3.2 Petro: Naphtha was off spec

The chemical tanker had loaded naphtha in port A. 10,000 MT of the naphtha was to be discharged in port B, and the balance to be discharged in port C. Before loading began the cargo tanks had been inspected by a surveyor and accepted. Not all the cargo tanks were used for the naphtha cargo.

Previous cargo

The vessel had previously carried EDC (ethylene dichloride). During loading of the EDC cargo, both the CPP1 (clean petroleum product) manifold on the port side and the port side's common pipeline had been used.

During loading of the naphtha, the manifold connection was changed from the CPP1 to the port side's common manifold. It is unknown whether the CPP1 manifold was drained during the shifting of the loading arm.

After discharging the EDC the tanks were ventilated. The ventilation took approximately 10 days to complete. After this the EDC tanks and the CPP1 manifold were subsequently washed with water, according to the Chief Officer. First the tanks were washed with sea water and finally with fresh water.

Loading the naptha

The same CPP1 manifold and pipeline that was used for the EDC cargo was used during the loading of the naphtha cargo.

After loading the naphtha in port A the vessel sailed to port B and discharged 10,000 MT of naphtha. The cargo receiver in port B decided to mix the 10,000 MT into a shore tank which already held 23,000 MT of naphtha.

The vessel departed from port B and sailed to discharge the balance of the cargo in port C.

Contamination

Contamination was later discovered in port B when the cargo was discharged from the shore tank to the refinery. The cargo from the shore tank to the production line was immediately stopped.

The vessel's cargo samples were taken and analysed. All the samples were found to be within specification. There was no contamination to the cargo on board, which had been loaded in port A.

Analysis of the shore tank's samples were however off-spec and were contaminated by organic chloride which was not produced at the refinery of port B. The cargo receiver in port A also confirmed that they had not handled any EDC cargo and that no such cargo was made at the refinery – the terminal in port B only receives naphtha cargoes.

The EDC cargo was not handled at port A which was the naphtha loading port.

This made it most probable that the contamination was from the vessel, as the previous cargo loaded had been EDC.

Discharge at port C

It was noted that there was no contamination to the naphtha cargo when it was discharged in port C. Here the discharging was via the foremost manifold of the CPP common line on the port side. The port side's CPP1 manifold, which had been used for the EDC cargo and naphtha cargo in port B, was not in use.

EDC in manifold

It is likely that the EDC remained confined inside manifold CPP1 following the change of the manifold connection from CPP1 to the port side's common manifold and contaminated the naphtha cargo in port B during discharging. The organic chloride was identified by the analysis of the shore tank to be ethylene dichloride (EDC).

The cargo receiver in port B later sold the naphtha at a public auction at a considerable loss which the shipowner had to pay.

What can we learn?

- It is unlikely that the cargo tanks were insufficiently cleaned after carriage of the EDC. Although not recorded in the cargo record book, the Chief Officer stated that the cargo tanks were correctly washed after the ventilation.
- It is likely that the CPP1 manifold was insufficiently cleaned by means of ventilation and/or washing. The contamination likely occurred when loading of naphtha commenced at port A via the manifold CPP1 and flushing the EDC material from the manifold into the first tanks opened to receive the cargo. As a result of the higher density, the EDC contaminant probably settled at the bottom of the cargo tanks, forming a very thin layer and/or pockets, allowing it to remain undetected upon completing the loading operation at port A and prior to the start of discharging at port B.
- The procedures carried out for ventilation and tank cleaning were not correctly recorded in the cargo record book and were only described by the Chief Officer when he was interviewed. It is imperative to keep correct records in the cargo record book.
- It is important to have good record keeping as per company SMS for tank cleaning.