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2 IN THE UNITED STATES DISTRICT COURT  
3 DISTRICT OF NEW JERSEY  
4 Civ. No. 04-3749 (JAP)  
5 (Consolidated Cases)  
6 Hon. Joel A. Pisano

7

8 ----- +

9 IN RE ROYAL DUTCH/SHELL |  
10 TRANSPORT SECURITIES |  
11 LITIGATION |

12 ----- +

13  
14 Videotaped Deposition of Tim Warren  
15 Washington, D.C.  
16 Tuesday, January 30, 2007  
17 10:25 a.m.

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23 Job No. 22-94054  
24 Pages 1 -206,  
25 Reported by: Paula G. Satkin

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2 Videotaped Deposition of  
3 TIM WARREN

4

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Taken pursuant to notice, before Paula  
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And Notary Public in and for the District of  
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0007

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PROCEEDINGS

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THE VIDEOGRAPHER: Here begins

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tape number one in the deposition of Tim Warren

6

in the matter of Royal Dutch/Shell Transport

7

Securities Litigation, in the United States

8

District Court, District of New Jersey, Case

9

Number 04-3749.

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Today's date is January 30th,

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2007. The time is 10:25 a.m.

12

The video operator today is Cali

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Day of LegaLink New York.

14

This deposition is taking place at

15

1875 Connecticut Avenue, Northwest, Washington,

16

D.C. 20009.

17

Would counsel please identify

18

themselves and state whom they represent?

19

MS. CAROLINE MARSHALL: Caroline

20

Marshall of Bernstein Liebhard & Lipshitz on

21

behalf of Peter M. Wood, the lead plaintiffs in

22

the class.

23

MS. HUGHES: Laura Hughes from

24

Bernstein Liebhard & Lipshitz on behalf of the

25

class.

0009

1

TIM WARREN

2

MR. MACFALL: Tim MacFall,

3

Bernstein Liebhard & Lipshitz on behalf of

4

plaintiffs and the class.

5

MR. HORN: William Horn, LeBoeuf,

6 Lamb Greene & MacRae on behalf corporate  
7 defendants and the witness.

8 MR. WEED: Earl Weed, in-house  
9 Shell.

10 MR. SMITH: Colby Smith from  
11 Debevoise & Plimpton, LLP, on behalf of Royal  
12 Dutch Petroleum, Shell Transport & Trading and  
13 the witness.

14 MR. BEST: Stephen Best with  
15 LeBoeuf Lamb, Washington, D.C., representing  
16 Mr. Warren.

17 MS. TISKA: Tracy Tiska from Hogan  
18 & Hartson for defendants KPMG Accountants NV.

19 MS. GABRIELLE MARSHALL: Gabrielle  
20 Marshall, Hughes Hubbard & Reed representing  
21 PWC, PriceWaterhouseCoopers.

22 MS. LATIMER: Aimee Latimer,  
23 Mayer, Brown, Rose & Maw for defendants Philip  
24 Watts.

25 MS. WICKHEM: Rebecca Wickhem of  
0010

1 TIM WARREN  
2 Foley & Lardner, LLP on behalf of Judith  
3 Boynton.

4 MR. FERRARA: Ralph Ferrara,  
5 LeBoeuf Lamb Greene & MacRae, on behalf of Shell  
6 Transport & Trading, Royal Dutch/Shell, my good  
7 friend and client, Tim Warren.

8 And I might make the footnote  
9 comment in response to Tim's entered order of  
10 appearance, I don't think we have a class yet,  
11 but I understand who your client is.

12 THE VIDEOGRAPHER: The court  
13 reporter today is Paula Satkin of LegaLink, New  
14 York. Would the reporter please swear in the  
15 witness.

16 Whereupon--

17  
18 TIM WARREN  
19 a witness, called for examination, having been  
20 first duly sworn, was examined and testified as  
21 follows:

22

## EXAMINATION BY COUNSEL FOR PLAINTIFFS

23

24

25 BY MS. CAROLINE MARSHALL:

0011

1 TIM WARREN

2 Q. Good morning, Mr. Warren. My name  
3 is Caroline Marshall. We met earlier. I'm  
4 going to be asking you a series of questions  
5 today. Before we begin, have you ever been  
6 deposed before?

7 A. I have.

8 Q. So I assume then you're familiar  
9 with the ground rules for a deposition; is that  
10 correct?

11 A. I believe so, but if you would  
12 like to remind me of them I would be grateful.

13 Q. Okay. I can do that.

14 It's important for the court  
15 reporter that you wait until I finish my  
16 question before you give an answer.

17 It's also important you answer  
18 verbally with a yes or no or something else.

19 If I ask you a question that you  
20 don't understand, let me know and I'll rephrase  
21 it.

22 Provided there's not a question  
23 pending, if you need to take a break we can do  
24 so at any time if you just let me know. Okay?

25 A. Thank you.

0012

1 TIM WARREN

2 Q. In what circumstances have you  
3 been deposed in the past?

4 A. I was deposed in a case in  
5 Houston, Texas brought against the Shell Oil  
6 Company and by two members of staff for their  
7 dismissal.

8 Q. When was that?

9 A. 2000, approximately.

10 Q. Also, for the purpose of this  
11 deposition, when I use the term Shell I'm  
12 meaning Royal Dutch, Shell Transport and  
13 operating companies and service companies in

14 which they hold an interest, two holding  
15 companies, so we can operate with that  
16 assumption. If at any point you want to clarify  
17 that deposition -- that definition if you're  
18 speaking about a particular entity just let me  
19 know and we can do that; okay?

20 A. All right.

21 Q. This is an example of the nodding  
22 and having to say it verbally. Otherwise it  
23 just becomes torture for the court reporter,  
24 okay?

25 A. Yes.

0013

1 TIM WARREN

2 MR. SMITH: We're going to torture

3 her enough today.

4 BY MS. CAROLINE MARSHALL:

5 Q. There we go. Can you please state  
6 your address?

7 A. Kingfishers, Mill Green, Station  
8 Road, Wargrave, Berkshire, Post Code RG 10 8EU,  
9 in the United Kingdom.

10 Q. How long have you been at that  
11 address?

12 A. Since the 5th of April 2006.

13 Q. Are you currently employed?

14 A. I'm a nonexecutive director on  
15 behalf of a few bodies, but I'm not fully  
16 employed by anybody.

17 Q. And which bodies are you a  
18 nonexecutive director?

19 A. I'm a nonexecutive director of the  
20 Save the Children International Alliance.

21 I'm a nonexecutive director of Oil  
22 Search Limited.

23 And I am the chairman of the World  
24 Energy Congress, Australia Limited.

25 Q. And what is Oil Search Limited?

0014

1 TIM WARREN

2 A. Oil Search Limited is an oil and  
3 gas exploration and production company  
4 registered in Papaua, New Guinea.

5 Q. Does it have any affiliation with  
6 Shell?

7 A. None.

8 Q. And does the World Energy  
9 Congress, Australia Limited have any affiliation  
10 with Shell?

11 A. No, though which would hope that  
12 Shell would become a member and in the capacity  
13 of Shell Australia, but they aren't a member at  
14 the present time.

15 Q. And what is the purpose of that  
16 organization?

17 A. The purpose of the World Energy  
18 Congress is to propose sound policy for the  
19 sustainable develop of energy across the world.  
20 It is an international organization  
21 headquartered in Paris with branches in most  
22 developed countries in the world.

23 Q. How long have you been involved  
24 with that organization?

25 A. The World Energy Congress, I was

0015

1 TIM WARREN  
2 invited to take the Australian chair in November  
3 last year.

4 Q. And when did you end your  
5 employment with Shell?

6 A. On the 30th of April 2006. So I  
7 was foot loose and fancy free on the 1st of May.

8 Q. And did you -- was that a  
9 retirement?

10 A. That was a retirement.

11 Q. And it happened in the normal  
12 course of your career at Shell?

13 A. It did.

14 Q. Now, if we can go back in time to  
15 your formal education. Where did you receive  
16 your undergraduate degree?

17 A. University of Saint Andrews in  
18 Scotland.

19 Q. When did you receive that degree?

20 A. 1967 -- sorry. 1970.

21 Q. Okay. And what did you receive a

22 degree in?

23 A. Applied mathematics.

24 Q. Did you receive any subsequent

25 degrees?

0016

1 TIM WARREN

2 A. No.

3 Q. Did you have a particular focus in  
4 your applied mathematics degree?

5 A. Plasma physics.

6 Q. What is plasma physics?

7 A. It's the physics of ionized  
8 fluids.

9 Q. Can you give me an example of an  
10 ionized fluid?

11 A. A gas which is under electrical  
12 charge.

13 Q. So you have received no  
14 postgraduate education?

15 A. No.

16 Q. Do you have any professional  
17 licenses?

18 A. Can you explain what you would  
19 mean by professional license?

20 Q. Well, do you -- have you belonged  
21 to any professional organizations?

22 A. I have done, but the only  
23 organization that I'm a member of at the present  
24 time is the Australian Institute of Company  
25 Directors.

0017

1 TIM WARREN

2 Q. What is that institute?

3 A. It's an institute that supports  
4 and educates nonexecutive directors.

5 Q. Have you ever been a member of any  
6 other professional organization?

7 A. I have been a member of the  
8 Society of Petroleum Engineers and the Society  
9 of Professional Well Log Analysts.

10 Q. Do you recall when you were a  
11 member of the Society of Petroleum Engineers?

12 A. I cannot remember when my

13 membership lapsed and I can't remember when I  
14 began it, but for a significant part of my  
15 career.

16 Q. Did you have to do anything in  
17 particular in order to become a member of the  
18 Society of Petroleum Engineers?

19 A. Merely to give evidence that I had  
20 been a practicing petroleum engineer.

21 Q. And what kind of evidence did that  
22 require?

23 A. A CV and a couple references, if I  
24 remember.

25 Q. Okay. What is the Society of Well

0018

1 TIM WARREN

2 Log Analysts?

3 A. Society of Professional Well Log  
4 Analysts is a society of petroleum engineers,  
5 petroleum engineers who specifically concentrate  
6 on the art and science of interpreting what lies  
7 in the subsurface.

8 Q. Do you recall --

9 A. They are sometimes known as  
10 petro-physicists.

11 Q. I'm sorry.

12 A. And petro-physics being the  
13 physics of rocks.

14 Q. Do you recall when you joined that  
15 organization?

16 A. I would believe that would be in  
17 the 1970s and it probably lapsed in the '80s.

18 Q. Did you have to have any  
19 particular specialty in order to be admitted to  
20 that society?

21 A. Again, merely experience in the  
22 field.

23 Q. What was your first employment  
24 after you graduated from Saint Andrews?

25 A. With a company called Shell

0019

1 TIM WARREN

2 International Petroleum Maatschappij,  
3 M-A-A-T-S-C-H-A-P-P-I-J, based in the

4 Netherlands.

5 Q. What was your job title at that  
6 location?

7 A. Trainee petroleum engineer.

8 Q. And how long were you a training  
9 petroleum engineer?

10 A. Approximately five months.

11 Q. And what did your training entail?

12 A. It entailed classroom training and  
13 practical training in the oil and gas fields  
14 that were owned by Netherlands NAM Maatschappij,  
15 a joint Shell and Exxon lessor at that time,  
16 joint venture in the Netherlands.

17 Q. Where did you go from there?

18 A. I went to -- well, first of all,  
19 actually, to Brunei and to work for Brunei Shell  
20 Petroleum Limited, a joint venture of the Brunei  
21 Government and Shell. And that was for  
22 approximately four months before I was appointed  
23 to Sarawak Shell Berhad, a company in the state  
24 of Sarawak in East Malaysia.

25 Q. What was your job title there?

0020

1 TIM WARREN

2 A. In Brunei Shell it was well site  
3 petroleum engineer and in Sarawak Shell Berhad  
4 after a period as well site petroleum engineer I  
5 became a petro-physics engineer, petro-physical  
6 engineer, and I ended my assignment there as an  
7 operations engineer.

8 Q. Approximately what year are we at  
9 at this point?

10 A. I left Sarawak in 1974.

11 Q. And where did you go from there?

12 A. I went to the U.K. to join Shell  
13 U.K. Exploration Production Limited.

14 Q. What was your job title?

15 A. Petro-physical engineer for the  
16 first part of the assignment and then economics  
17 and planning engineer.

18 Q. How long did that assignment last?

19 A. Until 1978.

20 Q. Where did you go from there?

21 A. Back to Sarawak to work for  
22 Sarawak Shell Berhad as their manager of  
23 planning and economics.

24 Q. And as manager of planning and  
25 economics what was your focus?

0021

1 TIM WARREN

2 A. The focus was doing economic  
3 analyses to justify new investments to be the  
4 coordinator on behalf of management of the  
5 company plan and specifically at that time to  
6 adjust and amend all our planning systems to  
7 change from what had been a tax concession basis  
8 on which we were operating to a new production  
9 sharing contract basis.

10 Q. How long did you hold that title?

11 A. I believe until 1981.

12 Q. Where did you go from there?

13 A. I moved to Kuala Lumpur in West  
14 Malaysia where I worked on the corporate side of  
15 Shell companies in Malaysia and still officially  
16 an employee of Sarawak Shell Berhad where I was  
17 the liaison manager with the National Oil  
18 Company Petronas.

19 Q. And what were your duties and  
20 responsibilities in that role?

21 A. To liaise with the company that  
22 was now, if you like, the company that had let  
23 us the contract under which we operated in the  
24 exploration production business in Malaysia.  
25 And specifically to -- I negotiated the first

0022

1 TIM WARREN

2 extensions of production sharing contracts with  
3 them and supported them in the development of  
4 the first natural gas contracts in Malaysia.

5 Q. What year did that position end?

6 A. 1983.

7 Q. Where did you go from there?

8 A. I went to Oman in the bottom of  
9 the Gulf to work for Petroleum Development Oman,  
10 again, a 50/50 joint venture between Shell and  
11 the Government of Oman.

12 Q. What was your title in Oman at  
13 that time?

14 A. Operations superintendent.

15 Q. And what were your  
16 responsibilities as operations superintendent?

17 A. I was responsible for all  
18 activities of PDO in the northern desert of  
19 Oman, which at that time was about 300,000  
20 barrels a day of oil production, a significant  
21 gas production, and I think we had operating  
22 some four or five drilling rigs.

23 Q. How long were you in Oman for?

24 A. Until 1985.

25 Q. And then where did you go?

0023

1 TIM WARREN

2 A. And then I went to The Hague.

3 Q. To take on what position?

4 A. To become the Shell group head of  
5 petro-physical engineering.

6 Q. So that's in 1985?

7 A. '5.

8 Q. And what was your -- what were  
9 your responsibilities as group head of petroleum  
10 engineering?

11 A. Not petroleum engineering,  
12 petro-physical engineering, which as I discussed  
13 before is a branch of petroleum engineering.

14 And my job there was to ensure  
15 that we had a robust and effective research  
16 program supporting the discipline.

17 The sharing of knowledge amongst  
18 all the petro-physical engineers working in our  
19 different operating units around the world and a  
20 staff mentorship and development responsibility  
21 for all those petro-physical engineers working  
22 worldwide for us.

23 Q. How long did you hold that role  
24 for?

25 A. I believe until 1987 or '88.

0024

1 TIM WARREN

2 Q. Were there particular places in

3 the world where petro-physical engineering was  
4 being performed or was it global?

5 A. Petro-physical engineering is  
6 performed wherever we are exploring for and  
7 developing oil and gas fields. It is a key  
8 discipline to understanding what is in the  
9 subsurface, because underground one cannot see  
10 with the eye, you have to use remote  
11 instruments, and it's the science of putting the  
12 measurements from those remote instruments into  
13 an understanding of what is physically there.

14 Q. And that's for every type of  
15 field?

16 A. That's for every type of field.

17 Q. Okay. Then in 1987 or '88 where  
18 did you move to?

19 A. I was appointed to a new  
20 appointment in The Hague. Again, I think at  
21 that time I'm not sure whether it was Shell  
22 International Petroleum Maatschappij or whether  
23 the name had changed to Shell International  
24 Exploration & Production, it was one of the two.

25 And my next assignment in that

0025

1 TIM WARREN

2 company was for the exploration and production  
3 business of Shell, the group manager of  
4 information management and technology.

5 Q. What were your responsibilities in  
6 that role?

7 A. In that role, again, to facilitate  
8 and agree global standards for our information  
9 technology infrastructure and architecture and  
10 software and also to begin the move to Shell  
11 common systems across the world.

12 Previous to that our operating  
13 units tended to use software that they had  
14 created or brought in from the outside and we  
15 had decided that it would be more cost effective  
16 to have common systems in all our operations.

17 Q. The software that you're talking  
18 about, what type of software practically would  
19 that be?

20 A. It was both on developed, so Shell  
21 proprietary software, as well as software that  
22 was purchased or licensed from the outside  
23 world.

24 Q. And was it software that was used  
25 for particular purposes within the company?

0026

1 TIM WARREN

2 A. For all corporate purposes from,  
3 if you like, the financial accounting systems  
4 through to the top end scientific routines to  
5 support exploration and petroleum engineering.

6 Q. When was it that the company  
7 decided to move towards a more global system?

8 MR. SMITH: Objection to form.

9 BY MS. CAROLINE MARSHALL:

10 Q. You can answer the question.

11 A. Sorry. Can you repeat the  
12 question, please?

13 Q. Sure. When was it that the  
14 company decided to move towards a more global  
15 system for using software?

16 MR. SMITH: Same objection.

17 BY MS. CAROLINE MARSHALL:

18 Q. You can still answer the question.

19 A. What was the objection?

20 MS. CAROLINE MARSHALL: It doesn't  
21 matter.

22 MR. SMITH: You can go ahead and  
23 answer. I'm just making an objection for the  
24 record.

25 MS. CAROLINE MARSHALL: It would

0027

1 TIM WARREN

2 be -- I hope it would be unusual in this  
3 deposition for you to be told you couldn't  
4 answer a question. Unless you hear otherwise  
5 you can answer a question. It is sort of legal  
6 wrangling going on here.

7 THE WITNESS: Can you please  
8 repeat the question?

9 BY MS. CAROLINE MARSHALL:

10 Q. Sure. I don't remember it

11 anymore. Now your testimony is so far up there  
12 he's definitely going to object this time. I  
13 can tell you for sure.

14 I'm just trying to figure out when  
15 it was, if you could say in time that the  
16 company decided to look at a more global system  
17 for unifying the different softwares or  
18 technologies that the company was using?

19 MR. SMITH: Objection to form.

20 THE WITNESS: I think it's  
21 impossible to give a specific point in time.  
22 Shell has been operating as an international  
23 company since its very, very beginnings and  
24 there have always been common systems, even  
25 before the days of computing, that were part of

0028

1 TIM WARREN

2 the uniform structure of a single company.

3 Now, as the company expanded and  
4 as particularly operating units grew there is  
5 always a tendency for custom-tailored solutions  
6 and custom-tailored systems to be built within  
7 those units. And, in fact, throughout my career  
8 there have been various campaigns to consolidate  
9 and have one system for all.

10 But at the same time, when you are  
11 experimenting it's worth having more than one  
12 set of solutions flowing because then you can  
13 take the best from the best when you do  
14 consolidate and make things in common.

15 So we've always tried to run a  
16 global business based on common principles,  
17 common values, common systems. And the  
18 structure underlying the business of course has  
19 changed with the environment and with  
20 technology.

21 BY MS. CAROLINE MARSHALL:

22 Q. In your role -- I'm sorry, one  
23 second. I'm having a strange -- I'm sorry. I'm  
24 just trying to recall the specific title of the  
25 job we were last talking about?

0029

1 TIM WARREN

2 A. That was the exploration and  
3 production business information -- manager of  
4 information management of technology.

5 Q. We're in the late '80s at this  
6 point?

7 A. We're in the late '80s.

8 Q. Okay. And was part of your role  
9 at that time -- did part of your role at that  
10 time involve a globalizing unifying process?

11 A. Yes, but specifically at that  
12 time, as with all the previous roles, outside of  
13 the United States.

14 In the United States, I forget  
15 until which year, Shell Oil Company had a  
16 minority shareholding which wasn't owned by  
17 Shell which meant that Shell Oil was independent  
18 of the Royal Dutch/Shell group other than  
19 through its board structure and we had various  
20 mechanisms for cooperation and sharing across  
21 the Atlantic, but they were cooperative  
22 agreements and so Shell Oil was a different type  
23 of operating unit than all the operating units  
24 in the rest of the world.

25 So certainly I corresponded with

0030

1 TIM WARREN

2 my opposite numbers in Shell Oil and under the  
3 research and technical sharing agreement we  
4 shared where appropriate.

5 Q. How long did you hold that role  
6 for?

7 A. I believe until 1990. It may have  
8 been '91. I think it was the end of '90.

9 Q. And what was your new title?

10 A. The new title was manager of  
11 exploration and production liaison for the  
12 Middle East and Africa.

13 Q. How long did you hold that role  
14 for?

15 A. For approximately two years --  
16 under two years it was, a year-and-a-half.

17 Q. Where were you physically located?

18 A. Physically located still within

19 The Hague.

20 Q. What were your responsibilities in  
21 that role?

22 A. To -- perhaps I can back up a bit  
23 and give you some context.

24 Q. That would be great.

25 A. In those days the Shell business

0031

1 TIM WARREN

2 was organized in regions, geographical regions  
3 of the world. And, if you like, the shareholder  
4 accountability was handled through such regional  
5 organizations, but alongside the regions you had  
6 the businesses who took a global look at the  
7 businesses across the world, one of which was my  
8 business, exploration and production.

9 So that manager EP liaison liaised  
10 with the shareholder function and took a global  
11 view of the direction that our companies were  
12 taking in the Middle East and Africa and  
13 supported the shareholder in his shareholder  
14 role. Shareholders' representative in their  
15 role, I should say.

16 Q. So this would have been in 1991?

17 A. 1990/1991. And I moved on in '92.

18 Actually, it must have been '91/'92 because I  
19 moved in September '92.

20 Q. Where did you go then?

21 A. To Nigeria.

22 Q. What was your title there?

23 A. I started in Nigeria as the  
24 general manager of operations and shortly after  
25 that, once I had restructured the operations

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1 TIM WARREN

2 function, I took a new role after that  
3 restructuring which was the general manager of  
4 the Western Division of Shell Petroleum Company  
5 Development Nigeria.

6 Q. And how did the restructuring  
7 change your responsibilities, if at all?

8 A. Essentially from being responsible  
9 for the total operations in Nigeria I took on

10 general management responsibility for all our  
11 activities west of the River Niger.

12 Q. How long did you hold that role?

13 A. Until 1995.

14 Q. Were you stationed in Nigeria?

15 A. For the first role in Lagos. For  
16 the second role in Western Nigeria in a town  
17 called Warri, W-A-R-R-I.

18 Q. Who did you report to while you  
19 were in Nigeria?

20 A. Initially to Philip Watts and  
21 secondly to Brian Anderson.

22 Q. And when you were in Nigeria did  
23 you have a particular focus in terms of your  
24 role there?

25 MR. SMITH: Which of the two jobs?

0033

1 TIM WARREN

2 BY MS. CAROLINE MARSHALL:

3 Q. The second one.

4 A. Essentially, as with all or most  
5 general management roles, to grow and maintain a  
6 profitable business without causing harm to  
7 people or the environment.

8 Q. Where did you go from there?

9 A. I went back to The Hague again,  
10 and this time during 1995 the Boards of the  
11 Shell companies had decided to restructure what  
12 were called central offices, the, if you like,  
13 the functions in the center of the Royal  
14 Dutch/Shell group and I was invited back by Mark  
15 Moody Stewart, who at that time was the  
16 coordinator of the exploration and production  
17 business, to take my place on what was called  
18 the Shadow Business Committee and who were  
19 designing or should I say steering the design of  
20 the new exploration and production business  
21 model and with a view to becoming a full member  
22 of that Business Committee when it was fully  
23 chartered.

24 Q. And what was that Business  
25 Committee ultimately called?

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1 TIM WARREN

2 A. It was called the EP Business  
3 Committee, Exploration and Production Business  
4 Committee, and it was chartered I believe in  
5 January 1996.

6 Q. And sometimes is that referred to  
7 as BusCom?

8 A. That's correct.

9 Q. I just want to try to clarify  
10 something.

11 Mr. Moody Stewart invited you to  
12 ultimately take over his role?

13 A. No. He was at the time the  
14 coordinator of the EP business unit, the  
15 exploration and production business unit, and as  
16 such was chairing a committee he called I think  
17 the Transitional Business Committee, which was  
18 steering the design for the future, which I  
19 presume he knew he was going to lead and when he  
20 invited me he said it was with a view to joining  
21 his Business Committee in the new structure and  
22 with the specific portfolio of technology and  
23 technical services.

24 Q. Did you understand the reason for  
25 the new structure?

0035

1 TIM WARREN

2 A. Very much so.

3 Q. And what was it?

4 A. Essentially to streamline Shell's  
5 global business model to ensure that it stayed  
6 competitive into the late '90s and the new  
7 century.

8 We had been operating under a  
9 business model that had been created in 1965,  
10 which had served us well, but had not taken into  
11 account the revolutions, particularly in  
12 information technology, and we were not  
13 sufficiently competitively nimble under that  
14 business model.

15 Q. And when you said that you were  
16 going to be joining this with a specific  
17 portfolio of technology and technical services,

18 can you explain what you mean by technology and  
19 technical services in that context?

20 A. Yes. It was to become effectively  
21 the director of two bodies at that time:

22 One was the exploration and  
23 production research effort, which was to be  
24 undertaken by a body which I will call KEPSL,  
25 unless you would like me to spell it out in

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1 TIM WARREN

2 Dutch.

3 Q. I think that's okay. K-A-C-P-L?

4 A. KEPSL, which was the research  
5 company for the EP business in the Netherlands.

6 And one of the streamlining was to  
7 integrate that research capability with the  
8 technical services capability that was preserved  
9 in either SIPM, I can't remember the date that  
10 SIPM became SIEP. It might have been, in fact,  
11 that restructuring that changed the name.

12 So we had our engineers who  
13 delivered technical services to the operating  
14 units, rather like the job I had done as group  
15 head of petro-physics, sat in the corporate  
16 entity called SIPM or SIEP, and our researchers  
17 sat in an entity called KEPSL. They were  
18 corporately separate, independently managed, and  
19 the idea was to bring them into one uniform  
20 structure under one direction.

21 Q. And was that done?

22 A. It was.

23 Q. And when was that accomplished?

24 A. And we implemented in  
25 January 1996.

0037

1 TIM WARREN

2 Q. And did it -- was it named  
3 something?

4 A. It became known at that time as,  
5 if I remember rightly, EP Research and Technical  
6 Services or planograms, again, RTS, for short.

7 Q. And how long -- strike that.

8 So then you became the head of EP

9 Research and Technical Services; is that

10 correct?

11 A. Correct.

12 Q. And as head of EP Research and

13 Technical Services what were your

14 responsibilities?

15 A. To ensure that we had a research  
16 program, a technical capacity that would keep us  
17 competitive and in our business, globally.

18 Q. And at that time did you assume a  
19 seat on the Business Committee?

20 A. I did indeed. So it was one of  
21 the portfolios represented on the Business  
22 Committee.

23 Q. So did you have a seat on the  
24 Business Committee when it was first formed?

25 A. I did.

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1 TIM WARREN

2 Q. Did you remain on the Business  
3 Committee through the duration of its being  
4 called the Business Committee?

5 A. I did.

6 Q. And then did it become the  
7 Executive Committee?

8 A. It did.

9 Q. And did you have a seat on the  
10 Executive Committee when that was formed?

11 A. I did.

12 MR. SMITH: Let her finish your  
13 question before you answer.

14 BY MS. CAROLINE MARSHALL:

15 Q. I know it's tedious.

16 In what year did it switch from  
17 the Business Committee to the Executive  
18 Committee?

19 A. My memory is not as sharp on that  
20 event. Possibly 1998, but I couldn't guarantee  
21 it.

22 Q. What was the purpose of the  
23 Business Committee?

24 A. The purpose of the Business  
25 Committee was to ensure that the resources that

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1 TIM WARREN

2 were -- well, several fold.

3 Number one, to ensure the  
4 resources that were allocated to the exploration  
5 production business were utilized in the most  
6 effective manner and that's resources in terms  
7 of human and money and research and technology,  
8 so three sets of resources.

9 To be the owners of the global  
10 plan and to monitor the global plan and take  
11 remedial action if the global plan was not  
12 delivering what we were targeting it to do.

13 Q. When was this global plan made?

14 A. Global plans were made annually.

15 Q. When you joined the Business  
16 Committee was there any -- what was the level of  
17 integration with Shell in the U.S. at that time?

18 A. It was still working as per the  
19 previous model. I believe by that time Shell  
20 had acquired 100 percent of the shareholding in  
21 Shell Oil, but it was being operated on a  
22 hands-off basis through the Board involvement  
23 and the cooperation agreements, technical  
24 cooperation agreements that existed between  
25 Shell International and Shell Oil.

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1 TIM WARREN

2 Q. What if any was your involvement  
3 with the technical cooperation agreement between  
4 Shell International and Shell Oil?

5 A. I was the custodian of the  
6 agreement on the Royal Dutch side, if you like,  
7 the research and technical agreement.

8 Q. Was there one research and  
9 technical agreement operating at any one time or  
10 were there many?

11 A. At that time I believe there was  
12 one. Certainly in principle there was one. How  
13 many the lawyers made it in the end, I'm not  
14 quite sure, but I thought of it as one umbrella  
15 agreement.

16 Q. Can you describe what in principle

17 the agreement was?

18 A. The agreement was a risk sharing  
19 agreement whereby both parties agreed that they  
20 would invest for their own businesses in  
21 research and technology development, but through  
22 a complex formula that was agreed prior to  
23 investment that the results of that research and  
24 development would be shared both ways, so our  
25 research results from Rijswijk in the

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1 TIM WARREN

2 Netherlands was shared with Shell Oil in the  
3 States and likewise the results from their  
4 research from the BellAire Research Center was  
5 shared with us in the Netherlands.

6 Q. And was there a name for the, for  
7 essential research facility within Shell Oil at  
8 that time?

9 A. I think it was called the BellAire  
10 Technology Center. Again, these places changed  
11 their names. It was always at BellAire; when it  
12 acquired the name of the BellAire Technology  
13 Center, I forget, in Houston.

14 Q. Do you recall who your counterpart  
15 was in Shell Oil with respect to this agreement?

16 A. I ought to but the name escapes  
17 me. He retired in 1998. No. I'm sorry, I  
18 can't remember.

19 Q. That's okay.

20 Practically speaking what type of  
21 research was being shared during this time  
22 period when this agreement was in place?

23 MR. SMITH: Objection to form,  
24 lack of foundation.

25 MR. BEST: Same objection.

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1 TIM WARREN

2 BY MS. CAROLINE MARSHALL:

3 Q. You can answer.

4 A. Can you restate the question?

5 Q. Sure. You said that the results  
6 of the research and development would be shared  
7 both ways.

8 Can you please describe to me what

9 you meant by the results of the research and  
10 development? What were those results?

11 A. Well, research output takes the  
12 form normally of reports, patents and procedures  
13 and practices. So written documents, patents,  
14 if you like, basic know how was exchanged so  
15 it's developed from these programs.

16 Q. And did the know how involve  
17 petro-physical engineering, for example, or  
18 something else?

19 A. It would be all research that  
20 supported our entire life cycle of our  
21 particular business, so it would be in support  
22 of exploration, so exploration seismic. In  
23 support of drilling technology. In support of  
24 petro-physics, absolutely. In support of  
25 reservoir engineering. In support of production

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1 TIM WARREN

2 engineering. In support of production systems.  
3 In support of construction.

4 We were operating in many  
5 pioneering environments where even how to  
6 construct was not known at the time. We had to  
7 invent our own construction methods. So it was  
8 everything that enabled us to discover and  
9 produce and sell oil and gas.

10 Q. How, if you know, did the two  
11 technology centers share information practically  
12 with each other?

13 MR. SMITH: At this time?

14 BY MS. CAROLINE MARSHALL:

15 Q. Yeah, at this time. I think we're  
16 in 1996 time period?

17 A. 1996. By the exchange of reports.  
18 By attending common conferences and workshops  
19 and by visiting each other in their workplaces  
20 and talking with their opposite numbers.

21 Q. Now, I apologize if I've asked you  
22 this, but for how long did you hold the title of  
23 the director of Research and Technical Services?

24 A. In essence until 2001, but the

25 title changed during that time.

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1 TIM WARREN

2 Q. And what did it change to?

3 A. It changed to the director of  
4 Shell Technology Exploration and Production.

5 Q. During the period from 1995 or  
6 1996 to 2001 did the relationship between the  
7 technology center in the United States and the  
8 technology center in Rijswijk change?

9 A. It did.

10 Q. How did it change?

11 A. It changed to a structure where we  
12 could enable the removal of overlaps and  
13 duplication and, therefore, a more effective  
14 research and development product for the Shell  
15 companies globally.

16 So rather than running the  
17 companies through, if you like, the loose  
18 relationship previously where they were under  
19 separate autonomous direction, now we changed  
20 the shape of our agreement such that we agreed  
21 programs and where various activities would be  
22 undertaken and where specific expertise was it  
23 would be used for the benefit of the entire  
24 Shell global community rather than just specific  
25 parts.

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1 TIM WARREN

2 Q. And did that happen at any  
3 specific time or was it a gradual movement?

4 A. No. I believe we implemented it,  
5 again, if my memory serves me right, in '98. I  
6 think it was '98. It might have been '99.

7 Q. Did that new organization have a  
8 particular name?

9 A. Shell Technology EP.

10 Q. So the BellAire Technology Center  
11 became under Shell Technology EP?

12 MR. SMITH: Objection to form.

13 BY MS. CAROLINE MARSHALL:

14 Q. You can answer.

15 A. The BellAire Technology Center

16 remained one of the two technology centers  
17 within the Shell group, but now harmonized and  
18 coordinated to a much greater degree than had  
19 happened in the past.

20 Should I point at this time the  
21 size of the efforts, as you can imagine, were  
22 much larger in the European and Royal Dutch  
23 sphere than in the Shell Oil sphere because of  
24 the size of the relative operations.

25 MR. FERRARA: Caroline, we've been  
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1 TIM WARREN  
2 on for about an hour. Is it a convenient point  
3 to take a break?

4 MS. CAROLINE MARSHALL: Sure. We  
5 can stop now.

6 THE VIDEOGRAPHER: We are going  
7 off the record. The time is 11:13 a.m.

8 (A brief recess was taken.)

9 THE VIDEOGRAPHER: We are back on  
10 the record. The time is 11:28 a.m.

11 BY MS. CAROLINE MARSHALL:

12 Q. Mr. Warren, does -- what if any  
13 role did SEPTAR play in these two technology  
14 centers?

15 A. SEPTAR was a division of Shell  
16 Technology EP.

17 Q. And what was the purpose of  
18 SEPTAR?

19 A. SEPTAR undertook the research  
20 function and a lot of smaller technical service  
21 capabilities.

22 Q. And what if any was the  
23 relationship between SEPTAR and the two  
24 technology centers we were talking about  
25 earlier?

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1 TIM WARREN

2 A. As I say, the objective of  
3 bringing the two centers closer together was to  
4 remove duplication, increase effectiveness,  
5 increase efficiency and basically get a better  
6 bang for the buck for our global research

7 investment and ensure that we weren't building  
8 duplicate capacities.

9 One of the ways of doing that was  
10 to create identical structures both sides of  
11 Atlantic.

12 In BellAire there was a SEPTAR, in  
13 Rijswijk there was a SEPTAR. The other  
14 divisions, I think with the exception of one,  
15 had a mirror image, if you like, each side of  
16 the Atlantic. That enabled much closer  
17 coordination because of course the same types of  
18 activities were being taken on in similar parts  
19 of the organization each side of the Atlantic.

20 Q. Was there an effort to make it one  
21 global organization?

22 MR. SMITH: Objection to form.

23 THE WITNESS: No, there wasn't.  
24 The structures remained corporately separate  
25 and, if you like, Step in the U.S. remained part  
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1 TIM WARREN  
2 of the Shell Oil Company. STEP in the  
3 Netherlands remained part of the Netherlands  
4 holding company structure and they had  
5 independent boards.

6 BY MS. CAROLINE MARSHALL:

7 Q. Were they both part of EP  
8 Technology?

9 A. As I was saying, we used as a  
10 method to improve communication and  
11 coordination, we used the same semantics.

12 So there was a Shell Technology  
13 E&P on this side of the Atlantic. There was a  
14 Shell Technology E&P on the other side of the  
15 Atlantic.

16 There was a SEPTAR on this side of  
17 the Atlantic. There was a SEPTAR on the other  
18 side of the Atlantic.

19 There was an STV on this side of  
20 the Atlantic. There was an STV on that side of  
21 the Atlantic.

22 So mirror images which enabled us  
23 as a first class communication because people

24 were talking the same language and about the  
25 same things.

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1 TIM WARREN

2 Q. Were they working together on  
3 similar projects like the U.S. SEPTAR and the  
4 European SEPTAR, how did they relate with each  
5 other?

6 MR. SMITH: Objection to form.

7 THE WITNESS: Can you rephrase the  
8 question?

9 MR. SMITH: I think that's a whole  
10 bunch of different questions. Maybe you can ask  
11 them one at a time.

12 BY MS. CAROLINE MARSHALL:

13 Q. Okay. That's fine.

14 You said that there was a SEPTAR  
15 on this side of the Atlantic and there was a  
16 SEPTAR on the other side of the Atlantic. How,  
17 if at all, did they work together?

18 A. On the research side ensuring that  
19 we didn't do duplicated research. That a  
20 research program, if it was being proposed by  
21 the U.S. side then we wouldn't duplicate and  
22 have a similar research program on the Royal  
23 Dutch side and vice versa.

24 So the research programs were  
25 separate but they didn't overlap. They

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1 TIM WARREN

2 continued to share results for each other from  
3 each other so they could feed off, if you like,  
4 the benefits of each other's research, but they  
5 conducted separate research programs.

6 They each offered a similar range  
7 of technical services, though the technical  
8 services offered on this side of the Atlantic --

9 Q. I think just to be clear, when you  
10 say "this side" you mean is U.S. side?

11 A. The U.S., yes. My apologies. I'm  
12 saying this because we're in the U.S. at the  
13 present time.

14 Q. Okay.

15 A. The technical services offered by  
16 the U.S. SEPTAR were designed to be those that  
17 were required by the Shell operations here in  
18 the U.S. and specifically to satisfy the  
19 majority of, if I could use another amogram,  
20 SEP's needs, Shell E&P Company, here in the  
21 States, who would be the primary customer for  
22 SEPTAR in the States.

23 Q. As part of your or during your  
24 time as the director of Research and Technology  
25 for EP did you have anything to do with Shell

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1 TIM WARREN

2 Deepwater Services?

3 A. Yes. That was part of the Shell  
4 Technology E&P structure. And Shell Deepwater  
5 Services was the one division that was  
6 represented primarily on the U.S. side of the  
7 Atlantic, with a small representation on the  
8 other side in Europe.

9 Q. And what was the purpose of Shell  
10 Deepwater Services?

11 A. If I can back up and give you some  
12 context. The deepwater basins of the world at  
13 that time was, as they still are, are few of the  
14 remaining unexplored hydrocarbon basins of the  
15 world and represented a significant growth  
16 opportunity for companies that had the capacity  
17 and capability to explore and develop them.

18 The first deepwater basin that had  
19 been discovered and developed was here in the  
20 Gulf of Mexico. And what we wanted to ensure as  
21 we moved into deepwater basins elsewhere around  
22 the world, Angola, the United States, the U.K.,  
23 Malaysia, Australia, I could go on listing the  
24 deepwater basins, was that we took and ensured  
25 that we didn't make the same mistake twice in

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1 TIM WARREN

2 any region. This was very expensive exploration  
3 and production effort.

4 So we felt it was important that  
5 we gathered all the learning in one place and

6 that we offered a more total technical service  
7 than we had done for other parts of our  
8 activities that ensured by virtue of keeping a  
9 common group of people working together on  
10 deepwater that they would maximize the speed of  
11 their total earning and be able to apply it by  
12 passing it on to the operating units around the  
13 world that were striving to explore and develop  
14 deepwater basins.

15 Q. And how, if at all, did you  
16 interact with Shell Deepwater Services during  
17 your time as the director of technical services  
18 at EP?

19 A. I used to, because they -- I was  
20 an important customer of theirs, as I say the  
21 majority of the deepwater basins lie outside of  
22 the United States. We only have one here in the  
23 United States that we're operating in, namely  
24 the Gulf of Mexico.

25 I used to have a quarterly

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1 TIM WARREN  
2 business review with Shell Deepwater Services to  
3 ensure that they were satisfying customer needs  
4 outside the States and as well as, of course,  
5 making sure they didn't satisfy the needs  
6 outside the United States, they didn't cut  
7 across satisfying the needs of the very  
8 important customer, SEPCO, here in the United  
9 States.

10 Q. When you left your position as the  
11 EP director of research and technology or  
12 whatever the title was at the end of your stint  
13 there, where did you go?

14 A. I stayed in The Hague. I was  
15 appointed regional business director for the Far  
16 East and Australasia.

17 Q. And were you still a member of the  
18 Executive Committee in that position?

19 A. I was.

20 Q. And what was your role as the  
21 regional business director for East Asia, China,  
22 and Australia?

23 A. To act as the shareholder's  
24 representative for our investments and  
25 corporations in the Far East and Australasia.

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1 TIM WARREN

2 Q. How long did you hold that role  
3 for?

4 A. I think it was just under  
5 12 months.

6 Q. And what was your next position?

7 A. My next position was chairman of  
8 the Shell companies of Australia and the Pacific  
9 islands and chief executive officer of Shell  
10 Development Australia.

11 Q. And what were your  
12 responsibilities in those roles?

13 A. In the chairman's role it was  
14 essentially to overview and oversight the  
15 different businesses that had activities in  
16 those countries, namely Australia and the  
17 Pacific islands, to ensure that we didn't miss  
18 cross-business opportunities. To ensure that we  
19 were maintaining a constant projection of Shell  
20 to the outside world.

21 We may have very different  
22 business units inside Shell, but the customer  
23 and the government in countries regard Shell as  
24 one company.

25 To be the lead person for

0055

1 TIM WARREN

2 government relations in-country and to be --  
3 also to take a significant interest in the  
4 development of the nationals who were employed  
5 in the country, even if they were working  
6 overseas on assignments. That's the country  
7 chairman's role.

8 As chief executive officer of  
9 Shell Development of Australia I was accountable  
10 to my successor as the regional business  
11 director for ensuring that we ran our  
12 exploration and production and gas businesses to  
13 deliver what we promised to our shareholder.

14 Q. And was your successor as the --  
15 at the regional business director Dominique  
16 Gardy?

17 A. He was. I should have pointed I  
18 reported and was accountable rather to two  
19 business directors. I was also accountable to a  
20 Peter de Wit, who is the responsible regional  
21 business director for gas and power and SDA  
22 actually represented two businesses, exploration  
23 and production and gas and power.

24 Q. And at that point you were no  
25 longer a member of the Executive Committee; is  
0056

1 TIM WARREN

2 that correct?

3 A. I was no longer a member of the  
4 Executive Committee.

5 Q. How long did you remain the CEO of  
6 SDA and those other roles that you just  
7 described that began in 2003?

8 A. I believe I was CEO for one year  
9 and I retained my chairman's roles until I  
10 retired in 2006. But a year after I arrived in  
11 Australia the exploration and production  
12 business restructured and I took on a new  
13 appointment in addition to my chairman's  
14 responsibilities, which was as production  
15 director for our exploration and production  
16 business in the Far East and Australasia.

17 Q. What were your responsibilities in  
18 that position?

19 A. To oversee the production  
20 activities of Shell in Australia and New Zealand  
21 and to sit on the leadership team of the  
22 exploration and production business in that  
23 region.

24 Q. Back when you were the EP director  
25 of research and technology were you involved in  
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1 TIM WARREN

2 something called the value creation team or  
3 project?

4 A. I was.

5 Q. And what was that?

6 A. As part of the restructuring in  
7 1995 of the Shell group, the Shell group created  
8 a global learning capability who tried to bring  
9 us into the modern world in terms of learning  
10 techniques and particularly increasing the speed  
11 of corporate application of learning.

12 And one of the techniques that  
13 they introduced to the businesses was the  
14 concept that they called a value creation team,  
15 which the concept was if you had a very  
16 difficult problem in your business you pulled  
17 together a team of good intellectual horsepower  
18 from within the Shell group and you dedicated  
19 them for a period of time to tackling that  
20 problem and you gave them the resources they  
21 needed to deliver a series of recommended  
22 solutions for you.

23 It was both an excellent way of  
24 bringing young minds and unfettered minds to old  
25 problems very often and get new insights to

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1 TIM WARREN

2 them. It was also extremely good staff  
3 development for future leaders in the business  
4 because they were working on, if you like, the  
5 problems that were troubling chief executives  
6 and senior directors.

7 The process, which was a uniform  
8 process, was you tried to have more than one  
9 value creation team working at the same time so  
10 that the value creation teams could spark off  
11 each other, learn from each other. It was, as I  
12 say, it was to develop experience for the  
13 individuals.

14 And the idea was that they had a  
15 kickoff get together where, if you like, the  
16 problem was shared and the understanding what  
17 the problem was agreed with their sponsors,  
18 whoever they were.

19 They then worked for a period of  
20 time in what we would call divergent mode  
21 looking in the world for analogies, going out

22 asking questions, getting in lots of inputs that  
23 would help them better understand the problem  
24 and possible solutions.

25 They then had an intermediate  
0059

1 TIM WARREN

2 workshop when all the teams would come together  
3 to say what they had learned and to agree a  
4 program of further work that would converge them  
5 ultimately to coming up with the recommendations  
6 that they would come up with and, finally, there  
7 was a final meeting where they delivered their  
8 final report and recommendations, not only to  
9 their sponsors, but to the people who at the end  
10 of the day would have to implement their  
11 recommendations if their recommendations were  
12 accepted.

13 So, if you like, value creation  
14 was a new philosophy in the group, it was a new  
15 way of working, it was a new way of developing  
16 staff.

17 And we agreed at the end of 1997  
18 as part of the EP Business Committee or  
19 Executive Committee, I forget when it changed  
20 its name, we agreed that it would be useful to  
21 run a value creation series for our business.

22 Q. And what was your involvement with  
23 that?

24 A. I was asked to coordinate the  
25 overall structure and ensure that everybody knew

0060

1 TIM WARREN

2 their roles and make sure, if you like,  
3 secretarial services were available for the  
4 effort.

5 I also, each member -- not each  
6 member. Each value creation team, and we had  
7 four of them, was officially championed by one  
8 member of the Business Committee or Executive  
9 Committee, and I championed one of the value  
10 creation teams myself.

11 Q. Was that the resource management  
12 team?

13 A. No. I championed a team that  
14 ended up calling itself the Olympic Well  
15 Delivery Team.

16 Q. The Olympic World Delivery or  
17 well?

18 A. Well, W-E-L-L.

19 Q. What was the purpose of the  
20 Olympic Well Delivery Team?

21 A. The purpose was that all our  
22 benchmarking that was done within our operating  
23 units showed us at the time that we were behind  
24 the competition in the speed with which we  
25 drilled our wells and behind the competition in

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1 TIM WARREN

2 terms of the cost with which we got the results  
3 from our wells. And so the problem that we sat  
4 for this specific team was what did we need to  
5 do to reestablish ourselves as, if you like, one  
6 of the best companies in terms of drilling in  
7 the world.

8 Q. I'm sorry. I interrupted.

9 A. And that's why they chose their  
10 title of Olympic Well Delivery Team, they set  
11 out to let Shell win the Well Olympics.

12 Q. What were these benchmarks that  
13 you referred to?

14 A. In many parts of our business,  
15 mind you that's true in other industries as  
16 well, we undertake through external consultants  
17 to benchmark our achievements against those of  
18 our competitors. That's one of the ways one  
19 learns. And certainly in drilling there are  
20 several benchmarks and probably the most famous  
21 is the one conducted in the U.K. And we also  
22 conducted benchmarks for ourselves seeing as we  
23 had different operating units around the world.

24 Q. What do you mean the one conducted  
25 in the U.K.? I don't know what you're referring

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1 TIM WARREN

2 to, can you explain it?

3 A. A benchmarking survey.

4 Q. Okay. And what did a benchmarking  
5 survey look at?

6 A. A benchmarking survey will look at  
7 things like how much per foot does it cost you  
8 to drill certain types of wells and how many  
9 people per drilling rig does a company employ.  
10 What is the speed per foot drilled in different  
11 geological settings.

12 So real metrics of the drilling  
13 operation by which you can compare your  
14 efficiency and effectiveness with those of your  
15 competitors.

16 Q. You said there were four value  
17 creation teams. So this was one of the four?

18 A. That was one of the four.

19 Q. What were the other three?

20 A. We had one which ended up being  
21 known as the Volume to Value Team, which is the  
22 one that I think you mentioned before, was  
23 looking at overall resource management.

24 We had a team that ended up  
25 calling itself the Capital to Value Team that  
0063

1 TIM WARREN

2 was looking at how we delivered our projects.  
3 And I mean the engineering side of our projects  
4 from, if you like, concept that we want to  
5 develop something to producing first oil or gas.

6 And then there was an  
7 Environmental Value Creation Team, which is the  
8 one that actually had the least impact at the  
9 end of the day, so I'm afraid I forget at this  
10 time what its actual topic was.

11 Q. Why did it have the least impact?

12 A. What?

13 Q. Why is it that it had the least  
14 impact?

15 A. Because there were no real common  
16 solutions. You know, the environmental  
17 challenges are different in each basin in each  
18 country where you're working and actually  
19 resolving them requires interaction with  
20 different cultural groups, different peoples.

21 They're very, if you like, country specific the  
22 solutions you would adopt and there were not  
23 sufficient common themes to come up with, if you  
24 like, a global palliative for the problem.

25 Q. What was the impact of the Olympic  
0064

1 TIM WARREN

2 World Delivery Teams work?

3 A. Fantastic. We greatly improved  
4 our drilling performance worldwide and out of  
5 their efforts came a philosophy which became  
6 known as "drilling the limit," which was  
7 something, if you like, a process of series of  
8 best practices that could be easily spread and  
9 updated across our operating units so that they  
10 were always current with best practice, were  
11 always drilling the best well.

12 We started off with the concept  
13 that drilling the limit would enable all Shell  
14 operations in any Shell operating unit to drill  
15 the well right and we actually grew it to  
16 drilling the best well right.

17 So even getting into the design  
18 phase so that the most optimal well was drilled  
19 and then drilled right and drilling right means  
20 drilled for lowest cost for best safety results  
21 and for best production results.

22 Q. And what was the impact of the  
23 Volume to Value Team?

24 MR. SMITH: Objection to form,  
25 lack of foundation.

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1 TIM WARREN

2 BY MS. CAROLINE MARSHALL:

3 Q. You can answer.

4 A. Can you restate the question  
5 again?

6 Q. What was the impact of the Volume  
7 to Value Team?

8 MR. BEST: Impact on what?

9 BY MS. CAROLINE MARSHALL:

10 Q. The impact on the company?

11 A. Well, again, let me give you some

12 context. The Volume to Value Team was looking  
13 at the entire life cycle of managing our  
14 resource base.

15 In an exploration and production  
16 business you first of all look to basin and you  
17 actually imagine that there are hydrocarbons  
18 underground. You don't know, you're led through  
19 science to believe that there will be oil and  
20 gas accumulations underground.

21 You make an estimate of what those  
22 volumes could be because that's ultimately  
23 whether you decide whether you should invest in  
24 setting up an office shooting seismic and maybe  
25 even drilling an exploratory well.

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1 TIM WARREN

2 Those volumes are hypothetical  
3 volumes and the essence of the life cycle is to  
4 move from those hypothetical volumes to  
5 discovered volumes to volumes that you would see  
6 as an economic prospect for development through  
7 to volumes that you've actually developed  
8 through to volumes which you sell as production.

9 And, of course, the shorter you  
10 can make that life cycle from, if you like,  
11 glimmer in the explorer's eye to real production  
12 that you sell in terms of gas and oil to any  
13 customer the better the profitability of your  
14 business.

15 So the Volumes to Value, Value  
16 Creation Team was set to say how do we actually  
17 turn these hypothetical volumes through to real  
18 sellable production in the shortest and, again,  
19 most cost effective manner, shortest time, most  
20 cost effective manner.

21 Q. Did the Volume to Value Team look  
22 at the Shell reserve reporting guidelines?

23 MR. SMITH: Objection to form and  
24 lack of foundation.

25 BY MS. CAROLINE MARSHALL:

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1 TIM WARREN

2 Q. You can answer the question.

3 MR. BEST: If you know.

4 MS. CAROLINE MARSHALL: Obviously

5 every question is if he knows.

6 THE WITNESS: In Shell we have  
7 resource reporting guidelines.

8 MR. BEST: Let me stop you for a  
9 second.

10 We're going to make sure that you  
11 understand that knowledge in this context is  
12 what you actually know versus hearsay or other  
13 information which comes to you by speculation.  
14 Nobody wants you to speculate here, okay.

15 MS. CAROLINE MARSHALL: I might  
16 ask him to speculate at a certain point.

17 MR. BEST: Then if you will tell  
18 the witness that that's exactly what you're  
19 doing and preface it.

20 BY MS. CAROLINE MARSHALL:

21 Q. You can finish your answer.

22 A. I've lost the question now.

23 Certainly I know of our Resource  
24 Reporting Guidelines. I don't believe they're  
25 called reserve reporting guidelines because they

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1 TIM WARREN

2 look at, as I say, the resource management all  
3 the way from these hypothetical volumes that we  
4 call scope for recovery all the way through  
5 different categories of reserves, and the most  
6 important one of which is what we call the  
7 expectation of reserves, which is that around  
8 which we plan our business.

9 Q. Was the Volume to Value Team  
10 looking at the Shell's petroleum resource volume  
11 guidelines as part of their task?

12 MR. SMITH: Objection to form and  
13 lack of foundation.

14 MR. BEST: As part of their task?

15 MS. CAROLINE MARSHALL: Yes.

16 I think that maybe we should take  
17 a brief break off the record because it's very  
18 difficult for me to ask questions with two  
19 people objecting to the same witnesses.

20 If one of you wants to make  
21 speaking objections that would be fine, but --

22 MR. BEST: We're not going to  
23 deviate what we're doing simply based on helping  
24 you out.

25 MS. CAROLINE MARSHALL: I don't  
0069

1 TIM WARREN  
2 think that you're entitled to have two people  
3 defending the same witness and making speaking  
4 objections.

5 MR. BEST: We can stop right now,  
6 you can get the judge on the phone and we can  
7 address this if you want, but he's going back to  
8 Australia, so you have a day with Mr. Warren  
9 today.

10 THE VIDEOGRAPHER: We're going off  
11 the record. The time is 11:57 a.m.

12 (A brief recess was taken.)

13 THE VIDEOGRAPHER: We are back on  
14 the record. The time is 12:08 p.m.

15 BY MS. CAROLINE MARSHALL:

16 Q. Mr. Warren, earlier you testified  
17 that the Volume to Value Creation Team was set  
18 up to look at how you actually turned  
19 hypothetical volumes through to real sellable  
20 production in the shortest and, again, most cost  
21 effective manner in the shortest time.

22 Was the Volume to Value Creation  
23 Team looking at what competitors were doing as  
24 part of their work?

25 A. I can't tell you what any of the  
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1 TIM WARREN  
2 value creation teams did themselves, because  
3 part of the whole philosophy was you gave them  
4 the resources and they got on with the job  
5 themselves and came together for these  
6 milestones that I told you about.

7 We certainly encouraged them to  
8 look at competitors and we encouraged them to  
9 look at other like industries where they could  
10 learn things from. During that divergent phase

11 we actually encouraged them to be very  
12 divergent.

13 Q. Were you involved in setting up  
14 the different teams?

15 A. No. I was responsible for  
16 organizing the forums and making sure that we  
17 had the teams formed and that we had champions  
18 and sponsors for each of them, but after that I  
19 concentrated on my own Olympic Well Delivery  
20 Team which I was championing.

21 Q. How long were you involved -- how  
22 long was the time period that you were involved  
23 with that team?

24 A. The concept was it was a 90-day  
25 process. I can't remember now what period of  
0071

1 TIM WARREN

2 lapsed time this particular series took.  
3 It's -- we kicked off the idea late '97. I  
4 think the teams -- no. My memory is too hazy.

5 Q. Was the -- was there such a thing  
6 as the Resource Management Team or was that part  
7 of the Volume to Value Team?

8 A. There was a team that was  
9 addressing the resource management cycle that  
10 eventually became known as the Volume to Value  
11 Team.

12 Q. Do you know why there was a team  
13 created to look at the resource management  
14 cycle?

15 A. Yes. Again, that is fundamental  
16 to the exploration and production business and  
17 its profitability is, as I say, the speed and  
18 the cost of effectiveness with which you move  
19 through that cycle. The faster you produce  
20 barrels and cubic feet of gas that you sell, the  
21 quicker you actually have a cash flow from the  
22 investment that you make.

23 Equally, the investment that you  
24 make has to be optimized for the uncertainty of  
25 the volumes that you're trying to develop.

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1 TIM WARREN

2 So your spending in terms of

3 investment derives from the volumes themselves.

4 How you're going to operate a

5 field through the entire operational phase of a

6 field life is determined by the facilities that

7 you put in at the start.

8 So, if you like, the resource

9 management life cycle from glimmer in the

10 explorer's eye to molecules left in the ground

11 when you abandon a field is the basic business

12 of the exploration and production business and

13 it is very important that it remains competitive

14 and optimized.

15 Q. What was the purpose of Shell's

16 petroleum resource volume guidelines?

17 MR. SMITH: Objection to form and

18 foundation.

19 BY MS. CAROLINE MARSHALL:

20 Q. You can answer the question.

21 A. I was not the author of those

22 guidelines and so I'm afraid I can't answer your

23 question. You would have to ask the author what

24 the primary objective was.

25 Q. Were you aware that Shell had

0073

1 TIM WARREN

2 petroleum resource volume guidelines?

3 A. As I mentioned before, I am aware

4 that we had hydrocarbon resource management

5 guidelines and they probably came in different

6 forms and flavors because they address, as I

7 say, this entire life cycle.

8 MS. CAROLINE MARSHALL: I'm going

9 to mark as Exhibit 1 for identification a

10 document that's Bates marked RJW0077063 through

11 66 -- hold on a second, sorry -- through 770663.

12 I think I may have said that first Bates wrong

13 it was 7700633.

14 (Warren Exhibit Number 1 was

15 marked for identification.)

16 BY MS. CAROLINE MARSHALL:

17 Q. Mr. Warren, the document that's

18 been put before you is relatively long. I'm not

19 going to ask you to read through the entire  
20 document. I'm just going to ask you if you'll  
21 take a quick look at it and if you recognize it?

22 A. I don't recall this specific one,  
23 but I certainly know that we had documents such  
24 as these.

25 Q. Can you identify what documents

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1 TIM WARREN

2 such as these are?

3 A. Can I scan the whole document?

4 Q. Sure.

5 MR. BEST: Take whatever time you  
6 need.

7 THE WITNESS: Yes. Can you repeat  
8 your question again?

9 BY MS. CAROLINE MARSHALL:

10 Q. You said that you don't recall  
11 this specific document, but that you know that  
12 Shell had documents such as these and I'm asking  
13 you can you identify what documents such as  
14 these are?

15 A. Yes. This would be a document  
16 that would have been reviewed and produced  
17 annually as a set of guidelines for our  
18 reservoir engineers in terms of how we classify  
19 our volumes and how we report hydrocarbon  
20 volumes.

21 Q. During your tenure at Shell did  
22 you personally ever have the occasion to utilize  
23 a document such as this?

24 A. Only back in my very beginning  
25 career in the '70s when I was actually working

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1 TIM WARREN

2 in an operational petroleum engineering  
3 function.

4 Q. And how did you use the guidelines  
5 at that time?

6 A. Only on the periphery because as a  
7 petro-physical engineer I was actually a  
8 supplier of data to the reservoir engineer who  
9 was actually responsible and accountable for the

10 volume metric estimates, so my knowledge was an  
11 understanding what he needed to do with my data.

12 Q. Was there part of the -- did part  
13 of the volume guidelines involve proven reserve  
14 classification?

15 MR. SMITH: Are you talking about  
16 in the '70s when he used them?

17 MS. CAROLINE MARSHALL: No. Just  
18 generally these documents.

19 MR. SMITH: Objection to form and  
20 lack of foundation.

21 THE WITNESS: Can you specify the  
22 question?

23 BY MS. CAROLINE MARSHALL:

24 Q. Do you know whether or not the  
25 guidelines in front of you or other guidelines

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1 TIM WARREN  
2 that you were aware of at Shell had a category  
3 for proven reserves?

4 A. Yes. That would be one of the --  
5 one small part of the large classification  
6 covered by this document.

7 Q. And at some point during your  
8 employment at Shell did you gain an  
9 understanding of what is meant by proven  
10 reserves?

11 A. Yes.

12 Q. And when was that?

13 A. As a petroleum engineer.

14 Q. And what was your understanding as  
15 a petroleum engineer as what a proven reserve  
16 refers to?

17 A. As a petroleum engineer we  
18 understood proven reserves to be those with a  
19 very high confidence of actually being in place.  
20 So not only the oil and gas being in place but  
21 producible in a commercial framework.

22 As was later developed with the  
23 World Petroleum Council and the Society of  
24 Petroleum Engineers the most accepted definition  
25 within the industry became either the

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1 TIM WARREN

2 90 percentile confidence level or the  
3 85 percentile confidence level around your  
4 reserve volumes.

5 Q. And when was that accepted  
6 definition developed by the World Petroleum  
7 Council and the Society of Petroleum Engineers?

8 A. I would be speculating. As with  
9 any professional society the development was  
10 over a long period of time whilst they agreed  
11 some very nitty-gritty aspects of their final  
12 and proposed classification.

13 Q. When you were a member of the  
14 Business Committee do you recall prior to the  
15 creation of the value -- I'm forgetting the  
16 exact name -- the value creation teams any  
17 conversations regarding Shell's reserve  
18 definitions?

19 MR. SMITH: At BusCom?

20 BY MS. CAROLINE MARSHALL:

21 Q. At BusCom?

22 A. We would have discussed reserves,  
23 and I'm now talking about resources and reserves  
24 in their largest context, regularly at the  
25 BusCom and EP ExCom which it finally became,  
0078

1 TIM WARREN

2 because that's the blood of our business.

3 As I say, our expectation of  
4 reserves are what we actually plan our business  
5 around so it's vital, in fact, if you're leading  
6 an exploration product business you have an  
7 understanding of where your expectation of  
8 reserves lie and particularly what is your scope  
9 for recovery, because your scope for recovery is  
10 actually the future of your business. And  
11 maintaining, in fact, all the buckets of the  
12 classification full is essential to sustaining a  
13 viable business going forward.

14 I would say at this point that  
15 proven reserves have little business  
16 significance because we don't develop our oil  
17 and gas fields around a concept of proven

18 reserves and we develop them around the concept  
19 of expectations and the uncertainty that we have  
20 around those expectations.

21 So the only business, true  
22 business driven consequence of our resource  
23 volumes are actually the proven reserves have a  
24 specific meaning in some long-term gas  
25 contracts.

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1 TIM WARREN

2 I'm now talking about the  
3 commercial side of our business, not the  
4 accounting side of our business.

5 Q. At some point during your career  
6 at Shell did you become aware of any external  
7 reporting requirements of proven reserves?

8 A. I certainly became aware, yes.

9 Q. When was that?

10 A. Probably back again in the 1970s  
11 that there was an external reporting requirement  
12 that had to be, if you like, built up from the  
13 various operating unit submissions.

14 Q. When you were -- when you became a  
15 member of the Business Committee in 1995 or '96  
16 do you recall at any time prior to the creation  
17 of the value creation teams any discussion about  
18 the reporting requirements that Shell had with  
19 respect to proved reserves?

20 A. I can't recall specific  
21 discussions but as I say, we would have  
22 discussed on both BusCom and ExCom our resource  
23 position in all the classifications.

24 Q. Do you recall whether part of the  
25 Resource Management Team's function was to look

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1 TIM WARREN

2 at whether Shell's reserve guidelines were  
3 overly conservative in relationship to Shell's  
4 competitors?

5 A. I would not have direct knowledge  
6 of that. As I say, they weren't a team that I  
7 was directly championing. I certainly was party  
8 to their results because the ExCom was one of

9 the customers of the results of all the value  
10 creation teams.

11 They would have set their own  
12 investigation path, their own charter,  
13 particularly during that divergent phase.

14 So, as I say, they had been given  
15 a very broad charter at the outset, which would  
16 have been along the lines that I originally  
17 suggested to you which is to look for  
18 optimizations and improve our effectiveness  
19 right across that resource management life  
20 cycle.

21 Q. Do you recall as part of -- do you  
22 recall learning that when you were on the  
23 Business Committee that the Resource Management  
24 Team had investigated whether the Shell reserve  
25 guidelines were conservative in relationship to  
0081

1 TIM WARREN

2 competitors?

3 A. I don't have a direct recall, no.

4 Q. Do you have a general recollection  
5 of learning that?

6 A. I have a general recollection that  
7 one of the concerns that was raised by that  
8 value creation team was there might have been an  
9 overall conserve advertise immaterial around all  
10 our volume assessment and particularly the  
11 transfer from scope recovery -- scope for  
12 recovery to expectation reserves, which would  
13 have had, if I can put it that way, downgrading  
14 impacts on the efficiency with which we were  
15 conducting our business.

16 Q. Do you recall ever -- do you  
17 recall generally ever learning that there were  
18 concerns about whether or not Shell's reserve  
19 guidelines were overly conservative with respect  
20 to their proven reserves classifications?

21 A. I don't have any recall of that,  
22 no.

23 Q. Do you recall whether or not that  
24 Shell's petroleum resource volume guidelines  
25 were changed subsequent to the resource

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1 TIM WARREN

2 management team's work?

3 A. I don't have a direct recall of  
4 that. The authors of the resource -- these --  
5 let me just remind myself what they were called,  
6 resource classification and volume guidelines  
7 were developed in a separate department not  
8 within my directorate and I would be speculating  
9 as to how and if they used any of the value  
10 creation teams outputs when they reviewed, as  
11 they did do annually, this document.

12 Q. Do you recall that Shell's  
13 petroleum resource volume guidelines changed in  
14 1998?

15 A. I don't have a direct recall. As  
16 I say, one thing I do remember clearly is that  
17 they were reviewed and possibly amended every  
18 year.

19 Q. Do you have any general  
20 recollections of any changes in 1998 to the  
21 guidelines?

22 A. No.

23 Q. Do you have any general  
24 recollection of there being an effect to the  
25 reserve replacement ratio as a result of a

0083

1 TIM WARREN

2 loosening of Shell guidelines at any point in  
3 time?

4 MR. SMITH: Objection to form,  
5 lack of foundation.

6 BY MS. CAROLINE MARSHALL:

7 Q. You can answer.

8 A. What reserve replacement ratio?

9 Q. The company's research replacement  
10 ratio, EP's reserve replacement ratio?

11 A. We had different reserve  
12 replacement ratios that we monitored.

13 As I mentioned, the most important  
14 reserve number in a company such as ours is the  
15 expectation of reserve, so the expectation of  
16 reserve replacement ratio was a very important

17 one for us.

18 Then there was, of course, the  
19 proven reserve replacement ratio which was  
20 important in a respect of being publicly  
21 available data.

22 So there were many resource  
23 replacement ratios, reserve replacement ratios  
24 that were looked at.

25 Q. Do you recall the proven reserve

0084

1 TIM WARREN

2 replacement ratio ever being affected by a  
3 change in the petroleum resource volume  
4 guidelines?

5 MR. SMITH: Objection.

6 THE WITNESS: Not specifically.

7 BY MS. CAROLINE MARSHALL:

8 Q. Do you have any general  
9 recollection?

10 A. I would suggest that whenever the  
11 guidelines change there may have been an impact  
12 on proven and expectation and scope recovery  
13 volumes because the guidelines actually are the  
14 basis on which these are calculated, but these  
15 are reservoir engineering details, not the sort  
16 of thing you spend a lot of time discussing at a  
17 Business Committee or an Executive Committee.

18 Q. As part of your role as the EP  
19 director of Research and Technology did you  
20 participate in analyst presentations?

21 A. Occasionally.

22 Q. Do you recall participating in a  
23 presentation on April 8th, 1999, in New York?

24 A. I can't recall when I appeared on  
25 analyst presentations, I certainly did. I would

0085

1 TIM WARREN

2 have to remind myself with a diary or something  
3 to confirm dates.

4 Q. Okay. I'm going to show you a  
5 document which we'll mark as Exhibit 2 for  
6 identification its Bates RJW00710239 through  
7 267.

8 (Warren Exhibit Number 2 was

9 marked for identification.)

10 MS. CAROLINE MARSHALL: I actually

11 have a couple of documents that go with this  
12 document. We might as well mark them all at the  
13 same time.

14 The next one we'll mark as

15 Exhibit 3. This document SMJ00010836 through  
16 903.

17 (Warren Exhibit Number 3 was

18 marked for identification.)

19 MS. CAROLINE MARSHALL: Then

20 Exhibit 4 is SMJ00014615 through 14633.

21 (Warren Exhibit Number 4 was

22 marked for identification.)

23 MS. CAROLINE MARSHALL: Then

24 there's one more. Exhibit Number 5 is

25 SMJ00033436 through 463.

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1 TIM WARREN

2 (Warren Exhibit Number 5 was

3 marked for identification.)

4 MS. CAROLINE MARSHALL: Now,

5 Mr. Warren, unfortunately, some of these  
6 documents are relatively thick. I don't suggest  
7 you read every page of them because we're not  
8 going to look at every page of them.

9 But first I'm just asking you to

10 look at them generally to see if it refreshes  
11 your recollection about attending an analyst  
12 conference on April 8th, in New York, 1999.

13 So to the extent that first

14 document in front of you doesn't help you, maybe  
15 these other three will. Sorry.

16 MR. FERRARA: Caroline, while he's

17 looking at this I notice Exhibit 5 isn't dated.  
18 Is that a part of the package or is that one of  
19 the questions you're going to ask?

20 MS. CAROLINE MARSHALL: It is a

21 document that based on the other documents,  
22 although it doesn't have a date it has the same  
23 slides and just a different script, so I think  
24 they do in fact go together.

25 MR. FERRARA: Okay.

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1 TIM WARREN

2 MR. SMITH: Ralph, look at  
3 Exhibit 3, starting at Bates page SMJ 879.

4 MR. FERRARA: What's that page?

5 MR. SMITH: It ends in 879.

6 MR. FERRARA: Okay.

7 BY MS. CAROLINE MARSHALL:

8 Q. Have you had a minute just to  
9 quickly look at these documents?

10 A. Yes.

11 Q. Okay. Does this refresh your  
12 recollection about whether or not you attended  
13 an analyst presentation in New York, April 8th,  
14 1999?

15 A. It does indeed.

16 Q. And did you also attend a  
17 presentation on April 9th in Rijswijk?

18 A. Yes.

19 Q. That same year, the very next day?

20 MR. SMITH: She needs an audible.

21 THE WITNESS: I said yes.

22 BY MS. CAROLINE MARSHALL:

23 Q. I know and I kind of asked it  
24 again. You have to say yes again. I'm sorry.

25 Were -- did you use a common

0088

1 TIM WARREN

2 script for both presentations?

3 A. I believe so.

4 Q. Do you know who wrote the script?

5 A. I would have worked it up. I'm a  
6 great believer in if I'm going to speak,  
7 preparing my own presentations, but I would have  
8 gotten a lot of help from my colleagues in terms  
9 of commenting and improvement.

10 Q. Did somebody need to approve your  
11 script?

12 A. The ExCom as a whole would have  
13 agreed the final total script in terms of did  
14 the story make sense and is this what we wanted  
15 to say to the outside world. And we would have

16 been advised by our Investor Relations  
17 Department.

18 Q. Do you recall being advised by --  
19 do you recall whether you were advised by the  
20 Investor Relations Department in the U.S.?

21 MR. SMITH: Objection to form.

22 BY MS. CAROLINE MARSHALL:

23 Q. Let me take a step back.

24 Do you know or do you recall at  
25 this time whether or not there was two Investor  
0089

1 TIM WARREN  
2 Relation Departments, one for the U.S. and one  
3 for Europe and the rest of the world?

4 A. I'm vaguely aware, but this was a  
5 group presentation and certainly our interaction  
6 would have been with the group Investment and  
7 Relations Department.

8 Q. And by group you mean EP?

9 A. No. I mean Royal Dutch/Shell  
10 group.

11 Q. Royal Dutch/Shell group.  
12 Do you recall whether or not you  
13 had any interaction with anybody from the  
14 Investor Relations Department in Shell U.S.?

15 A. I would be very clear that we  
16 would not.

17 Q. Okay.

18 A. That said, they may, unknown to  
19 me, have been our hosts in New York, I don't  
20 know, but not in the preparation of these  
21 documents.

22 Q. Do you recall whether this was the  
23 first analyst presentation you attended in the  
24 United States?

25 A. I'm not sure whether it was the  
0090

1 TIM WARREN  
2 first or the second. I did put on a  
3 presentation in Houston on technology for  
4 invited guesses. And whether it was linked to  
5 this one or whether it was another year, I'm  
6 afraid my memory is not good enough.

7 Q. I think I might be able to refresh  
8 your recollection, if you would like.

9 I'm not -- we're not going to look  
10 at these right this minute, but I might as well  
11 mark them so we can just take care of this now.

12 The first document we'll mark as  
13 Exhibit Number 6, Bates number SMJ00038407  
14 through 454.

15 And the second one we'll mark as  
16 Exhibit 7 is LON01321105 through 1321219.

17 (Warren Exhibit Numbers 6 and 7  
18 were marked for identification.)

19 BY MS. CAROLINE MARSHALL:

20 Q. Do these documents refresh your  
21 recollection as to the sequence?

22 MR. BEST: If you can wait until I  
23 get a set, too, that will be great.

24 MS. CAROLINE MARSHALL: Sure.

25 MR. BEST: Great. Thanks. I

0091

1 TIM WARREN

2 think he answered the question.

3 BY MS. CAROLINE MARSHALL:

4 Q. Do you now recall what the  
5 sequence was?

6 A. Yes, I do.

7 Q. You were in New York in 1999 and  
8 in Houston in 2000; correct?

9 A. Correct.

10 Q. So the presentation in New York in  
11 April 1999 was the first presentation you were  
12 at in the United States?

13 A. Yes.

14 MS. CAROLINE MARSHALL: The tape  
15 is almost over and I think it's our lunch break.

16 THE VIDEOGRAPHER: This marks the  
17 end of tape one in the deposition of Mr. Warren.

18 We are going off the record. The time is 12:44  
19 p.m.

20 (Whereupon, at 12:44 p.m., a lunch  
21 recess was taken.)

22

23

24  
25  
0092

1 TIM WARREN

2 AFTERNOON SESSION

3 (1:39 p.m.) .

4 THE VIDEOGRAPHER: This marks the

5 beginning of tape two in the deposition of

6 Mr. Warren. We are back on the record. The

7 time is 1:39 p.m.

8  
9 EXAMINATION BY COUNSEL FOR

10 PLAINTIFFS -- RESUMED

11  
12 BY MS. CAROLINE MARSHALL:

13 Q. Mr. Warren, do you recall meetings

14 at the BusCom or ExCom level depending -- it's a

15 little unclear when BusCom became ExCom --

16 regarding these presentations prior to something

17 happening?

18 MR. SMITH: Objection to form.

19 Just a compound question.

20 BY MS. CAROLINE MARSHALL:

21 Q. Yeah, I know.

22 Did you speak about the analyst

23 presentations at the Business Com level prior to

24 them happening?

25 A. We would have dry run them in

0093

1 TIM WARREN

2 front of the whole -- the collective Business

3 Committee or Executive Committee and that would

4 have been how we would have got the comments of

5 our colleagues on our various parts and making

6 sure that it was a whole story and not a lot of

7 separate stories.

8 Q. And if we focus first on the

9 April 1999 presentations was there any

10 difference in the presentations that were made

11 in New York and the presentation that was made

12 in Rijswijk?

13 A. There was one difference and it

14 was in fact in the technology portion because,

15 of course, in Rijswijk we have a technology  
16 research laboratory and technology capability so  
17 we took the opportunity to invite the audience  
18 to visit the laboratory in the afternoon and to  
19 actually talk with some of the researchers. We  
20 set out stools around some of the technologies  
21 and invited them there to get more in-depth  
22 knowledge. Of course, we didn't have that  
23 capability in New York so that's not something  
24 we did in New York.

25 Q. Do you recall where in New York

0094

1 TIM WARREN

2 this meeting was in New York?

3 A. It was at a hotel. I can't tell  
4 you which one.

5 Q. It appears to me from the program  
6 the title was Improving Performance and  
7 Maximizing Value in Uncertain Times. Is that  
8 what the presentation was called?

9 A. That's correct.

10 Q. And was there any specific aspects  
11 of the performance, Shell's performance that the  
12 presentation was focusing on?

13 A. Not specifically, no. Again, to  
14 give you context, 1999 we were coming or were in  
15 the period of the lowest oil prices that the  
16 world had seen since 1973, and so the oil  
17 industry was in a state of some shock and the  
18 external investors, of course, were interested  
19 to see how the various companies would respond  
20 in what was a very difficult, as well as  
21 competitive environment. And that I think is  
22 how you can judge the title there.

23 It was in that context how did we  
24 ensure that we improved performance which would  
25 be required at far lower oil prices than we had

0095

1 TIM WARREN

2 experienced before and maximize value where if  
3 you like the denominator of value, namely the  
4 value of oil, it just dropped through the floor.

5 Q. Did you attend the entire

6 presentation or were you just present for the  
7 section on technology?

8 A. We would have sat as a panel in  
9 front of the audience and spoken to our  
10 individual pieces and would have answered  
11 questions after the presentation and which would  
12 have been fielded by our chair and passed out to  
13 us appropriately.

14 Q. If you look at the first -- well,  
15 it's Exhibit Number 2. That's the one you have  
16 in front of you. If you look at page 11, that's  
17 on the bottom, which is Bates number ending 254.  
18 There's a description of a slide 18, Global  
19 Proved Reserve Phase.

20 Do you recall this part of the  
21 presentation?

22 A. I would not recall any parts of  
23 the presentation without reminding myself of  
24 them, as we gave many presentations.

25 Q. Why don't you read through slide

0096

1 TIM WARREN

2 18. I'm sorry I didn't point that out to you  
3 before the lunch break. So why don't you take a  
4 moment and read through that?

5 A. I've read that slide.

6 Q. Okay. Does that help refresh your  
7 recollection about this part of the  
8 presentation?

9 A. I can't remember all the  
10 particular details, but certainly I have no  
11 reason to believe that this slide was not  
12 presented and talked to in this manner.

13 Q. If you look on page 12, I think  
14 it's the second bullet point, it says "great  
15 emphasis is being placed on transferring  
16 expectation reserves to proved and also to  
17 mature SFR to proved reserves."

18 Do you recall that that was an  
19 emphasis in the company at that time?

20 A. As I think I've mentioned before,  
21 it was one of the concerns prior to the value  
22 creation effort. The speed at which we were

23 moving resources across the broad resource

24 classification was of concern to us.

25 Ultimately resources end up in

0097

1 TIM WARREN

2 two boxes, production and eventually proven

3 reserves, very often that don't become proven

4 reserves until they're produced.

5 So, yes, there was a strong desire

6 to accelerate that process. As I think is

7 mentioned, whoever the presenter here was, talks

8 about to mature scoped for recovery to mature

9 reserves. That is a very shorthand statement,

10 because scoped for recovery has to go through

11 many classifications to get that far.

12 One of the challenges, as you

13 know, in public speaking anyway is to talk to

14 your audience in the commodities and the

15 language that they understand.

16 And certainly for financial

17 analysts their actual real understanding of the

18 total resource classification is very often

19 limited because the proven reserves are the

20 reported commodity in accounting terms, so one

21 tends to use the language that they understand.

22 This captures within the company a

23 much larger initiative, as I say, which was to

24 discover, develop, and produce our resources

25 faster and more cost effectively than we had

0098

1 TIM WARREN

2 done before.

3 Q. So was the global proved reserves

4 base being highlighted because there were

5 financial analysts at the presentation?

6 A. That would be my understanding.

7 Q. Okay. If you look at the next

8 exhibit.

9 You can put the one in front of

10 you away.

11 A. The next one?

12 Q. Yes. The next one is Number 3.

13 Just briefly, in the cover there's

14 Phil Watts' name is listed and then there's this  
15 other name that I'm not going to venture to  
16 pronounce.

17 A. Dijkgraaf.

18 Q. Dijkgraaf. Okay. Walter van der  
19 Vijver and yourself.

20 What was Henk Dijkgraaf's position  
21 at that time?

22 A. He was regional business director  
23 for the Middle East and Russia, if my memory  
24 serves me correct.

25 Q. Was he a member of the Business

0099

1 TIM WARREN

2 Committee or ExCom?

3 A. He was indeed.

4 Can I just correct that?

5 Middle East and all places behind  
6 the previous Iron Curtain.

7 Q. Okay. Do you know why you were  
8 chosen to be one of the individuals to give a  
9 presentation at these two presentations?

10 A. Yes.

11 Q. Why was that?

12 A. As I say, we were in an  
13 unparalleled time because of what had happened  
14 to world oil prices and we believed that the  
15 community that we were addressing might well  
16 believe that our competitors had a stronger  
17 technological capability than ourselves, our  
18 own, and technology was going to be one of the  
19 keys to succeeding in this type of world.

20 So we wanted to put our technology  
21 muscle, if you like, clearly on the table so  
22 that they could see that we had the capabilities  
23 to survive in a low oil price world and to  
24 flourish in a low oil price world.

25 Q. What was your relationship like

0100

1 TIM WARREN

2 with Mr. Watts?

3 A. Can you be more specific?

4 Q. You worked closely with him; is

5 that correct?

6 A. I worked with Phil Watts several  
7 times during my career, yes.

8 Q. When you were a member of the  
9 Business Committee what was the nature of your  
10 relationship?

11 MS. LATIMER: Object to form.

12 THE WITNESS: I would again like  
13 you to be more specific.

14 BY MS. CAROLINE MARSHALL:

15 Q. Did you get along?

16 A. Very well.

17 Q. Were you friends?

18 A. Yes.

19 Q. When did you become friends?

20 A. I became a friend of Phil's in  
21 Nigeria when we worked very closely together.

22 Q. Did you ever have any difficulty  
23 in your working relationship with him?

24 MR. SMITH: Objection to form.

25 MR. BEST: Object.

0101

1 TIM WARREN

2 MS. LATIMER: Object to form.

3 BY MS. CAROLINE MARSHALL:

4 Q. You can still answer.

5 A. No.

6 Q. When did you first form a  
7 relationship with Walter van der Vijver?

8 A. I first got to know him and when I  
9 met him in fact when he was working in  
10 California back in the '80s.

11 I met him on and off but didn't  
12 actually have a real working relationship  
13 probably with him until when he was manager of  
14 the Brent field in Shell U.K. Exploration and  
15 Production Limited.

16 Q. How is it that you had interaction  
17 with him when he was working in California in  
18 the '80s?

19 A. He was on the succondment working  
20 for Shell Oil at that time and it was prior to  
21 -- after I had been appointed group head of

22 petro-physics and it was thought appropriate I  
23 should come and meet U.S. petro-physicists and  
24 to particularly visit U.S. companies in the  
25 forefront of petrophysics, such as Halliburton  
0102

1 TIM WARREN

2 and other major service providers.

3 And during the course of my visit  
4 with Shell Oil company I visited their  
5 operations in California and was particularly  
6 introduced to any succondees there who had been  
7 succeded from the Royal Dutch side, you know,  
8 showing we still loved them and cared for them  
9 and were interested in how they were getting  
10 Committee.

11 Q. Were you friends with Mr. Van der  
12 Vijver at any time?

13 A. I wouldn't say we were friends  
14 because we never worked in such close proximity  
15 as to come more than acquaintances.

16 Q. When he became head of the  
17 Executive Committee what was the nature of your  
18 working relationship?

19 A. It was sound but short. I moved  
20 out of the Executive Committee shortly after he  
21 took over as chairman of the Executive  
22 Committee.

23 Q. Did you ask to be removed from the  
24 Executive Committee or was your next position a  
25 position you were seeking?

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1 TIM WARREN

2 MR. SMITH: Objection to form.

3 THE WITNESS: The answer would be  
4 no, I did not ask.

5 Other than when I was originally  
6 appointed by Mark Moody Stewart back in 1995 it  
7 was made very clear to all of the appointees at  
8 that time that being on the Business Committee  
9 that became the Executive Committee should not  
10 be looked on as a lifetime appointment and that  
11 in order to get flux through the committee we  
12 could expect other front line assignments.

13 Certainly I had discussions with

14 Phil Watts, he was my boss, our annual appraisal  
15 discussions where I said at the end of six years  
16 in the technology role that I was looking for a  
17 new challenge and we discussed front line roles  
18 at that time and he asked me which front line  
19 roles would you like to take. One of the ones I  
20 mentioned was Australia, so I was very pleased  
21 when I was offered it.

22 BY MS. CAROLINE MARSHALL:

23 Q. Okay. So it was a natural  
24 progression of your career?

25 A. Yes.

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1 TIM WARREN

2 Q. Okay. During our last break did  
3 you have the opportunity to look through the  
4 part of this Exhibit Number 3 that begins on  
5 Bates page 10879?

6 A. I scanned it briefly, yes.

7 Q. Can you tell me what these pages  
8 are? Is it a slide presentation?

9 A. They're the slides that  
10 accompanied my presentation during this analyst  
11 presentation.

12 Q. And were the same slides used in  
13 New York and Rijswijk?

14 A. With the exception of the last  
15 slide and if I take you to -- yes. So that  
16 would be on your page numbering, is that 0901?

17 Q. Yes.

18 A. Yeah. And the slide is headed  
19 Technology Show. And I mentioned to you  
20 previously that in Rijswijk we held what was  
21 technology show, technology fair in the  
22 afternoon after the presentation.

23 Q. Okay. If you go to the second  
24 page of the presentation, which is the first  
25 slide of substance on page 880. It says

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1 TIM WARREN

2 Technology Imperatives at the heading.

3 Can you explain how technology --

4 how replacing reserves was a technology

5 imperative?

6 A. Certainly. Excuse me for

7 repeating myself.

8 Q. That's okay.

9 A. But the whole business value chain

10 of an exploration and production business is

11 discovering hydrocarbons in the exploration

12 phase, having the confidence to go in and

13 discover them in the first place, to having

14 discovered them, to appraise them to a stage

15 where you're willing to invest in their

16 development. Ultimately to produce them, sell

17 them, operate them until you're at the stage

18 where you have to abandon a field.

19 That can only happen if you have

20 an expectation of resources at all phases of

21 that life cycle that gives you confidence that

22 ultimately you're going to make money out of it.

23 When you get to the production

24 phase you actually are reducing your resource

25 base. Production once sold cannot replace

0106

1 TIM WARREN

2 itself. So to keep your business running you

3 must constantly be filling up these different

4 buckets in the resource classification to keep

5 your business viable.

6 As you discover resources from

7 your undiscovered resource bucket you must fill

8 it with new undiscovered resources in order to

9 be able to discover more.

10 As you take discovered resources

11 out of your discovered resource bucket and move

12 them into undeveloped resource bucket you must

13 actually start discovering more to fill that

14 bucket, and all the way down the chain you're

15 replacing resources or ultimately reserves. And

16 that is absolutely fundamental to a viable

17 business in our industry.

18 Q. And how is technology an

19 imperative to that process?

20 A. Because you cannot see the

21 resources underground. And even when you drill  
22 an oil well it's the equivalent of putting a  
23 needle in a haystack in terms of understanding  
24 what is within the haystack.

25 So understanding the geometry of  
0107

1 TIM WARREN

2 the subsurface, how the fluids are distributed  
3 through that geometry, how much of them are  
4 there, how when you produce them what impact is  
5 that going to have in terms of the fluid  
6 dynamics in the subsurface which determines  
7 ultimately how much and how fast you can produce  
8 the oil and gas.

9 To understand all these  
10 fundamental questions you need technology. And  
11 having the best technology enables you to do it  
12 better than your competitors, enables you to out  
13 compete them.

14 Q. And how does technology play a  
15 part in moving reserves into the proved reserve  
16 category?

17 MR. SMITH: Objection to form.

18 BY MS. CAROLINE MARSHALL:

19 Q. You can answer.

20 A. Technology -- technology does not  
21 play a direct role in moving resources into  
22 proven resources. What though is normally a  
23 logical consequence of increasing your  
24 expectation of developed reserves is a component  
25 will increase in your proven reserves. Not

0108

1 TIM WARREN

2 always, but normally that will be the case.

3 So when you talk in loose  
4 terminology about replacing reserves, replacing  
5 expectations of reserves will normally result in  
6 replacement to proven reserves. They're not in  
7 the same quanta.

8 Q. Do reserves have to be considered?

9 Isn't there an element of being  
10 technically mature in order for reserves to be  
11 considered proved?

12 MR. SMITH: Objection to form and  
13 foundation.

14 THE WITNESS: I think that's why  
15 we need to be sure of the semantics that we're  
16 both using.

17 You'll notice that I try and use  
18 wherever possible the world resources, which  
19 covers scope for recovery, it covers reserves,  
20 it covers the whole classification, because it  
21 is a resource classification.

22 In our industry our concentration  
23 is actually on the expectation part of that  
24 value chain, because that's actually what we're  
25 working with and actually what we make money out  
0109

1 TIM WARREN  
2 of. And that's what the technology is there to  
3 support. It's there to enable us to discover  
4 oil and gas through seismic, through provility,ry,  
5 through other techniques, including drilling  
6 holes and taking measurements from the holes  
7 that we put into the subsurface.

8 It's the technology that we use to  
9 decide how to develop an oil or gas field, where  
10 to put your wells that you're going to produce  
11 oil and gas through. How do you design and  
12 construct them so that they create maximum  
13 production flow and maximum recovery of  
14 molecules, hydrocarbon molecules from the  
15 subsurface.

16 And every time I'm talking about  
17 maximizing molecules I'm talking about  
18 maximizing resource volumes. You cannot  
19 maximize those without the use of technology.

20 BY MS. CAROLINE MARSHALL:

21 Q. How does a resource volume get --  
22 how did a resource volume get categorized as a  
23 proved reserve at Shell?

24 A. Now you're asking me a question,  
25 the detail of I would not know without referring  
0110

1 TIM WARREN  
2 either to the appropriate expert or the

3 appropriate guideline.

4 And what I can tell you is that  
5 moving a volume from a scope for recovery to a  
6 reserve requires both a degree of technical and  
7 commercial maturity.

8 And when you get to the proven  
9 reserves there has to be an even higher degree  
10 of confidence than you have around your reserve  
11 classification, but we would not classify in  
12 Shell anything as a reserve, even an expectation  
13 reserve, unless it was technically and  
14 economically mature.

15 Q. Can you explain to me what you  
16 mean by technical maturity?

17 A. Technical maturity for me means  
18 that there is a feasible, in other words --  
19 sorry -- there is a feasible plan by which those  
20 hydrocarbons can be developed and produced.

21 Q. And which group within Shell --  
22 strike that.

23 Did EP technology play any part in  
24 forming feasible plans by which those  
25 hydrocarbons could be developed and produced?

0111

1 TIM WARREN

2 A. We offered it as a service to our  
3 operating units and that service probably helped  
4 a small percentage of operating units in the  
5 formulation of development plans. Most  
6 development plans were derived in the operating  
7 units themselves and even the service that we  
8 offered from Shell Technology EP would have been  
9 a study which would have been discussed and  
10 dialogued with the engineers of the operating  
11 unit who ultimately would have to execute the  
12 plan.

13 And, if you like, we would do  
14 those studies in Shell Technology EP  
15 specifically for two reasons:

16 One, if there was a specific  
17 technology which had not yet, if you like, been  
18 trained into engineers around the world so we  
19 had specific expertise that it was appropriate

20 we should bring to bear and the second one was  
21 for an operating unit that didn't have all the  
22 skills as yet to prepare that development plan,  
23 in which case they would subcontract it to Shell  
24 technology. But that was -- would be a service.

25 Each service would have an

0112

1 TIM WARREN

2 operating unit customer and ultimately it's the  
3 operating unit customer that decides what is its  
4 development plan.

5 Q. If you look at Exhibit Number 5 --  
6 we'll look at 4 in a minute, but if you look at  
7 5. Can you tell me what this document is?

8 MR. FERRARA: Which one, I'm  
9 sorry, 4 or 5?

10 MS. CAROLINE MARSHALL: 5.

11 THE WITNESS: It's a version of  
12 the presentation that finally got delivered as  
13 my part of the analyst presentation. It looks  
14 to me as though it was probably a draft, it  
15 doesn't have the coloration on the sides which  
16 we have a specific Shell standard for, so it's  
17 probably a working draft.

18 BY MS. CAROLINE MARSHALL:

19 Q. And would the writing that's below  
20 the slides, was that meant to be a script?

21 A. That would be the script, yes.

22 Q. But you don't believe that this  
23 was the final script?

24 A. All I'm saying is the look of the  
25 pack suggests it was a draft. It looks as if --

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1 TIM WARREN

2 I've only done a very short visual comparison  
3 with the other one, as though it was pretty near  
4 a final draft because the slide is identical to  
5 the ones that are in the final pack.

6 Q. Okay. If you'll go to Exhibit  
7 Number 4. Starting on page -- there's not a  
8 page number, but it's Bates number 14618. Can  
9 you tell me if you recognize this document?

10 A. I do.

11 Q. Can you tell me what it is?

12 A. It was a glossy brochure that was  
13 produced by my external affairs department in  
14 Rijswijk to support the analyst presentation and  
15 was specifically handed out as a take away for  
16 the audience in both New York and in Rijswijk.

17 Q. When you say your external affairs  
18 department, did your -- did EP technology have  
19 its own external affairs department?

20 A. Yes.

21 Q. And who headed up that department?

22 A. Again, I can remember names that  
23 worked in it. I think -- I'm afraid my memory  
24 is gone.

25 Q. What was the purpose of that

0114

1 TIM WARREN

2 external affairs department?

3 A. To be able to represent us in the  
4 external world as a viable and credible  
5 innovator and deployer of technology.

6 Key selling point for when we  
7 engaged foreign governments to compete for  
8 concessions was we needed to try and persuade  
9 them that our technology was as good as or  
10 better than anybody else's.

11 Q. Did you assist in drafting this  
12 document?

13 A. I will have certainly have had a  
14 scrutiny and agreed to the final draft, yes.

15 Q. Would ExCom or BusCom have  
16 approved this document before it was  
17 disseminated?

18 A. I would have certainly asked my  
19 colleagues for their comment. There wouldn't  
20 have been a formal approval.

21 Q. Okay. If you go to the first --  
22 well, it actually says page 4 on it. There's  
23 numbers in little blocks. It's Bates 14621.

24 It says in the beginning, "I  
25 recognize that there is a perception that we

0115

1 TIM WARREN

2 have been more excited by long-term  
3 technological possibilities than short-term  
4 returns. This has changed."

5 Can you explain what change had  
6 transpired that you were referring to?

7 A. Several. If I take you back in  
8 time to 1996 when one of the key tasks that I  
9 was given was integrating the old research  
10 capability with the technical service  
11 capability, in fact, one of their structural  
12 changes was moving all research from a major  
13 research haven, if you like, into their  
14 businesses to create title links to their  
15 businesses. And some of the changes that we  
16 introduced at that time were, A, a drive to --  
17 which is talked about in this presentation, to  
18 commercialized technologies where they were  
19 appropriate and actually make money through  
20 selling technological services and technology to  
21 third parties.

22 Secondly, we introduced a  
23 completely new innovation scheme which I believe  
24 was written up in the Harvard Business Review at  
25 that time called The Game Changer Revolution in  
0116

1 TIM WARREN

2 Shell, which was introducing an in-house venture  
3 capital format to innovation, so minimum  
4 management interference, maximum expertise, the  
5 good people would get the good ideas, which  
6 would attract the dollars was the theory behind  
7 it.

8 Thirdly, insisting on a much  
9 tighter link between the research and  
10 development effort and what it could do for the  
11 bottom line.

12 If you like, I used the example  
13 many times in those days, gone are the days  
14 where we're going to have researchers in white  
15 coats who we're going to give money to and sit  
16 back and pray.

17 So it was a much more managed  
18 process of research through development tied to

19 achieving stuff for the bottom line.

20 Very much more customer oriented,  
21 giving the customer a far larger say in what we  
22 researched and what problems did he want us so  
23 solve in research or they wanted to resolve in  
24 research that would improve their business.

25 So a whole range. We actually

0117

1 TIM WARREN

2 transformed the research and technical service  
3 capability of Shell E&P from where it had been  
4 to something very new and novel.

5 Q. What if any were the short-term  
6 returns that resulted from this transformation?

7 A. On the operational side we  
8 actually took research to operational impact in  
9 a far shorter space of time than we had ever  
10 achieved before. And whilst at the same time  
11 retaining competitive advantage for ourself.  
12 Let me give you an example.

13 Previous to these days we had done  
14 a lot of research on drilling bit technology,  
15 drilling bits are what actually crunch the rock  
16 when you drill.

17 Since we weren't a drilling  
18 company we licensed that technology to drilling  
19 bit manufacturers and we got a very small  
20 royalty stream.

21 During this time we invented a  
22 technology called "expandable tubing" which had  
23 a huge application in the business in terms of  
24 enabling wells to reach further and farther than  
25 they had ever done before, to ensure that they

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1 TIM WARREN

2 provided a larger conduit for production than  
3 they had ever done before.

4 Previously we would have licensed  
5 that technology to people who would have  
6 provided it back to us as a service. This time  
7 we formed a company jointly with Halliburton and  
8 took it to market ourselves.

9 And, for example, from the

10 research concept to the first commercial  
11 application of that technology took four years.  
12 In previous Shell days it would have taken  
13 10 years. So huge impacts. I can give you lots  
14 of examples, I won't bore you with them.

15 Q. Okay. Page 6, which is Bates  
16 14623 there's -- the middle of the page there's  
17 a title, Integrated Subsurface Modeling, Getting  
18 It Together to Grow Reserves and Increase  
19 Production.

