


Property of Oil Spill Response 	Document Title IAR Hercules C-130 Mobilisation and Logistics Plan	Document Number OSRL-OPER-GUI-00709	
		Revision	6



IAR Hercules C-130 Mobilisation and Logistics Plan

REVISION HISTORY

Revision	Date	Description	Author	Reviewer	Approval
0	June 2016	Creation of document	Andy Lee	Tang Sze Wei	Jeremi Ong
1	February 2017	Document Update	Andy Lee	Tang Sze Wei	Jeremi Ong
2	February 2020	Document Update	Adrian Tan	Shane Jacobs	Shane Jacobs
3	December 2020	Document Update	Adrian Tan	Shane Jacobs	Shane Jacobs
4	May 2021	Document Update	Adrian Tan	Shane Jacobs	Shane Jacobs
5	November 2021	Document Update	Hon Phui Hang	Shane Jacobs	Shane Jacobs
6	January 2023	Update Responsibility Matrix	Hon Phui Hang	Shane Jacobs	Shane Jacobs



Property of Oil Spill Response 	Document Title IAR Hercules C-130 Mobilisation and Logistics Plan	Document Number OSRL-OPER-GUI-00709	
		Revision	6

Table of Contents

1. Introduction	3
2. Technical Specifications	4
3. Mobilisation	6
4. Indicative Flight Times	8
5. Flight Clearances	10
6. Crew	11
7. Responsibility Matrix	12
8. SD Pro	14
9. Dispersant	14
10. Costs	17
11. Additional Information	18

Property of Oil Spill Response 	Document Title IAR Hercules C-130 Mobilisation and Logistics Plan	Document Number OSRL-OPER-GUI-00709	
		Revision	6

1. Introduction

International Air Response (IAR) has been contracted by Oil Spill Response Limited (OSRL) to provide global aerial dispersant delivery capability.

IAR will maintain a 24-hour operational capability to respond to mobilisation calls within 10 minutes. Additionally, IAR will aim to provide exercise response details within 6 hours.


The Hercules C-130A aircraft consists of 1 Rapid Installation and Deployment Spray System (RIDSS) with a maximum allowable capacity of 12,000 litres. The aircraft has been based at Senai International Airport (WMKJ), Malaysia with an onsite stockpile of dispersant (Finasol OSR 52 and Dasic Slickgone NS).

OSRL maintains a response ready state for all aerial dispersant operations.

Purpose

This mobilisation and logistics planning guide is an aid to assist in the planning and understanding of the processes for the mobilisation and initial deployment phases of the IAR Hercules C-130A dispersant system. This helps to ensure that operational capability is delivered on time, as efficiently as possible to arrive at the spill site during the window of opportunity for dispersant application. This guide covers the following:

- Technical specifications of the aircraft
- Mobilisation instructions
- Flight times to various destinations
- Flight clearances
- Responsibility matrix
- Dispersant information

Property of Oil Spill Response 	Document Title IAR Hercules C-130 Mobilisation and Logistics Plan	Document Number OSRL-OPER-GUI-00709	
		Revision	6

2. Technical Specifications



Aircraft Details	<ul style="list-style-type: none"> • Hercules C-130A aircraft • Call sign: N117TG • Maximum allowable capacity of RIDSS tank: 12,000 litres • Transit speed: 300 knots at 10,000 ft altitude • Spray speed: 130 - 170 knots at 75 – 100 ft altitude • Approximate flight range and endurance: <ul style="list-style-type: none"> ▪ Fully loaded with dispersant (One way) – 780nm in 3 hours ▪ Fully loaded with dispersant (Round trip) – 500nm/way in 2.5 hours ▪ Empty tank (One way) – 2080nm in 8 hours
Operator	<ul style="list-style-type: none"> • International Air Response (IAR) Inc, United States • Minimum flight crews comprising of 1 x Captain, 1 x First Officer, 1 x Flight Engineer • No third-party work but Global Humanitarian support on behalf of OSRL
Location	<ul style="list-style-type: none"> • Senai International Airport (WMKJ), Malaysia
Response Pre-requisites	<p>Ensure low level flying and spraying permission are granted:</p> <ul style="list-style-type: none"> • Obtain permission to use dispersant from appropriate regulatory agency • OSRL could provide the template that contains all the information with regards to the aerial mission to be submitted to the leading government agency for approval
Aircraft Communications	<ul style="list-style-type: none"> • 2 x VHF Radios • 1 x Marine Band for Air to Sea communications • 1 x SATCOM for voice and text messages • 1 x SD Pro for 'live' flight tracking • 1 x SATLOC for dispersant spray application and monitoring system
Dispersant Operations	<ul style="list-style-type: none"> • RIDSS internal dispersant system permanently fitted • Controlled from flight deck by Flight Engineer • 3 x AC centrifugal pumps with maximum 2 in operation



