



Reports 592 & 594 Preparing for SSC Response & Optimising Timelines

APPEA Conference 2021 Pat Brenan & Andrew Best Manuscript ID: AJ20041.R2



Wells Expert Committee (WEC) & Subsea Well Response and Source Control Subcommittee (SWRSC)

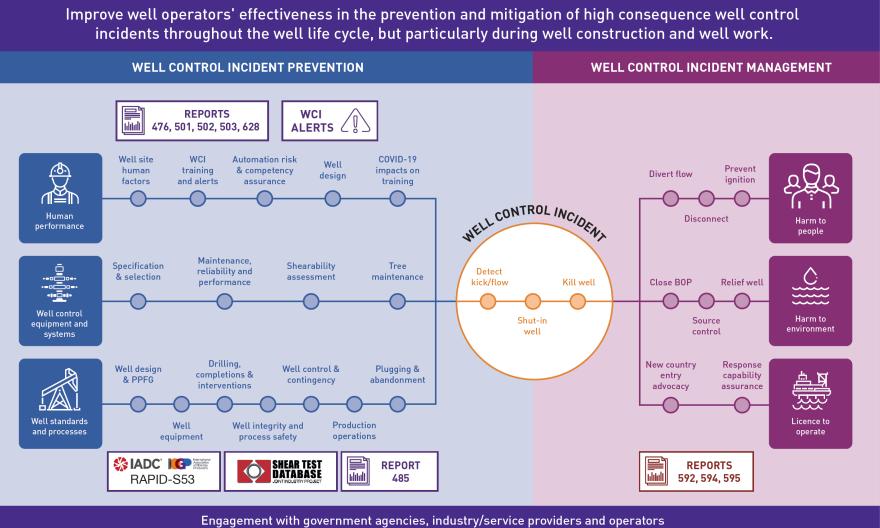


- Established in June 2011, WEC has become the global voice of Operators and a relevant and effective technical authority on the prevention and mitigation of high consequence well control events.
- The SWRSC was formed in 2017 and aims to:
 - Be a centralised source of industry knowledge and shared experience in subsea well response and source control
 - Support IOGP member organisations and the broader E&P industry engaged in subsea activity
 - Provide a forum for industry to identify technical areas where further development may be warranted





WEC Framework



Well control incident causal and trend analysis







IOGP SWRSC

SWRSC Key Activities:

- 1. Creation of resources and best practices for industry.
- 2. Education and knowledge sharing
- 3. Stakeholder engagement
- 4. Technical projects and continuous improvement

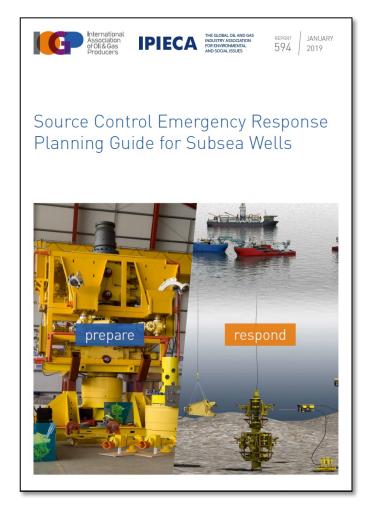






Purpose

- Fills an industry knowledge gap where a vast amount of information has been accrued but not concisely disseminated to the wider industry.
- Intended to inform technical and non-technical stakeholders what is meant by subsea source control and present a holistic picture of what is involved.
- Provides an overview of technical activities that should be considered when designing wells and preparing a source control emergency response plan (SCERP).
- Establishes a common workflow and guidelines for industry participants.





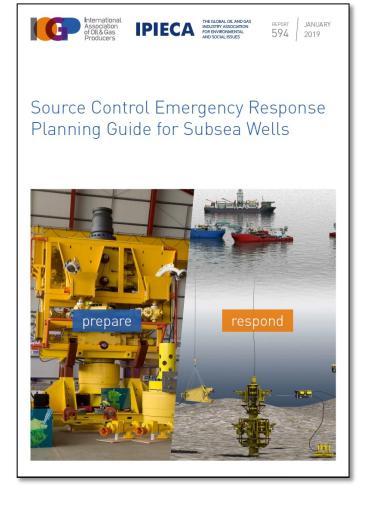


IOGP Report 594

• Foreword

- Introduces the report and describes the difference between Capping and Containment.

- Part 1: Overview of Source Control Emergency Response
 - Describes response organisational structures and key task groups.
- Part 2: Engineering Activities to Support Response Planning – Goes into engineering, design and preparation activities that should be considered before drilling commences.
- Part 3: Capping Stack Planning and Installation
 - Discusses how to choose and deploy the right capping stack solution.
- Part 4: Logistics Planning
 - Considers mobilisation and logistic requirements.
- Appendix:
 - Overview of Containment.
 - Response task group detailed descriptions.
 - Capping stack resources available to industry.
 - An overview of the capping stack installation process.
 - Example drawings.
 - Response Plan checklists.







International Offshore Petroleum Environmental Regulators (IOPER)

- International environmental regulators working together to foster good practice.
- IOPER's Oil Spill Working Group recognised the need to further improve preparedness for timely source control response.
- NOPSEMA/(IOPER) with APPEA hosted the 'Source Control Workshop' at 2019 Spillcon in Australia to foster collaboration and consistency in source control planning.
- Industry's global subsea well response expertise supported the event to focus on subsea response planning to minimize response time – (IOGP presented Report 594).
- One objective was to use the workshop outputs to create a source control response-time-model project planning tool.



Figure 2: Opening address

The workshop was opened by Wendy Kennedy, Chief Executive – Offshore Petroleum Regulator for Environment & Decommissioning (OPRED) and Chair of the International Petroleum Offshore Environmental Regulators (IOPER) – (shown seated above in Figure 2), welcoming all attendees, highlighting the future challenges of the oil and gas industry, and requesting open and straightforward communication and participation. Cameron Grebe, Head of Environment Division, National Offshore Petroleum Safety & Environmental Management Authority (NOPSEMA) – (shown standing above), then followed with remarks stressing the priority initiative regarding source control including preparation and actual response.

Brian Starkey, Chair of the APPEA Oil Spill Preparedness and Response Working Group, then emphasized the need for this workshop to include the cross-section of experienced industry professionals that were present and asked for continued collaboration between the attendees to ensure this event was fruitful.

A group of Subject Matter Experts (SMEs) were invited to present 10 sessions and to sit in a panel open for questions from and discussions with the workshop attendees. Robert Limb, CEO of Oil Spill Response, Ltd., moderated the workshop presentations and the ensuing panel discussion.





Report 592

- Developed in partnership with IOPER via NOPSEMA.
 - Steps taken to avoid regulatory capture such as no timelines entered, dynamic tool to be improved by users over time, etc.
- The report consists of subsea well response project files (multiple formats).
- Contains information on:
 - 1. User guide for how to use the model.
 - 2. Guidance on appropriate level of detail to be observed.
 - 3. Explanation of model logic with predecessor and successor activities.
 - 4. Color codes.

Does not:

- 1. Pre-populate response times.
- 2. Provide guidance on what times should be populated.
- 3. Consider Containment operations.

C	International Association of OIL&Gas Producers

REPORTDECEMBER5922019

Subsea Capping Response Time Model Toolkit User Guide







- Report 594 describes the elements that form a SCERP.
- Response time models form part of the response plan, but have not been presented consistently to the same level of detail.
- IOGP next step: develop an RTM and use it as a tool to understand overall response time and critical path activities.
- Once the RTM is developed, it along with the SCERP can be validated with tabletop exercises.

The Project

- Recognising IOGP-IOPER synergies for source control response planning improvements, NOPSEMA and IOGP collaborated to produce the Response-Time-Model and Report 592.
- The RTM is a tool to improve our industry:
 - Consistency in plans which can make mutual aid easier to optimize industry plug and play.
 - Allows Regulators to have a standard template to review and understand the status of best practice and whether Operators are appropriately reducing risk to ALARP (identifying and improving critical path items).
 - Makes overall planning more efficient through consistency.





