ROYAL DUTCH SHELL could be forced to delay its entire drilling programme in the Arctic this year unless its grounded Kulluk rig can be repaired in time, the City's top oil analyst has warned.

The oil major's controversial project also faces a series of regulatory hurdles that may now be even harder to pass as opponents of Arctic drilling prepare to capitalise on the reputational damage of the accident.

Last night, the Kulluk drilling rig remained off Alaska as the US Army was drafted in to help salvage operations. Officials were unable to say whether the rig, which was hit by a storm while being towed to Seattle for maintenance, was seaworthy or when it could be moved.

Shell refused to comment on whether it would be able to continue with its plans to drill for oil this summer - the culmination of a seven-year quest that has already seen it spend nearly £5bn ($10.5bn).

It plans to drill with the Kulluk in the Beaufort Sea and another rig, the Noble Discoverer, in the Chukchi Sea, where it spent more than £2bn acquiring leases. But its own safety plans require both rigs to be available so one can drill a "relief well" to stem a spill in the event the other suffers a blowout.

Jon Rigby, head of Europeon oil and gas research at UBS and Exel's top-rated oil analyst for four years running, said: "The absence of a second drill ship this summer, if it comes to that, might hold back all operations, putting the company out of compliance with its safety case - further delaying drilling and adding costs."

The grounding of the drilling rig, the cost of which Shell has yet to quantify, was "unlikely to hurt [Shell's] bottom line directly" but constituted a "very unfortunate reputational hit", he said in a research note. "The costs to Shell of a salvage operation and any needed repairs are unlikely to be great. But negative headlines are not helpful."

The Arctic is seen as one of the world's most promising, untapped oil and gas regions, with as much as 25bn barrels of oil thought to lie beneath the Chukchi Sea and 8bn barrels under the Beaufort.

Shell first planned to drill there in 2007 but faced legal and regulatory delays. It hoped to finally get the programme underway in 2012 but a series of setbacks limited it to drilling shallow "top-holes".

Even if the Kulluk can be repaired in time for this summer's programme, Shell must secure a series of regulatory approvals before it can drill into potentially oil-bearing rocks.

A "containment dome", a key piece of equipment used to cap any spill, needs further work after being "crushed like a beer can" during tests, according to official emails. The Noble Discoverer rig is also being repaired after the Coast Guard flagged problems.

Shell may also need fresh approval from the US authorities for its 2013 drilling plans, permits for specific wells, and for the project's impact on marine mammals.

"Shell got a green light to proceed, but is now facing regulatory hurdles," said Ben Ayliffe, head of Greenpeace's Arctic campaign.

Hanging over the entire operation is the threat that Shell's 10-year exploration licences, which were granted between 2005 and 2008, may expire before Shell can prove there are commercially viable oil discoveries. It has begun talks to try to secure extensions, arguing officials should recognise that their drilling work was delayed in part by factors beyond their control.

But those licences are likely to come under even closer scrutiny after the Kulluk accident. "We will try to put pressure on the US administration to suspend future drilling permits for Shell and the other majors," said Ayliffe.

Malcolm Graham-Wood, oil analyst at VSA Capital, said if Shell's plans were delayed "it might cause them to rethink the Arctic in the longer term". He felt Shell would press ahead for now as "the cost-reward equation is still in their favour". But if the reputational risk of continuing proved worse than that of putting off, they might reconsider.

"Reputational risk is much more important to people like Shell than $1bn that they can earn in one quarter," he said.

Writing off such a high-profile investment would leave Shell facing awkward questions from investors. One leading shareholder told The Sunday Telegraph he felt the market was "led up" with Shell generally. He questioned its ability to translate high capital expenditure into increased production, adding: "They are trying to achieve too many fronts, not particularly well."

Investors did not oppose drilling into the Arctic but were "nervous", he said. "If they spill anything it will be hell to pay."

A HISTORY OF SETBACKS

- **2007** Shell's plans to drill in the Arctic are halted by legal challenges from campaigning groups.
- **2010** Drilling cancelled after a moratorium is imposed on US offshore drilling in the wake of the BP Gulf of Mexico disaster.
- **July 2012** Shell says heavier than expected ice has delayed drilling plans, which are limited to two months in the summer when sea ice melts.
- **July** The Noble Discoverer rig slips its moorings in a storm and drills towards shore in the Aleutian area of Alaska.
- **Summer 2012** Shell is forced to wait to begin work in the Beaufort Sea until local communities have completed their annual whale hunt.
- **September** The Arctic Challenger oil spill response barge fails to receive US Coast Guard certification as planned, preventing Shell from drilling into oil-bearing zones. Certification is eventually granted in October.
- **December 2012** Reports show that the US Coast Guard has found issues with safety and pollution-prevention equipment on the Noble Discoverer rig after it returns from drilling.