MC252 Demobilization Project

for

MC252-1

Choke & Kill Manifold Recovery Procedure

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GulfofMexicoSPU

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	Mike Harville **Subsea Installation Lead**	Mike Harville with comments	10/26/10
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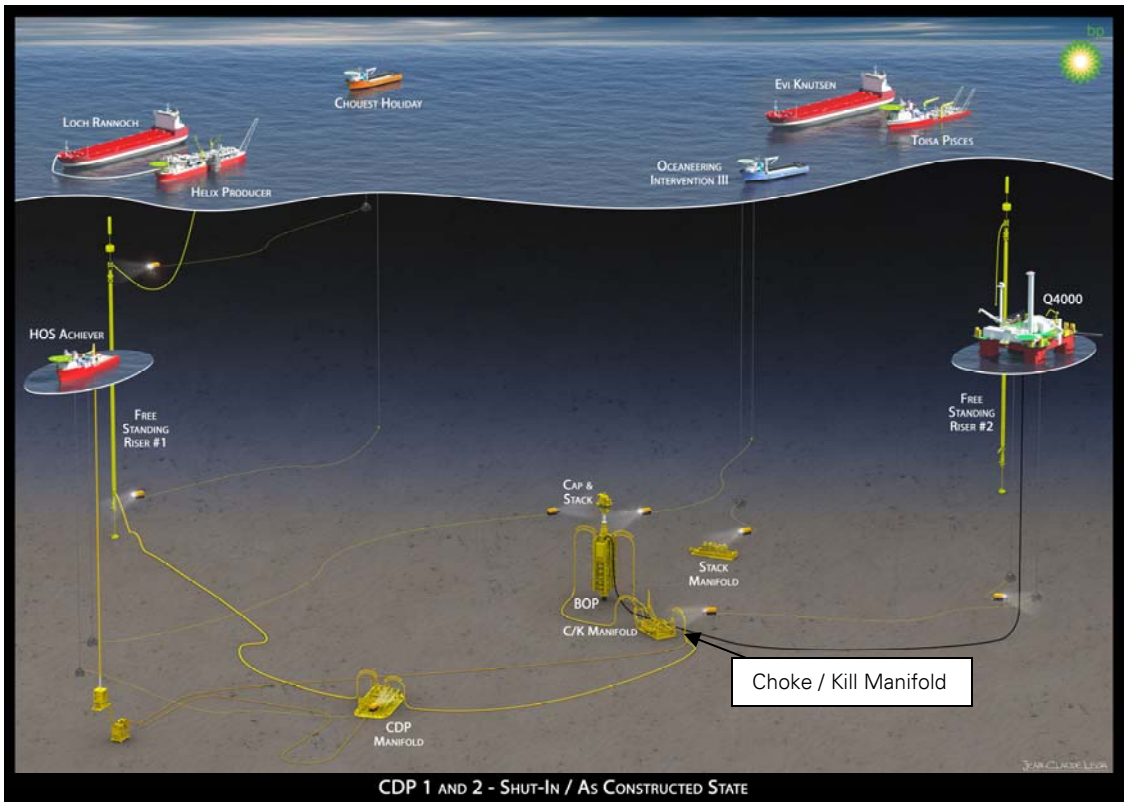
1 Introduction

The Containment and Disposal Project (CDP) objective was to contain the spill flowing at the BOP level located at MC252-1. This was accomplished utilizing a Free Standing Riser system composed of rigid pipe-in-pipe riser, flexible jumpers, containment and storage vessels, and an IWOCS-based/Hydrate Inhibition System (HIS).

As part of the Macondo Demobilization Project (MDP) these CDP system components will undergo de-commissioning and de-construction. This process requires that hydrocarbons/drilling mud, or base oil/drilling mud, be purged from the jumpers, flowlines, risers, and manifolds; the HIS be flushed; and of all of these components are recovered to the surface for transport, preservation, and storage.



The recovery of the FSR System is part of a larger effort to deconstruct, recover and demobilize the MC 252 temporary response equipment. A holistic recovery plan (MC252-1 Temporary Installed Subsea Equipment Recovery Plan, 2200-T2-DO-PR-4746) has been developed which includes categorizing response equipment as:

- Evidence (Legal Hold).
- Temporary Kit to be Recovered (Non-Legal).
- Abandon In-Place.

It should be noted that the Choke and Kill Manifold has not been characterized as legal hold kit. Therefore, custody transfer and quarantine protocols do not apply to the recovery and demobilization of the equipment to be recovered per this procedure. The legal hold category primarily pertains to BOP and flow-related equipment.

The equipment will be recovered to surface and demobilized.

1.1. Objective

The objective of this document is to guide the safe recovery of the Choke and Kill Manifold.

1.2. General

The Choke and Kill Manifold (also referred to as Junk-Shot Manifold) was installed in May 2010 for the first attempt at killing Macondo #1. Subsequently the manifold was utilized as a component of CDP#1. There are four gooseneck jumpers connected to the choke and kill manifold that will have to be removed prior to recovery.

Hydrocarbons were produced through the Choke and Kill Manifold prior to the shut-in of Macondo #1 in July of 2010. The Choke and Kill Manifold was flushed with MEG water in August 2010. All legs were included in this flush. It may be assumed that there are no hydrocarbons remaining in the structure of the Choke and Kill Manifold.

The slings for the Choke and Kill Manifold are of standard type and are non-ROV retrievable. These slings were deployed in May of 2010 and not recovered. A survey of this rigging was conducted in August 2010. The assumption of this procedure is that the existing slings are not suitable for recovery of the Choke and Kill Manifold on the basis that they have been subsea for 5-months (September 2010). The existing rigging is non-cathodically protected and has been subject to corrosion subsea. Therefore, a new set of slings with ROV shackles shall be procured and used to recover the Choke and Kill Manifold. The existing slings (that the manifold was deployed with) shall be removed prior to the installation of the new slings.

The Helix Express is the designated recovery vessel for the Choke and Kill Manifold. If the Helix Express is unavailable, an alternate vessel may recover the Choke and Kill Manifold with the premise that recovery analysis has been performed and acceptable sea states for recovery have been defined by the vessel vendor.

2 Scope of Work

The scope of work for this project will include the following:

- Preparations for recovery of Manifold;
- Connection of the main crane recovery rigging to rigging on the manifold Subsea;
- Lifting of Manifold off seabed and through water column;
- Recovery of Manifold to deck of SV or IV.
- Custody transfer of manifold to shore

2.1. HAZID

A HAZID has been conducted for the recovery of the Choke and Kill Manifold. The outcome of the meeting is documented in Appendix 4.

3 Acronyms and Definitions

Term	Description
AHC	Active Heave Compensation
CLIENT	BP
DP	Dynamic Positioning
H_S	Significant Wave Height
IV	Installation Vessel
OCM	Offshore Construction Manager
PIC	Person in Charge
ROV	Remotely Operated Vehicle
SZ	Safe Zone
JSA	Job Safety Analysis
SV	Supply Vessel
TBD	To be Determined
TBT	Tool Box Talk
VHF	Very High Frequency
UHF	Ultra High Frequency

4 Weather

The environmental operational conditions for manifold recovery operations are to be agreed upon by all parties involved, before commencing the operation. The operation will begin at the discretion of the superintendent.

The recommended operational sea state for either vessel is based upon the recovery analysis (Junk Shot Manifold Recovery Analysis 2200-T2-DO-RP-4287).

The limiting significant wave height (H_S) and associated wave period for the Iron Horse were 4.1 ft (1.25-m) and 8.3-seconds.

The limiting significant wave height and associated wave period for the Helix Express were 3.3 ft (1-m) and 5-seconds at a beam sea (90°) wave heading.

Should the sea state present a wave height greater than allowable or a longer wave period, the following alternatives may be considered:

- Orient the vessel so the wave heading is a quartering, following or head sea.
- Apply active heave compensation.
- Utilize an operation weather window in which the significant wave height is 1-m or less and a period of 5-seconds or less.

The required weather sensitive window: Planned duration + 50% contingency.

Task Description	Durations (hours)
Preparations for recovery of manifold	2
Connection of recovery rigging to manifold subsea	2
Lifting of manifold off seabed and through water column	2
Recovery of manifold to deck of SV or IV	2

Required Weather Sensitive Window = 8-hours x 1.5 = 12-hours.

5 Communication

Before and during the recovery operations of the Choke and Kill Manifold on the IV, radio communication shall be established between the IV and the SV. There will be a single point of contact. All operations will be confirmed with DD3 / SIMOPS prior to commencement.

