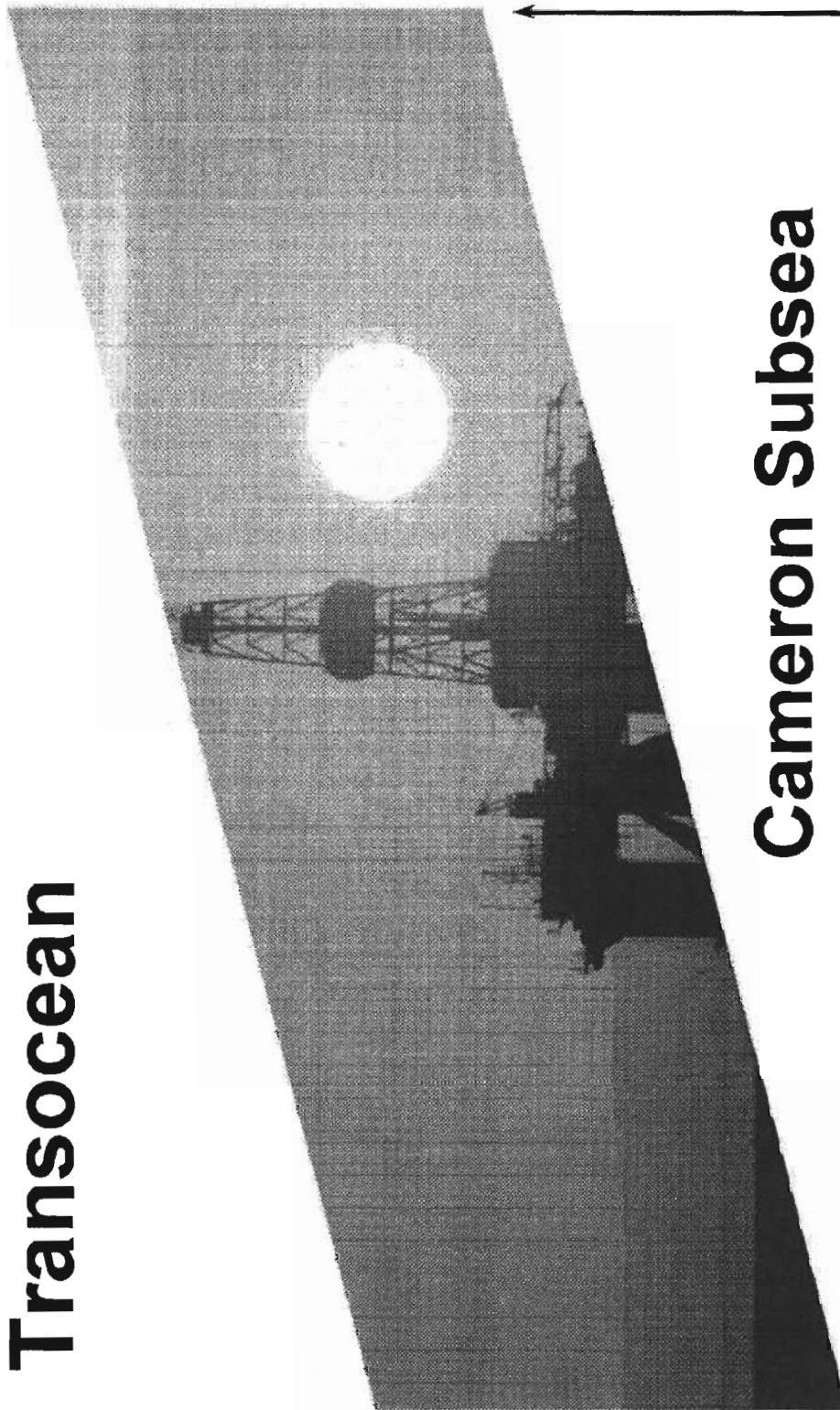




DRILLING & PRODUCTION SYSTEMS

**Transocean**



**Cameron Subsea  
Systems**

**May 2008**

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8054

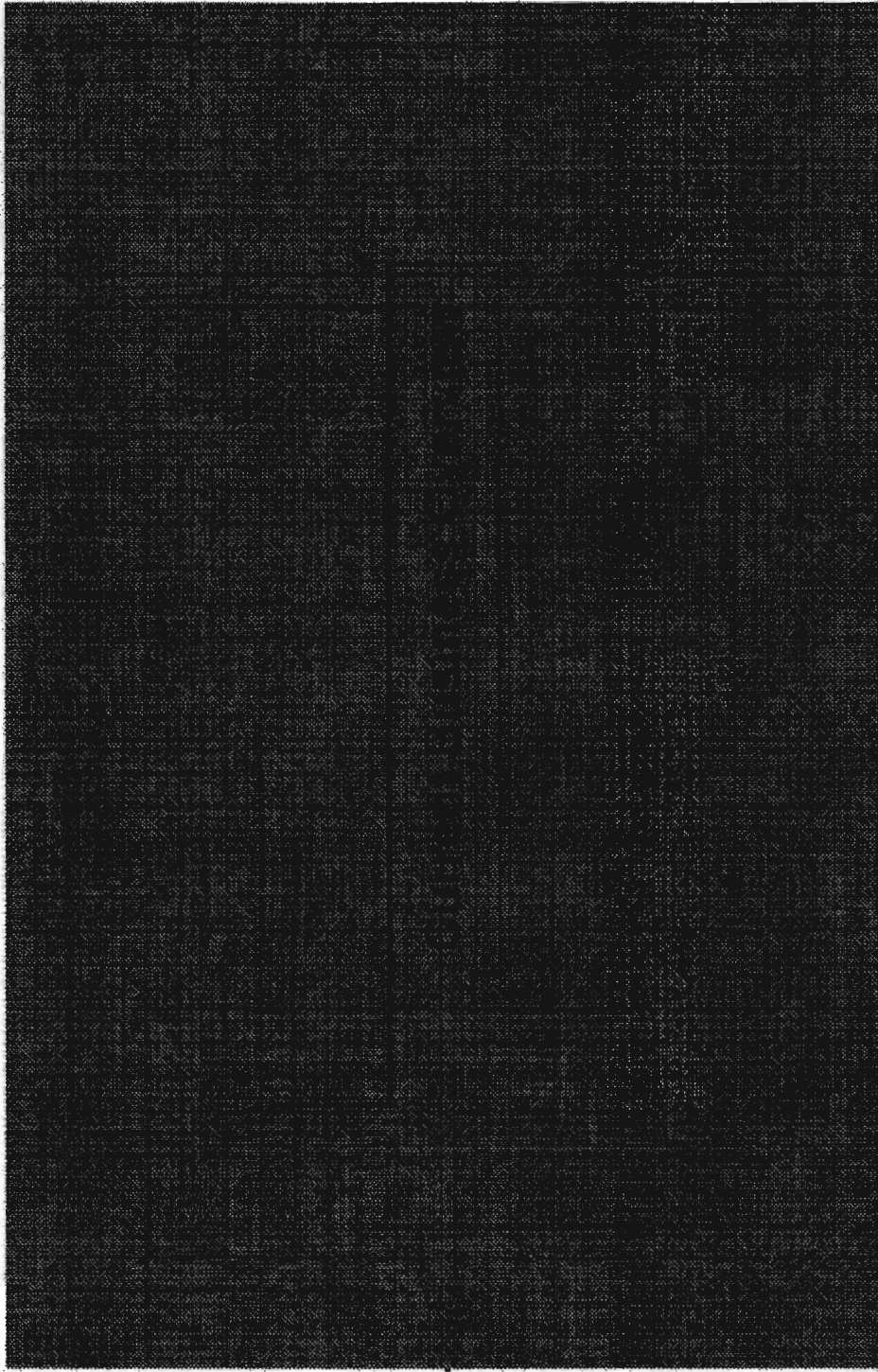
Exhibit No. \_\_\_\_\_  
Worldwide Court  
Reporters, Inc.



# Agenda

- Overview of Transocean's Cameron Equipment
- Project Schedule / Deliveries
- Product Overviews
- Incentives / Risk Avoidance

DRILLING & PRODUCTION SYSTEMS

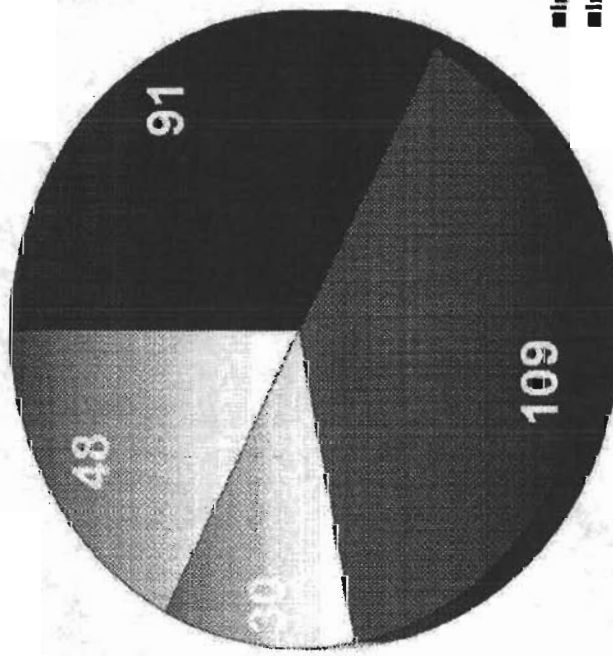


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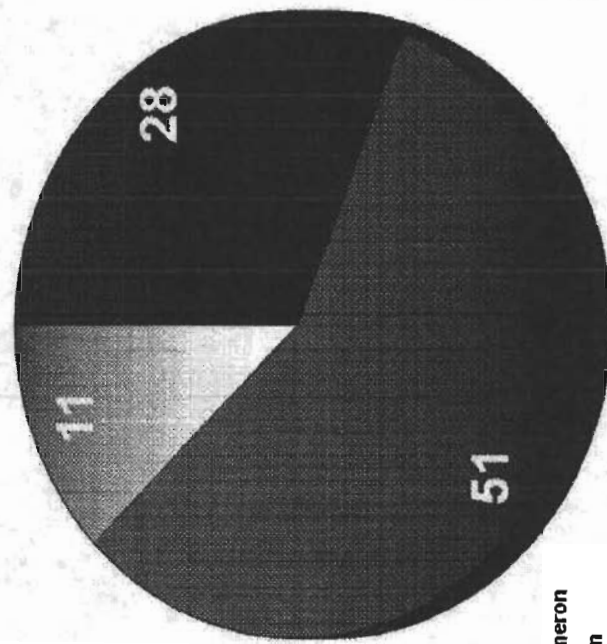
DRILLING & PRODUCTION SYSTEMS

## Floater Market Share



## Worldwide Floaters

**50% Cameron**



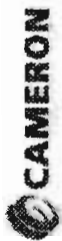
## Transocean Floaters

**57% Cameron**

- Installed non-Cameron
- Installed Cameron
- Under construction Cameron
- Under construction non-Cameron


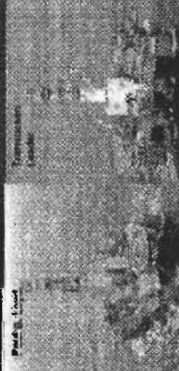



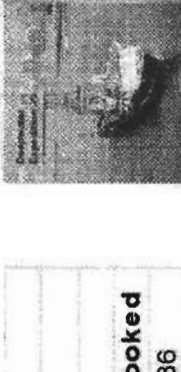















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DRILLING &amp; PRODUCTION SYSTEMS

## 21 Rigs in Transocean's fleet with EVO ram sealing elements

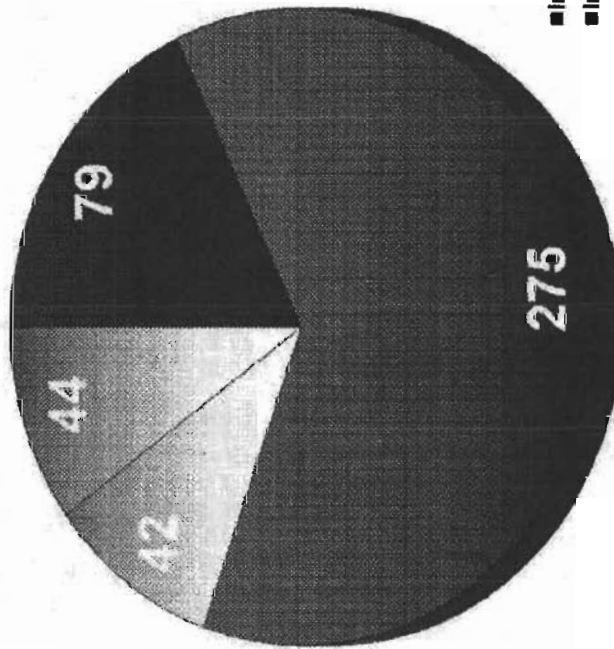
Cameron T & TL BOPs installed Transocean fleet		
Rig		Year Booked
Falcon 100		1986
Jack Bates		1986
Paul B Loyd Jr		1987
Transocean Leader		1987
Sovereign Explorer		1995
Celtic Sea		1996
Explorer		1996
Pathfinder I / II		1997
Deepwater Frontier		1997
Deepwater Millennium		1997
Deepwater Navigator		1997
Deepwater Expedition		1997
Deepwater Nautilus		1997
Deepwater Horizon		1997
Sedco Express 1		1997
Sedco Energy		1997
Cajun Express		1998
CR Luigs		1998
Jack Ryan		1998
Deepwater Discovery		1999
Artic I		2007

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## Jack-up Market Share



- Installed non-Cameron
- Installed Cameron
- Under construction Cameron
- Under construction non-Cameron

## Worldwide Jackups

72% Cameron

## Transocean Jackups

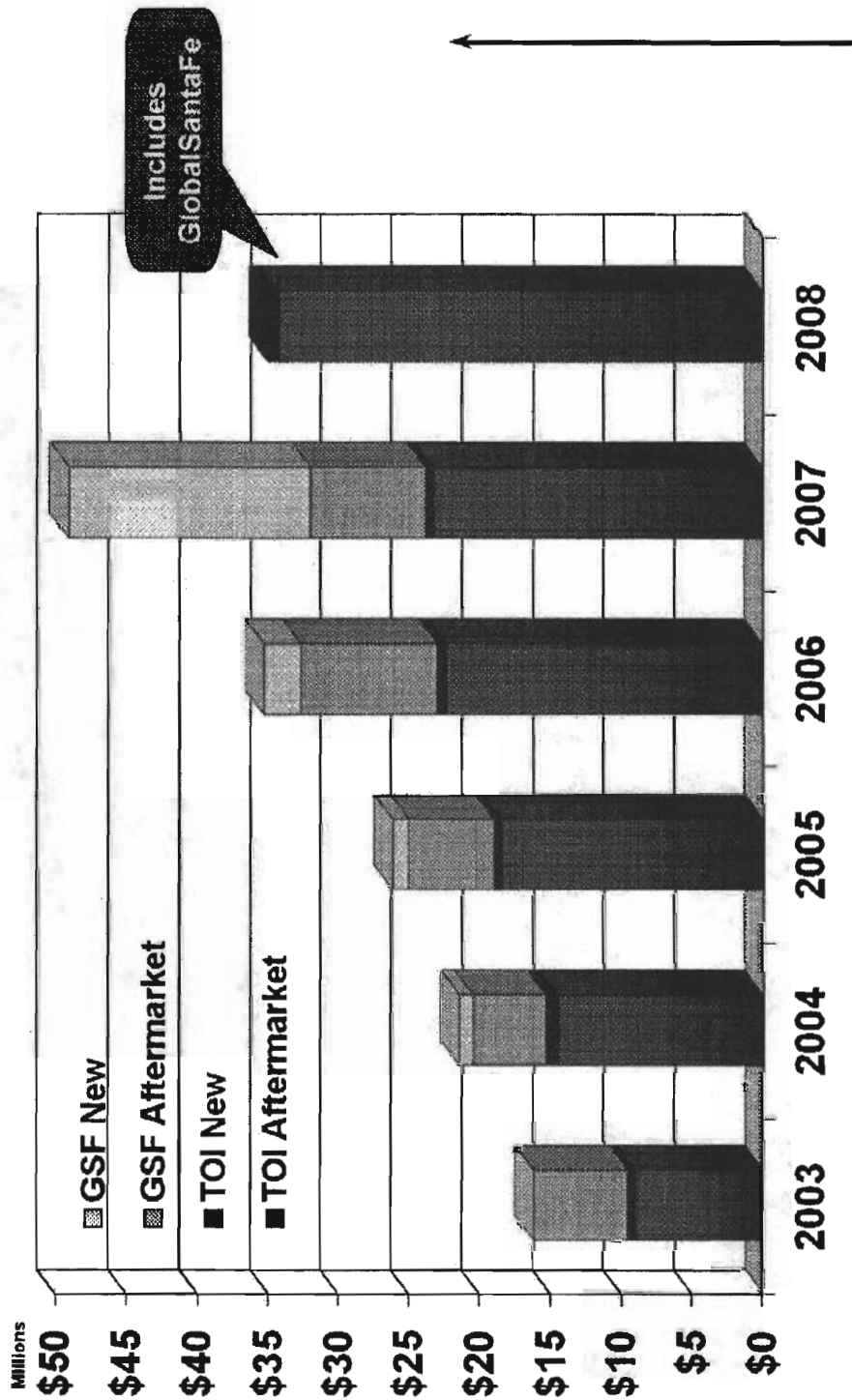
77% Cameron

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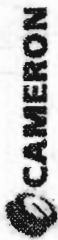


DRILLING & PRODUCTION SYSTEMS

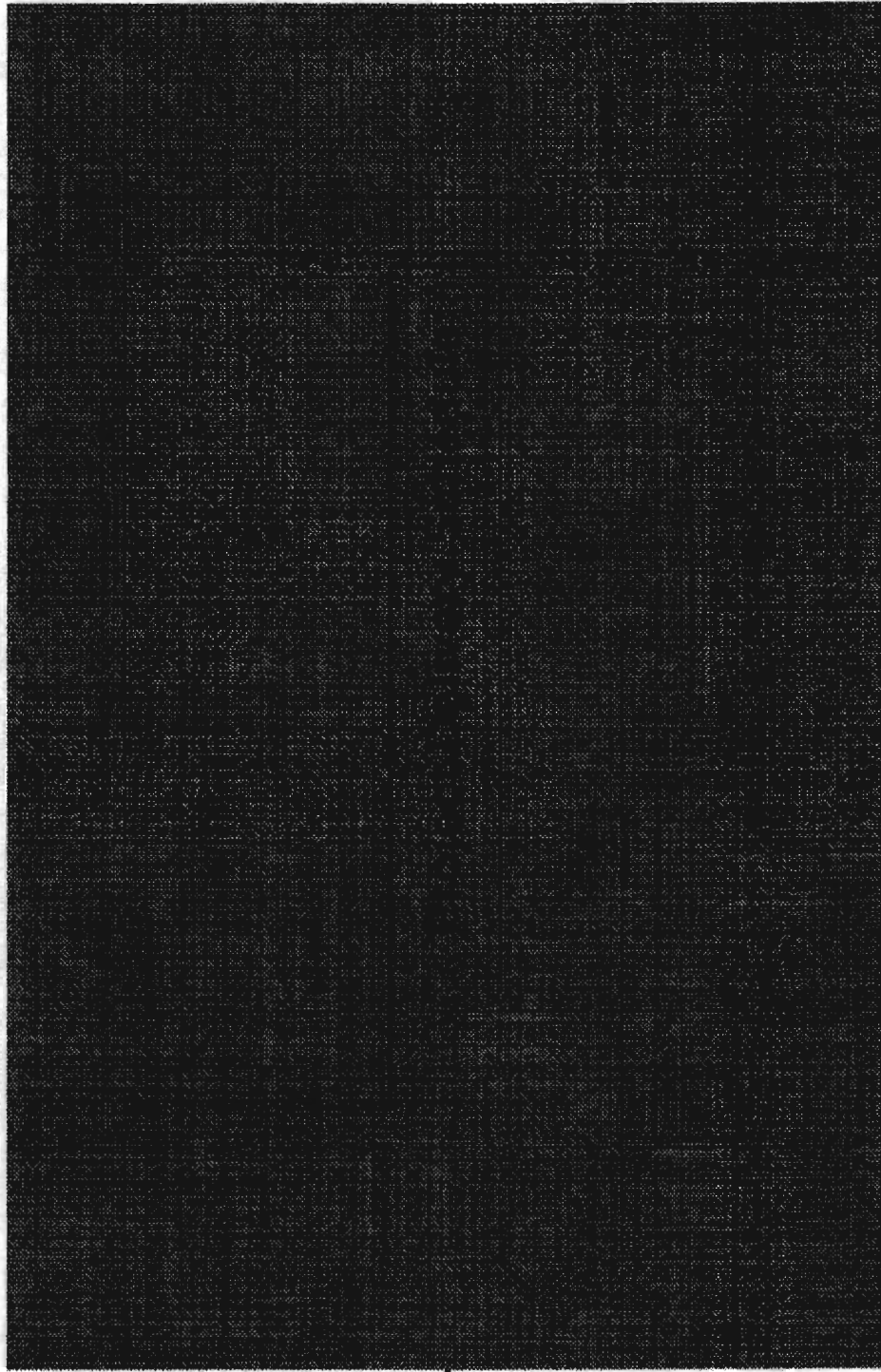
## Transocean Worldwide Bookings with Cameron



