



OceanGate Inc
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DIVE OPERATIONS
RISK ASSESSMENT

Titanic Survey Expedition 2023
May 8th to June 24th 2023

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Record of Revisions

Rev	Date	By	Remarks
A	3/25/23	SPG	Initial Release

Table 1: Record of Revisions

Abbreviations

Abbreviation	Description
AE	Acoustic Emissions
CB	Citizen band radio
Comms	Communications
FRC	Fast Response Craft
HAZID	Hazard Identification
PS3	Gaming Controller
SUB	Submarine or Submersible Vehicle
TBT	Tool box Talk
VBT	Variable Ballast Tank
VHF	Very High Frequency Radio

Table 2: Abbreviations

Definitions

Term	Description
Dive Support Vessel	Dive support vessel will be Polar Prince
Titan	OceanGate submersible capable of diving to 4000m depth underwater
Sheliah	OceanGate small inflatable boat used for tending sub ops ~16ft long
Darcie	OceanGate small inflatable boat used for tending sub ops ~16ft long

Table 3: Abbreviations

Reference Documents

Title	Description
OceanGate HSE Manual	Comprehensive OceanGate HSE manual
Project Execution Plan	Document containing details about execution of the Expedition

Table 4: Reference Documents

Introduction

OceanGate Inc. is a company that specializes in manufacture and operation of manned submersibles. All OceanGate's manned submersibles are free flying subsea vehicles that operate independently from topside support once submerged. OceanGate uses their submersible vehicles for different mission purposes including but not limited to research, education, and government activities. This document contains the project specific requirements and operational procedures for the Titanic Survey Expedition. This document has been prepared by OceanGate to provide onshore and offshore personnel with the details required for successful completion of the project. OceanGate's first measure of success for all operations is HSE performance. The health and safety of all personnel, equipment, and the environment will be OceanGate's number one priority during all phases of the project and shall not be compromised.

Scope of Work

OceanGate has scheduled an expedition to the Titanic wreck May 8th- June 24th 2023. The goals of this mission are:

- Create a detailed 3D model of the wreck and portions of the wreck using the latest multi-beam sonar and photogrammetric technology
- Supplement the work done on previous scientific expeditions to capture data and images for the continued scientific study of the site
- Document the condition of the wreck with high-definition photographs and video
- Document the flora and fauna inhabiting the wreck site for comparison with data collected on prior scientific expeditions to better assess changes in the habitat.

Expeditions are to be conducted respectfully and in accordance with the National Oceanic and Atmospheric Administration (NOAA) Guidelines for Research and Exploration.

The scope of work related to achieving these goals consist the following high-level activities. More details related to these activities will be given in later sections of this document

- HSE concerns and operating norms
- Mobilization of Titan submersible and supporting equipment
- Mobilization of OceanGate and 3rd party personnel
- Vessel preparation, deck layout, sea fastening and crewing of dive support vessel for expedition
- Transit of dive support vessel to and from the dive site
- Towing of Titan and Titan's deployment platform to and from site with the dive support vessel
- Small boat operations around the dive support vessel, Titan submersible and platform
- Launching and recovery of Titan to and from Titan's deployment platform
- Diving operations on Titanic or other sites of interest and data collection
- Submersible tracking
- Demobilization of personnel and equipment

HSE Policy

OceanGate Inc., in fulfilling its legal obligation and its moral responsibility to provide a place of employment free from recognized hazards, has set forth this HSE Policy statement, reinforcing its commitment to maintaining a safe and healthy work environment. This HSE Policy Statement is the

cornerstone of the Company's HSE management process. It is communicated openly and at every opportunity to employee, customers, vendors and subcontractors, and has equal status with other primary business objectives. Violations of this policy should be immediately brought to the attention of management.

The OceanGate HSE philosophy is that, in the performance of our work, the health and welfare of the people involved, and the protection of assets and the environment are the primary concern. NO JOB IS SO IMPORTANT THAT WE CANNOT TAKE THE TIME TO DO IT SAFELY.