5.1. Installation Vessel Contact Information

Installation Vessel Contacts:				
Vessel	**Radio Freq.**	**Title**	**Phone**	**E-mail**
Helix Express	TBD	Bridge	1-281-971-6655	
		Client Office #1	1-281-971-6665	
		Superintendent	1-281-971-6658	
		Captain	1-281-971-6656	

6 Technical Data

6.1. Choke and Kill Data

Overall Length	12.7863-m (41.95-ft)
Overall Width	5.9436-m (19.5-ft)
Overall Height	4.55676-m (14.95-ft)
Dry Weight (excluding rigging)	30.858-mt (68030.5-lbs)

Manifold Latitude	28° 44′ 17.316″N
Manifold Longitude	88° 21′57.476″W
Depth	5,000-ft

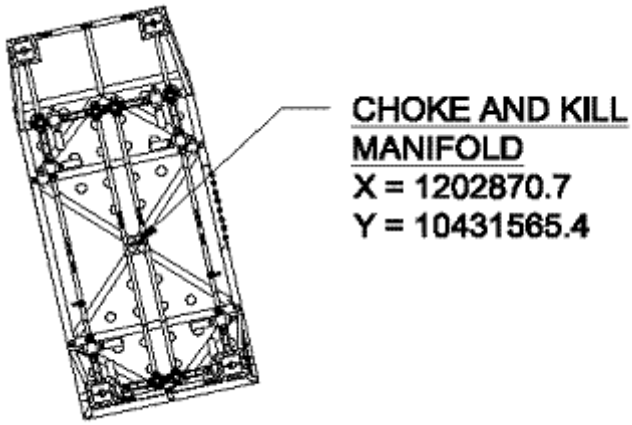


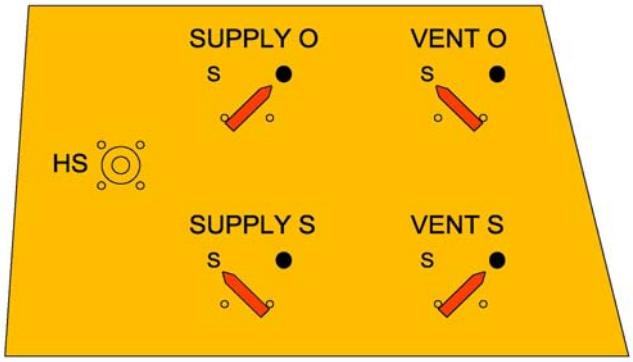
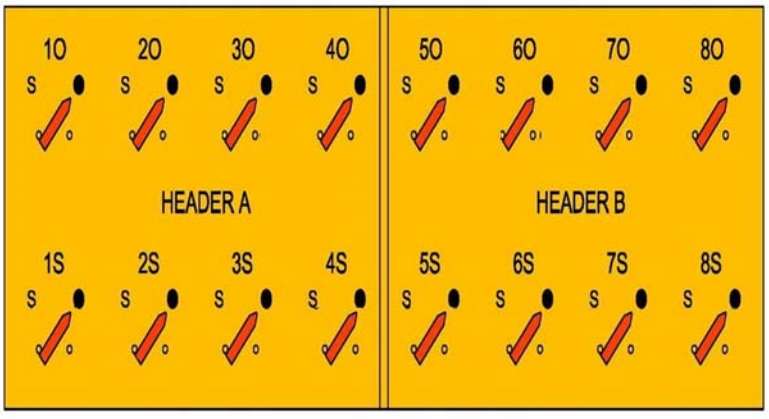
Figure 1: Choke and Kill Manifold

7 Choke and Kill Recovery Task Plan

7.1. Preparation Work

Step	Resp.	Activity	Initial
1.	Sup.	Confirm weather window is available for given operation. The rigging that the manifold was run with will be removed via ROV and new rigging shall have been pre-installed prior to recovery vessel coming on location.	
2.	Sup.	Notify SIMOPS and obtain approval of impending work to be done at MC 252.	
3.	Sup.	Complete all required JSAs and TBTs.	
4.	Sup.	Check all communications are in place between all parties involved (SV, ROV, deck and survey).	
5.	Deck Fmn.	Assemble main crane rigging and connect to main crane. **Note: Rigging to be confirmed before over boarding. See Rigging Arrangements Appendix 3.**	
6.	Deck Fmn.	Clear deck and mark out deck space for the option of recovery to IV deck.	
7.	Sup.	Survey to confirm that location of manifold recovery, SZ, and transit routes are available on survey screen.	

7.2. Panel Configurations

Step	Resp.	Activity	Initial
1.	Sup.	ROV to manually configure Supply Panel Valves on the manifold as shown in the panel diagram below. The valves may be open or shut in any order. 	
2.	Sup.	ROV to manually configure all Function Panel Valves in Table 7-1 as shown below in the panel diagram. The valves may be opened or shut in any order. 	

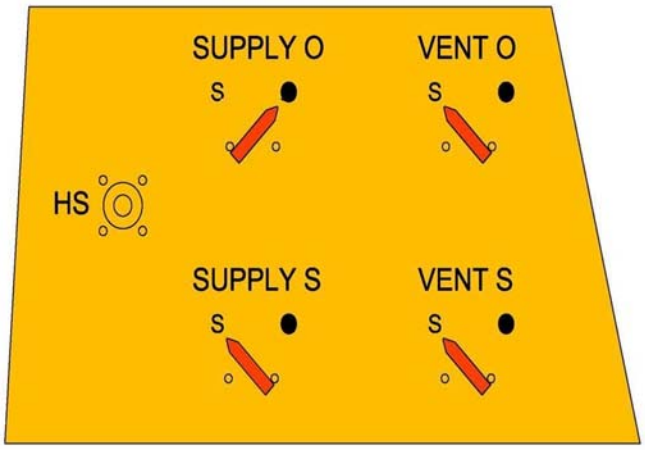
Step	Resp.	Activity	Initial
3.	Sup.	Function valves on the Choke and Kill Manifold to the OPEN position via ROV or accumulator skid with 17H hot stab. All of the OPEN Hydraulic lines should be pressure open (1,500-psi minimum – 3,000-psi maximum). **Note: All of the Cameron manifold gate valves are functioned to the open position to avoid trapped pressure in the piping during recovery.**	
4.	Sup.	The ROV will shift the "Vent S" valve on the panel to SHUT as per panel diagram below. This will hydraulically lock pressure on the tubing to keep all of the 3 1/16 MCK valves in the OPEN position as it is recovered. Supply O is to remain in the OPEN position. This will allow both circuits to balance to ambient as the manifold is raised to the surface while maintaining the manifold header valves in the open position. The spring chamber will act as a pressure compensator. 	
5.	Sup.	ROV to visually confirm all MCK valves in Table 7-2 (physical valve locations per Figure 2) are in the open position. The open position is confirmed by the ROV viewing the tail rod position indicators as shown in Figure 3.	

Table 7-1: Function Panel Valves

Choke and Kill Manifold	HEADER A				HEADER B			
Panel Valve name	1O	2O	3O	4O	5O	6O	7O	8O
Position (O)	o	o	o	o	o	o	o	o
Panel Valve Name	1S	2S	3S	4S	5S	6S	7S	8S
Position (S)	o	o	o	o	o	o	o	o

Table 7-2: Manifold Gate Valves

Choke and Kill Manifold									
Manifold Valve Name		1	2	3	4	5	6	7	8
Position O or C (Open or Closed)		o	o	o	o	o	o	o	o