20 Can you tell me what integrated  
21 modeling is?

22 A. Yes. Integrated modeling is  
23 taking all the technical data streams that come  
24 from various technological applications and  
25 integrating them into one geological and

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2 reservoir representation of the oil field or the  
3 basin.

4 And, in fact, I shouldn't talk  
5 about one because modern computer technology  
6 enables us actually to come up with many  
7 potential realizations of the subsurfaces.

8 An integrated model will be able  
9 to be continuously updated for new data as it  
10 comes in, maybe new seismic is shot, maybe a new  
11 well is drilled, and maybe an old piece of data  
12 is evaluated with new technology that gives you  
13 new insights to be continuously updated and  
14 eventually simulated with the field is in  
15 production so that what you simulate for the  
16 future in terms of your forecast production,  
17 which gives you a clue as to how large the  
18 resource is that you're tapping is based on your  
19 production history up-to-date.

20 So it's taking all the data you  
21 have about a hydrocarbon cumulation or a basin  
22 and putting it to a multivariate, if I may call  
23 it that way, model that you then use for  
24 planning.

25 Q. So this integrated modeling was

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1 TIM WARREN

2 used to grow reserves and increase productions;

3 is that correct?

4 MR. SMITH: Objection to form.

5 THE WITNESS: No. Integrated

6 modeling was done to understand the subsurface

7 that we couldn't see. If you understand it

8 better then you will engineer solutions that

9 will increase production.

10 By virtue of increasing production

11 they will -- you will increase the amount of

12 hydrocarbons that you withdraw from the

13 subsurface, which means you're going to increase

14 your ultimate recovery, which ultimately means

15 you're going to increase your expectation of

16 reserves, your developed reserves, and

17 ultimately your proven reserves.

18 BY MS. CAROLINE MARSHALL:

19 Q. Do you recall in this section

20 where you wrote about how integrated modeling

21 enabled petroleum development Oman to add

22 450 million barrels to reserves, which type of

23 reserves you were referring to specifically?

24 A. These were the expectation

25 reserves.

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2 Q. Okay. The next page there's --

3 this is page 7, which is Bates page 14624, to

4 make sure we're all on the same page.

5 The text goes down three columns.

6 Near the bottom of the third column it says --

7 there's a sentence in the second -- the middle

8 paragraph it says, "We have transformed our

9 organization processes, communications and ethos

10 to work seamlessly across the world and expect

11 benefits to flow more rapidly as a result. The

12 most fundamental change in this regard is the

13 creation this year of a unified global E&P

14 technology organization with two hubs in

15 Rijswijk and Houston. It has three business

16 units." And then there's listed research,

17 technical development and technical services,

18 deepwater services, and commercial technology  
19 and venture services.

20 Did this unified global E&P  
21 technology organization have a name?

22 A. This is the one that we discussed  
23 this morning that was called Shell Technology  
24 E&P that had a mirror image structure each side  
25 of the Atlantic, and in terms of these three

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2 divisions.

3 Q. Can you explain what you mean --  
4 I'm confused by the term mirror image because to  
5 me it means that they're exactly the same,  
6 they're just in different places but they're  
7 doing the exact same thing. Is that what you  
8 mean?

9 A. I'm talking about organizational  
10 structure. So I'm saying we had the same  
11 organizational structure here in the States as  
12 we had in Europe. And if you remember I said  
13 this morning that was to enable the best  
14 possible collaboration, lack of duplication and  
15 communication between the individual, but  
16 separate wings. And, yes, that is what is meant  
17 in this paragraph.

18 Q. So when it says unified global E&P  
19 technology organization with two hubs, it was  
20 one organization with two centers; is that  
21 correct?

22 MR. SMITH: Objection to form.

23 THE WITNESS: As I said this  
24 morning, it was two separate corporate  
25 organizations. Those were the two hubs. They

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2 had a similar identical internal geometry which  
3 I've been calling the mirror image and they  
4 cooperated and collaborated in a manner that  
5 reduced duplication and maximized cost  
6 effectiveness and efficiency.

7 BY MS. CAROLINE MARSHALL:

8 Q. Why did you call it a unified

9 global organization?

10 A. Again, you're talking to an  
11 external audience who does not want to be  
12 bothered with the internal complexities of your  
13 corporate organization.

14 And what we were trying to project  
15 to that external audience was we're now got our  
16 research and technology capabilities focused in  
17 the same direction and helping the whole global  
18 business move forward.

19 That's the message we were trying  
20 to give to the external world and we chose our  
21 words appropriately.

22 It's a marketing document I think  
23 one needs to recognize. One's trying to  
24 persuade people and show them, that's why we had  
25 a technology show, why you're capable of being

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1 TIM WARREN

2 better than the competition.

3 Q. It's a marketing document  
4 specifically to financial analysts?

5 A. To the external world. Ultimately  
6 you want them to invest in your company, don't  
7 you.

8 Q. And the next page you have a  
9 slide, it's page 8 at the top of the page.

10 It says, majors - proved reserves  
11 growth, oil and gas 1987 to 1997. And why did  
12 you include this slide?

13 A. Because it's the only  
14 classification of resources that is publicly  
15 available. So it's the only competitive data  
16 that you can show around volumes and it's one of  
17 the reasons though we put a production graph on  
18 the other side, which is also publicly available  
19 data.

20 Q. So when in this -- where it says,  
21 "Value from technology? Has our investment in  
22 in-house technology delivered a commercial  
23 return?" That's the question asked and it says  
24 here, "We have certainly out performed our  
25 competitors in long-term growth of reserves and

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2 production, see figures 2 and 3."

3 In that answer you're referring to  
4 proved reserves; correct?

5 A. The text refers to a graph that  
6 compares proved reserves and the connotation I  
7 would have been conveying is that our  
8 expectation of reserves on which we plan our  
9 business would have grown in a similar fashion  
10 and outgrown our competitors at the same time,  
11 so the basis of our business was healthy  
12 competitively.

13 Q. But you've answered the question  
14 by talking about proved reserves; is that  
15 correct?

16 A. I repeat, the only data that we  
17 have in the public domain on our competitors on  
18 volumes is proved reserves. It's the only  
19 comparison we can make.

20 Q. And at this time when this report  
21 was disseminated what was your understanding of  
22 the definition for proved reserves?

23 A. I wouldn't be able to quote you at  
24 this time any better than giving my general  
25 understanding that I gave you earlier. That was

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2 a matter of the experts.

3 Q. Back in 1999 did you have any  
4 awareness of an SEC rule regarding the reporting  
5 of proved reserves?

6 A. I was aware that there were SEC  
7 guidelines, yes.

8 Q. Can you describe your extent of  
9 your knowledge about the guidelines?

10 A. Beyond the understanding that they  
11 existed, that was all I knew.

12 Q. Okay. If you go now to Exhibit  
13 Number 7 or Exhibit 6 and 7, these two  
14 documents -- can you tell me whether or not you  
15 can identify Exhibit Number 6?

16 A. It looks to be the text that

17 underpinned the presentation that's in

18 Exhibit 7.

19 Q. Now, if you look at the end of the  
20 document there appears to be text of a Q and A  
21 session?

22 MR. BEST: What page?

23 MS. CAROLINE MARSHALL: It begins  
24 on page Bates ending 441.

25 THE WITNESS: Did you have a

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2 question?

3 BY MS. CAROLINE MARSHALL:

4 Q. Yeah. This appears to me to be  
5 like a transcript of that Q and A session. Is  
6 that what it appears to you to be?

7 A. It looks like a transcript of a Q  
8 and A session and it's headed the EP/GP Investor  
9 Relations Presentation. I don't know what its  
10 providence is.

11 Q. What I'm trying to determine is  
12 whether or not this entire document is a  
13 transcript of the presentations or if it's a  
14 script. And I don't know if you can help me  
15 determine that as you sit here, but if you look  
16 to page 432, Bates ending 432, your name is at  
17 the top. It appears to be the beginning of your  
18 presentation.

19 Maybe you can look at this and try  
20 to figure out for a minute whether or not this  
21 would have been your script or if this is a  
22 transcript of what you actually said?

23 A. This is a script.

24 Q. How do you know that?

25 A. Because it's so well paragraphed

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2 and it has a structure around it.

3 Q. How strictly did you keep to your  
4 scripts in these presentations?

5 A. Very closely, because we were on a  
6 very strict time horizon, so we time tested  
7 ourselves, we adjusted our scripts to that time

8 and if you've done any public speaking you know  
9 that if you diverge from your script you lose  
10 your time line.

11 Q. In the beginning of your  
12 presentation it says -- you start talking about  
13 a simulated run through where we're placing the  
14 Bonga development off the Coast of Nigeria and  
15 then it says what you've just seen is an example  
16 of technology in action and Shell exploration  
17 production.

18 Can you explain to me what the  
19 audience would have just seen; if you recall?

20 A. Yes. They would have seen a  
21 virtual film, if I can use that term, of the  
22 subsurface of the Atlantic Ocean above the Bonga  
23 field off the West Coast of Nigeria in  
24 deepwater, but it would have been -- looked just  
25 like somebody traveling over it with a video

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2 camera, except nobody filmed it, it was done by  
3 remote measurements, you know, rather like you  
4 can create maps of the earth with satellite  
5 technology.

6 Q. And was it created for the  
7 presentation or was it something that had a use  
8 outside of the presentation?

9 A. It had a use outside of the  
10 presentation. It was actually used to decide  
11 where to place both surface, so the platform  
12 facilities and the subsurface facilities, what  
13 were going to go in beneath the sea on the sea  
14 bed. It was used for that purpose.

15 Q. And who -- who did -- where was  
16 this created within Shell?

17 A. That, I would not be able to  
18 recall. Most likely Shell Nigeria EP Company,  
19 who were looking after the Bonga development.

20 Q. Was Shell E&P involved in the  
21 technology that created this virtual film?

22 MR. SMITH: Objection to form.

23 BY MS. CAROLINE MARSHALL:

24 Q. You can answer the question.

25 A. A lot -- virtual reality in our

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2 business --

3 Q. Virtual reality.

4 A. -- is very important because most  
5 of the things we do we cannot touch, feel, see  
6 or taste. So the whole technology underlying  
7 virtual reality was something that we kept a  
8 very keen eye on and developed applications for  
9 in our technology centers.

10 Q. Was this a deepwater project?

11 A. Bonga is a deepwater project.

12 Q. So would SDS have been involved in  
13 the technology for that project?

14 MR. SMITH: Object to form and  
15 foundation.

16 BY MS. CAROLINE MARSHALL:

17 Q. You can answer the question.

18 A. SDS was a service division. It  
19 did not invent or research technology that  
20 happened in the division called SEPTAR.

21 SDS used technology in doing what  
22 they did, as did operating units working in the  
23 deepwater.

24 So certainly SDS did work on  
25 behalf of Shell Nigeria EP Company that was the

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2 operating unit operating Bonga.

3 Whether this piece of film was  
4 developed by Shell Nigeria EP Company or within  
5 Nigeria SDS, I would not know. It certainly  
6 would have used Shell technology elements, which  
7 was what I was showing to this audience.

8 Q. I'm just -- can you explain to me  
9 how, if at all, SDS and SEPTAR were interacted?  
10 They were two separate entities; is that  
11 correct?

12 A. They were separate divisions  
13 within STEP, Shell Technology EP, and  
14 certainly -- let me just try to help if I may.

15 Q. Thanks.

16 A. Shell Deepwater Services offered a  
17 range of services from exploration through to  
18 construction. They didn't operate, but they  
19 offered services through exploration, drilling,  
20 facility construction to our deepwater operating  
21 units.

22 Now, a lot of the technologies  
23 that are used in deepwater are equally used in  
24 other basins. For instance, subsurface  
25 technology doesn't change because you're sitting

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2 in deeper water. And so SDS as a service  
3 division would be using Shell technologies that  
4 are developed out of SEPTAR. They would be a  
5 customer of SEPTAR in that regard.

6 SEPTAR would be developing  
7 technology applications for their use and they  
8 didn't conduct research themselves. If they had  
9 a research need that would have been conducted  
10 within SEPTAR.

11 Am I helping to clarify.

12 Q. Yes. That was very helpful.

13 Thank you.

14 So they would have had contracts  
15 between them?

16 A. Certainly they would have had what  
17 we called CTRs.

18 Q. Okay.

19 A. So cost time resource contracts.

20 Q. Do you -- would you be  
21 knowledgeable about any of the specific  
22 contracts or CTRs between the two?

23 A. I would not have got involved in a  
24 specific CTR, no.

25 Q. When you -- on page 434, the

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2 second to last paragraph. The first sentence  
3 says, "Volumes to value is where we focus on  
4 monetizing more reserves."

5 Can you explain what you meant by  
6 monetizing reserves?

7 MR. FERRARA: Sorry. Can you

8 direct me where you are?

9 MS. CAROLINE MARSHALL: Yeah.

10 Sure. Page 434, the first sentence to the

11 second to last paragraph.

12 MR. FERRARA: Got it. Thank you.

13 THE WITNESS: Reserves are

14 monetized when they're sold as production.

15 BY MS. CAROLINE MARSHALL:

16 Q. Okay. Now, if you look in the  
17 question and answer section on page 445?

18 A. Sorry, which page?

19 Q. 445. There is a question from Tom  
20 Schmidt from Alliance Capital. The question is,  
21 "If you look at your total production and then  
22 look at your exploration spending, aren't you  
23 going to have to increase exploration eventually  
24 here or you're not going to be able to replace  
25 reserves?"

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2 And if you turn to the next page,  
3 page 446, Phil Watts endeavored to answer his  
4 question and at a certain point it looks to be  
5 in the third paragraph he said, "I would like  
6 Tim to comment if he would because if you look  
7 at our proven reserves and compare them with the  
8 expectation of what they could be there's a  
9 dramatic prize there." He said, Tim, and then  
10 you spoke. So why don't you take a minute and  
11 look at this section. I just wanted to ask you  
12 a question about it.

13 A. Yes.

14 Q. Do you -- I assume you don't  
15 specifically recall this dialogue now?

16 A. No.

17 Q. Do you recall what you meant by  
18 your statements, "scope for recovery is the  
19 resource base that we believe is unlockable with  
20 new technology"?

21 A. Yes. If you remember the  
22 classification that we've discussed a lot today,  
23 we classify scope for recovery and there are

24 different types of scope for recovery as well.  
25 Those things under our guidelines we would not

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2 call reserves, be they expectation or proven, or  
3 any other type of reserves.

4 Obviously the reason they're in  
5 scope for recovery is they're not technically  
6 and commercially mature, so we don't yet have a  
7 development plan for them, a feasible  
8 development plan and we haven't proven to our  
9 satisfaction that we have a viable investment  
10 case to go after them other than to further  
11 define them.

12 Those scopes for recovery can in  
13 one case be undiscovered volumes, undiscovered  
14 scope, as we call it, which has to be discovered  
15 through exploration. And that uses a lot of  
16 exploration technology to take that undiscovered  
17 scope and move it to what's called discovered  
18 scope for recovery. That's the exploration  
19 piece, if you like.

20 There's another scope for recovery  
21 which is resources in the subsurface that we  
22 know we could move but we have not yet shown it  
23 to be commercially feasible. In other words,  
24 the technology is feasible, the commerciality  
25 isn't.

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2 Now, if you understand technology,  
3 all technologies go through a price return  
4 curve. The more you use the technology the more  
5 you learn how to do it more cheaply. And so  
6 ultimately if you take a technology you can  
7 actually say to yourself if I do this with it I  
8 will be able to actually use it commercially,  
9 the moment I can do that the scope for recovery  
10 will become commercially feasible.

11 So that technology life cycle, if  
12 you like, is the key to unlocking scope for  
13 recovery that is not yet commercially feasible,  
14 though we know it's technically feasible.

15 I can give you many other  
16 examples, but I come back to the point that our  
17 business is all about identifying, reducing  
18 risk, and ultimately implementing through  
19 tech -- through application of technology a  
20 development that produces oil and gas, sells to  
21 an end customer and makes us money.

22 Through producing and selling that  
23 reduces the immediate resource base that needs  
24 to be tucked up from the back, but we're  
25 quantifying that with large uncertainties from

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2 the moment, as I say, it's a glimmer in an  
3 explorer's or even a technologist's eye.

4 Q. Did the script and the slide  
5 presentation for the April 2000 presentations go  
6 through the same process as the ones for the  
7 1999 presentations in terms of being vetted with  
8 Business Com or ExCom?

9 A. As I mentioned, we would have  
10 taken the opportunity to rehearse our  
11 presentation in front of the complete Business  
12 Committee and Executive Committee. And since  
13 you know your presentation improves, the better  
14 the feedback you get.

15 Q. If you look at the slide  
16 presentation that is in Exhibit 7, there is a  
17 slide that comes up a couple of times at least,  
18 and I'll just show you one example of it, it is  
19 on page ending 1192 at the bottom. It's maybe a  
20 third of the way back or a quarter?

21 A. The one with the barrel?

22 Q. Yeah. The one with the barrel.

23 A. Yeah.

24 Q. What was the message behind this  
25 image?

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2 A. The message from this, and it in  
3 fact grew out of that value creation series,  
4 you'll see some of the names lived on. You'll  
5 see one has actually been added which is called

6 Producing the Limit, which was not the subject  
7 of a value creation team at the time, was in  
8 fact a spin-off from drilling the limit  
9 valuation team who utilized or discovered or  
10 invented or borrowed a methodology which  
11 basically said that if you want to improve a  
12 process or an activity you actually have got to  
13 get the existing implementers of that activity  
14 or process out of the box and not constrained by  
15 today's world.

16 So in the drilling one, if I can  
17 give you that, because it's one I of course am  
18 most familiar with, having lived with that team,  
19 effectively what they say is if we had a  
20 completely blank sheet of paper how fast could  
21 we drill this well and achieve its objectives.

22 Assuming we're not constrained in  
23 any way, let's take all the constraints away,  
24 how fast could we do it, which actually opens up  
25 new avenues, new insights into how you could

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2 actually drill that well.

3 You then come in with your  
4 constraints afterwards and say, now, I want to  
5 do that without creating an environmental  
6 incidence. In other words, having an oil spill,  
7 I don't want the well to blow out, so I've got  
8 to have a safe design and you start introducing  
9 your constraints afterwards.

10 But you come up with an ideal  
11 formulation of how that well can be drilled and  
12 we call that the limit formulation.

13 We started comparing all our well  
14 performance with what could have been done if  
15 they had been drilled at the limit, which is a  
16 tremendous motivator for improvement. If you  
17 like, you don't have to benchmark anymore  
18 because your ultimate benchmark is the limit.  
19 Nobody else could do better than the limit.

20 So that was the theory behind this  
21 was a methodology for understanding what your  
22 improvement target was in these various

23 activities and then finding means that enabled  
24 engineers to apply this as an automatic part of  
25 their daily doing business in these particular

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2 fields. And we got very, very powerful results  
3 from it. In fact, that methodology is now used  
4 by many of our competitors around the world who  
5 have invented it for themselves.

6 Q. Okay. You can put that aside?

7 MR. SMITH: We've been going about  
8 an hour and 15 since lunch. Do you want to take  
9 a short break?

10 MS. CAROLINE MARSHALL: Sure.

11 THE VIDEOGRAPHER: We're going off  
12 the record. The time is 2:49 p.m.

13 (A brief recess was taken.)

14 THE VIDEOGRAPHER: We are back on  
15 the record. The time is 3:14 p.m.

16 (Warren Exhibit Number 8 was  
17 marked for identification.)

18 BY MS. CAROLINE MARSHALL:

19 Q. Mr. Warren, I'm going to show you  
20 a document we'll mark Exhibit Number 8 for  
21 identification. It bears Bates number  
22 LON01560445 through 448.

23 This document was produced as one  
24 document, although I'm not sure that you've seen  
25 all of it. I would direct your attention to the

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2 second page of the exhibit.

3 There appears to be an e-mail from  
4 you, dated November 28th, 1997, and that's  
5 really what I'm focusing on. If you want to  
6 look at that first that would be great.

7 Mr. Warren, have you had an  
8 opportunity to review the e-mail that begins on  
9 Bates page 446 -- ending 446?

10 A. I have.

11 Q. Do you recognize this  
12 communication?

13 A. I have no recollection of it

14 whatsoever.

15 Q. Do you have any recollection of  
16 the circumstances surrounding this e-mail?

17 A. I'm afraid not, no. Certainly  
18 it's around -- it seems to be the report of  
19 responses to a letter, and I don't know what  
20 letter that is. And I would be speculating if I  
21 said anything else.

22 Q. Do you recall in late 1997 having  
23 any involvement on the subject of reserves  
24 reporting?

25 A. Not directly. The reserves

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2 reporting was -- the custodian very carefully  
3 was put in a department outside of my  
4 directorate, which I think I mentioned this  
5 morning. At that time, David Frowd, who is at  
6 the top of this page, was the individual in  
7 charge of I think it was called the group  
8 reserves coordinator position and reported to  
9 the strategy and planning director on the BusCom  
10 and reported to Henk Dijkgraaf at the time and  
11 he certainly utilized reservoir engineering  
12 expertise within my technology group, as  
13 reflected certainly particularly in an  
14 individual called Stewart Evans, who was  
15 considered the guru of reservoir engineering in  
16 Shell at the time, and they had a very strong  
17 dialogue.

18 Q. And what did you know about the  
19 dialogue that Stewart Evans and Mr. Frowd were  
20 having?

21 A. I imagined -- and now I am  
22 speculating.

23 Q. That's okay.

24 MR. SMITH: If she asks you to.

25 THE WITNESS: Yeah. I'm

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2 speculating that under the auspices of Stewart  
3 Evans there had been a workshop of reservoir  
4 engineering practitioners who had been asked to

5 address a series of questions, and this is a  
6 summary of the responses that were gathered at  
7 that time, though it does say specifically from  
8 a letter.

9 And the fact that it's come from  
10 my desk would suggest that it was probably  
11 drafted by Stewart Evans and went out from my  
12 desk to my colleagues to, as it says in the  
13 note, to forewarn them of a note that would be  
14 coming to the BusCom and authored EPTAM, EPSSE,  
15 which would be David Frowd and Stewart Evans.

16 BY MS. CAROLINE MARSHALL:

17 Q. What was Stewart Evans' role at  
18 that time?

19 A. He was the manager of -- I can't  
20 remember his title, but he was the manager of a  
21 grouping within EP technology on which at that  
22 time had combined research and technical  
23 services capability, specifically on the  
24 reservoir engineering side.

25 He laterally became the sponsor of  
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2 the volumes to value initiative. And, as I say,  
3 he was regarded as the guru of reservoir  
4 engineering within Shell.

5 Q. And did you have an understanding  
6 what his involvement, if any, was with reserve  
7 reporting?

8 A. Only as the guru of reservoir  
9 engineering, which is the science of  
10 volumetric estimating and, therefore, an  
11 individual in my outfit who was particularly  
12 interested in the resource maturation process,  
13 the whole process that we've discussed before,  
14 and he would have been an individual who David  
15 Frowd would have consulted regularly.

16 Q. Do you recall conversations  
17 regarding whether expectation reserves in mature  
18 fields could be reported as proved reserves?

19 MR. SMITH: Objection to form.

20 Conversations with?

21 BY MS. CAROLINE MARSHALL:

22 Q. Anyone.  
23 A. We're now getting down into  
24 matters of detail which I'm not sure how much I  
25 would have been involved in at the time,  
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2 possibly very little, and I'm afraid my memory  
3 plays me tricks because, of course, as history  
4 has unfolded over time details such as that I  
5 have gotten far more knowledgeable about and  
6 later on.

7 So, when in fact I was aware of or  
8 I had knowledge of expectation and the  
9 possibility of booking expectation reserves as  
10 proven, whether that happened later in my career  
11 or at this time, I would not recall.

12 Q. How practically could an e-mail  
13 have been sent out under your name if you hadn't  
14 written it? I'm just trying to --

15 MR. SMITH: Objection to form,  
16 both asked and answered -- asked and answered.

17 BY MS. CAROLINE MARSHALL:

18 Q. Would you have reviewed this  
19 e-mail if it went out under your name?

20 A. If -- I'm speculating it was  
21 probably written by Stewart Evans. I would have  
22 given it a casual once over and said now is  
23 that --

24 MR. BEST: Is that your standard  
25 practice or do you have a recollection that you

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1 TIM WARREN

2 reviewed this e-mail?

3 THE WITNESS: I do not have a  
4 recollection that I reviewed this e-mail.

5 BY MS. CAROLINE MARSHALL:

6 Q. Was it your standard practice to  
7 review e-mails that went out under your name?

8 A. Certainly to at least scan them,  
9 yes.

10 Q. When -- you said that you're  
11 afraid your memory causes you tricks because as  
12 history has unfolded over time details -- there

13 are details that you've gotten far more

14 knowledgeable about later on.

15 When did you become more  
16 knowledgeable about the details of reserve  
17 reporting?

18 A. Well, for example, after Shell's  
19 restatement of reserves all executives and  
20 practitioners went on reserve training course.  
21 And when I certainly attended one that was given  
22 to line management in Australia and that would  
23 have been in 2003. And so I have very specific  
24 knowledge from that training course.

25 Q. Do you think it was in 2003 or do  
0147

1 TIM WARREN

2 you think it could have been in 2004? Because  
3 you said it was after Shell's restatement of  
4 reserves.

5 A. It could have been 2004 then.

6 Q. Okay. Do you recall attending any  
7 other reserve training courses prior to that  
8 training course?

9 A. No, other than my basic training  
10 as a petroleum engineer back in the '70s.

11 Q. Do you recall during your tenure  
12 on the Executive Committee any conversations  
13 regarding the reporting of proved reserves  
14 amongst the Executive Committee?

15 A. As I say, reserves were a regular  
16 item on the both Business Committee and  
17 Executive Committee and I can't remember the  
18 details of all the discussions that we had.

19 Certainly understanding the total  
20 classification of reserves was very important  
21 for our business and so we did keep an oversight  
22 of it.

23 Q. Did you as a member of the  
24 Business Committee and then the Executive  
25 Committee have an awareness of any impact that

0148

1 TIM WARREN

2 changed in the Shell guidelines with respect to  
3 reserve reporting had on the proved reserve

4 replacement ratio?

5 MR. SMITH: Objection to form,  
6 asked and answered.

7 THE WITNESS: I have no direct  
8 recollection of that.

9 BY MS. CAROLINE MARSHALL:

10 Q. Do you have a general recollection  
11 of that?

12 MR. SMITH: Objection to form.

13 MR. BEST: Objection.

14 THE WITNESS: I find that an  
15 impossible question to answer.

16 BY MS. CAROLINE MARSHALL:

17 Q. You said you had no direct  
18 recollection. Can you explain what you mean by  
19 a direct recollection?

20 A. As I say, we would have had many  
21 discussions on the BusCom and the ExCom around  
22 reserves. The detail of those discussions I  
23 can't recall.

24 Q. Do you recall -- I'll show you a  
25 document which we'll mark as Exhibit Number 9.

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1 TIM WARREN

2 (Warren Exhibit Number 9 was  
3 marked for identification.)

4 MS. CAROLINE MARSHALL: It has  
5 Bates number PBW0003852 through 3873.

6 I'm not going to ask you about  
7 every page of this document, but if you could  
8 look at least at the first two pages and  
9 familiarize yourself with the document.

10 MR. BEST: The first two pages?

11 MS. CAROLINE MARSHALL: Yes.  
12 Really, just the first page, that's fine.

13 BY MS. CAROLINE MARSHALL:

14 Q. Do you have any recollection of  
15 presentation to ExCom in January of 2000 that  
16 seems to be described in this document?

17 A. Not an explicit recollection, but  
18 I'm sure it took place.

19 Q. Do you have any general  
20 recollection of a presentation by Mr. Platenkamp

21 on year end proved reserves around this time?

22 A. He and David Frowd, if he was  
23 still in that position, would have been present  
24 at the presentation of this paper, yes.

25 Q. Do you have any recollection of

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1 TIM WARREN

2 any conversations at ExCom about the subject  
3 matter of this presentation?

4 A. I'm afraid I don't have direct  
5 recollection of details of conversations. We  
6 discussed many things at many ExCom meetings and  
7 I'm afraid I don't have direct recall.

8 Q. Do you recall ever having any  
9 conversations with Phil Watts, whether at an  
10 ExCom meeting or on your own, about proved  
11 reserves and the proved reserve replacement  
12 ratio?

13 A. Not that I can explicitly recall.

14 Q. Do you recall generally ever  
15 talking to him about the subject?

16 A. As I say, reserves and resources  
17 are such a fundamental part of our business we  
18 would have had many conversations, both  
19 collectively and I'm sure individually, but I'm  
20 afraid recalling conversations at this distance  
21 is not something I'm capable of.

22 Q. Was a 37 percent reserve  
23 replacement ratio high or low?

24 A. 37 percent would be disappointing,  
25 so low.

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1 TIM WARREN

2 Q. If you see at the summary at the  
3 top, the first bullet point, the second sentence  
4 says, "total oil NGL gas replacement ratio for  
5 1999 is 37 percent." And then in parentheses it  
6 says 182 percent in 1998.

7 Do you have any understanding as  
8 to why there was such a big difference between  
9 the figure for 1999 and 1998?

10 MR. SMITH: Objection to form and  
11 lack of foundation.

12 THE WITNESS: Can you repeat the  
13 question?

14 BY MS. CAROLINE MARSHALL:

15 Q. If you see at the summary at the  
16 top the first bullet point, the second sentence  
17 says, "the total oil and gas replacement ratio  
18 for 1999 is 37 percent." And in parentheses it  
19 says 182 percent in 1998.

20 Do you have any understanding as  
21 to why there was such a big difference between  
22 the figure for 1999 and the figure for 1998?

23 MR. SMITH: Same objection.

24 THE WITNESS: Without reminding  
25 myself of the detailed breakdown I would not be  
0152

1 TIM WARREN

2 able to answer your question.

3 BY MS. CAROLINE MARSHALL:

4 Q. Is there anything in this document  
5 that would remind you of the detailed breakdown?

6 A. Do you want me to look through the  
7 document?

8 Q. Sure. If it's going to take you  
9 an hour, I would say no, but if you can look  
10 through it quickly and say I don't think I'm  
11 going to be able to find it?

12 A. I think I'm merely going to be  
13 able to say this is probably a reasonable  
14 summary of what underpins that 37 percent.

15 Q. But you have no independent  
16 recollection as to why there was such a  
17 discrepancy?

18 A. No.

19 Q. On the second bullet point it says  
20 in the second -- the second sentence it says,  
21 "It should be noted that the implementation of  
22 the new petroleum resource guidelines during  
23 1998 accounted for roughly 50 percent of the  
24 1998 proved reserve increase."

25 Does this refresh your

0153

1 TIM WARREN

2 recollection at all about the discrepancy

3 between those two numbers?

4 MR. SMITH: Objection to form.

5 THE WITNESS: I understand that

6 that's factually correct in this paper, that

7 they're reporting a fact.

8 BY MS. CAROLINE MARSHALL:

9 Q. Do you have any recollection of

10 such an event occurring?

11 A. I don't have a recollection of a

12 50 percent number, no.

13 Q. Do you have a recollection of the

14 change in the guidelines in 1998 affecting the

15 proved reserve replacement ratio?

16 A. I have a vague recollection that

17 there were changes being discussed at that time.

18 As I say, the classification guidelines were

19 altered every year. Something I left to the

20 experts.

21 Q. Did ExCom have to approve the

22 guidelines?

23 A. No. The guidelines would have

24 been approved directly in line by the director

25 responsible.

0154

1 TIM WARREN

2 Q. Would they have been presented to

3 the Executive Committee?

4 A. No. And we would have certainly

5 received a courtesy copy.

6 Q. When was it again -- I'm sorry. I

7 think it would be quicker if I just ask you

8 again that you became the -- I guess the title

9 where you were involved with Australia and

10 Gorgon?

11 A. 2001.

12 Q. 2001. What time of year was that?

13 A. I think it was about April.

14 Q. And what if anything did you do to

15 familiarize yourself with the different fields

16 in SDA?

17 A. At that time?

18 Q. Yeah.

19 A. I'd have been reliant on an

20 overview from my regional business advisor in  
21 the first instance who focused on Australia and  
22 I would have paid most of the country's within  
23 my geographical oversight a visit during the  
24 early months of my tenure and they would have  
25 given me an oversight of their entire business.

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1 TIM WARREN

2 And I can't recollect when I did that for  
3 Australia.

4 I do know I was a regular visitor  
5 to Australia at that time but it was, my focus  
6 was on in fact the failed takeover attempt of  
7 Shell on Woodside and my primary objective was  
8 rebuilding bridges and trying to evolve a new  
9 strategy after that course of action had failed.

10 So my focus in Australia was much  
11 more on, as I say, what were we going to do in  
12 the aftermath of the failure to merge with  
13 Woodside and look at their overall business  
14 until later.

15 Q. Was there any particular reason  
16 there was a failure to merge with Woodside?

17 A. Yes. The treasurer of the  
18 country, in his capacity as decision maker for  
19 the foreign investment review board decided that  
20 it was not appropriate that a majority  
21 shareholding in Woodside should be taken over by  
22 a foreign company.

23 Q. At some point in time did you  
24 become aware of a question involving the status  
25 of the categorization of the reserves for the

0156

1 TIM WARREN

2 Gorgon field?

3 A. I became aware that we had  
4 reserves in the Gorgon field during the course  
5 of that year and I also joined my strategy and  
6 appraisal review, which was something I did  
7 country by country in-country at the end of the  
8 financial year, so that would have been early in  
9 2003 I would have visited Australia for that.

10 I became aware that we had been

11 carrying reserves in Gorgon for some time and  
12 one constantly or the experts were constantly  
13 having to ask themselves was there a reasonable  
14 expectation that these resources would be taken  
15 to market and so were commercially mature.

16 In fact, I believe at that time I  
17 was concerned enough to know more to ask for a  
18 report to be written for me.

19 Q. And was a report written for you?

20 A. It was.

21 Q. And who wrote that report?

22 A. It would have been written by  
23 Sarah Bell, who is the senior reservoir engineer  
24 in Shell Development Australia at the time.

25 Q. Okay. Who first brought the

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1 TIM WARREN  
2 question of the Gorgon classification of  
3 reserves to your attention, if you recall?

4 MR. SMITH: Objection to form.

5 BY MS. CAROLINE MARSHALL:

6 Q. You can answer the question.

7 A. Nobody brought the question of the  
8 categorization to my attention, merely that it  
9 was a question that, as I say, the experts,  
10 Sarah Bell was having to ask every year was the  
11 commercial maturity of those reserves that had  
12 been booked.

13 MS. CAROLINE MARSHALL: I'm going  
14 to show you a document which has been previously  
15 marked as Exhibit Number 8 at Sarah Bell's  
16 deposition, it's Bates V00310490 through 514.

17 The first two pages of the  
18 document of the exhibit are e-mails which you  
19 don't need to look through, but I believe the  
20 report starts on Bates ending 492.

21 THE WITNESS: Starting?

22 BY MS. CAROLINE MARSHALL:

23 Q. This page, 492. That's the Bates  
24 ending at the bottom.

25 Is this the report that you just

0158

1 TIM WARREN

2 referred to?

3 A. Can I just quickly scan the  
4 content?

5 Q. Oh, sure. Sure.

6 A. I don't believe so, because it  
7 doesn't contain a recommendation I recognize.

8 Q. Do you recall seeing this report?

9 A. There's a particular -- I went to  
10 the back to see, you know, the final  
11 recommendation and there is a paragraph there  
12 called bench test summary, which I don't  
13 recollect seeing.

14 Q. Which page are you referring to?

15 A. On your numbering 31101.

16 Q. So you don't recall seeing this  
17 bench test summary; is that correct?

18 A. I don't.

19 Q. Do you recall seeing the rest of  
20 the report?

21 A. I certainly saw a report in this  
22 form, which had a very clear recommendation.

23 Q. Which had -- I'm sorry, I didn't  
24 understand?

25 A. Had a very clear recommendation.

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1 TIM WARREN

2 Q. And what was the recommendation in  
3 the report that you saw?

4 A. The recommendation was that the  
5 reserves booking should be held.

6 Q. And do you know who wrote that  
7 recommendation that you saw?

8 A. That would have been Sarah Bell.

9 Q. Do you know who, other than Sarah  
10 Bell, worked on this report?

11 MR. SMITH: Objection to form.

12 BY MS. CAROLINE MARSHALL:

13 Q. Worked on whatever report it was  
14 that you saw?

15 A. I wouldn't know. It was her piece  
16 of work. She was the accountable party and who  
17 she would have consulted, I do seem to remember  
18 that she said that she had consulted the groups

19 reserves coordinator at the time.

20 The report was certainly supported  
21 by her boss, who is a guy called David Johnson.

22 Q. Did you form your own opinion  
23 about whether or not the categorization of the  
24 Gorgon research volumes was -- as reserves was  
25 appropriate at that time?

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1 TIM WARREN

2 A. I was incompetent to form an  
3 opinion of that kind, but I was satisfied that  
4 the experts had looked at it, which was my  
5 intention in asking for the report to be  
6 prepared.

7 Q. And why were you satisfied by what  
8 the experts had looked at it?

9 MR. SMITH: Objection to form.

10 THE WITNESS: Can you express the  
11 question more clearly?

12 BY MS. CAROLINE MARSHALL:

13 Q. Sure. You said I was incompetent  
14 to form an opinion of that kind, but I was  
15 satisfied that the experts had looked at it.

16 What did you do to, if anything,  
17 to give yourself comfort that the experts had  
18 looked at it sufficiently?

19 A. I did nothing specific. I have an  
20 enormous respect for both members of staff that  
21 I just mentioned, David Johnson and Sarah Bell,  
22 who are people of utmost integrity and were  
23 competent people.

24 Q. Did you look yourself at the  
25 reserve guidelines at that time?

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1 TIM WARREN

2 A. No.

3 Q. Did you know whether or not there  
4 had been a contract in place for the Gorgon  
5 reserves?

6 A. I would know for a fact that there  
7 was not a contract in place for the Gorgon  
8 reserves, but I was certainly satisfied that  
9 there was room in the Asian market for the

10 placement of those reserves. And I was also  
11 satisfied that my company as a joint venture  
12 partner and Chevron as the operator were working  
13 extremely hard on a project implementation which  
14 we thought would come to fruition.

15 Q. What gave you satisfaction that  
16 there was room in the Asian market for the  
17 placement of those reserves?

18 A. Essentially the background studies  
19 that were done by our gas and power function  
20 which forecast demand in the Asian markets.

21 Q. When were those background studies  
22 done?

23 A. I have no recollection.

24 Q. Who did those studies?

25 A. Our gas and power business.

0162

1 TIM WARREN

2 Q. What do you recall about those  
3 studies?

4 MR. SMITH: Objection, asked and  
5 answered.

6 BY MS. CAROLINE MARSHALL:

7 Q. You can answer the question.

8 A. I thought I had answered it.

9 Our gas and power business are in  
10 the business of selling gas into those markets.  
11 They keep those markets under constant  
12 observation, and it's part of their basic  
13 business to look for gaps in future demand.

14 Who within the organization did  
15 that work, I have neither any recollection of.  
16 I probably didn't even know at that time. I  
17 would merely have seen the outputs.

18 Q. If you had seen this bench test  
19 summary that appears in this document at the  
20 time would you have taken any different action?

21 MR. SMITH: Objection to form,  
22 it's a hypothetical question.

23 THE WITNESS: That would call for  
24 speculation. I'm not prepared to speculate.

25 BY MS. CAROLINE MARSHALL:

0163

1 TIM WARREN

2 Q. Why?

3 MR. SMITH: Objection to form.

4 BY MS. CAROLINE MARSHALL:

5 Q. Why can't you speculate if you  
6 would have done something different?

7 A. I thought the purpose of having  
8 this deposition was to deal with facts.

9 Q. Well, I'm asking you based on your  
10 position at the time, if you had read a summary  
11 that had said if Gorgon resources had not yet  
12 been disclosed externally as proved reserves it  
13 is very unlikely that they would have been  
14 booked before actual projection FID is taken,  
15 would you have caused -- taken any action that  
16 you didn't otherwise take?

17 MR. SMITH: Objection to form. I  
18 would rather you finished reading the paragraph  
19 before you ask that question.

20 THE WITNESS: If you want me to  
21 speculate may I read the whole paragraph?

22 BY MS. CAROLINE MARSHALL:

23 Q. Yes, I would.

24 A. If I had read this paragraph, in  
25 fact, where I would have focused my attention is

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1 TIM WARREN

2 on the first paragraph which is the equivocal  
3 nature that is referred to there and my guidance  
4 to Dave Johnson and Sarah Bell would have been  
5 that if you are equivocal you need to take  
6 advice and because ultimately you and the people  
7 who have ownership of the guidelines are the  
8 only people who can ultimately decide.

9 Q. Are you certain that you never  
10 read this bench test summary before today?

11 A. Yes.

12 Q. How are you certain that you never  
13 read it before today?

14 A. Because my memory is very, very  
15 clear that I got a clear recommendation from my  
16 experts in Perth that the booking should stand  
17 and that that position apparently had been

18 supported by the group reserves coordinator and,  
19 again, my memory in time plays me tricks, but I  
20 believe we also had a group reserves audit  
21 around that time which supported that position.

22 Q. In what form did this clear  
23 recommendation from your experts come?

24 A. Again, without seeing the final  
25 report I can't verbatim quote it to you, but it

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1 TIM WARREN

2 was similar to the last sentence, in fact, in  
3 this report.

4 The current proved reserves  
5 disclosures will remain in force until it  
6 becomes absolutely clear that it can no longer  
7 be supported.

8 Q. So no one ever expressed to you  
9 the view that while they didn't think that the  
10 reserves should be reclassified, it's  
11 conceivable that they perhaps should not have  
12 been booked?

13 MR. SMITH: Objection to form.

14 MR. BEST: Objection.

15 THE WITNESS: As far as I'm aware  
16 they were booked by the individuals who booked  
17 them in 1997 with clear application of Shell's  
18 guidelines at the time.

19 One of the difficulties with gas  
20 projects is that they do go through many loops  
21 before they eventually get up and, as the  
22 industry would say, and you always have this  
23 tension of until the project is finally  
24 commissioned what is reasonable in terms of  
25 expectation that the market will in fact be

0166

1 TIM WARREN

2 there, it not being like an oil market which of  
3 course is fungible, you know can sell your oil  
4 at any time of the day or not. Gas is a  
5 different business unless you're sitting on the  
6 end of a fungible pipeline market.

7 So that tension I'm sure is always  
8 there and judgment has to be made. As I say, I

9 was satisfied with the judgment that was made,  
10 particularly with the support that it had  
11 received and particularly from my knowledge of  
12 where that project was and the ongoing effort  
13 that was going on in SDA and with the operator  
14 Chevron to bring it to reality.

15 MS. CAROLINE MARSHALL: I'm going  
16 to show you a document that we'll mark as  
17 exhibit -- you know what, I think they need to  
18 change the tape. Sorry. We'll change the tape.

19 THE VIDEOGRAPHER: This marks the  
20 end of tape two in the deposition of Mr. Warren.  
21 We're going off the record. The time is 3:59  
22 p.m.

23 (A brief recess was taken.)

24 THE VIDEOGRAPHER: This marks the  
25 beginning of tape three in the deposition of  
0167

1 TIM WARREN

2 Mr. Warren. We are back on the record. The  
3 time is 4:14 p.m.

4 (Warren Exhibit Number 10 was  
5 marked for identification.)

6 BY MS. CAROLINE MARSHALL:

7 Q. Mr. Warren, I'm going to show you  
8 a document we'll mark as Exhibit 10 for  
9 identification. It's titled Committee of  
10 Managing Directors, Minutes of the Meeting Held  
11 in The Hague on Tuesday 11 September 2001. So  
12 now we know what you were doing on September  
13 11th.

14 I'm going to direct your attention  
15 to page 7, which is Bates 3089.

16 For the record the document begins  
17 at LON00030983 through 30992.

18 A. Which page were you referring me  
19 to?

20 Q. Page 7 of the document.

21 There is a -- you might want to  
22 look at the whole section, I suppose, which  
23 begins the previous page. There's a section  
24 titled Australia Country Review.

25 A. Uh-huh.

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1 TIM WARREN

2 Q. The Sarah Bell exhibit?

3 A. Yes.

4 Q. Do you recall attending a meeting  
5 of the Committee of Managing Directors on  
6 September 11th, 2001?

7 A. This paper enables me to recollect  
8 that, yes.

9 Q. So you have a recollection having  
10 reviewed this document?

11 A. Yes.

12 Q. Okay. What was the purpose of  
13 your attending this meeting?

14 A. I would have to scan the whole  
15 paper to tell you that. If you ask me about  
16 this particular agenda item I'll answer that  
17 precisely.

18 Q. That's fine.

19 A. This particular agenda item was  
20 the Australia Country Review, which was  
21 presented by the country chairman, who was at  
22 this time Peter Duncan. And all the relevant  
23 regional business directors with business  
24 interest in that company attended as well to be  
25 able to comment and support him in his

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1 TIM WARREN

2 presentation. And I attended as the regional  
3 business director for exploration and  
4 production.

5 Q. In the page 8, three paragraphs up  
6 from the bottom of that section, it says --  
7 paragraph beginning asked by the committee about  
8 the Gorgon field and the stranded gas position  
9 Tim Warren replied that one would expect the  
10 Gorgon field to be the next field to be  
11 developed through North West Shelf, but the  
12 company with Chevron's support would need to  
13 convince BP of this as the latter hoped to  
14 develop Tamngguh.

15 Can you explain what is meant by  
16 stranded gas position?

17 MR. SMITH: Objection to form.

18 You said page 8. It's page 7.

19 BY MS. CAROLINE MARSHALL:

20 Q. Page 7. I'm sorry. Thank you.

21 A. Yes. If I can preface my remarks  
22 by the fact that we seldom saw the minutes of  
23 CMD, so they didn't always reflect exactly what  
24 we said at those meetings. This would have been  
25 a shorthand.

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1 TIM WARREN

2 I would certainly have been asked  
3 about the stranded gas position in Australia  
4 where Shell has significant gas resources in the  
5 North West Shelf in Gorgon in Sunrise, in Evans,  
6 and in other major accumulations. It's a major  
7 gas providence. Particularly those up in the or  
8 to the east of Australia; Sunrise, Evans Shoal,  
9 I forget the name of the other one, were  
10 extremely difficult to whilst they were large,  
11 conceive of the development plan that could  
12 bring them to market. They're very challenging  
13 in many technical respects. And that was what  
14 we called our stranded gas in Australia.  
15 Stranded, if you like, because we didn't know  
16 how to take it to market.

17 On the other end of the continent  
18 in the North West Shelf in Gorgon we had our  
19 largest resource space. The North West Shelf  
20 was already in production and, in fact, we were  
21 in the process of building a fourth LNG train to  
22 support the North West Shelf, and one of the  
23 things commercially under discussion at the time  
24 which gave us confidence that the Gorgon field  
25 would go forward was there were commercial

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1 TIM WARREN

2 discussions between the North West Shelf joint  
3 venture partners and the Gorgon joint venture  
4 partners of taking the Gorgon gas through the  
5 North West Shelf facilities, which due to  
6 sharing the facilities would have reduced the  
7 economic cost of Gorgon and was a very promising

8 development.

9 In summary that's what is

10 reflected in that paragraph of the minutes.

11 Q. As of this time Gorgon had yet to  
12 be developed; is that correct?

13 A. Gorgon was yet to be developed,  
14 yes.

15 Q. And in order to develop Gorgon, BP  
16 had to be -- had to come on board?

17 A. No. BP is not a venturer --  
18 sorry. It is a very minor venturer in one part  
19 of the larger Gorgon area.

20 This was a particular commercial  
21 solution that was under discussion at the time  
22 of which would have involved the Gorgon  
23 development producing its gas through the North  
24 West Shelf facilities, different ownerships. BP  
25 was a shareholder in the North West Shelf.

0172

1 TIM WARREN

2 And we had got all commercial  
3 parties almost to commercial closure at that  
4 time with the exception of BP.

5 Q. And how long had that particular  
6 commercial solution been being looked at?

7 A. I believe it was always considered  
8 an option, but this was the first time that it  
9 looked as though it might become a commercial  
10 reality.

11 Q. And did it become a commercial  
12 reality after this?

13 A. Not the solution, no. The  
14 negotiations did not close.

15 Q. Do you recall in early 2002 there  
16 was a question that was brought to the CMD and  
17 ExCom that as a result of SEC clarifications  
18 legacy reserve bookings in Gorgon might be  
19 exposed?

20 A. At what point in time are you  
21 talking about?

22 Q. Early 2002.

23 A. Got to get my mental calendar back  
24 in shape.

25 Q. Sure.

0173

1 TIM WARREN

2 A. I have a recollection that the  
3 question was posed that there were new SEC  
4 guidelines which could have an impact on Gorgon  
5 and that those were under review.

6 Q. And how if at all were you  
7 involved in any review that was done?

8 A. I was not directly involved  
9 except, as I mentioned in the spring of 2002, I  
10 asked for that report that we discussed  
11 previously this afternoon.

12 Q. At the time did you have -- in  
13 February 2002 were you still a member of the  
14 ExCom?

15 A. Yes.

16 Q. And as part of your -- during your  
17 time on ExCom in early 2002 do you recall  
18 discussions that took place about the potential  
19 exposure of Gorgon as a result of the SEC  
20 clarifications?

21 MR. SMITH: Objection to form,  
22 asked and answered.

23 THE WITNESS: As I mentioned  
24 before, we had so many discussions on BusCom and  
25 ExCom I don't have an explicit memory of any

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1 TIM WARREN

2 particular discussion.

3 BY MS. CAROLINE MARSHALL:

4 Q. How would you describe your  
5 knowledge of the SEC rule in early 2002?

6 A. My knowledge is virtually  
7 nonexistent.

8 Q. How would you describe it today?

9 A. Today, out of date probably.

10 Q. Was there any time that you would  
11 describe your knowledge of the SEC rule as being  
12 something more than nonexistent?

13 A. After I attended that course,  
14 which I think we agreed earlier on this  
15 afternoon that was in 2004.

16 Q. Did what you learned during that  
17 course in 2004 affect your opinion as to whether  
18 or not the Gorgon bookings complied with the SEC  
19 rule in 2000 -- in early 2002?

20 MR. SMITH: Objection to form.  
21 It's a hypothetical question.

22 MR. BEST: Objection.

23 BY MS. CAROLINE MARSHALL:

24 Q. You can answer the question.

25 MR. SMITH: You want what he

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1 TIM WARREN

2 thought about it in 2004?

3 BY MS. CAROLINE MARSHALL:

4 Q. No. Not what he thought about it  
5 in 2002. What you learned during the course in  
6 2002, did that change your view as to whether or  
7 not in 2002 the Gorgon bookings complied with  
8 the SEC rule?

9 MR. BEST: Sorry. You said in  
10 2002 twice.

11 MS. CAROLINE MARSHALL: I'm sorry.  
12 Why don't I try one more time.

13 BY MS. CAROLINE MARSHALL:

14 Q. When you went to that course in  
15 2004 I assume they went through the requirements  
16 of the SEC rule for proved reserve bookings; is  
17 that correct?

18 A. They went through the new Shell  
19 rules on reserved bookings, which we were told  
20 had been specifically reviewed and changed to  
21 ensure that they were in line with the latest  
22 SEC guidelines.

23 Q. In 2002 when you were or having  
24 gone through that course?

25 MR. BEST: He went through it in

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1 TIM WARREN

2 2004.

3 BY MS. CAROLINE MARSHALL:

4 Q. In 2004, having gone through that  
5 course, did your understanding of the SEC -- of  
6 the Shell guidelines at that time that were in

7 place in 2004, do you recall whether or not you  
8 questioned whether or not the Gorgon booking  
9 that was in place in 2004 -- in 2002 would have  
10 met the requirements of the 2004 rule?

11 MR. SMITH: Objection to form.

12 It's a hypothetical question, it calls for  
13 speculation and it lacks foundation.

14 BY MS. CAROLINE MARSHALL:

15 Q. But you can still answer.

16 MR. BEST: Go ahead and answer.

17 THE WITNESS: I can answer a  
18 different question which I think I feel more  
19 comfortable doing.

20 BY MS. CAROLINE MARSHALL:

21 Q. Okay.

22 A. In 2002, as we discussed earlier  
23 on this afternoon, I was assured to a reasonable  
24 level that our booking was conformable with  
25 Shell guidelines and I was confident and happy

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1 TIM WARREN

2 with that position in 2002.

3 After that course in 2004 I  
4 understood why the Gorgon reserves had been  
5 restated, but they were restated after 2002.

6 Q. And what was your understanding as  
7 to why they were restated?

8 A. They were restated because Shell  
9 in its guidelines put in place a very tough  
10 threshold on commercial maturity for gas.

11 Q. And what was that threshold?

12 A. My understanding, if my memory  
13 serves me correctly, was that a project needed  
14 to have gone through final investment sanction.

15 Q. And had that been the case in  
16 2002?

17 A. No.

18 Q. What was your understanding of  
19 what was required in 2002?

20 MR. SMITH: Objection to form and  
21 lack of foundation.

22 MR. BEST: Under Shell guidelines?

23 BY MS. CAROLINE MARSHALL:

24 Q. Under Shell guidelines.  
25 MR. SMITH: Objection to form and  
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1 TIM WARREN

2 lack of foundation.

3 THE WITNESS: Under Shell

4 guidelines a reasonable expectation that the  
5 market was there to satisfy the project and that  
6 there was a technically and economically  
7 feasible development plan ready to go.

8 BY MS. CAROLINE MARSHALL:

9 Q. And that was what you understood  
10 in 2002 to be the case?

11 A. Correct.

12 Q. Do you recall whether or not you  
13 asked Sarah Bell in her exploration of the  
14 question you asked her about the Gorgon booking  
15 whether or not she had spoken to an individual  
16 named Helga Hammar as to the circumstances  
17 regarding the Gorgon booking?

18 A. Who?

19 Q. Helga Hammar?

20 A. I don't recall that name at all so  
21 I doubt if I would have asked her.

22 Q. Okay. Did you ever ask to see  
23 copies of any signed letters of intent in 2002  
24 regarding the Gorgon fields or the market for  
25 the Gorgon gas?

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1 TIM WARREN

2 A. I was intimately knowledgeable  
3 about what was being done in terms of the  
4 marketing of Gorgon gas and there was no letter  
5 of intent at that time.

6 Q. And did you know that at that  
7 time?

8 A. I knew that.

9 MS. CAROLINE MARSHALL: I'm going  
10 to show you a document that we'll mark as  
11 Exhibit Number 11, which is Bates V00120427  
12 through 431.

13 (Warren Exhibit Number 11 was  
14 marked for identification.)

15 BY MS. CAROLINE MARSHALL:

16 Q. Before you look at this document I  
17 just want to ask you another question.

18 With respect to the Gordon  
19 development do you recall a plan involving  
20 Barrow Island, a development plan?

21 A. I do indeed.

22 Q. And what is your recollection of  
23 that plan?

24 A. In what regard?

25 Q. Well, you recall that it was --

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1 TIM WARREN

2 what do you recall about the Barrow Island plan  
3 for developing Gorgon?

4 A. The Barrow Island plan is the one  
5 that is still being pursued for Gorgon, in fact,  
6 which enables the economic development of Gorgon  
7 by landing the gas on Barrow Island, which is an  
8 island to the north of Australia. By making  
9 that earlier land fall of gas by the pipeline it  
10 is possible to do a sub sea development of the  
11 Gorgon field rather than a platform development,  
12 you don't need to put so much engineering kit  
13 out there, you can flow the gas naturally to  
14 Barrow Island without additional equipment.

15 And so Barrow Island has always  
16 been central to many of the development options  
17 of the Gorgon field and it is the one that is  
18 being implemented now.

19 Q. And was that -- do you recall  
20 whether or not that was an option that required  
21 environmental license or permits from the  
22 government?

23 A. All developments require permits.

24 Q. And had those permits been applied  
25 for back in 2002?

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1 TIM WARREN

2 A. No. You would not normally apply  
3 for them until after final investment sanction  
4 and for the simple reason that you want to go  
5 for those permits when everything is clear in

6 terms of what you want to do and what you want  
7 to achieve.

8 But having said that, perhaps I  
9 can qualify that. We had had significant  
10 discussions both with the Western Australian  
11 State Government and the Federal Government on  
12 how to make that process as short as possible  
13 and how to ensure that we could make it a  
14 process that was, if you like, ended up being  
15 supported by particularly the Western Australian  
16 Government that had to grant those permits.

17 Q. How long a process was the  
18 permitting process?

19 A. In the final event?

20 Q. Yes.

21 A. I'm afraid I left Australia before  
22 it was concluded and it was started for this  
23 current development nine months, I think, to a  
24 year before I left.

25 Q. Okay. So it hadn't been started

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1 TIM WARREN  
2 in 2002, the permitting process?

3 A. No.

4 Q. Okay. If you look at the document  
5 that's been put in front of you that's Exhibit  
6 Number 20?

7 MR. BEST: Exhibit what?

8 BY MS. CAROLINE MARSHALL:

9 Q. I'm sorry, Exhibit Number 11.

10 This document was produced as one  
11 document. I'm not convinced that it is in fact  
12 one document. I don't know that you've ever  
13 seen the first page of the document, but --

14 A. I wouldn't have seen the first  
15 page. I'm not an addressee and I was never  
16 associated with Groningen, which is a gas field  
17 in Europe.

18 MS. CAROLINE MARSHALL: For the  
19 record this is how the document was produced, so  
20 that's why it's put together the way it is. If  
21 you focus on the rest of the document.

22 MR. FERRARA: I'm sorry, page?

23 MS. CAROLINE MARSHALL: I'm sorry.

24 MR. FERRARA: Did you cite a page?

25 MS. CAROLINE MARSHALL: The first

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1 TIM WARREN

2 page Bates V00120427 appears to be an e-mail  
3 exchange that Mr. Warren was not a recipient or  
4 a sender, and so we're going to focus on the  
5 second page of the document which is V00120428,  
6 429, 430 and 431.

7 Do you recall this E-mail  
8 exchange?

9 THE WITNESS: I don't have a  
10 direct recollection of it, no.

11 BY MS. CAROLINE MARSHALL:

12 Q. Do you have a general recollection  
13 of the circumstances surrounding this  
14 communication?

15 A. I can -- yes. I can understand  
16 when I see it in front of me why I would have  
17 sent it.

18 Q. Okay. When you say why you would  
19 have sent it you mean the e-mail that's dated  
20 January 22nd, 2002?

21 A. Correct.

22 Q. Okay. Why did you -- why would  
23 you have sent this e-mail?

24 A. I sent it to the recipients of the  
25 e-mail on my regional business advisors, so my

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1 TIM WARREN

2 direct reports who, if you like, acted as the  
3 shareholder representatives, the various  
4 companies in the Far East and Asia and it was to  
5 remind them of the importance of getting our OU  
6 submissions on reserves in in a timely manner  
7 and ensuring that they understood them and  
8 particularly understood how they related to the  
9 original maturation plans of the operating units  
10 with which they dealt and that it was a topic  
11 that was going to come up in a forthcoming  
12 ExCom.

13 Q. You wrote 1998 has long gone and

14 we now need a repeat. What did you mean?

15 A. I was referring to the last year  
16 when we had good reserve replacement performance  
17 and as a company we needed to have a better  
18 year.

19 Q. Was 2002 a better year?

20 A. To be honest, I need to look at  
21 the -- it doesn't look according to these charts  
22 that it was going to be a better year, which was  
23 why we needed our shareholders' representatives  
24 to understand what was, if you like,  
25 underpinning the submissions from the operating

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1 TIM WARREN

2 units.

3 Q. If you look at the e-mail from  
4 Mr. Nauta on January 21st, 2000 it says, in line  
5 with ExCom's steer we will proceed on the basis  
6 that Bonga main is not debooked and NLNG train 4  
7 and 5 are booked in 2002. Do you know what NLNG  
8 train 4 and 5 is referring to?

9 A. That would have been Nigerian LNG  
10 trains 4 and.

11 Q. Was there any expectation that  
12 there was going to be bookings from SDA that  
13 year?

14 MR. SMITH: Objection to form.

15 BY MS. CAROLINE MARSHALL:

16 Q. 2002?

17 A. I certainly would not have had an  
18 expectation at that time.

19 In fact, one of the reasons for  
20 this telex was pretty much my style for notice  
21 that I wanted to review matters with them.

22 Q. Did you have any understanding as  
23 to any relationship between proved reserve  
24 bookings and scorecards at any time during your  
25 tenure at Shell?

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1 TIM WARREN

2 A. If my recollection serves me  
3 correctly the EP business scorecard for that  
4 period had proved reserve replacement ratio on

5 it and for a small component.

6 Q. Did you ever have a view as to  
7 whether or not the scorecard should have a  
8 component that included proved reserve  
9 replacement ratio?

10 A. I certainly had a view that having  
11 a reserve component or resource component on the  
12 scorecard was very important for all the good  
13 reasons I've said. It's what actually underpins  
14 whether our business is going to be a success or  
15 not.

16 The choice of proven, I myself  
17 would have argued against at the time because I  
18 don't believe it had significance business  
19 relevance, as I also explained.

20 I think it was finally selected  
21 with the input of our bosses on CMD because it  
22 is the component that can be measured with  
23 respect to the competition because of what is  
24 declared in the public domain.

25 Q. Do you recall when you were on  
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1 TIM WARREN

2 ExCom or BusCom being aware of what the  
3 competition was doing with respect to their  
4 proved reserve replacement ratios?

5 A. We would have looked at that every  
6 year to understand or try and understand where  
7 our competition were with respect to us.

8 Q. Do you recall in the end of 2002  
9 that the Gorgon booking was placed on a list of  
10 potential reserves exposure catalog?

11 A. What is a potential reserve  
12 exposure catalog?

13 Q. I can show it to you. We'll mark  
14 this as Exhibit 12. For identification it is  
15 document HAG00161385.

16 (Warren Exhibit Number 12 was  
17 marked for identification.)

18 BY MS. CAROLINE MARSHALL:

19 Q. I'm going to direct your attention  
20 to Bates ending 1390.

21 A. Which page?

22 Q. It's Appendix C, which is Bates  
23 ending 1390.

24 MR. FERRARA: Is there a pending  
25 question?

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1 TIM WARREN

2 BY MS. CAROLINE MARSHALL:

3 Q. You've had a chance to look at it.

4 Do you recall ever becoming aware  
5 of this potential reserve exposure catalog?

6 MR. BEST: I object to the form of  
7 the question. His previous answer was he had no  
8 idea what one was.

9 BY MS. CAROLINE MARSHALL:

10 Q. Does this document refresh your  
11 recollection whether you were ever aware that  
12 the Gorgon booking was included in such a list?

13 MR. SMITH: Objection to form and  
14 lack of foundation.

15 BY MS. CAROLINE MARSHALL:

16 Q. You can answer the question.

17 A. I have not seen this document  
18 before. It would not have been probable that I  
19 would have seen it because it was after the time  
20 I left the ExCom.

21 MS. CAROLINE MARSHALL: I'm going  
22 to show you now a document that we'll mark as  
23 Exhibit Number 13.

24 (Warren Exhibit Number 13 was  
25 marked for identification.)

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1 TIM WARREN

2 THE WITNESS: Have to develop  
3 longer arms.

4 MS. CAROLINE MARSHALL: Me, too.

5 BY MS. CAROLINE MARSHALL:

6 Q. I'm going to ask you to focus  
7 on -- obviously, your e-mail is the top of the  
8 page is just one line. Below that the e-mail  
9 from Sarah Bell, the first number 1 where it  
10 says direct gas. First couple of sentences  
11 there I'm going to ask you about. You probably  
12 should read the preceding paragraph to

13 understand what is going on.

14 A. Yes.

15 Q. Do you recall this e-mail  
16 exchange?

17 A. Not directly but I certainly  
18 answered it and when I read it the content is  
19 familiar.

20 Q. Okay. What do you recall about  
21 the content? Where it says here Sarah Bell  
22 wrote, "in order to smooth in SDA's annual  
23 reserves reporting process I've attached a list  
24 of assumptions and recommended reserve  
25 management issues and would appreciate any

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1 TIM WARREN

2 comments before December 20th. Report  
3 submission date is 15th January. The three main  
4 discussion points are as follows:"

5 At what point was SDA in terms of  
6 their annual reporting reserve process in the  
7 end of December 2002?

8 A. Well, virtually complete, as Sarah  
9 mentions there the report had to go in on the  
10 15th of January and that was despite the  
11 Christmas and New Year holiday. In fact, that's  
12 what she was trying to do, to ensure that her  
13 management team was happy with the way things  
14 were developing so she didn't have any last  
15 minute reversals or circuits she had to do  
16 before the 15th of January. So she laid out  
17 what she was proposing to do.

18 I think we even probably had a  
19 meeting or a virtual meeting where she discussed  
20 this with us and following that I said I was  
21 happy with her proposed approach.

22 Q. If you look under the paragraph  
23 number 1 it says, "Gorgon to remain as reserves  
24 as advised by the group reserves coordinator  
25 even though there is some debate as to whether

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1 TIM WARREN

2 it satisfies updated stricter guidelines for  
3 proved reserves booking."

4 Did you know which debate she was  
5 referring to?

6 A. I'm sure that would have been  
7 discussed between us. Certainly what I do  
8 remember, as I think I mentioned earlier on this  
9 afternoon, was that the group reserves  
10 coordinator had supported her approach by  
11 maintaining the booking.

12 Q. The next sentence says, "there  
13 remains a possibility that Walter van der Vijver  
14 might decide to take the hit on group reserves  
15 replacement ratios this year and debook Gorgon."  
16 Do you recall learning of that possibility?

17 A. I -- I don't recall anything. I  
18 it was a might happen that probably didn't  
19 concern me at the time.

20 Q. Would it have concerned you if  
21 Walter van der Vijver had decided to debook  
22 Gorgon?

23 MR. SMITH: Objection to form.

24 BY MS. CAROLINE MARSHALL:

25 Q. You can answer the question.

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1 TIM WARREN

2 A. You're asking me to speculate what  
3 I might have done or thought.

4 Q. I'm just asking you would it have  
5 been a concern of yours if he had debooked it?

6 MR. SMITH: Objection to form.

7 THE WITNESS: I'll answer it.

8 BY MS. CAROLINE MARSHALL:

9 Q. Great.

10 A. Bearing in mind that I'm  
11 speculating on what I might have done.  
12 I would hope he would have had  
13 this conversation with me, because ultimately it  
14 was my accountability and the accountability of  
15 my staff and I have respect for Walter that that  
16 conversation would have happened.

17 And then there would have been  
18 again another debate of experts, presumably,  
19 which would have decided what was going to  
20 happen.

21 But I was clear in my mind at that  
22 time that the reserve booking stood on the basis  
23 of the recommendations that had been made by my  
24 expert line and as corroborated by the group  
25 reserves coordinator.

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1 TIM WARREN

2 Q. Did you ever have a conversation  
3 with Walter van der Vijver about the possibility  
4 of debooking Gorgon?

5 A. No.

6 Q. Who ultimately decided to debook  
7 Gorgon, if you know?

8 A. To recategorize Gorgon?

9 Q. Yes.

10 A. After the -- well, by that time  
11 there was a group -- sorry -- what did they call  
12 themselves -- the group reserves committee which  
13 was recommending decisions on bookings dependent  
14 on operating unit submissions, external audits,  
15 and many other things. Who took the final  
16 decision is beyond me, but I imagine it would  
17 have been the reserve coordinator at the time,  
18 assisted by that reserve committee.

19 Q. Did you have any role in the  
20 decision to reclassify Gorgon?

21 A. No, because by that time I was no  
22 longer CEO of Shell Development Australia and  
23 my, if you remember, I had taken on the role of  
24 production director for the region which had no  
25 accountability for reserves. It belonged to a

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1 TIM WARREN

2 colleague of mine called Brian Straub, who was  
3 the regional director for technology.

4 Q. Why did you understand Gorgon to  
5 be reclassified?

6 MR. SMITH: Objection to form and  
7 lack of foundation.

8 THE WITNESS: I did not know at  
9 that time. As I say, it wasn't part of my  
10 responsibilities.

11 MS. CAROLINE MARSHALL: I'm going

12 to show you a document which we'll mark as  
13 Exhibit Number 14.

14 (Warren Exhibit Number 14 was  
15 marked for identification.)

16 MR. WEED: Counsel, just for the  
17 record I, didn't want to interrupt your  
18 questioning, but I think you misread it the  
19 quote. It starts, there "remains a small  
20 possibility." I think you left out the word  
21 small.

22 MS. CAROLINE MARSHALL: Okay.  
23 Thanks. It was unintentional.

24 I don't have much more but I  
25 need to use the restroom. Could we take a  
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1 TIM WARREN  
2 five-minute break.

3 THE VIDEOGRAPHER: We're going off  
4 the record. The time is 4:59 p.m.

5 (A brief recess was taken.)

6 THE VIDEOGRAPHER: We are back on  
7 the record. The time is 5:07 p.m.

8 BY MS. CAROLINE MARSHALL:

9 Q. Mr. Warren, have you had an  
10 opportunity to review this document?

11 A. I have.

12 Q. Do you recall this  
13 communication -- the communications contained in  
14 Exhibit 14?

15 A. I can recall the activity at the  
16 time. I think I had seen this note after the  
17 event and so I would have taken little notice of  
18 it.

19 Q. If you look to the last page of  
20 the document it says Tim's instructions. Do you  
21 recall whether or not these were your  
22 instructions?

23 A. I'm sure they were if Helen said  
24 they were, and they sound right.

25 Q. Under message it says, "main  
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1 TIM WARREN  
2 reason for the change Shell's internal

3 guidelines have become more restrictive over  
4 time. Nothing to do with SEC compliance."

5 Can you explain how the  
6 recategorization had nothing to do with SEC  
7 compliance?

8 MR. SMITH: Objection to form,  
9 lack of foundation.

10 BY MS. CAROLINE MARSHALL:

11 Q. You can answer the question.

12 A. Let me put this in context.

13 This was how parties within Shell  
14 companies of Australia would handle inquiries  
15 and particularly be proactive to partners and  
16 government parties in Australia as the news  
17 broke over the reserves recategorization in  
18 Shell.

19 We wanted to be sure that there  
20 was no misunderstanding in government or amongst  
21 our partners or amongst the general public  
22 around what this meant for Shell in Australia  
23 and our commitment to Australia.

24 So the message was very much one  
25 of trying to convey to those interested parties

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1 TIM WARREN

2 in Australia that this recategorization of  
3 reserves actually has no impact on our business  
4 here in Australia. We're as committed to Gorgon  
5 as we ever have done and the recategorization  
6 does not change the molecules in the round which  
7 we are committed to developing and bringing to  
8 market.

9 And so to keep it very much  
10 focused on that level and not to get into  
11 debates around why it happened, other than to  
12 say that Shell's guidelines had become more  
13 restrictive. So it was a restriction on what to  
14 say rather than saying that it had nothing to do  
15 with that.

16 Q. Did it have something to do with  
17 the SEC compliance?

18 MR. SMITH: Objection to form and  
19 lack of foundation.

20 BY MS. CAROLINE MARSHALL:

21 Q. You can answer the question.

22 MR. SMITH: If you know the  
23 answer.

24 THE WITNESS: I was not a decision  
25 maker at the time on the recategorization. All  
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1 TIM WARREN

2 I knew and was informed in advance to handle  
3 inquiries was that the recategorization was  
4 going to be made and specifically on Gorgon and,  
5 therefore, I needed to have a message to give to  
6 interested parties in Australia.

7 BY MS. CAROLINE MARSHALL:

8 Q. Why would interested parties have  
9 cared whether or not it had anything to do with  
10 SEC compliance?

11 MR. SMITH: Objection to form.

12 THE WITNESS: I'm not saying that  
13 they would. I'm just saying the straightforward  
14 message that I crafted there was designed to  
15 have the impact that I wanted it to and it did.  
16 We did not have a major public affairs problem  
17 in Australia.

18 BY MS. CAROLINE MARSHALL:

19 Q. When you went through this  
20 training in 2004 did you find out that in fact  
21 the change in the guidelines had something to do  
22 with SEC compliance?

23 MR. SMITH: Objection to form.

24 BY MS. CAROLINE MARSHALL:

25 Q. You can answer the question.

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1 TIM WARREN

2 MR. SMITH: Whose guidelines?

3 BY MS. CAROLINE MARSHALL:

4 Q. Shell's guidelines.

5 A. Shell's guidelines were certainly  
6 changed, as they had been throughout their  
7 lifetime in previous generations, to ensure they  
8 were consistent with our reporting requirements  
9 to external bodies, one of which was SEC.

10 Q. I'm just curious as to why you

11 included in the message that it had nothing to  
12 do with SEC compliance. Did you know that to be  
13 the case?

14 A. I was saying that in talking with  
15 the outside world we wanted to tell them that  
16 the reasons for this were due to Shell's  
17 internal guidelines having become more  
18 restrictive. That was the message that we  
19 wanted to convey in my part of the world.

20 That was my choice because my  
21 belief was that was the way that we could ensure  
22 that we did not have a public affairs problem in  
23 Australia or a misunderstanding of our  
24 commitments to Australia and our partners.

25 Now, I designed it this way, it

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1 TIM WARREN

2 worked. There's nothing sinister about it, it  
3 was the message I wanted to portray in the  
4 outside world and it happened to be true.

5 Q. Did you know at the time whether  
6 or not the recategorization had anything to do  
7 with SEC compliance?

8 A. I did not know that for a fact  
9 because I was not a decision maker in the  
10 recategorization. I knew at late notice, I  
11 think 24 hours notice, that this announcement  
12 was going to be made to the world that a  
13 significant part of our reserves base had been  
14 recategorized, Australian reserve base had been  
15 recategorized.

16 Q. Did you ask whether or not it had  
17 anything to do with SEC compliance?

18 MR. SMITH: Objection to form.

19 THE WITNESS: I wouldn't have even  
20 had an opportunity to ask questions. I was  
21 given a briefing paper and I responded to that.

22 MS. CAROLINE MARSHALL: I have no  
23 more questions.

24 MR. FERRARA: Thank you. Can we  
25 take a quick break?

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1 TIM WARREN

2 THE VIDEOGRAPHER: We're going off

3 the record. The time is 5:14 p.m.

4 (A brief recess was taken.)

5 THE VIDEOGRAPHER: We are back on

6 the record. The time is 5:23 p.m.

7  
8 EXAMINATION BY COUNSEL FOR ROYAL DUTCH  
9 PETROLEUM, SHELL TRANSPORT & TRADING  
10 AND THE WITNESS

11  
12 BY MR. SMITH:

13 Q. If you don't mind I'm going to  
14 have a couple questions.

15 First I wanted to go back to  
16 testimony you provided earlier today when you  
17 were talking about the value creation teams and  
18 your involvement in it. And I believe your  
19 testimony was that you were the champion of the  
20 team that dealt with well delivery; is that  
21 correct?

22 A. Yes.

23 Q. In connection with your work with  
24 that team I believe you also said that one of  
25 the outgrowths of that effort was something

0202  
1 TIM WARREN

2 called Drill the Limit Program; is that right?

3 A. Yes.

4 Q. In connection with the work of the  
5 Drill the Limit Program was there any  
6 consideration given to proved reserves?

7 A. No.

8 Q. Secondly, and if you wouldn't mind  
9 getting out Exhibit 2 and taking a look at page  
10 12 of that.

11 Let me direct you on the top of  
12 that page there are a series of bullet points.

13 The second bullet point down which  
14 reads, great emphasis is being placed on  
15 transferring expectation reserves to proved and  
16 also to matured SFR to proved reserves.

17 I believe Caroline asked you about  
18 that bullet point earlier today; do you recall

19 that?

20 A. I do.

21 Q. I believe in connection with your  
22 testimony on that score, and I'm looking on the  
23 electronic transcript at page 85 line 18, if you  
24 would like --

25 A. Yeah.

0203

1 TIM WARREN

2 MS. CAROLINE MARSHALL: Can you  
3 give me a second?

4 MR. SMITH: Sure.

5 MS. CAROLINE MARSHALL: Okay.

6 BY MR. SMITH:

7 Q. In connection with your discussion  
8 of that bullet point in this exhibit Caroline  
9 asked the question:

10 "QUESTION: Was the global proved  
11 reserves base being highlighted because there  
12 were financial analyst at the presentation?"

13 And you answered the question  
14 saying:

15 "ANSWER: That would be my  
16 understanding."

17 Just for the sake of clarity on  
18 the record, when you gave your response to her  
19 question, which included the word highlighted, I  
20 wanted to make sure we understood what you meant  
21 and intended by stating what you said with  
22 respect to that word highlighted.

23 Can you clarify that for us.

24 A. My understanding was that proved  
25 reserves were highlighted in this presentation

0204

1 TIM WARREN

2 alongside the rest of the resource space, as I  
3 discussed a lot this morning, and in this  
4 presentation we talked about our resource space  
5 from scope for recovery to our expectation to  
6 proved reserves and certainly the proved  
7 reserves were highlighted, but so were the other  
8 resource categories.

9 MR. SMITH: That's all I have.

10 MS. CAROLINE MARSHALL: That's  
11 fine.

12 THE VIDEOGRAPHER: This marks the  
13 end of the deposition of Mr. Warren. The total  
14 number of tapes used today was three. We're  
15 going off the record. The time is 5:26 p.m.

16 (Reading and signature not  
17 waived.)

18 (Whereupon, at 5:26 p.m., the  
19 deposition was concluded.)

20 - - - - -

21  
22  
23  
24  
25

0205

1 TIM WARREN  
2 ACKNOWLEDGMENT OF DEPONENT

3  
4 I do hereby acknowledge that I have  
read and examined the foregoing pages of the  
5 transcript of my deposition and that:

6 (Check appropriate box):  
7 ( ) the same is a true, correct and  
complete transcription of the answers given by  
8 me to the questions therein recorded.

9 ( ) except for the changes noted in  
the attached errata sheet, the same is a true,  
10 correct and complete transcription of the  
answers given by me to the questions therein  
11 recorded.

12  
13  
14  
15  
16 \_\_\_\_\_  
17 DATE SIGNATURE

18  
19  
20  
21  
22

23  
24  
25  
0206

TIM WARREN

CERTIFICATE OF NOTARY PUBLIC

I, Paula G. Satkin, the officer before whom  
the foregoing proceedings were taken, do hereby  
certify that the witness whose testimony appears  
in the foregoing proceeding was duly sworn by  
me; that the testimony of said witness was taken  
by me in stenotype and thereafter reduced to  
typewriting under my direction; that said  
proceedings is a true record of the testimony  
given by said witness; that I am neither counsel  
for, related to, nor employed by any of the  
parties to the action in which these proceedings  
were taken; and, further, that I am not a  
relative or employee of any attorney or counsel  
employed by the parties hereto, nor financially  
or otherwise interested in the outcome of the  
action.

19  
20 My commission expires October 31, 2010.

21  
22 \_\_\_\_\_  
23 PAULA G. SATKIN  
24 Notary Public in and for the  
25 District of Columbia

0207

ERRATA SHEET

2 IN RE: Royal Dutch/Shell

3 RETURN BY: \_\_\_\_\_

4 =====

5 PAGE LINE CORRECTION AND REASON

6 =====

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25 (DATE) (SIGNATURE)

0208

1 ERRATA SHEET CONTINUED

2 IN RE: ROYAL DUTCH/SHELL

3 RETURN BY: \_\_\_\_\_

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5 PAGE LINE CORRECTION AND REASON

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25 (DATE) (SIGNATURE)

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SIEP 98-1100

**Petroleum Resource Volume Guidelines**  
**Resource Classification and Value Realisation**

**EXHIBIT**

WARREN-1

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## Petroleum Resource Volume Guidelines Resource Classification and Value Realisation

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## 1. INTRODUCTION

Petroleum resources represent a significant part of the company's upstream assets and are the foundation of most of its current and future upstream activities. To aid in understanding, planning, and decision making about these petroleum resources, resource volumes are classified according to the maturity or status of its associated development project. The current status and changes in petroleum resources, and specifically the commercially recoverable portion (reserves), are a significant concern to management. The future of the company depends on our effectiveness in maturing resources to the point where maximum economic value is realised.

For the Shell Group as a whole, petroleum resources are reported annually to senior management and are essential information for the strategic planning process of the upstream sector. The current status and changes to the proved and proved developed reserves are also reported annually to the Securities and Exchange Commission (SEC).

Therefore the importance of these figures cannot be overemphasised. Reliability, uniformity, consistency, transparency and auditability are essential elements in the collation of petroleum resource reports by Operating Units (OUs) and New Venture Operations (NVOs). These guidelines, building on the foundation established by previous versions (References 1 to 5), aim to achieve these goals. They serve as a reference for OUs and NVOs and as the standard against which audits will be conducted.

The recommendations of the Hydrocarbon Resource Volume Value Creation Team have been incorporated in this update of the guidelines. The primary changes are increased attention to realise maximum value from volumes and the modification of the definition for proved developed reserves to be more consistent with industry practice. The value realisation theme is reflected in emphasising a) that reserves are project based and b) the importance of maturing resource volumes to developed reserves and hence sales. No major changes in the classification scheme are introduced.

This document contains only guidelines. The information on internal and external submission requirements and quantification methods that was contained in previous versions of this document will be included in other communications. Submission requirements will be communicated annually in a letter from EP Planning. Methods will be developed through the Hydrocarbon Resource Volume Common Interest Network (Reference 7).

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## 2 PETROLEUM RESOURCES

### 2.1 Definition

A petroleum resource is any accumulation of hydrocarbons that is known or anticipated to exist in a sub-surface rock formation, located in the company's current exploration and production acreage. If the petroleum resource extends beyond the company's licence area the resource volumes must be divided according to the granted licence boundaries, to take proper account of Group share.

Resource volumes are reported as the quantities of sales product. The corresponding quantities of field recovery should be maintained by the OU (See Appendix 6). The reporting of petroleum resource volumes should further indicate the petroleum type, the reporting units and conditions, and the Group share.

Resource volumes are tied to the project that develops them and are generally reported by field. The term **reserves** is used for resource volumes associated with a project that is technically mature and commercially viable. Resource volumes that do not meet these criteria are called **scope for recovery (SFR)**. **Proved reserves** are the portion of reserves that is reasonably certain to be produced. These distinctions will be discussed in Sections 3 and 4.

### 2.2 Group Share

Only the Group share of resource volumes is reported. The Group share is determined by agreements with the resource holders. Resource volumes can be distinguished according to three different types of agreement, which are discussed below.

*Equity* Equity resources are the Group share of resources in Concessions. Concession agreements lay down the general terms and conditions of operation. These agreements with governments define the applicable tax rules, the Group share of resources in Concessions and the duration of the production licence.

*Entitlement* Entitlement resources are the Group share of production in acreage governed by a Production Sharing Contract (PSC). The Group share of production is the Group interest in the sum of cost oil plus excess cost oil plus profit oil, in accordance with the PSC terms.

*Innovative Production Contracts* In recent years, a number of resource holding countries have introduced innovative production contracts in order to attract investment by foreign oil companies while preserving the principle of national resource ownership. These agreements typically provide for the contractor to recover costs and profits from hydrocarbon revenues while holding no title to, or entitlement to receive, petroleum resources.

US Financial Accounting Standards Board (FASB) regulations have lagged behind these developments and provide little explicit guidance on reserves disclosure when the risks and rewards of ownership are carried without legal title to mineral rights.

However, volumes covered by such innovative contracts should be included in external reports in an informative way to be consistent with the spirit of the SEC regulations. The volumes from which economic benefit is derived should be reported if all three of the following conditions are met:

1. The OU participates in the production operations as either operator or in partnership with the operator, and so bears a share of the costs and risks of the production operations.
2. The OU derives future economic value that is directly related to the volume of hydrocarbons produced. For example, a fee expressed as a fixed or indexed amount per barrel of production would constitute a derivation of value from the produced hydrocarbons, but an operating fee that is largely independent of production would not. The actual source of revenues used to pay the OU is not crucial to this point. For example, if the remuneration is determined by a produced gas

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volume but paid from oil revenues, the economic value to the OU is in effect derived from the produced gas, and this volume should be reported.

3. The OU is exposed to the normal risks and rewards associated with ownership of mineral rights, including the downside and upside from changes in the value of future production volumes. These include the risk that costs may not be recovered, due to either uncertainty as to the presence or magnitude of hydrocarbon volumes or to movements in petroleum prices.

OUs and NVOs working under such contracts should complete the standard resource volume submission for the Group/Company interest in these volumes, noting the nature of the interest. Reported volumes should be in line with the reporting of traditional reserves with regard to royalties and should therefore reflect the volumes from which pre-tax cash flow is derived. As elsewhere, cash royalties are regarded as a production cost.

If an OU has interests in several licence areas subject to different contract types (e.g. reward generating and PSC), a separate submission must be made with respect to the interest in the reward generating contract area.

When an OU is participating in a venture which grants neither title to, nor an entitlement to receive petroleum, and which does not satisfy the three criteria above the OU should not report reserves or production volumes. For example this might occur if the recovery of costs is guaranteed against adverse price movements or a shortfall in recovered volumes

*Licence or Contract Extensions* For internal reporting purposes, Group share of the expectation estimate of reserves and scope for recovery are recorded for the total producing life, i.e. including the period beyond the relinquishment date, but not covered by a right to extend or by a letter of assurance (see below). The currently existing licence terms or other anticipated terms should be assumed for this extrapolation.

For external reporting, Group share of reserves (proved, proved developed) is limited to production within the existing licence or contract period. However, production beyond the licence or contract period can be included if there is a legal right to extend a production licence or PSC, or if the government has formally indicated that it will favour substantiated requests for extensions in the future (letter of assurance). Then volumes recoverable during the extension period are included in the Group share, assuming currently existing or other anticipated terms. Such considerations should be documented in the annual submission.

In some countries, the issue or duration of production licences for gas fields is effectively coupled to the conclusion of gas sales contracts. In other areas, a realistic target date for initiation must be set for projects that are not yet firmly planned so that the production forecast and other screening assumptions can be used to estimate the volume produced before licence or contract expiry.

*Long Term Supply Agreements* FASB regulations (69 para. 13) require that quantities of oil or gas subject to purchase under long term supply, purchase or similar agreements should be reported separately, if the OU participates in the operation of the properties in which the oil or gas is located or otherwise serves as the "producer" of those reserves, as opposed, for example, to being an independent purchaser, broker, dealer, or importer.

The "supply" agreement should be a consequence of the OU acting as producer. This would not be the case if, for example, others had similar agreements but did not participate in the production operations.

These net quantities, as well as the net quantities received under the agreement during the year, should be included in the end year estimate of reserve volumes for external disclosure form.

*Royalty* Royalty is a payment made to the host government for the production of mineral resources. It is usually calculated as a percentage of revenues (payable in cash) or production (payable in kind).

Where in practice royalty obligations are met in kind (i.e. by delivering oil instead of cash), the Group share of production and reserves should be reported excluding these volumes.

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Where royalty is payable in cash or is in principle payable in kind but the government has formally elected to receive, or customarily receives, payment in cash, Group share of production and reserves should be reported without deduction of equivalent royalty volumes.

*Fees in kind* Third parties may in some cases pay fees in kind for the use of infrastructure (e.g. pipeline tariff). Such payments do not constitute a Group share in resources and should not be included in reported volumes.

*Open Acreage* Group share of volumes is non-existent in open acreage and acreage for possible acquisition or farm-in.

*Under/Over Lift* Group share should also allow for any historic under or over lift by partners or government.

### 3. RESOURCE VOLUME CLASSIFICATION FOR INTERNAL REPORTING

#### 3.1 Classification Scheme

The internal classification scheme shown in Figure 1 is intended to provide a consistent link between a field's resource volumes and the EP business model, identifying separately those resources that are the focus of the various stages in the development life cycle.

<b>Cumulative Production</b>	
<b>Reserves:</b>	Developed Reserves Undeveloped Reserves
<b>Discovered Scope for Recovery:</b>	Proved Techniques Scope for Recovery Unproved Techniques Scope for Recovery Non-Commercial Scope for Recovery
<b>Undiscovered Scope for Recovery</b>	
<b>Discovered Initial In Place</b>	

Figure 1: Resource Categories for Internal Reporting

A summary of the definitions for these categories is provided in Appendix 1. The cascade model (Figure 2) illustrates the migration of volumes between resource categories during the development life cycle.

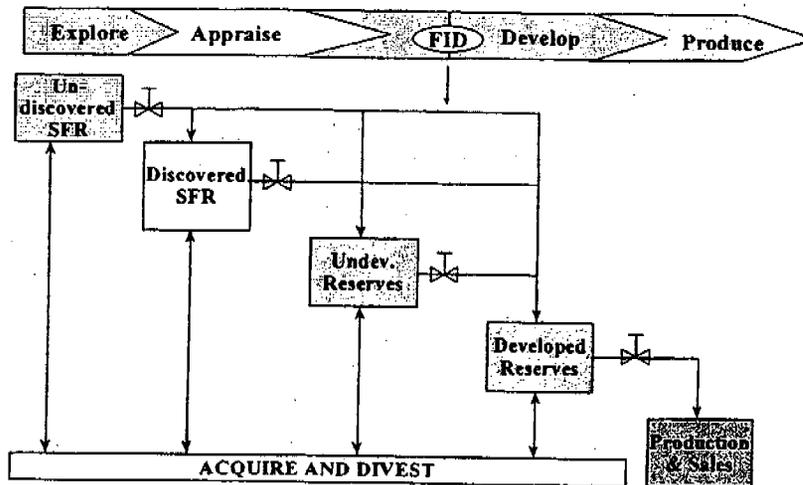


Figure 2: Cascade Model

A specific example of the migration of resource volumes between categories during a field's life cycle is shown in Appendix 2.

#### 3.2 Value Realisation

The most important objective of resource volumes management is the progression of the volumes to the point where maximum value is realised. The main purpose of the internal classification scheme tied to the development life cycle is to enable understanding of the potential value and the actions needed to mature volumes. In order to achieve business growth and reserves replacement objectives, it is essential that OUs and NVOs have efficient systems to move volumes through the value chain from scope for recovery to production and sales as shown in the cascade model.

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OU's and NVO's internal reserve management systems should;

- a) set targets and monitor actual performance in maturing volumes towards value realisation,
- b) fully inventorise and have maturation plans for Scope for Recovery opportunities,
- c) review ultimate recovery targets for existing fields and identify what activity - appraisal, study, new technology development, commercial agreement, etc. - is required to reach these targets,
- d) and have Key Performance Indicators (KPI's) to measure performance (e.g. replacement ratio, time between discovery and first production).

### 3.3 Technical and Commercial Maturity

The classification scheme uses a project's technical and commercial maturity as the primary criteria to distinguish between reserves and scope for recovery (SFR). Resource volumes can be classified as reserves only if the associated project that will result in production of those volumes is considered to be technically mature and commercially viable. If it cannot, the resource volumes should be classified as SFR. SFR needs an activity (e.g. exploration appraisal, field trial, gas market development, etc) to achieve technical maturity and commercial viability. Secondary technical and commercial distinctions (between proved and unproved techniques SFR and between commercial and non-commercial SFR) further identify resource volumes at various stages in the life cycle.

*Project Basis* Technical and commercial maturity reflects the status of remaining uncertainties in the assessment of the optimal development project and its associated recovery. A project is any proposed or notional modification of the wells, the production facilities and/or the production policy, aimed at changing the company's sales product forecast. It can also be a modification of the company's share in a venture (purchase/ sales-in-place, unitisation, new terms). The generic term 'project' is also used to describe a group of (sometimes alternative) projects, each with a certain chance of realisation, depending on the results of further data gathering. In that case, the project NPV is replaced by the Expected Monetary Value (or EMV, see Appendix 6).

*Technically Mature* For a project to be **technically mature**, information on the resource volume, including its level of uncertainty, is such that an optimal project can be defined with an auditable project development plan, based on a resource and development scenario description, with drilling/engineering cost estimates, a production forecast and economics. The plan may be notional or it may be an analogy of other projects based on similar resources. However, there should be a reasonable expectation that a firm development plan can be matured with time. Projects do not have to have a completed development plan.

*Commercially Mature* A **commercially mature** project is commercially viable over a sufficiently large portion of the range of possible scenarios that reflect the remaining resource uncertainties. The definition of what constitutes "a sufficiently large portion" may vary from case to case and could for example require the project NPV for the low reserves scenario to be positive for appropriate commercial criteria. It is also likely to include an assessment of the capital exposure in case of project failure due to adverse resource realisations. The selected range of scenarios should be documented and auditable.

A scenario is **commercially viable** if the NPV is expected to be positive under the applicable terms and conditions for the acreage and for the current advised Group reference criteria for commerciality (Reference 9).

A project is **economically viable** if the expected NPV under the applicable terms and conditions for the acreage exceeds the separately advised Group project screening criteria or if the project has already been approved by shareholders. Projects generally have to demonstrate economic viability in order to obtain investment approval. However, economic viability or formal project approval is not required for a project to be considered commercially mature. Reserves may be booked before project approval is sought.

**3.4 Uncertainty Estimates**

Uncertainty in resource volumes arises from using data and prediction techniques with varying degrees of uncertainty. The uncertainty in resource volume estimates can be assessed and represented using a variety of methods (see Reference 7). Probabilistic methods determine a range of estimates and the associated probability that they will occur. Scenario deterministic methods determine best estimates for specific cases such as a low side case or a base case.

The terms low, expectation or high estimates are used in this document to simplify the discussion and to define reported volumes where consistency is required. When using a probabilistic methodology, low, expectation and high estimates are defined as the P85, Mean and P15 values from the probability distribution function (see Appendix 7 for definitions). When using a scenario deterministic methodology, low, expectation and high estimates are the low side case, base case and high side cases, respectively.

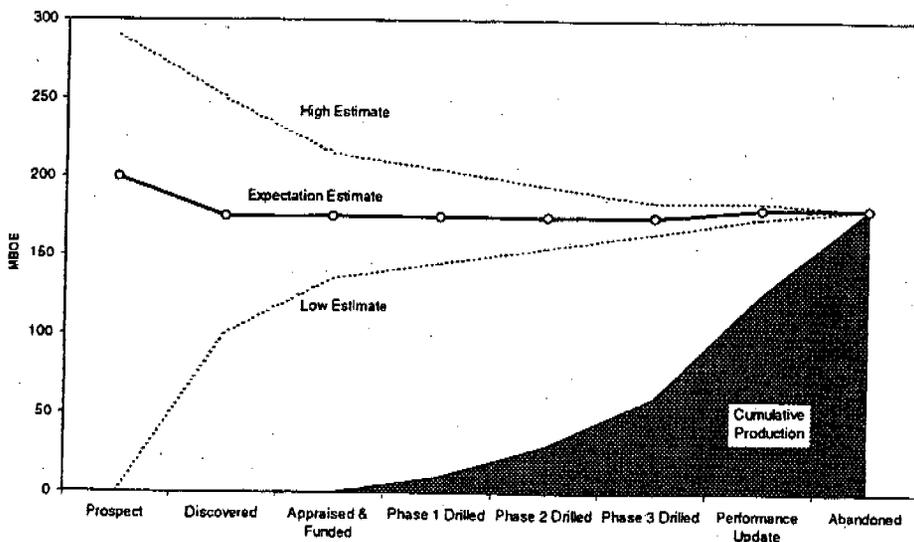
Only the expectation estimate for each of the resource categories is required for Internal reporting. The low estimate is usually used to define externally reported proved reserves. It is up to the OU to decide whether there is a need to determine other estimates.

*Uncertainty Reduction with Performance*

The uncertainty range of ultimate recovery generally decreases as a field is developed and produced. However, the uncertainty range as a percentage of remaining reserves may not always decrease with time. As a field matures, initial in place volumes and recovery should shift from a volumetric to a performance-based estimate, incorporating the additional production data to reduce the uncertainty range. Once the reservoir performance has been established with reasonable certainty, a fairly small difference between low, expectation and high estimates would be expected. Definition of the low and high estimates may no longer be of value in mature fields with relatively little uncertainty and use of a single expectation estimate should be considered in this situation.

Figure 3 illustrates the narrowing of the uncertainty with field appraisal and development. This is a near ideal example where the expectation remains constant for most of the life cycle. This example is also used in Appendix 2 to show the migration of resources between internal and external reporting categories during the field life cycle.

The reduction in uncertainty based on performance should be adequately reflected in the annual reserve and scope for recovery estimates for the field.



**Figure 3: Uncertainty Reduction during the Field Life Cycle**

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**Addition of  
Resource  
Volumes**

Resource volumes are added together at various levels during the resource assessment and reporting process. Addition of reserves at or above the level used for depreciation calculations must be arithmetical for consistency with financial accounting. Below this level, i.e. normally below the field level, addition should be done taking into account the dependency between the volumes to truly reflect the recoverable volumes associated with a project. Arithmetical addition is appropriate for dependent volumes, but usually overstates the uncertainty range for the sum of partially independent volumes. Probabilistic addition should be used for partially independent volumes when the difference with arithmetic addition is significant.

Below are two examples where the method of addition is important to handle properly.

- 1) Field A is comprised of separate layers and the properties of these layers are independent of each other. In other words, a low result in one layer would not increase or decrease the chance of a low result in the other layers. Low, expectation and high estimates are calculated for each layer separately. Probabilistic addition should be used to account for the reduced uncertainty of adding together independent volumes. Arithmetical addition of these estimates would understate the low estimate and overstate the high estimate of the total field.
- 2) A project develops three independent fields as sub-sea satellites connected to one platform. In this case, the investment in surface facilities may be totalled for depreciation<sup>1</sup> and consequently the reserves estimates should relate to the combined fields. Probabilistic addition should be used to calculate the total reserves associated with the platform.

Careful consideration should be given to Commercial SFR by proved techniques where eventual development is only incremental to an existing or planned development. These volumes may have a probability of success (POS) less than one, but with probabilistic addition will contribute at all levels - low, expectation and high - of reserves estimates. Examples of where this would apply are:

- 1) A fault block that is not yet tested and may be reasonably interpreted as an extension of the delineated area of the field. The project itself is technically mature and commercially viable. The untested block would be developed through existing field facilities without significant additional investment other than additional wells, which is recognised in the project scope. The uncertainty is geological and volumes are classed as reserves.
- 2) A phased development where there is uncertainty in the scope (e.g. number of wells) of a project due to geological uncertainty. However, the nature of the project remains essentially unchanged and additional wells could be accommodated within the flexibility of the field facilities design, then the whole range of recoverable volumes should be considered in deriving reserves. A scenario tree can be developed to represent the range of outcomes, both in recovered volumes and optimised number of wells, dependent on geological uncertainty. The uncertainty is resolved, with time, through planned data gathering eventually determining the number of wells. Hence the volumes can be regarded as technically mature. If one branch of the scenario tree is not economic, then the volumes associated with that arm do not contribute to reserves.