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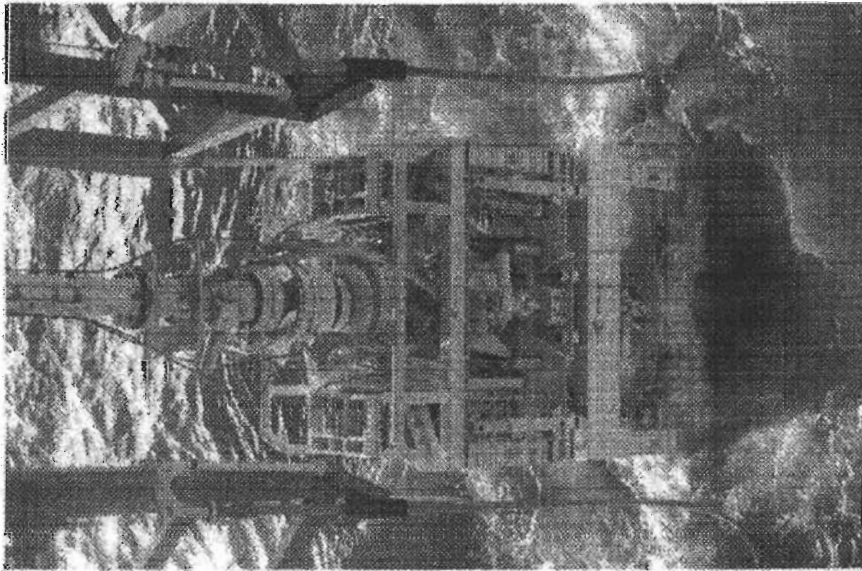
# Project Delivery Schedule

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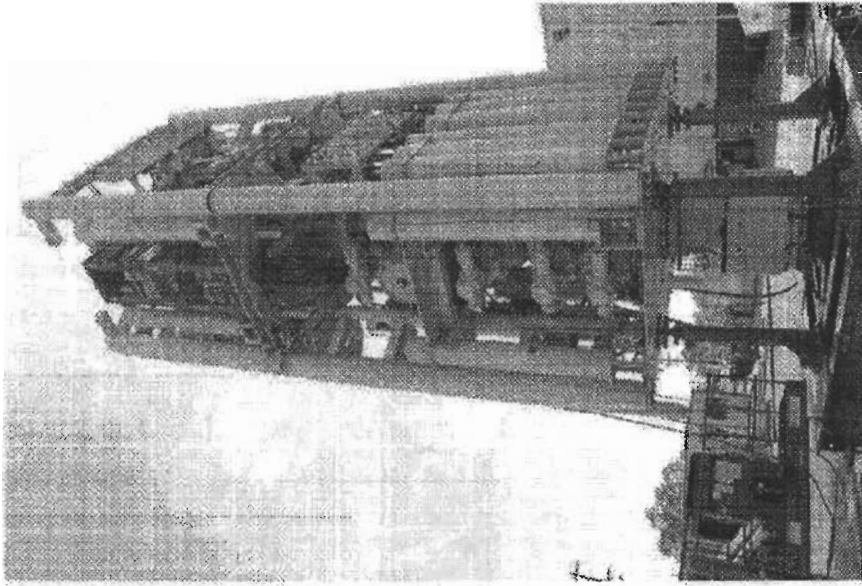


DRILLING & PRODUCTION SYSTEMS

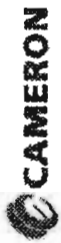
BP Thunderhorse



Stena DrillMax 1

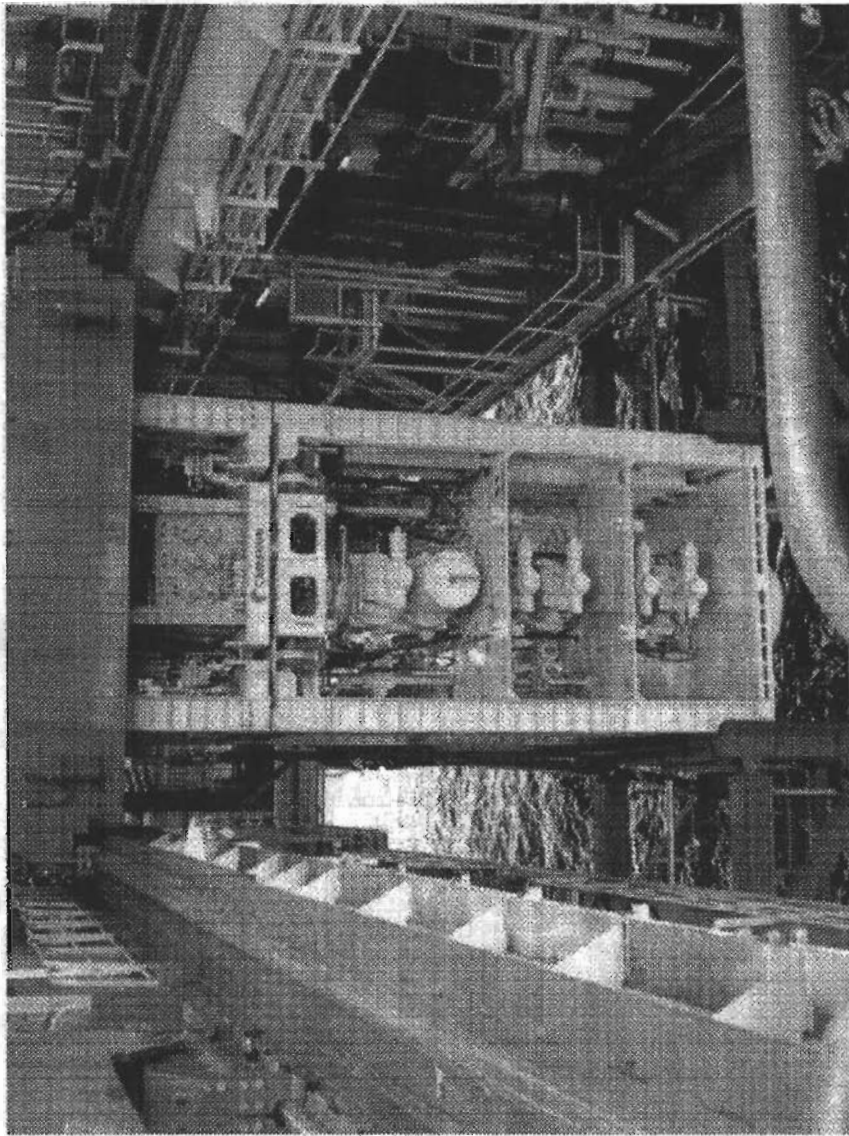


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## Seadrill 8 Sea Trials



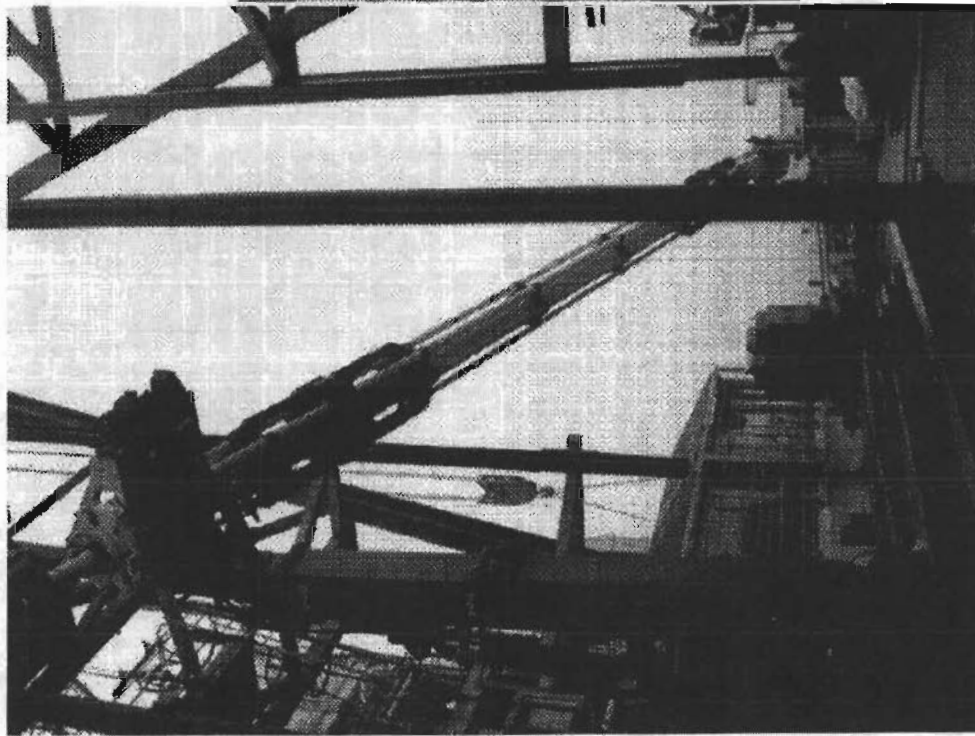
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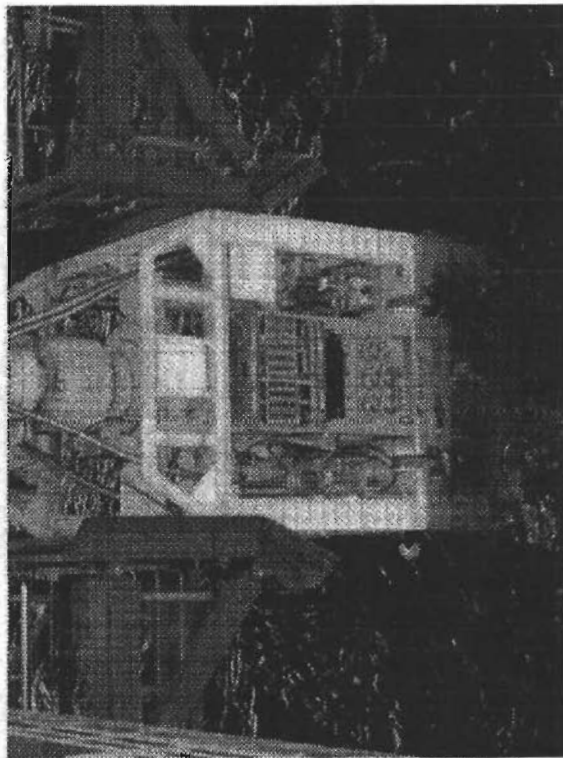


DRILLING & PRODUCTION SYSTEMS

## Seadrill 8 Sea Trials



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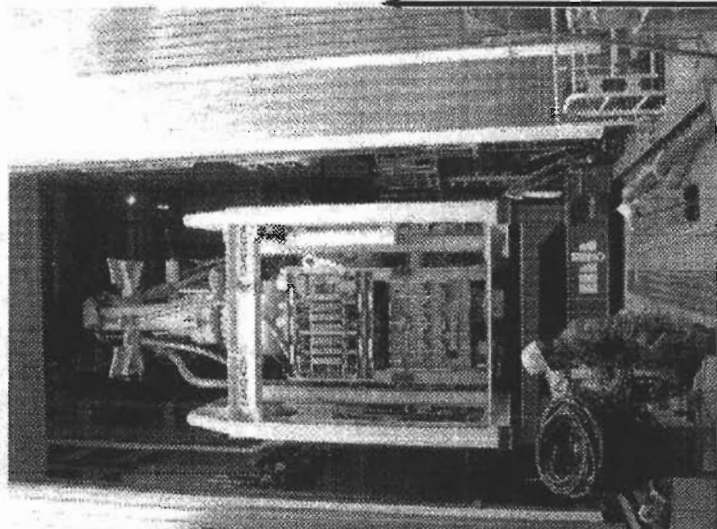
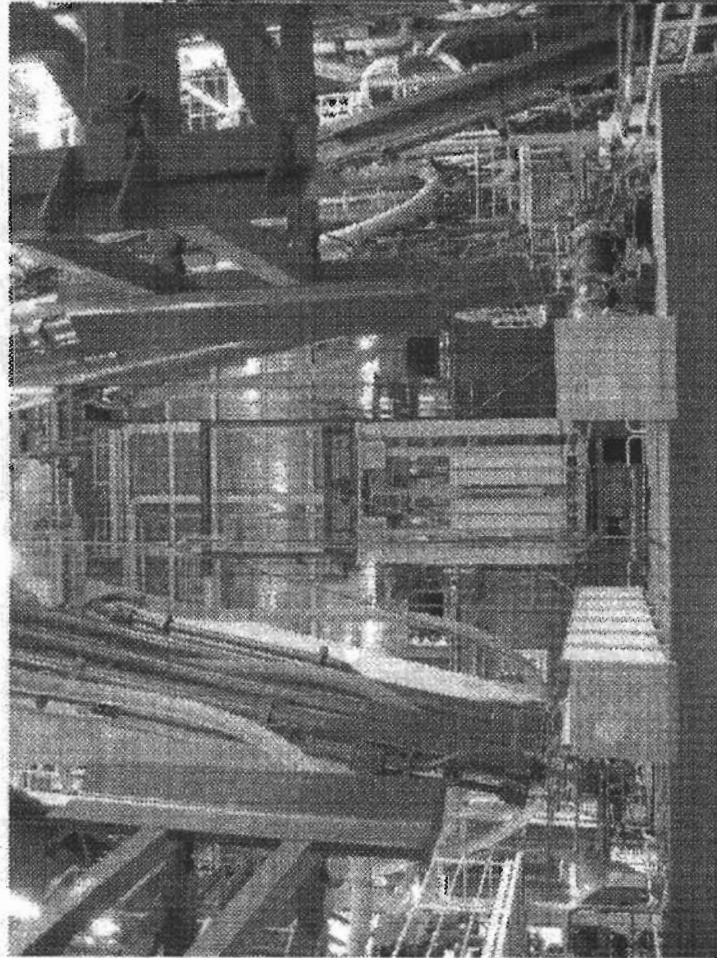


DRILLING & PRODUCTION SYSTEMS

## West E-Drill Lower Stack

Lower Stack

LMRP

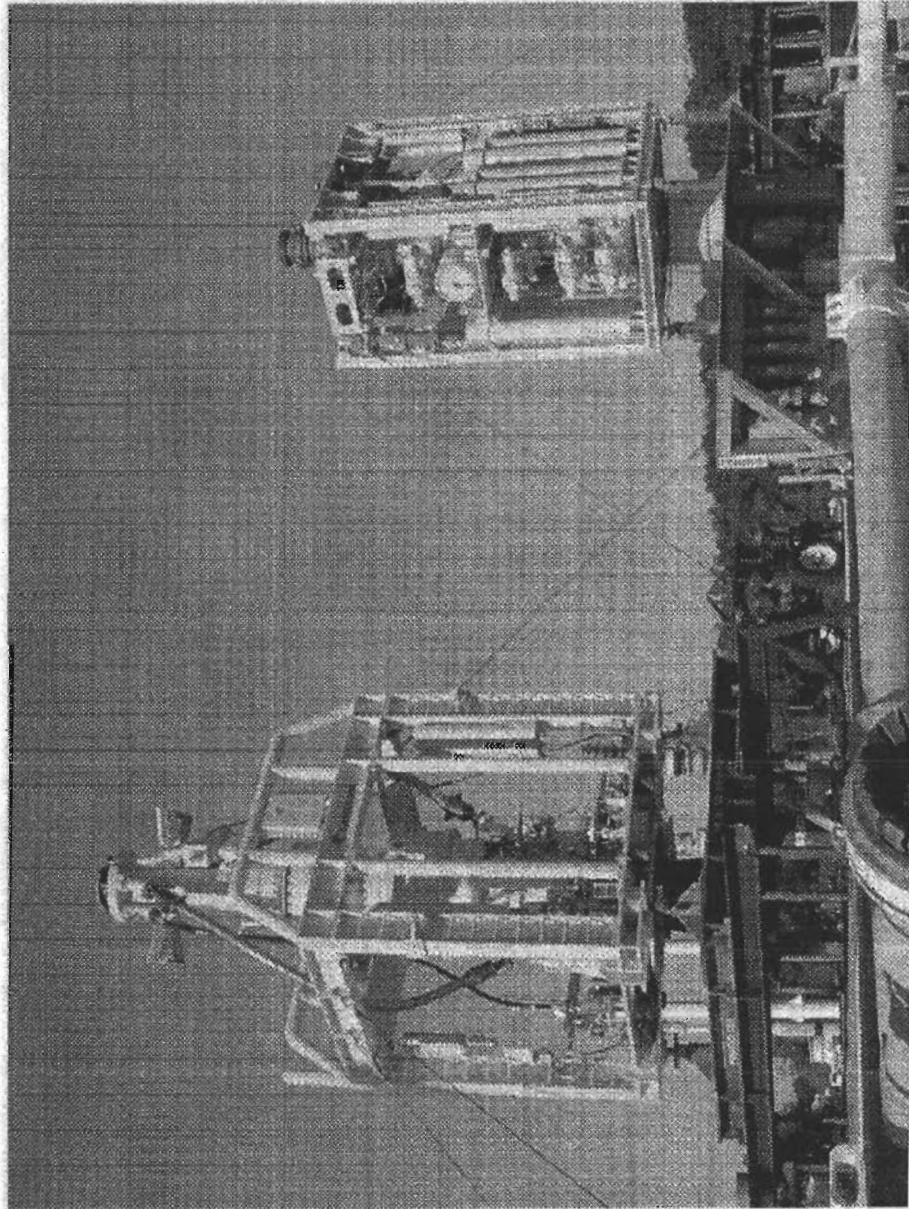


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## Seadrill 10 Load Out - Berwick

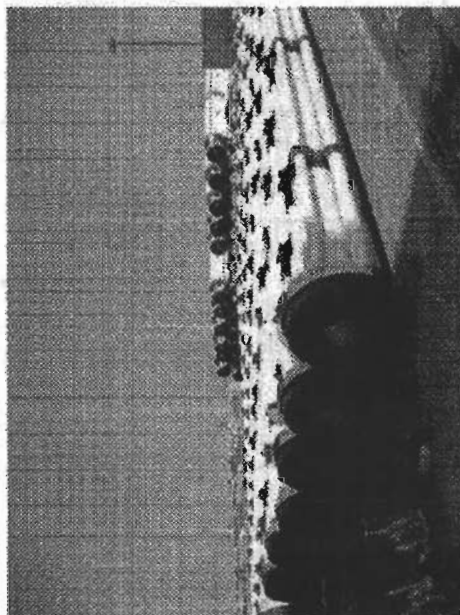
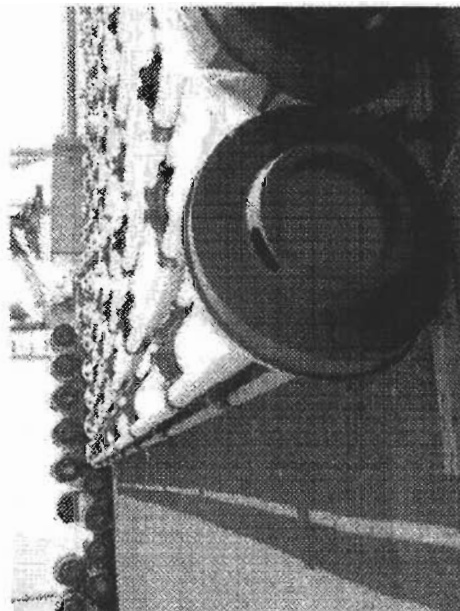
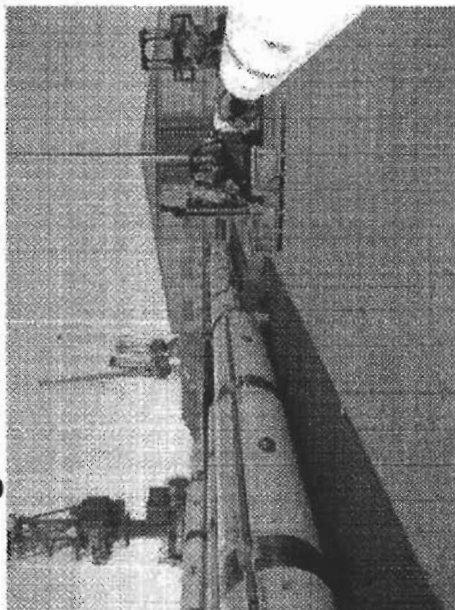
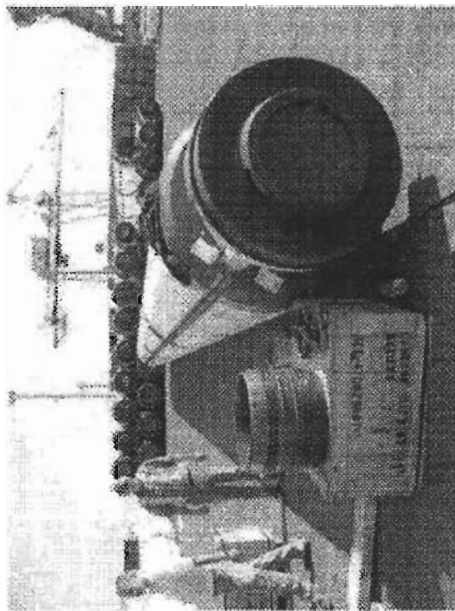