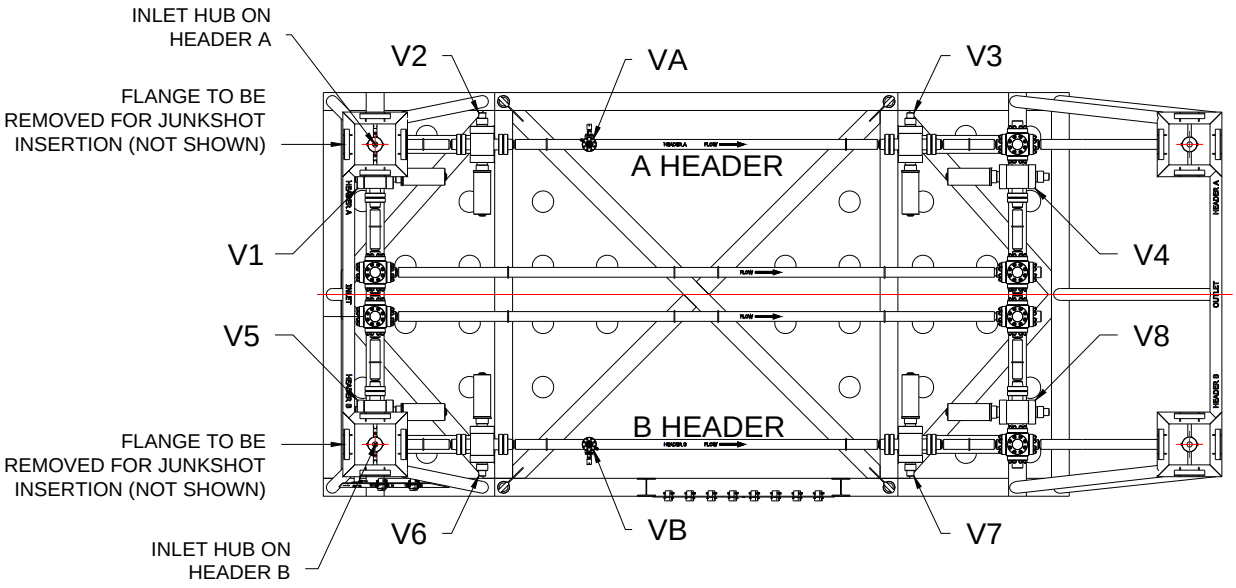


Figure 2: Header Panel

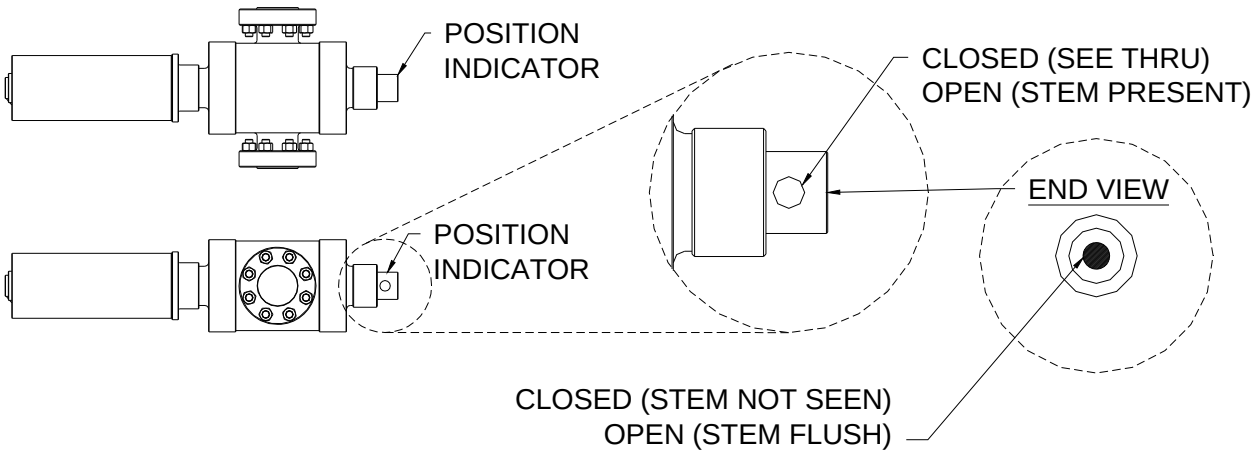


Figure 3: Position Indicators on 3 1/16 MCK Valves

7.3. Subsea Connection and Recovery through Water Column

Step	Resp.	Activity	Initial
1.	Sup.	IV to setup in the field, ready in DPII and deploy ROV's. Confirm manifold has been configured as described in Section 7.2.	
2.	Sup./ Crane Op.	Review rigging requirements for lift. Refer to Rigging Arrangements in Appendix 3. **Note: A portion of the recovery rigging has been pre-installed onto the Choke and Kill Manifold prior to IV arriving in the field.**	
3.	Sup.	Vessel to obtain permission from SIMOPS to enter 500-m zone around MC252 well.	
4.	Sup./ROV	IV to move into manifold recovery location. Deploy ROV (s). **Note: ROV to follow rigging to ensure no entanglement occurs in the crane block rigging while running to depth.**	
5.	Sup/ROV	Once on location, ROV shall complete a survey of the manifold recovery rigging and to verify that the original rigging has been replaced. Replacement rigging with ROV friendly shackles should have been pre-installed prior to the IV arranging in the field. Refer to Appendix 3 for Rigging Arrangements.	
6.	Sup./ Crane Op.	Position crane hook with rigging over manifold.	
7.	Sup./ Crane Op.	AHC to be engaged and used at the discretion of the superintendent.	
8.	Sup./ROV	ROV to fly 10-ft grommet to ROV hook on main crane rigging and engage.	
9.	Sup./ROV/ Crane Op.	Crane is lifted slightly to remove excess slack in the rigging so that the ROV can complete a visual inspection of all connections before proceeding with lifting operations. **Note: ROV to confirm no entanglement of lift rigging.**	

Step	Resp.	Activity	Initial
10.	Sup./ROV/ Crane Op.	Manifold to be slowly lifted clear of the seabed and held at approximately 3-m (10-ft) above subsea architecture. **Note:** • **Manifold weighs 68,030-lbs and is within the capacity of the 150-Te forward crane for recovery and back-loading on supply vessel.** • **Both ROVs to monitor manifold during lift off if possible.** • **Monitor hook load during lift off of the mud.** • **De-activate active heave compensation, as required to break suction. Crane operator to monitor load and speed so that the crane hook does not exceed 1.1 * wet weight of manifold. If suction needs to be broken, hold tension in the crane wire until manifold is free. Larger suction loads, if necessary will be managed by management of change (MOC).**	
11.	ROV	Once manifold is free from seabed, ROV to inspect manifold to ensure there are no connected objects and that manifold is clear.	
12.	Sup./ROV/ Crane Op.	Continue to lift manifold to 30-m (100-ft) above seabed and stop.	
13.	Sup.	IV to reposition in SZ, while ROV monitors manifold during transit. **Note: Transit speed to be at the discretion of the superintendent.**	
14.	Sup.	IV to stop move once in SZ.	
15.	Sup./ROV/ Crane Op.	Main crane to continue lifting manifold to surface. **Note:** • **De-activate AHC, as required. Crane operator to monitor load and speed so that the crane hook does not see less than the wet weight of the manifold.** • **ROV to monitor manifold to surface.**	
16.	Sup.	SV to be advised to standby for back-loading. **Note: Re-confirm communications with SV.**	
17.	Sup./ Crane Op.	Main crane to raise the manifold through the splash zone, while monitoring crane hook load. **Note:** • **Recommended lifting speed through splash zone is approximately 0.25-m/s or less.** • **If SV is used, Main crane to hold manifold clear of SV bulwark.**	

8 Recovery to Deck

8.1. Recovery to Supply Vessel Deck

Step	Resp.	Activity	Initial
1.	Sup.	SV to be directed to move into position on starboard side of IV. **Note:** • **SV positioned at the discretion of the superintendent.** • **SV to DP into IV and maintain required offset.** • **Riggers are not to position themselves under the load at any time.**	
2.	Deck Fmn	Manifold to be brought alongside Express sponson. Tag lines will be attached to corners via boat hooks.	
3.	Sup./Deck Foreman	Thoroughly wash the Manifold clear of all mud and marine debris using seawater hose while alongside the sponson.	
4.	Sup./Crane Op.	Monitor SV and IV wave motions, choose correct moment to lower manifold and continue lowering until entire load is on SV.	
5.	Sup./ Deck Fmn.	Main crane to lower manifold towards deck of SV. **Note:** • **Rigging foreman on SV to direct recovery of the manifold.** • **Riggers to utilize taglines as necessary.**	
6.	Sup./ Deck Fmn.	Riggers to disconnect slings when load is fully on SV. **Note: If rigging can not be disconnected, it will have to be lowered onto the SV and disconnected at the hook.**	
7.	. Sup.	SV to move away from IV for sea fastening. **Note: SV position to be at the direction of the superintendent.**	
8.	Sup.	Recovery Complete.	

8.2. Record Sheet and Punch List

Assembly Description: _____

Manifold Cameron Part Number:

Performed by: _____

Manifold Recovery Date _____

Manifold Post-Recovery Requirements		Witness Sign-Off (If Applicable)	
		Cameron	VPIC/APIC
	Vent off Hydraulic supply to all valves by Opening "Vent S" Panel valve? **WARNING: Trapped Pressure behind closed valve. JSA should address this risk.**		
	Verify all valves are in closed position via tail rod indicators?		
	Sea fastening installed?		
	Dummy hot stabs installed in appropriate receptacles?		
	Excess mud and debris hosed from structure?		
	Mark up schematic with as recovered valve positions and any issues that decontamination and storage personnel should be made aware of. Submit this document to IMT upon completion of offshore assignment.		
	Document as recovered manifold with photographs of all components. Multiple photographs of any damaged components, any visible oiled sections of the structure, and all structural issues.		
	Record as left valve positions in the panel tables below.		