Level 1 shows the headline activities and is intended to present the overall summary

		Ta							Resource		.ev l	e Le	
		M	Task Name	Duration	Start	Finish	Predec	Successors	Names	Ro 1	L 2	3	Justification for Time Estimates
	1	-3	A Response Planning Activities, SCERP Preparation	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	Yes Y	es Yes	
9	97	-3	Incident Occurs	<u>0 hrs</u>	<u>Sun 10/20/19</u>	<u>Sun 10/20/19</u>		<u>6,5,7,12,13,1</u>		<u>Yes</u>	<u>Yes Y</u>	es Yes	
9	98		 RESPONSE - notifications, activations and mobilizations 	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	Yes Y	es Yes	
(99		Initial Notifications	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	Yes Y	es Yes	-
1	L05		Mobilization of Company Internal Resources	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	Yes Y	es Yes	6
1	154	-3	Activation of External Resource Contracts	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	Yes Y	es Yes	8
2	258	-3	 Mobilization of Aircraft, Crane and Road Transport for Subsea Response Equipment Packages and Subsea Dispersant supplies, not including the capping stack 	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	Yes Y	es Yes	
3	304	-3	 Mobilization of Subsea Equipment Packages, except capping stack, to Offshore Operations Deployment Site for Subsea Missions 	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	Yes Y	es Yes	
3	355	-3	Mobilization of Sea Vessels for Subsea Missions, except for capping stack	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	Yes Y	es Yes	í
4	143		Offshore / Subsea Well Incident Response Missions	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	Yes Y	es Yes	í
4	477	-3	Capping Stack - Transport by Sea Vessel to Offshore Operations Deployment Site	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	Yes Y	es Yes	
5	512	-3	 Capping Stack - Transport by Aircraft to Offshore Operations Deployment Site 	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	Yes Y	es Yes	
HART	517	-3	 Capping Stack - Installation by Offset Installation Equipment (OIE) - Offset Installation System (OIS) 	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	Yes Y	es Yes	
GANTT CHARI	776	-3	 Mobilization of Installation Vessels required for OIE Capping Stack Installation 	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	Yes Y	es Yes	
AD 2	777	-3	Anchor Handling Vessel (AHV) for OIS Deployment and Carrier Operations - Two required	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	Yes N	lo Yes	
7	792	- 5	Supply Vessel for OIE Deployment - One required	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	Yes N	lo Yes	
8	307	-3	Offshore Construction Vessel (OCV) for OIS Carrier Deployment - One required	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	Yes N	lo Yes	
8	322	-3	Air Supply Vessel for OIS Deployment and Carrier Operations - One required, but may combined with other vessels	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	Yes N	lo Yes	
8	337	- 4	Towing Vessel for OIS Carrier Deployment - One required	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	Yes N	lo Yes	
9	909		Relief Well / Well Kill Operations	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	Yes Y	es Yes	6
9	911 [RWD MODU is selected, notified and suspends any active operations	0 hrs	Sun 10/20/19	Sun 10/20/19	85,35,7	912,917		No	Yes N	lo No	
		-											





10

Level 2 contains the intermediate details.

It is anticipated that most level 2 activities can be populated when developing the response time forecast and used during tabletop exercises.

								_					
	Ta Mi	Task Name	Duration	Start	Finish	Predec	Successors	Resource Names			Le 2		Justification for Time Estimates
1		Response Planning Activities, SCERP Preparation	0 hrs	Sun 10/20/19	Sun 10/20/19				/es			_	
-		- Response Flamming Activities, SCERF Freparation											
2		Written response plan documents completed	0 hrs	Sun 10/20/19	Sun 10/20/19				/es	No	Yes	Yes	
11		Well design checks and analyses, BOP interface checks	0 hrs		Sun 10/20/19				/es				
18			0 hrs		Sun 10/20/19				/es	No	Yes	Yes	
27		Dispersant Approvals and Application Capability	0 hrs		Sun 10/20/19			1	ſes	No	Yes	Yes	
34		External Mutual Aid Contracts in place	0 hrs		Sun 10/20/19			1	ſes	No	Yes	Yes	
36		Logistics/Installation Analyses and Plans completed	0 hrs	Sun 10/20/19	Sun 10/20/19			1	/es	No	Yes	Yes	
43		Transportation Tracking Services	0 hrs	Sun 10/20/19	Sun 10/20/19			1	/es	No	Yes	Yes	
46		Transportation - Support Services/Facilities	0 hrs	Sun 10/20/19	Sun 10/20/19			1	/es	No	Yes	Yes	
52		Equipment storage/deployment sites - lifting/loadout capability	0 hrs	Sun 10/20/19	Sun 10/20/19			١	ſes	No	Yes	Yes	
57	-9	Customs clearance processes, visa/immigration/work permit processes	0 hrs	Sun 10/20/19	Sun 10/20/19			١	ſes	No	Yes	Yes	
60	_	For onshore/offshore work activities	0 hrs	Sup 10/20/10	Sun 10/20/19				/es	No	Vor	Vor	
60 65	-9	 For offset Installation Planning (if not members of OSRL/SWIS and/or alternate installation method to 	0 hrs		Sun 10/20/19 Sun 10/20/19				res (es				
CO	-9	 For Oriset instanation Planning (if not members of OSRL/SWIS and/or alternate instanation method to OIE is proposed) 	UIIIS	Sun 10/20/19	Sun 10/20/19				res	NO	res	res	
71		For Offset Installation Equipment (OIE) Planning - if required. (Assumes the OSRL OIE option)	0 hrs	Sun 10/20/19	Sun 10/20/19			١	fes	No	Yes	Yes	
	1												
84	-5	For Relief Well Planning	0 hrs	Sun 10/20/19	Sun 10/20/19			١	fes	No	Yes	Yes	
97	l - 5	Incident Occurs	<u>0 hrs</u>	Sun 10/20/19	Sun 10/20/19		<u>6,5,7,12,13,1</u>	2	<u>es</u>	Yes	Yes	Yes	
98	-,	RESPONSE - notifications, activations and mobilizations	0 hrs	Sun 10/20/19	Sun 10/20/19			1	f es	Yes	Yes	Yes	
99	-3	Initial Notifications	0 hrs	Sun 10/20/19	Sun 10/20/19			١	fes	Yes	Yes	Yes	
105	-3	Mobilization of Company Internal Resources	0 hrs	Sun 10/20/19	Sun 10/20/19			١	f es	Yes	Yes	Yes	
106	-3	Incident Command Team is established	0 hrs	Sun 10/20/19	Sun 10/20/19			,	Yes	No	Yes	Yes	
134	-3	Command Center Site is established	0 hrs	Sun 10/20/19	Sun 10/20/19			,	Yes	No	Yes	Yes	
144	-3	Offshore Operations Deployment Site is established	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	No	Yes	Yes	
154	-3	Activation of External Resource Contracts	0 hrs	Sun 10/20/19	Sun 10/20/19			١	fes	Yes	Yes	Yes	
155	-9	4 Sea Vessel tracking service or vessel agent (identified by organization) is notified to locate available required	0 hrs	Sun 10/20/19	Sun 10/20/19			•	Yes	No	Yes	Yes	
		vessels											
158		 Aircraft tracking service (identified by organization) is notified to locate available required aircraft 	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	No	Yes	Yes	
161	- 4	Well Control Response Contractor (WCRC)	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	No	Yes	Yes	
171		Relief Well Drilling Contractor (RWDC) - 2nd or 3rd MODU	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes			_	
183		4 Subsea Response Organization (identified by organization) - capping stack and response equipment	0 hrs	Sun 10/20/19	Sun 10/20/19	-			Yes				
100													
193	-3	ROV Contractor	0 hrs	Sun 10/20/19	Sun 10/20/19			,	Yes	No	Yes	Yes	
204		Water Column Monitoring Service supplier	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	No	Yes	Yes	
210		Subsea Dispersant Approvals and Supply Source	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	No	Yes	Yes	
217		Subsea Dispersant Conveyance System Contractor (surface to mudline)	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	No	Yes	Yes	
225		Mutual Aid entities	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	No	Yes	Yes	
235		Subsea Dispersant transfer and handling equipment	0 hrs	Sun 10/20/19	Sun 10/20/19			,	Yes	No	Yes	Yes	
238		 A Nitrogen for pre-charging operations 	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	No	Yes	Yes	
243		4 Hydraulic Fluid for operating subsea equipment	0 hrs	Sun 10/20/19	Sun 10/20/19			,	Yes	No	Yes	Yes	
246	-3	MeOH for hydrate mitigation	0 hrs		Sun 10/20/19				Yes	No	Yes	Yes	
4	_	·····		e	e					••			





Level 3 contains the granular details.

Too detailed for supporting planning. Is intended to support an actual response.

Notwithstanding, Level 3 is worth reviewing as some activities can potentially have a significant impact on response time.