The Company's HSE management hazard assessment process promotes hazard identification, assessment, control and recovery, should a loss occur. The HSE management process is intended to demonstrate to Company management, appropriate regulatory agencies, customers and other interested parties, that equipment and operations associated with the performance of work are capable of being utilized without undue risk to those involved or the environment.

We believe that incidents are caused, and therefore, can be prevented. Safety, the health of individuals involved in Company operations, incident prevention, the protection of assets and the environment is each individual's responsibility. Employees at all levels of the organization will be held accountable and responsible for preventing job related illnesses, injuries and equipment and environment losses through the diligent and consistent application of the Company's HSE management process. Employee HSE performance will be a major consideration in decision affecting promotions, salary actions and continued employment.

Expedition Personnel

OceanGate personnel and their roles in the expedition are listed in Table 5 below.

OceanGate Expedition Personnel		
Management		
Name	Title	Typical Function Performed During Expedition
[REDACTED]	Chief Executive Officer/Pilot	Managing the work
[REDACTED]	Chief Operating Officer	Interfacing with clients
TBD	Director of Engineering	Interfacing with vessel crew
[REDACTED]	Dir. of Logistics & Quality Assurance/Pilot	Coordination with shore support
[REDACTED]	Operations Manager	Conduct dive briefings
		Pilot submersible (trained personnel only)
		Administrative tasks
		Assisting operational crew as needed
OceanGate Operations		
Name	Title	Typical Function Performed During Expedition
TBD	Submersible Pilot/Tech	Pilot submersible (trained personnel only)
TBD	Submersible Pilot/Tech	Perform maintenance/Troubleshoot
TBD	Lead Tech	Assist with lifts as directed by deck foreman / crane operator
TBD	Operations Tech	

OceanGate Expedition Personnel		
TBD	Operations Tech	Operate small boats
TBD	Operations Tech	Perform platform pre/post dive checks
		Perform Sub per/post dive checks
		Operate platform
		Track submersible
		Standby as divers
OceanGate Business Development / Client Reps / Media		
Name	Title	Typical Function Performed During Expedition
	Expedition Manager	Entertain OceanGate clients
TBD	Multimedia Producer	Document expedition
		Manage media and media outlets
		Interfacing with vessel crew
		Coordination with shore support
		Assisting operational crew as needed
OceanGate Foundation		
Name	Title	Typical Function Performed During Expedition
	OceanGate Foundation	Communication Specialist
Mission Specialists		
Name	Title	Typical Function Performed During Expedition
TBD	Mission Specialist	Scientific Crew in submersible to dive site Participate in operations as desired Interface with vessel crew as desired
TBD		
TBD		
TBD		
TBD		
TBD		
TBD		
TBD		

Table 5: OceanGate Expedition Personnel

Equipment

Table 6 below lists the large pieces of kit that OceanGate will mobilize for the Titanic Expedition.

#	Description	Size	Approx Weight
1	Titan Sub and Platform	40'x20'x15'	61k lbs
2	20' Shipping container 1 – OceanGate tools and workshop	20'x8'x8.5'	16k lbs
3	20' Shipping container 2 – OceanGate spare parts	20'x8'x8.5'	14k lbs
4	20' Shipping container 3 – OceanGate Change Room	20'x8'x8.5'	5k lbs
5	OceanGate Inflatable boat 1 – “Darcie”	16'x8'x3'	1k lbs
6	OceanGate Inflatable boat 2 – “Shelia” (may containerize rather than lift directly)	16'x8'x3'	1k lbs

Risk Assessment Matrix

The risk assessment matrix shown in Figure 1 below is used to quantify the Severity and Likelihood of each operational task.