If probabilistic addition is used, ensure the methodology and parameters used are documented in the audit trail.

**3.5 Cumulative Production**

The resource volume category "Cumulative Production" pertains to summation of sales quantities of production volumes up to the date of reporting. Consistency is required between sales and field quantities. Production Operations and Finance functions must reconcile their figures prior to any submission.

---

<sup>1</sup> Group Accounts should be consulted when considering combining surface facilities for different fields for depreciation purposes.

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### 3.6 Reserves

Reserves are the sales quantities anticipated to be produced from a discovered field due and associated with a project that is **technically and commercially mature** (see definition in Section 3.3). Petroleum volumes have been demonstrated to be producible from the field. A market must reasonably be expected to be available.

The production forecast, and therefore the reserves, must be cut off at the point where cash generation becomes negative, i.e. when operating costs (with appropriate treatment of abandonment costs) exceeds sales revenues after royalties. If the remaining tail production is significant, it may be booked as Non-Commercial SFR (see below).

The restriction of marketability is relevant to gas reserves and for the classification of those NGL products that are subject to go-ahead of a non-associated gas project. Apart from an assessment of the local market and identification of the type of export project (e.g. pipeline, LNG, methanol), this restriction implies earmarking the gas resources suitable to feed these outlets. The restriction applies to all confidence levels (low, expectation and high estimates) of reserves.

To minimise fluctuations over time, OUs and NVOs should exert caution in transferring volumes between the reserves and SFR categories. Demonstrable technical and commercial maturity will be required when new fields and reservoirs are added to the reserves base. The same requirement applies in principle when undeveloped reserves are retained. To retain developed reserves, their production should have a positive cash generation after subtraction of operating costs and royalties.

Existing volumes classified as reserves, but which are no longer commercially mature, may be retained as reserves only in cases when there is an overriding strategic interest, or where a current small operating loss is expected to be reversed in the short term. In both cases support from shareholders must be obtained.

*Developed Reserves* Developed reserves are the portion of reserves that is producible through currently existing completions, with installed facilities for treatment, compression, transportation and delivery, using existing operating methods. Outstanding project activities, such as initial completions, recompletions, hook-up and modifications to existing facilities, can be considered as existing or installed if the outstanding capital investment is minor (<10%) compared to the total project cost and if budget approval has been obtained or is reasonably expected.

Developed reserves are estimated by forecasting the production that will be contributed by the existing wells through the currently installed facilities assuming no future development activity. Future wells or facilities may be planned that add reserves and/or accelerate the reserves that would be produced by the existing investments. However, the portion of reserves expected to be accelerated by future investments are classified as developed with the existing investments and not after the future investments. If future investment accelerates production such that additional reserves are recovered within time limits (e.g. sales contract periods, field life), the additional reserves are classified as developed only after these investments are made.

*Undeveloped Reserves* Undeveloped reserves are the complement of developed reserves in the total reserves, requiring capital investment in new wells and/or production facilities in order to be produced.

For new development projects, developing additional reserves may defer field / platform abandonment and may thereby also increase the reserves producible from existing completions. Such gains should be included in the economic evaluation of the new development project and can only be classified as reserves if the project meets the technical and commercial criteria.

### 3.7 Scope for Recovery

Scope for Recovery is the recovery estimate of any notional project for which implementation cannot yet be shown with sufficient confidence to be technically sound or commercially viable. However, there must be an expectation that this project could mature based on reasonable assumptions about the

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success of additional data gathering, a maturing technology from current research, relaxation in the market constraints and/or the terms and conditions for implementing such a project.

The economic evaluation should include any future pre-investment costs required to reduce technical uncertainty.

In the case of immature projects, the associated scope for recovery may be reported as a single estimate for the undiscounted average recoveries in the case of success (mean success volume, MSV) together with a probability of success (POS). For aggregation purposes the risked expectation volumes are used (POS\*MSV).

*Non-Commercial SFR* SFR in discovered resources is considered non-commercial for development projects which, even if technically successful, would not be commercially viable. To avoid unrealistic situations the reporting of Non-Commercial SFR is restricted to projects with a Unit Technical cost below an annually advised ceiling.

Non-commercial SFR is reported in order to retain an indication of the discovered resources that could become commercial with a change of circumstances (e.g. an increase in oil price, a change in tax regime, development of a gas market, flared/vented/re-injected gas volumes if significant enough to be marketed).

SFR which is expected to be commercially viable should be reported in one of the following three SFR categories.

*SFR by Proved Techniques* SFR by proved techniques is the volume estimated to be recoverable from discovered resources, by a project utilising a recovery process or technique which has been demonstrated to be technically feasible in the area or in the field. Implementation is expected to be commercially viable, but a large range of technical uncertainty precludes the formulation of a technically sound project proposal.

*SFR by Unproved Techniques* SFR by unproved techniques is the volume believed to be recoverable from discovered resources by a project utilising any recovery technique or process that has not yet been demonstrated to be technically feasible in the field where its application is considered, but which through laboratory or trials elsewhere has a reasonable chance of being technically feasible in the future. If feasible, the process should be expected to be commercial.

Future data gathering may disprove the technique, and with it the possibility of development, and these SFR volumes must therefore be discounted for the risk that the considered technique will not prove to be feasible.

*Undiscovered SFR* Undiscovered SFR is the volume believed to be recoverable from as yet undrilled potential accumulations by any process that has been a technical success elsewhere, under similar conditions, and the development of which is expected to be commercial.

These SFR volumes must be discounted for the risk that petroleum is not present or is not commercial to develop (Probability of Success, see Appendix 6).

Future data gathering may result in a total write-off of these resources. Following drilling results, the resource volumes are revised and, in the case of a discovery, the economics re-assessed, whereupon the resource is either discarded or reclassified.

### 3.8 Initial In Place

The petroleum volume Initially In Place (IIP) are expressed in volumes of Stock Tank Oil Initially In Place (STOIIP), Condensate Initially In Place (CIIP) and Gas Initially In Place (GIIP) under standard conditions. For standard conditions the same PVT data must be used as adopted for the reporting of field recoveries.

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## 4. RESOURCE VOLUME CLASSIFICATION FOR EXTERNAL REPORTING

### 4.1 Classification Scheme

Externally reported resource volumes have two primary purposes – financial calculations and investor assessments. The reported figures are used to calculate the depreciation of EP sector capital investments. The amount of depreciation affects the company's book earnings that are also externally reported. Shareholders and the investment community use the reported volumes and earnings to assess the performance and value of the company. It is essential that externally reported volumes are a true reflection of shareholder value.

The resource categories for external reporting are shown in Figure 4. Cumulative production, total proved reserves and proved developed reserves are externally reported annually for oil, gas and NGL sales quantities as of the 1st of January. The reported volumes must comply with SEC definitions, reproduced in Appendix 3. The Shell Group definitions contained in this section are in full compliance with these definitions. Where Group guidelines interpret SEC definitions, as listed in Appendix 4, these interpretations have been accepted by external auditors as fulfilling SEC requirements. A summary of the Group definitions for the external categories is provided in Appendix 1.

<b>Cumulative Production</b>	
<b>Proved Reserves:</b>	Proved Developed Reserves Proved Undeveloped Reserves

Figure 4: Resource Categories for External Reporting

Cumulative production for external reporting has the same definition as used in the Shell internal classification scheme (see Section 3.5). An example of the migration of resource volumes between externally reported categories during a field's life cycle is shown in Appendix 2.

### 4.2 Proved Reserves

Proved reserves are the portion of reserves, as defined for internal reporting, that is **reasonably certain** to be produced and sold during the remaining period of existing production licences and agreements. Extension periods are only included if there is a legal right to extend, which may derive either from the initial concession agreement or from a subsequent letter of assurance. Any applicable government restrictions on oil export and contractual or practical market limitations to gas delivery rates should be taken into account. Only the Group share of proved reserves is reported.

If probabilistic methods are used, reserves are reasonably certain when there is an 85% probability that the quantities actually recovered will equal or exceed the estimate. This is the P85 value of the cumulative probability curve. If scenario deterministic methods are used, the term reasonable certainty is intended to express a high degree of confidence that the quantities will be recovered. This is the low side estimate. When the estimate assumes significant volumes of hydrocarbons outside the defined fluid contacts, or when the recovery mechanism is untested in the field or analogue fields, a lower estimate should be used that reflects this uncertainty.

As discussed in Section 2.4, proved reserve estimates should be updated annually based on development and performance data.

*Proved Developed Reserves* Proved developed reserves are the reasonably certain portion of internally reported developed reserves (i.e. produced from existing wells through installed facilities). Drilling and completing a well essentially proves the hydrocarbons that it develops and therefore proved developed reserves are based on the expectation estimate of developed reserves adjusted to take into account of undefined fluids contacts, untested recovery mechanisms, licence periods, government restrictions and market

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limitations, as discussed above. The expectation estimate is the mean value if probabilistic methods are used or the base case estimate if scenario deterministic methods are used.

*Proved  
Undeveloped  
Reserves*

Proved undeveloped reserves are the reasonably certain portion of internally reported undeveloped reserves (i.e. require additional capital investment for new wells or facilities). Reasonable certainty is met by using the P85 value or low side estimate of undeveloped reserves and taking into account undefined fluids contacts, untested recovery mechanisms, licence periods, government restrictions and market limitations, as discussed above.

Total proved reserves and proved developed reserves are often determined, and then proved undeveloped reserves is the difference between the two. In mature fields when most of the reserves have been developed, this approach can result in values for total proved reserves and proved undeveloped reserves that are no longer reasonable. Once a field is at this level of maturity, a deterministic approach should be used for both proved developed reserves and proved undeveloped reserves consistent with the SEC and SPE definitions (Appendix 3, Reference 8). Total proved reserves is then the sum of proved developed reserves and proved undeveloped reserves.

Estimates of proved reserves should be benchmarked against the "proved area" deterministic method consistent with the SEC and SPE definitions (Appendix 3, Reference 8). This method first defines the proved area<sup>2</sup> of the field and then estimates the volumes expected to be recovered from the proved area. If the proved and proved developed reserve estimates are significantly different using the proved area method (as generally used in the industry), a reconciliation should be made for the OU to assure itself that the reported reserves are a true reflection of shareholder value.

Asset holders should be aware of the differences between probabilistic and deterministic techniques since third parties, e.g. gas buyers and hence external reserves auditors for certification, may adopt different practices.

*External  
Financing*

For projects which require some degree of external financing (e.g. LNG projects, major new venture start-ups), project financing must be expected to be available before proved reserves are disclosed externally. This could, by exception, be a reason why the reserves of some viable projects are excluded from external reporting.

*Improved  
Recovery  
Projects in  
External  
Disclosures*

Advances in reservoir modelling techniques have greatly enhanced the systematic assessment of project recoveries across the full range of uncertainties, increasing confidence in the use of simulation results as the basis for investment decisions and reserves estimation. This improved quantification has in some cases shown that pilot testing is not necessary prior to project commitment (based on a Value of Information approach). Under these circumstances, recovery from improved recovery projects (e.g. fluid injection, reservoir blowdown) may be considered proved when the following three conditions are met:

- 1) A comprehensive assessment of uncertainties results in confidence that the actual volume will be greater than the low estimate.
- 2) The main features of the recovery process are supported by confirmed responses in analogous reservoirs.
- 3) Project financing has been obtained or is expected to be available without a pilot testing phase.

In the case of improved gas recovery, the additional conditions in the following section also apply.

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<sup>2</sup> The area of the reservoir considered as proved area includes (1) the area delineated by drilling and defined by fluid contacts, if any, and (2) the undrilled portions of the reservoir that can reasonably be judged as commercially productive on the basis of available geological and engineering data. In the absence of data on fluid contacts, the lowest known occurrence of hydrocarbons controls the proved limit unless otherwise indicated by definitive geological, engineering or performance data (Reference 8).

*Proved Gas Reserves in External Disclosures*

In addition to the foregoing conditions, proved reserves of natural gas should include only quantities falling in the following categories:

- 1) that are contracted to sales; or
- 2) that can be considered as reasonably certain of being sold based on a reasonable expectation of the availability of markets, along with transportation/ delivery facilities that are in place; or
- 3) that, while not firmly planned, have been earmarked for future development and hence may reasonably be anticipated to be sold based upon expectation of availability of markets and project financing.

These restrictions also apply to the external disclosure of condensate/NGL products that are subject to the go-ahead of a non-associated gas project.

*Proved Reserves under Constrained Production*

When operating under a combined production constraint (e.g. oil production quota) and production beyond the licence or agreement period is expected, the capability to accelerate the post licence production provides a safeguard against under-performance of the planned development programme during the licence period. This capability increases the confidence level that can be assigned to the constrained production forecast during the licence period. In this circumstance, the proved reserves should be based on an accelerated development programme that could be followed in the event that the base plan delivered less production than expected.

*Types of Agreements*

Under US Financial Accounting Standards Board (FASB) regulations, separate disclosure is required for oil and gas volumes applicable to different types of agreements. These requirements are illustrated in Figure 5.

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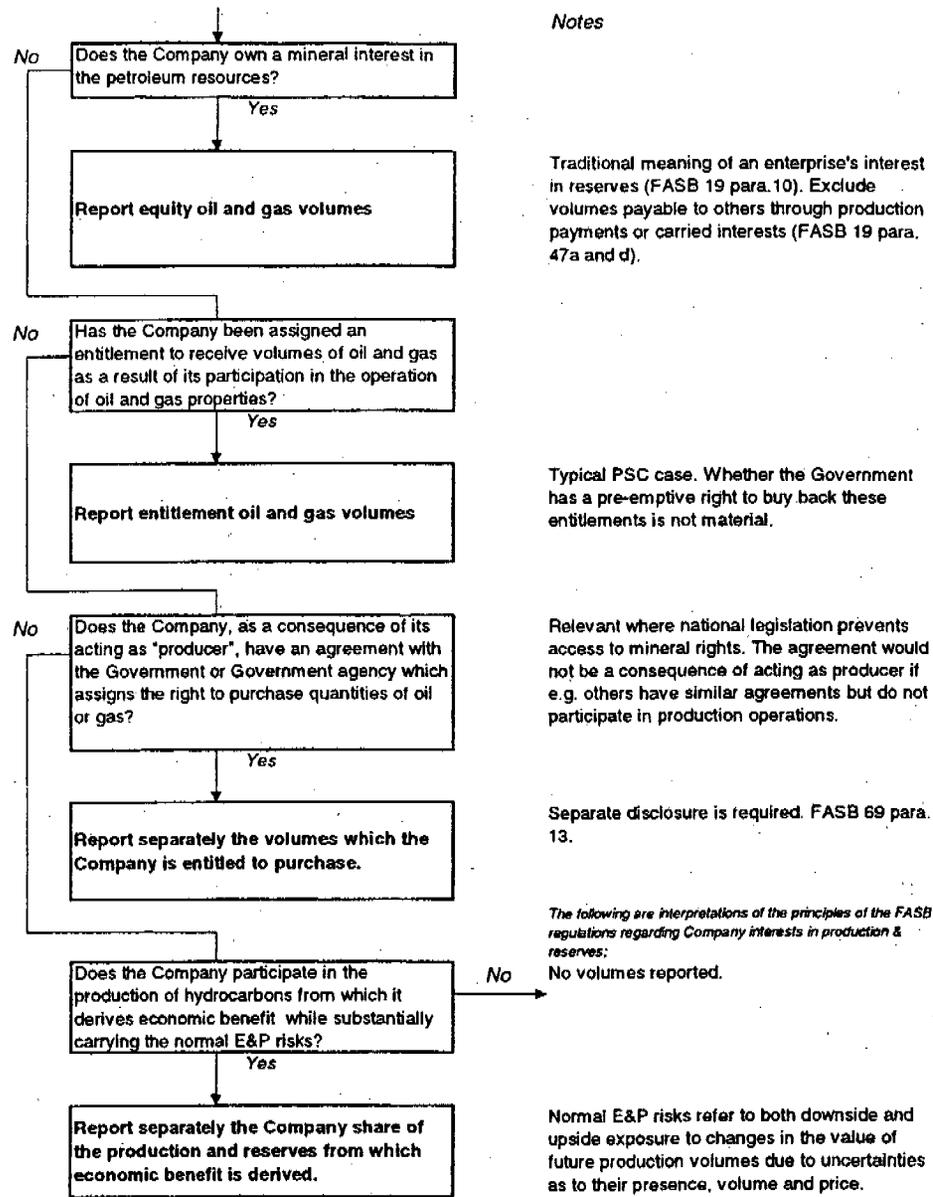


Figure 5: Types of External Disclosures in Relation to FASB Regulations

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## 5. RESOURCE VOLUME REPORTING, RESPONSIBILITIES AND AUDITS

### 5.1 Shareholder Requirements

EP Planning will communicate a timetable and the details about submission requirements to OUs and NVOs each year for both internal and external reporting.

Volumes will be reported based on the classification systems described in Sections 3 and 4. Additional information is reported for the calculation of the Standardized Measure required by the US Financial Accounting Standards Board (FASB).

### 5.2 Methods and Systems

OUs and NVOs are responsible for selecting the methods and systems that are technically most appropriate for quantifying the resource volumes of their assets consistent with these guidelines. The preferred methods and systems may vary depending on the type of resource and with time as the resource matures and technology improves. Best practices will be developed, updated and shared in the Hydrocarbon Resource Volumes Management Common Interest Network (Reference 7). This network will replace the material previously covered in Volume 2 of the 1988 guidelines (Reference 1).

A variety of commonly used Group and 3rd party systems are available to support resource volume assessment. Group systems are tailored to these requirements and methods and will generally provide an inherent level of quality assurance through input constraints, internal calibrations, and other "reality checks". Where more generalised 3rd party systems are used, OU and RBD management should be aware of the greater burden of quality control that will be required.

The Group Reserves Auditor will review decisions on methods and systems during the periodic audits. As far as these methods bear on the estimation of externally reported resource volumes, the Group Reserves Auditor will ensure that recommended methods are acceptable to the external auditors.

In some cases, OUs and NVOs may be unable to follow Group guidelines and/or recommended practice, due to government requirements, hardware constraints or other reasons. It is the responsibility of the OU Reserves Custodian to bring such cases to the attention of the Group Reserves Auditor, to enable him to obtain external auditors' approval of the OUs and NVOs specific methods and systems.

### 5.2 Responsibilities and Audit Requirements

#### *EP Planning Responsibilities*

EP Planning is responsible for compiling of the Group statistics of resource volumes, the analysis thereof and the communication to other functions. EP Planning also maintains the resource volume guidelines.

#### *Reserves Auditor Responsibilities*

The Group Reserves Auditor will carry out regular detailed reserves reviews in OUs and NVOs to ensure compliance with SEC requirements. The Terms of Reference of the SEC Audit are included in Appendix 5. The external auditor will verify the data for external reporting.

#### *Operating Unit Responsibilities*

Within OUs and NVOs, a Management System should be established (see Reference 6), clearly defining internal reporting requirements, tasks and responsibilities. Technical and Financial functions must co-ordinate and reconcile their figures (particularly production volumes) prior to submission.

All levels in an OU, including Asset managers and the reservoir engineer preparing the individual field reserves estimates, should be aware of the importance of externally reported reserves (proved, proved developed) and their impact on financial indicators.

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Asset and OU managers are responsible to ensure that the guidelines are implemented in such a way as to best represent to the shareholders the true value of the asset.

*Non-operated Reserves*

Where Shell is not the operator, the local Shell EP representative should prepare the reserves submission. In this case the Shell representative has the responsibility of ensuring that resource volume assessments by the operator are aligned with Group guidelines before submission. This may include reclassification of volumes between reserves and SFR categories where the operator's criteria differ from Group criteria. As usual, an audit trail (Note for file) should be available to document the reserves estimate.

If there is no EP representative or if the necessary data are not available locally, then the submission is prepared by SIEP.

*Annual Review of Petroleum Resources*

Until 1995, the Annual Review of Petroleum Resources (ARPR) was a constituent document of the annual EP Programme Documentation, providing an inventory of the status of petroleum resources. While OUs and NVOs no longer submit ARPR's to SIEP, the compilation of such an overview report will generally be necessary to satisfy the requirements of OU governance and as such will be a key element of the OU reserves Management System referred to above.

*Audit Trail*

For all the reported resource volumes an audit trail must be available of the assumptions made and process followed. This will allow any subsequent assessor to modify these estimates based on new information in a reconcilable manner. Thus, evaluation reports must be compiled (preferably on a field basis) giving the basic data, the way it has been interpreted and processed, the development options considered, and the resultant volumes with the assigned probabilities. In addition, a description should be given of the development strategy, including data gathering activities. These reports may be working files (if acceptable to local auditors), but it is recommended to make a duplicate 'for file' in order to ensure that the data are preserved in field reports.

Where subsequent small revisions are made, an update note must be compiled. Multiple changes may be combined in one overall update of the resource volumes if they all belong to the same change category. After several years of small changes or following a development study, a new evaluation report must be issued. When a proposed change has a significant impact on the Company's total reserves or financials, SIEP should be advised at the earliest opportunity.

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5. Revision of Report SIEP97-1100, September 1997
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7. Hydrocarbon Resource Volume Common Interest Network, <http://sww1.epglobal.shell.com/forums/aca-2/dispatch.cgi>
8. Petroleum Reserves Definitions, Society of Petroleum Engineers and World Petroleum Congresses, <http://w.w.w.spe.org/ip/reserves>
9. Project Evaluation and Screening Criteria, SIEP 97-2020, June 1997
10. Handbook of SEC Accounting and Disclosure
11. Financial Accounting Standards Board (FASB), e.g. Statements 19, 25 and 69.

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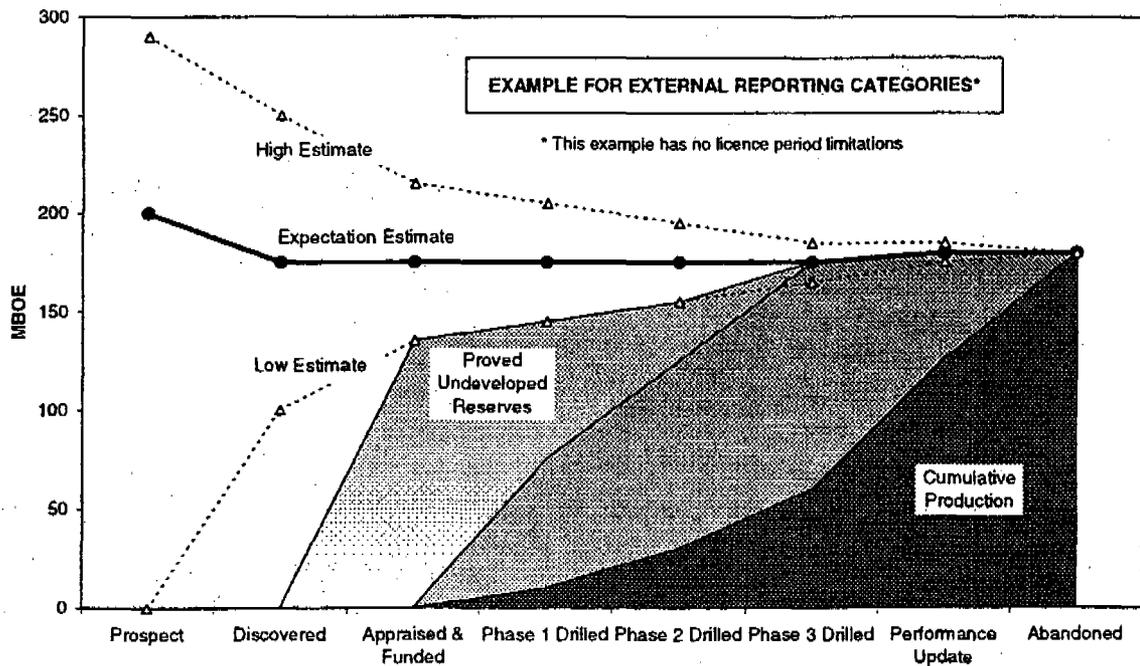
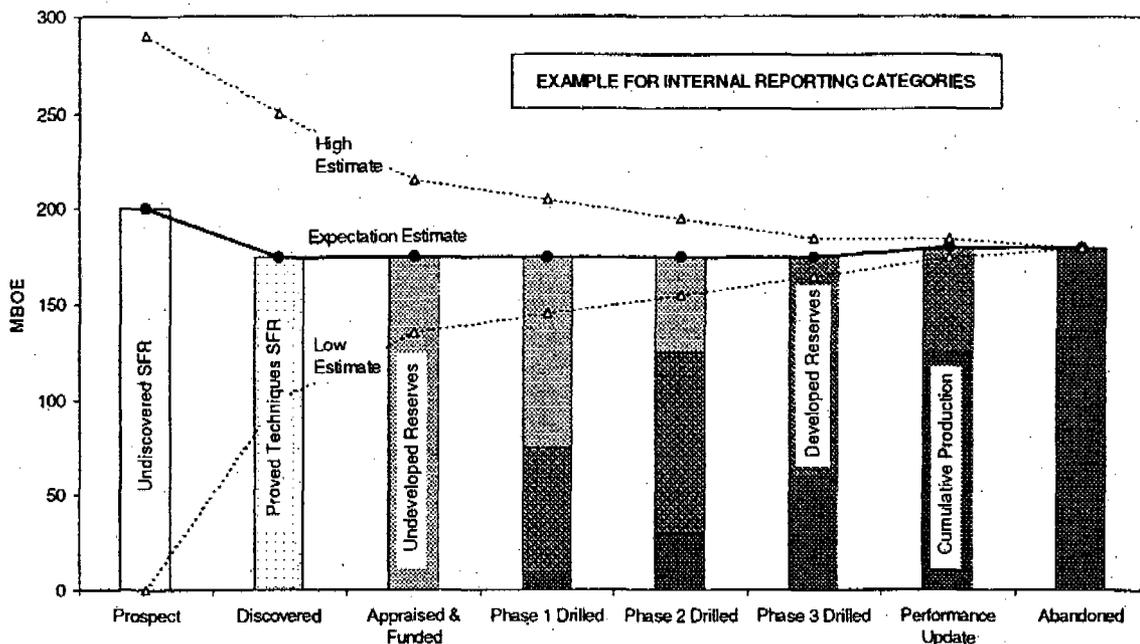
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**APPENDIX 1: RESOURCE CATEGORY DEFINITIONS SUMMARY**

<b>Internal Reporting</b>	<b>Reserves</b>	<ul style="list-style-type: none"> <li>Project is "technically and commercially mature" (defined in section 3.3)</li> <li>Formal project approval or economic viability is not required</li> <li>Market is reasonably expected to be available</li> <li>Includes only production with positive cash flow</li> <li>Not restricted by licence period</li> <li>Group share reported</li> </ul>
	<b>Developed Reserves</b>	<ul style="list-style-type: none"> <li>Reserves producible through existing completions and installed facilities using existing operation methods</li> <li>Outstanding project activities considered completed if &lt;10% of total</li> </ul>
	<b>Undeveloped Reserves</b>	<ul style="list-style-type: none"> <li>Reserves which require capital investment (wells and/or facilities)</li> </ul>
<b>Internal Reporting</b>	<b>Scope for Recovery</b>	<ul style="list-style-type: none"> <li>Project is <u>not</u> technically and commercially mature</li> <li>Not restricted by licence period</li> <li>Group share reported</li> </ul>
	<b>Proved Techniques SFR</b>	<ul style="list-style-type: none"> <li>Discovered</li> <li>Commercially viable</li> <li>Techniques have been proved to be feasible in this resource</li> <li>A sound technical project proposal is not possible yet due to large range of technical uncertainty</li> </ul>
	<b>Unproved Techniques SFR</b>	<ul style="list-style-type: none"> <li>Discovered</li> <li>Commercially viable</li> <li>Recoverable by techniques that have been successful elsewhere, but cannot yet be demonstrated to be feasible in this field</li> <li>Laboratory work or trials elsewhere have a reasonable chance of demonstrating technical feasibility in this field</li> <li>Discounted for the risk that the considered technique will not prove to be feasible</li> </ul>
	<b>Non-commercial SFR</b>	<ul style="list-style-type: none"> <li>Discovered</li> <li>Not commercially viable even if technically successful</li> <li>Commercially viable with a change of commercial circumstances</li> <li>Unit Technical cost below an annually advised ceiling</li> <li>Remaining tail production if it is significant</li> </ul>
	<b>Undiscovered SFR</b>	<ul style="list-style-type: none"> <li>Recovery from undrilled prospects</li> <li>Commercially viable</li> <li>Techniques have been successful elsewhere under similar conditions</li> <li>Discounted for the risk that commercial volumes are not present</li> </ul>
<b>External Reporting</b>	<b>Proved Reserves</b>	<ul style="list-style-type: none"> <li>Portion of reserves as defined above that are reasonably certain</li> <li>Discounted for undefined fluid contacts and untested recovery mechanisms</li> <li>Restricted by licence periods, government constraints and market limitations</li> <li>External financing, when used, must be expected to be available</li> </ul>
	<b>Proved Developed Reserves</b>	<ul style="list-style-type: none"> <li>Reserves producible through existing completions and installed facilities using existing operation methods</li> <li>Outstanding project activities considered completed if &lt;10% of total</li> </ul>
	<b>Proved Undeveloped Reserves</b>	<ul style="list-style-type: none"> <li>Reserves which require capital investment (wells and/or facilities)</li> </ul>

**APPENDIX 2: RESOURCE MIGRATION DURING FIELD LIFE**



**APPENDIX 3: SEC PROVED RESERVES DEFINITIONS**

(Transcribed from the Handbook of SEC Accounting and Disclosure 1998, pages F3-63 to F3-64)

*Proved Reserves*

Proved reserves are the estimated quantities of crude oil, natural gas, and natural gas liquids which geological and engineering data demonstrate with reasonable certainty to be recoverable in future years from known reservoirs under existing economic and operating conditions, i.e. prices and costs as of the date the estimate is made. Prices include consideration of changes in existing prices provided only by contractual arrangements, but not on escalations based upon future conditions.

- A. Reservoirs are considered proved if economic productivity is supported by either actual production or conclusive formation test supports. The area of a reservoir considered proved includes:
1. that portion delineated by drilling and defined by gas-oil and/or oil-water contacts, if any, and
  2. the immediately adjoining portions not yet drilled, but which can be reasonably judged as economically productive on the basis of available geological and engineering data. In the absence of information on fluid contacts, the lowest known structural occurrence of hydrocarbons controls the lower proved limit of the reservoir.
- B. Reserves which can be produced economically through application of improved recovery techniques (such as fluid injection) are included in the "proved" classification when successful testing by a pilot project, or the operation of an installed program in the reservoir, provides support for the engineering analysis on which the project or program was based.
- C. Estimates of proved reserves do not include the following:
1. oil that may become available from known reservoirs but is classified separately as "indicated additional reserves";
  2. crude oil, natural gas, and natural gas liquids, the recovery of which is subject to reasonable doubt because of uncertainty as to geology, reservoir characteristics, or economic factors;
  3. crude oil, natural gas, and natural gas liquids, that may occur in undrilled prospects; and
  4. crude oil, natural gas, and natural gas liquids, that may be recovered from oil shales, coal (excluding certain coalbed methane gas), gilsonite and other such sources.

*Proved Developed Reserves*

Proved developed reserves are reserves that can be expected to be recovered through existing wells with existing equipment and operating methods. Additional oil and gas expected to be obtained through the application of fluid injection or other improved recovery techniques for supplementing the natural forces and mechanisms of primary recovery should be included as "proved developed reserves" only after testing by a pilot project or after the operation of an installed program has confirmed through production response that increased recovery will be achieved.

*Proved Undeveloped Reserves*

Proved undeveloped reserves are reserves that are expected to be recovered from new wells on undrilled acreage, or from existing wells where a relatively major expenditure is required for recompletion. Reserves on undrilled acreage shall be limited to those drilling units offsetting productive units that are reasonably certain of production when drilled. Proved reserves for other undrilled units can be claimed only where it can be demonstrated with certainty that there is continuity of production from the existing productive formation. Under no circumstances should estimates for proved undeveloped reserves be attributable to any acreage for which an application of fluid injection or other improved recovery techniques is contemplated, unless such techniques have been proved effective by actual tests in the area and in the same reservoir.

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#### APPENDIX 4: SHELL INTERPRETATION OF SEC RESERVE DEFINITIONS

SEC Definition	Shell Interpretation for External Reporting
Reasonable certainty; Proved area includes portion delineated by drilling and defined by gas-oil and/or oil-water contacts, if any, and the immediately adjoining portions not yet drilled...In the absence of information on fluid contacts, the lowest known structural occurrence of hydrocarbons controls the lower proved limit of the reservoir.	<p>If probabilistic methods are used, reserves are reasonably certain when there is an 85% probability that the quantities actually recovered will equal or exceed the estimate. This is the P85 value of the cumulative probability curve. If scenario deterministic methods are used, the term reasonable certainty is intended to express a high degree of confidence that the quantities will be recovered. This is the low side estimate. When the estimate assumes significant volumes of hydrocarbons outside the defined fluid contacts, or when the recovery mechanism is untested in the field or analogue fields, a lower estimate should be used that reflects this uncertainty.</p> <p>Drilling and completing a well essentially proves the hydrocarbons that it develops and therefore proved developed reserves are based on the expectation estimate of developed reserves adjusted to take into account of undefined fluids contacts and untested recovery mechanisms.</p>
Fixed RT prices at level prevailing at date of estimate	Prices fixed by SIEP ca. 6 months prior to estimate date, but amended if there is a subsequent significant change.
Fixed RT costs at level prevailing at date of estimate.	Costs fixed by OUs and NVOs at date of estimate. Flat MOD costs must be supported by technology plans.
Economic productibility	Technically and commercially mature (i.e. positive discounted real terms cash flow for sufficient range of scenarios).
Productibility supported by either actual production or conclusive formation test supports	Productibility should normally be demonstrated by a conclusive test, but may be based on log or core evaluation in an area where many similar reservoirs have been conclusively tested.
Improved recovery processes included only after successful testing by a pilot project or the operation of an installed program	Reserves from improved recovery processes are normally included following an in-situ test; by analogy with the same process being used elsewhere under similar conditions, or occasionally as a result of lab tests or simulation studies.
No gas qualifier	Include only gas contracted or reasonably expected to be sold.
Developed reserves are from existing wells (including minor cost recompletions), existing facilities and operating methods	Existing wells, installed facilities and existing operating methods. Outstanding project activities can be considered existing or installed if outstanding costs are minor and is reasonably expected.

## APPENDIX 5: SEC AUDIT - TERMS OF REFERENCE

The Auditor's task is the following:

1. Establish whether the reserves estimates for external reporting have been prepared in accordance with the established guidelines. If not, to establish that the procedures used are acceptable, and not likely to result in reserves estimates that differ from those that might be expected from the application of the standard guidelines.
2. Establish that the basis for estimating the reserves quantity information is consistent with the previous periods.
3. Check that the source data is adequately documented and that movements in proved reserves are supported by such data and are correctly classified.
4. Establish that the frequency and extent of the reserves estimates are sufficient to make the estimates continuously reliable.
5. Investigate any differences between volumes that are reported for external purposes and those that are reported to SIEP in annual financial reporting.
6. Check the calculation of proved developed reserves and investigate any differences between proved developed reserves used for external purposes and those used as a basis for asset depletion purposes.
7. Establish whether proved gas reserves agree with sales contracts concluded.
8. Ensure that all quoted proved reserves are expressed in sales quantities, e.g. own use has been excluded. In case of gas sales the production quantity should be given as measured at the point of transfer.
9. Ensure that sales quantities of hydrocarbons are in line with those reported to Finance.

The checks will be carried out by taking at random one or more fields for detailed analysis, and a judgement will be passed accordingly.

The audit will be carried out as a stand alone exercise based on documentation available in the company to be investigated. In case of queries assistance of company staff may be called upon.

An audit report will be prepared on site (draft) and discussed locally. The report will contain an Action List based on recommendations of the report.

**APPENDIX 6: TERMINOLOGY****A) Petroleum Resources Terminology**

**Reservoir** A reservoir is a discovered petroleum resource where internal pressure communication is known to exist between all identified geological sub-units.

In case of doubt, reservoirs are restricted to fault blocks / sedimentary units until production performance proves communication to exist across faults/ barriers. PVT properties can vary within a reservoir.

**Field** A field is the collection of all petroleum resources within a closed areal boundary that belong to the same confining geological structure, and where the presence of petroleum has been demonstrated in at least one reservoir by a successful exploration well.

Field boundaries must be defined upon discovery and should encompass the unpenetrated petroleum resources in adjacent fault blocks and stratigraphic traps, if they are considered to be part of the same overall confining structure. Field boundaries may be re-defined on the basis of new geological information.

**Potential Accumulations** Potential petroleum resources beyond existing field boundaries, where the presence of petroleum has not yet been demonstrated, are collectively called potential accumulations.

**Producibility** Should normally be supported by a conclusive test in a drilled or immediately adjoining reservoir, but may be based on log or core evaluation in an area where many similar reservoirs have been conclusively tested.

**Production Facilities** The production facilities consist of all hardware installed to recover petroleum from the sub-surface resources and to deliver a quality controlled end-product for sale. These comprise the production and injection wells and the surface facilities for treatment, conversion, compression/ pumping, transport and delivery.

**Surface Facilities** That part of the production facilities accessible at surface, connecting the wellheads ultimately to the delivery points.

**Existing Development** The collection of all completed projects or sub-projects is referred to as the existing development.

**Field quantities** Field quantities (also called "Wellhead" quantities) are those quantities routinely measured at surface for individual well strings and expressed in terms of the stabilised products oil, condensate and (wet) gas or in terms of the type of injected fluids. These quantities may subsequently be reconciled with fiscalised sales and other product outlets, see below.

**Sales quantities** The quantities sold after fiscal metering and delivered at the locations where the upstream company ceases to have an interest in the end-products. These can be expressed in terms of the general end-products oil, (dry) gas and natural gas liquids (NGL) or in terms of the actual product.

Field products and the subsequent sales products may be different and will be affected by own use and losses. The properties and volumes of end-products may be influenced by mixing and the petroleum type itself may be altered during surface processing. Since surface processing conditions may change during a project life, sales products may vary in specification and in relation to field products. To avoid ambiguity and double counting, a clear distinction must be made between recoveries in the field and the quantities estimated to be available for sale.

For general sales products, oil, gas and NGLs, only the quantities sold by the upstream E&P company can contribute to Group reserves. Condensates mixed with crude oil in the same stream and sold as such are reported under oil. Separator condensate from gas wells and light hydrocarbon liquid products, derived from surface processing, if collected in a separate stream and sold as such are reported under NGL. Bitumen may be reported under oil in summary reports (with an appropriate footnote). In line with SEC requirements, sales volumes for gas should be those committed or

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commitable to a gas contract. Committed Gas is covered by a gas contract. Commitable gas reasonably expected to be assigned to a contract in the future.

It is necessary to maintain a more detailed internal administration of the actually sold products by stream in two cases: 1) If the upstream E&P company has separate contracts for delivery of special converted sales products such as LNG, methanol, ethane, LPG, C5+, or 2) if there are special sales products like helium, sulphur or generated electricity.

**Reconciliation** A monthly reconciliation is made between the fiscalised sales quantities and the quantities produced in the field. This is reported in the Monthly Report of Producing Wells (MRPW). The reconciliation process corrects for own use, flaring, losses and product conversion, and provides the end-product yield.

For reserves estimating purposes an average future yield factor is to be estimated (e.g. LPG/ wet gas yield, dry gas/ wet gas yield).

**Ultimate Recovery** The ultimate recovery (UR) of a petroleum type is the sum of cumulative production and the estimated volume of reserves.

### **B) Probabilistic Terminology**

**Probability Distribution Function** The probability distribution function of a stochastic variate indicates the probability that the actual variate value lies within a narrow interval around a particular value of the possible range, divided by the width of that interval.

**P85** The value that has a 85% probability that it will be exceeded.

**P15** The value that has a 15% probability that it will be exceeded.

**Mean** The statistical mean of a stochastic variate is the weighted average over the entire probability range.

**Mean Success Volume (MSV)** The probability weighted average of all realisations that equal or exceed the minimum reserves required for a commercial development of the resource.

**Probability of Success (POS)** The probability that the minimum commercial volume will be exceeded and which therefore indicates the likelihood of any future development. The product of MSV and POS is the recovery expectation.

### **C) Commercial Terminology**

**Discount Rate** A rate at which future real terms costs or cash-flow are discounted over time to calculate their present value.

**Net Present Value (NPV)** The net present value of a project is the sum of the discounted annual cash flow, expressed in real terms money, over the period from the first project expenditure to abandonment. The net present value is expressed in million US\$ at the relevant discount rate.

**Expected Monetary Value (EMV)** The expected monetary value is a probabilistic balance of investments and revenues, expected from a set of conditional operational activities, comprising data acquisition and one or more development projects, which are arranged in an ordered sequence with probabilities assigned to each action (decision tree).

The EMV is the summation of the NPV's of projects, reduced by the costs of data acquisition activities, all expressed in discounted real term money and multiplied by their assigned probabilities. EMV is expressed in million US\$ at the relevant discount rate.

Projects with a negative NPV for certain resource model realisations should be excluded from the EMV calculation, if the assumption is valid that data gathering will prevent such projects being implemented.

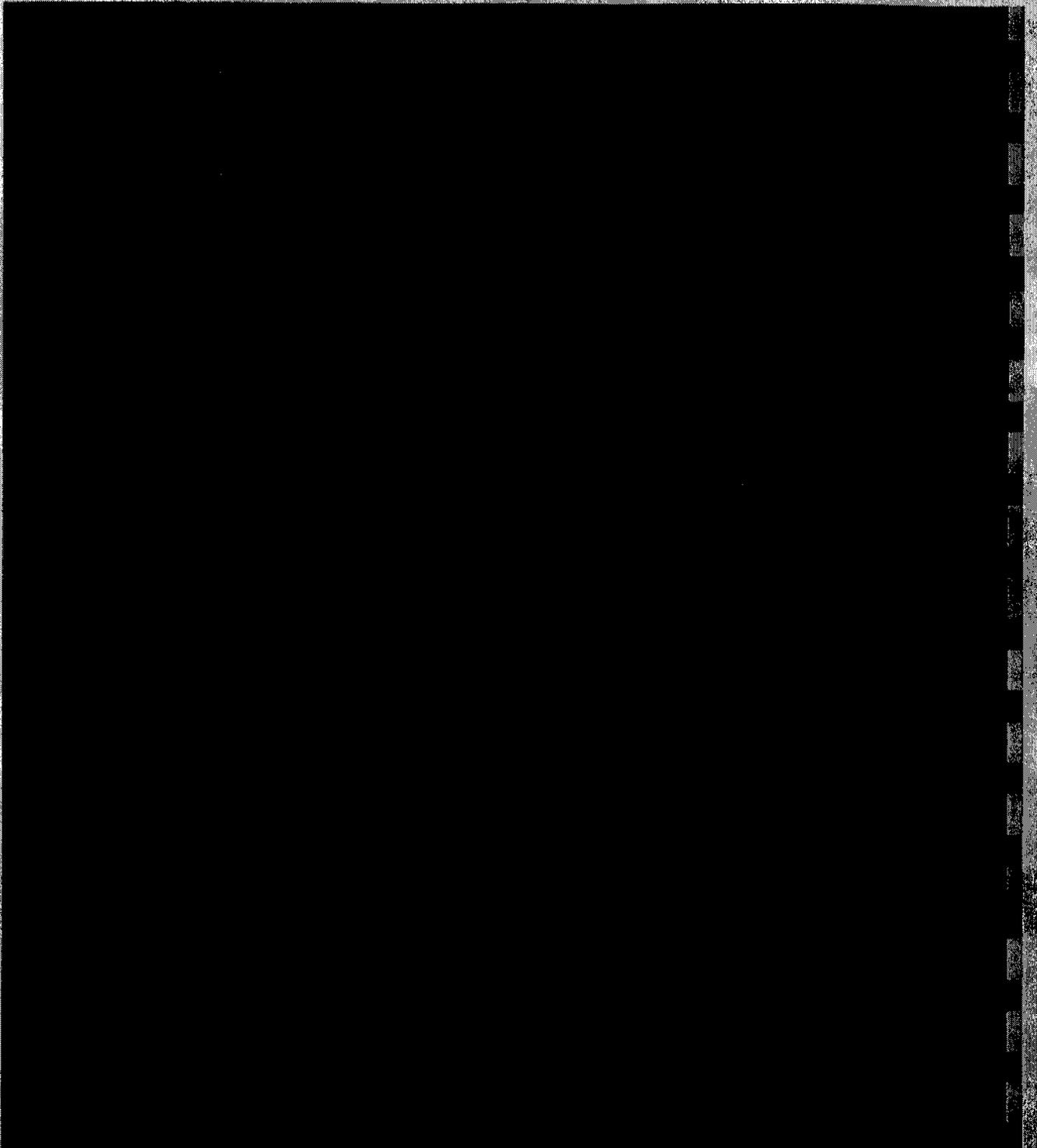
**Unit Technical Cost (UTC)** The unit technical cost of a development project is defined as the sum of capital plus operating costs, expressed in real terms money, divided by the total production over the period from start-up to abandonment. In addition, both the cost and the production must be discounted. The reference date for

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the discounting should be the same for denominator and numerator (e.g. the first year of expenditure) and should be stated. The unit technical costs is expressed in US\$/bbl (oil equivalent) at the relevant discount rate.



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D. Gardy ◀

# EP Presentation to Financial Analysts

8 April, New York – 9 April, Rijswijk



**EP Presentation to Financial Analysts**  
8 April, New York – 9 April, Rijswijk



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**Exploration and Production Presentation to Financial Analysts New York, 8<sup>th</sup> April  
1999 and Rijswijk, 9<sup>th</sup> April 1999.**

**“Improving performance and maximising value in uncertain times”**

**Contents:**

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| 3.  | <b>Slides &amp; Story Line,</b>        | <b>Phil Watts</b>                             |
| 4.  |  | <b>Henk Dijkgraaf</b>                         |
| 5.  |  | <b>Walter van de Vijver</b>                   |
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| 18. | <b>Stock Exchange Release Draft 7</b>  |   |

Distribution: Phil Watts, Tim Warren, Heinz Rothermund, Bob Sprague, Henk Dijkgraaf, Walter v.d. Vijver, Linda Cook, Raoul Restucci, Alan Parsley, Dominique Gardy, Karen de Segundo, Wouter de Vries, Steve Hodge, Chuck Gerheim, Hans van Nues

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**Programme  
EP Presentation to Analyst 8 and 9 April 1999**

**“Improving performance and maximising value in uncertain times”**

<b>Presenter</b>	<b>New York</b>		<b>Rijswijk</b>	
Na	07.30-08.30	Breakfast	10.30- 11.00	Coffee
Phil	08.30-08.50	Globalisation & Excom; Overview	11.00-11.20	Globalisation & Excom; Overview
Henk	08.55-09.15	Nigeria; Australia; ME; Gas	11.25-11.45	Nigeria; Australia; ME; Gas
Walter	09.20-09.40	Deepwater; United States Portfolio Activities	11.50-12.10	Deepwater; United States Portfolio Activities
Tim	09.45-10.05	Technology	12.15-12.35	Technology
	10.10-10.40	Coffee Break	12.35- 13.30	Lunch
Phil	10.40-10.50	Summary & Intro Q&A	13.30-13.40	Summary & Intro Q&A
	10.50-11.50	Questions & Answers	13.40-14.40	Questions & Answers
			14.45-16.15	Technology Fair

**Other Excom members in attendance:**

New York : Dominique Gardy; Heinz Rothermund, Bob Sprague

Rijswijk : Heinz Rothermund, Karen de Segundo, Bob Sprague

**Themes Technology Show - Rijswijk only - :**

1. Clever wells
2. Adding value in Oman
3. Subsurface revelations from seismic
4. Waste – a business opportunity
5. Capturing the rent from innovations
6. Revolutionary Breakthrough Technologies

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List of Slides

**Phil Watts**

1. Title : Improving Performance and Maximising Value in Uncertain Times
2. Disclaimer
3. Agenda
4. Globalisation of Shell's E&P Businesses
5. Global EP Executive Committee
6. Global Portfolio in 1998 (ROACE)
7. ROACE Roadmap
8. Oil Production & Gas Sales (incl. Latest estimate Q1/99)
9. Nigeria Oil Production
10. Strategic Cost Leadership
11. Cost Leadership in Malaysia
12. Investment Levels
13. Competitor Comparison (EP World)
14. 1998 Exploration Activity
15. UK Exploration & Production
16. Ongoing Major Projects
17. Impact of Technology
18. Global Proved Reserves Base
19. EP Global Strategies

**Henk Dijkgraaf ( Nigeria, Australia, Middle East, Gas)**

20. Nigeria unlocking a low cost asset base
21. Nigeria – Train 3 Integrated Projects
22. Australia
23. Shell in the Middle East
24. Cost leadership in Oman
25. NE Mediterranean – A new Hydrocarbon province for Egypt?
26. Middle East MRH's– EP Initiatives
27. 1998 Shell EP Activities in CIS
28. Global EP Gas
29. Argentina , Exploration & Production
30. Shell Philippines –Malampaya Gas to Power Project

**Walter van de Vijver (DW, United States, Portfolio Activities)**

31. Global Deepwater
32. Deepwater Gulf of Mexico
33. Brutus Development
34. Emerging Deepwater Province in Nigeria
35. Global Portfolio in 1998 (ROACE)
36. Global Portfolio & Restructuring Activities 1998
37. Global Portfolio Management 1999
38. US EP Portfolio
39. Aera Alliance in California
40. Altura

**Tim Warren (Technology)**

41. Shell E&P technology strengths- ready money, new opportunities, long term value
42. Technology imperatives
43. Dangers of relying on others (1)
44. Operated production 1997
45. Dangers of relying on others (2)
46. In house technology
47. Commercialising technology
48. Competitive advantage – quicker and better
49. Shell GOM- deep water learning
50. Global EP technology
51. Petroleum Development Oman- oil & gas production & potential
52. Oman – Yibal Production
53. Yibal well cost/unit productivity
54. Oman- technology gains 1994-8
55. Shell Technology Delivering a Commercial Return
56. Shell seismic imaging
57. Realising the value of subsurface vision
58. Advanced multilateral wells
59. Realising the value of cheaper plumbing
60. Realising the value of waste management
61. Transforming gas separation- Twister
62. Emission –free hydrocarbon power
63. Technology show (only in Rijswijk)
64. Ready money new opportunities long term value

**Phil Watts**

65. Summary

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**STORY LINE :**

**Improving Performance & Maximising Value in Uncertain Times**

- Phil Watts: Introduction

**Slide 1: Title Presentation:**

**Improving Performance & Maximising Value in Uncertain Times**

- Welcome
- The last bi-annual exploration and production presentation- given in June 1997- had as its theme, "the challenges of profitable growth"
- Since then business conditions have changed dramatically – as highlighted in our Group presentation this past December ... and we are also changing.
- Hence, the title of today's presentation, "Improving performance and maximising value in uncertain times".

**Slide 2: Disclaimer**

- First, we show you a slide that says in essence: projections are subject to many outside factors and our lawyers like to remind you of that on this occasion as well...

**Slide 3: Agenda**

- Today's presentation is planned for approximately 90 minutes starting with an overview.
- I will be followed by three of my colleagues, Henk Dijkgraaf, Walter van de Vijver and Tim Warren. (2 Excom ; *Walter CEO E&P Oil/GAS US*)
- New York: Q&A, after coffee break, which will be following Tim's speech. In the Q/A, my other colleagues, also here today Heinz Rothermund, Bob Sprague and Dominique Gardy, will participate
- Rijswijk: Q&A after lunch break, which will be following Tim's speech. In the Q/A, also my other colleagues, also present today Heinz Rothermund, Bob Sprague, and Karen de Segundo, will participate

**Slide 4: Globalisation of Shell's E&P Business**

- First I would like to address the recent announcement regarding the 'globalisation' of our EP (and Gas) Business(es)
- EP (as well as Gas & Power) will be run on a world-wide basis, including North America, thru single leadership team.
- Expecting significant gains: better investment and portfolio decisions, improved best practice sharing, enhanced access to global skill pools and reduced costs.
- Most of all, it clarifies accountability...beginning at the top ... & world wide. (in Q&A : How we deal with Canada, taking into account minority interests)

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**Slide 5: Global EP Executive Committee:**

- The global business will be run by the EP Executive Committee including myself as CEO and four Regional directors as shown on the map.
- In addition it includes 4 other members (as shown on the right)
  - Appointment of CFO emphasis the increasing focus on Financial discipline & short term performance. He will also be responsible for global procurement; a new created position
  - Global Strategy & Planning
  - Global Technology
  - To ensure alignment between Upstream E&P and Downstream Gas, Karen de Segundo, CEO of Gas & Power has become member of EP executive committee

This is my team and **we are accountable, ....**

**Slide 6: Global Portfolio in 1998 (ROACE – before Impairments)**

- We have shown you this slide also in December.
- It highlights the high ROACE (profitability) for many of our major producers and some underperforming assets in Venezuela and in the US.
- We have and are taking measures to address these underperformers that are important to reach our Roadmap objectives (and Walter will give more details later on).

Non performing assets	NIAT	Impairment	NIAT	ACE
	before imp.		after imp.	
Venezuela	-125	-409	-534	556
Aera/Altura	-10	-1418	-1428	2772
<b>Total</b>	<b>-135</b>	<b>-1827</b>	<b>-1962</b>	<b>3328</b>
UK		-46		
USA		-177		
World		-2050		

ROACE in %	Dec. 14	April 8
	EST	Act
Brent \$/bbl	12.80	12.75
Majors Producers	20.6	20.9
Other Producers	10.7	7.7
Deepwater US	9.6	8.4
Under performing assets	-3.1	-2.5
New Growth Areas	-39.7	-32.9
World	8.5	7.8

*Excluding growth area's ROACE would have been some 12.3% (some \$1.8.blm of Capital Employed invested in growth areas)*

- Major producers are : UK, Netherlands, Denmark, Nigeria SPDC, Oman, Malaysia and Brunei
- Other Producers : Mature US, Canada, Norway, Germany, Abu Dhabi, Syria, Egypt, New Zealand, Gabon, Australia, Bangladesh, China
- Deepwater US –GoM
- Underperforming – Venezuela; US : Aera & Altura
- New/Growth area's – Philippines, Nigeria (SNEPCO), Argentina, Russia, Kazakstan, Pakistan, Chad, India, Trinidad, Peru, Angola, Congo, Namibia

**Slide 7: ROACE Roadmap**

- In the 14 th December presentation we showed a roadmap which would give at \$/bbl 14 a ROACE of 15 % in 2001
- Our 1998 ROACE , adjusted for specials at \$/bbl 14 would have been some 11 % well short of our 2001 target (of 15%), and measures are taken to address this, as also highlighted in December.
- The plan involves improving performance by increasing near term production, reducing costs and investment levels, and making some changes to the portfolio.
- However we can not ignore that prices may remain weak, despite the recent OPEC measures (which lifted the price to over \$14/bbl (by the end of March) of which the medium term effect is still to be seen
- Therefore we need to consider the possibility that Brent decreases again. If Brent were to go down to \$10/bbl again and would stay there for some time, we can not guarantee 15 % in 2001 (of course)
  - We are reacting now and even if prices would recover further, the measures taken will position us better
  - and we are reviewing longer-term consequences on the business were prices to be at the level seen before the announcement of the OPEC cuts

Considering these uncertain times, and although we stick with our 15% promise at \$14/bbl, we have increased our focus on short term performance while preserving long term growth options and investing selectively (building on our strong asset base)

ROACE	Reported 1998 @ 12.75\$/bbl	Excl. imp 1998 @ 12.75\$/bbl	Excl. Specials 1998 @ 12.75\$/bbl	Excl. Specials 1998 @ 14.00\$/bbl	Plan 1999 @ 14.00\$/bbl	Plan 2001 @ 14.00\$/bbl
ESOSC	7.1%	10.2%	12.1%	14.7%		
Shell Oil	-11.8%	4.6%	3.6%	5.5%		
Shell Canada	8.4%	8.4%	8.4%	10.8%		
World	-0.5%	7.8%	8.4%	10.8%		15.0%

**Slide 8: Oil Production & Gas Sales**

- **MESSAGE: Oil production and gas sales are essentially on target (as shown in December).**
- For oil we estimate Q1/99 production to be flat compared to Q4/98 (2,318 kbd in Q1/99 compared to 2,306 kbd in Q4/1998) and just slightly above (2%) our plan presented to you in December 1998.
  - Note 1: this plan ~2287kb/d- excluded NGL volumes classified as Downstream (85 kbd) in the US.
  - Note 2: The 2% 'increase' is explained by the 85kbd reclassification of plan volumes offset by decreases in Expro (-28kb/d) and Shell Oil (-15kb/d).
  - Note 3: Compared to the adjusted plan production is some 2% below plan
- Gas sales depend heavily on weather. For the first 3 months of 1999 is expected to be some 4 % over Q1/98.

- Regarding 2001, prospect for gas is unchanged but dependent on Asian demand, economic recovery and the oil price;
- If oil price would remain low (well below \$14/bbl), oil production is more uncertain and the forecast for 2001 is possibly not achievable as we will not go for production growth at the expense of profitability;
- Also as we become more active in portfolio management, this will have natural but justifiable increases or decreases;

Note December presentation quoted:

- gas production growth 6 % average annual increase vs 98 (25 % to 2001)
- oil production growth 4 % aai vs 98 to '03 (10 % to 2001)

	1995	1996	1997	1998	Est 99	PLAN 1999	2001	Q4 Act 1998	Q1 LE 1999
Oil in kb/d	2,261	2,321	2,329	2,354	2,330	2,287	2,705	2,306	2,318
Gas in kboe/d	1,311	1,441	1,368	1,352	1,430	1,423	1,739	1545	1643
total in kboe/d	3,572	3,762	3,697	3,706	3,760	3,710	4,444	3851	3961

#### Slide 9: Nigeria Oil Production

- After a bad patch last year – and particularly in the new year, as mentioned, recent oil production performance in Nigeria has been steadily improving and is currently over 750 kbd (100 % basis);
- In 1998, monthly production (100 %) ranged from 600kbd , to over 900kbd with the volatility to a large degree due to community disturbances (also asset integrity, OPEC ceilings);
- We have seen a trend towards an improved operating environment in the recent months as can be seen in this chart;
- Although, significant progress has been made politically (with the elections transferring power from the military to an elected government), the situation remains volatile;
- and the effect of recent OPEC cuts (Nigeria 7% down 148 kbd to 1,885 Kbd) on our production in Nigeria still unclear at this time;
- *N.B. Based on the new OPEC Ceiling, Shell operated production level (some 50% of Nigerian output) would be capped at 942kb/d (assuming even share of OPEC Cuts). Even this new ceiling would allow operated production growth of over 200kb/d (Shell Share of production: 60kb/d).*

#### Slide 10: Strategic Cost Leadership

- Shell EP worldwide aspires to become the cost leader and achieve sustainable competitive advantage.
- We have set a \$1.1 billion Opex reduction target for EP by 2001, (based on improved unit Opex 2001 vs 1998 and increased production).
- But achieving these goals takes more than tough target setting and wishful thinking.
- Cost leadership is driven from the top by the ExCom.
- Global procurement. A global EP procurement manager is on board as of April 1<sup>st</sup>.

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- Reduction programs have been announced in the UK, Nigeria, and US while some other operating units are expected also to reduce staff levels.
- Estimated overall reductions per end 1999 compared to 1998 levels are at least 10 % (some 3200, including international staff. NB Estimated scope for further staff reductions is 500-1000). This will result in estimated Shell share annual cost saving of some \$ 150 mln (minimum, based on \$200,000 per expat; \$75,000 per national and taking into account partner share and contingency margin)
- International staff will be reduced by some 18% (over 500 staff).
- Reducing cost by integrating deepwater and technology services on a world wide basis
- Local initiatives address cost and value in all OU's (benchmarking, barrel chasing, ELAN, FRD , consolidating GOM divisions in Shell Oil).

**Note 1:** Promised to report on progress as part of our Q2 1999 results

**Note 2:** Regarding staff levels: Annual report staff reduction levels in % will be somewhat higher (10-12 %) as Joint Venture companies only report Shell share of manpower figures and associated companies (Oman, Brunei, Woodside etc) are excluded from the annual report, but are included in the numbers quoted above. The absolute numbers and savings however will be lower (for the same reason).

Cost saving promise	1999	2000	2001	1999 Q1 Est.	1999 Annual Est.
	ESOSC	192	389	748	64
SOSC	128	251	339	38	165
Total Saving	320	640	1,087	102	341

*Including redundancy*

**Slide 11: Cost leadership in Malaysia**

- Unit Margin Enhancement or UME:
  - all-encompassing hearts and minds programme that started end-1994
  - staff challenged to propose and implement ideas to improve the bottom line
  - contain and reduce costs and to increase production, steered from the top & relied on bottom-up initiatives.
  - special awards given to winning ideas & widely communicated
- Operations Benchmarking:
  - best practice benchmarking effort undertaken in 1995 to significantly impact Operations management.
  - improved upon were materials management and logistics, contract management, maintenance and asset reliability, and organisation
- Organisational Review began Nov 1995, implemented in Q4/96;
  - new organisation is an asset-based organisation with multi-disciplinary teams grouped into Business Units with clear single line accountabilities running from top to bottom
  - staff surpluses of the order of 600 out of a total level of about 2600 people at 31.12.95.

- organisation put through learning programmes on how to engage and work in teams and identify positive cultural practices in decision-making and leadership
- enabled Shell EP Malaysia to capture the competitive high ground: leaner organisation- reduced its operating cost base
- Transformation Continues:
- The unit opex reduction achieved year-on-year since 1993 speak for themselves. The 65 cents/boe achieved in 1998 places Shell EP in Malaysia as the Group top performer in unit opex. It is recognised by PETRONAS to be #1 in Malaysia beating the likes of Exxon.

**Slide 12: Investment Levels**

- As we mentioned in December, our plan for 1999, included a significant reduction in investment levels as compared to 1998
- The plan included a spending level for '99 up to \$ 6.5 bln, which is a 22 % decrease over 1998 (\$8.3 bln), but with flexibility to spend even less if prices remained below \$ 14/bbl
- Indeed, prices were quite low for the first 3 months (ca. \$11.4/bbl Brent) and we envision spending several hundred million less than the ceiling. (LE is \$5.7 bln, some 12 % less than '99 plan, This highlights the flexibility in the plan as the 'holdback' is not being released.)  
[NB: In order to meet our targets we work on some farm outs.]
- Competition for funds via new capital allocation & global ranking introduced
- New Planning process geared to deliver short term operational & financial performance with adequate flexibility
- OU's will have to demonstrate annually: 1) the financial performance of their assets ; segmenting the good , the bad and the ugly and their response (invest, fix, sell); 2) their focus on maximising production of oil and gas; and 3) their performance in strategic cost leadership including benchmarking results and meeting tough cost targets.

**Back up story:** New Plans will be built up from base level of committed expenditure using ExCom/CEO controlled capital allocation processes to determine which new proposals will secure support within ceiling/framework (determined by commitments to the Group) and prevailing circumstances to deliver on financial and operational performance. OU's to compete for funds and have to ensure their marginal investments are fully robust, against new tough screening criteria. They also have to demonstrate good results with recent investments and real progress towards cost leadership vs competition.

Summary	1994	1995	1996	1997	1998	1999	LE	saving'	saving'
							1999	LE vs Plan	LE vs 1988
Capex	3,812	4,477	4,995	5,723	6,469	5,250	4,522	-728	-1,947
Expl. Expense	1,025	871	1,116	1,154	1,591	970	954	-16	-637
Inv. Ass.	25	14	40	238	286	245	216	-29	-70
Total	4,812	5,334	6,151	7,115	8,346	6,465	5,692	-773	-2,654

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**Slide 13: Competitor Comparison (EP World)**

- If we look at comparison of Shell net income in 1998 vs competitors, excluding specials (redundancy (\$ 58 m) and restructuring in US (\$ 17m) and impairment of assets (\$ 2,050 mln), Camisea write off \$ 96 mln (total \$ 162 m) you see that our earnings fell somewhat more than others compared to '97.
- The most significant reason for this has to do with our high level of exploration expense in 1998 (which included write off of our activities in the Peru-Camisea Project)
- If you look at change in earnings- net of exploration expense, you see a much more consistent result

So the fair question really is "What did we get for the money we spent- both exploration and production capex?"

NIAT excl specials	1995				1996				98 v
	1995	1996	1997	1998	1995	1996	1997	1998	
Shell	2,947	5,070	4,599	2,120	955	1,168	1,173	1,591	
Exxon Mobil	4,719	6,887	6,641	3,741	1,120	1,275	1,252	1,459	
BP-Amoco	2,538	4,292	4,773	1,747	890	933	927	921	
Chevron	1,363	2,251	2,169	1,113	372	455	493	513	
Texaco	1,017	1,574	1,469	518	289	379	471	508	

**Slide 14: 1998 Exploration Activity**

Exploration Expenditure (capex +expense) totalled \$ 2.4 bln in 1998. This includes:

- \$ 162 mln expenses in Peru incl. special item for write off our activities in Camisea
- acquisitions (Argentina \$200m, Bangladesh \$57m, Pakistan \$30m, Egypt \$35m)
- 3 large gas discoveries (*Norway (Ormen Lange-125 mln boe comm-SFR); Malaysia (Sabah Kamansu East (deepwater) 199 mln boe comm-); and Peru (Parogeni 230 mln boe comm-SFR)*) with total expectation reserves of 544 mln boe shell share. (4<sup>th</sup> gas discovery in Australia Chuditch 171 mln boe classified as non commercial-SFR; Others: 221 mln boe of 28 minor discoveries )
- 3-years finding costs average some \$2.7/bbl for 1996-1998, up slightly from the \$2.3/bbl of the last few years (1992-1997). NB. 1998 isolated finding costs are some \$6.5/bbl.
- Proved Reserves replacement ratio (boe basis) of 182% (1997: 158%); 130% excluding change in guidelines. [3-year replacement ratio 1998 is 184% up from 151% in 1997]
- We are introducing stricter investment discipline. Funds for Exploration will be awarded in competition and exploration plans will be challenged by peer groups
- We are spending much less on exploration this year and there will (probably) be a further reduction next year

**Slide 15: UK Exploration & Production**

- in the past years, significant investments have been made in the Central North Sea Area, developing new oil and gasfields. These will come on stream during 1999 and 2000 (e.g. Ketch, Guillemor, Sheerwater, Skiff, Brigantine).
- These fields include the development of High Pressure, High Temperature (HPHT) gas/condensate fields. Recent advancements in technology and cost reductions have enabled economic development of these fields. Shell has a leading edge in HPHT technology.
- The production growth (+35%, from 1998 – 2001 as in December) comes from ongoing and committed projects. Investment levels (exploration expenditure and production capex) decrease significantly (1998: \$1.4 bn, 1999: \$0.8bn, a decrease of 40%).
- Significant cost reduction measures have been announced including the merging of business units, the relocation of London based staff to Aberdeen and the reduction of staffing levels with some 16%. This will deliver some 20% reduction in unit operating costs by 2001. (some 400 Shell staff '98 vs 99 end year – 100 % basis)

Note: Part of the expected growth (+35% from 1998) results from the disappointments of growth expected in earlier years that come on stream in 1999 and 2000, somewhat later than we had initially expected.

**Slide 16: Ongoing New Projects**

- The Group is undertaking a number of large projects around the world which have required and still require a large capital investment in the period 1996 to 2002 of some 8.5 bln US\$ and
- which are expected to contribute some 740 kboe/d to the Group production levels in 2002-2003 making a major contribution to the company bottom line, project are :

	Capex [US\$]	Production [kboe/d]	
Oman LNG	1.23	262 in 2002	
Nigeria LNG	1.05	35 in 2001	
Malampaya	1.59	55 in 2002	
Laminaria	0.28	35 in 2000	
Obaiyed/Rosetta	0.72	50 in 2000	
Expro	1.81	160 in 2001	Etap/Shiehallion 1998 150 in 2000 Triton 1999, Shearwater 2000
USA	1.92	200 in 2003	Angus/Macaroni/Ursa 1999 120 in 2001 Europa 2000 Brutus 2001
<b>Total</b>	<b>8.6 bln</b>	<b>760 max in 2002</b>	<b>Some 722 kb/d in 2003</b>

- Note that this new production is not additional but to a large extent offsets declines elsewhere and supports our aim to increase oil and gas production

over the next years, subject of cause to the oil price and any portfolio changes (Dec 14 : oil and gas up with resp. some by 10 % and by 25 % compared to 1998 as indicated in September based on \$/bbl 14 outlook.)

**Slide 17: Impact of Technology**

- Brunei Shell Petroleum (BSP) is a 50% Shell, 50% Brunei Government Joint Venture Company working in Brunei Concession Areas. (Shell equity oil and gas is 50% of total production.) In addition to an established gas business to Brunei LNG, oil production is key to the company.
- In '98 oil production (100%) of just short of 160,000 b/d; '99 target of 180,00 b/d and plans in 2000 for 200,000 b/d. The ongoing Champion South-East Development gives an example of how this can be achieved in this mature oil province.
- Heavy Oil Complex Geology and Shallow Sands (200m-600m). Although first produced in 1976, the recovery is only 3% in a 1 billion barrel STOIPP field.
- Challenging opportunity that needs the application of several technologies by a focused team.
  - Technical Limit Drilling (1st well drilled in 15 days versus 21 in original plan. Shallowest well in BSP - 390m);
  - Long 1000m gravel packs to control sand.
  - Integrated 3D Subsurface Modelling
  - Sophisticated structural analysis allows drilling and production from existing structures.
- This is a good example of how various technologies and skills produce real benefits today. Tim will tell you more of the importance of technology in today's world.

**Slide 18: Global Proved Reserves Base**

- Proved Oil/NGL reserves increased by 3.6% from 9.7 bln bbl in 1997 to 10.0 bln bbl in 1998.
- Proved Gas reserves increased by 7.7% from 56.1 Tscf (9.7 bln boe) in 1997 to 60.5 Tscf (10.4 bln boe) in 1998
- Collectively Shell companies have one of the largest global proved oil/NGL reserves of any other private oil enterprise only slightly smaller than the recent Exxon/Mobil merger – In 1997: Shell 9.7 versus 10.8 billion barrels for Exxon/Mobil. (Shell 10.0 in 1998)
- Shell companies have the largest global proved gas reserves of any other private gas enterprise still slightly larger than the recent Exxon/Mobil merger – In 1997 Shell 56.1 Tcf versus 59.1 Tscf for Exxon/Mobil; (Shell 60.5 Tscf in 1998).

- On top of the proved reserves base the Group also has significant expectation reserves and SFR resources both oil/NGL and gas as well as a large potential in undiscovered resources. These additional resources nearly double (200%) of the size of the proved reserves base. Excluding undiscovered SFR the resource base is some 40 bln boe. (the total resources are some 61.6 bln boe, including undiscovered SFR).
- Great emphasis is being placed on transferring expectation reserves to proved and also to mature SFR to proved reserves.
- As said, Shell has a very strong reserve base: We are well re-presented across the globe and also in low cost countries (i.e Nigeria). Our primary focus will be on further developing the resources already in our portfolio. This allows us to be flexible on exploration expenditure; well below current levels.
- Focus now shifts from adding to SFR to "monetising inventory"  
NB No expectation and SFR data available for US

#### Slide 19: EP Global Strategies

- Challenge, now in uncertain times, is to maximise performance of the (mature) asset base with the right balance of investments in existing areas (to monetise the existing resource base) and in selective new growth areas Our generic strategies to meet performance and value targets are:
  - Increased accountability and organisational effectiveness
  - Improving near term performance of existing asset base
    - Portfolio management (Aera; Altura)
    - Strategic cost leadership and cost reduction
    - Reducing exploration expenditure and increasing focus on monetising existing asset base
    - And, due to uncertain times increased frequency and emphasis on tracking of performance –global performance
    - Maximising flexibility
  - Investment discipline
    - Selective investments (in competition)
    - Allocating capital to proven performers
  - Investing in Technology to deliver today and to improve (within the next 5 years) our competitiveness, especially in a lower oil price world (nb. Short term performance is more important than increasing SFR in 20 years)
  - Selective focus on a few key growth themes, which we see as viable at low prices
    - MRH, Deepwater, Gas

We want income and cash flow now through more barrels, reduced costs and a more bottom line focussed- hard-nosed culture, which will deliver; financial discipline is reinforced, as is delivery on milestones. We made a major strategic shift from profitable growth to affordable growth, which has been painful, and we are not yet there. However, we will deliver with an organisation able to adapt quickly to changes and we will still create long term value (and growth) without forgetting the short term nor the need to deliver performance. Consequently we will still grow but only when it is affordable, by monetising our large reserves base or through changes in the portfolio. Also we want to

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be convinced that only the best projects available go forward (at the lowest life cycle costs) and are only awarded to management who have shown they are able to deliver.

## Henk Dijkgraaf (Nigeria, Australia, Middle East, Gas)

### Slide 20: Nigeria unlocking a low cost asset base

- I will follow on from Phil's overview of EP global Strategies
- And start with Nigeria, a major holder of low-cost hydrocarbon resources where we have the number one competitive position. This is about monetising its potential.
- Phil has talked about restoration of production in our venture to over 800 kbd
- Community unrest, remains a concern, as Phil mentioned, but progress is being made. (we are not the real party here, it is the federal government; elections should lead to improvements; already agreed is that more of the revenue flow will go to the Communities concerned)
  - good progress with improvement of asset integrity, preparing for the future
  - Forcados refurbished, ready for another 25 years, now working on Bonny
  - Restructuring of Shell in Nigeria in progress, 750 staff less, moving towards real cost leadership

**MESSAGE:** We are maximising the return on our Nigerian assets.

NB. Recent (Q4/98) discoveries were made by Exxon and Statoil: Any official statement of these discoveries should be agreed with the operators.

Exxon (operator) in Erha1 -block in which Shell has a 35% stake

Statoil (operator) in NNWA1/block opl.218. No Shell equity stake, but agreement to share seismic data and we do own neighbouring block 219. -> also refer to slide 34.

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### Slide 21: Nigeria – Train 3 Integrated Projects

- Now let us look at what we call “Train 3” – this denotes 12 projects, increasing production by 600,000 bpd. The common thread is that all associated gas will be used in an expanded LNG plant. (NB. This project will create some \$20bln in additional oil&gas income for the government over the next 25 years).
- This includes the development of Bonga and three shallow water fields offshore and six projects onshore, including the gathering of associated gas. Walter will say a bit more on the prospects of Deepwater offshore Nigeria.
- This is all directly in line with the Nigerian Governments so-called “Vision 2010” aim to double production over the next 10 years.
- Total cost will be some US\$ 8.5 billion over this period (of which some 30%-\$2.5bln- will be born by the Nigerian government). The third LNG train is key and will come on stream in 2003, with customers already secured.

**MESSAGE:** We are turning what sometimes appears a problem into a major profit opportunity.

### Slide 22: Australia

- Another existing portfolio position with major potential is Australia.
- The slide shows the extent of Shell interest blocks and key infrastructure and projects.
- Fundamental to our success here is our recently concluded alliance with Woodside to create Australia’s number one oil and gas venture.
- Woodside (Shell interest 34%) will operate all upstream work, with Shell involvement and technical support.
- Shell will lead the Alliance’s gas marketing efforts
- Woodside and Shell will together identify new business opportunities.
- The plan is to expand the LNG plant with an extra (4<sup>th</sup>) train by 2003/4, in first instance to go to Japan.
- Shell had a leading role in establishing the ALNG (Australian LNG) initiative very recently for marketing all Australian LNG outside Japan.
- There are also oil projects being worked on:
  - (Cossack Pioneer) being refurbished, to resume production mid-year).
  - Laminaria – being developed with an FPSO, robust project, to reach 150 kboe/d next year. (Shell Share 37.5 kb/d)

**MESSAGE:** we are taking major steps to realising our Australian potential

### Slide 23: Shell in the Middle East

- Now I move to the Middle East, which already is a key element in our portfolio and is the main target for our business development drive.

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- First a summary of our current interests in the region: Number one upstream positions in Oman and Syria, key and growing position in Egypt and amongst the leaders in Abu Dhabi. Major gas interest in Oman, with first gas now in the LNG plant and exports starting from April 2000; an exploration study **signed for the Caspian Sea**; downstream positions throughout the region; chemicals in Saudi Arabia. We furthermore lift over **1 million boe/d** from the Gulf.

**MESSAGE:** we already are a leader in the Middle East and have relations and a reputation to match

**Slide 24 : Cost leadership in Oman**

- Our position in Oman is important, also to our reputation in the Middle East
- Here is another example of Cost Leadership. The aim is to grow output to close to 1 million boe/d (up from 835 kboe/d in 1998; Shell share is 34% of this) and save another \$200 million over 5 years.
- This is credible and seen against the impressive recent achievements.
- PDO is a company where transformation really is taking place.

**MESSAGE:** Oman is about hard targets and real achievements.

Cost initiatives:
<ul style="list-style-type: none"> <li>- drilling the limit</li> <li>- down hole water oil separation</li> <li>- accelerated multi-lateral wells</li> <li>- better seismic</li> <li>- Omanisation</li> </ul>
NB. Stretch target cost savings are \$400 mln in 3 years.

**Slide 25: NE Mediterranean – A new Hydrocarbon Province for Egypt?**

- Now let me come back to our venture in Egypt – we described its exciting future in the Analysts presentation of 14 December – this is underpinned by continuous growth in reserves.
- We mentioned our NE Med concession – since then we have been working on this and the OU's first 2D seismic lines are coming.
- What we are seeing is possibly more prospective than we had hoped for!
- And Deepwater of course is an area where we in Shell have unrivalled expertise to offer.
- Further seismic is underway, and drilling should start next year.

**MESSAGE:** We are on the verge of exposing hydrocarbon province

NB. Initiated partly divestment/dilution

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**Slide 26: Middle East MRH's- EP Initiatives**

- **NOW TO THE Middle-East MAJOR RESOURCE HOLDERS,**  
I know of your interest.
- A highly competitive environment but one where our long standing **RELATIONSHIPS** and **REPUTATION** matter!
- In Iran, we have submitted proposals for 2 offshore buy-backs and for land oil projects near Ahwaz. We appear well positioned and expect discussions to start within the next few days.
- In Kuwait, we have been participating actively in the various discussions on a new model contract and will participate in the consequent bidding rounds.
- In Saudi Arabia, we have made proposals for up- and downstream projects recently to the Crown Prince. Of course, we have been investing heavily in the Kingdom for many years, e.g. in SASREF and SADAF. We also have several other smaller JVs (*blending & marketing lubricants SASLUBCO & JOSLOC*) and are the largest private lifter of Saudi crude. We expect follow-up discussions to start this month.

**MESSAGE:** We are really going for the new opportunities and are well positioned.

**Slide 27: 1998 Shell EP activities in CIS**

- I'll be brief on the CIS, despite our past flurry of activities. The centre of gravity of our efforts, however, has shifted to the Arabian Gulf, as I mentioned just now.
- Our main focus here is on
  - Russia, the Gazprom alliance where we are discussing the way forward with Gazprom, and Sakhalin, where production is to start by mid year.
  - Kazakhstan, where a key well in the world's largest undrilled structure in the North Caspian will be drilled later this year. Onshore, our latest well in Temir is a discovery!

**MESSAGE:** Highgrading our portfolio with minimum expenditure – moving forwards prudently.

**Sakhalin volumes:**

7 mln bbls in 1999 for 100% venture (i.e. Shell equity share: 4 kb/d annualised)  
Capacity is some 90 kb/d (100% venture) for 6 months (Siberia freezes over) which translates to some 11 kb/d Shell equity share annualised.

**Slide 28: Global EP Gas**

- We are a world leader in gas production and will continue to pursue growth in gas, also and in particular in a low-oil price world.
- We have major involvements in North America, Europe and Japan.
- We are also looking at other significant growth markets as indicated on the slide. I mention South America, Mediterranean Rim, Pakistan, Bangladesh, Philippines. We made another attractive discovery last month in Pakistan.

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- In 1998, Pakistan and Bangladesh have seen the start of new growth ventures for Shell.
- We are the world-leader in LNG with the imminent start of production in Nigeria and Oman and we will continue to participate in new ventures (e.g. Australia, Malaysia Tiga, Nigeria Train 3, Sakhalin).

**MESSAGE:** Even after the recent mega-mergers (Exxon/Mobil & BP/Amoco), Shell is still one of the leading upstream gas companies and growing (NB. Based on 1998 reserves and production we are nr. 2 after Exxon-Mobil, still far ahead of BP-Amoco but probably not when Arco is included).

**Slide 29: Argentina, Exploration & Production**

- Now a quick look at one of these emerging gas plays, in the so-called "Southern Cone".
- The idea is to position Shell over the whole of the value chain, from upstream to retailing, and to maximize our access to the available rent.
- In the upstream, we have in 1998 acquired two strategic gas assets in the prolific Basins of Northern Argentina, Acambuco and the Rio Colorado. The latter contains the Valle Morado field, both containing significant reserves as well as further potential.
- Work is in progress and production in Valle Morado should start later this year.

**MESSAGE:** We have created a platform for growth in this major gas market

**Slide 30: Shell Philippines -- Malampaya Gas to Power Project**

- Now to round off the gas theme in Shell EP, a look at our Malampaya project on the Philippines.
- This is a major opportunity to pursue a profitable domestic gas project.
- We now have 100% ownership of this but plan to monetize some equity early on to relevant strategic players.
- Spending \$ 1.2 billion this year and next year and production will already start in October 2001.
- Significant cost savings are being realised and the economics are robust also at low oil prices.

**MESSAGE:** This major, attractive project is moving forwards quickly.

- This field is located in relatively deep-water (800m) and this is a very good point to hand over to Walter who will address the Deepwater theme.

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## Walter van de Vijver: Deepwater, US, Portfolio Activities

### Slide 31: Global Deepwater

- We have a strong acreage position in deepwater with opportunities across the globe, and have significant experience in deepwater development and production.
- Our existing producing assets are robust even at \$10/bbl. We are building a deepwater business, which is sustainable in a lower oil price world but allows oil price upside to be captured.
- We have ongoing deepwater development projects in the GOM (Ursa, Europa, Macaroni, Angus) and the Philippines (Malampaya), and selective investments will continue as exemplified by our Brutus development in GOM
- We have discoveries in Nigeria and Namibia, and are repositioning in the Lower Congo basin following disappointing results of our campaigns in Conga and Angola.
- Shell is pursuing Partnership opportunities in Brazil, and is reviewing blocks on offer in the first open bid round (bid closing date mid June)
- In Egypt early 2D on the strategic NEMed (NE Mediterranean) deepwater block has confirmed major structures.
- Cost reductions are possible through cost leadership initiatives, new technologies and leveraging existing infrastructure in GOM
- We are setting up a global deepwater services organisation to leverage our experience, competencies and capabilities as well as our relationships with vendors and service companies.
- With operated deepwater production of some 500 000 boe/d the GOM clearly is a major experience base and a springboard for deepwater activities worldwide.

### Slide 32: Deepwater Gulf of Mexico

- We have demonstrated success in deepwater GOM, which has been, and is, profitable even at low oil prices (Brutus break-even is \$8.50/bbl – disclose?). Reservoir performance and well productivity are above expectations to date, and as you may know we expanded the facilities on our Auger platform in 1997 which increased the throughput capacity to 100,000 barrels of oil per day and 300 million cubic feet of gas per day.
- We are the largest producer in the Gulf of Mexico, with more than 50% of the total deepwater production.
- With Ursa just on-stream, we now have four producing Shell operated tension leg platforms in the GOM. The learning curve enabled us to bring costs down and reduce cycle times. For example, Ursa came on stream ahead of schedule despite unanticipated early well problems. (Back-up to be provided.)
- Operating costs are coming down: Unit operating costs are now less than \$2/barrel.
- Shell remains a very strong player in the deepwater GOM. After the last lease sale (sale 172 on 17 March, 1999) we remain the largest leaseholder and have 15% of all deepwater leases. From a deepwater production perspective Shell is clearly number one. [followed by BP Amoco with 14% and Exxon-Mobil with 13%. (BP Amoco and Vastar (Arco ?) would be the largest individual leaseholder with 17% if they were combined].
- Current infrastructure can be leveraged through hook-up of several “hubs” capable of processing production from satellite fields. This facilitates profitable incremental

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developments and allows us to generate profits from other operators through production handling.

- We believe that there are many opportunities remaining even in a low oil price environment. At the same time though, we are making sure that our investment program is robust even in a sustained low price environment. To that end we are for example reducing project risks by taking on partners where appropriate.

#### **Slide 33: Brutus Development**

- We're pleased to announce the development plans for our Brutus prospect, our latest major deepwater development. We will develop the Brutus prospect with a tension leg platform, the same type of platform we have successfully used on the Auger, Mars, Ram/Powell and most recently Ursa field developments.
- Brutus is located in the Green Canyon area of the GOM, not far from our Bullwinkle, Popeye and Troika developments.
- Brutus project data: expected peak production is 100 thousand barrels of oil and 150 million cubic feet of gas a day, but capacity is 100 thousand barrels of oil and 300 million cubic feet of gas a day. The additional capacity will be used for developments that can be tied back to Brutus.
- Brutus is profitable at \$10/bbl and exemplifies our robust investment opportunities in deepwater (disclose break-even price of \$8.5/bbl?)
- Shown here also is an example of the learning curve that we have experienced. This cost index tells us how cost efficient our developments are. The index on the chart represents tension leg platform cost normalized by facility size (represented by peak production capacity).
- Brutus should continue Shell's GOM deepwater dominance and build on a proven track record with regards to development cost and timing of first production.

#### **Slide 34: Emerging Deepwater Province in Nigeria**

- Nigeria represents a key growth platform within the EP Business Portfolio as discussed earlier
- Production growth from Nigeria will partly be underpinned by increased emphasis on offshore development with the deepwater production making a very significant contribution.
- SNEPCO operates two deepwater blocks and has interest in 3 further blocks operated by Esso and Agip respectively (all awarded under PSCs in 1993)
- Results to date of exploration drilling confirm presence of prolific hydrocarbon generating basin: of the 26 exploration wells drilled to date, 15 have encountered oil with varying amounts of gas, with the remainder solely non-associated gas.
- Following the early success of the Bonga and Abo oil discoveries, a series of gas discoveries were made (from SNEPCO DW portfolio – 10tcf 100%. 4tcf Shell share). In 1998, the deeper sections were explored and several significant oil discoveries have been made since then (Erha - Shell 35% and Nnwa [Block 218: Statoil] straddling Block 219 – Shell 55%).
- Current Oil Reserves Estimates some 3 billion.

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- This demonstrates the emergence of a significant resource base where SNEPCO have developed a leading position, participating in 6 of 9 oil discoveries:

OPL	Discovery	Spud Date	Oil Reserves (100%) Million bbls
210	Oyo	July '95	-50
316	Abo Cluster	Nov. '95	150
212	Bonga	Sept. '95	1,000
219	Ngolo	Jan. '96	120
222	Ukot	Aug. '98	-300
220 (219)	Chota (Bolia)	Feb. '98	350
209	Erha	Dec. '98	450
218 (219)	Nnwa (Doro)	Dec. '98	450
	TOTAL		3,370

Concessions comprise 18 blocks awarded to 13 companies, under P.S.C. conditions in 1993, with water depths range from 200 to 1400m: average block size 2000 km2. One ultra deep block was awarded in 1998

**Message: SNEPCO ARE THE LEADING DW OPERATOR IN NIGERIA**

*NB. Recent (Q4/98) discoveries were made by Exxon and Statoil: Any official statement of these discoveries should be agreed with the operators.*

*Exxon (operator) in Erha - block in which Shell has a 35% stake*

*Statoil (operator) in NNWA1/block opl. 218. No Shell equity stake, but agreement to share seismic data and we do own neighbouring block 219.*

Field	Operator	Shell Interest
209	Esso	35%
211	Agip	12.5%
212	Shell	55%
219	Shell	55%
316	Agip	12.5%

**Slide 35: Global Portfolio in 1998 (ROACE)**

NB. Already briefly shown by Phil Watts (slide number 6).

- As explained by Phil, this chart demonstrates the profitability profile of our existing portfolio at 1998 oil prices (before impairments, but including our other specials)
- EP ROACE high for many major producers
- Problems in Aera/Altura & Venezuela resulted in impairments (\$ 2.6 bln NIBT; \$ 1.8 bln NIAT) and are being addressed ; (I will address this in the following)
- Impairments and reorganisations are the first indications of addressing problem areas
- The position of our deepwater assets reflects the maturation of this play from "growth" towards "producing" and we are climbing up the maturation curve.
- We will also look within our OU's for underperforming assets, which need to be fixed.

Non performing assets	NIAT	Impairment	NIAT	ACE
	before imp.		after imp.	
Venezuela	-125	-409	-534	556
Aera/Altura	-10	-1418	-1428	2772
Total	-135	-1827	-1962	3328
UK		-46		

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USA	-177
World	-2050

ROACE in %		
	Dec. 14 EST.	April 8 Act.
Brent \$/bbl	12.80	12.75
Majors Producers	20.6	20.9
Other Producers	10.7	7.7
Deepwater US	9.6	8.4
Under performing assets	-3.1	-2.5
New Growth Areas	-39.7	-32.9
World	8.5	7.8

*Excluding growth area's ROACE would have been some 12.3% (some \$1.8.blm of Capital Employed invested in growth areas)*

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- *Major producers are : UK, Netherlands, Denmark, Nigeria SPDC, Oman, Malaysia and Brunei*
- *Other Producers : Mature US, Canada, Norway, Germany, Abu Dhabi, Syria, Egypt, New Zealand, Gabon, Australia, Bangladesh, China*
- *Deepwater US --GOM*
- *Underperforming - Venezuela; US : Aera & Altura*
- *New/Growth area's - Philippines, Nigeria (SNEPCO), Argentina, Russia, Kazakstan, Pakistan, Chad, India, Trinidad, Peru, Angola, Congo, Namibia*

### Slide 36: Global Portfolio & Restructuring Activities 1998

- In order to put our 1999 activities in perspective let me show you first what has been implemented in 1998
- As you are well aware of these activities I will not dwell on these for long . Some were covered in December while Henk mentioned already developments in Australia and Argentina.
- In the area of leveraging synergies and increasing efficiencies, three JVs/alliances were formed:
  - Apart from Australia/Woodside: (completed), in Pakistan: with Premier onshore 50/50 JV signed in December (recent discoveries Bhit, Zargan, Zamzama) and in Bangladesh with Cairn where Shell increased its interest in JV block 15 and 16 to 50 % and becomes operator in 1999 over the combined interests.  
The partnership recently was awarded Block 10 and entered into an agreement with Unocal to cooperate in proposed energy & infrastructure development projects in South west Bangladesh
- Following our empahsis on our gas-strategy we did a gas for oil asset swap with Occidental Petroleum: We traded PRODUCING oil interests in Yemen (20 kb/d) and Colombia (28kb/d) for increased interest in FUTURE gas in Malaysia and the Philippines
- Important is to note also what we decided NOT to pursue: bidding on Rosneft and entering into the next phase of the Camisea project. This shows again that we are more disciplined and short term focussed now, as both projects would have hurt our short-term performance. ( Rosneft: write off a la BP/Amoco; Camisea large CE without return; both projects also NPV not acceptable ?)
- Furthermore staff reductions were announced; most notably in the UK and the US. In the US, in a first round, some 750 jobs have been made redundant. As mentioned by Phil, world-wide more than 3200 jobs are expected to be cut between end '98 and '99 and (next slide), let's move now to the 1999 plans.

### Slide 37: Global Portfolio Management 1999

- But, as said, we will continue to upgrade our portfolio. For 1999 the following actions have already been taken
- **US/GOM** : integration of Shelf & Deepwater organisation ;
  - Reduction of 160 to 300 staff indicated helps to increase operating efficiencies while reducing costs (Shell Oil to update)
- **Deepwater**  
Reviewing various West Africa options while also reviewing a partner for Kudu in Namibia

- **Malampaya**
  - Acquisition of Occidental's 50% as part of a global portfolio (multi-asset/country) swap.
  - Studies have been initiated to look at opportunities for strategic equity dilution of the gas to power project in the Philippines.
- **Venezuela**
  - Shell believes it has to better position itself for a more balanced portfolio of current production, development and exploration acreage in Venezuela. Divesting part of Urdaneta West contract is consistent with this strategy.
  - *Shell's business is almost completely dominated by the performance of this asset. For long term growth in Venezuela, we need a diversified portfolio.*
  - Shell feels that given the prospects for profitable investment in Venezuela (incl. diversification), the current upstream position of SVSA can be further improved.
- **Altura**  
will be addressed later on.
- **Non-strategic assets**  
Work-in-progress on divestment & swap opportunities details of which cannot be disclosed yet (due to partner & government sensitivities and for competitive reasons)

**Slide 38: US EP Portfolio**

- The chart shows the major pieces of the US portfolio: including our associates Aera and Altura.
- While we have some strong performers in our portfolio, given our current price outlook, some of our US assets are not performing.
- We are improving our performance by attacking on several fronts:
  - First, we are focusing on our core strategic assets by divesting non-core assets and making investments in our core areas only.
  - Actions related to Aera and Altura will be discussed separately.
  - Second, we are enforcing capital discipline. We have a \$1 bln development capital expenditure ceiling and we have cut the exploration program to less than \$400 mln in 1999.
  - Third, we are further reducing costs. We already reduced our work force by about 20% in 1998 and will make a further reduction of 5 to 10% in 1999. We are also consolidating our Gulf of Mexico Shelf and Deepwater Business Units to reduce administrative cost and optimise our investment program. We are also applying all the strategic cost leadership actions you heard about earlier in the presentation. In particular, we are taking advantage of the best practices in Aera and Altura.

**Slide 39: Aera Alliance in California**

**Message:** Aera is cost leader in California and has upside potential

- Shell and Mobil formed Aera Energy LLC in 1997. Shell's interest in the joint venture was 58.6% at the formation, later reduced in 1998 to 51.8% when Mobil acquired Arco's California properties and contributed them to Aera.
- The principal synergies we anticipated at the creation of Aera were savings from consolidation of field infrastructure, staff reduction and leveraged procurement, and

leveraging of Shell's development expertise to Mobil's large undeveloped reserve base.

- These synergies were achieved faster than anticipated, and Aera is now the benchmarked cost leader in operating and overhead expenses compared to other California operators.
- The recently acquired Arco properties (contributed by Mobil) increase the scope of the cost savings.
- Having achieved a cost leader position, which we will defend, we now turn our focus towards efficient steam utilization. Energy costs due to steam injection used to recover heavy oil accounts for about 44% of the operating costs.
- While approximately 70% of Aera's 1998 oil production came from heavy oil deposits, we have a significant opportunity associated with light oil primarily in the Belridge (Diatomite) and Lost Hills properties. Development of these light oil reserves is very robust and profitable even at Brent oil prices less than \$10 per barrel.

#### Slide 40: Altura

**Message:** Altura is best in class in basin cost performance but does not fit in our portfolio.

- Altura is our joint venture with BP Amoco in West Texas and SE New Mexico. It was formed in 1997 when Shell combined its properties in the area with those of Amoco. Shell has a 36.1% interest in the joint venture.
- Since the formation, Altura has reduced costs and achieved the envisioned synergies faster than anticipated. Altura is now a cost leader in the basin. (Back-up to be provided.)
- We are investigating the divestment of Altura. (Latest status communicated.)
- In the interim, Altura is pursuing portfolio rationalisation to upgrade the venture portfolio.
- Altura is also continuing the optimisation of its operating performance, driving down cost further.
- We are not making new investments in Altura, but are making minimum investments to maintain the value of the properties.

#### Phil Watts      Slide 41: Summary

**Key message:** It are difficult times and we do not know how long they will last, but we are not waiting for better time, we are adjusting now:

- bringing cost and spending levels down and increasing capital efficiency of our spending through enhanced investment discipline and global ranking (capital allocation; competition for funds).
- Increasing transparency and accountability;
- Commitment ...improving balance between short-term performance and long term value; various measures are underway.
- We are committed to deliver 15 % ROACE at 14 \$/bbl in 2001 and will continue to enhance our portfolio and retain flexibility should prices decrease again to around \$10/bbl.

NB. Perhaps obvious, but still important to note is that we will remain our cost and capital efficiency targets even when oil-prices would recover in the short term.



# Royal Dutch / Shell Group of Companies

Exploration and Production Presentation to Financial Analysts  
New York, 8th April 1999 and Rijswijk, 9th April 1999

*Improving performance and  
maximising value in uncertain times*

Copies of viewgraphs used by:

Phil Watts  
Henk Dijkgraaf  
Walter van de Vijver  
Tim Warren

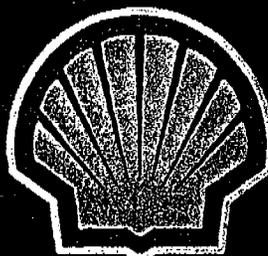
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*Exploration & Production*



*Improving performance  
and maximising value  
in uncertain times*

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***Disclaimer***

This presentation contains forward-looking statements that are subject to risk factors associated with the oil, gas and power businesses. It is believed that the expectations reflected in these statements are reasonable, but may be affected by a variety of variables which could cause actual results or trends to differ materially, including, but not limited to: price fluctuations, actual demand, currency fluctuations, drilling and production results, reserve estimates, loss of market, industry competition, environmental risks, physical risks, legislative, fiscal and regulatory developments, economic and financial market conditions in various countries and regions, political risks, project delay or advancement, approvals and cost estimates.