	M	ask Name	Duration	Start	Finish	Predec	Successors	Names	Ro	1	2 3	Justification for Time Estimates
	-,	Incident Occurs	<u>0 hrs</u>	<u>Sun 10/20/19</u>	<u>Sun 10/20/19</u>		<u>6,5,7,12,13,1</u>		<u>Yes</u>	Yes Y	es Ye	
	-, ⊿	RESPONSE - notifications, activations and mobilizations	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	Yes Y	es Ye	2
	4	Initial Notifications	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	Yes Y	es Ye	15
)		Calls in to Crisis Call Center (CCC - identified by name) and Drilling Manager (identified by title)	0 hrs	Sun 10/20/19	Sun 10/20/19	97,6,8	101	Company Rep	No	No	No Yes	3
L	-9	Identifies Incident Command Team (ICT)	0 hrs	Sun 10/20/19	Sun 10/20/19	100,5,3,	102,107	Company Rep	No	No	No Yes	5
2		Notifies/activates Incident Command Team (ICT as described in SCERP)	0 hrs	Sun 10/20/19	Sun 10/20/19	101,5,8	103,109,111,	Company Rep	No	No	No Yes	6
3	-9	Notifies local governmental and regulatory authorities (identified by organization and listed in SCERP)	0 hrs	Sun 10/20/19	Sun 10/20/19	102,8	104	Company Rep	No	No	No Yes	ŝ
4	-5	Notifies Company Senior Management (identified by title) and Company Safety Dept (identified by organization and/or title)	0 hrs	Sun 10/20/19	Sun 10/20/19	103,8	133	Company Rep	No	No	No Yes	5
5	-5		0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	Yes Y	es Ye	
5		4 Incident Command Team is established	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	No 1	es Ye	
1	-5	Command Center Site is established	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	No 1	es Ye	
1	-5	4 Offshore Operations Deployment Site is established	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	No 1	'es Ye	15
1		▲ Activation of External Resource Contracts	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	Yes Y	es Ye	15
5	-5	4 Sea Vessel tracking service or vessel agent (identified by organization) is notified to locate available required vessels	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	No 1	es Ye	5
5	-5	Sea Vessel tracking service confirms activation of search and replies with list of available vessels	0 hrs	Sun 10/20/19	Sun 10/20/19	133,61,4	157		No	No	No Yes	8
1	-9	Number of sea vessels required for mobilization and installation of equipment packages, capping stack (direct vertical access or offset method) and subsea dispersant supplies is confirmed	0 hrs	Sun 10/20/19	Sun 10/20/19	156	357,371,385,	Subsea Response Organization	No	No	No Yes	\$
3	-9	Aircraft tracking service (identified by organization) is notified to locate available required aircraft	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	No 1	'es Ye	21
9	-9	Aircraft tracking service confirms activation of search and replies with list of available aircraft	0 hrs	Sun 10/20/19	Sun 10/20/19	133,47,4	160		No	No	No Yes	ŝ
)	-3	Number of aircraft required for mobilization of equipment packages, capping stack (direct vertical access or offset method) and subsea dispersant supplies is confirmed	0 hrs	Sun 10/20/19	Sun 10/20/19	159	298,554,710,	Subsea Response Organization	No	No	No Yes	5
L	-5	Well Control Response Contractor (WCRC)	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	No 1	es Ye	25
	-3	Relief Well Drilling Contractor (RWDC) - 2nd or 3rd MODU	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	No 1	es Ye	/5
	-5	4 Subsea Response Organization (identified by organization) - capping stack and response equipment	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	No	'es Ye	21
3	- 4	ROV Contractor	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	No 1	es Ye	15
1	-5	4 Water Column Monitoring Service supplier	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	No 1	es Ye	15
0	-5	Subsea Dispersant Approvals and Supply Source	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	No 1	es Ye	15
7		4 Subsea Dispersant Conveyance System Contractor (surface to mudline)	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	No 1	'es Ye	5
5		Mutual Aid entities	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	No 1	es Ye	15
5	-5	4 Subsea Dispersant transfer and handling equipment	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	No 1	es Ye	
	-5	A Nitrogen for pre-charging operations	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	No 1	es Ye	
3	-3	4 Hydraulic Fluid for operating subsea equipment	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	No 1	es Ye	/5
			0 hrs	Sun 10/20/19					Yes		es Ye	
	-5	4 Mudmats for subsea equipment installed on seabed	0 hrs	Sun 10/20/19					Yes	No 1	'es Ye	15
3			0 hrs	Sun 10/20/19						Yes Y		





Green's – Planning and pre-response activities, Level 1 and 2 roll ups and activities.

White on Red – Incident time datum.

Blue's – Response activities, Level 1 and 2 roll ups and activities.

Black & Grey – Level 3 roll ups and activities.

Yellow shading – Logistical movement activity.

Peach & Orange shading – Linked to governmental approvals or processes.

