













OME SHE Learning













Learning number CES – HSI APR 235

Operating Entity CES: CDF - Outbound Logistics

Date of incident 26 April 2022

Incident type	Occupational Safety	Process Safety	Environment	Product Transportation	Health	Security	Equipment Damage	PSF
	X						X	

Relevant Life Saving Rules												

Relevant Process Safety Fundamentals												

Key Undesirable Event N/A

Description of the incident A Joint Venture (JV) partner Fuel Distribution Officer (FDO) was struck by the gantry vapour recovery arm as it fell while he was trying to connect it to the tanker prior to loading. The vapor recovery arm struck him on the left shoulder, and he twisted his right ankle as he was trying to get away.

Underlying and root causes

- UC1 - Damaged (Torn and deformed) face o-ring
- UC2 - Damaged of ball bearing race
- UC3 - Failure of the bolts connecting the flange to the bearing module
- UC4 - Grease that dried up within the swivel coupling resulting from inadequate maintenance system (ineffective inspection with run to failure) in place for the swivel joints
- UC5 - Use of one bolt from a different manufacturer is not in line with the accepted practice in Sasol
- UC6 - Failure in PSSR, punch out and/or QA for initial installation
- UC7 - External force resulting in overload as part of normal operation
- UC8 - Maintenance system failure

Root causes
One overarching root cause (Management system failure) was identified, however it is applicable in many different areas and as such is being noted as three separate root causes:

- RC1 - Management system failure, Maintenance management system: During the investigation it was determined that the maintenance management team is making use of a manual system (Excel based) to manage maintenance schedules (For all equipment including loading arms), additionally SAP is not being used to track the specific SOW for maintenance activities, this is being done verbally/manually between the appointed technician and the service provider. In addition, the following around the SAP PS7 maintenance program is noted:
 - Loading arms are loaded as a unit, so individual components are not identified
 - Strategies loaded on loading and VRU arms - Cards kicked out (every month) running between Apr 2017 to Nov 2019. Then all Maintenance plans were made "Inactive".
 - Since strategies were made inactive, only one card (loaded against a single load arm) was observed.
 - Quality of strategy - The strategy was noted as requiring only visual inspection
 - Number of strategies created:

✓ 2017	- 2673	- 2367 inactive state
✓ 2018	- 13	- 1 inactive
✓ 2019	- 42	- 1 inactive
✓ 2020	- 17	- 0 inactive
✓ 2021	- 05	- 0 inactive
✓ 2022	- 01	- 0 inactive
 - Total active maintenance plans on the whole Alrode Plant - 385 Plans - Single liners with no/little descriptions.

- RC2 - Management system failure, Procurement system failure: There is currently a system in place which requires monthly manual loading of POs for the inspections by the service provider as a result of no SLA or maintenance contract being in place. Additionally, the service provider being used for the inspections is not accredited for the work being conducted. The service provider being used for general maintenance is also not approved for the work they are being contracted for, and this service provider is currently yellow flagged since 2017.

- RC3 - Management system failure, SHE management system failure: Inconsistent reporting of incidents on site result in a lack of information as to what could have caused the prior damage to the VRU arm under review. Additionally, the incident governance system was not fully in place (see C rated finding), and the corrective action (Sharepoint incident management register) to the C rating is not being fully used. The SHE management of the service provider safety system did not identify the gaps associated with the scope creep into non-accredited scope and the usage of a yellow flagged service provider. As part of the investigation a review was done on the baseline risk assessment and the Bowtie for LOC, on the bowtie the only control for the prevention of an equipment failure event is inspection, this ties back to the failure in maintenance systems as inspections alone will not prevent an event, but rather intervention and action on inspections as well as routine maintenance.

Key learning and control improvement recommendations

1. All equipment failure incidents and activation of safety control devices to be managed as potential safety incidents
2. All equipment and components damaged during an incident to be preserved for investigation purposes
3. Formalise Service Level Agreement engagements with all service providers
4. Adopt standard Management Systems as used across Sasol
5. Involve technical subject matter expert as early as possible in incident investigation process
6. Formal process to be followed in tracking closure of corrective actions to be centralised
7. Equipment identified as defective should be immediately isolated
8. Ensure proper maintenance strategies are implemented

Identification of standard or good practice related to the incident

None identified

Flange from swivel where bolts shreaded off

Add pictures



To prevent future incidents, it is recommended that this incident learning is appropriately shared and implemented by relevant persons in your Operating Model Entity, where applicable.

Together towards ZERO HARM and SUSTAINABILITY