

FIVE WHY INVESTIGATION

HP & LP FLARE IGNITION FAILURE

Facility (Leviathan/Tamar/AOT):	Leviathan	Operator Name:	NBL
Doc Number:	LPP-OP-NEM-OPS-RPT-0059	TAG Number:	[מספר תיוג]
Start Date:	October-17-2020	End Date:	October-17-2020
Start Time:	[סוד מסחרי]	End Time:	[סוד מסחרי]
Total Duration of Event [hh:mm]:	[סוד מסחרי]{see note1}		
Describe the failure	On Saturday, October 17, 2020 at [סוד מסחרי] the lead cook activated a fire alarm hand station [תיוג ציוד] and triggered a confirmed fire alarm in the living quarters [תיוג ציוד]. Per Cause & Effects, a confirmed fire in the living quarters initiated an [מתקן] of the platform at [סוד מסחרי] (See: Investigation Report LPP-OP-NEM-OPS-RPT-0058 for additional information.) The [תיוג ציוד] signal shunt tripped the breaker that feeds emergency generator power from [מתקנים על האסדה]. The flare control panel lost power. At [סוד מסחרי] the [מתקן] confirmed closed. [מתקנים על האסדה] of the status of the [מתקן] showed all [מתקן] to be lit prior to initiation of [מתקן]. Due to loss of power to flare control panel, no IO data was available starting at this time. At [סוד מסחרי] all [מתקן] had confirmed open automatically per [רכיב] , at [סוד מסחרי] the [מתקן] was visibly [רכיב] , [מידע אודות מתקנים ורכיבים על האסדה] At [סוד מסחרי], the LPP OIM made an announcement to proceed to the secondary muster location [מתקן] and that this was not a drill. [מידע המהווה סוד מסחרי] At [סוד מסחרי] a response team was dispatched to extinguish the fire. At [סוד מסחרי] the muster officer confirmed a full muster at the secondary muster location. At [סוד מסחרי], a second response team confirmed the fire was extinguished in the galley and the OIM was notified that the area was secure. At [סוד מסחרי] [תיוג ציוד] confirmed closed. At [סוד מסחרי], the [מתקן] were completely blown down. At [סוד מסחרי] the [מתקן] appeared out with [מידע המהווה סוד מסחרי] to [מתקן].		

	At [סוד מסחרי] the [מתקן] going to [מידע המהווה סוד מסחרי] . At [סוד מסחרי] the [מתקן] for the emergency power generators was manually closed. Power and ventilation for the [מתקן] was restored. [מתקן] were returned to service. [מתקן] [מתקן] . At [סוד מסחרי] the OIM stood down the muster and convened all personnel in the galley main hall with the kitchen isolated. At [סוד מסחרי] equalization around the [מתקן] was complete and [מתקן] were opened. By [סוד מסחרי], the [מידע אודות מתקן על האסדה] Using [מידע אודות מתקן על האסדה] , at [סוד מסחרי] the [מתקן על האסדה] was [רכיב] . At [סוד מסחרי] [מידע אודות מתקן על האסדה] (see Figure 8 below). At [סוד מסחרי] all [מתקן] confirmed closed. By [סוד מסחרי] the LPP had returned to target nominations. At [סוד מסחרי] on Sunday, October 18, 2020 the residual [מתקן] was visually confirmed out.
Describe any bodily injuries	None
Describe any property damage	None
Describe any reduction or interruption in production	[מידע המהווה סוד מסחרי]
Corrective Work Order:	None
Expected Return to Work (Production/Drilling/Infrastructure):	N/A
Technician Name:	[שם עובד]

{note1}

The duration of the flaring event is calculated from [רכיב] initiation to closing of [מתקן] . After the event was concluded, residual gas that was present in the [מתקן] was combusted in the flares [מידע המהווה סוד מסחרי] .

