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Mr. Doug Halkett
Transocean Sedco Forex
4 Greenway Plaza
Houston Texas, 77046

April 26, 2001

Subject: Deepwater Horizon

Reference: Acceptance of Well Control Equipment

Dear Mr. Halkett:

Enclosed is the report from our recent assessment of the well control equipment on the Deepwater Horizon. Thank you for allowing WEST Hou, Inc. the opportunity to perform the well control equipment acceptance testing.

The cooperation received from the personnel aboard the Deepwater Horizon was most appreciated. Special thanks go to the subsea engineers. Their assistance allowed the testing and assessment to progress smoothly.

Executive Summary:

The primary purpose of this assessment was to review known equipment and system anomalies that have caused problems on other rigs and to offer guidance for correction of these issues on the Deepwater Horizon. With the implementation of the recommendations included in this report and the completion of the Cameron punch list items, known anomalies should be addressed and the rig should have a good probability of high reliability in the BOP and associated systems.

While conducting this assessment, WEST has made comments and recommendations to assist in improving well control equipment operations, improving safety and increasing equipment reliability. In conformance with API and ISO recommendations, WEST will follow up these recommendations to ensure their satisfactory resolution. To expedite this process, WEST has included Section 2 in this report.

Should you have any comments on the contents of this report, please do not hesitate to contact us at WEST Hou, Inc. It has been a pleasure to serve TSF. Your faith in our service is most appreciated.

Best Regards,

Gary Eastveld

cc: M. Montgomery – WEST

WEST Report # 1040

7691
Exhibit No. _____
Worldwide Court Reporters, Inc.

Section 1: Project Summary

Operator:	BP
Rig:	Deepwater Horizon
Contractor:	TSF
Location:	Korea
Dates of Assessment:	12 March –25 March 2001
Length of Assessment:	14 days
WEST Representative:	Gary Eastveld
WEST In-House Technical Review:	Greg Childs
WEST Quality Review:	Steve Carroll

Operator Personnel

Rig Supervisors:	Don Weisinger

Contractor Personnel

Rig Manager:	Kevin Wink and John Keeton, new rig manager
Rig Superintendent:	Van Williams
Toolpusher:	Steve Cross and Tad Jones
Subsea Superintendent:	Mike Rogers
Subsea Engineers:	Al Cotton and Steve Donahue, new startup team

Comments

The objective of this assessment was to check equipment on the rig against anomalies found on other rigs to verify the equipment had proper updates to eliminate the problems or that a different manufacturer was used with equipment with no known problems. The main work to accomplish when WEST departed the rig was change out the Vetco wellhead connector to a Cameron wellhead connector, and re-pipe the deadman circuit to include only closing the shear rams and locking the ST locks. There should be ample time to accomplish these tasks, as the rig will be coming to the GOM.

Section 2: Recommendation Summary and Disposition

Purpose:

To comply with API and maximize the value of the WEST assessment, all recommendations must be closed. Accordingly, all recommendations made as a result of this assessment have been collated in this section with attendant priorities as defined below. The definitions used for each category of priorities are as follows:

Category I: Failure to implement this recommendation may lead to loss of wellbore integrity, injury or loss of life.

Category II: Failure to implement this recommendation may compromise the drilling operation and/or leave the rig out of compliance with local regulatory requirements, API, manufacturer's recommendations, the use of OEM parts, the operator's policies or the contractor's policies.

Category III: These recommendations meet neither of the first categories but should receive attention in the interest of good operating practice.

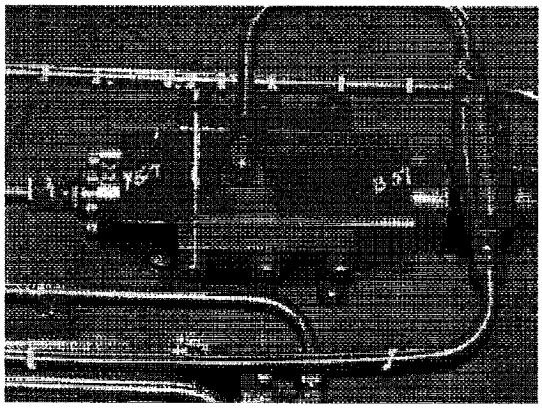
Please note:

If there were no recommendations for a particular category, that category will not be listed under that section in the Recommendation Summary and Disposition form.

Action Required:

WEST is planning to work with TSF so that satisfactory resolution of these recommendations occurs.

Category II:

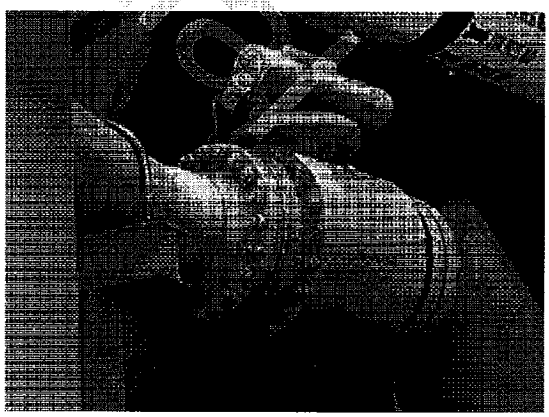


1. The "deadman" circuit should be modified to only close the shear rams and lock the ST locks. This will reduce clutter on the stack, eliminate many unnecessary valves making the circuit more reliable and reduce leak paths. The existing circuit for the deadman also utilizes the Cameron unbalanced shuttle valves that have had problems in the past, as shown at the photo to the right. These will be eliminated with the deadman circuit modifications.

2. As part of the deadman circuit modifications, the accumulator bottles not needed should be plumbed in to give the hot line additional volume. This will help to eliminate the high flow rates in the 1" valves when pressure drops while the hot line is in use. This is on the Cameron punch list, which TSF will pursue with Cameron using different spring tensions to try to improve the interflow during valve shifting.

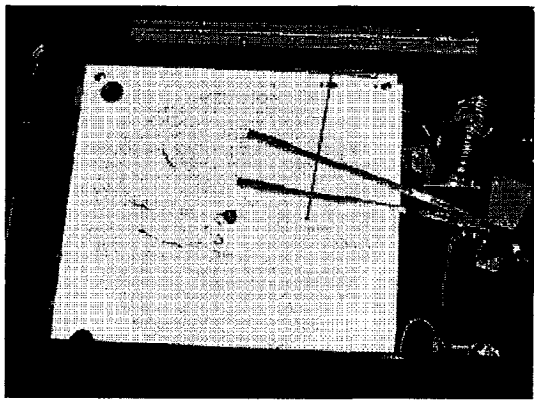
3. All leaking packer seals should be replaced and repair kits should be installed in all pod valves and regulators. This is on the punch list to be done on the rig move when parts arrive. The output of the mixing system should be increased to keep up with the pumps.

4. All bonnet and flange ring grooves should be checked by Cameron and new ring gaskets should be installed. These should be torqued to proper specifications and should then be retorqued after pressure testing. The ring grooves checked were within the proper tolerances. As a result, this leaves only a bad ring gasket or improper torque as a reason for leaks.



5. The port overboard ball valve leaked and two repair kits were ordered. This should be repaired promptly to be certain no other parts are required to fix the leak (for example, if the ball was damaged, this is not part of the repair kit).

6. A spare chart recorder should be obtained so the one on the unit can be sent in for repair and calibration. The low pressure pen and high pressure pen could not be used together due to interference when a long enough pen was put on the low pressure arm to get it to contact the chart, see the photo to the right. The gauges were also in need of calibration.



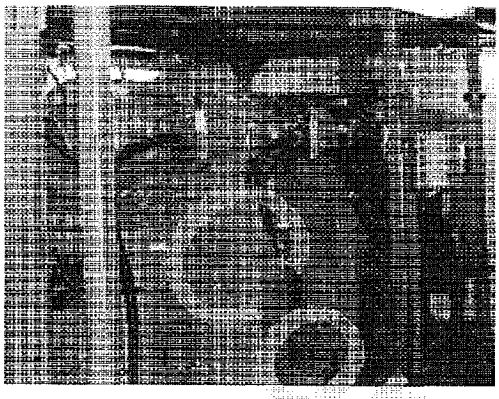
7. No preventative maintenance (PM) program was in place. Documentation on maintenance work performed should be retained along with a rotational system for rebuilding the valves. For example, it should be noted whether a repair kit or seal kit was installed in a pod valve or regulator. Information kept should include: when, what function, what pod, and the condition of old seal plate, rings and O-rings. If the seal plates are pitted, additional anodes may be needed. The Enterprise had bad corrosion and pitting on seal plates and added many more anodes as a result.

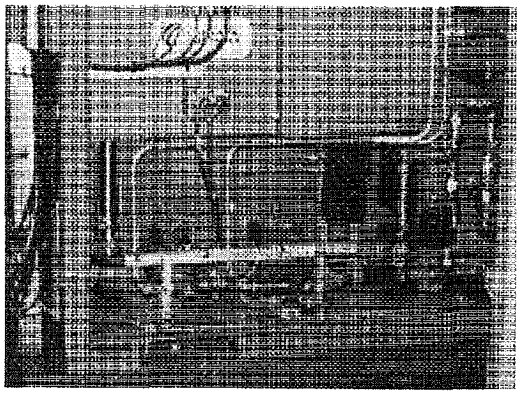
8. The SEM connector should be replaced with the 5000 psi face (assuming it is currently the 3000 psi face).

9. The punch lists from Cameron and IN-SPEC should be completed.

Category III:

1. The triplex pumps, below left, put out 30 GPM with 3 pumps, which equals 90 gallons per minute. The mix system, below right, will not keep up with a max output of only 30 GPM. This should be corrected and is under review by Cameron. The rig has already taken steps ensure 120 GPM for supply is available from the rig.



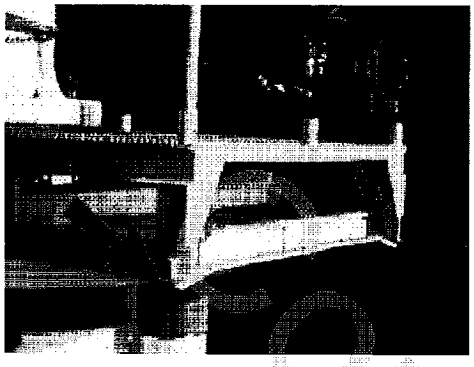


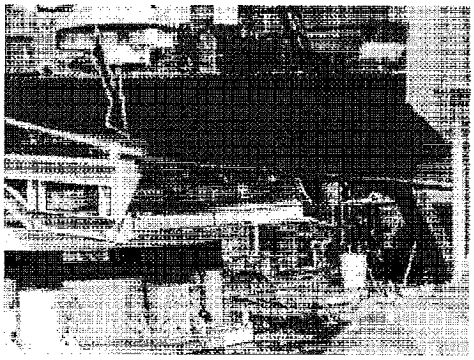
2. The choke hydraulic connector moving up ¼" should be further reviewed for suitability. Cameron advises that the movement does not present a problem. To prove this, the connector should be functioned numerous times and the BOP stack wellbore pressure tested to confirm the upward movement will not cause a leak at the connection points. There has already been a leak at the outlet below the lower annular, which required changing the AX gasket. This is not a function that will be used a great deal (only when the LMRP is pulled) so functioning it many times now would identify the problem early. The photo to the right is the complete assembly, which moves upward ¼".

3. The precheck lists from should be obtained from the Discovery Enterprise. They are very thorough and include electrical as well as hydraulic tasks with signoff sheets. They could be modified for use on this rig.

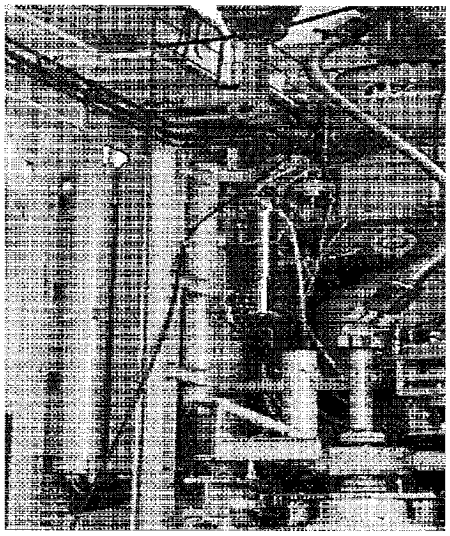
4. Personnel operating the trip saver should be limited to the subsea engineer or toolpushers. They should have training on how to operate the trip saver in the manual mode. Improper operation in manual mode or not paying proper attention could result in major equipment damage. Major damage has already occurred on the Nautilus, according to Peter Keenan.

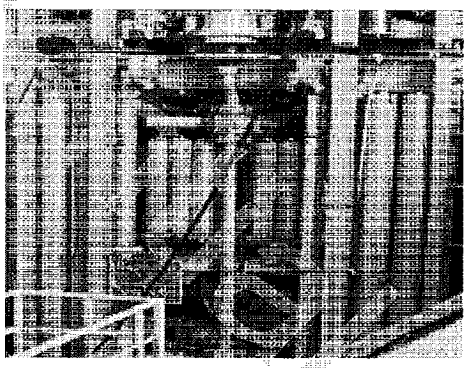
5. The riser spider should be modified to clear the slip joint when picking it up or laying it out. The ideal time to do this would be now, as there may still be an interference problem when running the BOP. The photo below left below shows minor damage that occurred. The photo below right shows the interference that caused the damage from the slipjoint. Normally this will be run after the BOP and riser, which should drop the riser spider by a small amount.