	VetCircurol Texpone Constructive (VCRC) VetCircurol Texpone Constructive (VCRC) VetCircurol Texpone Constructive Construction Submitted for equipment and personnal VetCircurol Texpone Constructive	Ohrs Ohrs Ohrs Ohrs Ohrs Ohrs Ohrs Ohrs	Sun 10/20/19 Sun 10/20/19	Sun 10/20/19 Sun 10/20/19	163,143 163,153 163,12,1 166 167,58	164,165,166, 169,445,453, 169	WCRC WCRC WCRC	Yes No No No No	No No No	Yes Ye No No No No No No No No	0 0
	WCRC continue activation of contract and begins mobilization of required gestioned WCRC identifies personnal, personnal transit to Incident Command Center Site WCRC identifies personnal, personnal transit to Offshore Operations Deployment Site WCRC identifies equipment meets and begins mobilization of required equipment WCRC identifies equipment meets and begins mobilization of required equipment WCRC identifies equipment meets and begins mobilization of required equipment WCRC identifies equipment meets approad process WCRC identifies consplexe actual/ammigration approad process WCRC incomplexe Survice for activation process WCRC personnal complexes for activation process WCRC personnal complexes for activation in activation in the personnal meets and personnal meets McRe personnal complexes for activation in activat	Ohrs Ohrs Ohrs Ohrs Ohrs Ohrs Ohrs Ohrs	Sun 10/20/19	Sun 10/20/19 Sun 10/20/19 Sun 10/20/19 Sun 10/20/19 Sun 10/20/19 Sun 10/20/19 Sun 10/20/19	162 163,143 163,153 163,153 163,12,1 166 167,58	164,165,166, 169,445,453, 169 167	WCRC WCRC WCRC WCRC WCRC	No No No	No No No	No No No No	0
	WCRC identifies personnel, personnel transit to incident Command Center Site WCRC identifies personnel, personnel transit to Offshore Operations Deployment Site WCRC identifies equipment meets and begins mobilitation of required equipment WCRC personnel completes actuating personal process WCRC Personnel completes Security Clearance process at Offshore Operations Deployment Site WCRC personnel completes Security Clearance process at Offshore Operations Deployment Site WCRC Personnel completes Security Clearance process at Offshore Operations Deployment Site WCRC personnel completes Security Clearance process at Offshore Operations Deployment Site WCRC personnel completes Security Clearance process at Offshore Operations Deployment Site At Intel [®] WCRC is notified and required authorization documentation is submitted for equipment and personnel WCRC is submitted for equipment and personnel	Ohrs Ohrs Ohrs Ohrs Ohrs Ohrs Ohrs Ohrs	Sun 10/20/19 Sun 10/20/19 Sun 10/20/19 Sun 10/20/19 Sun 10/20/19 Sun 10/20/19 Sun 10/20/19	Sun 10/20/19 Sun 10/20/19 Sun 10/20/19 Sun 10/20/19 Sun 10/20/19 Sun 10/20/19	163,143 163,153 163,12,1 166 167,58	169,445,453, 169 167	WCRC WCRC WCRC	No	No	No No	-
	WCRC identifies equipment needs and begins mubilitation of required equipment WCRC Equipment transits to Offshore Operations Deployment Site WCRC Equipment completes customs approval process WCRC Pransomal completes actual valuation approval process WCRC premoval completes actual valuation approval process Mislet Well Drilling Constructor (RWOC) -2nd or 3rd MOOD RWOC is notified and required authoritation documentation is submitted for equipment and personn RWOC is notified and required authoritation documentation is submitted for equipment and personn	Ohrs Ohrs Ohrs Ohrs Ohrs Ohrs Ohrs	Sun 10/20/19 Sun 10/20/19 Sun 10/20/19 Sun 10/20/19 Sun 10/20/19	Sun 10/20/19 Sun 10/20/19 Sun 10/20/19 Sun 10/20/19	163,12,1 166 167,58	167	WCRC	No			3
	WCRC identifies equipment needs and begins mubilitation of required equipment WCRC Equipment transits to Offshore Operations Deployment Site WCRC Equipment completes customs approval process WCRC Pransomal completes actual valuation approval process WCRC premoval completes actual valuation approval process Mislet Well Drilling Constructor (RWOC) -2nd or 3rd MOOD RWOC is notified and required authoritation documentation is submitted for equipment and personn RWOC is notified and required authoritation documentation is submitted for equipment and personn	Ohrs Ohrs Ohrs Ohrs Ohrs Ohrs Ohrs	Sun 10/20/19 Sun 10/20/19 Sun 10/20/19 Sun 10/20/19 Sun 10/20/19	Sun 10/20/19 Sun 10/20/19 Sun 10/20/19 Sun 10/20/19	163,12,1 166 167,58	167	WCRC	No			
	WCRC Equipment transits to Othore Operations Deployment Site WCRC Equipment completes Customs approval process WCRC Environment Completes Customs approval process WCRC personent Completes Scurity Castrance process act Othore Operations Deployment Site Relief Well Drilling Constructor (RWOC) - 2nd or 3rd MOOD RWOC is notified and required authoritation documentation is submitted for equipment and personne	Ohrs Ohrs Ohrs Ohrs Ohrs	Sun 10/20/19 Sun 10/20/19 Sun 10/20/19 Sun 10/20/19	Sun 10/20/19 Sun 10/20/19 Sun 10/20/19	166 167,58				No	No No	
	WCRC Response complete cutoms approvel process WCRC Presonnel complete vitra/immigration approvel process WCRC personnel complete Security Contranets process at Offshore Operations Deployment Site WCRC personnel Contralector (RWOC) - 2nd or 3rd MOOD RWOC is notified and required authoritation documentation is submitted for equipment and personnel	Ohrs Ohrs Ohrs Ohrs	Sun 10/20/19 Sun 10/20/19 Sun 10/20/19	Sun 10/20/19 Sun 10/20/19	167,58	168					2
	WCRC Personnel complete vita/immigration approval process WCRC personnel complete Security Clearance process at Offshore Operations Deployment Site # Relief Well Online Contractor (RWDC)-2nd or 3rd MODU RWDC is notified and required authorization documentation is submitted for equipment and personnel	Ohrs Ohrs Ohrs	Sun 10/20/19 Sun 10/20/19	Sun 10/20/19			WCRC	No	No	No No	2
	WCRC personnal complete Security Clearance process at Othbrev Operations Deployment Site A Relief Well Drilling Constructor (RWDC) - 2nd or 3nd M0000 RWDC is notified and required authorization documentation is submitted for equipment and personnel	Ohrs Ohrs	Sun 10/20/19				WCRC	No	No	No No	5
	Relief Well Drilling Contractor (RWDC) - 2nd or 3rd MODU RWDC is notified and required authorization documentation is submitted for equipment and personnel	0 hrs		Curr 10/20/10	164,165	170	WCRC	No	No	No No	>
	RWDC is notified and required authorization documentation is submitted for equipment and personne			30H 10/20/15	169	445,453,460,	WCRC	No	No	No No	5
		l Ohrs	Sun 10/20/19	Sun 10/20/19				Yes	No	Yes Ye	25
	RWDC confirms activation of contract(s), cancels existing contract(s), ceases all current operations		Sun 10/20/19	Sun 10/20/19	133,7,5,	173,619		No	No	No No	2
		0 hrs	Sun 10/20/19	Sun 10/20/19	172	174,175,177,	RWD MODU Contractor	No	No	No No	2
	RWDC performs any required MODU equipment refurbishment and begins mobilizing for relief well drilling activities	0 hrs	Sun 10/20/19	Sun 10/20/19	173	178	RWD MODU Contractor	No	No	No No	2
	RWDC identifies required personnel, personnel transit to incident Command Center Site	0 hrs	Sun 10/20/19	Sun 10/20/19	173,143	176	RWD MODU Contractor	No	No	No No	2
	RWDC MODU company personnel complete visa/immigration approval process	Ohrs	Sun 10/20/19	Sun 10/20/19	175,58	914	RWD MODU Contr	No	No	No No	6
	RWDC identifies required drilling equipment and begins mobilization of required drilling equipment	0 hrs	Sun 10/20/19	Sun 10/20/19	173,133	178	RWD MODU Contractor	No	No	No No	2
	RWDC transits required drilling equipment to Offshore Operations Deployment Site	0 hrs	Sun 10/20/19	Sun 10/20/19	177,174	179	RWD MODU Contractor	No	No	No No	2
	RWDC MODU company drilling equipment completes Customs approval process	0 hrs	Sun 10/20/19	Sun 10/20/19	178,58	601	RWD MODU Contr	No	No	No No	5
	RWDC identifies supply vessels and facilities base support organization	0 hrs	Sun 10/20/19	Sun 10/20/19	173	181	RWD MODU Contr	No	No	No No	2
	RWDC contracts supply vessels and facilities support base organization for RWDC MODU	Ohrs	Sun 10/20/19	Sun 10/20/19	180	182	Company Rep	No	No	No No	2
-	RWDC support vessels transit drilling equipment and facility supplies to RWDC MODU at incident site	0 hrs	Sun 10/20/19	Sun 10/20/19	181	923	RWD MODU Contractor	No	No	No No	2
	4 Subsea Response Organization (identified by organization) - capping stack and response equipment	0 hrs	Sun 10/20/19	Sun 10/20/19				Yes	No 1	Yes Ye	8
-	Subsea Response Organization (identified by organization) is notified and required authorization is submitted for equipment and personnel	0 hrs	Sun 10/20/19	Sun 10/20/19	133,7,5,	185	Company Rep, Subsea Response	No	No	No No	2
	Subsea Response Organization (identified by organization) confirms activation of contract	0 hrs	Sun 10/20/19	Sun 10/20/19	184		Company Rep, Subsea Response	No	No	No No	>
-	Subsea Response Organization (identified by organization) personnel transit to storage site	0 hrs	Sun 10/20/19	Sun 10/20/19	185	187	Subsea Response Organization	No	No	No No	2
-	Subsea Response Organization (identified by organization) personnel complete visa/immigration approval process	0 hrs	Sun 10/20/19	Sun 10/20/19	186,58	188	Subsea Response Organization	No	No	No No	2
-	Subsea Response Organization (identified by organization) personnel complete Security Clearance process at storage site	Ohrs	Sun 10/20/19	Sun 10/20/19	187	608	Subsea Response Organization	No	No	No No	2
-		0 hrs	Sun 10/20/19	Sun 10/20/19	185		Subsea Response Organization	No	No	No No	>
-	Subsea Response Organization (identified by organization) personnel transit from storage site to departure airport	0 hrs	Sun 10/20/19	Sun 10/20/19	189	191	Govt/Reg - Customs/Immigra	No	No	No No	,
		Obrs	Sun 10/20/19	Sun 10/20/19	189,190	192	Govt/Reg - Customs/Immigra	No	No	No No	2

	M	Task Name
1	-,	4 Response Planning Activities, SCERP Preparation
2	- 3	Written response plan documents completed
11	-5	Well design checks and analyses, BOP interface checks
18	-3	Capping stack installation support activities
27	- 3	Dispersant Approvals and Application Capability
34	-4	External Mutual Aid Contracts in place
36	-4	b Logistics/Installation Analyses and Plans completed
43	-3	Transportation Tracking Services
46	-9	Transportation - Support Services/Facilities
52		Equipment storage/deployment sites - lifting/loadout capability
57	-5	> Customs clearance processes, visa/immigration/work permit processes
60	-3	For onshore/offshore work activities
65	-3	 For Offset Installation Planning (if not members of OSRL/SWIS and/or alternate installation method to OIE is proposed)
71	-4	> For Offset Installation Equipment (OIE) Planning - if required. (Assumes the OSRL OIE option)
84	-5	For Relief Well Planning
97	3	Incident Occurs
98	-5	 RESPONSE - notifications, activations and mobilizations
99	-3	Initial Notifications
100	-9	Calls in to Crisis Call Center (CCC - identified by name) and Drilling Manager (identified by title)
101	-3	Identifies Incident Command Team (ICT)
102	-3	Notifies/activates Incident Command Team (ICT as described in SCERP)
103	-9	Notifies local governmental and regulatory authorities (identified by organization and listed in SCERP)
104	-4	Notifies Company Senior Management (identified by title) and Company Safety Dept (identified by organization and/or title)
105	-3	Mobilization of Company Internal Resources
106	-3	Incident Command Team is established
107	- 3	Incident Commander (identified by name) is nominated and confirmed
108	-9	Incident Commander (identified by name) nominates and confirms support personnel to ICT
109	-4	Safety and QA Lead is nominated/confirmed
110		Safety and QA Team personnel are nominated/confirmed
111		Supply Team Lead is nominated/confirmed
112	-5	Supply Team personnel are nominated/confirmed
113		Logistics Team Lead is nominated/confirmed
114	-5	Logistics Team personnel are nominated/confirmed
115	-3	Finance Team Lead is nominated/confirmed
116		Finance Team personnel are nominated/confirmed
117	-5	Administrative Support Team Lead is nominated/confirmed
4		