Property of Oil Spill Response 	Document Title IAR Hercules C-130 Mobilisation and Logistics Plan		Document Number OSRL-OPER-GUI-00709	
		Revision	6	
Specifications (range where appropriate)	<p><u>Dispersant Operation</u></p> <ul style="list-style-type: none"> • Dose rate: 1 – 8 gal/acre; Flow rates: 45 – 360 gal/min • Swath width: 152 ft (at nominal spray configuration of 5 gal/acre and 265 gal/min; at 75 ft altitude) <p><u>Dispersant loading</u></p> <ul style="list-style-type: none"> • 2 x spate pumps** (1 x spare) • 20 m rigid suction/discharge hoses, IBC couplings • 1m x 1m collapsible bund • PPE <p>** <u>Selwood Spate 75C Specifications</u> <i>Capacity: 8,400 gal/h (31,800 litres/h)</i> <i>Total Head: 130 ft (40 m), Delivery Head- 100 ft (30.5 m)</i> <i>Pump ends: 2" Camlock suction discharge</i></p>			
Airport Requirements	<ul style="list-style-type: none"> • Max all-up take-off weight is 124,200 lbs • Required runway length 4,900 ft (at 124,000 lbs, 1000 ft field elevation and 20 °C) • Pavement Classification Number (PCN) must be greater than 23 in order to accommodate C-130A 			

Table 1: Technical Specification

Property of Oil Spill Response 	Document Title IAR Hercules C-130 Mobilisation and Logistics Plan	Document Number OSRL-OPER-GUI-00709	
		Revision	6

3. Mobilisation

OSRL Members may mobilise the Aerial Dispersant Service by calling **OSRL** at the number provided.

Notify **OSRL** Duty Manager:
+ 65 6266 1566

The Duty Manager (DM) will call back to the number(s) provided, and will request all relevant information plus the Mobilisation Authorisation Form **signed by Nominated Authority**. A delay in providing these forms may possibly delay the response.

The DM will contact IAR to notify and/ or mobilise the aircraft. The DM will promptly follow up the call to mobilise with an email detailing location and type of mobilisation.

Mobilisation Type

In the case of a potential incident, OSRL DM will contact IAR and give them prior notice. The DM has two options with regards to the aircraft.

Pro-active mobilisation: Notification to all parties to begin preparing the aircraft for possible flight mission ie. refuelling but no actual take-off – block flight hours do not start counting down

Mobilisation: Same as above but involves the actual take-off of the aircraft

The IAR Hercules is response ready in 6 hours which includes fuelling and if required, dispersant loading. This is not inclusive of time taken for flight plan approval and airspace clearance.


Aircraft Location

The aircraft is located at Executive Jets Asia (EJA), Senai Airport Cargo Terminal (WMKJ):

