



Property of Oil Spill Response 	Document Title United Kingdom Continental Shelf Dispersant Stockpile (UKDS) Logistics Planning Guide (LPG)	Document Number OSRL-OPER-PLA-00904	
		Revision	3



Logistics Planning Guide (LPG)
United Kingdom Continental Shelf Dispersant Stockpile (UKDS)


REVISION HISTORY

Revision	Date	Description	Author(s)	Reviewer	Approval
00	26/09/2018		Dave Redington	Simon McCosh	Ian Midgley
01	10/07/2019		Dave Redington	Andrew West	Ian Midgley
02	04/02/2021	Template Change and Information Review	Tawirat Bates	Simon McCosh	Øistein Dahlslett
03	06/10/2021	Information Update	Tawirat Bates	Dave Redington	Øistein Dahlslett

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1. Introduction

1.1. Disclaimer

The information contained within this document is for guidance and is correct at time of writing. During an exercise or emergency response, all information should be verified with OSRL to ensure the latest information is used for the mobilisation and onwards transportation of equipment.

1.2. Service Level Agreement

Oil Spill Response Limited (OSRL), together with its Affiliates is an industry owned and funded joint initiative, providing industry with the capability to better respond to incidents world-wide.

Through its relevant Affiliate companies (OSRL, together with its Affiliates shall hereafter be referred to as “OSRL”), OSRL provides the industry with the equipment, expertise and capability to better respond to incidents globally.

The United Kingdom Continental Shelf Dispersant Stockpile (UKDS) is an OSRL Supplementary Service.


1.3. Notification and Callout

Any component of the UKDS must be mobilised via the Southampton (UK) branch by contacting a Duty Manager at +44 23 8033 1551. The Southampton base is manned 24 hours/day to ensure your call is dealt with directly. During out of hours, the operator will contact a Duty Manager (DM).



Figure 1 - Activation Procedure Card

In the event of an Incident where the Well Owner / Incident Owner (WO / IO) is considering mobilising the UKDS, OSRL should be notified immediately using the telephone number shown above and providing the basic information listed;

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- Initial contact person - Telephone, fax and email information
- Location, source and time of spill
- Weather
- Company – Address, telephone, fax number etc
- Oil volume of the spill
- Oil type and Characteristics

The following steps will then need to be followed, the OSRL Duty Manager (DM) will;

- Call back within 10 minutes (24 hours/day)
- Have extensive response experience
- Have access to a wide range of planning and predictive tools
- Act as the initial primary point of contact for the WO / IO
- Verify that the caller is a subscriber to the UKDS service
- Check that the location of the assistance is within terms of the UKDS membership

The initial discussion between the OSRL DM and the WO / IO will include;


- Scenario of spill
- UKDS assets required
- Location UKDS assets to be mobilised from
- Transportation mode (air/sea/land)
- Special logistics/permits required for mobilisation
- Additional oil spill response equipment required

The OSRL DM will forward the following documentation to the WO / IO based on the conversation above. The WO / IO will need to complete the following paperwork. Signatures are required, so paper copies are used.

- Notification Form (OSRL-OPER-FOR-00173 Rev9¹), can be found on OSRL Website or DM will send after initial phone call)
- Mobilisation / Authorisation form (OSRL-OPER-FOR-00172 Rev8¹), can be found on OSRL Website or DM will send after initial phone call)

The mobilisation of equipment will continue as described in this document (Logistics Planning Guide – United Kingdom Continental Shelf Dispersant Stockpile - OSRL-OPER-PLA-00904), with continued communications between OSRL and the WO / IO, but the ‘Notification’ process as described above,

¹ Revision numbers referenced in the document are the latest at the time of publication. During a mobilisation the Revision number of documents sent to the WO / IO may be higher than that shown here BUT should never be lower

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has been completed. OSRL will ensure that the communications flow shown below in Figure 2, is followed:

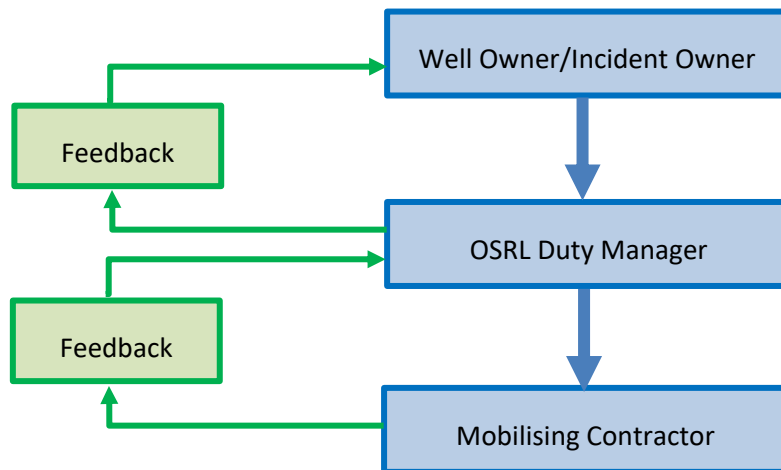


Figure 2 - Communications Flow


1.4. Purpose

This Logistics Planning Guide (LPG) is an aid to the planning and understanding of the processes for the mobilisation and initial deployment phases of the UKDS. This helps to ensure that operational logistics capability is delivered on time, in the right quantity and correct configurations, in a fully serviceable condition and crucially, to the right location. The guide covers details of the following:

- Equipment storage
- Storage medium (containers and types etc.)
- Potential transport methods (air, road and sea)
- Handling requirements
- Documentation
- Re-supply
- Lines of responsibility

1.5. Audience

The LPG is designed to be a simple to use, ready reference document for use by OSRL Response and Logistics staff and WO / IO's Logistics staff, whilst also providing a structured overview for management.

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1.6. United Kingdom Continental Shelf Dispersant Stockpile Overview

The UKDS is an OSRL supplementary Service.


OSRL owns, stores and maintains the dispersant and associated support equipment (Equipment) in a response ready state, providing the WO / IO with readily available Equipment, logistical support and technical support when required.

500 m³ of dispersant, 2 x TC3 Heli spray units and 2 x Boat Spray 50 vessel application systems are pre-positioned at two locations. The Equipment is transportable by road, air and sea for deployment. Any UKDS Member may request 100% of the stockpile at any time.

Key facts:

- UKDS provides a total of 500 m³ of Slickgone NS dispersant to the subscribing Member, broken down by location as follows; 200 m³ at Inverness and 300 m³ at Scalloway, Shetland Islands
- Total of 2 x Going Away (GA) Boxes (1 at each Primary storage location) containing associated support equipment
- 100% of the stockpile can be mobilised for a single incident
- Dispersant type has been approved for the United Kingdom Continental Shelf (UKCS) region
- Any Member of OSRL can subscribe to the UKDS via a supplementary agreement
- The WO / IO has full responsibility for the approval and application of the dispersant, however OSRL will assist as required
- OSRL will arrange stockpile resupply as soon as dispersant has left the storage warehouse
- WO / IO is responsible for insurance and freight from Primary Storage, OSRL will assist if required
- The Equipment is a sale to the WO / IO on mobilisation from the Primary Storage².
- Following mobilisation of the Equipment from the Primary Storage, OSRL will arrange resupply of the Equipment. The Equipment purchase costs from the supplier associated freight and duties to replenish the Equipment to the Primary Storage will be invoiced to the WO / IO.

² This is true at the time of writing. Updates to this will be included in the subsequent LPG versions. Please seek OSRL DM's discretion.

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2. Mobilisation

2.1. Storage Locations


The UKDS stockpile locations can be seen in **Error! Reference source not found.** below. Additional location and contact information can be found Table 1.