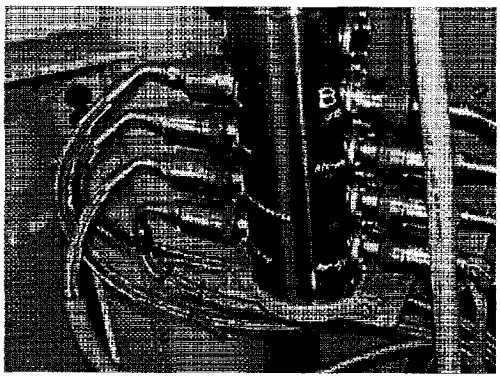
6. Work platforms should be installed on the tow from Singapore, as the BOP stack was in dire need of them. As shown below, there is nowhere to stand when working on the stack.



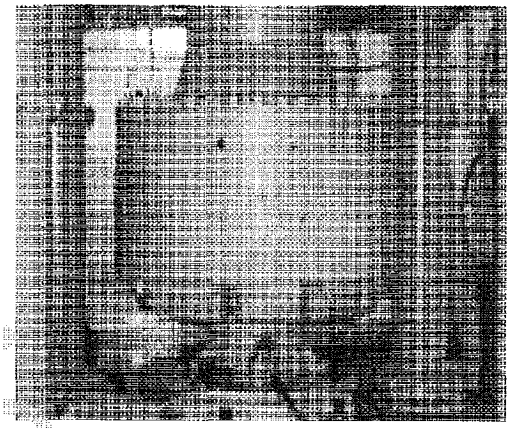


7. When moving the BOP, the wraps on the drums on the bridge cranes have to be wound tight. A procedure should be in place to use a tugger to hold tension on them and rewind them prior to picking up the LMRP or BOP stack.

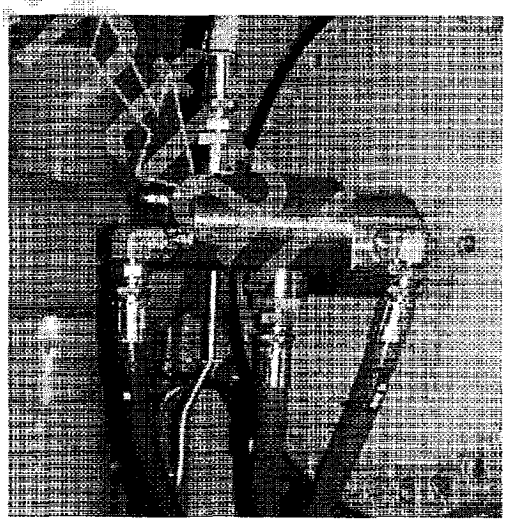
8. The riser connection box (RCB) as seen to the right should have the latest update with individual fuses that are resettable. This provides redundancy for the system. Also, Cameron is investigating the effect of losing the RCB and how it would effect the full system.



9. All the required modifications to install the Cameron connector should be performed while on the tow to be certain no unforeseen problems arise that require extra time. At present the rig has a Vetco H-4, as seen to the right.



10. Mark II Gilmore stackable shuttle valve on the super shear ram, shown to the right, should have the Mark III HD shuttles installed.



11. Cameron and Simrad should work together to resolve the problems with controls to allow time to modify the software or hardware if needed. This was an ongoing effort on the Enterprise until just before running the BOP stack.

Section 3: Executive Summary

The Deepwater Horizon should have a very reliable subsea BOP stack and control system. The rig has not experienced any major failures. The ST locks have a separate close function and auto open. This limits the wear and tear other rigs have experienced with fully automatic ST lock systems and should give trouble free operation. The pilot operated check valves are Gilmore and the shuttle valves are the old style Gilmore, which along with the BOP hose have been used successfully for years.

Once the recommendations have been implemented and the Cameron punch list has been completed, the control system and BOP stack will have no known anomalies to possibly cause failures. Past history has proven the systems to be reliable with proper PM programs and documentation. The Cameron pods with shear seal valves have been around a long time. The Auger had their BOP stack down for over one year with the same basic hydraulic pod. It was a very prudent decision to put new repair kits in all pod valves and regulators. This coupled with a good rotational PM system on rebuilding the pod valves and regulators with new repair kits should give good reliability. Tracking and recording the condition of the valves when they are rebuilt should be done to adjust the frequency of the valve rebuilding. Employing checklists with sign off sheets will help eliminate oversights.

The BOP handling system functioned very well, with the BOP stack captured well at all times. The under the hull guidance system could be very beneficial when running riser in strong currents. The trip saver feature along with the false rotary on the BOP carrier and blocks for running casing should provide real time savings in operation.

The riser has proper riser racks for storage and an excellent riser handling system, including a hydraulic running tool, all which worked very well.

The rig is one of the best setups and problem free start-ups this surveyor has seen

Section 4: Anomalies

The following anomalies were utilized on the Deepwater Horizon to help ensure that the same problems would not occur. Some comments have been added concerning the Horizon.

Gilmore Shuttle Valve Switchback (shuttle shifts toward the opposite pod) - Both the Mark II and Mark III 1" shuttle valves have a tendency to "switchback" (the shuttle shifts toward the opposite pod) at the end of venting flow. Gilmore has duplicated the "switchback" in shop testing. Gilmore stated this anomaly was also present in the conventional, rectangular shuttle valves. As of October 4, 2000, Gilmore will no longer support the Mark II valve. The super shear rams have Mark II valves and Cameron has been notified of the need to replace these.

Status/solution:
The new Mark III HD shuttle valve eliminates switchback. In shop tests under high flow conditions, the design completely eliminated both switchback and oscillation.

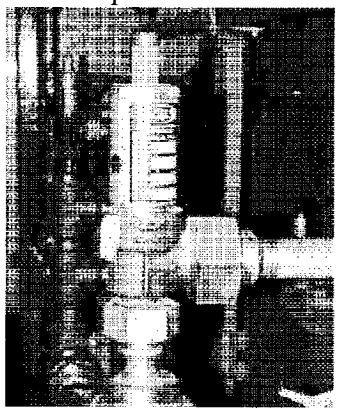
Gilmore Shuttle Valves Wash Out of O-ring – 1" Gilmore shuttle valves come in two versions, the Mark II and the Mark III. The Mark II has a rubber seat seal (O-ring) that has been observed to wash off. The debris from the O-rings can go downstream into the function and create leaks. The Mark III has an all metal-to-metal, 8° angle seat. The Mark III also has a higher flow capacity than the Mark II. When upgrading to the Mark III, the shuttles in the two valves will interchange, and the valve leaks badly initially. This is because there is no machined seat in the Mark II body that matches the shuttle sealing angle. The valve must be operated several times to "coin" a new seat. As of October 4, 2000, Gilmore will no longer support the Mark II Valve.

Status/solution:
See anomaly above. Replacement is by the Mark III or III HD.

The Seacon cable connectors chosen by Cameron have pressure ratings that correspond with a depth of only 6,750 ft even though the control system may be rated for as much as 10,000 ft. The connector of part number AWQ-4/24-S-BC-DO has a mated pressure rating of 10,000 psi and an open face rating of 3,000 psi. This means that when all six of the cable plugs are properly mated to the bulkhead connector, the assembly can withstand 10,000 psi. A loose or disconnected fitting in any one of the six connectors results in a decreased pressure rating of 3,000 psi and could cause failure of the solenoid cable.

Status/Solution:
Steve Donahue will check with Cameron to be certain the Seacon connectors on the Horizon are the 5000 psi open face rating. The recommendation is to use Seacon's connector of part number AWQ-4/24-BC-SP with an open face mating pressure rating of 5,000 psi (approximately 11,250 ft water depth). Although replacement of each of these connectors is a tedious process that should be carefully tested upon completion, the cost of replacing the Seacon connectors is estimated at much less than the replacement cost of a flooded SEM.

Inadequately Sized Relief Valves on Cameron Hydraulic Power Unit (HPU) Systems – Cameron has designed some of their HPU system with undersized relief valves. Cameron's vendors have supplied new equipment recently with hydraulic pump relief valves incapable of relieving a volume equal to or greater than the pumps deliver. Should the pressure switch fail to turn off the pumps, pressure would continue to increase until a major failure of a component occurred. This is a serious safety hazard. On one rig, the pumps did fail to turn off and seals blew out when the pressure exceeded 7000 psi. The original Cameron part number of the undersized relief valve manufactured by CPV Mfg., Inc was 22511-4. The CPV part number was 158 and the valve had a .219" diameter orifice.

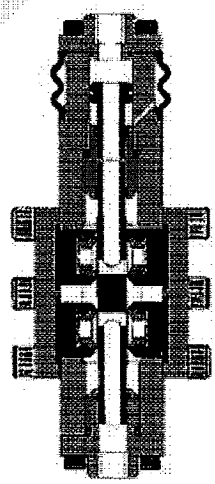


Status/Solution:
The relief valves on the triplex pumps on the Horizon are CPV as seen to the right, and this issue has been taken up with Cameron They were to provide calculations to demonstrate the relief valves can handle the pump output by 4-1-01.

Valves Failure in Cameron ½" Unbalanced Shuttle Seats – A failure in the internal seats of these valves led to loss of hydraulic supply to both pods. The root cause was trapped pressure between the O-ring and the backup ring, which caused excessive friction. The O-rings and backup rings were replaced with 90 durometer O-rings and scarf-cut backup rings. One rig experienced hydraulic locking of these valves on the conduit manifold at 2,200 feet if they did not properly grease the valves.

Status/Solution:
WEST recommends properly greasing the valves and using 90-durometer elastomers. Verification of correct assembly is also recommended.

Cameron ½" Unbalanced Shuttle Valves Hydrostatic Lock - A problem with hydrostatic lock was witnessed on one rig. The problem was isolated to either the ½" unbalanced shuttle valve or a ¾" pilot operated check valve in the same circuit, but could be isolated no further. Both valves were removed and replaced with different types of components and the problem did not recur. It should be pointed out that these same valves are currently in use on other rigs separately and have not caused problems.



Status/Solution:
The ½" unbalanced shuttle valves should be closely monitored to ensure hydrostatic lock does not occur. The ½" unbalanced shuttle valve can be seen to the right.

Section 5: Punch Lists

Lists From:
Punch List Update from IN-SPEC &
Punch List From Cameron on 23 March 01

Deepwater Horizon
Well Control Systems

Date	Description	Comments
	STACK	
3/1/01	Upper outer kill bonnet seals leak wellbore test fluid	The flanges to be broken for repair **Cameron did dimensional check on ring grooves and found all in tolerance, during rig move the, plan is all bonnet and flange ring gaskets will be replaced and torqued**
2/19/01	Change the wellbore and choke line Xmitters to 20K psi wellbore pressure	The pressure transmitter & readouts need to be changed out. Currently the readout on the subsea and remote panels all read a maximum of 5,500 psi. To be changed in the Gulf **Waiting for Cameron response, Cameron Control System Engineering is reviewing and will issue correct part number for revisions**
3/12/01	Install up-graded ST lock bearings	**Waiting on Cameron to decide on molded or machined bearings**
10/19/01	Change to Cameron DWHC connector on the stack	**Need to do all required modifications for connector changeout to be ready when connector arrives to change it on tow or in the Gulf**
Berwick	Install Emergency recovery slings	Shackles fall outside the stack envelope when installed. Need to redesign attachment method. **Drawings received. Rig move Item**
11/29/01	Work platform needed for safety on upper BOP	David Doles has plans drawn up for good access ladders and platforms. **To be fabricated n Sinapore and installed on the rig move**
12/18/00	Install physical protection over and around exposed 15K lines and diverter lines under BOP	**Look into blocking area off during testing to keep the potential of dropping something on the 15K lines from happening. Rig move**
2/19/01	Correct crossed hoses on lower choke valve	**Trouble shoot problem on LIC and LOC rig move**
2/25/01	Install Mark III shuttle valve internal components on Gilmore HP super shear shuttles	**Al Sheppard at Cameron is reviewing situation**
3/1/01	After sea trial run of BOP stack all through bore and stack outlets should be checked for proper torque.	**The plan is all ring gaskets on the operator bonnet and flange will be checked and changed out, then torqued**
3/4/01	Confirm all failsafe assist circuits are working	All tested okay except lower choke valves, **Bleed valves to be tested after reassemble**

