# Incident/Accident Information

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| **Incident/Accident No.** | 35455 | **Incident/Accident No. (Isometrix)** | #617 |

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| **Supervisor Name** | Jabulani Mdhluli | **Investigation Date** | 15 September 2025 |

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| **Injury** | - | **Environment** | - |
| **Non-injury** | - | **Quality** | - |
| **Safety** | X | **Medical** | - |
| **Health** | X | **Property damage** | X |
| **TMM incident** | - | **Other incidents** | - |
| **Pollution** | - | **Fire** | X |
| **Incident** | - | **Other** | - |

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| **Personal Information / Equipment Information** | | | | | | | | |
| **Full Name & Surname** | | Otswakae Ronald Tlhareseng | | | | | | |
| **ID/~~Passport~~ No.** | | 7804095713085 | | | | | | |
| **Coy No.** | | 81055368 | | | | | | |
| **Gender** | | Male | | | | | | |
| **Occupation** | | Multi Skilled Operator (Hydraulic Drill Operator at the time of the incident) | | | | | | |
| **Experience in current Occupation** | | 17 Years | | | | | | |
| **Date Started – BRMO** | | 2008-06-26 | | | | | | |
| **Total Number of Years working in Mining Industry** | | | Years | 2 | 6 | Months | 0 | 0 |
| **Body Part / Damage to Property** | | Total Destruction of Hydraulic Drill (HD0054) | | | | | | |
| **Nature of Accident / Incident** | | Total Destruction of Hydraulic Drill (HD0054) by (Fire) | | | | | | |
| **Equipment Involved Number** | | Hydraulic Drill (HD0054) | | | | | | |
| **Day of the week** | | Wednesday | | | | | | |
| **Incident / Accident Information** | | | | | | | | |
| **Date** | 20 August 2025 | | | | | | | |
| **Time** | 02:50 | | | | | | | |
| **Department** | Mining | | | | | | | |
| **Section** | Central Section | | | | | | | |
| **Workplace** | 25 South 51 West | | | | | | | |
| **Cause** | Machine Engine Overheat | | | | | | | |

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| **Detailed Description of Incidents / Accident** |
| The Hydraulic Drill (HD0054) was enroute to the waiting place to be parked after drilling at 52 North 58 West, as it was knock off time. Upon arrival at the corner of 25 South 51 East the vehicle's engine cut-off due to overheating.  The operator proceeded to the waiting place by foot to report the break-down. While the operator was busy reporting the break-down to Central Control Room, a Charge-hand (Mr. OB Tshabang) from the Drillshop arrived at the waitng place and informed the Central Section crew that the drill rig was on fire.  The Charge-hand was looking for his crew (Charging Crew) who were still charging up in the sections, when he observed the drillrig on fire at 25 South 51 West. The Charg-hand went to the waiting place and found the sections crew there. The Chargehand informed them that the Drill Rig was on fire.  The miner, operator and Charge-hand went to the drill rig to check it, and upon arrival they saw the fire. they could not extinguish it as it was extreme. The miner rushed back to the waiting place to report the incident to Central Control Room. |

**The sequence of events *(Systematic explanation of what happened, including times)*:**

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| **Time** | 18:30 to 19:30 | **Time** | 19:30 to 20:25 | **Time** | 20:25 to 20:45 |
| Start of night shift. | | Instructions & transport. | | Pre-start check. | |
| **Time** | 20:45 to 21:10 | **Time** | 21:10 to 21:30 | **Time** | 21:30 to 22:20 |
| Tramming to face (52N,58W) | | Set up for drilling. | | Wait for drill bits. | |
| **Time** | 22:20 | **Time** | 22:35 | **Time** | 22:50 to 23:20 |
| Breakdown – loose fitting & low coolant level. Order 1840019 | | Mr. Erasmus received a call reporting low coolant level of HD0054. Drove to 59 North, 63 West. | | Top up coolant & check for leaks. No  leaks visible from the left-hand side of the engine bay. Right-hand side of the engine bay not inspected. | |
| **Time** |  | **Time** | 02:10 | **Time** | 02:10 to 02:45 |
|  | | Operation – drilling. 20 holes LHS & 20  holes RHS | | Whilst approaching the intersection of 25 South, 21 East, the engine of HD0054 cut out and the coolant temperature / level as well as the engine warning light illuminated. | |
| **Time** | ~02:45 to ~02:50 | **Time** | ~03:10 | **Time** | ~03:10 to ~03:15 |
| The operator restarted HD0054 and  reversed so that the booms were clear of  the intersection. He then deployed the outriggers and switched off the engine. The operator switched off the main battery isolator switch. He noticed steam / mist above the other (left-hand side of the engine bay) when he switched off the batteries. The operator did not notice a  fire before he left the machine and walked towards the waiting area. | | Mr. Bokang Tshabang Charge Hand drove past HD0054 and saw flames emanating from both sides of  the engine bay. The fire was limited to the engine bay at that time, but it was welldeveloped. | | Mr. Tshabang made a U-turn and drove to the waiting place. He alerted a miner and Mr. Ronald Tlhareseng (HD0054 operator) of the fire. The operator and the  miner walked to HD0054 and noted that it was burning. They returned to the waiting place and called Control Room, alerting them of the fire. | |
| **Time** | ~03:15 | **Time** | ~03:15 + | **Time** | ~03:15 to ~18:00 |
| The Control Room was notified of the fire. | | Evacuation of the mine by all employees. | | The fire propagated and destroyed the face drill. | |
|  | ~16:00+ |  |  |  |  |
| CO levels drop to below 10 ppm. | |  | |  | |

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| |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | YES | X | NO |  | NA |  |   **Checklists of Previous shift & Current Shift**  Available at the time of in-loco investigation   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | YES | X | NO |  | NA |  |   Available at the time of section11.5(a) investigation  **Two last maintenance work that was done on the involved TMM**   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | YES |  | NO | X | NA |  |   Available at the time of in-loco investigation   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | YES | X | NO |  | NA |  |   Available at the time of section11.5(a) investigation  **Training Material available and completed training**  Available   |  |  |  |  | | --- | --- | --- | --- | | YES | X | NO |  |   **Risk Assessment conducted & available (Dates)**  Available   |  |  |  |  | | --- | --- | --- | --- | | YES | X | NO |  |   **PTO conducted available (Dates):**  Available   |  |  |  |  | | --- | --- | --- | --- | | YES | X | NO |  | |

**RISK EVALUATION (Incident) Mark or Circle the applicable conditions**

3.1 SEVERITY: Severity is derived from the seriousness of likely injuries and costs of the losses being

incurred or the loss most likely to be incurred as a result of the wrong execution of the task.

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| **SCALE** | **PEOPLE** | **EQUIPMENT** | **MATERIAL** | **ENVIRONMENT** | **PROCESS** |
| 1  NEGLIGIBLE | Injury not likely to result in a lost time.  Dressing case only  No visible injuries | Damage not exceeding R1 000 | Shortage, wastage or damage causing loss not exceeding R1000 | Negligible change in the environment, short term, no lasting effect, small spill, clean up not exceeding R1000, No liability and/or compensation costs. No negative publicity. | Hold up of production or process, which can be made up during the same shift – no loss. |
| 3  MINOR | Non-reportable injury.  Less than 14 days lost. | Damage between R1000 and R10 000 | Shortage, wastage or damage causing loss of between R1000 – R10 000 | Minor change, short term, no lasting effect, small spill, clean up costing between R1000 –  R10 000  No liability and or compensation costs.  No negative publicity | Hold up of production or process, which can be made up during the next shift. |
| 7  SIGNIFICANT | Injury likely to be reportable  14 days or more lost  Fractures, deafness  Cosmetic scarring, small limb amputations | Damage between R10 000 and  R100 000 | Shortage, wastage or damage causing loss of between R10 000 and R100 000 | Spill likely to remain evident for several days or weeks. Clean up costing between R10 000 - R100 000.  No liability and or compensation costs but negative publicity may occur. | Hold up of production or process likely to result in a loss not more than R100 000  1 Panel lost cannot be made up. |
| 15  SERIOUS | Injury resulting in fatal or total disablement such as paraplegic, amputation of 2 limbs, blindness | Damage between R100 000 – R1m | Shortage, wastage or damage causing loss of between R100 000 and R1m | Spill likely to have lasting effects on the environment, clean up, liability and or compensation costs between R100 000 and R1m. Serious negative publicity may occur. | Hold up of production or process likely to result in loss of between R100 000 and R1m. More than 1 panel for more than 1 day – cannot be made up. |
| 40  MAJOR | Multiple fatals (2 to 4) | Damage between R1m and R5m | Shortage, wastage or damage causing loss of between R1m and R5m | Spill likely to have long-lasting effects on the environment, clean up, liability and or compensation costs between R1m and R5m. Severe negative publicity may occur. | Hold up of production or process likely to result in loss of between R1m and R5m. Several panels over several days – cannot be made up. |
| 100  CATASTROPHIC | More than 4 fatalities | Damage in excess of R5m | Shortage, wastage or damage causing loss in excess of R5m | Spill likely to affect human, animal and plant life, clean up or liability/compensation costs in excess of R5m. Effects likely to be permanent. | Production/process loss likely to result in losses in excess of R5m. Many or all panels lost over several days – cannot be made up |