Figure 3 - Map of Stockpile Locations

Table 1 - Information on Stockpile Locations

Country	Address	Type and Volume	Notes
UK	Scalloway Harbour Office Saga Buildings Blacksness Scalloway ZE1 0TQ	Slickgone NS 300 m ³	<p>The Harbour Master has access to forklifts. The dispersant will either be mobilised to Scalloway Port, Lerwick Port, Sumburgh airport or a destination of the WO / IO's choosing.</p> <p>Streamline Hauliers are the usual freight company who transport from the Scalloway Warehouse to Sumburgh Airport or Lerwick Port. Streamline will supply a forklift if requested. Lerwick Port Authority also have a forklift at Lerwick port.</p> <p>If the dispersant is delivered to Sumburgh Airport, the Sumburgh Fire Service are required to escort the freight onto airside at the Virkie Apron gate.</p>

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UK	17A Dalcross Ind Est Inverness Highland IV2 7XB	Slickgone NS 200 m ³	<p>There is a forklift located at the warehouse. The dispersant will either be mobilised to Inverness port, Inverness airport or a destination of the WO / IO's choosing.</p> <p>MacRitchie Highland Distribution (MHD) are the contracted freight company who transport from the Inverness warehouse to Inverness Airport or Inverness Port. MHD can provide a forklift to unload if requested.</p>
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2.2. Equipment Inventories

Table 2 - Equipment Details at Each Stockpile

Inverness	Scalloway, Shetland Islands
200 x Slickgone NS 1000 litre IBCs	300 x Slickgone NS 1000 litre IBCs
Boat Spray 50 vessel spray system	Boat Spray 50 vessel spray system
TC3 helo spray system	TC3 helo spray system
Forklift truck	Forklift truck
GA box (contents in ANNEX A)	GA box (contents in ANNEX A)
IBC sump	IBC sump
1000 litre spillage bin	1000 litre spillage bin
2 x spare empty IBCs	1x spare empty IBCs

2.3. General Considerations

The following should be considered when mobilising any of the equipment packages:

- Which are the nearest stockpile locations to the incident area?
- What is the time and risk differential between mobilisation by air, mobilisation by sea or mobilisation by road?
- Any lead time to mobilise the required vehicles / vessels / aircraft to the storage location?
- What are the local documentation requirements (packing lists, pro-forma invoices, load summary, Shipper's Declaration for Dangerous Goods (for GA box only), Safety Data Sheets (SDS), Commercial Invoices)?
- Are there WO / IO representatives available at receiving airports and ports?


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Table 3 - Equipment Replacement Cost³

Equipment	Cost per IBC/item (USD)	Quantity in Stockpile	Total Cost in Stockpile (USD)
Slickgone NS	\$ 3,100.00	500	\$ 1,550,000.00
GA Box	\$ 6,600.00	2	\$ 13,200.00
Boat Spray 50 vessel spray system	\$ 10,050.00	2	\$ 20,100.00
TC3 helo spray system	\$ 37,500.00	2	\$ 75,000.00
		TOTAL	\$ 1,658,300.00

2.4. Tasks completed by OSRL for all equipment during a mobilisation


OSRL will arrange the loading of the Equipment ready for initial road freight. In accordance with the UKDS supplementary agreement⁴, it is the WO / IO's responsibility to insure and freight the Equipment from the Primary Storage location, to either a temporary secondary storage location or onward to the WO / IO's incident location. However, OSRL has freight relationships (as listed in Table 1) and would assist or arrange freight to the nominated delivery point (NDP), which may be either an airport of embarkation (APOE) or seaport of embarkation (SPOE), or direct to the WO / IO's location if requested.

- Provide a focal point to support the WO / IO and any ongoing operations 24/7
- Supply the shipping and customs documentation as required for the incident destination whether by road, sea or air from the storage locations
- If required, assist with initial road transport to mobilise the Equipment to the nominated airport or port
- If required, provide transport routes, timings and costs
- In the event of a large incident, OSRL will manage the Dispersant Logistics Plan in order to monitor dispersant freight movements, deliveries and usage at the incident location so adequate dispersant is available to the WO / IO at the incident
- OSRL will organise the resupply of purchased dispersant back to the Primary Storage location

If requested by the WO / IO, OSRL will ensure that the required equipment is mobilised to the NDP, which may be either an APOE or SPOE as agreed with the WO / IO. Upon notification from the WO /

³ This is true at the time of writing. Updates to this will be included in the subsequent LPG versions. Please seek OSRL DM's discretion.

⁴ This is true at the time of writing. Updates to this will be included in the subsequent LPG versions. Please seek OSRL DM's discretion

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IO, OSRL will start working with our cargo charter brokers to identify suitable methods to mobilise the requested Equipment. Any costs and routings will be confirmed with the WO / IO in writing prior to mobilisation.

2.5. Documentation

OSRL will prepare the following documentation (in English) as part of standard procedures:

- Packing lists
- Pro-forma/Commercial/Customs invoices as required
- Load summary
- Shipper's Declaration for Dangerous Goods (for GA box only)
- Safety Data Sheets

It is the WO / IO's responsibility to provide OSRL with the following information to mobilise the equipment:

- Consignee details (name, contact number and address of the site)
- Notifying party (Logistics company supporting the shipment)


2.6. Dangerous Goods

Information is key to any safety program, including for dangerous goods in transport. Through Dangerous Goods Regulations (DGR) and comprehensive training programmes, International Air Transport Association (IATA) and the International Maritime Organisation (IMO) ensure that shippers, forwarders, and carriers have the tools and resources to ship dangerous goods safely.

Compliance with the DGR requires specific training. The successful application of regulations concerning the transport of dangerous goods greatly depend on the appreciation by all individuals concerned of the risks involved and on a detailed understanding of the Regulations. This can only be achieved by properly planned initial and recurrent training programs.

All equipment has been checked against compliance with the below regulations:

- **ADR** European Agreement concerning the International Carriage of Dangerous Goods by Road
- **ADN** European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
- **IMDG Code** International Maritime Dangerous Goods Code
- **IATA DGR** International Air Transport Association Dangerous Goods Code
- **ICAO** International Civil Aviation Organisation Technical Instructions for the Safe Transport of Dangerous Goods by Air.

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Shipper's Declaration for Dangerous Goods for the outward transport of equipment will be provided by OSRL where required.

Table 4 - Dangerous Goods in UKDS Stockpile

Type of equipment	DG by Air	DG by Sea	DG by Road	UN Number / Proper Shipping Name / DG Class	DG Note required	Notes
AFEDO Boat Spray, Diesel Transfer Pump, TC3 Helo Dispersant Helibucket	YES	YES	NO	UN3528 / MACHINERY, INTERNAL COMBUSTION, FLAMMABLE LIQUID POWERED / 3	<ul style="list-style-type: none"> • Yes (Air) • Yes (Sea) • No (Road) 	Declaration and hazard label by air and sea, not by road.


Dispersant itself is not classed as Dangerous Goods for transport by road, sea or air and is not regulated as such. However, under ADN regarding transporting by European inland waterways, dispersants are regulated if their flash point is between 60 °C and 100 °C (typically this is the range into which dispersants' flash point falls). Scenarios leading to dispersant transportation on European inland waterways are likely to be very limited. Under the UN classification for transportation, dispersants are categorised as Packing Group III (least danger).

2.7. Safety Data Sheets

The SDS information below covers the dispersant currently held by the UKDS service. This information was correct at the time of inclusion, but WO / IO can obtain up to date copies of the SDS from OSRL or the dispersant manufacturer. The SDS follows an internationally agreed 16-section format and provides information on chemical products that help users of those chemicals to produce a risk assessment. They describe the hazards the chemical presents, and give information on handling, storage and emergency measures in case of an accident. Safety Data Sheets will be provided as appropriate within the GA boxes and are intended to provide personnel with procedures for handling or working with that substance in a safe manner. Please see ANNEX B


2.8. Global Harmonised System (GHS) and Labelling of Chemicals

The United Nations Globally Harmonised System (GHS) provides a voluntary agreement for the classification and labelling of chemicals. GHS becomes legally binding through a suitable national or regional legal mechanism. GHS not to be confused with Harmonised Systems Codes (HS Codes).

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There is no risk to human health or the environment whilst dispersants are stored in their correct packaging, aided by effective spillage mitigation measures. The risk of exposure or potential environmental impact only occurs in cases of spillages, handling and the operational application of the product. More recent packaging labels and SDS may be marked with the signal words 'Danger' or 'Warning' and carry UN GHS pictograms to identify the hazards. UKDS Slickgone NS IBC's carry the following pictogram:

Table 5 – Slickgone NS Dispersant Hazard Code

Pictogram	Signal Word	Hazard Statement
	Danger	<ul style="list-style-type: none"> May be fatal if swallowed and enters airways

2.9. Mobilisation Times

It should be noted that due to the variations along the entire response chain for any equipment, it is extremely difficult to provide accurate mobilisation times. The Equipment is stored in a configuration suitable for common transport to ensure a time efficient response via all modes of transport.

OSRL would encourage early mobilisation of Equipment to allow the most efficient options for transport to be considered.


2.10. Dispersant Spillage Instructions

In the event of an inadvertent dispersant leak or spillage occurring between the Primary Storage and the incident location, the procedure is listed in ANNEX D and included in the GA box. Primary storage locations have 1000litre spill kits available and the GA boxes contain 90litre spill kits.

3. Equipment Transportation

3.1. Consignment Tracking Information

Consignment tracking is the process, procedures and associated technology used to give both the consignor and consignee visibility of items in transit, whether in real time or at last known location. Visibility of items in transit is crucial for pragmatic operational planning and execution. Knowing where items in transit are and when they will be available for use at the required location, including expected

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arrival date and time, helps ensure the efficient and effective co-ordination of available resources to maximise operational capability.