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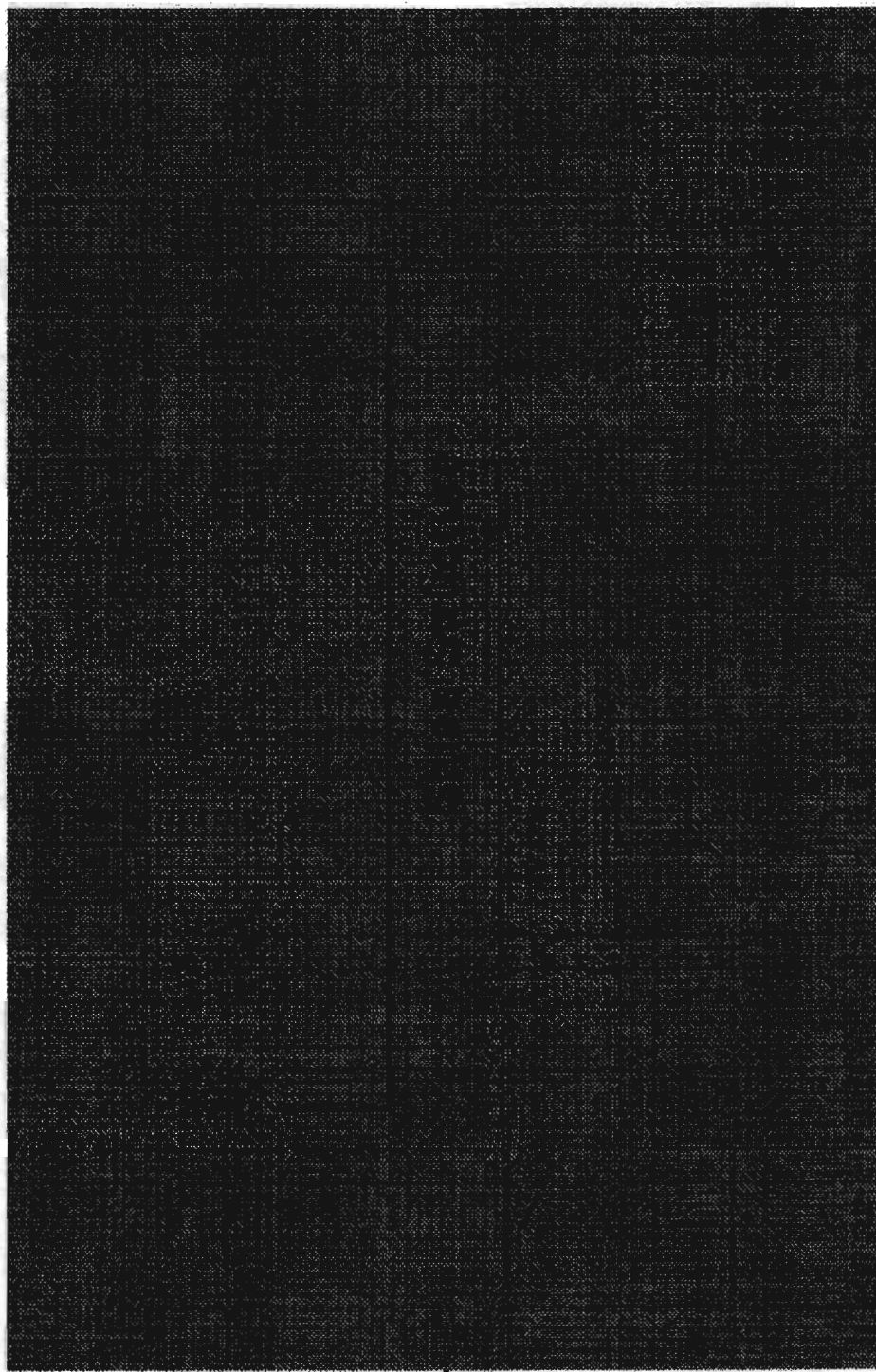
## Delivered Load King Riser



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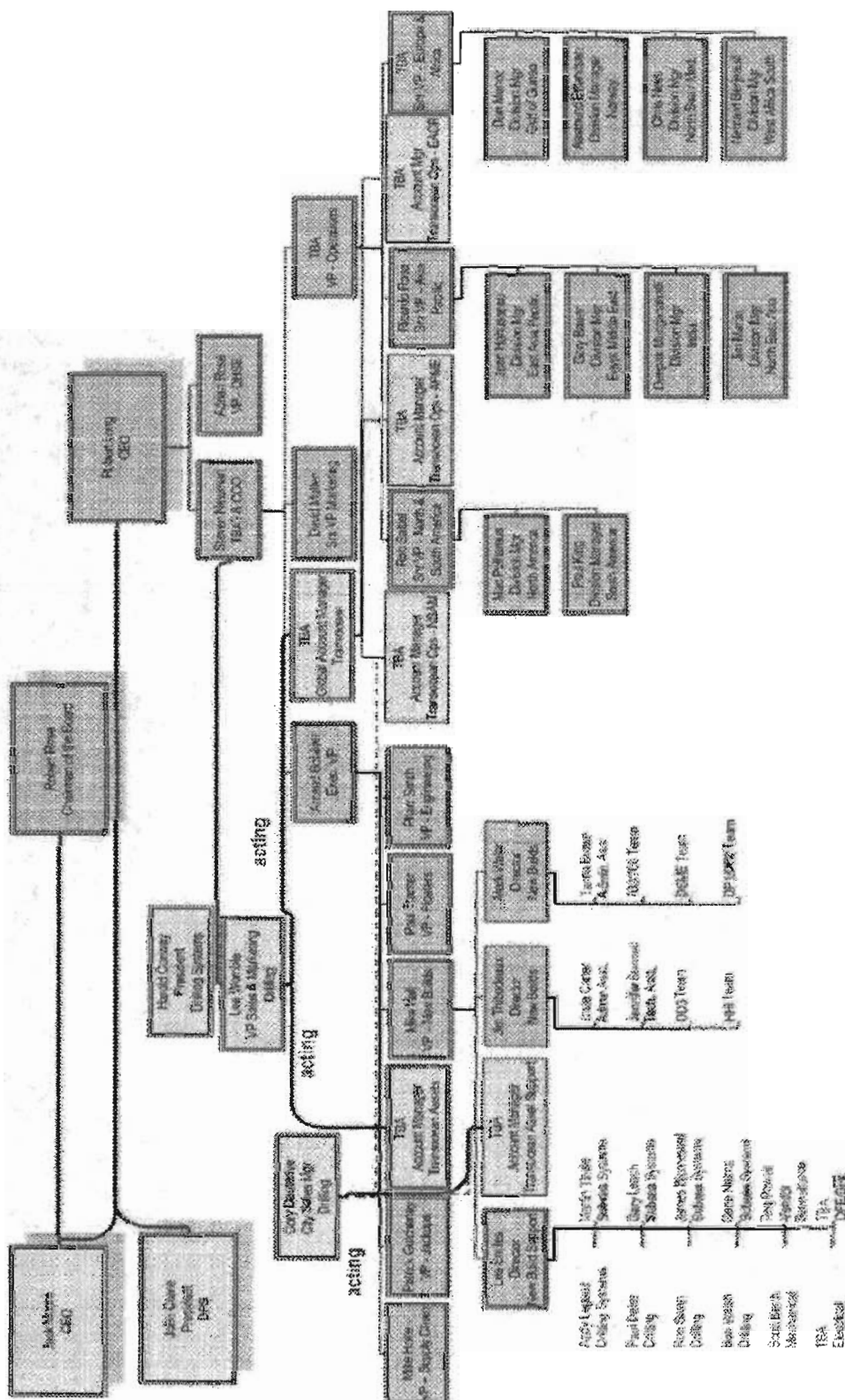
DRILLING & PRODUCTION SYSTEMS

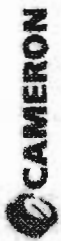


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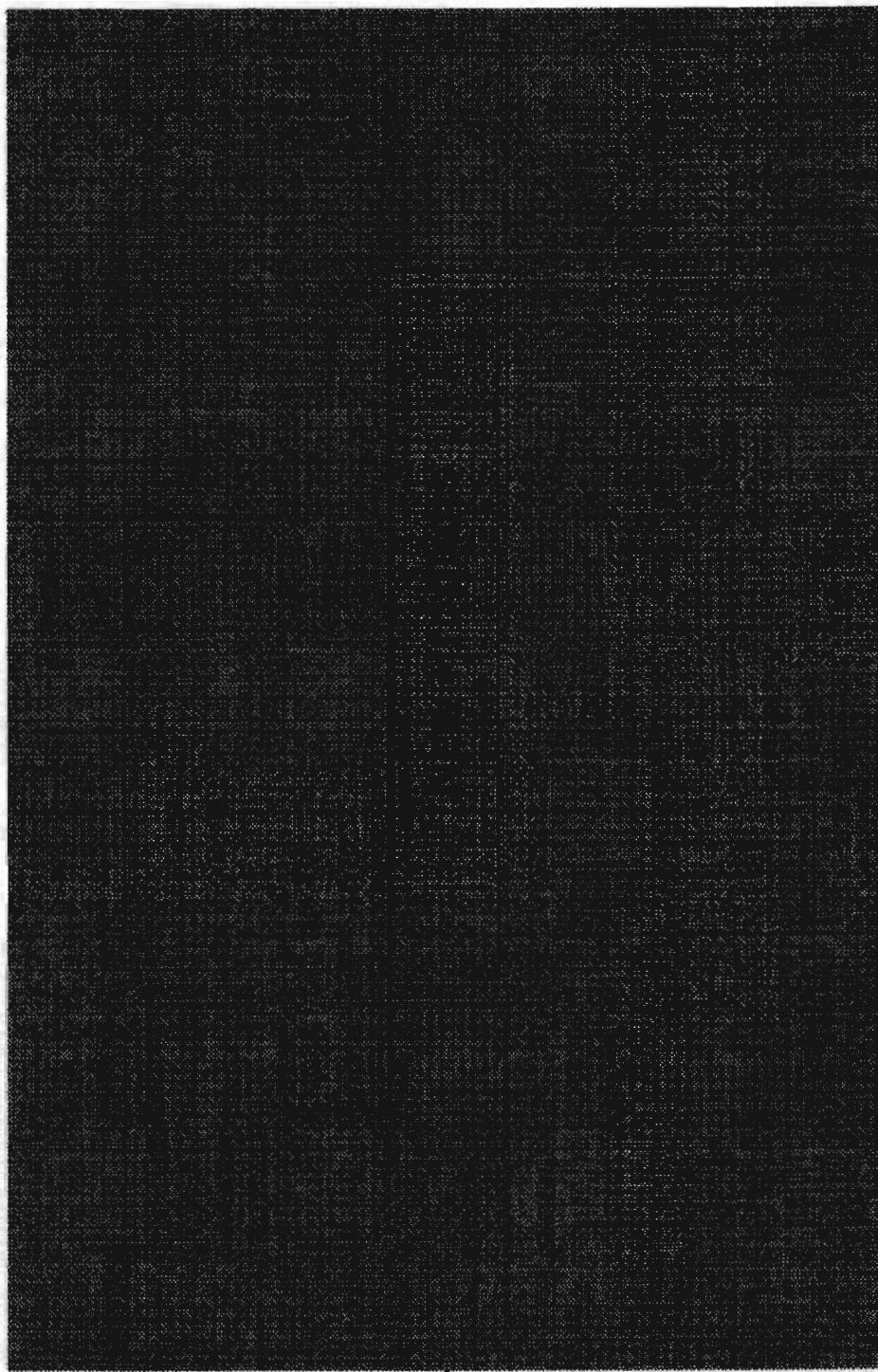


# Cameron's Transocean Support Team





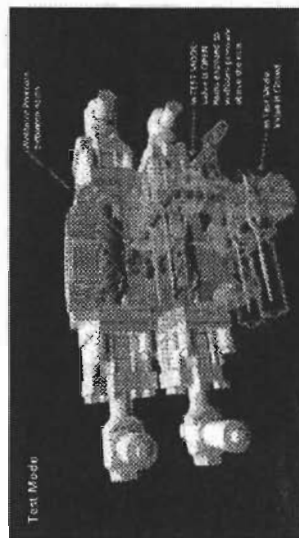
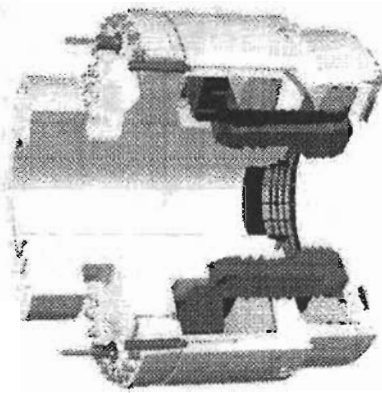
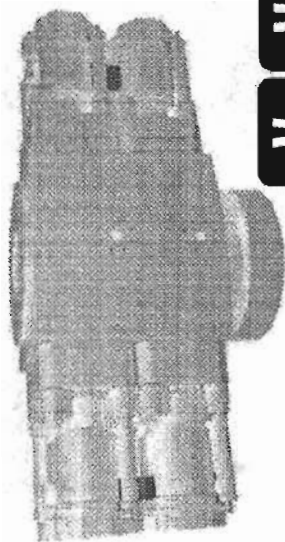
DRILLING & PRODUCTION SYSTEMS



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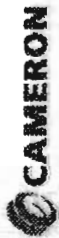
## Introduced during this build cycle



## Bi-Directional Sealing Ram

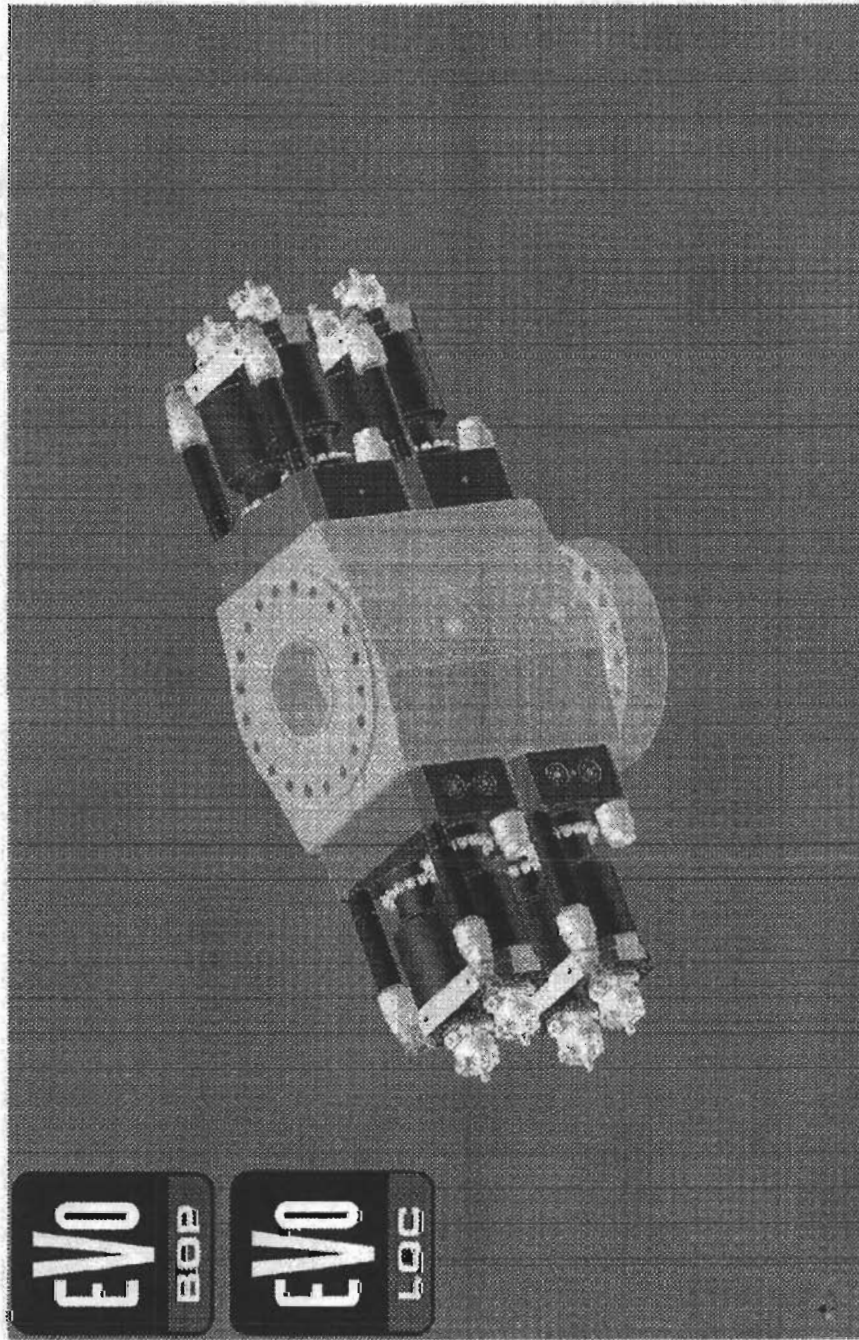


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## Final EVO BOP (motors relocated)



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**CAMERON**

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## EVO BOP Testing



### API 16A Monogram Successfully Completed :

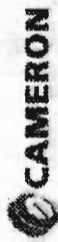
- API 16A BOP Shell Test (22,500 psi hydrostatic test)
- API 16A Bonnet Shell Test (7,500 psi hydrostatic test)
- API 16A Ram Access Test (200 cycles /10 pressure cycles)
- API 16A Ram Fatigue Test (546 open/close cycles, 11 locked mode tests embedded in the 78 pressure cycles)
- API 16A Shear Test (3 consecutive shears with wellbore sealing)

Slow  
Shear  
VideoRapid  
Shear  
Video

### Additional 'Cameron' Testing Successfully Completed:

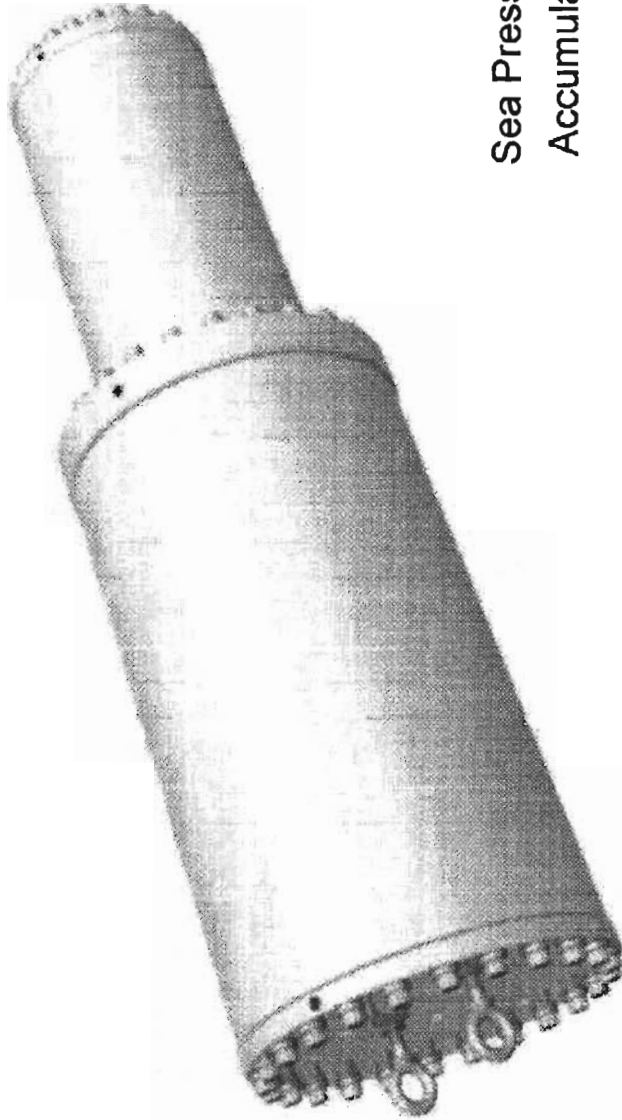
- Shell Test of Ram Change Assembly (1.5 times working pressure; i.e. 4,500 psi)
- Lock Cycle Test (94 cycles)
- Armageddon Test
  - Closed w/ 1,500 psi
  - Wellbore pressure to 15,000 psi
  - Locked w/ 1,500 psi
  - Vented operating pressure
  - Vented wellbore pressure
  - Re-applied wellbore pressure 15,000 psi
  - Unlocked w/ 1,500 psi
  - Bled-off wellbore pressure
  - Opened

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## SPA: Introduced at OTC 2008



