

Gregory Karsten

From: Johnny Hollenbach
Sent: Monday, October 6, 2025 4:03 PM
To: Gregory Karsten; Johannes van Deventer; Sello Sease
Cc: Johan Vermeulen
Subject: RE: HD0054 update.
Attachments: Inspection of overheating TMM.docx; M3 PRD 176.pdf; Scanned from a Xerox Multifunction Printer.pdf; QT3011013498.pdf

Good Day

My 5cents

I think we leaner a lot for HD0054 incident.

We need to focus to prevent the same incident to happen again.

1.The tappet cover melt a number of S2 drill rigs.

- Inspection of overheating TMM, Check list. (Attached Document)
- Set ECM, Warning Level, Power reduction, Engine Stop, Healing and it was tested on the S2 drill rigs. See OEM Engine settings below.(Monitoring Engine Protection)
- Note: The normal engine operating temp start from 89 to 107 Degrees Celsius.
- My opinion: Change the setting of the ECM to:
- Warning Level 98 Degrees Celsius,
- Power reduction 100, 103, 104,105, Degrees Celsius
- Engine Stop 107 Degrees Celsius
- Healing 100 Degrees Celsius
- This will help us to control the temperature of engine to prevent the tappet cover from melt.

Monitoring Engine protection

Monitoring function & strategy

| | Warning level | | | | Power reduction | | | | Engine stop | Healing |
|---------------------|--------------------|--------|--------|--------|-----------------|-------|-------|-------|-------------|---------|
| | Level | Level | Level | Level | Level | Level | Level | Level | | |
| Coolant temperature | Temperature [°C] | 111.0 | | | 111.0 | 112.0 | 115.0 | 118.0 | 119.0 | 109.0 |
| | Debounce time [s] | 1 | | | | | | | 0 | 5 |
| | Reduction level to | | | | 100.0 | 99.0 | 90.0 | 70.0 | | |
| Coolant level | Debounce time [s] | 3 | | | 3 | | | | 30 | 1 |
| | Temperature [°C] | 105.0 | | | 105.0 | 110.0 | | | 115.0 | 100.0 |
| Boost temperature | Debounce time [s] | 5 | | | | | | | 30 | 1 |
| | Reduction level to | | | | 100.0 | 80.0 | | | | |
| Boost pressure | Pressure [kPa] | 2800.0 | 3200.0 | 4000.0 | 5000.0 | | | | | 1375.0 |
| | Engine speed | 1400.0 | 1500.0 | 2000.0 | 2500.0 | | | | | |
| | Debounce time [s] | | | | | 5 | | | 30 | 30 |
| | Factor to warning | | | | | 60.0 | | | 60.0 | |
| Oil pressure | Pressure [kPa] | 1000.0 | 1200.0 | 1400.0 | 2018.0 | | | | | |
| | Engine speed | 0.0 | 800.0 | 1000.0 | 1500.0 | | | | | |
| | Debounce time [s] | | | | | 3 | | | 5.0 | 1.0 |
| | Reduction level to | | | | | 80.0 | | | | |
| Water in fuel | Debounce time [s] | 5 | | | | | | | | 5 |
| | Engine speed | 600.0 | | | | | | | | 600.0 |
| Air Filter | Debounce time [s] | 5 | | | | | | | | 60.0 |
| | Reduction level to | | | | | | | | | |
| Fuel pressure | Pressure [kPa] | 2000.0 | | | | | | | 2000.0 | 3200.0 |
| | Debounce time [s] | 2 | | | | | | | 15 | 1 |

Gregory Email:

I found HD0055 to be connecting to My Epiroc.

2 x critical alarms for yesterday:

- Coolant temp high
- Engine overs peed

May be worth the while to check why this happened.

| Equipment name | Alarm description | Alarm level | Alarm time | Status |
|----------------|--|-------------|------------------|----------|
| HD0055 | Boom sensor in emergency mode critical | Critical | 2025-09-24 13:51 | Inactive |
| HD0055 | Boom sensor in emergency mode critical | Critical | 2025-09-24 13:51 | Inactive |
| HD0055 | Engine coolant temp high critical | Critical | 2025-09-24 13:22 | Inactive |
| HD0055 | Engine coolant temp high critical | Critical | 2025-09-24 13:21 | Active |
| HD0055 | Boom sensor in emergency mode critical | Critical | 2025-09-24 08:09 | Inactive |
| HD0055 | Boom sensor in emergency mode critical | Critical | 2025-09-24 08:09 | Inactive |
| HD0055 | Engine overspeed critical | Critical | 2025-09-24 06:47 | Inactive |
| HD0055 | Engine overspeed critical | Critical | 2025-09-24 06:47 | Active |
| HD0055 | Engine overspeed critical | Critical | 2025-09-24 06:41 | Inactive |
| HD0055 | Engine overspeed critical | Critical | 2025-09-24 06:41 | Active |
| HD0055 | Boom sensor in emergency mode critical | Critical | 2025-09-24 06:39 | Active |
| HD0055 | Boom sensor in emergency mode critical | Critical | 2025-09-24 06:39 | Active |
| HD0055 | Boom sensor in emergency mode critical | Critical | 2025-09-24 02:33 | Inactive |

We need to investigate the Alarms of the system.