Tracking of items in transit is achieved by:

- The reporting of the arrival or departure of the item
- Recording the following:
 - Identification of the item
 - Location where observed
 - Time and date

This process can be electronic, manual and electronic, or entirely manual, depending on the location and availability of consignment tracking information systems and member companies' own installed systems.

3.2. Road Transport

WO / IO's planning teams should familiarise themselves with the specific procedures for each airport or seaport that has been identified for the loading and unloading of equipment. Potential difficulties are to be highlighted and mitigated where possible.

Availability of road transport assets, material handling equipment for loading and offloading including availability of equipment operators is to be included.


Road routes to and from APOE/SPOE and airports of disembarkation (APOD)/seaports of disembarkation (SPOD) are to be proved on the ground if possible, paying attention to the following:

- Overhead clearance
- Width limits
- Weight limits
- Road furniture constraints
- Turning restrictions
- Traffic flows
- Bridges (heights and weight limits)
- Tolls

All the Primary Storage locations have suitable hauliers or haulier retainer contracts, providing a haulier if the Equipment is to be transported to either an APOE/SPOE or onwards to the incident.

The following considerations must be observed prior to and during road transport:

- Liability insurance for both the dispersant value as well as potential environmental damage and pollution becomes the responsibility of the WO / IO following movement from the

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Primary Storage location for UKDS. Additional insurance is not required for routine maintenance and mobilisation exercises where the dispersant is under the ownership of OSRL, as this is covered by the OSRL Marsh insurance policy⁵.

- IBCs must be single stacked when transported by road freight. Schütz Ltd advises full IBCs may be transported double stacked, however double stacking is likely to exceed trailer payload and axle weight distribution.
- To prevent IBC frame distortion during road transit on a flatbed type trailer, it is suggested IBCs are lashed over the top of the HDPE container but under the top metal frame, see Figure 4 below. Slight HDPE container distortion may occur when lashing is tightened.
- It is the responsibility of the freight carrier to secure the load in accordance with company or regional requirements. Any damage occurring to the load during transport, then the liability insurance will provide a financial means to make good any damage caused.



Figure 4 - IBC Lashing


3.3. Sea Transport

Mobilising Equipment by road freight then sea at a local port is the most likely transport scenario for the UKDS stockpiles. Dispersant IBC's can be transported by sea freight to the required destination. If dispersants are to be applied to the spilled oil from a vessel (vessel dispersant application), then a suitable vessel must be sourced to carry out such operations.

Inverness Stockpile

MHD are the contracted freight company who transport from the Inverness warehouse to Inverness Port. MHD will provide a forklift truck to unload if requested.

⁵ This is true at the time of writing. Updates to this will be included in the subsequent LPG versions. Please seek OSRL DM's discretion.

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Scalloway Stockpile

The Harbour Master has access to forklift trucks. The dispersant will either be mobilised to Scalloway Port or Lerwick Port.

Streamline Hauliers are the usual freight company who transport from the Scalloway Warehouse to Lerwick Port. Streamline will supply a forklift if requested. Lerwick Port Authority also has a forklift truck at Lerwick port.

3.3.1. Transporting as Cargo by Sea

Dispersant IBCs can either be loaded for sea transport breakbulk as individual IBCs, loaded into DNV 2.7.1 (Offshore containers) or transferred into integrated ships tanks or ISO storage tanks. The pump package within the GA box may assist with any dispersant transfers.

Storage and transport of full IBCs in sea containers is dependent on forklift capabilities to determine whether single stack or double stack can be achieved.

- The requirement for specialised forklifts (reduced height mast / upright) in order to double stack (loading and unloading) in sea containers
- Ensure similar destination forklift capability is available


The following are WO / IO considerations:

- Charter the vessel/s and associated ships' agent
- Ensure all vessel port state clearances are carried out
- Form a contract with a stevedoring company to load equipment to vessel (details provided by OSRL)
- On site representative(s) to accept Equipment

The sea-fastening procedures will be the responsibility of the vessel crew. Welding of some equipment to decks may be required for safe at-sea storage.

3.3.2. Sea Fastening

The sea-fastening procedures will be the responsibility of the vessel crew. Welding of some equipment to decks may be required for safe at-sea storage

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3.3.3. Mobilisation by Sea – Lines of Responsibilities

Find in Figure 5 a diagram of OSRL's and the WO / IO's responsibilities during the mobilisation process by sea. Table 6 shows a breakdown of responsibilities depending on tasks to be completed during the mobilisation process.




Figure 5 - Pictogram of OSRL's and WO / IO Responsibilities - Mobilisation by Sea⁶

Table 6 - Breakdown of Responsibilities (Deployment by Sea)⁶

Task	Responsibility	Cost incurred by	Resources required	Service providers required	Service provider mobilized by
Selection of Required Equipment	OSRL and WO / IO	OSRL (Charged to WO / IO)	Personnel	None	N/A
Load Equipment for Transport to Seaport	OSRL / OSRL Contractors	OSRL (Charged to WO / IO)	Road Haulage, Forklift	Warehouse Contractors / Road Haulage Company	OSRL

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Task	Responsibility	Cost incurred by	Resources required	Service providers required	Service provider mobilized by
Charter Vessel	WO / IO	WO / IO	Vessel Charter	Vessel Charter Provider	WO / IO
Mobilise Cargo Handlers	WO / IO	WO / IO	Handlers	Cargo Handling Agent	WO / IO
Pass Equipment to Cargo Handlers	WO / IO	WO / IO	Handlers	Cargo Handling Agent	WO / IO
Load Vessel	Cargo Handlers	WO / IO	Handlers	Cargo Handling Agent	WO / IO
Export Customs Clearances	WO / IO	WO / IO	Personnel	Customs Agent	WO / IO
Unload Vessel	Cargo Handlers	WO / IO	Handlers	Cargo Handling Agent	WO / IO
Import Customs Clearances	WO / IO	WO / IO	Personnel	Customs Agent	WO / IO
Transport from Seaport	WO / IO	WO / IO	Road Haulage, Forklift	Road Haulage Company	WO / IO

3.3.4. Dispersant Application at Sea

When dispersants are being transported by sea on a vessel where dispersant application operations are planned to take place, the proper vessel would need to be sourced. Dispersants can either be loaded in its current storage medium (IBCs) or by transferring the dispersants into a larger integrated ship or ISO tank. The method chosen will depend on the availability of the sourced vessel and the operational directive of the response plan.

The GA box, (one at each location) that is part of the UKDS contains equipment designed to spray dispersants from a vessel. When sourcing for suitable vessel, the OSRL Duty Manager could be consulted for further input. However, general considerations for dispersant application vessels are:

- Vessel deck space to place equipment, ISO tanks and IBCs

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- Vessel integrated tank storage volume
- Open deck to allow use of spray equipment
- Accommodation for responders

3.4. Air Transport and Application

The stockpiled dispersants could be transported by road before being freighted as cargo on chartered aircrafts to the required destination from APOEs near the corresponding stockpile locations. For aerial dispersant spraying, only aircrafts designed with integrated spray systems, such as OSRL's own Boeing 727 and Hercules C-130, will be utilised. These aircraft are restricted to which airport they can operate in, due to airport runway restrictions.

Inverness Stockpile

MHD are the contracted freight company who transport from the Inverness warehouse to Inverness Airport. MHD will provide a forklift truck to unload if requested.

Scalloway Stockpile

The Harbour Master has access to forklift trucks. The dispersant and equipment will be mobilised to Sumburgh airport.


Streamline Hauliers are the usual freight company who transport from the Scalloway Warehouse to Sumburgh Airport. Streamline will supply a forklift truck if requested. The Sumburgh Fire Service are required to escort the freight onto airside at the Virkie Apron gate.

3.4.1. Transporting as Cargo by Air

Air freighting from Inverness or Sumburgh Airport remains an option. However, it must be noted that these airports are reasonably small, limiting access to the most common carriers and placing heavy restrictions to the maximum allowable payload. These reasons, in addition to the cost of chartering an aircraft paired with the time required to get a permit, determines that air freighting the Equipment from the two locations may not be the most efficient or cost-effective method of transportation.

Regardless, should the Equipment be transported by air from Inverness or Sumburgh Airport, the following needs to be considered when deploying the equipment by air:

- Are there internal procedures in place within the WO / IO company to arrange cargo handlers at the APOD
- Does the APOD have the resources and infrastructure in place i.e. cranes and forklifts to transfer equipment to transportation vehicles
- Can the APOE/APOD allow take off/landing of the chartered aircraft (noise regulations, runway specification, slot availability etc.)