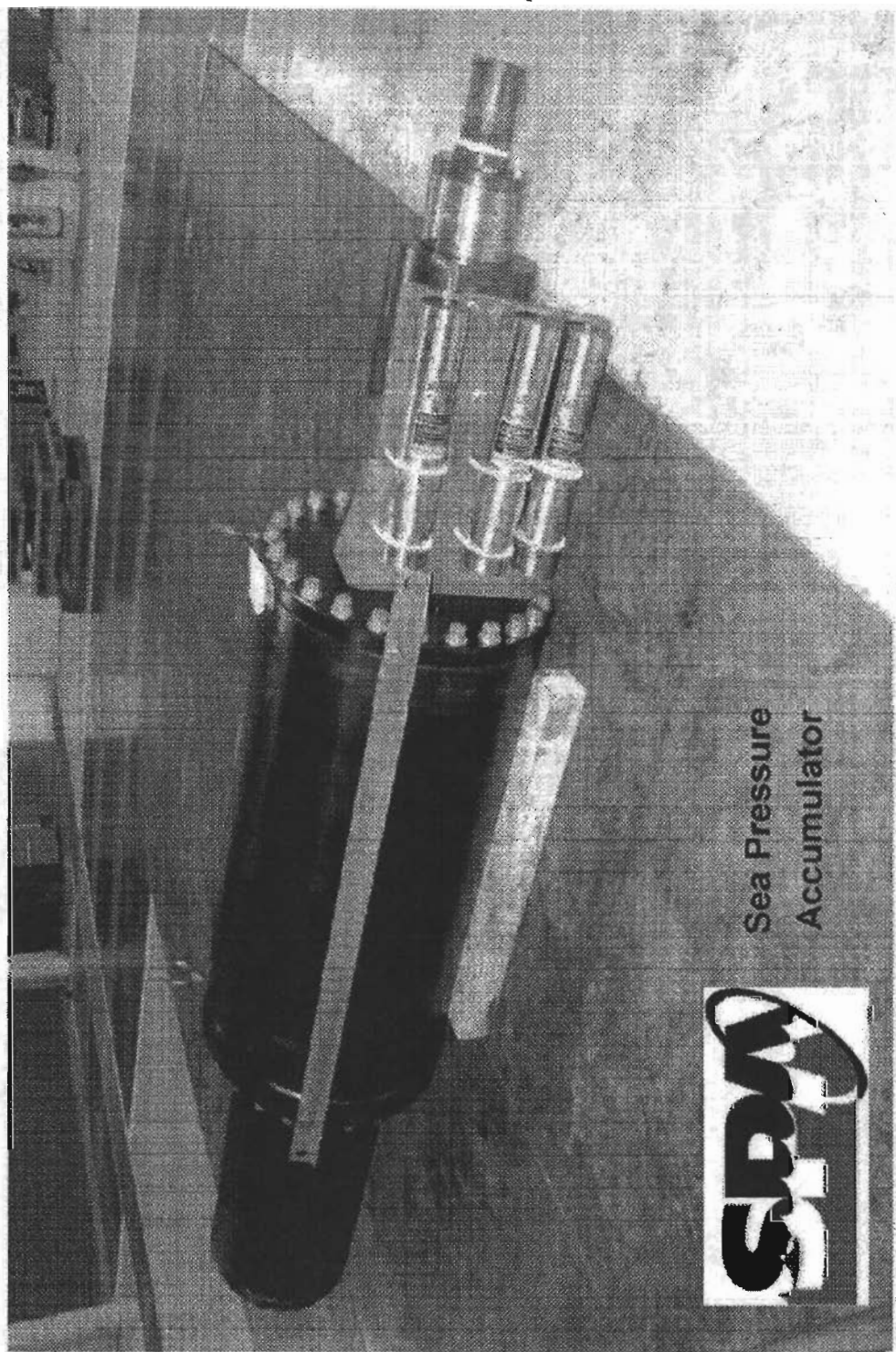
Sea Pressure  
Accumulator



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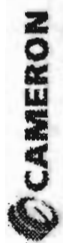
Sea Pressure  
Accumulator

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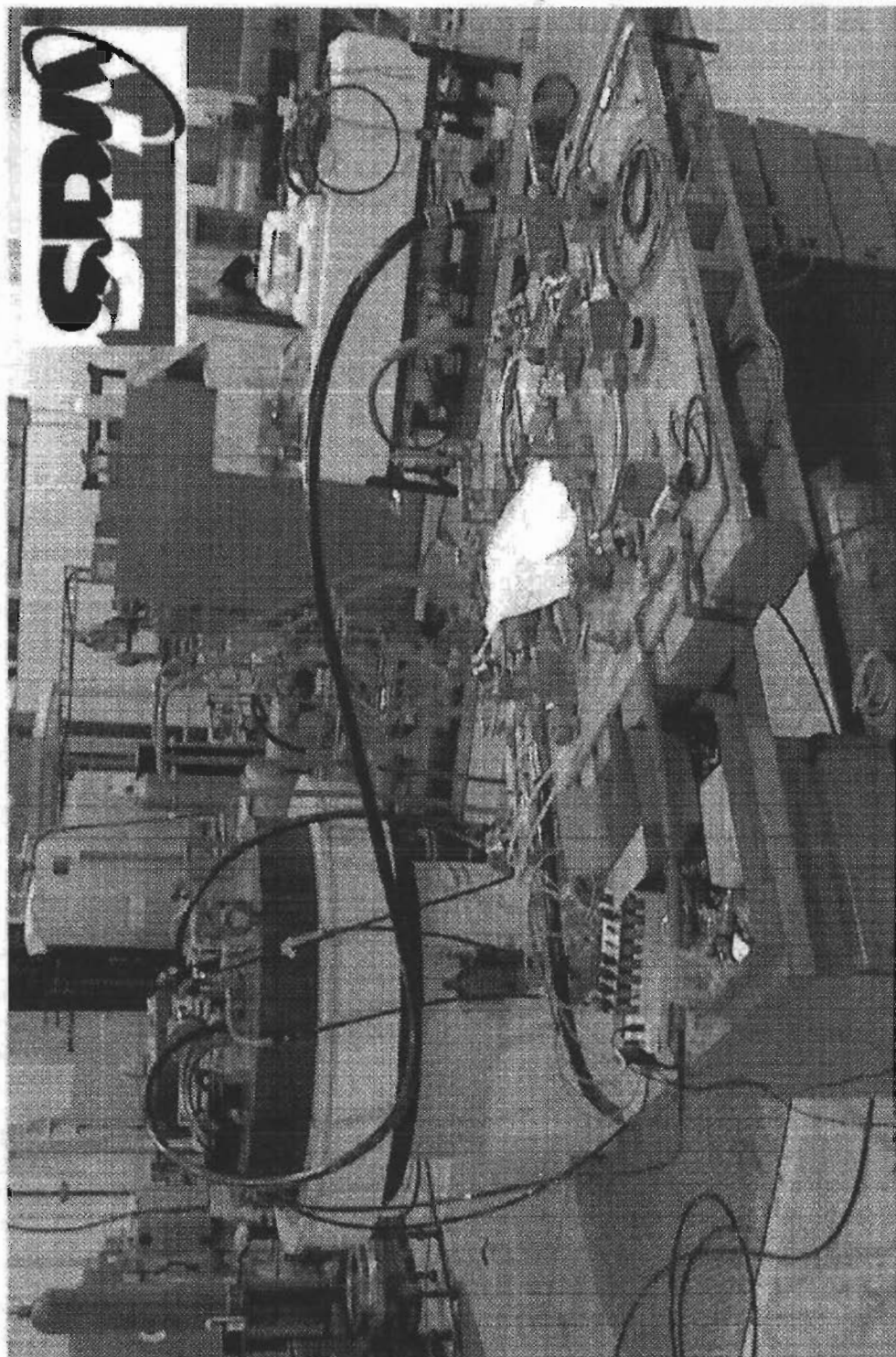
CONFIDENTIAL

CAM\_CIV\_0042698





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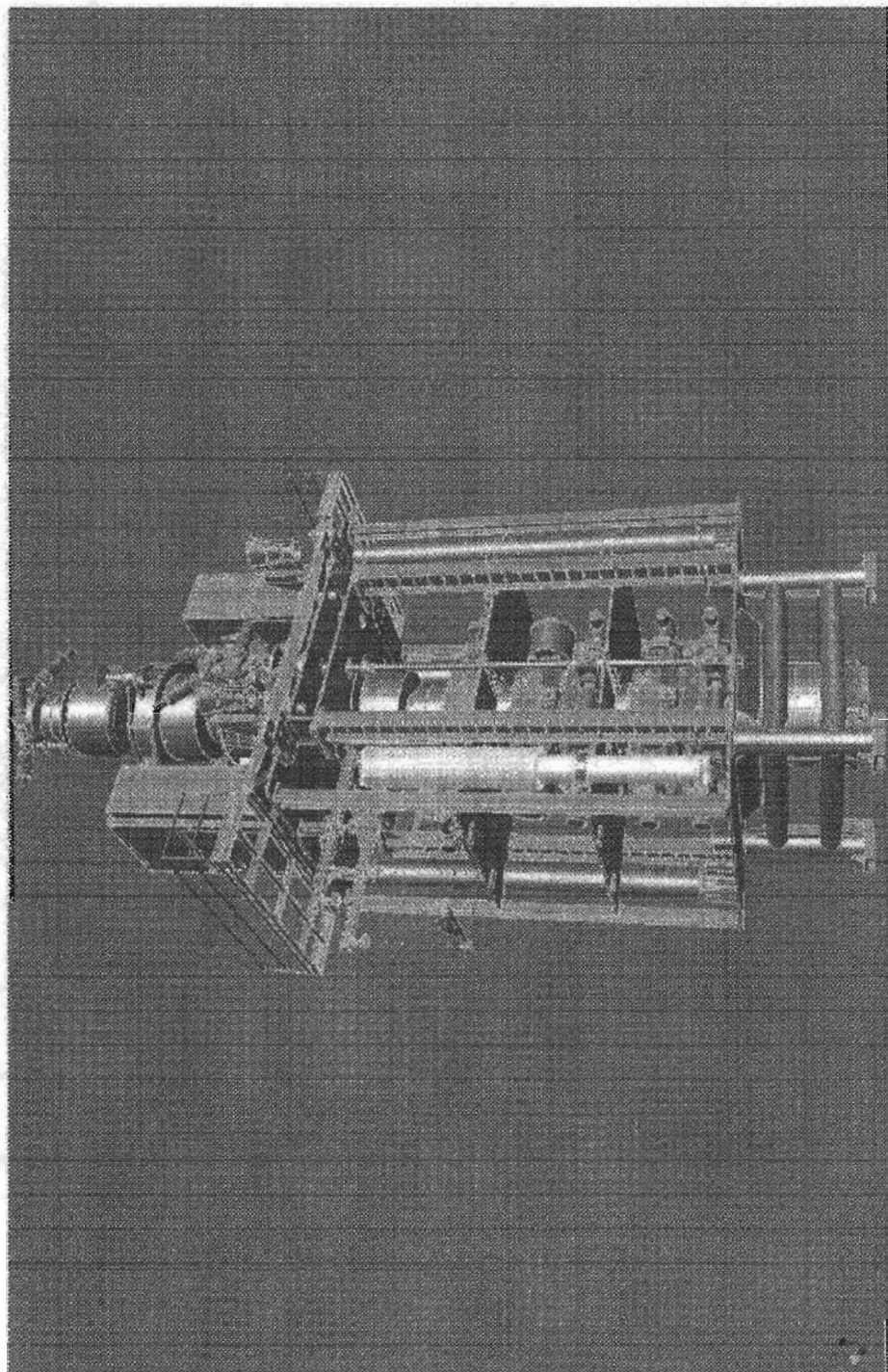


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## The Jack Ryan stack with a SPA



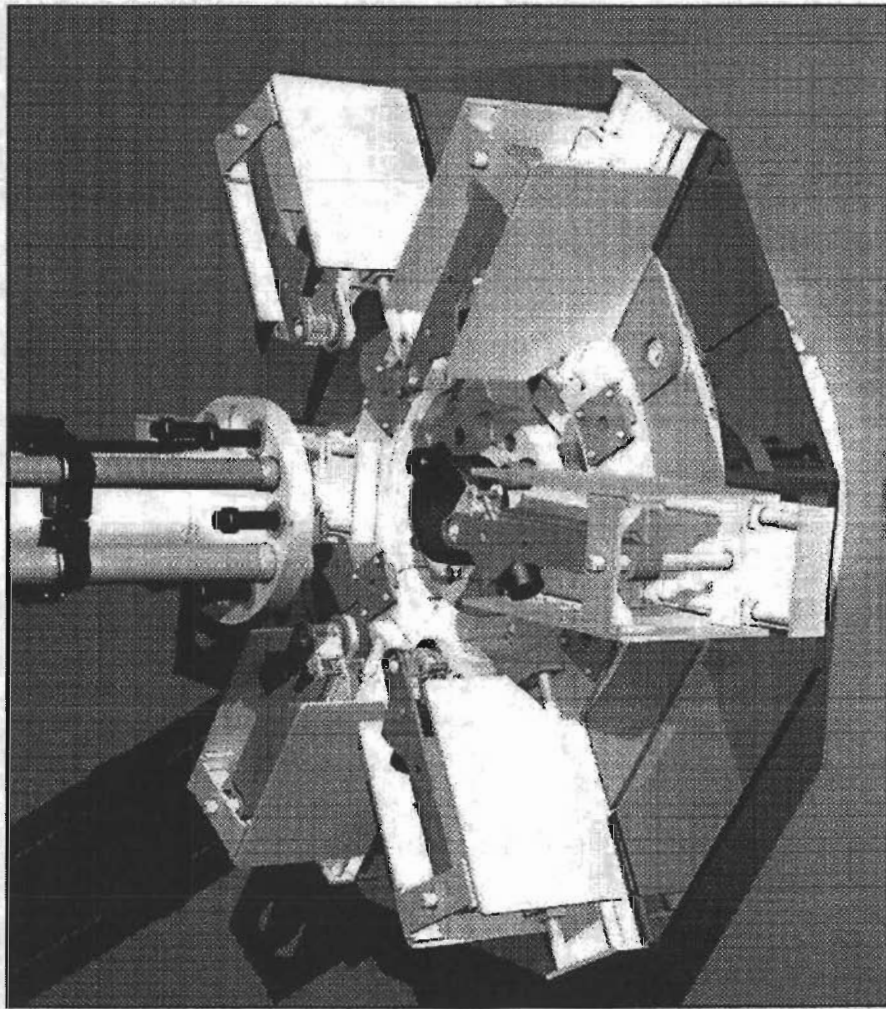
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## Cameron Robo-Spider: 2008 Introduction

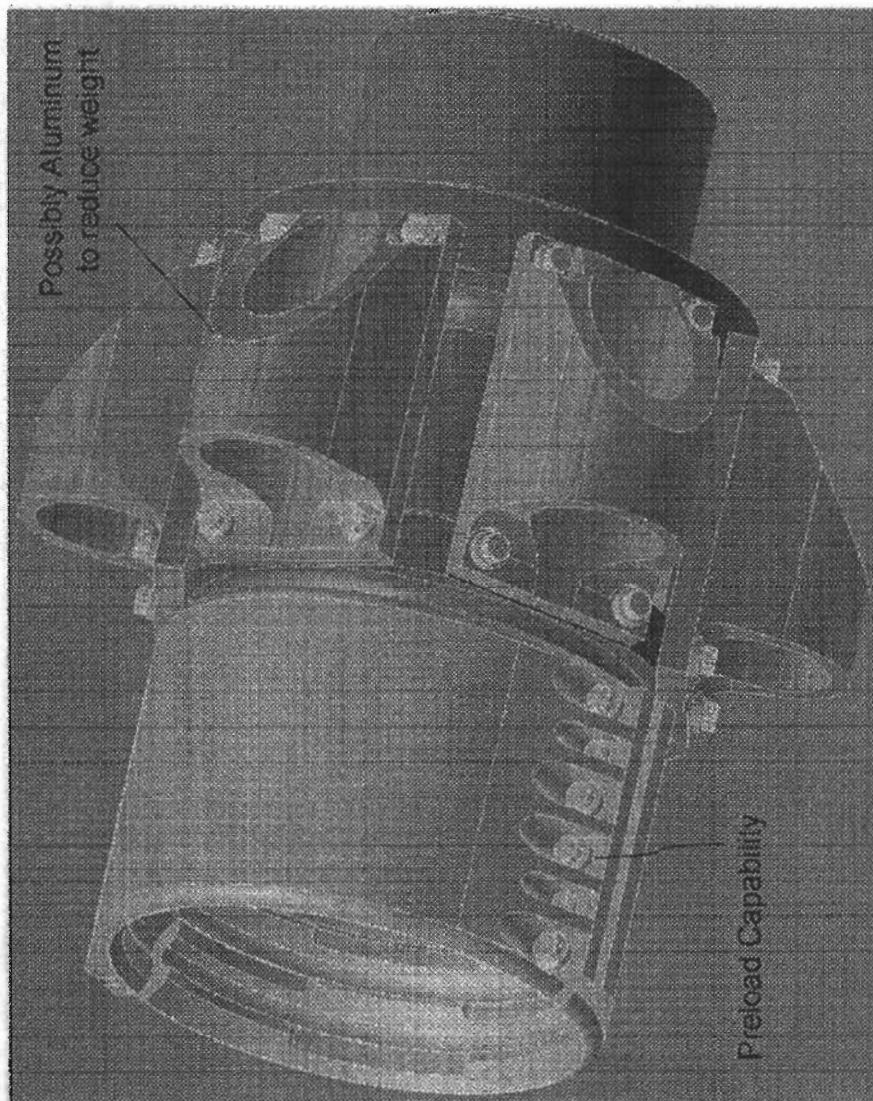


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## New Riser: 2009/2010

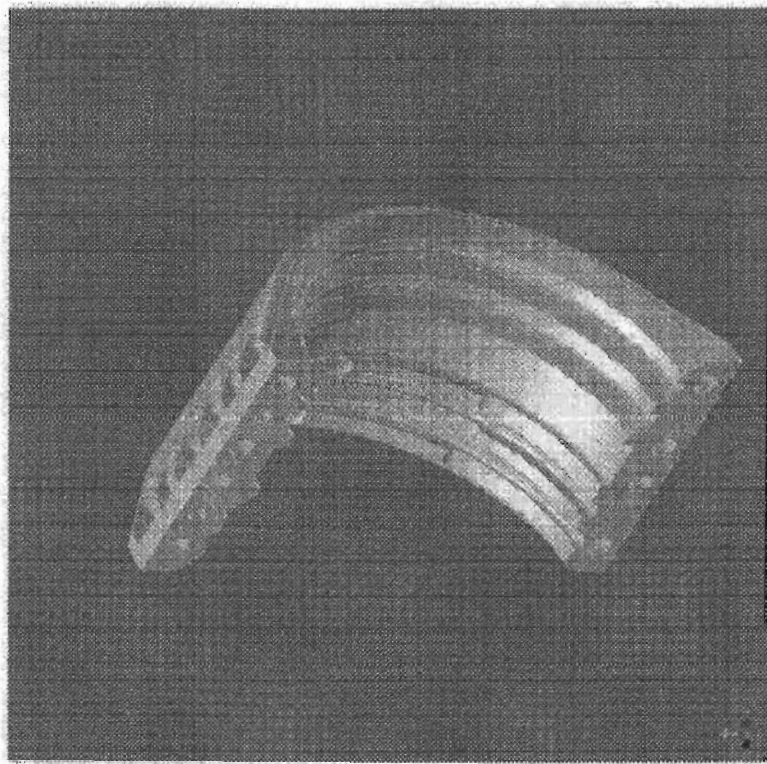
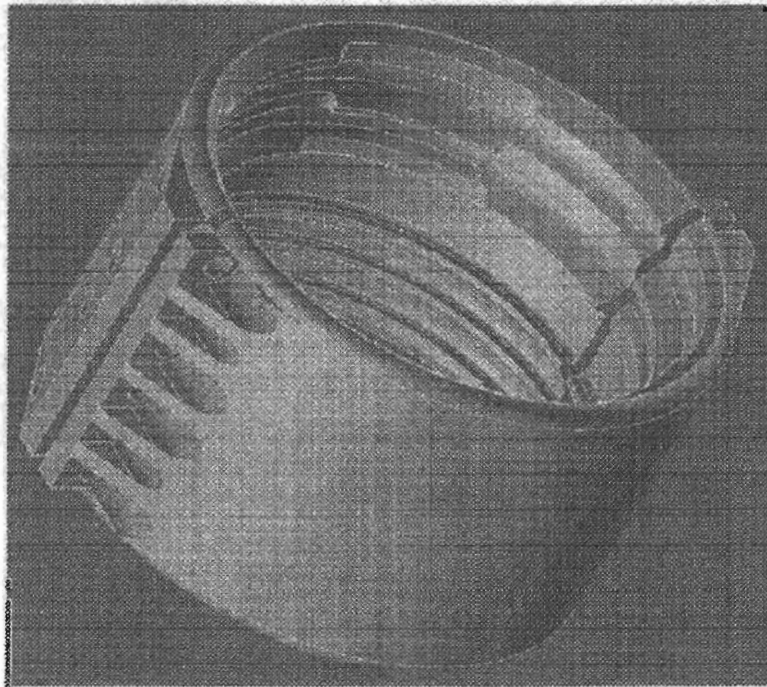


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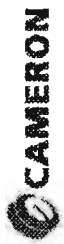