Severity of Occurrence		Likelihood of Occurrence						
		PERSONAL INJURY or ENVIRONMENTAL IMPACT or EQUIPMENT - PROPERTY DAMAGE		VERY UNLIKELY 1	UNLIKELY 2	POSSIBLE 3	LIKELY 4	VERY LIKELY 5
				Little or no chance of occurrence	Conceivable but would require multiple failure of systems and controls	Could happen when additional factors are present but unlikely to occur	Not certain to happen but additional factors may result in an accident	Almost inevitable that an incident would result
		NEGLECT 1	No disruption to operations Potential for slight injury (First Aid) Potential for slight effect Potential for slight damage (\$5000)	LOW 1	LOW 2	LOW 3	LOW 4	LOW 5
			SLIGHT 2	Brief Disruption to Operations Potential for Minor Injury (medical Treatment) Potential for Minor Effect (temporary contamination) Potential for Minor Damage (<\$50,000)	LOW 2	LOW 4	LOW 6	MEDIUM 8
		MODERATE 3		Partial Shutdown Potential for Major Injury (Days Away From Work or Restricted Duty) Potential for Local Effect (recoverable environmental loss / repeated accidence) Potential for Local Damage (<\$1,00,000)	LOW 3	LOW 6	MEDIUM 9	MEDIUM 12
			HIGH 4	Partial Operational Loss Potential for Single Fatality Potential for Major Effect (Severe damage extended loss of contaminant) Potential for Major Damage (<\$1,000,000)	LOW 5	MEDIUM 10	MEDIUM 12	HIGH 16
		VERY HIGH 5		Substantial Operational Loss Potential for Multiple Fatalities Potential for Massive Effect (Widespread chronic effect) Potential for Extensive Damage (>\$1,000,000)	LOW 5	MEDIUM 10	HIGH 15	HIGH 20

Figure 1: Risk Assessment Matrix

Risk Assessment

Activities	Task	Persons in Danger	Hazards	Control Measures	Controlled Assessment		
					Sev	Like	Risk
Dive Brief	Sub Weighting / Loading Calculations	No One	None	NA	3	2	6
	Dive Plan Completion	None	None	NA	3	1	3
	Risk Assessment	None	None	NA	3	2	6
	Weather and Sea State Checks	None	None	NA	3	2	6
Pre-Dive Checks	Sub Weighting / Buoyancy	Sub Crew Ops Crew	Manual Handling	Assess manual handling task	3	2	6
				Limit load size			
				Manage Posture			
				Wear Proper PPE - Gloves			
				Get assistance to avoid pinch points			
			Slips trips & Falls	Use proper foot gear			
				Line deck / walk on areas with antiskid material where appropriate			
				Use three points of contact when possible			
			Poor visibility and Lighting	Use head lamps and other lights			
				If operating in the dark have lights on each person			
			Weather (sea state, temps)	Wear proper foul weather gear			
				Use buddy system			
				Wear proper life preserver PPE			
				Limit load size			
				Manage Posture			
				Wear Proper PPE - Gloves			
				Get assistance to avoid pinch points			
			Slips trips & Falls	Use proper foot gear			
				Line deck / walk on areas with antiskid material where appropriate			

Activities	Task	Persons in Danger	Hazards	Control Measures	Controlled Assessment		
					Sev	Like	Risk
				Use three points of contact when possible			
			Poor visibility and Lighting	Use head lamps and other lights			
				If operating in the dark have lights on each person			
			Weather (sea state, temps)	Wear proper foul weather gear			
				Use buddy system			
				Wear proper PPE - life preserver			
	Pre-Dive Platform Inspection / Checklist	Sub Crew Ops Crew	Slips trips & Falls	Use proper foot gear	3	1	3
				Line deck with antiskid material where appropriate			
				Use three points of contact when possible			
			Poor visibility and Lighting	Use head lamps and other lights			
				If operating in the dark have lights on each person			
			Weather (sea state, temps)	Wear proper foul weather gear			
				Use buddy system			
				Wear proper PPE - life preserver			
	Pre-Dive Submersible Inspection / Checklist	Sub Crew Ops Crew	Slips trips & Falls	Use proper foot gear	3	1	3
				Line deck / walk on areas with antiskid material where appropriate			
				Use three points of contact when possible			
			Poor visibility and Lighting	Use head lamps and other lights			
				If operating in the dark have lights on each person			
			Weather (sea state, temps)	Wear proper foul weather gear			
				Use buddy system			
				Wear proper PPE - life preserver			
			Working at	Get work permit			