Date	Description	Comments
3/8/01	Deadman sequence and philosophy to be reviewed	EDS/DMS TPP has been revised to place disconnect due to fire in EDS. Rig procedures to reflect change Review philosophy of other rigs, Express do not disconnect Frequency of fire to be reviewed Implementation of casing shears to sequence to be reviewed **Steve Donahue has proposed the idea of reducing the number of functions to improve reliability, this idea was acceptable to BP and is now with TSF for their approval, Larry Dorsey has been given a marked up set of drawing for Cameron review.**
12/11/00	Mini collet connector is lacking transfer barrier on unused secondary unlock port	Transfer barrier prevents back flow of sea water into cylinder for longer life. **Will fill cylinder with oil and plug for this sea trial run, long term barrier added during rig move. Cameron to rerquest canisters from Berwick, they were removed during FIT and not shipped to the rig. Passed this issue to Al Sheppard for resolution**
12/12/00	When the choke mini connector secondary unlatch is operated, the entire choke line and bleed valve assembly move upward ¼"	This movement can cause loss of pressure at the annular outlet and needs to be eliminated. **Cameron states the ¼" is acceptable. In a 12/18/00 meeting** **Calculations showing this were requested but not yet received**
	Outlet on lower annular leaking	Ring groove to be inspected **Ring groove has been inspected and new gasket installed waiting to wellbore pressure test**
12/18/00	Riser bullseye is bent down and needs to be straightened back up and relocated. Adjusting screws are too short & need to be lengthened	**Rig move**
1/7/01	1" yellow hot line bottle & wellhead secondary hoses are excessively long and to be reterminated	Cameron replaced with hoses too long TSF to reterminate when swage tool and fitting on board *Rig Move, Be sure to pressure test to 1 ½ times*
1/18/01	Hot line SS pipe on LMRP vibrating and needs additional support.	**Rig Move will install bracing on all piping requiring it.**
2/19/01	Relief valve venting inner bleed valve assist close	*Cameron stated the new relief valve was on order, is under warranty and will be replaced next time service hands are onboard*

Date	Description	Comments
2/19/01	Remove unused ball valve from LMRP ROV pane land remove unused ST lock stab from stack panel	Unused items on the stack can cause clutter and confusion to ROV operator. *Rig Move*
2/21/01	Change nuts on mini collet connector and arm cylinders for crack resistant nuts	Cameron has reported nut failure due to material selection. Cameron will supply new nuts, Al Sheppard. *Rig Move if get nuts*
2/28/01	Stack and LMRP hoses and electrical cables need to be run with no sharp bends and secured from whipping. Hoses need to be secured from floating into the mini collet connector area and LMRP guide slot	Top cable on blue junction box needs support , they are making too tight a bend radius. **80 % complete**
3/4/01	Remove o-ring from dummy stabs or do not install stabs when stack is run to prevent hydraulic lock of a function due to stab	The small pressure relief port on these stabs may become blocked. ROV operators have experienced difficulty pulling dummy stabs. *Under discussion*
	PODS	
2/9/01	A 3000 psi full WP test on the pods and stack hoses in the drilling and killing position to be performed. Repair of leaking valves to be done first	Cameron asked for request in writing along with testing UPS. Written request as presented to TSF *TSF have agreed to perform, UPS test completed.*
2/10/01	***Repair leaking pod valves***	Observed leaks in: Yellow Pod: middle and upper pipe ram, WH Conn, BS/R, LMRP Conn Reg, upper annular close, & LMRP Conn primary. **Blue pod valves repaired.** *Waiting on repair kits, will be done rig move*
3/4/01	Function test spare pod on the stack	*Rig Move after valves rebuilt*
Berwick	Top covers or grating need to be put on pods	R&B to have fabricated in Korea **Rig Move**
Berwick	Make final installation of deadman POCV package with ¼" SS tubing directly into the rigid conduit package eliminating 4 of 6 shuttle valves in the new package and 8 hoses	The removal of redundant shuttle valves and use of SS tubing makes for a more reliable installation. Document with proposed changes and photos given to RBF 1/24/01 *Rig Move*
10/18/00	Cameron now offers cycle count soft ware upgrade	Status to be provided by Cameron **Later 3th quarter 2001**

Date	Description	Comments
12/18/00	Pod ROV handles need to be reattached in a manner that allows pod to be removed from the LMRP	To be bolted on top. Holes drilled but handles not yet installed. **Rig move**
1/14/01	Prior to deployment 1ST well batteries replaced	*Batteries will be replaced by Cameron when rig arrives in GOM(as per Kevin Wink)*
3/5/01	Replace ½" leaking stinger packing	**Larry Dorsey ordered replacements to be installed on Rig Move**
	MIXING SKID	
2/28/01	Mixing system not keeping up with pumps	TSF working with Cameron. **Bolie Williams is reviewing situation. Report due from Houston 4-1-01** **Now have 120 GPM available for mix unit, waiting on Cameron**
	PUMP UNIT	
12/16/00	Verify that HPU pump does not over run the relief valve	*Cameron to provide calculations to demonstrate valve can handle pump output should get answer 4-1-01*
2/19/01	The mix system start level should not fire an alarm every time the mix system starts	The mix system start level is also the low level alarm, Cameron have not fixed it yet. *Cameron punch list. This will be reviewed when the mixing skid is revised*
12/4/00	Install blank off plate on unused 2" port	Unused 2" port on HPU had no blanking plate to prevent accidental dumping of fluid. *Flange on order*
	DIVERTER SKID	
1/13/01	Permanent solution to diverter and gas handler manifold regulator oscillations need to be implemented	Currently the supply valve to each regulator is partially open t o slow down flow to prevent oscillation. **Cameron is to supply accumulator , tubing and fittings, more data is required to complete this issue.provide Accumulator to be installed.** *Rig Move if parts arrive*
	Apply full WP, 3000 psi to reworked pipe work	Diverter packer, Gas Handler x2, lines which were welded *Rig Move*
12/10/00	Back up system for diverter skid needed	Remote panels and air piloted regulators (T Joint packers) require this air for continued operation. *N2 supply for diverter panel bottles to be ordered for delivery in the US, will hook up a HHI bottle for testing purposes.*
1/9/01	Diverter panel front covers need a cover to prevent accidental operation of a function by a passer by	And the handles could be cut shorter like the ones behind the pipe. *Rig Move*
1/13/01	After commissioning the spare gas handler push buttons on driller's and remote panel should be covered to prevent confusion	*Rig Move*

Date	Description	Comments
1/23/01	Subsea and surface flow meters off by factor of x10	In the subsea's CCU a decimal point is missing on the "stack screen flowmeter". *Software to be corrected byCameron Controls –Houston*
	SURFACE ACCUM	
2/16/01	Replace code 62 flange o-rings on the accumulator bottles and system piping with 90 durometer o-rings and torque correctly	The current o-rings appear to softer than 90 duro. 2 O-rings blew out in the last 2 days. *Rig Move*
	POWER DISTRIBUTION ROOM & CCU	
2/19/01	Check fiber optic loss and OTDR reading should be made of the system FO cables to provide a base line	HHI have reterminated broken FO cables on the control system. Ship yard says they do not have OTDR to do testing. *The DB loss fall within Cameron's specifications.* ET check fiber optic cable using OTDT
12/18/00	Telephone in the Subsea CCU room required	This would allow communications while operating the stack *Rig Move*
1/6/01	Remove rig air line in CCU room	A blank plate at the flange will prevent a leak of rig air & condensation on to the event logger. **Under consideration** *Rig Move*
2/19/01	Correct event logger software so diverter spare #5 function is not called out when the mini collet conn is unlocked	**Event logger software is to be corrected by Cameron Controls Houston. On Punch list**
3/10/01	CCU readout of flowmeter and riser angle information needs to be calibrated	***Don Algama the Cameron programmer is unable to work with this software on the rig*** *Cameron punch list*
	REMOTE PANELS	
2/20/01	Inclinometer 4-20 ma off need calibrating	***After calibration need to verify correct reading go to Simrad*** *Simrad interface to be checked when Simrad return. CCU and event logger software needs to be revised. During rig inclining (March 14) it appears there is some faulty inclinometers in Blue pod(stack angle)* . ***Marishes/Capetown Simrad will be back***
2/19/01	Change wellbore and choke line display to read 20000 psi	Display currently reads 5000psi *Cameron Controls engineering is reviewing and will issue correct part number for revision*
2/20/01	Drilling and Casing EDS LMRP regulator increase command does not have the 1 sec time delay specified by the sequence	*Cameron Houston is reviewing this and will provide a suitable explanation. Houston software engineering to review and correct*
	Command in EDS was not conducted by pod cause to be found and corrected	*Cameron Houston is reviewing this and will provide a suitable explanation. Houston software engineering to review and correct* Function was done but not picked up by event logger

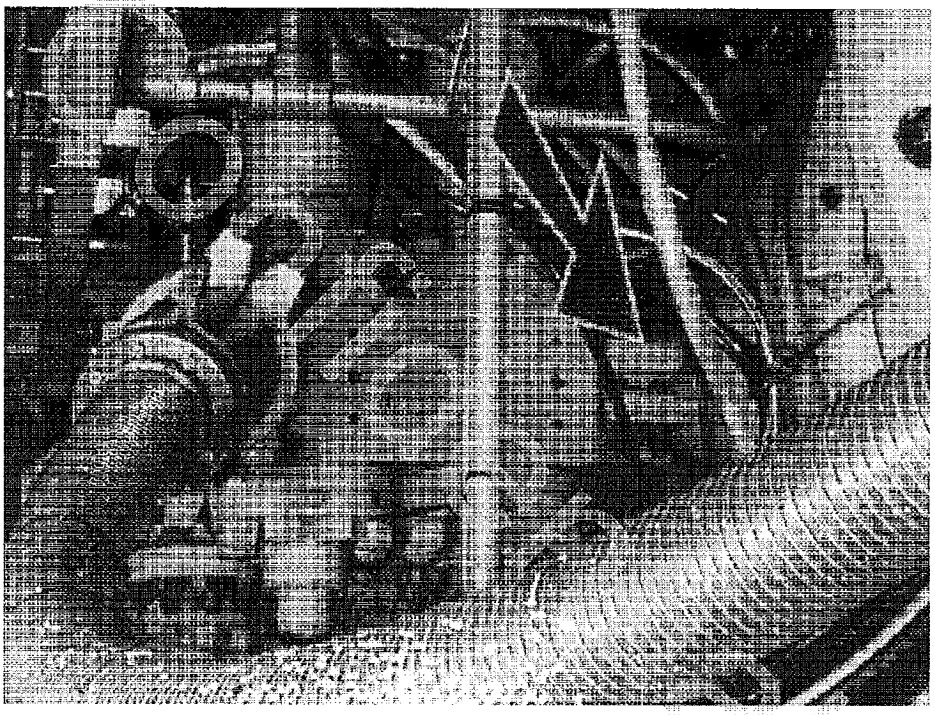
Date	Description	Comments
1/6/01	Panel purge philosophy needs to be reviewed. Function test purge unit Instructions in the event of a loss of panel purge should be posted on drillers panel	It is proposed that logic be changed to alarm on purge loss with drillers to manually shut off panel if required. **Present system shuts down on loss of purge, project proposal is to have system modified to give an alarm if purge is lost, Note –Hitec house is already purged , so if BOP panel purge is lost, Hitec purge will be utilized. Cameron Controls Engineering is reviewing** *Rig Move connect air to panel*
1/6/01	Cameron to provide quote for drillers chair triptank and flowline valve control	**Cameron quote number AB0 12604.C Price has been transmitted to Kevin Wink, Cameron awaiting purchase order**
2/11/01	Rig site software revisions need to be documented and formally submitted to TSF	Changes to , diverter panel sequences, div panel A/B control, EDS initiation, flowmeter calibration , riser angles and Hitec interface are some of the change issues *On going with Cameron*
2/11/01	Function test the BOP panel s to verify correct operations of functions on the Hitec screen including diverter functions from drillers panel	Drillers Hitec display is not matching the Cameron system. Errors have been noted and presented to Hitec. *Working on Hitec and Cameron*
2/28/01	Verify proper pressure readouts from LMRP and stack sensors during wellbore pressure testing	Sensors to be change to 20,000 psi units and will need checking *Cameron Control is reviewing and will issue correct part numbers for revision*
	MUX HOTLINE REELS	
1/6/01	Saftey straps needed for hotline and electric cable rollers	*Rig Move*
	BOP CRANE	
1/16/01	Install aft aux hoist replacement drum.	Auxiliary hoist drum to replace damaged one on way *Rig Move*
	BOP BULKHEAD GUIDE	
2/1/01	Hydralift are to revert with required modifications to guide for handling heavier BOP stack with new wellhead.	*In progress*
	RISER	
2/28/01	Tensioner support ring lock indicator should be more visible	The shank should be painted white or a mechanical extension added **Rig Move**
	RISER TENSIONERS	

2/9/01	Soft ware parameters specifically for DW Horizon recoil system is to be installed Riser and rod break to be incorporated into software	**DWH software has been installed** **Hydralift position is the dead end accumulator will protect the system**