3.2 PROBABILITY Chance of loss

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| **Probability Value** | **Description of Frequency** |
| 10.00 | Is most likely, expected if an event occurs |
| 6.00 | Quite possible (50/50 chance) |
| 3.00 | Unusual but possible |
| 1.00 | Only remotely possible (but has happened somewhere) |
| 0.50 | Conceivable but very unlikely (has not happened yet) |
| 0.10 | Practically impossible (one in a million chance) |

3.3 FREQUENCY Probability is influenced by frequency:

1. The number of persons involved.
2. The number of times a task is performed.
3. The duration of a task.

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| **Frequency Value** | **Description of Exposure** |
| 10.00 | Continuous (many times daily) |
| 6.00 | Frequent (once daily) |
| 3.00 | Occasionally (once per week to monthly) |
| 2.00 | Unusual (once per month to yearly) |
| 1.00 | Rare (yearly) |
| 0.50 | Very rarely (not known but remotely possible) |

These factors are not evaluated separately, but simultaneously on a three-dimensional scale, in order to attain a Risk Classification.

**Risk Classification Calculation Method:**

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| **Severity x Probability x Frequency = Risk Ranking** | **Priority** |
| **100 x 1 x 10 = 1000** | **EH** |

**RISK INDEX CLASSIFICATION TABLE:**

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| **Risk Ranking** | **Risk Ranking Description** | **Priority** |
| **401 +** | **Very High Risk - Discontinue Operation** | **EH** |
| **201 to 400** | **High Risk - Immediate action required** | **H** |
| **71 to 200** | **Substantial Risk - Corrective Action required** | **M** |
| **21 to 70** | **Possible Risk - Attention required** | **L** |
| **1 to 20** | **Low Risk - Tolerable as is** | **L** |

**STATEMENT:**

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| INJURED | EMPLOYEE INVOLVED | WITNESS | SHE Rep | 1ST LINE SUPERVISOR | 2ND LINE SUPERVISOR | 3rd LINE SUPERVISOR | 4th LINE SUPERVISOR |
|  | X |  |  |  |  |  |  |

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| I | OR Tlhareseng | (Full Names and Surname), work as | Multi Skilled Operator |

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| At | BRMO – Nchwaning 3 Central Section | (Company) since | 26th June 2008 | (Date) |

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| Coy No. | 81055368 | And ID/~~PP~~ No. | 7804095713085 |

State in English as follows:

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| On the 19th of August 2025 I reported on duty at approximately 18:23 and got my PPE from the laundry and went to the change-house to don it. I then proceeded to the shaftbank area to wait for the shaft conveyance to be transported to underground workings. We procedded to underground and got transport to the section.  Upon arrivcal at the waiting place, we held a Safety Talk and got our instructions from the miner.  At approximately 20:25, I conducted Pre-start Check and completed completed it for the Hydraulic Drill (HD0054) and went to the new block at 52 North 58 West. Upon my arrival at the face, I realised that there is steam coming out from the coolant tank. Iwent to report it to Central Control Room. I also observed oil leak on the fitting, I stopped everything and waited for the Fitter. He came and pour water in the coolant tank, and I saw him do this, I asked him where is the coolant, and he replied that he doesn’t have. On completion he instructed me to start the machine to check for leakages.  I then started drill after the Fitter completed reparing the drillrig. I drilled until 02:05 and took the drillrig out of the face to go and park it at the waiting place. While travelling to the waiting place, at 25 South 51 West. The machine cut off. I went to the waiting place to report to control. When we still at the waiting place, there came another guy to tell us the machine is burning. The Miner, myself and another operator went out to go and check. When we got there, we found that there is fire on the machine and went back to the waiting place to report.  **Questions:**  Q = Question  A = Answer  Q1: Is there a Risk Assessment for the task that was performed at the time of the accident/incident?  A:  Q2: Is there a Procedure/Standard for the task that was performed at the time of the accident/incident?  A:  Q3: Is there a Planned Task Observation conducted prior to the accident/incident?  A:  Q4: From the face as you were driving to the waiting place up until 25 South road, did the Machine ever cut off?  A: No I didn’t cut out it was running smoothly.  Q5: Did you notice any warning sign whilst driving?  A: No    Q6 When was the first time you saw a warning sign?  A: The first time before it cut off it showed warning lights.  Q7: How many warning lights did you see?  A 2 Warning lights: One for overheat and the other one was for the coolant.  Q8: Prior to operating the machine did you do a Pre-start Check?  A: Yes  Q9: When you do your Pre-start Check, how do you check the level of coolant?  A: I check it at the side where you check the engine oil. The coolant indicator is at the same sde as the engine oil, I check the level on the glass indicator.  Q10: On the day of the accident, did you check the leve of the coolant?  A: Yes, when I conduct the Pre-start Check.  Q11: With your experience, what do you think causes the machine to overheat?  A: Maybe water leakage on the machine.  Q12: When did you drive to block C?  A: I drove to C Block at the start of the shift.  Q13: During your Pre-start Check, did you notice any warning on the coolant?  A: No  **The following questions are related to a previous incident where the operator was involved.**  Q14: Have you had an incident before where there was water leakage and the engine overheat?  A: Yes. When I was working day shift , on the same machine I once experience a similar incident. I was driving from the waiting place to block C. There was smoke and mist emanating from the machine. The machine was still idling. Luckly the Shftboss and the Mine overseer were there on that day.  Q15: Which side of the machine did you see smoke/steam?  A: I saw smoke on the side of the turbo and the steam on the side of the compressor.  Q16: How did you know which side is steam and which side is smoke?  A: Normally I know the turbo is on the right hand side, as my MO had explained , on the right hand side (turbo side) it was a dark smoke, and on the left it was light.  Q17: Did you open to see where the smoke/steam was coming from?  A: No, I only reported to the mechanics  Q18: When you saw the smoke/steam, did you go inside the cab?  A: Yes  Q19: What alarm(s) did you see in the cab?  A: Both the high engine temparature and low coolant level/high coolant temperature lights were on.  Q20: How far did you drive to Block E?  A: More then 10 minutes  Q21: When the Mechanic came did he look inside the engine bay , to investigate and were you with him?  A: The Mechanic took about 10 minutes to arrive. He opened the side of the coolant, he topped up the machine with coolant about 10 liters, from the 25L can. He requested me to start the machine, the Mechanic opened on top of the machine to investigate the smoke. He explained to me that an oil leaking pipe is the cause of the smoke.  Q22: Do you normally operate HD0054, was this the only time that you noticed low coolant , engine overheating?  A: At our section we have three HDs, that we interchange. I normally operate HD0052, HD0054 I only operate when HD0052 is on servive , or to cover for another operator.Since 2019 when the HDs arrived , I can not recall any other instances of overheating or low coolant on HD0054 ,  Q23: Did you notice similar overheating on HD0052 and HD0049?  A: No .  **Continuing with the questions on HD0054 incident (20/08/2025)**  Q24: With your experience of the oil level of the machine, can it cause the machine to overheat?  A: What I do know is that if the engine oil is low the macine cuts-off.  Q25: How do you check the engine oil level on the HD?  A: I check with a dip stick.  Q26: On the day of the accident did you check the engine oil level?  A: Yes I did, it was okay .  Q27: On the day of the accident did you experience any engine overheating, or low coolant on the HD before the accident occurred?  A: Yes, as you can recall on my statement , I did. The same day I reported shortage of coolant, I reported the oil leakage on the hydraulic fitting on the boom.  Q28: After the breakdown was fixed , did you check the HD , for any defects?  A: Yes I did , when the Mechanic asked me to start the HD  Q29: How long did you idle the HD after the mechanic topped up the HD ?  A: For about 5 minutes  Q: How much coolant did the machnic top up the HD with?  A: The mechanic topped the HD with water with half of the 25 liter can  Q: Where did you make the call to report, the defect (breakdown)?  A: There is a phone at 63W 48S next to the mini sub, that’s where I made the call  Q: Did you see anything else besides the alarm lights on the HD?  A: I saw mist coming from the coolant pipe.  Q: When you saw the mist , did you check the coolant level ?  A: Yes I did , it was empty.  Q: After the HD cut off, did you go check the coolant level?  A: No, I did not check the coolant level , I switched off the main switch and left.  Q: When you were switched off the main switch, did you smell anything?  A: No  Q: What is it that you wanted to report?  A: Engine cut-off  Q: Did you report to comtrol room?  A: Yes, I reported to Control and Aubrey (the Charge-hand drills).  Q: Between your report and Mr Tshabang arrive, what is the time frame?  A: ±8 minutes to 15 minues, that’s when Mr Tshabang came and reported that the machine was on fire  Q: What did Mr Onkabetse Tshabang say?  A: He said, “guys the machne is burnig.” We said that he shouldn’t make funny jokes. However we went to check the machine. As we walked out the Bolterc Operator took the fire extinguisher at the waiting place to the scene.  Q: Was the Drillshop Charge-hand specific which machine was burning?  A No, he was not.  Q: You drove the machine and parked it, what was your thinking after you find that the machine was on fire and you were the last person to operate it?  A: Obviously I thought of the overheating the machine had. I thought maybe the overheating could be the cause. I was panicing. The moment I heard that the machine is burning I panicked.  Q: When the machine cut out with the booms inside 25South, did you immediatey get out to inspect the reason for the engine cut-off?  A : No, I didn’t  Q: Why did you not get out to inspect?  A: I realised that it could be the overheating again and I decided to complete my drill shift report. I didn’t immediately attempet to start it. Only after about 2 minutes, I started the machine and the warning light was flashing faster and it could start and I reversed a bit and the machine cut-off again. I then took my books and swithched off the main switch and left to the waiting place.  Q: When you switched of the main switch, did you notice any smoke of Steam comig from the engine?  A: I only nocited the steam coming from the left side of the engine compartment but it was not as servere as the previous time.  Q: Was it the first time that the engine of HD0054 cut-off; complete shutdown, since you operated the HD0054?  A : Yes, both lights were on when it cut-off. When I started the engine after 2 minutes, the engine light was flashing and the coolant light was on.  Q: After the machine was topped up with the water, how long did you travel?  A: Since the machine was already in the panel, I didn’t travel only after drilling  Q: How long did you travel from the drilling face to the point where the machine cut off?  A: I am not sure about the time. The machine drive slow. It could be 10-15minutes.  Q: Which route did you use when you were gong back to the waiting place? Is it part of the traffic management?  A: I used 49 South, turned into 58 East and turned left into 35 North and then right again into 52 East 34 North and then 51 East leading to 25 South  Q: Is this the route that is use to travel to the working place as per the Traffic Managemtnt Plan?  A: Yes, because we use the same route when are going to Block K.  Q: When traveling HD underground, what is the direction of traveling?  A: I always tram with the booms in front.  Q: According to the training that you received, what is the procedure that the operator must follow when there is an engine/coolant high temarature alarm?  A: Stop the machine immediately and report to Central Control Room.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  SIGNATURE DATE |

