



Please print and post at your vessel/ facility for all employees to view

Fleet Memo #33: Lifting Gear Policy and Procedures

Lifting gear on TDI-Brooks vessels is at the very core of what we do. Moving heavy gear around, on and off our vessels allows us to gather the high quality data that we have become known for. Quite simply, if we can't lift gear, we can't work.

All lifting gear aboard TDI-Brooks vessels is reviewed and approved by our engineering department and provided to the vessels by our Resupply/ Logistics department. It is logged into the Lifting Gear Register when it is brought on board, when it is put into service and logged out when removed from service. The list of approved lifting gear is long and includes everything from Plasma rope, to wire rope, shackles, pendants, slings, chain falls, sheaves and more.

It is NOT ACCEPTABLE for a vessel or individuals to purchase gear locally for use in lifting operations. Any gear marked made in China or India does not meet our engineering specs and should be removed from service immediately.

The attached SOP-GEN-013A has been completely revised to include procedures for inspection, maintenance and use of all lifting gear, including winches and cranes. It also clarifies who is responsible for these procedures.

Brian Anderson has recently been assigned as the new TDI-Brooks Lifting Gear Manager. Any questions about this policy or how to implement it should be directed to him at briananderson@tdi-bi.com.

Please conduct the following HSE meeting with your crew to review the revised lifting gear procedures in the attached NOC. When complete, scan and send the meeting sign in sheet and post this memo and NOC.



Lifting Gear SOP/ Policy Review

Date: _____

Job ID# _____

Vessel: _____

Start: _____ End: _____

No.	Name	Signature	No.	Name	Signature
1			17		
2			18		
3			19		
4			20		
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10			26		
11			27		
12			28		
13			29		
14			30		
15			31		
16			32		

Meeting Minutes

Make sure your entire crew can answer these questions correctly. Make sure the 2014 Color Chart and other lifting gear postings are prominently displayed wherever lifting gear is used or stored.

What is lifting gear? Anything used to lift a load

What is the Lifting Gear Register?

Where is it located on your vessel?

Who is responsible for logging gear into the register as it comes on board?

Who is responsible for logging damaged gear out of service and painting it red?

Can the vessel purchase lifting gear locally? NO. ALL gear must be requested through TDI resupply

How often must lifting gear be inspected? Before every use. Annually a qualified rigger must inspect the gear and ensure approved gear is painted with the current year's color.

Is the 2014 Pendant and Shackle color chart posted near all lifting gear storage and use locations?

What should you do with damaged gear? Paint it red and store belowdecks or where it is not easily accessible.

Who is the new TDI-Brooks Lifting Gear Manager? Brian Anderson

What is the 2014 color for approved lifting gear?

*******IF LIFT GEAR IS DAMAGED OR THE WRONG COLOR- DON'T USE IT**


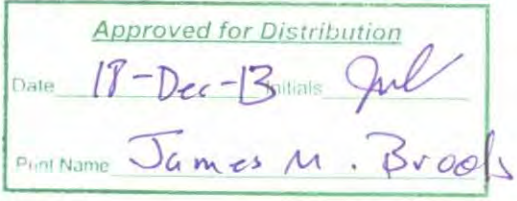
Name of person conducting the meeting:(printed)	Signature:

Notice of Change to Controlled Documents #163 /20 Dec 2013

Summary of Changes

NOC#	Ch., Sec., SOP	Summary	Revision#
163	SOP-GEN-013A	Lifting Gear SOP completely revised	#3

19 Dec 2013 SS Searchable Smm updated
19 Dec 2013 SS SMM TOC web page updated
19 Dec 2013 SS NOC web page updated
19 Dec 2013 SS SMM - each section updated
 _____ NOC sent to fleet
 _____ NOC pdf posted on CM

Approvals	Approvals
 <p>Approved for Distribution Date <u>18 DEC 13</u> Initials <u>DBS</u> Print Name <u>DENISE BELAND</u></p>	 <p>Approved for Distribution Date <u>18-Dec-13</u> Initials <u>JMB</u> Print Name <u>James M. Brooks</u></p>

NOC # 163
SOP-GEN-013A
Complete Revision- all sections

Topic: SOP completely revised to clarify responsibilities

Revision #	Section(s)
Revision #3	• Revised SOP is continued on next page



Safety Management Manual

SOP GEN-013A Lifting Gear

SOP GEN-013A Lifting Gear

- 1.0 [Introduction](#)
- 2.0 [Definitions](#)
- 3.0 [Types of Lifting Gear](#)
- 4.0 [Lifting Gear Registers](#)
- 5.0 [Lifting Gear Inspections & Maintenance](#)
- 6.0 [Winch Inspections and Maintenance](#)

