

OIL SPILL COMBAT STRATEGY & LESSON LEARNT OF BALIKPAPAN SPILL

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2018





Presidential Decree No. 109 / 2006 regarding National Oil Spill Contingency Plan & Response

TIER

1

Tier 1 is a categorization of the emergency response of oil spills occurring within or outside of ports area, or other oil and gas processing units or other units of activity, which can be handled by the facilities, infrastructure and personnel available at ports or oil processing units and other natural gas or activity units.

TIER

2

Tier 2 is a categorization of the emergency response of oil spills occurring within or outside ports area, or other oil and gas processing units or other units of activity, which can not be handled by facilities, infrastructure and personnel available at ports oil and gas processing unit or other activity units based on Tier 1 level.

TIER

3

Tier 3 is a categorization of the emergency response of oil spill occurring inside or outside ports area or oil and natural gas processing units or other activity units, which can not be handled by facilities, infrastructure and personnel available in a region based on Tier level 2, or spread across the territory of the Unitary State of the Republic of Indonesia.

Tiered Response in Indonesia is based on area and capability. Tier-1 on-scene commander is by port or oil & gas terminal area and once the spill is outside the port area and cannot be handled anymore, it is escalated to Tier-2 /Tier-3 with mission coordinator from Area Port Authority (Indonesian Coastguard).



Ministry Transportation Law No 58 Year 2013 Mandatory Oil Spill Response Preparedness for Ports & Terminals



**SURAT PENGESAHAN PEMENUHAN PERSYARATAN
PENANGGULANGAN PENCEMARAN**



Every Port / Oil & Gas Terminal must have Oil Spill Contingency Plan & Risk Assessment, Tier-1 Oil Spill Response Equipment and Personnel on-site with Tier-2 on-call response arrangements from OSRO like OSCT / Area approved by Indonesian Coastguard for 5 years



Oil Spill Combat Team (OSCT) Indonesia is Tier-2 National Oil Spill Response Organization and have combated over 64 oil spills in Indonesia. From every incident lessons learnt, we review our preparedness & capability. Most Recent experience & review is Balikpapan Pipeline Incident.

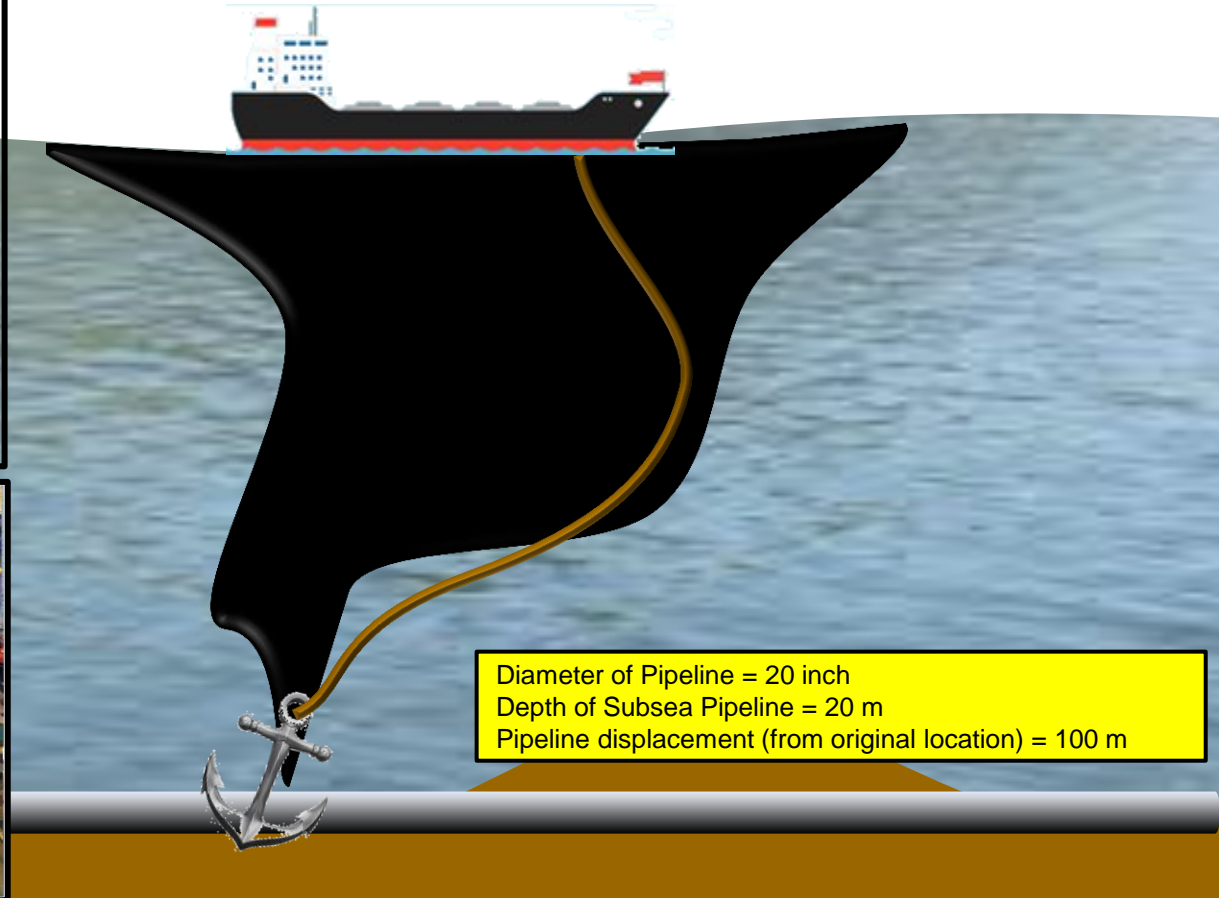
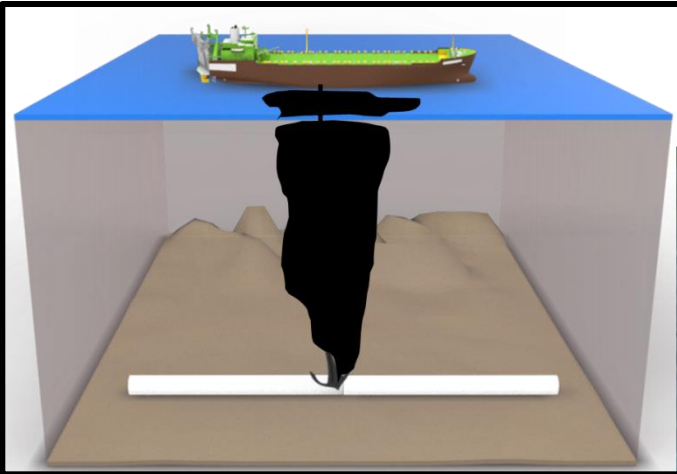