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- Are special permits required to allow the landing of the chartered aircraft
- Airport altitude and temperature (hot and high) may impact maximum aircraft payload
- Notice period required for aircraft availability is dependent upon aircraft movements and can take several days if there is a demand for a specific aircraft

3.4.2. Liquid Cargo

Operators of Boeing manufactured aircraft are subject to Boeing recommended operating practices for restricting the carriage of bulk liquids, such as IBC containers without baffles, to a specific percentage of the maximum payload for the aircraft type. This is a recommendation from Boeing in order to prevent excessive 'sloshing' of liquid during flight (especially in turbulence) which it is thought can cause the aircraft to become unstable and increase the fatigue level of the flight crew.

The safety restriction covers all models of Boeing aircraft, refer to the Boeing Service Letter found in ANNEX E . The safety restriction recommends restricting liquid loading to 42% of the aircraft max payload. For example, In the case of a B747-400F (max payload 120,000kgs/264,554lbs) this would mean a maximum payload of liquid cargo of 50,400kgs/111,112lbs. Where 1100kgs/2,425lbs IBCs are being used, this means a total of 45x IBCs per flight. In this situation, the rest of the aircraft can be loaded with other non-liquid cargo up to the maximum payload of the aircraft. B747 converted freighters have a lower max payload and hence the maximum IBC count is 42x. **It should be noted that not all Boeing carriers follow this recommendation and there are known carriers at this time who will carry a full 100% load of liquid cargo.**


3.4.3. Aircraft Types

Having sought advice from OSRL's main air chartering service provider, the following Table 7 details the qualified planes that could operate from the two airports with any specific tonnage restrictions:

Table 7 - Information on Aircraft Eligibility

Aircraft Type	Eligible to operate from Sumburgh Airport	Eligible to operate from Inverness Airport
ANTONOV AN12	Not possible	Yes. Maximum load of 10 tons
ANTONOV AN26	Yes. Maximum load of 1.5 tons and only if there is head wind.	Yes. Maximum load of 2.2 tons

Please note that due to runway restrictions, any freighter aircraft other than those stated above are not eligible to operate from Inverness and Sumburgh airport. Details of the two available aircrafts and

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their capabilities can be found below. Please consider the descriptions as guidance and not as authoritative information.

Antonov AN12

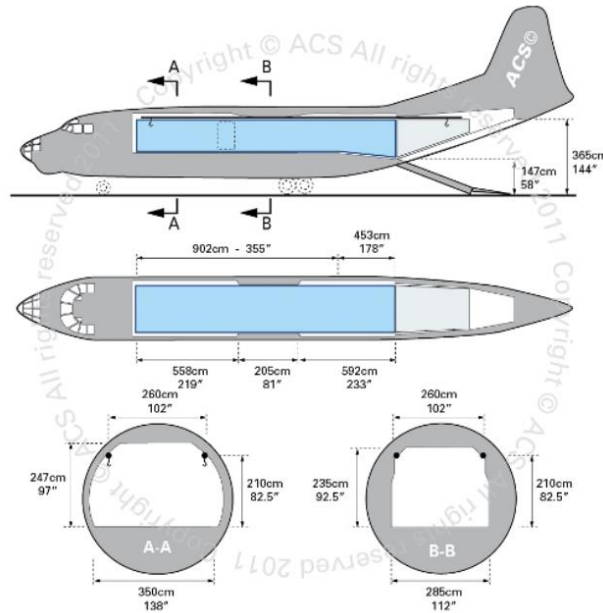



Figure 6 - Antonov AN12 Cargo Hold Dimensions

The Antonov AN12 is a medium size cargo aircraft with the following capabilities:

- Cruise Speed: 323 mph
- Range: short to medium haul
- Maximum payload: 18 tons
- Hold Size (LxWxH): 1355x280x240 cm
- Door Size (WxH): 298x295 cm
- Total load volume: 90 m³
- Maximum range: 1304 miles

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Antonov AN26

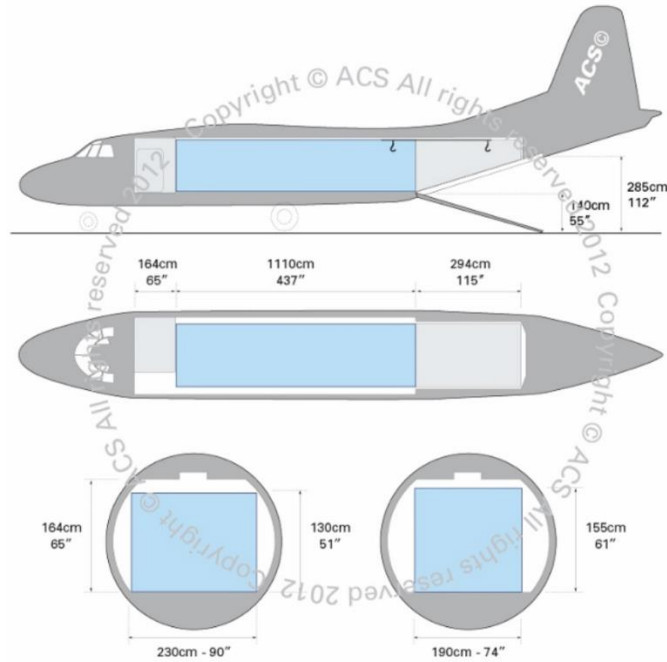



Figure 7 - Antonov AN26 Cargo Hold Dimensions

The Antonov AN26 is a small size cargo aircraft with the following capabilities:

- Cruise Speed: 260 mph
- Range: short to medium haul
- Maximum payload: 5.5 tons
- Hold Size (LxWxH): 1100x220x160 cm
- Door Size (WxH): 220x165 cm
- Total load volume: 30 m³
- Maximum range: 372 miles

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3.4.4. Mobilisation by Air – Lines of Responsibilities

Find in Figure 8, a diagram of OSRL's and the WO / IO's responsibilities during the mobilisation process by air. Table 8 shows a breakdown of responsibilities depending on tasks to be completed during the mobilisation process.

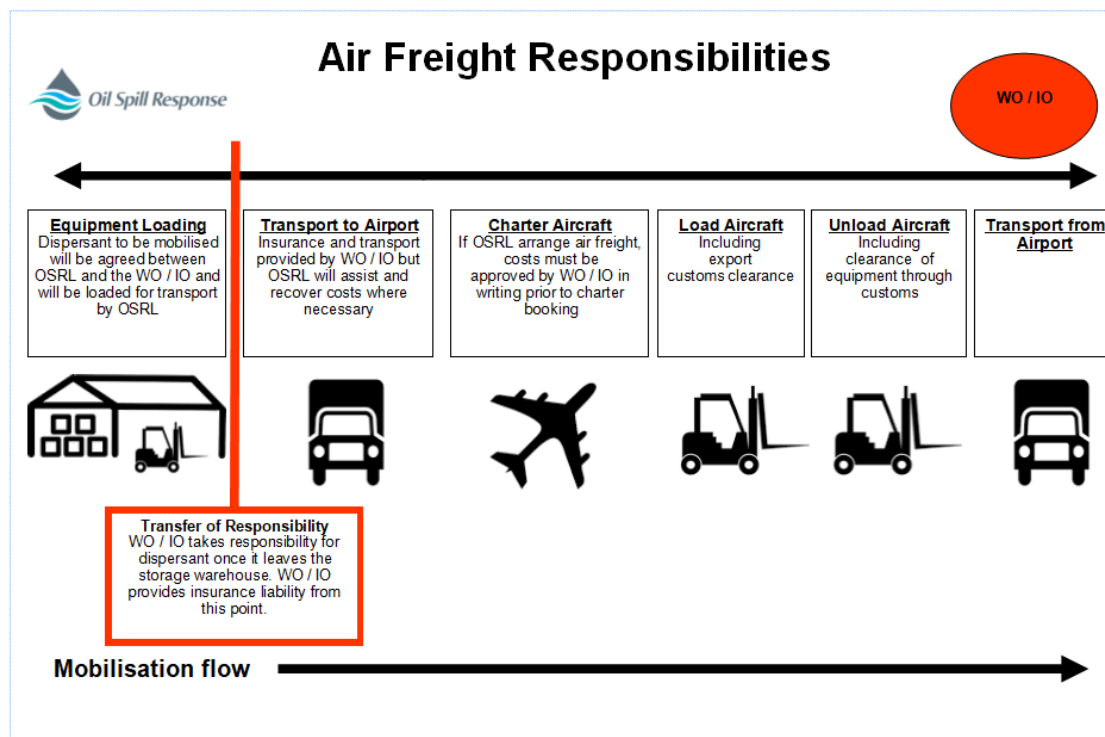



Figure 8 - Pictogram of OSRL's and WO / IO Responsibilities - Mobilisation by Air⁷⁸

Table 8 - Breakdown of Responsibilities (Deployment by Air)⁷

Task	Responsibility	Cost incurred by	Resources required	Service providers required	Service provider mobilized by
Selection of Required Equipment	OSRL and WO / IO	OSRL (Charged to WO / IO)	Personnel	None	N/A

⁷ This is true at the time of writing. Updates to this will be included in the subsequent LPG versions. Please seek OSRL DM's discretion.