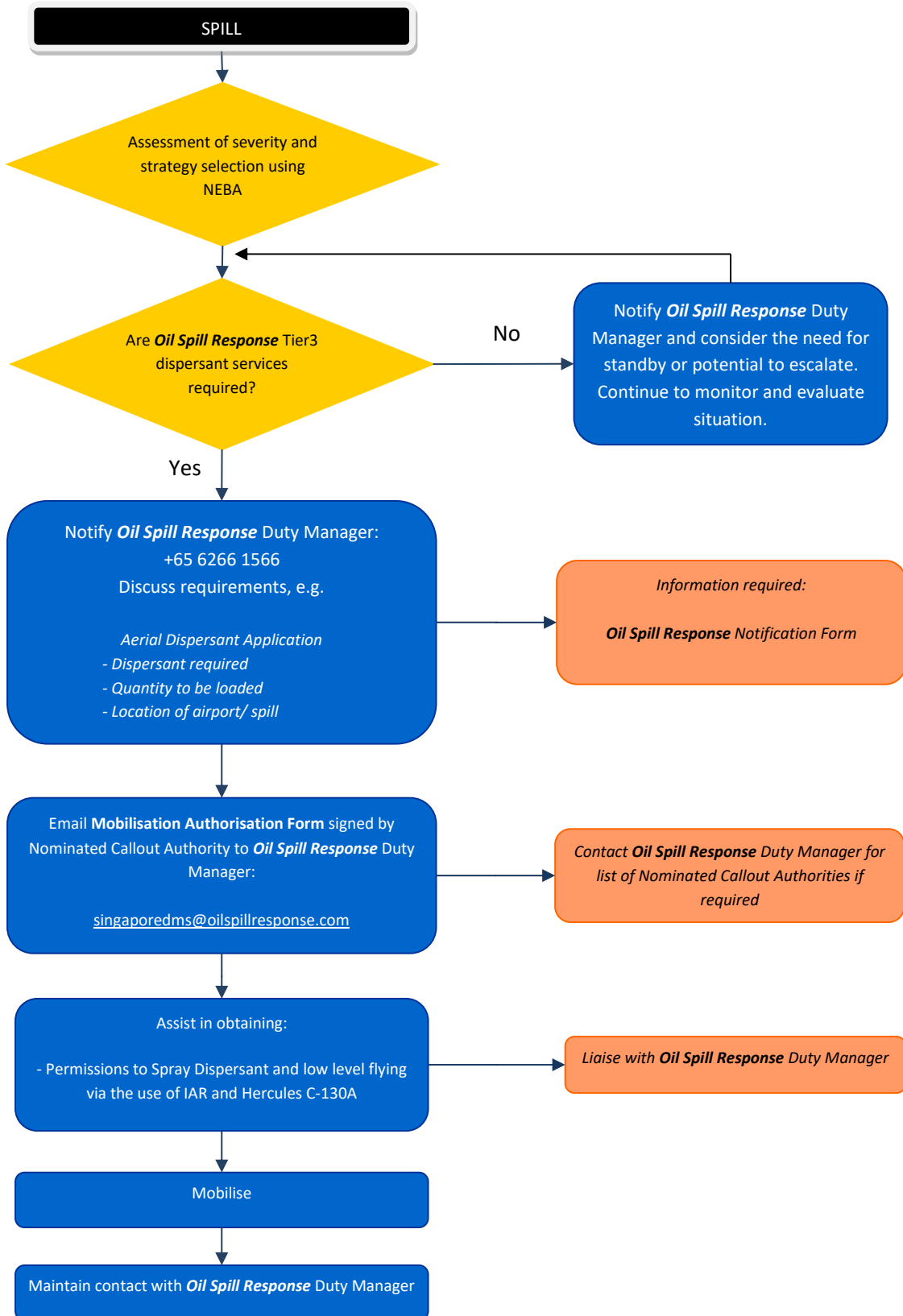
Senai Aviation Park, Senai International Airport,


81250 Johor Bahru, Malaysia

EJA is located within Senai Airport Cargo Terminal which is operated and handled by Senai Airport Terminal Services Sdn. Bhd.

Property of Oil Spill Response 	Document Title IAR Hercules C-130 Mobilisation and Logistics Plan	Document Number OSRL-OPER-GUI-00709	
		Revision	6

OSRL Client




Property of Oil Spill Response 	Document Title IAR Hercules C-130 Mobilisation and Logistics Plan	Document Number OSRL-OPER-GUI-00709	
		Revision	6