DRILLING & PRODUCTION SYSTEMS

## Split Lock Ring



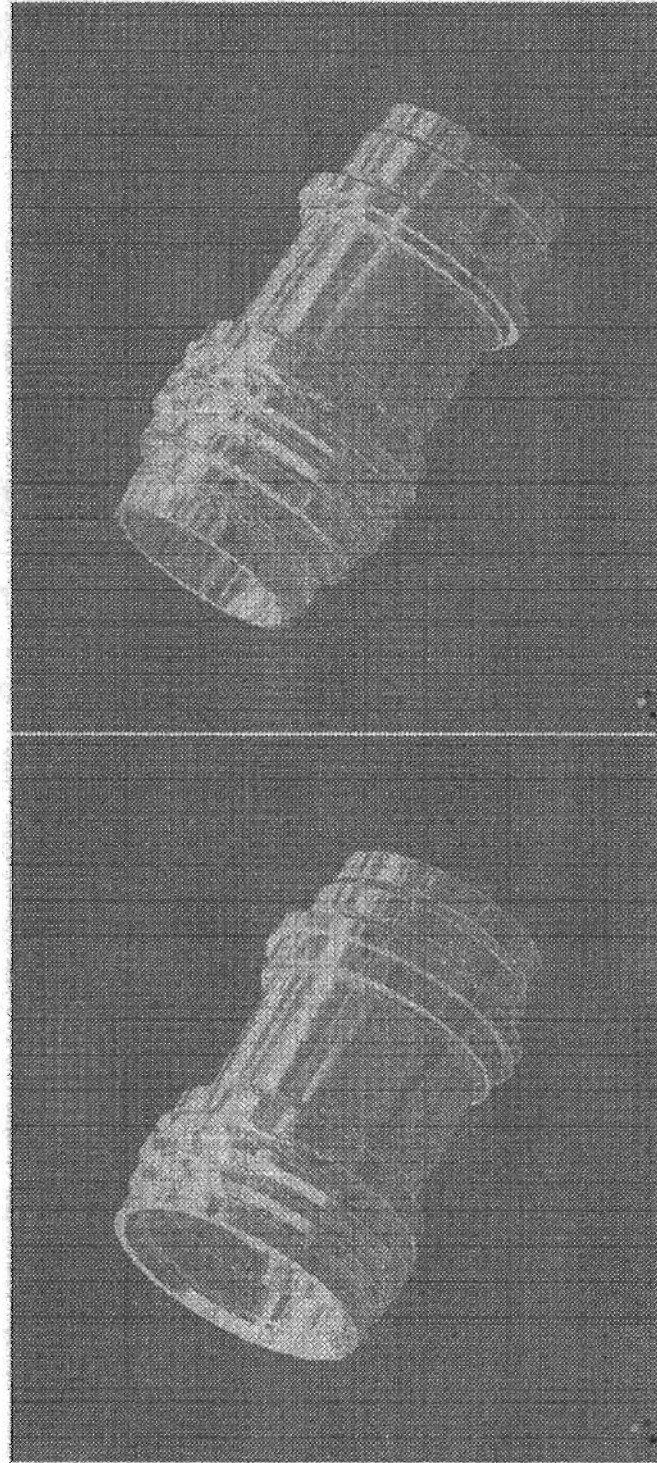
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DRILLING & PRODUCTION SYSTEMS

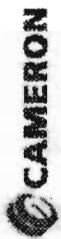
Box

Pin



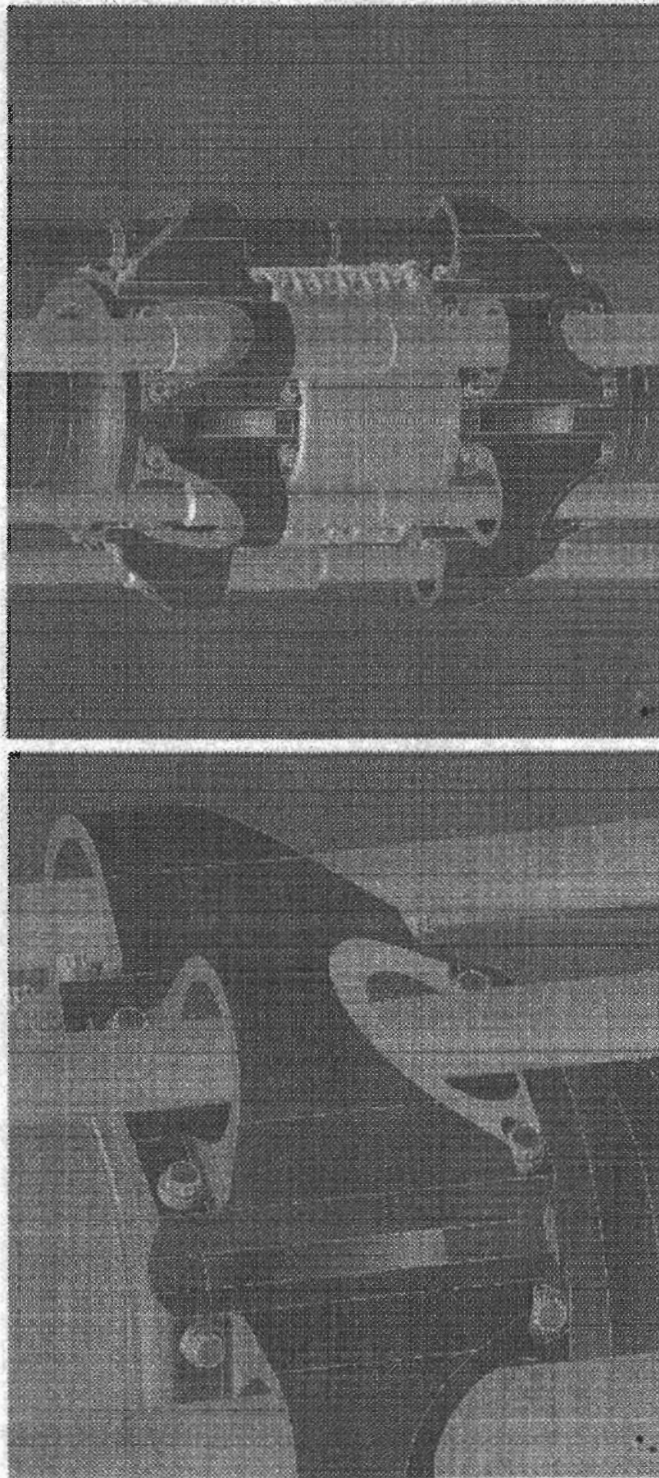
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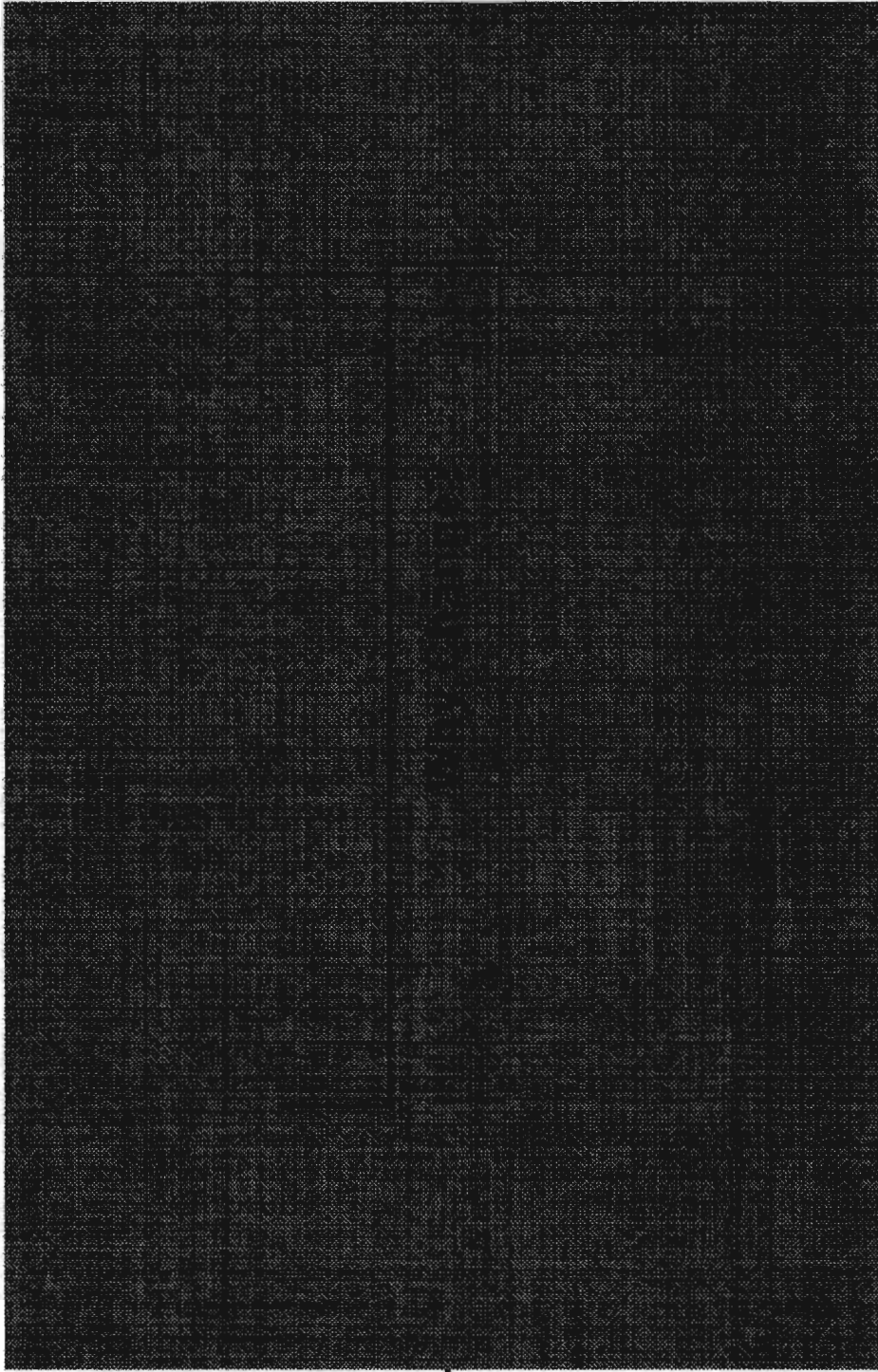
## Clamped connection



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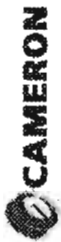


## Transocean Incentives & Risk Avoidance

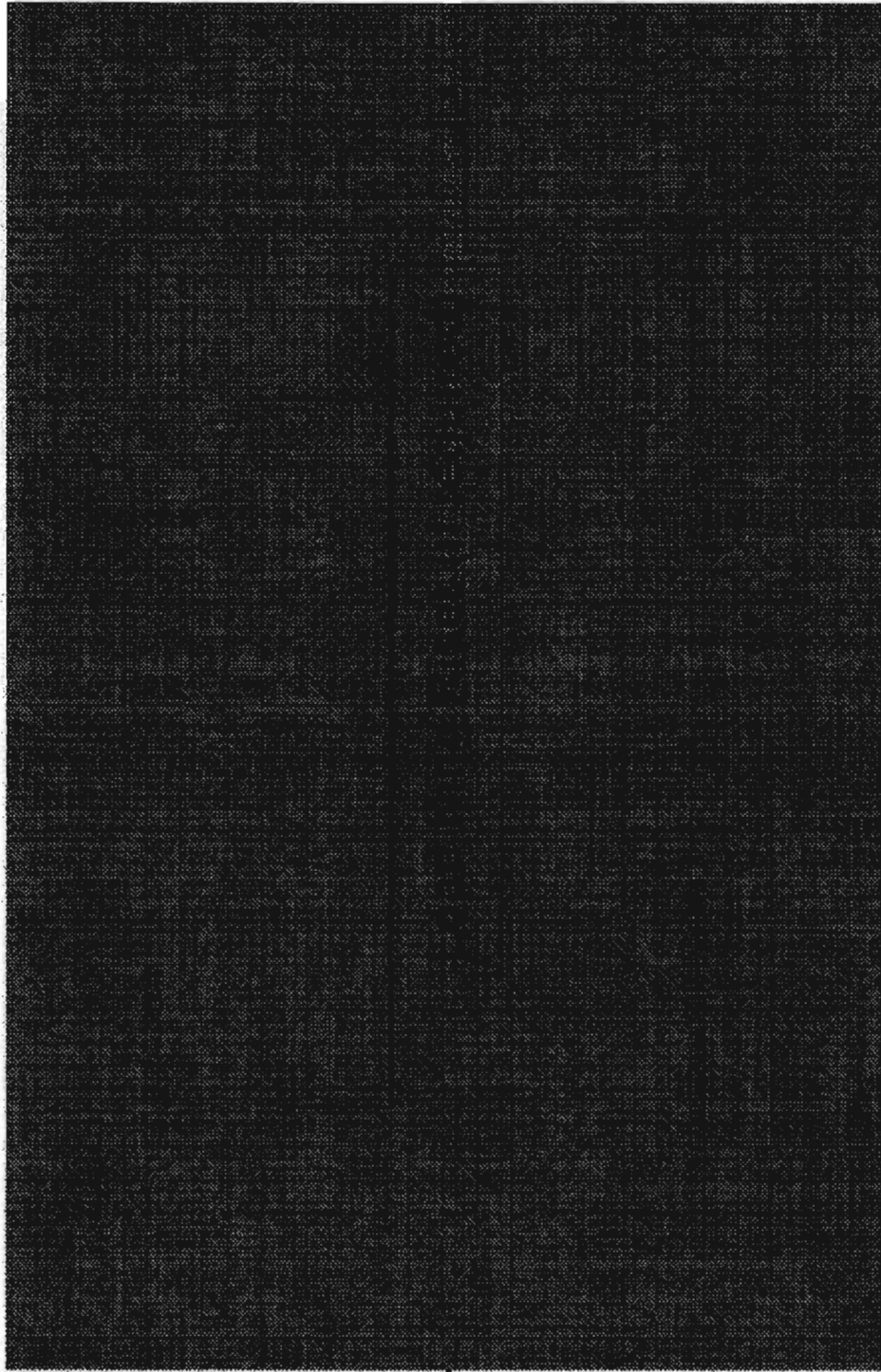
- **Plug & Play topsides**
  - Match nozzle points, inlets, outlets, supply points, etc
- **Performance Guarantee**
  - Uptime/downtime criteria with spare/standby BOPs and POD located at shore base
- **Delivery Guarantee**
  - LD's for late delivery
- **Aggressive spares parts discount beyond current levels**
  - Additional 10% per year for two years
- **Training Program**
  - No fee on class room and rig site training
- **Camserv Contract**
  - 1 year no fee – dedicated personnel onboard 24/7/365
- **Robo Spider**
  - Provide traditional spider as backup with purchase of robo and riser string
- **SPA**
  - Examine possibility of providing both SPA and traditional bottles

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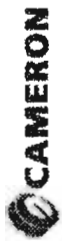
DRILLING & PRODUCTION SYSTEMS



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CONFIDENTIAL

CAM\_CIV\_0042708



## RISER OFFERRINGS

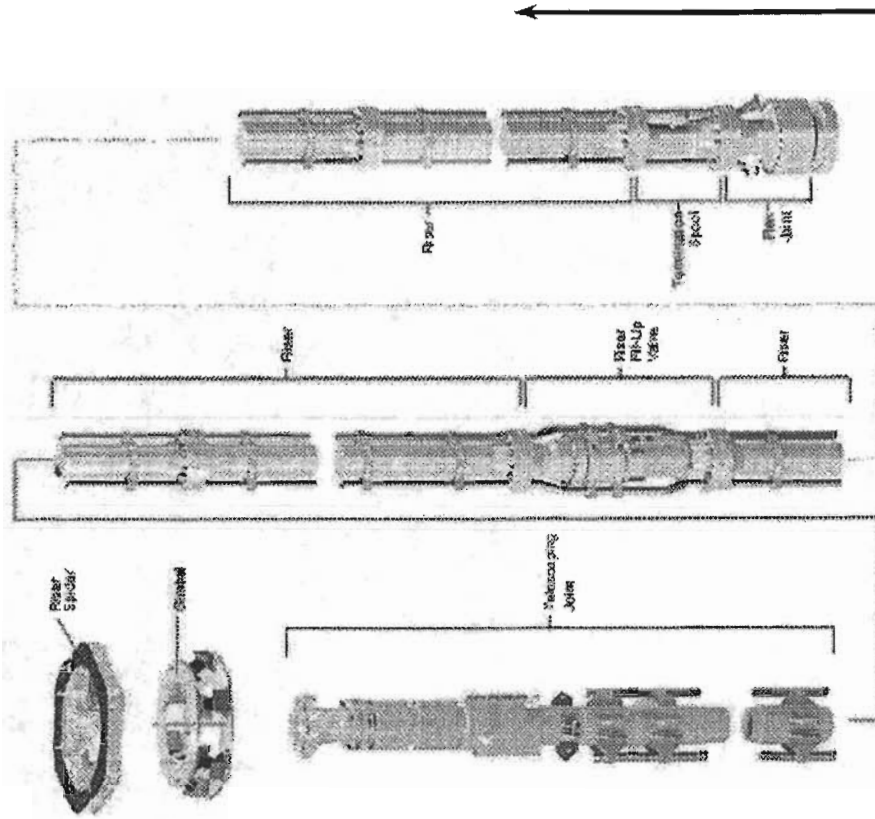
MODEL - API 16R LOAD RATING

RF - 2,000,000 lb

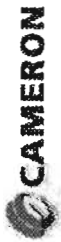
RFM - 2,800,000 lb

LK3.5 - 3,500,000 lb

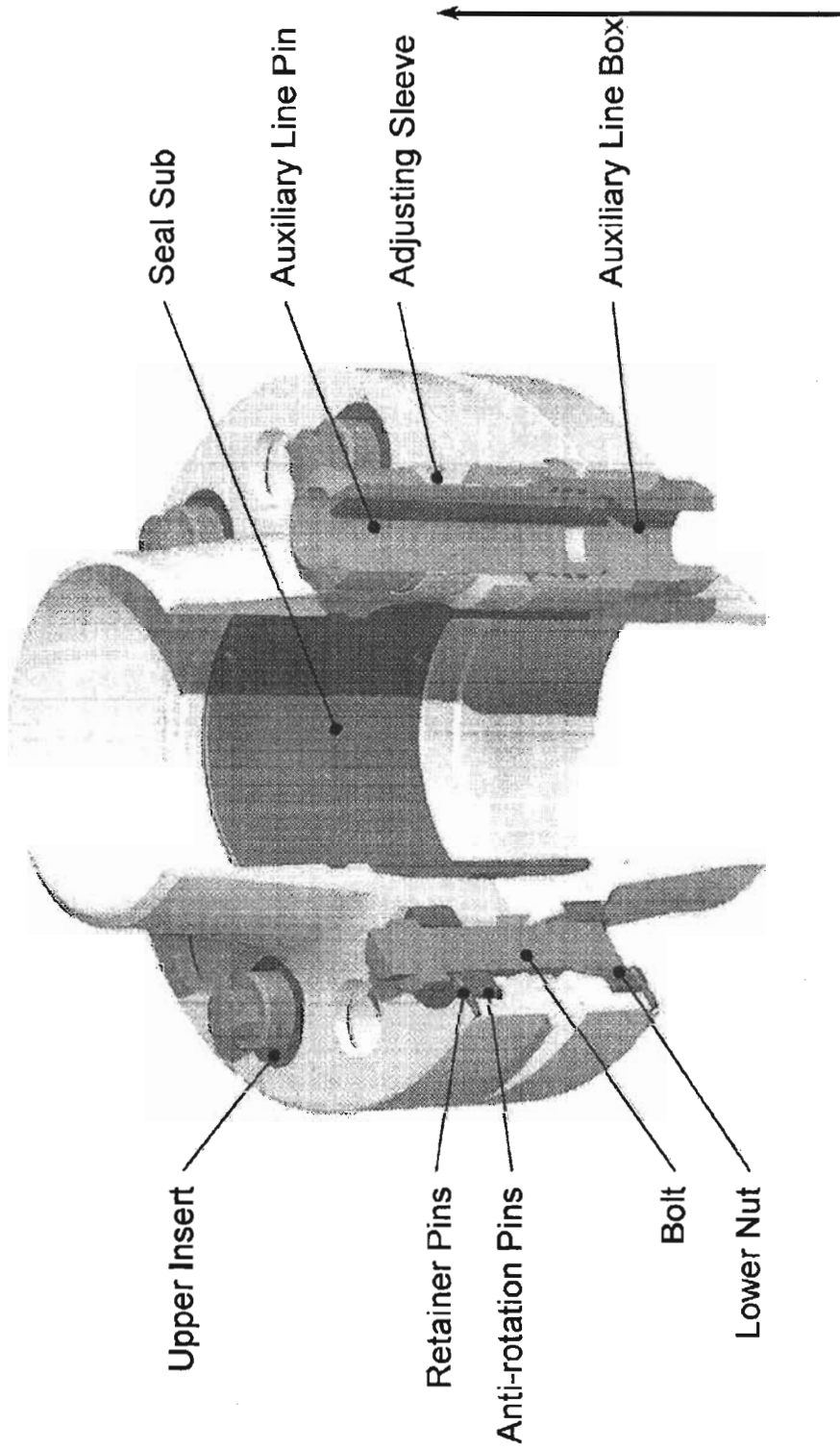
LK4.0 - 4,000,000 lb



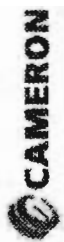
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## LoadKing Riser Flange