⁸ This is true at the time of writing. Updates to this will be included in the subsequent LPG versions. Please seek OSRL DM's discretion.


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Task	Responsibility	Cost incurred by	Resources required	Service providers required	Service provider mobilized by
Load Equipment for Transport to Airport	OSRL/OSRL Contractors	OSRL (Charged to WO / IO)	Road Haulage, Forklift	Warehouse Contractors/Road Haulage Company	OSRL
Charter aircraft	WO / IO	WO / IO	Aircraft Charter	Aircraft Charter Provider	WO / IO
Mobilise Cargo Handlers	WO / IO	WO / IO	Handlers	Cargo Handling Agent	WO / IO
Pass Equipment to Cargo Handlers	OSRL / OSRL Contractors / WO / IO	OSRL / WO / IO	Handlers	Cargo Handling Agent	OSRL / WO / IO
Load Aircraft	Cargo Handlers	WO / IO	Handlers	Cargo Handling Agent	WO / IO
Export Customs Clearances	WO / IO	WO / IO	Personnel	Customs Agent	WO / IO
Unload Aircraft	Cargo Handlers	WO / IO	Handlers	Cargo Handling Agent	OSRL / WO / IO
Import Customs Clearances	WO / IO	WO / IO	Personnel	Customs Agent	WO / IO
Transport from Airport	WO / IO	WO / IO	Road Haulage, Forklift	Road Haulage Company	WO / IO

3.4.5. Dispersant Application by Air

For more in-depth detail regarding mobilising the B727 and the C-130 Hercules, the referenced documents (B727 Mobilisation and Logistics Plan - OSRL-OPER-GUI-00192, Hercules Mobilisation and Logistics Plan – OSRL-SCRG-GUI-00709) in Reference documents can be referred to.

Dispersant aircrafts have in-built spray systems; therefore, the dispersants will have to be transferred from the IBCs to the aircraft storage tank. This can be done using the transfer pump included in the GA box.

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Inverness Airport


The B727 may operate from Inverness, however a Cat 7 fire procedure is required when the B727 operates from the airport. Signature Flight Support provide airside aircraft handling and operating staff liaison.

The TC3 application package located at the warehouse may be utilised with a helicopter.

Sumburgh Airport

The B727 cannot operate from the Shetland Islands due to runway limitations. However, the C-130 Hercules may be utilised for aerial dispersant operations and can operate at the airport.

The TC3 application package located at the warehouse may be utilised with a helicopter.

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4. Equipment

4.1. Dispersant

The UKDS is primarily made up of 500m³ of [Slickgone NS](#), which is separated into 200m³ at Inverness & 300m³ at Scalloway in the Shetlands. Both these stockpiles are regularly maintained and the IBC's which contain the dispersant are replaced every five years in conjunction with dispersant efficacy sampling & testing.

4.2. TC3 Helo Dispersant Spray System

OSRL hold 1 x TC3 at Inverness and 1 x TC3 at Scalloway. The TC3 is an aerial dispersant spray system suitable for spot slick treatment which uses type 3 dispersants. The TC3 has a dispersant operating capacity of 910 litres (200 Gallons) and dispersant application can be varied up to 455 litres/min (100 gallons/min). The applied spray swath width is up to 30 metres.



Figure 9 - TC3 Helo Dispersant Helibucket

4.3. Boat Spray 50 Dispersant Spray System & AFEDO Nozzles

OSRL also hold 1 x Boatspray 50 & AFEDO Nozzle system at Inverness and 1 x Boatspray 50 & AFEDO Nozzle system at Scalloway. The Boat Spray systems are small portable diesel-powered dispersant pump units which are designed to be operated from small tugs, workboats and other specialised vessels. The systems are capable of spraying either concentrated or diluted dispersant. Typical application is from small to medium size vessels (15m-40m+) operating inshore.


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Figure 10 - Boatspray 50 Vessel Dispersant Delivery System


The AFEDO Nozzle is a specially designed nozzle which creates an even drop-out spray pattern and provides an effective alternative to spray arms.



Figure 11 - AFEDO Nozzles

4.4. Stockpile Support Equipment

UKDS stockpiles are aligned to ensure suitable stockpile response support equipment is available at the primary and secondary storage locations in the event of a dispersant spillage as well as a means of transferring the dispersant into bulk storage with the high-volume diesel transfer pump with a flow

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rate of 870 L/min and associated hoses and valves. Figure 12 below illustrates a typical stockpile support equipment layout at the Primary Storage location.



Figure 12 - Primary Storage Support Equipment

The Primary Storage location is facilitated with a 1000 litre chemical spillage kit, a double IBC bund and a spare empty IBC. This equipment shall be located and maintained at the Primary Storage location. The spill kits contain spillage instructions and a wide range of equipment to deal with any dispersant spillages. The bin is located in an accessible location but should be relocated to a location of high-risk during IBC movements.


The GA box and one spare empty IBC will be mobilised with the first mobilisation of IBC's to support the stockpile during freight transport and onwards to the WO / IO's location. The GA box inventory is described in Annex A. If the WO / IO's storage location becomes fragmented, the GA box and spare empty IBC shall remain with the largest volume of dispersant. Figure 13 below illustrates the Equipment that will be loaded with the first IBC road freight load.



Figure 13 - Secondary Storage Location Support Equipment

4.5. Equipment Storage

If Equipment is mobilised from the Primary Storage location; either temporarily located at a port, airport, on a trailer or aboard a vessel – the following considerations must be observed:


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- Temporary shelter to protect the dispersant from direct sunlight, high humidity and saltwater. If solid shelter is unavailable, opaque sheeting should be applied to cover the IBCs
- Considerations should be observed if storage location poses a potential environmental impact; such as gradient run off or open drains etc. If drainage systems are in the vicinity of the dispersant, then suitable drain covers must be utilised. Drain covers are available in the GA box, see ANNEX A
- IBC relocated from the Primary Storage location must be accompanied with a spare empty IBC, gravity transfer hose and the GA box

4.6. Secondary Storage Weekly Checks

On mobilisation of the Equipment from Primary Storage; this could be during freight, temporary laydown area, at the incident location, in bulk storage or on a vessel – the following weekly checks should be observed:

- Ensure there are no dispersant leakages from the containers or the discharge valves
- Ensure the Equipment is secure and weather tight, ensure either solid shelter or opaque sheeting is maintained
- Ensure IBCs are stored in accordance with manufacturer's instructions and away from direct sunlight)

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5. Reverse Logistics

In accordance with the UKDS Supplementary Agreement, the Equipment is a sale to the WO / IO at the Primary Storage location⁹. The lead time to resupply the complete UKDS stockpile will take a number of weeks. OSRL are obliged to ensure the UKDS is restocked as soon as possible in the event another UKDS Member requires Equipment, or if the WO / IO requires additional Equipment.


If the WO / IO no longer requires the Equipment at the incident, OSRL will consider repurchasing the Equipment (depending on the warehouse resupply status) from the WO / IO following successful dispersant efficacy testing. OSRL will assist with samples and delivery to test laboratory. The WO / IO shall cover all costs associated with testing, return freight to the Primary Storage location. If any of the Equipment is subject to excessive corrosion or general damage, the WO / IO shall bare the associated costs to ensure the Equipment is relocated in a suitable standard.

5.1. Dispersant Re-supply


Table 9 - Dispersant Re-supply Information

Supplier	Dispersant	Delivery Information
Dasic International Winchester Hill Romsey Hampshire SO51 7YD United Kingdom Tel: +44 (0) 1794 512 419 Email: sales@dasicinter.com	Slickgone NS	<u>Production Capacity</u> On the assumption that Dasic can supply in bulk road tankers and that such road tanker capacity is available, Dasic can have 30,000 litres DASIC Slickgone NS available on the first day. A further 60,000 litres can be available by the next day. Supply in IBCs will be dependent on the current available stock of empty IBCs and new stock could take 3-5 days to arrive from the manufacturer. Dasic ongoing production capacity for supply in bulk road tankers is 108,000 litres per 24 hours. It would take 7 to 10 days to ramp up to this capacity. For supply in 1000 litre IBC's, this capacity would reduce to 54 cubic metres per 24 hour shift.