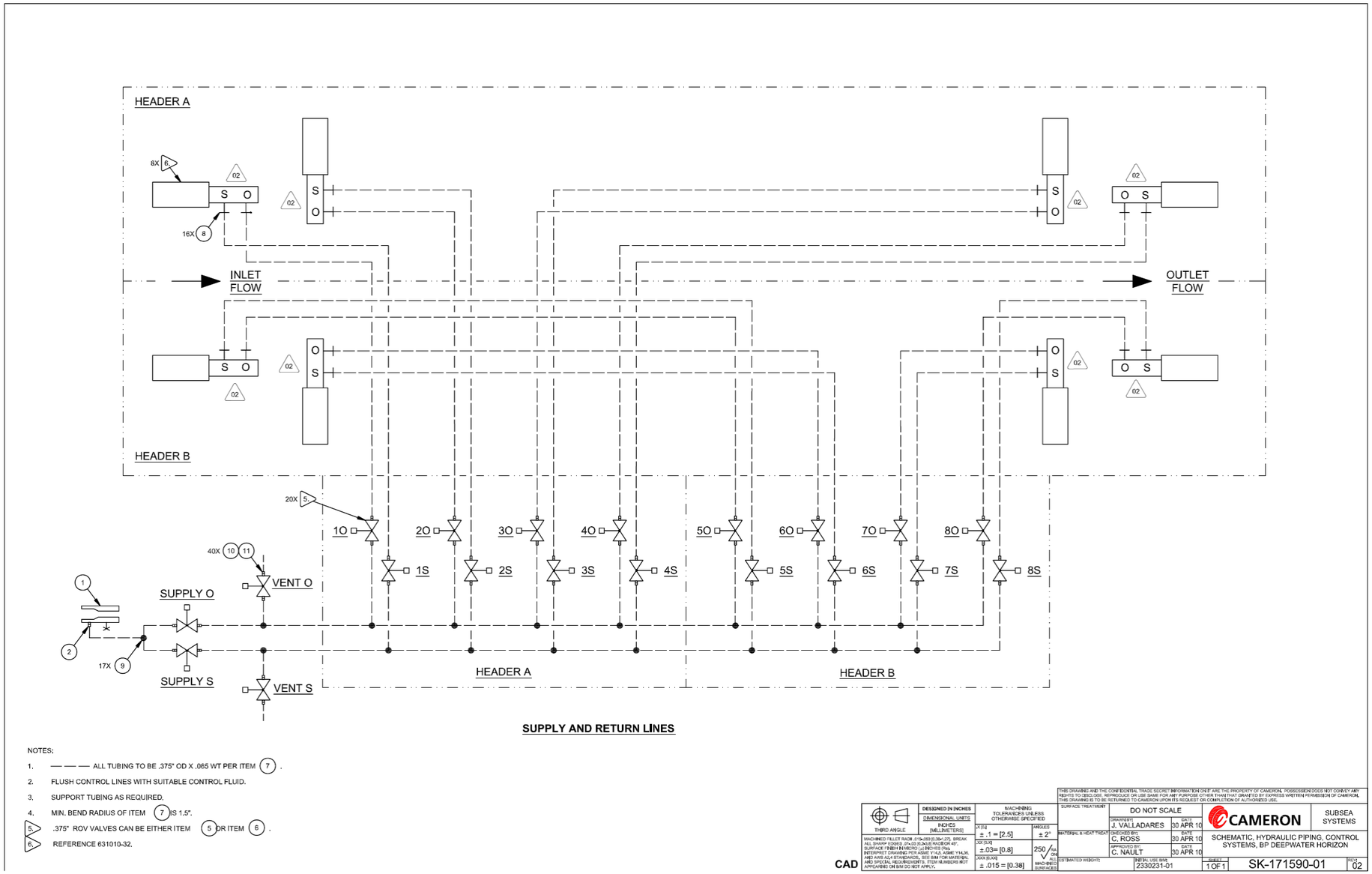
Choke and Kill Manifold									
Panel Valve Name	SUPPLY	1	2	3	4	5	6	7	8
Position O or C (Open or Closed)									

Choke and Kill Manifold	HEADER A				HEADER B			
Panel Valve name	1O	2O	3O	4O	5O	6O	7O	8O
Position (O)								
Panel Valve Name	1S	2S	3S	4S	5S	6S	7S	8S
Position (S)								

Junk Shot Injection Manifold	SUPPLY O	VENT O
Position (O/S)		
Panel Valve Name	SUPPLY S	VENT S
Position (O/S)		

Comments:

Appendix 1: Choke and Kill Subsea P&ID



SUPPLY AND RETURN LINES

NOTES:

1. — — — ALL TUBING TO BE .375" OD X .065 WT PER ITEM (7).
2. FLUSH CONTROL LINES WITH SUITABLE CONTROL FLUID.
3. SUPPORT TUBING AS REQUIRED.
4. MIN. BEND RADIUS OF ITEM (7) IS 1.5".
5. .375" ROV VALVES CAN BE EITHER ITEM (5) OR ITEM (6).
6. REFERENCE 631010-32.

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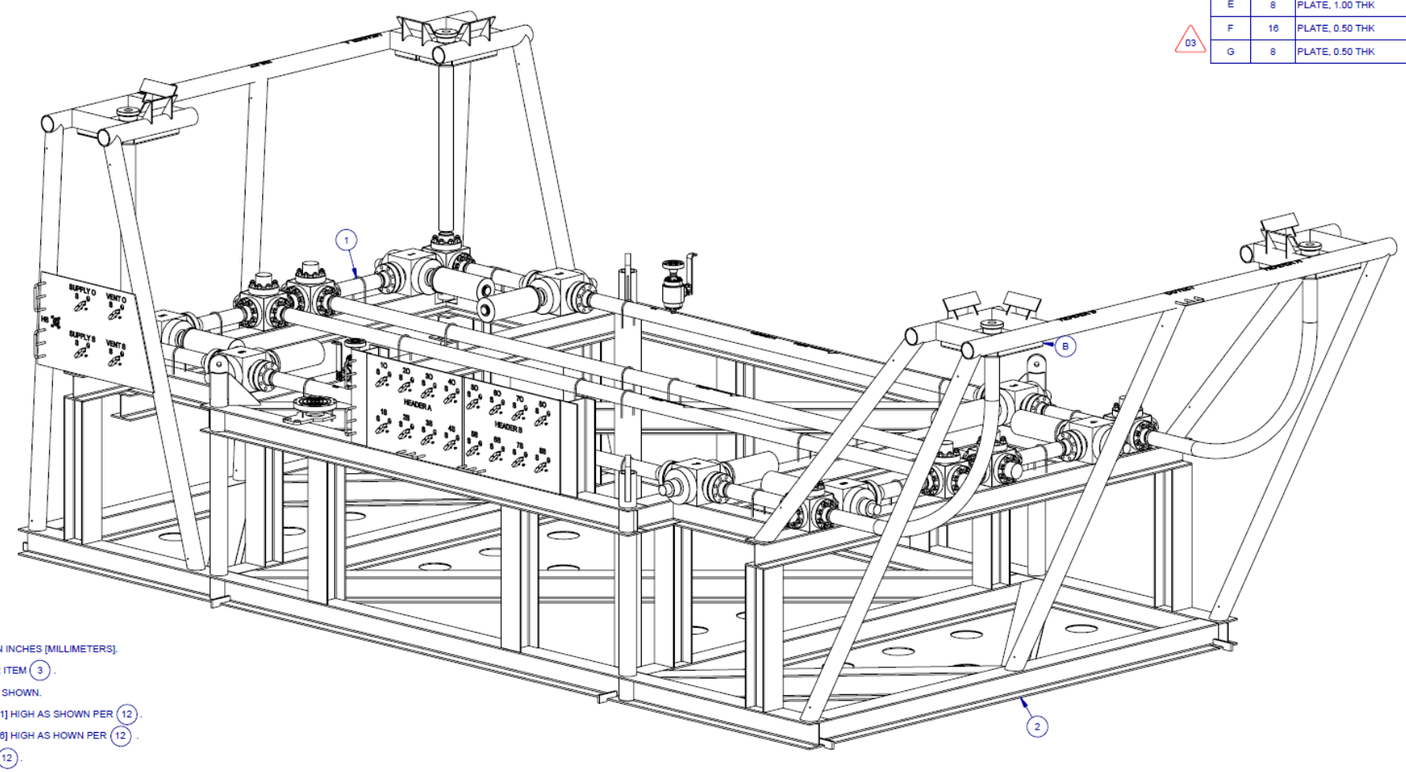
CAD

THIRD ANGLE	DESIGNED IN INCHES; DIMENSIONAL UNITS INCHES [MILLIMETERS]	MACHINING TOLERANCES UNLESS OTHERWISE SPECIFIED: XX [0] ± .1 = [2.5]; XXX [0.0] ± .03= [0.8]; XXXX [0.00] ± .015 = [0.38]; ANGLES ± 2°; 250 µin ALL MACHINED SURFACES	SURFACE TREATMENT: DO NOT SCALE	CAMERON — SUBSEA SYSTEMS
MACHINED FILLET RADII .01"–.050 [0.25–1.27], BREAK ALL SHARP EDGES .01"–.03 [0.3–0.8] RADIUS OR 45°. SURFACE FINISH IN MICRO µin INCHES (RA). INTERPRET DRAWING PER ASME Y14.5, ASME Y14.36, AND AWS A2.4 STANDARDS. SEE BOM FOR MATERIAL AND SPECIAL REQUIREMENTS. ITEM NUMBERS NOT APPEARING ON BOM DO NOT APPLY.			MATERIAL & HEAT TREAT: ESTIMATED WEIGHTS:	DRAWN BY: J. VALLADARES — DATE: 30 APR 10 CHECKED BY: C. ROSS — DATE: 30 APR 10 APPROVED BY: C. NAULT — DATE: 30 APR 10 FINAL USE BOM: 2330231-01 — SHEET: 1 OF 1 — SCHEMATIC, HYDRAULIC PIPING, CONTROL SYSTEMS, BP DEEPWATER HORIZON SK-171590-01 — REV: 02