**STATEMENT**

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| INJURED | EMPLOYEE INVOLVED | WITNESS | SHE Rep | 1ST LINE SUPERVISOR | 2ND LINE SUPERVISOR | 3rd LINE SUPERVISOR | 4th LINE SUPERVISOR |
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| I | Onkabetse Bonnke Tshabang | (Full Names and Surname), work as | Chargehand drill shop |

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| --- | --- | --- | --- | --- |
| At | BRMO | (Company) since | 2017-01-22 | (Date) |

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| --- | --- | --- | --- |
| Coy No. | 10062638 | And ID/PP No. | 9404145357088 |

State in English as follows:

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| On the day of the 19th of August 25 I clocked in by the main gate and proceeded to the change house, changed my clothing and proceeded to the lamp room and cage area to proceed underground. Upon arrival, I went through the report of dayshift and compiled my connect for my shift and actioned the guys accordingly. After that they went to their respective actioned areas to commence with charging activities, So I go to them in the various sections to check how far they are or if they have a break down or not. So as I arrived at drill shop around 3 am from Main West, I noticed Mr Gaebuelwe and Shuping using UV0135 have not yet returned from the sections( Central and Developing) So I went to check on them. As I approached 25S near Central waiting place, I saw smoke and turned into 25S a few blocks , I encountered the HD on fire on my right hand side(RHS). I then noticed that no one is around and went to the wating place to call. As I arrived at the waiting place I found the miner and 2 guys and alerted them. We then went and checked and I asked them if the UV has passed because I was looking for them. They responded “No” and the Miner went to the phone to call and I left to continue checking for my guys. The fire was too big to extinguish by fire extinguisher.  **Questions:**  Q = Question  A = Answer  Q1: When you saw the fire , where were you standing?  A: I wouldnt say I was standing, because I was driving passing, from the waiting place side into the section  Q2: Where was the smoke going?  A: The smoke was going to the waiting place side.  Q3: Did you see the smoke or the fire on the machine?  A: I saw the smoke as I was going in to 25 South, then I saw fire as I approach the machine.  Q4: How would you say, where was the fire on the machine and how big was the it?  A: I could see the fire on both sides of the machine on the engine compartment. The hight of the fire was as high as the height of the cabin.  Q5: Did you at any stage attempt to extinguish the fire?  A: No  Q6: Which Bakkie were you driving?  A: LDO635  Q7: When you arrived at the waiting place, how thick was the smoke?  A: By the waiting place the smoke was not yet there?  Q8: More or less, can you recall at what time did you pass there?  A: I would say it was between 03:10 to 03:15  Q9: When you saw the smoke, how far did you see the smoke?  A: I noticed the smoke just before turning into 25 South. I am not sure in terms of the meters.  Q10: You metioned that the smoke was coming from 25 South, was the smoke over-filling the whole tunnel?  A: It was half the size of the excavation, from the middle to the top.  Q11: While travelling in the bakkie, did you smell the smoke inside?  A: Yes  Q12 Were you wearing any monitoring device like a Gas Detection Instrument (GDI)?  A : No  Q13: What colour was the smoke?  A Due to the light I could only see smoke but I cant tell the colour  Q: 14: How was the visibility?  A: It was reasonable fair for me to see, I could see approximately ±10 m front of me  Q: Did you find it difficult to breath while in the bakkie?  A: No  Q: How can you explain the smell?  A: It smelled like a fibre glass burning.  Q: Where did you smell that type of smell before?  A: Due to my experience, at home. The smell of fibre glass roof sheet burning.  Q: You said dyou went to he waiting place to make a call, whom did you want to call?  A: I wanted to call the Emergency number(4555), however when I got there, I saw the miner and other 2 emloyees. I asked them are they aware of the fire. At first they thought I was joking and I told them that I was serios then we went to see. As we were walking (the 4 of us) we could smell the smoke.  Q Did you hear anything like alarm?  A: No  Q: What colour was the flames  A: It was yellowish and blueish.  Q: How did the flame look like?  A: At the base of the fire it was blueish and the outer was yellowish.  Q: Is there anything that you would like to raise that can assist us to prevent a similar re-occurrence?  A: There is no significant thing that I can say. I have a question, as the company we should have fire suppression system that incase of fire. So whay did the TMM burn?  A: We are investigating the route cause of the fire.  Q: On your last decision when you decided to go back and check, why did you walk instead of driving?  A: The waiting place is not far from the scene hence we walked.  Q: When you were at the waiting place, could you smell or see the smoke?  A: No  Q: Are you aware of the emergency preparedness procedure?  A: I can say yes, I am aware.  Q: If you are aware, did you take the right steps to go back to where there was an emergency situation?  A: Yes, because at the waiting place there was breathable air.  Q: At what point could you see and smell the smoke?  A: Approaching 25 South.  Q: How much time did lapse when you drove passed the machine turn around and went to the waiting place and walk back?  A: Approximately 4 minutes  Q: Desrcibe the smoke as you approach the machine for the second time with the other employees?  A It was the same as previously described.  Q: On the second time when you walk to the mchine, what colour was the smoke?  A: It was dark  Q: Who and how was the incident report?  A: it was reported by the miner, Mr. Bokamoso Mashwe, by means of a telephone at the waiting place. He called Central Contrl Room at 4555.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  SIGNATURE DATE |

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| I | Bokamoso Maswe | (Full Names and Surname), work as | Miner |

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| At | Central section | (Company) since | 06/02/2017 | (Date) |

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| Coy No. | 10062641 | And ID/PP No. | 8604295505086 |

State in English as follows:

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| On 19/08/23 The chargehand of drill shop came to our waiting place while I was busy doing the report at the end of shift, told me that the machine is burning. Then we immediately went out to check. When we arricve we saw the lot of smoke then we return immediately to the waiting place then reported to my shiftboss then took our bags drive straight to the station where by we meet with our shiftboss. The situation of the machine.  Mr Bokamosho Maswe was not at work during the time of the 11.5(a) investigation. He is on annual Leave.  :  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  SIGNATURE DATE |

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| I | Thlodisang Maruping | (Full Names and Surname), work as | Miner |

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| At | Assmang | (Company) since | 03/03/23 | (Date) |

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| Coy No. | 10065542 | And ID/PP No. | 7612075786082 |

State in English as follows:

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| On the 20th of August 2025 I was at charging busy charging the face. when I arrived at the waiting place I found Maswe, Thlareseng and Thabong. They told me that the machine is burning then I went with Thabong to check. There was a lot of smoke then we get back to the waiting place.  **Questions:**  Q = Question  A = Answer  Q1: Whilst walking from the waitng place, Where did you notice the smoke?  A: As we approached 25 South intersection, I noticed smoke coming out of 25 South into 18 East. We then turned back to the waiting place.  Q2: Plese take us through the ventilation layout for the section and the positions of the fans.  A: There is a big fan at 38 West blowing towards the south, where the waiting place is situated  Q3: When you got the information about the incident, how long after the incident was discovered, did you arrive at the waiting place?  A: Approximately 15 minutes.  Q4: On your arrival, what was happening in the waiting place?  A: The miner was busy on the phone, Thabong was having a fire extinguisher and Thlariseng was seating on the table.  Q5: With the information you received, where was the incident reported to?  A: I am not sure but after Maswe finished on the phone he was instructed to evacuate the area.  Q6: What colour was the smoke?  A: Was black smoke  Q7: From where you turned, please explain what you observed?  A: I just saw a smoke. It was going up along 18 south.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  SIGNATURE DATE |

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| I | Thandeka Mabena | (Full Names and Surname), work as | Shiftboss |

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| At | Central Nchwaning 3 | (Company) since | 2021/03/12 | (Date) |

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| Coy No. | 10064952 | And ID/PP No. | 9608120378089 |

State in English as follows:

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| On the day of 20 of August 2025 upon arrival on surface end of shift I was busy with reports/Logbook. I received a call from the waiting place from Miner informing me about machine that was surrounded by smoke. I immediately informed emergency control, Mine overseer and safety Officer. I instructed the team to proceed to safe place/refugebay.  Original Copy Sign \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  SIGNATURE DATE |

**CHARGE-HAND STATEMENT**

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| I | Dandre Erasmus | (Full Names and Surname), work as | Hydraulic fitter |

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| At | Nchwaning 3 | (Company) since | 16/11/2020 | (Date) |

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| Coy No. | 10064764 | And ID/PP No. | 8507145145147084 |

State in English as follows:

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| On the 19th of August 2025 on nightshift around 22H35, I received a call from Central Control Room that HD0054 need a top up coolant. I then looked for coolant could not find it. So I took water went to the machine in section 63 West – 49 North where the drill stood. I Found the drill in section plugged and water connected. I then came there and saw that the machine needed coolant. I then topped the up water with ±2.5L. I closed the radiator with it’s cap and asked the operator to start the machine. I checked for any water leaks. Rev’d up the engine and I did not see any leaks. So then told operator to switch off the machine. Then operator continue with drilling. I booked the machine off by Central Control Room at 23:20.  **Questions:**  Q = Question  A = Answer  Q1: Wht time did you arrive at the machine?  A: At approximately 22:55.  Q2: Did you notice any smoke or steam coming from the machine?  A: No. I only saw that the coolant reservoir was empty.  Q3: What is the practice/rule when topping up coolant?  A: After you top up with coolant. You start the machine to see if there is any leaks from the machine.  Q4: What do you physically check to verify the leaks?  A: You check the clamps and the hoses to see if the clamps are tight, the engine, the radiator for any leaks and underneath the machine.  Q5: Did you go into the cab?  A: No, I did not  Q6 How did you know that the machine was no longer over heating?  A: The operator started the machine and confirmed that there is no alarm on the machine.  Q7: How many coolant did you use to top up the machine?  A: ±2,5L  Q8: How much coolant does the entire system contain?  A: ±20 liters that is the only place that you can top up and store excess coolant.  Q9: Did the operator report to you that the machine is overheating?  A: No. I was only told by control that the machine needed coolant top up.  Q10: As an experience artisan, can a low level of coolant cause overheating?  A: When the coolant level gets too low, then it can cause overheating.  Q11: Is it normal practice to top up with water instead of coolant?  A: No. Normally we use coolant but because the Charge-hand was in the sections, I couldn’t find coolant then I used water. The coolant was locked in the workshop store.  Q12: Did you experience overhearting on HD0054 before?  A: No, not me.  Q13: What is the capacity of the coolant to operat from one service to another?  A: If there is no leakage on the system, the machine can go until there is a problem.  Q14: For you to refill the coolant, is it an indication of defect/ break down?  A: Yes.  Q15: In your opininon was there a leakeage in the machine?  No. I didn’t see leakage on the machine  Q16: What did you think is the cause of fire on that machine?  A: No, I don’t know  Q17: When you receive a jobcard, do you rely on the massege received or do you do something else just to make sure that what you will be doing is correct?  A: I take the equipment required, I will also try and anticipate what other reasons there are.  Q18: When you arrive at the machine, do you ask the operator for more information regarding the breakdown?  A: I just ask him what is wrong with the machine.  Q19: Is there a way where you can drain the coolant?  A: Yes  Q20: In your expirience where you ever called where Central Contrl Room (CCR) said a HD was overheating?  A: No  Q21: Have you ever been called by CCR where a HD had to be refilled with engine oil?  A: No.  Q22: Have ever had a breakdown where you had to replace a coolant reservoir or radiator cap?  A: No  Q23: Where you ever exposed in a scenarior where an HD machine has had an engine that overheated?  A: Yes, I heard of an HD but the engine didn’t get damage.  Q24: Did you ever find out what was the cause?  A: No  Q25: When investigating for leaks, did you look at both sides of the engine bay. Did you notice any oil leake in the vicinity of the turbo or the manifold?  A: Yes, I also checked for leaks but did not see anything.  Q26: Did you notice deformation/melting or leaks from the tappet cover?  A: No.  Q27: In your experience working with the S2’s how often do you have to attend to coolant top ups/leaks?  A: Very seldom.  Q28: With your experience, how long would the HD tram before the HD engine could catch fire?  A: No, I don’t know.  Q29: Take us through engineering tactics during on boaring of artisans?  A: We get training on the machine fault findings  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  SIGNATURE DATE |

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| I | Aubrey Mokgalo | (Full Names and Surname), work as | Chargehand drills |

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| At | Nchwaning 3 | (Company) since | 02/04/2012 | (Date) |

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| Coy No. | 81001031 | And ID/PP No. | 8510035458082 |

State in English as follows:

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| On day of 20th August at round 3am I received a call from R5 section reporting a breakdown of engine cut off. HD0054, 10minutes later I got another call stating now the rig is burning. I then instructed the operator ( TLhareseng) to call emergency control room to report the incident.  **Questions:**  Q = Question  A = Answer  Q1: On your statement you said that you received a call, Where did you get the call from?  A: From Mr. Tlhareseng from Central Section and ±10 minutes later he called me again.  Q2: After receiving the second call, what did you do?  A: I confirmed with control. I instructed the operator to call control because I wanted to make sure that the incident was reported. I also wanted to make sure that before I go to the machine, indeed the incident was reported. Sometimes operators would call to say that the machine is on breakdown just to get lift at the end of shift.  Q3: Are you aware of any breakdown on the machine in question reported on the same shift?  A: Yes I was aware. I picked it up on Mobilaris report and Dandre told me before he knocked off that he was at HD054 for breakdown.  Q4: What was reported on the breakdown report on Mobilaries?  A: It was written coolant empty.  Q5: What was the discussion between you and Dandre about coolant empty  A: He told me that he topped up with water as he couldnt get antifreeze.  Q6 Did you ask him why he didn’t use antifreeze?  A: I didn’t ask him much as I understood that he wouldn’t have access since I was not in the section at that time.  Q7: Was that the only question you had for him ?  A: Yes  Q8: What is the norm/standard on the coolant /water mixing?  A: That one I don’t have an answer all I know is that our coolant is premixed from the vendar. It is 50% coolant and 50%water.  Q9: Is it a standard that coolants are controlled by the supervisor at the workshop or is your standard in your shift?  A: No. the coolant in the workshop is kept in the cage. It is not a norm that I control it. Chargehands are normally the ones who order. I also don’t have access to the storage cage. The chargehand can order coolant from the underground store if required.  Q10: Do you keep different types of coolants or you only have one type of coolant?  A : No, Only one type.  Q11: How long have you been working as a chargehand at Nchwaning 3?  A More than 5 years now.  Q12: Would you say in that 5 years, you’ve been working on S2?  A Yes  Q13: In your five years have you ever had an incident where the S2 machine cut out (engine stop) other than HD0054 this year?  A: Yes, I expirience it with HD0055 on the 02nd of Sptember 2025.  **Questions about the previous breakdown on HD 0055**  Q14: What did you find when you attendand the breakdown on HD0055  A: This happened at start of shift. I found the coolant low. I topped up about 1liter of coolant. On the sight glass the coolant was just below the required level. I also check for any leaks, inspected the hoses. The HD0055 went back to production and the operator reported that the machine overheated again at end of shift.  Q15: What did the operator of HD0055 say?  A: He said the machine overheated and it cut out.  Q16: Was that the only time that you have experienced the overheating and engine cut off on HD0055?  A: Yes  Q17: When you got to the machine(HD0055), what did you find out?  A: It was just the reported from the operator that the machine (HD0055) overheated and engine cut out but he managed to start it and park it.  Q18: How was the overheating problem resolved on HD0055?  A: I carried over the message to the next shift. I don’t know what did they do thereafter. I communicated that the thermostart could be blocked or the fan doesn’t work. I couldn’t check that because the coolant temparature was too hot.  Q19: Other than HD0055/54, do you recall any other breakdown of similar nature (Overheat or no coolant) before 2025?  A: Previously it was HD0056 but I cant recall the date. Main West Section complained about HD0056 overheating  Q20: Did you attend to that break down?  A: No  **Continuing on questions about HD 0054**  Q21: Did you attend a previous breakdown on HD0054 relating engine overheating ?  A: Yes, I received a report from [Central](file:///\\central) section shiftboss on the 01 August 2025 midshift that there was a lot smoke emanating from the engine compartment of HD0054. When I arrived at HD0054 there was no smoke and the Operator informed me that the MO Mr J Mduli used water to cool off the resevior. I topped up about 10 liters of coolant. I started the Machine( HD0054) I didn’t find any leaks but I saw oil leaks at the engine between the tapppet cover as it looked like it melted. While the machine was idling oil was spurting out of the engine onto the turbo. I stopped the machine instructed the operator ( Mr Tlhareseng) not to drive the machine. I reported to the supervisor which provided me with a teppet cover gasket. I went back to the machine to replace the gasket but the teppet cover was melted and I couldn’t fit it. I reported back to the supervisor at the end of shift.  Q22: Did you notice any smoke or steam , while you were testing the engine of HD0054 on the 01 August 2025 after top up?  A: No, the steam was only on the tank by the resevior due to spilled coolant on the tank, I only saw the oil sprutting on to the turbo while HD0054 was idling  Q23: After the mentioned incident above, replacing the cap , turbo, etc . Did HD0054 experience overheating and/ or related issues?  A: No, the next time I heard of overheating issues was on the night of the incident.  Q24: Do you have anything to add , any inputs to assist the investigation  A: The Kanru fire suppression, has a disclaimer that the fire suppression might not go off in case of fire. The second thing is, the radiarors are difficult to clean, due to confined space.  Original Copy Signed \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  SIGNATURE DATE |