4. Indicative Flight Times


Country	City / Town	Airport of Destination	ICAO	Direct Flight Time (hr)	# Stops	Stop #1	Stop #2	Total Mission Time (hr)
Australia	Perth	Perth International Airport	YPPH	9.0	1	Bali	-	11.0
Bahrain	Bahrain	Bahrain International Airport	OBBI	14.2	1	Male, Maldives	-	16.2
Brunei	Brunei	Brunei International Airport	WBSE	2.7	0	-	-	2.7
Cambodia	Phnom Penh	Phnom Penh International Airport	VOPP	2.3	0	-	-	2.3
China	Beijing	Beijing Capitol International Airport	ZBAA	9.5	1	Hong Kong	-	11.5
China	Hong Kong	Hong Kong International Airport	VHHH	5.3	0	-	-	5.3
Fiji	Nadi	Nadi International Airport	NFFN	17.6	2	Makassar, ID	Port Moresby	29.6
India	Chennai	Chennai International Airport	VOMM	6.0	0	-	-	6.0
Indonesia	Jakarta	Jakarta Soekarno-Hatta International Airport	WIII	2.0	0	-	-	2.0
Indonesia	Surabaya	Surabaya Juanda International Airport	WARP	3.0	0	-	-	3.0
Japan	Haneda	Haneda Airport	RJTT	11.3	1	Manila, PH	-	13.3
Korea	Busan	Gimhae International Airport	RKPK	10.1	1	Manila, PH	-	12.1
Korea	Seoul	Incheon International Airport	RKSI	10.4	1	Manila, PH	-	12.4
Malaysia	Bintulu	Bintulu Airport	WBGB	2.2	0	-	-	2.2
Malaysia	Kerteh	Kerteh Airport	WMKE	0.7	0	-	-	0.7
Malaysia	Labuan	Labuan Airport	WBKL	2.8	0	-	-	2.8
Myanmar	Yangon	Yangon International Airport	VYYY	3.9	0	-	-	3.9
New Zealand	Christchurch	Christchurch International Airport	NZCH	19.0	2	Darwin, AU	Adelaide, AU	31.0
Northern Mariana Islands	Saipan	Saipan International Airport	PGSN	10.1	1	Zamboanga, PH	-	12.1
Pakistan	Karachi	Jinnah International Airport	OPKC	11.5	1	Colombo, Sri Lanka	-	21.5
Papua New Guinea	Port Moresby	Jacksons International Airport	AYPY	10.5	1	Makassar, ID	-	12.5
Philippines	Manila	Manila Ninoy Aquino International Airport	RPLL	5.0	0	-	-	5.0
Russia	Sakhalin	Yuzhno-Sakhalinsk Airport	UHSS	14.8	2	Manila, PH	Okinawa, JP	18.8
Taiwan	Songshan	Taipei Songshan Airport	RCSS	6.7	0	-	-	6.7
Thailand	Rayong	U-Tapao International Airport	VTBU	2.6	0	-	-	2.6
Vietnam	Da Nang	Da Nang International Airport	VVDM	3.5	0	-	-	3.5

Table 2: Indicative C-130A flight times without dispersant loaded

Note: In the event of spill, please get in touch for accurate mobilisation times. The indicative flight times shown should be used for guidance purposes only and are subjected to obtaining flight clearances, landing permits, ground handling time, adverse weather conditions or any other unforeseen

Property of Oil Spill Response 	Document Title IAR Hercules C-130 Mobilisation and Logistics Plan	Document Number OSRL-OPER-GUI-00709	
		Revision	6

circumstances which could delay the flight. As with any response, there will be factors outside of OSRL's control which could affect the response times and every endeavour will be taken to ensure a timely mobilisation.

Property of Oil Spill Response 	Document Title IAR Hercules C-130 Mobilisation and Logistics Plan	Document Number OSRL-OPER-GUI-00709	
		Revision	6


5. Flight Clearances

Over flight clearances and technical stop clearances (for aircraft servicing, routine/ non-routine maintenance, crew rest, general declaration, customs and immigration clearances) which are valid for a few days to a week, will be obtained by IAR. These clearances, however do not allow any commercial activities to be carried out during the technical stop. In addition, the general declaration document (which allows the crew to stay in country temporarily without visas) will also be filled in by IAR.

Should there be a need for the use of Hercules C-130A to respond to the emergency oil spill incident, permission must be granted from the leading government agency before IAR is able perform the necessary aerial missions to respond to the oil spill. OSRL is able to provide the template which contains the details for the aerial mission (e.g. Hercules C-130A operated by IAR, mission types such as Low level flying, Aerial dispersant application and Aerial Surveillance and type of dispersant to be used, etc). The client should assist in obtaining such permissions from the leading government agency, ideally during peace times.

Permission must be obtained from the leading government agency by the client, should they require the use of aerial dispersant services. Such permission should be sought for as soon as possible during an oil spill incident. IAR will be able to fly to the required staging airports*. However, without the permission from the government, IAR will not be able to perform any aerial works pertaining to the oil spill incident. The process of obtaining such permission should be done during peace times in the form of exercises or drills.