Appendix 2: Assembly Drawings

ITEM	QTY	DESCRIPTION		MAT'L
A	20	U-BOLT	(SHT 3)	ASTM A193 GRADE B7
B	8	ITEMS C, D, F & G	(SHT 6)	(14)
C	8	PLATE, 0.50 THK	(SHT 6)	(14)
D	16	PLATE, 0.50 THK	(SHT 6)	(14)
E	8	PLATE, 1.00 THK	(SHT 7)	(14)
F	16	PLATE, 0.50 THK	(SHT 6)	(14)
G	8	PLATE, 0.50 THK	(SHT 6)	(14)

03



NOTES:

1. ALL DIMENSIONS ARE IN INCHES [MILLIMETERS].
2. HYDRAULIC PIPING PER ITEM (3).
3. CENTER LETTERING AS SHOWN.
4. LETTERING TO BE 2.0 [51] HIGH AS SHOWN PER (12).
5. LETTERING TO BE 3.0 [76] HIGH AS HOWN PER (12).
6. PAINT AS SHOWN PER (12).
7. MATCH DRILL Ø 0.53 [13.5] THRU 2 PLACES.
8. TORQUE U-BOLT NUTS TO 50 FT-LBS UNLESS OTHERWISE SPECIFIED.
9. TORQUE U-BOLT NUTS TO 100 FT-LBS.
10. ITEM (11) NOT SHOWN.
11. ALL WELDS TO BE INSPECTED BY QP-000391-01.
12. ALL JOINTS TO BE SEAL WELDED PER ITEM (15).
13. REMOVE ALL WELD SLAG AND SPLATTER.
14. DRILL Ø0.50 [25.4] HOLES TO TOP AND BOTTOM OF ALL STRUCTURAL TUBULAR MEMBERS.
15. WELDING TO BARGE DECK FOR SEA FASTENING.
16. ALL ROV GRAB HANDLES TO BE 0.25 [6.4] ALL AROUND FILLET WELD PER (15).

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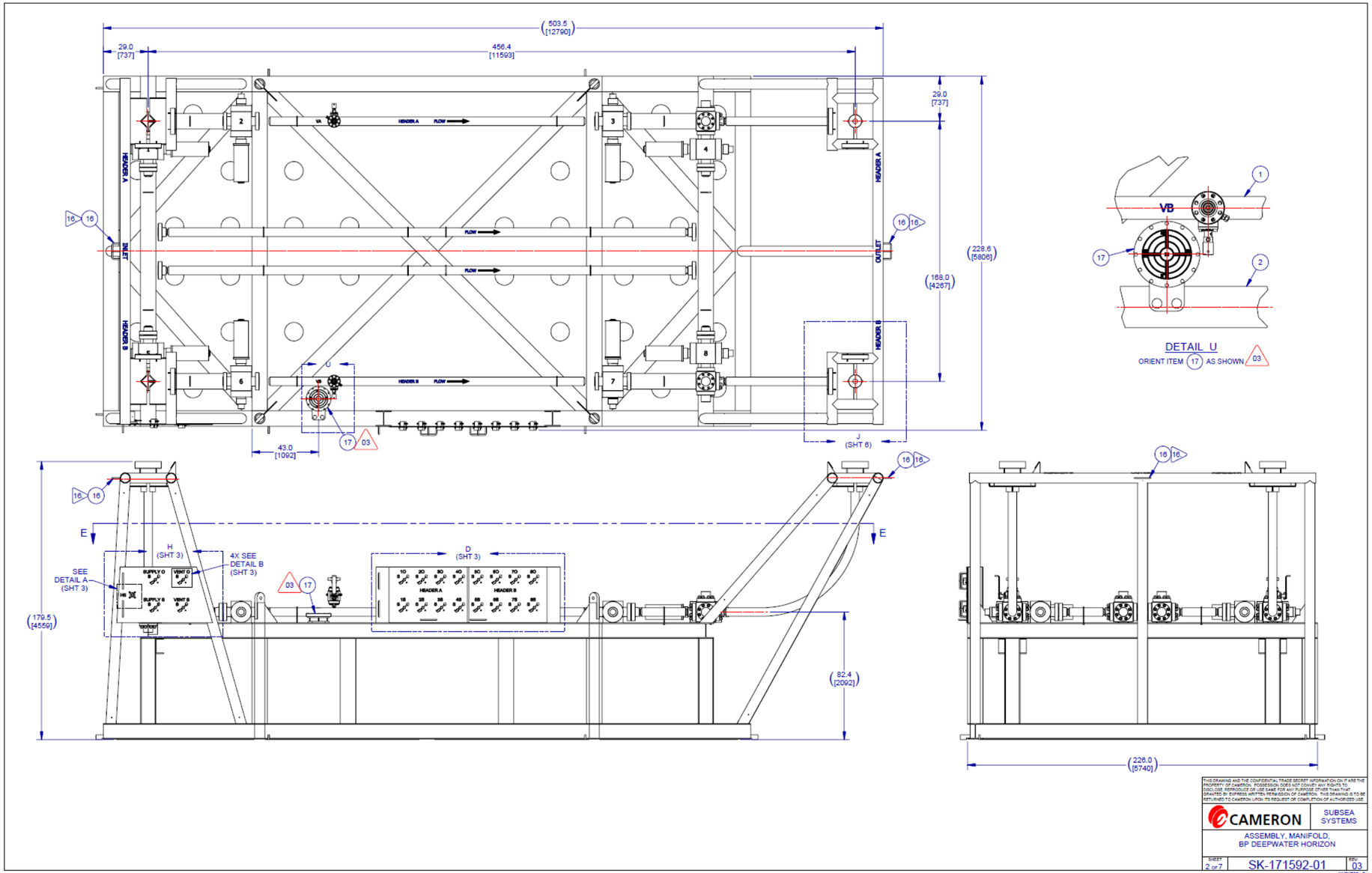
DESIGNED IN INCHES
DIMENSIONAL UNITS
INCHES [MILLIMETERS]
THIRD ANGLE
MACHINING TOLERANCES UNLESS OTHERWISE SPECIFIED
X [0.] ± = [ ]
XX [0.X] ± = [ ]
XXX [0.XX] ± = [ ]
ANGLES ± °
MACHINED SURFACES
MACHINED FILLET RADII: 0.05-.060 [0.34-1.27]. BREAK ALL SHARP EDGES .01-.03 [0.3-0.8] RADII OR 45°.
SURFACE FINISH IN MICRO (µ) INCHES (Rа) INTERPRET DRAWING PER ASME Y14.5. ASME Y14.36. ISO 1302 FOR SURFACE FINISH SYMBOLOGY UNLESS NOTED AND SPECIAL REQUIREMENTS. ITEM NUMBERS NOT APPEARING ON B/M DO NOT APPLY.

SURFACE TREATMENT
MATERIAL & HEAT TREAT
DO NOT SCALE
DRAWN BY: J. VALLADARES DATE 1 May 10
CHECKED BY: J. WILHELMI DATE 2 May 10
APPROVED BY: C. NAULT DATE 2 May 10
ESTIMATED WEIGHT: 60630.1 LBS [27508.1 KG]
INITIAL USE B/M: 2330234-01

CAMERON
SUBSEA SYSTEMS
ASSEMBLY, MANIFOLD, BP DEEPWATER HORIZON
SHEET 1 of 7
SK-171592-01
REV 03
INVENTOR - D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29.0 [737]
456.4 [11593]
29.0 [737]
228.6 [5806]
168.0 [4267]
HEADER A
HEADER B
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OUTLET
FLOW
43.0 [1092]
J (SHT 6)
DETAIL U
ORIENT ITEM 17 AS SHOWN 03
VB
H (SHT 3)
4X SEE DETAIL B (SHT 3)
SEE DETAIL A (SHT 3)
D (SHT 3)
179.5 [4559]
82.4 [2092]
226.0 [5740]
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ASSEMBLY, MANIFOLD, BP DEEPWATER HORIZON
SHEET 2 of 7
SK-171592-01
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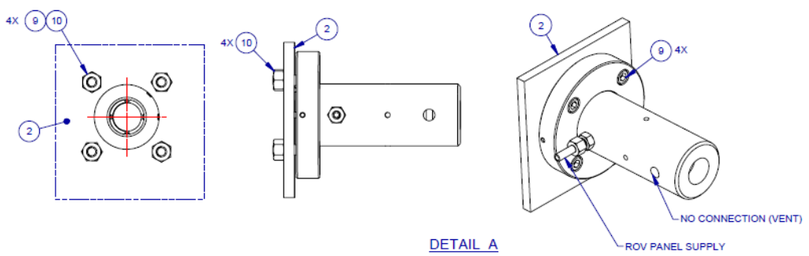
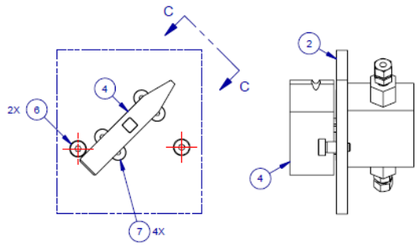


