Uncontrolled spill of hot bitumen

WHAT HAPPENED

Hot bitumen was being delivered into a bitumen storage tank at an asphalt plant. All was going well with the contents gauge increasing as expected.

However, an uncontrolled spill of approximately 250 litres of hot bitumen occurred from the storage tank vent pipe.

After the bitumen spill had occurred the storage tank High-Level Alarm (HLA) and High High-Level Alarm (HHLA) both activated.

The contents gauges and alarms were calibrated during a maintenance shutdown two months before the bitumen spill occurred. Although the contents gauge was showing bitumen being added it is believed that it was not showing the correct quantity of bitumen in the storage tank. Post-delivery the reading on the contents gauge increased to the correct level. Site staff have been carrying out stock reconciliations and the contents gauge appeared to be accurate up until that point.

Root cause of the incident

- The contents gauge was checked by a gauge maintenance company and it appeared to be reading correctly.
- When the gauge probe was removed there was significant water ingress into the equipment. This may have been the reason for the inaccurate contents gauge reading.
- The failure of the HLA and HHLA was thought to be due to significant build-up of material in storage tank.
- The storage tank is horizontal and the contractor believed that a wedge-shaped block affected the accuracy of the contents gauge.

LEARNING POINTS / ACTIONS TAKEN

Actions taken

- The Safe Working Capacity (SWC) of the storage tank was reduced.
- The accuracy of the contents gauge is being verified through stock reconciliation.
- A calibration load was arranged.

Learning points

- The critical importance of accurate manual stock reconciliation from a known accurate start point.
- The importance of planned maintenance schedule to check cleanliness and accuracy of probes and content gauges.
- The importance of planned maintenance schedule to check cleanliness of bitumen storage tanks.
- Need to reassess the SWC limits for horizontal tanks.

LOCATION:	**ASPHALT/COATING PLANT**	**ALERT STATUS:**	**Normal**
ACTIVITY:	**MANUAL HANDLING AND STORAGE**	**DATE ISSUED:**	**25/08/2020 11:44:37**
SUB ACTIVITY:	**BITUMEN**	**INCIDENT No:**	**02567**