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TO: HID CI 1-4, HID HQ, HID SI3 (Bands 0-4)

## **APPLICATION OF COMAH TO JETTIES WHICH ARE NOT PART OF THE “ESTABLISHMENT”**

### **PURPOSE**

This Circular gives information about jetties associated with COMAH establishments and clarifies the position on assessment, inspection, investigation and on charging for these activities.

### **BACKGROUND**

1. A number of major hazard establishments subject to COMAH are supplied with raw materials etc. from pipelines connected to a jetty outside the establishment. The jetty may be under the control of the operator of the establishment (the principal establishment), or may be under the control of a third party. This circular addresses both circumstances. There is a potential for major accidents at the principal establishment, stemming from the way that the jetty operations are controlled and managed. See Annex 1 for examples of such events.

### **JETTIES UNDER THE CONTROL OF THE OPERATOR OF THE “PRINCIPAL ESTABLISHMENT”**

2. A number of enquiries have been made about the application of COMAH to jetties under the control of the operator of the principal establishment, connected by a pipeline passing over land outside the operator’s control.
3. HSE’s view on the meaning of the defined term “establishment” in COMAH, is that the establishment is defined by the extent of the whole area under the control of an operator.
4. This means that jetties serving an establishment, but which do not form part of the establishment as defined, are not subject to COMAH unless the jetty itself is subject to threshold levels of dangerous substances. **Guidance on the**

**allocation of HID/FOD enforcement responsibilities is given in para 19 below.**

5. However, COMAH requires that the operator of an establishment should consider internal or external events which could affect the operation of the site.
6. Schedule 4, Part 2 provides for minimum information to be included in a safety report and paragraph 4(a), in setting out the extent of the requirement for accident scenarios, requires **“a summary of the events which may play a role in triggering each of these scenarios, the causes being internal or external to the installation;”**.
7. HSE considers that this paragraph requires an operator to take account of external risks in the safety report, including risks from jetties which service a COMAH establishment. Where a safety report does or should address risks from jetties, assessment of the report is within the functions of the competent authority (CA). As a result, these are **chargeable** activities, provided that the work undertaken is for the purposes of enforcing COMAH at the principal establishment.
8. Subsequent inspection of jetties relating to the measures described, is also a chargeable activity, as it is also necessary to verify that the measures set out in the report have been put in place, maintained and are still relevant to current conditions. Inspectors undertaking chargeable work at jetties, including assessment, should inform the operator at the time that the work will attract a charge.
9. If a major accident could be caused at the jetty as a result of an event at the principal establishment, this should also be considered in the safety report. It is possible, for example, through failure to control gravity flow from storage tanks sited above the level of the jetty, for an incident to occur at the jetty. Such scenarios should be addressed in the safety report.
10. If a major accident occurs at the establishment and the cause is linked to the jetty, or its design, construction, operation and maintenance, an investigation of the major accident could involve the jetty. This also would be a chargeable activity on the principal establishment.
11. Accidents at the jetty which do not have the potential to affect the operation of the establishment, are not within the scope of the CA's COMAH functions.

#### **JETTIES OPERATED BY PERSONS OTHER THAN THE OPERATOR OF THE“PRINCIPAL ESTABLISHMENT”**

12. Where a jetty serving a major hazard establishment is operated by a separate company to the operator of the principal establishment, the safety report for the principal establishment must consider the potential for the jetty operations to cause or aggravate a major accident on its establishment. Some of the measures to control the risk may lie with the third party and be outwith the direct control of the establishment. In such circumstances, the principal

establishment safety report should explain what action will be taken by the principal establishment if the measures at the jetty fail.

13. The measures taken by the jetty operation could be subject to inspection for the purpose of assessing the safety report e.g. where a serious deficiency is suspected, or to verify that measures at the jetty, on which the principal establishment relies, are in place. Assessment of the safety report, inspection and the investigation of incidents (see paragraphs 7-10 above) would be a chargeable activity against the operator of the principal establishment.

### **APPLICATION TO COMAH LOWER TIER (LT) SITES**

14. The general duty under regulation 4 of COMAH, to take all measures necessary to prevent major accidents and limit their consequences to the environment, applies to all COMAH sites. A LT operator would be expected to take account of such risks in their identification and evaluation of major accident hazards under regulation 5, duty to prepare and implement a Major Accident Prevention Policy.
15. Where a jetty is separate from the LT site but under its control, such LT sites, in taking account of risks from jetties, will be subject to chargeable inspection as set out in paragraphs 7-10 above.
16. For LT sites associated with a jetty operated by a third party, verification of the measures taken at the jetty, or investigation of an incident at the LT site caused by the jetty, would be chargeable against the operator of the principal duty holder on the basis of the point made in paragraph 10 above.
17. However, before carrying out COMAH chargeable inspections and investigations at jetties, it should be clearly established that they are linked to COMAH functions directed at the LT duty holder.

### **SECURITY AT PORTS**

18. SPC/ADMIN/47 'Effect of the International Ship and Port Facility Security Code (ISPS Code) on HSE Inspectors' advises on the need for HSE inspectors to obtain a Restricted Area (RA) security pass for access to certain areas of port and designated RAs from 1 July 2004 onwards.

### **HID/FOD DEMARCATION AND CO-ORDINATION**

19. Guidance on the allocation of HID/FOD enforcement responsibilities for explosive, flammable and toxic substances at jetties is given in paras 26-29 of OC 18/9 HID/FOD Demarcation. Close liaison will be necessary between HID and FOD inspectors at jetties where FOD have the primary enforcement responsibility to ensure a coordinated approach.