Activities	Task	Persons in Danger	Hazards	Control Measures	Controlled Assessment		
					Sev	Like	Risk
			heights	Use tie off and fall restraint and arrest equipment Use spotter / ladder holder / ladder tie off when applicable			
Dive	Crew Transiting / Transferring / Small Boat Ops	Sub Crew Small Boat Crew Platform Crew Deck Crew (dive support vessel) Mission Specialist	Slips trips & Falls (on deck or overboard)	Use proper foot gear	3	2	6
				Line deck / walk on areas with antiskid material where appropriate			
				Use three points of contact when possible			
				Bracing against inside of sub			
				Wear Proper PPE - Life Vest			
				Have Hands free to grab onto things			
				Use stronger personnel to assist with climbing up and down ladders, in and out of small boats and into submersible, Forearm to forearm grasp			
				Clean up any fluids that could spill on deck			
				Use spotter when transferring from boat to platform, Rope ladder to boat, Boat to FRC			
				Maintain regular communications with mission director			
				Call out tasks on radio prior to doing them and after completion			
		Small Boat Crew Platform	Sun burn	Use sun screen and reapply on a regular basis			

Activities	Task	Persons in Danger	Hazards	Control Measures	Controlled Assessment		
					Sev	Like	Risk
		Crew		Cover skin with clothing if temps allow			
			De-hydration	Drink liquids on a regular basis			
			Low energy level	Take snacks on small boats to maintain energy			
	Hatch Opening and Closing Procedures	Small Boat Crew Platform Crew	Manual Handling	Assess manual handling task	2	1	2
				Limit load size			
				Manage Posture			
				confirm stability of load			
				Use dome damper to control load			
				Get assistance to avoid pinch points			
				Keep fingers out of pinch point areas (hinge)			
				Wear proper PPE - Gloves			
			Mobile equipment	Assess mobile equipment - dome dolly			
			Poor visibility and Lighting	Use head lamps and other lights			
	Loading and unloading of Titan Crew	Small Boat Crew Platform Crew Sub Crew	Weather (sea state, temps)	Wear proper foul weather gear	3	2	6
				Use buddy system			
				Wear proper PPE - life preserver			
			Poor visibility and Lighting	Use head lamps and other lights			
			Slips trips & Falls (on deck or overboard)	Use proper foot gear			
				Line deck with antiskid material where appropriate			
				Use three points of contact when possible			
				Bracing against inside of sub			
				Wear Proper PPE - Life Vest, helmets, safety			

Activities	Task	Persons in Danger	Hazards	Control Measures	Controlled Assessment		
					Sev	Like	Risk
				glasses	1	1	1
				Have Hands free to grab onto things			
				Use stronger personnel to assist with climbing up and down ladders, in and out of small boats and into submersible, Forearm to forearm grasp			
				Clean up any fluids that could spill on deck			
				Use spotter when transferring from boat to platform, Rope ladder to boat, Boat to FRC			
				Maintain regular communications with mission director			
				Call out tasks on radio prior to doing them and after completion			
	Crew Briefing Inside Titan	Sub Crew	None	NA	1	1	1
	Platform Decent / Accent	Platform Crew Small Boat Crew Sub Crew	Weather (sea state, temps)	Wear proper foul weather gear	3	2	6
				Use buddy system			
				Wear proper PPE - life preserver, helmet, gloves and safety glasses when applicable			
			Small boat Operations	See - Crew Transiting / Transferring / Small Boat Ops			
			Poor visibility and Lighting	Use head lamps and other lights			
			Mobile equipment	Assess mobile equipment - Platform controls and umbilical			
			Slips trips & Falls (inside sub)	Use proper foot gear			
				Use three points of contact			