Balikpapan Bay has many activities of vessel, port, terminal, oil and gas company, subsea pipeline, refinery, SBM. Shoreline of Balikpapan bay consist of sensitive area such as settlement, mangrove, industry, fisherman area, tourism. Oil spill combat for Balikpapan spill is extensive operation involved Government and stakeholder



Saturday, March 31st 2018 – 03:00 AM

Illustration of Incident



**Spill Incident occurred due to pipeline ruptured by MV Ever Judger Vessel anchor
Spill volume estimates 40.000 bbls and spread impacting over 12.987 ha of Balikpapan Bay
Waters and 60 km of shoreline.**





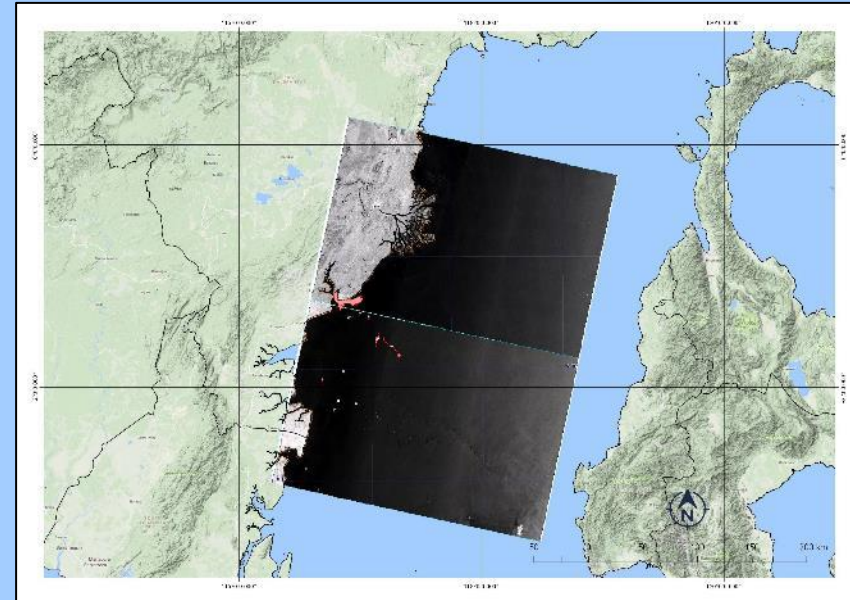
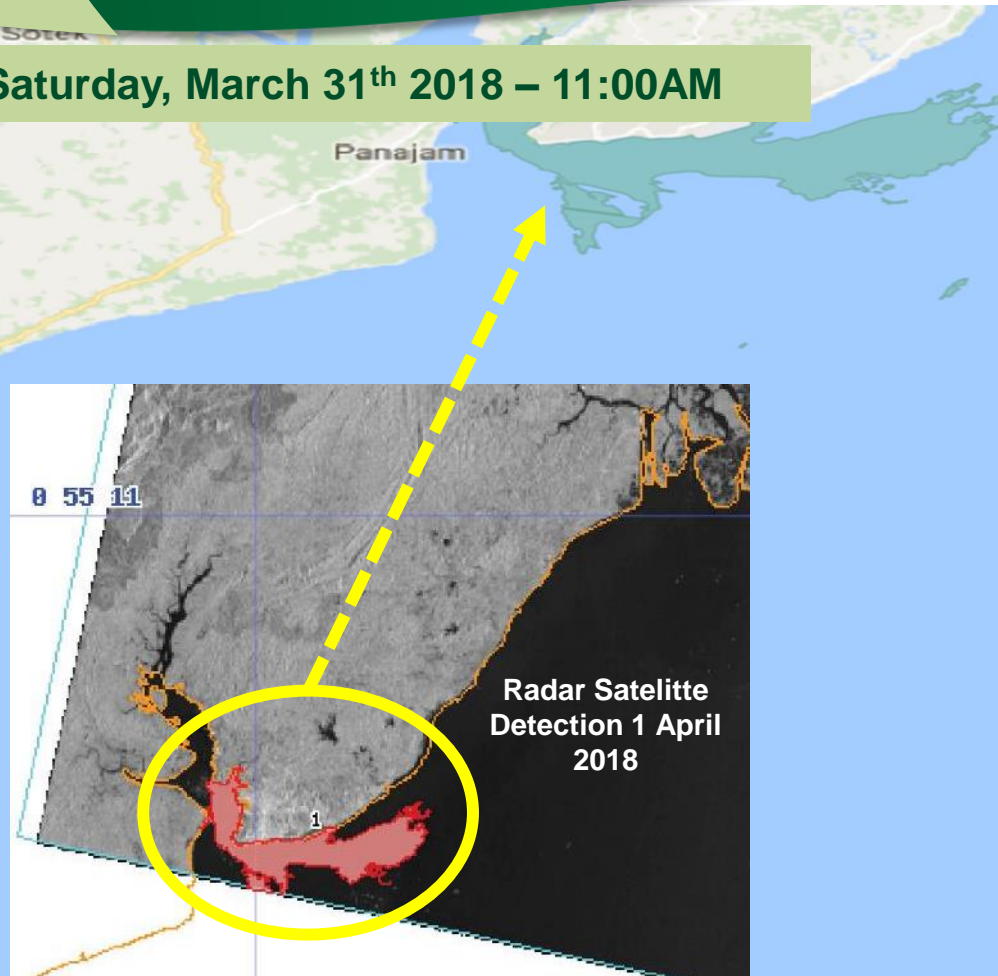
Saturday, March 31th 2018 – 11:00AM