⁹ This is true at the time of writing. Updates to this will be included in the subsequent LPG versions. Please seek OSRL DM's discretion.

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Notes	<p>1. Capacity is based on the assumption that raw material suppliers can keep up supplies. True production capacity could be reduced dramatically, especially if dispersant is also being sourced from multiple manufacturers. Most dispersant manufacturers use sodium di iso octyl sulphosuccinate and sorbitan monooleate surfactants in their formulations. If several companies are sourcing these materials at the same time, the supply chain would be severely strained. Do not add together the production capacities quoted by the various dispersant manufacturers.</p>
	<p>2. All volumes listed above would be delivered in 1000 litre IBCs.</p>
	<p>3. OSRDL must purchase dispersants from the Dasic during resupply, then either restock the UKDS or sell it to the WO / IO. The WO / IO cannot purchase direct from Dasic (in accordance with end user indemnity agreements). There are no purchase restrictions with Dasic products, as there are no end user indemnities required.</p>

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6. Glossary

Logistics terminology used within the document is, where possible, universal. For the purposes of the context of the document the following simplified terms and abbreviations are used:

6.1. Terminology

Burn Plan – A model to plan and predict available, delivered and applied dispersant at location.

Deployment – Move and bring into effective action, i.e. deploying stores and Equipment to required destinations.

DNV 2.7.1 – Standards for Offshore containers, OSRL equipment referred to as DNV in this plan meets either DNV 2.7.1 (Offshore containers).

Equipment – The dispersant and stockpile support equipment.

Lead time - The period of time from when the item is ordered to when the item is delivered to and received at the final destination ready for use (technically Supply Lead Time). The understanding of lead times is a critical management component.

Logistics - Management and flow of resources between point of origin and point of consumption.

Maintenance - The process of preserving a condition in respect of Equipment, associated items and other items in storage therefore ensuring items are fit for issue and subsequent use. Including planned and unplanned activities.


Material Handling Equipment - Equipment that relates to the movement, storage, control and protection of materials, goods and products.

Mobilisation - Make something movable or capable of movement, i.e. making stores and Equipment ready for deployment.

Primary Storage – The primary long-term storage warehouse location of the Equipment prior to mobilisation.

Recovery - Move items back from deployment location to home storage base location.

Secondary Storage – Any Equipment location following mobilisation from Primary Storage; this could be during freight, temporary laydown area, at the incident location, in bulk storage or on a vessel.

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6.2. Abbreviations

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways

ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road

APOD – Airport of Disembarkation

APOE – Airport of Embarkation

DGR – Dangerous Goods Regulations

DOM – Date of Manufacture

GA Box – Going Away Box

GHS – United Nation’s Global Harmonised System

IATA – International Air Transport Association

IBC – Intermediate Bulk Container

ICAO – International Civil Aviation Organisation

LPG – Logistics Planning Guide

MHD - MacRitchie Highland Distribution

NDP – Nominated Destination Point

OSRL – Oil Spill Response Limited

SDS – Safety Data Sheet


SPOD – Seaport of Disembarkation

SPOE – Seaport of Embarkation

UKCS – United Kingdom Continental Shelf

UKDS – United Kingdom Dispersant Stockpile

WO / IO – Well Owner / Incident Owner


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7. Reference documents

The below table identifies the documents to assist the WO / IO during a mobilisation (correct at time of printing).


Table 10 - Supporting Documents for Mobilisation

Document no.	Document Title
OSRL-OPER-FOR-00172	Mobilisation Authorisation Form
OSRL-OPER-FOR-00173	OSRL Notification Form
OSRL-OPER-GUI-00192	B727 Mobilisation and Logistics Plan
OSRL-SCRG-GUI-00709	Hercules Mobilisation and Logistics Plan

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ANNEX A **Going Away (GA) Box Inventory**

- 1 x Large storage box
- 1 x High volume centrifugal diesel pump unit, mounted on a wheeled trolley
- 3 x 6m 2" hoses with 2" female-male camlock nylon connectors
- 1 x 1m plastic/poly pick up tube with 2" female camlock and 2" ball valve
- 1 x 1m x 2m pump bund
- 1 x GA spill kit (90 litres)
- 1 x Bale of absorbent pads
- Spares & Ancillaries Storage Box
 - 2 x 2" ball valve with 2" female-male connections
 - 1 x 2" T-piece with 2" male inlet and 2 x 2" female outlets
 - 1 x 2" double male adapter
 - 1 x 2" double female adapter
 - 1 x IBC Cap Spanner
 - 1 x 5lt diesel can
 - 1 x Toolkit
 - 1 x Medium funnel
 - 1 x pack of medium cable ties
- 1 x Dispersant effectiveness test kit
- 1 x bag of rags
- 2 x drain covers

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ANNEX B Slickgone NS Safety Data Sheet

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Revision: 15

Supersedes date: 11/01/2018



SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name Slickgone NS
Product number F315

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses Internationally approved dispersant for treating oil spills in the marine environment.

1.3. Details of the supplier of the safety data sheet

Supplier Dasic International OSD Ltd
Winchester Hill, Romsey, Hampshire, SO51 7YD, UK
+44 1794 512419
+44 1794 522346
info@dasicinter.com

1.4. Emergency telephone number

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (EC 1272/2008)

Physical hazards Not Classified
Health hazards Asp. Tox. 1 - H304
Environmental hazards Not Classified

2.2. Label elements

Pictogram




Signal word Danger
Hazard statements H304 May be fatal if swallowed and enters airways.
Precautionary statements P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P260 Do not breathe spray.
P313 Get medical advice/ attention.
Contains Distillates (petroleum), hydrotreated light

2.3. Other hazards

SECTION 3: Composition/information on ingredients

3.2. Mixtures

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Slickgone NS

Distillates (petroleum), hydrotreated light			60-100%
CAS number: 64742-47-8	EC number: 265-149-8	REACH registration number: 01-2119484819-18-0001	
Classification Asp. Tox. 1 - H304			

Sodium dioctyl sulphosuccinate			5-10%
CAS number: 577-11-7	EC number: 209-406-4	REACH registration number: 01-2119491296-29-0000	
Classification Acute Tox. 4 - H302 Acute Tox. 4 - H312 Skin Irrit. 2 - H315 Eye Irrit. 2 - H319			

The full text for all hazard statements is displayed in Section 16.

SECTION 4: First aid measures**4.1. Description of first aid measures**

Inhalation	Considered to be a low inhalation hazard at normal workplace temperatures. Get medical attention if symptoms are severe or persist.
Ingestion	Do not induce vomiting. Rinse mouth thoroughly with water. Give plenty of water to drink. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Entry into the lungs following ingestion or vomiting may cause chemical pneumonitis. Get medical attention if a large quantity has been ingested. If in doubt, get medical attention promptly. Never give anything by mouth to an unconscious person.
Skin contact	Remove contaminated clothing and rinse skin thoroughly with water. Get medical attention if symptoms are severe or persist.
Eye contact	Remove any contact lenses and open eyelids wide apart. Rinse with water. Continue to rinse for at least 15 minutes and get medical attention.

4.2. Most important symptoms and effects, both acute and delayed


Inhalation	No specific symptoms known.
Ingestion	Aspiration hazard if swallowed. Entry into the lungs following ingestion or vomiting may cause chemical pneumonitis.
Skin contact	May cause irritation.
Eye contact	May cause severe eye irritation.

4.3. Indication of any immediate medical attention and special treatment needed**SECTION 5: Firefighting measures****5.1. Extinguishing media**

Suitable extinguishing media	Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture

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Hazardous combustion products Acrid smoke or fumes.

5.3. Advice for firefighters

Protective actions during firefighting Cool containers exposed to flames with water until well after the fire is out.

Special protective equipment for firefighters Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions Wear protective clothing as described in Section 8 of this safety data sheet. No smoking, sparks, flames or other sources of ignition near spillage.

6.2. Environmental precautions

Environmental precautions Avoid the spillage or runoff entering drains, sewers or watercourses. Inform the relevant authorities if environmental pollution occurs (sewers, waterways, soil or air).

6.3. Methods and material for containment and cleaning up

Methods for cleaning up Absorb spillage with sand or other inert absorbent. Collect spillage for reclamation or disposal in sealed containers via a licensed waste contractor. Flush contaminated area with plenty of water.

6.4. Reference to other sections

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions Wear protective clothing as described in Section 8 of this safety data sheet. Eliminate all sources of ignition. Do not spray on an open flame or other ignition source.