Activities	Task	Persons in Danger	Hazards	Control Measures	Controlled Assessment		
					Sev	Like	Risk
				Maintain grasp on small boat lines as appropriate			
				Bracing against inside of sub			
				Wear Proper PPE - Life Vest, helmets, safety glasses			
				Have Hands free to grab onto things			
				Maintain regular communications with mission director			
				Call out tasks on radio prior to doing them and after completion			
	Takeoff and Landing	Sub Crew Small Boat Crew	Motion energy	monitor cameras on sub to avoid hitting platform	2	2	4
				launch and recover in calm weather conditions			
				Maintain slow speeds			
			Entanglement	Divers standing by to assist if needed			
				Use spotters on small boat to keep eyes on divers			
				Monitor cameras on sub to avoid entanglement in platform lines			
	Dive Execution Sequence	Sub Crew	Confined space	Monitor internal hull pressure (vacuum)	5	2	10
				Monitor oxygen levels sub			
				Monitor CO2 levels in sub			
				Monitor sub crew for signs of distress			
				Monitor for water ingress			
				Monitor Acoustic Emissions system for extraordinary acoustic hull events			

Activities	Task	Persons in Danger	Hazards	Control Measures	Controlled Assessment		
					Sev	Like	Risk
			Motion energy - collision	Maintain distance from objects on sea floor	1	1	1
				Navigate slowly when close in around wreckage			
				monitor cameras on sub to get 3D awareness around vehicle			
				Use ROV to monitor sub and surrounding - if available			
			Entanglement	Maintain distance from objects on sea floor			
				monitor cameras on sub to get 3D awareness around vehicle			
				Have call lists for rescue operations on hand topside			
				Use ROV to monitor sub and surrounding - if available			
				Use ROV remove entanglements with manipulators if - if available			
				Communicate with topside via ATM			
	Drop Weight System Operations	Sub Crew	Environmental	Drop weight in designated areas as called out in project execution plan	1	1	1
	Camera Operations	Sub Crew	None	NA	1	1	1
	Comm Operations	Sub Crew	None	NA	1	1	1
	External Light Operation	Sub Crew	None	NA	1	1	1
	Controller Operation	Sub Crew	None	NA	1	1	1
	Subphone Acoustic Comms	Sub Crew	None	NA	1	1	1
	VBT Operations	Sub Crew	None	NA	1	1	1
	Sonar Operation	Sub Crew	None	NA	1	1	1

Activities	Task	Persons in Danger	Hazards	Control Measures	Controlled Assessment		
					Sev	Like	Risk
Tracking	Tracking & Communications equipment deployment	Tracking Crew	Manual Handling	Assess manual handling task	3	2	6
				Limit load size			
				Manage Posture			
				confirm stability of load			
				Get assistance to avoid pinch points			
				Wear proper PPE - Gloves			
				Tie off equipment during over boarding to avoid loss			
			Slips trips & Falls (on deck or overboard)	Use proper foot gear			
				Line deck with antiskid material where appropriate			
				Use three points of contact when possible			
				Bracing against inside of boat			
				Wear Proper PPE - Life Vest			
				Have Hands free to grab onto things			
				Use stronger personnel to assist with climbing up and down ladders, in and out of small boats and into submersible, Forearm to forearm grasp			
				Clean up any fluids that could spill on deck			
				Maintain regular communications with mission director			
				Call out tasks on radio prior to doing them and after completion			
			Equipment Loss	Ensure equipment is deployed in a manner that it cannot be entangled in boat			