Example of RTM use

Populate the RTM with estimated durations, complete with 'Justifications for Time Estimates'

MODE -	Task Name	Duratic -	Start	 Finish 	 Predecessor - Successors - Names 	👻 Rolli 🗸	1 👻	2 👻 3 👻 Justification for Time Estimates	- 1 6 11 16 21 26 1 6 11 16 21 26 31 5
 l Inoue ₽	Incident Occurs	<u>0 hrs</u>	Tue 13/04/21	Tue 13/04/21	6,5,7,12,13,14	Yes	_		13/04
→	A RESPONSE - notifications, activations and mobilizations	1210 hrs	Tue 13/04/21	Wed 2/06/21		Yes	Yes	Yes Yes	
_	▷ Initial Notifications	14 hrs	Tue 13/04/21	Tue 13/04/21		Yes	Yes	Yes Yes	
□ →	Initial Notifications Mobilization of Company Internal Resources	14 nrs 86 hrs	Tue 13/04/21 Tue 13/04/21	Sat 17/04/21		Yes	Yes	Yes Yes	
-⇒ 	Incident Command Team is established	40 hrs	Tue 13/04/21	Thu 15/04/21		Yes	No	Yes Yes	Π
-→ =\$	Command Center Site is established	85 hrs	Tue 13/04/21	Sat 17/04/21		Yes	No	Yes Yes	
	> Offshore Operations Deployment Site is established	69 hrs	Tue 13/04/21	Fri 16/04/21		Yes	No	Yes Yes	
	▲ Activation of External Resource Contracts	268 hrs	Thu 15/04/21	Mon 26/04/21		Yes	Yes	Yes Yes	
	> Sea Vessel tracking service or vessel agent (identified by organization) is notified to locate available required vessels	16 hrs	Thu 15/04/21	Thu 15/04/21		Yes	No	Yes Yes	Π
	Aircraft tracking service (identified by organization) is notified to locate available required aircraft	16 hrs	Thu 15/04/21	Thu 15/04/21		Yes	No	Yes Yes	П
□	Vell Control Response Contractor (WCRC)	123 hrs	Thu 15/04/21	Tue 20/04/21		Yes	No	Yes Yes	
→	Relief Well Drilling Contractor (RWDC) - 2nd or 3rd MODU	268 hrs	Thu 15/04/21	Mon 26/04/21		Yes	No	Yes Yes	
	> Subsea Response Organization (identified by organization) - capping stack and response equipment	68 hrs	Thu 15/04/21	Sun 18/04/21		Yes	No	Yes Yes	
	> ROV Contractor	86 hrs	Thu 15/04/21	Sun 18/04/21		Yes	No	Yes Yes	
→	> Water Column Monitoring Service supplier	59 hrs	Thu 15/04/21	Sat 17/04/21		Yes	No	Yes Yes	
	Subsea Dispersant Approvals and Supply Source	9 hrs	Thu 15/04/21	Thu 15/04/21		Yes	No	Yes Yes	n
	Subsea Dispersant Conveyance System Contractor (surface to mudline)	59 hrs	Thu 15/04/21	Sat 17/04/21		Yes	No	Yes Yes	
→	Mutual Aid entities	115 hrs	Thu 15/04/21	Tue 20/04/21		Yes	No	Yes Yes	
$ \rightarrow $	Subsea Dispersant transfer and handling equipment	83 hrs	Thu 15/04/21	Sun 18/04/21		Yes	No	Yes Yes	
$ \rightarrow $	Nitrogen for pre-charging operations	71 hrs	Thu 15/04/21	Sun 18/04/21		Yes	No	Yes Yes	
→	▷ Hydraulic Fluid for operating subsea equipment	47 hrs	Thu 15/04/21	Sat 17/04/21		Yes	No	Yes Yes	П
□ →	MeOH for hydrate mitigation	35 hrs	Thu 15/04/21	Fri 16/04/21		Yes	No	Yes Yes	П
□ →	b Mudmats for subsea equipment installed on seabed	155 hrs	Thu 15/04/21	Wed 21/04/21		Yes	No	Yes Yes	
	Mobilization of Aircraft, Crane and Road Transport for Subsea Response Equipment Packages and Subsea Dispersant supplies, not including the capping stack	176 hrs	Thu 15/04/21	Thu 22/04/21		Yes	Yes	Yes Yes	
-	A Mobilization of Subsea Equipment Packages, except capping stack, to Offshore Operations Deployment Site for Subsea Missions	184 hrs	Sat 17/04/21	Sat 24/04/21		Yes	Yes	Yes Yes	
□ →	Site Survey Equipment	142 hrs	Sun 18/04/21	Sat 24/04/21		Yes	No	Yes Yes	
□	Debris Clearance Equipment	36 hrs	Thu 22/04/21	Sat 24/04/21		Yes	No	Yes Yes	П
$ \rightarrow $	BOP Intervention Equipment	154 hrs	Sun 18/04/21	Sat 24/04/21		Yes	No	Yes Yes	
□	Subsea Dispersant Injection Equipment	142 hrs	Sun 18/04/21	Sat 24/04/21		Yes	No	Yes Yes	
□	Subsea Dispersant Conveyance Equipment	154 hrs	Sun 18/04/21	Sat 24/04/21		Yes	No	Yes Yes	
	> Subsea Dispersant Supplies	184 hrs	Sat 17/04/21	Sat 24/04/21		Yes	No	Yes Yes	
→	Water Column Monitoring Equipment	150 hrs 346 hrs	Sun 18/04/21 Thu 15/04/21	Sat 24/04/21 Fri 30/04/21		Yes	No	Yes Yes Yes	
	Mobilization of Sea Vessels for Subsea Missions, except for capping stack Site Survey Vessel mobilization	346 hrs 210 hrs	Thu 15/04/21 Thu 15/04/21	Fri 30/04/21 Sat 24/04/21		Yes	Yes No	Yes Yes	
	Site Survey vessel mobilization A Debris Clearance Vessel mobilization	298 hrs	Thu 15/04/21 Thu 15/04/21	Wed 28/04/21		Yes	No	Yes Yes	
⇒ ⇒	A Water Column Monitoring Vessel mobilization	254 hrs	Thu 15/04/21	Mon 26/04/21		Yes	No	Yes Yes	
⇒ ⇒	A BOP Intervention Vessel mobilization	338 hrs	Thu 15/04/21	Fri 30/04/21		Yes	No	Yes Yes	
-→ =⇒	▲ Subsea Dispersant Injection Vessel mobilization	346 hrs	Thu 15/04/21	Fri 30/04/21		Yes	No	Yes Yes	
-→ =>	▲ Subsea Dispersant Supply Vessel mobilization	344 hrs	Thu 15/04/21	Fri 30/04/21		Yes	No	Yes Yes	
-→ 	▲ Offshore / Subsea Well Incident Response Missions	252 hrs	Tue 20/04/21	Fri 30/04/21		Yes	Yes	Yes Yes	
	4 Site Survey Mission	125 hrs	Tue 20/04/21	Sun 25/04/21		Yes	No	Yes Yes	
	Debris Clearance Mission	82 hrs	Sun 25/04/21	Thu 29/04/21		Yes	No	Yes Yes	
	# BOP Intervention Mission	39 hrs	Wed 28/04/21	Fri 30/04/21		Yes	No	Yes Yes	П
-	▲ Subsea Dispersant Injection Mission	47 hrs	Wed 28/04/21	Fri 30/04/21		Yes	No	Yes Yes	П
	# Water Column Monitoring Mission	155 hrs	Tue 20/04/21	Mon 26/04/21		Yes	No	Yes Yes	
-	Capping Stack - Transport by Sea Vessel to Offshore Operations Deployment Site	153 hrs	Tue 20/04/21	Mon 26/04/21		Yes	Yes	Yes Yes	
	# Transport Vessel mobilized for transporting capping stack	56 hrs	Tue 20/04/21	Thu 22/04/21		Yes	No	Yes Yes	
	<i>d</i> Installation Vessel mobilized at storage site for transporting capping stack	153 hrs	Tue 20/04/21	Mon 26/04/21		Yes	No	Yes Yes	
		115 hrs	Tue 20/04/21	Sun 25/04/21		Yes	No	Yes Yes	
	> Capping Stack - Transport by Aircraft to Offshore Operations Deployment Site	33 hrs	Thu 15/04/21	Fri 16/04/21		Yes	Yes	Yes Yes	П
	▲ Capping Stack - Installation by Sea Vessel - Transport by Sea or Air		Thu 15/04/21					Yes Yes	



Identify the critical path items

'Predecessors' and 'Successors' will identify the tasks that are critical e.g. task 426 requires dispersant conveyance system installed on injection vessel and needs to occur before task 428, which needs to occur before dispersant deployment task 469.