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## *Agenda*

### *Phil Watts*

- Globalisation and the Executive Committee
- Overview of Performance, Plans and Portfolio

### *Henk Dijkgraaf*

- Nigeria
- Australia
- Middle East
- Gas

### *Walter van de Vijver*

- Deepwater
- United States
- Portfolio activities

### *Tim Warren*

- Technology



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### *Globalisation of Shell's E&P Business*

- Single global leadership team
- Global strategies, investment decisions
- One technology organisation, two sites
- Gas Power CEO on EP Executive Committee



- Clarifies & strengthens accountability
- Enhances decision-making
- Reduces costs



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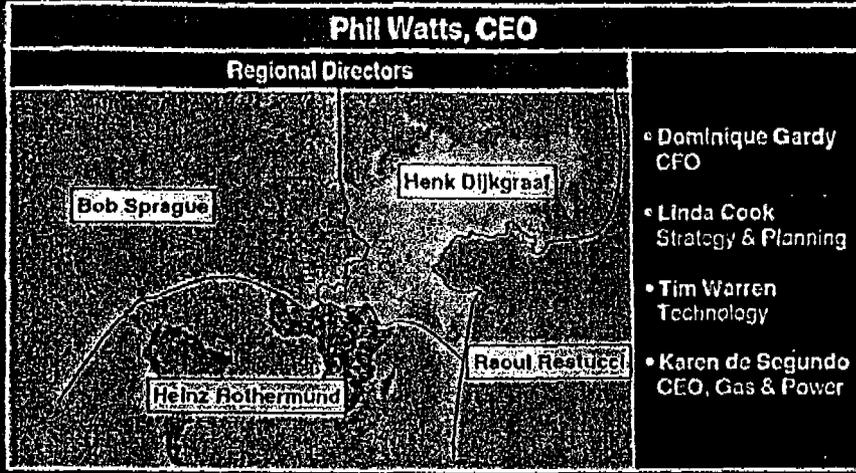
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### Global EP Executive Committee



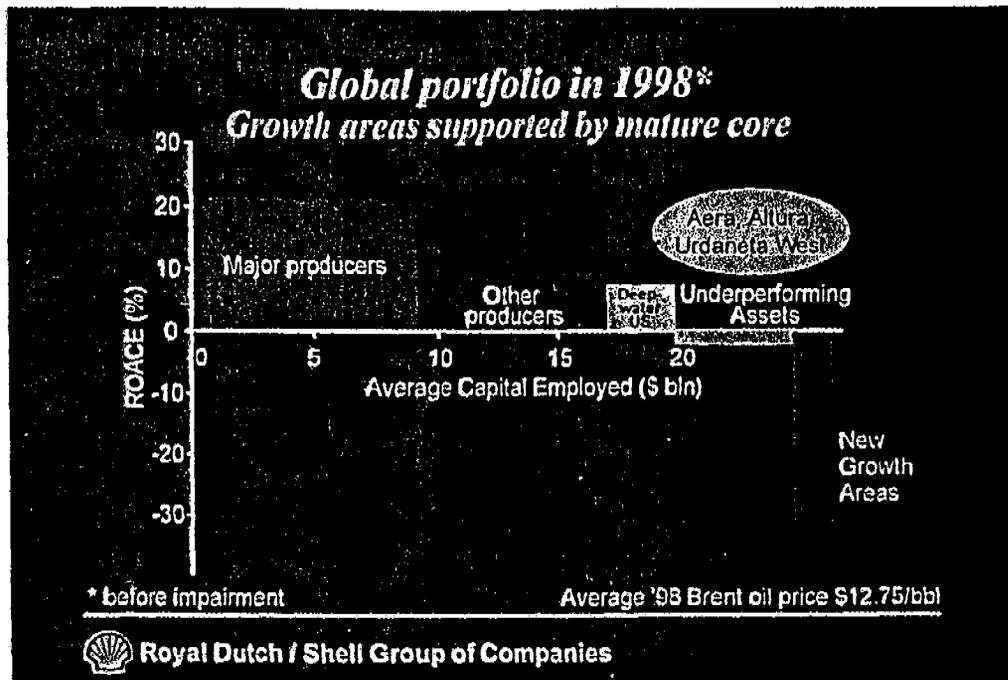
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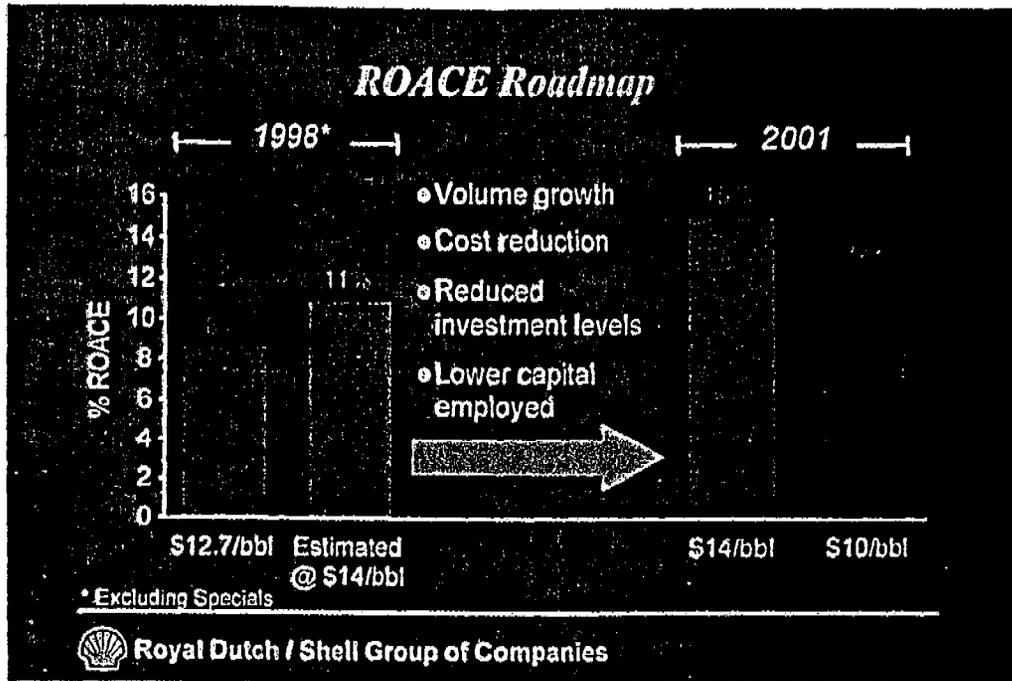


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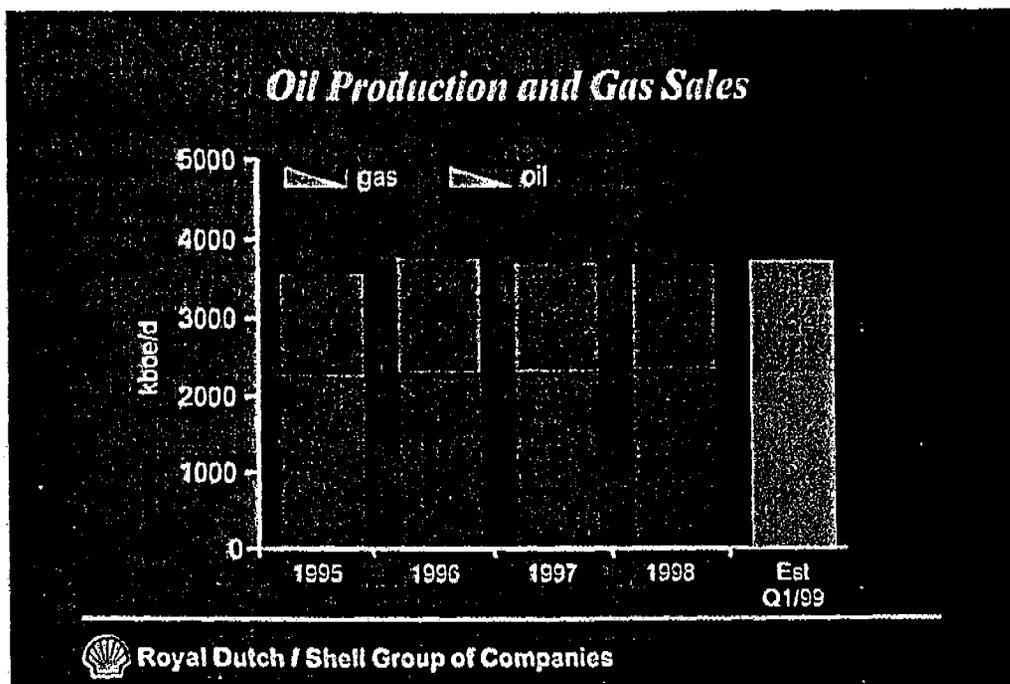
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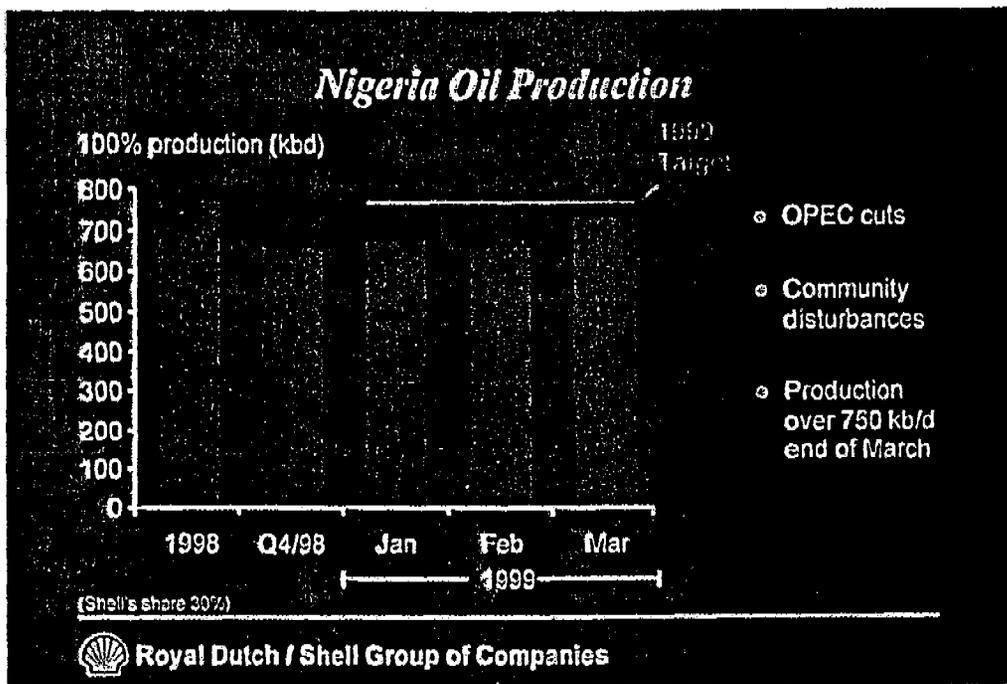


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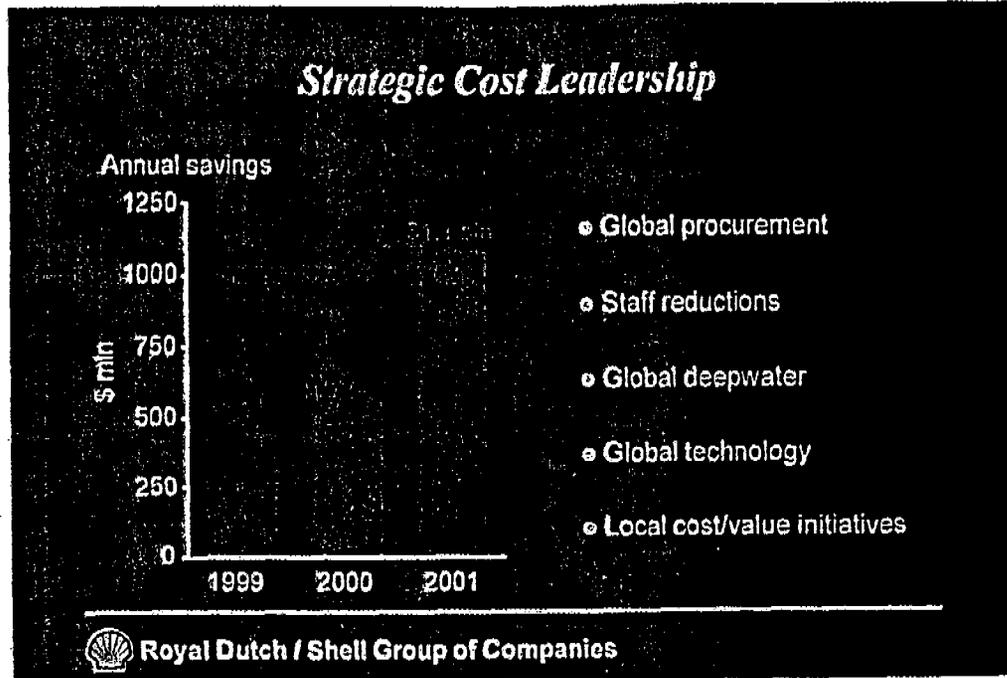


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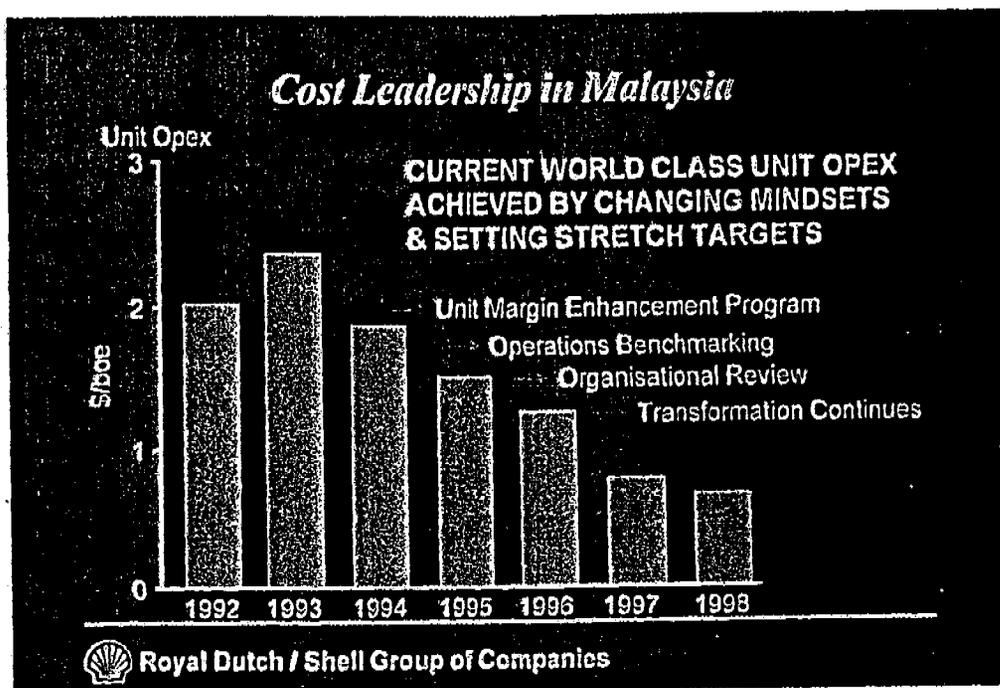
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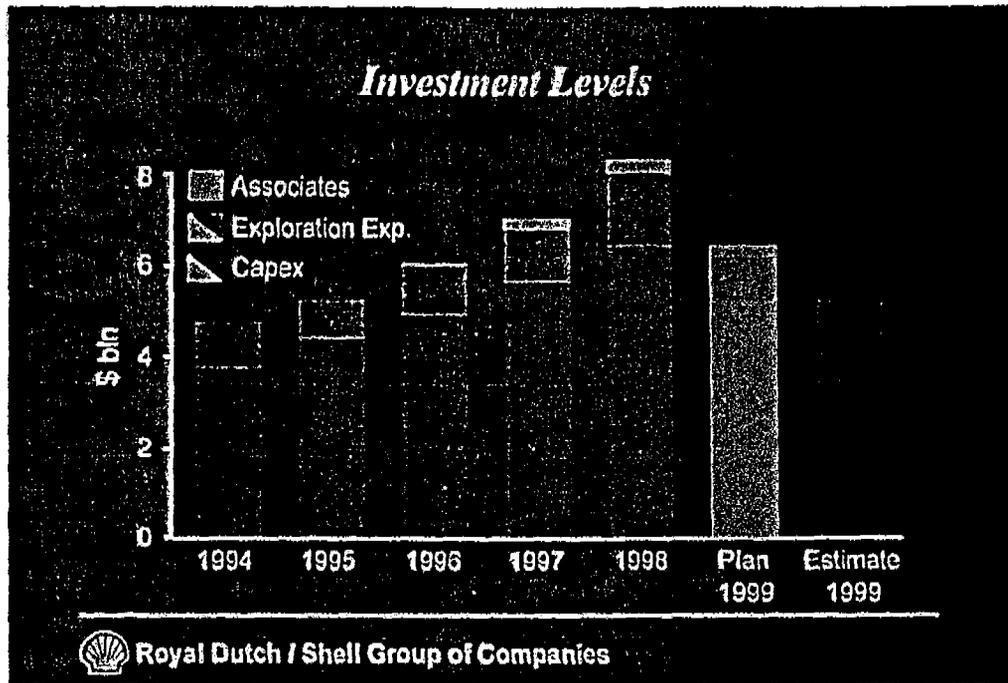


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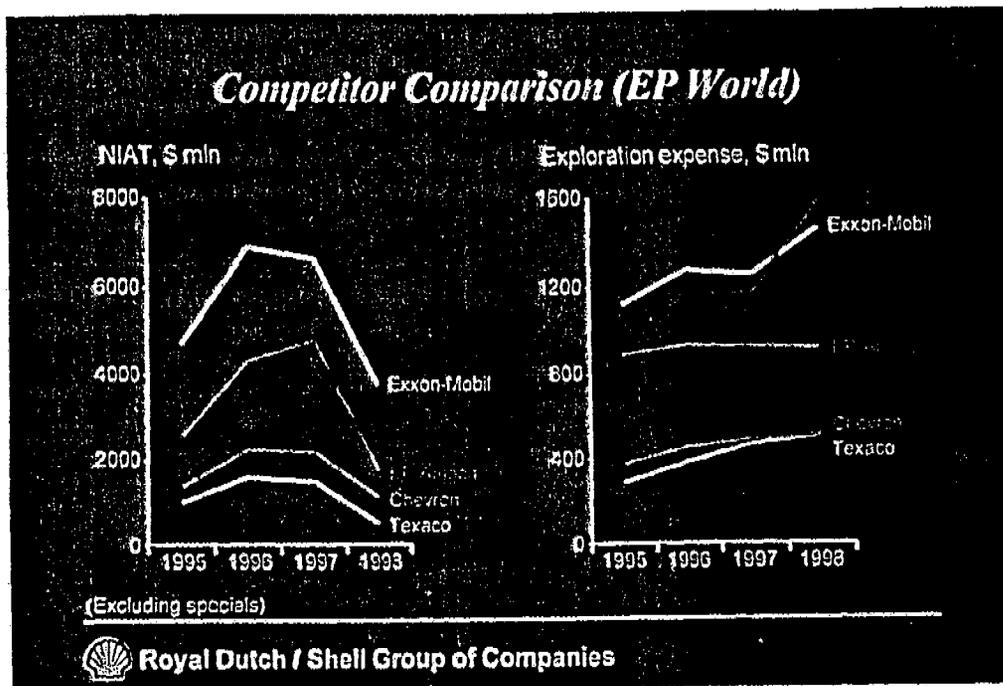


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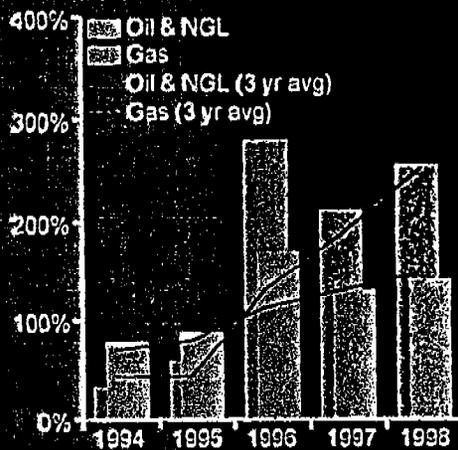
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### 1998 Exploration Activity

- Total spent: \$2.4 bln
  - \$0.2 bln for Camisea
  - \$0.2 bln Argentina acquisition
- Large gas discoveries in Peru, Norway and Malaysia
- 3 year finding cost \$2.70/boe
- Total proved reserve replacement ratio 182%

Proved total reserves replacement ratio



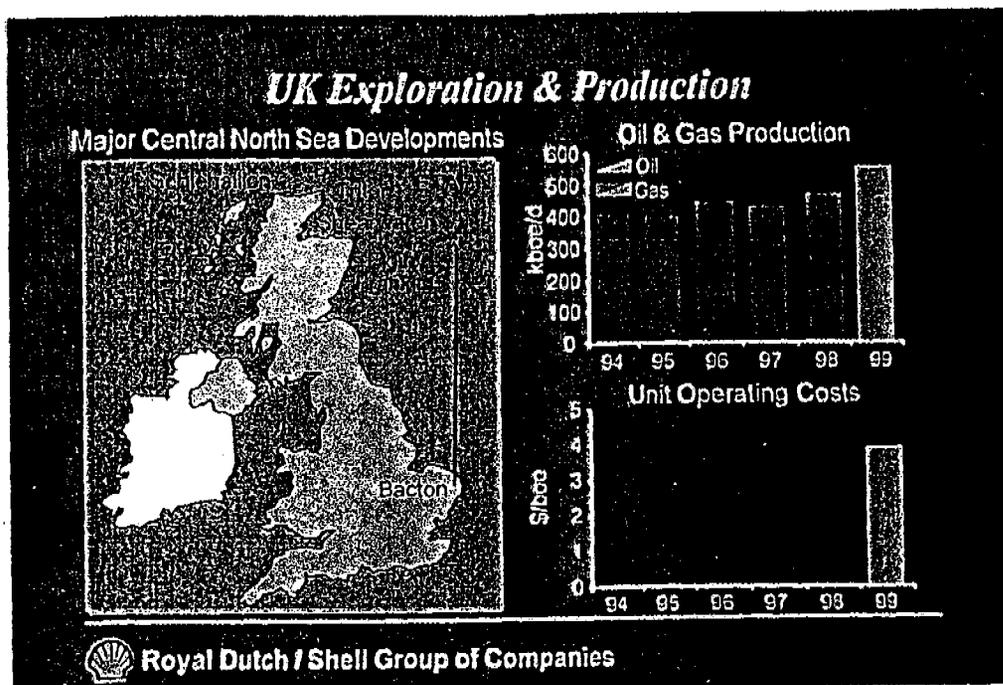
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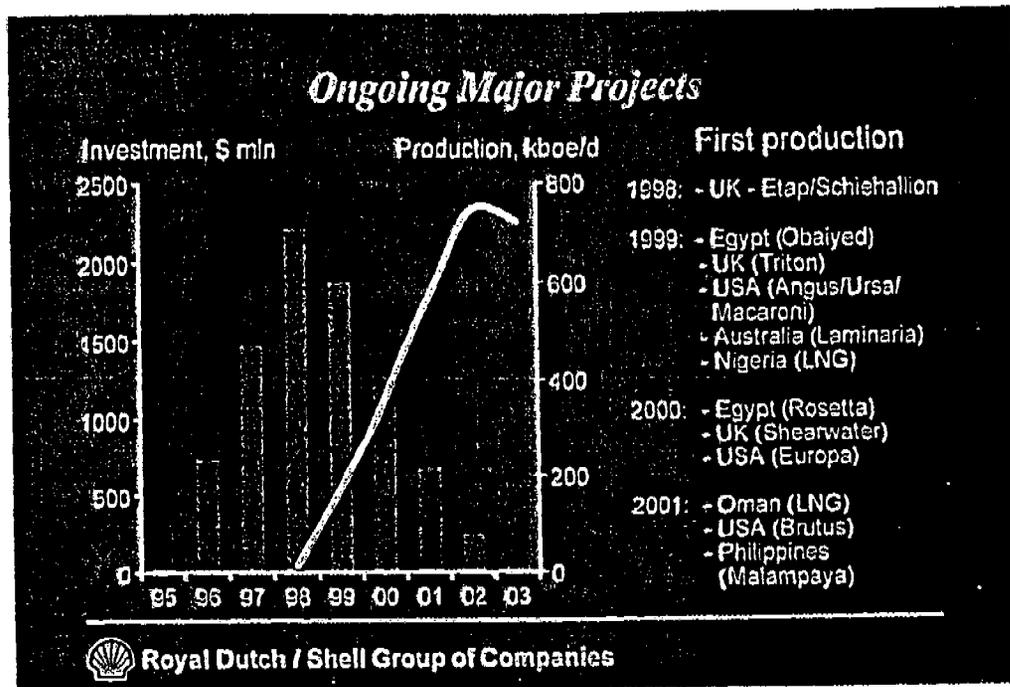


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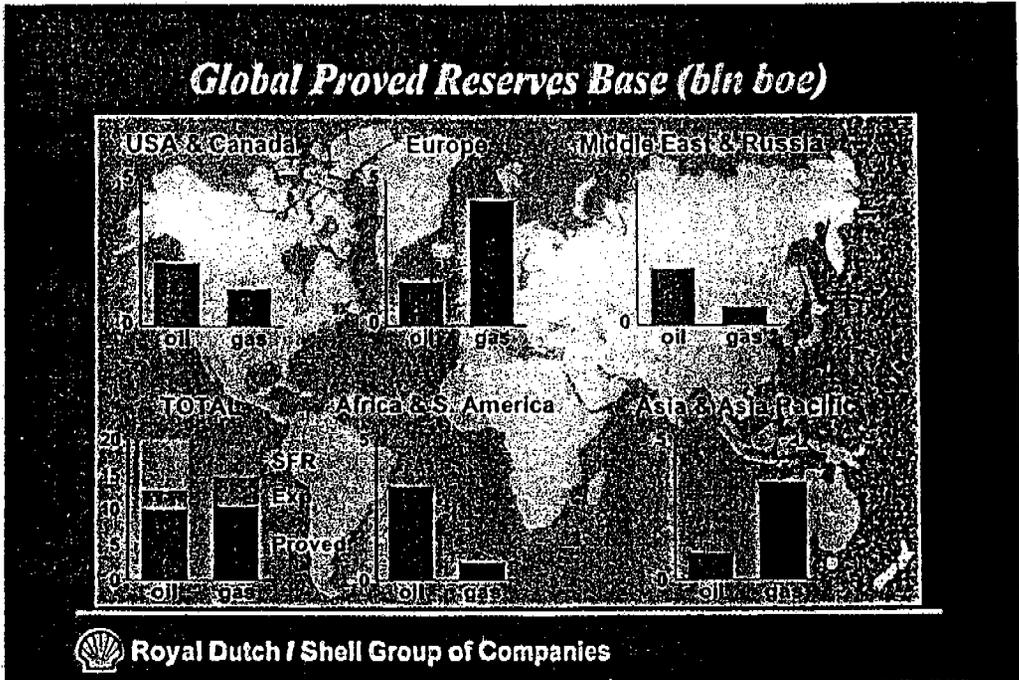
### *Impact of Technology*

in Bruner Shell's Champion-SE Field

<b>Drilling</b> 25% Time Savings		<ul style="list-style-type: none"><li>• UTC from \$6.5 to \$1.5/bbl</li><li>• Additional oil reserves 35 MMbbl</li><li>• 10,000 bbl/d peak oil production</li><li>• Payback &lt; 2 year</li></ul>	<b>Highly profitable at \$10 oil</b> <b>Robust at \$6 oil</b> <b>Similar potential for Phase II</b>
<b>Horizontal Gravel Packs (1000m)</b>			
<b>3D Modelling</b>			
<b>Using existing Structures</b>			
<b>TECHNOLOGY DRIVERS</b>	<b>PERFORMANCE TARGETS</b>	<b>BUSINESS IMPACT</b>	

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### *EP Global Strategies*

- Increased accountability & organisational effectiveness
- Improving short term performance
  - portfolio management
  - strategic cost leadership
  - monetise existing reserves
  - improved tracking
- Investment discipline
  - global ranking, tough screening
  - flexibility/capital allocation
  - proven track record
- Technology to deliver today
- Growth themes: MRH, deepwater, gas



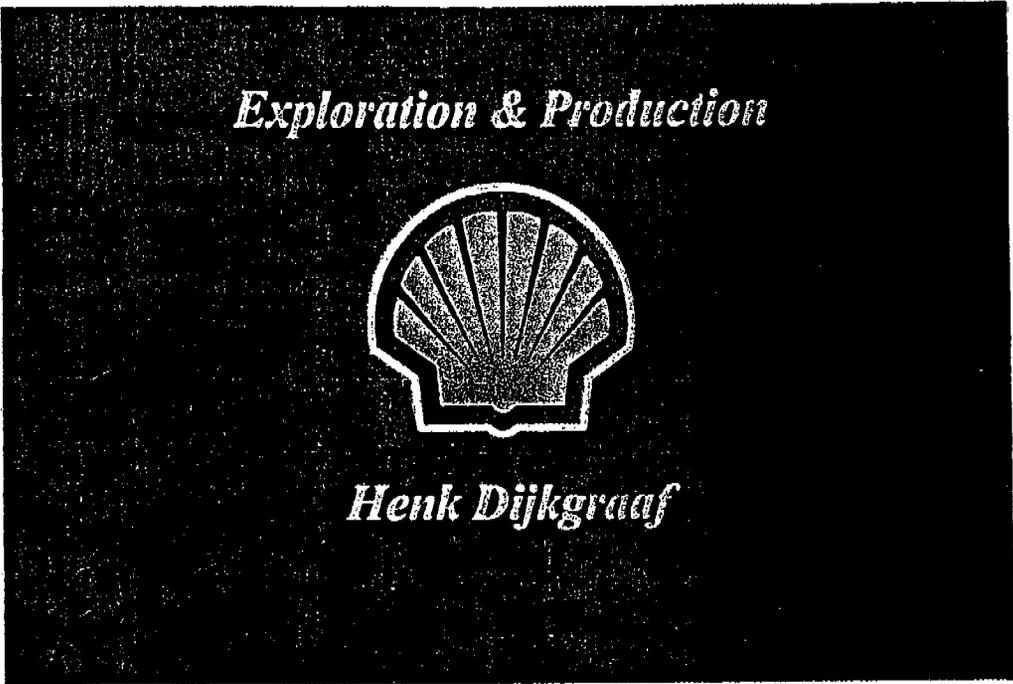
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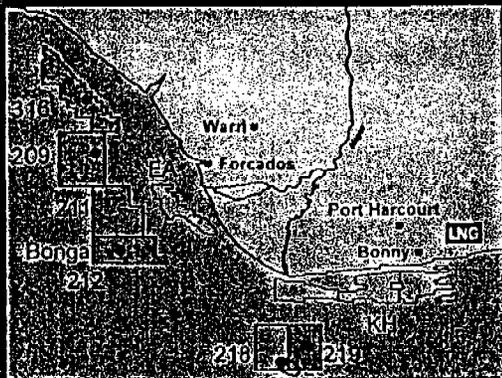
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### Nigeria unlocking a low cost asset base



#### Onshore Short Term potential

- Opec quota
- Community unrest
- Asset integrity
- Restructuring
- Production: 700 - 1000+ kboe/d

#### Gas Development: LNG

- Train 1+2 : Oct. 1999
- Train 3 approved

#### Offshore Medium Term Growth

- Bonga/EA optimisation
- Other exploration success (Block 209/316)



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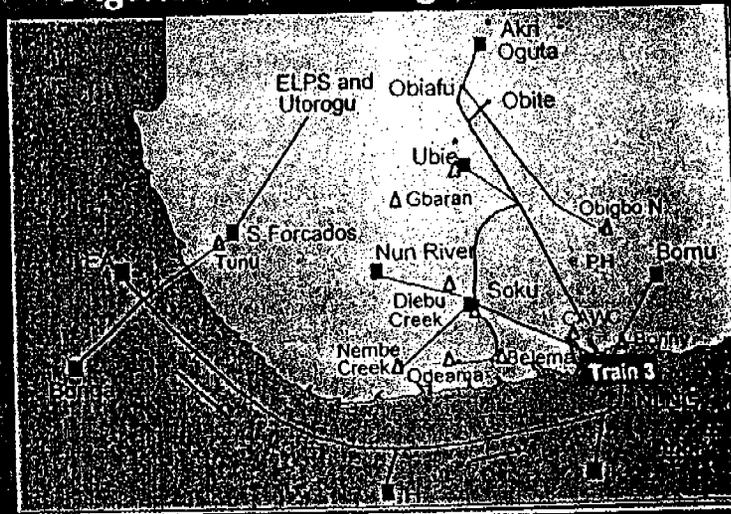
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### Nigeria - Train 3 Integrated Projects



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### Australia

- Shell/Woodside Alliance
- Australia LNG
- Leverage infrastructure
- Start up Laminaria Q4 1999

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## *Cost Leadership in Oman*

### **WHY ?**

- Low oil price world
- Plan \$200 million savings over 5 years from 1998, whilst growing production

### **HOW ?**

- Build on existing capability to take out costs
  - \$855 million savings 1994-98
  - 1998-99 exploration budgets halved
  - Capital expenditure for 1999 reduced by 12%
- Value creation and a cost leadership mindset instilled at all levels
- Benchmarking & best practice implementation

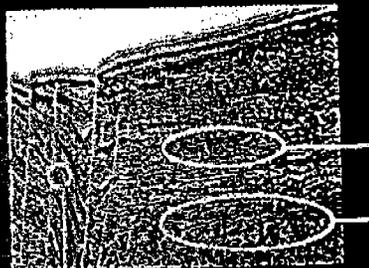
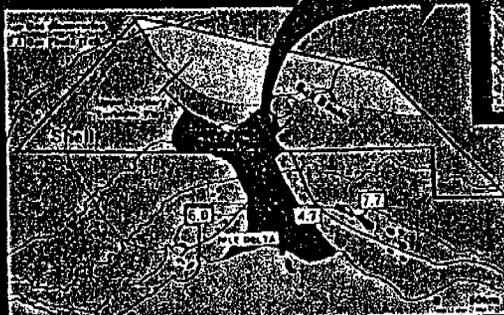


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### **NOTES:**

### *NE Mediterranean - A New Hydrocarbon Province for Egypt?*

- NE Mediterranean deepwater 100%
- 2D seismic under acquisition
- Early data indicates many prospects



Analog with known discoveries -  
New structural play



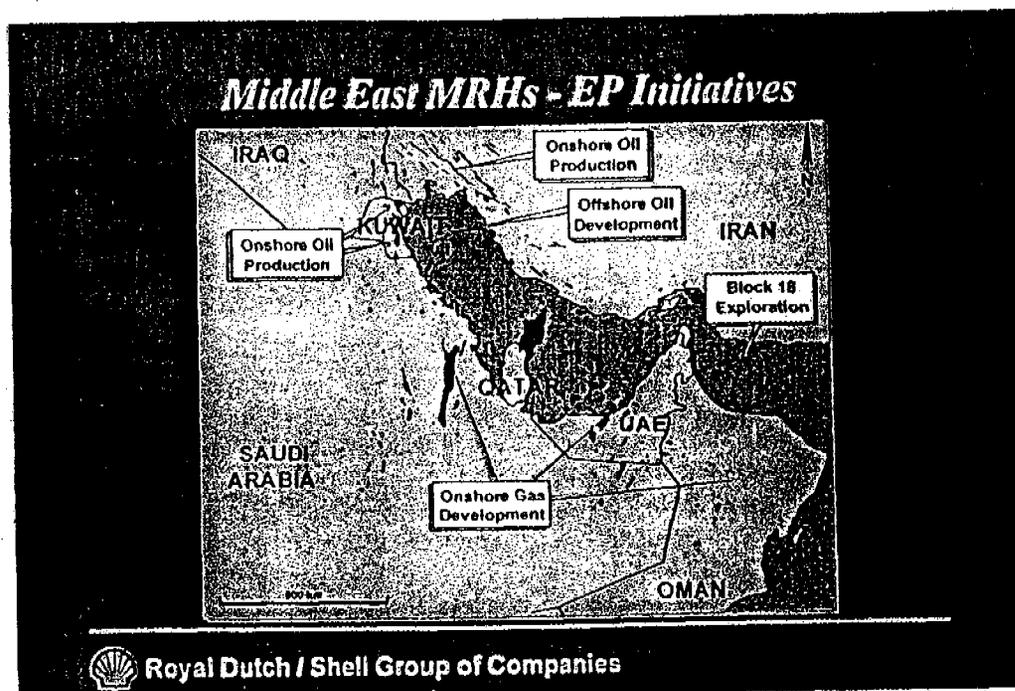
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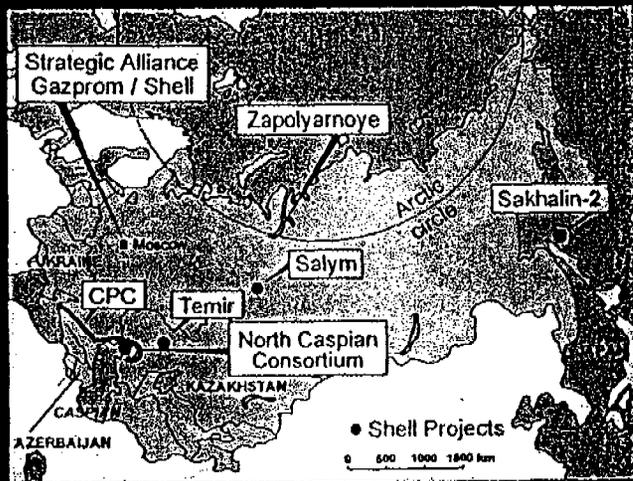
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### 1998 Shell E&P Activities in the CIS



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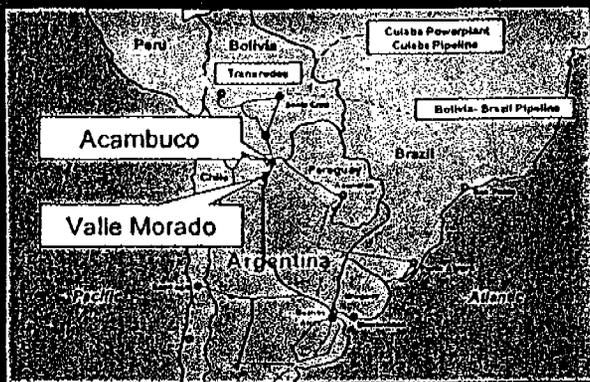
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## Argentina, Exploration & Production



- Valle Morado gas on stream by 1999
- Acambuco gas on stream by 2001
- Integrated Southern Cone gas marketing



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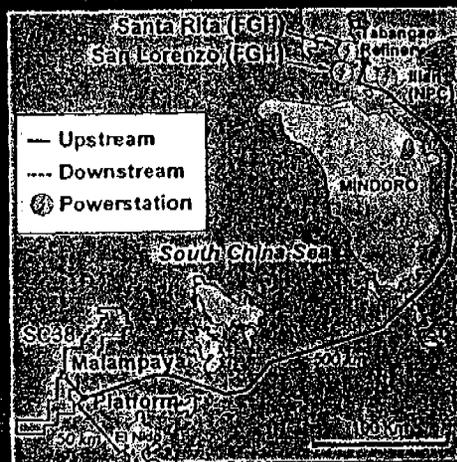
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## Shell Philippines - Malampaya Gas to Power Project

- 100% Equity holder and operator
- First gas October 2001
- Project economics robust at \$10/bbl
- Cost leadership initiatives
- Dev. capex of \$1.2 bln for 1999/2001
- Strategic equity dilution initiated



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*Exploration & Production*



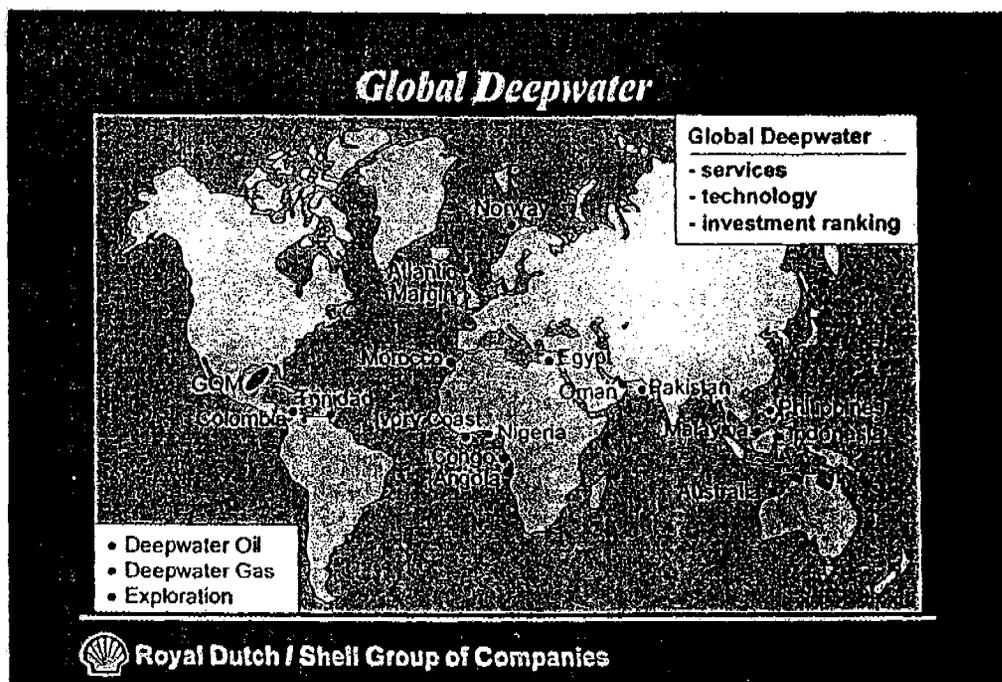
*Walter van de Vijver*

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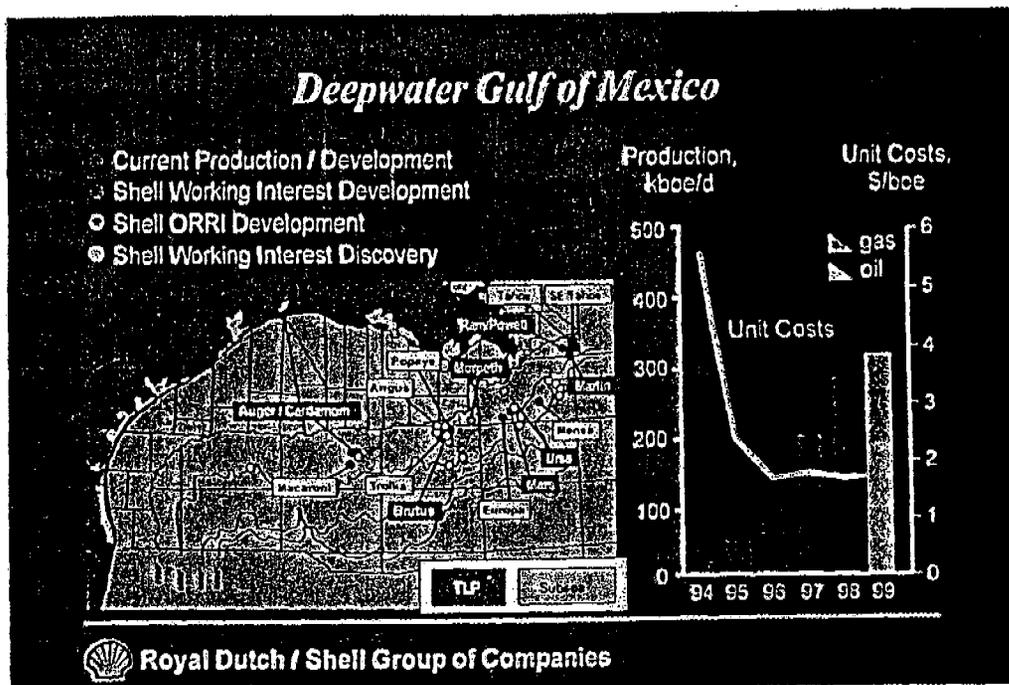


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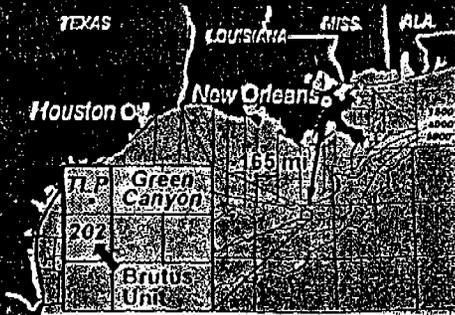
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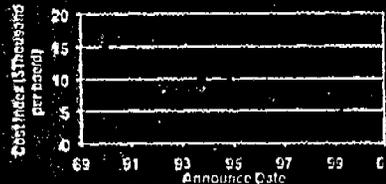
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## Brutus Development



- Tension Leg Platform
- Water Depth 910m
- Estimated peak production:  
100 kbd Oil; 150 mln scf/d Gas
- Total Project Cost ~\$900 mln  
(including pipelines)
- First Production late 2001
- Est. Ult. Recovery > 200 mln boe

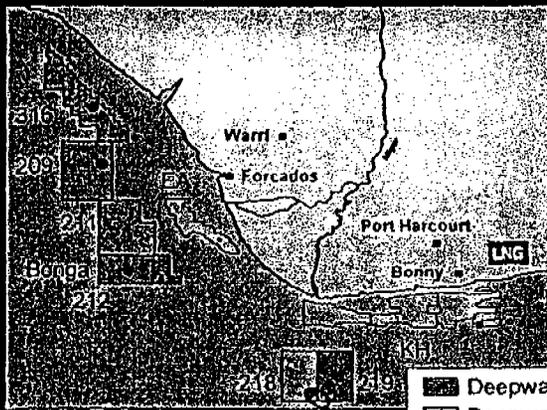
Project Schedule						
	98	99	00	01	02	03
Design						
Fabricate						
Install						
Drilling						
First Production						



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**NOTES:**

### Emerging deepwater province in Nigeria



- Current estimated oil reserves 3 bln bbl
- SNEPCO
  - 2 blocks operated
  - 3 blocks non-operated

■ Deepwater Shell operated  
▨ Deepwater Shell non-operated  
• Discoveries

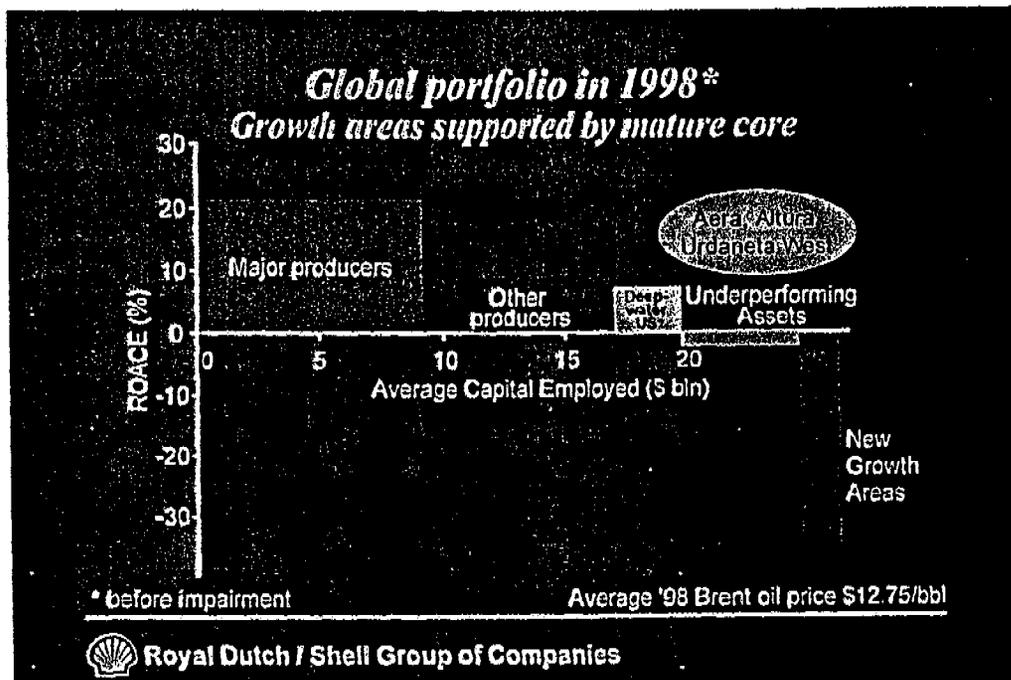
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**NOTES:**

### *Global Portfolio & Restructuring Activities 1998*

- Alliance in Australia
- Cairn deal in Bangladesh
- Premier deal in Pakistan
- Oxy swap increased gas interest
- Withdrew from Camisea; no bid on Rosneft
- Argentina gas deal
- US field sales
- Write downs \$2 bln (Venezuela, US, UK)
- Announced manpower cuts



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## *Global Portfolio Management 1999*

- US GoM: integration of Shelf and Deepwater organisation
- Reviewing opportunities for risk sharing/partnering:
  - Deepwater assets
  - Malampaya
  - Venezuela
- Divestments
  - Pursuing Altura options
  - Non-strategic assets



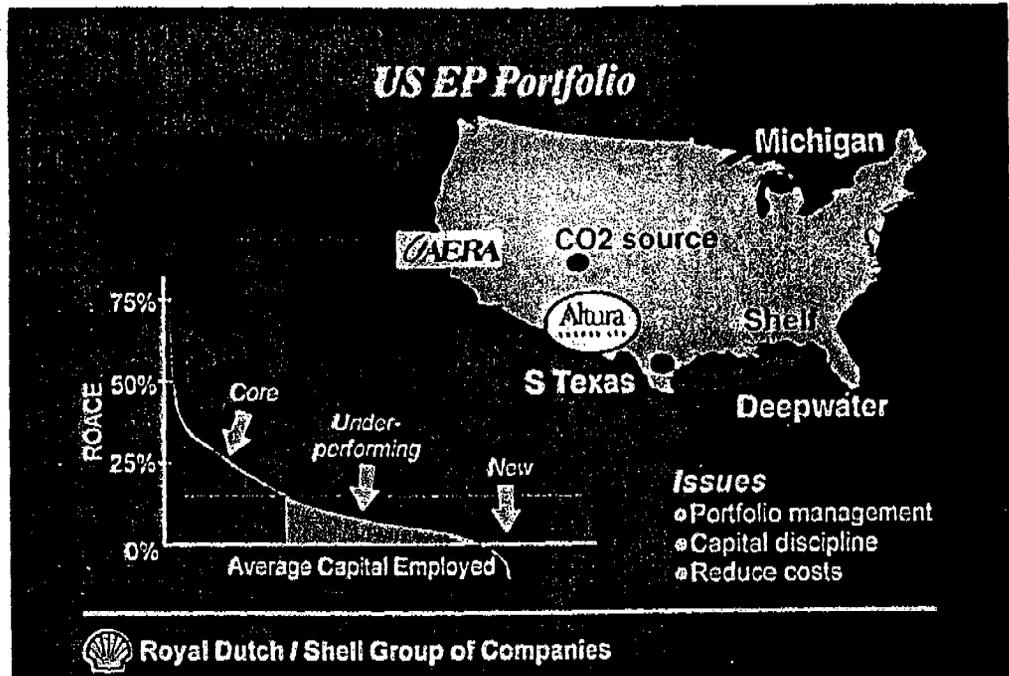
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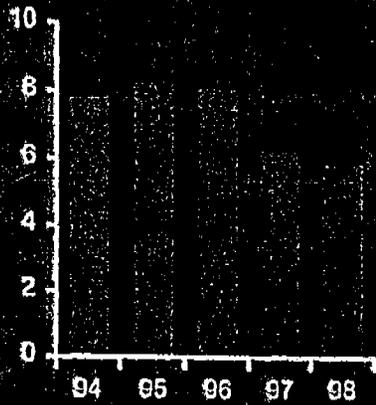
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### *Aera Alliance in California*

Unit production cost, \$/boe



- Benchmarked California cost leader for operating and overhead expenses
- Recently acquired ARCO properties will provide cost reduction opportunities through infrastructure consolidation
- 1999 cost efforts focusing on efficient steam utilisation and portfolio rationalisation
- Significant upside oil recovery potential in light oil reservoirs



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*Altura*



- Achieved synergies faster than anticipated
- Best in Class for both overhead and operating cost

**Forward actions**

- Investigate divestment
- Pursue portfolio rationalisation initiatives
- Optimise operating performance
- Minimum investments to maintain value

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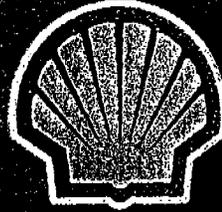
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**Shell E&P technology strengths**  
**– ready money, new opportunities,**  
**long-term value**

**Tim Warren**



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## *Technology imperatives*

- cutting costs
- replacing reserves
- developing our business
- meeting the environmental challenge



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*Dangers of relying on others*

- differing competitive interests
- inability to exploit external advances
- loss of learning curve



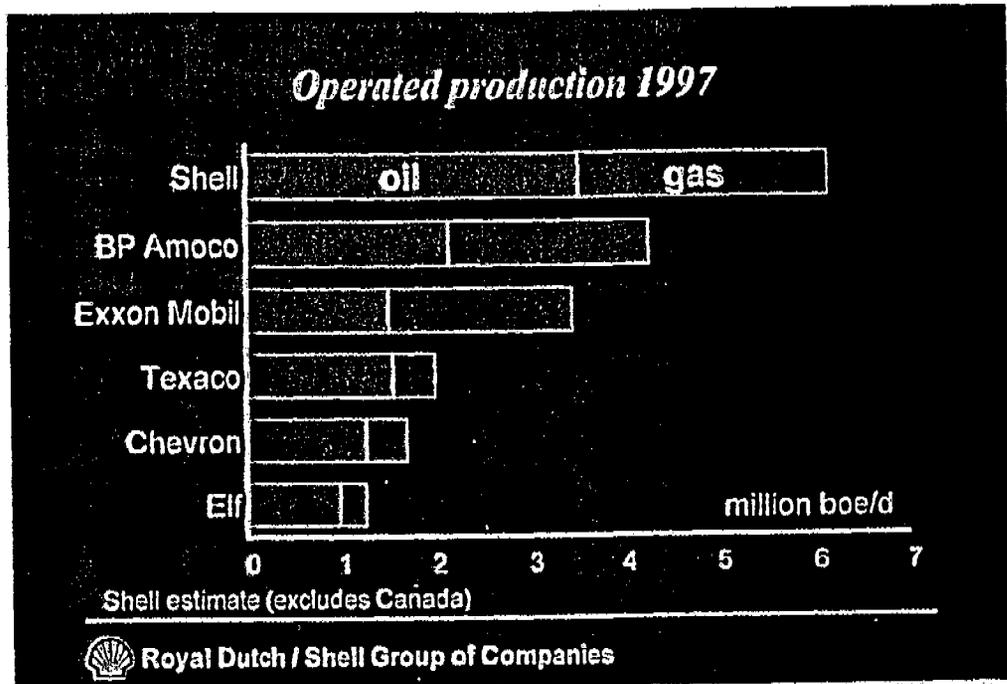
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*Dangers of relying on others*

- differing competitive interests
- inability to exploit external advances
- loss of learning curve
- monitor service quality



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*"We only do in-house those things that provide high and unique added value. And we manage our technology portfolio like any other asset."*



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*Commercialising technology  
- benefits of joint-ventures*

- return on investment
- rapid deployment
- fastest learning curve



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*"There's another vital source of competitive advantage - applying advances quicker and better than others."*



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*Shell GoM - deep water learning*

	<b>Auger</b>	<b>Ursa</b>	<b>Brutus</b>
Depth (metres)	872	1200	910
Throughput (thousand boe/d)	69	222	154
Time (months)	52	32	29
Cost (\$ billion MOD)	1.1	1.45	0.9
Cost index (\$ thousand per boe/d)	16.1	6.55	5.86



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NOTES:

***Global EP Technology***

Research, Technology Development & Technical Services

- seamless, world-wide service

Deepwater Services

- exploit deep water leadership

Commercial Technology Venture Services

- drive forward commercialisation



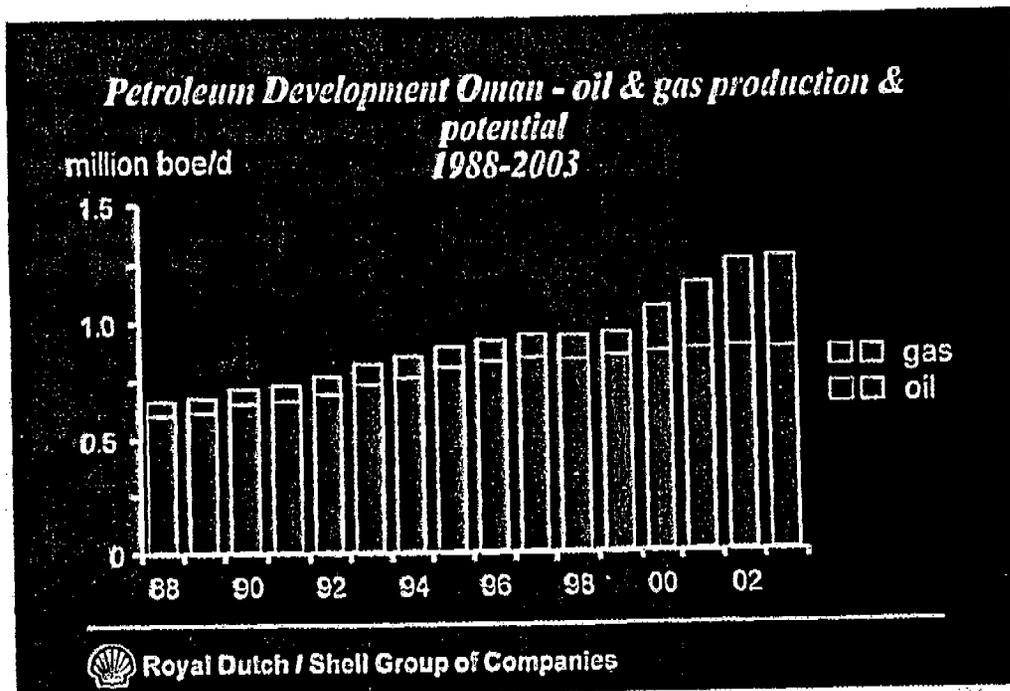
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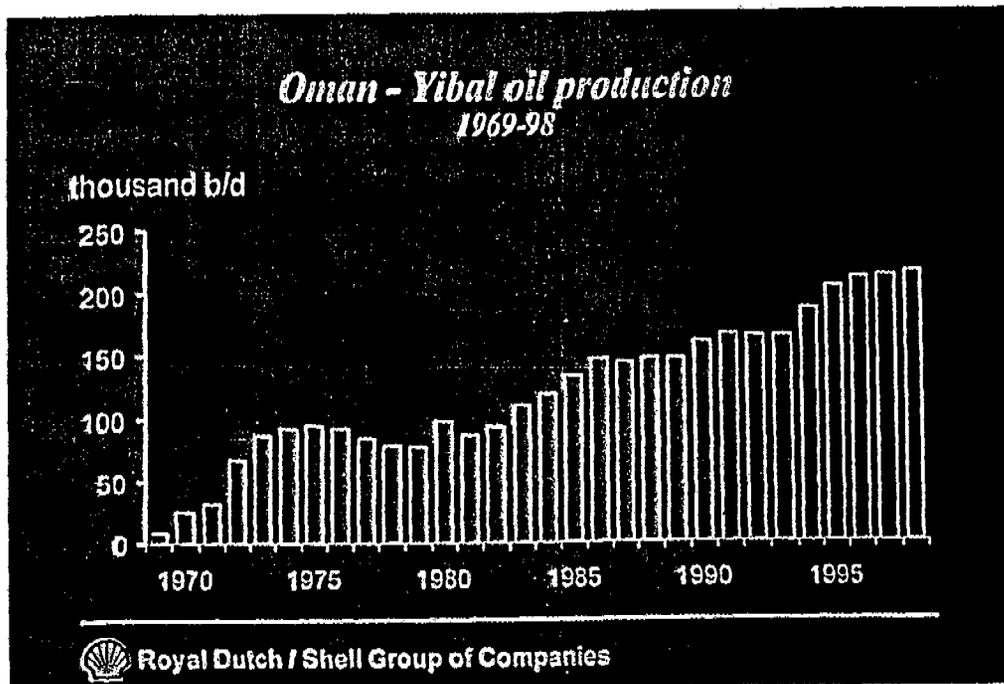


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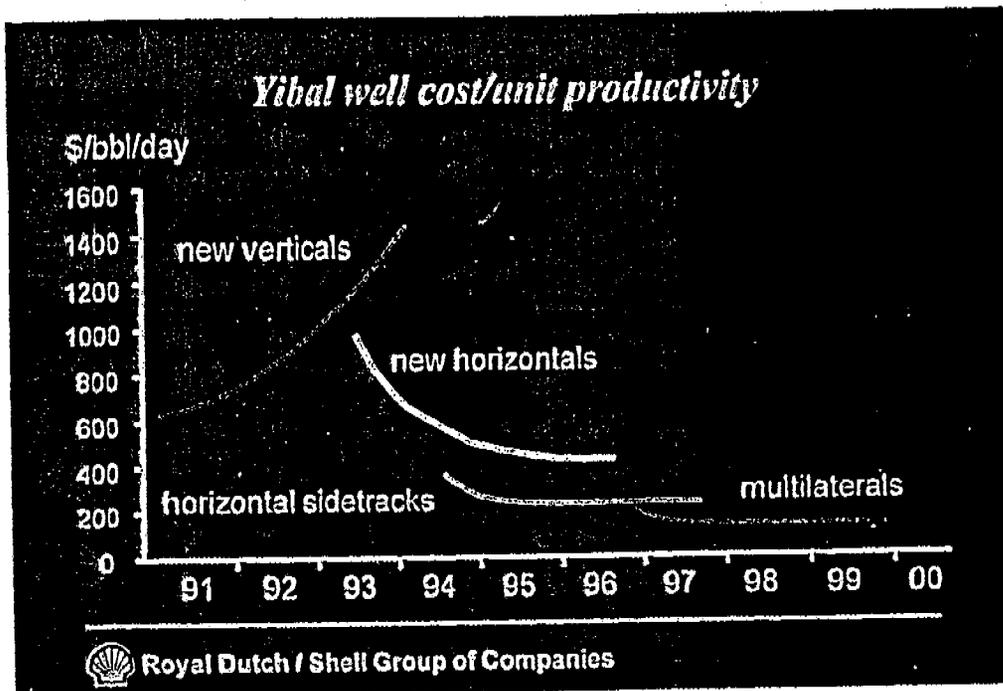


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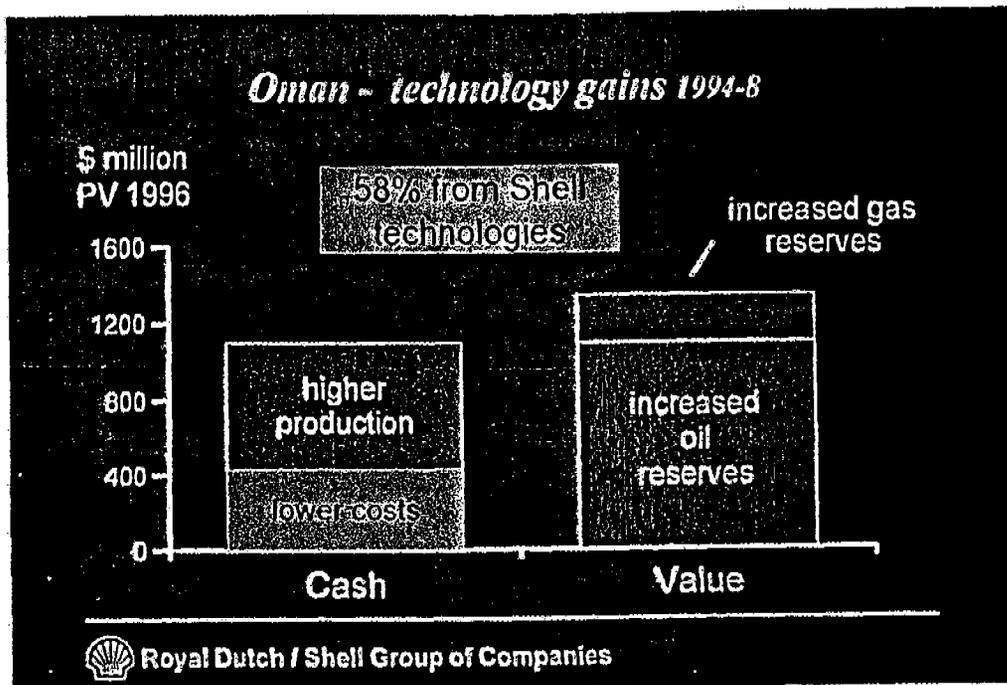


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*Shell Technology Delivering  
a Commercial Return*

- ready money
  - costs, production, sales
- new opportunities
  - plays, development, partners
- long-term value
  - reserves, gas markets, standards



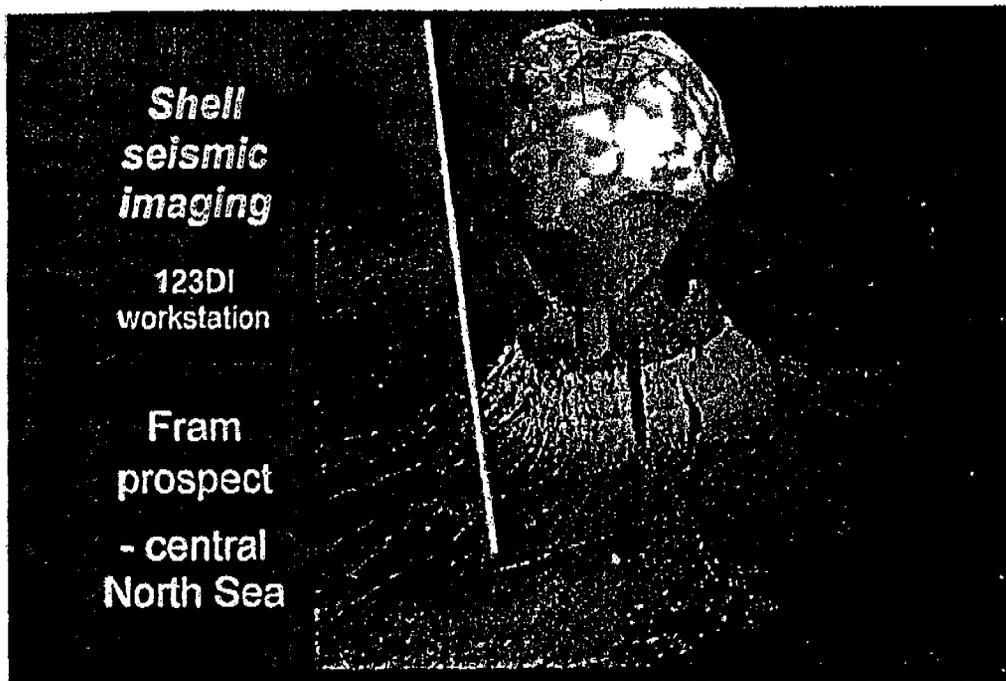
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LON01390821

SMJ00010893



NOTES:

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LON01390822

SMJ00010894

*Realising the value of subsurface vision*

- US/UK - defining Fram
- US - GoM exploration success
- Netherlands - Grijpskerk wells (+\$11mln)
- US - Ram Powell well (+\$20mln)
- Nigeria - integrated studies (+390MMbbl)



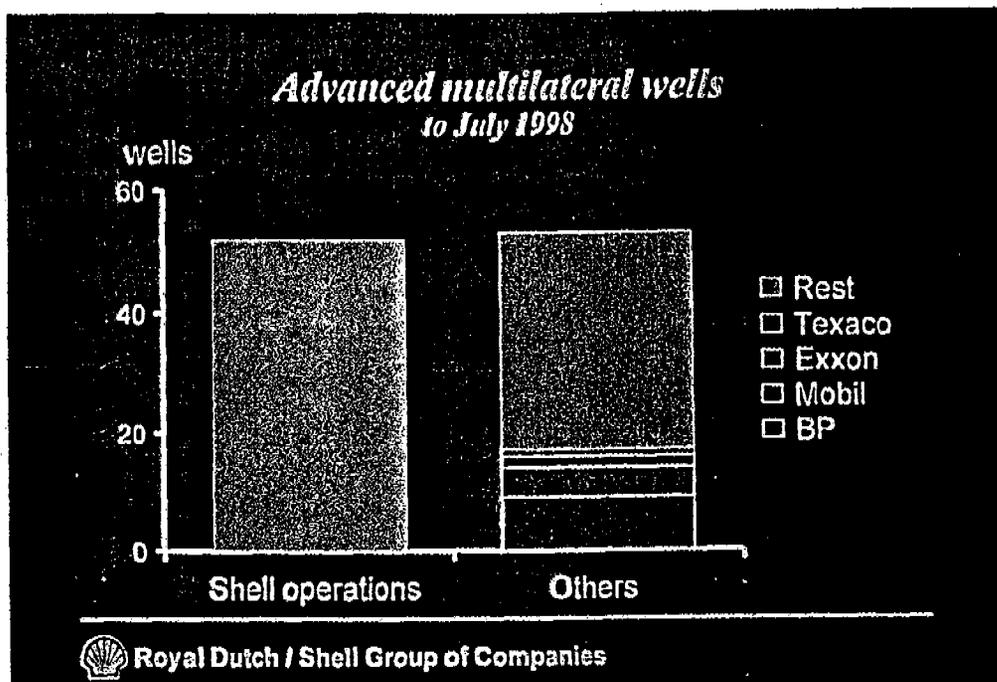
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NOTES:

*Realising the value of cheaper plumbing*

- Brunei - Champion (\$140mln)
- UK - Barque, Tern, Galleon (+\$22mln)
- Expandable tubulars -  
world wide sales > \$100mln in five years



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*Realising the value of waste management*

- Germany - downhole separation of water and oil
- Shell gas inhibiting foam
- Halving waste water/gas (+\$2-4bln)
- Commercial value



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***Transforming gas separation - Twister***

primary flow  
(saturated gas)

swirl inducing  
supersonic wing  
(Mach 1.2 to 3)

dry gas

liquid/gas separation

liquids

**A cheaper, simpler, smaller, emission-free  
way of treating gas**

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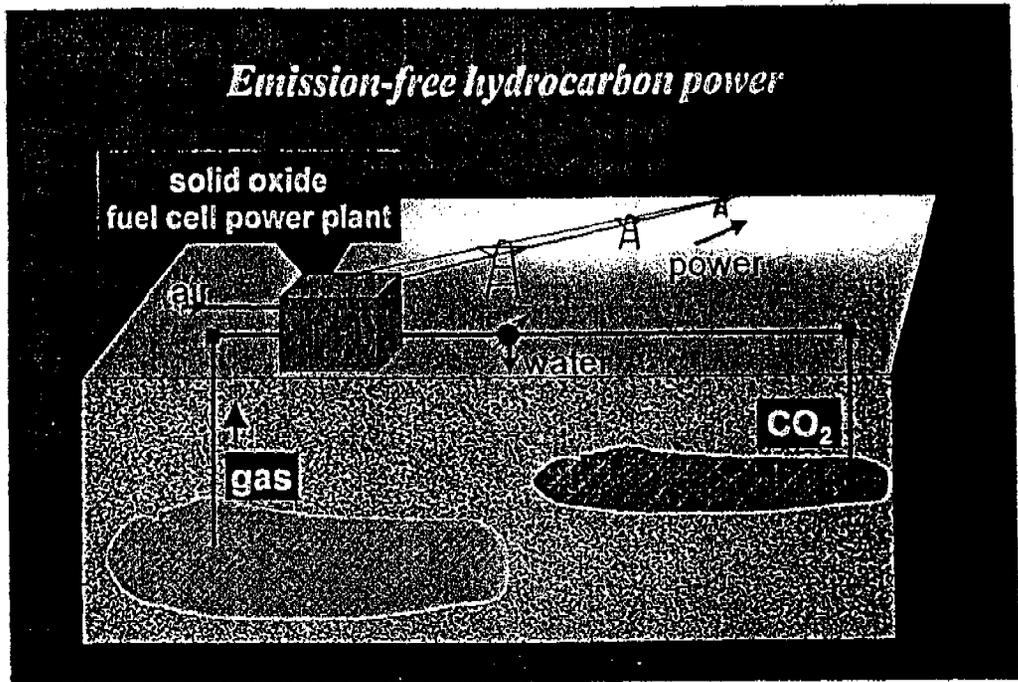
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### *Technology Show*

- Clever wells
- Adding value in Oman
- Subsurface revelations from seismic
- Waste - a business opportunity
- Capturing the rent from innovations
- Revolutionary Breakthrough Technologies



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*Shell Technology Delivering  
a Commercial Return*



**READY MONEY  
NEW OPPORTUNITIES  
LONG-TERM VALUE**



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### *Summary*

- Harsh business environment
- Shell has reacted, actions in hand
  - Increased bottom line focus and accountability
  - Decrease in spending level
  - Capital discipline and global ranking
  - Increased focus on costs and short term performance
  - Focus on existing asset base
    - Portfolio management
    - Monetising existing reserves
- Committed to...improving performance and maximising value in uncertain times



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SMJ00010903



**EP Presentation to Financial Analysts**  
8 April, New York – 9 April, Rijswijk

**EXHIBIT**

*Wacca-4*

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SMJ00014615

*J. van der Plas* ◀

# **EP Presentation to Financial Analysts**

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8 April, New York – 9 April, Rijswijk

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planned to drill a deepwater well with Houston-based partner Ocean Energy  
<OEI.N> this year.  
(Andrew Mitchell, London newsroom, +44 171 542 5024, fax +44 171 542 4453)

Friday, 9 April 1999 15:45:37 ENDS [nL09256109]

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Any views expressed in this message are those of the individual sender,  
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Reuters Ltd.

Shell International Exploration and Production B.V.



# Shell E&P Technology

- strengths - ready money,  
new opportunities,  
long-term value

- Tim Warren, presentation to financial analysts,

April 8-9, 1999

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**Shell E&P technology strengths – ready money,  
new opportunities, long-term value**

**Tim Warren, presentation to financial analysts,  
April 8-9, 1999**

SIEP 99-5233

1

**Cautionary statement**

This document contains forward-looking statements that are subject to risk factors associated with the oil and gas businesses. It is believed that the expectations reflected in these statements are reasonable, but they may be affected by a variety of variables which could cause actual results or trends to differ materially, including, but not limited to: price fluctuations, actual demand, currency fluctuations, drilling and production results, reserve estimates, loss of market, industry competition, environmental risks, physical risks, legislative, fiscal and regulatory developments, economic and financial market conditions in various countries and regions, political risks, project delay or advancement, approvals and cost estimates.

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**Tim Warren -**

**3**

**Director, Global EP Technology & Technical Services**

Born in India and educated in the United Kingdom, Tim Warren graduated in applied mathematics from the University of St. Andrews in Scotland. He joined Shell International in 1970 and worked in Brunei, Malaysia and Oman. In 1985 he returned to The Netherlands to hold a series of management positions in Shell International.

In 1992 he went to Nigeria as general manager of Shell Petroleum Development Company of Nigeria's Western division. Tim Warren has been director of Research & Technical Services for Shell International Exploration and Production since 1995.

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**SMJ00014620**



# Shell E&P technology strengths – ready money, new opportunities, long-term value

Tim Warren, presentation to financial analysts, April 8-9, 1999

Shell E&P has always emphasised technological development. However, I recognise that there is a perception that we have been more excited by long-term technological possibilities than short-term returns. This has changed. We have transformed our structures, processes and attitudes. Our technology efforts are delivering ready money, new business opportunities and long-term value for our shareholders and I am pleased to outline to you how we are doing this.\*

\* Examples of the estimated impact of technology in different ventures are for the ventures as a whole, not just Shell share. Value figures refer to net present value, discounted at 7%

4

## Hi-fi seismic acquisition and processing

### seeing to cut development costs

Shell companies use 3D seismic data to cut the cost of developing fields. Shell research has focused on developing new, proprietary techniques for (re)processing seismic data – much cheaper than acquiring new data – to improve interpretation and modelling.

PSDM and PROMISE are two advances which have delivered significant returns. PSDM (pre-stack depth migration) improves the resolution and accuracy of seismic images. PROMISE extracts vital reservoir properties – such as porosity and thickness.

PSDM (or the Shell proprietary software PSI) is used to optimise data quality close to large fault structures or salt domes – ensuring wells do not miss their targets and revealing new reservoirs. In the Netherlands, PSDM prevented two wells from being drilled into the wrong reservoir block in the Grijpskerk field, saving \$12 million. In

the Gulf of Mexico, PSI has helped to identify several hitherto 'unseen' reservoirs.

Similar techniques are now being used to open new opportunities in the North Sea. The Fram prospect – on the flank of a salt dome – is an example with an expected hydrocarbon volume of some 60 million barrels of oil equivalent. Poor results from standard seismic processing made it too risky to drill. Reprocessing using PSI – followed by integrated reservoir modelling, including PROMISE – revealed its potential. Drilling is planned for 1999.

Reservoir quality properties such as porosity and thickness – the main determinants of hydrocarbon distribution – vary considerably within reservoirs. PROMISE shows the best location for production wells. In the Gulf of Mexico, PROMISE will help to save at least one additional well in the Ram-Powell field, saving \$20 million. Similar savings in other Gulf of Mexico fields amount to at least \$130 million.

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**Technology dependence**

I don't think there can be any doubt that this industry's future depends on developing its technology:

- It plays a vital role in cutting costs – which I believe will become even more important as it becomes harder to squeeze further operational efficiencies;
- It is essential for replacing reserves – increasingly difficult as resources are depleted;
- It develops our business – extending our reach, revealing new exploration plays, offering new recovery possibilities, commercialising more gas; and
- It enables us to meet the increasingly stringent environmental standards society requires.

But there's a debate about how to access technology. Should we rely on others – service companies, academia, other industries – or develop it ourselves?

**In-house imperative**

In Shell, we are convinced it would be very dangerous to rely wholly on others. Here are some reasons.

Service companies don't always share our need to introduce new advances immediately. If they have a profitable technology their interest is to delay bringing forward a replacement until they have milked maximum value from the existing product. Moreover exploiting advances from other sources – universities or other

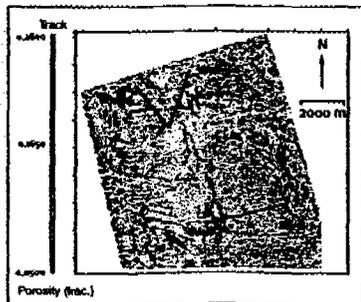
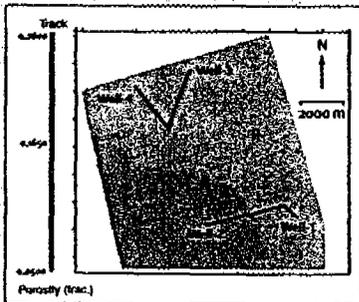
industries – often depends on our own technological capabilities.

Our world-wide operational experience enables us to develop the technologies which meet our business needs. We don't just want static technology. Technology leadership depends on maintaining a learning-curve advantage. Unique technology differentiates us from our competitors – including, of course, major service companies.

Finally, a technology base is essential for monitoring the quality of the technology services we obtain from others. For we don't, of course, do everything ourselves. On the contrary, we only commit limited in-house



Vertical cross sections through a field in the southern North Sea demonstrate how PSDM (pre-stack depth migration) helps to 'focus' the image on the right so that costly wells can be drilled accurately.



Extrapolating reservoir information between wells doesn't reveal variations in reservoir quality. Shell PROMISE identifies the best areas – in blue – enabling more productive wells to be drilled.

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resources to those technologies which give us both *high* and *unique* added value. Otherwise we rely on the market. And we recognise the need to manage our technology portfolio, just as we do our other assets.

**A commercial return**

One aspect of this is our drive to commercialise advances. In the past we often licensed technologies as a means of getting them deployed. Now we want a return as well. We do this through joint-ventures – offering us a financial return, the rapid deployment we need, and close involvement in the learning curve.

We have formed Shell Technology Ventures to pursue these opportu-

	Auger	Ursa	Brutus
Depth (metres)	872	1200	910
Throughput (thousand boe/d)	69	222	154
Time (months)	52	32	20
Cost (\$ billion/boe)	1.1	1.45	0.9
Cost index (\$ thousand per boe/d)	16.1	6.55	5.85

Figure 1

nities. Recent deals include those for expandable tubulars – from which we look for an early return – and for our revolutionary Twister gas separation technology. I will say more about these valuable advances.

**Quicker and better application**

I have been speaking about technology development. But there is another vital source of competitive advantage – being able to apply advances more quickly and better than others. The race is increasingly close.

6

**Integrated subsurface modelling**

*getting it together to grow reserves and increase production*

Shell proprietary integrated modelling combines static reservoir models – showing detailed field geology – with dynamic models simulating the flow of oil, gas and water in the reservoir. Integration allows a range of different production scenarios to be modelled quickly and effectively. Shell companies are leaders in subsurface modelling.

Integrated modelling enabled Petroleum Development Oman to add 450 million barrels to reserves in the Natih, West Haima and Wafra fields over the past five years. The three fields are in carbonate rocks for which recovery factors are less well understood than in clastic fields.

The additional reserves – and the accelerated production made possible – raised the value of the fields by \$600 million. Three unnecessary wells were also avoided in the Wafra field, saving \$4 million in capital expenditure.

Oman's hydrocarbon resource development guidelines require stable plateau production to be maintained for ten years and reserves to be depleted by no more than 6.5% a year. Adding to reserves means production can be accelerated, generating immediate cash flow. Wider application of the new modelling suite could add twice as much to the company's reserves over the next five years.

Shell Nigeria operates more than 100 fields – many have been in production for a quarter of a century. Shell integrated studies of five fields last year added 390 million barrels of oil – with a development cost of some \$2 per barrel.

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In a shrinking, accelerating world, technology advantage can be fleeting. Retaining it depends on climbing the learning curve as quickly as possible – with your competitors snapping at your heels.

Shell has, for example, more experience of developing deep-water fields than any other international company. But our competitive advantage depends on our ability to learn from this experience and apply the knowledge profitably. Shell Oil recently brought its fourth deep water tension-leg platform, Ursa, into production in the Gulf of Mexico. The development cost per daily barrel of production was just 40% of that of Auger, the first tension-leg platform. The Brutus

development announced today will be even cheaper (see figure 1). The capacity to realise the value of experience is clearly even more important at low oil prices.

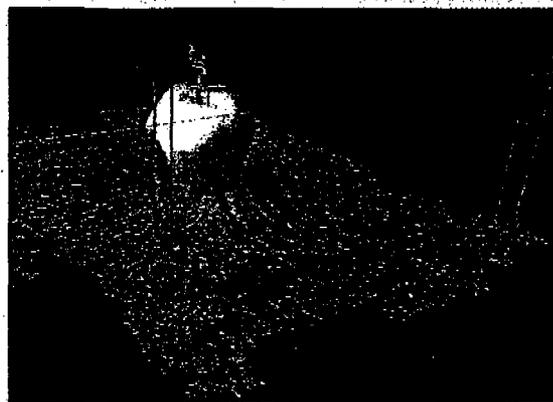
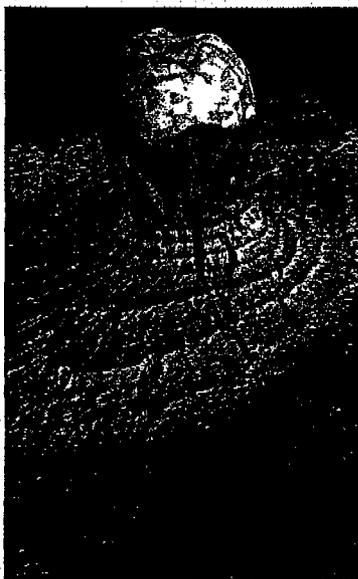
Success in applying technology depends on people – their calibre, experience, training and attitudes – and on organisation. Our efforts were hindered by a fragmented organisation. We have transformed our organisation, processes, communications and ethos to work seamlessly across the world and expect benefits to flow more rapidly as a result.

The most fundamental change in this regard is the creation this year of a unified global E&P technology

organisation – with two hubs in Rijswijk and Houston. It has three business units:

- **Research, Technology Development and Technical Services** – providing a seamless technological service for our world-wide customers,
- **Deepwater Services** – to exploit the technological leadership gained in the Gulf of Mexico around the world, and
- **Commercial Technology Venture Services** – to drive forward the commercialisation of our technology.

We have developed a capacity to work seamlessly at a distance in virtual teams. The world-wide effort engaged



*Shell integrated modelling revealed the extent, nature and potential of the Fram prospect – below a salt dome in the North Sea*

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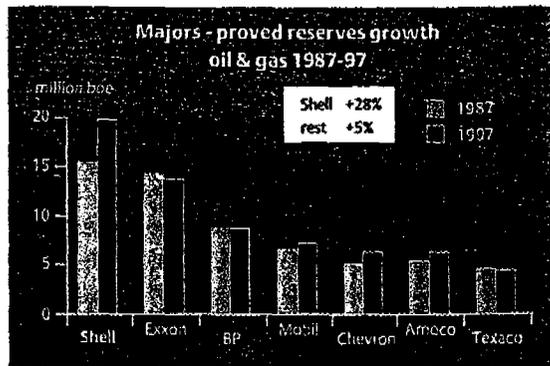


Figure 2

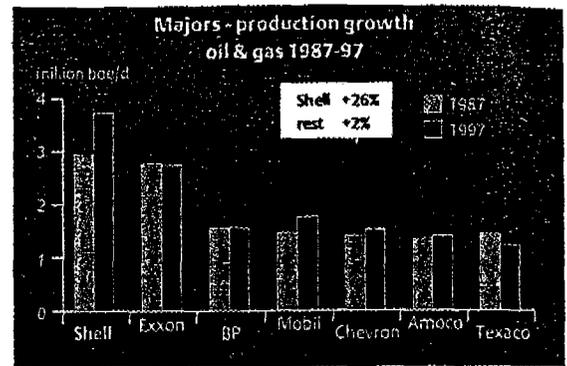


Figure 3

in unlocking the complex geology of Oman's Athel field is an example.

**Value from technology?**

Has our investment in in-house technology delivered a commercial return? We have certainly outper-

formed our competitors in long-term growth of reserves and production (see figures 2 & 3). Of course this should not be pursued to financially unattractive limits. We don't want growth for growth's sake, rather profitable growth.

Recently, our performance has been affected by failures to deliver forecast production in a few locations, although the vast majority performed very well. Pushing forward the bounds of technology always increases the risk of failure - producing

8

**Complex multi-laterals and intelligent wells**

*drilling cheaper, more productive, more intelligent wells*

In the early 1990s, horizontal drilling brought about a dramatic improvement in well performance. Now advanced multi-lateral wells are delivering a similar advance. These have several producing bore holes extending - like tree roots - into the reservoir. They cost more than conventional single-hole wells but deliver much greater production.

Shell companies are industry leaders - responsible for around half the advanced multilateral wells drilled so far.

In Oman, multilaterals have reduced well costs in the Yibal, Nimr and West Haima fields by 20-30%. Together with novel horizontal side-tracks they have added some \$640 million to cashflow by accelerating production. In Brunei, multilaterals have helped to cut the cost of further development of the Champion field by two thirds (\$140 million) - avoiding the need for two new platforms and reducing the number of extra wells needed from 37 to just eight. In the United

Kingdom, they have saved a fifth of the capital cost (\$13 million) of further development of the Barque, Galleon and Tern fields, and improved their value by \$9 million.

Shell companies are now focussing on developing intelligent wells - the next breakthrough in well technology. These will combine downhole control and measuring technology to manage production and injection into different areas of the reservoir automatically. Such wells could bring about a further 20-30% improvement in well costs. Multilateral wells are particular suited for retro-fitting such technologies.

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gas in water a mile deep, for example, is far from standard technology.

However, there is another side to this – connected with our transformation efforts in the mid-90s. We knew that Shell engineers had been too cautious. The fact that we had very few failures was a measure of this. So we emphasised risk-taking, stretch-targets, a ‘can-do’ approach. In a couple of cases we stretched too far.

Our present plans are based on a sober appreciation of the potential for technological problems. And there is no doubt that caution is a virtue at \$10 oil. But the occasional problems in meeting our stretch targets should not obscure the continuing

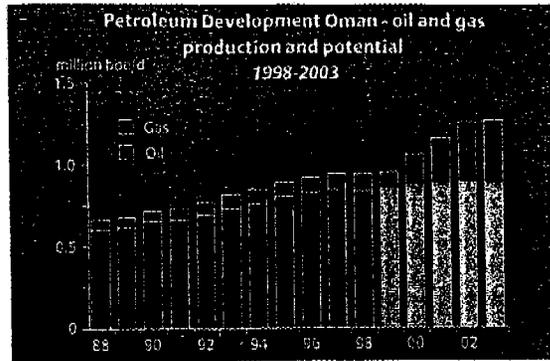


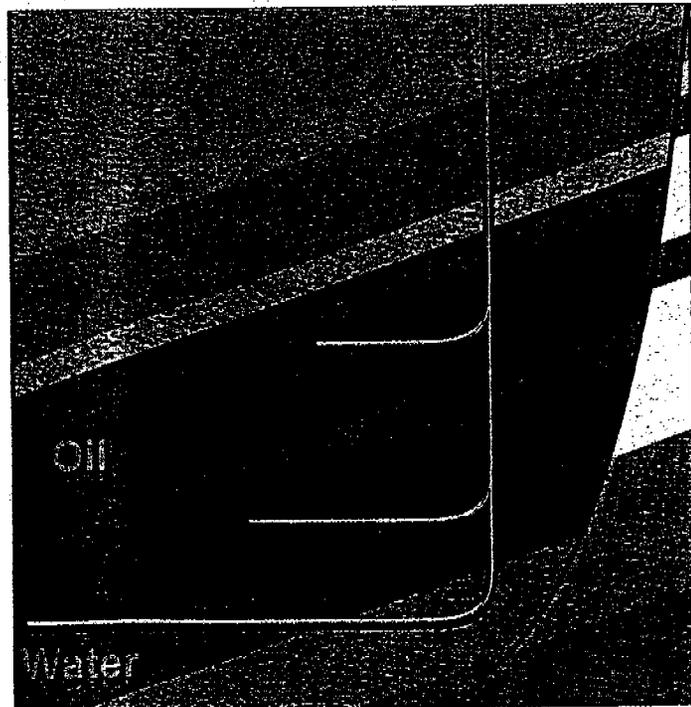
Figure 4

commercial benefits delivered by technology development throughout our operations.

Let me focus on just one country, Oman (see figure 4) – where I spent several very happy years. Oman’s

resources are smaller than those of some of its neighbours – and geologically much more complex. Observers have long expected the Sultanate’s production to start declining. Thanks to advancing technology – and a lot of hard work –

*The Shell intelligent well concept envisages wells spreading like tree roots – responding to changing underground conditions and producing only the desired fluids.*



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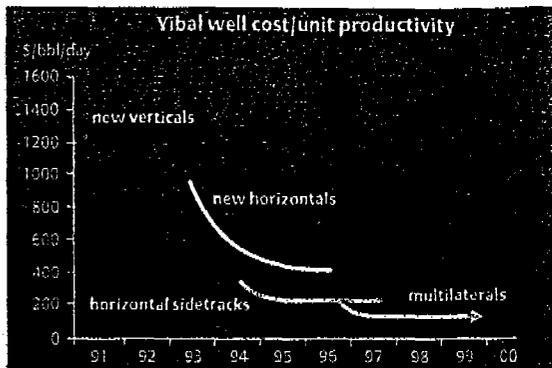


Figure 5

cost of wells rose to some \$1,400 per daily barrel of initial production (see figure 5). In the early 1990s, horizontal wells halved this. Horizontal sidetracks and advanced multilateral wells are now halving the cost again. Yibal wells are cheaper today than during primary development.

An evaluation of the value of the new technologies applied there over the past five years was recently completed. These are some of the benefits it identified:

- multilateral wells (+\$650 million)
- integrated subsurface modelling (+\$622 million)
- advanced seismic (+\$220 million)

these observers continue to be disappointed.

Shell discovered oil at Yibal in 1962. Production from this field – Oman’s largest – is still rising 30 years after it began. This is a testament to

successive technological advances. Our growing imaging and modelling powers help us to locate more of the field’s resources and understand how to produce them better. New drilling techniques enable us to access them. For example, as the field matured the

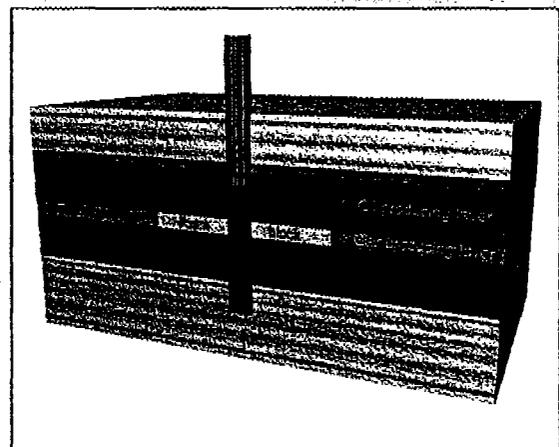
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## Integrated water and gas management

### maximising production from maturing fields

Oil reservoirs are produced for targeting quick recovery of reserves. As a consequence the co-production of water and gas accelerates. Remedial actions against the unwanted inflow of water and gas are taken when wells start producing unacceptable amounts of water, or unacceptably high gas oil ratios (GOR).

Shell E&P companies produce more water than oil; 1 million m3 per day, this will double by 2002 if no action is taken. As water production increases, it dramatically reduces the amount of hydrocarbons coming to surface. Discharge of produced water needs to be environmentally friendly, the cost, to Shell, of cleaning and disposing of produced water is \$400 million per year. In addition, high water cut wells and high GOR wells must be closed in leaving hydrocarbons in the ground. Such wells must be replaced by drilling new wells. Halving the amount of produced water would save \$250 million per year.



A gas blocked off reservoir interval. The Shell developed foam is an Industry First

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- cheaper horizontal wells (+\$160 million)
- improved well fracturing (+\$70 million)
- reduced drilling costs (+\$60 million)

Overall new technology delivered over \$1 billion in additional cash – from capital and operating cost savings, and incremental production. Reserve additions added more than \$1.3 billion in future value (see figure 6). Shell technology was directly responsible for 58% of this added value – without taking into account the additional value from our ability to customise contractor technology to meet PDO's particular business needs.

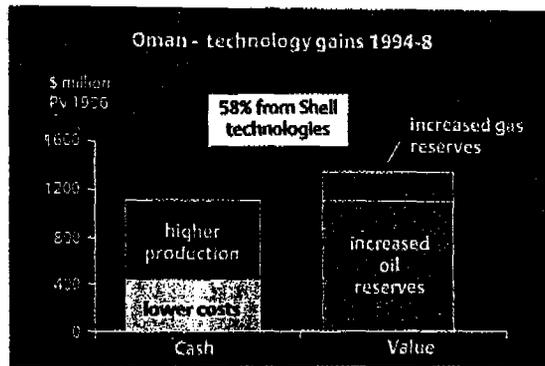


Figure 6

We seek three things from our technology:

- ready money from lower costs, more production and – now – commercial sales,
- business opportunities from new exploration plays, development

opportunities and enhanced attractiveness as a partner – particularly to major resource holders,

- long-term value from growing reserves, commercialising gas and meeting environmental requirements.

### Another Industry First for Shell

Shell is ahead of its competitors in having successfully trialed a foam for blocking gas production and avoiding well shut-ins due to high GORs. The foam is injected into the entire reservoir interval, in a gas bearing interval the foam coagulates to block gas production, whilst in an oil bearing section it is flushed out with no effect on production.

In trials in Brunei the foam reduced the gas production from two wells by 75% per well, enabling them to remain in production and recovering the investment in these wells in 200 days.

### Downhole Separation

The technology to separate oil and water downhole, rather than at surface, consists of a hydrocyclone and a pump which pumps water into the subsurface while carrying

hydrocarbons to the surface. It was field trialed in Germany on a well which was producing 10 bbl/d of oil and 490 bbl/d of water, this resulted in oil production increasing fourfold, water production was reduced by 60%. Further trials are planned on the Yibal Field in Oman later in 1999.

Downhole separation can revitalise an ageing field. Early installation can prevent the requirement to upgrade water treatment facilities and application in more costly developments offshore can lead to a reduction in the requirement for infrastructure and even the number of platforms. The next technological breakthrough in this area is the Intelligent Well with Downhole Separation. This enables the monitoring and control of fluids in the wellbore and works to keep all undesirable products underground while leaving the production of hydrocarbons unhindered. This is Shell's Zero Waste Well™.

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Let me illustrate the returns from some recent technological advances in four key areas:

- sharpening subsurface vision,
- installing cheaper plumbing,
- avoiding costly waste,
- turning gas into cash.

#### **Sharpening subsurface vision**

Better subsurface vision is central to this business – to identify reserves, drill them cheaply, and produce them effectively. During the 1980s, 3D seismic transformed this vision. Shell companies benefited from being faster than others in applying 3D – in the early 1990s we may have been responsible for around half the 3D data acquired. We continue to benefit from developing subsurface technologies.

These include advanced seismic which allows us to map reservoirs in difficult conditions – for example under salt domes – accurately. And tools which tell where to drill the most productive wells. Such technologies cut drilling costs, increase production and open up new reserves.

Integrated subsurface modelling enables reservoir engineers to test many different development possibilities quickly and cheaply in the search for the most cost effective options. Shell companies are leaders in developing such tools which are already responsible for adding significant economic reserves. The studies which added 390 million barrels to reserves in five Nigerian

fields last year had a 'finding cost' of some €2 a barrel.

#### **Installing cheaper plumbing**

Underground plumbing is the most expensive aspect of developing fields, up to 60% of the costs.

Learning how to drill cheaper and more productive wells is a key challenge facing this industry. I believe the revolution in well technology now underway will have as profound an impact as 3D seismic had in the 1980s. We intend to be leaders in applying these advances as well. Shell companies have been responsible for half the advanced multilaterals drilled (see figure 7) As I mentioned in connection with the Yibal field, advanced multilateral

## **Shell Technology Ventures**

### *making money from marketing technological advances*

Shell Technology Ventures was formed in 1998 to spearhead rapid development and deployment of Shell E&P technologies – and maximise their commercial value through joint-ventures and subsidiaries. Recent ventures involve Shell expandable tubular and Twister gas separation technologies.

The expandable tubulars technology involve forcing a device through wells to expand the diameter of pipes by up to a quarter without harming their properties. It can be used to insert sections of cladding in wells for operational or maintenance reasons. It will also enable drilling of slimmer, deeper, more effective and much cheaper wells.

The technology is being marketed through two joint-ventures – Enventure (with Halliburton, primarily in the United States) and e<sup>2</sup>Tech (with Baker Hughes, primarily elsewhere). Shell companies will benefit from competition between suppliers. World-wide sales could exceed \$100 million within five years.

The Twister gas separation technology is a revolutionary way of treating natural gas. It has no moving parts and creates no emissions. Twister forces gas into a supersonic cyclone to drive out liquids while minimising the drop in pressure. The device is cheaper, simpler and smaller than other methods – which is particularly valuable for remote or offshore locations. It is environmentally friendly.