Revision/ Review Log

Revision Date	Approved by	Reviewed by	Revision Details/ Proposal Notes
21 March 2013 Revision #1	Dr. Jim Brooks	Dr. Jim Brooks Dr. Bernie Bernard Dr. James Howell	Company policies and procedures for lifting gear established
1 July 2013 Revision #2	Dr. Jim Brooks Dr. Bernie Bernard	Dr. Jim Brooks Dr. Bernie Bernard Dr. James Howell	Damaged gear to be painted red and quarantined below decks
13 December 2013 Revision #3			SOP completely revised to clarify responsibilities



1.0 Introduction

Lifting gear consists of a specified set of tested and load rated items that are approved for use in TDI-Brooks operations. **This gear meets specific engineering requirements and must be provided by the College Station logistics department. It is NOT ACCEPTABLE for a vessel or individuals to purchase gear locally for use in lifting operations.**

The purpose of this SOP is to establish specific procedures for placing gear in and out of service, documenting gear inspection and use and assigning responsibility for these tasks.

2.0 Definitions

Approved for use- Approval for use means that gear has been inspected by a qualified rigger and painted the current year's color to indicate it has passed annual inspection.

<p>Brummel hook- Manganese Bronze or Stainless Steel hook pairs of various sizes- most commonly used to connect the trigger weight to the trigger assembly on the PC rig</p>	
<p>Chain Hoist/ Fall- a device used for lifting or lowering a load by means of a chain wrapped around a drum or wheel lift</p>	

In Service- When a piece of lifting gear is taken from storage and placed into an assembly for active use, it is considered "In service". At this point any identification tags are documented in the lifting gear register and the "in service" date noted. Only approved gear may be placed in service.



JPC Rig- Jumbo Piston Core rig with a 4 inch diameter barrel that runs on a track on the back deck

Liner Extraction tigger- a small winch used to remove the core liner from the Jumbo Piston Core rig

Moon Pool- an open shaft through the hull of the vessel through which survey gear may be deployed into the water below

PC Rig- smaller Piston Core rig with a 3 inch diameter barrel that is lowered by main winch and positioned off the vessel by a-frame

Pendants- are rotation-resistant wire rope assemblies of various lengths with Spelter sockets at each end. Pendants are used as the connection interface between the main rope and the seabed sampling rigs to facilitate the triggered free-fall of the rig.

Pendant & Shackle Color Chart- a chart that is issued annually to indicate the year's color codes for qualified, in-service shackles. Pendants are color coded by length. The entire shackle is painted. The pendants are painted only on the Spelter sockets. The chart should be posted on the deck in an easily accessible area.

Plasma Line- an ultra high strength synthetic rope this is used by TDI-Brooks in place of steel wire for most coring operations. It has no weight in water, is resistant to most oils and fuels and is significantly safer to use than wire rope. It is subject to UV degradation and should be covered with a dark tarp when not in use.

Qualified Rigger- a person who has been trained as a rigger by an approved outside company or certified by TDI-Brooks to inspect and approve lifting gear for use.

Removed from Service- any gear removed from **active use** must be repaired and inspected by a qualified rigger before it may be returned to service.

Safe Working Load (SWL)- The amount of load that the lifting gear can safely handle. This should be clearly marked on all lifting points, cranes, and A-frames. **Lifting gear shall not be loaded beyond the safe working load.**



Shackles- Shackles are U shaped connections of various sizes that form part of most of our lifting assemblies. They are to be qualified for use by inspection by a qualified rigger annually and painted the correct color for that year. Any shackle that is not painted with the correct year's color must NOT be used in any lifting gear assembly and must be removed from service immediately.



Sheave- a wheel with a groove for a rope to run on. An integral part of a block.

Shock Load- a rapid application of force (such as impacting or jerking), or the rapid movement of a static load.

Snatch Block- a block that can be opened on one side to receive the looped part of a rope.



Spelter Socket- the metal termination piece at the end of a pendant that is used to connect to the main rope or the rig to the pendant



Termination- the loop at the end of the mainline Plasma rope to which coring equipment is attached, or the act of splicing that loop

Trigger Assembly- a set of parts that compose the trigger arm of either the PC or JPC rig

Trigger Tugger- a small winch mounted near A-Frame for lifting the trigger assembly and core weights during PC operations

USBL Pole- a long, pivoting pole mounted on the side of the vessel that properly holds the USBL transducer below the vessel during coring operations

WLL- Working Load Limit- the maximum working load permitted by a specific piece of equipment (often used interchangeably with Safe Working Load) On smaller pieces it may be stamped into the metal or raised on the surface.