T 1							0				May 2021 Jui
Task Moc		- Duratic	- Start	- Finish	- Predecessor	Successor	Resource			v Lev ▼ 3 ▼	→ Justification for Time Estimates → 8 10 12 14 16 18 20 22 24 26 28 30 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 1
412 🔄	▲ Subsea Dispersant Injection Vessel mobilization	346 hrs	Thu 15/04/21	Fri 30/04/21						Yes Yes	
413 🖾	Subsea Dispersant Injection Vessel Safety Case is prepared	0 hrs	Thu 15/04/21	Thu 15/04/21	157,7,48	414	Company Rep,SS Dis	No	No	No No	♦ 15/04
414 🗳	Subsea Dispersant Injection Vessel Safety Case is submitted to local authorities (identified by organization)	0 hrs	Thu 15/04/21	Thu 15/04/21	413	415	Company Rep, Subsea Response	No	No	No No	15/04
415	Subsea Dispersant Injection Vessel Safety Case is approved by Local authority	0 hrs	Thu 15/04/21	Thu 15/04/21	414	416	Organization Govt/Reg - Vessel Safety Case	No	No	No No	15/04
416 🕹 🖙	Subsea Dispersant Injection Vessel owner is notified and suspends any active operations	8 hrs	Thu 15/04/21	Fri 16/04/21	415	417,422	Company Rep, Subsea Response	No	No	No No	Company Rep.Subsea Response Organization, Vessel Owner
417 🕹 📑	Subsea Dispersant Injection Vessel transits to Offshore Operations Deployment Site	24 hrs	Sat 17/04/21	Sun 18/04/21	416,59	419,418	Organization Company Rep, Vessel Owner,Subse	No	No	No No	Company Rep, Vessel Owner, Subsea Response Organization
418 🗳	Subsea Dispersant Injection Vessel and crew complete Customs clearance process - vessel released to Company Rep (identified	by 0 hrs	Sun 18/04/21	Sun 18/04/21	417	419	Reso	No	No	No No	18/04
19 🍰 🖳	Subsea Dispersant Injection Vessel and crew are mobilized at Offshore Operations Deployment Site	24 hrs	Sun 18/04/21	Mon 19/04/21	417,9,418	420,421	Company Rep,	No	No	No No	Company Rep, Subsea Response Organization, Vessel Owner
							Subsea Response Organization				
120 🕹 🖙	Subsea Dispersant Injection Vessel ROV and LARS is prepared for work scope - crew, equipment maintenance/inspections, etc.	12 hrs	Mon 19/04/21	Mon 19/04/21	419,203,201	426	Vessel Owner, Company Rep,ROV	No	No	No No	Vessel Owner, Company Rep. ROV Contractor, Subsea Response Organization
421 🕹 🖙	Subsea Dispersant Injection Vessel is prepared for work scope - fuel, provisions, crew, completes required equipment maintenance/inspections, etc.	8 hrs	Thu 29/04/21	Thu 29/04/21	419,224,237,339	,3 426	Contr Vessel Owner	No	No	No No	Vessel Owner
422 🕹 🖙	Gas detection equipment for Subsea Dispersant Injection Vessel Is sourced and delivered to Offshore Operations Deployment Si	te 8 hrs	Fri 16/04/21	Sat 17/04/21	416,153	423	Vessel Owner	No	No	No No	Vessel Owner
423 🕹 🛒	Subsea Dispersant injection Vessel owner designs/approves seafastening and installation plans for gas detection equipment, Transfer pumps and piping, Subsea Dispersant injection equipment and Subsea Dispersant Conveyance equipment	4 hrs	Sat 24/04/21	Sat 24/04/21	237,332,339,422	424,425,426	427 Company Rep, SS Dispersant Conveyance Contractor SS Dispersant	No	No	No No	Company Rep.SS Dispersant Conveyance Contractor,SS Dispersant Supplier,Subsea Response Organization
424 🕹 🖙	Gas detection equipment is installed on Subsea Dispersant Injection Vessel	2 hrs	Sat 24/04/21	Sat 24/04/21	423	469	Vessel Owner	No	No	No No	TVessel Owner
125 🕹 🖙	Subsea Dispersant Injection equipment is installed on Subsea Dispersant Injection Vessel	6 hrs	Sat 24/04/21	Sun 25/04/21	423,332,257,296	428	Vessel Owner, Subsea Response	No	No	No No	Vessel Owner Subsea Response Organization,Company Rep
426 🕹 🖙	Subsea Dispersant Conveyance System is installed on Subsea Dispersant Injection Vessel	6 hrs	Thu 29/04/21	Thu 29/04/21	423,339,420,421	,2 428	Organization Company Rep, SS Dispersant	No	No	No No	Company Rep.SS Dispersant Conveyance Contractor, Vessel Owner
127 🕹 🖙	Transfer pumps, piping, and associated dispersant transfer equipment are installed on Subsea Dispersant Injection Vessel	6 hrs	Sat 24/04/21	Sun 25/04/21	423,237,296	428	Conveyance Company Rep, SS Dispersant	No	No	No No	Company Rep.SS Dispersant Supplier, Subsea Response Organization, Vessel Owner
28 👗 🗔	Subsea Dispersant fluids are loaded onto Subsea Dispersant Injection Vessel	12 hrs	Thu 29/04/21	Fri 30/04/21	427,425,426,347	,2 469	Supplier Crane Contractor,SS	No	No	No No	Crane Contractor, SS Dispersant Supplier, Vessel Owner
29 🔄	▲ Subsea Dispersant Supply Vessel mobilization	344 hrs	Thu 15/04/21	Fri 30/04/21				Yes	No	Yes Yes	
30 🖾	Subsea Dispersant Supply Vessel Safety Case is prepared	0 hrs	Thu 15/04/21	Thu 15/04/21	157,7,48	431	Company Rep,Subse	No	No	No No	15/04
31 📑	Submits Subsea Dispersant Supply Vessel Safety Case to local authorities (identified by organization)	0 hrs	Thu 15/04/21	Thu 15/04/21	430	432	Company Rep, Vessel Owner	No	No	No No	15/04
32	Subsea Dispersant Supply Vessel Safety Case is approved by Local authority	0 hrs	Thu 15/04/21	Thu 15/04/21	431	433	Govt/Reg - Vessel Safety Case	No	No	No No	15/04
33 🕹 📑	Subsea Dispersant Supply Vessel owner is notified and suspends any active operations	8 hrs	Thu 15/04/21	Fri 16/04/21	432	434,438	Company Rep, Subsea Response	No	No	No No	Company Rep,Subsea Response Organization,Vessel Owner
134 🕹 📑	Subsea Dispersant Supply Vessel transits to Offshore Operations Deployment Site	8 hrs	Sat 17/04/21	Sat 17/04/21	433,59	436,435	Organization Company Rep, Vessel Owner,Subse	No	No	No No	Company Rep.Vessel Owner, Subsea Response Organization
35 🗳	Subsea Dispersant Supply Vessel and crew complete Customs clearance process - vessel released to Company Rep (identified by	y ti 0 hrs	Sat 17/04/21	Sat 17/04/21	434	436	Reso	No	No	No No	17/04
136 & 式	Subsea Dispersant Supply Vessel and crew are mobilized to Offshore Operations Deployment Site	24 hrs	Sat 17/04/21	Sun 18/04/21	434,9,435	437	Company Rep, Vessel Owner	No		No No	Company Rep. Vessel. Owner
37 🕹 📼	Subsea Dispersant Supply Vessel is prepared for work scope - fuel, provisions, crew, completes required equipment maintenance/inspections, etc.	12 hrs	Thu 29/04/21	Thu 29/04/21	436,347,468	442	Company Rep, SS Dispersant Supplier	No	No	No No	Company Rep.SS Dispersant Supplier, Subsea Response Organization, Vessel Owner
138 🕹 🖙	Gas detection equipment for Subsea Dispersant Supply Vessel is sourced and delivered to Offshore Operations Deployment Site	2 hrs	Fri 16/04/21	Fri 16/04/21	433,153	439	Subsea Response Company Rep, Vessel Owner	No	No	No No	Company Rep. Vessel Owner
39 🕹 🖙	Subsea Dispersant Supply Vessel owner designs/approves seafastening and installation plans for gas detection equipment, dispersant fluids and Subsea Dispersant transfer pumps and piping equipment	4 hrs	Thu 29/04/21	Thu 29/04/21	438,237,347,468	440,441,442	Company Rep, SS Dispersant Conveyance Contractor	No	No	No No	Company Rep.SS Dispersant Conveyance Contractor,SS Dispersant Supplier,Subsea Response (iternat
140 🍰 📼	Gas detection equipment is installed on Subsea Dispersant Supply Vessel	2 hrs	Thu 29/04/21	Thu 29/04/21	439	471	Vessel Owner,Comp	No	No	No No	Vessel Owner,Company Rep 5SOCia f01&C
441	Transfer pumps, piping and associated dispersant transfer equipment are installed on Subsea Dispersant Supply Vessel	8 hrs	Thu 29/04/21	Thu 29/04/21	439,296	442	Subsea Response Organization	No	No	No No	Subsea Response Organization,SS Dispersant Manufacturer, Company Rep, Vessel Owner TodUce
442 🊨 📑	Subsea Dispersant fluids are loaded onto Subsea Dispersant Supply Vessel	12 hrs	Thu 29/04/21	Fri 30/04/21	441,347,437,439	,2 469	SS Dispersant Company Rep,SS Di:	No	No	No No	Company Rep,SS Dispersant Supplier,Subsea Response Organization,Vessel Owner

Improve the timelines of critical path items

Could time increase due to not prepared with downline dispersant conveyance system?