* Subject to overflight and technical stop clearances

Property of Oil Spill Response 	Document Title IAR Hercules C-130 Mobilisation and Logistics Plan	Document Number OSRL-OPER-GUI-00709	
		Revision	6

6. Crew

IAR air crews are on standby 24 hours a day, all year round. In a mobilisation, the air crew will transit to the designated staging airport and do not require in country visas for the first 72 hours (varies between countries) whereby they will not be allowed to engage in any commercial activities. After this period, the aircrew will need visas to remain in the country to perform the required aerial works.

To ensure a timely response, support will be expected from the client/ OSRL to expedite the visa process where possible for the aircrews as this is critical in getting the crew and dispersant in country and ready to respond, especially for prolonged response periods.

A second set of aircrew is available so that the crews can be rotated and not delay the response as far as reasonably practicable. Minimum of one set of crew is required to operate the aircraft which consists of a pilot, one first officer and one flight engineer.


Crew hours

As a basic rule, Federal Aviation Administration (FAA) stipulates that the aircrew must have 8 hours of rest time in between flight time.

The most taxing period of an operation is the initial phase when the crew is required to prepare the aircraft, relocate to the required staging airport and to perform the spraying operation. This taxing period is however limited to day time operations where it shall end by sunset of each day.

Crew	Duty period (Inclusive of flight and working on the ground)	Flight time in a single duty period
Minimum 1 set to operate: (1 captain, 1 first officer and 1 flight engineer)		
1 set	16	10
2 sets	19	No stated limits


Table 3: Flight and rest time of IAR crew

Property of Oil Spill Response 	Document Title IAR Hercules C-130 Mobilisation and Logistics Plan	Document Number OSRL-OPER-GUI-00709	
		Revision	6

7. Responsibility Matrix


Assistance may be required to complete the task	Has full responsibility / is the only party who can complete the task
√	√√

Task	OSRL	Aircraft Operator	Service Subscriber
Notification of Incident			√√
Notification form & signed Mobilisation form	√		√√
Modelling support for tracking spilled oil	√√		√
Generate aircraft work order	√√		
Booking of any commercial flights and accommodation for air crew	√	√√	√
Booking of any commercial flights and accommodation for OSRL task specialist	√√		√
Over flight clearances/ landing permits	√	√√	√
To obtain permission from leading government agency for aerial operations via the use of IAR and Hercules C-130A	√		√√
Applying for necessary visas and work permits for aircrew and personnel	√√	√	√
Chartering aircraft for dispersant (top-up)	√√		√
In country logistical support	√		√√
Aircraft handling, customs clearance, refuelling, dispersant loading/unloading (in country)	√	√√	√

Property of Oil Spill Response 	Document Title IAR Hercules C-130 Mobilisation and Logistics Plan	Document Number OSRL-OPER-GUI-00709	
		Revision	6

Task	OSRL	Aircraft Operator	Service Subscriber
Request of spotter aircraft in country			√√
Aircraft flight path and spray path coverage of sorties (Sky Connect)	√√	√	
Formal Reporting	√√	√	
Supply of daily cost sheets and invoicing	√√	√	
Demobilisation from the incident including signed demobilisation form	√		√√
Provide Purchase Order Number	√		√√
Paying the operator	√√		√
No Notice drills	√√		√

Table 4: Responsibility Matrix

Property of Oil Spill Response 	Document Title IAR Hercules C-130 Mobilisation and Logistics Plan	Document Number OSRL-OPER-GUI-00709	
		Revision	6

8. SD Pro

SD Pro acts as the Source of Data (SD) for tracking of flight operations, delivering real time information in a centralized ecosystem during a flight sortie.