**QUESTIONS TO THE MINE OVERSEER: Mr. Jabulani Mdhluli**

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| Q1: Please provide a brief overview for the incident that took place on the 01 August on HD0054  A: On the day in question, I visited Block E, HD0054 was parked at 74 North 41 West tunnel. I left after 10 minutes to go to the stopping block at 59. I was informed that HD0054 was burning, I turned back immediately when I arrived at HD0054 it was smoking not burning. I investigated if there was any fire or leakages I could not see any defects, or leakages. I took empty paint can, went on the side of the resevior, there is an overflow pipe I poured the water there and the steam disappeared. I reported the incident to the foreman, that he needs to fix the problem. I also made a follow-up , on the finding of HD0054, the foreman informed that , there was a problem with the tappet cover gasket, and it was fixed.  Q2: Which side of the engine was the steam coming from  A: My obseveration it was from the left hand side, of the engine bay  Q3: How do you know it was steam and not smoke?  A: My reason is because the hot water was coming out from coolant tank  Q4: Did you open the engine bay cover and what did you see?  A: All I saw was steam-water was flowing from the overflow pipe. I only poured water on the overflow pipe and the steam stopped, there was no other smoke or steam coming out of the engine. |

**QUESTIONS TO THE GES: Mr. Johannes van Deventer**

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| I | Johannes Van Deventer | (Full Names and Surname), work as | Hydraulic Foreman |

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| At | TMM Hydraulic workshop NCH#3 | (Company) since |  | (Date) |

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| Coy No. |  | And ID/~~PP~~ No. |  |

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| Q1: How long have you been working at BRMO as an Hydraulic Foreman  A: From 2012  Q2: How long have been appointed at Nchwaning 3 as an Hydraulic Foreman  A: April 2022, three years and 5 months  Q3: When did you first come to know about issues of overheating on the S2 drill rig engines?  A: It was HD0055 about two years back I did pick it up, but could not get the history, I went to the HD0055, when it was reported for oil leak, I attended the breakdown with one of my artisans. We replaced the tappet cover, and HD0055 needed coolant, and it was topped up. The Artisan tested HD0055, by driving it as he is licenced, to test if it will overheat, reason for coolant top up, was that the filler cap, was not sealing anymore (wear and tear).  Q4: Did you do anything else regarding the above breakdown  A: HD0055 was taken to the workshop, to clean up the radiator and the engine, due to the oil leak.  Q5: The tappet cover, how many tappet covers have you changed in 2025  A: I know of 2, 3 including the one on the 15 September 2025  Q6: Have you investigated the damages on the tappert covers?  A: I did send an email to the TMM GES, OEM Epiroc, to assist me with the tappert cover problem  Q7: What was your findings from your investigation?  A: The day of the fire accident, the OEM was on site to investigate. The reason was due to overheating, the S2  TMM was not cutting off when overheating  Q8: What is the risk of the tappert cover defects, what are the risk associated it?  A: Risk is damage to the engine, and possible fire  Q9: When did you first hear of the overheating problem on HD0054, first time it was reported to you  A: Some time last year. HD0054 was smoking , I recall it was over the weekend I was not on shift . The crew reported that they replaced the tappert cover  Q10: Are there any other instances, since then prior to the fire accident  A: Yes , the incident that was discussed that occurred on the 01 August 2025  Q11: Do you have anything more to add, other than what has been discussed?  A: No, I do not  Q12: In your experience have you ever come across a drill rig or a bolter catching fire due to engine related defects excluding the electrical circuit  A: Yes, Prior to 2022 while I was on standby, it was reportd that the air filter housing caught fire on one of the RTs at Nchwaning 3. It was said that the exhaust sparks were sucked into the air filter element. At that time it was said it was the grease that was used to seal the filter, also contributed to the fire.  Q13: Have you ever heard of a rig or a bolter burning out completely?  A: No,  Q14: So what in your opinion contributed to the fire on HD0054?  A: I think it is because of the overheating and the tappert cover melting , and the oil flowing on to the filter  Q15: Do these S2 drill rigs come with autiomatic engine cut out protect and which temperature does it activate?  A: S2 drill rigs are not activated to cut off the engine, it only gives the engine warning light  Q16: Do you know why is the engine protection disabled  A: No  Q17: Did you get a response from the OEM regarding your request to assist with melting tappert covers  A: Yes, Epiroc came on site in July , they collected data on the S2 drill rigs. I am still waiting for feedback from EPIROC, Deutz was here and activated the safety protection.  Q18: How is the fire suppression systems maintained  A: Quarterly it is done by Kenru  Q19: Do you know why the fire suppression system did not extinguish the fire on HD0054  A: The nozzles were not placed on the correct positions and the linear wire was not routed correctly  Q20: How do you know this  A: From third party audits that indicated the defects of the fire suppression system  Q21: Are there anyother TMM’s that you work with that has the same type of engine , and you experience the same problems with the tappert cover and overheat?  A: Yes, the roof bolter 235H (RT0047) has the same type of engine, however we have not experience any problems with the tappert covers. We have not experienced overheating on these TMM’s, RT0047 has a mechanical oil pressure and engine temperature protection system fitted (lubrivent)  Q22: Why was the lubrivent not fitted on S2 TMMs?  A: I do no have an answer, the OEM said it has to be on the scope , RT0047 was from Gloria fitted with the system  Q23: Do we follow the LCC (life cycles cost) of the OEM radiators?  A: No, not that I know off  Q24: Do you now what is the root cause of the overheating of the engines on the S2?  A: Hoses that start to leak , radiator caps rubber that is worn out, previously radiator blockages  Q25: When you change radiators, do you buy new or use refurblished  A: HD0055 was refurb and on HD0050 was a new one  Q26: Coolant hoses, are they condition, monitored or follow the LCC  A: They are conditioned monitored  Q27: During service on S2 TMM do you check the engine compartment, and what do you check?  A: Guided by the job card, we check the , chelsy, engine , drive lines and the booms.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  SIGNATURE DATE |

**QUESTIONS TO EPIROC OEM: Mr. Phillip Moller**

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| I | Phillip Moller | (Full Names and Surname), work as | Site Manager Epiroc |

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| At | BRMO | (Company) since |  | (Date) |

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| Coy No. |  | And ID/~~PP~~ No. |  |