	Task							Resource	Ŀ	ev l	.ev Lev	May 2021 Jun
	🚺 Mode 🗸	Task Name	- Duratio	👻 Start		➡ Predecessor ➡	Successors -	Names 👻 🖡	Rolli 👻 1	- 2	2 - 3 -	→ Justification for Time Estimates → 8 10 12 14 16 18 20 22 24 26 28 30 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 1
412		✓ Subsea Dispersant Injection Vessel mobilization	380 hrs	Thu 15/04/21	Sat 1/05/21				Yes	No	Yes Yes	
413	5	Subsea Dispersant Injection Vessel Safety Case is prepared	0 hrs	Thu 15/04/21	Thu 15/04/21	157,7,48	414 0	Company Rep,SS Dis	No	No	No No	15/04
414	4	Subsea Dispersant Injection Vessel Safety Case is submitted to local authorities (identified by organization)	0 hrs	Thu 15/04/21	Thu 15/04/21	413	S	Company Rep, Subsea Response Organization	No	No	No No	15/04
415		Subsea Dispersant Injection Vessel Safety Case is approved by Local authority	0 hrs	Thu 15/04/21	Thu 15/04/21	414	416 0	Govt/Reg - Vessel Safety Case	No	No	No No	15/04
416	≗ 🖙	Subsea Dispersant Injection Vessel owner is notified and suspends any active operations	8 hrs	Thu 15/04/21	Fri 16/04/21	415	S	Company Rep, Subsea Response Organization	No	No	No No	Company Rep, Subsea Response Organization, Vessel Owner
417	≗ 🖙	Subsea Dispersant Injection Vessel transits to Offshore Operations Deployment Site	24 hrs	Sat 17/04/21	Sun 18/04/21	416,59	419,418 0	Company Rep, Vessel Owner,Subse Resp	No	No	No No	Company Rep, Vessel Owner, Subsea Response Organization
418		Subsea Dispersant Injection Vessel and crew complete Customs clearance process - vessel released to Company Rep (identified	by 0 hrs	Sun 18/04/21	Sun 18/04/21	417	419		No	No	No No	18/04
419	≗ 🖘	Subsea Dispersant Injection Vessel and crew are mobilized at Offshore Operations Deployment Site	24 hrs	Sun 18/04/21	Mon 19/04/21	417,9,418	s	Company Rep, Subsea Response Organization	No	No	No No	Company Rep, Subsea Response Organization, Vessel Owner
420	≗ 🖙	Subsea Dispersant Injection Vessel ROV and LARS is prepared for work scope - crew, equipment maintenance/inspections, etc.	12 hrs	Mon 19/04/21	Mon 19/04/21	419,203,201	426 V	Vessel Owner, Company Rep,ROV	No	No	No No	Lessel Owner, Company Rep, ROV Contractor, Subsea Response Organization
421	≗ 🖙	Subsea Dispersant Injection Vessel is prepared for work scope - fuel, provisions, crew, completes required equipment maintenance/inspections, etc.	8 hrs	Thu 29/04/21	Thu 29/04/21	419,224,237,339),3 426 V	Vessel Owner	No	No	No No	Vessel Owner
422	≗ 🖙	Gas detection equipment for Subsea Dispersant Injection Vessel is sourced and delivered to Offshore Operations Deployment Sit	te 8 hrs	Fri 16/04/21	Sat 17/04/21	416,153	423 V	Vessel Owner	No	No	No No	Vessel Owner
423	≗	Subsea Dispersant Injection Vessel owner designs/approves seafastening and installation plans for gas detection equipment, Transfer pumps and piping, Subsea Dispersant Injection equipment and Subsea Dispersant Conveyance equipment	4 hrs	Sat 24/04/21	Sat 24/04/21	237,332,339,422	c c s	Company Rep, SS Dispersant Conveyance Contractor SS Dispersant	No	No	No No	Company Rep.SS Dispersant Conveyance Contractor,SS Dispersant Supplier,Subsea Response Organization,'
424	≗ 🖘	Gas detection equipment is installed on Subsea Dispersant Injection Vessel	2 hrs	Sat 24/04/21	Sat 24/04/21	423		Vessel Owner	No	No	No No	[‡] Vessel Owner
425	≗ 🖘	Subsea Dispersant Injection equipment is installed on Subsea Dispersant Injection Vessel	6 hrs	Sat 24/04/21	Sun 25/04/21	423,332,257,296	s	Vessel Owner, Subsea Response Organization	No	No	No No	TVessel Owner Subsea Response Organization, Company Rep
426	≗ 🖙	Subsea Dispersant Conveyance System is installed on Subsea Dispersant Injection Vessel	40 hrs	Thu 29/04/21	Sat 1/05/21	423,339,420,421	.,2 428 C	Company Rep, SS Dispersant Conveyance	No	No	No No	Company Rep,SS Dispersant Conveyance Contractor, Vessel Owner
427	≗ 🖙	Transfer pumps, piping, and associated dispersant transfer equipment are installed on Subsea Dispersant Injection Vessel	6 hrs	Sat 24/04/21	Sun 25/04/21	423,237,296	428 C	Company Rep, SS Dispersant Supplier	No	No	No No	Company Rep. SS Dispersant Supplier, Subsea Response Organization, Vessel Owner
428		Subsea Dispersant fluids are loaded onto Subsea Dispersant Injection Vessel	12 hrs	Sat 1/05/21	Sat 1/05/21	427,425,426,347		Crane Contractor,SS	No	No	No No	🝟 Crane Contractor,SS Dispersant Supplier,Vessel Owner

Delays the subsea dispersant injection, which delays tasks 608 and 870, which are successors to the Capping Stack deployment

	Task							Resource	Le	ev Le	ev Lev	May 2021 June 2021
	i Mode 🗸	Task Name	Duratic	Start -	- Finish	👻 Predecessor 👻	Successors -	- Names - F	tolli 🚽 1	v 2	→ 3 → Justification for Time Estimates	• 8 10 12 14 16 18 20 22 24 26 28 30 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 1 3 5
466		▲ Subsea Dispersant Injection Mission	81 hrs	Wed 28/04/21	Sun 2/05/21				Yes	No	Yes Yes	
467	L 🖘	Subsea Dispersant injection Plan, including pre-deployment checks and dispersant re-supply procedures, is developed and submitted for approval	4 hrs	Wed 28/04/21	Thu 29/04/21	133,164,457,29,3	30 468	Company Rep, Incident Command Team ROV Contractor,SS	No	No	No No	Company Rep.Incident Command Team,ROV Contractor,SS Dispersant Conveyance Contractor,SS Dispersa
468	≗ =⇒	Subsea Dispersant Injection Plan is approved	4 hrs	Thu 29/04/21	Thu 29/04/21	467	469,421,437,43	9 Company Rep, ROV Contractor,Sub	No	No	No No	Company Rep, ROV Contractor, Subsea Response Organization, Vessel Owner, WCRC
469	-	Subsea Dispersant Injection vessel transits to incident site and notifies SIMOPS team upon arrival	4 hrs	Sat 1/05/21	Sət 1/05/21	215,216,442,468,	,1 470	Company Rep, ROV Contractor,SIM	No	No	No No	Company Rep,ROV Contractor,SIMOPS Team,Subsea Response Organization, Vessel Owner, WCRC
470	□ →	SIMOPS team approves subsea dispersant injection activities and Subsea Dispersant Injection equipment is installed at seabed	8 hrs	Sat 1/05/21	Sun 2/05/21	469,153	471	Company Rep, ROV Contractor,Sub	No	No	No No	Company Rep,ROV Contractor, Subsea Response Organization, Vessel Owner, WCRC
471	-	Subsea Dispersant injection begins and continues as determined by Company Rep (identified by title)	1 hr	Sun 2/05/21	Sun 2/05/21	470,440	608,870	Company Rep, Incident Command	No	No	No No	Company Rep.Incident Command Team,ROV Contractor,Subsea Response Organization,Vessel Ow
170		d Wildow Antonio Manulanda Maladan	4 8 8 L	T 20/04/21	Man				w	A1	V V	
	16											

Improved outcomes to support preparedness

- Response planning is highly detailed and complex.
- The RTM is a tool to help delineate the critical path and therefore priorities.
- The principle of ALARP is to undertake all <u>reasonable preparedness</u> actions to enable the project to be completed in the shortest reasonable timeframe.
- As per the case example,
 - A downline solution for subsea dispersant conveyance would improve the overall project timeline.
 - Is the timeline improvement significant to the end outcome (note: some tasks can occur concurrently).
 - Are the improvement actions reasonable (cost verses benefit)?
 - Does it represent ALARP?
 - Document reasoning (the 'Justification for Time Estimates' provides stakeholder information).