Twister has been tested in the Groningen field in the Netherlands.

The prime market will be the oil and gas industry – drying gas for transportation and removing natural gas liquids for sale. Other markets include air conditioning.

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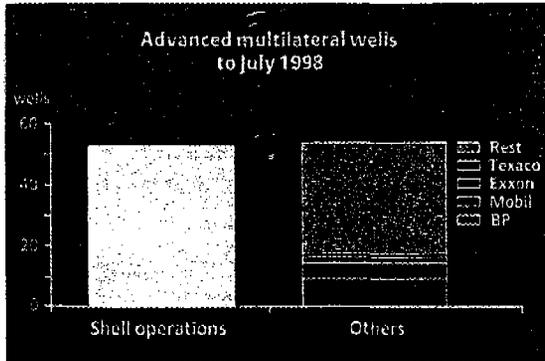


Figure 7

wells offer huge cost savings. The technology is playing a vital part in making field developments economic at low prices. Shell companies are going further by developing 'intelligent' wells which will use downhole measurement and control

technology to optimise production from different reservoirs automatically.

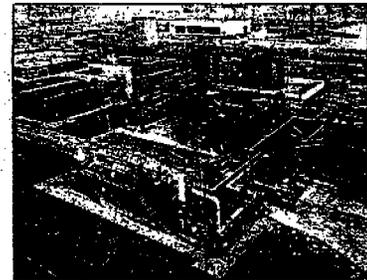
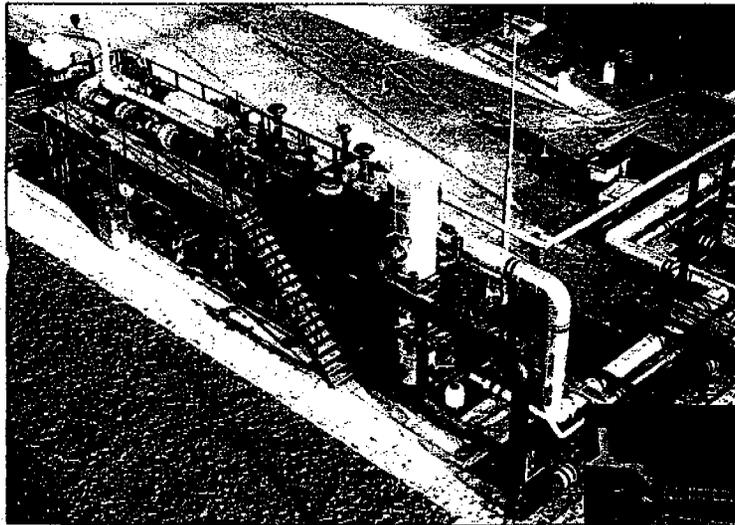
I discussed commercialisation of our expandable tubular technology. This will allow deeper, slimmer wells – to

reach otherwise inaccessible reserves – which are more productive and cost less to drill. It is a major breakthrough which will transform our business – as well as providing significant commercial returns. World-wide sales could exceed \$100 million within five years.

**Avoiding costly waste**

Society rightly demands higher environmental standards from all industries. For the oil industry, one need is to deal with the water – and in some cases the gas – produced with the oil from the reservoir. This is a costly and growing burden.

Shell companies now produce more water than oil. Volumes are expected



The revolutionary Twister gas treatment device uses a supersonic cyclone to drive out liquids. It is smaller, cheaper, simpler and more environmentally friendly than other technologies.

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to double in five years, as fields mature. Handling water on the surface - cleaning it for discharge or re-injecting it - costs as much as handling oil. Dealing with unwanted gas without flaring is even more expensive.

The best way of responding would be to shut off the flow in the reservoir before it ever gets to the surface. We are working on mechanical and chemical ways of doing this. Resolving this problem could save us up to \$4 billion over the next 20 years. The technology would also be commercially valuable - as other producers, including major resource holders, face similar challenges.

### Turning gas into cash

The best way of dealing with gas, of course, is to sell it. Shell companies are leaders international gas marketers. We see gas as an increasingly important part of our business. So commercialising more gas is one of our central business thrusts. New technologies - such as floating LNG and gas-to-liquids plants - will play a vital role in this.

But let me focus on our revolutionary Twister gas separation technology which, as I mentioned, we are putting on the market. This is simpler, smaller and cheaper than competing ways of removing liquids from gas. It has no moving parts - working by creating a supersonic gas vortex. It will cut the

costs of removing valuable condensate, and of drying gas for transport, liquefaction and sale.

Outside this industry it may have uses in air conditioning and many industrial processes. It is a very valuable advance which will enhance our own business and provide a significant commercial return.

### Changing the game

Both Twister and expandable tubulars come from our 'Game-changer' programme which promotes and pursues innovative thinking. Another product is our 'Light Touch' remote sensing exploration tool developed from a technology Shell researchers first

## The gamechanger process

### realising the value of radical innovation

Making money at low prices and reaping the opportunities of a changing world requires radical innovation. Shell EP's global 'game-changer' programme has unleashed this - resulting in hundreds of radical ideas. A portfolio of the best opportunities is being pursued.

The programme uses a venture capitalist approach to stimulate and fund innovation. Entry into the portfolio is competitive - work on a project may be discontinued if a more promising opportunity emerges. Projects follow a structured plan to accelerate progress from concept to money-making venture.

The gamechanger programme is already generating revenues. 'Light Touch' is a novel means for sensing underground hydrocarbon reserves by measuring surface emissions - developed from Shell technology for detecting refinery emissions. Last year, it was used to help locate up to 30 million barrels of additional oil reserves in the Rabi field of Gabon.

'Greening the Desert' is a scheme for using reed bed technology to clean produced water for agricultural irrigation. In Oman, confidence in this tool has allowed planned expenditure of \$15 million on water injection facilities to be postponed.

Other projects currently being implemented by Shell companies, or being commercialised, include:

- wearable instrumentation for production operators,
- inter-well seismic to provide detailed understanding of reservoir conditions,
- shoe track conveyed logging to cut the costs and risks of logging horizontal and long-reach wells.

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developed for locating fugitive emissions from refineries – a benefit of our increasing emphasis on sharing knowledge.

Radical innovation could transform our business. Shell researchers are working on fuel cell technology for producing efficient, emission-free electricity from gas at the wellhead, with carbon dioxide fed back into the ground. Shell conversion technologies may provide a way of turning associated gas into valuable liquids.

The same technologies are being used to develop cleaner cars.

We believe, and I hope you concur, that our investment in E&P technology does provide a valuable return

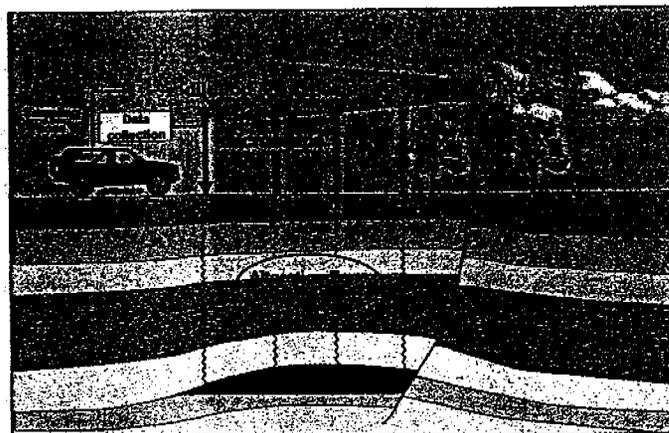
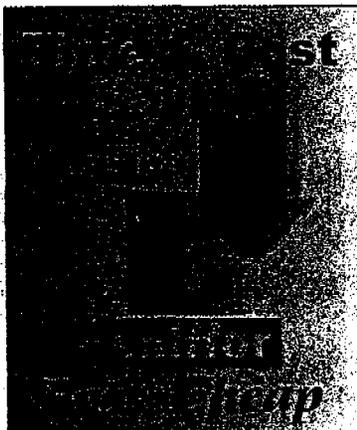
– in ready cash, business opportunities and long-term value.

The boxes show examples of how specific technologies are contributing hundreds of millions of dollars, and we expect substantial future contributions to the bottom line in all our ventures around the world.

The important point is that our technology effort is now driven by a much clearer focus on financial return. And we have organised ourselves everywhere to deliver this return for our shareholders.

Such radical innovation can transform our business. For example, Shell researchers are working on solid-oxide fuel-cell technology to convert gas to electricity at the wellhead. Carbon dioxide would be re-injected directly back into ground – providing efficient, emission-free power. Another project involves using Shell catalytic conversion technologies

to turn associated gas produced with oil into valuable syncrude, rather than flaring it. These conversion technologies are also being used to develop cleaner motor cars.



*'Light Touch' helps oil and gas explorers by sensing hydrocarbon emissions released naturally into the atmosphere from underground resources.*

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**Shell Exploration & Production  
technology strengths**

**– ready money, new opportunities,  
long-term value**

Tim Warren



Royal Dutch / Shell Group of Companies

Shell has always emphasised technological development. However, I recognise that there is a perception that we have been more excited by long-term technological possibilities than short-term returns.

This has changed. We have transformed our structures, processes and attitudes. And I hope to convince you today that our technology efforts are delivering ready money, new business opportunities and long-term value for our shareholders.

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EXHIBIT

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A

### *Technology imperatives*

- cutting costs
- replacing reserves
- developing our business
- meeting the environmental challenge

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I don't think there can be any doubt that this industry's future depends on developing its technology.

It plays a vital role in cutting costs. I believe technology will become even more important as it becomes harder to squeeze further operational efficiencies.

It is essential for replacing reserves – increasingly difficult as resources are depleted.

It develops our business – extending our reach, revealing new exploration plays, offering new recovery possibilities, commercialising more gas.

And it enables us to meet the increasingly stringent environmental standards society requires.

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*Dangers of relying on others*

- differing competitive interests
- inability to exploit external advances
- loss of learning curve



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But there's a debate about how to access technology. Should we rely on others – service companies, academia, other industries – or develop it ourselves?

In Shell, we are convinced it would be very dangerous to rely wholly on others.

Here are some reasons.

Service companies don't always share our need to introduce new advances immediately. If they have a profitable technology their interest is to delay bringing forward a replacement until they have milked maximum value from the existing product.

Exploiting advances from other sources – universities or other industries – often depends on our own technological capabilities.

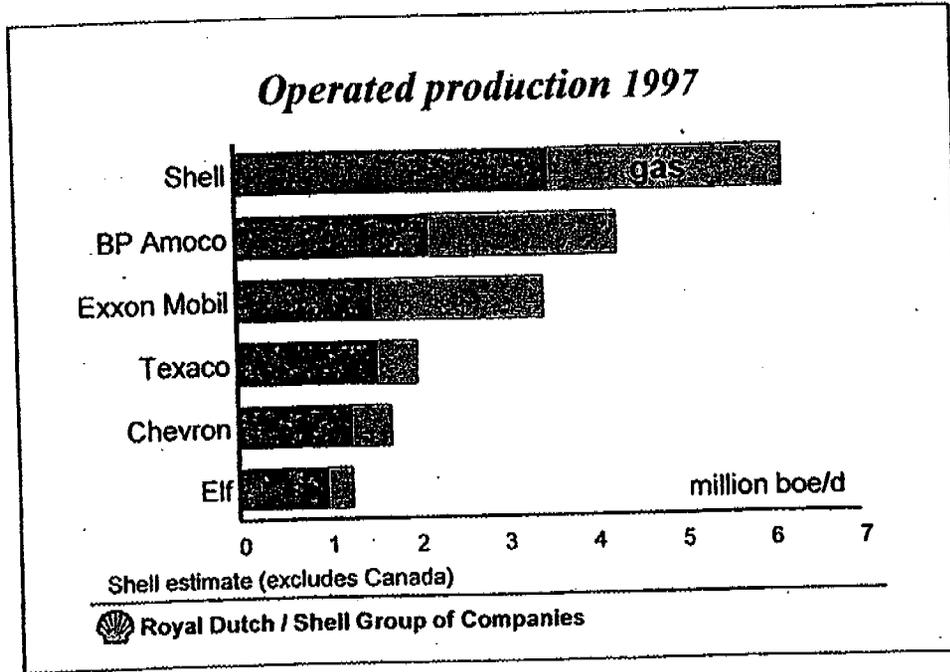
We don't want just a static technology. Technology leadership is sustained only by climbing learning curves faster than others.

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Our operational experience is, much greater and wider than other companies, this means that our people also have a greater and wider capability and experience base. This provides us with the opportunity to stay ahead on learning curves and a sound basis for defining our technology needs.

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*Dangers of relying on others*

- differing competitive interests
- inability to exploit external advances
- loss of learning curve
- monitor service quality



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Finally, a technology base is essential for monitoring the quality of the technology services we obtain from others.

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*"We only do in-house those things that provide high and unique added value. And we manage our technology portfolio like any other asset."*



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For we don't, of course, do everything ourselves. On the contrary, we only commit limited in-house resources to those technologies which give us both high and unique added value. Otherwise we rely on the market.

And we manage our technology portfolio, just as we do our portfolio of business assets.

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***Commercialising technology  
- benefits of joint-ventures***

- return on investment
- rapid deployment
- fastest learning curve

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One aspect of this is our drive to commercialise advances. In the past we often licensed technologies as a means of getting them deployed. Now we want a return as well.

We do this through joint-ventures – offering us a financial return, the rapid deployment we need, and close involvement in the learning curve.

We have formed Shell Technology Ventures to pursue these opportunities. Recent deals include those for expandable well casings – from which we look for an early return – and for our revolutionary Twister gas separation technology.

I will say more about these valuable advances.

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7

*"There's another vital source of competitive advantage - applying advances quicker and better than others."*

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I have been speaking about technology development. But there's another vital source of competitive advantage – applying advances more quickly and better than others.

The race is increasingly close. In a shrinking, accelerating world, technology advantage can be fleeting. Retaining it depends on climbing the learning curve as quickly as possible – with your competitors snapping at your heels.

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***Shell GoM - deep water learning***

	<b>Auger</b>	<b>Ursa</b>	<b>Brutus</b>
Depth ( <i>metres</i> )	872	1200	910
Throughput ( <i>thousand boe/d</i> )	69	222	154
Time ( <i>months</i> )	52	32	29
Cost ( <i>\$ billion MOD</i> )	1.1	1.45	0.9
Cost index ( <i>\$ thousand per boe/d</i> )	16.1	6.55	5.86



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Reducing project cycle times in the Gulf of Mexico is one measure of this learning.

Shell Oil recently brought Ursa into production – its fourth deep water tension-leg platform in the Gulf of Mexico. The Brutus development was also announced today. Ursa cost only 40% and Brutus 35% of Auger – Shell Oil's first such development – for each daily barrel of production. In addition the time from investment to production for Brutus is almost 50% less than that of Auger.

The capacity to realise the value of experience is clearly even more important at low oil prices.

Success in applying technology depends on people – their calibre, experience, training and attitudes – and on organisation.

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9

## ***Global EP Technology***

**Research, Technology Development & Technical Services**

- seamless, world-wide service

**Deepwater Services**

- exploit deep water leadership

**Commercial Technology Venture Services**

- drive forward commercialisation



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Our efforts were hindered by a fragmented organisation. We have transformed our organisation, processes, communications and ethos to work seamlessly across the world and expect benefits to flow more rapidly as a result.

The most fundamental change in this regard is the creation this year of a unified global E&P technology organisation – with two hubs in Rijswijk and Houston. It has three business units:

- Research, Technology Development and Technical Services – providing a seamless technological service for our world-wide customers,
- Deepwater Services – to exploit the technological leadership gained in the Gulf of Mexico around the world, and
- Commercial Technology Venture Services – to drive forward the commercialisation of our technology.

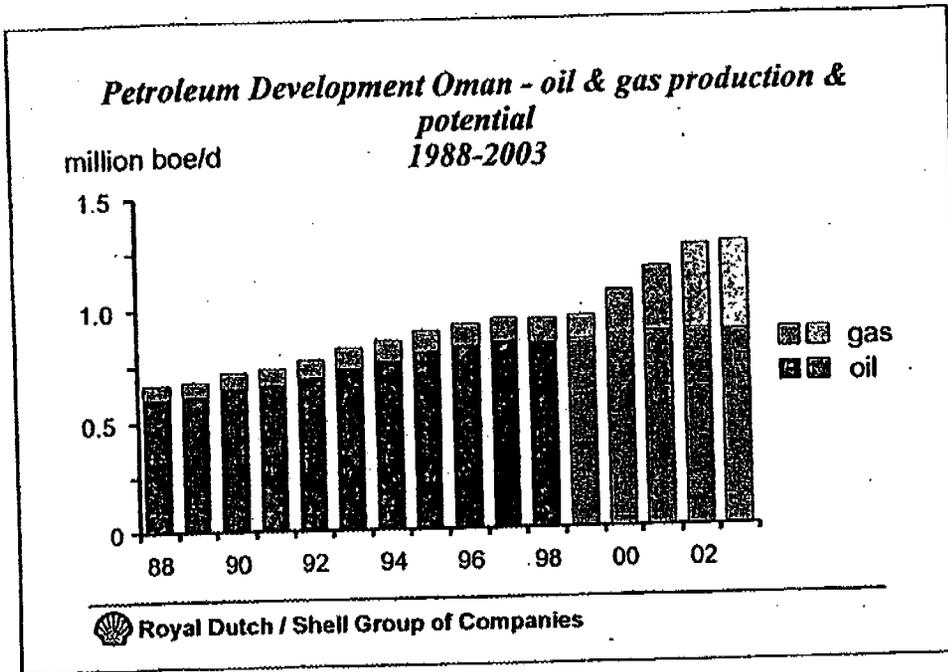
Has our investment in in-house technology delivered a commercial return?

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Let me focus on just one country, Oman – where I spent several very happy years.

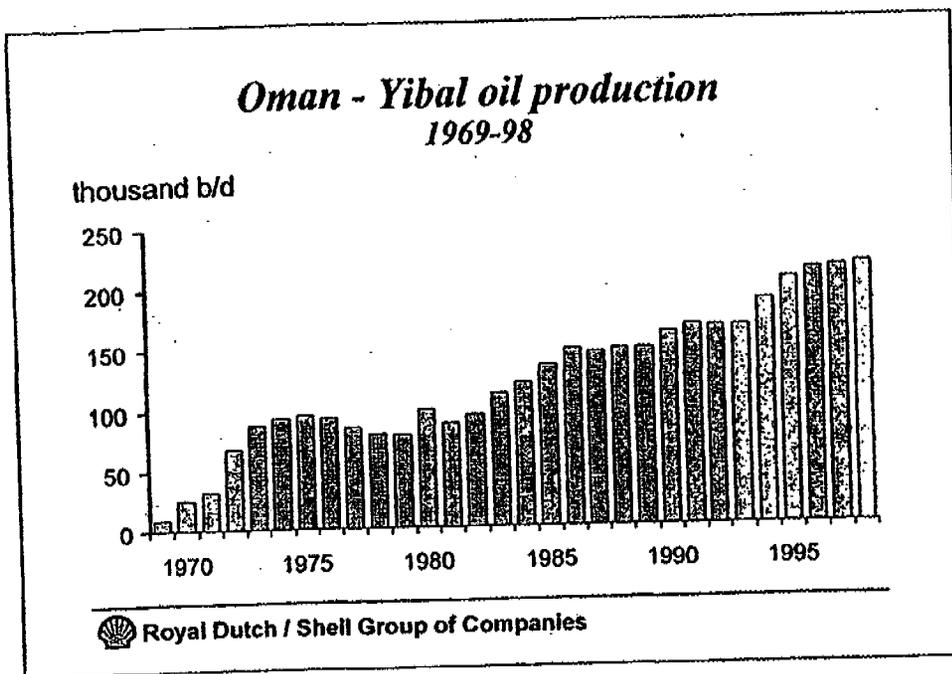
Oman's resources are smaller than those of some of its neighbours – and geologically more complex. Observers have long expected the Sultanate's production to fall off. Thanks to advancing technology – and a lot of hard work – we will continue to exceed the expectations of these observers.

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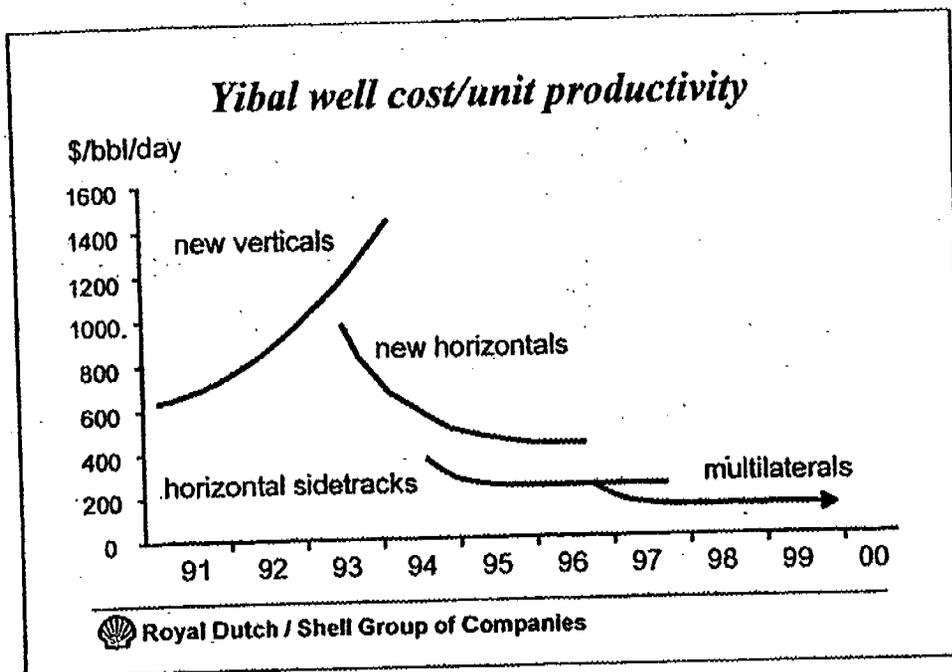
Shell discovered oil at Yibal in 1962. Production from this field – Oman's largest – is still rising 30 years after it began. This is a testament to successive technological advances. Our growing imaging and modelling powers increase understanding of the fields resources – which new drilling techniques enable us to access.

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For example, as the field matured the cost of vertical wells rose to some \$1,400 for each daily barrel of initial production. In the early 1990s, horizontal wells halved this. Horizontal side-tracks and advanced multilateral wells are now halving it again. Today Yibal wells are cheaper than during primary development.

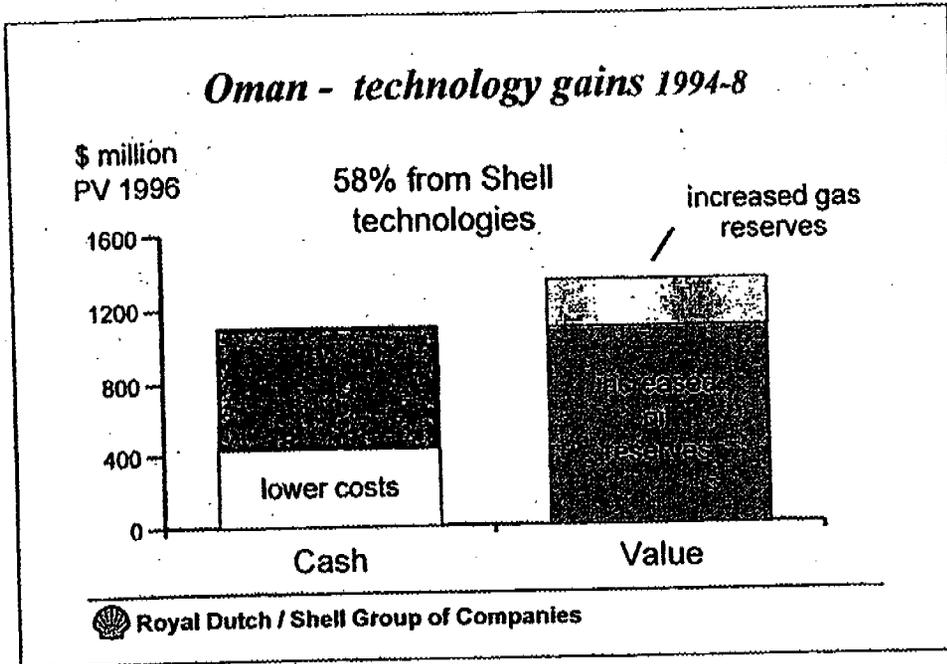
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13



Overall technology delivered over **\$1 billion** in additional cash – from capital and operating cost savings, and incremental production. Reserve additions added a more than a \$1.3 billion in future value. Shell proprietary technology directly accounted for some 58% of this added value.

*[Rijswijk – Abdulla Lamki, PDO's deputy managing director, is here to tell you more about this success after lunch]*

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***Shell Technology Delivering  
a Commercial Return***

- ready money
  - costs, production, sales
- new opportunities
  - plays, development, partners
- long-term value
  - reserves, gas markets, standards

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We seek three things from technology:

- ready money from lower costs, more production and – now – commercial sales,
- business opportunities from new exploration plays, development opportunities and enhanced attractiveness as a partner – particularly to major resource holders,
- long-term value from growing reserves, commercialising gas and meeting environmental requirements.

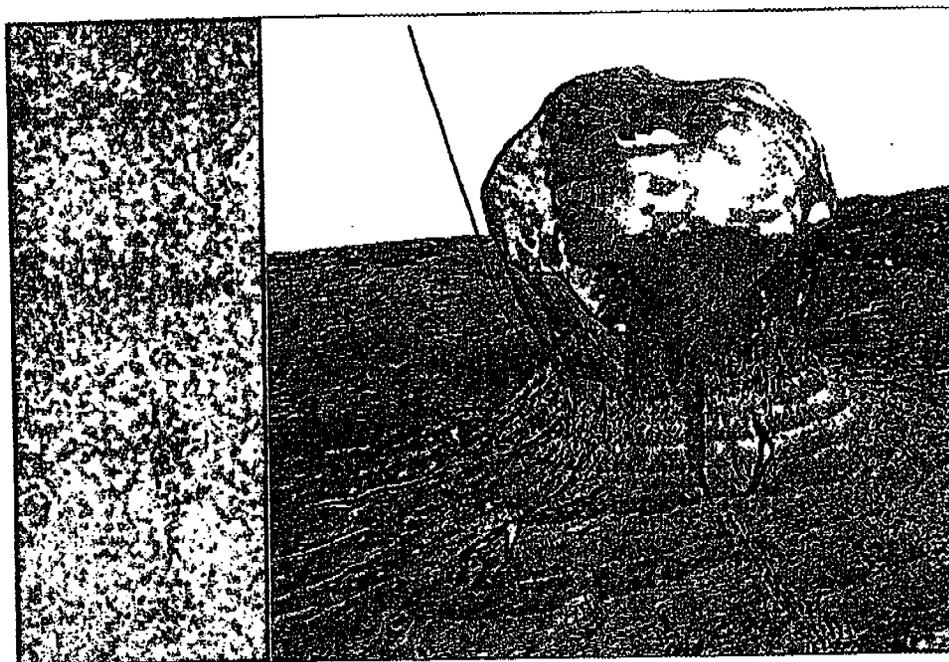
Let me give a few examples:

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**Better subsurface vision is central to this business – to identify reserves, drill them cheaply, and produce them effectively.**

During the 1980s 3D seismic transformed this vision. Shell companies benefited from being faster than others in applying 3D – in the early 1990s we may have been responsible for around half the 3D data acquired. We continue to benefit from developing subsurface technologies.

In Britain, it resolved problems in imaging the Fram prospect on the flanks of a salt dome. What you see here is a salt dome which has been extruded from the subsurface over Geological time. Traditionally it has always been difficult to 'see' clearly below salt or on the flanks of salt domes, however, these structures are impervious and therefore make good traps for hydrocarbons. The advances in imaging technology have enabled us to clearly identify reservoirs trapped against the flanks of the Fram salt dome leading to a decision to drill the prospect this year.

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***Realising the value of subsurface vision***

- UK - defining Fram
- US - GoM well savings (~~\$150m~~) *Ren Power well (+ bonus)*
- Nigeria - integrated studies (+390MMbbl)

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In the Gulf of Mexico, proprietary imaging technology called PSI – pre-stack imaging – has helped to identify several hitherto 'unseen' reservoirs. It is now being used in the North Sea.

A Shell tool called PROMISE shows the best place in the reservoir to drill productive wells. In the Gulf of Mexico, PROMISE will help to save \$150 million.

In Nigeria, integrated modelling added 390 million barrels to the reserves of five fields last year – with a development cost of some \$2 a barrel. These studies were carried out by multi-disciplinary teams from Rijswijk and Nigeria – helping to transfer technology. Incidentally, expenditure on the studies amounts to a 'finding cost' of some \$2 a barrel.

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17

*Not shown*

***Realising the value of cheaper plumbing***

- Wells represent 60% of field development cost
- drilling cheaper and more productive wells is a key challenge
- revolution in well technology now underway



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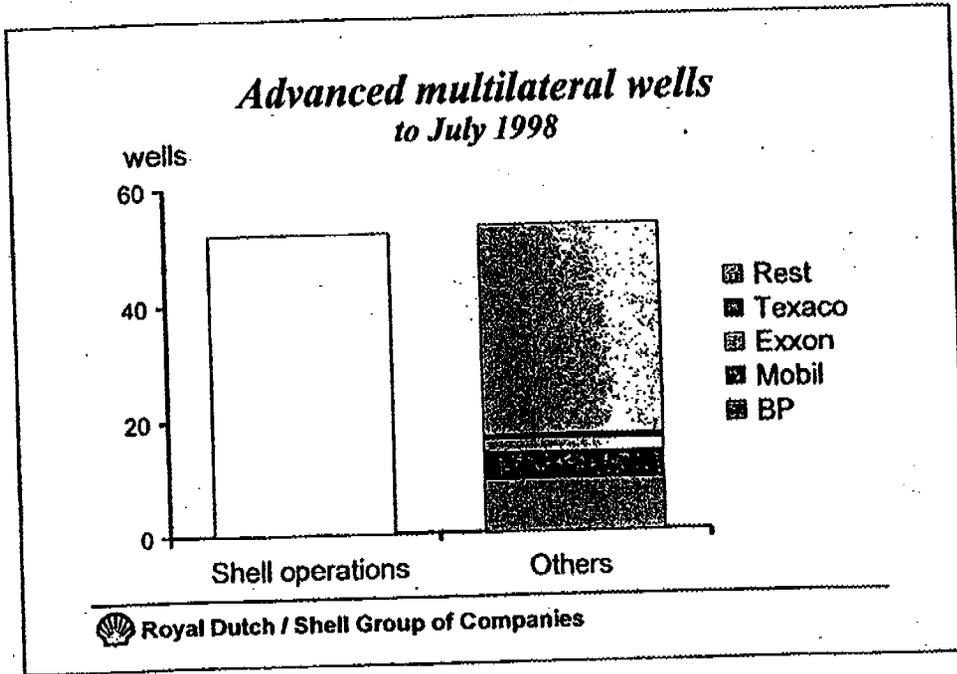
Underground plumbing is the most expensive aspect of developing fields, up to 60% of the costs. Learning how to drill cheaper and more productive wells is a key challenge facing this industry. I believe the revolution in well technology now underway will have as profound an impact as 3D seismic had in the 1980s. We intend to be leaders in applying these advances as well.

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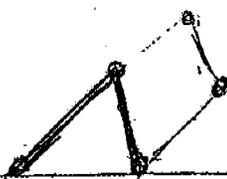
As I mentioned in connection with Yibal, advanced multilateral wells offer huge cost savings. Shell companies have been responsible for half those drilled, which places us high and competitively on the experience curve.

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***Realising the value of cheaper plumbing***

- Brunei - Champion (\$140mln)
- UK - Barque, Tern, Galleon (+\$22mln)
- Expandable well casing -  
world wide sales > \$100mln in five years

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In Brunei, they have helped to cut the cost of further development of the Champion field by two thirds (\$140 million) – avoiding the need for two new platforms and reducing the number of extra wells needed from 37 to just eight.

In the United Kingdom, they have saved a fifth of the capital cost (\$13 million) of further development of the Barque, Galleon and Tern fields, and improved their value by \$9 million.

I discussed commercialisation of our expandable well casing technology. This will allow deeper, slimmer wells – to reach otherwise inaccessible reserves – which are more productive and cost less to drill. It is a major breakthrough which will transform our business – as well as providing significant commercial returns. World-wide sales could exceed \$100 million within five years.

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20

***Realising the value of waste management***

- Germany - downhole separation of water and oil
- Shell gas inhibiting foam
- Halving waste water/gas (+\$2-4bln)
- Commercial value

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Society rightly demands higher environmental standards from all industries. For the oil industry, one need is to deal with the water – and in some cases gas – produced with the oil from the reservoir. This is a costly and growing burden.

Shell companies now produce more water than oil. Volumes are expected to double in five years, as fields mature. Cleaning and disposing of produced water costs \$400 million a year.

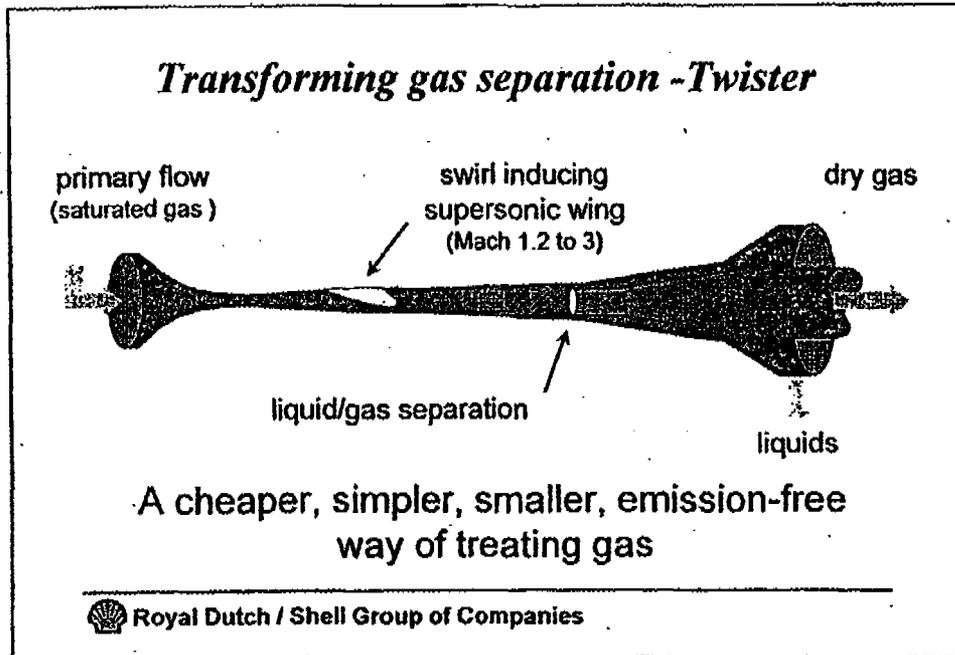
The best way of responding would be to shut off the flow in the reservoir before it ever gets to the surface. We are working on mechanical and chemical ways of doing this. The technology would also be commercially valuable – as other producers, including major resource holders, face similar challenges. You will hear more about this during the technology show this afternoon.

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But let me focus on our revolutionary Twister gas separation technology which, as I mentioned, we are putting on the market.

This is simpler, much smaller and cheaper than competing ways of removing liquids from gas and therefore significantly reduces costs and the environmental footprint. It has no moving parts – the wing that you see there in the middle of the equipment creates a supersonic gas vortex. It will cut the costs of removing valuable condensate, and of drying gas for transport, liquefaction and sale

Outside our industry it will have uses in air conditioning and many industrial processes. It is a very valuable advance which will enhance our own business and provide a significant commercial return.

Twister and expandable tubulars both came from our 'Gamechanger' programme, which pursues innovative ideas, such radical innovation can transform our business.

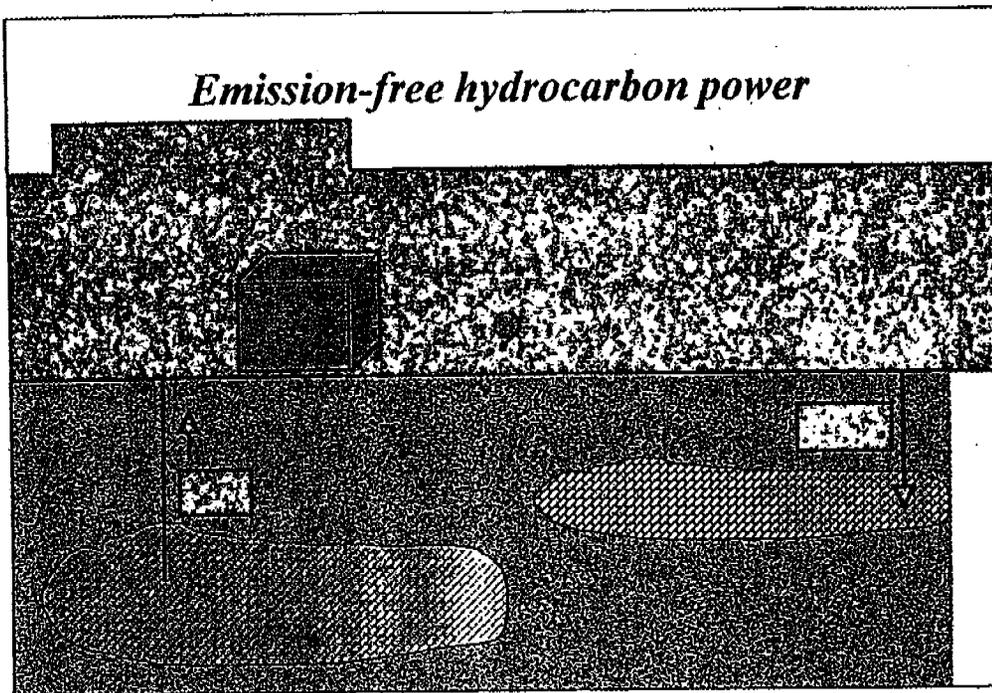
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22



For example Shell researchers are working on solid-oxide fuel-cell technology to convert gas to electricity at the wellhead. Carbon dioxide would be re-injected directly back into ground – providing efficient, emission-free power. PAUSE

You have seen how technology has delivered over two billion dollars in reduced costs, additional production and increased reserves in just one operation, in Oman. And I have mentioned examples of how specific technologies are contributing hundreds of millions of dollars. We expect substantial further contributions to the bottom line in all our ventures around the world.

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23

*Research only*

***Technology Show***

- Clever wells
- Adding value in Oman
- Subsurface revelations from seismic
- Waste - a business opportunity
- Capturing the rent from innovations
- Revolutionary Breakthrough Technologies



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This afternoon you will have the opportunity to hear more about these technologies from those directly involved in them.

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*Ripovija only*

***Shell Technology Delivering  
a Commercial Return***

**READY MONEY  
NEW OPPORTUNITIES  
LONG-TERM VALUE**

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 **Royal Dutch / Shell Group of Companies**

I would not like to falsely claim that all our technology turns to gold, we have our failures alongside our successes as technology is a risk business.

We believe and I hope you do too that our investment in E&P technology does provide a valuable return – in ready cash, business opportunities and long-term value.

The important point is that our technology effort is now driven by a much clearer focus on financial return. And we have organised ourselves everywhere to deliver this return for our shareholders.

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*Shell Technology Delivering  
a Commercial Return*

READY MONEY  
NEW OPPORTUNITIES  
LONG-TERM VALUE

 Royal Dutch / Shell Group of Companies

I would not like to falsely claim that all our technology turns to gold, we have our failures alongside our successes as technology is a risk business.

However we believe and I hope you do too that our investment in E&P technology does provide a valuable return – in ready cash, business opportunities and long-term value.

You have seen how technology has delivered over two billion dollars in reduced costs, additional production and increased reserves in just one operation, in Oman. And I have mentioned examples of how specific technologies are contributing hundreds of millions of dollars. We expect substantial further contributions to the bottom line in all our ventures around the world.

These examples are explained more fully in the published version of the speech, which you will be given.

The important point is that our technology effort is now driven by an enhanced focus on financial return. And we have organised ourselves everywhere to deliver this return for our shareholders.

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## Summary

- Harsh business environment
- Shell has reacted, actions in hand
  - Increased bottom line focus and accountability
  - Decrease in spending level
  - Capital discipline and global ranking
  - Increased focus on costs and short term performance
  - Focus on existing asset base
    - Portfolio management
    - Monetising existing reserves
- Committed to...improving performance and maximising value in uncertain times



Royal Dutch / Shell Group of Companies

Phil Watts

Slide 41: Summary

**Key message: It are difficult times and we do not know how long they will last, but we are not waiting for better time, we are adjusting now:**

• bringing cost and spending levels down and increasing capital efficiency of our spending through enhanced investment discipline and global ranking (capital allocation, competition for funds).

• Increasing transparency and accountability.

• Commitment ... improving balance between short-term performance and long term value; various measures are underway.

• We are committed to deliver 15 % ROACE at 14 \$/bbl in 2001 and will continue to enhance our portfolio and retain flexibility should prices decrease again to around \$10/bbl.

NB. Perhaps obvious, but still important to note is that we will remain our cost and capital efficiency targets even when oil-prices would recover in the short term.

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**EP/GP Investor Relations Presentation  
12<sup>th</sup> – 13<sup>th</sup> April 2000**

<b>Phil Watts: Overview Environment Strategy .....</b>	<b>1</b>
<b>Dominique Gardy: Delivering on Promises .....</b>	<b>8</b>
<b>Din Megat: Upstream Portfolio .....</b>	<b>13</b>
<b>Linda Cook: Gas &amp; Power .....</b>	<b>18</b>
<b>Tim Warren: Technology .....</b>	<b>26</b>
<b>Phil Watts: Summary .....</b>	<b>33</b>
<b>Q&amp;A Session .....</b>	<b>35</b>

**Phil Watts:**

Good morning, ladies and gentlemen, and I say good morning here. I'm not sure what time of the day it is for those of you who are watching on the Web at the moment. Welcome to all of you from around the world.

When we last met 12 months ago, our theme was "Improving Performance and Maximizing Value in Uncertain Times." This theme remains unchanged. In the context of many changes that have taken place, it still reflects our key ambitions to deliver on our promises and to do these things in a business environment that is quite different from 12 months ago and still full of uncertainty. Our presentations today will focus on what we have delivered to date and on our strategy and plans for the future—in particular we will be expanding on what we see as our unique ability to create value in the gas chain.

The targets that we will discuss today are those already in place for 2001. New targets beyond 2001 will be disclosed at the Group Strategy Presentation in December. Just before I describe today's agenda in detail, I'm obliged to show you this disclaimer which reminds us all that any projections made are always subject to factors outside our control. And so to business...

Today's presentation will last about 2 hours. I will open the proceedings with an overview of where we are and the targets we are moving towards. Then my colleagues, Dominique Gardy and Din Megat will give you a more detailed picture of the EP portfolio. Linda Cook will give you an overview of our gas and power businesses, explaining our strategy and our capabilities for adding value. All of these presentations will demonstrate how Shell's oil and gas businesses depend critically on our ability to develop and deploy new technologies rapidly and stay ahead of the game. In our final presentation, Tim Warren will report on the technology advances that we've made in the last 12 months. There will be a short coffee break after Din's presentation and lunch after Tim's presentation and after that we'll have a question and answer session.

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**EP/GP Investor Relations Presentation**

**12<sup>th</sup> – 13<sup>th</sup> April 2000**

Page 2

For this reason, or I should say for this session, we will be joined by Walter van de Vijver who is sitting here on the front row who is responsible for our upstream and gas and power operations in the United States. After a break for lunch, you're invited to our technology show which demonstrates several advances we've made over the last 12 months and those we've planned for 2000. When you visit the show, you'll see why developments such as 4D seismic, expandable tubulars and the Twister have such an impact on our ability to produce effectively and efficiently.

Let me introduce you to the persons responsible for exploration and production in yellow and gas and power in green. Note that Linda Cook is CEO of gas and power and also part of the EP Executive Committee. This insures that we have a seamless linkage over the whole value chain from molecules to electrons. It would have been nice to have the entire Exploration and Production and the Gas and Power Executive Committee here today making presentations and answering questions but it would be rather a crowd and would look a little bit like the Last Supper; so, we've been a little selective. And added to that, a few of them had some urgent and pressing business to do and some deals to close.

We've successfully globalized the business and technology organizations of EP including the alignment... including the integration of the North American businesses. We have aligned E&P and gas and power organizational structure building on the strengths of both organizations, working closely together at the global and regional level to maximum synergy and customer focus.

We've established processes which are centrally laid but locally owned and which allows us to further leverage the size of the Group. Examples are e-business and procurement. You may remember the promises and plans presented last April and June by EP and Gas and Power, respectfully. Those presentations were about our contribution to achieving The Group Roadmap set out in December 1998. At that time, we committed to a 15% ROACE for EP at \$14.00 a barrel, and that's \$14.00 a barrel Brent. We also committed to reductions in workforce and costs and to some major portfolio divestments and dilutions. At the same time, we set a target for volume growth of 5% per annum for the period through to 2003, subject, of course, to possible portfolio actions.

All these promises reflected our commitment to making significant improvements to our short-term performance without compromising our long-term growth aspirations. In gas and power, we set as a target a ROACE of 7% in 2001 and investments of some \$800 million dollars annually reflecting the gross ambitions and opportunities that this business offers.

Let's look now at what we've actually achieved against our promises and at the opportunities we've created to grow more value.

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EP earnings, adjusted NIAT, more than doubled in 1999 when compared to 1998, up 121% excluding specials against an industry average of 85%. Although oil prices were significantly higher than we'd expected, a substantial part of this improvement was due to self-help. The self-help constituted lower operating costs in all major areas of the business and lower exploration costs due to a stringent global ranking process.

Overall, we reduced our costs in 1999 by some \$1 billion dollars. This is split equally between exploration expense and operating cost improvements. The operating cost improvement is 30% better than was planned. The cost improvements and reductions in exploration expenses are both before tax. Compared to the restated cost promise of \$1.8 billion dollars for 2001, some 55% has been realized in the first year which will help us to further strengthen our competitive position.

We have various programs in place to insure that the revised targets will be achieved within the 3-year period, that is, before the end of 2001. According to a comparison by Schroders, we're the leading major in terms of costs, both finding and development costs and unit production costs. We outperformed the other recently-formed super majors for the period 1996.

Shell is building a strong, competitive position. As we move forward, we will continue to build this position. We have more E&P operations than any other company and more deepwater operations than any other. Our gas reserves are larger than those of any other organization in the private sector. We've maintained leadership in areas where it makes a difference in the future despite the recent mega-mergers.

Many of these achievements reflect our strength in technology. As Tim will explain a little later, technology is one of our key differentiators and a major source of competitive advantage for us. As far as size is concerned, Shell's global production operation is more than double any competitor's outside North America. We operate more oil production globally than either ExxonMobil or BP Amoco.

Twenty-five per cent of the rest of the world Shell operated production is gas. We cover every continent; with 30% of our production in West Africa, 30% in the Middle East and 18% in Australasia. In contrast, more than 75% of BP Amoco's rest-of-the-world production lies within Europe itself.

Being the leading operator provides us with a strong competitive advantage. All these factors help explain why we are the partner of choice for governments and national oil companies. Recent examples have been the award of agreements and operatorships in Oman, Nigeria, Norway and, of course, the development contracts in Iran.

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In addition to our reputation, our financial position and our size, we offer our global capabilities across the value chain and, specifically, the leverage of superior technology and a vast pool of talent and experience. Of course, we are also welcomed in joint ventures where we positively influence our partners and insure sound risk containment set against our sound business principles.

Lastly, of course, our low finding and development costs make us a partner of choice. Also, our leading position in the application of sustainable development will help us in the future to align our interests even better with governments and national oil companies and the expectations of society at large.

In 2000, we've already made significant steps along the path to improving performance and maximizing long-term value. In EP, we announced the Altura divestment in the USA and disposed of the related CO<sub>2</sub> assets to Kinder Morgan and I'd like at this point to pay tribute to the leadership of Walter and, of course, Jerry Egan, the CFO, this morning and to all the staff in SEPCo who were able to push through that deal.

We diluted our holdings in the Malampaya Project in the Philippines by a further 10%, having sold 45% to Texaco in 1999. Later on, Dominique will give some more background on our most recent portfolio actions.

Also, the Sable Offshore Project in Canada in which we have a 31% interest came on-stream, and we've successfully re-entered Azerbaijan where we look forward to participating in the development of the country.

In gas and power, the first cargo of Oman LNG was shipped on the 5<sup>th</sup> of April and the second train was commissioned. Also, agreements which may lead to future growth were secured for a regasification terminal in Suabe in Northeastern Brazil.

I'm delighted to announce that Dick Cheney and I signed an agreement yesterday in The Hague to establish a joint venture called WellDynamics. This joint venture represents a unique combination of industry strengths which we're putting together to develop and deploy SmartWell technology. Both companies believe that by combining Shell's operator insight and technology with Halliburton's service company capability technology and the wholly owned subsidiary of Petroleum Engineering Services, Ltd., we can lead the industry in this technology. We're confident the impact of this business on the industry will be as great as 3D seismics and horizontal drilling.

SmartWell technology is potentially \$1 billion per annum market. We're excited by the prospects of our partnership which will create significant value for Shell directly through the joint venture but even more importantly for us through the value it will bring to our core

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business through the fast and effective deployment of strategic SmartWell technologies. Tim will say more about this later.

Let me know look at the future, if I may. None of us are complacent. The business environment remains volatile. In 1999, we saw oil prices sharply rebound from the lows reached at the end of 1998. We cannot say for certain what will happen in the future but we expect prices to remain above \$20 in the short-term and, then you'll notice I've not defined what short-term is several factors among them OPEC's March agreement to increase production by 1.7 million barrels a day. As always, it's difficult to predict actual prices and production volumes.

In the long-term, however, we believe that oil prices will be driven by marginal costs for non-OPEC countries. So, our long-term outlook remains a \$14.00 a barrel price. This may look pessimistic today. Only 14 months ago, it looked optimistic. Therefore, we maintain our project screening at \$14.00 a barrel and every asset and new project within our overall portfolio needs to also be robust at \$10.00 a barrel so that my Chairman can sleep easily at night as he expresses it.

In our view of the future, we also see gas growing much faster than oil. Gas will take a growing share of the energy market as societies increasingly demand cleaner fuel. The statistics are compelling. Carbon dioxide emissions from combined cycle gas turbine power plants are one-half of the emissions from older coal-fired power stations. Therefore, companies that are well-placed in the gas business, we believe, will thrive. And for Shell which has the biggest gas reserves of any private-sector company in gas and power, the outlook has to be positive.

Now, what about our company strategies? In EP, our strategy remains focused on short-term profitability and long-term profitable growth. We have a strong portfolio to build on. Capital employed is some \$25 billion. Our operations produce about 7 million barrels a day. Our reserve base is some 10 billion barrels of oil and some 60 tcf of gas.

We are also building on our key skills and technologies. We have access to a large global pool of technically competent staff. Our technology organization is global with centers in The Netherlands and, right here, in Houston where you're sitting today developing ground-breaking technologies in a number of key areas. We will continue to use integration to create value with close cooperation between our gas and power and oil products businesses. All of these factors will feature, as the implementation of our plan unfolds.

We will be expanding in new countries such as Iran and Brazil. We will leverage our success in the Gulf of Mexico as we develop other major deepwater basins. We will develop markets and grow our LNG business. We will continue to invest in several major projects that have

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been given the go-ahead in Nigeria, in the USA, in Canada and Iran. The total capital expenditure of these projects recently announced comes to some \$5.8 billion.

We will invest some \$6 billion annually in production Capex and exploration expenditures sufficient to meet our growth target. However, we will use our strong financial position to grasp new opportunities and we will take advantage of the current business environment to selectively increase our exploration and production expenditure in 2000 and in 2001 for high-value opportunities but in no way loosening our commitment to capital discipline.

Gas and power strategy is about leveraging and monetizing upstream gas positions, developing significant positions in growth markets in power or infrastructure such as import terminals and providing unique solutions to the various customers in the value chain.

Building on Shell's upstream gas position provides both unique competitive advantage and the opportunities to maximize value for gas and power and also, of course, for E&P. This is working very successfully with LNG building on our strong upstream possessions in Nigeria, Australia, Brunei and Malaysia.

Furthermore, gas and power seeks a major role in key growth markets such as the southern cone in Latin America, India, Turkey and China. Here, we look for long-term partnerships to invest in infrastructure such as pipelines, regasification terminals or power providing tailor-made customer solutions to grow the gas market.

We are also applying state-of-the-art Shell technology—for example, SMDS and coal gasification. We also seek to bring energy to homes and to industrial customers, for example, in Australia, in Europe, in the USA. These activities are about leveraging brand reputation and also about learning and acquiring new skills and mindsets.

Let me illustrate this point by showing you a typical integrated value chain in the Far East. For simplicity, we've excluded specific retail arrangements but the same principles apply. It is not unusual in the value chain to have two or more different partnerships involved with different parties and/or different interests. However, all parties at the various stages require a return commensurate with the specific risks that are involved at that position on the value chain.

Linda will elaborate on these new opportunities we're developing in key markets, marketing and trading businesses in the US and Europe, and increasing customer focus through our new ventures in the retail market.

I would like to draw your attention here to the new processes we've introduced under the heading of "New Ways of Managing the Business." These processes are crucial to our success and we increasingly take decisions from a global perspective and implement them

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locally. The other crucial ingredient is having a business performance driven culture embedded throughout the organization. This is supported by clear accountability and a scorecard established and in place at each level down the line. As a result, strategic cost leadership and portfolio management are at the forefront of our day-to-day business.

We have been able to take some tough decisions and very tough and necessary decisions also with regard to staff reductions, divestments and also some things that you decide not to do—the withdrawal from projects in Chad and Peru. The way we go about growth has improved. We're more focused, more selective and with clear deliverables. Our aspirations are balanced with that need to improve short-term performance.

In summary, our revised approach means better decision-making and faster implementation. We're confident of meeting our targets and we have made fundamental ways in the way we work although there is no reason, I would say, immediately for complacency.

Let me now hand over to Dominique Gardy who will now present to you detailed results of those initiatives and how we really have been delivering on our promises. Thank you, very much.

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**Dominique Gardy:**

Good morning, ladies and gentlemen. I would like to start by summarizing EP progress against our Roadmap to 2001. Progress was very significant in 1999. Earnings improved by some \$2.4 billion giving a return on average capital employed of 21% in 1999. This is 13% percentage points higher than 1998 adjusted for impairments. Half of the improvement was due to higher oil price and the net effect of specials. But, as Phil mentioned earlier, half of it came from self-help like cost reduction, exploration expenses reduction, and once off items, in particular, divestments.

At \$14.00 per barrel, our return on average capital employed would have been 16% including some 2 points related to once off 1999 divestments. We are well on track to deliver 15% at \$14.00 in 2001 when we get the full year benefit of action undertaken in 1999 and the ones to come in 2000 and 2001.

I will now take a closer look at all the major business drivers of our performance roadmap: volume growth, cost reduction, investment level and portfolio management.

And let me start with production volumes. On this chart, I want first to focus on the left part of the slide which reflects volume growth before production sharing contracts and divestment impacts. Underlying volume growth was 3%, equivalent to some 110,000 barrel oil equivalent per day (boe/d). The production level of some 3.8 billion boe/d, oil production was up by 1% and gas volumes were up by 8%.

Despite some adverse effects from community disturbances in Nigeria, this growth was achieved as the result of production from new fields, some 160,000 boe/d mainly in UK, USA and Oman. Total 1999 production of 3,681,000 barrels a day was in line with 1998 including the negative impact of higher price on volume from producing sharing contract in countries such as Syria, Malaysia and divestments.

Divestments are one element of our ongoing proactive portfolio management which I would like to cover now. Yes, indeed, first pillar of our ongoing portfolio management is divestment/dilution. We review all our assets on a systematic and continuous basis to assess how they fit our portfolio. Those that do not meet criteria for performance, strategic fit, ability to generate value at various oil prices, are either cured or divested. We also take advantage of opportunities to monetize the value of assets early in their lifecycle in order to mitigate commercial and technical risk.

The list you see on the top part of the chart shows many of the divestments we successfully completed in 1999. But, as I stated earlier, volume growth is a major element of our performance and to this end we need to make the best investment decisions, the second pillar of our ongoing portfolio management.

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In 1999, we introduced the global capital allocation process. The proposals submitted by some 42 countries were arranged globally against their profitability and strategic fit. The result was a selection of the best of the best projects with a total ownership and commitment to execute these projects all across the world.

The bottom part of this slide shows major investment decisions we took in 1999. We expect to see significant production growth from these projects in the years to come as indicated in the next slide.

Looking ahead, we have significant portfolio ongoing projects that underpin our future production growth. These projects are located in the Gulf of Mexico, Oman, Norway, Egypt, Russia, and Australia and demonstrate our global strength. This chart shows the expected production as these projects come on stream. In 1999, several major projects came on stream for a total cost of some \$3.2 billion and with plateau production of some 400,000 boe/d. Some of the larger projects were in Oman (GISCO), the deep water in the Gulf of Mexico with Ursa, Angus, Macaroni, and Obayed in Egypt.

Another 100,000 boe/d will come on stream in the next 2 years for projects in Canada, Egypt and the Philippines. Furthermore, the investment decisions we announced in 1999, the red bars on the chart, will add some 500,000 boe/d to our volume by 2004 for just under \$6 billion expenditure.

In total, we expect these projects to generate some 1 million boe/d. Din will expound on the specifics of key major projects in his presentation.

So, all together, we expect an increase of annual hydrocarbon production by an average of 5% per year for the period from 1999 to 2004. It is worth noting that all our volume projections are based on \$14.00 per barrel for Brent. If the price is higher, it may impact our volume estimates for countries governed by production sharing contracts or similar agreements. For example, at \$18.00 per barrel for Brent for 2004, the average annual increase would be closer to 4% as a result of this production sharing contract impact I just mentioned. We expect 2000 oil production to be flat and gas volume to increase from 1999 levels as a result of the new projects coming on stream offsetting divestments.

Phil, in his presentation, used a slide about cost leadership with Shell leading the majors. While our leadership is promising, it does not leave any room for any complacency. This is why we are attacking every element of our unit margin under the strategy cost leadership as we call it. The process was initiated at the end of 1998 and took shape in the form of Realizing the Limit which Tim will explain in more detail later. Realizing the Limit includes four sub-processes; drilling the limit, producing the limit, capital to value and volumes to value all contributing to a combination of cost reduction, reservoir optimization and production growth—in a nutshell, financial performance improvement.

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This is done with heavy emphasis on value and quality assurance with centrally lead teams reviewing expectation and investment proposals designed in strategies at various stages of their development. This is mandatory, helps operating units to reduce their capital costs and give the confidence that projects will deliver as promised.

Leveraging global purchasing power, optimizing contractual terms and seeking global tax optimization are totally integrated in the way we do business today.

Let's look at strategic cost leadership in hard numbers. We achieved operating cost savings by some \$5 billion in 1999, equivalent to 10% reduction in unit cost. This is a result of strategic cost leadership embedded in all our operating units and you can see two examples in the next slide. USA, first, operating costs down 24% in 1999 and a further reduction of 12% by 2001. In Oman costs were down by 19% in 1999, and by 2001 we expect costs to come down by some 42% compared to 1998.

Phil mentioned manpower and here, as well, quite a dramatic step change. We achieved some 14% reduction compared to a commitment of 10%. The larger reduction came from US, UK and Nigeria. As you know, the major restructuring has been announced in NAM in the 4<sup>th</sup> quarter of 1999. All together, globalization has been an enabler to exceed our commitment.

Let me move now to procurement. A revolution is taking place in procurement. We are developing a leading capability in the industry. Three key strategies to get there: global contracting, e-procurement, and contractor value strategy. We exceeded our 1999 cost saving target in procurement by 80% delivering some \$19 million savings. In 2000, we aim to cut some 7% of EP spent on third-party materials and services based on the total spent of \$8 billion.

The aggressive program of developing global contracts that we put in place in mid-1999 has progressed well, with 2/3 of the planned contracts now in place in areas such as pumps, gas turbines, valves, instrumentation, pipeline, and so on. This gives us substantial savings over previous prices, somewhere between 15% and 55%, for example, in well engineering materials and services, instrumentation, drilling fluids, casing, tubing and so on.

Throughout all these activities, we are using all the enablers we have at our disposal, knowledge sharing, internal and external benchmarking and systematic tracking to go as far as we can as fast as we can.

But we are also maximizing the opportunity of the Internet. Another change is taking place in the way we do business in our use of the Internet. Our first step was to form [entradis.net](#), a joint venture between Shell and Commerce One. As you know, this Internet procurement exchange venture has now been joined by, among other, BP Amoco, TotalFinaElf, Conoco,

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Dow Chemicals, Philips, Equilon, Motiva and so. We are moving fast to maximize the benefits of entradis.

The first auction and the first transaction took place just 10 weeks after we made the entradis announcement. The first online bidding within EP was held on March 28<sup>th</sup> in Germany using the capabilities of entradis. The online bidding was for chemical used by our BV venture while only \$1 million activity, it shows the process worked with 4 bidders and 2 re-bids as you can see on the graph. At the end of the day, 20% price range between highest and lowest bidders and the result in savings of some 10%.

Next applications are planned in Nigeria, Malaysia and the Netherlands and more will roll out fast. But we do not want to keep entradis.net to ourselves. The opportunities for using entradis.net are wide-ranging from vendor-managed inventory to surplus stock reduction and beyond. Discussions are going on with a number of prospective partners. We expect to realize some \$200 million savings related to maximizing the use of e-procurement in EP contributing to the overall Group target of \$640 million.

Moving to capital investment discipline, it is embedded in the way we manage our business. In hard numbers that meant we spent \$3 billion less in 1999 as compared to 1998. How did we achieve that? In 1999, as I mentioned, all projects with a capital outlay of more than \$20 million went through a global ranking process. These were subjected to a challenge process by the leadership in EP including operating unit representation and were rigorously tested against strategy fit and contribution to final Shell performance. In addition, projects that are initially selected are the subject of a peer challenge to insure that the overall near and long-term business target as advertised will be met before the approval of the individual project is given.

With these measures, we believe we can sustain a level of \$6 billion annually while meeting our growth projection. At the same time, when there are interesting opportunities, we will be able to afford thanks to our financial position to grasp those opportunities provided that we create sustainable shareholder value.

Let's now have a look at our overall portfolio. Our results improvement in 1999 was significant and all across the category of our various assets. ROACE more than doubled compared to 1998. So improvement partly reflects the better business environment but self-help, indeed, contributed as I already mentioned.

The deliberate divestment decision also contributed to this improvement as well to the significant capital employed reduction. We have now some \$11 billion in major producer assets, some \$5 billion in other producer assets, and some \$1.8 billion in new growth area. A large part of our under-performing assets has been divested and will be further reduced thanks to Altura and CO<sub>2</sub> announced divestments. In summary, quite a unique portfolio.

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Let me now summarize my presentation by using the same slide that Phil used for fro EP at the beginning. There are a lot of ticks on this slide which means that we deliver what we promise. But, actually, we delivered more than promised. We have integrated strategic cost leadership in our day-to-day business and this is paying off. 1999 operating cost savings of \$0.5 billion was 30% better than our target. Stringent ranking of exploration expenses resulted in \$0.5 billion lower costs in 1999. Workforce reduction was 14% in 1999 compared to a target of 10%.

Proactive portfolio management is embedded. We deliver more than the necessary promised divestments especially some high-cost power plays that a limited upside. We also diluted a few projects to mitigate risks while benefiting from value premium. We introduced global capital allocation to get the best of the best project selection and move forward with critical investment to support our growth, like EA Bonga in Nigeria, Athabasca in Canada, Brutus in the Gulf of Mexico.

The benefits of capital discipline are evident in our 1999 results where we achieved a \$3 billion reduction in expenditures compared to 1998 levels. The end result a ROACE of 21% compared to 8% in 1998. As I mentioned, at \$14.00 it would have been 16% including 2 points for divestment.

We are well on track towards our promises of 15% return on average capital employed in 2001 at \$14.00.

In summary, we have gained momentum and we have increased the pace at which we are delivering our promises.

I will now turn it over to Din for a look at the portfolio and aspirations driving our long-term performance.

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**Din Megat:**

Good morning, ladies and gentlemen. Let me first recap the main themes around which our strategies have been developed. These themes are our core portfolio, deepwater, major resource holders, and gas. As Phil and Dominique have shown, we have been pursuing and implementing strategic cost leadership which underpin these themes to strengthen our core portfolio of businesses as well as positioning for new business growth. Over the next 20 minutes, I'm going to tell you about some exciting opportunities and recent major developments in our portfolio. I will emphasize those in deepwater and the major resource holders. I will conclude with an overview of our new production and reserves.

In all these areas, our strategy is built on our existing competitive advantage. Much of that advantage has to do with size global spread and depth and our worldwide network of relations, thereby building on our unique technology base. My colleague, Tim, will elaborate more on how technology makes our core portfolio more valuable. We also have the operational experience, skills base and adaptability to make us the choice partner of governments and private industry players.

Before moving to the portfolio, let me first give an overview of our how our expenditure in the year 2000 of \$5.8 billion is allocated, a result of the new capital allocation process. When you look at our overall investment program, you can see a significant proportion is allocated in the Middle East Major Resource Holders, the Caspian, deepwater and gas. At the same time, our lowering cost base and technology enables our short-term performance to be improved by maximizing oil production in our core regions.

Some of the projects that came on stream in 1999 were Sakhalin in Russia, Obaiyed in Egypt, Laminaria in Australia and Ursa, Angus and Macaroni in the United States. At over 40% of 2000 expenditure, our push for our long-term strategic thrust is clear. You will hear more of the synergies with gas and power from Linda later. The expenditure in the Major Resources Holders is still relatively low as the execution of this strategy will take some years.

In 2001, we plan a total Capex again of around \$6 billion with close to 50% in our non-core areas. As Phil has said, our present strong financial position means that if additional opportunities arise we can also afford to grasp those.

Let me now turn to the portfolio. Here you can see our new projects coming on-stream for this year, demonstrating our global reach and spread of operations. Eight of these ten projects are operated and managed by Shell. The projects in orange were approved in 1999 for startup after 2001. All these projects demonstrate our diverse approach to grow the business—not at any cost but profitably.

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Let me highlight one of our core areas, Canada. The Canada Sable Island Project is located on the east coast of Canada. It was developed in 2 years from the decision to go ahead with the development. We do not operate this project but we have a 31% share. Our involvement in this project is to increase Shell Canada's gas production and reserves and offset our recent divestment of Plains to Apache. It underpins our move to gas. There is some upside potential in Sable. Hence, our plan to drill two exploration wells.

Let me now turn to China, a country where we have upstream presence of over 20 years and intend to grow in the related businesses. In China, our production levels are currently 25,000 barrels a day, average, in Xijiang. We are exploring several other prospects in the greater Xijiang area. Our objective here is to add value by optimizing on the existing facilities and supplementing declining future production. Exploration and Production together with Gas and Power is working with the Chinese government and its national oil company on the development of the Changbei integrated gas project which is moving to its final investment decision in mid-2001. A letter of intent was signed on 21 February 2000.

LNG import terminals and coal gasification projects are also being planned by our gas and power business. We are progressing discussions with the China National Star Petroleum Company and the Chinese National Offshore Oil Corporation for gas exploration and production in the east China Sea. Finally, in west China, we are undertaking a joint study of Kuqa in the Tarim Basin to help us establish a gas position there.

Let me now turn to deepwater. You can see that we are well represented in the major basins around the world. The new development projects in The Philippines and Nigeria are benefiting from the experience and skills base that we have created in the Gulf of Mexico. In the Gulf of Mexico alone, we made 37 discoveries of which 12 have been brought onto production. This experience and skills are unrivaled. Shell is the largest private-sector operator in deepwater over 500 m where the real technology challenge starts.

Our total operating production is 550,000 boe/d. This is more than the combined production of all the other private-sector operators put together. The only organization with comparable production to ours is Petrobras. We also hold more reserves than any private-sector company.

The Gulf of Mexico remains a focus and a growth area for us. The basin is a good example of our proven ability to apply innovation across the entire upstream value chain. In exploration, we continue to add to our discovery volumes. With industry-leading drilling performance and cutting-edge seismic technology, we have decreased exploration spent while maintaining our pace of annual discovery volumes.

Our experience in development and operations in the Gulf of Mexico have lead us to reduce development costs per barrel by 67% over 5 years. On the development side, it is also about leveraging our infrastructure with both hubs and satellites. We are very excited about Brutus,

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our latest, ongoing large tension leg project development. Brutus is presently ahead of schedule and below budget and we have encouraging subsurface results from our pre-drilling program. Brutus reaffirms our in-house project execution organization, Shell Deepwater Services, a strength that is unique to Shell.

Our deepwater production continues to increase while operating costs are coming down. Our unit operating cost is now below \$1.50 per barrel and dropping. This translates to record uptime. For example, Ursa has maintained 99% uptime for each of the last six months, thereby meaning more barrels. We continue to learn how to drill complete and produce high-rate wells. One of our Ursa wells, a 3,000' horizontal completion, is now producing at Gulf of Mexico production record levels.

Looking forward, we're shifting our focus to material, large-scale opportunities. We have recently announced that our Europa Development is on-stream. We have also built a large inventory of prospects that we are quite excited about.

In Egypt, we have diluted our interests by 25% to create a better balance of risk and reward with our global deepwater theme. The opportunity here is enormous. The contract area is similar in size to the total Niger delta deepwater area, half of the Gulf of Mexico deepwater area and 20 times bigger than the total UK deepwater acreage. We have done some excellent quality 3D seismic studies which have given direct hydrocarbon indications. Large structures are evidence that the deepwater concession has the potential to be a hydrocarbon province in its own right with both gas and oil potential.

We are currently planning to drill the first well before the end of this year. Note too, that in the inboard areas, infrastructures are being put in place, for example, in our Rosetta development.

Brazil is another very promising area. We established a significant position in Brazil in 1999 with presence in 3 blocks. Our presence in Brazil helps us to strengthen our relations with Petrobras. It also enables us to leverage our deepwater skills. We will be drilling our first well in the third quarter of this year in block BC-10 using Shell Deepwater Services rig Stena Tay and plan to acquire a further 3,000 square km of seismic.

In addition to our Bonga project in Nigeria, we have also interest in several deepwater fields there. The most promising are Erha where Shell has a 44% interest and Abo where we hold 50%. Of the volumes found so far, Shell holds 26%. This is equivalent to about 1 billion barrels which puts us well ahead of the competition.

To support our operations in Nigeria, we are investing a lot in infrastructure projects, as well. These include integrated supply to Nigeria LNG Train 3 and the Shell Offshore EA

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development. Implementation of these projects is on track and the benefits to our deepwater activities will be significant in time forming 1/3 of Shell's production in the country.

Let me now turn to another area of focus. Ladies and gentlemen, with some 65% of the world's proved oil reserves, the Middle East Major Resource Holders are prime target areas, not only for us, but also for our competitors. In addition to Abu Dhabi, Oman, Egypt and Syria, where we've had a long presence, we re-entered Iran in 1999. In Iran, we're making good progress to implement the integrated Soroosh/Nowrooz projects with a value of \$800 million. Early production of 60,000 barrels a day is scheduled in November 2001. We expect to complete the project and hand over the facilities in August 2003 when we will be up to 190,000 barrels a day. Negotiations have already started on a technical services contract.

You may remember our joint venture with KEPCO, Lasmo and Veba Oil in the South Caspian Exploration Study. Phase I of the study started in December 1998 and will end in October 2001. We have also submitted a proposal for the onshore Bangestan oil development project. Discussions and negotiations will probably continue until September this year. And we're involved in the South Pars Gas Consortium. This Consortium includes nine companies with Shell playing a leading role. The Consortium is looking at market opportunities for the South Pars gas as part of Iran's national gas utilization plan.

In Saudi Arabia, we are, as you know, discussing a number of proposals. We are seeking to extend our involvement, building on our long downstream and chemicals presence there.

Let me now turn to the Caspian where we have some interesting developments, as well. We returned to Azerbaijan, a territory where Shell was active in the early years of the last century. The Iman prospect offshore Azerbaijan in waters of only 30-100 m deep in the Caspian Sea. With our partners, we have committed to 3D seismic data acquisition and drilling of two exploration wells. Preparation is underway for drilling the first well which we expect in the third quarter of this year.

We are also drilling the OKIOC well in Kashagan-East I. Right at this moment, it is making very good progress after a very difficult start.

In Turkmenistan, we signed in August last year a strategic alliance agreement with the government. Under the terms of the agreement, we hope to develop a long-term partnership with TurkmenGaz and work together with them to export gas from Turkmenistan to the neighboring countries to the rapidly growing Turkish markets and beyond and, in the longer term, the developing markets in India, Pakistan and China. The Trans-Caspian Gas Pipeline (TCGP) where we have a 50% position is the priority project right now given the high potential of the hard currency Turkish markets and Shell's entry into that market via InterGen.

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Together with our partner in TCGP, we are committed to delivering gas by the end of 2002. It remains critical, however, that the governments of the region cooperate. We expect to see the picture unfold in the coming weeks and months. The market is there, the gas is there and we're convinced that TCGP and Shell can deliver on time and on budget.

In summary, therefore, as Dominique has said earlier, the projects I have outlined plus others will build almost 1 billion boe/d in production and growth for our future. Let me now cover other aspects that are key for our future.

Firstly, exploration. 1999 was a year of success in global exploration. There was more focus as a result of the expenditure discipline and some of the notable successes include finds in Denmark and West Africa. The overall resources discovered were the highest for half a decade, thus, rounding off our reserve space. Shell has the best 3-year average production replacement ratio of all the majors with almost 150% replacement ratio. Shell, after ExxonMobil, is also the second largest private hydrocarbon resource holder with a portfolio almost equally split between liquids and gas. Here, you can see we are strong and well represented across the globe according to our regions. Based on 1999 production, proved reserves would last some 13 years for liquids and this includes Athabasca and 20 years for gas. This would increase to 50 years on a barrel oil equivalent basis if all the additional resources that we have are converted to proved reserves.

Ladies and gentlemen, let me now hand over to Linda who will tell you about our gas and power business which compliments the development and monetization of our large inventory of gas assets. Thank you.

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**Linda Cook:**

Welcome back and good morning. I'm excited to be talking today about Shell's global gas and power business. We actually often hear the question, "Why is Shell in the gas and power business?" One of the main reasons is shown on this first chart.

All forecasts point to significant growth in gas demand with key drivers being the Kyoto Emissions Targets, the abundance of gas reserves and the increasing competitiveness of gas with reduction in LNG and pipeline costs. But, we're not in the gas and power business just because of the growth and demand. We're in it because it adds value to our overall portfolio and it leverages Shell's strengths: global reach, business development skills, technology and reputation.

If we look at the energy value chain, you see the gas and power business picking up where E&P leaves off and we operate in most parts of this chain. We are leaders in gas to liquids technology as well as LNG with strong skills in market development and trading. In our InterGen power development joint venture provides us with world-class IPP development capabilities. In addition, we're evaluating the attractiveness of the emerging residential market which I'll talk more about later.

Phil showed a map of our strategic focus in gas and power. You'll recall it has three key elements. First, the initial reason years ago why Shell entered this business, that's monetizing upstream gas. This has to do with enabling the production of Shell equity gas volume and is still important today. The second element is the development of new markets. We're working with governments and industry to create new demands for gas and power and, finally, customer solution where customers can range from host governments to large industrials to individual residential consumers. I'll be covering Shell activities in each of these strategic areas but first an overview of our business.

Capital employed in Shell Gas and Power rose to \$7 billion at the end of 1999. We now have operations in 20 countries with business development activities in another 15. Shell equity share of LNG plant capacity rose to 10 million tons per annum up from just 7 in December. In power, our equity generation capacity has risen to a total of 2.3 gigawatts in operation or under construction. In 1999, Shell entities in the US and the UK sold more than 10 bcf/d per day in commercial gas marketing and trading activities, significantly up from 1998 levels.

The next chart shows the distribution of our capital employed with the largest investments in the LNG business and in the US with the rest divided between our assets in Europe, InterGen, our gas to liquids plant in Malaysia and new business development activities around the world. Geographically, the importance of our LNG business in Asia and Africa is also highlighted.

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In terms of financial results, in 1999, we delivered over \$250 million net income with a ROACE of 7% which is equivalent to the return expected for gas and power in Shell's well-known Roadmap to 2001 which is clearly achievable for our business. Longer term, we do aim to deliver 15% ROACE, the expectation of all Shell businesses. But in the near term, Gas and Power expects to create shareholder value by a combination of growth and relatively modest return, like any new business.

That was 1999 and a lot has happened in the short time since. Starting with LNG, we loaded the first cargo in Oman just last week, on schedule and within budget. The second Nigerian train commenced production at the end of February and important milestones have been met for future projects in India, Brazil and Venezuela.

In the power sector, InterGen completed the successful sell down of interest in their Millmerran Plant in Queensland, Australia, and Shell approval was reached on two new power projects in Turkey totaling 2.3 gigawatts with the approval of a third expected shortly.

In US marketing and trading, Coral successfully launched their e-commerce platform late last year and announced an alliance with a major northeast US distributor.

Finally, in the emerging retail or residential sector, our pilot in Atlanta, Georgia, reached a market share of 23%, an encouraging result. We've launched the Pulse Energy joint venture with our partners in eastern Australia. I'll talk more about many of these during the course of my presentation starting first with our LNG business.

Our expectations are that global demand for LNG will grow 5% per annum over the next 10 years. Despite the adjustment in the Asian economy, LNG demand is growing in the Asia-Pacific region. In addition, we see significant growth opportunities in the Atlantic basin with demand outstripping supply. The increase in demand above currently-contracted volumes in both parts of the world is at the point where justification of expansion of existing LNG projects is now possible and the ability to justify new plants is possible in the foreseeable future.

Shell has 25 years of international experience in LNG and a proven track record. This slide illustrates the wide global spread of our LNG activities. We have interests in operating plants in Malaysia, Australia, Brunei, Oman, and Nigeria, with expansions underway in Malaysia and Nigeria and further expansions under consideration in Oman and Australia.

Looking to the future, prospects for new projects are maturing. Venezuela is one example and we're pursuing opportunities for regasification terminals in India, China and Brazil. Shell is the leading LNG player around the world when measured in terms of equity volumes. With the recent start up of both Oman and Nigeria LNG, Shell's equity capacity is approaching 10 million tons per annum as shown in the chart on your left. We expect further growth with

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the recent approvals of expansions in Malaysia and Nigeria adding another 1.7 billion tons per annum by the year 2004.

On the right, you can see how this compares with other private LNG players. Shell has been the clear leader for some time and our planned growth will widen the gap between us and the others in the coming years as we reach a volume that is almost double that of our nearest competitor.

Shell has also designed and operated more LNG plants than any other company. This has enabled us to be the leaders in terms of LNG cost performance, as well. With our operating experience and improved designs, we've managed to reduce the cost of operating LNG facilities by 45% over the last 7 years and advances in technology have led to lower up-front capital costs, as well. The Oman project has delivered the lowest ever unit capital cost for a greenfield LNG project, considerably lower than recent competitor designs in the Atlantic basin and Middle East.

Our experience and cost leadership allow us to create more value for Shell and our partners in existing projects as well as position us as partners of choice for new LNG opportunities around the world.

An example of the application of this technology is in Oman which is the fastest ever LNG project from the discovery of gas to first cargo. The gas comes from fields in the central part of the country, which is then piped to the LNG plant on the coast. LNG will be shipped to markets in Korea, Japan and India. A state-of-the-art technology also allowed for the low-cost design and the largest operating LNG trains ever, 3.3 million tons per annum each. And for those of you who like to see real photos of our impressive facility, here's one taken just last week showing the Kogas ship receiving the first cargo of Oman LNG on April 5<sup>th</sup> before leaving for its return leg of a maiden voyage to Korea.

Looking ahead to future projects, on March 23<sup>rd</sup>, we announced the signing of a memorandum of understanding between PDVSA, Shell, ExxonMobil and Mitsubishi related to the development of offshore gas fields in Venezuela and the construction of a liquefaction complex. The project is targeting the attractive markets in the Atlantic basin with an initial output of 4 million tons per annum.

Shell is committed to applying the latest technology to this project and keep the forward momentum going with a plan to start up in late 2005.

So, maybe I've presented a convincing case that we're the world leader in LNG but you may ask, "So, what?" Historically, LNG has been considered as an extension of the upstream by many of our competitors. For Shell, because of our global reach, technology and cost leadership, LNG has matured into a profitable business in its own right. This chart shows that

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in 1999 on \$2 billion of capital employed, the LNG business delivered a ROACE of 14%. With the current outlook on oil prices for 2000 and the growth in LNG volume, we'll see net income increase in 2000 with further growth in 2001 when we forecast a ROACE of 15% at a Brent price of \$14.00 per barrel and exceeding 20% at \$18.00 a barrel.

These figures exclude the profit and returns from the related upstream positions where, of course, additional value is added.

In addition to the long-term LNG project profitability, Shell's global reach allows us to add additional value by capturing short-term marketing opportunity. Due to a variety of factors, including improvements in plant performance and slightly lower demand in Asia, the volume of LNG available for short-term trade doubled in 1999. As a result, Shell facilitated the marketing and sale of an additional 15 cargoes. Examples include spare cargoes of LNG from Malaysia and Oman, which were sold to Coral in the US, and, more recently, a deal was closed to deliver a spot cargo of Malaysian LNG for marketing into the growing Spanish market.

As a result, a cargo of gas, which would have otherwise been left in the ground, was sold, creating value for Shell in the monetization of the upstream reserves and the profit at the Malaysian LNG plant where we have an interest as well as marketing margins in Spain. Just another example of the value to be gained from Shell's global reach in our gas and power business.

Turning to new markets, we're aggressively pursuing opportunities in growing markets in all stages of liberalization, including India, Brazil, China and Turkey. In the southern cone, we have an established position in the Bolivia to Brazil value chain targeting the large São Paulo market with key assets including our stake in Comgas. The Comgas distribution concession covers a market of over 6 million households with gas expected to grow tenfold in the next 10 years. Comgas provides an excellent example of integrated customer solutions and the company is now developing plants to combine gas distribution with power and other energy services, further leveraging their customer base.

India is another major growth market, in particular, for LNG projects in which Shell has an interest in the Middle East and Southeast Asia. It is expected that demand in the north and west of India alone is likely to exceed 10 million tons per annum by 2010 with further market development in the south. LNG from Oman will become the first LNG delivered to India with initial deliveries to the Dabhol power project towards the end of next year. At the end of 1999, Shell was awarded a letter of intent for the right to develop a port and LNG receiving terminal in Hazira in the state of Gujarat. Compared to several competing projects, Hazira benefits from its close proximity to major customers as well as key gas infrastructure.

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Because of this, we expect Hazira will be the lowest cost option for import of LNG into Northwest India and we're targeting aggressively an investment decision in early 2001.

You hear a lot about the importance of Shell technology in our E&P business and I would like to tell you that it's important to gas and power, as well. One example is our gas to liquids technology which is in the press quite often lately. Unlike our competitors, Shell has a proven commercial process for converting natural gas into liquid petroleum products. The photo shown here on the top is of our Bintulu plant in Malaysia designed to take in approximately 120 million cubic feet per day of gas and produce 15,000 barrels of middle distillates and specialty products. On the right is a diagram of floating LNG which offers a low-cost means to monetise remote gas. Both of these technologies are included in Tim Warren's technology presentation and in the exhibition later today. On the left is a photo of a coal gasification facility located in Holland. The Shell technology applied in this plant enables the generation of electricity with coal as the fuel but with a 90% reduction in sulfur, nitrogen oxide and particulate emissions compared with conventional coal processing.

We've licensed the technology to projects in Italy and India but see the most potential for application in China where there are huge domestic coal reserves. We recently signed a memorandum of understanding in China with Sinopec to develop a 50/50 joint venture coal gasification project at the Dongting fertilizer plant in Hunan Province. We continue to consider additional opportunities for this technology.

Now, let's turn to power generation. This chart illustrates the growth in global power generation capacity over the coming 20 years and it highlights, in particular, the growth of gas-fired power which is forecast to average 5% over this time frame. This growth presents several opportunities to Shell—acceleration of the monetization of Shell upstream volume; opportunities to leverage our world class IPP development skills in InterGen, our 50/50 joint venture with Bechtel; and as a growing platform for gas and power marketing and trading.

The map on the next chart shows the span of power generation activity we are involved in around the world, predominantly through InterGen. The activity includes projects in mature markets such as the UK, US and Australia and developing markets in Turkey, China and South America resulting in a diverse and high-quality portfolio.

This portfolio translates into tremendous growth on the horizon for InterGen. At this time they have plants in operation totaling over 1,000 megawatts. Looking forward, projects currently under construction will almost triple their operating capacity by the end of 2002. The plants coming on-stream are located in The Philippines, the UK, China, Australia, Egypt and Mexico.

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Adding to that a projection of the impact of projects that have not yet reached financial closure such as the three projects in Turkey and the forecast indicates operations of over 8 gigawatts by 2004.

InterGen is not only considered a success internally. They are also recognized as such throughout industry. Over the period 1996 to 1999, InterGen has been the second most successful developer of the greenfield plants outside North America, just behind AES. And InterGen continues to win industry awards recognizing their world-class project development and financing capabilities. A few examples of these awards are shown on the chart related to their projects in Australia, the UK and Egypt.

The next chart I'll show is not in your package but building on InterGen's success so far, I'm pleased to announce that we're in advanced discussions with Bechtel concerning an expansion of our InterGen joint venture. The new venture which will continue to be owned by Shell and Bechtel will include the existing InterGen portfolio and certain US gas and power assets. An important element of the new venture is the preferred relationship established between the JV and the parent company with Bechtel providing world-class EPC skills for new project development and Shell becoming the global fuel supplier and merchant energy marketer and trader for all InterGen facilities.

The benefits of the new venture include strengthening the alignment between gas and power assets and marketing and trading particularly between InterGen and Coral in North America, leveraging the skills of the parent company, presenting a single face to the market for power development through InterGen and for marketing and trading through Shell, and creating a stronger platform for future growth. We plan to issue a joint press release with Bechtel providing more details of these plans in the coming weeks.

We are often asked, especially by analysts, about our investments in power generation and whether we expect a utility rate of return. The answer to that is, no, we're in it for more and this chart attempts to explain. InterGen typically expects to receive a return on equity on the order of 10-15%, higher in developing countries where the project risk is higher. Now, with the expanded joint venture, Shell will be the preferred supplier into all InterGen facilities. This creates the opportunity for additional value creation and improved return. We also have the preferred power marketer role for all merchant power available from InterGen plants, worldwide, creating an additional opportunity for improved margins.

The resulting return on Shell's investment, then, can be significantly higher than that of the plant alone and we shouldn't forget the potential linkages with Shell LNG or upstream projects where further integration can create a market for Shell reserves or a unique offering to host governments and major resource holders.

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Moving to North America now in marketing and trading, Coral Energy is positioned to provide integrated solutions to energy customers, not just gas and power but also fuel oil as well as financial and industrial energy services. An example of their capabilities is reflected in the recently-announced KeySpan Energy alliance. KeySpan is the 4<sup>th</sup> largest local distribution company in the US serving over 2.7 million customers in the New York City area. Through the alliance, Coral will participate in the management of KeySpan assets including coordination of the fuel supply, buying and selling power, managing price risks, and maximizing trading opportunities. Coral secured this opportunity against stiff competition from the major US players and we're excited about the new partnership and look forward to others like it in the future.

A second recent and successful business development in Coral has been the launch of Coral's e-commerce platform, coralconnect.com, which provides customers with the opportunity to conduct financial and physical gas transactions online. This site also offers access to a wide variety of energy information. Over 900 users registered in the first 6 weeks following the launch, arriving to the current level of over 2,000 and activity levels continue to increase.

As liberalization continues, new opportunities emerge from marketing and trading operations around the world. Outside the US, the most mature and significant opportunity is Europe. Shell Energy has been created to pursue power marketing and trading throughout Europe. One of its first steps has been the announced joint venture with ENECO to trade electricity in The Netherlands. Shell Energy is now also trading electricity in the Scandinavian power pool and are initiating activities and staying.

We have also expanded the scope of Shell Gas Direct, which is the 5<sup>th</sup> largest UK gas marketer to include power, providing it with dual fuel capabilities.

Other opportunities for value chain creation are emerging with the liberalization of retail or residential markets in the US, Europe and other places around the world. The chart on the left provides an indication of the size of this potential prize, projecting that within 5 years approximately 200 million households will be open to competition for gas and power. At an estimated annual growth margin, and I stress "estimated," of \$50 to \$100, there is an opportunity on the order of \$10-20 billion per year. These are really big numbers. Of course, net margins will be slim especially for new entrants competing against strong incumbents.

What will it take for a new entrant to win? One of the critical ingredients is the regulatory framework that allows for fair competition. Once you have that, other important factors will be scale, reliability, a recognizable brand, and a unique customer value proposition. Shell has a number of relevant attributes: experience in gas and power supply; a strong brand; an existing customer position through our retail gasoline operations. In fact, every day over

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20 million customers visit Shell retail gasoline sites around the world and another 10 million people in the US and Europe have Shell credit or gasoline card in their pocket.

But can we leverage these attributes into a winning residential energy business? This is an important question for us and this is why we are investigating opportunities in selected markets. One such effort is in the residential gas market in Atlanta, Georgia, through our US subsidiary, Shell Energy Services Company (SESCO). The Atlanta market was opened to competition in late 1998 and through the end of 1999, Shell had captured 23% of the market gaining customers through telemarketing and direct mail efforts as well as through the acquisition of a competitor's customer base.

This particular pilot proved the strength of the Shell brand and helped us establish the back office and other systems necessary to compete in this business. Following this initial success, we are currently considering entry into other US residential markets for both gas and power.

A second residential entry is through our recently-announced venture called Pulse Energy that will market gas and power to residential customers in eastern Australia. Shell's partners contribute over 1 million existing residential gas and power customers to the joint venture. Shell brings brand recognition as well as the local petrol loyalty program called Fly Buys which is similar to the airline rewards program in the US. Fly Buys has 2 million members which will be leveraged to attract and retain home energy customers. The joint venture is expected to be up and running at the beginning of 2001 and is developing plans to attract more of the 10 million potential customers in their territory.

So, where will we go with the residential market? I think it's too early to say but it's clearly an interesting opportunity for Shell.

In summary, I think I've demonstrated that Shell is the clear leader in LNG and we're on course to widen the gap between us and the competition. We're pursuing strategic positions in key growth markets leveraging technology to our advantage. In power generation, we're building on our world class capabilities in order to grow our portfolio and developing a more strategic relationship with our InterGen joint venture. We're expanding our marketing and trading capabilities, including e-commerce and we're evaluating the emerging residential market—all of this leading to a growing and robust Gas and Power business for Shell—but it won't be easy. The Gas and Power business moves very rapidly with key changes in terms of liberalization and the competitive landscape coming at us every day. By leveraging Shell's strength global reach, business development, marketing and financing skills, reputation, brand, the lowest cost, and the best technology—we have what it takes to be a clear leader and I'm confident of our ability to succeed.

Thank you, and now I will turn it over to Tim Warren who will tell you more about all the exciting new technologies many of us have referred to this morning. Thank you.

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**Tim Warren:**

Good morning, ladies and gentlemen. Did you ever think that the ocean floor could be quite such an exciting place? That was a simulated run through where we're placing the Bonga development off the coast of Nigeria. What you've just seen is an example of technology in action in Shell Exploration Production. This particular technology using detailed echo sounding gives us a safe, cost effective and efficient way to explore the seabed. We can avoid hazards and locate and operate our subsea facilities and wells and put them in the best place for the best returns. It's just one of the ways that technology is helping Shell's performance.

When I met with some of you in New York last year, I said that technology is a key competitive differentiator within our industry. I think my colleagues who have spoken before have all reinforced that point. It's a source not only of ready money but new opportunities and long-term value for Shell. At that time I also highlighted a number of ongoing developments. In the next 20 minutes, I'd like to give you a snapshot of the progress we've made since then delivering on those promises and I'll explain the course we're on to continue and, indeed, accelerate progress.

First, I'd like to just mention WellDynamics that was introduced by Phil in his introduction and announced with Halliburton and ourselves yesterday. I'm pleased to welcome, in fact, on the front row particularly Edgar Ortiz who is the president of Halliburton Energy Services and his team. You'll have an opportunity to interact with them later on this afternoon during the technology show.

SmartWell intelligent completion technology is a technology that's designed to maximize production at minimum unit cost through the application of real time downhill measurements, real time inflow control, processing and multi-lateral technologies. It actually represents a convergence of all our historical technologies within the well bore and we expect in Shell a 30% increase in the value of all our future wells through the application of this technology. Indeed, we see it as the next breakthrough akin to that of 3D seismic and horizontal drilling.

The venture WellDynamics positions Shell to extract early and maximum value from the deployment of these technologies. Products are already available from Petroleum Engineering Services Ltd. and I'm pleased that Larry Kinch is here to join us today, the chairman and founder of that company that is part of our exciting new venture. We and Halliburton have exciting plans for the future.

A global Shell team has been working for some time to build a portfolio of the opportunities for operationalizing this technology and I'd just like to take you through 3 examples. Firstly, at the end of this year in the last quarter, Petroleum Engineering Systems products are already planned as components of Shell Expro Gannett-D development. These products will reduce the incremental development cost in that development by 33% and provide an accelerated

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production volume of just under 1 million barrels. 40% of our global operated production is gas-lifted. Gas-lift systems by their very nature run sub-optimally. But real time measurement and control will allow full time optimization, thus, allowing us to grasp a 100,000 barrel a day prize within Shell managed operations alone.

In the future, we see smart or intelligent wells taking up more and more of the functions presently provided through surface facilities. Downhole dehydration, downhole compression will reduce surface requirements and provide access to reserves which are now not economic. Facilities costs will be lowered and there will be significant benefits in terms of reduced environmental footprints.

Larry and the Halliburton team, as I say, will be with us this afternoon. There is a booth at our technology showcase on WellDynamics and I hope you will go there and have an opportunity to see the very great value that we see in this partnership.

What else are we doing to achieve the targets we set ourselves? The key is rapid deployment of our knowledge and technology to achieve new limits ahead of the competition and realizing our aspiration of being too fast to follow. In Shell, we call this Realizing the Limit. Realizing the Limit is all about challenging what we do and what we assume. It's about avoiding the mindset of doing things as they've always been done. Global teams throughout Shell challenge these ways and share best practices. They imagine the perfect performance possible with today's technology and go up the learning curve to get there. This limit, ladies and gentlemen, is the ultimate benchmark. Nobody can do better.

But as new technologies are developed, the limits are pushed back. Today's perfection is no longer tomorrow's and the process is a continuous one, ever climbing new learning curves to reach the next perfect performance limit. As you see in our global reach, in fact, gives us access to learning curves that are just unavailable to our competition.

To put Realizing the Limit into practice, we've established limit techniques in four areas: volumes to value, which addresses the monetization of the value of our subsurface knowledge and technology and together capital to value, drilling the limit and producing the limit, minimize our costs and maximize our return on investment.

Let me give you just a little bit of detail on each of these techniques. Drilling the Limit is about maximizing the value from each well. Drilling the right wells and drilling them right. It focuses on challenging assumptions about what is achievable and creating the teams, the mechanisms, and the culture to do better. Input and expertise from our people everywhere within our global business are drawn in as appropriate.

In 1999, in the Gulf of Mexico, Shell drilled wells faster and cheaper than any other company. This was benchmarked against the performance of the rest of the industry. Shell was drilling

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wells twice as fast and, therefore, it reduced cost of the average of other operators. This was achieved through applying Drilling the Limit.

The same technique is being applied in all our operations around the world. For example, here in Shell Expro in the North Sea, the average rate of drilling has been improved by more than 50%, 1999 over 1998.

There are two examples of drilling the well right but here is a lovely example of drilling the right well. The Fishhook well in Brunei which actually turns round in the subsurface and comes back towards the surface started off as a \$10 million proposal as an exploration well stand alone. Applying our Drilling the Limit technique to this well reduced the cost significantly as shown on the middle bar. But this still wasn't good enough to gain acceptance in our global ranking process. So, a novel sidetrack path shown in red was developed from an existing development well. The cost of this should be less than 1/10 of the original \$10 million proposal.

Capital to Value is the way of helping Shell deliver world-class projects. Throughout the life of the project Capital to Value specialists get involved in insuring application of best practice to amongst others, objective setting, risk and uncertainty management, contracting and procurement strategies and relationship management. Their job is to make sure the assets being created will have maximum value.

In The Philippines, for example, our Malampaya project has gained significantly from the Capital to Value technique. Applying this value engineering technique essentially redesigned the approach to part of the project. Many changes were made by the team, an example of which was the removal of redundant methanol scrubbers. This process saved 20% of the original design cost, a saving of \$50 million. Indeed, the onshore gas contractor working with this gas contractor, Foster Wheeler, stated they found this methodology so powerful that they intended to mandate it on all their future projects.

Volumes to Value is where we focus on monetizing more reserves. That means, homing in on the basic value drivers of the given project and on building teams of people who can use those drivers to improve performance. As you might expect, Producing the Limit is about maximizing production. It provides a framework at which we can look at all aspects of the production value chain identifying opportunities for increases, both immediately and in the short-term.

One example, again from Brunei on how much Realizing the Limit can and will continue to contribute comes from Brunei in part of their large Champion Field asset. The slide here shows you in red the production previously forecast from this part of the field. When the Volumes to Value methodology was applied, it was found that estimates of oil initially in place had been understated by 13%. Producing the Limit generated many ideas for increasing

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production such as improving gas lift efficiency and changing commingling zones. This brought improvements which could be applied almost immediately, as from mid-2000. These are shown in green on the chart.

But Realizing the Limit went further. Producing the Limit initiatives identified recompletions that added extra oil shown here in the orange section. On top of that, a combination of Volumes to Value and Drilling the Limit highlighted the potential for three new fast wells with up to 20% additional production opportunity. The effects are shown in yellow.

Applying these recommendations that I've emphasized in just one part of a major field asset will increase production in the Champion field by 2 million barrels a year at a cost of less than \$2 a barrel and maintain those new levels for several years.

Realizing the Limit is absolutely crucial in allowing us to maintain capital discipline whilst growing our business. In 1999, we saved \$270 million with Drilling the Limit compared to the cost which would have been incurred without it. This year, the target is a \$500 million saving. Volumes to Value identified additional expectation as opposed to proven, that's a 50/50 chance, of 250 million barrels last year. This year's target is 400 million.