DETAIL A



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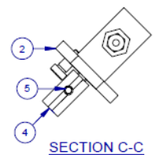

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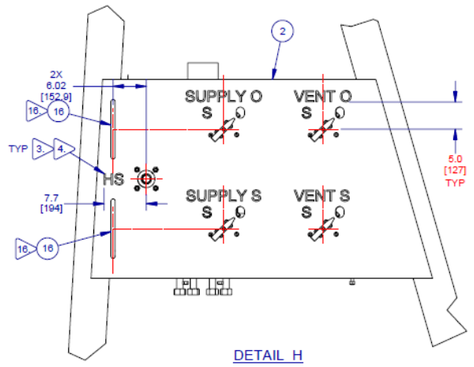

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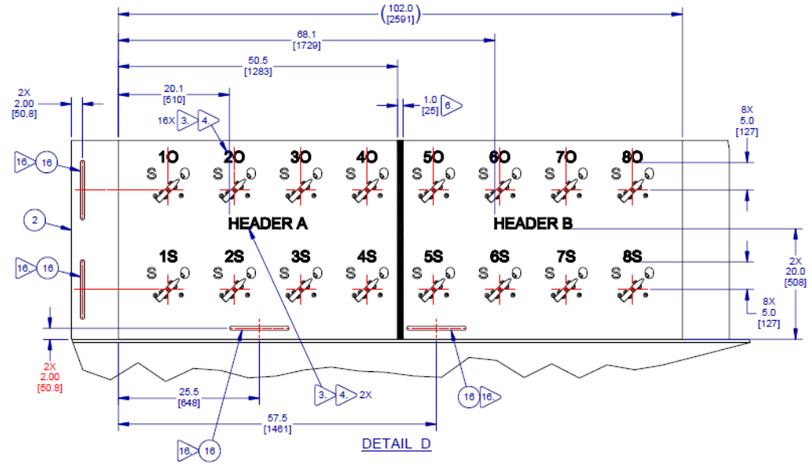

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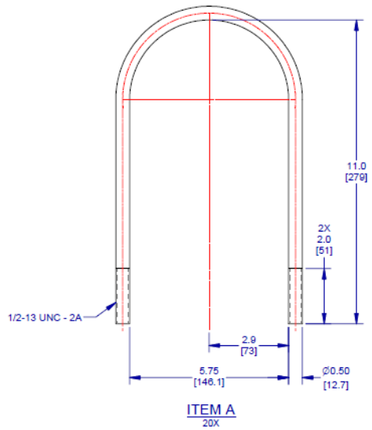

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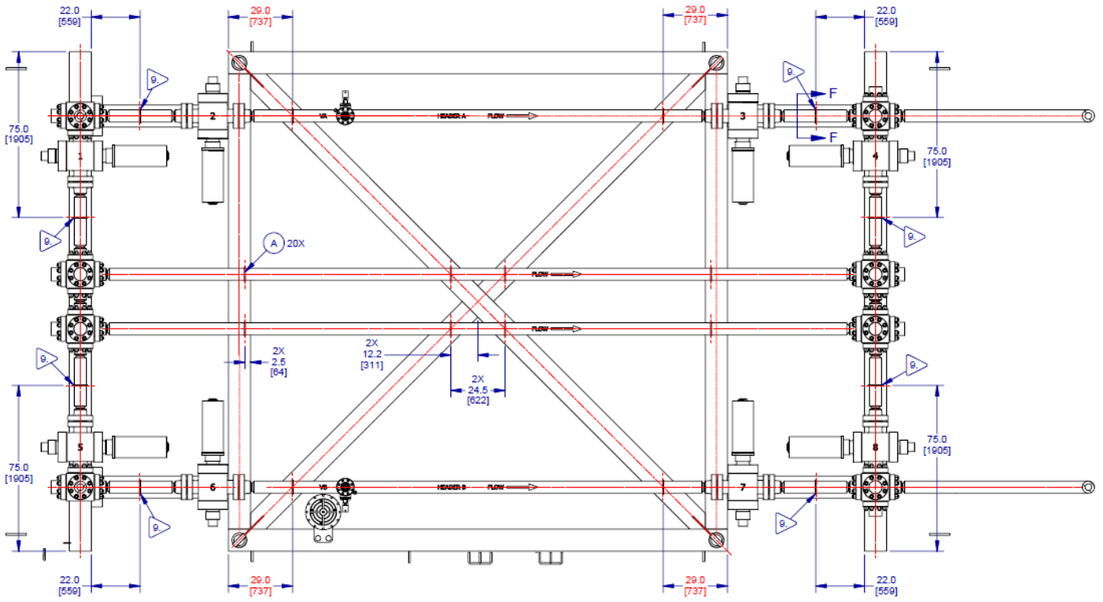
SHEET 3 of 7 | SK-171592-01 | REV D3



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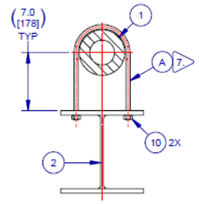
SOME MEMBERS NOT SHOWN FOR CLARITY