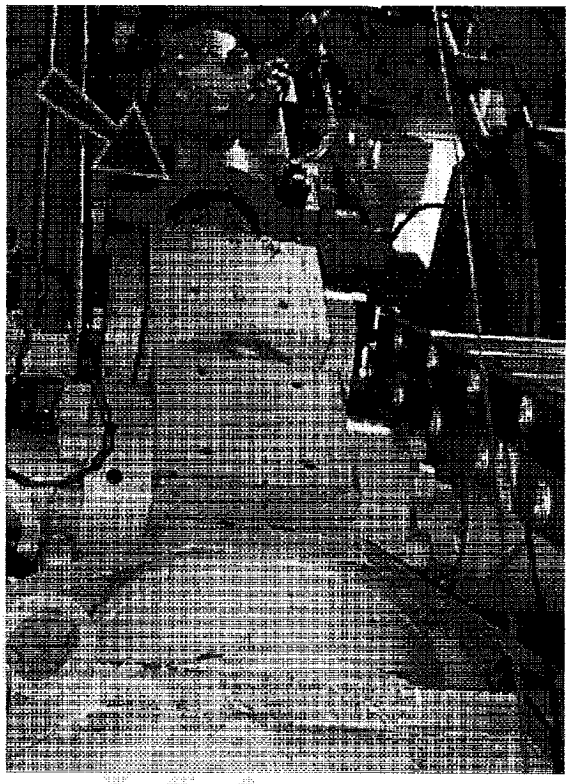
Date	Description	Comments
1/25/01	RT Cylinder removal cylinders & control system need to be removed from current position, preserved and boxed for future use.	**Rig Move**
1/31/01	The operation procedures to reset the trip saver after manual operation or emergency stops needs to be included on the panels	**Hydralift to put a plate giving details. On Hydralift punch list**
1/31/01	The difference between "stop" (stop at next station) and emergency stop needs to be made clear in the button labels	**Hydralift to put a plate giving details. On Hydralift punch list**
2/01/01	Riser tensioner LCD on system and local panel needs to have % of throttle valve identified as" % open" or" % close"	All displays are not explicit, including position indicators. **Hydralift working on**
2/28/01	Install security devices on trip saver and riser tensioner electric panel	TSF have requested passwords to be installed on the Hydralift riser tensioner electric panel touch screen. The trip saver buttons are easily bumped by accident.
	CHOKE AND KILL	
2/28/01	Open manual chokes for inspection at conclusion of mud pump testing	**After commissioning**
1/6/01	Attach remaining moonpool drape hose safety chains	**Will change the chains to cables**
1/13/01	Covers need to be placed on the unused gas handler drape hose deck opening	**Rig Move**
	The remote chokes should open within 30 seconds per API, now takes 55 sec	**Waiting on response from HDI**
	PREVENTATIVE MAINT	
2/28/01	Preventative maintenance program to be developed specifically for the rig	Computer based and will start on tow from Singapore **Waiting on PM System**
2/28/01	EDS, deadman, and auto-shear functions not found on the Nautilus need to be incorporated into the maintenance program.	**Waiting on PM System**

Date	Description	Comments
2/28/01	St lock bearing test and sequence valve inspection should be in PM System	**Waiting on PM System**
2/28/01	Riser NDE and wall thickness inspections should be in PM System based upon in service kips	**Waiting on PM System**
Date	**Description**	**Comments**
2/28/01	Moonpool drape hoses and flex hoses should be inspected and pressure tested per the manufacturers recommendation	**Waiting on PM System**
3/13/01	Review items on spare parts survey	**Waiting on PM System**
	Remaining Cameron Items not covered above on Punch List	
	Shear seal valve valve interflow problems occur when switching pods on hot line and during dead man operations	**Cameron Controls Houston to carry out tests on valves with different spring rates to see if this problem can be corrected. Steve Donahue will be involved with this when he's in Houston** **Engineering is near completion and testing will be done to verify solution.**
	TSF have requested from Cameron that if the riser control box is flooded, what effect does this have on the control pod	**Houston Engineering is reviewing and will issue report 4-1-01** **Should also confirm it has resetable fuses for each function like the modification which was done to the Enterprise**
	Have possible check valve flowing by Blue pod	**Will inspect during valve rebuilding stages and replace if necessary.**
	Port diverter overboard valve is leaking	**2 repair kits ordered will do during rig move when parts arrive.**
	Software updates	**Confirm the new software allows manual input of hydrostatic values if the auto system fails. Important for regulators to work properly**

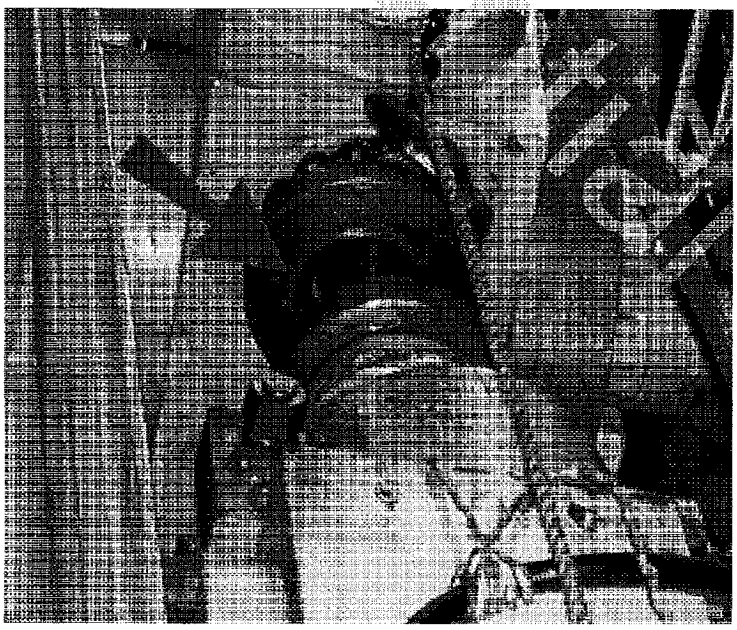
Section 6: Photos



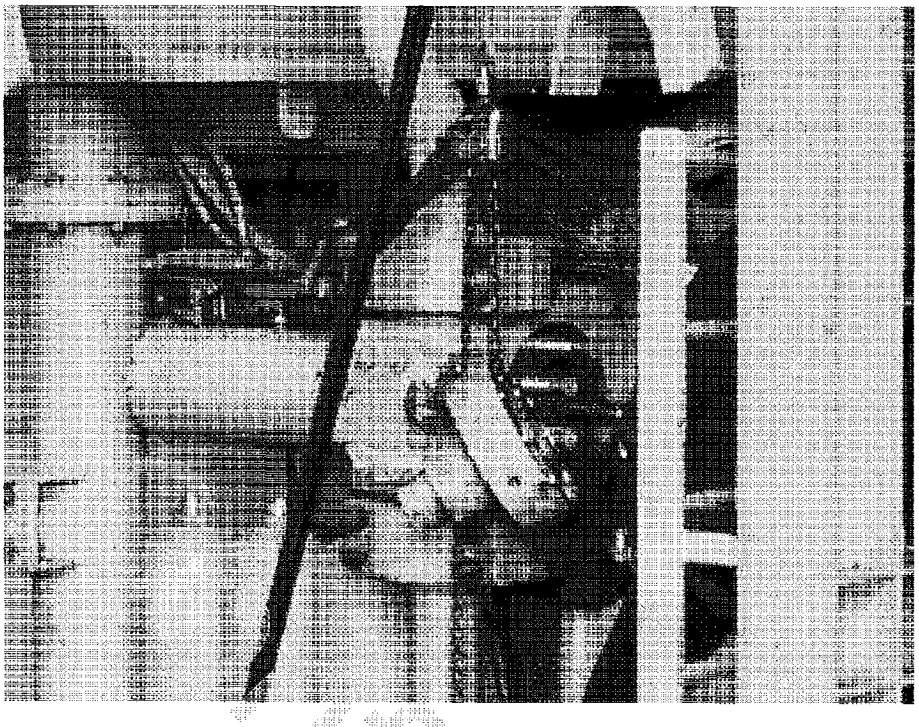
6.1 The arrow to the right points to the outlet on the lower annular bleed valves requiring AX gasket change out due to a leak found during wellbore pressure testing. This outlet and the connection shown below are the ones affected by the ¼" upward movement when the choke mini connector is unlatched. Cameron is supposed to demonstrate why the ¼" movement is acceptable.



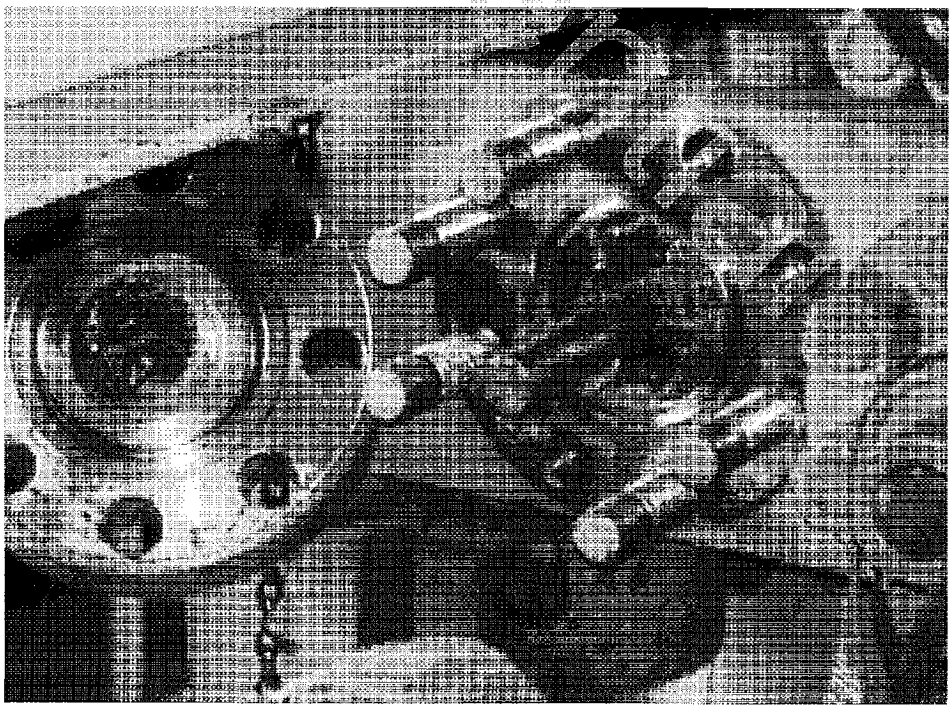
6.2 The arrow points to the other connection opened to change the AX gaskets.



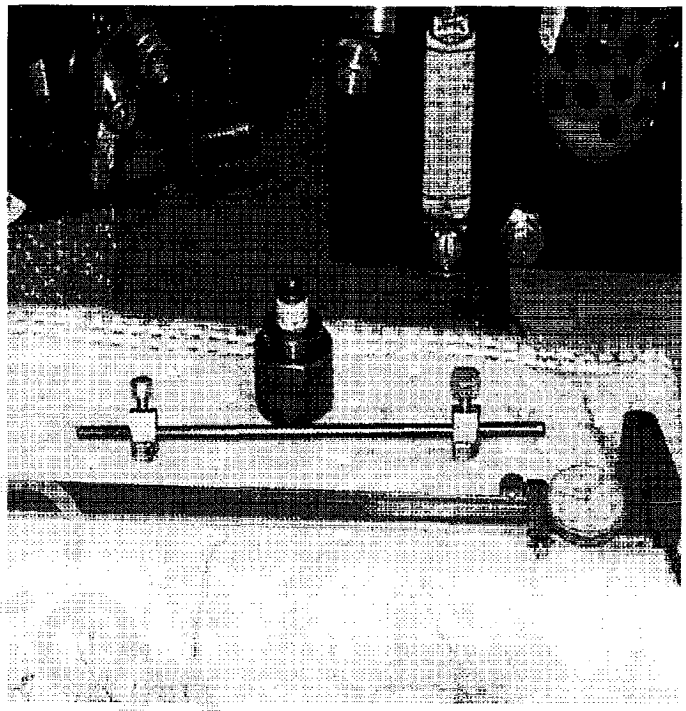
6.3 The process of replacing the AX gasket



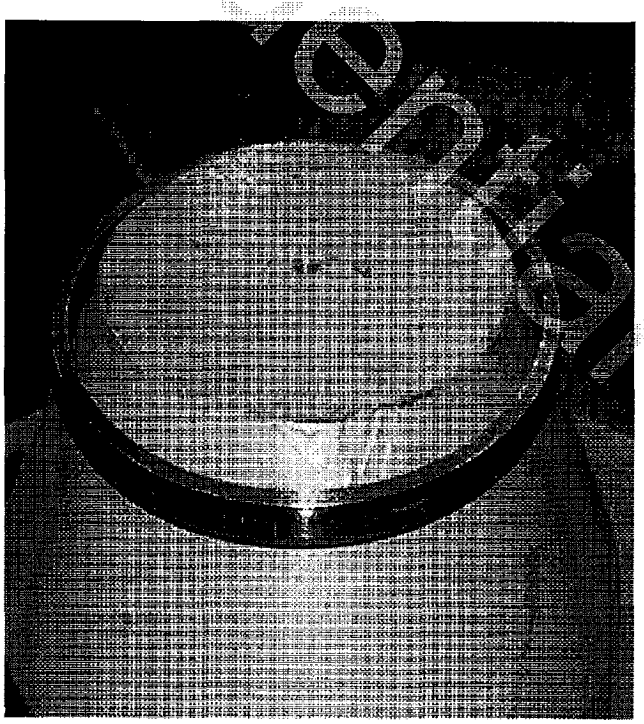
6.4 The flange was pulled off the upper outer kill valve to do a dim0ensional check of the ring groove.