Producing the Limit came up with production opportunities of 14,000 barrels a day and this year we're targeting 100,000. Capital to Value identified Capex savings of \$250 million last year and this will be significantly exceeded in 2000 working on projects in hand or planned.

I should emphasize that the figures on this chart represent 100% improvements on the assets that Shell operates. Our partners and our host government partners accrue some of the benefits, themselves.

We're well on course, therefore, to clear the milestones we set ourselves for the end of 2000. The Drilling the Limit technique by then will have been applied to all wells to be drilled from the start of 2001. Application of Volumes to Value will have covered over 15% of our resource space and Producing the Limit will have been applied to 25% of Shell's operated production. All our major projects and ventures will have received Capital to Value assists.

Let's look now at how we're doing in the technical arena. Remember, we promised you a commercial return on technology, quicker and better application and value from the technology itself. We're making this happen in several ways. Our globalized organization enables technology experts based here in Houston and New Orleans and in Europe as shown here to communicate with staff in our operating units all around the world concerning their particular challenges.

Electronic means and web forums all contribute to the rapid sharing and implementation of best technology and practice. They also enable us to get the best out of our global pool of

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human talent. We can place the details of a particular technical challenge in a web forum and get virtual teams working together quickly and effectively to find a solution.

In one case, an engineer in a Middle East team had a problem concerned with a critical safety issue for a bid on a project required within a very tight deadline. Omitting the specification would have meant missing or losing the bid. He posed the problem on the Shell web and received answers, which enabled him to answer his problem in the same day. Our bid was successful.

Last year we highlighted key areas where we provide value. Cheaper plumbing was one now being address by Drilling the Limit and SmartWell technology but we also said we were going to sharpen our vision of the subsurface. Today, our seismic imaging and analysis lead the world. In Norway, here, for example, Shell geoscientists now routinely perform 4-dimensional or time-lapse seismic studies. In Norways' Draugen field where the technique revealed the flow of water during oil production, allowed us to avoid drilling the well that was planned at the bottom of the chart on your right and pinpointed the right place to drill it. In fact, the last opportunity to drill a well from that platform. The new well drilled at the end of 1999 is a record-producer in the North Sea at over 70,000 barrels a day.

Another advantage from our seismic technology is that the subsurface can now be visualized in virtual reality centers. An immersive 3-dimensional view combined with a variety of seismic well and reservoir data gives a full understanding of the situation and tasks at hand. It actually allows multi-disciplinary teams to communicate better and more effectively and quickly. They can challenge today's and each other's orthodoxies to increase reserves and production and save time and money. I hope you will be equally excited by the demonstration you will see this afternoon in our technology show.

Last year we also said we would turn gas into cash and Linda has explained to you the power of our gas and power business. We have a powerful array of technologies thanks to focused research combined with our extensive operational design experience and the learning curves we're able to go up both in LNG and gas to liquids technologies.

The Oman LNG project, as Linda demonstrated, is the lowest unit cost greenfield LNG project ever, an unrivaled specific capital expenditure of US\$200 a ton of LNG produced per annum and the next plant—we already know how we're going to do it better still.

Shell's floating liquefied natural gas concept is now at the stage where it is ready for commercial application and has been added to our gas technology tool kit. We firmly believe that it enjoys a similar cost advantage to the traditional LNG forms.

Our proprietary Shell Middle Distillate Synthesis technology has further strengthened our competitive advantage. Recent advances such as a break through in catalyst performance

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have reduced the specific capital costs to US\$20,000 a barrel per day capacity. A 70,000 barrel a day facility using SMDS has the same gas intake as a large-scale LNG train. The economic attractiveness of such a plant is often as good as or even better than an LNG investment. As Linda has shown you earlier, LNG makes us very good money.

This creates opportunities for us to flexibly apply SMDS, LNG and floating LNG trains as building blocks in our field developments. You will be able to see more details of all these projects this afternoon in the technology showcase. All of them are helping us to keep the promises we have made to deliver more cheaper and faster. All of them are contributing to defining the new tomorrow's limits that will be pursued by our Realizing the Limit techniques.

Speed is absolutely critical to what we are trying to do. A major part of Shell technology's task, a major purpose of Realizing the Limit is to develop technology faster and deploy it faster for the benefit of Shell's bottom line. Why is speed so important? Firstly, of course, to keep ahead of the competition but also to make our reserves commercializable more quickly. Secondly to produce the production on which our profitability and value is predicated.

Thus, that is why we are engaged simultaneously in multiple ways of commercializing our technology. We're developing our own technologies in areas where Shell can sustain owned competitive proprietary advantage. In other areas, we're buying in excellent technology from others. And others, we're entering into joint technology development ventures such as WellDynamics.

We formed Shell Technology Ventures to take those technologies to the marketplace both within Shell to create additional value for our businesses and to external customers. We have now come quite a way down that road and with our venture partners, we further developed the technology of expandable tubulars. The first products were on the market late last year. The first five applications are out there already working in the field.

Of course, delivering a commercial return on technology is not just about technology. Commercializing technology requires keen financial engineering and entrepreneurial skills. We were pleased also to announce yesterday that we're forming a new holding company called Shell Technology Investments Partnership. This is a partnership with the private equity investment company, The Beacon Group, in New York. I'm pleased to welcome in the audience today Eric Vollebregt, the CEO of the management company of this partnership who you'll have a chance to interact with this afternoon.

Last year, I mentioned our intent to commercialize our revolutionary Twister gas separation gas technology. Two Twister units have been operating successfully in The Netherlands over the last 4 months and Shell companies in Nigeria and Sarawak are now keen to implement this technology in their short-term developments in Bonga and MB-12. The industry at large

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has shown a lot of interest in this product which can reduce the facility costs of gas field development by up to 40%. I'm pleased to say that commercializing the Twister is one of the first investment projects blessed by the new Shell Technology Investments partnership.

In creating an investment partnership, we venturing beyond the traditional parameters of a technology organization and with good reason. We wanted to do everything we can to accelerate technology development and particularly deployment for the benefit of the Shell EP bottom line. Beacon's successful track record of helping companies grow new businesses and their particular understanding of the energy sector are a natural complement to Shell's capabilities and our drive to achieve a commercial return on our technology investment.

The partnership will bring together exciting complimentary opportunities between Shell technologies and technologies available in the outside world with the objective of significantly enhancing value creation.

I hope I've helped you to understand the significant difference that technology is making in Shell exploration and production, more precisely the difference made by the application of technology by our people. We continue to drive forward developing technologies, identify and promoting applications that will have real impact on the bottom line, training, motivating and facilitating our people to use technology to its best advantage. We're delivering on the promises we made last year, in particular, through Realizing the Limit and I hope you agree the results speak for themselves.

We're in good shape to meet and even exceed the hurdles we set ourselves for this year and 2001. Our venture partnerships, WellDynamics with Halliburton and Shell Technology Investments Partnership will accelerate technology development and accelerate deployment. So, as you see, ladies and gentlemen, we believe we have an exciting future ahead of us building on the solid foundations of the past.

I thank you for your patience in listening. We're now going to take a break for lunch and reconvene back here at 1:20 when Phil will give a summary and open the floor for Qs and As.

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**Phil Watts:**

Welcome back, everybody. We've just had lunch here in Houston. Welcome back to all of you folks out there on the Web, on the Internet. We'd especially like to welcome those that are watching from Kansas City and especially the mom and dad of Linda Cook who is sitting here. Hi, mom.

We've been covering quite a lot of ground before lunch and I've been given quite a bit of stuff for a summary and I thought, well, at this point in the proceedings, let's not read this stuff. I just want to hit the high spots that are important as far as I'm concerned about Shell's E&P and gas and power business.

I hope you've not missed point number one and that is that we have a great deepwater business in Shell and, of course, it started here in the Gulf of Mexico. We're still making progress but now we've got a global deepwater business of which we are very proud and we intend to continue that and to grow it.

Secondly, we really do want to become partner of choice in the Major Resource Holders. I don't think any major oil and gas company is going to be worth its salt, 10, 20 years from now if it doesn't have a significant position with the Major Resource Holders and we think the fact that we're a very large operator, we bring those sort of skills to the party can make us a partner of first choice.

I'm sure you've also seen in everything we've had to say this morning, the common thread of the importance of gas and, for us, gas is the key growth market. In the upstream, certainly, but also in the downstream, in particularly LNG and you've seen that we have an LNG business that is large, profitable and still growing and we intend to grow it further.

Then, of course, is power. We've been really pleased with the way the InterGen company, that venture, has taken off and we want to make more of that. As Linda was saying, and you may want to ask about it later, we're very keen that that venture we have with Bechtel and InterGen really grows and prospers and develops over the years.

Of course, then there's the whole area of gas and power marketing and trading. We're very proud of the business we have here in the US, that is Coral, and we're proud of the things that are being done in SESCO, the example that you saw in Georgia, what's happening in Australia. This is not going to be an easy business. It's a very dynamic business but we've got these experiments going and some of them are starting to make money. We're determined to pursue that.

Having talked about a number of things, I could have said more, but we just mentioned a few, having talked about prospects for growth, you should have no doubt about our determination

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to maintain and improve our short-term profitability and somehow we've got to get the balance between those two things right and I do personally believe that it is not a matter of either or. The conversations we have as an Executive Committee with our business leaders around the world, it's all about we want short-term profitability and long-term growth, please—preferably sooner rather than later. Somehow the challenge is to get to the ingenuity and imagination of our people to achieve that around the world.

I make no apology whatsoever. Some companies are giving up on technology. You know, it's something you can't afford. Often they rationalize it and put it under a headline of fast follower or whatever. Of course, we want to take up other good ideas onboard. We're not the source of all wisdom ourselves, but I think some companies are losing heart as far as technology is concerned. Shell is not. The fact that we stressed technology last year in our analysts presentation, that we give it even more of a profile this year, reflects that we're determined to press forward with technology—not technology for technology's sake but really technology that makes money and commercial technology.

That is why I'm so pleased that we've got a couple of announcements today about WellDynamics, the deal with Beacon, the fact that we're very encouraged with our gas to liquids technology which I think can be quite a break through.

So, in conclusion, I would say, we do have an unparalleled portfolio. We should thank our fathers and grandfathers for some of that and we appreciate it. We're building on that portfolio. It's a tremendous global spread. Our challenge and commitment is to exploit all of those assets to their full potential during our period of stewardship to add to a rich portfolio even further. Thank you for your attention to the formal part of the presentation.

We're delighted to have a Q&A session. Can I just check where the microphones are? There's a couple over there. There's one here. If you do have a question, can I ask you please to identify yourself, state your question clearly and I'll make sure that we all understand the question and then we'll take it from there.

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**Q&A Session:**

Q.

[Inaudible]

A.

Phil Watts: This is a question about LNG importation into the US. Linda?

Linda Cook: As I mentioned in the presentation, during 1999, we sold a number of spot cargoes, many of them into the US market because the prices were attractive and we had the additional capacity available. Of course, that's a lot different than justifying a whole project based on spot cargo. I think in the near term what you'll see is new expansions and possibly new projects being justified with certainly still a base load of LNG sold under long-term contract but with excess capacity built in so that you do have the flexibility to take advantage of higher prices when you see them.

Q.

[Inaudible].

A.

Phil Watts: The question is whether you're talking minor volumes to import or significant.

Linda Cook: I think in the near terms the volumes won't be that significant because projects that are on-stream have the majority of their LNG tied up under long-term contracts. It will just be what you have available in terms of operating capacity and available shipping.

Q.

Doug Terreson from Morgan Stanley. I think my question is for Linda, as well. In the global gas and power business, you guys mentioned that you're generating about 80% of your net income after tax from LNG which about 30% of the capital employed which implies that the ROACE in the other businesses as you mentioned is probably pretty low today, although I think you mentioned also that there were some special items in those numbers. My question is, can you kind of clarify those ROACE figures and also give us some guidance as to how you expect capital employed in this business to be proportioned, say, 3 years from now or 5 years from now, whichever you chose; and also, your projections on when the non-LNG portion will begin to exceed the cost of capital.

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A.

Phil Watts: This is a question about the segmented profitability of the gas and power business. After you get the whole answer, you'll know more than I do.

Linda Cook: I hope not more than I do but I'll give it my best shot. Okay, so I talked about LNG and it is about a third of our capital employed right now. We're projecting good returns this year. Of course, better than what we might project at \$14.00 a barrel because we're seeing higher oil prices this year than that. So, going forward... of course, that will fluctuate with oil prices, you know, quite a bit.

In terms of the other businesses, you're right. They are delivering much less because the overall return on average capital employed for gas and power in 1999 was 7% and that was at about an \$18.00 Brent, you have to keep that in mind, as well. So the other parts of the business were not performing that well. I think the thing you have to keep in mind is that LNG is the most mature of all of the segments of the portfolio in the gas and power business. We're a growing business and the Group is looking at us to grow. We have the long-term aspiration and expectation by our chairman, the gentleman to my right, if the business delivers 15% ROACE overall but I think we're several years away from that. As I said, what we're going to deliver to the Group is a combination of growth and value and relatively modest returns for the coming 2 years.

Q. (same individual)

Okay. Let me also ask... I think in the non-LNG portion, you have \$5 billion of capital employed. What's that number going to be 5 years from now? Do you have an idea?

A.

Linda Cook: Yeah. Certainly the power portion of that we expect to grow and you saw the forecast I showed you on capacity and power generation growing so that would be a growing portion of that and the LNG portion will be growing also.

Q. (same individual)

Okay. But you don't have a non-LNG...

A.

Linda Cook: Well, if you think about it, the other parts of the portfolio in gas and power are relatively low capital-intensive businesses.

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Q.

I guess we're stuck on LNG. I tend to talk to Woodside from time to time and they give you good insights into their attempts and your attempts, as well, to get another set of businesses going in Japan. There are a couple of Japanese members of the consortium which would seem to give it some push and, yet, Mr. Akers' comments informally were to say that the structure of that market has changed quite a bit. It's not unlike the direction we've changed in in the West... much more spot oriented in the sense of wanting things, smaller pieces, less responsibility financially, buyers don't finance the whole thing. It would seem to me that that rings true and, therefore, to sort of set up a 6 train LNG project as Total did with Tubu won't be happening again. I'm not sure what the model is going to be. Maybe you're going to combine China, India and Taiwan. Also, if the company is so enthusiastic about gas, economically how do you think about things like Gorgon?

A.

Phil Watts: So I can make a remark in the first instance. I was recently in Japan and we see markets... the liberalization that's taking place and we have to open our minds as to the possibility that a different regime could one day exist. Against that, you have to really look at the reality of the necessity or security of supply and properly a number of those markets are extremely conservative about that and don't want to be dependent on a really fluid arrangement. It doesn't mean that some of that stuff isn't going to happen at the margins but if we're not careful we can be a little premature about the prospects for the current regime.

I think we'll get other kinds of flexibility as we come in to satisfy the market requirements.

Linda Cook: I think one thing I add is, of course, the recent slow down in the economy of Asia has backed up into our business, as well, slowing down in terms of the demand but as that picks back up, we'll see a strengthening of the demand, as well, as I showed in the charts during the presentation and as Phil mentioned, the buyers there will be looking for not just low cost but also security of supply as well as diversity of supply. So, we're just looking for that to mature and see what impact of deregulation, as well.

Q.

The attached question was on the issue of stranded gas or gas not ready to be commercialized and I mentioned Gorgon as being one which you have some involvement and BP Arco offshore Indonesia is another we all know about but gas very often sits for years. When you say that Shell is particularly interested in being more gassy or associated with gas, do you just sort of write off in your mind beforehand those waiting times and all the difficulties that have traditionally occurred?

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A.

Phil Watts: I don't think we can afford to be complacent about the issue of stranded gas. And, of course, you get quite a bit backing up, ranked on its unit technical cost and all the rest of it. That's why, from my perspective, I'm so interested in the idea of gas to liquid schemes where you produce a product that goes into the global oil pool and, of course, you have the opportunity that it can be particularly tailored products for a particular use in particular markets. That's where I think we're keen to get those schemes off and running.

Linda Cook: I think the other thing I would add to that is floating LNG because floating LNG enables you to do a smaller-scale project without the large initial up front investment and you can get your cash flow going sooner then and then perhaps justify the large project later. Both gas to liquid and floating LNG are featured in the technology exhibition, so I encourage you to go by there after the Q&A session and find out more.

Phil Watts: They're very interesting sessions.

Q.

This is Steve Pfeifer with Merrill-Lynch. Last year the Group went through a major reallocation and streamlining of your capital budget, really focused on lower cap spending, laying off some of your projects to interest in other companies and then also going through a global allocation. Could you give us some sense for the old portfolio, what kind of internal rate of return you may have been looking at and how that's been improved by the new portfolio going forward or maybe another way to describe it would be what's the unit operating cost or development cost per barrel for the new investment portfolio compared to the previous portfolio that you had been pursuing in the past?

A.

Phil Watts: I'll make a general comment but I'll turn to Dominique. I think one thing we were very determined to do was to improve the downside robustness of our portfolio. And when we use the catch phrase "we screen at 14 and then we check at 10 so that we sleep easily in our beds" I mean, it sounds a little simplistic and whatever but that is deadly serious and so I'm pleased that over the last 12 months we've really got a better downside resilience in the portfolio. I hope we never have to demonstrate how useful it is because you find that... as well as divesting some stuff that's vulnerable, if you can improve your cost performance, it works well at \$14.00 a barrel. It works even better at... what is it... \$22.00 a barrel today. As far as getting to detailed numbers, I think that's a bit early. I'm looking forward to seeing the Schrodgers comparison of the oil industry in this coming June, July, so that we see what's happened to the unit finding costs and the like. Dominique?

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Dominique Gardy: Well, I would just like to come back to what I said this morning. Return on average capital employed improvement between 1999 and 1998 was some 13 point. Half of that was due to better price per barrel but half of its 6 point return on average capital employed was a result of the action... we did it through strategy cost leadership and portfolio management. Re divestment, we divested some \$1.7 billion capital employed in 1999. Generally speaking, high cost type of assets and... this is definitely something which has improved our portfolio and will bear fruit in the years to come.

Q.

You got a couple of new LNG facilities Oman, Nigeria, what kind of netbacks to the wellhead are you guys getting for the gas on that stuff and in a \$14.00 a barrel Brent environment, what kind of gas purchase price would you need to make a new LNG plant economical?

A.

Linda Cook: In terms of the netback to the wellhead, I think the important thing that we always try to do with LNG projects is look at the integrated economics because in each of the different countries we operate in, the contracts are written differently and the profit and margins can be distributed differently so I think it's important to look at it on an integrated basis. What we can say though is that the overall LNG portfolio at Shell as I showed you in the numbers here is profitable at \$14.00 a barrel and expect a reasonable return, a strong return actually. And the economics on the integrated projects look equally good, if not better.

Phil Watts: Let me give an example of that. I used to be Chief Executive in Nigeria and we just approved Train 3, we're a partner in Nigeria LNG. As well as being inherently profitable in its own right, it will gather associated gas from our fields with the gas gathering system and will do two things. It will facilitate the production of the oil and the profitability of that and it will also help to put out the flares which is part of our commitment to have a flares-out policy in Nigeria with a stretch target at 2005 and certainly everything out by 2008.

Q.

Tom Schmidt from Alliance Capital. If you look at your total production and then look at your exploration spending, aren't you going to have to increase exploration eventually here or you're not going to be able to replace reserves? You spent roughly, what, a billion and you produced 1.3 billion.

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A.

Phil Watts: Here would be an appropriate point to... we certainly want to do the best we can with exploration and you saw the numbers that are coming through, they're in your charts. On a... I use the phrase "expectation." I think you used the phrase "resources" basis as opposed to the proven but... last year, 1999, in a traditional way of looking at it we... what we found at \$2.00 a barrel oil equivalent. If you look at the expectation, the resources, it was closer to \$.90. But, you're right, if you look at that and the rate at which it's going to mature perhaps we're a bit short.

Last year, we also went ahead with the Athabasca oil sands project and the day we took the investment decision, 600 million barrels went, bang, to our reserves. Of course, they're under mining reserves. Then you look at the deal that was done in Iran, and that's a buy-back contract, and there is by law no entitlement to reserves. So, they don't show in all the reserves numbers. When other Middle East Major Resource Holders open up, they could well not adopt a sort of way of counting reserves and a way of looking at the business that we're used to. So, I think we've got some explaining to do in working with analysts so we get a kind of fair picture of how things are developed.

That wasn't quite the question you asked but I broadened a bit to... and it may be also that at some stage we'll want to acquire reserves for money as opposed to the drill bit but there is another tremendous source of reserves and I'd like Tim to comment if he would. Because, if you look at our proven reserves and compare them with the expectation of what they could be, there's a dramatic prize there. Tim?

Tim Warren: You saw a very interesting chart in Din Megat's presentation this morning that separate our resource base in proven exploration expectations and what we call scope for recovery. And scope for recovery is the resource base that we believe is unlockable with new technology. If you look back to those charts, the numbers are very large indeed.

Phil Watts: I have no doubt that if we get Volumcs to Valuc to work with the application of new technology, we don't need to go to Wall Street for it, we're actually sitting on a lot of it.

Q.

The question is one on the power business. Global power businesses are very highly competitive and you have some pretty aggressive competitors there, for instance, Enron. Just wondering if you can elaborate a little bit more in terms of the approach that you take and also that the target market perhaps what is different than some of your competitor or what differentiates yourself and gives you the advantage. The second question is related to the gas to liquid technology as well as the floating LNG as you indicate that both of them potentially could reduce the cost or that could make the project more viable or feasible. If we're looking

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out at, say, the next 10 years, do you foresee the two that will be, as a competitor, one will pace the other or do you think they will be complimenting each other.

A.

Phil Watts: The first question is about the global power business and aggressive competitors all over the world. Linda or Walter, there...

Linda Cook: I'll at least start. I showed you the chart that compared InterGen to the competitors over 1996 to 1999 and it showed that InterGen was the second most successful greenfield independent power producer in terms of developing new projects in the world outside of North America. So, they even beat Enron on that score and AES, of course, was the company that was number one. I think they have... and that proves that InterGen has world class skills in terms of project development and financing and those are the key strengths they rely on in order to win the bid successfully and then have profitable projects when they're actually pursuing them and get the financing done.

The second question was on gas to liquids and floating LNG and I would say that we see them as quite complimentary actually, to our existing LNG business. There are times, as I mentioned, you can actually get started with a floating LNG project on a smaller scale and expand it into a large LNG facility later or you can do SMDS which is Shell Middle Distillate Synthesis process which is our gas to liquids technology in conjunction with LNG and enhance the overall profitability of the project.

Phil Watts: Perhaps I could just ask Walter to comment and you may talk about the situation in the US with InterGen.

Walter van de Vijver: As probably are aware, we started up InterGen in North America last year and I was actually having dinner with Carlos Riva, the CEO of InterGen yesterday because as you can imagine he is very excited about the next stage of where we're going with InterGen and we feel that that venture and this unique linkage it will have with Shell, we'll not have to worry about the big Enron we always like to talk about. I mean, Enron is a different business from the business we are and where our strategies are. We don't try to compare ourselves just with Enron. We have a more complete package we have... and more linkage with the E&P business that's very important and we have different investment opportunities, so we don't look at the business through the eyes as Enron. At the same time, we are very confident as Linda has shown with the success today that we can go where we want to go with what we have put together and where we think we're going.

Phil Watts: And, we'll build, I think, on the global spread we have in this capacity. We're in 130 countries, Shell has a presence and I think that's a really valuable thing to have in terms

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of getting to know who the customers are, how the country works, what the marketplace is like.

Q.

John Mahady from Sanford Bernstein. To follow on Tom's earlier question, what is the finding and development cost assumption that's being used in the volume and capital spending forecasting that you've shown us and, then, also, if you can share with us some of the factors that went into your decision regarding Chad.

A.

Phil Watts: I got the question on Chad. I missed the first part and we have people listening so speak up.

Q.

John Mahady: What is the assumed finding and development cost that you have embedded in the forecast that you've shown us today? What's your expectation for that number?

A.

Phil Watts: I think the short answer to that is... and if you take one of those charts that was demonstrated where Shell is actually the leading company as far as unit finding and development cost is concerned, we would want that and, frankly, something improving on that as we get more focused and also with the benefit of better technology and doing things faster.

As far as Chad is concerned, I said that we had to make some hard decisions about which projects to go forward with and which not and you saw the reality of the choices last year were that we went for a major project in the deepwater in Nigeria, a major project in the US, Gulf of Mexico, Brutus, an offshore pipeline in Nigeria, shallow water field EA. We went to Athabasca with all the story around that, huge reserves and the longevity of the project and some others that you know and then a conscious decision that we would withdraw from the Chad project. I'm pleased for Chad that it's going ahead and that new partners have been found in the form of Chevron and Petronas and I wish the project well and I hope it contributes to the development of the country but there are some hard and tough choices that you have to make as to what you can afford to spend in total and then what the balance and shape of the portfolio of projects should add up to. Very often, it's this downside resilience criteria that forces you to take some hard decisions. I hope that's... Tim...

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Tim Warren: ... on the first part, again. If you look at what we've achieved through Drilling the Limit so far which... anything from 25-50% reductions in our well costs and recognize that well construction costs are anything to 40-50% of your finding and development costs, and we don't believe that the 25-50% that we've realized now is today's technology limit... we've still got way to up the learning curve to actually extract the most from today's... and then factor in the 30% value increase that is the basis for which we're investing with Halliburton and WellDynamics and I think you can see that there are some very, very significant reductions in unit finding and development costs going to be coming in the Shell portfolio.

Q.

Fred Leuffer with Bear Sterns. How much of your Nigerian production is being affected by the disturbances there now and what's your assessment of that situation going forward?

A.

Phil Watts: Thank you. I'm at least reasonably well-informed on that because every Monday morning I insist on a special report from Nigeria... not that the guys that are running it aren't doing their job well but I have been the CEO in Nigeria. This is more for old times sake and deep affection for our people in Nigeria. They had a really difficult time last year and part of the year before and that persisted until the first part of this year. I'm pleased to say that just lately things have improved quite a lot and the atmosphere seems rather a lot better and, in fact, we're not restrained in our production at the moment by community disturbances. We're, in fact, more restrained by quota restrictions from OPEC, would you believe. I think it's something, though, that we have to manage and live with and certainly we make all the representations that we can to the Nigerian government about making sure that the people in the local communities, where we're producing, see their fair share of the revenue that comes from the production of oil and that it's not just in the capital and big cities and whatever. But actually makes it back to the communities and what they need is jobs. We play our part but there's no way we can take the role of government. But, as I say, things just at the moment are looking quite a bit better.

Q.

Tyler Dan from Bank of America Securities. I wanted to address the underlying decline rate that's in your projections. When you formulated these projections, was the Realizing the Limit program... how far along was that and to what extent will that have perhaps offset that underlying decline rate? In other words, could your projections be conservative or... I guess I'm trying to figure out the impact of the Realizing the Limit program on the existing field production.

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A.

Tim Warren: I think you're doing something we're trying to figure out, as well, at the moment.

Phil Watts: That's a very honest answer.

Tim Warren: Yes, that's honest... Realizing the Limit we kicked off, you know, at the end of 1998 and it's been building momentum throughout 1999 and some of our operating units are already banking the advantages in their plans. The others are planning to do that this year. So, there is a significant component that is not yet in our plan, part of it is in our plan. We'll certainly give you clarity on that at the end of this year.

Phil Watts: And, we'll see how things develop over these next few years with these programs. It's not just a mechanical process. This is also about attitudes, hearts and minds, and the ingenuity and the enthusiasm that you can engender when people see it delivers results.

Q.

Actually, that sort of segues into my second question which I'm sorry I didn't state earlier. The accountability that you mentioned in terms of your new way of managing the business, could you just give us a refresher as to what's different now, in terms of accountability, in terms of management structure, versus before and when that major shift may have taken place.

A.

Phil Watts: Shell had an organization or management structure that served the company very, very well for many, many years and I was part of that. I enjoyed the freedom I had in the operating unit as man and boy and it was good fun. The world changes. You get into a more competitive situation and the Group decided to change in early '96 from this matrix structure which, frankly, had got terribly overgrown with all kinds of weeds and bureaucracy and we went to a business structure. We sharpened that up significantly early in '99 where we went from a kind of loose and vague business committee to an executive committee. I think that's enough of the history.

I'll tell you what the situation is like now. We're talking about both Executive Committees, both for E&P and gas and power and it applies just the same. I'll describe the E&P one just for ease of doing it only once.

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At the end of last year, I agreed my scorecard with the Chairman, with the Board, in fact, and the scorecard has on it, top line performance, return on average capital employed. And, then, you go into the rest of the scorecard and it has a line that says unit costs, oil production, gas production, reserve replacement. It goes into the next part. It has HSE, human resources, some measures there. And then at the bottom of the chart... you can see I look at this quite regularly and I can remember what it looks like... it has strategic milestones. Did we get that investment decision for Bonga in Nigeria. There's normally a month next to it.

Now, I have that and I share that with my colleagues on the Executive Committee and I cut it up into slices. Din has his piece, and so it goes. Below that, within each particular region, every operating unit has a scorecard that matches that. So, by the end of the year I have for E&P and Gas and Power my books of scorecards and I know who's name it is at the top of the thing. Perhaps the most important thing we do as an Executive Committee is make sure that you've got the right people on the spot responsible for that piece of total score. Getting the right people in the right places.

We have then quarterly an in-depth review of that and then we have a monthly review. And it's a bit arduous. It's a bit straightforward and it's pretty disciplined and you find out... you know who's accountable but then you see where things are going right or wrong and where things are going wrong how can you inject... not just criticism and give people a slap. That's not the point of it. How can you use resources from elsewhere to help with that particular situation? How can it be turned around? Does it need more people? Does it need a different technology team to go and have a look at that problem? Does it need more financial resources, or whatever? That's the way our business is.

I sometimes dream about the old days but it's all changed. And everybody's used to it by now. Works well. Does that give you a feeling for what it's like? It's very tough but it's also... tries to be very helpful.

Linda Cook: I would just add one thing. The other part of it that Phil didn't mention was the whole compensation structure which, believe me, is directly tied to our performance against our scorecard.

Phil Watts: And we've upped the amplitude of that so that people that really make a difference get really significantly rewarded.

Walter van der Vijver: From my side, one thing you have to add to that is that it's not a story any more which we be very good in Shell of excuses. That doesn't work any more. That's a big difference.

Phil Watts: We had brilliant rear-view mirror explanations of why this wasn't really a very sensible target to have in the first place. Last couple of questions.

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Q.

You said in your conclusion you wanted to be the partner of choice in major resource areas going forward. Do you have trouble sleeping at night that you're maybe too stringent on your criteria at \$14.00 a barrel oil and 15% return?

A.

Phil Watts: I think you've put your finger absolutely on one area that, if I did stay awake at night and look at the ceiling and worry about things, it would be that we missed that trick, yeah. And that's why you can have that for every day, every day... there are the [unintelligible]... but you also have to have certain areas that you're thinking about. Could these be a special exception to this? If I didn't get that, would it be a shut-out forever? And that doesn't mean that we're going to lose our capital discipline which some people would argue is a bit tight. I would argue that it then makes funds available, if we wanted to do it, for really high value positions that were perhaps one-time opportunities that we should have an open mind to consider that sort of thing.

Q.

Let me turn it around another way. Are you selling assets at \$14.00?

A.

Phil Watts: Are you selling assets at \$14.00, Walter?

Walter van der Vijver: No way.

Phil Watts: No way. And we don't sell assets on just the bare bones assessment. We dream of how much more reserves you could possibly get out of it and then combine that with a higher price before we let go.

Din Megat: I think it's good that the CEO of the business worries every night.

Phil Watts: Not every night.

Din Megat: well... about the fact that some hurdles need to be met because we all feel it the next morning. But through feeling that, then the creative juices started flowing and one thing especially with the Major Resource Holders is all about continuing their engagement such that we find solutions between ourselves which would lead to a win-win between both them and ourselves. And through proper understanding as to what they really want—not just in the short-term but over the longer term—it seems you are looking at helping in the development

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of not just their natural resource but perhaps also their country. We will eventually find solutions which meet our hurdle as well as the aspiration.

Phil Watts: Then we'll have the last question after this one.

Q.

This is Stan Harbison from Scudder Kemper. You didn't say a lot today, I don't think, about into the lower 48, the mature Canadian onshore and, if I might add the North Sea to that list. These are all areas where it appears as if most major oil companies are disinvesting or lowering their investment, sort of full-cycle economics were not very attractive after '97 and then we heard the technology. So, it occurred to me that as a percentage of the rent that exists in properties perhaps the biggest impact of that kind of technology, if it worked on smaller scale issues, could be in the North Sea, or lower 48 or Calgary and it's really just a question of how you think about those areas, because they're not trivial. I mean, they used to consume most of the rigs in the world and I just wonder how you think about those basic areas.

A.

Walter van der Vijver: If you look at the lower 48 and the mature areas in the US and to whatever has happened in industry, there's an enormous fragmentation, as you know. And one of the things that I clearly worry about is that with this fragmentation, all the smaller players now looking at the mature assets... they don't have the skills, they don't have the technology, nor do they have the capital to actually make these things really work. I think your comment in that sense is valid for the US. I would predict that you will see further changes in the lower 48 because, given the advantage of technology and associated skills with it, you will see that other companies will have to come back to get the best out of the assets. I assume that the same will be valid to some extent for the North Sea, as well. Technology and the skills and also the access to capital to do some of these things are going to be very dominant factors.

Phil Watts: But we can prolong active life and help the aged and all the rest of it, but in the end, you need the new provinces of West Africa, offshore Brazil, the whole Caspian area, the other Major Resource Holders and that really must be a big... the commercialization of huge quantities of stranded gas. So, there's a whole spectrum of possibilities out there that you have to compare the lower 48 or the North Sea or whatever with you. The last question, if we may.

Q.

Rob Arnott from Morgan Stanley. I had a quick question to you on returns and looking out in the future, in particular in the Middle East region because you talked of the area being a

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tremendous resource space... tremendous from the point of view of cost. What about the returns that you think you may get from the projects that ultimately you'll be involved in there?

A.

Phil Watts: I thought Linda expressed it very well when she was talking about these new things to do in gas and power down the gas value chain and all the rest of those when she said... and then she said about LNG... we're doing all this stuff, and your question is, "Do we make any money?" And I think that's the big caveat about Major Resource Holders, these new opportunities that we're looking at is, will we make money? And we're not in it for utility rates of return because there's too much risk associated with it. But that will be the big challenge and it will need the sort of relationships and discussions that Din was talking about to make sure that you can get into real win-win situations where we make an acceptable rate of return and the government feels that the way it normally should go is that they make even more and the better we do, they do ever better. It's that sort of challenge that we face in these new areas.

Can I say at the end, thank you very much for your attention and for coming. We really appreciated the opportunity to talk about the company that we know and love and enjoy working for. Thank you very much indeed.

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# Royal Dutch / Shell Group of Companies

*Phil Watts*

Exploration and Production, Gas and Power Presentations to Financial Analysts  
The Hague, 12<sup>th</sup> April and Houston, 13<sup>th</sup> April 2000

***Improving performance and maximising value  
In uncertain times  
Accelerating delivery, generating value***

Copies of viewgraphs used by:

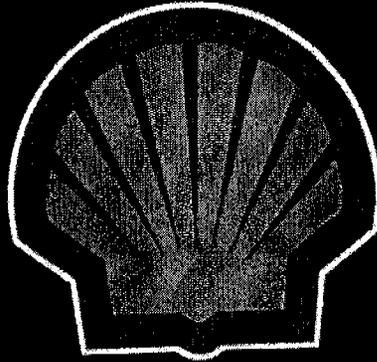
- Phil Watts
- Dominique Gardy
- Zaharuddin Megat
- Linda Cook
- Tim Warren



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*Exploration & Production  
Gas & Power*



*Improving performance and maximising value  
in uncertain times  
Accelerating delivery, generating value*

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This presentation contains forward-looking statements that are subject to risk factors associated with the oil, gas and power businesses. It is believed that the expectations reflected in these statements are reasonable, but may be affected by a variety of variables which could cause actual results or trends to differ materially, including, but not limited to: price fluctuations, actual demand, currency fluctuations, drilling and production results, reserve estimates, loss of market, industry competition, environmental risks, physical risks, legislative, fiscal and regulatory developments, economic and financial market conditions in various countries and regions, political risks, project delay or advancement, approvals and cost estimates.

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## *Agenda*

*Phil Watts* - Overview, environment, strategy

*Dominique Gardy* - Delivering our promises

*Din Megat* - EP portfolio overview

*Linda Cook* - Gas & Power

*Tim Warren* - Where the difference is technology

*Phil Watts* - Summary

All - Questions & answers

*Tim Warren* - Technology show



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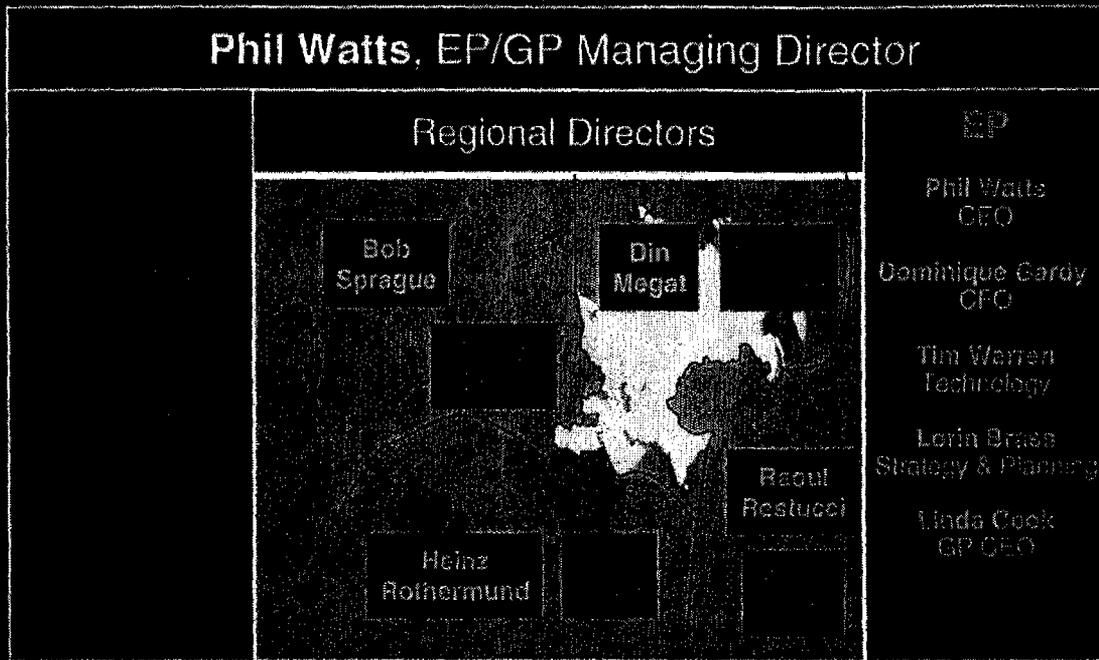
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## Global EP/GP Executive Committee

Phil Watts, EP/GP Managing Director



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## *EP/GP commitments*

### *Setting the scene*

• EP cost improvement \$1.1 bln by 2001 with \$0.3 bln in 1999

• Production growth 5% aal oil + gas  
1999: oil 2,287 kbd; gas 81.2 mrd m<sup>3</sup>

• Exploration expenses restricted

*Cost*  
*Portfolio*

• Continued action on USA portfolio (Altura and Transok)

• EP workforce reduction 10% in 1999

• Continued LNG cost focus

Capital Discipline

• Dilute Matampaya (Philippines)

• EP capital investment c. \$6 bln pa

• GP capital investment c. \$0.8 bln pa



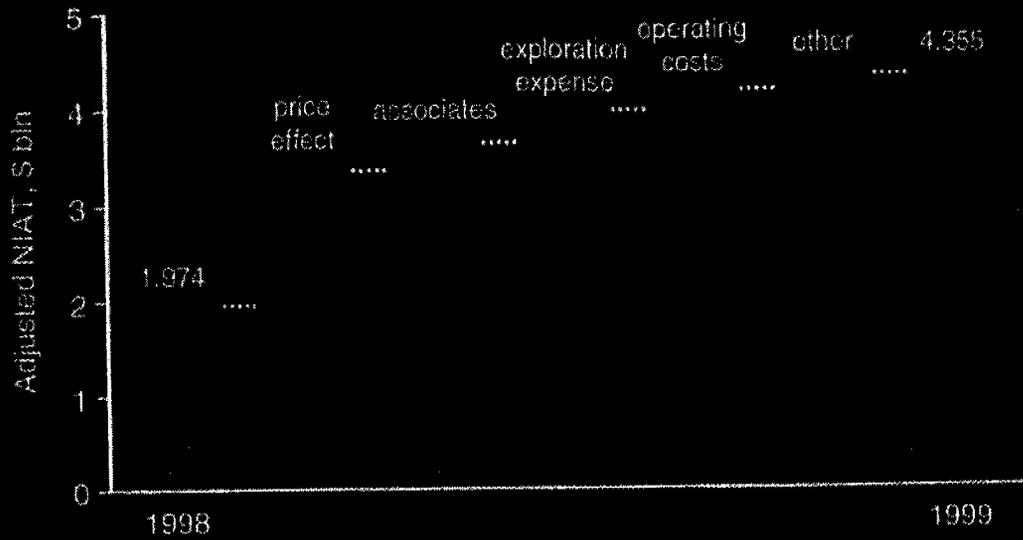
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## EP earnings improvement \$2.4 billion



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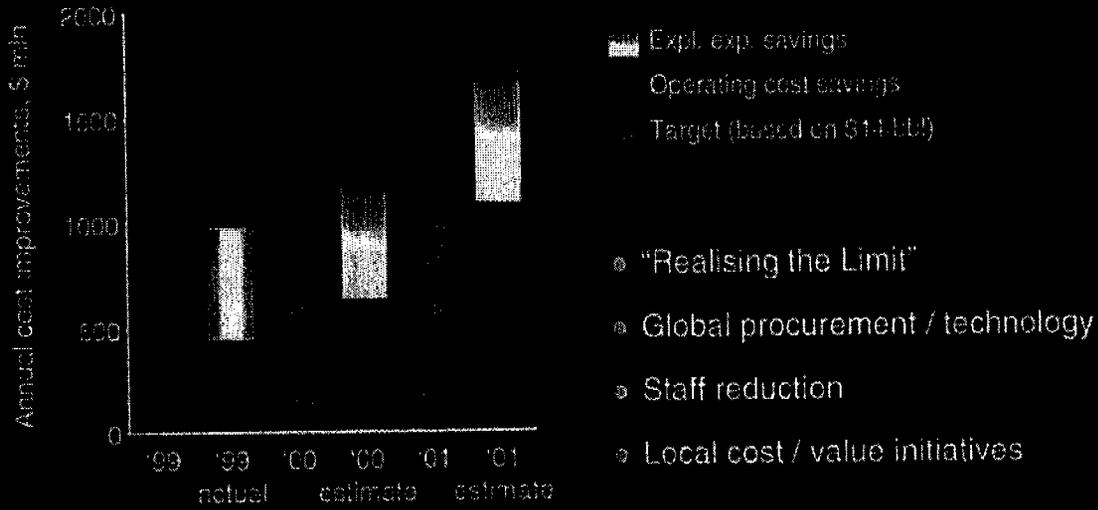
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## *EP cost improvements vs 1998*

### *\$1 bln delivered in 1999*



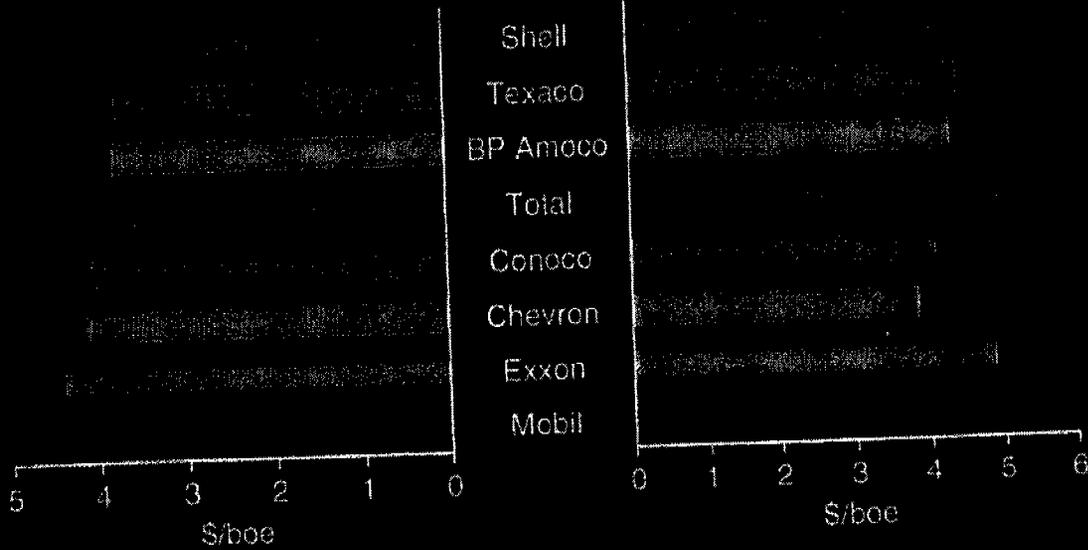
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### NOTES:

# Cost Leadership ... leading the Majors

Finding and development costs  
1996 - 1998

Adjusted production costs  
1996 - 1998



Source: Schrodgers June 1999



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## NOTES:

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## Shell is building on a strong competitive position

	Total 1999 operated production mln boed	Operated Deepwater production mln boed *	1998 proved oil reserves bln bbls	1998 proved gas reserves Tcf	1998 proved reserves mmboe	1999 LNG equity sales volumes mtpa **
Shell	6.5	0.6	10.0	60.5	20.5	5.8
ExxonMobil ***	4.6	0.0	11.5	58.0	21.5	5.1
BP Amoco	3.8	0.2	8.4	32.7	14.1	2.2
BP Amoco/Arco ***	5.5	0.2	9.8	40.2	16.7	2.2

\* Deeper than 500 metres, estimated 1999 production

\*\* Estimated volumes

\*\*\* Before any forced regulatory divestment effects (except Arco Alaska assets)

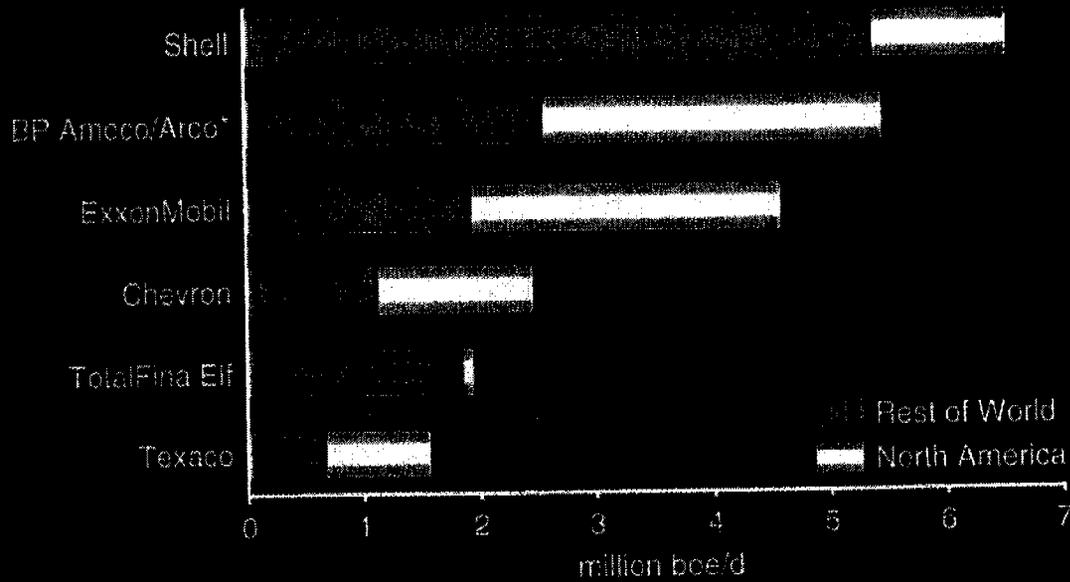


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### NOTES:

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### 1998 operated production



\*combined BP Amoco and Arco (excl. Arco Alaska assets) Source: WoodMackenzie & PFC



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### NOTES:

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*Operatorship*  
*Shell the partner of choice*

- Unique relations with governments and national oil companies
- Superior global capabilities across EP/GP value chain
  - Leverage the technology base
  - Diverse pool of world wide talents and experience
- Positive influence and risk containment
- Lowest unit finding and development cost



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**NOTES:**

## Q1 2000 highlights

### • Portfolio actions

- Azerbaijan 25% farm-in
- USA Altura sale to Oxy. CO<sub>2</sub> assets to Kinder Morgan
- Malampaya 10% dilution to PNOG

Exploration & Production  
Gas & Power

### • New Zealand discovery

### • Canada Sable Island on stream

### • Start-up of Oman LNG and Nigeria LNG 2nd train

### • Regasification terminal agreements in Brazil and India

### • Development of Marketing & Trading in Coral

### • Pulse Energy J.V. in Australia

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## *WellDynamics*

- A 50/50 Joint Venture between Shell and Halliburton
- Will develop the technologies of
  - Shell's iWell™
  - Halliburton's SmartWell™
- Combines the complementary capabilities and technologies of
  - A major operator
  - A major service company
  - The market leading innovator of SmartWell™ intelligent completions technology
- Will be a major player in an expected \$ 1 billion p.a. market



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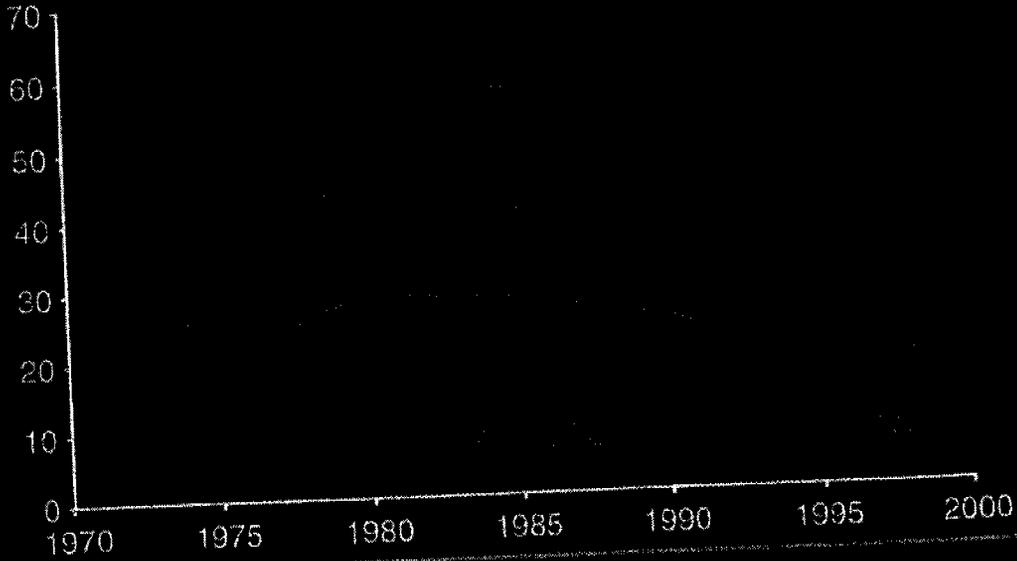
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## *Brent oil prices expected to average \$14/bbl over planning period*

1998 real terms \$/bbl



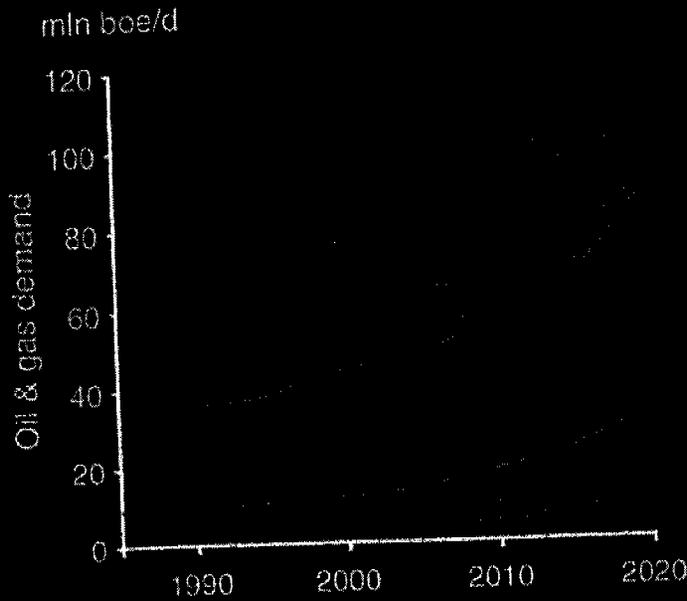
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## Gas grows faster than oil



Gas growth driven by:

- CCGT\* economics and power liberalisation
- Customer preference for clean fuel
- Kyoto and CO<sub>2</sub> constraints

\* CCGT = Combined cycle gas turbine

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### NOTES:

LON01321120

## *EP strategy*

- Near term performance improvement
- Long term profitable growth

### By leveraging

- Existing assets:
  - reserves
  - infrastructure
- Key skills and technologies
- Operated volumes
- Strategic relationships and reputation
- Linkage with GP, OP

"Value of integration"

### Focus

- Existing ventures
- Global deepwater
- Major Resource Holders
- "Shift to Gas"
- Oil sands



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## NOTES:

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## Gas & Power strategic focus

Monetising Upstream Gas  
Bringing equity gas to market

Key Market Developments  
Developing new markets



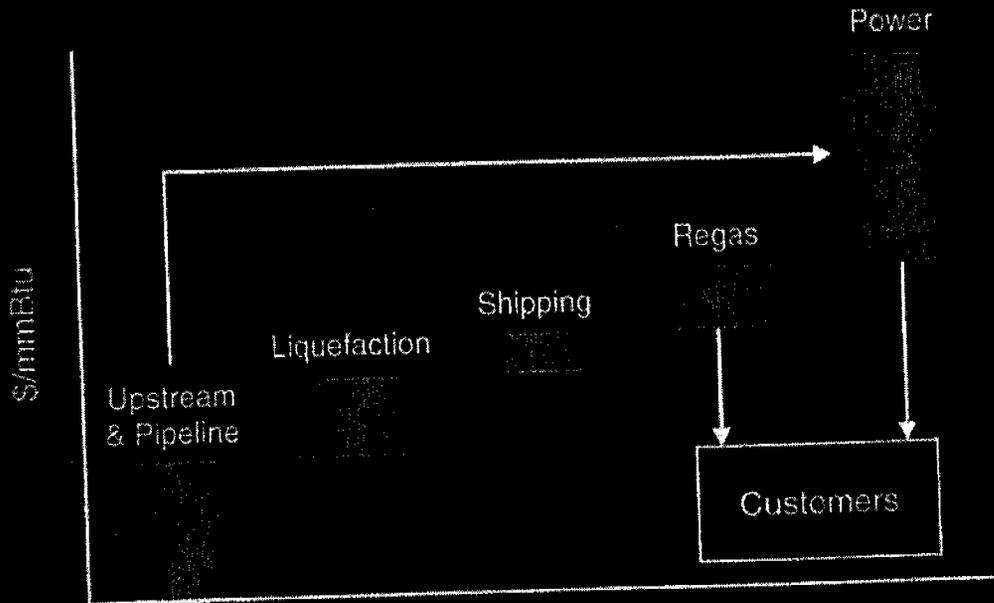
Customer Solutions  
Providing solutions to energy customers

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NOTES:

# Gas & Power value chain

*An example in the Far East*



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## NOTES:

## *New ways of managing the business*

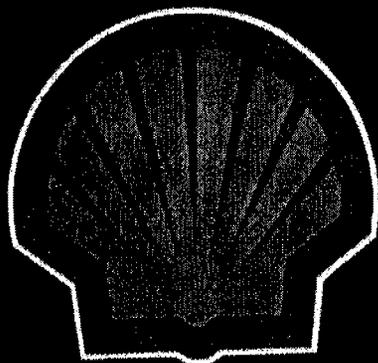
- Global business and technology
- Accountability
- Global strategies
- Strategic Cost Leadership
- Capital efficiency
- Active portfolio management



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### NOTES:

*Dominique Gardy*



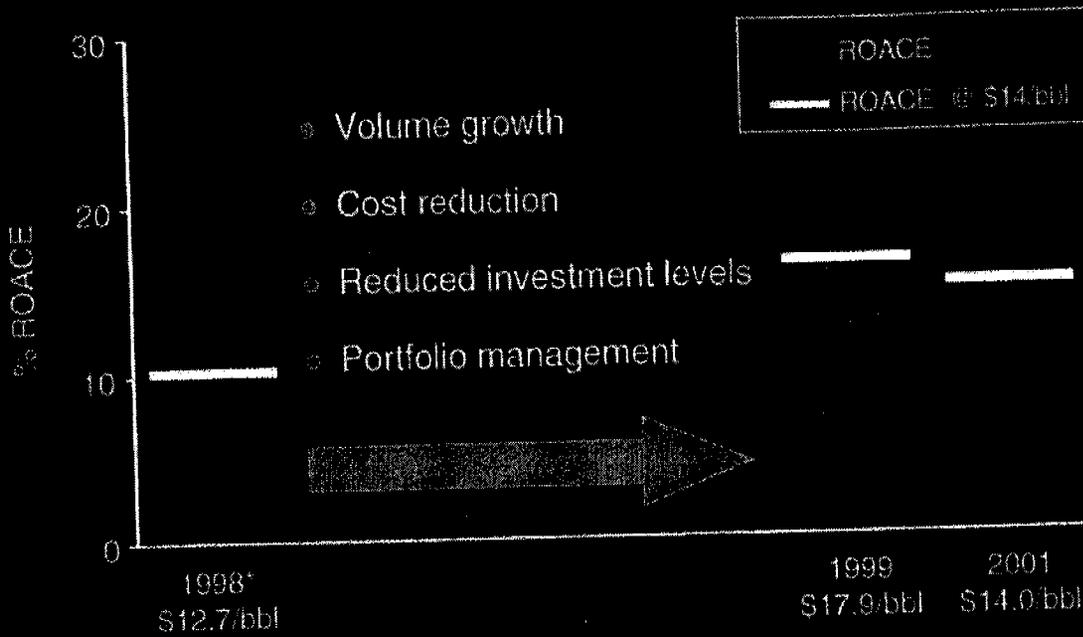
*Delivering our promises*

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## EP ROACE roadmap



\* excludes restructuring



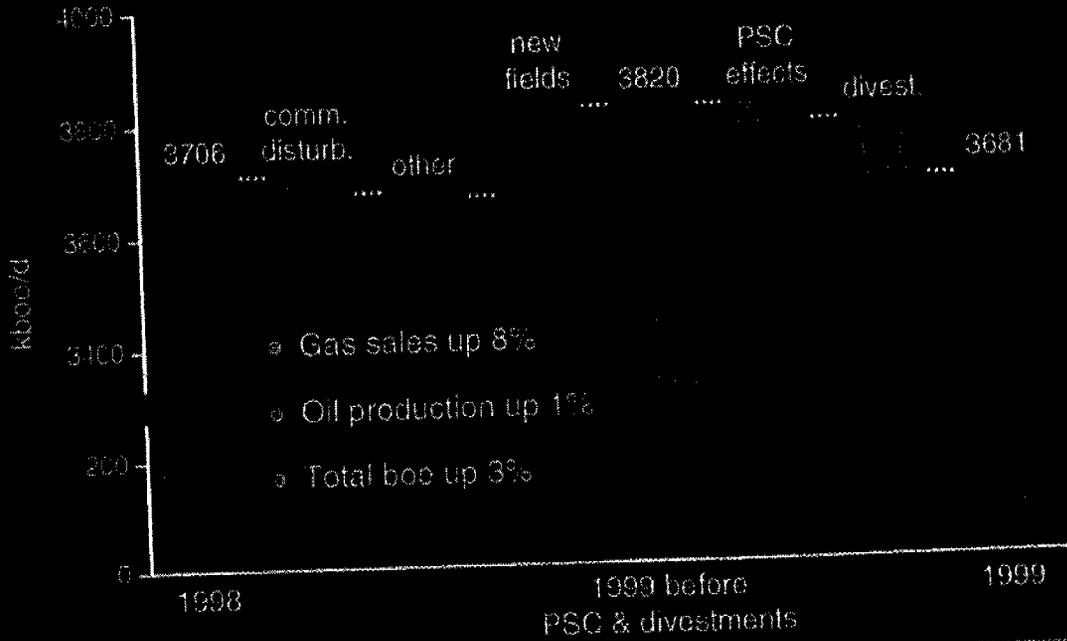
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### NOTES:

1998  
 1999  
 2001

Adj.

## Underlying volume up 3% in 1999



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### NOTES:

## *Portfolio actions*

### • Divestments / dilutions

- USA: Shallow GoM, DW GoM dilutions, Cedar Creek Anticline
- Philippines: Malampaya dilutions
- Egypt: Northeast Mediterranean Deepwater farm-out
- Canada: Plains properties
- Australia: divestment WA-1-P

### • Major investment decisions

- Nigeria: Train 3, EA, Bonga
- USA: Brutus
- Canada: Athabasca
- Iran: Soroosh/Nowrooz



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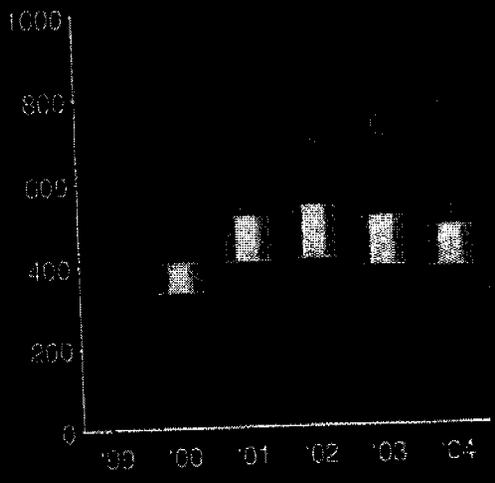
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# Major projects underpinning production growth

Production  
kboe/d



Projects announced in 1999

On stream 2001 and after

Cumulative investment \$5.8 bln

Projects announced before 1999

On stream 2000 and after

Cumulative investment \$1.5 bln

On stream 1999

Cumulative investment \$3.2 bln



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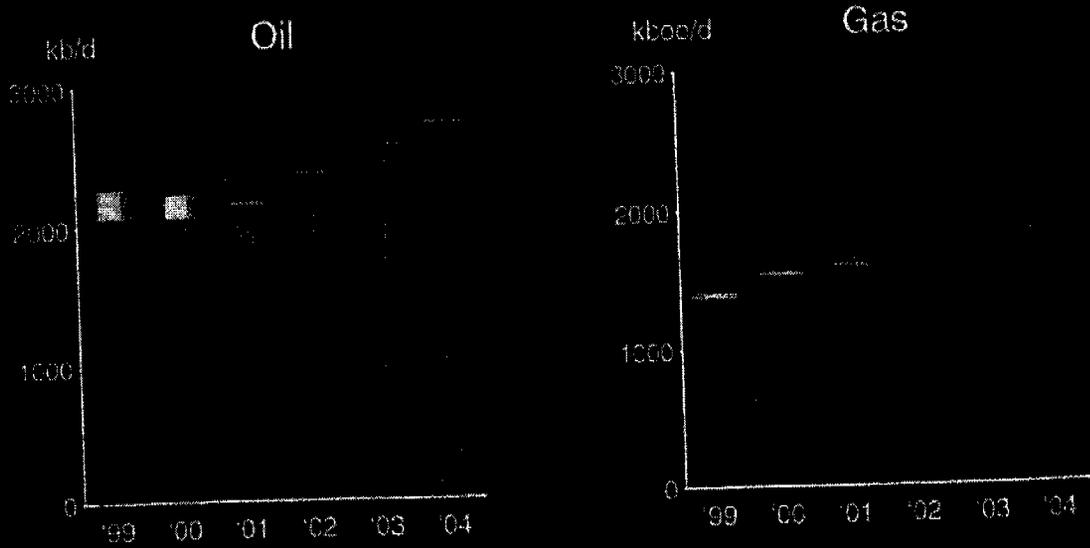
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# Oil production and gas sales

## Hydrocarbon volumes 1999 to 2004: 5% a.a.i. \*



Volumes divested in later years  
 PSC effect @ S1B

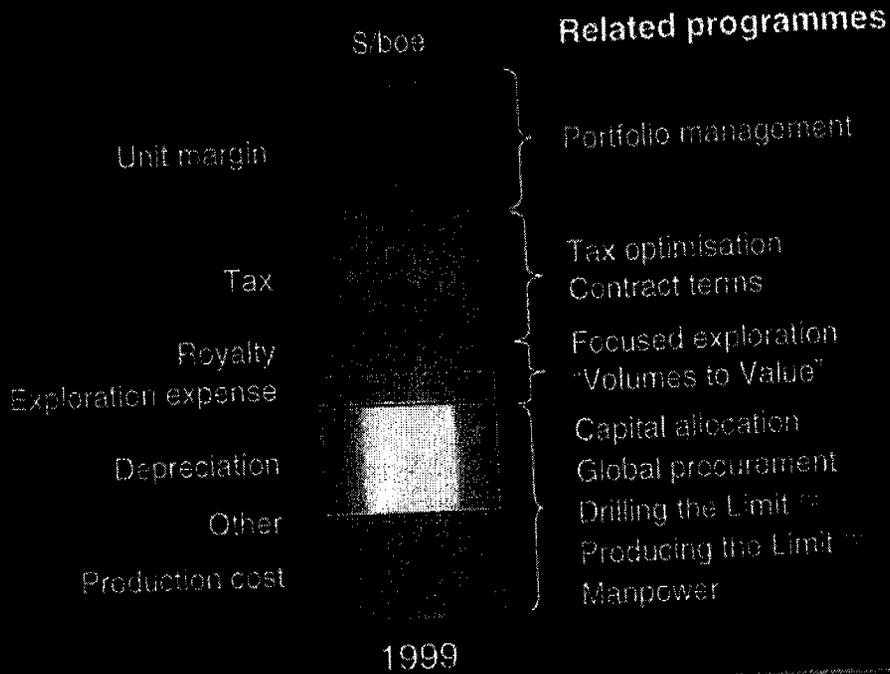
\* excluding divested volumes: 6.5% a.a.i.



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### NOTES:

# Tackling all lines of the P&L

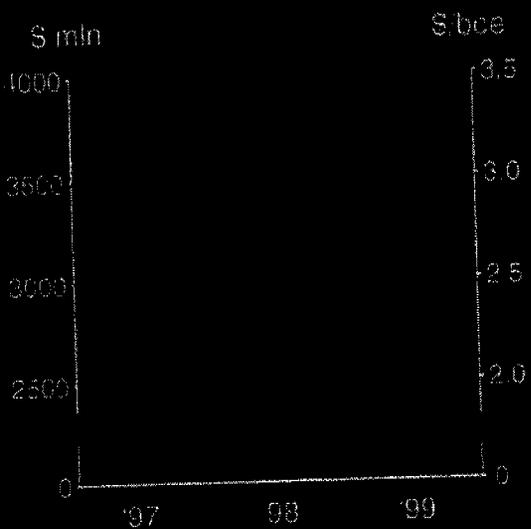


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## NOTES:

# Strategic Cost Leadership

## Operating costs



1999 vs 1998

- Opex down \$0.5 bln
- Cost per boe down 10%

Unit operating costs

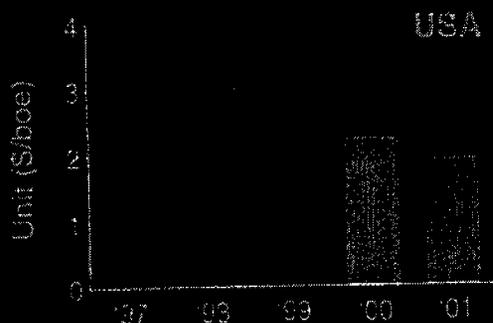
Operating costs

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### NOTES:

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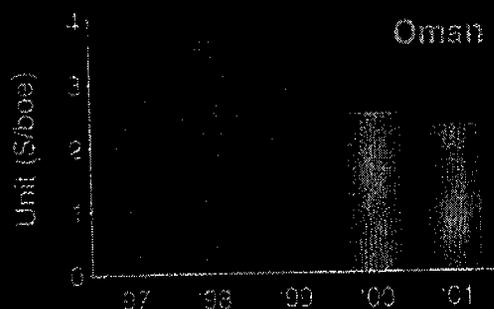
## Unit operating cost improvements



● Unit costs in 1999 down relative to 1998

- USA down 24%

- Oman down 19%



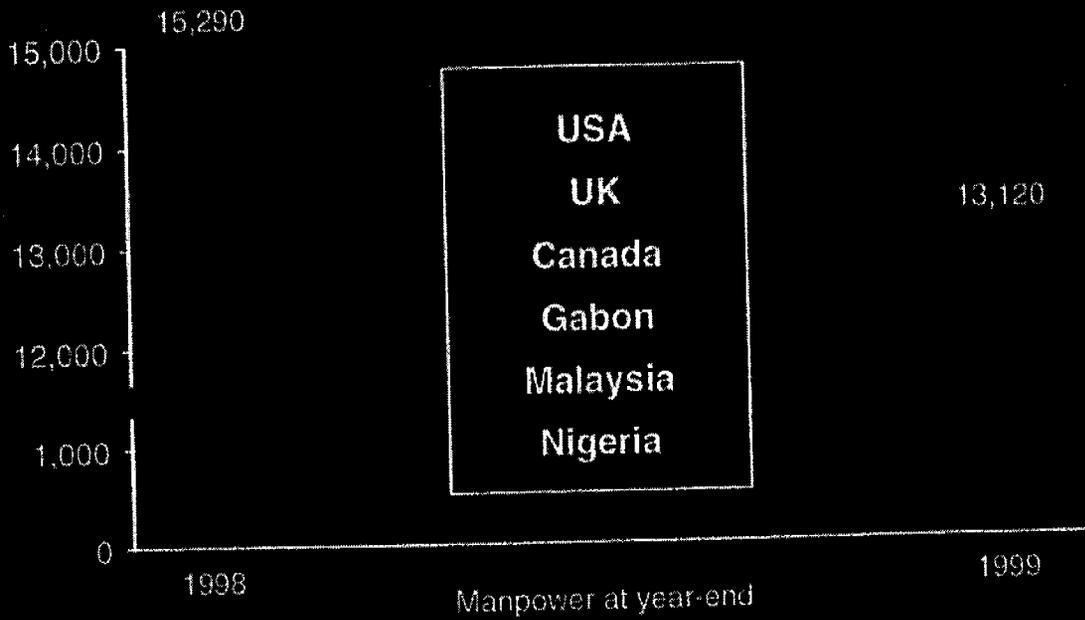
Planning periods @ \$14 Brent



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### NOTES:

### *Manpower reduced 14% in 1999*



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#### NOTES:

## *The Global Procurement Revolution*

*\$90 mln savings in 1999*

- Contracting Strategy  
Some 40% of spend through global contracts
  
- eProcurement Strategy  
Shell / CommerceOne JV
  
- Contractor Value Strategy  
\$42 mln savings achieved on relevant contracts

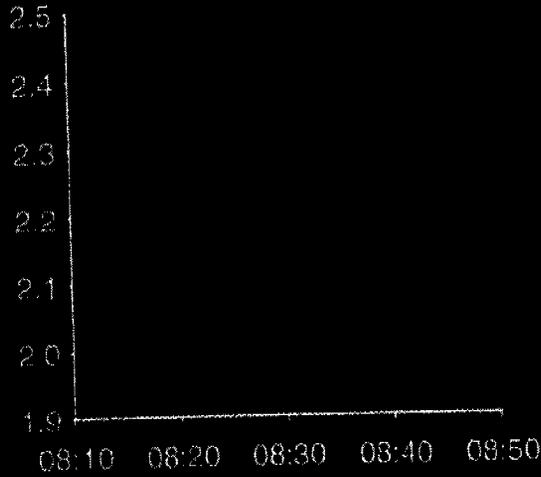


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NOTES:

*eProcurement is a reality*  
*First example of online bidding*

BEB online auction



- Shell / CommerceOne JV used
- 10% savings achieved
- Next applications in Nigeria, Malaysia and The Netherlands

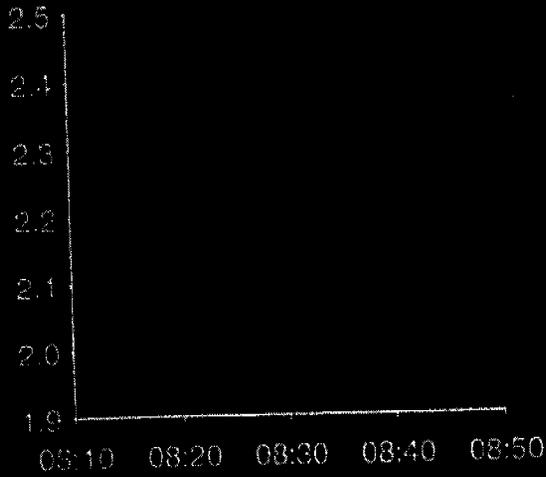


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**NOTES:**

*eProcurement is a reality*  
*First example of online bidding*

BEB online auction



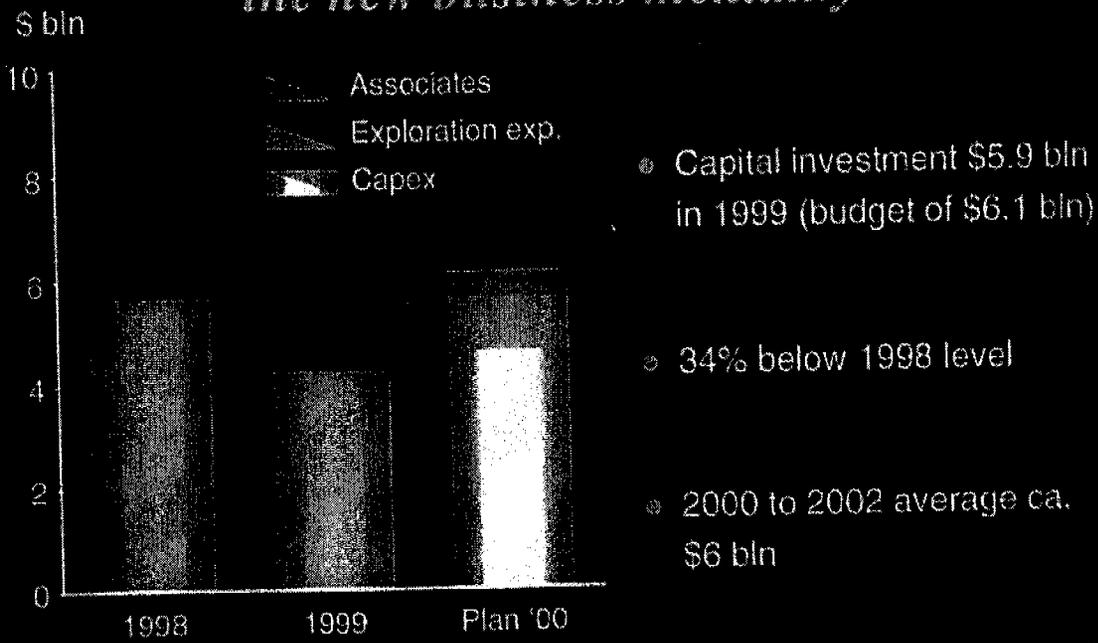
- Shell / CommerceOne JV used
- 10% savings achieved
- Next applications in Nigeria, Malaysia and The Netherlands

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**NOTES:**

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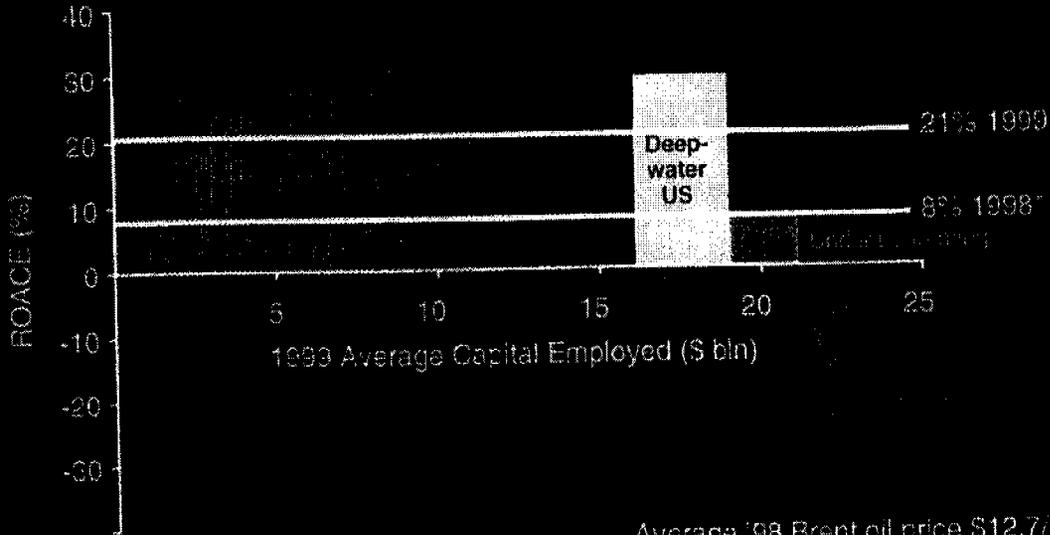
## *Capital investment discipline embedded: the new business mentality*



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### NOTES:

*EP portfolio and ROACE in 1999*  
*ROACE more than doubled in 1999*



Average '98 Brent oil price \$12.7/bbl  
 Average '99 Brent oil price \$17.9/bbl

\*1998 before impairment



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**NOTES:**

LON01321139

# EP commitments - Delivering our promises

✓ Cost Improvement \$1.1 bln by 2001 with \$0.3 bln in 1999 (saved 0.5 bln)

✓ Production growth 5% aai (underlying volume up 3% in 1999)

✓ Exploration expenses restricted (saved 0.5 bln)

✓ Divestments / Divisions:

- Gulf Oil, Gulf Oil Inc.
- Altex (USA)
- Plains (Canada)
- Malampaya (Philippines)
- Nemed (Egypt)

✓ Workforce reduction 10% in 1999 (achieved 14%)

Capital Discipline

✓ Investments:

- Benga, EA (Nigeria)
- AOSP (Canada)
- Brutus (USA)

✓ 1999 Capital investment \$5.9 bln (5% below target, 34% below 1998)

• Major projects on stream

- UNSA, Angus, Macaroni, Olneyed, Sakhalin, DISCO



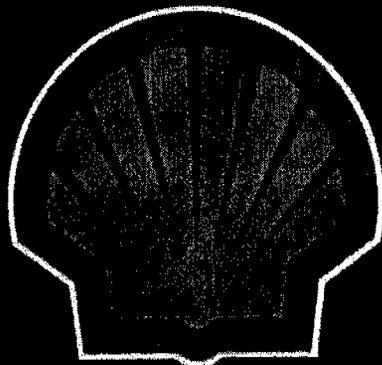
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## NOTES:

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*Din Megat*



*EP portfolio overview*

NOTES:

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## *EP themes*

*Building on competitive advantage through  
Technology and Strategic Cost Leadership*

### **Existing "Core" Portfolio**

- Active portfolio management
- Leverage infrastructure

### **Major Resource Holders**

- Be partner of choice
- Actively build relationships
- Pursue synergies with operator skills / experience

### **Deepwater Oil & Gas**

- Leverage Shell Deepwater services
- Leverage infrastructure
- Focus on the proven basins

### **EP Gas**

- Market driven: regional strategies
- Upgrade portfolio



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## NOTES:

# Investment programme - 2000

## Capex and exploration



**MRH & Caspian**  
Implement Iran agreement  
Explore in Azerbaijan & Kazakhstan

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### NOTES:



## Canada - Sable Island on stream strengthening Shell's position

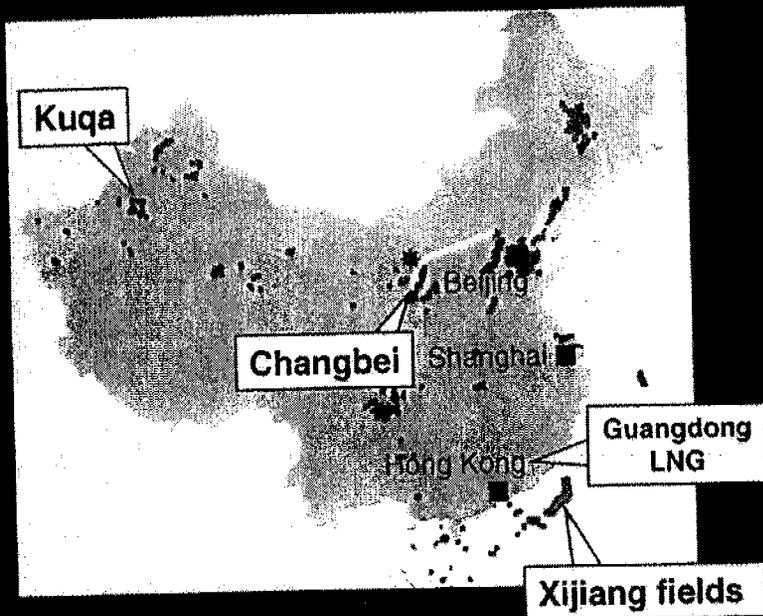


- First production 31-Dec-99
- Capital investment \$1.4 bln  
(Shell Canada share: \$0.4 bln)
- Reserves 3.6 tcf  
(Shell Canada share: 1.1 tcf)
- Plateau production Q4 510 mmcf/d  
(Shell Canada share: 100 mmcf/d)
- 2 exploration wells Q3/00

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### NOTES:

## EP - GP in China



- Xijiang 25,000 b/d plateau Shell share
- Oil exploration around Xijiang
- Changbei integrated gas project
- Kuqa significant gas opportunity
- 3 mtpa LNG receiving terminal & pipeline opportunity
- Coal gasification opportunities under development



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### NOTES:

# Global Deepwater

*Leveraging DW skills and infrastructure*



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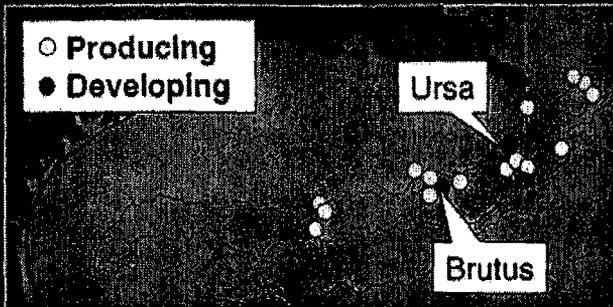
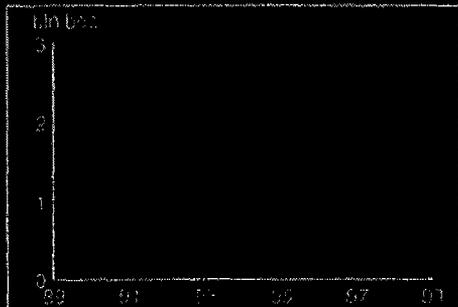
## NOTES:

# Leadership in Deepwater Gulf of Mexico

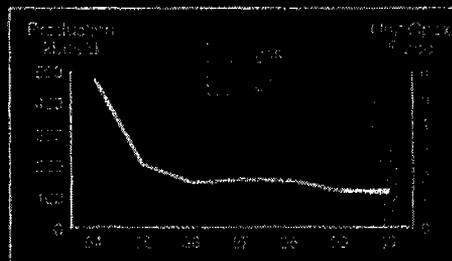
*Building on performance, securing future growth*

Exploration...

Development...