- HD0055 air follow through the radiator 2.5 m/s 7.3 m/s inadequate air follow
- We need to check the over speeding(Johannes will inspect the sensor on the hydraulic pump to control the speed or to stay in 1ste gear).

Please see the air follow readings

| Drill Rig No. | Idle RPM | Full RPM | Comments |
|---------------|----------|----------|--|
| HD0049 | 6.5m/s | 10.9m/s | Need to replace cooler |
| HD0050 | 10 m/s | 18.6 m/s | Replace cooler |
| HD0051 | 4.3 m/s | 12 m/s | No consistent air flow on surface area of fan Need to replace cooler |
| HD0052 | 6 m/s | 10.6 m/s | No consistent air flow on surface area of fan Need to replace cooler |
| HD0055 | 2.5 m/s | 7.3 m/s | Need to replace cooler |
| HD0056 | 7.3 m/s | 12.5 m/s | Need to replace cooler |
| HD0061 | 10.2 m/s | 19 m/s | No Info |
| HD0062 | 9.5 m/s | 17.5 m/s | Clean cooler |

Overheating of Drill rig need to be investigate:

Offline Checks / Inspection (Perform these checks while the engine is off and the machine is locked out)

- 1. Visually inspect the coolant level
- (Use only coolant to top up the coolant level)
- 2. Inspect the V belts
- (cracks, tension)
- 3. Inspect the radiator inlet and outlet hoses for leakages
- (clamps and bends)
- 4. Inspect the radiator for leaks and clean
- (Make sure the radiator is clean for air flow)
- 5. Inspect the fan blades
- 6. Inspect the radiator cap
- (Seal, spring tension)
- 7. Inspect the fan shaft and hydraulic motor
- (Ensure the fan is secured to the motor and the key is in position)
- 8. Inspect the Tappet Cover for oil leaks
- (Inspect tappet cover for deformation / melting)
- 9. Perform a pressure test on the radiator and cooling system. (Pressurise the cooling system with a pressure tester. The system pressure must hold for at least 5 minutes. If the pressure drops there is a leak which must be identified and corrected)

Running Checks / Inspection (Perform these checks while the engine is idling)

- 10. Test the air flow and direction of the flow after starting the engine.
- (Flow must be from the engine towards the radiator and exit the rear-end of the machine)
- 11. Idle engine four 5min and check for water leaks.
- (On both sides of the engine, Check the sight glass for the correct level,)
- 12. Ensure no water is flowing out the overflow pipe.

Note: We waiting for a quotation from Epiroc for the radiators. (See attached old quotation complete radiator with motor and to clean the radiator)

- We can add a Lubri split system to help protect the engine.(Please see attached quote)
- Update Fire suppression lay out
- Update job cards
- Training of operators on the warning lights.

From: ab@alexisbasson.co.za <ab@alexisbasson.co.za>
Sent: Thursday, 02 October 2025 15:13
To: Gregory Karsten <Gregory.Karsten@assmang.co.za>
Cc: Johnny Hollenbach <Johnny.Hollenbach@assmang.co.za>; Johannes van Deventer <Johannes.vanDeventer@assmang.co.za>
Subject: RE: HD0054 update.

Caution: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know that the content is safe. Use the "Report Phishing" button if you suspect the email is suspicious.

Dear Gregory,

Find attached my updated report. Updates were necessary due to reliable witness information on the incident of 1 August 2025.

I made the following amendments.

- 1 Updated operator of HD0054's statement.
- 2 Updated the timeline to include a detailed account of 1 August.
- 3 Included 3 additional statements – all relating to the incident on 1 August.
- 4 Fixed a few erroneous sentences carried over from the previous report.
- 5 Included additional correspondence with Deutz Dieselpower in Appendix G
- 6 Updated my conclusions & recommendations (now more reliable and conclusive due to additional evidence).
- 7 Commented on Deutz Dieselpower's report dated 3 September 2025.

Please review the report, as a few mistakes may have slipped through.

I thank everyone involved for their work, support & technical input.

We would not have progressed this far without teamwork and collaboration.

Please delete all previous versions of the report (AB1085.01 & AB1085.02).

Kind Regards

Alexis Basson
082 378 2892

<https://alexisbasson.co.za/>

From: Gregory Karsten <Gregory.Karsten@assmang.co.za>
Sent: Wednesday, 01 October 2025 13:01
To: ab@alexisbasson.co.za
Cc: Johnny Hollenbach <Johnny.Hollenbach@assmang.co.za>; Johannes van Deventer <Johannes.vanDeventer@assmang.co.za>
Subject: RE: HD0054 update.

Here is the Operator and Mine Captain Statements

Regards,

Greg Karsten

*Senior Production Engineer
Black Rock Mining Operations*

From: ab@alexisbasson.co.za <ab@alexisbasson.co.za>
Sent: Wednesday, October 1, 2025 10:41 AM
To: Gregory Karsten <Gregory.Karsten@assmang.co.za>
Cc: Johnny Hollenbach <Johnny.Hollenbach@assmang.co.za>; Johannes van Deventer <Johannes.vanDeventer@assmang.co.za>
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Hello,

Stuur asseblief gedetailleerde inligting van die insident op 2 Augustus.

Dit sluit in 'n statement dat die tegnikus olie sien spat het op die exhaust manifold.

Groete,

Alexis Basson
082 278 2892

<https://alexisbasson.co.za/>