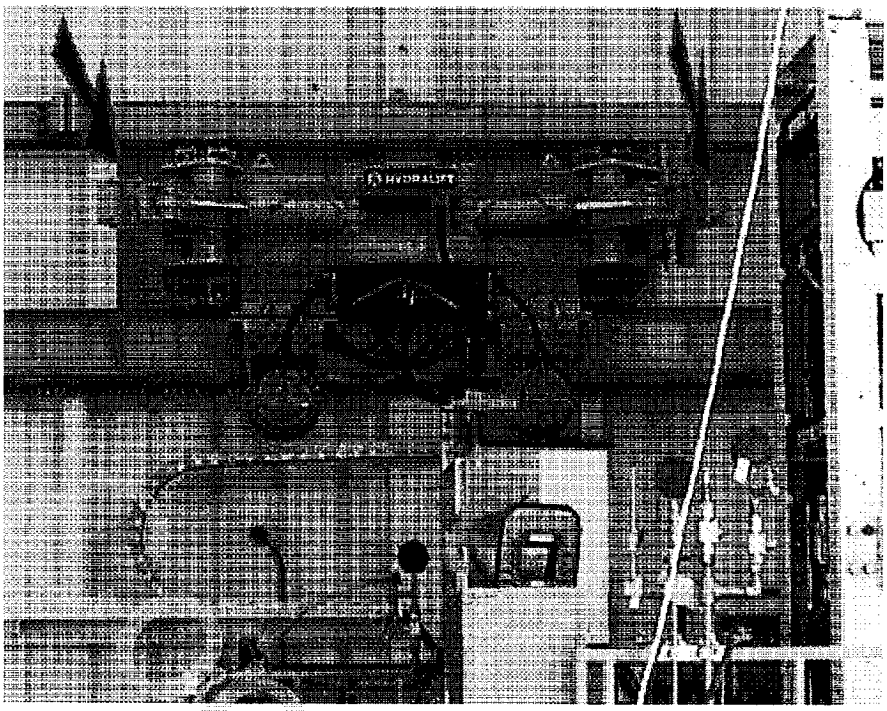
6.5 A close up of ring groove on flange. The bonnet and gate were pulled to do dimensional checks on the ring groove. This valve had leaks on both the flange side and the bonnet side during wellbore pressure testing.



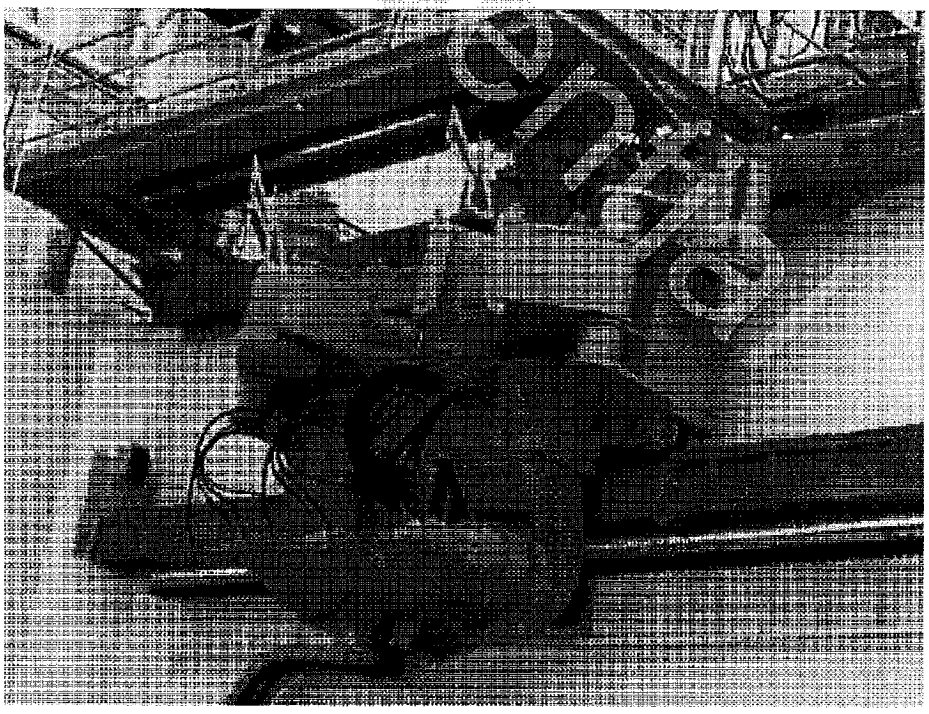
6.6 The ring groove was checked out dimensionally by the Cameron service representative, Alton Dupre, using a button type go/no go gage and a ball as shown. The ring groove was dimensionally correct.



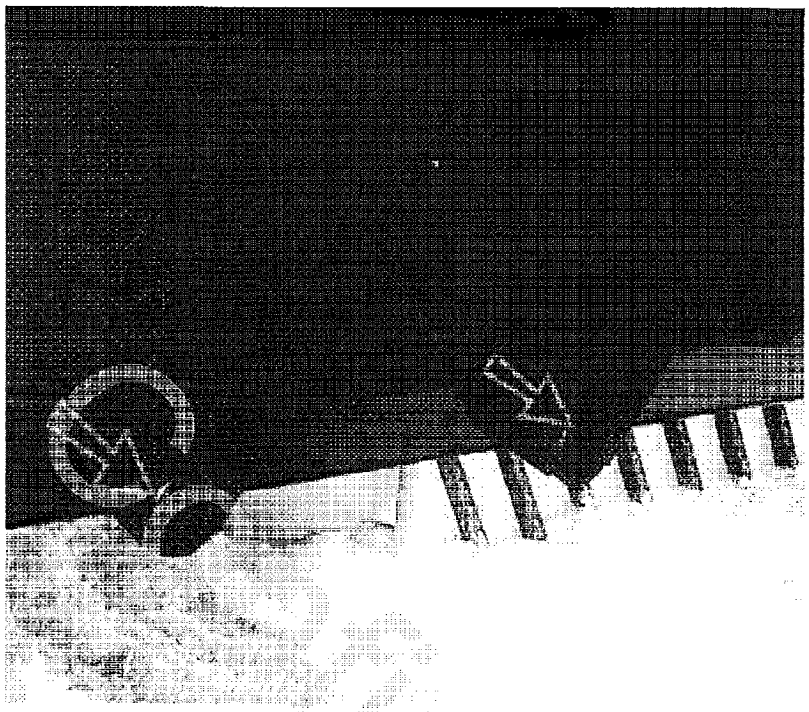
6.7 The old ring gasket that was removed. It was to be hand carried to Houston to be checked. A bad ring gasket or incorrect torque are possible reasons for the leak



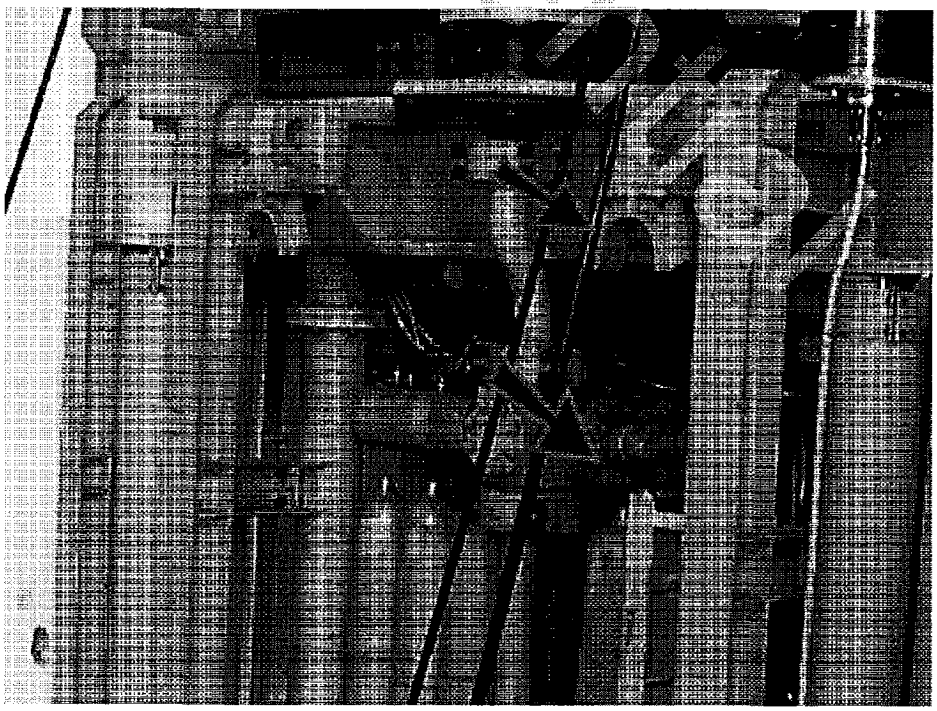
6.8 The BOP handling system should be a good system. It has the BOP and LMRP captured at all times when moving it. This shows the gripper arms used to secure stack the BOP when it is on the test stump.



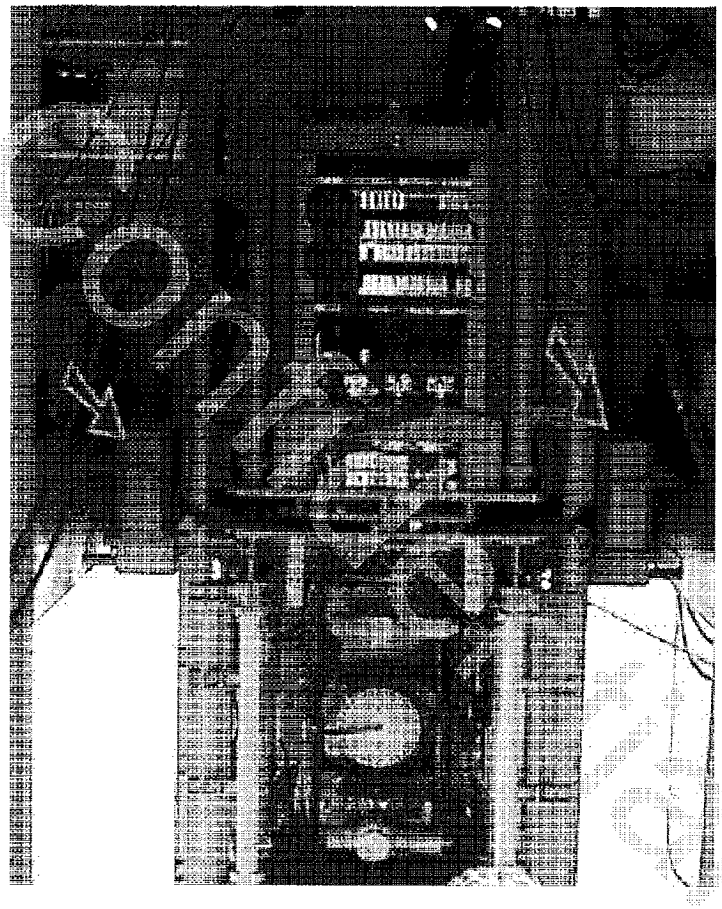
6.9 This shows the gripper arms used to secure the BOP stack or LMRP when it is being moved to the BOP carrier or when the LMRP is being moved to the test stump.



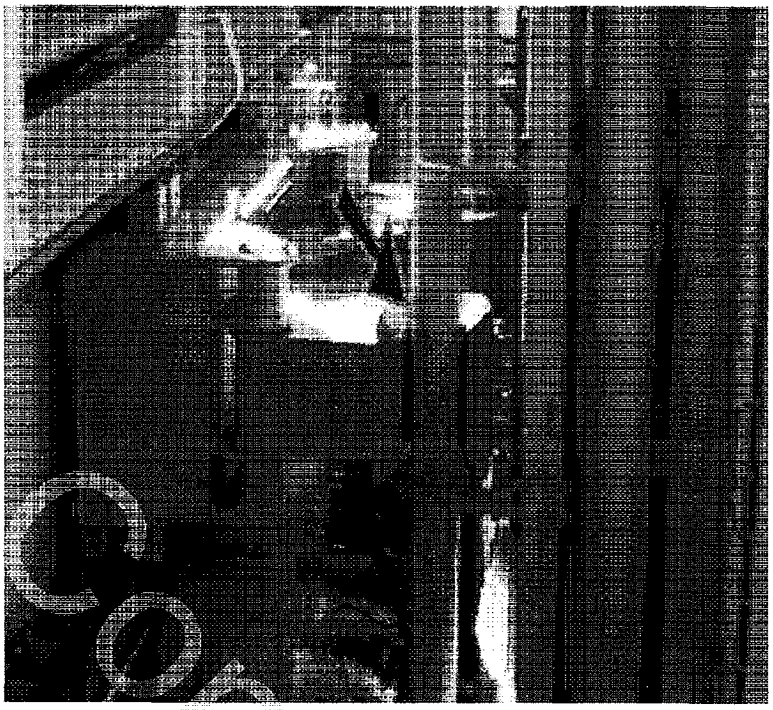
6.10 The landing pins that the BOP stack sits on.