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| Q1: Please state your name, occupation and how long have you been servicing BRMO?  A: My name is Phillip Moller , the site manager for Epiroc on BRMO. I started on boarding March 2025 , effectively started April 2025  Q2: Are you aware that the S2 engines do not have automatic engine cut out protection?  A: I found out during the investigation of HD0054 that some TMM do cut and others do not  Q3: Do you know why the protection was not enabled on the S2 drill rigs ?  A: No, I can elaborate why they do not cut the engine. It is for safety reasons so that the operator can move the machine to a safe place where the machine( S2) can be inspected.  Q4: Why is it enable on some machines and not on other machines?  A: I will have to refer that on Deutz.  Q5: You menstioned that some of the machine has the cut off, At what degree the TMMs cut off?  A: At119 Degrees celcius.  Q6: At what temperature will the engine turn red (burning point)?  A: Engine teppet cover melting point is 254 Degrees celcius. With that said engine pistons or bearings will fail before you reach engine temperature of 250 degrees cslcius. This information is from Deutz.  Q7: From the OEM side, the fire suppression system that comes with the S2 TMM, who design that system?  A: That I will have to find out?  Q8: Are you aware of any other instansis where the S2 engine has over heated and/ or the tappet cover deformed/melted?  A: No  Q9: In your experience, do you know of any other underground face drill rigs that caught fire and/ or burned out?  A: No, I will have to investigate.  Q10: As Epiroc side, if we have recurring cases, what type of assistance do you offer to the client?  A: We utilise field service techinicians to conduct a root cause analysis and raise an ACIGN ( support ticket) that gets loaded to Sweden. This function also fall into the technical manager to also assist.  Q11: In our case, was there any assistance requested, and what was the feedback?  A: The request from Johannes regarding the melting of the tappet covers was refered to the technical manager in April 2025 just when I started, after that there were no followups from Black Rock and I assumed that the matter has been resolved. On the 14th of August 2025 I visited Johannes and he informed me that they still have the same issue. We had a rig scanned on the 19 August 2025, the specialist ( Frikkie) planned to visit the drills for information to raise an ACIGN regarding the matter.  Q12: Did you receive any feedback from the technical manager after the request from Johannes?  A: No, I didn’t receive a mail, So I ask if we can use the field service technician that we have used previously on Black Rock.  Q13: Please take us through your findings on the root cause analysis that you mentioned on Question 10.  A: There was no communication.  Q14: With your scope with BRMO, what legal inspection/audits are required from you as OEM on the S2?  A: Not that I know off, I will have to find out  Q15: Please take us throught the commissioning on S2 TMM safety systems emphasis on fire supression systems?  A: All the quality checks are done at Jetpark. Quality files get sent to BRMO , inspected with OEM and Qualty contrl from BRMO and signed off.  Q16: Does BRMO require you to hold any legal appoitments? If so please elaborate.  A: Yes.  Q17: Accordng to you how many third party safety systems are fitted on the S2 TMM?  A: I only know strata.  Q18: Refering to Q6, in your view why do we get tappet covers melting and no seizing effects on the bearing and pistons?  A: I cannot elaborate on that. I recommend that we take the cover to the third party for investigation.  Q19:  Duetz Question  Q1: At what temperature will the gasket seize?  Q2 At what temperature will the engine seize?  Q3: Is the a heat shield on the turbo?  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  SIGNATURE DATE |

**STATEMENT:**

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| INJURED | EMPLOYEE INVOLVED | WITNESS | SHE Rep | 1ST LINE SUPERVISOR | 2ND LINE SUPERVISOR | 3rd LINE SUPERVISOR | 4th LINE SUPERVISOR |
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| I | Jaco Jonker | (Full Names and Surname), work as | Field servive Technician |

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| --- | --- | --- | --- | --- |
| At | DEUTZ | (Company) since | 2009 | (Date) |

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| Coy No. | N/A | And ID/~~PP~~ No. |  |

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| Q1: Please state your name, Occupation and for how long have you been working for DEUTZ?  A: I am Jaco Jonker. I am a field service technician at DEUTZ. I have been with DUETZ since 2009. For the past five years I have been a field service technician. Before that I was an engine testing technician.  Q2: How familiar are you with the engine that is currently fitted on S2 drill rig?  A: I am quite familiar with it.  Q3: Are you aware that the S2 Drill rig doesn’t come with automatic engine protection as standard?  A: As I was told the last time I was here , the ones that comes from Johannesburg does have protection but engines imported from Europe do not have protection.  Q4: Do you know as to why the S2 delivered without the engine protection?  A: No I don’t know why.  Q5: Are you aware of any other type of model that has the engine protection disabled?  A: No  Q6: At what  Q: At what temperature does a TCD 3.6L O4 engine protection activate normally?  A: On the oil temperature is 118 Degrees celcius. At 111 degrees celcius the warninglight come on. At 112 you get the second warning, third warning at 115 at 118 and above the engine will cut off.  Q: Are you aware that the tappet cover has shown signs of deformation and /or melting?  A: I was only told by the guys at BRMO but I have never seen it anywhere else.  Q: At what temperature does the tappet cover melt?  A: I cant remember the exact numbe but Germany said above 200 Degrees celcius.  Q: How hot can the terbo gets hot on the TDC 3.6L04 engine?  A: 590 degrees celcius  Q: How close is the turbo from the tappet cover of the engine?  A: I am not to sure abuout that, the turbo is not in line with the tappet cover.  Q: How long will the engine have to run before it completely burns out?  A: It supposed to cut out at 118 degrees celcius. It should not burn out.  Q: What happens to the engine if it is allowed to run without cooling?  A: The engine will seize  Q: In you experience at what temperature will the engine seize?  A: I have no idea. I haven’t experienced it before.  Q: What are the know faileru points on these type engines that can cause fire?  A: I don’t know this incident is the first one I have ever heard of the caught fire.  Q: Could the cooling system faileru cuase fire, i.e Oil leaks ,exhaust temperature and etc ?  A: It is possible because the oil is a combustible.  Q: What interval inspection that you guys perform on these type of machines?  A: I am not sure. Its written on the sticker.  Q: Does this incident fall under warranty or good will inspection according to DEUTZ?  A: It has to be investigated first.  Q: How close is the exhust return cooler to the tappet cover?  A: Its about 25mm-30mm  Q: Is there a heat shield on the turbo?  A I have not seen a heat shield.  Q: So without the heat shield and proximity of the exhaust component at the temperature exceeding 500 degrees celcius will that not result in the tappet cover melting?  A: I will have to ask the technical department about that.  Q: Is there anything that you can add to help us conclude this investigation?  A: No. I don’t have this is aso a learning curve for me as well.  Q: Because the tappet cover is of placstic material, do you know any other operation that is using different teppat cover?  NO  Q: Have you done an analysis on th tappet covers that are melting at BRMO  A: Not to my knowledge  Q: Knowing the epiroc S2 TMM, according to the design of the S2 in terms of the engine position is it adequate to our operation?  A: I am not sure , because we do simulations  Q: Normally at what coolant temperature will the  A:  Q: At what temperature will the engine seize?  A:  Q: Is the a heat shield on the turbo?  A:  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  SIGNATURE DATE |

**STATEMENT:**

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| INJURED | EMPLOYEE INVOLVED | WITNESS | SHE Rep | 1ST LINE SUPERVISOR | 2ND LINE SUPERVISOR | 3rd LINE SUPERVISOR | 4th LINE SUPERVISOR |
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| I | Gerhard Badenhorst | (Full Names and Surname), work as | Manager |

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| At | Kenru Fire protection ( BRMO) | (Company) since | 2006-08-08 | (Date) |

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| Coy No. | N/A | And ID/~~PP~~ No. | N/A |