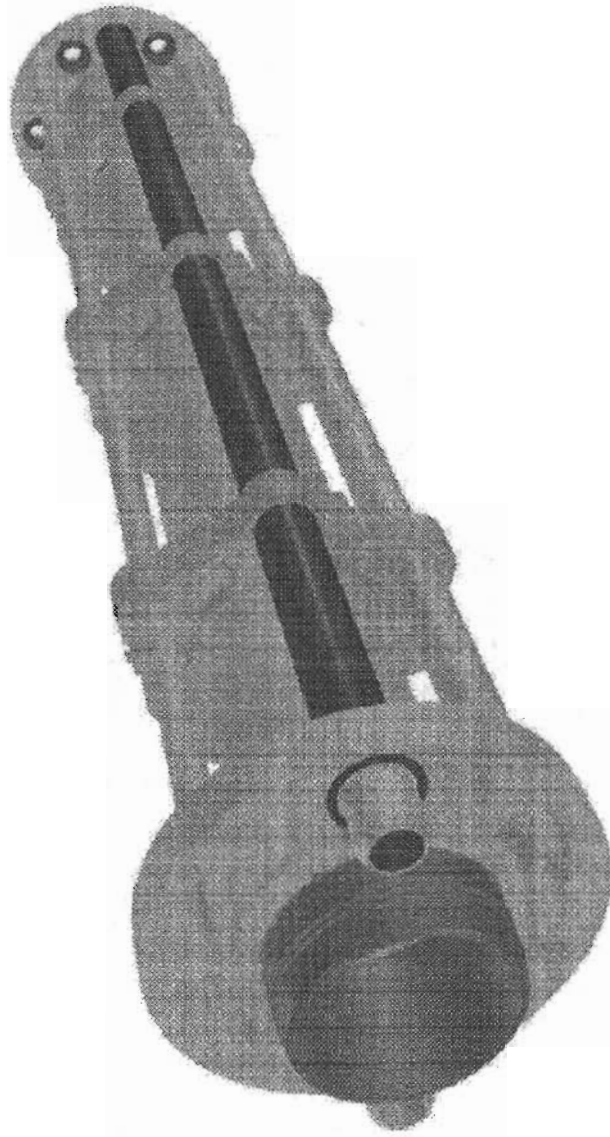


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## LoadKing Riser Joint



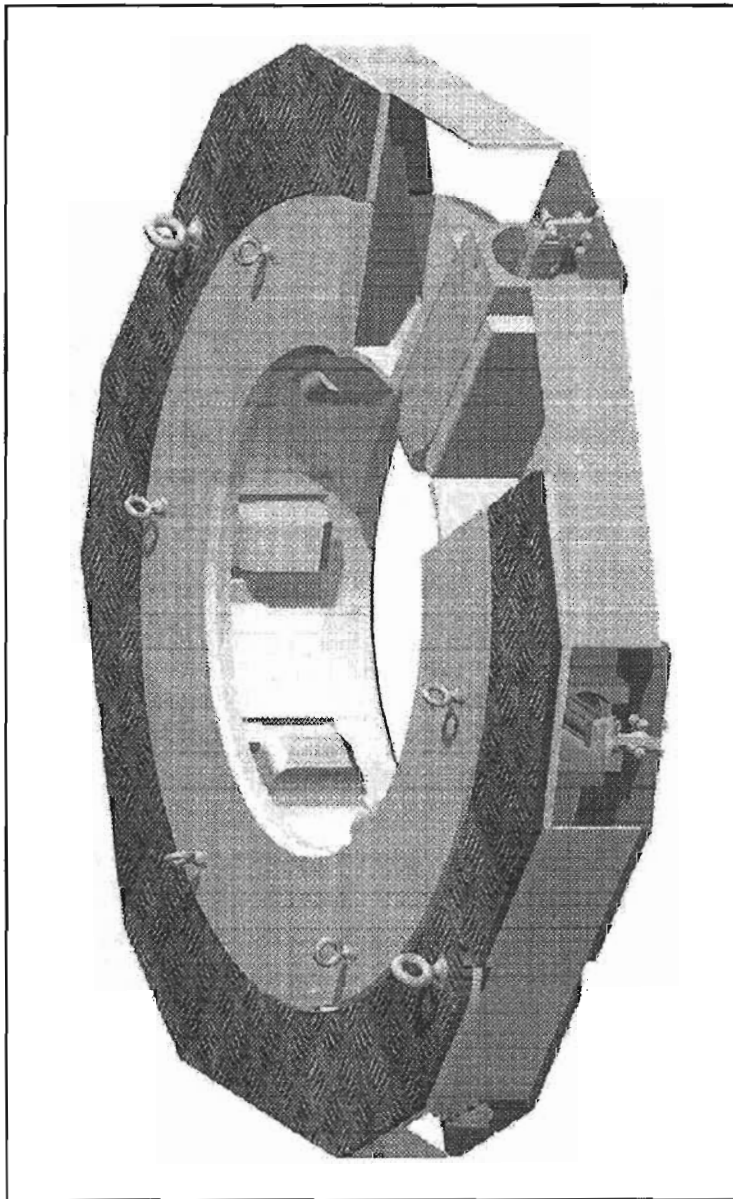
View in 3D with Deep View  
Free at  
[www.righthemisphre.com/dv](http://www.righthemisphre.com/dv)

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## Spider

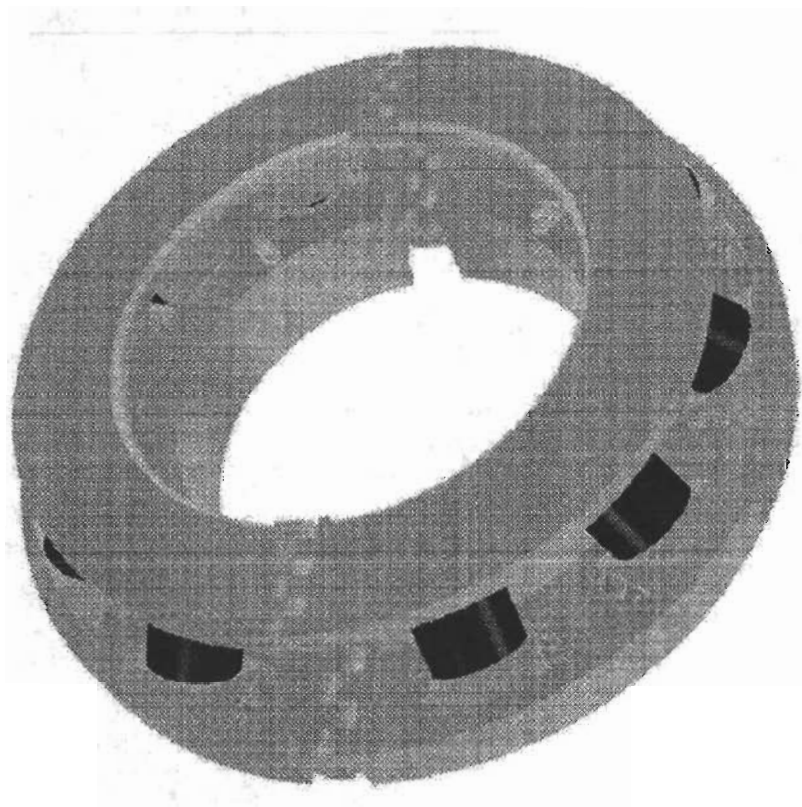


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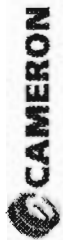
## Gimbal



View in 3D with Deep View  
Free at  
[www.rightthisphere.com/dv](http://www.rightthisphere.com/dv)

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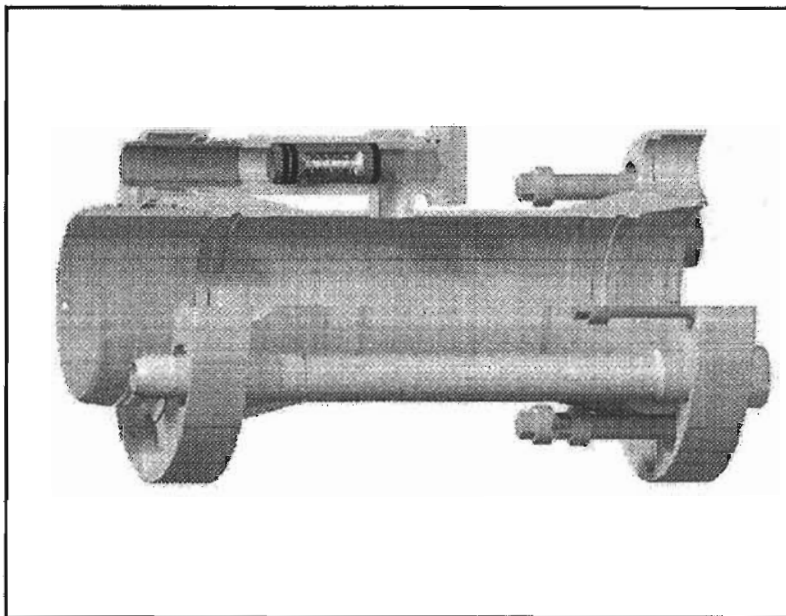




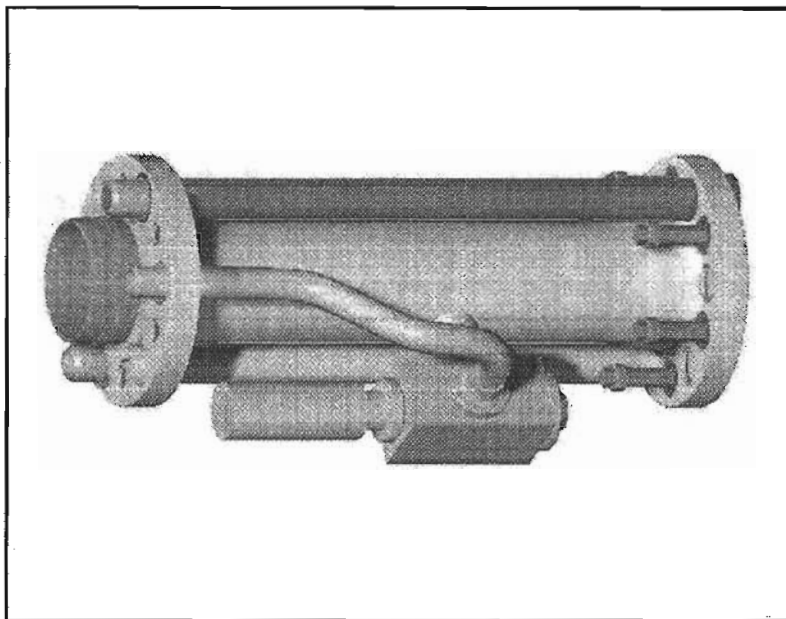
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## Mud Boost / Termination Spool

Baker Float Valve



Single MCS Subsea Gate Valve

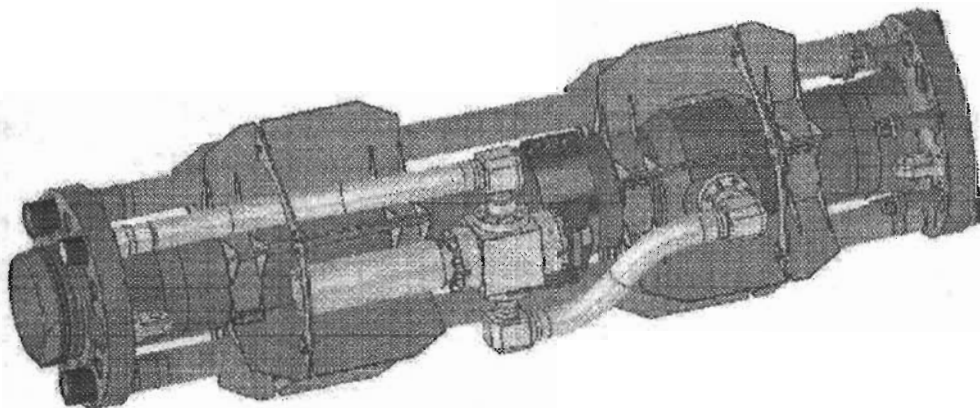


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## Termination Spool with Gate Valve

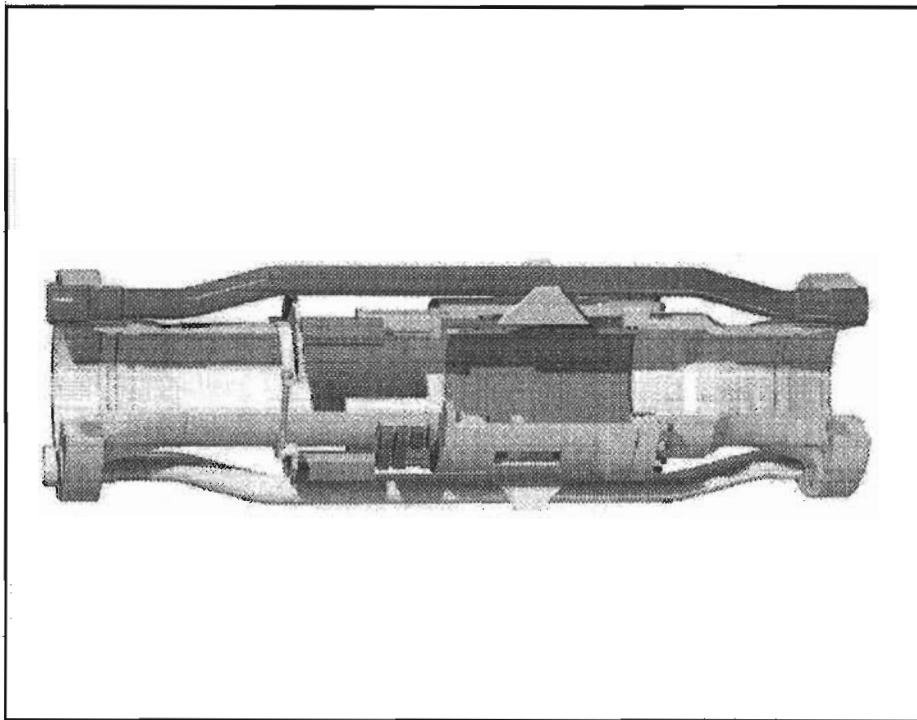
- Can be configured to pass through the Diverter Housing
- Gate Valve sizing based on Mud Boost line size
- May Be Integrated With The Flex Joint Adaptor Above The LMRP





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## Fill-up Valve

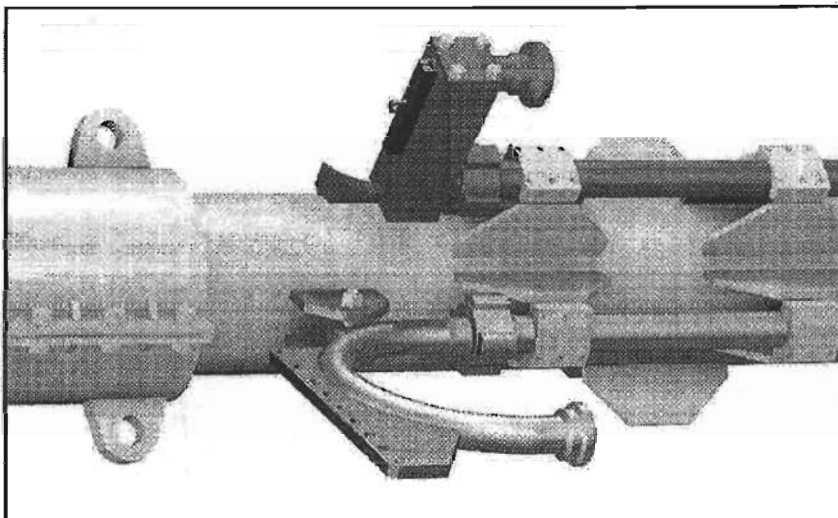


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## Gooseneck



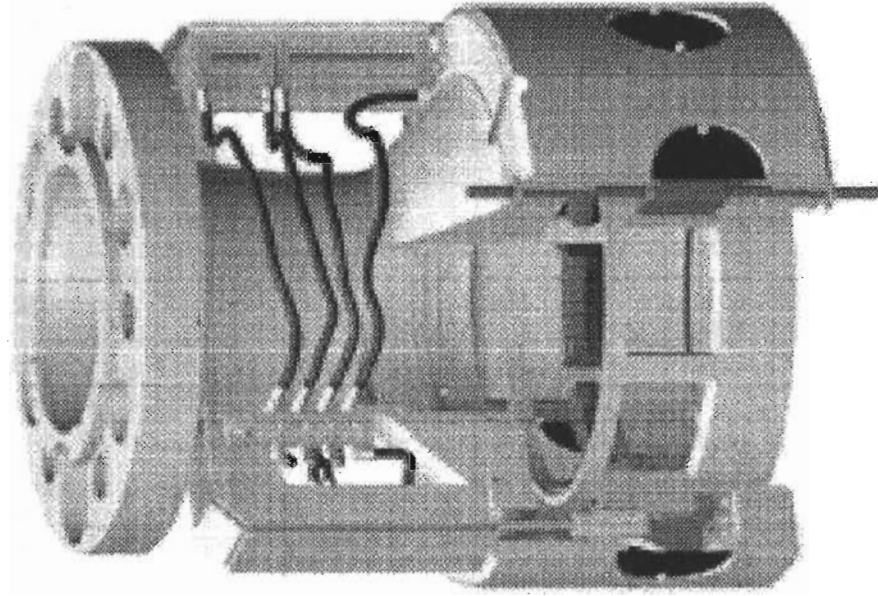
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DRILLING & PRODUCTION SYSTEMS

## TELESCOPING JOINT BARREL LOCK

- Hydraulic Lock and Unlock Functions
- Available in Loadratings up to 4 Mill LB
- Position Indicators

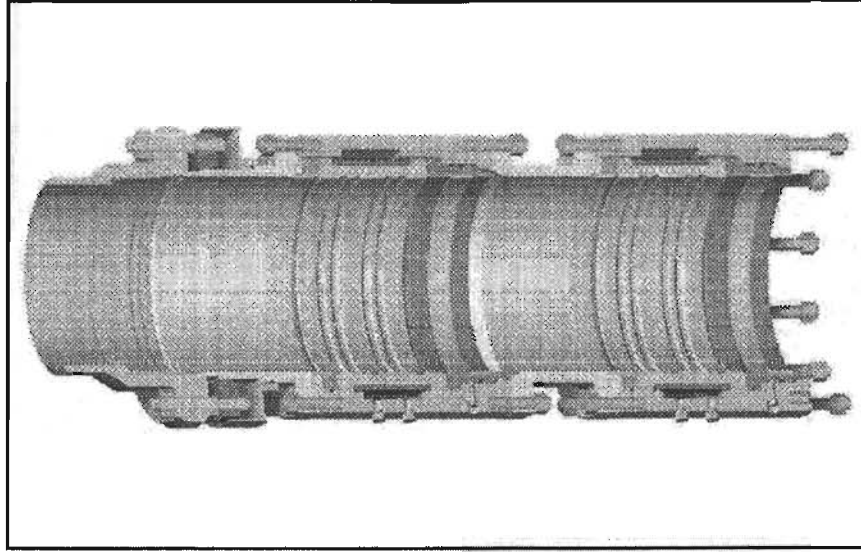


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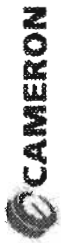
DRILLING & PRODUCTION SYSTEMS