Fire accident occurred at 11.00 am until 12.00 pm. Tier-2 Response was conducted with neighboring fire fighting vessel and fire was put out about 1 hour after the incident. Oil was ignited by accident causing five casualties, there was no in-situ burning of oil allowed



Saturday, March 31th 2018 – 11:00AM



SPILL INFORMATION

Spill Source	<i>Pipeline Rupture</i>
Location	Balikpapan Bay - Balikpapan
Date	Saturday, March 31st, 2018

On March 31st 2018, Oil Spill Combat Team (OSCT) Indonesia received an oil spill notification and immediately acquired radar detection due to size of major spill. Team Deployed same day with equipment preparation in Balikpapan Base & West Java



Sunday, April 1st 2018 – Aerial Surveillance



Aerial Surveillance was used to verify radar detection results for major oil spill. Shoreline impact was within 24 hours, and within 7 days before oil spreads outside Balikpapan bay, impacting more sensitivities and towards Makassar Strait

11 Shoreline Assessment



Monday, April 2nd 2018 – Shoreline Assessment

Benoa Patra Beach



© photos by OSCT Indonesia

Shoreline Assessment around Balikpapan Bay was conducted by OSCT Indonesia and oil spill response operation for shoreline protection / clean-up conducted in few areas. During the assessment, One carcass of oiled Irrawaddy dolphin was found



Monday, April 2nd 2018 – Wildlife Impact



Irrawaddy Dolphins that was impacted at Klandasan Beach from Balikpapan spill is one of critically endangered species (Protected on IUCN Red List). Wildlife impact from oil spill started to be seen on 2 April 2018 there are various birds, fish, marine life impacts.