- Robust prospect inventory
- Industry leading drilling performance (DTL™)
- Operational capability and capacity - leveraging hubs



and Production

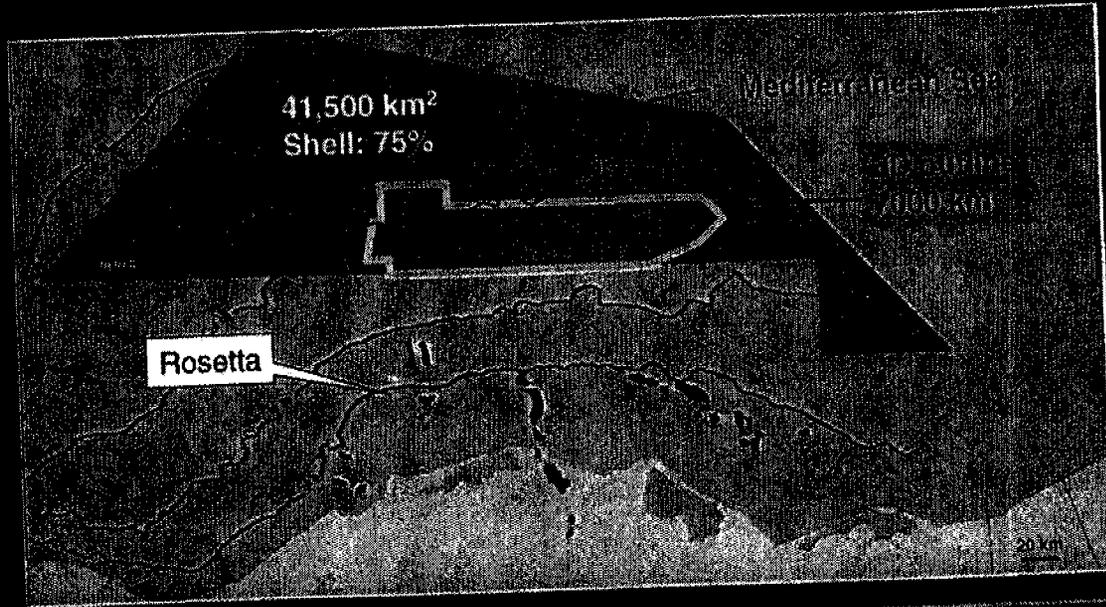


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## NOTES:

# *Egypt Deepwater - leveraging Shell technology*

## *Potential new oil/gas for Egypt*

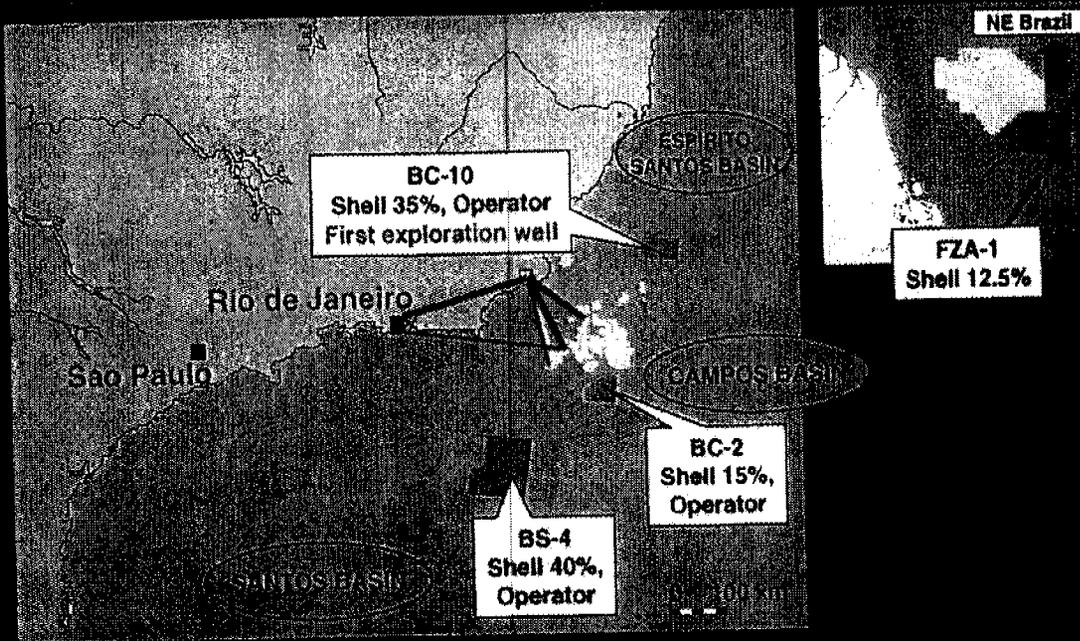


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NOTES:

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# Shell EP acreage expansion in Brazil



Seismic acquisition and 3 exploration wells in 2000

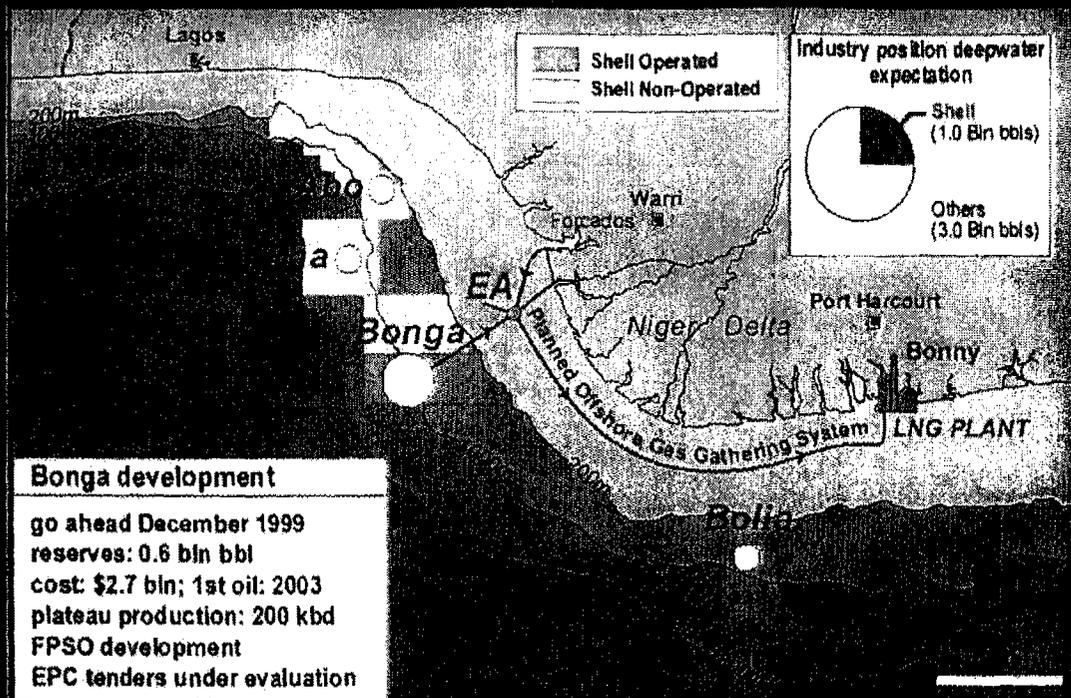
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NOTES:

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# The leading player in Nigeria deepwater



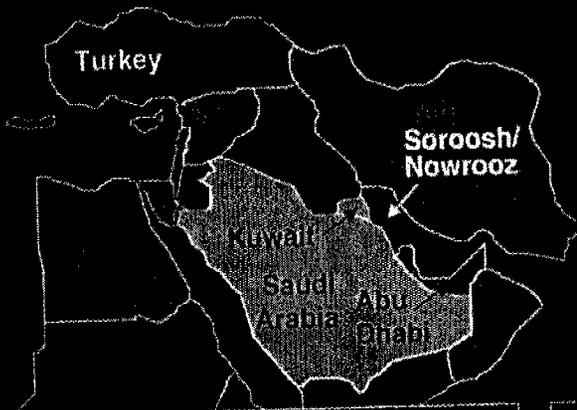
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## NOTES:

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LON01321151

# Shell EP in the Middle East MRE



- Existing Ventures
- New Venture Focus

### What Shell can offer

Technology  
 Project Management Skills  
 World wide Operating Experience  
 Strong financial base  
 Lowest unit finding and development cost

### New Business Opportunities

Kuwait  
 Saudi Arabia



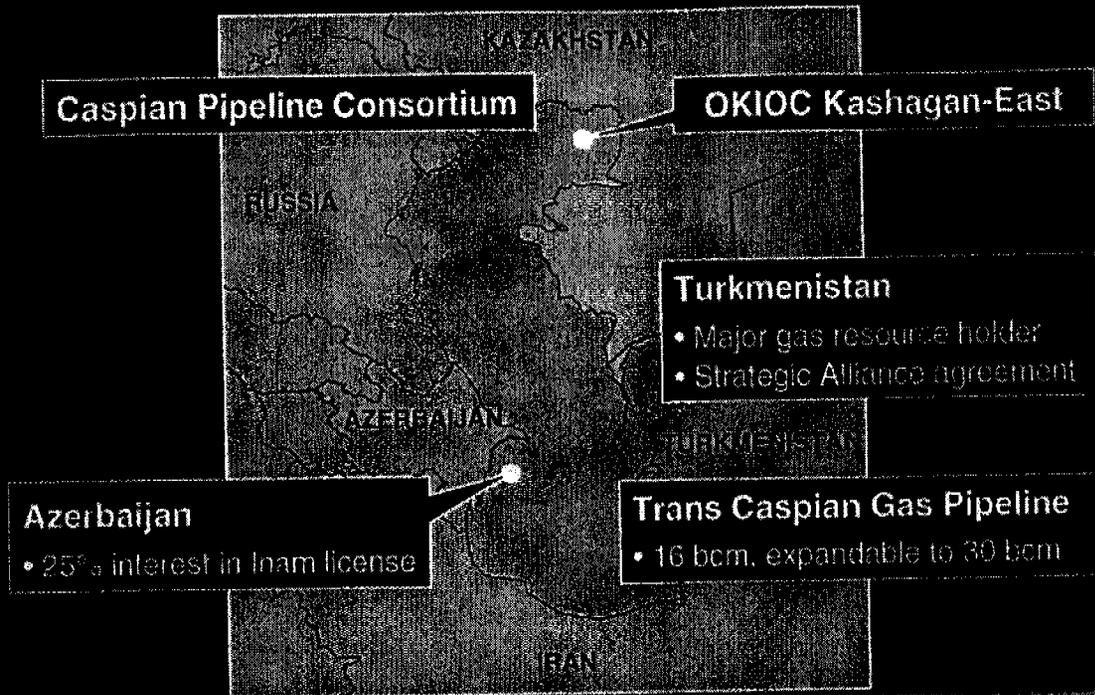
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## NOTES:

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## Shell activities in Caspian region



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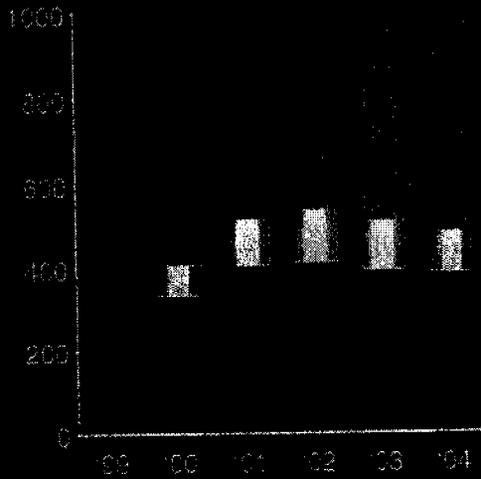
### NOTES:

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## Major projects underpinning production growth

Production  
kboe/d



Projects announced in 1999

On stream 2001 and after

Cumulative investment \$5.8 bln

Projects announced before 1999

On stream 2000 and after

Cumulative investment \$1.5 bln

On stream 1999

Cumulative investment \$3.2 bln

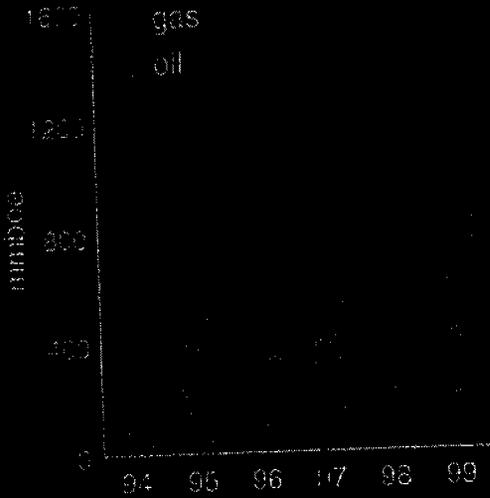


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### NOTES:

# Shell exploration

Exploration 1 bln bce/year\*  
(average 94-99)



- More barrels for less dollars
  - UFC proved 1999 \$2/bce\*\*
  - UFC resources 1999 \$0.90/bce

- Major 1999 discoveries
  - Oil: Denmark, Nigeria, Angola
  - Gas: Egypt, Australia, Malaysia

\* Total resources

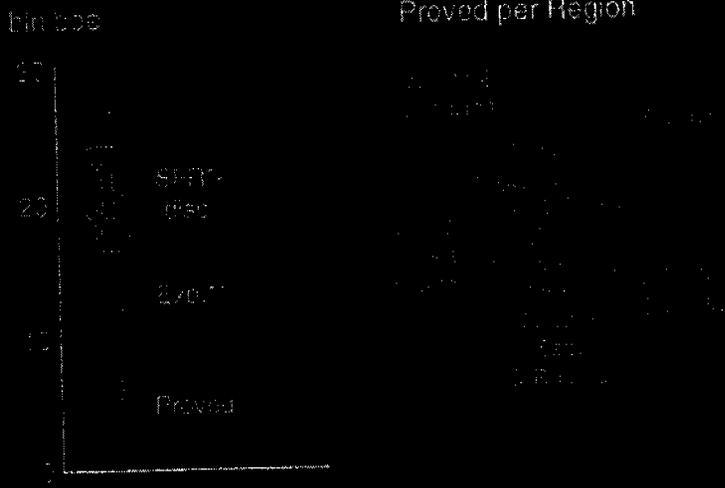
\*\* 5 yr avg \$2.65/bce

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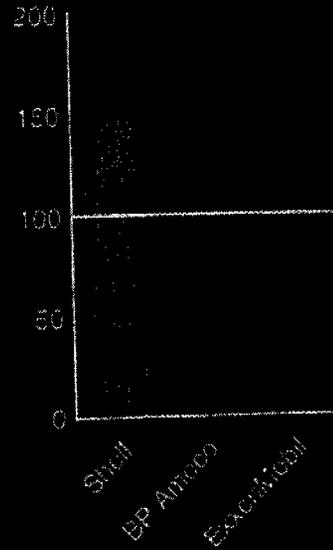
## NOTES:

# Resource base, production replacement

1999 Hydrocarbon Resources



Production Replacement Ratio  
97-99 average



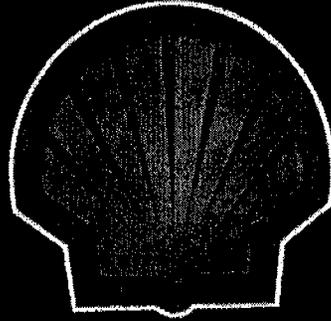
1 - scope for recovery  
2 - expectation

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## NOTES:

LON01321156

*Linda Cook*



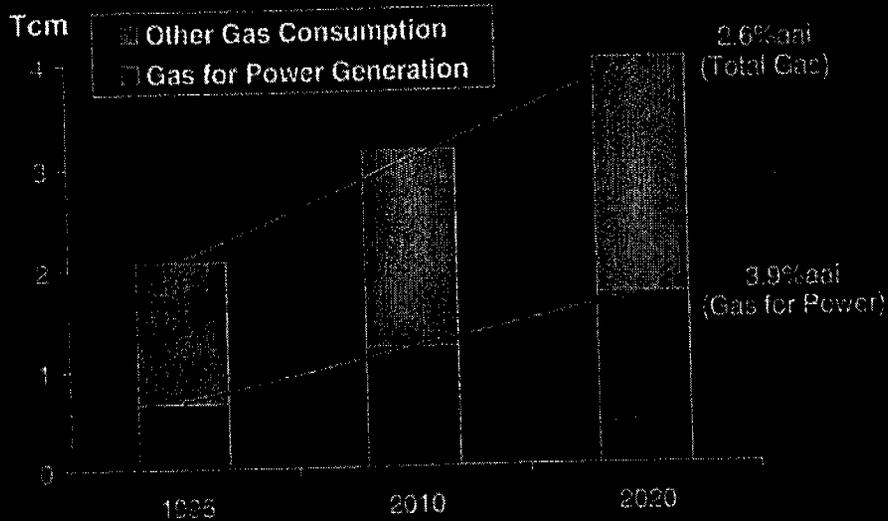
*Gas & Power*

NOTES:

LON01321157

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## Global Gas Demand



1 Tcm = 37.3 Tcf

Source: IFA



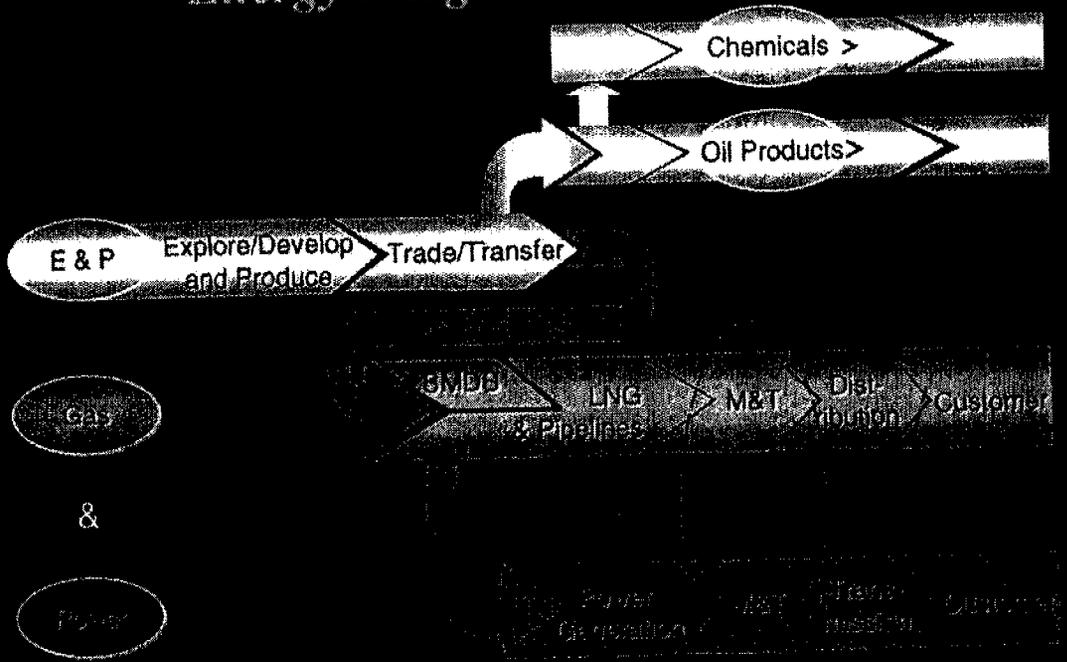
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### NOTES:

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# Energy Integrated Value Chain



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## NOTES:

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## Gas & Power Strategic Direction

Monetise Upstream Gas



- Expand LNG Leadership
- Lever Technology (GTL, Other)
- Build Power Platform



Key Market Developments



US... India... China... Asia Pacific...  
Turkey... Med Rim... NW Europe...  
Latin America Southern Cone



Customer Solutions



- Build Marketing & Trading Business
- Retail Initiatives

Through ... Technology, Knowledge, Reach, Customer Base and Brand

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### NOTES:

## *Gas & Power - Key Facts*

- Capital Employed y/e 1999 US\$7 billion
- Operations in 20 countries
- Development activities in a further 15 countries
- LNG Plant capacity (Shell equity share)
  - operational 9.7 Mtpa
  - under construction 1.7 Mtpa
- Power Generation capacity (Shell equity share)
  - operational 0.5 GW
  - under construction 1.8 GW
  - under contract/mandated 1.9 GW
- Marketing & Trading (M&T) - gas volumes (1999) 10.2 Bcf/d



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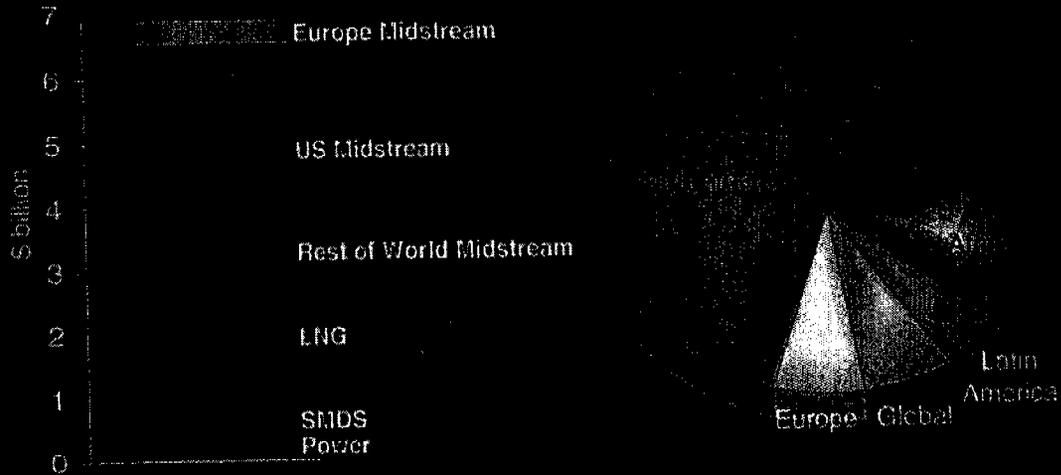
### NOTES:

LON01321161

# Gas & Power - 1999 Financial Results

Capital Employed by Business

Capital Employed - Regional Breakdown



NIAT = \$253m ROACE = 7%  
(including Specials)



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## NOTES:

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## *Recent Achievements*

- LNG**
  - First cargo from Oman
  - Start-up of 2<sup>nd</sup> train in Nigeria
  - LOI for LNG terminal in India
  - MOU for Brazil regasification terminal
  - MOU for Venezuela LNG
  
- Power**
  - InterGen - Millmerran plant sell down
  - Final Investment Decision on 2 power plants in Turkey
  
- M&T**
  - Coral business development (e-commerce, LNG deliveries)
  - KeySpan Alliance
  
- Retail**
  - SESCo achieves 23% of Atlanta area residential market
  - Pulse Energy joint venture in Eastern Australia



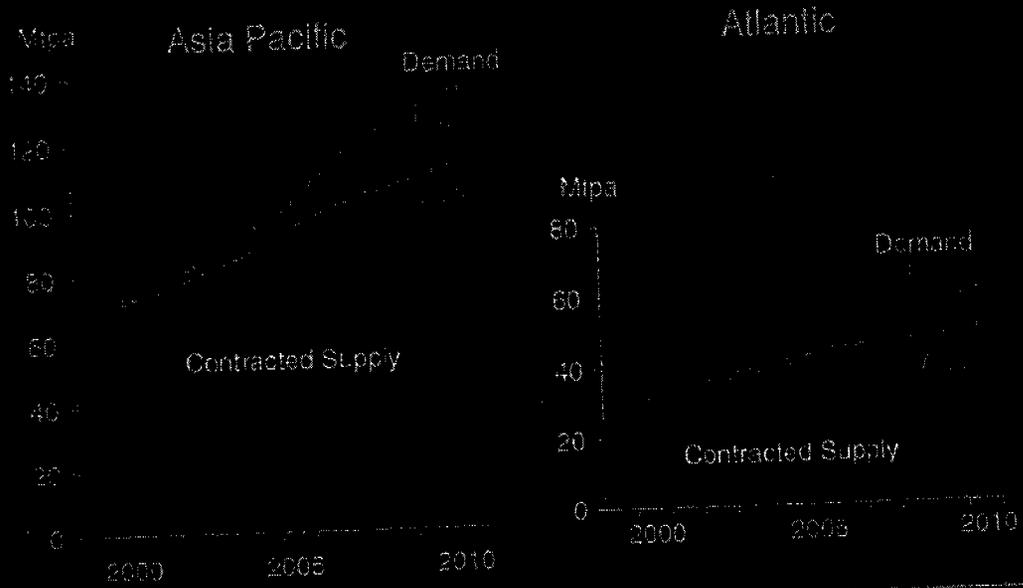
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# LNG Contracted Supply and Demand

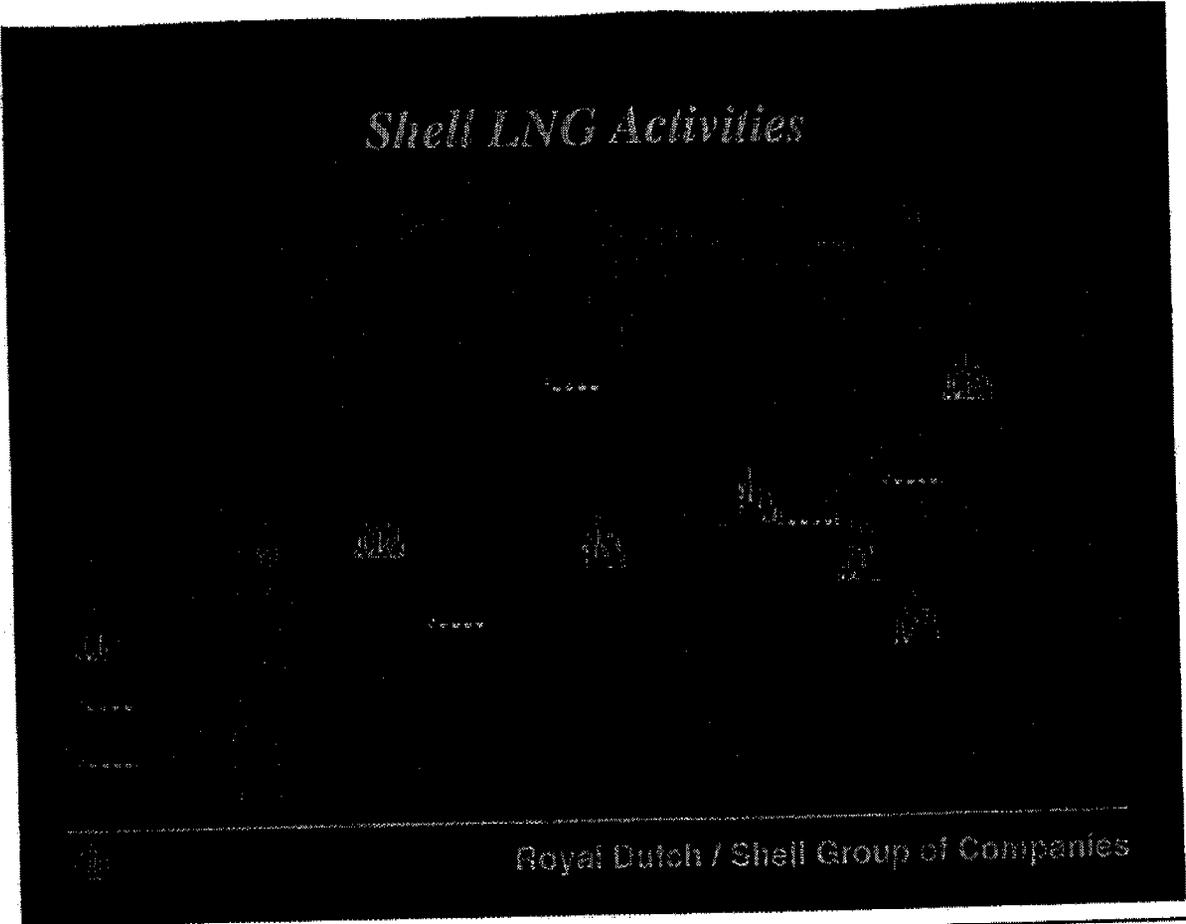


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## NOTES:

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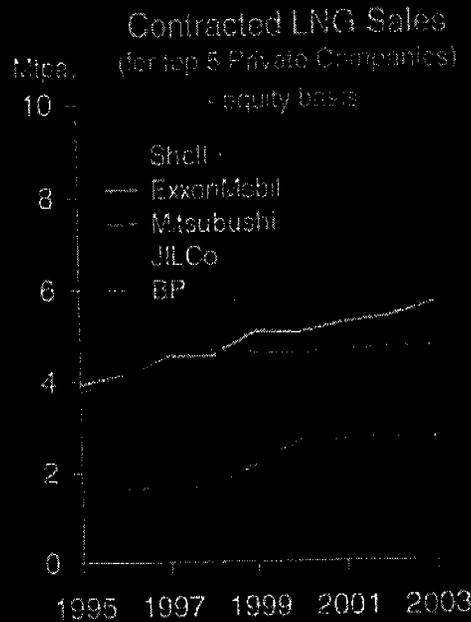
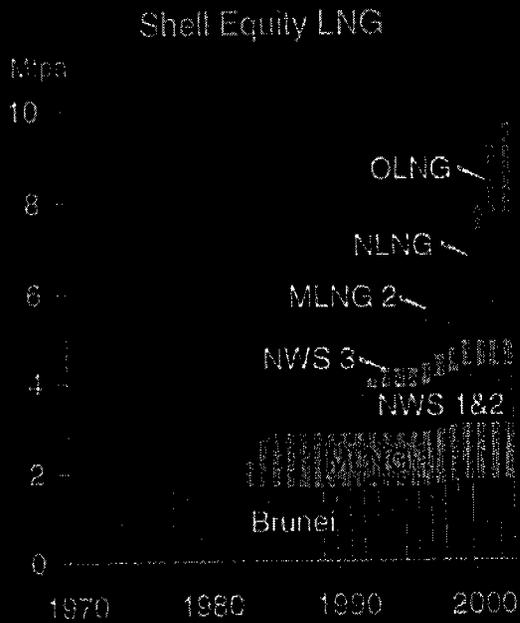
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NOTES:

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## Shell LNG - Industry Leadership



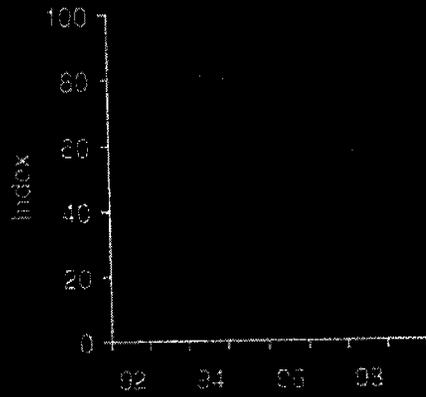
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### NOTES:

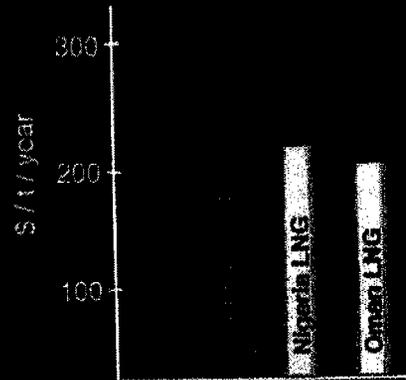
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## LNG Cost Focus

Operating Expenditure



Capital Cost at Middle East reference location



● 45 % reduction over 7 years

● Lowest capital cost projects



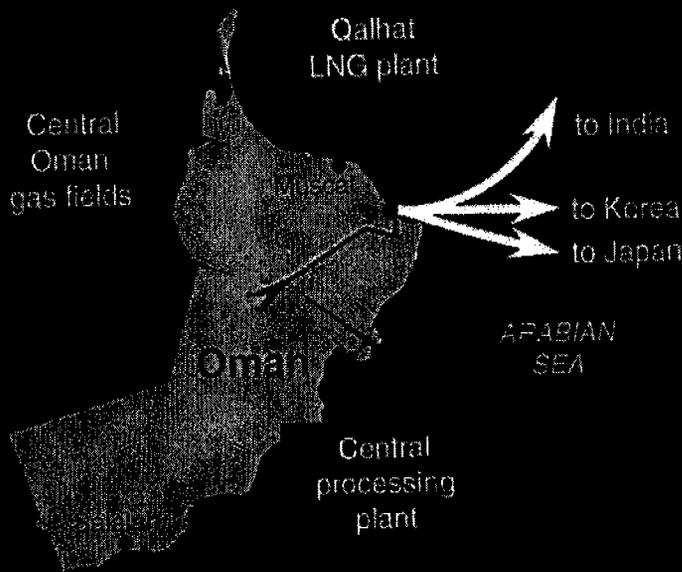
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### NOTES:

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## Oman LNG



- Fastest LNG project from gas discovery to LNG sales
- State-of-the-art technology
- Largest capacity trains (3.3mtpa each)
- Lowest capital cost in the world
- Built below budget
- First cargo 5th April '00



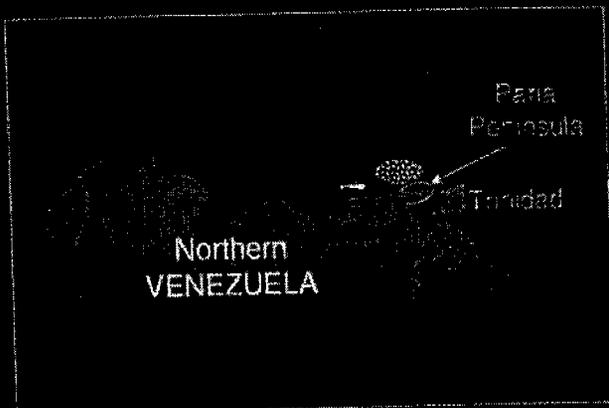
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### NOTES:

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## Venezuela LNG



- MOU signed in March 2000
- Partners: PDVSA, Shell, ExxonMobil and Mitsubishi.



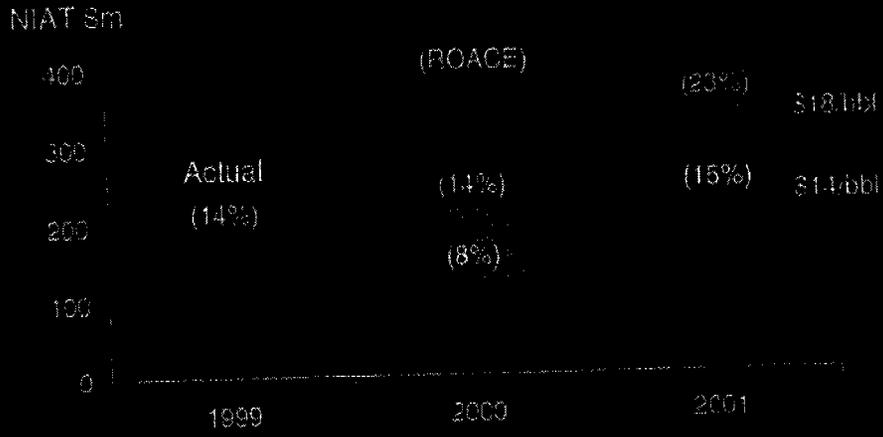
- First 4 Mtpa train to start-up late 2005
- Markets: Atlantic Basin, including US



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### NOTES:

## LNG Financial Performance



Capital Employed y/e	1999	2000	2001
	\$2.1 Bln	\$2.2 Bln	\$2.4Bln

Note: Includes LNG Shipping

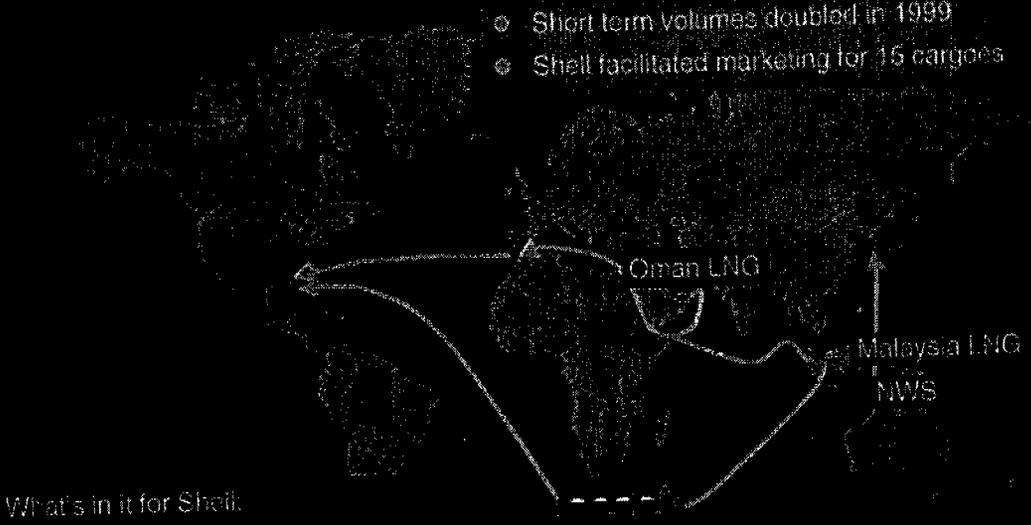


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### NOTES:

## Global LNG

- Short term volumes doubled in 1999
- Shell facilitated marketing for 15 cargoes



### What's in it for Shell:

- LNG sales from Shell-interest plants
- Marketing and Trading margins

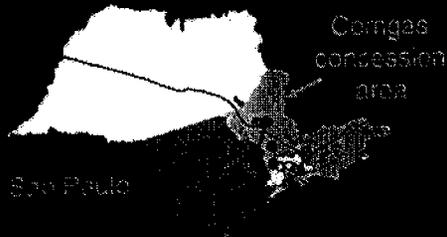
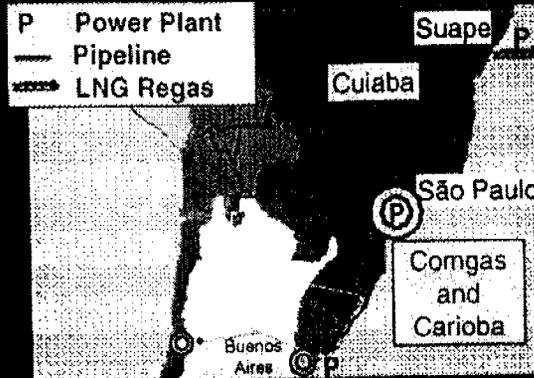
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## NOTES:

## Southern Cone

### Assets, Projects

- Pipelines - BBPL, Transredes, Cuiaba
- Power - Cuiaba, Carioba
- Distribution - Comgas
- Re-gasification - Suape
- Upstream in Argentina



### Comgas

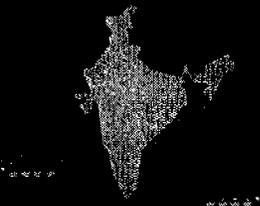
- Sao Paulo gas distributor
- 300,000 customers
- growing to 1 mln by 2008
- Industrial / Residential / Energy Services



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## NOTES:

## *Market Development - India*

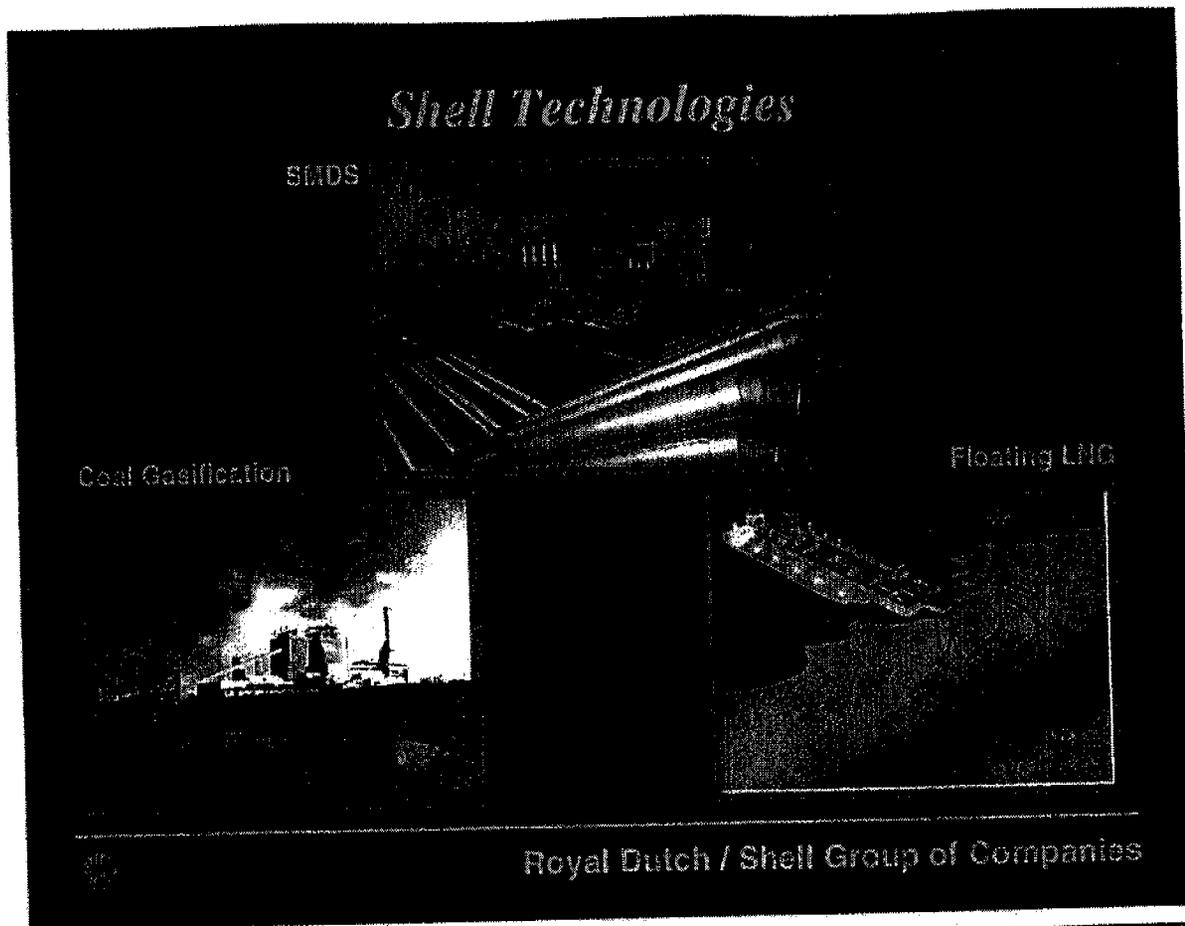


- major new markets for Shell equity NLG
- Oman LNG - first LNG into India (2001)
- NW India potential of 10+ Mtpa by 2010
- LOI for Hazira terminal
  - proximity to market / infrastructure
  - cost leading location
  - targeting early deliveries



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### NOTES:

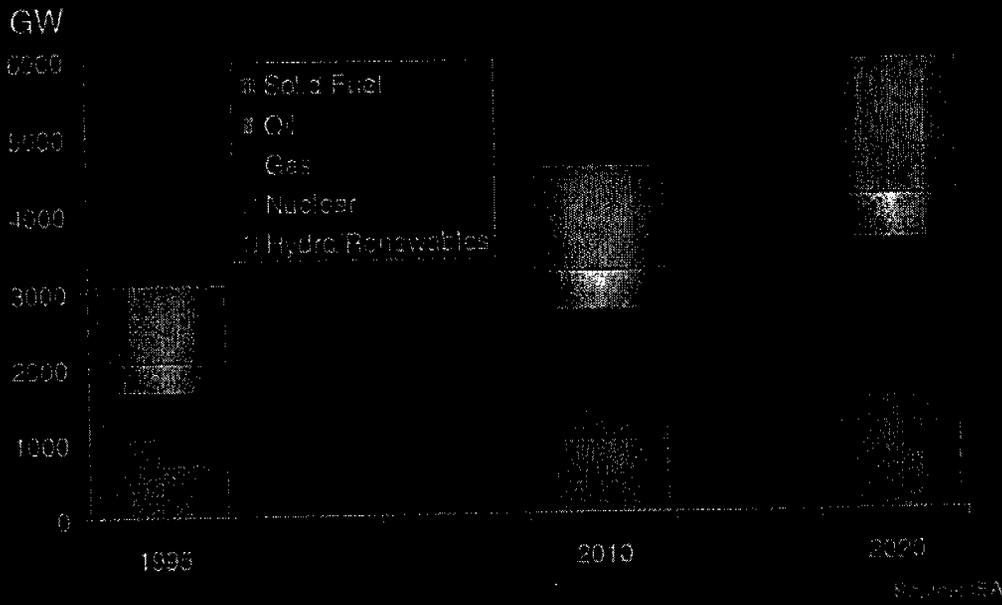


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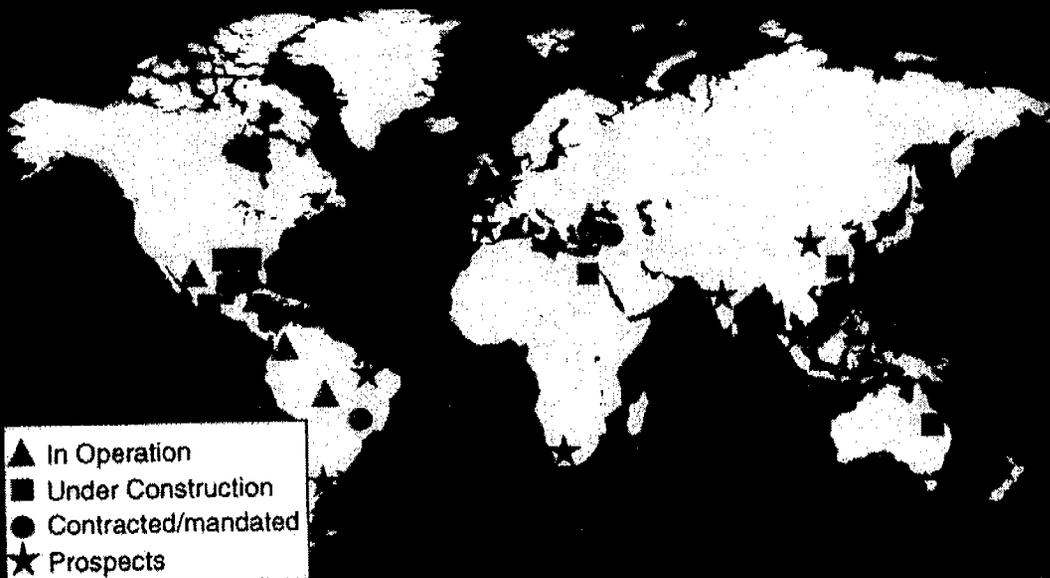
## Global Power Generation Growth



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### NOTES:

# Shell / InterGen Power Portfolio



Power portfolio as of 31/12/07



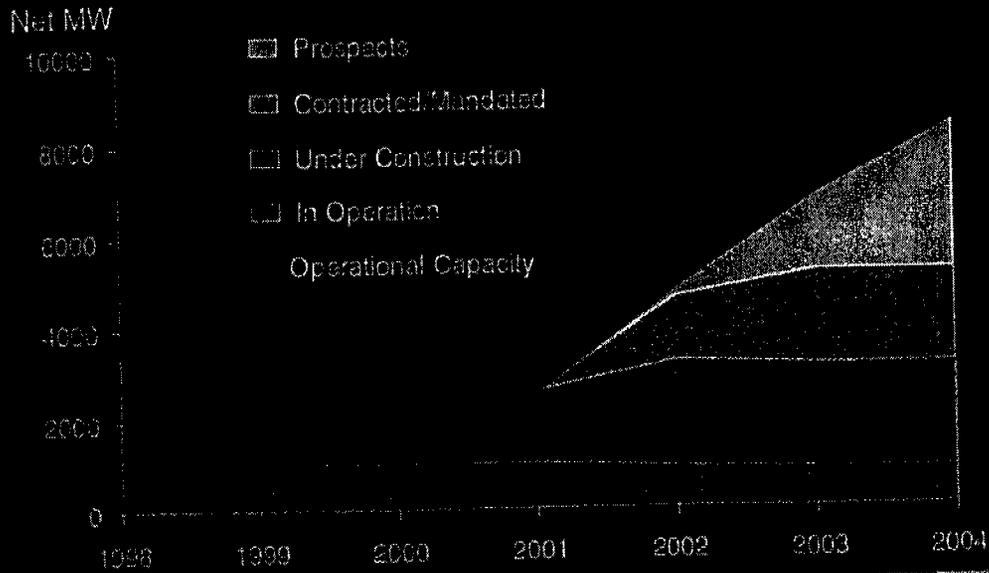
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## NOTES:

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## InterGen Growth (outside North America)



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### NOTES:

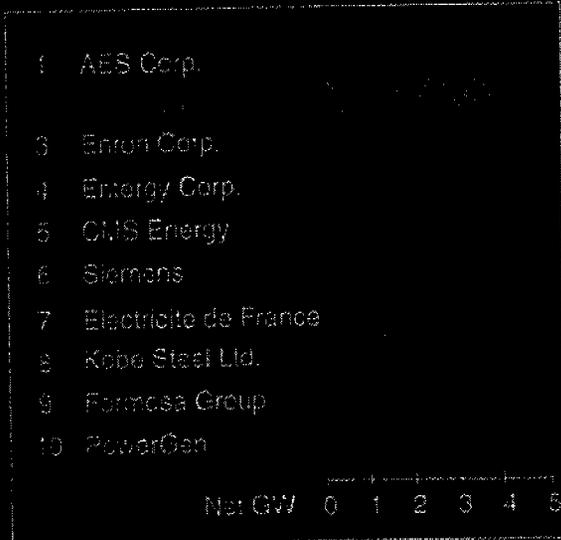
LON01321177

## *InterGen - Competitive Position*

*(outside North America)*



### Greenfield Development 1996-1999



### 1999 Recognitions

- Millmerran - "Deal of the Year"
  - *Project Finance International* (Asia Pacific)
  - *Australian Financial Review*
- Rocksavage - "1999 Powerplant Award"
  - *Electric Power International*
- Sidi Krir - "Deal of the Year"
  - *Project Finance International* (Middle East)

Source: PwC Energy/GEPA data



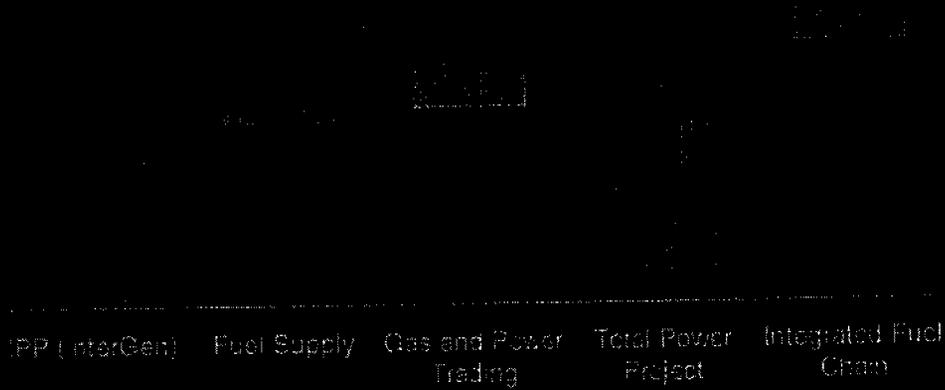
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## NOTES:

LON01321178

## *Power Generation Economics for Shell*

Return on Project Investment %



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### NOTES:

## North America



### Multiple Products and Services

- gas, power, fuel oil
- financial services
- back office support
- industrial energy efficiency

### Highlights

- no. 4 gas marketer  
(9.8 Bcf/d, up 21% of 1998)
- no. 20 power marketer  
(17 TWh/a, up 50% of 1998)
- 1900 customers

### KeySpan Energy Alliance

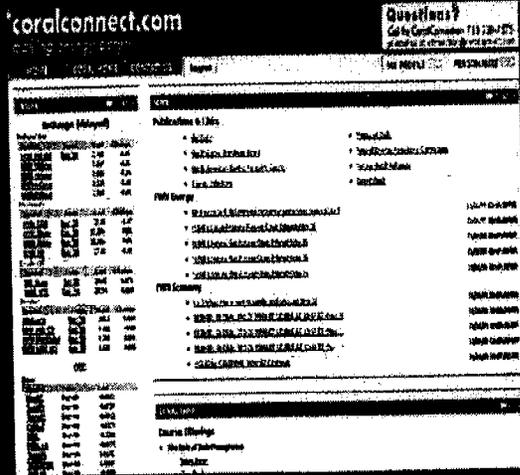
- KeySpan
  - 4th largest gas distribution company
  - 2.7 mln gas and power customers
- Energy Alliance
  - co-management of energy assets and fuel supply
  - energy price risk management
  - maximise trading value of multiple commodities



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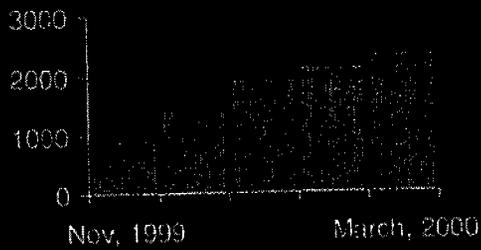
## NOTES:

# Coralconnect.com



- launched November, 1999
- more than 2000 registered users
- 3000 data requests / week
- additional functionality in June

Cumulative Customer Registrations



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## NOTES:

## *European Midstream Initiatives*

- gas transmission and marketing companies in Belgium, Netherlands and Germany
- launched Shell Energy Ltd - power Marketing & Trading across Europe
- ENECO JV in the Netherlands - power Marketing & Trading
- Shell Gas Direct
  - 5th largest UK gas marketer
  - launching dual fuel capability
- Spanish market entry

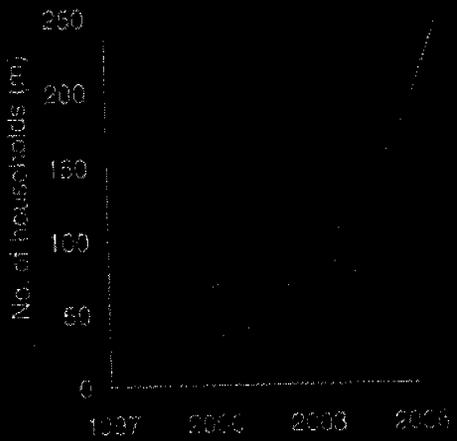


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### NOTES:

## Retail Energy Market

Markets opening .....



Keys to success .....

- fair competition
- scale
- reliability, supply
- brand
- customer proposition

Potential Value .....

- gross margin \$50-100 per household
- multiple products



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### NOTES:

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# Shell Energy Services (SESCO)

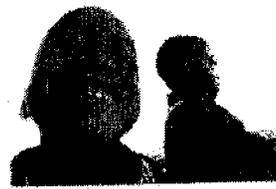
> to choose Shell as your energy partner, call 1.877.55.shell.

**JEREMY**  
A natural gas provider  
with the same goals  
I really don't  
want to have.

**AWARENESS**  
Shell guarantees a low  
set price with no long-  
term agreement. Not all  
providers will give you  
that.



> to choose Shell as your energy partner, call 1.877.55.shell.



Shell's cost  
efficiency is  
the only way  
to get the  
best price.  
Your family.

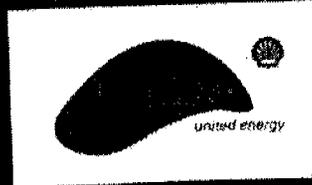


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## NOTES:

## *Pulse Energy, Australia*

- Energy retailer in deregulating gas & electricity markets
- Joint venture Shell (40%) United Energy, Energy Partnership, Woodside
- Offers one bill for gas & electricity, one phone number and competitive pricing
- Customer loyalty 'Fly Buys' rewards
- Partners contribute over 1 million customers



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### NOTES:

## *Gas & Power Summary*

- LNG - World Leaders ..... and growing
- new technologies provide leverage
- pursuing development of growth markets
- InterGen Joint Venture .....world class capabilities and growth
- expanding Marketing & Trading capabilities
- retail energy ..... a potential opportunity

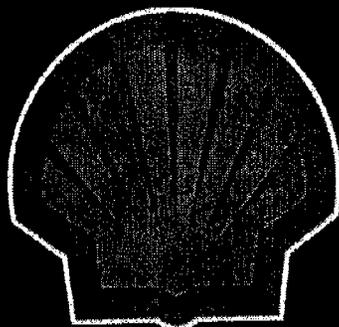


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### NOTES:

LON01321186

*Tim Warren*



*Where the Difference is  
Technology*

NOTES:

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Treatment Requested

LON01321187

*Shell Technology Delivering  
a Commercial Return*

- **Ready money**
  - costs, production, sales
- **New opportunities**
  - plays, development, partners
- **Long-term value**
  - reserves, gas markets, standards

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NOTES:

LON01321188

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*Impact of*



*on Shell's business*

- - Shell Expro Gannet-D cost down by 33% (\$10 million)
  - 850,000 barrels accelerated production
- - Intelligent gas lift will give 100,000 barrels a day production
  - Smart 'connector' wells tie in marginal wells (60% today's cost)
- - Smart processing will reduce surface facilities
  - Increase reserves via downhole dehydration/ compression



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NOTES:

LON01321189

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- A Joint Venture between Shell, Halliburton and Petroleum Engineering Services Ltd.
- Will develop the technologies of
  - Shell's iWell™
  - Halliburton's SmartWell™
- Combines the complementary capabilities and technologies of
  - A major operator
  - A major service company
  - The market leading innovator of SmartWell™ intelligent completions technology
- Will be a major player in an expected \$ 1 billion p.a. market

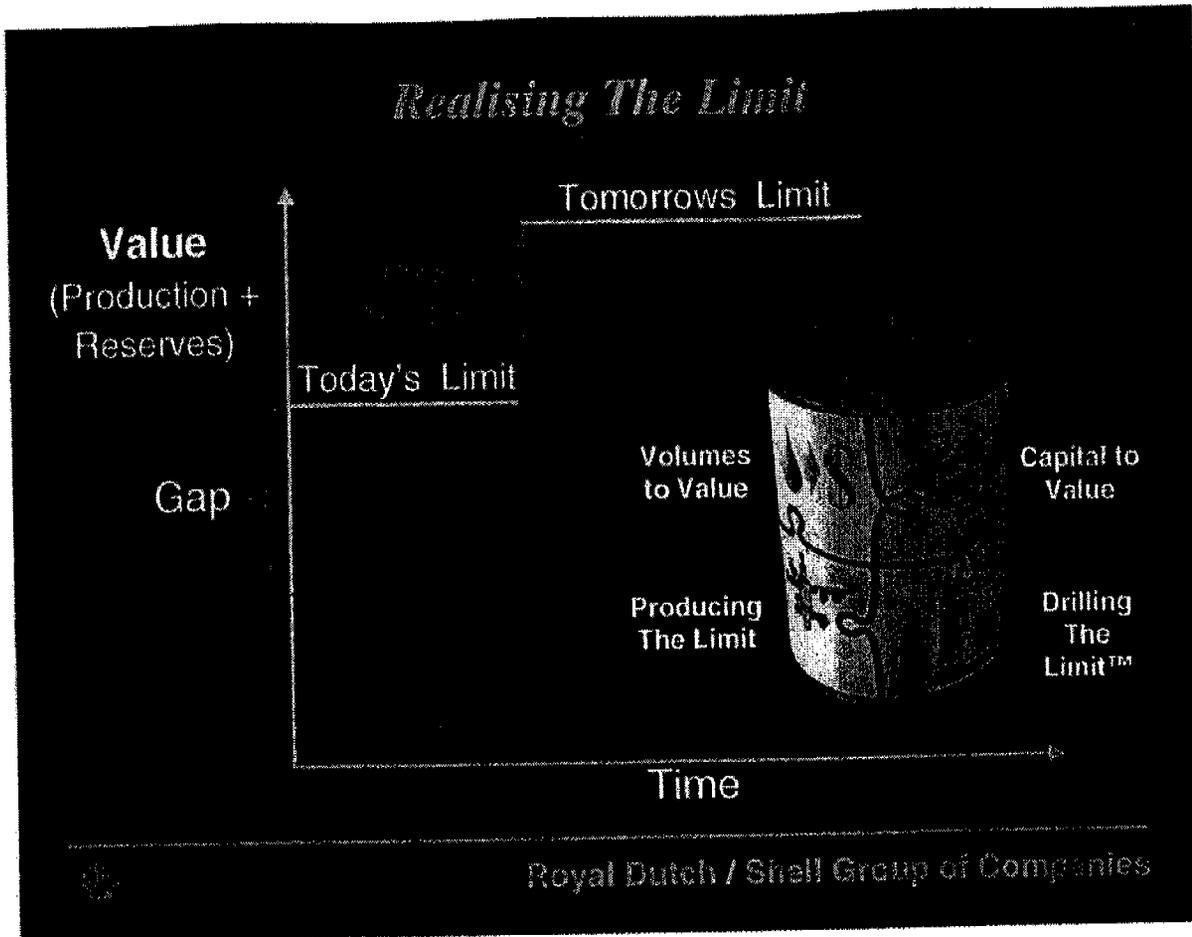


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**NOTES:**

LON01321190

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**NOTES:**

*Realising The Limit*

**Volumes  
to  
Value**

**Producing  
the  
Limit**



**Capital  
to  
Value**

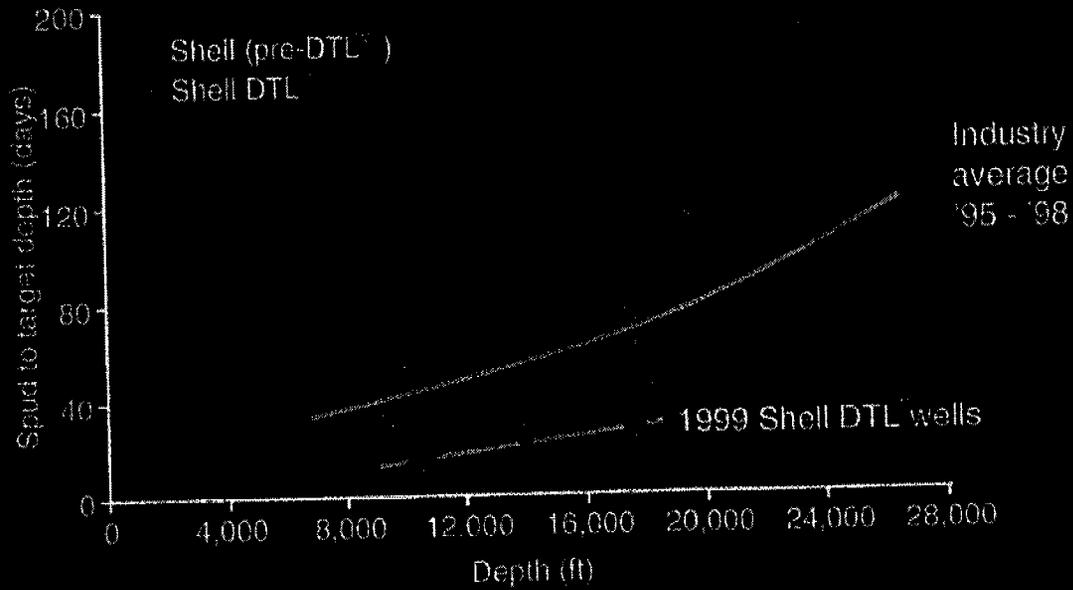
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NOTES:

LON01321192

# Drilling The Limit™

## US Deepwater GoM exploration drilling

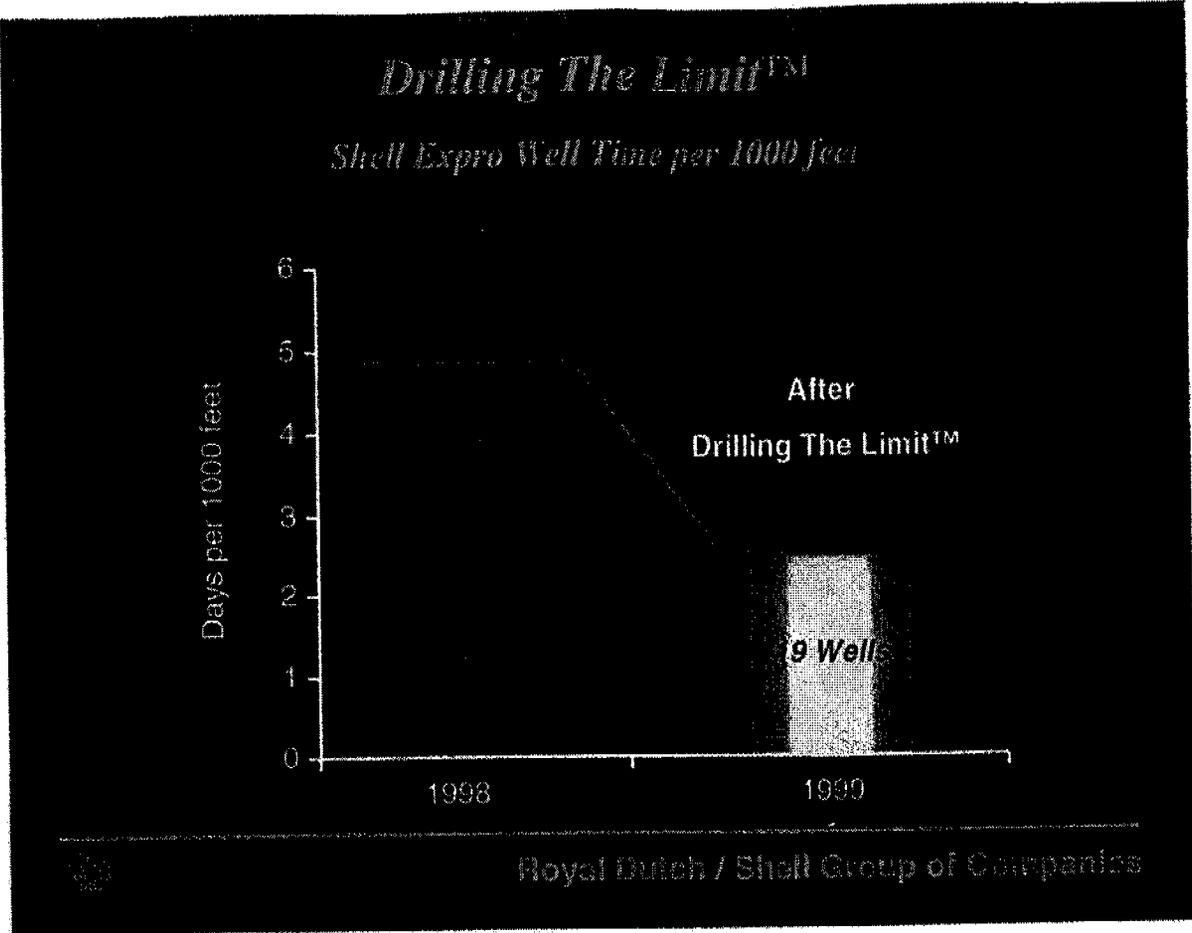


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### NOTES:

LON01321193

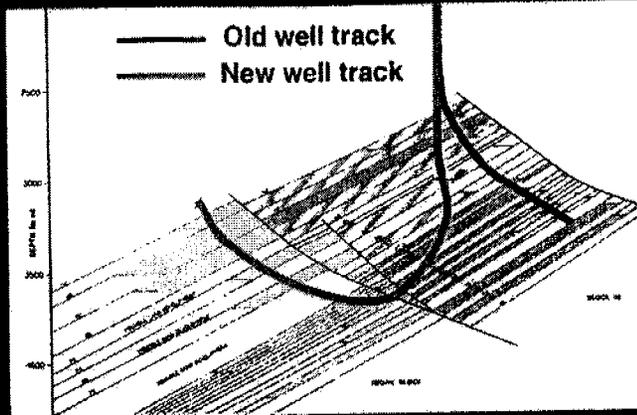
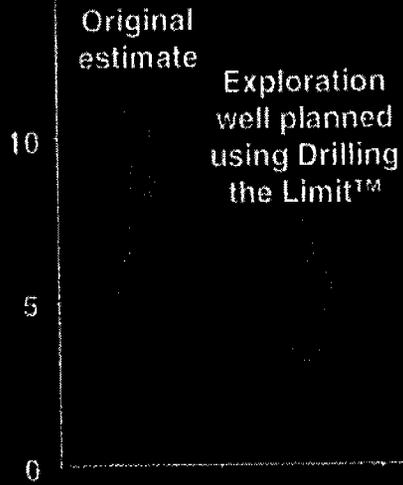
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**NOTES:**

# "Fish Hook" - Brunei

S mln



Fish-hook well

Drilling uphill



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## NOTES:

LON01321195

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*Realizing the Limit*

**Volumes  
to  
Value**

**Producing  
the  
Limit**



**Drilling  
the  
Limit™**

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NOTES:

# Realising the Limit - Malampaya

\$ 50 million saved



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NOTES:

*Realising the Limit*

**Capital  
to  
Value**

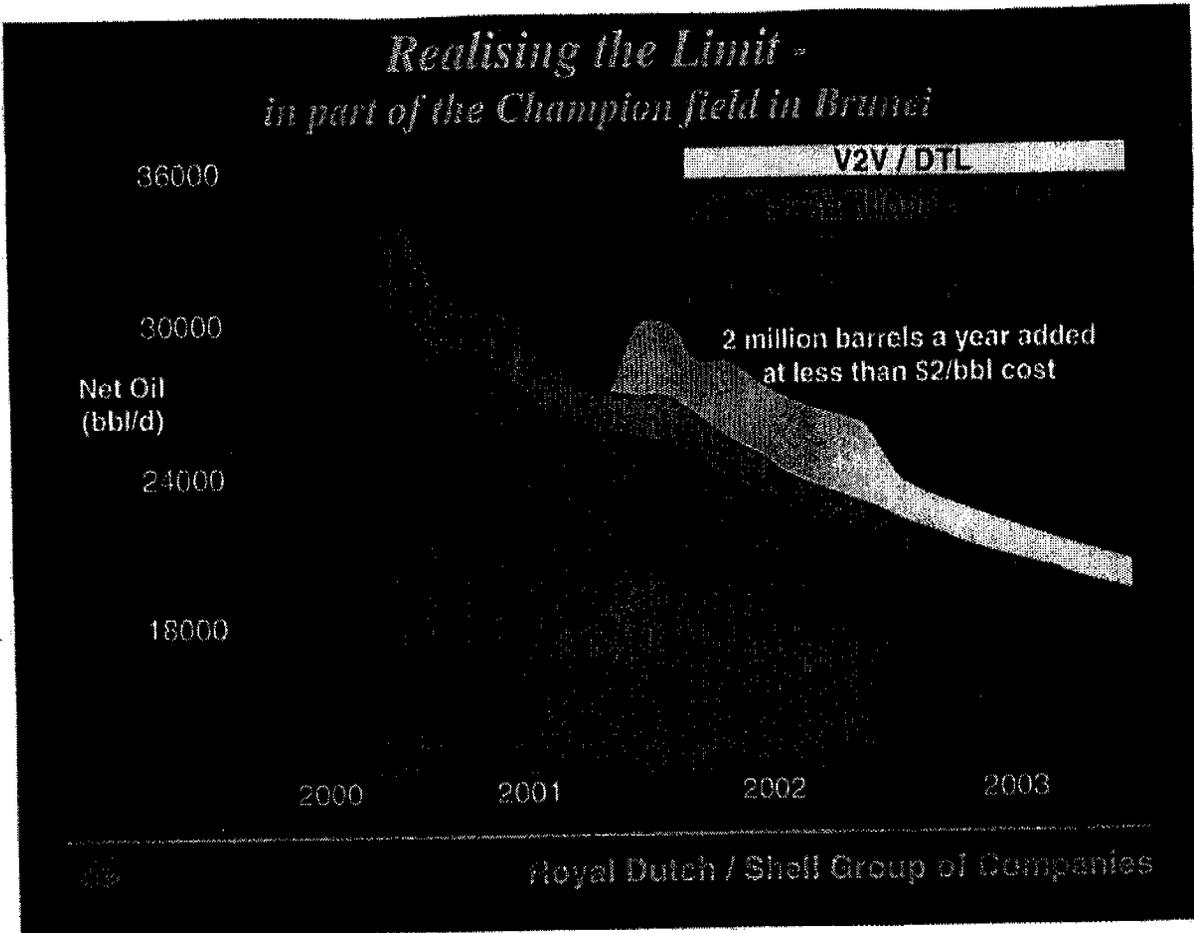


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NOTES:

LON01321198

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NOTES:

*Realising The Limit*  
*All figures Shell operated*

**Drilling the Limit™;**

Savings achieved            \$ 270 million            \$ 500 million

**Volumes to Value;**

Expectation reserves        250 million barrels    400 million barrels  
identified

**Producing the Limit;**

Incremental production    14,000 bbl/day        100,000 bbl/day  
opportunities



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**NOTES:**

LON01321200

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*Realising the Limit  
End 2000 situation*

Wells addressed

All wells addressed

Resources addressed

>15% of resources  
addressed

Production addressed

>25% of production  
addressed

Major projects addressed

All major projects  
addressed



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NOTES:

LON01321201

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*Shell Technology Delivering  
a Commercial Return*

- **Ready money**
  - costs, production, sales
- **New opportunities**
  - plays, development, partners
- **Long-term value**
  - reserves, gas markets, standards

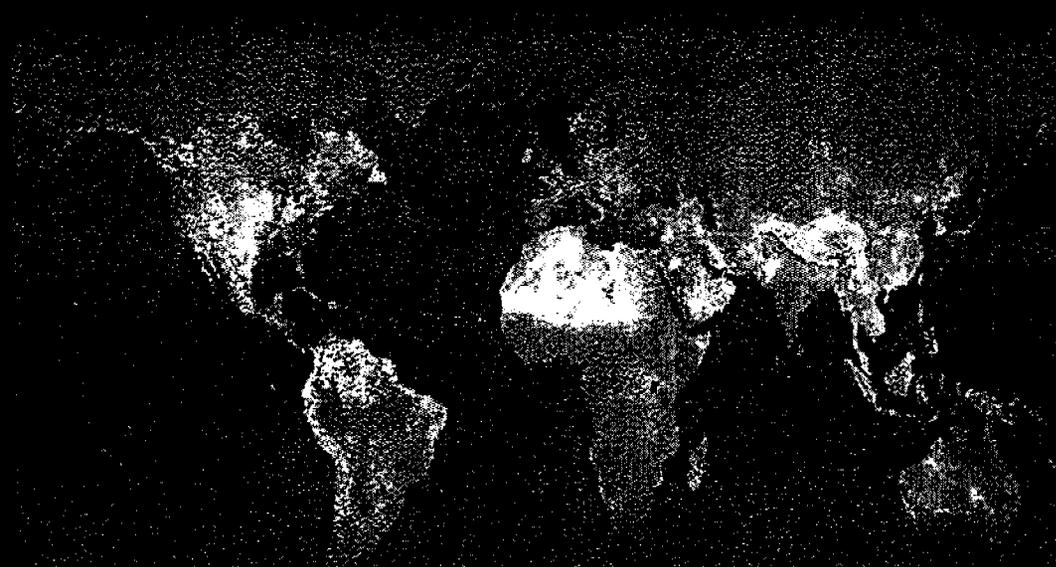


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NOTES:

LON01321202

*Better and quicker application  
Technology globalisation*



© Shell Technology Locations

(The global solution: a recent safety issue solved by the Wells Global Network)

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NOTES:

LON01321203

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Treatment Requested

*Better and quicker application  
Technology globalisation*



Shell Technology Locations  
Shell Operating Units

(The global solution: a recent safety issue solved by the Wells Global Network)

010

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NOTES:

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LON01321204

*Better and quicker application  
Technology globalisation*

**“Critical safety issue”  
Engineer MIDDLE EAST**

Shell Technology Locations  
Shell Operating Units

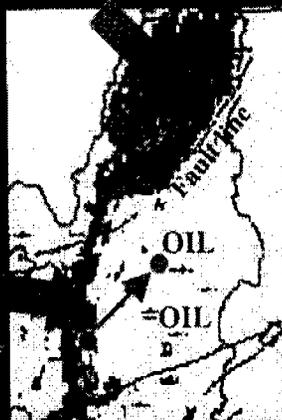
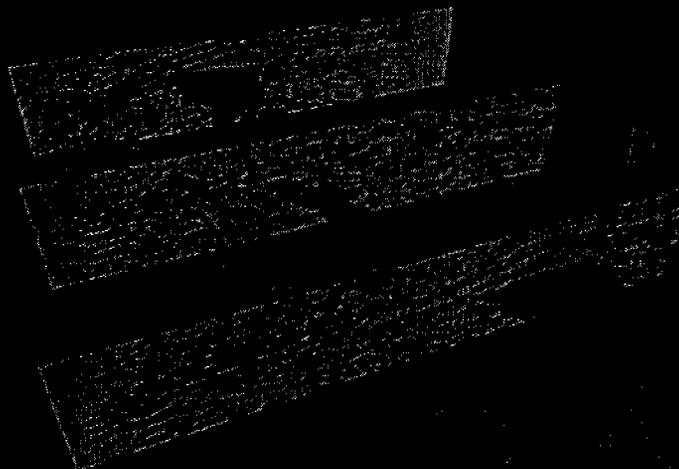
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NOTES:

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LON01321205

*Value from Technology*  
*Time Lapse Seismic (4D) Draugen*



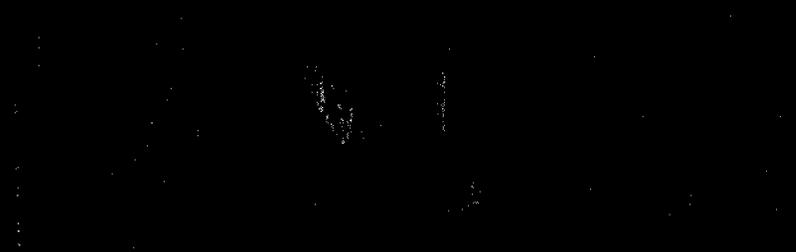
New well is  
N. Sea record  
> 70,000 bbl/day

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NOTES:

### *3D Visualisation*

Viewing sub-surface in  
virtual reality centres

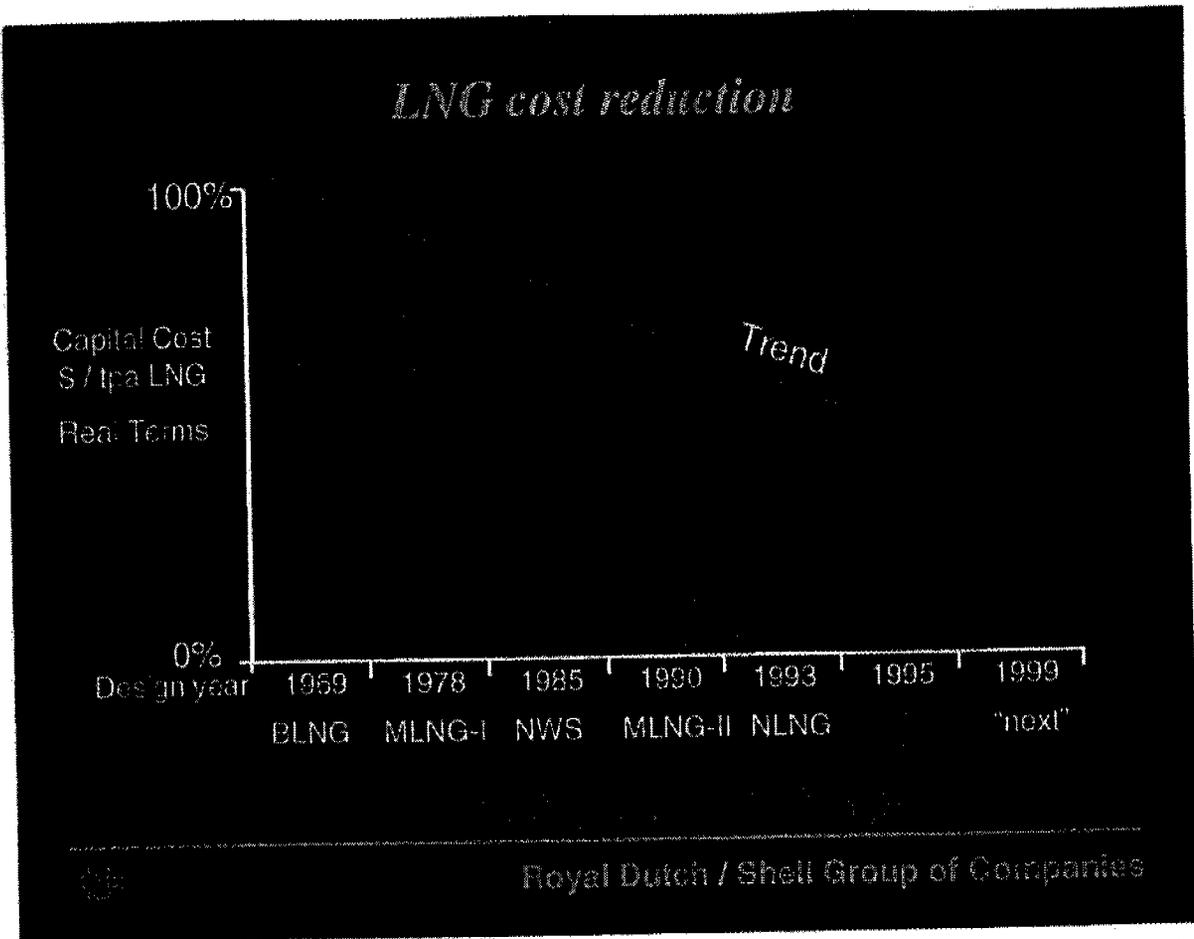


Accelerated planning and knowledge sharing



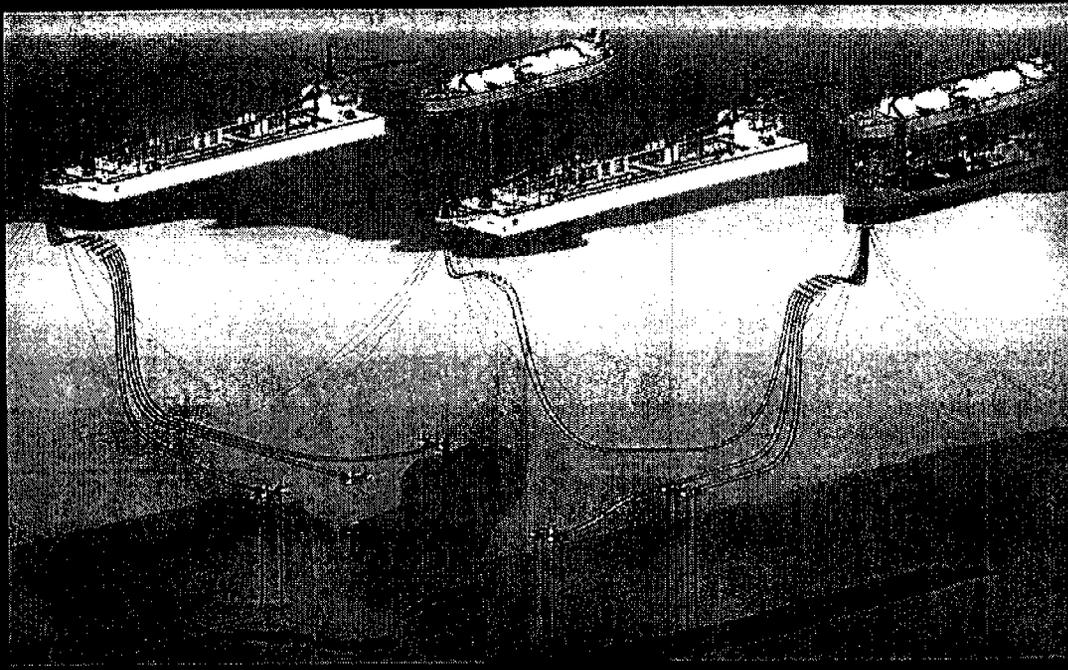
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NOTES:



**NOTES:**

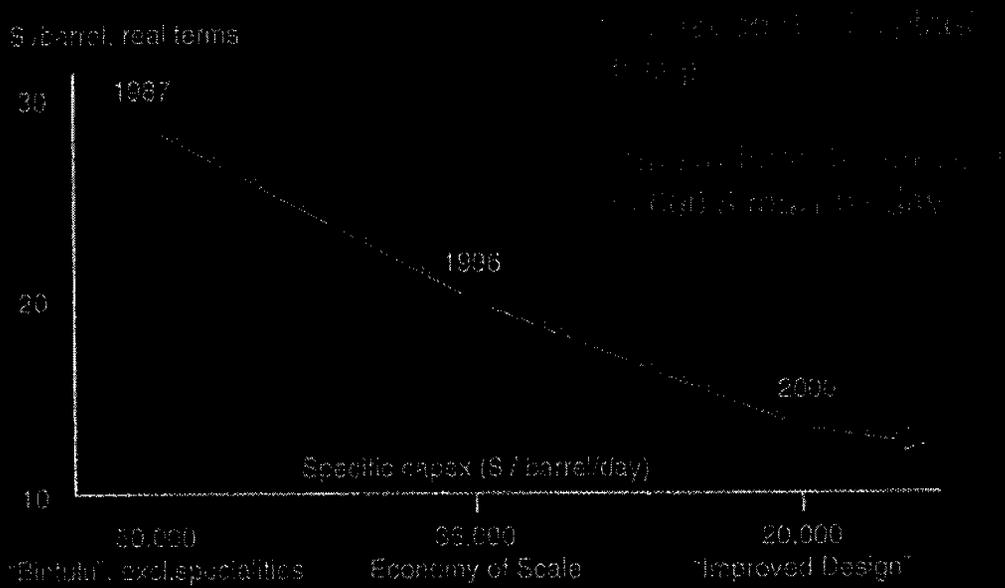
# *Floating LNG*



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## NOTES:

## Shell Middle Distillate Synthesis



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### NOTES:

LON01321210

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*Shell Technology Delivering  
a Commercial Return*

- **Ready money**
  - costs, production, sales
- **New opportunities**
  - plays, development, partners
- **Long-term value**
  - reserves, gas markets, standards



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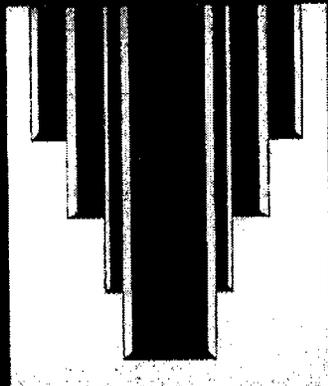
NOTES:

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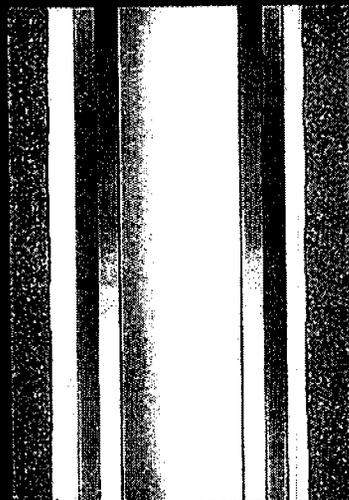
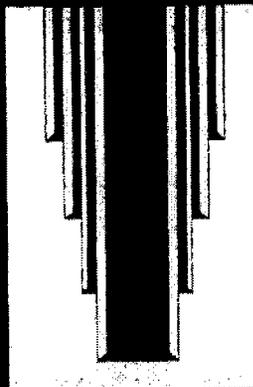
LON01321211

## *Expandable tubulars*

Conventional



Expanded Tubulars



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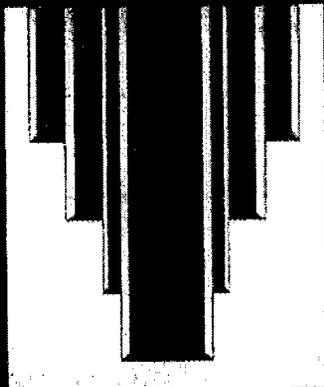
NOTES:

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Treatment Requested

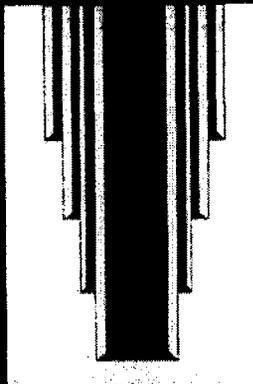
LON01321212

# *Expandable tubulars*

Conventional



Expanded Tubulars



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## NOTES:

LON01321213

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## *Shell Technology Investments Partnership*

- Joint venture with Beacon Group
- Commercialising advanced technologies
- First project - Twister Company
- Accelerating technology development and deployment
- Complementary opportunities and financial excellence



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NOTES:

LON01321214

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## *Twister Supersonic Separator*

**Old facility**



**Now with Twister**



Twister will reduce gas facility costs by up to 40%



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NOTES:

LON01321215

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## *Shell Technology Investments Partnership*

- Joint venture with Beacon Group
- Commercialising advanced technologies
- First project - Twister Company
- Accelerating technology development and deployment
- Complementary opportunities and financial excellence



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NOTES:

## *Conclusions*

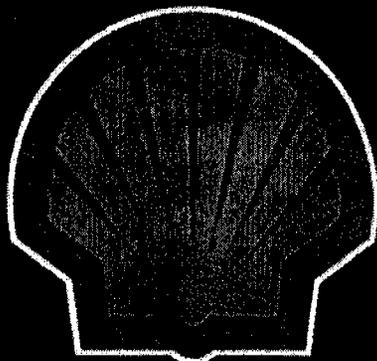
- **Technology is making a difference**
- **We are delivering on promises**
- **Venture partnerships will**
  - accelerate development
  - accelerate deployment
- **We have an exciting future**



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NOTES:

*Phil Watts*



*EP/GP Summary*

NOTES:

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LON01321218

## *EP/GP summary*

- New ways of working embedded
  - Short term performance improvement
    - Strategic Cost Leadership
    - Capital allocation - Capital discipline
    - Portfolio management
  - Medium term growth secured
    - EA, Bonga, Brutus, AOSP, Iran
    - InterGen J.V., LNG growth
- All supported by global technology & skillpools



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### NOTES:

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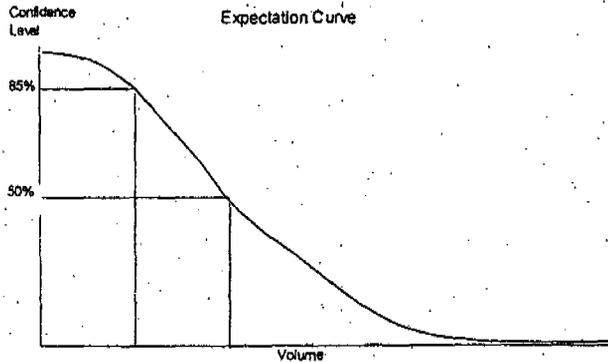
Notes on the Definition of Proved Reserves

The foundation definition is that of the SEC, being that "proved oil and gas reserves are the estimated quantities of crude oil, natural gas, and natural gas liquids which geological and engineering data demonstrate with reasonable certainty to be recoverable in future years from known reserves under existing economic and operating conditions."

The SEC do not specify how reserves are to be calculated. Other majors calculate published reserves figures using the 'Deterministic' approach whereas Shell (alone, perhaps) uses a "Probabilistic" approach.

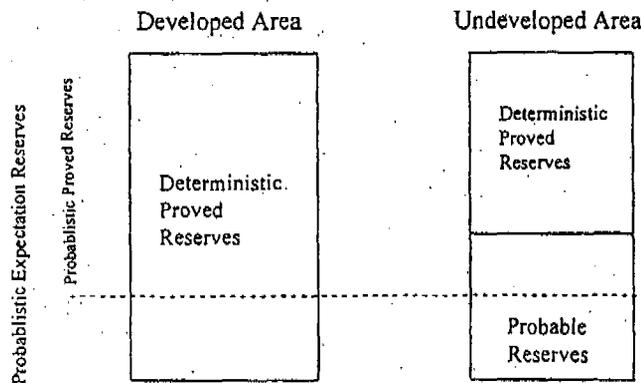
The deterministic method involves using best judgement to estimate a single reasonable value for each parameter related to reserve determination for a specific field, but restricted to field areas considered proved by drilling. The result is a single value for proved reserves. Beyond proved reserves, in undeveloped areas there are also probable and possible reserves but these need not be calculated with the same degree of caution as proved reserves and are not published (generally).

The probabilistic method involves assigning ranges of possible values to each parameter, including the areal extent, and a possible range of values for reserves calculated by probabilistic multiplication of the variables. The result is expressed as a probability curve, not a single value. An expectation curve is developed which plots the confidence level that reserves will be greater than the indicated volume. The 50% confidence level plots to the expectation reserves (which is also the area under the expectation curve). To meet the SEC requirement of reasonable certainty, that value having an 85% chance of being exceeded is read from the expectation curve and termed proved reserves.



As data becomes more complete, particularly in producing fields, the deterministic estimate may be expected to approach the Group expectation figure. The probabilistic proven figure (85%) approaches the expectation (50%) figure towards the end of the field life.

Conceptually, and broadly, the deterministic and probabilistic methods can be 'reconciled' as follows :



*Report, this might not be strictly correct. Perhaps EP could give a better explanation as part of their explanation.*

Reserves in a developed area are reported as proved developed and those in an undeveloped area are reported as proved undeveloped.

LON01560445

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**EXHIBIT**  
*Warrior-8*

**Frowd, David SI-PXG**

From: FROWD, D.E. SIEP-EPS-SE  
Sent: 28 November 1997 14:28  
To: Frowd, David SI-PXG  
Subject: FW: Reserves Reporting

From: WARREN, T.N. / EPT-TC; SIEP RIJSWIJK, OPENMAIL  
To: DIJKGRAAF, H.G. / EPS, SIEP, OPENMAIL; COLLIGAN, J.A. / EPA;  
SIEP, OPENMAIL; PARSLEY, A.J. / EPB, SEPIV, OPENMAIL; Sprague, R.M. /  
EPE, SIEP LONDON, OPENMAIL; ROELS, H.J.M. / EPM, SIEP, OPENMAIL  
Cc: EVANS, S. / EPT-AM, SIEP RIJSWIJK, OPENMAIL; BOSTOCK, D. /  
EPT-AM, SIEP RIJSWIJK, OPENMAIL; WATTS, P.B. / MGDW, SI LONDON,  
PROFS; SMITH, J.M. / EPS-FX, SIEP, OPENMAIL; FROWD, D.E. / EPS-SE,  
SIEP, OPENMAIL  
Subject: Reserves Reporting  
Date: 28 November 1997 14:51

Please find below an initial synopsis of the OU responses (no response from Nigeria as yet) to our letter. There is promise of a significant reward and EPT-AM, EPS-SE will provide a paper for discussion and decision at our 11/12 BUSCOM meeting. However, I believe it is useful for you to have early warning of some of the issues. In particular, I would suggest that John and Harry encourage SSB and PDO to be open to implementing any decision which would be communicated to them on 12th December.

A. Greater inclusion of "commercial SFR" in reserves

There is some negative reaction to this. The rationale of the negative response is that once volumes are in reserves they will not receive the same attention or it will not be so easy to justify appraisal/data gathering to mature to reserves. This would appear to be more of a mentality issue but if this perception is held by governments (BSP are the most concerned about this aspect) or joint venture partners, there may be real issues behind them.

There were no issues around the principle of probabilistic addition only around the practicality.

B. Use of expectation developed reserves as proven in mature fields

1. There is approx 500MMboe increase due to switching from P85 to expectation developed as fields mature. (Nigeria has quite a few mature fields so I would anticipate it having a positive contribution to this number): These figures are mainly based on 1.1.97. Impact on NIAT (from Peter Elam) is of the order of \$150m in would be gained in 1997. Only a few OU submissions give NIAT data for later years, but there is some indication that the difference in NIAT in 1998 would be similar. This would contribute some 0.5% in ROACE in 1998.

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2. Three OU - BSP, SSB, NAM - report a negative impact on their cashflow and hence a reduction in field NPV. These are due to proved reserves being the basis for depreciation for tax purpose (BSP, NAM) or for capital allowances (SSB). The impact on SSB is pretty small, NAM is the most significant at \$10m p.a. BSP in between.

3. Two OU - BSP and PDO (and probably Nigeria) - report a negative impact on the government relations front: time they have invested in bringing the governments round to the existing Shell system,

3 } 4. Expro do not want to "book" any positive changes this year because of the likelihood of downgrading Brent next year when they would like to have offsets.

5. Denmark figures illustrate nicely the longer term impact on NIAT and ROACE. ROACE is comparatively worse from 2000 if the reserves increases are adopted.

6. Negative reactions to the methodology have come from BSP, NAM, Expro, EPE. These centre around "greater volatility" due to using expectation; book-keeping rather than real adjustments; inconsistency with probabilistic addition. The first two are correct; the latter is true for mature fields but the existing methodology is more attuned to immature fields and the methodology for mature fields needs to be revised.

7. OU's need to know which way we are going sooner rather than later (5th december for SSB; too late already for PDO). Also if they are to go ahead they wish to be assured that this change has been cleared by Group auditors. EPS-SE are actioning the latter

Regards,  
Tim

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Page 2

LON01560447

kins, John J SI-FSCAH

From: Perry, John J SOPE-OAMF  
 Sent: 10 April 2000 02:34  
 To: Jones, Peter J SOPE-OAM; Eisenhans, Lynn L SOPE-OA; Waight, Roy R SOPE-OAF  
 Cc: Lee, Tzu-Yang TY SOPE-OAP; Sadler, David M SOPE-OAPS; Haney, Matt MB SIPC-OFAD; Elkins, John J SI-FSCAH; Arnot, Miles M SI-FSCAH  
 Subject: Rayong Impairment

Importance: High  
 Sensitivity: Confidential

The complexity surrounding impairment of Rayong continues.

Impairment of Rayong needs to be reviewed at various levels:

- Group accounts
- the accounts of the various holding companies: SIHL which owns (and only owns) the Shell investment in Rayong, and SPCo which owns the shares of SIHL.
- the accounts of Rayong itself

Each of the above is subject to different accounting standards for impairment:

- Group accounts - American GAAP FAS121
- SIHL, SPCO - UK accounting standard, FRS 11
- Rayong - Thai accounting standard.

And the principles underlying the above are all different to varying degrees.

You may recall that at the beginning of this year the 1998 accounts of SIHL were published including an impairment of its investment in Rayong. The impairment was based on (all numbers are end 1998):

- SIHL investment (before impairment) USD 536mln
- remaining shareholder equity in local accounts of Rayong USD 380mln, equivalent to USD 243mln Shell share.
- impairment of USD 293 mln (being difference 536 - 243)

The rationale for using the equity value of USD 380 mln (100% basis) was the unlikelihood of any dividends in next 20 years and ongoing discussions with a third party which, at that time, were based on a Shell view of selling an interest (100% basis) for circa USD 400mln.

I have been discussing with London the need or otherwise to show an impairment in SPCo's 1999 accounts in respect of the investment in SIHL. Based on continuing belief that no dividends are likely to be paid by Rayong in the next 20 years a valuation based on fair market value is considered appropriate. For this purpose we have used the maximum fair market value quoted in the recent CMD presentation, i.e. USD 200mln (100% basis). This would give rise to an impairment in SPCo's accounts as follows:

- investment value USD 303mln (net of provision already taken in 1998 accounts)
- fair market value USD 128 mln (64% of USD 200mln).
- impairment of USD 175 mln

It is proposed to include in the accounts of SPCo in 1999 an impairment of USD 175mln.

An alternative of delaying the issue of SPCo accounts (e.g. until there is more clarity on sale to a third party and/or impairment in Group accounts) has been examined but is not feasible.

An alternative of writing down the investment to zero was rejected since any subsequent third party sale at a value above zero would cause accounting difficulties.

It is understood that the impairment will be identified in the SPCo accounts (since it is a material item) but details of the asset being impaired will not be shown in the accounts. Therefore, this impairment is unlikely to cause sensitivities vis a vis lenders, PTT or Rembrandt.

We will review impairment in the accounts of SIHL later this year, by which time the Group accounts position should be clearer.

Matt Haney has been fully involved with these discussions and will be keeping Frank informed on these developments.

regards,  
John

John Perry OAMF - General Manager, Finance MSD Business East Zone  
 Shell Eastern Petroleum (Pte) Limited, 83 Clemenceau Avenue, UE Square, Singapore 239920  
 Tel: +65 384 8649 Fax: +65 384 8491 Email: john.j.perry@shell.com.sg

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 LON01560448

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**Presentation ExCom 31<sup>st</sup> January 2000**

**Preliminary Summary of End 1999 Proved Reserves**

The objective of this note and presentation is to inform ExCom of the end 1999 Group Resources, especially proved and proved developed reserves, prior to the finalisation and External Audit clearance of these numbers by the 4<sup>th</sup> February 2000, ahead of the Q4 press release. The numbers are still being finalised, but adjustments are expected to be minor.

**Summary**

- ♦ The 1999 proved reserves replacement ratio is 46% for oil/NGL (141% in 1998) and 23% for gas (255% in 1999). Total oil/NGL/Gas replacement ratio for 1999 is 37% (182% in 1998).
- ♦ Three year average proved reserves replacement ratio for 1999 is 106% for oil (146% in 1998) and 161% for gas (249% for gas), total replacement on boe basis is 126% (184% in 1998) (ref attachment 1). It should be noted that the implementation of the new Petroleum Resource Guidelines during 1998 accounted for roughly 50% of the 1998 proved reserves increase.
- ♦ Including the AOSP "mining reserves" the overall proved replacement ratio increases from 37% to 82% and further inclusion of the Iran "pseudo reserves" increases the replacement ratio to 94%.
- ♦ Regional proved reserves replacement indicates a trend of limited reserves replacement in the mature areas of EPN and EPA from production and divestment and reserves additions in the other two areas EPG and EPM.

There are a number of issues regarding proved reserves booking for 1999 which require endorsement by ExCom. The issues and recommendations are presented in this Note under "Issues".

**Changes during 1999**

**Summary of Proved Reserves**

The ESOSC proved reserves as of 1.1.2000 (assuming recommendations presented are endorsed) stand at 1523 mln m<sup>3</sup> oil/NGL (9581 mln bbl) and 1647 mrd sm<sup>3</sup> gas (10,037 mln boe), showing a decrease of 71 mln m<sup>3</sup> (449 mln bbl) and 64 mrd sm<sup>3</sup> (388 mln boe) for oil/NGL and gas respectively after taking account of 1999 production being 132 mln m<sup>3</sup> (831 mln bbl) oil/NGL and 82.6 mrd sm<sup>3</sup> (503 mln boe). Total proved reserves replacement ratio is 37% with a replacement ratio of 46% for oil and 23% for gas.

	Unit	Proved Reserves 1.1.1999	Proved Reserves 1.1.2000	Change	Proved Reserves Repl. Ratio
Oil/NGL	mln m3	1594.8	1523.4	-71.4	46%
Gas	mrd sm3	1711.1	1647.4	-63.7	23%
Total	mbln boe	20.5	19.5	-1.0	37%

One new venture has booked first time proved reserves in 1999, Kazakhstan (*Saigak* +2 mln m<sup>3</sup> oil) and one venture no longer books proved reserves Chad (-0.4 mln m<sup>3</sup>) as the Group has pulled out of the Doba-project end 1999.

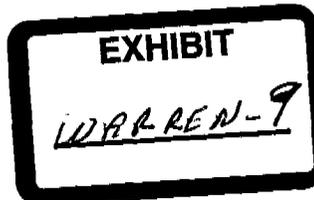
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CONFIDENTIAL**

V00210807



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**Summary of Reserves by Region**

The changes in proved reserves split by Region shows that only EPG has a significant replacement ratio for 1999 both oil/NGL and gas. As a result of production and divestments in the mature areas in EPN and EPA replacement ratio is very low with increases just offsetting the divested reserves. EPM replacement ratio is also low. (Gas replacement ratio's in EPM and EPG are 'distorted' due too low production).

	OIL/NGL [mln m3]					Gas [mrd sm3]					R.R. boe
	Proved 1.1999	Proved 1.2000	Prod 1999	Delta	Repl. Ratio	Proved 1.1999	Proved 1.2000	Prod 1999	Delta	Repl. Ratio	
EPN	578	480	70	-97	-39%	915	896	61	-19	69%	11%
EPM	316	308	27	-8	71%	109	94	3	-15	-391%	24%
EPA	157	159	14	2	115%	577	544	17	-33	-93%	4%
EPG	544	576	22	31	244%	110	113	1	3	321%	248%
Total	1595	1523	132	-71	46%	1711	1647	83	-64	23%	37%

**Breakdown of Changes by Category**

The decrease in both oil/NGL and gas reserves is the result of Production and Divestments (Sales in Place) from Portfolio Management recommendations, the reductions are only partly offset by increases from Discoveries & Extensions, Improved Recovery, Revisions & Reclassifications and Acquisitions (Purchases in Place).

	OIL/NGL [mln m3]	Gas [mrd sm3]
Proved Reserves 1.1.1999	1594.8	1711.1
Revisions & Reclassifications	39.2	15.2
Improved Recovery	18.7	2.2
Extensions & Discoveries	53.7	38.6
Purchases in Place	11.9	2
Sales in Place	-62.8	-37.3
Production 1999	-132.1	-82.6
Proved Reserves 31.12.1999	1523.4	1647.4

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**Major Changes by Category and Country**

Breakdown of the major changes is as follows :

	Oil/NGL (mln m3)		Gas (mrd sm3)
Sales in Place (Divestments)	-63	Sales in Place (Divestments)	-37
USA (Enterprise&Apache)	-47	USA (Enterprise&Apache)	-15
Philippines (Texaco)	-4	Philippines (Texaco)	-19
Canada (Plains)	-10	Canada (Plains)	-3
Purchases in Place (Acquisition)	11	Purchases in Place (Acquisition)	0
Nigeria SPDC (EA/EJA)	11		
Extensions & Discoveries	54	Extensions & Discoveries	39
Nigeria SNEPCO (Ehra)	24	Nigeria SNEPCO (Ehra)	0
USA (Hickory, Spirit, Auger e.a.)	10	USA (Hickory, Spirit, Auger e.a.)	9
Norway (Ormen Lange)	1	Norway (Ormen Lange)	12
Denmark (Halfdan)	6	Denmark (Halfdan)	2
Nigeria SPDC	5	Nigeria SPDC	7
Others (New Zealand, Oman e.a.)	8	Others (Egypt, Malaysia, Brunei e.a.)	9
Improved Recovery	19	Improved Recovery	2
Oman PDO	9	Malaysia (Lower Pressure)	2
Others (Sakhalin, Altura, Brunei)	10	Others	0
Revisions & Reclassifications	39	Revisions & Reclassifications	15
Nigeria SPDC (Shallow Offshore)	+18	Canada (Royalties in Cash +14)	19
Oman PDO	+12	USA (Own Use)	-7
Gabon	+5	Norway (Troll gas contract e.a.)	13
Canada	+6	Oman Gisco (Entitlement)	-12
Others NET	-2	Others NET	2

**Impact AOSP and Iran**

The proved oil/NGL and gas reserves exclude the Canadian OilSands AOSP - 95 mln m3 proved (600 mln bbl) as these under SEC rules are classified as "minning reserves" (volumes are incl. minority interest). Also exclude are the Iranian "Pseudo Reserves" *Soroosh/Nowrooz* - 24 mln m3 (150 mln bbl Shell share) as proved reserves booking is currently still very sensitive in Iran. Note the 100% project reserves volumes in Iran are 950 mln bbl (151 mln m3).

Although the externally reported proved oil/NGL and gas reserves will not include AOSP "Mining Reserves" nor the Iran "Pseudo Reserves" the overall hydrocarbon resource replacement performance is better represented if these volumes are included resulting in a replacement ratio of 94%.

	Initial Submission excl adj.	Repl. Ratio Proved Reserves	Repl Ratio Excl. A&D	Repl. Ratio Incl. AOSP	Repl. Ratio Incl. AOSP & Iran
Oil/NGL	71%	46%	84%	118%	136%
Gas	31%	23%	68%	23%	23%
Total	56%	37%	78%	82%	94%

The initially submitted reserves prior to the proposed adjustment gave a replacement ratio of 56%; after adjustments but excluding Acquisitions and Divestments the replacement ratio is 78%.

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**Proved Developed Reserves**

The proved developed reserves as of 1.1.2000 stand at 795 mln m<sup>3</sup> oil/NGL and 775 mrd sm<sup>3</sup> gas, showing an increase of 15 mln m<sup>3</sup> and 2 mrd sm<sup>3</sup> for oil/NGL and gas after taking account of 1999 production. Proved developed replacement ratios are 111% for oil/ngl and 103% for Gas (108% total boe).

The proved developed reserves replacement ratio for 1999 indicated that production as well as divested developed reserves were replaced. Large contributions were made by from transfer of undeveloped reserves to developed reserves in Canada (Sable project start-up), Oman Gisco (production start-up), Malaysia (Compression Installation FZ3), USA and UK.

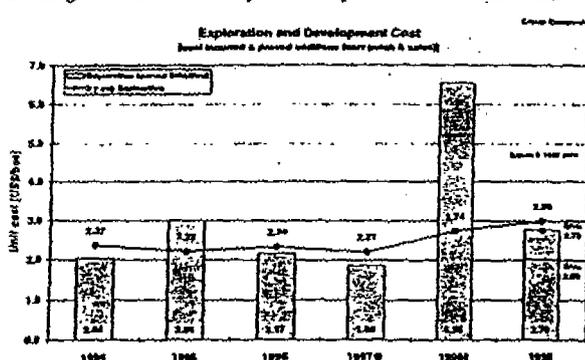
**Issues**

The following issues need endorsement from the ExCom before finalising the 1999 proved reserves:

**Nigeria SPDC-SNEPCO - Ehra Discovery**

In their initial submission SNEPCO have booked the 1999 Ehra discovery (made by Exxon) as commercial SFR and not as reserves. Up to the November 1999 monthly reporting (MISCOM) by SNEPCO indicated booking of Ehra volumes as proved reserves for 1.1.2000. Ehra volumes, however, were excluded from the 1.1.2000 proved reserves as Exxon indicated mid December 1999 that they would not include the volumes in their proved reserves and did not present SNEPCO with a preliminary development plan. Subsequent challenge has indicated that volumes are sufficiently large and sufficient technical work has been done in Houston to support proved reserves booking for 1.1.2000. It is therefore recommended to advise SNEPCO to book Ehra proved reserves for 1.1.2000 of 24.0 mln m<sup>3</sup> oil Shell PSC entitlement.

Booking of the Ehra discovery is also important in view of the external Unit Finding Cost (UFC) which is



based on proved reserves additions and exploration expenditure disclosed. Preliminary figures indicate an 1999 exploration expenditure of 1087 mln US\$ for Group companies. Based on the Group company proved additions form "discoveries & extensions" the UFC'99 would be 2.78 \$/b excluding and 2.0 \$/b including the Ehra discovery.

**Nigeria SPDC**

Nigeria SPDC has submitted an increase in proved reserves of 80 mln m<sup>3</sup> proved reserves - this is believed to be too optimistic in view of the current licence expiry of 30<sup>th</sup> June 2019 for the Onshore (MOU) and Shallow Offshore Licences by 30<sup>th</sup> November 2008.

Under the alternative funding arrangement for EA/EJA Shell share of reserves increase for these fields from 30% to 77.14% and the licence has been extended to 350 million barrels cumulative production. Net result of these changes is an increase in proved reserves in the Shallow Offshore of 30 mln m<sup>3</sup> (189 mln bbl). It is recommended to book these incremental volumes.

The Onshore Licence expires mid -2019 and it is recommended to freeze the onshore proved reserves at the 1.1.1999 level to prevent potential large proved reserves reduction in future, if the planned growth does not or only partly materialises. This means not book the 50 mln m<sup>3</sup> oil proved reserves addition for

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1.1.2000 as submitted by SPDC. As a consequence proved onshore oil reserves in SPDC will decline with cumulative production in future years until such time that significant growth in oil production volumes has been established or a licence extension has been secured.

**Abu Dhabi**

Abu Dhabi proved oil reserves have historically been booked on an expected growth scenario which still has not materialised under OPEC constraints. As a result of the Abu Dhabi licence expiry early 2014 reserves have to be de-booked with deferral of the expected production increase. It is recommended to differentiate between an expected (50/50) forecast and a proved (90/10) forecast when estimating proved reserves. An initial gap of two years delay in growth for 1.1.2000 requires a de-booking of 6.5 mln m3.

**Canada**

The Group Resource Guidelines prescribe in line with SEC rules that 'Royalties in Kind' should be excluded from the reserves but that 'Royalties in Cash' should be included in the reserves. Historically Canada proved reserves have been included net of all royalties, directly from the Shell Canada Annual Report data. Early 1999 it became clear that only oil royalties in Canada are due in Kind and that Gas royalties are due in Cash. For 1.1.2000 reserves gas royalties have been included in the SC reserves - addition of 13.8 mrd sm3. With the divestment of the Plains properties all oil fields have been divested and Royalties in Kind are no longer applicable.

**Australia**

Australia SDA have indicated that WAPET have re-evaluated the Gorgon reserves which has lead to a 20% increase in recoverable volumes. In view of the limited market availability and already large uncommitted proved gas reserves carried by SDA based on future market expectations it has been proposed and agreed with SDA and EPA not to include the additional 20 mrd sm3 for 1.1.2000. Booking of the additional volume in future is subject to further market development and capture.