## Dual Packer Assembly

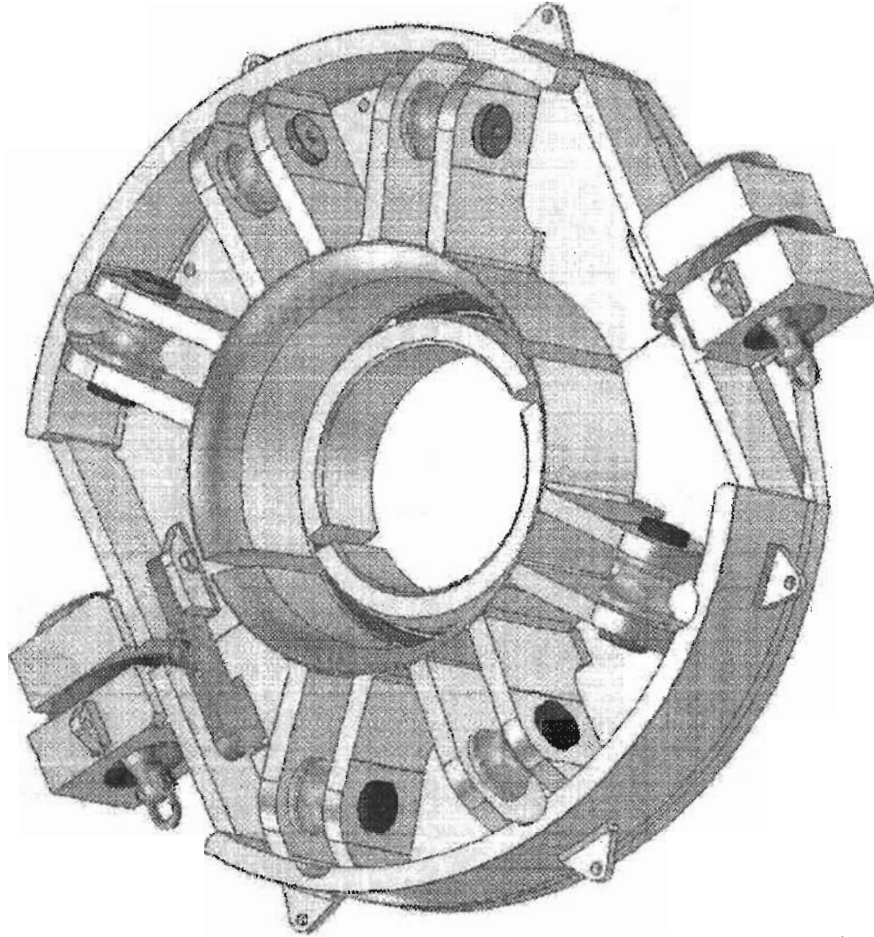


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## SPLIT TENSION RING

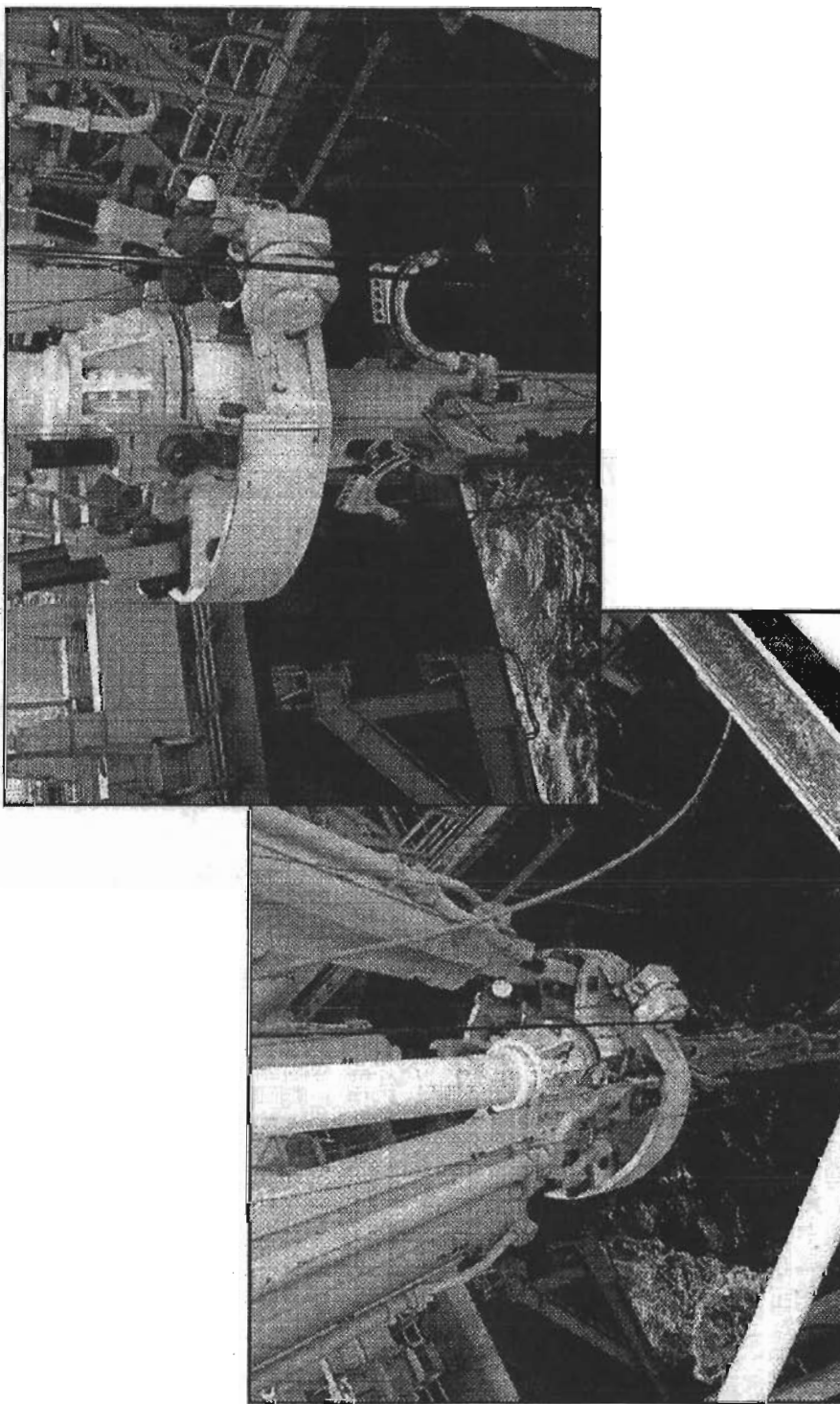


- Split to allow the Tension Ring to be separated
- Allows for Tension Lines to be Permanently Installed
- Bearing installed on the T-Joint
- Optional Hinged configuration



DRILLING & PRODUCTION SYSTEMS

## Split Tension Ring

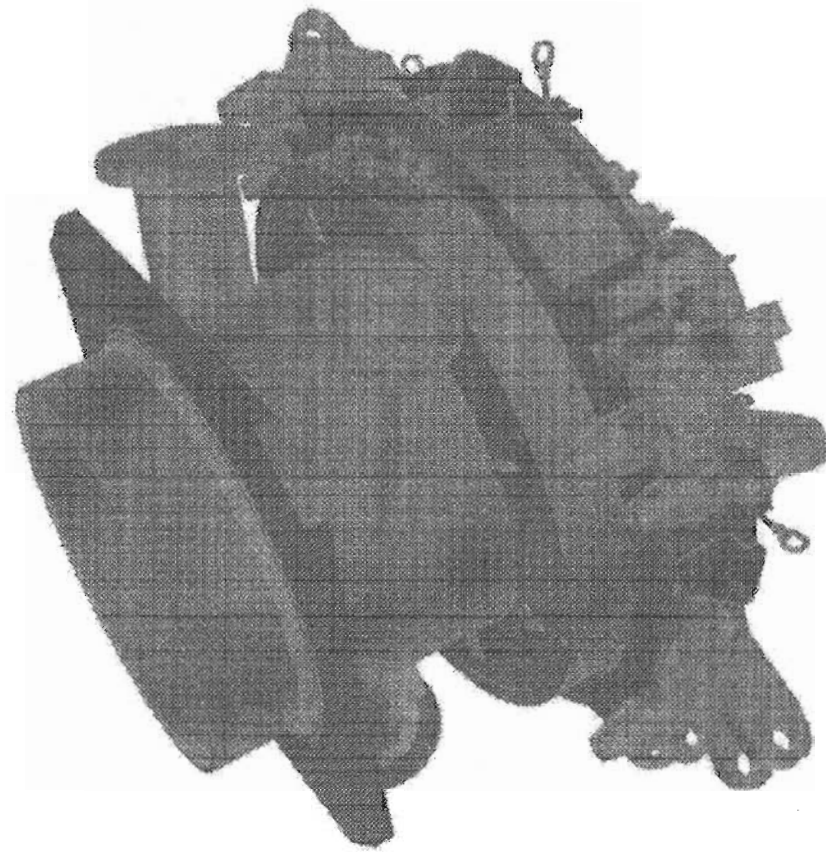


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## Diverter Storable Tension Ring



View in 3D with Deep View  
Free at  
[www.righthemisphere.com/dv](http://www.righthemisphere.com/dv)

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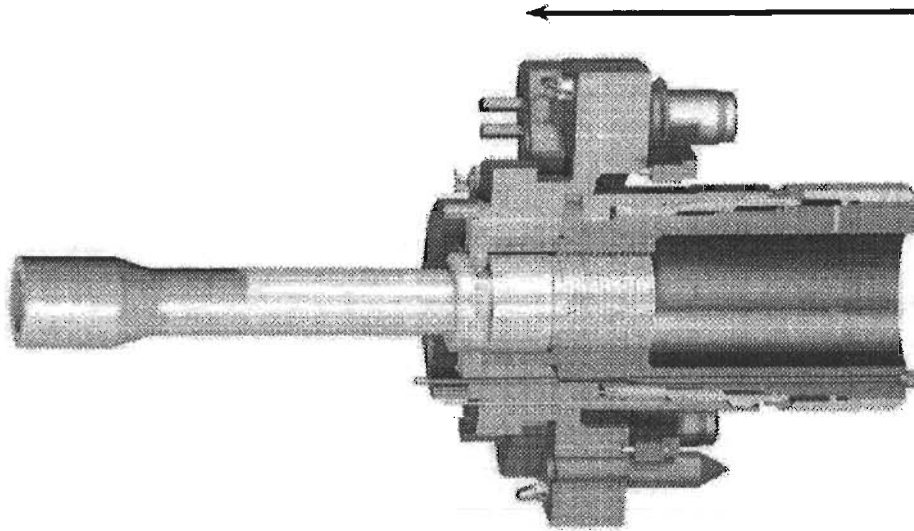


## HYDRAULIC RISER RUNNING TOOL

- Hydraulic Lock and Unlock Functions
- Position Indicators
- Mandrel with API Tool Joint
- Can Pick Up Riser from Horizontal Position
- Will Stay Locked even after Hoses are Disconnected

Available in Two Load Ratings

- 1,500,000 lb
- 2,750,000 lb

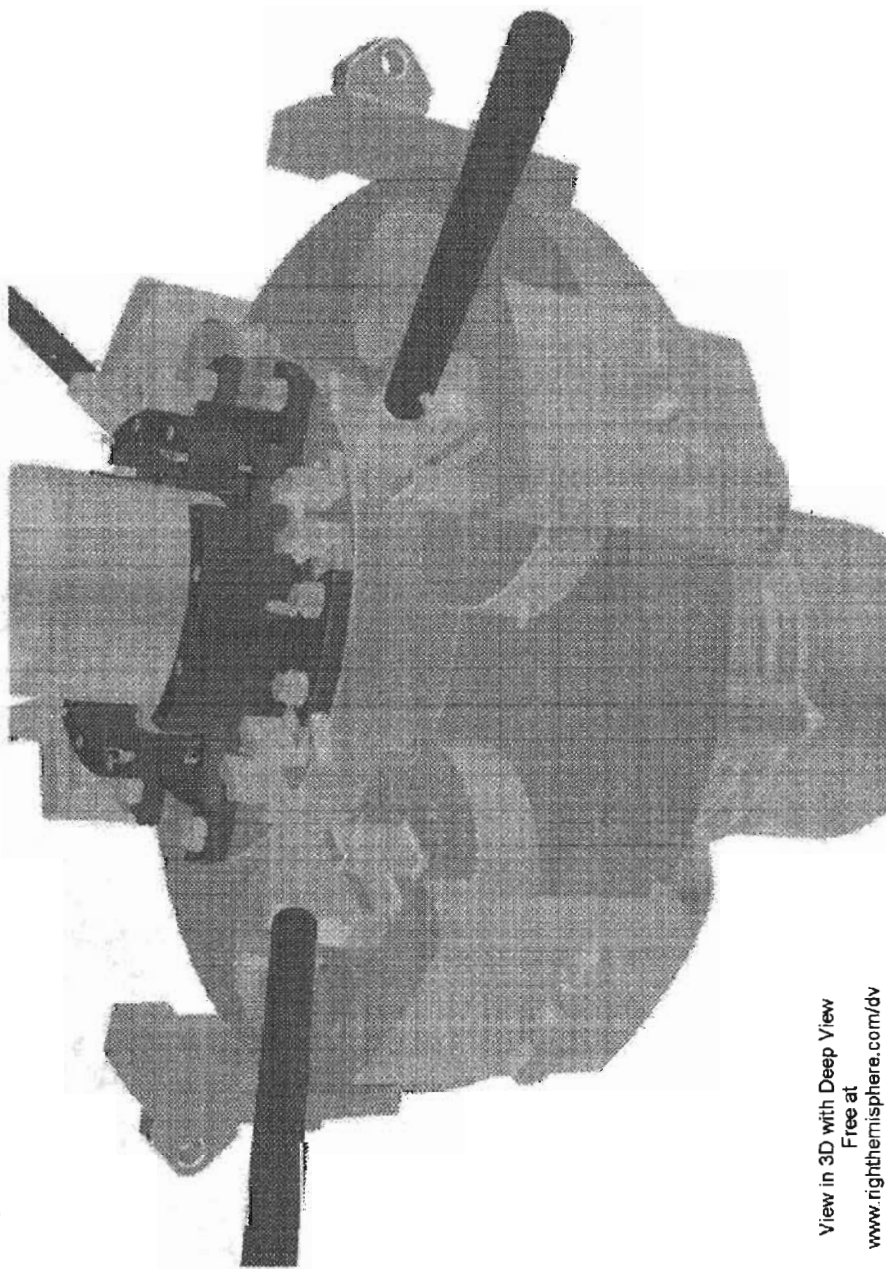


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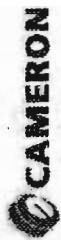
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## Hydraulic Running Tool



View in 3D with Deep View  
Free at  
[www.righthemisphre.com/dv](http://www.righthemisphre.com/dv)

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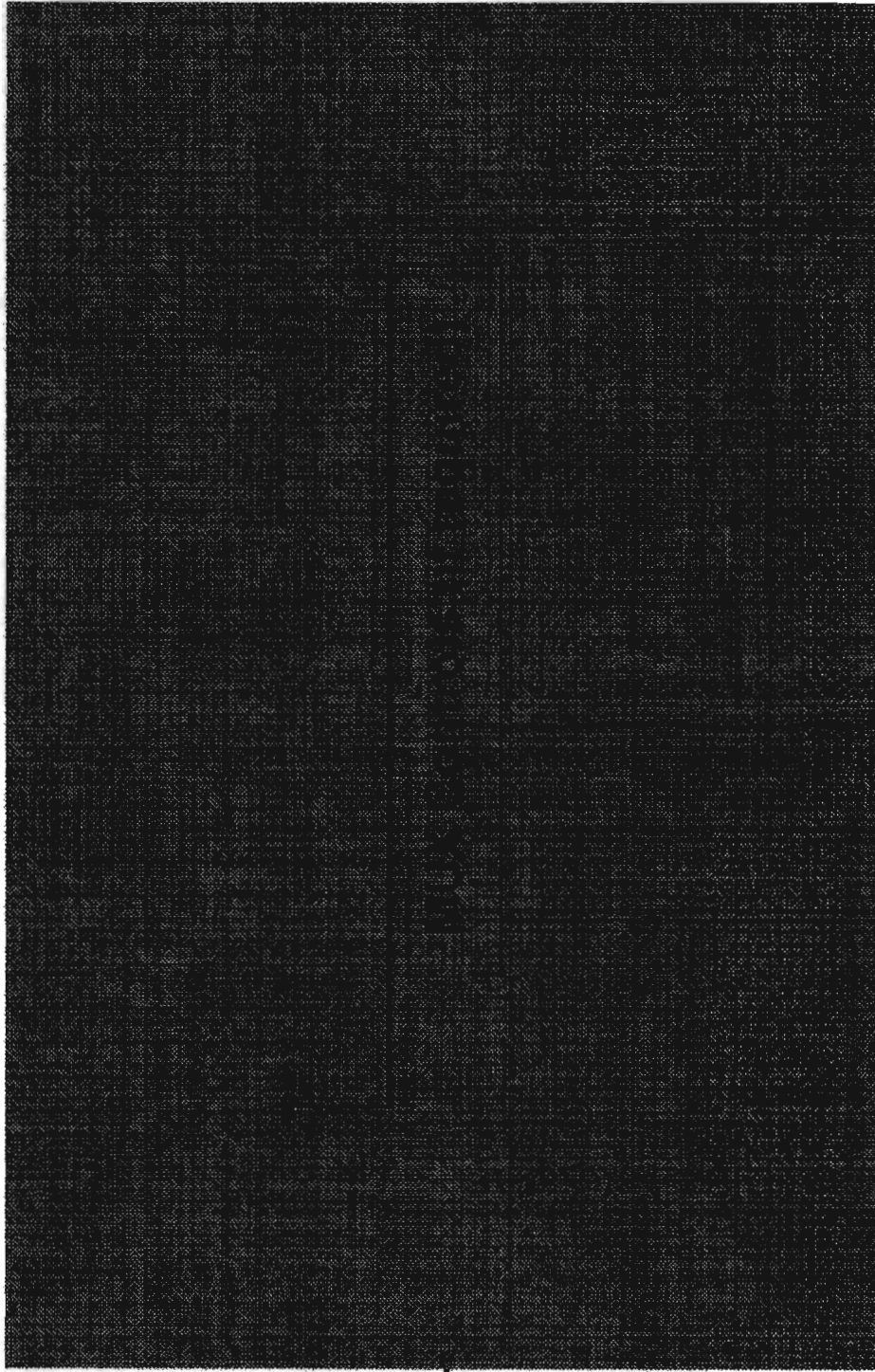
## LoadKing Riser – Supplied and Backlog

MFG PLANT	PROJECT	LENGTH (FT)	# OF JOINTS	CONTRACT DATE	SHIP DATE
PK Mfg	JDC OD21	10,000	133	August-01	February-03
PK Mfg	BP Thunderhorse	6,300	78	March-02	April-04
PK Mfg	Scarabeo VI	525	17	October-06	February-07
Liberty	Stena DrillMax 1 (80 ft.)	7,520	101	November-06	January-07
Liberty	West E Drill 1	2,500	37	April-07	January-07
Beziers	Stena DrillMax 2 (80 ft.)	7,520	101	May-07	August-07
Beziers	Seadrill 8	7,500	116	July-07	June-07
Beziers	Seadrill 8 Extension	3,225	33	July-07	June-30
Beziers	West E Drill Option 2	2,500	36	December-07	September-07
Beziers	Seadrill 9	7,500	105	December-07	October-07
Beziers	Seadrill 10 - Daewoo 1	7,425	105	March-08	December-07
Beziers	Stena DrillMax Spare	7,520	101	April-08	February-08
Beziers	Petro Rig 1 - Jurong 3	7,500	105	June-08	March-07
Beziers	Petro Rig 1 - Jurong 3 Extension	3,075	41	June-08	April-07
Beziers	West E Drill 1000 M Extension	3,300	44	June-08	April-07
Beziers	Seadrill 11 - Daewoo 2	7,425	105	June-08	May-07
Beziers	Seadrill 10 - Daewoo 1 Extension	3,300	44	September-08	June-08
Beziers	Seadrill 11 - Daewoo 2 Extension	3,300	44	September-08	July-08
Beziers	Petro Rig 2 - Jurong 4	7,500	105	October-08	August-08
Beziers	Scarabeo 8	5,775	84	December-08	October-07
Beziers	Stena DrillMax 3 (80 ft.)	7,520	101	February-09	November-08
Beziers	Petrosene - Magnum	8,625	126	May-09	March-09
Beziers	Petro Rig 3 - Jurong 5	7,500	105	July-09	June-07
<b>TOTAL RISER</b>		<b>134,815</b>	<b>1,867</b>		





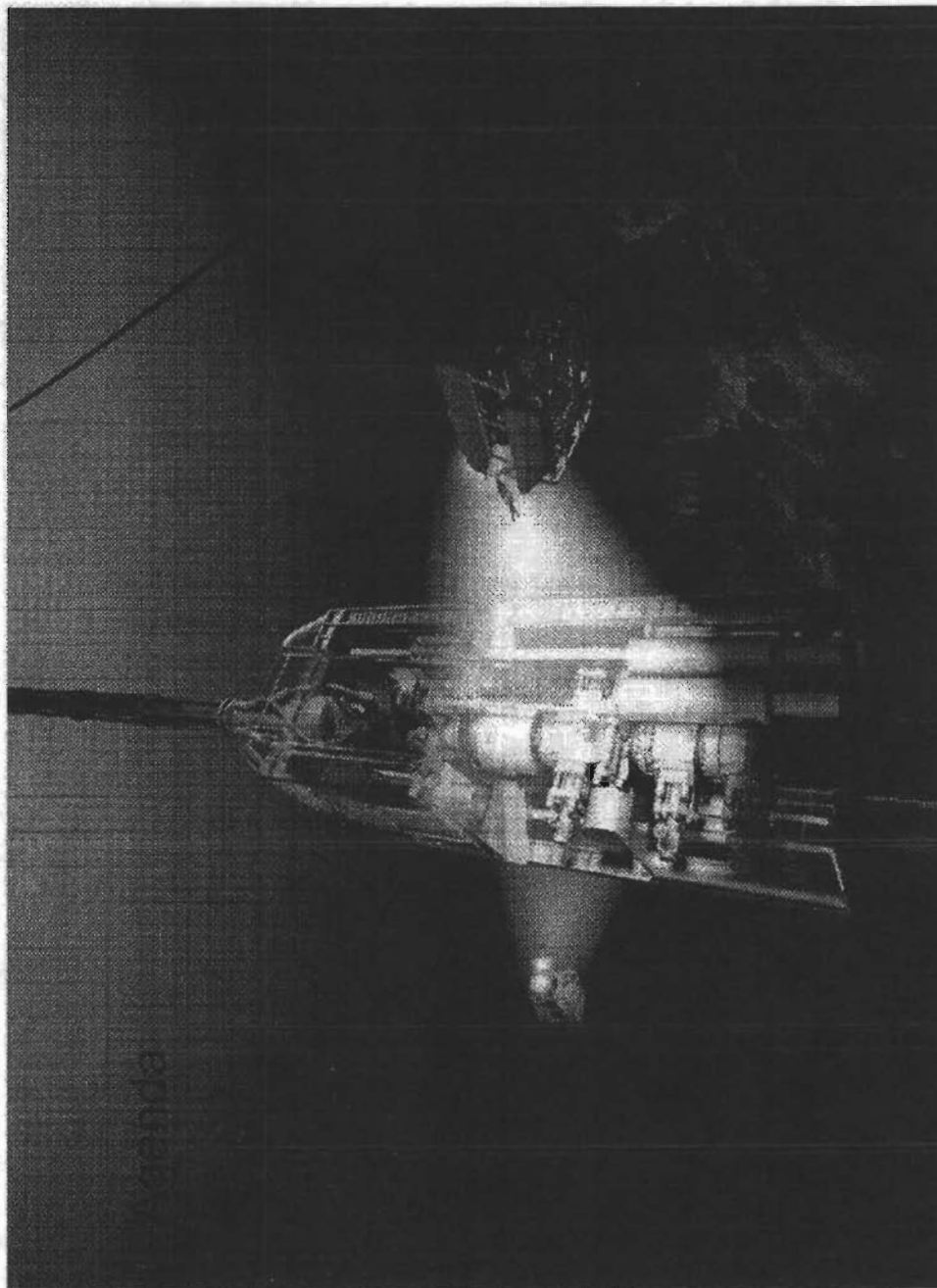
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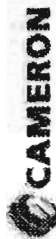
## Installed Base 1996 to 2004