7.2. Conditions for safe storage, including any incompatibilities

Storage precautions Keep out of the reach of children. Keep only in the original container in a cool, well-ventilated place. Store away from the following materials: Strong oxidising agents. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Protect from sunlight.

7.3. Specific end use(s)

Specific end use(s) Obtain special instructions before use.

SECTION 8: Exposure Controls/personal protection

8.1. Control parameters

Occupational exposure limits

Distillates (petroleum), hydrotreated light


CEFIC-HSPA : 1200 mg/m³

Distillates (petroleum), hydrotreated light (CAS: 64742-47-8)

DNEL

Consumer - Oral; Long term systemic effects: 19 mg/kg/day
Workers - Inhalation; Long term systemic effects: 330 mg/m³

Sodium dioctyl sulphosuccinate (CAS: 577-11-7)

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		<div>Revision</div>	<div>3</div>

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Supersedes date: 11/01/2018

Slickgone NS

DNEL

Professional - Inhalation; Long term systemic effects: 13 mg/m³
Professional - Dermal; Long term systemic effects: 18.8 mg/kg/day
Professional - Oral; Long term systemic effects: 18.8 mg/kg/day

8.2. Exposure controls

Appropriate engineering controls	Provide adequate ventilation.
Eye/face protection	Wear chemical splash goggles.
Hand protection	Chemical-resistant, impervious gloves complying with an approved standard should be worn if a risk assessment indicates skin contact is possible. The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material.
Other skin and body protection	Wear suitable protective clothing as protection against splashing or contamination.
Respiratory protection	Respiratory protection may be required if excessive airborne contamination occurs. Wear a respirator fitted with the following cartridge: Organic vapour + dust and mist filter.

SECTION 9: Physical and Chemical Properties


9.1. Information on basic physical and chemical properties

Appearance	Viscous liquid.
Colour	Brown.
Odour	Slight. Petroleum.
Odour threshold	No information available.
pH	pH (concentrated solution): 5 - 7
Melting point	< -10°C
Initial boiling point and range	192°C @ 760 mm Hg
Flash point	72°C Pensky-Martens closed cup.
Evaporation rate	No information available.
Upper/lower flammability or explosive limits	No information available.
Vapour pressure	No information available.
Vapour density	> 1 (air = 1)
Relative density	0.88 @ 20°C
Solubility(ies)	Forms an emulsion with water.
Partition coefficient	Not applicable.
Auto-ignition temperature	225°C
Decomposition Temperature	No information available.
Viscosity	Kinematic viscosity ≤ 20.5 mm ² /s.

9.2. Other information

Other information	Conductivity 5.4 x 10 ¹⁷ pS/m (Concentrate product).
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SECTION 10: Stability and reactivity

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10.1. Reactivity

10.2. Chemical stability

Stability No particular stability concerns.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions The following materials may react strongly with the product: Oxidising agents.

10.4. Conditions to avoid

Conditions to avoid Avoid the following conditions: Heat, sparks, flames. Thermal decomposition or combustion products may include the following substances: Acid smoke or fumes.

10.5. Incompatible materials

Materials to avoid Oxidising agents.

10.6. Hazardous decomposition products

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity - oral

ATE oral (mg/kg) 21,978.02

Acute toxicity - dermal

ATE dermal (mg/kg) 21,978.02

Aspiration hazard

Aspiration hazard Aspiration hazard if swallowed.

Ingestion Aspiration hazard if swallowed. Nausea, vomiting.

Skin contact Prolonged contact may cause dryness of the skin.

Eye contact May cause severe eye irritation.

SECTION 12: Ecological Information

12.1. Toxicity

Ecological information on ingredients.

Distillates (petroleum), hydrotreated light

Acute aquatic toxicity

Acute toxicity - fish LC₅₀, 96 hours: 2.4 mg/l, Oncorhynchus mykiss (Rainbow trout)

Sodium dioctyl sulphosuccinate

Acute aquatic toxicity


Acute toxicity - fish LC₅₀, 96 hours: 20 - 40 mg/l, Oncorhynchus mykiss (Rainbow trout)

Acute toxicity - aquatic invertebrates EC₅₀, 48 hours: 36 mg/l, Daphnia magna

12.2. Persistence and degradability

Persistence and degradability Expected to be readily biodegradable.

Phototransformation Data lacking.

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Stability (hydrolysis) Data lacking.

Biodegradation Data lacking.

Biological oxygen demand Data lacking.

Chemical oxygen demand Data lacking.

12.3. Bioaccumulative potential

Bioaccumulative potential The product does not contain any substances expected to be bioaccumulating.

Partition coefficient Not applicable.

12.4. Mobility in soil

Mobility Semi-mobile.

Adsorption/desorption coefficient Not applicable.

Henry's law constant Not applicable.

Surface tension Data lacking.

12.5. Results of PBT and vPvB assessment

Results of PBT and vPvB assessment This product does not contain any substances classified as PBT or vPvB.

12.6. Other adverse effects

Other adverse effects None known.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

General information Disposal of this product, process solutions, residues and by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any local authority requirements.

Disposal methods Dispose of waste product or used containers in accordance with local regulations External recovery, treatment, recycling and disposal of waste should comply with all applicable local and/or national regulations.

SECTION 14: Transport information

General The product is not covered by international regulations on the transport of dangerous goods (IMDG, IATA, ADR/RID).

14.1. UN number

UN No. (ADR/RID) Not regulated.

UN No. (IMDG) Not regulated.


UN No. (ICAO) Not regulated.

UN No. (ADN) 9003

14.2. UN proper shipping name

Not applicable.

Proper shipping name (ADR/RID) Not regulated.

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Proper shipping name (IMDG) Not regulated.

Proper shipping name (ICAO) Not regulated.

Proper shipping name (ADN) Substances with a flash point above 60°C and not more than 100°C

14.3. Transport hazard class(es)

ADN class 9

14.4. Packing group

Not applicable.

14.5. Environmental hazards

Environmentally hazardous substance/marine pollutant

No.

14.6. Special precautions for user

Not applicable.

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

Transport in bulk according to Not applicable.

Annex II of MARPOL 73/78 and the IBC Code

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

EU legislation

Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (as amended).

15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

SECTION 16: Other information

Revision date 15/10/2018

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SDS number 4607


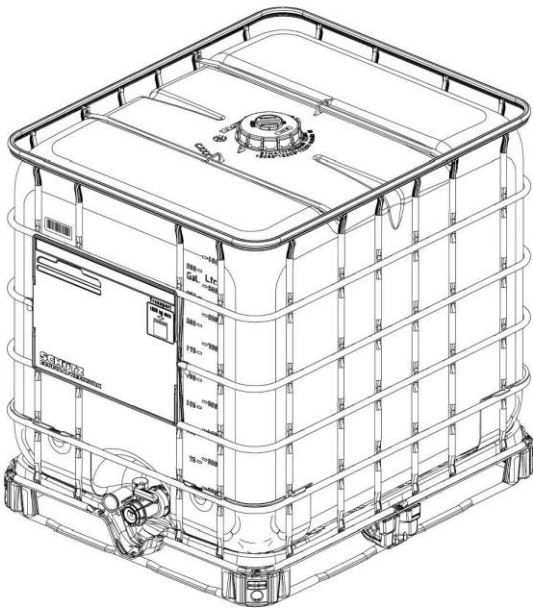
Hazard statements in full


H302 Harmful if swallowed.
H304 May be fatal if swallowed and enters airways.
H312 Harmful in contact with skin.
H315 Causes skin irritation.
H319 Causes serious eye irritation.

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty, guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.