Proved Gas volumes in Australia have been a point of challenge by the external Auditors (KPMG/PWC) for the last two years already and incremental booking at present would be hard to support.

**USA**

Shell Oil up to 1998 reported its financial performance externally separately from the Group, which included proved reserves based on Shell Oil's internal reserves Guidelines. The Shell Oil definition of proved reserves includes 'own use' gas in the proved gas reserves.

Following the Globalisation in 1999 and de-registration of Shell Oil from the SEC Shell Oil no longer individually publishes its results and reserves. The Group's definition of proved reserves explicitly excludes 'own use' gas from the reserves. To align reporting across the Group it is proposed that Shell Oil reserves for 1.1.2000 are reported excluding 'own use' gas in line with the Group Guidelines. This results in a reduction of 6.5 mrd sm3 versus the number submitted by Shell Oil (-1.9% for Shell Oil, -75% for Area and -7% for Altura).

The issue has been discussed with the Group Reserves Auditor and Group External Auditors who confirm that both interpretations are defensible under SEC rules but also acknowledge that reporting consistency across the Group is a strong consideration.

Excluding own Use gas from the USA reserves also aligns with the new gas definition proposed for 2000 "Gas Production Available for Sales (from own Reserves)" which also excludes own use and flared gas volumes.

It should be noted Shell Oil prefer not to adjust reserves and have submitted 1.1.2000 proved gas reserves including 'own use' gas.

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The total of the above recommendations in terms of changes to the originally submitted proved reserves by the Group Ventures is as follows:

OIL	<u>Proved Reserves</u>
♦ Inclusion of Nigeria-SNEPCO 1999 Ehra discovery ('Exxon' block)	+ 24.0 mln m <sup>3</sup>
♦ Increase Nigeria-SPDC Shallow Offshore Reserves (EA/EAJ) resulting from alternative funding agreement (77% share) and Licence extension post Nov-2008 (max of 350 MMb)	+ 30.0 mln m <sup>3</sup>
♦ Limit Nigeria-SPDC Onshore (MOU) to currently booked proved reserves minus 1999 production reflecting doubling of production to 1,400 b/d by 2010 only with licence expiry in Jun-2019; Reduction from SPDC submission of	- 50.0 mln m <sup>3</sup>
♦ Reduce Abu Dhabi proved reserves based on two year delay production increase and licence expiry in Jan-2014	- 6.5 mln m <sup>3</sup>
	Total: - 2.5 mln m <sup>3</sup>
GAS	
♦ Exclude USA 'own use' gas in line with Group Reserves Guidelines	-6.5 mrd sm <sup>3</sup>
♦ Australia SDA, increase in Gorgon volumes are not included as proved reserves due to gas market limitations (19.7 mrd sm <sup>3</sup> increase from 86.1 to 105.8 mrd sm <sup>3</sup> )	0.0 mrd sm <sup>3</sup>
♦ Include Canada gas royalty in cash in line with Group Reserves Guidelines	+ 13.8 mrd sm <sup>3</sup>
	Total + 7.3 mrd sm <sup>3</sup>

**Discoveries 1999**

Two NVOs and sixteen OUs have reported a total of 59 successful exploration wells for 1998 versus 60 dry wells (note Shell Oil and Shell Canada statistics are not yet complete). Total Group share on equity basis (i.e. including carried Government take in PSC countries) of the discovered hydrocarbon resource volume is 136 mln m<sup>3</sup> oil/NGL (857 mln bbl) and 67 mrd sm<sup>3</sup> gas (411 mln boe), a combined total of 1,268 mln boe.

There are seven large oil finds one each in Nigeria-SNEPCO (Ehra 746 mln boe), Denmark (Halfdan 491 mln boe) and Oman (Ghafeer 85 mln bbl), plus two each in Australia-Woodside (Vincent 61 mln bbl and Enfield 72 mln bbl) and Angola (Platina 117 mln boe and Plutonia 283 mln boe).

A further seven gas fields were discovered one in Egypt (Obaiyed-South 74 mln boe), two in Malaysia (Kamansu East Upthrows 62, F23-SW 23 mln boe), Australia SDA (Geryon and Orithrus) and Norway (Ormen Lange South 125 mln boe). The large deepwater gas discovery in Nigeria SNEPCO (Doro) under current contractual terms does not give Shell any entitlement.

Total exploration expenditure for 1999 is currently estimated at US\$ 1290 mln resulting in an internal unit resource finding cost of 1.02 \$/b for the discovered expectation resource volume of 1268 mln boe.

If discovered resources from exploration in 1999 are limited to shell share expectation reserves booked for 1.1.2000 of 60 mln m<sup>3</sup> oil/ngl (377 mln bbl) and 19.4 mrd sm<sup>3</sup> (118 mln boe) a total of 495 mln boe this results in a unit reserves finding cost of 2.60 \$/b.

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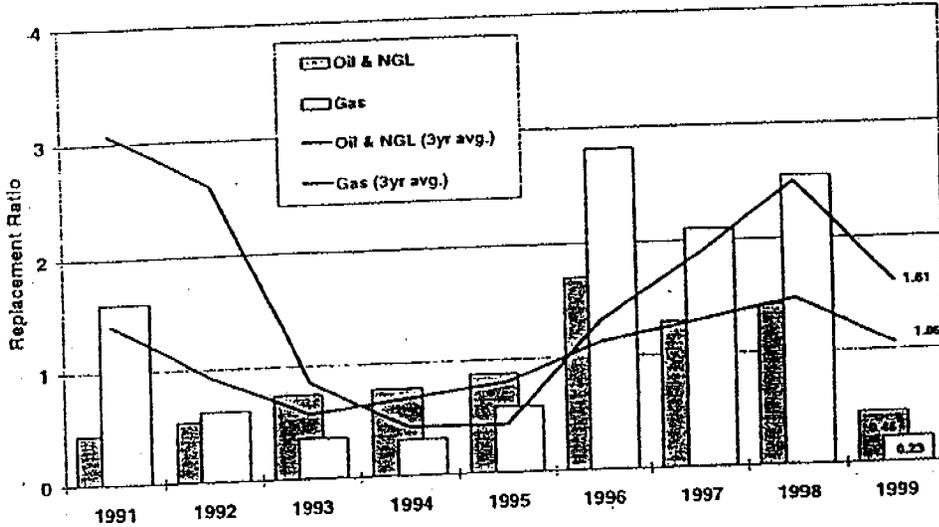
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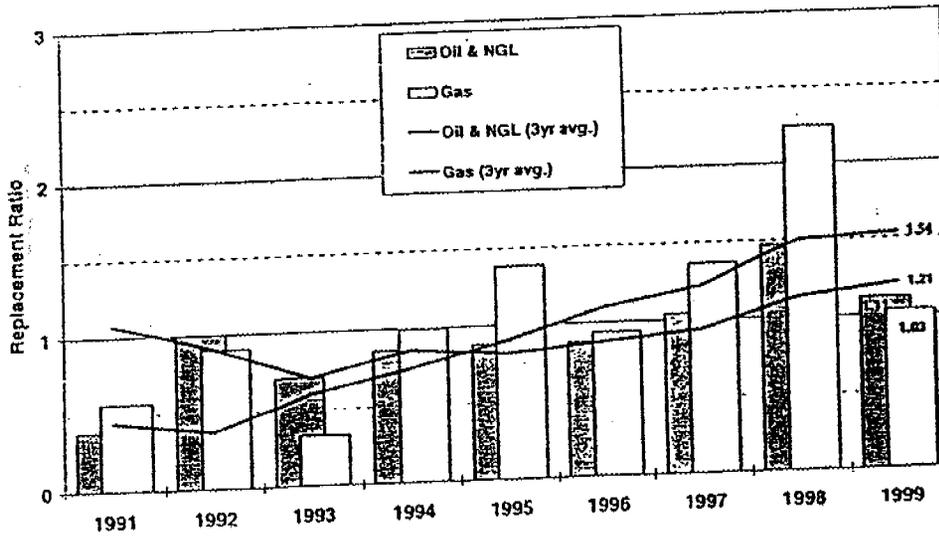
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Historic Replacement Ratio's

Proved Replacement Ratio's (Group)



Proved Developed Replacement Ratio's (Group)



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Attachment 2

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Proved Reserves Summary

	Crude Oil and NGL in million MB					Gas in billion SMD					BOE Repl. Ratio
	Proved Reserves 01/01/99	Proved Reserves 31/12/99	Prod 1999	DELTA	Repl. Ratio	Proved Reserves 01/01/99	Proved Reserves 31/12/99	Prod 1999	DELTA	Repl. Ratio	
Netherlands	6.08	5.77	0.76	-0.32	59%	424.61	410.64	15.71	-13.97	11%	13%
UK	155.40	129.92	23.94	-25.48	-13%	116.44	108.45	9.98	-7.99	30%	-1%
Norway	26.75	33.25	4.82	5.49	14%	67.01	69.90	2.38	22.894	1032%	334%
Denmark	26.57	38.15	6.85	3.58	152%	32.81	33.44	3.22	-2.374	26%	113%
Germany	4.04	3.37	0.33	-0.67	-103%	62.34	59.42	5.00	-2.919	42%	32%
Austria	0.25	0.29	0.03	0.02	33%	1.24	1.48	0.17	0.240	240%	210%
Shell Oil (USA)	149.43	92.00	18.20	-57.43	-216%	118.44	94.40	17.75	-24.038	-38%	-128%
Shell Oil (Aera)	83.38	79.25	7.65	-4.12	48%	4.42	1.38	0.12	-3.037	-3474%	9%
Shell Oil (Alura)	42.03	47.87	2.64	5.84	321%	5.88	7.50	0.40	1.625	508%	345%
Shell Oil (MCC)	4.91	1.85	0.55	-3.05	-65%	2.00	1.55	0.55	-0.450	18%	-222%
Shell Oil (TMF)	0.67	0.93	0.18	0.25	244%	1.28	1.89	0.17	0.410	341%	291%
Canada	55.13	47.16	4.16	-8.97	-116%	78.42	85.31	5.81	8.891	270%	105%
EPN	577.65	480.78	69.53	-96.87	-39%	914.89	885.16	61.25	-18.725	69%	11%
Oman - (FDC)	134.09	139.50	18.37	5.41	133%	0.00	0.00	0.00	0.000	0.00%	133%
Oman - (Gsoo)	32.34	33.18	0.85	0.84	159%	59.32	45.69	1.23	-13.628	-1000%	-499%
Abu Dhabi	108.78	95.81	4.80	-11.97	-148%	0.00	0.00	0.00	0.000	0.00%	-148%
Egypt	9.15	9.05	0.57	-0.09	76%	29.48	31.27	1.08	1.790	269%	216%
Syria	22.78	19.81	4.11	-2.97	28%	3.46	1.01	0.28	-2.443	-789%	-22%
Russia - (Sakhalin)	8.71	7.69	0.05	-1.02	-1940%	0.00	0.00	0.00	0.000	0.00%	-1940%
Kazakhstan - (Ternit)	0.00	2.00	0.00	2.00		0.00	0.00	0.00	0.000	0.00%	
Pakistan	0.00	0.00	0.00	0.00		10.17	11.34	0.18	1.167	839%	839%
Bangladesh	0.00	0.00	0.00	0.00		6.74	4.71	0.33	-2.025	-512%	-512%
EPN	315.85	308.05	25.58	-7.80	77%	108.17	94.09	3.08	-15.140	-391%	34%
Australia - (GDA)	31.03	32.49	1.98	1.46	174%	174.51	176.64	2.27	2.129	194%	164%
Australia - (Woodside)	12.45	11.85	0.79	-0.60	24%	55.05	40.21	1.47	-14.845	-913%	-578%
Ethiopia	55.23	59.28	5.00	4.05	181%	100.55	102.61	4.70	-0.948	80%	133%
New Zealand	3.59	4.80	0.44	1.01	330%	11.97	12.65	1.26	0.672	153%	200%
New Zealand - (Pecten)	0.77	0.80	0.11	0.03	127%	2.58	2.31	0.27	-0.270	0%	38%
Malaysia	27.12	25.55	3.81	-1.57	59%	183.03	183.82	6.55	0.780	112%	82%
Philippines	7.40	3.82	0.00	-3.58		39.20	19.44	0.00	-19.760		
Thailand	12.73	14.17	1.02	1.44	241%	6.69	6.23	0.39	-0.464	-18%	171%
China	2.79	3.24	0.58	0.45	178%	0.00	0.00	0.00	0.000		178%
China - (Pecten)	3.84	3.29	0.59	-0.55	7%	0.00	0.00	0.00	0.000		7%
EPA	156.95	159.09	14.32	2.14	119%	576.69	543.90	16.90	-32.700	-50%	4%
Nigeria - (SPDC)	429.82	448.07	12.29	18.25	248%	92.05	95.93	0.84	3.871	554%	289%
Nigeria - (SNEPCO)	50.40	71.41	0.00	21.01		7.31	5.70	0.00	-1.612		
Oceon	20.20	19.91	5.18	-0.29	94%	0.00	0.00	0.00	0.000		94%
Venezuela	25.27	21.43	2.37	-3.84	-62%	0.00	0.00	0.00	0.000		-62%
Argentina	3.88	3.43	0.25	-0.45	-73%	8.22	7.28	0.02	1.086	5176%	309%
DFI Corp (Zaire)	4.34	3.22	0.16	-1.12	-800%	0.00	0.00	0.00	0.000		-800%
Chad	0.42	0.00	0.00	-0.42		0.00	0.00	0.00	0.000		
Brazil - (Pecten)	0.83	0.81	0.12	-0.12	0%	4.82	4.38	0.45	-0.440	2%	2%
Cameroon - (Pecten)	9.04	7.75	1.31	-1.29	2%	0.00	0.00	0.00	0.000		2%
EPG	544.30	576.89	21.89	31.73	246%	110.41	113.30	1.31	2.885	321%	250%
EP World	1594.75	1523.95	132.12	-70.80	46%	1711.07	1647.39	82.54	-63.681	23%	38%
EP World (Oil/boe)	1002.9	958.6	80.9	-44.3	46%	1042.5	1002.5	90.9	-39.0	23%	38%
EP Total Oil + Gas (boe)	2045.4	1982.1	133.8	-63.3	38%						

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EXCOM 1999 Proved Reserves  
31st January 2000

**Key Proved Reserves Messages**

- '99 Proved Oil/NGL and Gas Replacement Ratio 37%
  - Low after three years high
  - Challenge to communicate externally
    - upside AOSP and Iran & excluding divestments
- Unblocking Nigeria is Key
  - Production Performance and Proved Reserves additions
- 2000 Scorecard
  - SPDC Impact on proved reserves target equates to a 20% loss (LE 62%)
- BP'99 2000-2004 Proved Reserves
  - 25% additions promised by SPDC are unlikely to materialise
- Need to resolve reporting of Innovative Contracts
  - Booking Pseudo Reserves "Buy-backs"

EXCOM 1999 Proved Reserves  
31st January 2000

**2000 EP Scorecard  
(Including D/S Gas)**

Performance Period	Plan	Actual	Target	Weighting	Target %	Actual %	Weighted Target	Weighted Actual
Recovery (%)	66.0%	72%	66.0%	25.0%	100%	66.0%	1.65	1.70
Production Volume by NOICE	2000	2000	2000				0.0	0.0
<b>Production Performance</b>	<b>Plan</b>	<b>Actual</b>	<b>Target</b>	<b>Weighting</b>	<b>Target %</b>	<b>Actual %</b>	<b>Weighted Target</b>	<b>Weighted Actual</b>
Core Reserves	100%	100%	100%	10%	100%	100%	1.00	1.00
Open & Development (O&D)	100%	100%	100%	10%	100%	100%	1.00	1.00
Production Stability, Early	100%	100%	100%	10%	100%	100%	1.00	1.00
Gas Delivery (by %)	100%	100%	100%	10%	100%	100%	1.00	1.00
Proved Reserves Replacement (including Divestment)	100%	100%	100%	10%	100%	100%	1.00	1.00
Performance vs. Commitment (all included)	100%	100%	100%	10%	100%	100%	1.00	1.00
Additional Reserves (O&D, J&P and PPR Development)	100%	100%	100%	10%	100%	100%	1.00	1.00
Management	100%	100%	100%	10%	100%	100%	1.00	1.00
<b>Total Performance</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>				<b>10.0</b>	<b>10.0</b>

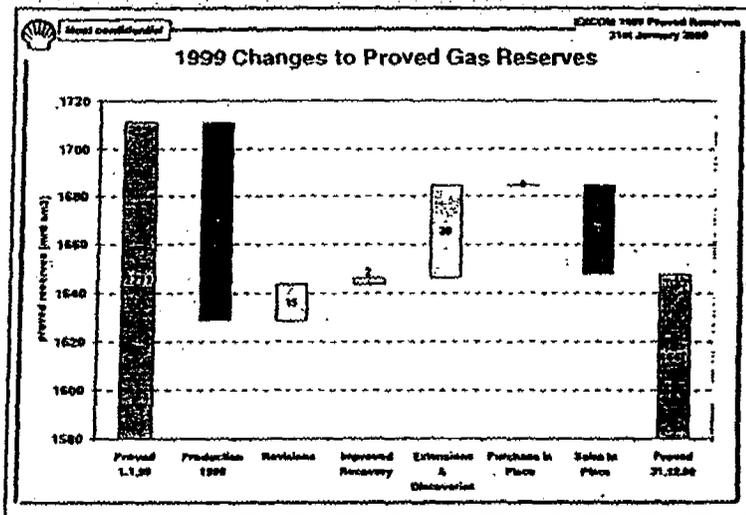
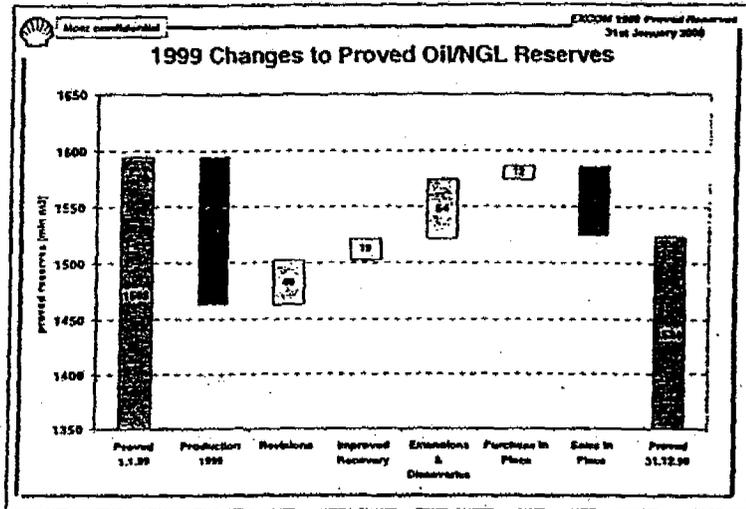
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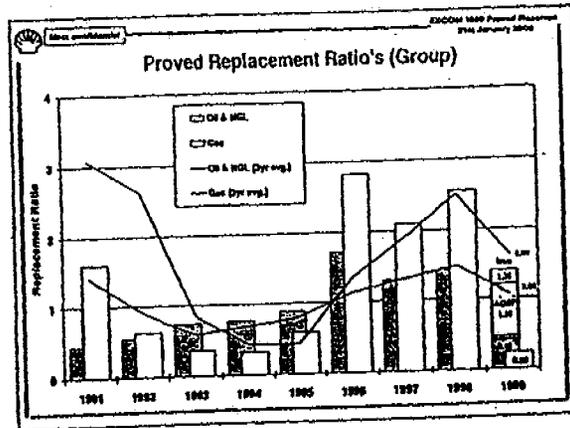
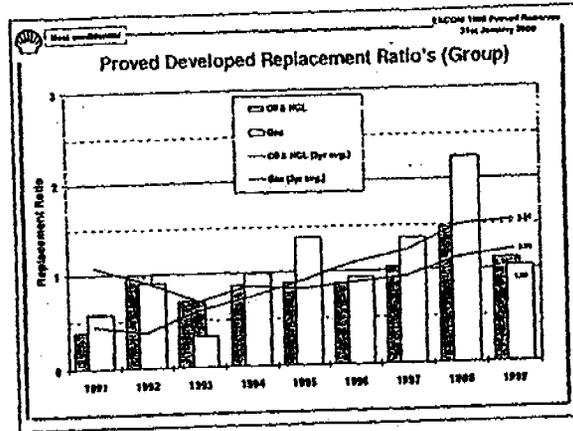


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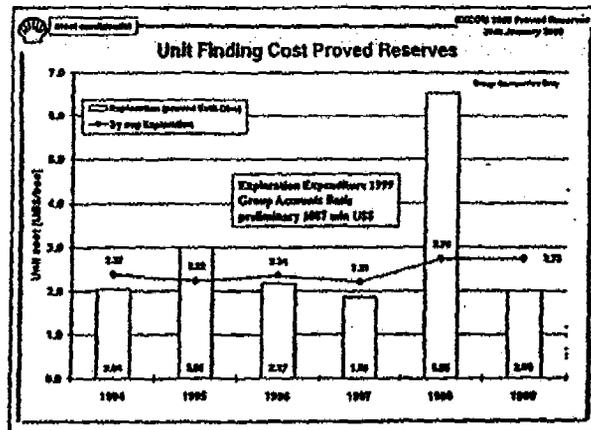
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ECON 1999 Proved Reserves  
20th January 2000

**1999 Proved Reserves Replacement Ratio**

	Initial Data	Proposed Data	Excl. A&D	Incl. AOSP	Incl. AOSP & Iran	+AOSP +Iran Ex A&D
OW/NGL	71%	46%	84%	118%	136%	173%
GAS	31%	23%	68%	23%	23%	68%
Total (boe)	56%	37%	78%	82%	94%	133%



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EXCOM 1999 Proved Reserves  
31st January 2009

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### Proved Oil/NGL Reserves Issues

• <b>Nigeria SPNEPO - Deepwater</b>	
– Book 1999 Ehra discovery (Exxon block)	+ 24.0
• <b>Nigeria SPDC - Shallow Offshore</b>	
– Book EAEJA Alternative Funding/FID	+ 30.0
• <b>Nigeria SPDC - Onshore</b>	
– Do not book proposed increase MOU Limit plateau proved forecast upto 1,400 b/d Licence expiry 30 June 2019	- 50.0
• <b>Abu Dhabi</b>	
– Reduce proved reserves Delay growth scenario by 2 years Licence expiry Jan 2014	- 6.5
<b>Total</b>	<b>- 2.5 mln m3</b>

EXCOM 1999 Proved Reserves  
31st January 2009

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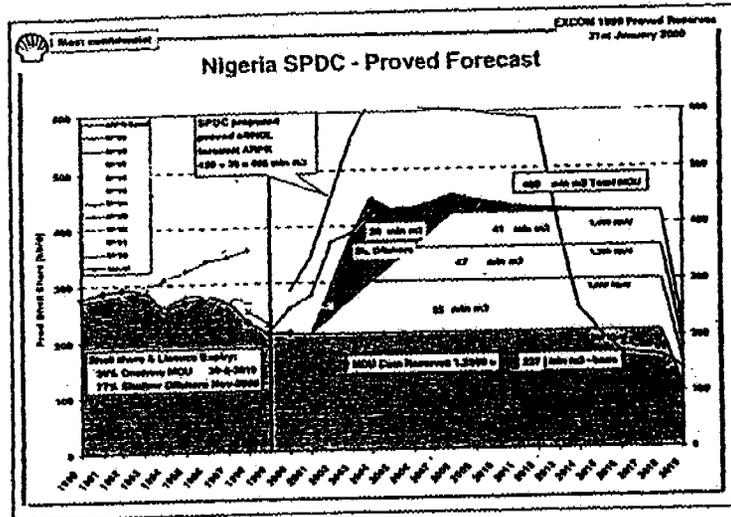
### Proved Gas Reserves Issues

• <b>Canada</b>	
– Include Gas Royalties in Cash in line with Group Guidelines	+ 13.8
• <b>Australia</b>	
– Do not book increase Gorgon (20%) Increase market take-up	+ 0.0
• <b>USA</b>	
– Exclude own use gas volumes in line with Group Guidelines	
Shell O&G	- 1.9 %
Area	- 75 %
Altura	- 7 %
	- 6.5
<b>Total</b>	<b>+ 7.3 mrd sm3</b>

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EXXON 1999 Proved Reserves  
31st January 1999

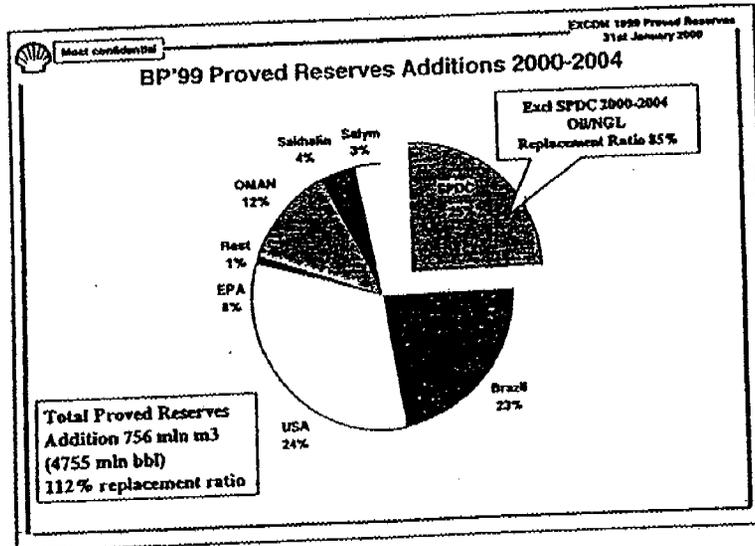
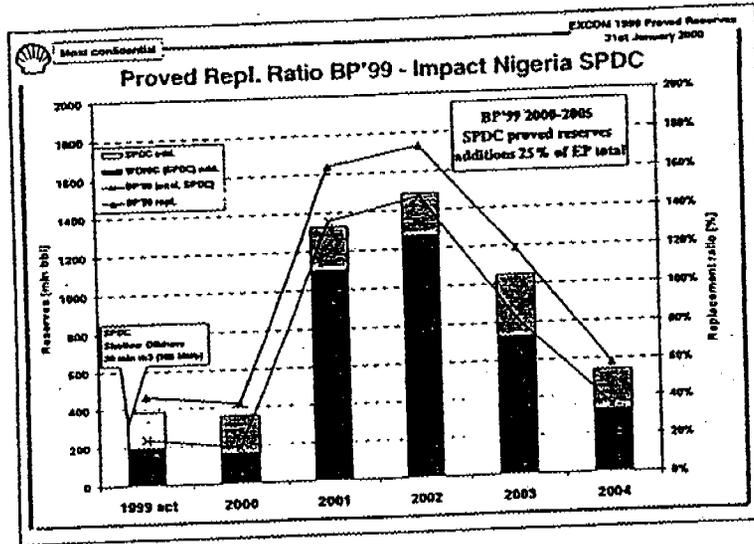
**BP'99 - SPDC Reserves Management**

- SEC Reserves Audit - August 1999
  - Audit highlighted the issue of proved reserves forecast
  - Proved oil forecast assumes doubling of SPDC production levels
  - If growth does not materialise significant risk of de-booking proved reserves
  - Formal licence extension beyond 2019 would mitigate issue.
- SPDC BP'99 resource plan repeatedly challenged
  - Not taken up by SPDC at the time
  - Issue only fully recognized at end 1999

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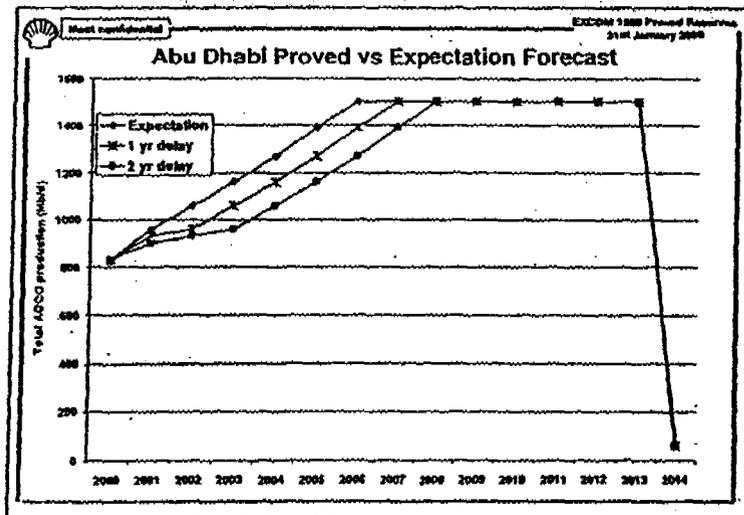
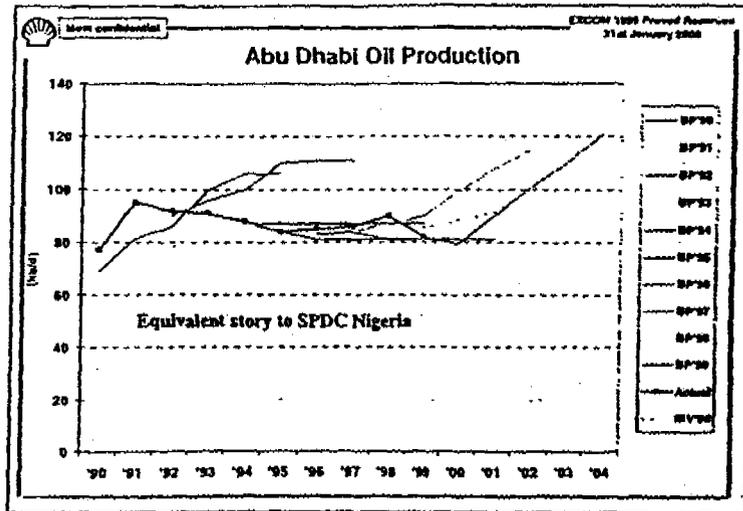


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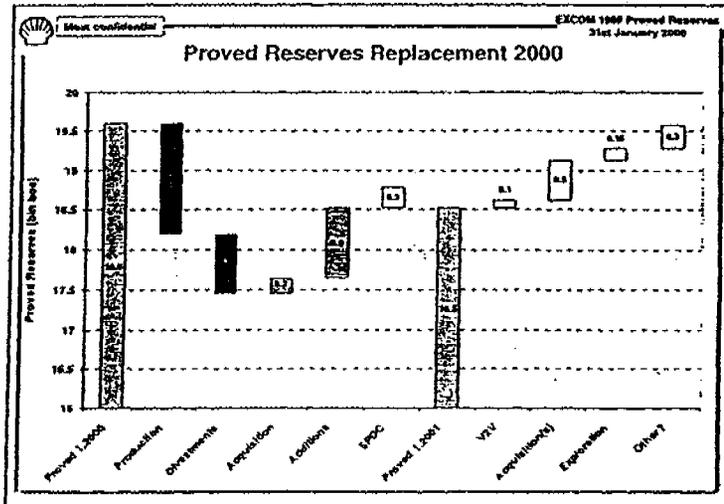
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EXCOM 1999 Proved Reserves  
21st January 2000

**ARPR versus Nov'99 Monthly LE**

Category	ARPR versus Nov'99 Monthly LE				EXCOM 1999 Proved Reserves			
	ARPR	Nov'99	Delta	% Change	ARPR	Nov'99	Delta	% Change
<b>Assets</b>								
Land	1.7	0.0	1.7	0.0	0.0	0.0	0.0	0.0
Inventory	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
Construction	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
Debtors	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prepaid Expenses	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Liabilities</b>								
Accounts Payable	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Accruals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Total</b>	<b>14.7</b>	<b>20.0</b>	<b>-5.3</b>	<b>-35.3%</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0%</b>

NOV LE'99 not accurately reflecting final reserves position ARPR'2000



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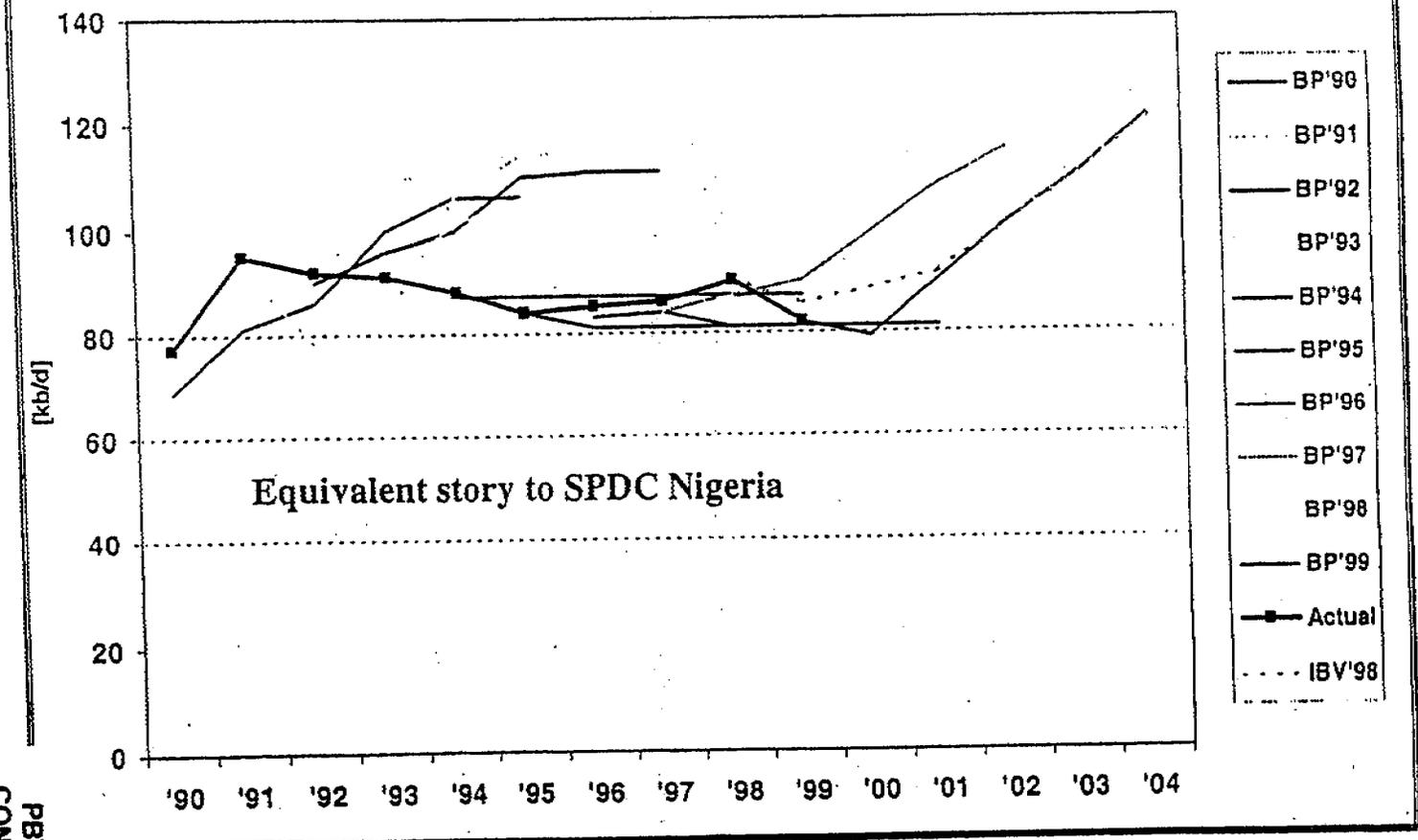
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Most confidential

EXCOM 1999 Proved Reserves  
31st January 2000

### Abu Dhabi Oil Production



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## EP EXCOM

Minutes of meeting held 31st January 2000

### 1. Minutes and Highlights

- EP Procurement "table" distributed to Excom who committed themselves to use it when visiting OUs as a reference to review progress being made in implementing EP Procurement strategies.
- Excom on 7<sup>th</sup> February: videoconference confirmed; no Highlights.
- SBW/EPLF May 2000: ~~Warren to give Gardy~~ contact names in SIEP Inc. to help preparing logistics (when format finally agreed). ✓
- Shell Capital financing proposals to third parties in EP and GP sectors: Gardy to contact Treanor to ensure EP and GP are made aware of such financing proposals beforehand. ~~Gardy to propose guidelines~~ for such co-ordination at the next Shell Capital Board. ✓
- Valle Morado: Rothermund to review impact of sudden increase in water production and latest status of reserves.
- Brazil: Rothermund to review learnings from the unsuccessful joint Shell/ Enterprise farm-in bid for exploration block BC20.
- Nigeria:
  - country review in April to be confirmed by Rothermund,
  - value for money audit to be closely monitored by Rothermund/Gardy.
- "Stress Management" project: team to discuss with Rothermund.
- Reminder: agenda items for Excom need to be final on Thursday 9.00 (the Hague time) preceding Excom and pre-reading to be submitted by noon latest.

### 2. Technology Portfolio/Value Management

- Support given to move forward with proposed "pilots". However review with Nigeria the most effective way forward in the light of other priorities (production in particular),
- Proper balance between short term deliveries and medium term strategies is critical,
- Review possibilities to use Business to Technology maps as a potential "entry ticket" in new or existing ventures (Iran),
- Prepare a presentation focused on short term deliveries to be included in the March cost workshop,
- Progress to be reviewed at Excom in April and at May EPLF.

### 3. Sustainable Development

Megat/(Mann) to prepare a strawman on Vision ("Weave", "Infuse") and the way forward within EP: review at Excom in April in anticipation of discussion and release at May EPLF.

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4. Allegro

- Recommendation reviewed and way forward agreed,
- Achilles: should the ongoing merger not get FTC approval, what are the alternatives?: review at 7<sup>th</sup> February Excom,
- Ulysses recommendation to be reassessed in the light of their balance sheet,
- Brass to send out a note for information on "financials" impact of potential deals to be reviewed at 7<sup>th</sup> February Excom.

Cairn-VAR to be conducted. Megat to redraft the note re the way forward.

5. Preliminary Summary of end 1999 proved reserves

- Brass/(Gardy) in liaison with de Vries to review with Schroders how to deal with AOSP/Iran reserves.
- Proposed revisions in reserves supported except for:
  - Abu Dhabi: no change
  - Gas in USA: "own use" still to be included.
  - Brass/(Platenkamp) to provide an analysis of exploration expenditure, discovered expectation volume and unit resource finding cost for sector, USA and WOUSA by 7<sup>th</sup> February.

6. New Nigeria MOU

Rothermund to review possibility to get new MOU valid for more than 3 years (up to 5 years) or at least get some insurance whereby this MOU would remain valid until a new one would be put in place.

7. Argentina Neuquen Exploration proposal resubmission

Proposal to be reviewed as part of the overall EXPEX 2000 LE at 21st February Excom.

8. Request for mandate to negotiate asset swap with USX/Marathon

Strategic support confirmed. Need to be on the driving seat with a "good" share (but not the 55% option). Any swap alternative should be based on the respective value/risk of the assets to be swapped.

Megat/(Tambozer) to redraft the request for mandate accordingly.

9. EP and Group Strategy process

Way forward to be decided at 1<sup>st</sup> February Excom(s) Strategy Workshop.

10. New gas Volumes Definition "Gas production available For Sale"

Supported.

11. Insurance

Supported. Gardy to prepare a note for information on insurance covering scheme for EP. ✓

12. e-Business: Current status and next steps

Commitment to deliver Commerce One deal implementation to be developed by Gardy/(Henderson). Additional specific opportunities (Integrated Planning, EP industry ported, E-surplus, EP Expertise) on hold for the time being.

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**13. Future of Noordwijkerhout Learning Centre**

Warren to tell Golden Tulip that current terms are off and alternative terms and conditions are expected by April. In the meantime Warren to come back with terms and conditions of alternative solutions in the light of Global/ EP Open University requirements.

**14. Learning and Development co-operation with BP-Amoco**  
Supported.

**15. Travel - Service expectations and measurement**  
Supported. Metrics to be in place during Q1 2000.

**16. Oil Opportunity in Algeria**

Support given to go into data room to find out if there is a business case. Brass to dedicate required resources.

**17. Shell Business Week**

- Format still to be validated by CMD,
- Each RBD to give Gardy/(Kroes) feedback on the proposed list of participants by Thursday 21<sup>st</sup> February closing.

**18. EP Procurement conference**  
Supported.

**19. Economics of tax on Group Loans**  
Supported.

**20. Project Screening criteria**

Brass to prepare a note for discussion on the rationale for proposed changes in Gas PSV's and Power evaluation and screening criteria: review at 21<sup>st</sup> February Excom.

**21. Technology Implementation FRD follow up plan**  
Supported.

**22. Realising The Limit - status**  
Supported. Concern expressed about getting resources.

**23. First Assignees -- status**  
Supported. Opportunities to be identified with GP.

**24. Shell Technology EP - Mandate to Negotiate a joint venture**  
Supported. Scope will have to be specifically defined.

**25. Shell Technology EP - Mandate to Engage external financial partners**  
Supported. Warren to send the supporting strategy note to Brass.

**26. Plans talk to staff in 2000**  
Supported.

**27. Financial Analyst Expectation re EP Business**  
Supported.

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28. Stakeholder Engagement in the EP Business Supported.

**PBW0003873**  
**CONFIDENTIAL**

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No. 2494

COMMITTEE OF MANAGING DIRECTORS  
MINUTES OF THE MEETING HELD IN THE HAGUE  
ON TUESDAY, 11 SEPTEMBER 2001

Present: P B Watts Chairman  
J van der Veer  
H J M Roels  
P D Skinner  
W van de Vijver

In attendance: S M G Hodge

S A Fish Secretary

1. MINUTES

The Minutes of CMD Meeting No. 2493 were approved, as amended.

2. CHINA EAST-WEST PIPELINE/GAZPROM

Din Megat, Tim Warren, Peter de Wit and Dominique Gardy entered the meeting.

Tim Warren presented a report on recent developments relating, *inter alia*, to the Shell bid and the question of financing support to Gazprom.

In light of these developments, he explained, the proposal is to:

- (1) establish a Shell-led consortium of 16% Shell/16% ExxonMobil/16% Gazprom/1% Hong Kong China Gas to negotiate a full 49% participation in the pipeline and associated upstream PSC's;

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- (2) should either ExxonMobil or Gazprom be unwilling to participate, to consider Petronas as an alternative participant; and
- (3) to agree an appropriate timeframe with PetroChina.

The Committee expressed considerable concern over a number of aspects to the proposal including the question of reputation management, the cost of financing, the issue of Board approval, and the ability of Gazprom to deliver on its promises. In particular, the Committee:

- (1) queried the cost of the \$1 bln guarantee and the basis for the risked exposure of \$70 mln;
- (2) emphasised the need to obtain real value from Gazprom for any financing support;
- (3) sought the assurance that the Group was not already committed (in terms of the protocol with Gazprom);
- (4) expressed a desire for a smaller interest in the pipeline; and
- (5) acknowledged that introducing Sakhalin would complicate matters but recognised this could be raised in the discussions.

In sum, the Committee accepted there would be some cost to entering into China but that any such cost should be in return for concrete projects supported with enforceable security instruments. It recognised that Shell may have to walk away from the proposal at the risk of disappointing both the Chinese and the Gazprom alliance.

*Copy of Minute to: W van de Vijver, L.Cook.*

### 3. NICHE ACQUISITIONS

Dominique Gardy, Lorin Brass, Judy Boynton and Aidan McKay entered the meeting.

Aidan McKay presented a further report on EP Niche Acquisitions. He identified five possible targets and compared their various characteristics, valuations, their impact on the EP business and the likely competition for such targets. The targets were ranked in terms of their strategic fit, development and growth opportunities and synergy value. It is proposed to continue with

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further staff work to ensure preparations are in a "deal ready" state by end December.

The principal aspects of the report were:

- (1) Mega mergers have given both BP and ExxonMobil greatly increased scale and additional positions in both old EP and new EP.
- (2) Shell EP has a high decline in "old" business and there is an indication that some "new" business will not produce major returns for some time.
- (3) There is a desire to reinvest in EP (which has been responsible for delivering 60% of Group cash since 1975).
- (4) Certain "old EP" targets may never really become "cheap".

The Committee thanked the presenters for an excellent presentation and the very thorough staff work that had gone into it. The Committee made the following comments:

- (1) All acquisition proposals should make clear the assumed forward curve (hard numbers per year) for oil and gas in the presentations and pre-reading materials.
- (2) The size of these acquisitions is critical; each one will have a large impact even on overall Group performance. A clear statement on impacts on EP and Group earnings at different prices is required. An assessment of the impact (as options) of the acquisitions against the Base EP plan would be helpful.
- (3) An assessment of the EP and GP aspired portfolio is required to determine the gaps and the fit of each of the targets. An analysis of each target's short term and long-term opportunities is required.
- (4) There is uncertainty about appropriate energy prices and a clear view on this is required. All the relevant market metrics at L/M/H prices would be helpful.
- (5) An assessment of share prices against EBITDA would be helpful, as would an assessment of goodwill effects.
- (5) It is becoming very clear that a material shift to gas is going to be difficult for a company of Shell's size even through acquisition.
- (6) It is critical to maintain confidentiality on these targets.

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The Committee thanked the presenters for an excellent presentation and the very thorough preparatory work and required that during October notes be prepared containing the evaluation criteria and the necessary conditions for launching acquisition efforts. These should be discussed before the Committee in time for the review at the October Conference.

*Copy of Minute to: W. van de Vijver.*

4. EP ANALYSTS PRESENTATION

Dominique Gardy, Lorin Brass, Judy Boynton and Malcolm Brinded entered the meeting.

Walter van de Vijver presented the proposed storyline for the EP presentations to analysts on 19/20 September.

The Committee agreed to revise the production growth rate to 3% a.a.i for the period 2000-2005. The Committee acknowledged, however, that this growth rate should be communicated with "appropriate caveats".

In terms of the proposed messages, the Committee suggested that the statement "productivity improvement from global value delivery drives" would not be clear to analysts. The Committee suggested also that the messages include "robust profitability with downside resilience".

*Copy of Minute to: none.*

5. YABUCOA REFINERY

Evert Henkes entered the meeting; Rein Willems joined by videoconference.

Evert Henkes presented a proposal to make a \$123 mln bid for the 85 kbd Sun refinery at Yabucoa, Puerto Rico. The proposed bid price comprises \$20 mln for the acquisition of the fixed refining and logistics assets, \$50 mln for working capital, \$30 mln for projects to align the refinery to Shell's desired operating mode and \$23 mln for projects to improve HSE performance and to complete site re-instrumentation.

The Committee expressed its support for the proposal.

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The Committee noted that the \$5 mln per annum negative impact on the OP scorecard would be resolved between Chemicals and OP. The Committee noted also that the proposal did not contain an analysis of ROACE impact and requested that the same be included in future proposals for all businesses.

*Copy of Minute to: J van der Veer, E Henkes, M Warwick.*

6. PROJECT "NEWMARKET"

Tim Warren, Peter Duncan and Peter de Wit entered the meeting.

Tim Warren presented a report on the various options available to EP/GP following the rejection of the revised merger proposal for Woodside Petroleum.

As regards the current position, Woodside have been advised that Shell is concerned by the fact that it has no control and limited influence over major investments, it is unable to gain access to full value from all investments and is exposed to what it regards as Woodside's value-eroding activities. Woodside, by contrast, believes it is in a strong position to remain independent and wishes to retain the current status quo. BHP sees this as an opportunity to increase the scale of its petroleum business, extract synergies and to increase its operating capability.

Two (mutually exclusive) paths for moving forward are proposed:

- (1) enhancing Shell's current position with a view to gaining control of Woodside at an appropriate time thereafter; or
- (2) exiting Woodside (through facilitating a BHPP/Woodside merger).

The Committee considered the merits of each option. The Committee noted that option 1 (enhanced status quo/gain control) provides some improvement in the short term but will be difficult to achieve in the longer term. Option 2 (exit) is achievable in the short-term although gives rise to a number of uncertainties that require resolution beforehand.

The Committee supported the proposal to maintain "parallel paths" for the time being focusing on enhancing the current status quo as well as exiting.

In relation to the exit option, the Committee suggested that efforts should be directed at determining precisely what Shell's requirements are but leaving the

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remainder of the work on the proposal to BHPP. The Committee suggested also that an exit for other assets rather than cash would be preferable.

*Copy of Minute to: W van de Vijver.*

#### AUSTRALIA COUNTRY REVIEW

Peter Duncan, Peter de Wit, Tim Warren and Campbell Grant entered the meeting.

Peter Duncan presented the Australia Country Review. His review focused on identifying the principal issues confronting Shell in the coming years, presenting a realistic view of the outlook for Shell businesses and presenting certain recommendations regarding the company's operations.

The key challenges facing Shell Australia over the next decade include prospering in the "great game of gas", the Woodside relationship, an overhang of local and regional refining capacity that is leading to hyper-competition particularly in retail gasoline and chasing opportunities in energy retailing.

Shell has \$2.3 bln of capital employed in Australia. Shell Development Australia (SDA) has some \$1.13 bln in capital employed and the Oil Products business has \$1.18 bln in capital employed. SDA's assets are primarily focused on the North West Shelf and Timor Sea but include also the GP/Shell Consumer interests in EdgeCap and Pulse. The OP business is underpinned by refineries in Sydney and Geelong, 21 terminals and about 1,400 service stations.

The recent performance of the two businesses has been very different with SDA returning a record result in 2000 of \$724 mln (ROACE 60%), while the OP business lost \$30 mln (ROACE -3%). Latest estimates for 2001 indicate EP/GP returning \$708 mln (ROACE 68%) and OP returning \$43 mln (ROACE 3%). The presenter then discussed the key business strategies for both the EP/GP/Consumer and OP businesses before turning to the outlook for each of these businesses. He concluded with some remarks concerning HSE and Human Resources issues.

Asked by the Committee about the likelihood of the success of the Sunrise Floating LNG proposal, and the reaction of the press thereto, the presenter replied that the reaction had been negative and that the Company was engaged in briefing the press in order to change opinion. Peter de Wit added that the

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LNG business will double in the next 15 years and Shell was not well positioned in Australia because of high costs in that country. Floating LNG, if successful, would transform this position, resulting in the lowest cost gas in the region. Shell will most likely have to accept other parties into the venture. He further commented that only 20% of the field is located in East Timor territory, and so the tax issue is less important than for say Phillips, whose interests lie 100% in East Timor territory.

In relation to a question on Group reputation, the presenter replied that Shell's reputation is not very high. Some ten years ago it would have achieved a 20% positive rating; today its reputation probably receives a 10% rating. The decline in reputation is probably attributable to high pump prices (particularly in the face of globalisation) and Woodside.

Asked by the Committee about the Gorgon field and the stranded gas position, Tim Warren replied that one would expect the Gorgon field to be the next field to be developed through North West Shelf, but the company, with Chevron's support, would need to convince BP of this (as the latter hope to develop Tangguh). The joint venture structure is currently quite complicated, thus eroding value, and one objective is to simplify this.

Asked by the Committee about whether Chinese oil companies such as CNOOC could become involved in order to provide a market, Peter de Wit replied that this was a possibility, most likely using gas from Gorgon.

The Committee thanked the presenter for the review and expressed its special appreciation for his loyal service to the Group over the past 35 years.

*Copy of Minute to: none.*

8: EQUILON GULF OF MEXICO PIPELINES

Mark Williams entered the meeting; Rob Routs, Gus Noojin, Raoul Restucci and John Hollowell joined by videoconference.

Rob Routs and John Hollowell presented an overview of Equilon's Gulf of Mexico (GoM) transportation business as well as a proposal to participate in a significant pipeline play related to BP's deepwater developments in the Southern Green Canyon area.

The presenters explained that Equilon has built an extensive network of transportation assets in the GOM over the past 40 years. It has leveraged that

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position to attract both affiliate and non-affiliate volumes and has grown the business to an estimated \$120 mln in 2001. The challenge ahead is for Equilon to continue to grow this business. The presenters then set out in some detail the proposed pipeline play.

The Committee expressed its directional support for the proposed way forward. It requested that the capital investment proposal, when submitted, should place the proposal within the context of the business' overall strategy and the opportunities that may arise from gaining full control of the oil and gas pipeline system.

*Copy of Minute to: P Skinner.*

9. PREPARATION FOR 17/18 SEPTEMBER

Malcolm Brinded, Roxanne Decyk and Judy Boynton entered the meeting.

The Committee considered the proposed agenda for the Business Options discussions on 17/18 September.

*Copy of Minute to: none.*

10. PROJECT "NIKE"

Walter van de Vijver reported that the on-going discussions with Bidas have been widened to include BP also.

*Copy of Minute to: none.*

11. ANGOLA BLOCK 34

Walter van de Vijver reported that Shell Exploration and Production Angola B.V. has entered into a production sharing contract with Angola's national oil company, Sonangol, in Block 34 offshore Angola.

*Copy of Minute to: none.*

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12. ASIA VISIT

Harry Roels reported that he had met with the mayor of Shanghai and the Director General of METI.

*Copy of Minute to: none.*

13. PROJECT "POPEYE"

Harry Roels reported that the GP CEO had met with President Kim of Kogas.

*Copy of Minute to: none.*

14. SHELL CAPITAL

Harry Roels reported that the business would generate a sizeable profit on a recent loan transaction. In terms of the transaction, Shell Capital loaned monies to a coal bed methane company, Mannix, in return for certain royalty rights. Mannix had recently been acquired by Williams who now wish to buy out Shell Capital's rights.

*Copy of Minute to: none.*

15. TRADE RANGER

Harry Roels reported that following the recent technical disappointments, Trade Ranger's financial position was not looking particularly healthy. Trade Ranger members, however, were committed to maintaining the venture. Shell was looking to see whether there was an opportunity to acquire a greater interest in the venture.

*Copy of Minute to: none.*

16. PROJECT "SPECTRUM"

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Paul Skinner reported that the FTC had published its Consent Order relating to the Chevron/Texaco merger which provides, inter alia, for the establishment of the trust mechanism. Shell has issued a press release in response indicating its acceptance of this outcome. Shell received thereafter another approach from Texaco's Chairman seeking further discussions with Shell. Shell has set out clear terms and conditions which would form the basis of the meeting including a value range and the acceptance of the terms of the draft MoU. Texaco have accepted these terms.

*Copy of Minute to:* none.

17. **NAMIBIA - FATALITY**

Paul Skinner reported, with regret, a road accident that resulted in five third party fatalities. The accident occurred on 2 September when a passenger vehicle with seven occupants collided with a road tanker. The accident is being investigated.

*Copy of Minute to:* P Skinner.

18. **NOTES FOR INFORMATION/DISCUSSION**

The following matters were before the Committee as Notes for Information/  
Discussion:

**ITEMS FOR DISCUSSION**

Forthcoming Items for CMD and Conference

Carbon Constrained Future FRD

**Unknown**

**From:** Bell, John J SIEP-EPB-P  
**Sent:** 20 January 2002 19:15  
**To:** Van Driel, Peter P SIEP-EPB-P; Wharton, Mark M SIEP-EPB-P  
**Subject:** FW: Proved reserves addition from Groningen

fyi

-----Original Message-----

**From:** Van De Vijver, Walter SI-MGDWV  
**Sent:** 18 January 2002 09:40  
**To:** Bell, John J SIEP-EPB-P; Gardy, Dominique D SIEP-EPE  
**Subject:** FW: Proved reserves addition from Groningen

fyi

-----Original Message-----

**From:** Bouman, MGJ NAM-ELG  
**Sent:** 17 January 2002 13:57  
**To:** Sprague, Bob RM SI-SEPI-EPN; Van De Vijver, Walter SI-MGDWV  
**Subject:** Proved reserves addition from Groningen

**From:** M.G.J. (Hans) Bouman, NAM-ELG, Hoogezand  
**Tel:** +31 (0)592 - 363276 **gsm:** 06 201 35 448 **fax:** +31 (0)592 - 36 4330  
**Internet:** m.g.j.bouman@nam.nl

Hello Bob/Walter

It is my pleasure to announce that today it has been formally approved by all parties that Groningen will add a cool 22 mrd m3 proved reserves (Shell share) to the pot.

We do this from the goodness of our heart, it was not in the scorecard!

It only materialised due to the relentless pushing of Remco Aalbers who knows about these things.

I hope this will help your scorecards.

Greetings from the north

Hans

**EXHIBIT**  
WARREN-11

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Unknown

From: Warren, Tim T.  
Sent: 22 January 2002 22:08  
To: FROST, DAVID D.B.; ALLMAN-WARD, PATRICK P. /SEPI /EPA-X; CLIFF, J. /SEPI /EPA; Jager, Robert R.J. /SEPI /EPA; Kerr, BRAD B. /SEPI /EPA; SUNMONU, MUTIU M.O.A. /SEPI /EPA; TAUCCCHIO, P.G. /SEPI /EPA; Martin Ten Brink (E-mail)  
Subject: FW: Reserves Replacement Ratio 3 yr rolling average



3yr rollin avg status  
21-1-200...

Gents,

Just to emphasise how important 2002 reserves bookings will be. 1998 has long gone and we now need a repeat.

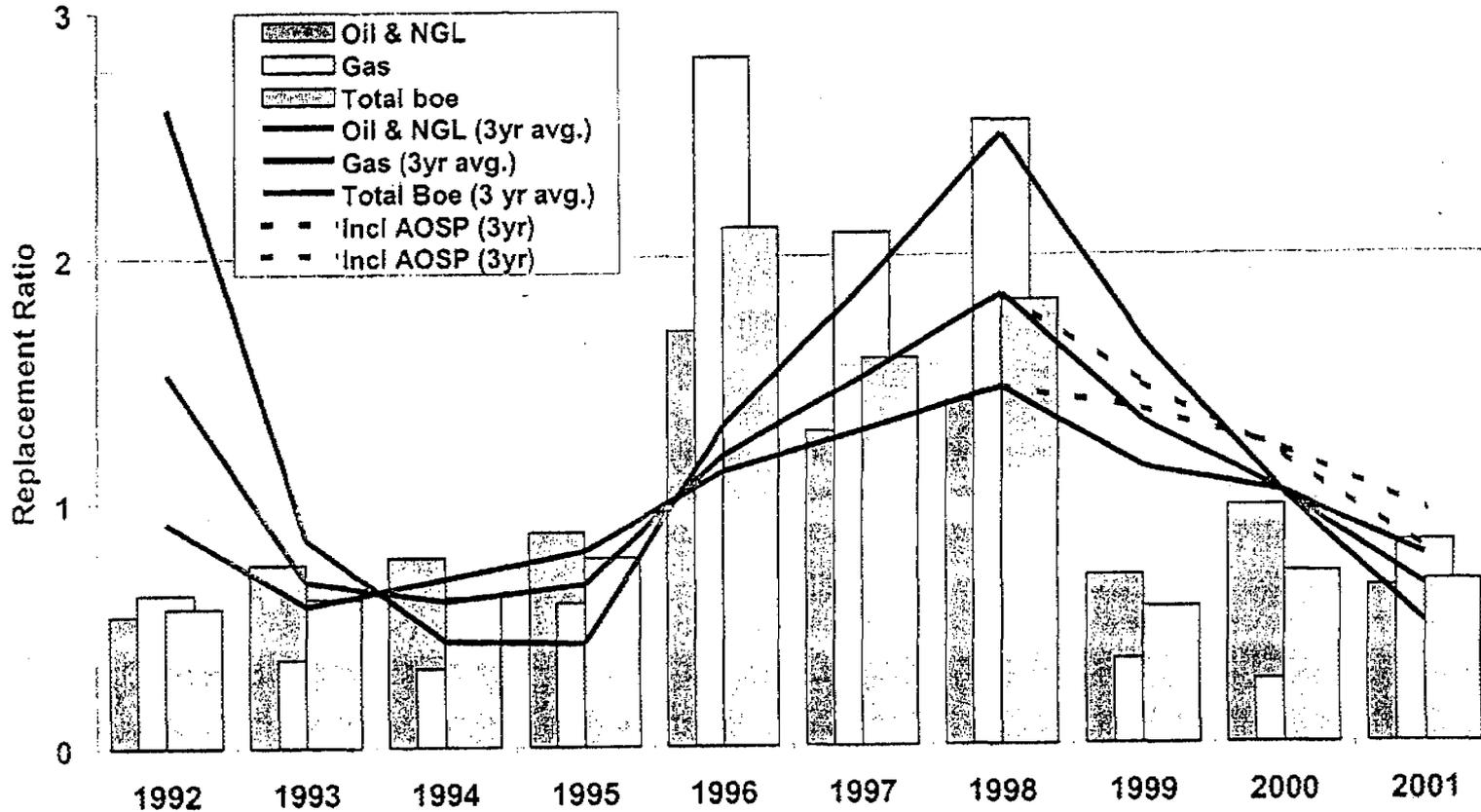
Regards,

Tim

> -----Original Message-----  
> From: NAUTA, JAAP J.  
> Sent: 21 January 2002 18:34  
> To: Brass, Lorin L.L.; Cook, Linda Z.; Darley, John J.;  
> Dubnicki, Carol  
> C.; Gardy, D.; Megat, Zaharuddin Z.; Sprague, Robert M.; VanDeVijver,  
> Walter W.; WARD, BRIAN B.J.; Warren, Tim T.  
> Cc: Bell, John J.; Bichsel, Matthias M. /777264; Wood, Andy A.  
> Subject: Reserves Replacement Ratio 3 yr rolling average  
>  
>  
> Linda, Carol, Gents,  
>  
> In response to a question raised in Excom today please find  
> attached graphs showing 3 year rolling average RRR for three cases.  
>  
> In line with Excom steer we will proceed on the basis that:  
> - Bonga main is not de-booked.  
> - NLNG train 4 & 5 are booked in 2002  
>  
> This is reflected in Graph 3 (2001 RRR 80% including Athabasca )  
>  
> Regards,  
>  
> Jaap Nauta  
>  
>  
>

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# Proved Replacement Ratio's (Group) 1/3



	1999	2000	2001	3yr avg
Oil	0.69	0.97	0.55	0.74
Gas	0.35	0.26	0.83	0.49
BOE	0.56	0.70	0.66	0.64
Incl AOSP	1.01	0.70	0.66	0.79

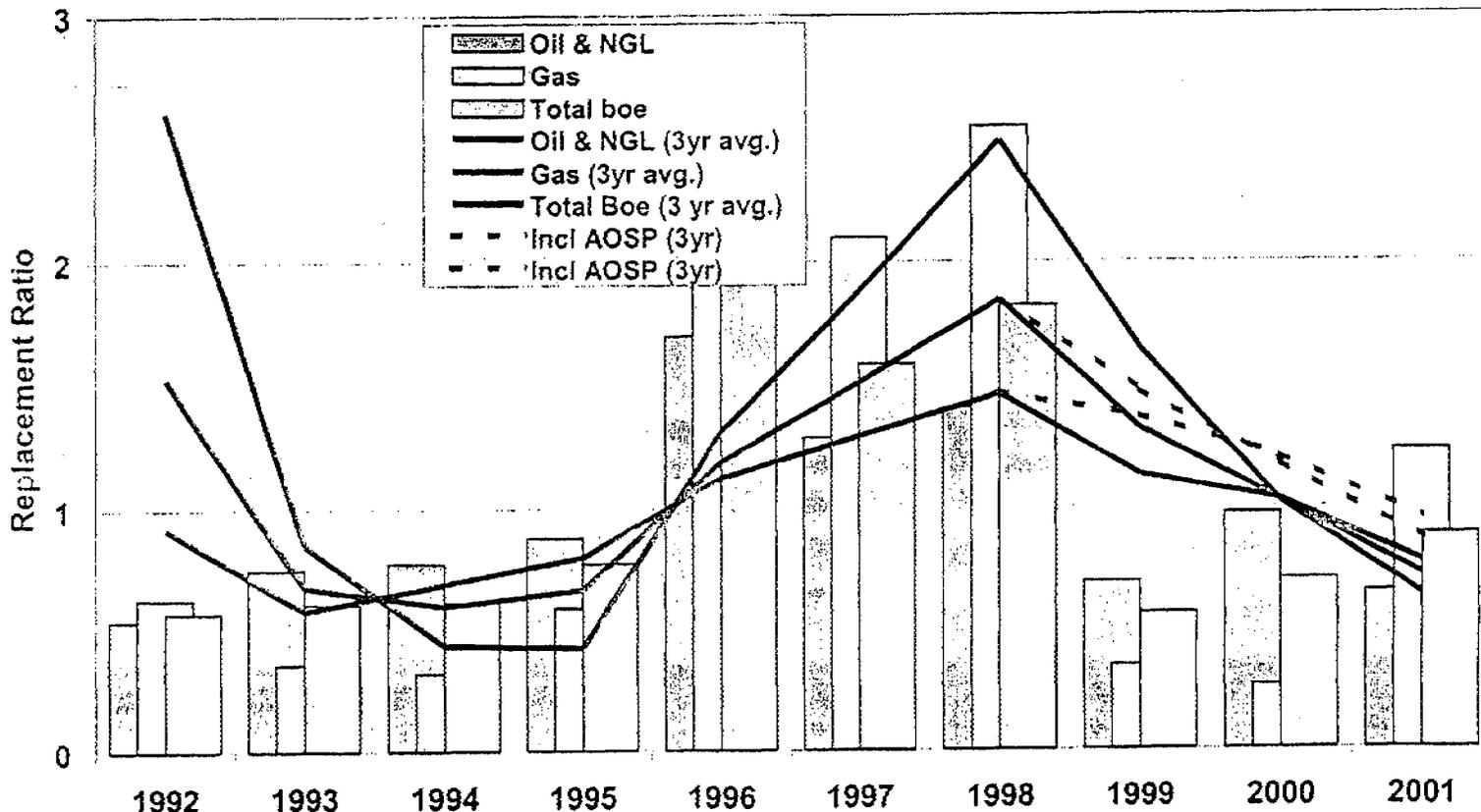
Including Bonga main de-booking  
NLNG Train 4/5 in 2002

DB 07593

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V00120429

## Proved Replacement Ratio's (Group) 2/3



	1999	2000	2001	3yr avg
Oil	0.69	0.97	0.56	0.74
Gas	0.35	0.26	1.23	0.63
BOE	0.56	0.70	0.84	0.70
Incl AOSP	1.01	0.70	0.84	0.85

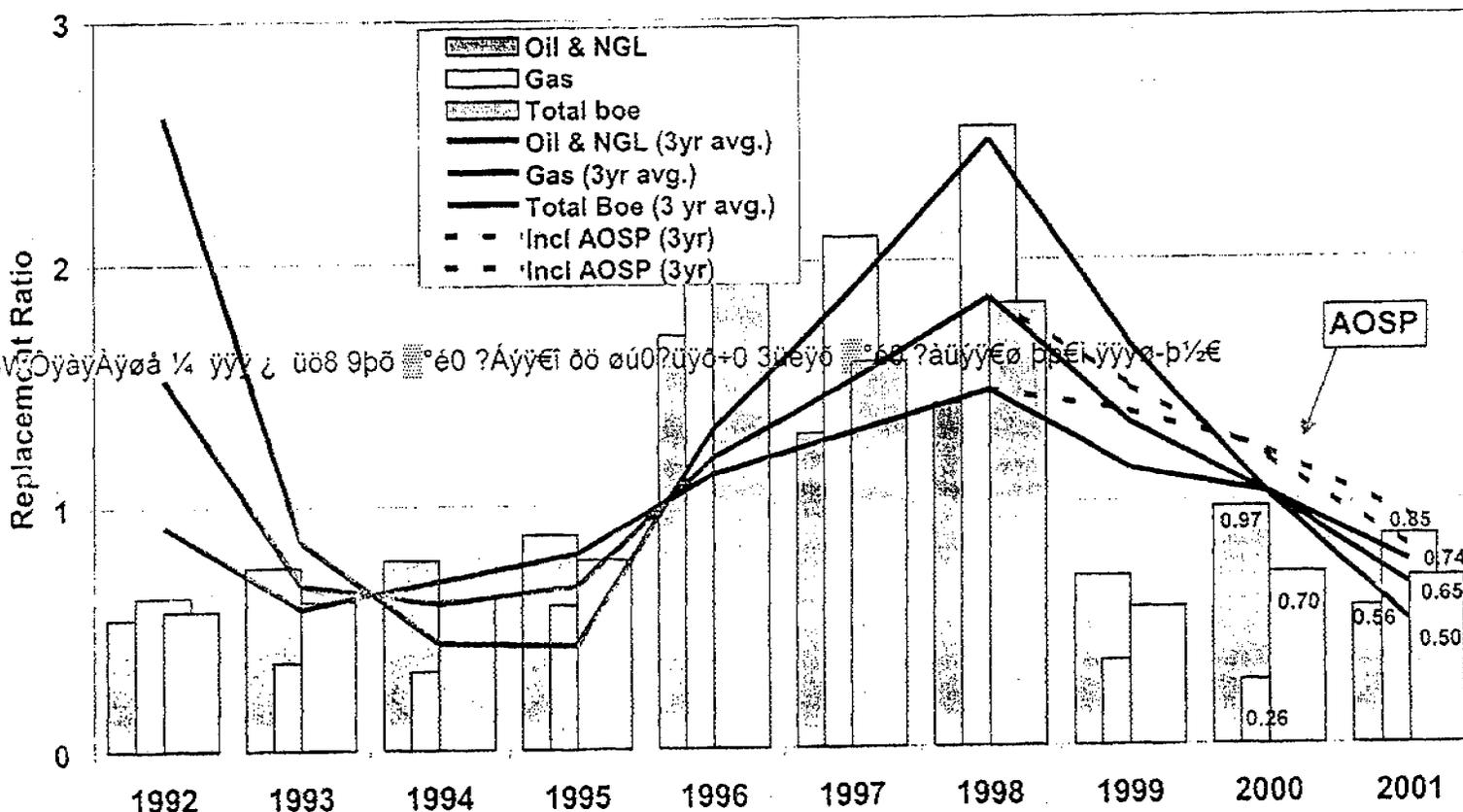
**Not taking Bonga main de-booking  
NLNG Train 4/5 in 2001**

DB 07594

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Treatment Requested

V00120430

### Proved Replacement Ratio's (Group) 3/3



\*b116V OyayAyaa ¼ yyy z üö8 9pö \*é0 ?Ayyei dö öü0?uyö +0 3üeyö \*68 ?äüyyeö psEI yyy a-b½€

	1999	2000	2001	3yr avg
Oil	0.69	0.97	0.56	0.74
Gas	0.35	0.26	0.85	0.50
BOE	0.56	0.70	0.68	0.65
Incl AOSP	1.01	0.70	0.68	0.80

Not taking Bonga Main de-booking  
NLNG Train 4/5 in 2002

DB 07595

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V00120431

**NOTE FOR DISCUSSION**

**Subject : Review of 2002 and 2003 Reserves Replacement**

Date : 7<sup>th</sup> November 2002

FROM : EPB, EPG

TO : ExCom

Excom,

The attached note summarizes the current outlook for reserves replacement in 2002 and 2003. Its objective is to stimulate discussion and management determination of bookings and debookings that are being contemplated for the 2002 year-end reserves disclosure to the SEC. Summary presentation material is also attached.

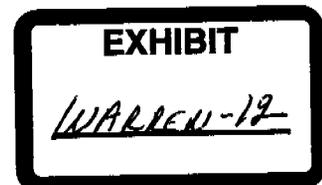
Lorin

In support of the above, an additional note on SNEPCO is attached, addressing issues raised by the recent audit of SEC Proved Reserves.

Brian

*- what about  
expectation / SFR values ?*

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## Note for Discussion

## Review of 2002 and 2003 Reserves Replacement

The purpose of this note is to advise ExCom of the current outlook for proved reserves replacement in 2002 / 2003 and to obtain management determination of certain reserves additions and debookings that are being contemplated for 2002.

The latest estimate for organic proved reserves additions in 2002 is 659 million boe (47% Reserves Replacement Ratio, RRR). Including the effects of A&D (principally Enterprise) this increases to 1759 million boe (119%). Significant downward pressure is exerted on these figures by a recent SNEPCO audit finding that reserves there may be overstated by 133 million boe. A similar volume of Enterprise reserves may also be at risk, subject to the findings of ongoing audits (Italy Tempa Rossa and Norway Skarv Area). Consequently the 2002 RRR could be as low as 29% excluding A&D, or 101% including A&D. Offsetting upward pressure is limited. Details are provided in Appendix A.

These figures compare with an EP plan for 2002 of 56% organic RRR (98% with Strategic Options, none of which is likely to be delivered this year). The principal reasons for underperformance are a delay in the maturation of Bonga SW (90 million boe), disappointing appraisal results in Namibia (125 million boe), PSC / PSV effects in Malaysia, Iran and Oman GISCO (100 million boe) and a variety of other unforeseen negative revisions. These have been offset by the Enterprise acquisition (1140 million boe, subject to audit) and acceleration of Kashagan booking pursuant to the Declaration of Commerciality (380 million boe, to be ratified by the Group Reserves Auditor, once SKN documentation has been received).

Planned organic proved reserves additions for 2003 are 867 million boe (56% RRR), this being heavily reliant on the delivery of Sakhalin, China WZE and Pinedale reserves additions. The total would rise to 1021 million boe (66%) if currently defined Option projects mature (principally Ormen Lange). Considerable uncertainty applies to these figures and at this stage actual organic performance could range between 40 and 100% depending mainly on the degree of success in maturing (and funding) option projects and on the approach taken to the booking of Sakhalin reserves. Sakhalin offers further flexibility to offset downward pressure on reserves replacement for 2003, subject to success in firming up LNG markets and to consideration of the planned dilution of our interests in the venture.

Additional potential sources of reserves additions have been identified via T&OE (100 million boe) and Strategic Options (some 500 million boe, risked), none of which are currently funded in the plan.

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The Reserves Opportunities Catalogue has been reviewed and updated (Appendix B). No items are considered to be deliverable during 2002, although several hold potential for 2003 and the following new items are being progressed at present:

- SPDC licence extensions: Nigerian legislation, supported by precedence, may allow automatic licence renewal rights to be claimed and incorporated in SEC reserves filings.
- Tax-paid PSCs: it may be possible to include production and reserves in recognition of tax paid on behalf of Shell by National Oil Companies.

The Potential Reserves Exposure Catalogue has been reviewed and updated (Appendix C). No debookings are considered to be necessary at this stage, apart from SNEPCO reserves (see below), pursuant to the 2002 SEC Proved Reserves audit. The same audit supported the proved reserves associated with waterflood in Bonga and Erha, which consequently have been removed from the inventory. Certain elements of the Enterprise portfolio are potentially at risk and have been added to the inventory pending ongoing audit.

**Proposal**

- Enterprise should be portrayed externally as a fundamental contributor to the Group's reserves growth for 2002.

- Possible major de-bookings:

SNEPCO	-133 million boe: see separate Note for Information.
New Zealand Pohokura	-55 million boe: technical revision ← <u>what's new</u>
Malaysia PSC effect	-39 million boe: lower cost, lower entitlement
Iran PSV effect	-28 million boe
Thailand WF projects	-27 million boe: uneconomic
Oman (GISCO) PSV effect	-23 million boe

- Possible major bookings:

Kashagan	380 million boe: justification in preparation
Angola Block 18 (incremental)	45 million boe: audit planned, November 2002
USA Brutus Phase 1	39 million boe: SEPCo internal audit in progress

- |||| : too many uncertainties?

-  $\frac{1}{\downarrow}$  books?

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Appendix A

Appendix A: 2002 Proved Reserves Additions Latest Estimate

Latest Estimate, Proved Reserves Additions

End-September 2002

Million Boe	T1	Proved Reserves Additions			Reserves Replacement Ratio	
		Plan	LE	Delta	Plan, %	LE, %
Organic						
Kazakhstan	Kashagan Declaration of Commerciality + Arman		384	384		27.3
USA	New WFA/Upper Oil/Gas/OSO Multi-T. Shinnec, Crookedneck others	139	145	6	9.8	10.3
Brunei		67	66	0	4.7	4.7
Canada		50	50		3.5	3.6
Angola	Block 18 FID ↑ Risked pending check with SEC rules	33	45	12	2.3	3.2
Denmark		24	34	9	1.7	2.4
UK	Conoco West/Catwin/T. Sharnbrook/Convent/MSL, some deferred	68	33	-35	4.8	2.4
Venezuela	Not a gain: Plan figure was inadvertently omitted from EP total		25	25		1.8
Netherlands		30	21	-9	2.1	1.5
Syria		13	14	1	0.9	1.0
Egypt		11	11		0.8	0.8
Gabon		7	7		0.5	0.5
Australia (SDA)		0	0	4	0.0	0.3
Brunei (FCE)		3	3		0.2	0.2
Argentina		3	3		0.2	0.2
Germany	Changed / deferred drilling programme	17	2	-15	1.2	0.2
Australia (WPL)		0	0		0.0	0.0
Russia	Deconsolidation deferred	-92		92	-6.5	
USA (Asa Comp)	Area included in USA LE	4		-4	0.3	
Bangladesh	Changed / reduced activity level	4		-4	0.3	
Pakistan	Bahdra-3 well result(T). Query Plan figure.	10		-10	0.7	
Brazil	BS-4 deferred	41		-41	2.9	
Oman (PDO)	Production forecast exposure / uncertainty	76		-76	5.4	
Nigeria (BNEPCO)	Range BW deferred. Other additions zeroed. Further reductions under review.	116		-116	8.2	
Namibia	Kudu appraisal	125		-125	8.8	
TOPCO NZ			0	0		0.0
Brazil (Pecten)			-3	-3		-0.2
Philippines			-7	-7		-0.5
Norway		7	-8	-15	0.5	-0.5
Oman (GUSCO)	Virtual PSV / PSC effect		-23	-23		-1.7
Thailand	Reduction pending completion of studies Q3/Q4	4	-27	-30	0.3	-1.9
Iran	PSV effect		-28	-28		-2.0
Malaysia	P/SV/PSC effect, Tigri Paper/Upper/Wharfed, Dots/Ga Joseph T	31	-39	-70	2.2	-2.8
New Zealand	Pohokura	4	-55	-58	0.3	-3.9
Total Organic		796	659	-137	56	47
Production	Includes ExCom adjustment	1419	1407	-12		
A&D	Adjust total RRR so far for effect of A&D production					-2.1
ENTERPRISE (KMOC @ 46%)	KMOC = 131 mln boe		1141	1141		77.4
Norway	Drift/Jan		33	33		2.2
USA	Rockies		27	27		1.8
TOPCO NZ			9	9		0.6
UK	Goldeneye		7	7		0.5
DR Congo (Zaire)			-17	-17		-1.2
New Zealand	Portfolio rationalization + transfer to TOPCO NZ		-49	-49		-3.3
Iran	Farm out		-51	-51		-3.5
Total A&D			1100	1100		73
Total Organic + A&D		796	1759	963	56	119
Production Organic + A&D		1419	1474	54		
Strategic Options						
Whale		154		-154	10.9	
Namibia Gas (FLNG) incremental		145		-145	10.2	
Libya gas		90		-90	6.3	
Venezuela light oil		86		-86	6.0	
AIOC notional		81		-81	5.7	
Libya Block 47		21		-21	1.5	
Stepherson		13		-13	0.9	
Alberticola notional		13		-13	0.9	
OU projects		-2		2	-0.1	
Total Strategic Options		801		-801	42	
Grand Total		1397	1759	362	98	119
Production Grand Total		1419	1474	54		

Uncertainty in Latest Estimate

Million Boe		Proved Reserves Additions	Reserves Replacement Ratio %
Downside:			
Enterprise	Tampa Rossa, Skarv Area debooking	-136	-9.2
BNEPCO	Fully implement audit recommendations	-133	-9.0
Upside:			
Enterprise	Shell guidelines implementation update	50	3.4
Whale	Deal secured in 2002; 50% Shell share, unrisked	450	30.5
Other SOs		33	2.2
Range	Minimum	1490	101
	Maximum	2292	156

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Appendix B

Appendix B: Reserves Opportunities Catalogue (November 2002)

*or how flow?*

Project	FID	PRA <sup>1</sup>	RRR <sup>2</sup>	Note
<b>Licence Extensions:</b>				
Nigeria SPDC (mostly expiring in 2019)		530	35%	3
Oman PDO (2012)		500	35%	4
Malaysia (various years)		450	30%	
Abu Dhabi (2014)		370	25%	
Denmark (2012)		80	5%	5
Norway (various years)		70	5%	
Venezuela (2013)		40	3%	
Syria (2009 - 2014)		10	1%	
Brunei (2003)		0	0%	6
<b>Big Tickets and Strategic Options</b>				
Quota increase, Nigeria		0	0%	7
Retain Sakhalin consolidated and/or more aggressive booking		600	40%	8
Venezuela Cretaceous	2003	410	25%	
Kuwait OSA	2003	400	25%	organic? <sup>9</sup>
Iran Azadegan farm-in	2003	110	7%	A&D
Russia Zapolyarnoye Neocomian	2004	760	50%	
Libya Gas (Block 6 devt.)	2004	440	30%	
Iran Bangestan	2004	300	20%	
Qatar SMD5	2004	300	20%	A&D
Venezuela LNG	2004	250	15%	
Saudi Arabia CV1	2004	70	5%	
<b>Others</b>				
T&OE: 2003 potential additions		100	7%	10
Tax-paid PSCs (2003, in definition)		>40	>3%	11
<b>Ranked out of the Base Plan 2002</b>				
Nigeria SNEPCO Bonga SW	2003	70	5%	
China Changbei Upstream	2003	55	4%	
Australia Sunrise	2004	340	20%	
<b>Options and Strategic Options, 2003</b>				
Norway <u>Ormen Lange</u>	2003?	160	10%	
Thistle (risky)	2003	300	20%	
Abu Dhabi Whale (risky)	2003	150	10%	A&D
Russia Salym (risky)	2003	60	4%	organic?

*de-bookings?  
G-ign etc?*

- 1 Approximate Proved Reserves Additions, million boe, unrisksd.
- 2 Approximate contribution to Proved Reserves Replacement Ratio in the year of reserves booking, assuming annual production of 1500 million boe total for EP, OA basis.
- 3 Ongoing work suggests that SPDC might be able to claim automatic rights to production beyond licence expiry. If confirmed, this could be the key to lifting the reserves booking moratorium, with new bookings being tied to FIDs in future years. Reserves booking impact to be investigated.
- 4 Based on the currently reported post-licence Expectation Reserves (550 million boe). Reserves to be booked when there is certainty that a deal will occur with no risk of detailed negotiations de-railing it.
- 5 Not under Shell control: negotiation to be conducted exclusively by Concessionaires (A.P. Moller).
- 6 Reserves already booked assuming that BSP's rights to two 15-year licence extensions will be exercised. Any reserves upside would be in relation to the negotiation of further extensions beyond the 30-year window, but this may be offset by potential equity reduction in the first two 15-year extensions.
- 7 A quota increase is necessary in any case to enable production to grow and thereby enable the currently booked Proved Reserves to be realized.
- 8 Bookings should in principle keep pace with "reasonably certain" market development and preferably with actual LNG sales contract fixtures.
- 9 Cash-based Service Agreement with little exposure to oil price. Reserves bookings might not be possible.
- 10 Nominally 25 million boe from waterflood projects, 25 million boe from the T&OE Opportunities Catalogue and 50 million boe from V2V reviews.
- 11 Under investigation: in some PSCs tax is paid by the NOC on behalf of contractor (i.e. Shell). It may be possible to claim production and hence reserves in recognition of this.

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Appendix C

Appendix C: Potential Reserves Exposure Catalogue (November 2002)

Asset (Year booked)	Reserves mln boe	Comment
Australia Gorgon (1997)	560 91.	Booked in 1997 in anticipation of imminent FID, subsequently deferred indefinitely by the downturn in Asian economies and the consequent reduction in demand for LNG. It is inevitable that a resource of this magnitude will be developed eventually.
SNEPCO		It is assumed that 133 million boe of potentially overstated reserves will be debooked at 31.12.2002 (SEC Reserves Audit recommendation).
Angola Block 18 (2000) Reserves potentially at risk estimated provisionally to be 75% of the current inventory.	up to 55	Reserves rely on the successful implementation of water flood in reservoirs that have limited local supporting analogues. Nevertheless, analogy with the Girassol field is invoked. Audit is planned before the end of 2002.  Similar bookings by SNEPCO were considered acceptable during a 2002 reserves audit, being supported by extensive reference to analogy (although predominantly not with local reservoirs).
Norway Ormen Lange (1999, 2000)	109	Reserves have been partially booked ahead of VAR3 and FID, whilst <u>it appears that there are issues that could prevent it proceeding</u> . De-booking will be considered only when and if it becomes clear that development definitely will not proceed. FID planned in 2003 or 2004.
Enterprise	136	Certain elements of the portfolio may not satisfy minimum requirements for project maturity (Italy Tempa Rossa, Norway Skarv Area, possibly elements of KMOC). <u>Audits are in progress.</u>
Netherlands, Waddenzee (?)	25	Government-enforced moratorium on Waddenzee drilling, due to environmental concerns, could ultimately prevent development from proceeding.
Brunei legacy (Various)	20	Historical reserves bookings that can no longer be supported are inventorized and actively managed. It is expected that the remaining balance will be reduced to zero over the next two or three years, in consultation with national regulatory authorities.
Total	905	The total proved reserves balance at 1.1.2002 was 19100 MMboe.

In addition, reserves in some OUs would be at risk if planned production rate increases do not materialize. The OUs thus affected are SPDC Nigeria and Abu Dhabi. Furthermore, Oman PDO must sustain current production rates throughout the remaining lifetime of the licence to ensure production of the booked proved reserves.

The SEC provides no specific guidance on reserves disclosure for "novel" contract structures. Shell currently has four bookings in this category: the Venezuela service agreement, Iran buy-back contract, Oman Gisco and the booking of NGL reserves in connection with interests in Abu Dhabi GASCO.

Note: this inventory captures reserves bookings that are fully justified at present but which could come under threat of debooking, for example, should the SEC further clarify its rules to imply that more conservatism should be applied by Form 20-F registrants.

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**Note for Information**  
**Changes to Proved Reserves Additions**  
**SNEPCO, Nigeria, November 2002**

Proved Reserves Additions, million boe, Shell share

Plan	116	Bonga SW (92 mln boe) plus Erha Deep and Erha South E&A
Previous LE (end-Aug)	49	Bonga SW discounted, possible delay to VAR 3
Current LE	0	Bonga SW deleted, VAR 3 deferred. All potential E&A gains zeroed.
Proposed end-year position	-133	De-booking pursuant to <u>2002 SEC Reserves Audit</u> .
Total impact on EP RRR	-16.9%	Relative to Plan

None of the activities incorporated in the SNEPCO plan for reserves additions in 2002 will materialize during the year. Furthermore, a recent SEC Proved Reserves Audit of SNEPCO found that proved reserves were overstated by 133 million boe at 31.12.2001:

(in mln boe SS)	31.12.2001	31.12.2002	2002 Delta		
Abo	33.4	28.9	-4.5	Apply Proved Area concept	
Bonga	Oil/NGL:	366.2	290.4	-75.8	} Proved Area & } revised recovery factors
	Gas:	42.8	16.9	-25.9	
Erha	165.9	139.4	-26.5	Erha-3 and Proved Area ← <i>WJ</i>	
Total	608	475	-133		

- In Bonga, the revisions are due to the exclusion of reserves in unpenetrated reservoirs (the so-called In Field Opportunities, or IFOs), this being despite an increase in recovery that is now projected from the proved areas (FDP Revision 5).
- The revision in Erha reflects the results of the Erha-3 appraisal well (which removed significant in-place volumes from the model of the eastern fault block), and from the exclusion of reserves in an as-yet unpenetrated central fault block.

The bulk of these reserves were first booked in 1998 and 1999. Since then, Shell has introduced a revised interpretation of the SEC rules on the disclosure of proved reserves. This is explained on the following page.

*Total Nigeria Reserves Quality??*

*50 million boe de-booking shift to 2003 (drilling)*

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#### Clarification of SEC Rules

The SEC/FASB definition of proved reserves is, and always has been, strictly deterministic, being based on recovery from the so-called "Proved Area": the area of each reservoir that has been proved by drilling. This area is limited laterally by reasonable certainty over production continuity, and hence it generally stops at faults that could be sealing. It is limited vertically by the limits of hydrocarbons seen in wells, unless contacts outside this range can be inferred from pressure data acquired from the hydrocarbon and water legs of the same reservoir. In undeveloped or immature fields, the reporting of proved reserves for unpenetrated reservoirs is not consistent with the SEC rules.

Before the SEC introduced its rules in 1977, Shell had developed a probabilistic approach to describe uncertainty in reserves. Thereafter, until 1998, Shell continued to use its probabilistic approach, equating the 85% cumulative probability level to the "reasonable certainty" required by the SEC's rules. This could lead to the inclusion of reserves from outside the Proved Area, insofar as these areas were included in the probabilistic range. Also, in the case of Bonga, it led to the inclusion of reserves from reservoirs that had not yet been penetrated (the IFOs).

Shell's probabilistic approach generally resulted in the over-reporting of proved reserves in immature fields, but this was (more than) offset by under-reporting in mature fields. In 1998, in order to correct the latter and curb excessive depreciation charges, the Shell guidelines were changed and brought more into line with the deterministic approach of the SEC. Approximately 1,200 million boe proved reserves were added to the inventory as a result. !!

The Shell guidelines for immature fields were not finally updated until 2002, spurred by the issuance in 2000 and 2001 of guidance from the SEC which confirmed that their deterministic limiting criteria (i.e. the proved area) must be honoured even if probabilistic estimation techniques are used.

Work is ongoing to try and establish whether Shell is conservative or otherwise in its approach to the disclosure of proved reserves compared with competitors.

Opportunities will continue to be sought to engage the SEC in dialogue concerning modern industry practices. The main aim is to encourage the SEC to recognize technological advances that enable registrants to build confidence in "reasonably certain" recovery estimates without incurring the appraisal costs that are required to establish proved reserves according to the SEC's current rules.

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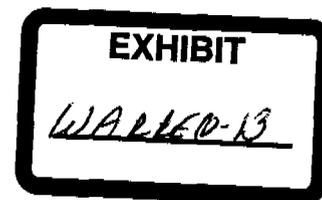
**From:** Warren, Tim SAL-CMAN  
**To:** Bell, Sarah SDA-OE/21  
**CC:** Stouthamer, Christiaan SDA-FP/4; Crabtree, Paul SDA-OE/2; Spong, Penny SDA-DCN/7; GX SDA Leadership Team  
**BCC:**  
**Sent Date:** 2002-12-15 22:45:24.000  
**Received Date:** 2002-12-15 22:45:27.000  
**Subject:** RE: Annual Reserves Reporting Assumptions  
**Attachments:**

Sarah,

Happy with your proposed approach.

Regards,

Tim



-----Original Message-----

**From:** Bell, Sarah SDA-OE/21  
**Sent:** Friday, 13 December 2002 4:15 PM  
**To:** GX SDA Leadership Team  
**Cc:** Stouthamer, Christiaan SDA-FP/4; Crabtree, Paul SDA-OE/2; Spong, Penny SDA-DCN/7  
**Subject:** Annual Reserves Reporting Assumptions

Tim, David, Wim Hein, Dave, Helen,

In order to smoothen SDA's Annual Reserves Reporting process I have attached a list of assumptions and recommended reserves management issues and would appreciate any comments before 20th December (report submission date is 15th January). The three main discussion points are as follows (refer to attached note for more details):-

1. Direct Gas - Gorgon to remain as reserves, as advised by the Group Reserves Coordinator, even though there is some debate as to whether it satisfies updated stricter guidelines for proved reserves bookings. There remains a small possibility that Walter Van de Vijver might decide to take the hit on Group reserves replacement ratios this year and de-book Gorgon. For the NWS it is recommended to incorporate technical revisions to Tidepole, Echo Yodel and Sculptor - which results in no change to gas ultimate recovery and a small increase in condensate ultimate recovery, (2002 production will result in a decrease in remaining reserves for both). The final technical status of NWS gas reserves will be available from Woodside next week.
2. Direct Oil - Recommended to balance NWS oil ultimate recovery increase with Laminaria ultimate recovery decrease - both have been peer reviewed and are technically justified (shell share ultimate recovery neutral). Excellent production in 2002 will result in a significant decrease to remaining direct oil reserves.
3. Indirect Oil - Recommended not to de-book Vincent volumes and classify Enfield 2002 'slither-block' discovery as scope for recovery as opposed to Woodsides anticipated reserves booking (on the basis that there is no clear evidence to de-book Vincent at this stage, however we do not want to increase exposure to the total Vincent/Enfield/Laverde project prior to FID by increasing volumes).

If you have any comments on the attached it would be much appreciated. If you would like to discuss in further detail please let me know

Regards, Sarah

<< File: ARPR 1.1.2003 assumptions v2.doc (Compressed) >>

Sarah Bell

Reservoir Engineer

Shell Development (Australia) Proprietary Limited

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Tel: +61 8 9213 4607

Email: [sarah.bell@shell.com.au](mailto:sarah.bell@shell.com.au)

Internet: <http://www.shell.com.au>

**From:** Morgner, Helen L SAL-ARV  
**Sent:** Sunday, January 11, 2004 10:24 PM  
**To:** Papaspiropoulos, Antonius A SDA-DPA; McKenzie, Ian E SAL-AOP; Poole, Catherine M SAL-ARE; Simpson, John P SAL-ARG; Cannon, Annette C SAL-ARV/1; Harben, Anita SDA-DPA1; Pericles, Sara L SDA-BSG; Freeman, Karyn SEPL-EPA-S-E; Chittleborough, Mark L SDA-DCG; McLaughlin, John J SDA-DCG/2; Youngs, Charles SDA-FP/42; Christie, David A SDA-FP; Crabtree, Paul T SDA-EPT; Bell, Sarah SDA-OE/21; Gunner, Chris SDA-DC; Williams, Sylvia R SIG-GPHX; Corrigan, Andy A SI-PXXM; Warren, Tim N SAL-CMAN  
**Subject:** RE: Recategorisation of Reserves

---

Hi all

Just to let you know that I have spoken to Tim and confirmed that he did talk to Reuters very briefly this morning. His only quote was "This does not change at all our commitment to the Gorgon project and...our expectation is that all these reserves eventually will be recategorised back to proven developments at the appropriate time," Shell Australia Chairman **Tim Warren** told Reuters."

Tim confirmed he will forward any other media queries received directly to me. I have spoken to AAP and advised them to contact London directly via the pager number.

Annette has already sent through the Reuters article and the other newlines received so far today.

As per Antonius's message, I have spoken to Peter King from the Fed Dept of Industry and relayed the key messages which he was happy with. He is preparing a briefing note for the minister, especially in light of Abraham's visit, and flagged that the Minister is likely to be asked Gorgon questions at the press conference Abraham is planning to have while in Melbourne this Friday.

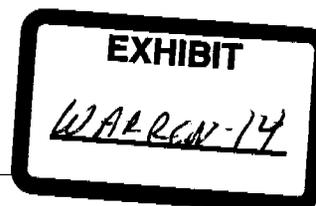
As such, he would appreciate any extra information we are able to give him. His direct no. is 02 6213 6626 and email peter.king@industry.gov.au

I have also received a couple of calls from analysts and referred them directly to Group Investor Relations.

Cheers

Helen  
Helen Morgner  
Senior External Affairs Advisor  
The Shell Company of Australia Limited  
GPO Box 872K, Melbourne VIC 3001, Australia

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PER00011768

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Email: [helen.morgner@shell.com](mailto:helen.morgner@shell.com)  
Internet: <<http://www.shell.com.au>>

-----Original Message-----

**From:** Papaspiropoulos, Antonius A SDA-DPA  
**Sent:** Monday, January 12, 2004 1:42 PM  
**To:** Morgner, Helen L SAL-ARV; McKenzie, Ian E SAL-AOP; Poole, Catherine M SAL-ARE; Simpson, John P SAL-ARG; Cannon, Annette C SAL-ARV/1

**Cc:** Harben, Anita SDA-DPA1; Perides, Sara L SDA-BSG; Freeman, Karyn SEPL-EPA-S-E; Chittleborough, Mark L SDA-DCG; McLaughlin, John J SDA-DCG/2; Youngs, Charles SDA-FP/42; Christie, David A SDA-FP; Crabtree, Paul T SDA-EPT; Bell, Sarah SDA-OE/21; Gunner, Chris SDA-DC; Williams, Sylvia R SIG-GPHX; Corrigan, Andy A SI-PXXM

**Subject:** Recategorisation of Reserves  
**Importance:** High

Colleagues

David Christie (as acting COO) chaired a meeting this morning in which the following (below) was discussed:

I have spoken to Nigel Wilson at 10.15 this morning, merely to refer him to Andy Corrigan in Media Relations, in London. I have referred other callers to Andy over the weekend (London Financial Times Australian stringer on Friday night, and John Phaceous at the West Australian yesterday afternoon). Gorgon, and Shell's commitment to it, is obviously the issue everyone wants to discuss.

I received a message at 9.30am from a Peter King (Department of Industry, Tourism, Resources in Canberra) and pursuant to Tim's directives would ask that one of you contact him.

I have referred Nicky Todd at AAP (Brisbane) to Andy and to you, Helen, because she says Tim is talking to the media (quoting a Reuters interview this morning).

I am attempting to obtain Q&A's from London, but I am not confident that these will be forthcoming.

In the interim, I have been instructed to draft our own Q&A's which may prove worthwhile when answering any questions in a reactive context.

Andy's contact details are:

Andy Corrigan  
Group Media Relations  
Shell International Limited  
Shell Centre, London SE1 7NA, United Kingdom

**Tel:** +44 (0) 20 7934 5963 **Fax:** 5252 **Other Tel:** Mobile: 07786 661 733  
**Email:** [Andy.Corrigan@shell.com](mailto:Andy.Corrigan@shell.com)  
**Internet:** <http://www.shell.com>

Tim's instructions:

- All queries OTHER THAN govt and JV partners should be directed to London (Andy Corrigan)
- All queries, including those directed to London to be channelled via DPA and logged and sent to him
- Govt/JV queries - WA queries to be channelled via Mark and Antonius
  - Federal queries to be channelled via Melbourne EA & Tim
- David Christie and Paul will be back-ups
- NO volunteering/proactive engagement - reactive response to queries only

Messages:

- This is a recategorisation, it does not change the molecules in the ground
- It does not change our minds on the commerciality of Gorgon project
- It does not in any way change our commitment to the project, we remain fully committed to Gorgon

Main reason for the change - Shell's internal guidelines have become more restrictive over time, nothing to do with SEC compliance

Briefing to staff

- staff to notify DPA of any meetings planned with govt, JV partners over the rest of this week
- NOT to be proactive in sharing above messages