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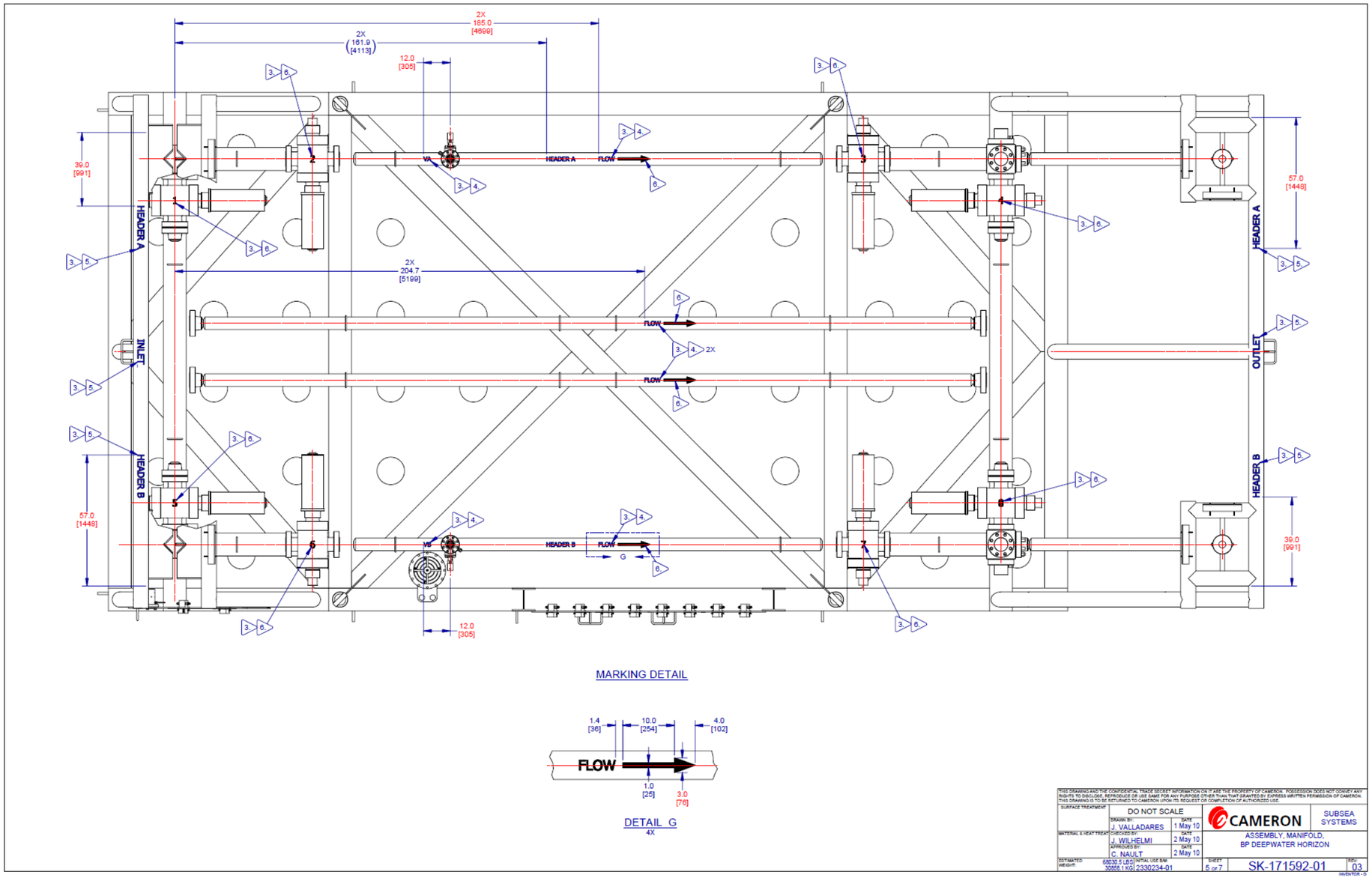
2X
185.0
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2X
(161.9)
[4113]
12.0
[305]
39.0
[991]
HEADER A
INLET
2X
204.7
[5199]
FLOW
2X
HEADER A
OUTLET
57.0
[1448]
HEADER B
57.0
[1448]
HEADER B
39.0
[991]
12.0
[305]
HEADER B
FLOW
G
MARKING DETAIL
1.4
[36]
10.0
[254]
4.0
[102]
FLOW
1.0
[25]
3.0
[76]
DETAIL G
4X
DO NOT SCALE
DRAWN BY: J. VALLADARES 1 May 10
CHECKED BY: J. WILHELMI 2 May 10
APPROVED BY: C. NAULT 2 May 10
CAMERON
SUBSEA SYSTEMS
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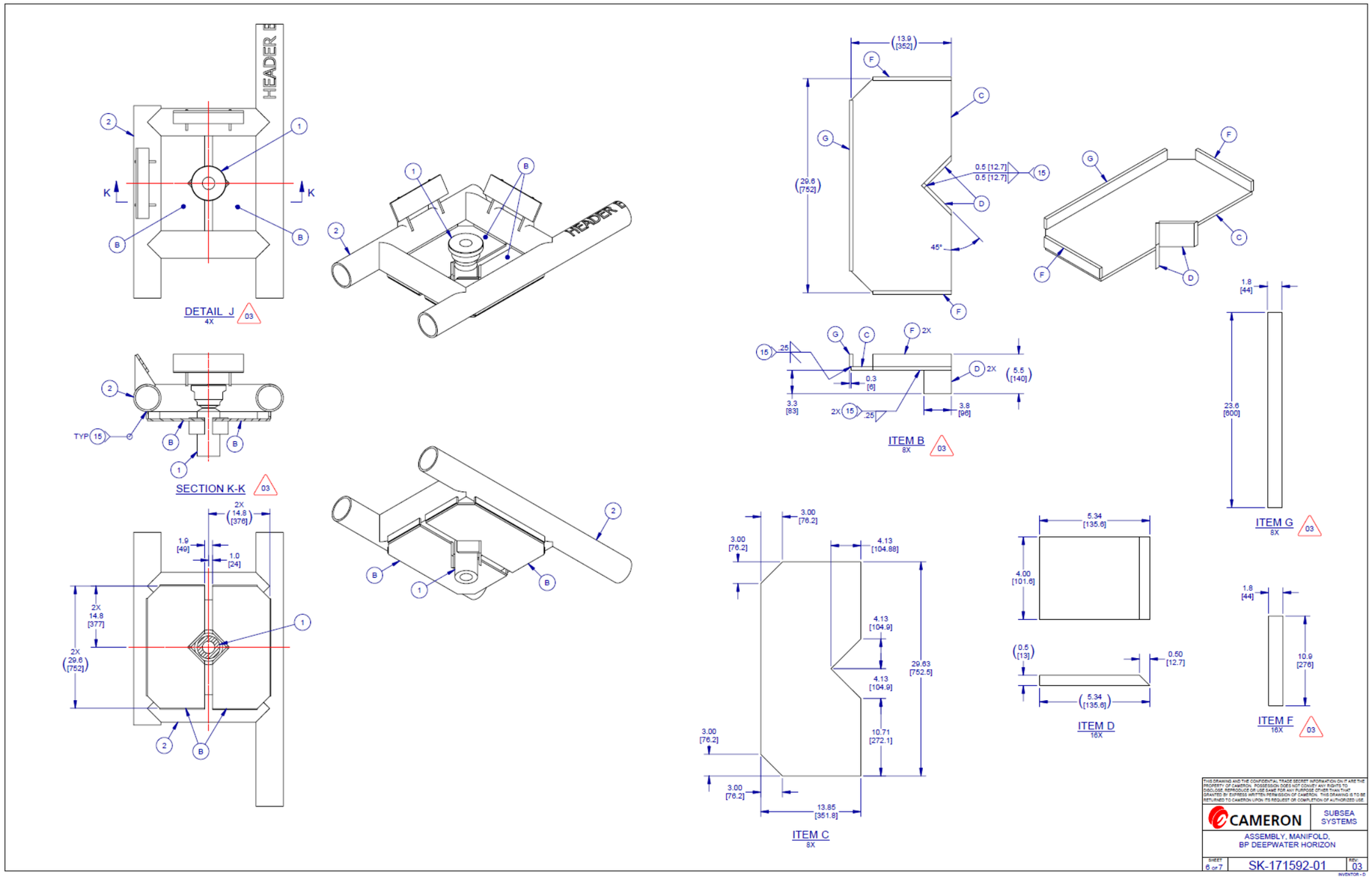
SHEET 5 of 7
SK-171592-01
REV. 03
INITIAL USE S/M 2330234-01


HEADER E
HEADER B
DETAIL J
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03
SECTION K-K
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(13.9)
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(29.6)
[752]
0.5 [12.7]
0.5 [12.7]
45°
ITEM B
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03
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0.3
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3.3
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2X
3.8
[96]
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1.8
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23.6
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4.13
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ITEM D
16X
10.9
[276]
ITEM F
16X
CAMERON
SUBSEA SYSTEMS
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SK-171592-01
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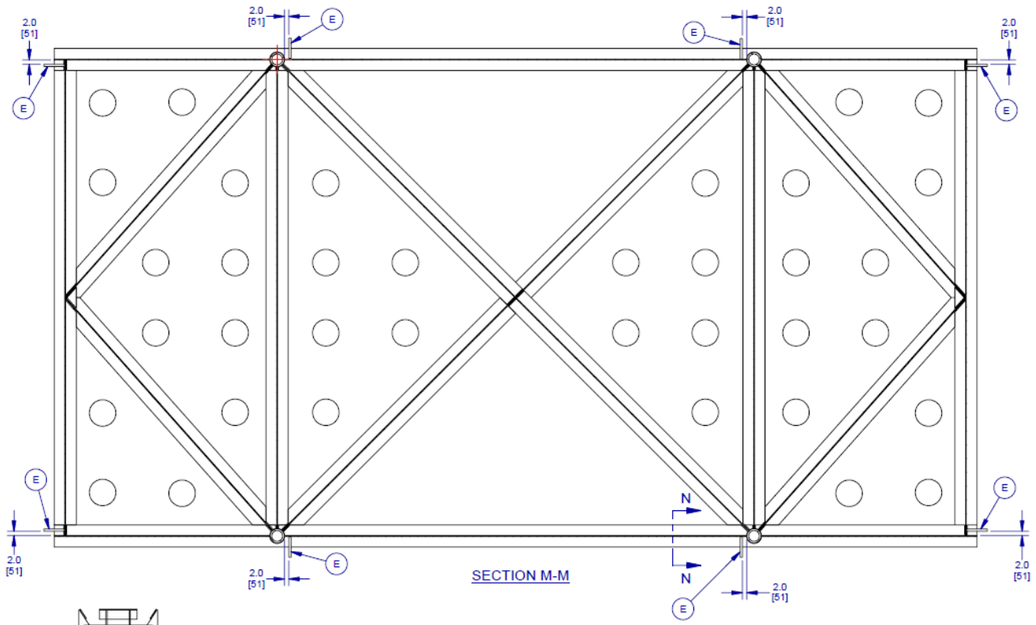
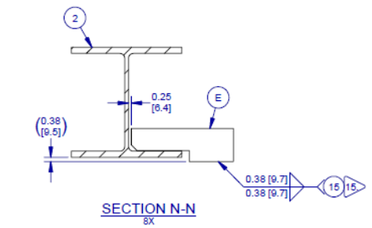
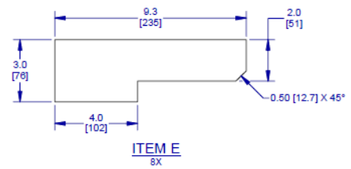
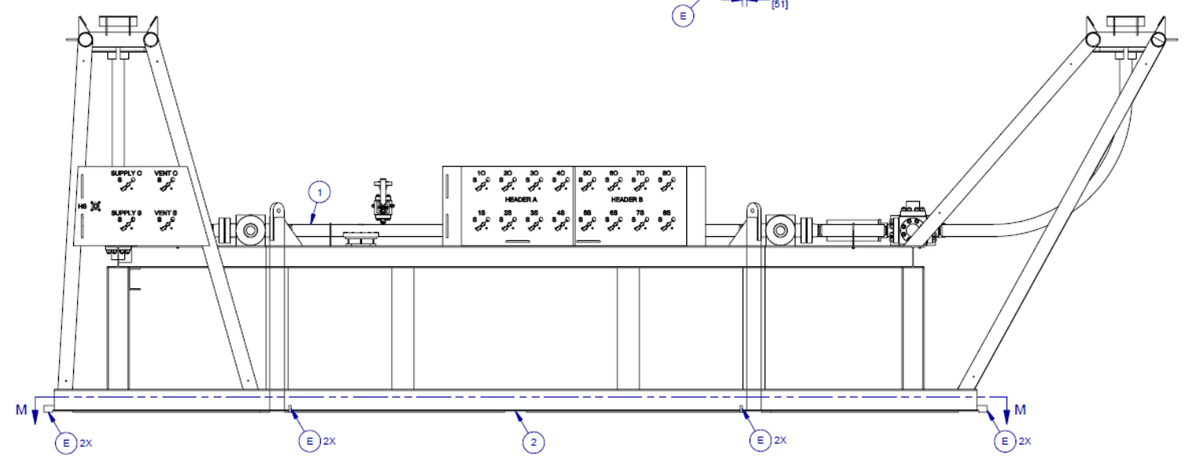
03









