



ITOPF PRESENTATION TO PAJ Oil Spill Symposium 2009

HEBEI SPIRIT, Oil Spill, South Korea, 7 December 2007

Oil Spill Response – The Technical Advisor’s Perspective

By

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During the morning of Friday 7th December 2007, whilst at anchor off Taeon, Republic of Korea (36°52.3N, 126°03.4E) awaiting discharge at Hyundai Oilbank refinery, the VLCC HEBEI SPIRIT (146,848GT, built 1993) was struck by the crane barge, SAMSUNG No.1. It was reported that the crane barge was being towed by two tugs when the tow line broke in poor weather conditions.

HEBEI SPIRIT was laden with 209,000 MT of four different Middle Eastern crude oils. As a result of the collision, No.1, No.3 and No.5 port cargo tanks were punctured and before the leak was completely stemmed, 9,400 tonnes of oil (a mix of Iranian Heavy, Upper Zakum and Khafji) had been spilled.

ITOPF was mobilised to attend the incident on site on behalf of Assuranceforeningen Skuld (Skuld P&I) and the IOPC Funds. ITOPF has had two to three technical advisers continuously on site since the beginning of the incident.

Movement of Spill and Extent of Contamination

The prevailing north-westerly winds and coastal current carried the oil onto shorelines southeast of the collision site. During the initial few days of the incident oil contamination was confined largely to Taeon County, Chungcheongnam-Do Province. The area is characterised by a large tidal range with shallow shelving coastlines, which has resulted in oil stranding across intertidal areas of up to 200m wide. Long sand beaches of several kilometers, as well as pocket beaches of various substrates interspersed with extensive rocky headlands and man-made structures within numerous ports have all been oiled.

Over a period of several weeks, mainland shorelines and islands further south (in Jeollabuk-Do & Jeollanam-Do provinces) became contaminated by emulsified oil and tar balls. Oil finally reached Jeju Island (approximately 375km south of the spill site) in early January 2008. Much of Korea’s western coast has therefore been affected to varying degrees.

Response Activities

The Korea Coast Guard (formerly the National Maritime Police Agency – MPA), a department of the Ministry of Maritime Affairs and Fisheries (MOMAF), has overall responsibility for marine pollution response in Republic of Korea waters. In accordance with the Korean Marine Pollution Prevention Act, the spiller is under obligation to respond to an oil spill incident, to undertake any clean-up and prevent the oil from spreading. For shore cleaning, reliance is placed on local labour with essential equipment and supervision coming from clean-up contractors. ITOPF has been offering advice by working within the Coast Guard command post and also extensively in the field.

At Sea Response

At sea response was led by the Coast Guard with support from the navy and Korean Marine Pollution Response Corporation (KMPPRC). More than 100 vessels were used along with over 1,500 private

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fishing boats. Dispersants were initially applied to heavier concentrations of oil from vessels. Helicopters with spray booms were also later used along with small fixed-wing crop sprayers to target small areas of heavy oil concentrations. On 16th December the Korean government mobilised the ADDS Pack (Airborne Dispersant Delivery System Package) loaded onto an OSRL/EARL Hercules transport aircraft and a single sortie with a 5 tonne "test spray" was undertaken.

Tens of kilometres of containment boom have also been deployed either at sea, or close to sensitive coastal areas. The government-led at-sea response was completed within two weeks but a large fleet of fishing vessels continued to be deployed in towing small lengths of sorbent boom and/or collecting tar balls.

Shoreline Clean-Up

Following the spill, a major shoreline clean-up operation was launched, involving in excess of one million man-days within the first six weeks. Twenty three separate clean-up contractor companies have been involved, hiring many local villagers as labourers (up to 10,000 people a day). Significant numbers from the armed forces have also been deployed and there has been a huge volunteer effort (up to 50,000 a day).

The clean-up operations have been undertaken over three provinces, and over 300 kilometres of coastline and hundreds of islands. The geography of the western coastline of Korea has provided numerous logistical problems including: sea transport of personnel and equipment, strong currents, shallow waters, steep rocky shorelines and harsh winter weather. The primary clean-up technique has involved using the large workforce to manually remove the oil using buckets, shovels and sorbent pads. Wide-spread manual wiping of rocks and pebbles using sorbent materials and other textiles has also been carried out. Contractors used vacuum trucks, skimmers and mechanical means at selected sites. Removal of bulk oil is largely complete now and secondary clean up techniques, such as surf washing and flushing are now being utilised. Mechanical stone washing and hot water high pressure treatment is also being used, while in other place ITOPF's recommendation for cleaning to be left to natural processes is being followed.

Waste Disposal

The shoreline clean-up operations have generated large quantities of oiled waste. Hyundai Oilbank has provided a storage facility for liquid oil, which now contains around 2,000 tonnes of an oil/water mixture. More than 20,000 tonnes of solid waste have also been generated to date, particularly oiled sorbents and PPE used to equip the workforce. Individual clean-up contractors have organised their own solid waste disposal through incineration at licensed facilities.

Pollution Damage

Fisheries and Mariculture

Fisheries and mariculture are a very important component of Korea's national economy. Much of the west coast of Korea is used for such enterprises and these have been severely affected by the spill with serious socio-economic implications. A number of demonstrations have taken place and it has been reported that three fishermen have taken their own lives.

Vessel-based capture fisheries use net, long-line and pot fishing in coastal waters, whilst other capture fisheries involve thousands of individuals gleaning in the intertidal and shallow subtidal zones of the village fishing grounds (VFGs).

The shallow waters of Korea's west coast provide an ideal environment for mariculture, typified by Jeollanam-Do Province which produces ~80% of the national production of seaweed, particularly Laver (*Porphyra* spp.). Oil has passed through thousands of hectares of such farms. Intertidal oyster cultivation is a second very important sector of the industry that has been affected. The mariculture industry is also supported by large-scale hatchery production facilities for laver, sea mustard, abalone, sea cucumbers, and finfish, all of which have been affected by the spill to some degree.

Surveying and providing assessment of these facilities is a large undertaking. ITOPF together with international experts are working with Korean marine surveying companies to provide advice to Skuld P&I Club and the IOPC Funds.

**Tourism**

The Taean peninsula is considered the third most important tourism area in Korea with almost 21 million visitors annually (98% Korean). The peninsula is a national park and the main attractions of the area are the beaches, coastal scenery and marine life. Areas such as Anmyeondo and Daecheon are also popular destinations. South of this, areas affected by the oil spill are less popular as tourism destinations, with the exception of Jeju Island, a favourite destination of honeymooners.

Environment

MOMAF have instructed Korea Ocean Research & Development Institute (KORDI) and Chungnam National University to embark upon a US\$2.3 million environmental monitoring programme.

Compensation

The Republic of Korea is a signatory to the 1992 Civil Liability and Fund Conventions (CLC & FC) and under this regime approximately \$320 million is available for compensation. Claims are anticipated for clean-up operations, fisheries & mariculture, tourism and environmental investigations.

Agreement has already been reached between the Skuld P&I Club and MOMAF for the settlement of hardship payments of ~US\$12 million to local fishing communities engaged in the clean-up.