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| Q1: Can you state your name, Occupation, the company you work for and your years of expirience in the fire suppression field?  A: I am Gerhard Badenhorst, I am a manager for Tsantsabane fire consulting for Kenru fire protection . I am 19 years in th fire suppression field.  Q2: What is your involvement with the fire suppresion system at BRMO?  A: My involvement side is more on the technical side of it. Basically when there is faults I help with that.  Q3: What is the nature of the involvement of Kenru fire in the fire suppression system at BRMO?  A: The agreement is for ,the services and repairs of Ansul fire system on a three month basis and the purchase order base.  Q4: Are you also involved with the installation of the Ansul fire suppression system?  A: Approximately 90% of the machine at BRMO comes with the system already installed. We installed the few on the TMMs at BRMO. Some machine come with the system fitted already from overseas.  Q3Are you familiar with the fire suppression system that is installed on the Epiroc S2 drill rig at BRMO?  A: Yes, I became very familiar after this incident.  Q3: What is the perpose of the fire surpression system that is fitted on the epiroc S2 drill rig, specifically what is the objective design?  A: Firstly, the design of the fire suppression system is to save live, secondly is to minimise damage to property. The  Q4: Can you describe the system that is fitted on the Epiroc S2 drill rig and how its supposed to function?  A: The S2 that burned had a DCP( Dry cheminal powder unit fitted on with an automated detection system. The functionality, ther is a linear detection wire running through the machine and if it reaches 180Degrees celcius it fuses together and activate the system automatically. The is also mnual activation point on the machine for incase the operator notices fire he/she can activate the system. After actvation, the chemical will discharge from various nozzles located on the machine.  Q: How many nozzles are installed and each components are they supposed to cover/ protect?  A: 6 nozzles that tank will allow. The nozzles will cover various high risk areas. E.G the turbocharge, altanator and the sides of the engine.  Q: How is the linear wire routed on this machine(S2 drill rig)?  A: I am not sure on this particular machine. But there would be 2 istallations methods one is running around the engine compartment the second method the linear wire is situated in the engine covers.  Q: What is the expected response time of the system should the fire occur?  A: There is no set time on the linear wire. It should take about 20 -30 seconds ( the panel has a 20Seconds delay from the detection and the activation.) This assumes that the flame touches the fire wire immediately.  Q: Why 20 seconds after the linear wire has detected the fire?  A: The 20 seonds is split in to 2. The first time delay is10 seconds and the second time delay is 10 seconds.The first 10 seconds you can reset or delay the fire system by pressing the botton on the panel. The main point point if for the operator to be able to park the machine. The second 10 second the person cannot do anything on it.  Q: Why does the system not activate after 10 seconds?  A: It was design like that on the old system . on the new system it is programmable.  Q: Is the system on HD0054 programmed on 20 seconnds delay?  A: Yes  Q: Can the system fail to active during the count down/sequence?  A: If the panel is not working the system will not activate.  Q: Is the panel fail to safe( if the delay botton in the panel fails the system wont activate)?  A: No, the system will not activate automatically.  Q: Is the other tyope of fier suppression system fitted on the S2 drill rig other than the DCP?  A: I think the new S2s are fitted with the LVS ( Liquid Vihicle system)  Q: Is the DCP the correct type of extinguishing agent for this applicationand which of the two products is better?  A: It is an approved ad adequate FSS( Fire suppression system)A few years ago DCP was the only recognsd and Approved agent, until the LVS was approved as a stand alone gent. It is superior over DCPin the sense that that it knock down the flames, cools super heated surfaces and it follows the path of least resistance as which your combustible liquids will do.  Q: Would you advice that we continue using the DCP on the Epiroc S2 drill rigs?  A: The DCP system was approved and correct but the LVS is the better system available in the market but it is more expensive(The older electronic panel that came with DCP are redundant).  Q: To your knowledge, did the FSS activate on HD0054 when the fire occurred and why do you say that?  A: Yes, I think so. The technician that was part of the investigation informed me that the tank was empty.  Q: Can the tank be empty due to any pipe burning and releasing the agent?  A: No.  Q: According to your knowledge, was the quatryely inspection on HD0054 done up to date?  A: I saw the jobcard but I cant recall what was the date on it.  Q: Why is the frequency of the sevices done quarterly?  A: The OEM (Ansul) recommends six montly services or sooner depending on the operating and/or environmental. Just because of the harsh enviroment the system is working in. We then recommend a montly inspection and quarterly services.  Q: What does your risk assessment recommend in terms of the frequency of the fire system maintanance when it comes to the S2 drill rig?  A: Monthly inspections and the qouately mantainance.  Q: What is the current practice for FSS maintenance at BRMO?  A: Kenru is doing quartely services.  Q: What is the requirement fro the OEM for maintainance by the end user( operator and Artisan)?  A: Durig pre-start checks,the operator must check the power LED for a green light . All other LED is off, Sounder is silent and no apparent damage on the components, check the seals on the activation point if are intact.  The is no requirement from the OEM for the Artisans but it is recommendad that they do the same as the operator and the following checks extra:   * the blowoff caps are fitted * , the nozzles are secured, * hoses connected and not damaged, * linear wire routing and secureness.   Q: Ca you explain what is done on the monthly inspection nd the quarterly service?  A: On the monthly inspection the following is done:   * Actuator sealed * Catridges tight * All nozzle in place * All nozzle blow off caps inplace * Inspect actuators for no damages, dants and the striker knop is in place * All distribution blocks connections are tight and in place * No damages on hoses * The agent tank is tight and in place * Is panel operational( green LED) * Is the any alarm. * Check linear wire for abrasion and damages * Is the linear wire in place * Is the end of line in place   **The quarterly service**  All the monthly checks will be done the following will be in addition but not limited to:   * Chec the PAD date and replace after five years * Test the panel to test the time delays and functionality – test that it activates * Inspect all cables and wires * Check battery date and replace after a year * Remove the pneumatic actuators , clean and grease * Weigh all catridges and record findings * Check all hoses for damages * Check the extinguishing agent inside the tank * Inspect that all nozzles are pointing at correct direction * Replace service labelled with new one * Record everything on the jobcard and sign off   Q: During our post incident investigation, we found some of the nozzles not pointing in the right direction, in other cases the nozzles were obstructed due to position and orientation. This not long after the quaterly inspection was conducted and signed off. One of the nozzle pointing at the turbo, the fire could not have been extinguished had the system went off. Why was tis not picked up during the service?  A: I am not sure I will have to find out fro the relevant technician.  Q: Are the instances where the quarterly service was below compliant and the S2 drill rig has FSS components had to be relaced or wire rerouted? For the past 2 quartely services.  A: I am not sure have to find out.  Q: During the post incident investigation, we found the lineasr wire routed above “ the cold side” of the engine and below the turbo on t”he hot side” of the engine”. Is that an acceptable practice and why ?  A: It is difficult for me to say but it can be 30cm to any direction.  Q: I this particular scenario what is the better way to route the wire?  A: If there is enough space at the end of the heat souce, I will route the wire on top.  Q: Who designed the FSS for HD0054?  AZ: I think ther was a dafo system that came from Europe.  Q: Was the design approve by the OEM( Epiroc)?  A: I cant answer on that. In my thinking there is no OEM that approve FSS.  Q: How do we know tht the system was designed by an approved/registerd person?  A: I am not sure from dafo side who designs.  Q: The law requires that for every design it must be done and signed off by a competent person. How do we verify that your designs meets this requirement?  A: I am not aware of the term fire engineer on vehicle systems. I am also not aware of the organisation that does designs or certification. Kenru use MSTA ( Mine Safety Training Academy) to design and to do a risk assessment. All that is based on previous experience on fire investigations.  Q: During our audits we found on various equipment models misdirected nozzles, broken fire wires, inconsistent routing fire wires, missing dust caps expired service dates. This demonstrate poor quality of service from Kenru. What are the rasons for this to happen?  A: I think there are few contributing factors to this. Workload, Insufficient resources on site for the amount of equipment. Late submission of orders to do services. So there is a constant backlock.  Q: Many of the defects found relates to quality of work done and cannot be ascribed to late orders or concerns. How did yo ensure that the work prformed is of high standard? Did you communicate that in writing timeously for all the equipment that expired due to those factors when it occured?  A: We appointed a supervisor to overinspect the work done by technicians but hi time was taken out by performing services. I wil have to find out as I am not part of the mail trail . I know there was communication between BRMO and Kenru.  Q: Pleas take us through Kenrus good will investigation, post the incident to the client?  A: We have not done good will investigation and I haven’t even receive the information regarding the incident  Q: Do you have any intention to investigat e your part and any learnngs from this incident?  A: Yes, it is also good to know where was the faileru and what was the failure was.  Q: Are you familiar wit the body solenoid?  A: Yes, We provide the dry contact for the body solonoid.  Q: Do you know why the monthy inspectiois not done at BRMO?  A: No. It was removed of the contract by the client.  Q: Have you ever seen any face or surface drill rig catch fire( None electrical) and/or burn out like HD0054?  A: I saw a number of surface dril rigs due to electrical fault. One surface drill that had diesel fire . This is the first underground drill rig I know off.  Q: The disclaimer on your service sticker, how did you came about to have it displayed on the service sticker ( It remains the responsibility of the customer to ensure that the fire extinguisher is in good order)?  A: I don’t know .I will try an find out.  Q: Why did the system not extinguished /contain the fire?  A: I don’t know because I am not sure what were the variables in the machine was.  Q5: With your experience on servicing and the repairing of the Ansul fire suppression system are the installation layout?  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  SIGNATURE DATE |

**Sketch the Scene of the Incident / or Photographs:**

**Photo Photo**

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| **Pic 1:** **CO levels at the Masilo box – FP314, located approximately 540 metres from the incident.**  **Increased concentration of CO was detected from 03h21, but based on witness accounts, the fire started atapproximately 02:55.** | **Pic 2:** **Front, left view.** |

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| **Pic 3: Front, left.** | **Pic 4:** **Rear, left-hand side. The area of witnessed fire origin is indicated.** |
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| **Pic 5: Rear – right-hand side. The area of witnessed fire origin is indicated.** | **Pic 6: Front – right-hand side.** |

**Activities at the scene by Investigating Team**

1. **Gathering Information**

*(Full Statements injured and witnesses, Photos, etc.)*

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| Statements and photos |

1. **Environment including Hygiene Measurements**

*(List the information regarding the work environment where the accident occurred)*

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| Ventilation Velocity Reading | 0.00 m/s |
| Temperature | 28° Dry Bulb and 26° Wet Bulb |
| Ellumination Level | It was observed to be poor as the striplight got burnt. |

1. **Alcohol Test & Results**

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| **Test Conducted** | Yes |  | No | X | **Results** | Negative | N/A | Positive | N/A |

1. **Equipment**

*(List the information gathered regarding the equipment involved in the accident /Incident)*

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| HD0054 Maintanance record, Pre-start checklist |

1. **Risk Assessments COP’s**

*(List applicable Risk Assessment pertaining to the work performed at the time of the accident)*

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| TMM risk assessment |

1. **Procedure**

***(****List the applicable Procedure* *pertaining to the work performed at the time of the accident)*

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| Safe Operating Procedure, PTO, Assessment : Tramming with a drill rig S2 |

1. **Code Of Practice**

***(If applicable)*** *list the applicable Code of Practice* *pertaining to the work performed at the time of the accident)*

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| Mandatory Code of Practice for TMM |

1. **Forms / Records / Checklists / Safe Declarations**

*(Gather all the documents relevant to the accident)*

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| Pre-start checklist, Maintanance record, Incident/accident report |

1. **Fatigue Management**

*(Include form from BRMO Clinic)*

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| N/A |

1. **Maintenance Test done by the Mine before Accident**

*(Gather all documents relevant to the accident)*

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| Yes |

**Documentation**

Is the following documentation available?