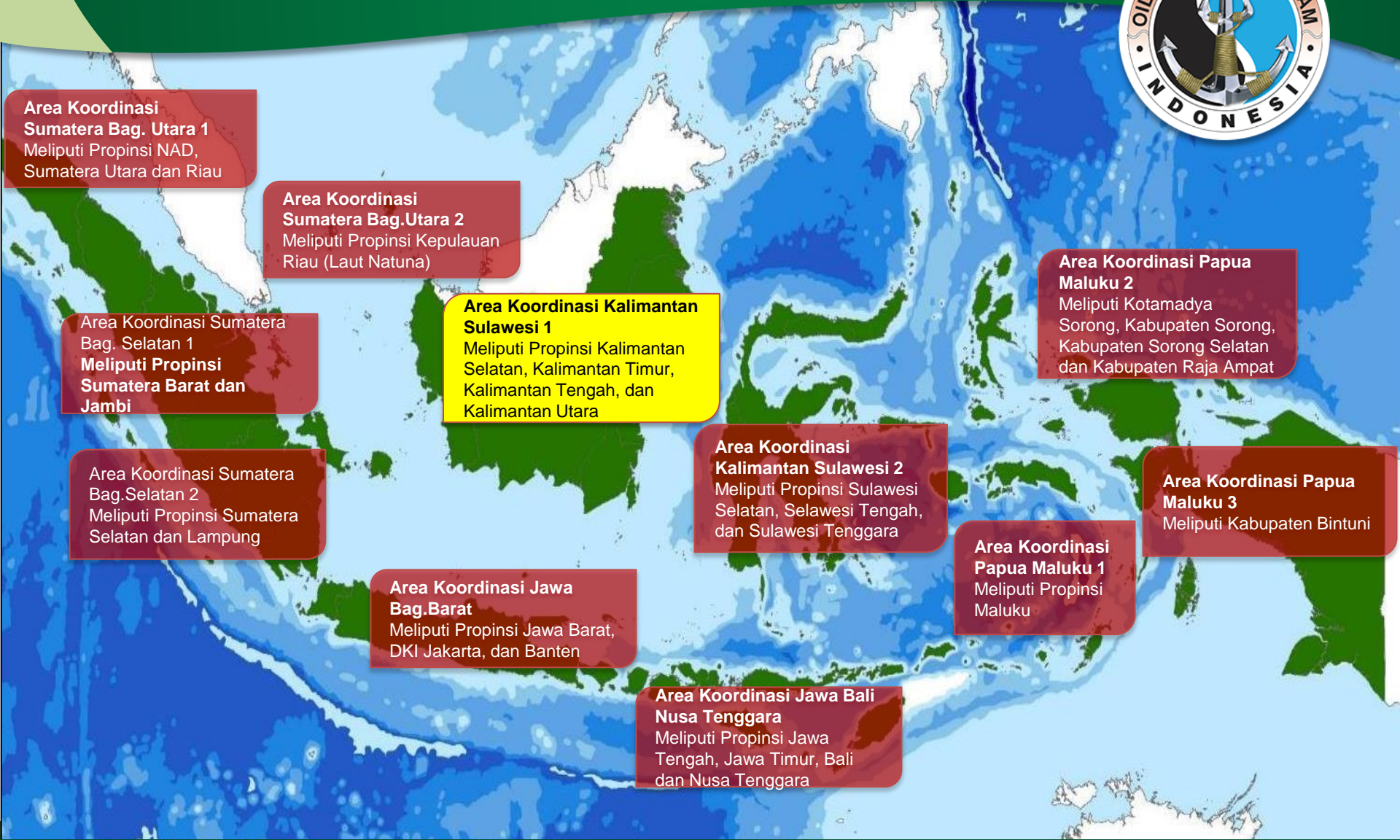


Monday, April 2nd 2018 – Balikpapan Coastguard Coordination Meeting



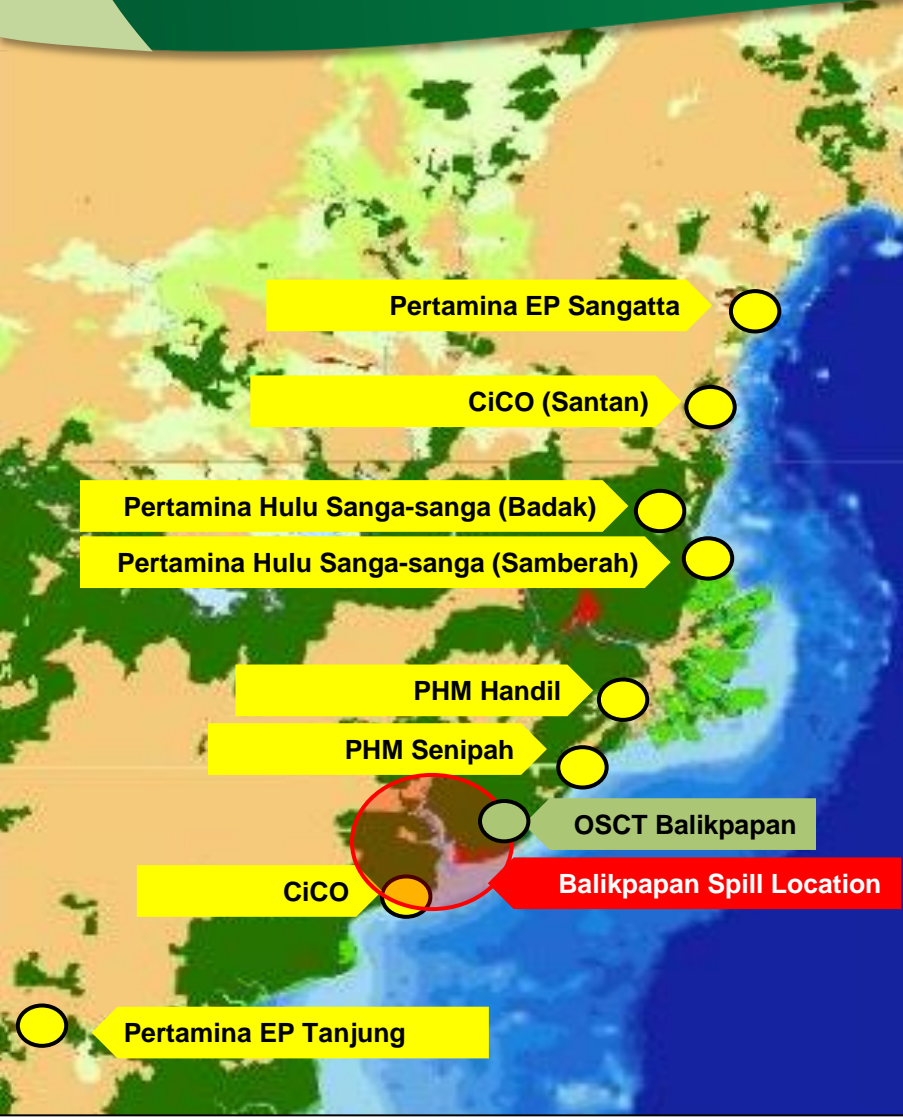
© photos by OSCT Indonesia

OSCT attended coordination meeting for Balikpapan spill lead by Balikpapan Port Authority / Coastguard with members of all stakeholders in the area to coordinate unified oil spill response strategy and reporting to be conducted by all stakeholders



