

HYDROCARBON MANAGEMENT

Losses stay steady

The latest analysis of the 2020 data on global marine crude oil voyage losses, presented by Peter Coulson, Consultant to the EI's HMC-4A Marine Oil Transportation Database Committee, shows losses have remained steady over the past year.

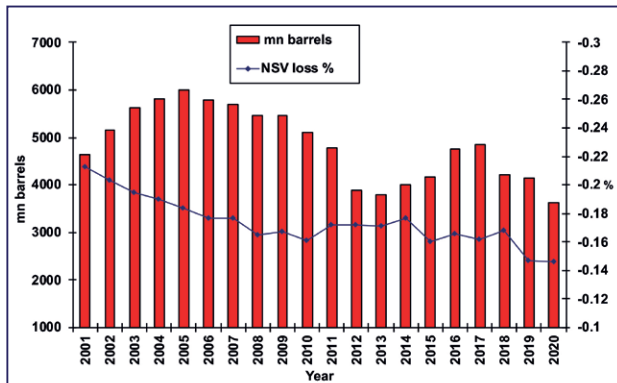


Figure 1: Database volume and average recorded net loss of crude oil, 2001–2020
Source: HMC-4A

The Energy Institute's (EI) HMC-4A Marine Oil Transportation Database Committee has been collecting and analysing worldwide oil shipping data for over 25 years and meets twice a year. As a result of the COVID-19 pandemic, the 2020 autumn meeting and 2021 spring meetings were held online. Usually, the meetings are held face-to-face, alternating between London and the US.

Committee members submit their voyage measurement data annually and receive a global analysis and confidential individual company reports.

The following member companies submitted data for 2020: Bazan, BP, Cepsa, Chennai Petroleum, Chevron, Ecopetrol,

Equinor, Essar Oil UK, ExxonMobil, Galp Energia, Marathon Petroleum, Mercuria, Monroe Energy, Petrobras, Petroineos, Phillips 66, Preem, Repsol, Saras, Shell and Total. Additional members are always welcome.

The main findings from the global analysis are presented below. US inland barge movements are analysed separately and are not included.

Database development

The total number of ship voyages reported for 2020 decreased as did loaded volume, with reported bill of lading (BOL) totalling 5.35bn barrels. The volume of crude with complete voyage data also fell, to 3.635bn barrels as shown in Figure 1. This was expected due to COVID-19, as there were less shipments of cargoes and an increase in cargoes stored on vessels for longer periods.

Comparison with the BP Statistical Review of World Energy 2021 report indicates that the 2020 database includes approximately 38% of the global shipped volume at BOL and contains complete load and discharge data for around 26% of estimated global seaborne movements.

Global losses

Losses fell steadily after 2001 to a net standard volume (NSV) loss of -0.161% in 2010 (by convention losses are given as negative). The 2011 figures showed an increased loss of -0.172%, with losses then remaining steady until 2015, which saw a significant fall to -0.160%. The fall in 2019 from -0.168% to -0.147% was the first significant change since 2015. The loss (-0.146%) remains steady in 2020.

It must be noted that losses include apparent as well as physical losses. Apparent losses result from the combination of fixed and random errors in the measurement systems used at load and discharge.

In recent years, changes in NSV loss have been largely driven by gross or total calculated volume

(TCV) loss. This was the case for the change seen in 2019, with TCV loss falling from -0.16% to -0.13%, repeated in 2020. Water loss remained the same; see Figure 2.

TCV loss comprises any real losses due to evaporation, slack pipelines or passing valves, plus any apparent losses due to systematic measurement differences. Water loss represents any additional water reported at discharge compared with that reported at load, ie an accounting loss in terms of oil quantity but not a real loss of either oil or water.

The significant fall in 2019 was due to reduced losses seen for several high-volume grades/ports rather than any major shift in trading patterns. During 2020 there was a change in shipments and storage due to the pandemic, but this appears not to have influenced the figures.

Loss comparison for individual crude oils

A comparison of 2020 and 2019 mean NSV loss is available on the HMC-4 website at <https://oil-transport.info/>. The data is based on the crude grades with 20 or more voyages. Also included is the mean of the reported API gravity, temperature data and the overall percentage loss based on reported total barrels shipped.

Conclusion

The significant fall in global crude oil voyage losses in 2019 was confirmed by the 2020 figures. There was no apparent effect from the change in shipment patterns due to COVID-19. Significant loss differences remain for individual ports, particularly offshore loadings.

The Committee's detailed work continues to highlight where improvements can be made, this is included in EI standards on measurement and loss control, see <https://publishing.energyinst.org/topics/hydrocarbon-management>

The HMC-4 Committee also analyses US crude oil barge movements and has developed product loss benchmarks which were last reviewed in 2019. New members are always welcome to join and any companies with data to submit should contact Peter Coulson at e: peter.coulson@ocelotech.net

The EI as a body is neither responsible for the statements or opinions presented in this article nor does it necessarily endorse the technical views expressed.

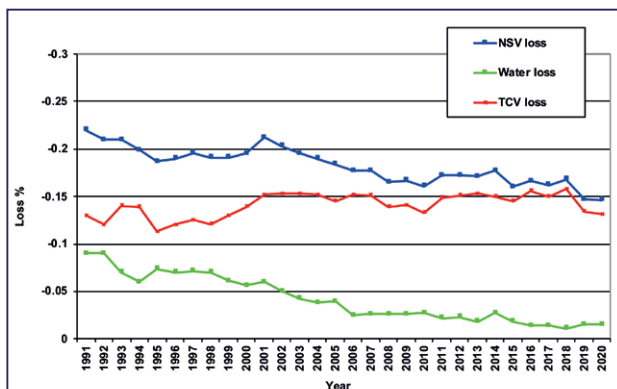


Figure 2: NSV, water and TCV losses, 1991–2020
Source: HMC-4A