

**CONTROL OF MAJOR ACCIDENT HAZARDS DIRECTIVE  
MAJOR ACCIDENT: SHORT REPORT**

**REPORT PROFILE**

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**1** (For CI4 use only)

**Accident Code:** GB/2005/001 - [02]

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**2** (For completion by investigating inspector)

**Date and time of Major Occurrence:**

Start – 11 December 2005 at 0601 hours

Finish – 14 December at 1936 hours

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**Establishment:**

Name: Hertfordshire Oil Storage Ltd, British Pipelines Agency & BP Oil UK Ltd

Address:

Buncefield Terminal  
Green Lane  
Hemel Hempstead  
Herts  
HP2 7HZ

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**Type of industry** (select from the list at Annex 1):  
Petrochemical, refining, processing

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**Seveso II Status:**

Article 9 – SR

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**Additional comments:**

Additional information is available on the Buncefield Investigation web site  
<http://www.buncefieldinvestigation.gov.uk/>

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## **ACCIDENT PROFILE (SHORT REPORT)**

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### **1. Accident Type(s):**

**Release/Water contamination/Fire/Explosion/Other**

**- brief description and brief explanation of why incident reportable; indicate gravity level where known:**

During still and cold weather conditions large quantities of vapour were seen emanating from a bund on the NW corner of the site consistent with loss of containment from tanks or pipework within or close to that bund. This was followed by a massive explosion and several other lesser explosions. A large fire ensued that engulfed 21 of the tanks on site.

Groundwater monitoring undertaken to date, using boreholes either installed prior to or subsequent to the incident to monitor groundwater quality at the Buncefield site, has identified concentrations of contaminants in excess of groundwater quality standards. These contaminants are primarily perfluorooctane sulphonate (PFOS), zinc and hydrocarbons.

Based on the distances between the boreholes located north of Tank 12, adjacent to Cherry Tree Lane, at Hogg End Lane and adjacent to the effluent treatment plant in Green Lane, all of which have shown evidence of contaminated groundwater, the Competent Authority is satisfied that an area greater than one hectare of groundwater has been affected as a result of the incident.

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### **2. Substance(s) Directly Involved:**

Toxic/Ecotoxic/**Flammable**/Explosive/Other

**- brief description [name(s) and/or CAS no(s) & quantity(ies) lost, etc]:**

On 11 December the site held over 35 million litres of petrol, diesel and aviation fuel. There was a loss of around a third of the site inventory, mostly of motor spirit and aviation kerosene, most of which was consumed in the fire. The full figures will be subject to refinement through the course of the investigation.

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### **3. Immediate Source(s) of Accident:**

**Storage/Process/Transfer/Other**

**- brief description [location, type, size, etc where accident originated]:**

During still and cold weather conditions large quantities of vapour were seen emanating from a bund on the NW corner of the site.

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**4. Suspected Cause(s):**

**Plant or Equipment/Human/Environmental/Other**

**- brief description [nature of defect, error, failure, etc; event sequence]:**

The cause of the original loss of containment of fuel, mostly likely motor spirit, has not yet been fully ascertained. The release appears consistent with loss of containment from tanks or pipework within or close to a bund in the NW corner of site.

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**5. Immediate Effects:**

**Human deaths/Human injuries/Ecological harm/National heritage loss/Material loss/Community disruption/Other**

**- brief description [on/off-site, numbers, size, costs, habitat, etc]:**

The explosion caused widespread damage up to 2km from the site. Several homes were severely damaged and hundreds received minor, non structural damage. 20 businesses employing 500 people were destroyed and the premises of 60 businesses employing 3500 people were badly damaged. 60 people received minor injuries, typically from flying debris. There were no fatalities. Large quantities of black smoke were emitted from the resultant fire which dispersed at a high level over southern England and beyond. The fire burned for 3 days and large quantities of water and foam were used to extinguish the flames. Early indications are that some product, water and foam flowed off site. Remediation work has commenced and work continues to evaluate the long and short term effects on the environment, on ground and drinking water contamination and effects on the health of persons in the vicinity.

Groundwater monitoring undertaken to date, using boreholes either installed prior to or subsequent to the incident to monitor groundwater quality at the Buncefield site, has identified concentrations of contaminants in excess of groundwater quality standards. These contaminants are primarily perfluorooctane sulphonate (PFOS), zinc and hydrocarbons.

Based on the distances between the boreholes located north of Tank 12, adjacent to Cherry Tree Lane, at Hogg End Lane and adjacent to the effluent treatment plant in Green Lane, all of which have shown evidence of contaminated groundwater, the Competent Authority is satisfied that an area greater than one hectare of groundwater has been affected as a result of the incident.

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**6. Emergency Measures Taken:**

**On-site systems/External services/Sheltering/Evacuation/Decontamination/Restoration/Other**

**- brief description [on/off-site, numbers, duration, type, etc]:**

The police and fire service led the emergency response and at the peak of the incident there were 180 firefighters tackling the blaze using 26 fire pumps and over 700,000 litres of foam were used. Until the cause of the explosion is determined and what caused any loss of containment of fuel, it is not possible to make definitive recommendations to ensure and improve safety in the future at this or similar depots. About 2000 people were evacuated. Sections of the M1 motorway were closed.

This particular depot will be out of commission for many months. For other similar depots the Competent Authority has issued a Safety Alert to operators and is undertaking a series of inspections to ensure that preventative measures meet current standards.

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**7. Immediate Lessons Learned:**

**Prevention/Mitigation/Other**

**- brief description [immediate precautions appropriate]:**

The substantial overpressure resulting from the explosion is a matter of concern and resources are being targetted at determining why this was the case. The results of this work will be of significance to the industry and other CAs and will be widely disseminated when known. It will also be relevant to reviewing standards of safety and environmental protection at such sites as well as policy on land use planning matters.

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\* delete those not applicable

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## Annex 1: Type of industry categories

<b>Industry</b>
Agriculture
Building and works of construction
Ceramics (bricks, pottery, glass, cement. Plaster, etc.)
Electronics and electrical engineering
Fairgrounds/amusements
Food and drink
General chemicals manufacture
General engineering, manufacturing and assembly
Handling and transportation centres (ports, airports, lorry parks, marshalling yards, etc)
Medical, research, education (includes hospitals, universities, colleges, etc)
Metal refining and processing (includes foundries, electrochemical refining, plating, etc)
Paper manufacture, printing, publishing
Pesticides, pharmaceuticals, other fine chemicals
Petrochemical, refining, processing
Plastics and rubber manufacture
Power supply and distribution (electric, gas, etc)
Shipbuilding, shipbreaking, shiprepair
Textiles, clothing and footwear
Timber and furniture
Waste treatment, disposal
Water and sewage (collection, supply, treatment)
Wholesale and retail storage and distribution (incl. LPG bottling and bulk distribution)
Not known/not applicable
Other