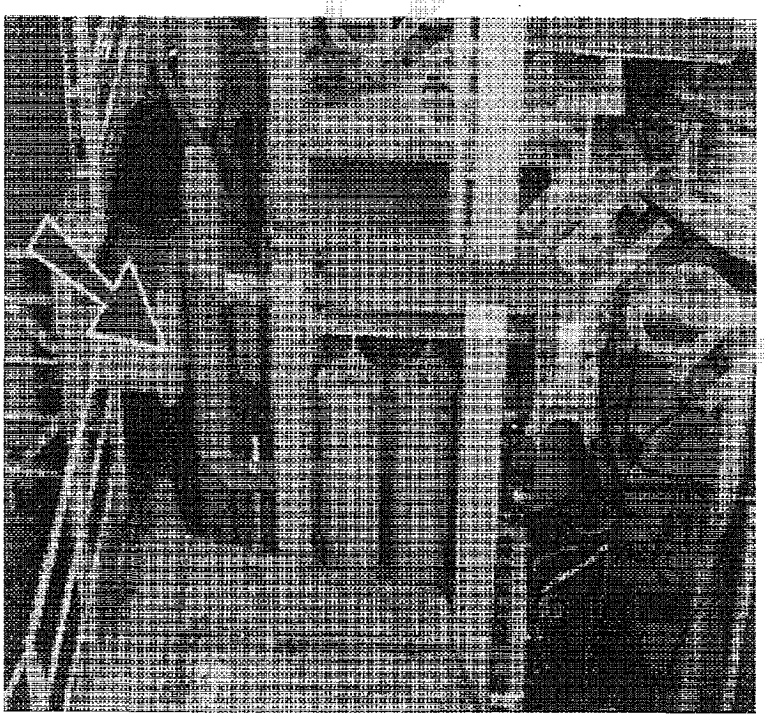
6.11 The ladder on the stack was cut for clearance when landing on the pins.



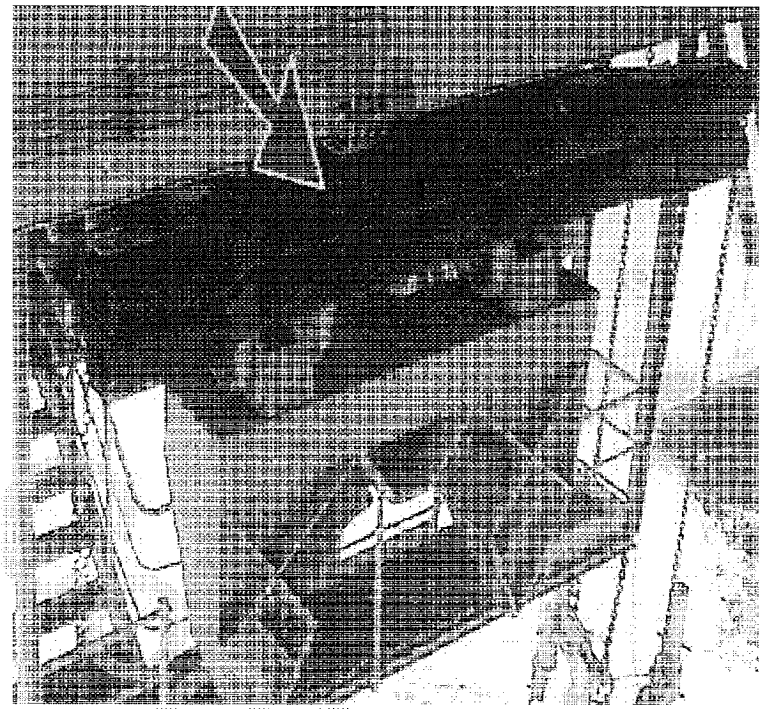
6.12 The BOP stack landed on the carrier.



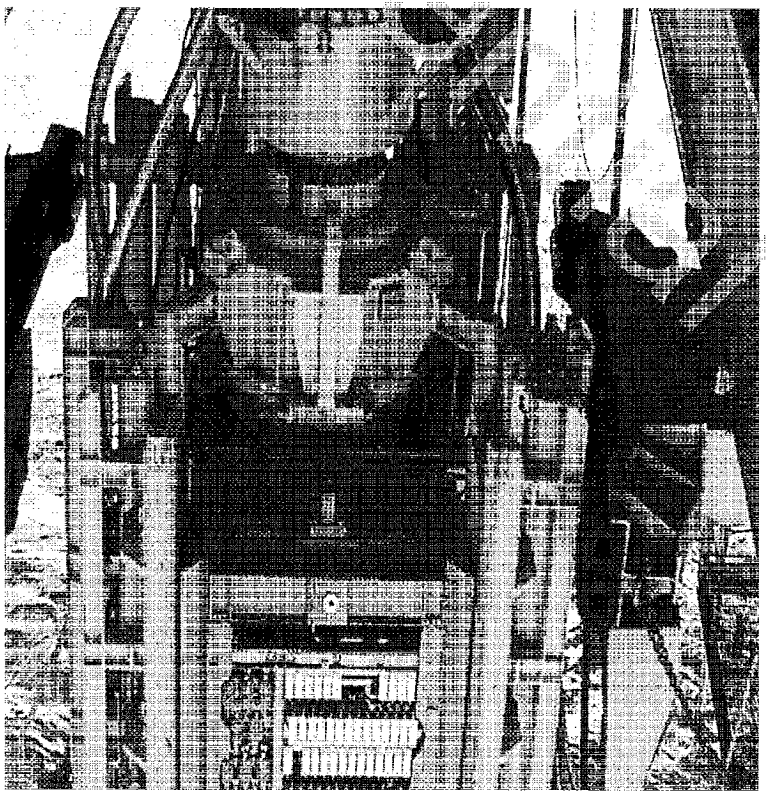
6.13 The arrow points to the upper set of gripper/guide arms.



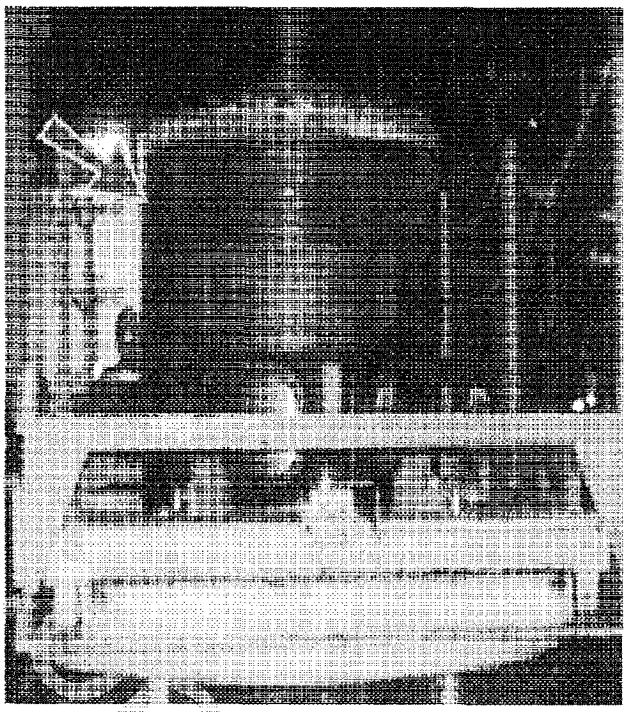
6.14 The arrow points to the lower set of gripper/guide arms.



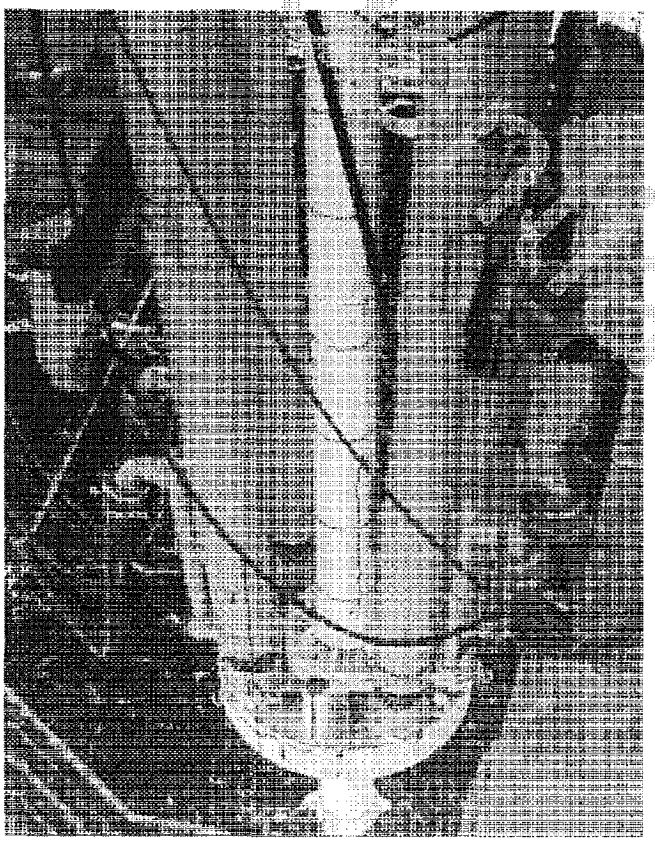
6.15 The under hull guidance system for the BOP and riser. This is a very complete handling system.



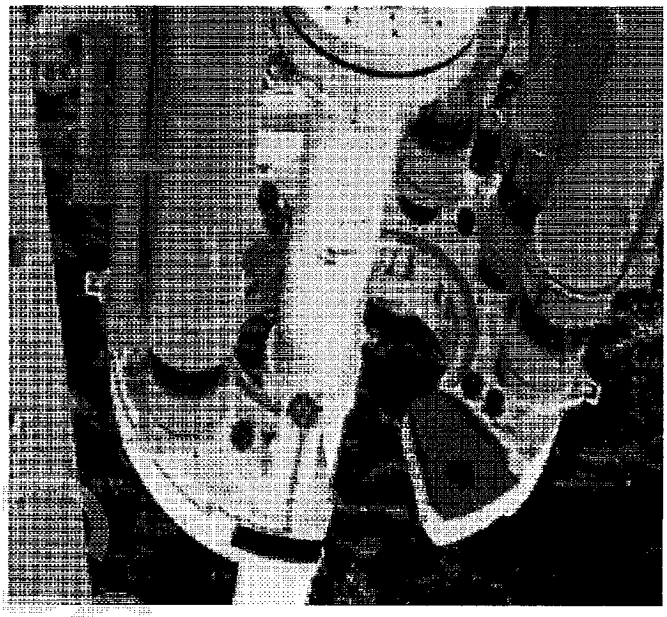
6.16 Another view of the under hull guidance system for the BOP and riser.



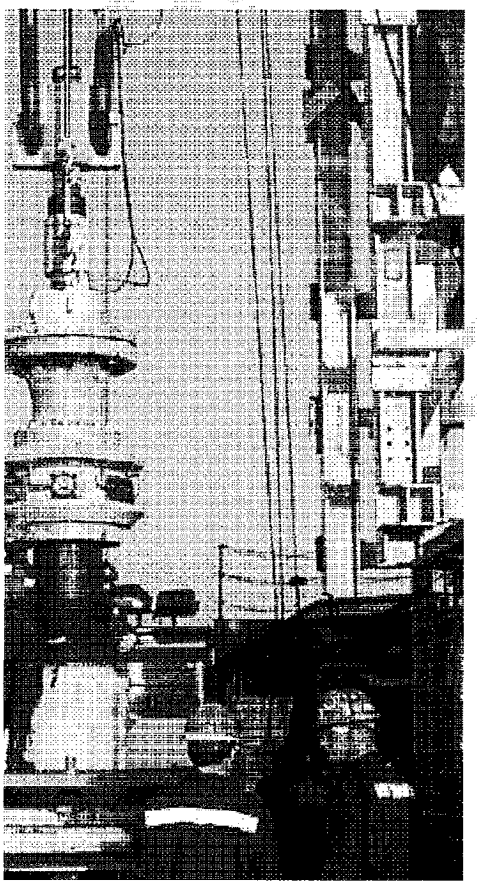
6.17 This is the diverter and flex joint being pulled.



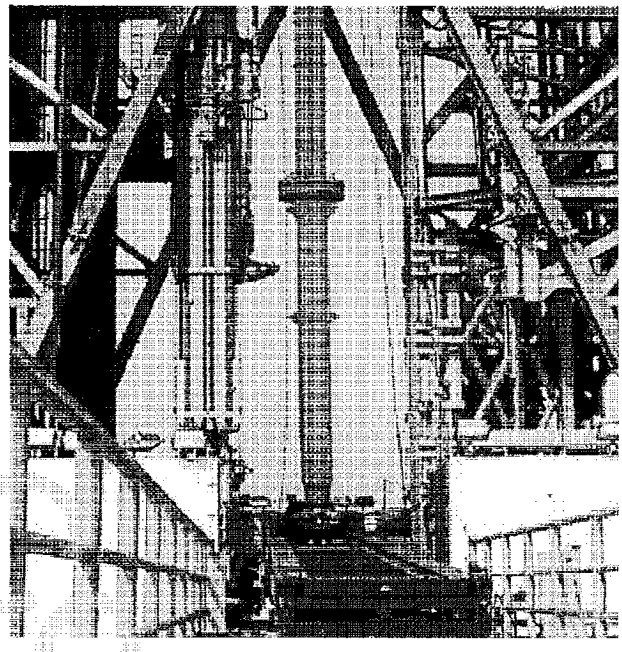
6.18 The support ring is shown locked on the slip joint.