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ANNEX C IBC Specifications

Packaging - Specification ECOBULK			
Transportcontainer ECOBULK 1000 ltr. MX1000 UN EVOH Nat/150R TP Bfly 50 VI Met 3PCA/Steel frame 2-Pit LG:LG/TI		SCHÜTZ (UK) LIMITED Claylands Ave Dukeries Ind. Estate WORKSOP NOTTS S81 7BE UNITED KINGDOM	
Article-No.	4027214	Date	Mar 13, 2020
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This picture is for illustration purpose only and does not necessarily correspond to the specified product.			
Weights and measures			
Nominal Capacity	1,000 l		275 gal US
Brimful Capacity	1,060 l		280.027 gal US
Length	1,200 mm		47.240 in
Width	1,000 mm		39.370 in
Height with pallet	1,160 mm		45.670 in
Total weight approx.	56.5 kg		124.7 lbs US
Pallet			
Pallet type	Steel-framepallet, zincd		
Opening height	min. 90mm, 4-way entry		

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Packaging - Specification ECOBULK



Transportcontainer ECOBULK 1000 ltr.
MX1000 UN EVOH Nat/150R TP
Bfly 50 VI Met 3PCA/Steel frame
2-Pit LG:LG/TI

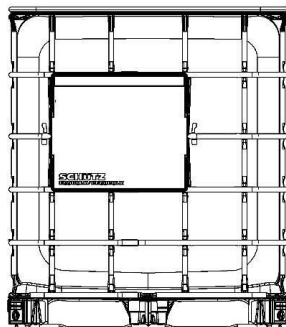
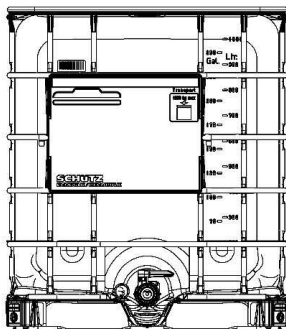
SCHÜTZ (UK) LIMITED
Claylands Ave Dukeries Ind. Estate
WORKSOP NOTTS S81 7BE
UNITED KINGDOM

Article-No. **4027214**

Date Mar 13, 2020
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Outer container

Grid	Steel, galvanized
Bottom plate	Steel, galvanized
Corner protector	black
Label plate	large - 6 field, with Schütz-Ticket
additional label plate	back side - standard

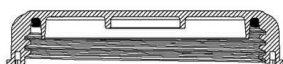



Inner container

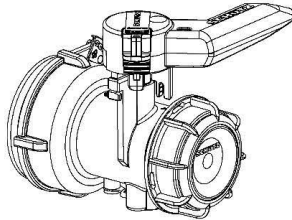
Rectangular blow molded tank of high density polyethylene	
Container	PE-HD, natural
Permeation barrier	EVOH barrier


Filling opening

Screw cap	DN150 / 6", PE-HD, red
O-ring gasket	TPE



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Packaging - Specification		<div>SCHÜTZ</div>	
ECOBULK			
Transportcontainer ECOBULK 1000 ltr. MX1000 UN EVOH Nat/150R TP Bfly 50 VI Met 3PCA/Steel frame 2-Pit LG:LG/TI		SCHÜTZ (UK) LIMITED Claylands Ave Dukeries Ind. Estate WORKSOP NOTTS S81 7BE UNITED KINGDOM	
Article-No.	4027214	Date	Mar 13, 2020
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<div><div>Plug</div><div>without Plug</div></div> <div><div>Discharge opening</div><div><div>Outlet valve</div><div>Case</div><div>Connection thread</div><div>Flap gasket / Ball gasket</div><div>Flange gasket</div><div>Handle color</div><div>Screw cap</div><div>Screw cap gasket</div><div>Screw cap color</div><div>Outlet nozzle</div></div><div><div>scr. butterfly-valve DN50/2"</div><div>PE-HD</div><div>metric</div><div>PP</div><div>FKM</div><div>grey, Handle protection</div><div>PE-HD</div><div>PE, foamed</div><div>black</div><div>PE-HD</div></div></div> <div></div> <div><div>Features</div><div>UN-Marking</div><div>UN_31HA1/Y/MM YY/D/BAM12868-SCHÜTZ#/4056/1724/1060L/56KG/100KPA</div><div><div>Heavy metals</div><div>Concentration level of heavy metals (Pb, Cd, Cr VI and Hg) in packaging does not exceed 100 ppm</div></div><div><div>Delivery</div><div>Ready for filling. The customer or filler is responsible for testing the material compatibility of the filling material with the packaging</div></div></div> <div><div>This specification is produced and delivered according to the current status of the SCHÜTZ "Quality Management Standard for the Supply of Packaging Products" which can be viewed under the following link:</div><div>www.schuetz.net/qmstandard</div></div>			

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ANNEX D **Dispersant Spillage Instructions**

Safety


1. Safety is priority
2. PPE is to be worn in the event of any spillage
3. First aid kit located in the GA box
4. Eyewash bottle located in the GA box


Initial Actions

1. Raise alarm
2. Don PPE (located in GA box)
3. Apply putty to IBC breach if possible
4. Contain or reduce spread using absorbent pads and booms
5. Cover drains with putty matts or drain covers if IBC is not bunded
6. Transfer remaining dispersant into spare empty IBC, using transfer pipe

Secondary Actions

1. Inform HSEQ representative
2. Manage the spread of dispersant with spill kits, assisted by colleagues
3. Cordon off area and manage clean up
4. Notify relevant authorities if any dispersant makes its way into watercourses

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		Revision	3

ANNEX E Boeing Safety Notice for Liquid Cargo



**Commercial
Aviation
Services**

SERVICE LETTER

FLEET SUPPORT ENGINEERING • BOEING COMMERCIAL AIRPLANES • P.O. BOX 3707 • SEATTLE • WASHINGTON 98124-2207

707-SL-02-005	757-SL-02-022	DC-10-SL-02-002
717-SL-02-103	767-SL-02-016	MD-10-SL-02-103
727-SL-02-007	777-SL-02-007	MD-11-SL-02-103
737-SL-02-023	DC-8-SL-02-002	MD-80-SL-02-103
747-SL-02-018	DC-9-SL-02-002	MD-90-SL-02-103

ATA: 0200-30
15 December 2010

SUBJECT: TRANSPORT OF LIQUID CARGO

MODEL: ALL

APPLICABILITY: All models

REFERENCE: IATA Dangerous Goods Regulations, Packing Section 5.0.2.8

SUMMARY:


This service letter provides guidance information for the transport of large volumes of liquid cargo to avoid unwanted cyclic lateral motions that may cause to flight crew to divert or turn-back.

BACKGROUND:

A 747-400F operator reported two events when the flight crew experienced significant lateral oscillations due to sloshing of liquid cargo. One event with 238,103 lb. (108,002 kg.) of liquid cargo resulted in an air turn-back due to continued lateral oscillations. A subsequent flight with 118,316 lb. (53,667 kg.) of liquid cargo did not cause noticeable lateral oscillations.

DISCUSSION:

The transport of a large amount of liquid cargo in large containers or multiple smaller containers can result in cyclic sloshing of the liquid in the void (ullage) at the top of each container. Sufficient ullage must be provided to allow for thermal expansion of the liquid in the container to 55 deg. C (130 deg. F.), per the reference. Sloshing movement of the liquid cargo in the ullage can result in low frequency lateral loads on the airplane. The lateral loads from sloshing in large tanks or multiple smaller tanks can be additive, resulting in lateral oscillations that cause poor ride quality. A large amount of high-density liquid cargo in a container with a large ullage

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707-SL-02-005	757-SL-02-022	DC-10-SL-02-002
717-SL-02-103	767-SL-02-016	MD-10-SL-02-103
727-SL-02-007	777-SL-02-007	MD-11-SL-02-103
737-SL-02-023	DC-8-SL-02-002	MD-80-SL-02-103
747-SL-02-018	DC-9-SL-02-002	MD-90-SL-02-103

15 December 2010

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could, in an extreme case, result in high loads on the airframe that could potentially result in damage to the structure. Boeing is not aware of such tank sizes that are in commercial use and are shipped as airplane cargo.

BOEING ACTION:

Boeing has conducted studies on sloshing liquid cargo and has worked with the airline that reported in-service events. Boeing is issuing this service letter to provide operators with recommendations from these studies and from in-service airline experience. Boeing has reviewed this issue for potential safety and determined that sloshing cargo is not a safety issue, but may result in crew action such as air turn-backs if the sloshing results in lateral motions and poor ride quality.

SUGGESTED OPERATOR ACTION:

Boeing suggests that operators consider the potential adverse effects from sloshing large volumes of liquid and suggests the following operational considerations:

1. Avoid the use of large tanks with large ullages.
2. Use tanks/containers with baffles, where possible. Baffled tanks will damp the sloshing motion and prevent sustained oscillations.
3. Avoid locating the liquid cargo far from the airplane center of gravity where sloshing can cause larger lateral motion effects on the airframe. Instead, locate high-weight liquid cargo near the center of gravity and preferably over the wing box on the main deck. Liquid cargo in the lower lobe compartments should be loaded just forward or just aft of the wing box.
4. Consider limiting the total weight of liquid cargo to no more than 42% of the airplane cargo capacity. This value has been demonstrated in service on 747-400F airplanes to not cause noticeable lateral oscillations for un-baffled multiple containers.
5. Unit Load Devices (ULD) carrying liquid in containers should have all restraints operative with no missing or inoperative restraints. Where the ULD carrying liquid in containers is restrained using the airplane installed cargo restraints, the weight limit for the cargo position should be reduced by 50% for tanks that are 2/3 full, and reduced by 20% for tanks that are 90% full. Further, if ULD carrying liquid in containers are tied down to the airplane, an additional "slosh" load factor of 2.0 should be used in the