*(Gather (highlight) all documents relevant to the work performed at the time of the accident)*

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| Risk Assessment |  | Procedure | X | Standard |  | Lesson Plan | X | PTO | X | SDS |  |
| Pre-Use Inspections | X | Permit | X |  | |  | |  | |  | |

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| YES |  | NO | X |

Did the injured/involved employee deviate from the above documentation?

If Yes, why?

*(Injured/involved employee must explain why he/she deviated from stipulated measures)*

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| N/A |

Please specify the changes to documents:

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| --- | --- | --- | --- |
| YES | X | NO |  |

Should a new ~~Baseline~~ or Issue-Based Risk Assessment be ~~drafted~~/Revised?

*(Name of Risk Assessment to be ~~drafted~~/Revised)*

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| *Safe Use of S2 Epiroc Drill – IBRA-SHE-Risk-Gen-G-36387* |

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| YES | X | NO |  |

Should the employee(s) be re-trained on new/existing/Revised Issue Based Risk Assessment?

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| YES | X | NO |  |

Should a ~~new~~/existing Procedure be ~~drafted/~~revised?

*(Name of new/existing procedure to be ~~drafted/~~revised*)

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| *Drill Rig S2 Components on Fire and Capsizing – SOP-ENG-TMM-Gen-G-36655* |

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| YES | X | NO |  |

Should the employee(s) be re-trained on ~~new/existing~~/Revised Procedure(s)?

**Ensure that all changes of any document are done on our Document Control System. (SharePoint)**

**Incident/Accident Investigation Report**

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| **Date** | 15 -17 September 2025 | **Incident Number** | 35455 |

**A: IMMEDIATE CAUSES**

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| **A** | **SUBSTANDARD ACTS** | |
| **STEP 1**  **IMMEDIATE CAUSES** | **CODE** | **What acts and omissions contributed most directly to this incident?** |
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| **A** | **SUBSTANDARD CONDITIONS** | |
| **STEP 2**  **IMMEDIATE CAUSES** | **CODE** | **What poor conditions contributed most directly to this incident?** |
| 17 | Inadequate protection system for the engine, the engine cut off protection system was not activated by the OEM( DEUTZ) this was a request by Epiroc. However when it cut off it was due to water entering the combustion chamber. |
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| **NATURAL FACTORS** | |
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**B: BASIC CAUSES**

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| **B** | **PERSONAL FACTORS** | |
| **STEP 3**  **CONTRIBUTING CAUSES** | **CODE** | **What are the fundamental reasons for the existence of these acts, omissions and conditions?** |
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| **B** | **JOB FACTORS** | |
| **STEP 4**  **CONTRIBUTING CAUSES** | **CODE** | **What are the fundamental reasons for the existence of these acts, omissions and conditions?** |
| G4 | Overheating/tappet-cover events were not timeously addressed by OEM despite multiple requests to do so. This resulted in delays in enhancing the maintenance strategy |
| G14 | Inadequate quality control/overinspection on work by FSS Service Provider. |
| H1 | Known tappet-cover heat vulnerability and coolant dilution risk was escalated to the OEM but not addressed timeously. |
| H3 | Engine cut-out protection not enabled — reliance only on alarm lights. No additional safeguards (e.g., heat shield between tappet cover and turbo). |
| H7 | Fire suppression system (DCP) not checked for nozzle aim, routing, or coverage adequacy. Detection wire routing did not provide early warning where hydraulic oil and heat co-exist. |
| H9 | HD0054 commissioned without auto-protection activated on the engine |
| I10 | Kenru inspection sticker has a disclaimer- it remains the responsibility of the customer to ensure that fire extinguisher is in good working order. Even though the service contractor (Kenru) stamps and certifies the extinguisher/suppression system. |
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| **C** | **What are the Basic Causes of the Incident/Accident** | |
| **BASIC CAUSES** | G4 | Hazards and risks not reassessed after repeated overheating and tappet cover failures |
| G14 | Conflicting priorities / inadequate oversight of contractor (FSS maintenance not verified for quality) |
| H1 | Known tappet cover heat hazard and coolant dilution risk not addressed through design or preventive action |
| H3 | Lack of engineering controls to automatically prevent overtemperature damage (engine cut-out, shielding) |
| H7 | Adequacy of fire suppression devices not verified (nozzle aim, routing, early detection not ensured) |
| H6 | Inadequate Design and shielding of turbo to prevent tapet cover deformation |
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| **D** | **REMEDIAL ACTIONS** | | | | | |
| **STEP 5**  **IDENTIFY REMEDIAL ACTION** | **CODE** | **What action is to be taken to prevent a recurrence of this incident?** | **Responsible Person** | **Target Date** | **Completion date** | **Signature** |
| F4 | Conduct mechanical audits on TMM | G Karsten | 05/09/2025 | 05/09/2025 |  |
| F4 | Conduct audit on fire systems on all primary production equipment | G Karsten | 19/09/2025 | 17/09/2025 |  |
| G5 | Conduct independent investigation into cause of the fire | G Karsten | 26/09/2025 |  |  |
| H7 | Implement Engine Cut-out Protection on all S2 Drill Rigs (Deutz) | S Sease | 12/09/2025 | 01/09/2025 |  |
| H2 | Implement recommendations re nozzle positioning and fire wire routing recommendations | S Sease | 12/09/2025 | 14/09/2025 |  |
| H7 | Implement Lubrivent/Sentinel engine overtemperature protection on S2s | S Sease | 30/11/2025 |  |  |
| J1 | Implement corrective actions / repairs on Primary Production Equipment | G Karsten | 30/10/2025 |  |  |
| M1 | Conduct audits on key underground support equipment and implement corrective actions | G Karsten | 30/10/2025 |  |  |
| H2 | Conduct test to confirm melting point of tappet cover at independent lab | G Karsten | 26/09/2025 |  |  |
| G4/F1 | Issue Non-conformance to OEM and FSS Service Provider and address inadequate support and poor performance issues | G Karsten | 26/09/2025 |  |  |
| M1/J1 | Implement monthly fire suppression system inspections as well as maintenance inspections by artisans during services (Training to be done on operators and artisans) | G Karsten | 30/11/2025 |  |  |
| J1/M2 | Implement new maintenance strategy for S2 Drill Rigs (Breakdown Inspections checklist, radiator cleaning, 6-monthly tappet cover, annual radiator swaps, etc), | S Sease | 31/08/2025 | 01/09/2025 |  |
| H5/H8 | Implement Foam/ Mist / LVS system on S2 Drill Rigs | G Karsten | 31/03/2026 |  |  |
| H1/H2 | Review Fire Risk assessment on all High Risk TMM and confirm adequacy of Fire Protection System design and type. | G Karsten | 15/12/2025 |  |  |
| H1 | Train all Drill Rig Operators on inspection of fire suppression systems and response in case of fire. (Update Training Standard Operator Training Material) | W Koekemoer | 30/11/2025 |  |  |
| H6 | Implement metal tappet cover or effective shielding | G Karsten | 30/11/20205 |  |  |
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**Accident/Incident Risk Investigation Team**

***(List all the names of the people present)***

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| **NAME** | **DESIGNATION** | **SIGNATURE** |
| **See attendance register** |  |  |
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**Comments**

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| **Remarks/Learnings by Employer OR Employer Representative** | | | |
| During the investigation the following were learned: | | | |
| **Employer Or Employer Representative** |  | **Date** |  |
| **Designation** |  | **Appointment** |  |

**Control List**

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| **(To be completed by the Safety Department)** | | | | | | | **Reported by** |
| Reported to Rand Mutual | YES |  | NO | X | Date | N/A | N/A |
| Reported to DMR | YES | X | NO |  | Date | 20/08/2025 | Rudi Opperman |
| **Investigation Verified By** | | | | | | | **Signature** |
| 3.1(a) Appointee | | | | | Date |  |  |
| 2.13.1 Appointee | | | | | Date |  |  |
| 2.17.4 Chief Safety Officer | | | | | Date |  |  |
| SHERQ Manager | | | | | Date |  |  |