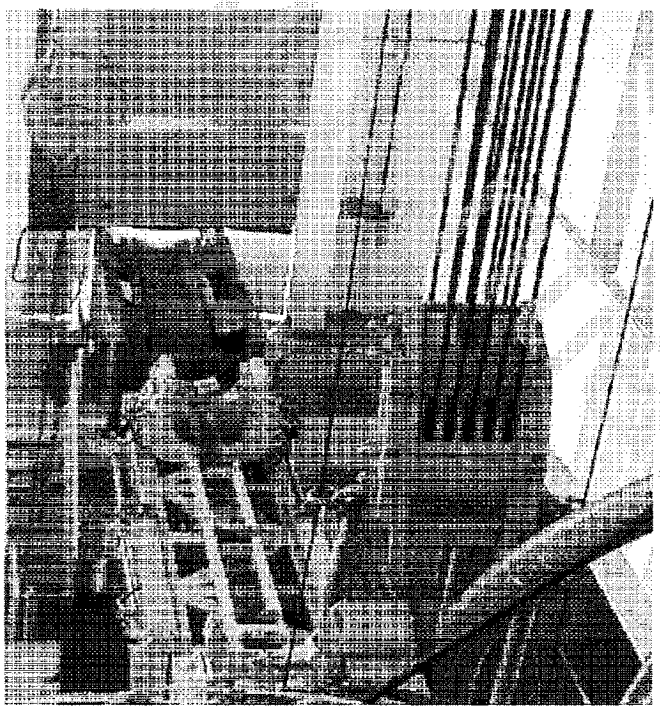
6.19 The support ring opened to pull the slip joint.



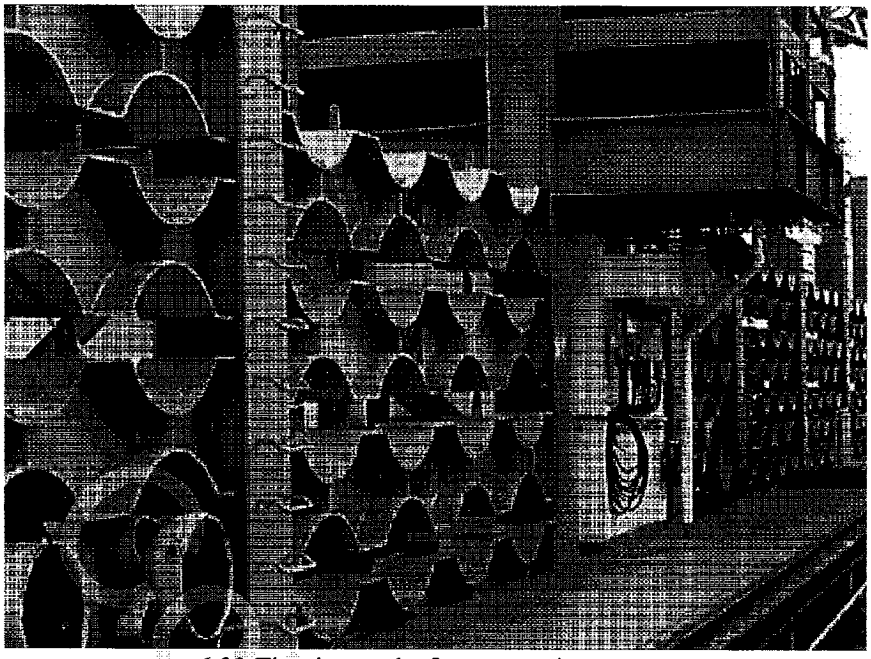
6.20 This photo shows the stroking the slip joint closed to lock and lay out.



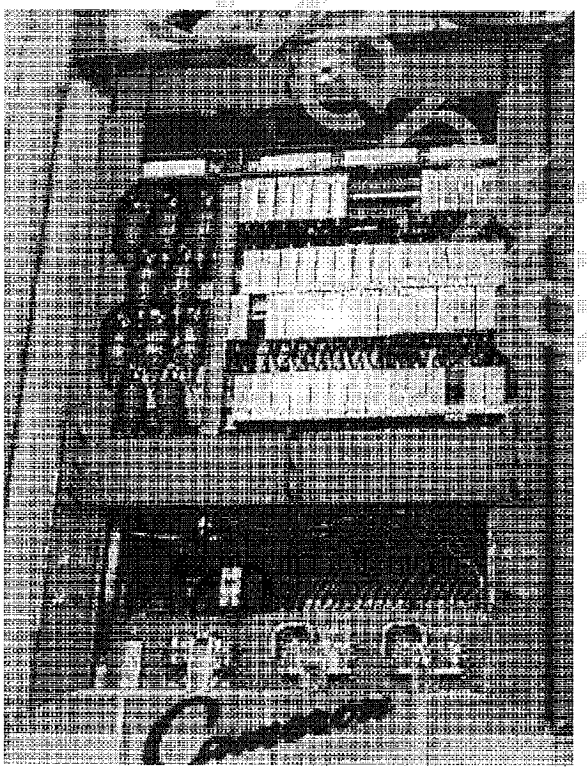
6.21 Laying out the slip joint on the skid.



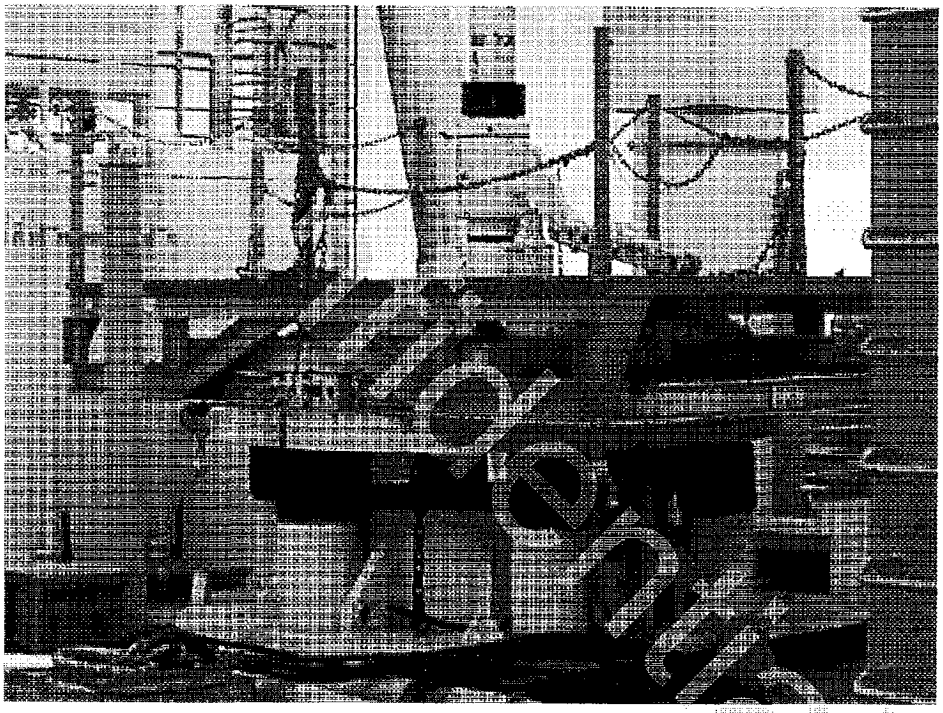
6.22 This is the blocks and casing handling system to be used with the false rotary for making up casing.



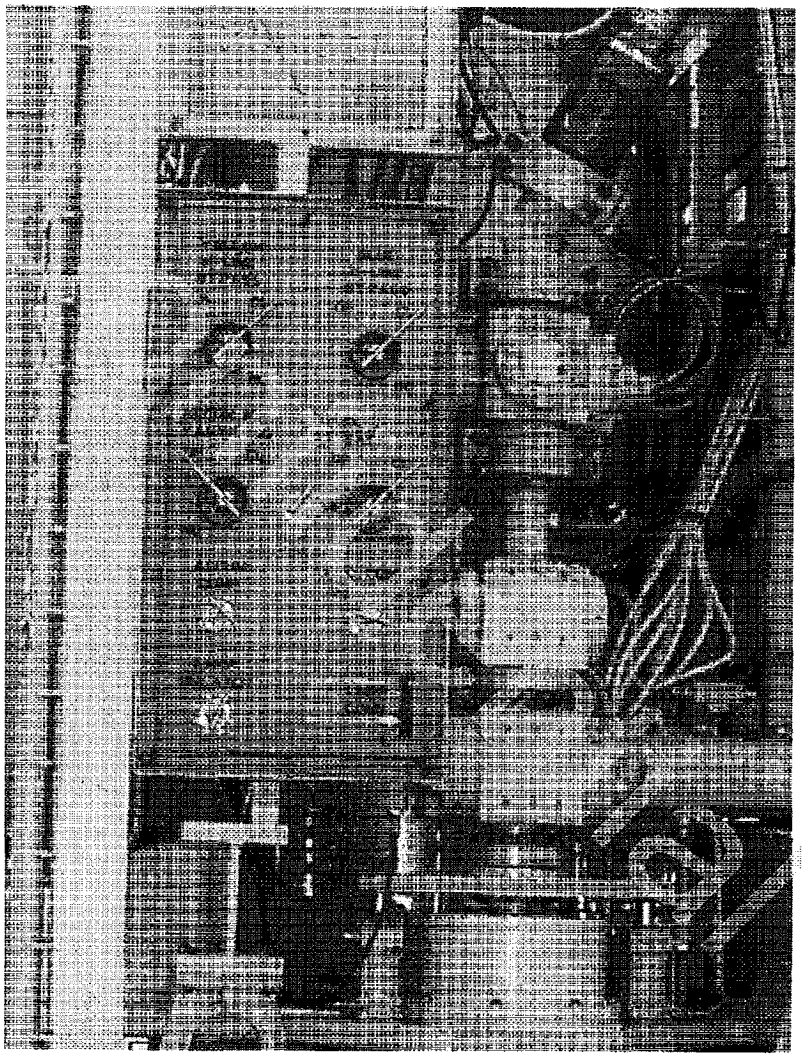
6.23 The riser racks for proper riser storage.



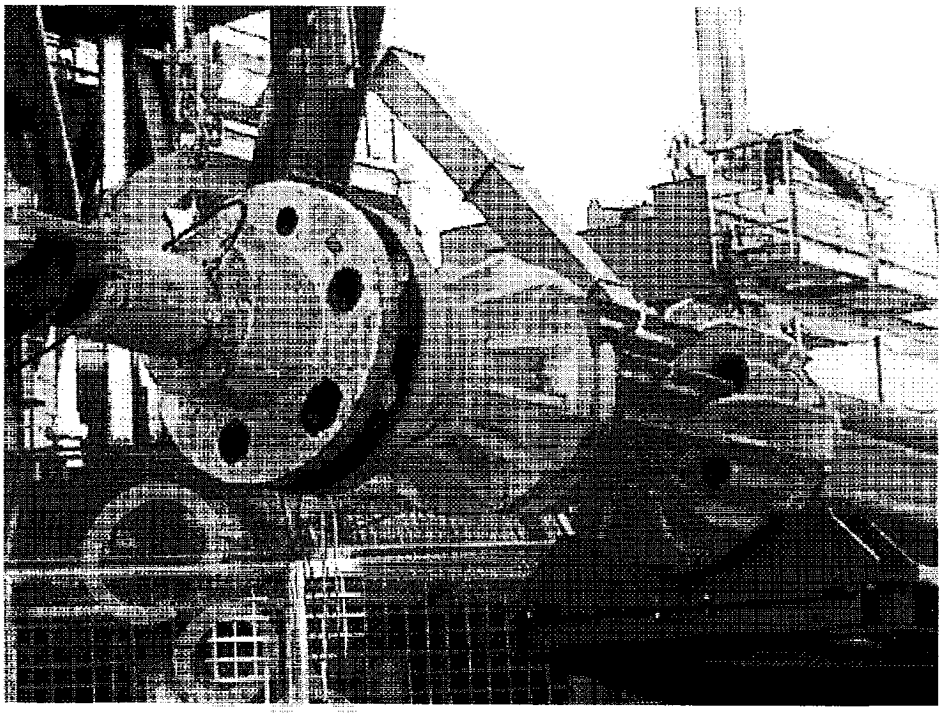
6.24 Cameron Mux Pod.



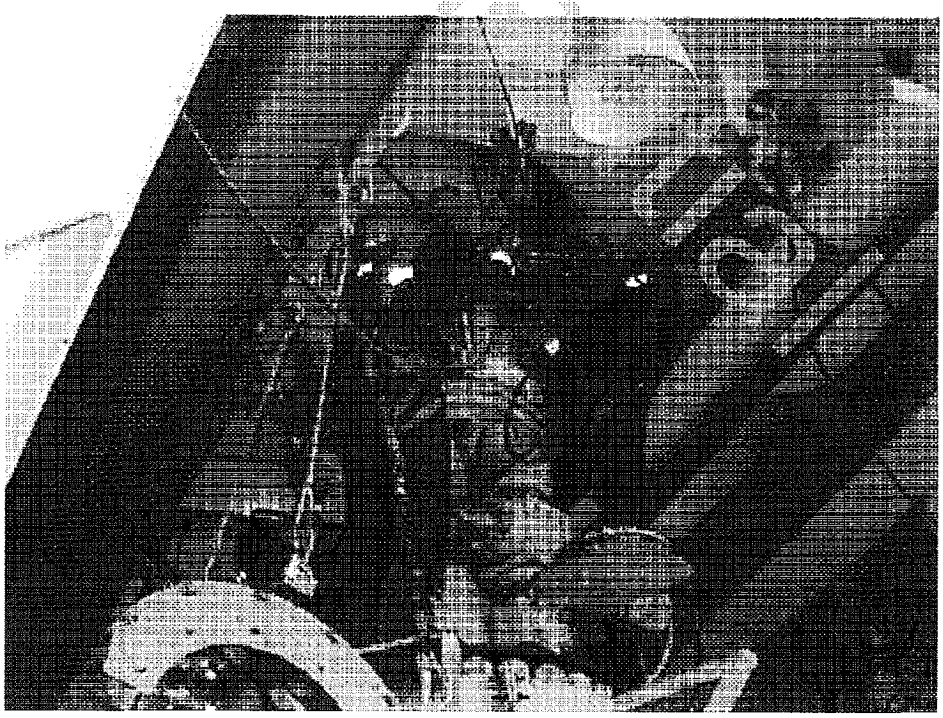
6.25 Riser spider and gimbal on deck.



