21/12/2022

Joshua Copage,
Environmental Protection Agency,
Inniscarra, Co. Cork

Submitted via EDEN

Re: Irving Oil Whitegate Refinery (P0266-03)
Re Firewater Retention (FWR) response to CI Action A11233

Dear Mr Copage,

The purpose of this communication is to provide an update with regard to pipeline inspections as required by the EPA and communicated via EDEN CI001806 Action A112338 as below;

Response Noted. Please provide the following information so that the submitted proposal may be assessed further;
- Evidence that the proposed use of the Ullage tanks on site to retain water in an emergency situation is deemed an acceptable industry practice. Where appropriate, referring to industry regulations and guiding bodies (e.g. AGI), and
- Clarification that, in the event contaminated firewater (containing complex contaminants) is pumped into the Ullage tanks, that the existing product could be recovered without undue wastage.

Your response, including relevant documentation, may be submitted by 21/12/2022 as a message response to CI Action A112337 in EDEN.

Response
Each item is addressed as follows;

Item 1
- In response to the *Firewater Retention Risk Assessment* (ref CI001816 Action A108918) whereby it was calculated that 9,590m^3 of firewater would need to be retained, IOW conducted an engineering study to establish the most practical method of achieving this while satisfying the 2019 EPA *Guidance on Retention Requirements of Firewater Run-off*. Having assessed a number of options, it was concluded that the most practical solution was to;
  i. divert the main site drain upstream of the skimming pond
  ii. pump the firewater to a manifold on Corkbeg Island where it will be stored preferentially in the WWTP equalisation storage tanks U-10 and U-13 and, should additional retention capacity be required
  iii. pump any additional firewater to one of the crude tanks (C1 to C7).

  This proposal is in line with the EPA Guidance which states;
  "Firewater run-off must be retained within the operational site. The retention can be provided by means of the site's drainage system and other suitable infrastructure, which is not exclusively foreseen for firewater retention (e.g. storm water attenuation ponds / tanks in waste water treatment plants)"
  Furthermore, the Section 5.3 of the guidance states;
  "Equalisation tanks associated with onsite WWTPs may be considered as possible retention systems, but many such facilities operate at or very close to their capacity, and additional retention capability may be limited".
  While IOW's "Equalisation tanks" have available capacity during normal refinery operation, the ability to divert remaining firewater to the crude tanks provides the "additional retention capacity" should the need arise.

In consideration of the EPA's request to provide **evidence** that the IOW proposed solution is an **acceptable industry practice** a review of **industry guidelines** was conducted. Summarised below are some of the relevant standards reviewed and applicable sections regarding the topic under consideration;

- Safety and Environmental Standards for Fuel Storage Sites (Buncefield guidance, 2009)
  MIIB Recommendation 17
  "The Competent Authority and the sector should jointly review existing standards for secondary and tertiary containment with a view to the Competent Authority producing revised guidance by the end of 2007. The review should include, but not be limited to the following:
  (d) Improving firewater management and the installed capability to transfer contaminated liquids to a place where they present no environmental risk in the event of loss of secondary containment and fires".

- COMAH Competent Authority Policy on Containment of Bulk Hazardous Liquids at COMAH Establishments
  11. Facility design
  "The installation shall have sufficient capacity to hold safely the anticipated or foreseeable volume of hazardous liquids, including firewater, compatible with the intended operational characteristics".

- CIRIA C736 Containment Systems for the Prevention of Pollution (2014)
  CA containment policy for fuels:
  "Sufficient capacity to allow for tank failure and firewater management"

- EI Model Code of Safe Practice Part 19:
  Fire Precautions at Petroleum Refineries and Bulk Storage Installations (2012)
  Section 1.7.3 Environment Impacts
  "Fires at petroleum installations have the potential to result in serious environmental impacts due to loss of product and firewater or cooling water containment.
  Some measures that could be taken include:
  Containment: By using or installing facilities for containing firewater and foam run-off (secondary and tertiary containment measures)".

- UK HSE Guidance Note 70
  The control of fire-water run-off from CIMAH sites to prevent environmental damage (2011)
  "Permanent provision for the containment of large quantities of fire-water run-off, typically several thousand cubic metres and above, may be achieved by lagoons and tanks.
  Tanks have the benefit of providing a relatively large storage volume in a small area, though they are expensive compared to lagoons, particularly for the larger volumes. Where available, an economical option might be to make use of a redundant or spare tank".

From the literature we reviewed and discussion with our technical advisors, we did not identify any industry guidelines indicating that in an emergency scenario, introducing firewater to crude tanks was not recommended.

Item 2

- Since 1959 to the present day, Whitegate Refinery's core business has been the refining of crude oil. In that time, a vast knowledge and expertise has been accumulated and we view this proposed approach and management of firewater as consistent with our day to day operational procedures.

  Crude oil imported into the refinery is stored in 7 purpose built crude tanks C1 to C7. These tanks are built in accordance with API standard *650 Welded Tanks for Oil Storage* and inspected in accordance with API Standard 653 *Tank Inspection, Repair, Alteration, and Reconstruction.* Similarly, transfer of materials to and from these tanks via pipelines constructed in accordance with ASME B31.3 *Process Piping Guide* and inspected to API Standard 570 *Piping Inspection Code In-service Inspection, Rating, Repair, and Alteration of Piping Systems.* In complying with these standards, IOW ensures that its crude pipelines and tanks are designed and constructed to transfer, and store crude oil and any contaminants contained therein.

  All imported crude oil has a percentage of water entrained. Crude tank design in combination with site water run off (WRO) procedures ensure that this water is efficiently removed and stored in dedicated water storage tanks U10 and U13 for later treatment in the wastewater treatment plant (WWTP). Transfer of material from the refinery back to crude tanks is also common practice governed by site procedures. This may occur to allow reprocessing of crude, crude slops or finished products. Any contaminated firewater diverted to crude will act in identical fashion as entrained water and collect at the bottom of the tank beneath the oil ahead of water removal via the WRO procedure. Similar to entrained water, any contaminants contained therein will be treated in the WWTP. Any hydrocarbon contaminants in the firewater will naturally separate from the aqueous firewater and remain with the crude layer for later processing through the refinery.

  IOW is therefore satisfied that there will be no **undue wastage** as a result of the proposed FWR solution as we consider any firewater introduced to the crude tanks in the event of an emergency will be treated in accordance with our standard operating procedures.

Approved By:  Date: 21/12/2022

Austin Broderick, HSE Manager,
Irving Oil Whitegate Refinery