Activities	Task	Persons in Danger	Hazards	Control Measures	Controlled Assessment		
					Sev	Like	Risk
				prop			
	ATM Operation / Tracking Operation	Tracking Crew	Slips trips & Falls (on deck or overboard)	Use proper foot gear	2	2	4
				Line deck with antiskid material where appropriate			
				Use three points of contact when possible			
				Bracing against inside of boat			
				Wear Proper PPE - Life Vest			
				Have Hands free to grab onto things			
				Use stronger personnel to assist with climbing up and down ladders, in and out of small boats and into submersible, Forearm to forearm grasp			
				Clean up any fluids that could spill on deck			
				Maintain regular communications with mission director			
				Call out tasks on radio prior to doing them and after completion			
			Sun burn	Use sun screen and reapply on a regular basis			
				Cover skin with clothing if temps allow			
			De-hydration	Drink liquids on a regular basis			
			Low energy level	Take snacks on small boats to maintain energy			
			Mechanical Energy - collision with Sub	Maintain tracking of sub to avoid sub coming up under boat			
				Slow ascent when approaching surface			

Activities	Task	Persons in Danger	Hazards	Control Measures	Controlled Assessment		
					Sev	Like	Risk
Post Dive	Post dive checks on Sub	Platform Crew Small Boat Crew	Slips trips & Falls	Use proper foot gear	2	1	2
				Line deck with antiskid material where appropriate			
				Use three points of contact when possible			
			Poor visibility and Lighting	Use head lamps and other lights			
				If operating in the dark have lights on each person			
			Weather (sea state, temps)	Wear proper foul weather gear			
				Use buddy system			
				Wear proper PPE - life preserver			
			Working at heights	Get work permit			
				Use tie off and fall restraint and arrest equipment			
	Platform Servicing / Post dive checks on Platform	Platform Crew Small Boat Crew	Slips trips & Falls	Use proper foot gear	3	1	3
				Line deck with antiskid material where appropriate			
				Use three points of contact when possible			
			Poor visibility and Lighting	Use head lamps and other lights			
				If operating in the dark have lights on each person			
			Weather (sea state, temps)	Wear proper foul weather gear			
				Use buddy system			
				Wear proper PPE life preserver			
	LPA Tank Charging (platform)	Platform Crew Deck Crew	Manual Handling	Assess manual handling task	3	2	6
				Limit load size			
				Manage Posture			
				confirm stability of			

Activities	Task	Persons in Danger	Hazards	Control Measures	Controlled Assessment		
					Sev	Like	Risk
				load			
				Get assistance to avoid pinch points			
				Wear proper PPE - Gloves			
			Pressure energy	Anticipate residual pressure potential	3	2	6
				Use blast shield when applicable			
				Monitor pressure on tank being charged to avoid over pressure			
				inspect all pressure hoses for cuts prior to use			
				inspect pressure fitting for wear or damage before use			
				Ensure routing of pressure hoses to be clear of objects that could be pinched / cut by			
	HPA Charging (Sub)	Platform Crew Deck Crew	Manual Handling	Assess manual handling task	3	2	6
				Limit load size			
				Manage Posture			
				confirm stability of load			
				Get assistance to avoid pinch points			
				Wear proper PPE - Gloves			
			Pressure energy	Anticipate residual pressure potential			
				Use blast shield when applicable			
				Monitor pressure on tank being charged to avoid over pressure			
				inspect all pressure hoses for cuts prior to use			
				inspect pressure fitting for wear or damage before use			