Oil & Gas areas are divided into 11 areas with mutual assistance agreement in each area to release +- 25% Tier-1 resources to assist for Tier-2 Incident. Balikpapan is part of Kalimantan and there are over 10 companies in the area

15 Tier II Resources For Balikpapan



Qty.	Oil Spill Combat Equipment
Pertamina EP Tarakan	
200 m	Offshore Boom
300 m	Solid Floatation Boom
265 m	Solid Floatation Boom
1 set	Offshore Skimmer
1 set	Dynamic Inline Skimmer
1 set	Interchangeable Disc And Brush Skimmer
4 unit	Temporary Floating Storage 20-25 M3
1 unit	Temporary Onland Storage
5 set	Dispersant Sprayer
Pertamina EP Sanga Sanga	
200 m	Offshore Boom
400 m	Solid Floatation Boom
1 set	Interchangeable Skimmer
1 set	Dynamic Inline Skimmer
2 unit	Skimmer Truck
2 set	Disc Skimmer
1 set	Brush Skimmer
1 set	Rope Mop Skimmer
2 set	Onland Skimmer
1 unit	Temporary Floating Storage Kap. 5 M3
Pertamina EP Tanjung	
100 m	Semi Permanent Boom
100 m	Compact Boom
1 set	Interchangeable Weir And Brush Skimmer
1 set	Interchangeable Disc And Brush Skimmer
1 set	Rop Mop Skimmer
2 unit	Temporary Onland Storage

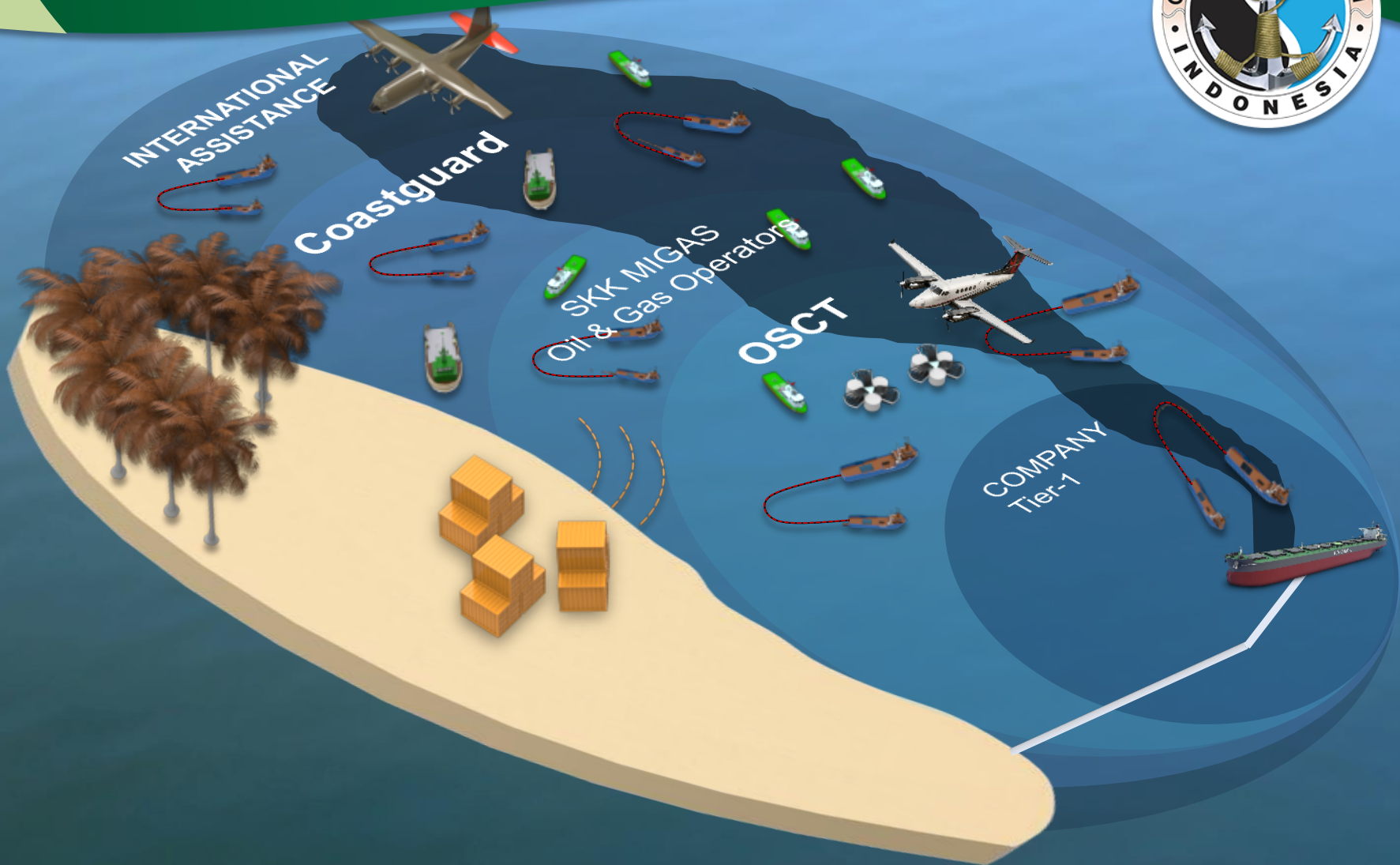
Qty.	Oil Spill Combat Equipment
Chevron Indonesia Company	
400 m	Offshore Inflatable Boom
250 m	Shore Guardian Boom
60 m	Harbor Boom
40 m	Tidal Sea Boom
1 unit	Weir Skimmer
2 unit	Offshore Skimmer
1 unit	Powerpack
Pertamina Hulu Mahakam (PHM)	
500 m	Permanent Onshore Boom
200 m	Semi Permanent Boom
200 m	Offshore Solid Floatation Boom
200 m	Offshore Inflatable Boom
150 m	Water Curtain Boom
2 set	Skimmer Stopol 120
2 set	Skimmer Sirine 20A
1 unit	Disc Skimmer T-Disc 10
2 unit	Disc Skimmer Komara 12
2 unit	Disc Skimmer Komara 20
1 unit	Helispray Simplex
10 unit	Onshore Storage Tank 2 m³
1 unit	Floating Storage Tank 50 m³
OSCT Balikpapan	
1,600 m	Onshore Boom and Offshore Boom
400 m	Semi permanent Solid detachable flotation boom
8 sets	Onshore and Offshore Skimmer
8 Sets	Temporary Storage Tanks
2 set	Dispersant Sprayer and chemicals