3.0 Types of Lifting Gear

Lifting gear is generally divided into three categories. However, ALL lifting gear must be inspected at least annually by a qualified rigger and painted the appropriate year's color to indicate it is approved for use.

Gear is frequently brought aboard for each project. Before being put in service, it must be verified that the gear is approved for use.

- **Vessel lifting gear**- defined as part of the vessel and necessary for regular vessel operations. This category includes:
 - Main winch
 - Stern and side A-Frames
 - Back deck crane
 - SOLAS Davit or rescue boat crane
 - Lifting points integrated into the vessel structure, overhead beams or decks

- **Survey/ Scientific lifting gear**- defined as gear specific to the coring and survey work of the scientific crew. This category includes:
 - Coring related winches (Moon Pool, USBL pole, JPC tracks, JPC liner removal, Trigger tugger, JPC deployment and retrieval tuggers)
 - Pendants, pendant connections
 - Plasma rope on tuggers

- **Common lifting gear**- defined as part of the vessel gear but used for both ship and scientific operations. This category includes:
 - Chain falls/ hoists
 - Blocks and Sheaves
 - Shackles
 - Slings
 - Plasma rope on main winch



4.0 *Lifting Gear Registers*

Each vessel has a lifting gear register binder **as well as an electronic spreadsheet. Entries are hand written into the binder and periodically updated to the spreadsheet.** The Lifting Gear Register contains the manufacturer's specifications for each purchased piece of lifting gear or their assemblies as well as the history of the gear on that vessel. General lifting gear specifications may be found on the ship web pages.

The Master is responsible for ensuring that any new gear brought aboard the vessel is entered into the Lifting Gear Register and about monthly or upon request, sending the updated electronic spreadsheet back to the Lifting Gear Manager.

Anyone taking damaged gear out of service is responsible for logging this in the Lifting Gear Register and ensuring the gear is painted red and stored with other condemned gear.

5.0 *Lifting Gear Inspections & Maintenance*

Inspections The person using the gear is responsible for inspecting lift gear before each use. They must be sure it is painted with current year's color and in good condition. Worn out or damaged gear must be painted red and removed from service. Annual inspections must be conducted by a qualified rigger.

The Master is responsible for ensuring the annual inspection has been conducted and documented in NS5 (it is an annual standard job) and that gear in service is painted the appropriate color.

Maintenance is the responsibility of the Engineer on board.

The Engineer and Master cannot anticipate the needs of individual projects. Therefore, the Party Chief is responsible for ensuring that the lifting gear he needs to complete that job is on board in sufficient quantity and with spares before leaving the dock.

****Damaged lift gear is to be condemned with red paint and quarantined below decks to prevent accidental use.** If gear can be repaired, it will be repaired and inspected by a qualified rigger, then tested, painted the correct color and put back into service. If not, it will be disposed of at the next port call.



Lifting gear not in use shall be removed from the immediate work area so as not to present a hazard to employees.

6.0 Winch & Crane Inspections & Maintenance

SOP-GEN-007X "Crane and Winch Operations" describes the general operational procedures for winches, a-frames and cranes and specifies operator training. It also assigns responsibilities regarding adding any new lifting gear to a vessel and the standards to which they are held.

~~This purpose of this section is to assign responsibilities for inspections, use and maintenance of winches. This changes depending on if a scientific crew with a deck chief and winch operator is on board or if the vessel is manned only by ship crew.~~

Inspections The operator of the winch or crane is responsible for inspecting the winch or crane and equipment before each use. If the winch is in daily use, it must be inspected once per shift. These inspections are to be kept in a binder at an established location easily accessible to the operator.

The Master is responsible for ensuring the inspections are being conducted and documented in NS5. Every crane inspection must be entered. Winch inspections are to be reviewed and summarized weekly and will appear in the NS5 maintenance plan as a standard job.

Maintenance- It is the responsibility of the Chief Engineer to ensure that all winches and cranes are maintained and operable at all times. Repairs/ replacements and service must be entered into NS5 and linked to the equipment.

The Master is responsible for ensuring the winches and cranes are being maintained properly and maintenance documented in NS5.