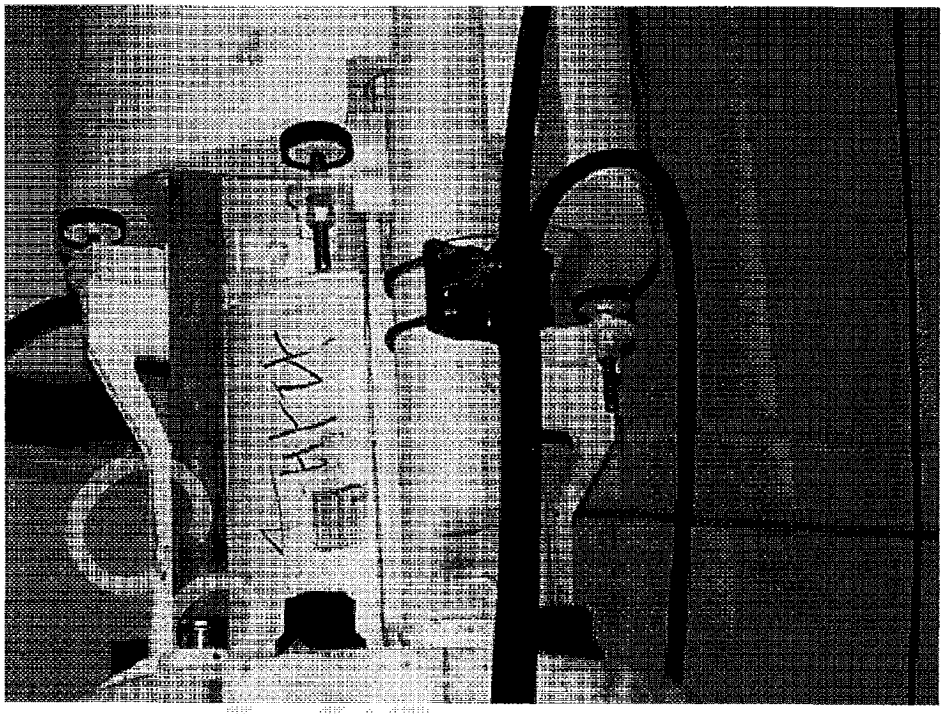
6.26 ROV panel on LMRP



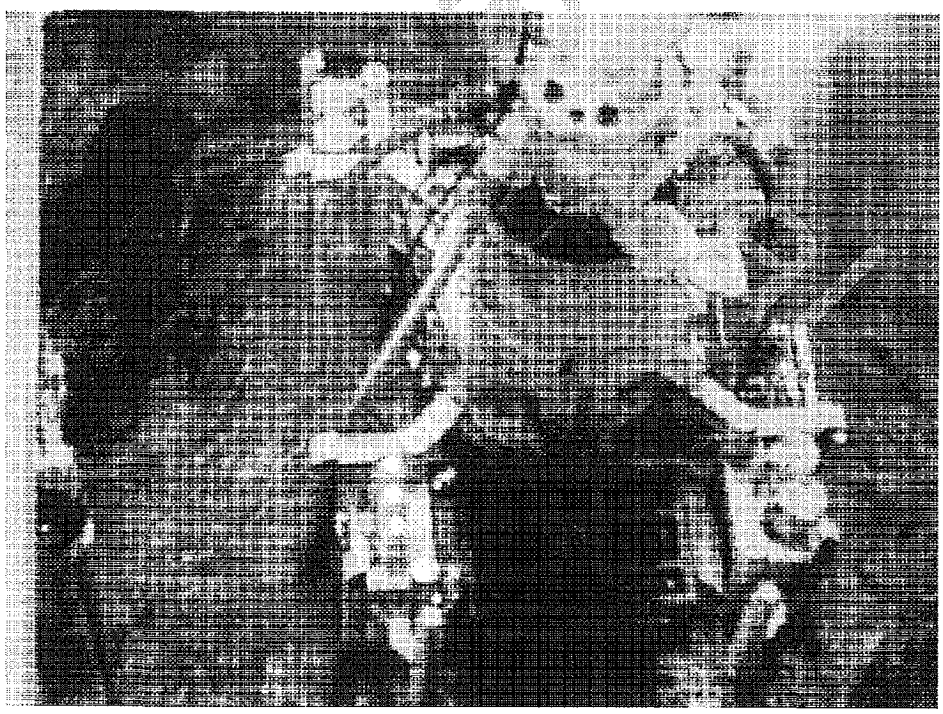
6.27 Stabbing hydraulic running tool into termination joint.



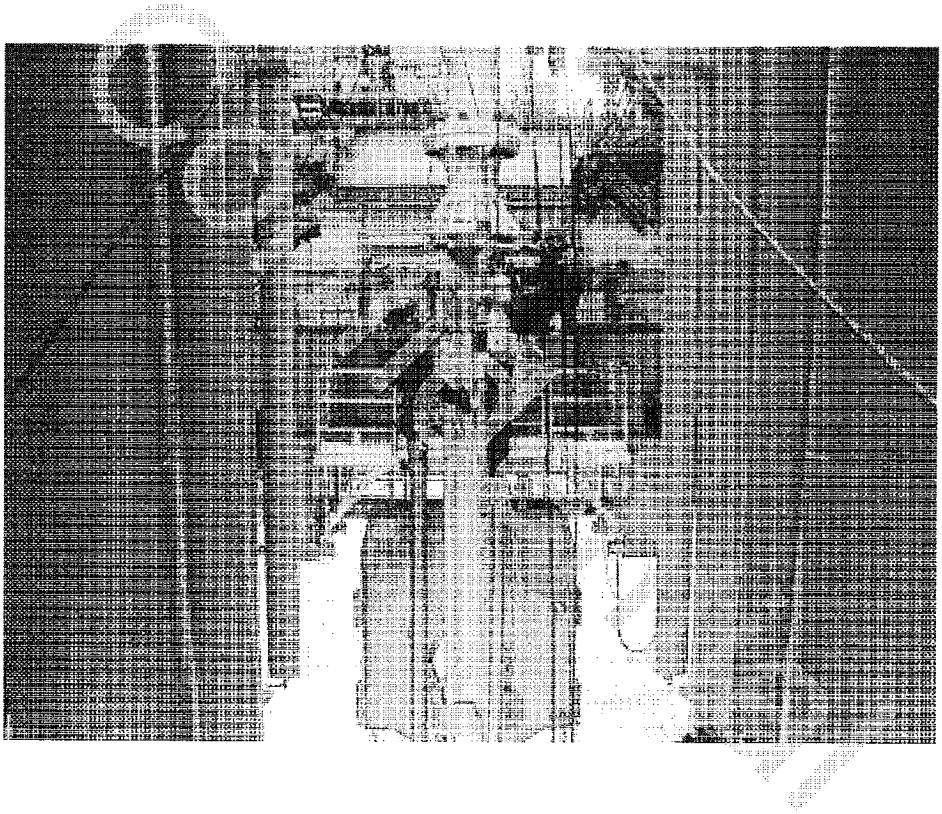
6.28 Making up termination joint.



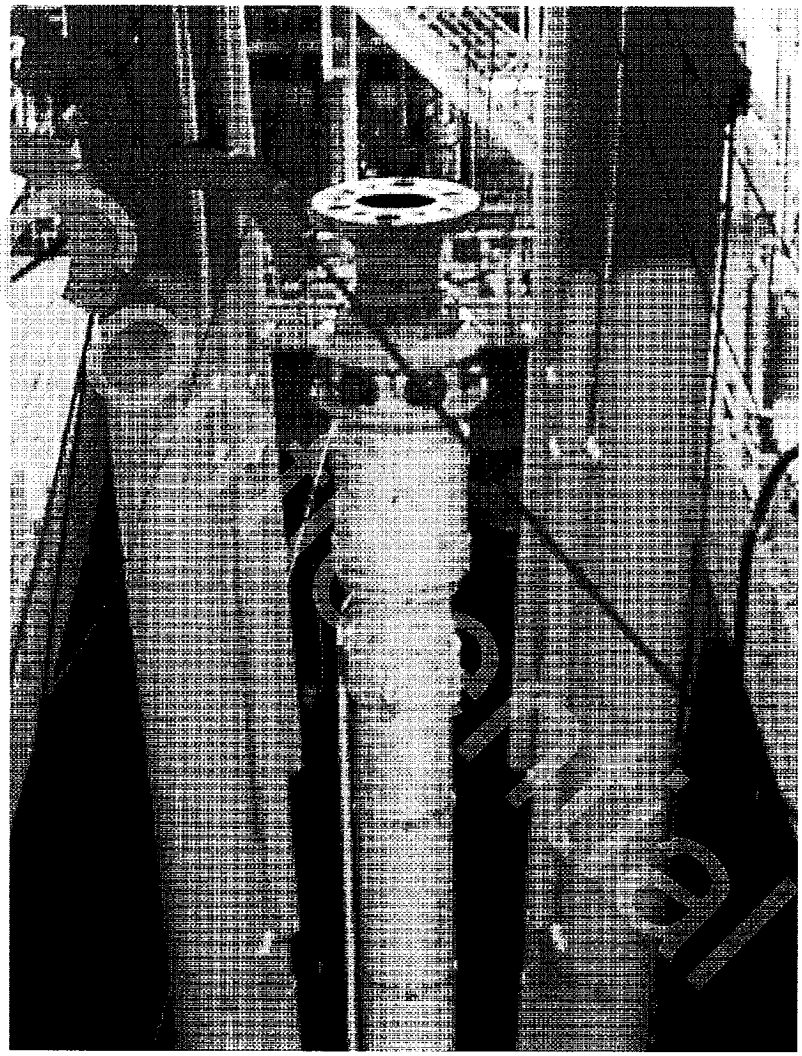
6.29 Mux clamp installed.



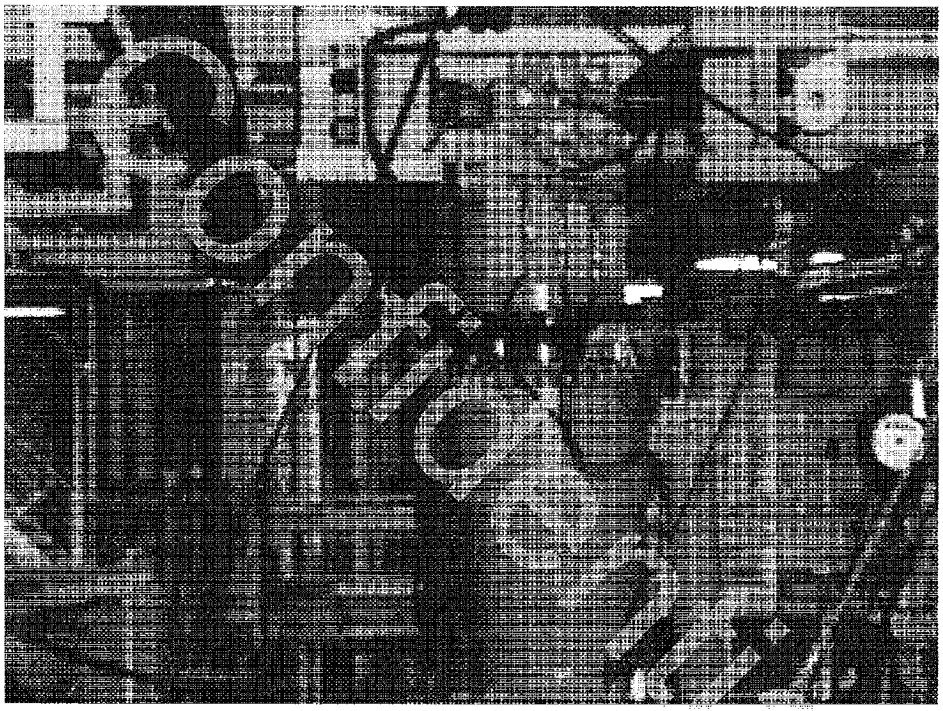
6.30 BOP stack heading down.



6.31 Slip joint made up and installing goosenecks to pressure test.



6.32 BOP hanging on support ring with landing joint removed. Moving BOP on trip saver.



6.33 This shows the beams the trip saver travels on to move the BOP stack.

SECTION 7: DAILY REPORTS