Tier-2 Resources in the bay activated however most companies was protecting their own ports hence Additional Resources came from outside the bay (Regional Resources) and National OSRO OSCT mobilized in coordination with Coastguard



OIL SPILL RESPONSE EQUIPMENT RESOURCES	OFFSHORE BOOM	OFFSHORE SKIMMERS	ONSHORE BOOM	ONSHORE SKIMMERS	DISPERSANT
Area Koordinasi Sumatera Bag.Utara 1	300 m	-	450 m	3	-
Area Koordinasi Sumatera Bag.Utara 2	450 m	4	600 m	1	7250 Liter
Area Koordinasi Sumatera Bagian Selatan 1&2	400 m	1	985 m	25	4400 Liter
Area Koordinasi Jawa Bagian Barat	800 m	6	766 m	9	13600 Liter
Area Koordinasi Jawa Bali Nusa Tenggara	750 m	9	N/A	1	8400 Liter
Area Koordinasi Kalimantan Sulawesi 1	600m	3	1300 m	6	1200 Liter
Area Koordinasi Kalimantan Sulawesi 2	400 m	1	-	-	1963 Liter
Area Koordinasi Papua Maluku 1,2&3	250 m	2	300 m	8	8100 Liter
OSCT Balikpapan	600 m	4	1000 m	4	2,000 liters
OSCT Surabaya	800 m	4	1000 m	4	2,000 liters
OSCT Headquarters	5400 m	20	6000 m	30	10000 Liter
Marine Disaster Prevention Ship – MDPS (7 unit)	1400 m	7	-	-	7000 Liter
TOTAL	11,205 m	56	11,211 m	86	62,313 Liter

There are about 11 km of offshore boom and 12 km of shoreline boom available in-country for Tier-2 Response in Balikpapan. Most Resources came from outside the bay for Tier-2 Assistance and OSRO