- 1. Having a robust understanding of response times and critical path activities is a key part of the Regulator's environmental assessment process.
- 2. The RTM was developed to be available to all and promote consistency in response planning.
- 3. The tool can be used in preparedness activities to help identify critical path tasks or establish priorities.
- 4. The tool can be used to support the organisation and coordination of response.





Australian Application





The RTM in use (case example):

• The APPEA Drilling Industry Steering Committee (DISC)

Source Control Response Industry Working Group – Terms of Reference:

Purpose:

The Source Control Response Industry (SCRI) working group is to share and collaborate on Australian Offshore Titleholders' ("Titleholders") existing source control response plans. The Working Group will explore and act on opportunities to align and strengthen the Titleholders' source control emergency response capability though "mutual aid" initiatives and drive continuous improvement by implementing fit-for-purpose and effective source control emergency response strategies.

Work Streams

Direct Intervention	 SC/SCR Template for SFRT / Capping Stack deployment Shared Capping Stack Pkg (SFRT model) Assessment of alternate installation methods Shared vessel tracking service Generic response time models for the different direct intervention methods Organise a workshop (or other as required) with the regulator on above topic for alignment
Indirect Intervention	 MoU "re-fresh" as it pertains to rig sharing Alignment on relief well planning and blowout scenarios Shared relief well equipment Generic response time model (indirect int.) Alignment on high rate kill methodolgies
Personnel	 Source control "Core Group" concept Access to people - mutual aid agreement Joint training / exercise opportunities and planning





APPEA DISC

• Produced an Australian Offshore Titleholders Source Control Guideline that includes, partnerships, agreements and plans for the selected initiatives. This Plan can be expanded by the relevant Titleholder to cover any project specific requirements.

Source Control Planning

and Procedures

Information Paper

Association

U

• Gathered and applied information from all relevant sources:



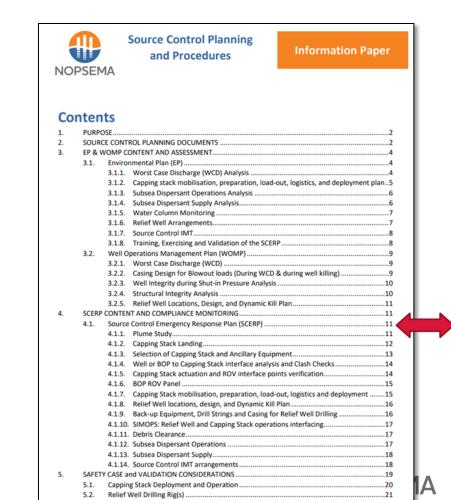
The RTM in use (case example):

• Information Paper: Source Control Planning and Procedures

- NOPSEMA's expectations with regards to source control planning content of:
 - Environmental Plan (EP)
 - Well Operating Management Plan (WOMP)
 - Source Control Emergency Response Plan (SCERP)
- Reflects the content of IOGP Report 594 and the RTM



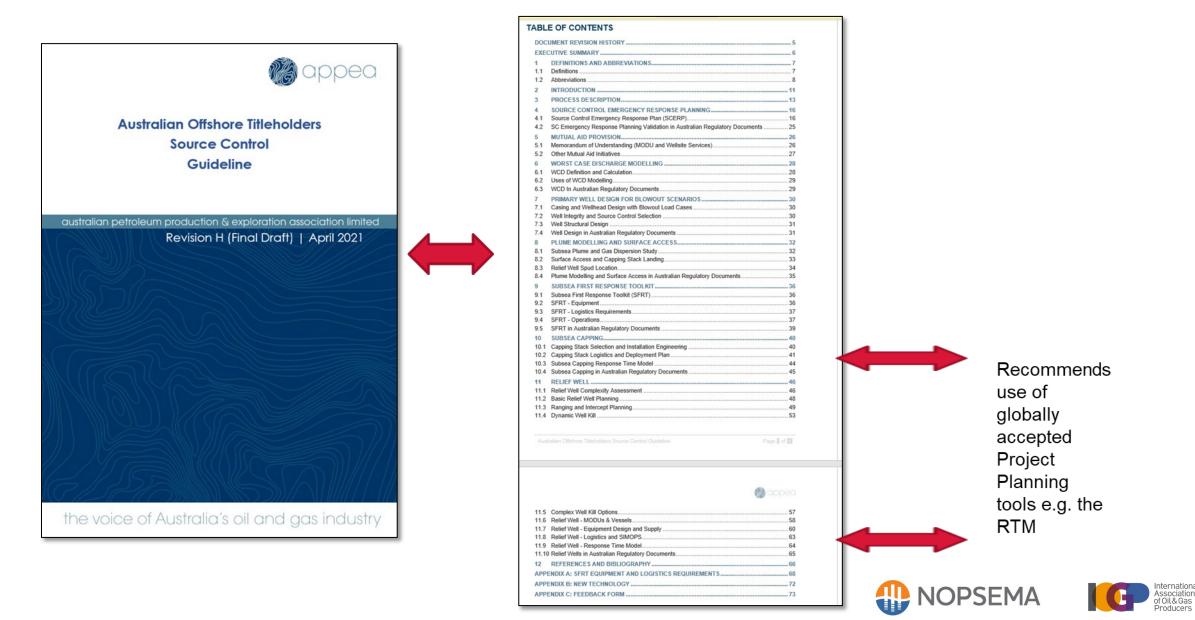
Consistent



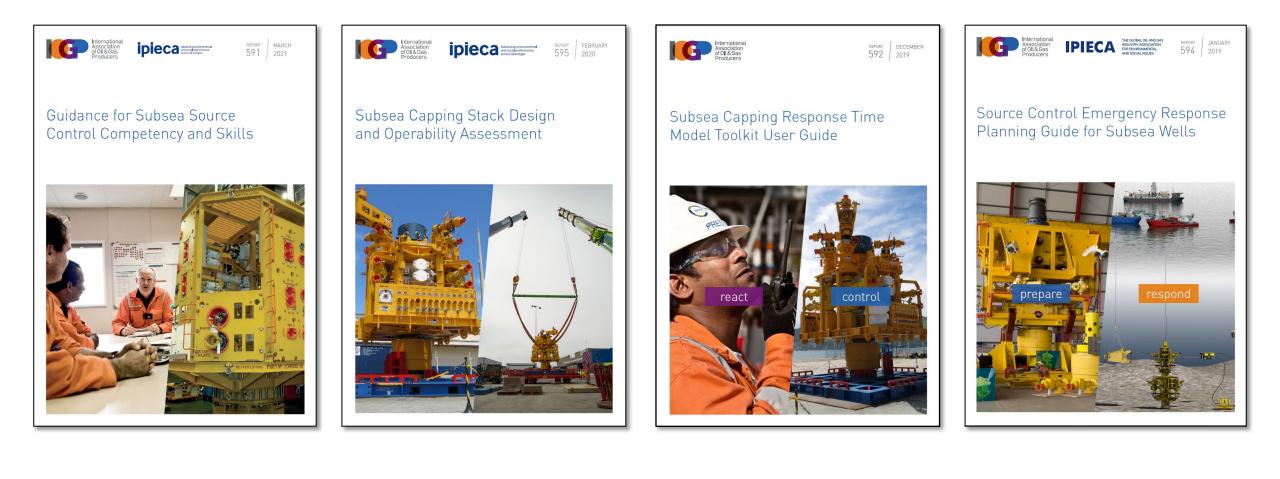
Recommends use of globally accepted Project Planning tools e.g. the RTM



The RTM in use (case example):



Reports 592, 594 & 595 are available free at the IOGP Bookstore: www.iogp.org/bookstore







Thank You & Questions