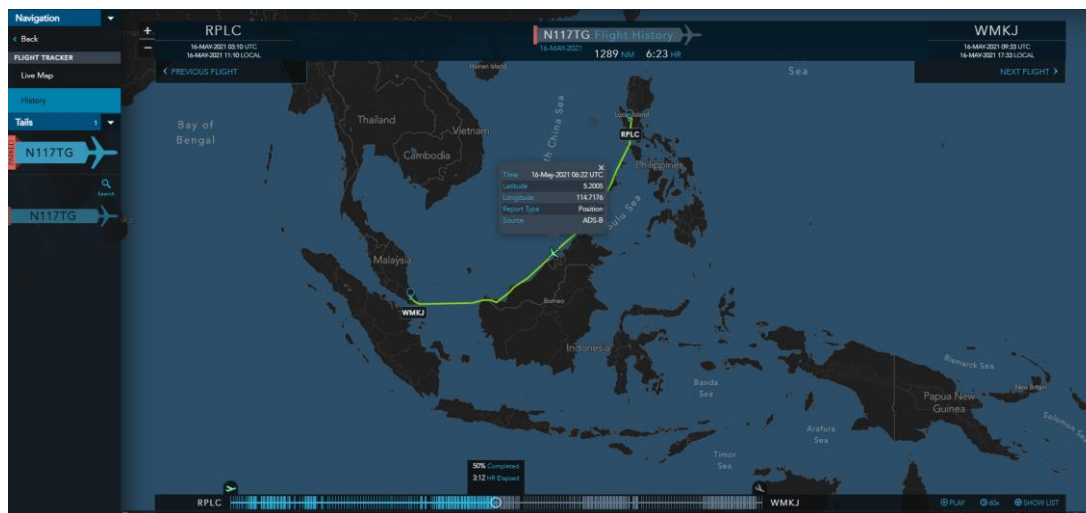



Figure 1: Example of a tracklog of an aircraft on a sortie using SD Pro

9. Dispersant

The Hercules C-130A with RIDSS can fly fully laden to any spill location. The payload of dispersant does not affect the air speed of the aircraft but the overall range is reduced before needing to refuel, hence multiple stopovers will be required. During a mobilisation, the OSRL Duty Manager will advise whether it is more efficient to fly fully laden or to send dispersant as cargo on a chartered aircraft, in which several variables need to be taken into account including:

- Reduced coverage of the aircraft with full payload and its effect on response times
- Scale and duration of the response
- Availability of dispersant in country
- Availability of charter aircraft
- Dispersant type required and the approval for use
- Flight times for chartered aircraft transporting dispersant

12,000 litres of Finasol OSR52 and 24,000 litres of Dasic Slickgone NS are stationed at Senai Airport Cargo Terminal for immediate loading if required.

Property of Oil Spill Response 	Document Title IAR Hercules C-130 Mobilisation and Logistics Plan	Document Number OSRL-OPER-GUI-00709	
		Revision	6

Aerial dispersant Authorisation

OSRL can provide as much assistance as possible with aerial dispersant operations pre-approval through logistics and technical support. Technical liaison support can be provided to assist with pre-approval with the regulator. Aerial dispersant operation enabling key considerations include but not limited to the low level over water flight approval, dispersant spraying permission from local leading government agency, crew working hours, operational day light hours and adequate dispersant supply.

Supply Chain

For an extended response and to ensure the availability of dispersant for ongoing aerial dispersant spraying operations, a continual supply of dispersant will be required either from in-country or through OSRL Service Level Agreement (SLA) stockpiles. This can be organised through OSRL but needs to take into account the limitations of flying liquid cargo on commercial aircraft.

Due to a Service Letter from Boeing Commercial Aviation Services, there is a current advisory on all Boeing aircraft for a limit on liquid cargo to 42% of the total cargo. This may reduce the availability of aircraft and result in higher chartering costs to move the same amount of cargo on alternative air platforms i.e. Airbus, Antonov, Ilyushin, etc.

OSRL works closely with our air charter broker to ensure that equipment can be mobilised around the world as quickly as possible. This is regularly tested through exercises and spills. We have a global contract signed with our charter brokers and agreed aircraft charter terms which means that we can normally respond as soon as an aircraft is available and the mobilising member has given written authorisation for the costs. The maximum time for OSRL to receive flight options in a spill is six hours.


Although it is subjected to fluctuating aviation markets and aircraft availability, OSRL expects to have an aircraft available and loaded with dispersant within 24 - 48 hours. During this time, OSRL will also have all import paperwork completed including, Commercial Invoices and Airway Bills. If any extra paperwork is required (such as Certified Certificates of Origin or translations), it will increase the mobilisation time.