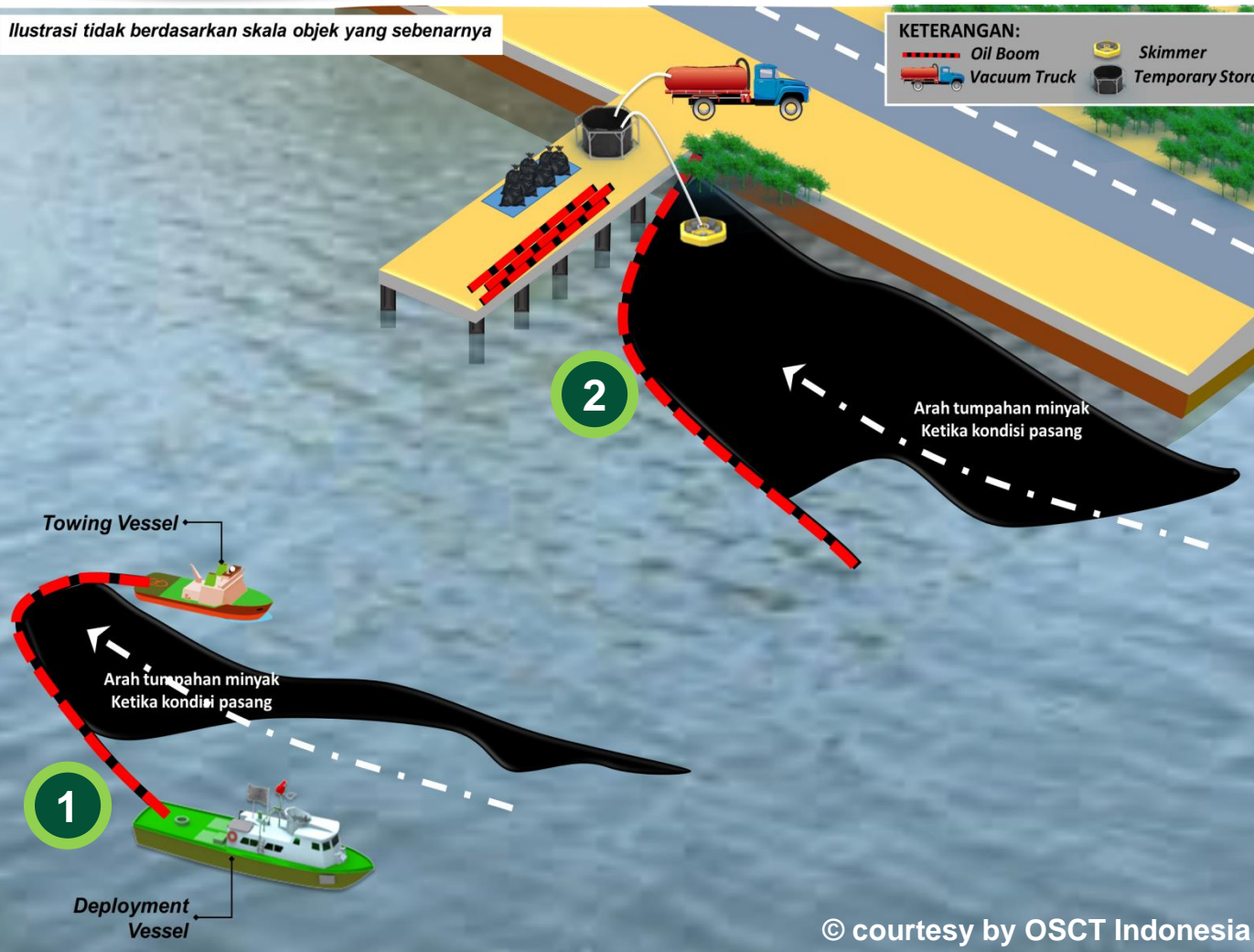
Each Tier level in Indonesia have sources of oil spill response equipment to mitigate risk of oil spill incident. Tier-1 is the key to rapid response, supported with Tier-2



Oil Spill Response Strategy consist of four primary aspects which is assessment/surveillance, containment and recovery, shoreline protection/cleanup and dispersant spraying & monitoring



Ilustrasi tidak berdasarkan skala objek yang sebenarnya



© courtesy by OSCT Indonesia



OSCT Indonesia conducted containment and recovery strategy, wherein oil spill was directed from the bay to the collection point, and localized immediately by using oil boom and recovered with oil skimmer before stored in the temporary storage, then transferred into vacuum truck.



3 ~ 15 April 2018 – Containment & Recovery



BALIKPAPAN, KALIMANTAN TIMUR

KANDUNGAN GAS DALAM AMBANG BATAS NORMAL

Offshore containment strategy conducted to divert the spilled oil to jetty collection points and recover the spilled oil using skimmer. For oil spreading offshore with depth > 20 meters, dispersants was used with fluorometry monitoring



3 ~ 15 April 2018 – Containment & Recovery





3 ~ 15 April 2018 – Containment & Recovery



© Pictures from Pertamina RU V

24/7 Continuous Containment & Recovery Operation was completed less than 2 weeks with over 1000 personnel from companies in the region and government stakeholders & 60 OSCT Responders