In Case of Flaring			
HP Flare		LP Flare	
Volume of gas sent to flare [mmscf]	Duration [minutes]	Volume of Gas sent to flare [mmscf]	Duration [minutes]
[מידע המהווה סוד מסחרי]	[מידע המהווה סוד מסחרי]	[מידע המהווה סוד מסחרי]	[מידע המהווה סוד מסחרי]

Other Potential Environmental Impacts	
Discharge Quantity	None
Hydrocarbon Spill Quantity	None
Hazardous Material Spill Quantity	None

	Root Cause/ Five Why	Notes/Comments
LP & HP Ignition Failure		
Why 1	During [רכיב] of the platform, why did the HP and LP flares not ignite?	[מידע אודות מערכות ומתקנים]
Why 2	Why did the [מידע אודות מערכות] go out?	Loss of power to the [מידע אודות מערכות] caused the [מידע אודות מערכות ומתקנים] . As a result, the [מידע אודות מערכות ומתקנים], and the [מתקן] went out. Loss of power to the [מידע אודות מערכות] also prevented automatic relighting of the [מתקן] as the [מתקן] was no longer energized.
Why 3	Why did the [מידע אודות מערכות] lose power?	The confirmed fire in the living quarters signal [תיוג ציוד] caused the [מידע אודות מערכות] to send a trip signal to [מידע אודות מערכות] [מידע אודות מערכות] . As the [מידע אודות מערכות] is located on the [ציוד], this resulted in a shutdown of the [מידע אודות מתקנים] power to the [מערכות] [מערכות]. As a result, the [מידע המהווה סוד מסחרי] was without power for [מידע אודות מערכות] before a manual reset was performed. During this time, there was no [מידע אודות מערכות] (due to the closure of the [מידע אודות מערכות] or ability to re-ignite the [מתקן] .
Why 4	Why was the [תיוג ציוד] signal sent?	Per the most recent revision of the [תיוג ציוד] [תיוג ציוד] should not be tripped on [תיוג ציוד] [תיוג ציוד]. There is an error in the [מערכות] that sends a trip signal to the [ציוד] that supplies emergency power from [מערכות] .

This incident is to be considered as a **Level 1 incident in the NEML OMS Element 11 risk matrix.**

Short Term Actions:			
1.	Troubleshoot and relight [מידע אודות מתקנים על האסדה] . Complete [מידע אודות מתקנים על האסדה] in normal status as of 29 October 2020).		
	Action Party:	Operations	Due Date: Oct-17-2020
2.	Perform visual inspection and maintenance of [מידע אודות מתקנים על האסדה] during scheduled facility shutdown and maintenance starting Nov 5th, 2020. Scheduled as part of critical scope during November Turnaround.		
	Action Party:	Maintenance	Due Date: Nov-15-2020

NOTE: To be completed by Supervisor

Proposed Action to Prevent Recurrence:				
Options	Instruction	Required (Y/N)	Reference Number	
Investigate	Conduct additional investigation into root cause of [מערכות] . Complete.	Y		
Investigate	Perform visual inspection and maintenance of [מתקנים] during scheduled facility shutdown and maintenance starting Nov 5 th , 2020.	Y		
Investigate	Investigate [מתקנים] to determine alignment with [מתקנים] . Complete.	Y		
Initiate Change	Move [מידע אודות מערכות] supply for [מערכות] . [תיוג ציוד] in progress.	Y		
Initiate Change	Correct [מתקן] logic to not trip [תיוג ציוד] . Complete.	Y		
Change Operational Procedure/Instructions				
Other				
Supervisor/Operator Name:	[שם עובד]		Date:	Oct-18-2020

Personnel Involved in Completing Investigation			
Crew Member	Position		
[שם עובד]	[שם עובד]		
Author of Report:	[שם עובד]	Date:	Oct-18-2020
Approver of Report:	[שם עובד]	Date:	Oct-18-2020
Contact Info.:			

[מידע אודות רכיבים וציוד על האסדה]

[מידע אודות מערכות ורכיבים על האסדה]

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