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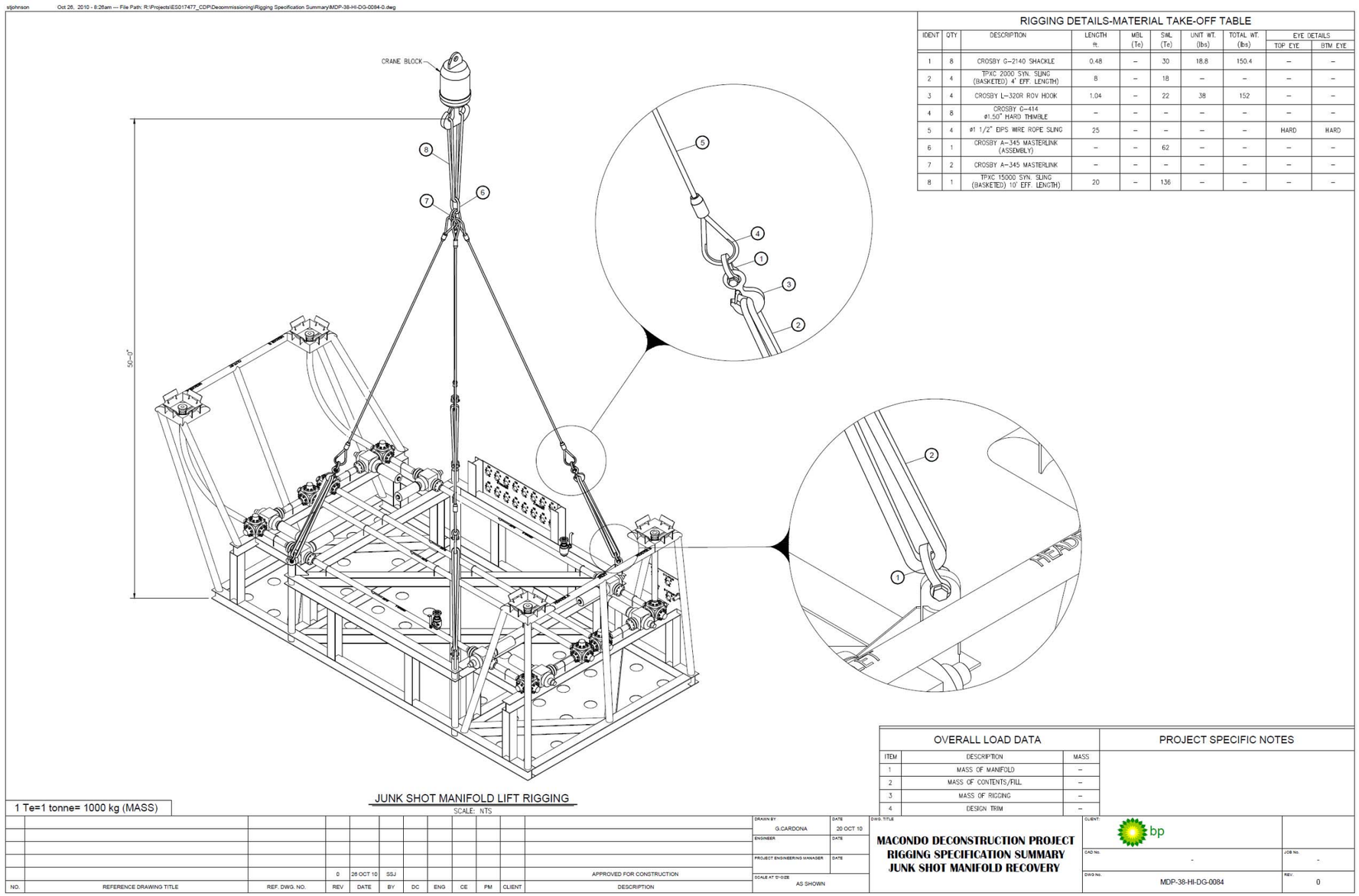
BP DEEPWATER HORIZON

SK-171592-01 | 03

Appendix 3: Rigging Arrangements



RIGGING DETAILS-MATERIAL TAKE-OFF TABLE

IDENT	QTY	DESCRIPTION	LENGTH ft.	MBL (Te)	SWL (Te)	UNIT WT. (lbs)	TOTAL WT. (lbs)	EYE DETAILS	
								TOP EYE	BTM EYE
1	8	CROSBY G-2140 SHACKLE	0.48	–	30	18.8	150.4	–	–
2	4	TPXC 2000 SYN. SLING (BASKETED) 4' EFF. LENGTH)	8	–	18	–	–	–	–
3	4	CROSBY L-320R ROV HOOK	1.04	–	22	38	152	–	–
4	8	CROSBY C-414 ø1.50" HARD THIMBLE	–	–	–	–	–	–	–
5	4	ø1 1/2" EIPS WIRE ROPE SLING	25	–	–	–	–	HARD	HARD
6	1	CROSBY A-345 MASTERLINK (ASSEMBLY)	–	–	62	–	–	–	–
7	2	CROSBY A-345 MASTERLINK	–	–	–	–	–	–	–
8	1	TPXC 15000 SYN. SLING (BASKETED) 10' EFF. LENGTH)	20	–	136	–	–	–	–

OVERALL LOAD DATA		
ITEM	DESCRIPTION	MASS
1	MASS OF MANIFOLD	–
2	MASS OF CONTENTS/FILL	–
3	MASS OF RIGGING	–
4	DESIGN TRIM	–

PROJECT SPECIFIC NOTES

NO.	REFERENCE DRAWING TITLE	REF. DWG. NO.	REV	DATE	BY	DC	ENG	CE	PM	CLIENT	DESCRIPTION
			0	26 OCT 10	SSJ						APPROVED FOR CONSTRUCTION

DRAWN BY: G.CARDONA DATE: 20 OCT 10
ENGINEER DATE
PROJECT ENGINEERING MANAGER DATE
SCALE AT D-SIZE: AS SHOWN

DWG. TITLE: MACONDO DECONSTRUCTION PROJECT
RIGGING SPECIFICATION SUMMARY
JUNK SHOT MANIFOLD RECOVERY

CLIENT: bp
CAD No.: -
JOB No.: -
DWG No.: MDP-38-HI-DG-0084
REV.: 0

Appendix 4: HAZID Findings and Recommendations

Step No.	Key Step	Threat / Hazard Scenario	Causes / Consequences	Safeguards	Actions / Mitigation Measures	Assigned Individual	Dates	Comments
4741 Choke and Kill Manifold Recovery Procedure								
1.0	**Introduction**			Note: the manifold has been purged and all jumpers have been removed. The work will be done under the MC 252 SIMOPS plan.				
2.0	**Acronyms and Definitions**							
3.0	**Weather**			Installation/recovery analysis will confirm the weather criteria is adequate for the dynamic load when coming through the splash zone.				
4.0	**Communication**							
5.0	**Technical Data**							
6.0	**Choke and Kill Manifold Recovery Plan**			New certified rigging is being ordered.	Determine the stack up height of rigging and manifold to confirm the adequacy of the crane reach.	Ron Berger		Rigging is 50' well within height of Express crane. See Appendix 3 "Rigging Arrangement".
		Trapped pressure	The manifold control will have pressure. Potential for injury as pressure is released.	Valve matrix will be used.				
7.0	**Recovery to Deck**				Determine the most effective way to handle any trapped pressure in the manifold as it is recovered to the deck. Include the details in the procedure.	Ron Berger		Addressed in 7.2 "Panel Configuration" steps 1-5 and section 8.2 "Manifold Post Recovery Requirements"