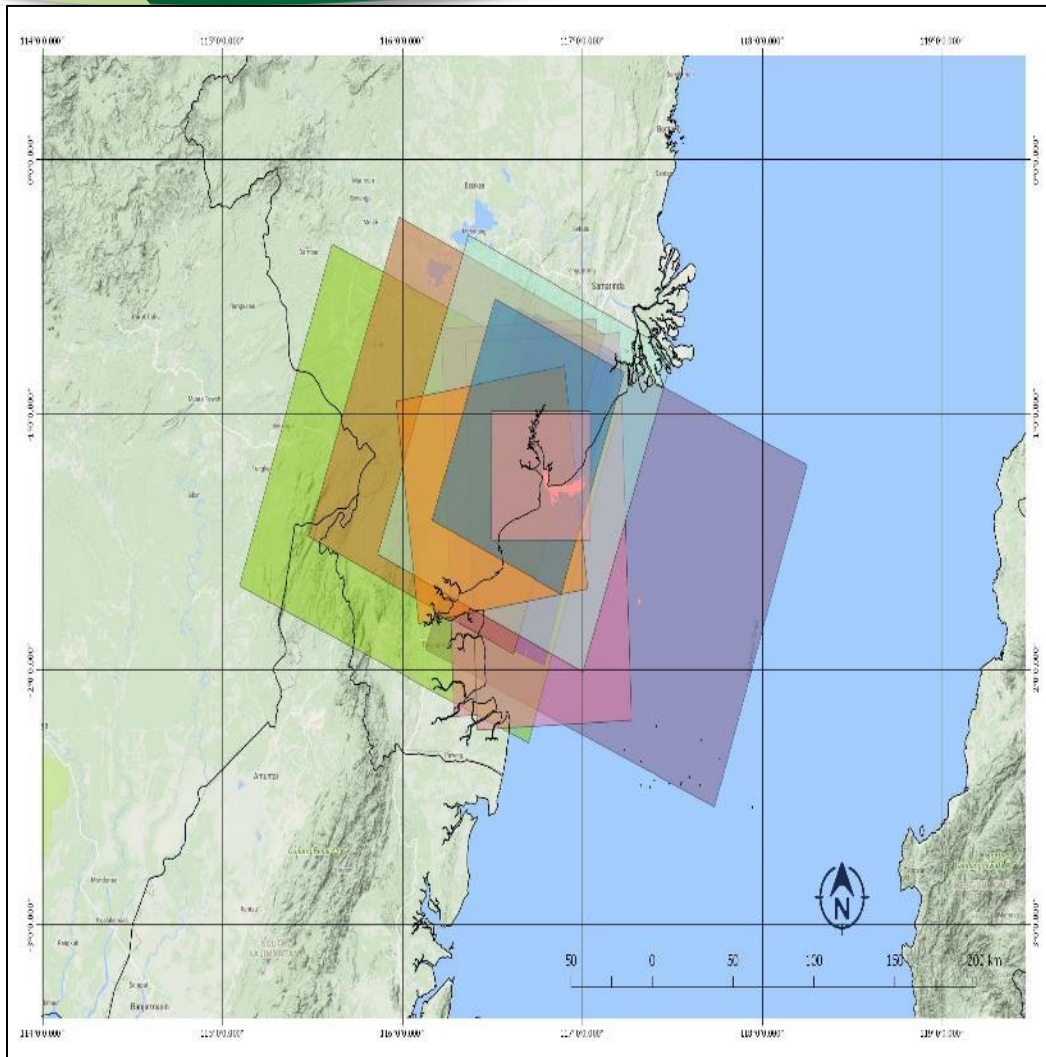


3 ~ 15 April 2018 – Containment & Recovery



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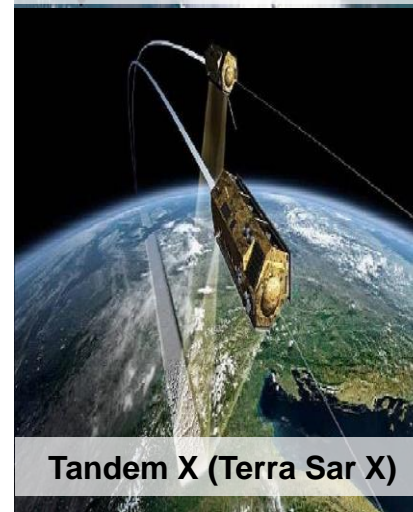
Before and after spill cleanup condition. Each Area is cleaned within 2-3 days simultaneously with extensive resources covering over 60km and 12.987 hectares of impacted area



**Radarsat
(Extra & Wide Fine)**



**Cosmo Skymed
(Wide-Region)**



Tandem X (Terra Sar X)



Sentinel (S1A)

According to surveillance report to monitor oil movement and ensure no further impact radar satellite detection was used using four different satellites producing daily detection reports that determine the location of vessel & drone surveillance to be deployed



Fluorometer is operated within 0 – 20 meters depth, and live results are recorded and witness by independent surveyors combined with oil spill monitoring and surveillance using drones

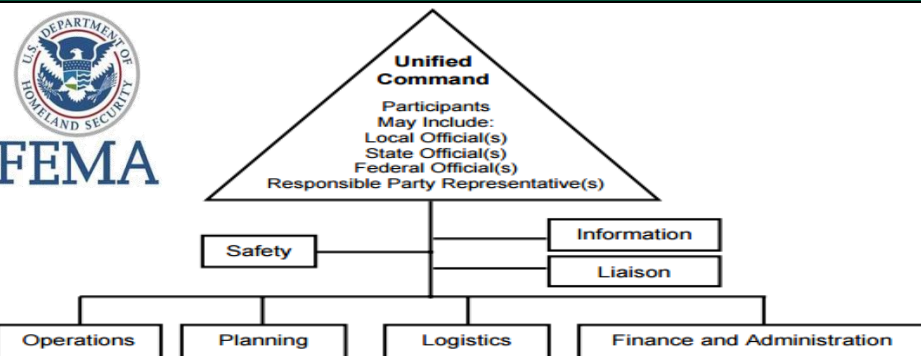






COORDINATION & PLANNING

Major spill incident involving combined stakeholder coordination from private sector and government, important to apply **Unified Command System** to make coordination easier.



OIL SPILL DETECTION, SURVEILLANCE & MONITORING

Oil spill monitoring is difficult to be conducted by vessel and not efficient if using helicopter. UAV (Unmanned Aerial Vehicle with IF) is instrument to monitor for wide ocean can be conducted for 24/7 continuously



TIER-2 RESPONSE CAPABILITY REVIEW

Oil Spill response containment and recovery conducted rapidly in 2 weeks at Balikpapan Bay. Due to different risk across Indonesia, tier-2 capability requirement varies depending on risk assessments / contingency planning.



TIER-2 SPILL WILDLIFE RESPONSE & MITIGATION

Wildlife response plan was difficult to due to diverse wildlife impact and lack of trained experts. Pre-determined wildlife response kits is being evaluated that can be deployed with experts and personnel





TERIMA KASIH
THANK YOU

ありがとう
고맙습니다
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PREPAREDNESS IS KEY TO
A SUCCESSFUL RESPONSE