Activities	Task	Persons in Danger	Hazards	Control Measures	Controlled Assessment		
					Sev	Like	Risk
				Ensure routing of pressure hoses to be clear of objects that could be pinched / cut by			
				Keep clear of any HP air leaks to avoid skin puncture by high pressure			
				Operate booster pump slowly to avoid excessive heat build up			
	Charging (batteries for thrusters)	Deck Crew Platform Crew	Manual Handling	Assess manual handling task	3	2	6
				Limit load size			
				Manage Posture			
				confirm stability of load			
				Get assistance to avoid pinch points			
				Wear proper PPE - Gloves			
			Electrical Energy	Restrict access to authorized personnel			
				Discharge equipment and make electrically dead			
				Observe safe working distance from live cables			
				Ensure voltage polarity is connected properly prior to providing power			
				Use proper PPE - Insulated gloves & tools			
				Keep electrical leads out of water			
				Keep connections clean and debris free			
	House Battery Charging and Operation	Deck Crew Platform Crew	Manual Handling	Assess manual handling task	3	2	6
				Limit load size			
				Manage Posture			

Activities	Task	Persons in Danger	Hazards	Control Measures	Controlled Assessment							
					Sev	Like	Risk					
				confirm stability of load	3	2	6					
				Get assistance to avoid pinch points								
				Wear proper PPE - Gloves								
			Electrical Energy	Restrict access to authorized personnel								
				Discharge equipment and make electrically dead								
				Observe safe working distance from live cables								
				Ensure voltage polarity is connected properly prior to providing power								
				Use proper PPE - Insulated gloves & tools								
				Keep electrical leads out of water								
				Keep connections clean and debris free								
			Towing Platform w/ Support Vessel	Deck Crew Platform Crew				Manual Handling	Assess manual handling task	3	2	6
									Limit load size			
									Manage Posture			
									Get assistance to avoid pinch points			
	Wear proper PPE - Gloves											
	Slips trips & Falls (on deck or overboard)	Use proper foot gear										
		Line deck with antiskid material where appropriate										
		Use three points of contact when possible										
		Bracing against inside of sub										
		Wear Proper PPE - Life Vest, helmets, safety glasses										
		Have Hands free to grab onto things										

Activities	Task	Persons in Danger	Hazards	Control Measures	Controlled Assessment		
					Sev	Like	Risk
				Use stronger personnel to assist with climbing up and down ladders, in and out of small boats and into submersible, Forearm to forearm grasp	4	2	8
				Clean up any fluids that could spill on deck			
				Use spotter when transferring from boat to platform, Rope ladder to boat, Boat to FRC			
				Maintain regular communications with mission director			
				Call out tasks on radio prior to doing them and after completion			
				Stay clear of two line when it is under load			
			Mechanical Energy - Stored in tow line	Visually inspect tow line to ensure condition is good and without cuts etc that may fail			
			Lifting Equipment	Inspect equipment and tools			
				Ensure all lifting appliances are appropriate for load			
				Check all lifting cert			
				Follow documented lift plan			
				Maintain communications			
				Stay out from under the load at all time			
				Tie down the load as appropriate once on deck			
	Small boat lifting to deck	Deck Crew Small Boat Crew Crane Operator	Manual Handling	Assess manual handling task			
				Limit load size			

Activities	Task	Persons in Danger	Hazards	Control Measures	Controlled Assessment		
					Sev	Like	Risk
				Manage Posture	1	1	1
				Get assistance to avoid pinch points			
				Wear proper PPE - Gloves			
			Slips trips & Falls (on deck or overboard)	Use proper foot gear			
				Line deck with antiskid material where appropriate			
				Use three points of contact when possible			
				Bracing against inside of sub			
				Wear Proper PPE - Life Vest, helmets, safety glasses			
				Have Hands free to grab onto things			
				Use stronger personnel to assist with climbing up and down ladders, in and out of small boats and into submersible, Forearm to forearm grasp			
				Clean up any fluids that could spill on deck			
				Use spotter when transferring from boat to platform, Rope ladder to boat, Boat to FRC			
				Maintain regular communications with mission director			
				Call out tasks on radio prior to doing them and after completion			
	Update Titan Log Master	None	None	NA	1	1	1
Debrief Dive	Review dive with OceanGate and 3rd Parties	None	None	NA	1	1	1