### **FURTHER INFORMATION**

For further information, contact HID CI4, (VPN 523 3721).

## EXAMPLES OF EVENTS AT JETTIES AND COMMENTARY RE PIPELINES LEGISLATION

The following examples are of operational events which could be relevant to COMAH. These are in addition to incidents caused directly by a fire/explosion at a jetty. Although there have been no major accidents of this kind in Great Britain, the incident at Braefoot Bay in 1993, when a liquid petroleum gas tanker "Havkong" broke loose from her moorings while loading a cargo of butane, illustrates the potential for a serious accident. This incident is described in the "Level 3 Guidance for the assessment of technical aspects of COMAH safety reports" on the HSE Internet.

A leak or emission from a pipeline and its ancillaries, affecting the principal establishment, or spreading from the principal establishment could result in a COMAH major accident. The principal establishment should consider such scenarios and control measures in its safety report.

The Pipelines Safety Regulations 1996 are also relevant. Where failure of a pipeline at a jetty or outside the principal establishment does not have the potential to cause a major accident at the principal establishment, then the lead will remain with HID HID SI3 to deal with the incident under the Pipelines Safety Regulations 1996. The COMAH CA should be informed. In the circumstances shown in the following examples, which all had the **potential** to affect a COMAH establishment, it will be necessary to liaise with HID SI3, as there could be issues for pipelines legislation as well as COMAH.

1. **Pressure surge** in the pipeline, due to closing valves too rapidly, may lead to failure of vulnerable parts, such as flanges. This could lead to serious danger to human health and the environment, both on and off the establishment.
2. **Pigging operations**, as there are traps at either end of a pipeline. During a pigging operation to remove unleaded petrol from a 12 inch pipeline, an explosion occurred behind a pig as it approached the trap at the storage site. The pipeline fractured below ground and at a pig diverter. Large fragments of cast iron valve bodies were thrown 30-50 feet. Flames from the fracture at the diverter caused nearby storage tanks to be blackened.

The pig was driven by compressed air - a procedure used without incident during the previous 25 years or so. However, the recent change to unleaded petrol may have been significant. Following the incident, modifications were made to allow pigs to be propelled with nitrogen only. This would ensure that there was no flammable mixture in the pipeline which could be ignited - for example, by static electricity

3. On completion of a **pigging operation** to remove unleaded petrol from a pipeline between a jetty and storage site, two explosions occurred in the pipeline - one at the jetty and another at the storage site. The explosions may have originated at the jetty with the fire travelling through the pipeline causing pressure-induced failure at the site. A fire followed the explosion at the jetty end.

In this case a “pig train” comprising two pigs separated by a slug of nitrogen was driven by compressed air. The compressed air behind the second pig probably contained enough petroleum vapour (from the wet walls of the pipe) for a flammable atmosphere to exist. Again, the recommended way to pig these types of pipeline is to use nitrogen only.

Although both these incidents resulted in explosions and fires, there is the potential for major environmental damage, especially if the pipelines fail at the jetty and discharge their contents into rivers/river banks

**4. Tanks overfilled, due to inadequate control of transfer from the jetty. (Abstract from IchemE database follows:)**

A butadiene vapour cloud (less than 1 tonne) was released from a 2 inch diameter, 60 foot high blow down vent located in a tank farm adjacent to a sphere. The gas release occurred as a cargo of butadiene raffinate commenced unloading from a ship at a nearby jetty. It resulted from the drain valves on the jetty manifold being inadvertently left open after the blind/spade had been swung open on the previous shift. The oncoming shift believed the ship was already lined up to commence unloading and that it was only necessary to wait for the laboratory's clearance on the analysis of the cargo before opening the main jetty isolating valve. Product separation at the jetty manifold is achieved by the use of blinds. Before the blinds are swung to the open position, prior to lining up the correct pipework system, any residual pressure that may be present in the manifold is released to the appropriate drain drum which is vented in the tank farm.

Discharge commenced without checking the status of the drain valves. Fortunately, liquid was immediately seen coming out of the vent by a tank farm operator, who immediately instructed the jetty operator to stop the loading operation.

A cloud of butadiene vapour, approximately 35 feet in diameter and 10 feet high drifted across the docks and shipping operation at the other jetties were stopped. Precautionary measures were taken by the other ships e.g. all accommodation openings were closed and the cloud eventually dispersed safely (sic) away.

**5. Wrong or contaminated material transferred from the jetty. (Abstract from IchemE database follows:)**

Petrol had been pumped from a ship to a shore tank. The pipeline was washed out with water and a transfer of kerosene from the ship to another tank, through the same pipeline, was started. Seven minutes later there were three explosions in rapid succession, which lifted the roof of the tank. A fire started but soon extinguished itself.

The obvious explanation is that the kerosene was contaminated with petrol, either through leaking valves or because the transfer line had not been washed out thoroughly. However, an investigation showed that contamination did not occur. The valve isolating the kerosene tank was tested and found not

to leak and samples taken from the ship, the pipeline and the kerosene tank, all showed no contamination with lighter fractions.

The common transfer line from the jetty was connected to the individual tanks by hoses. Presumably, this was done so that the hoses could be disconnected when not in use, thus preventing contamination through leaking valves, a method still sometimes used. However, the hoses were all connected. After investigation it was found that there was a layer of water beneath the kerosene and bubbles of gas were noticed arising from it. The water was sampled. It was river water and decomposition of the organic matter in it, was found to produce a gas (marsh gas) containing methane (or ethane) and hydrogen. It was concluded that this was the source of the explosive mixture. The probable source of ignition was static.