Air cargo carrier global availability indicative estimates

Aircraft type	Estimated number globally for cargo	Estimated short notice spill availability	Cargo capacity (tonnes)	Capacity following Service Letter (tonnes)	World coverage (potential)
Boeing 747 / 777	150	10	100-130	42-50	Global
Antonov 124	24	2-3	100	100*	Global
Antonov 225	1	1	250	250*	Global
Ilyushin IL 76	7 (that can land in the UK)	1-2	45	45	Global – shorter journeys
MD11	9	1-2	85	85	Africa centric with some USA

*These figures may reduce due to volume constraints and are subject to an ongoing investigation into pressurisation of holds

Table 5: Air cargo carrier global availability indicative estimates

Property of Oil Spill Response 	Document Title IAR Hercules C-130 Mobilisation and Logistics Plan	Document Number OSRL-OPER-GUI-00709	
		Revision	6

Dispersant Spraying and Refuelling

For repeated sorties, if there is dispersant available at the airport, the aircraft can be reloaded in 120 minutes if being filled by individual IBCs, but this will depend on the location of the dispersant stockpile and available ground handling assistance. The IAR crew together with OSRL task specialists will load the dispersant. The aircraft will be refuelled between each sortie. It is expected that IAR could normally achieve 2 – 3 spray sorties a day but this is dependent upon dispersant supply, ground handling facilities, distance of the spill site from the staging airport, airport traffic, weather etc.


In the event that all the dispersant has not been used in a spray sortie, it is possible for the aircraft to land with the remaining dispersant on board.

Spotter Aircraft

In order to maximise the operational effectiveness and increase encounter rate, it is recommended that a spotter aircraft is also mobilised to provide top-cover support.

The use of a light aircraft will be the primary option for use. The main requirements of the spotter aircraft are, sufficient communication between the two aircraft so they can be directed towards any spill, enough endurance for a single spray operation before needing to refuel and space onboard for an OSRL trained observer. The aircraft will communicate on normal Aviation Band VHF.

If available, a spotter aircraft can be used to direct the aircraft into position which will increase the effectiveness of the dispersant runs and ensure the Hercules C-130A is on target. The client will have to provide this in country where possible.

Property of Oil Spill Response 	Document Title IAR Hercules C-130 Mobilisation and Logistics Plan	Document Number OSRL-OPER-GUI-00709	
		Revision	6

10. Costs

In the event of a mobilisation, the below fees will be applied for OSRL members for the conduct of aerial dispersant operations or be made available on standby in country:

- Daily standby fee US\$9,250* per day (applicable on days where flights are not carried out and charged on a daily basis)
- Response flights US\$8,500* per hour (subject to a minimum charge of the daily stand by fee)


The above rates apply in respect of 'normal' response operations where the aircraft is deployed and utilised for up to a maximum of 10 days. Daily charges for non-flying standby periods of greater than 10 days duration where the aircraft flies on average for less than 2 hours per day during that period will be charged at US\$17,000* per day and will require special consideration.

Direct operating costs will be charged as incurred to Members, including but not limited to fuel and handling charges. Non-members will be charged an additional 15% administration fee to these direct operating costs – Response for non-members is not guaranteed and subject to approval by OSRL Board of Director; the aircraft may be recalled in the event of mobilisation by OSRL members.

The estimated costs for each sortie with dispersant (loaded with 12,000 litres of dispersant), the client will be charged:

- Corexit 9500 – US\$ 142,653*
- Corexit 9527 – US\$ 148,933*
- Slickgone NS – US\$ 34,324*
- Finasol OSR 52 – US\$ 143,748*

**Subject to changes. Please refer to OSRL Scale of Fees for latest information*

Property of Oil Spill Response 	Document Title IAR Hercules C-130 Mobilisation and Logistics Plan	Document Number OSRL-OPER-GUI-00709	
		Revision	6

11. Additional Information

Table Top Exercises

Service subscribers are encouraged to exercise the mobilisation of the service during any table top exercise. By calling the duty manager, real time flight information to any location can be provided free of charge. OSRL can also arrange actual participation of IAR and the flying mission of C-130 aircraft in a client exercise at published response rates.

Training

OSRL are responsible for the training of their contractors and OSRL conduct operational training sessions each year to simulate aerial dispersant spraying operations. The training includes:

- Aerial dispersant spraying (using fresh water)
- Use of monitoring equipment
- Coordination with vessel operations (if any)
- Production of reports
- Data management

The training is supported by 6-monthly scheduled exercises and no notice drills to ensure the appropriate level of competence is maintained and to ensure that OSRL fulfils the mobilisation times and standards expected from our members. In addition to the scheduled training, the IAR crews complete a minimum of one spray experience flights each quarter and one training flight each month to retain route flying proficiency.