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Verzonden: woensdag 8 juni 2022 17:14
Aan: @sodm.nl>
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Onderwerp: Nedmag - VE-5 - MoC

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DICTU Servicedesk

Geachte heer , beste ,

Bijgevoegd is een MoC met betrekking tot het verlagen van de geplande testdruk van de 16" casing. Deze testdruk is verlaagd naar 125 bar. 125 bar is de maximum verwachte druk tijdens het boren. In combinatie met de FIT die gisteren is uitgevoerd (1.61 sg EMW, 12 m³ kick tolerance) kan er veilig geboord worden.

Met vriendelijke groet,



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1. Information			
Temporary Change	<input type="checkbox"/>	Minor Change	<input type="checkbox"/>
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Contact name	()	Contact name	info@sodm.nl
Name	()	Datum:	03-June-2022
Function:	()		
Project Name:	Nedmag VE-5/6 Drilling		
Location:	Veendam		
Proposed Adjustment:	Pressure test on 16" casing reduced from 200 bar to 125 bar		

2. Justification of MoC

INTRODUCTION

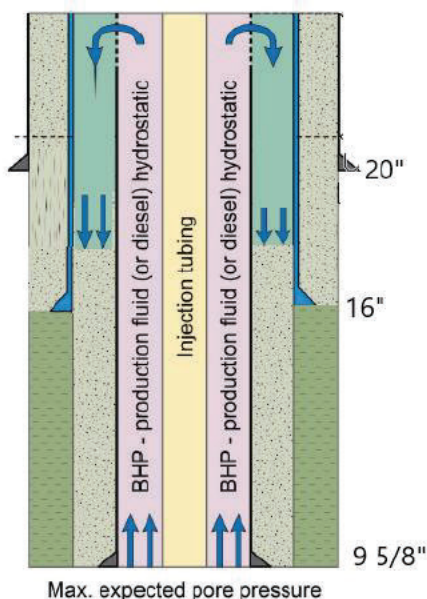
The original plan for VE-5 was to perform a pressure test to 200 bar on the 16" casing. The casing failed the pressure test after cement hardened. A successful pressure test with cup type tester in first joint below hanger, proves the leak to be below surface. To rule out a leaking shoetrack, a cement plug was placed on the stab-in collar with TOC at 1230m MD. After cement hardened the pressure test was repeated, but still did not fulfil the requirements. A second test to a lower value of 128 bar was performed and this time the pressure test was good.

PRESSURE TEST REQUIREMENTS

From detailed design:

Burst loads as a result of 9-5/8" leaking at the wellhead; blanket fluid column at full lithostatic pressure exerted on the 16" casing (250 bar) against TOC at surface (WORST CASE LOAD). 16" casing is connection limited to 223 bar (including 1.1 design factor). Following mitigations to be implemented to minimize risk: multiple seals on hanger 9-5/8", pressure alarm on 16". The chance on a lithostatic pressure on blanket fluid column is small, limited use of hydrocarbon blanket. After cementation of 9-5/8" the 16" will have an enclosed annulus, taking the well in production (heating up) the pressure in the 16" will rise, requiring bleed-off => pressure alarm with action. Potential a nitrogen cushion can be installed.

Inter. csg burst load for the case of production casing leaking at wellhead



From drilling program:

Maximum Expected Wellhead pressure during drilling:

*Maximum expected pore pressure 12 ¼" hole section = 1.39 s.g. – Gas gradient 0.23 s.g. * 1714m TVD hole*0,0981 = 195 bar. Limited to fracture at shoe with 120 bar (formation strength at 16" shoe of 1,70 s.g. EMW)*

Update: shoe at 860m, with 1.7 frac EMW, MEWHP = 124 bar

CHANGE IN PROGRAM

With the 128 bar pressure test on the 16" casing the MEWHP criteria is fulfilled and drilling of the well can continue as per program.

RISKS

The risks are for the production phase of the well. The worst-case load of 250 bar can only occur when the 9 ½" casing will leak just below the surface during the first 3 months, when the cavern is being developed and is under lithostatic pressure with blanket fluid in the annulus. The 9 ½" casing will be tested once installed and is unlikely to start leaking in the first 3 months thereafter. This has not happened in any of the other Nedmag wells.

After the initial cavern is developed, the pressure will be held at maximum 90% of lithostatic and the fluid will be changed to water or brine. This will lead to a maximum WHP of 181 bar with water and 131 bar with 1.30sg brine.

In case of a leak in the 9 ½" casing, fluid will either go to

- the formation (when below the 16" shoe)
- or to the 16" casing (when above the 16" shoe) and then to
 - the formation when below the 20" shoe (either out of the 16" shoe or via a leak in the 16" below the 20" shoe)
 - the 20" casing, and then down to the 20" shoe.

This is not different than any of the other Nedmag wells, which don't have an (in VE-5 16") intermediate casing . The reason the 16" is required in this well is due to well profile (highly deviated) and reduction in torque it provides during drilling the bottom part of the well.

MITIGATIONS

Multiple seals on hanger 9-5/8"

Pressure monitoring on 16" with alarm at 128 bar

When taking the well in production (heating up) the pressure in the 16" might rise, requiring bleed-off

CONCLUSIONS

Drilling can continue. During production phase of the well the measures that were already planned will be followed.

3. Reference(s)

Drilling program VE-5 version 5.3

Summary of Potential hazard (s):

Summary of Mitigation required (s), to mitigate risk (s):

4. Attachments: Yes No

1. Initials - Approval of Modification and Proposed Mitigation(s)		
Reporter,))
WEP))
WEP)) on behalf of (agreed by email)
Nedmag)	