Transocean	Leader	1997	Schahin	Lancer	1997
	Discoverer Enterprise	1999	Saipem	Scarabeo 5	1997
Sedco Forex	Sedco Express	1997	Ocean Rig	Leiv Eiriksson	1998
	Sedco Energy	1997		Eirik Raude	1998
	Cajun Express	1998	Pride	Pride Africa	1997
	Sovereign Explorer	1997		Pride Angola	1998
R&B Falcon	Peregrine III	1997		Pride Africa II	1997
	Deepwater Navigator (PVI)	1997	Marine Drilling	Marine 500 (PSP)	1997
	Deepwater Nautilus	1997		Marine 700 (PNA)	1997
	Deepwater Horizon	1997	Pride/Petrodrill	Pride Brazil	1998
Global Marine	Celtic Sea	1996		Pride Carlos Walter	1998
	Explorer	1996		Rio de Janeiro	1998
	C.R. Luigs	1998		Pride Portland	1998
	Jack Ryan	1998	Petrobras	P23	1997
Marinor/Stena	Stena Tay	1997	BP	Thunderhorse	2004
	Stena Don	1998			

Red & Blue = Consolidation

31 Systems

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# Current Build Cycle

Marinor	Stena DrillMAX I	Mark 1.5	Daewoo (DSME)	Seadrill 10	Mark III Model 120
	Stena DrillMAX II	Mark 1.5		Seadrill 11	Mark III Model 120
	Sena DrillMAX I & II Spares	Mark 1.5	Sevan Marine	New Build #1	Mark III Model 120
	Stena DrillMAX III	Mark III Model 80	Schahin	Schahin 1	Mark III Model 120
	Stena DrillMAX III Spares	Mark III Model 80	Saipem	Scarabeo 8	Mark III Model 120
AKMH	Aker H6 Rig 1	Mark III Model 120	OSAT	OSAT	Hyd Mod Pod
	Aker H6 Rig 2	Mark III Model 120	Global Santa Fe	Arctic 1 Upgrade	Hyd Mod Pod
	Jurong#6 (Seadrill 13)	Mark III Model 120	Schahin	Casablanca	Mark III Model 120
	Aker H6 Rig 4	Mark III Model 120	Daewoo (DSME)	Group R	Mark III Model 120
	West E-Drill #1	Mark III Model 120		TMT Drillship #1	Mark III Model 120
	West E-Drill #2	Mark III Model 120		TMT Drillship #2	Mark III Model 120
PetroRig 1		Mark III Model 120	Swiber	Equatorial Driller	Mark III Model 120
PetroRig 2		Mark III Model 120	Songa	Songa Trym Upgrade	Hyd Mod Pod
PetroRig 3		Mark III Model 120	Murphy	Azurite ESG Project	Acoustic
Seadrill 8		Mark III Model 120	Pride	Pride Amethyst	Mark III Model 80
Seadrill 9		Mark III Model 120	Aban Drilling	Aban Abraham	Mark I
				Middle Technologies	Hyd Mod Pod

Blue = Shipped

27 Systems + 6 Other

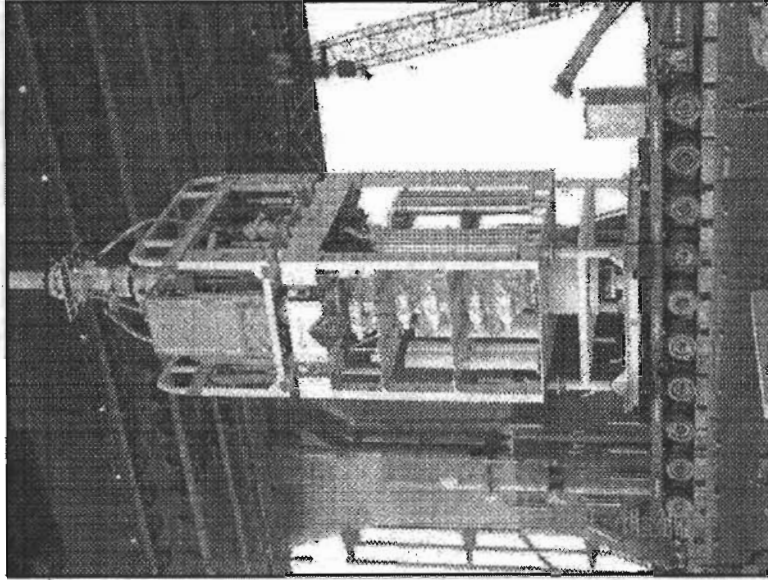
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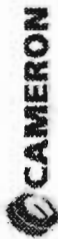


## Legacy System vs Mark III System

### Main discussion areas

- Surface architecture
- Subsea architecture
- MUX Pods





## Surface Changes

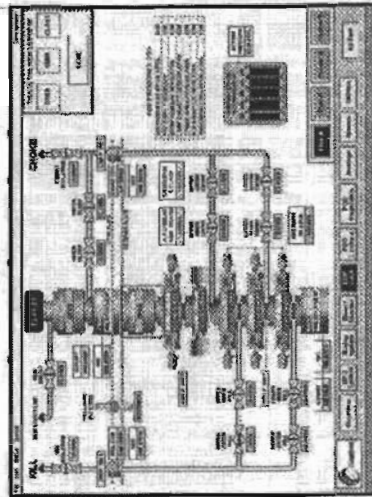
### •Surface Communications

- Legacy used Profibus via Fiber Optics with OLM's  
(Star type network with poor diagnostic capabilities)
- Mark III utilizes Ethernet technology via Fiber Optics with field proven

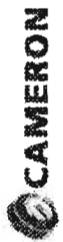
### Siemens Fiber Converters/Switches

(robust network management for increased uptime with enhanced diagnostics)

- Touch Screen Panels have been developed  
push-button panels
- Wonderware HMI Software utilized  
for enhanced graphics and ease of use
- Field proven Siemens S7 PLC's  
utilizing Step 7 software

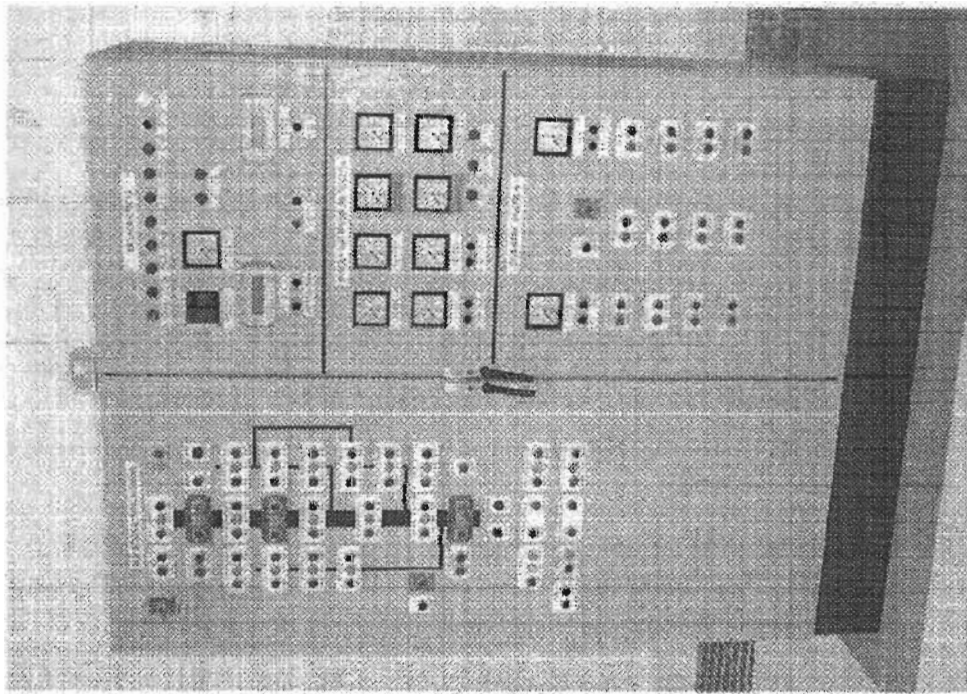
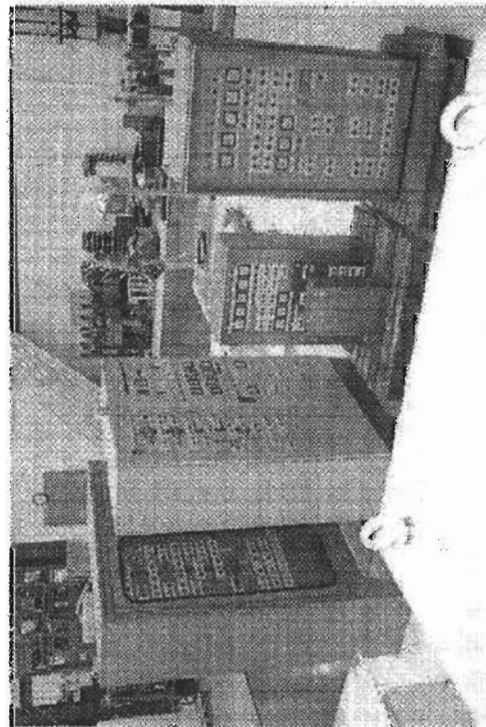




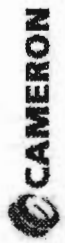


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## Legacy Hardwire Push-button Panels



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## Touch Screen Panels

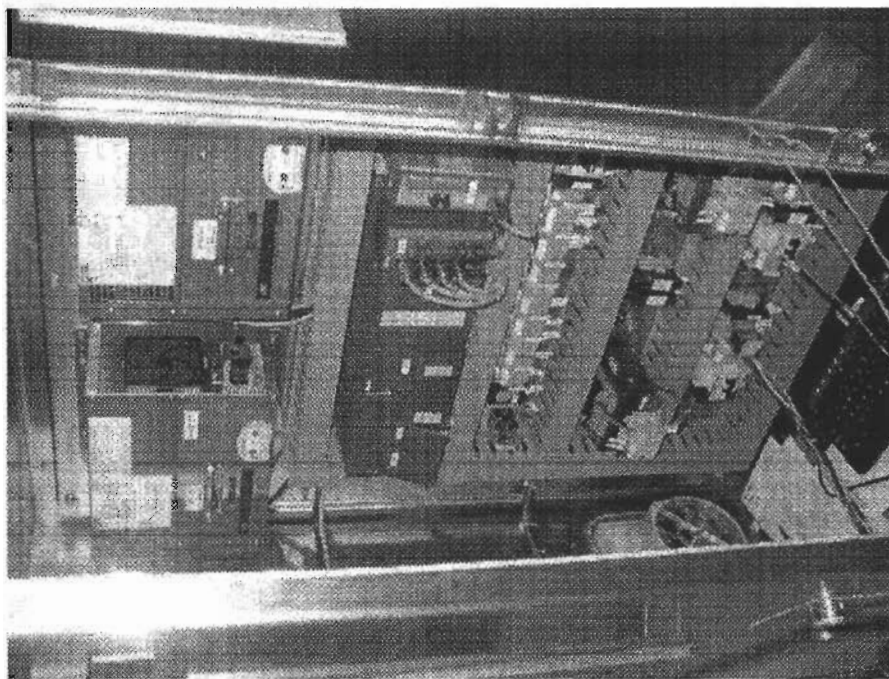
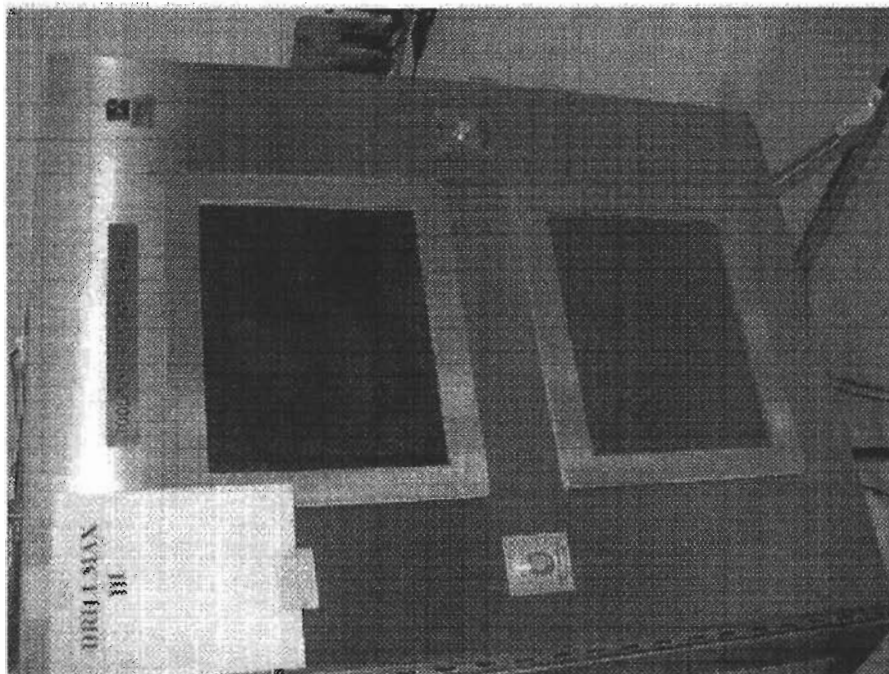


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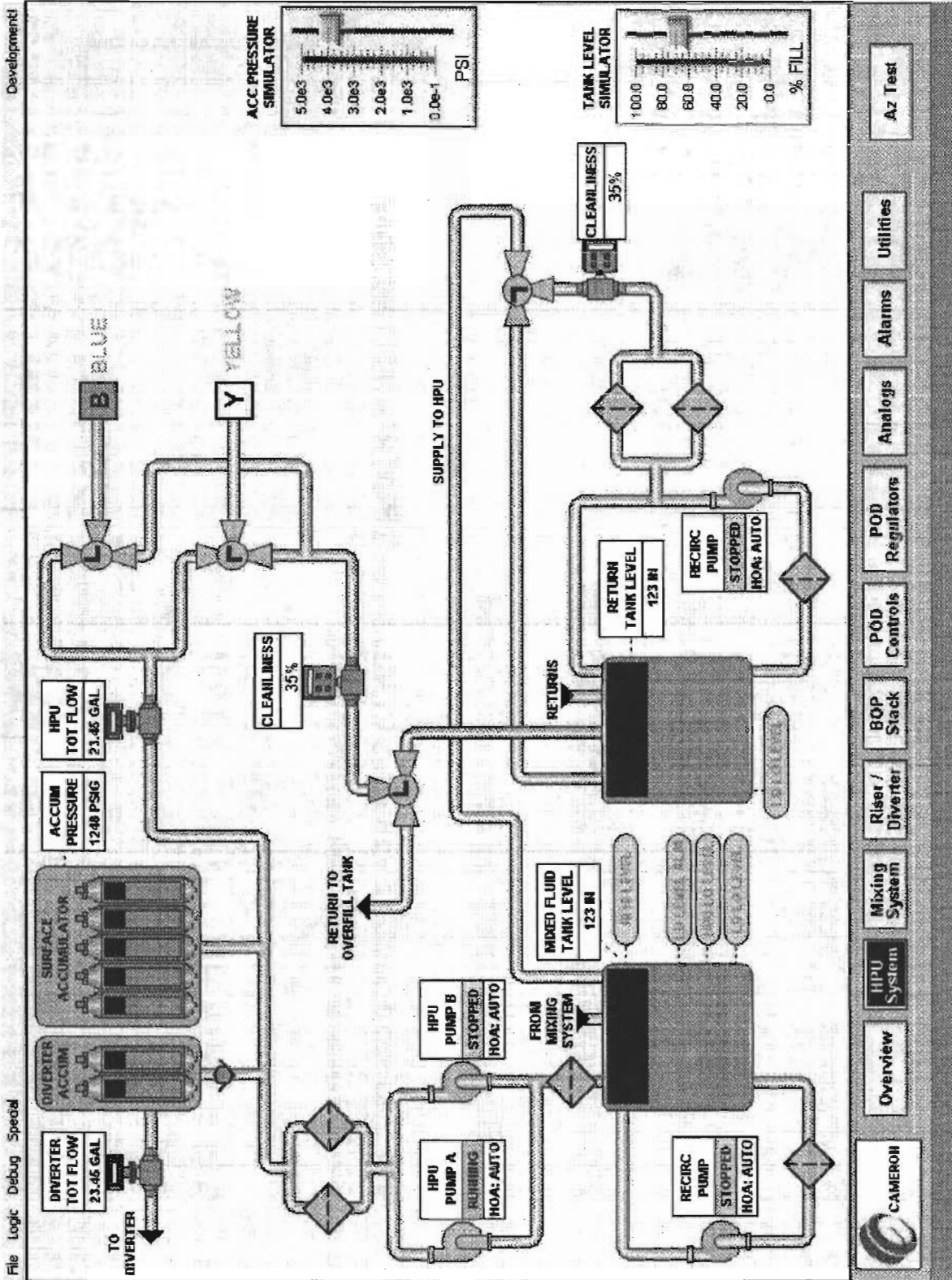
## Touch Screen Panels



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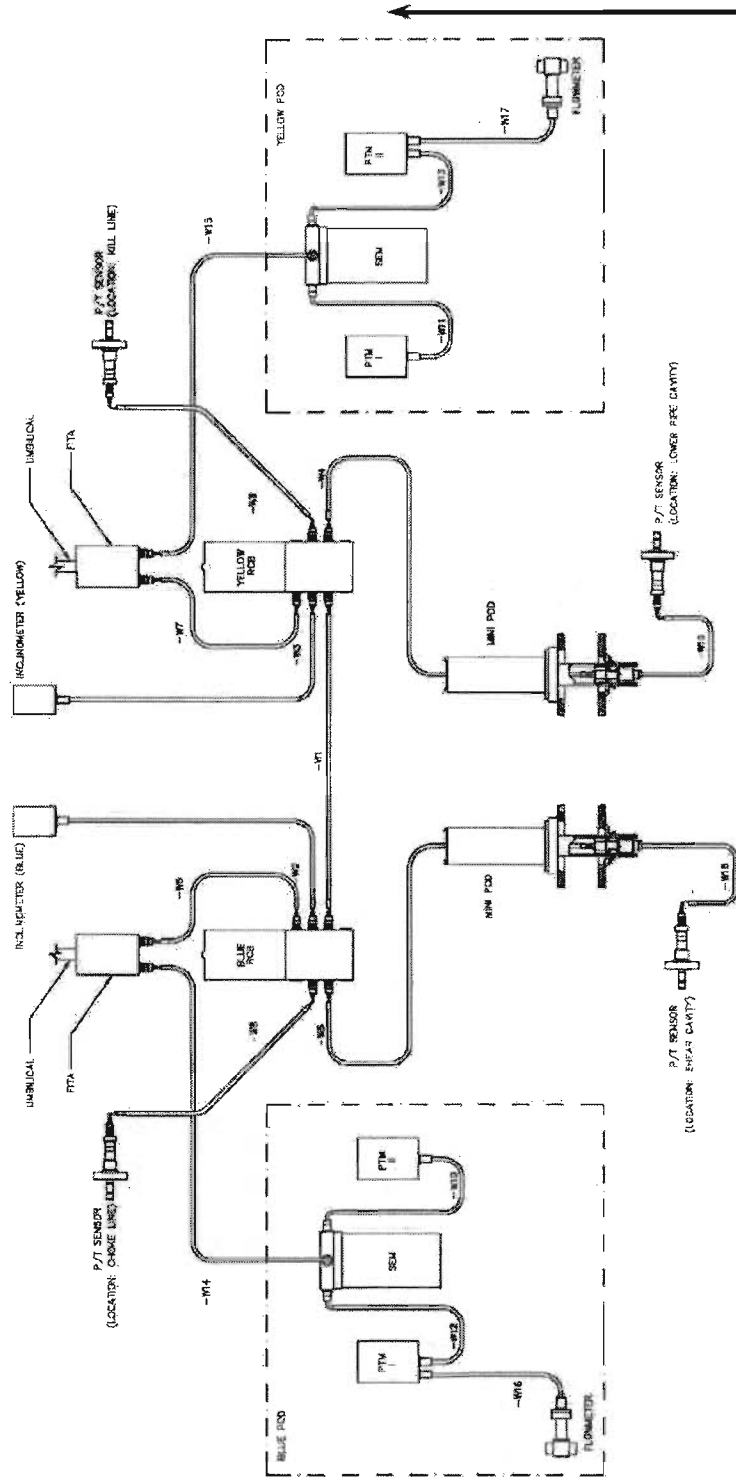
## Subsea Changes

- Number of 1atm chambers reduced
- Power and signal go directly to SEM
- RCB has separate power and signal
- All interconnection cabling is Version 2 PBOF with testable connections and field reparability

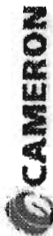




# PBOF Interconnection Diagram



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## PODS

- Ben Ocean Lancer – 1st Gen MUX circa 1976
- Mark I – 2nd Gen 77 Functions circa 1995
  - Used Direct Hyd Mod Section developed in the late 70's
- Mark II – 2nd Gen Extended 107 functions circa 1998
  - Larger rectangular footprint

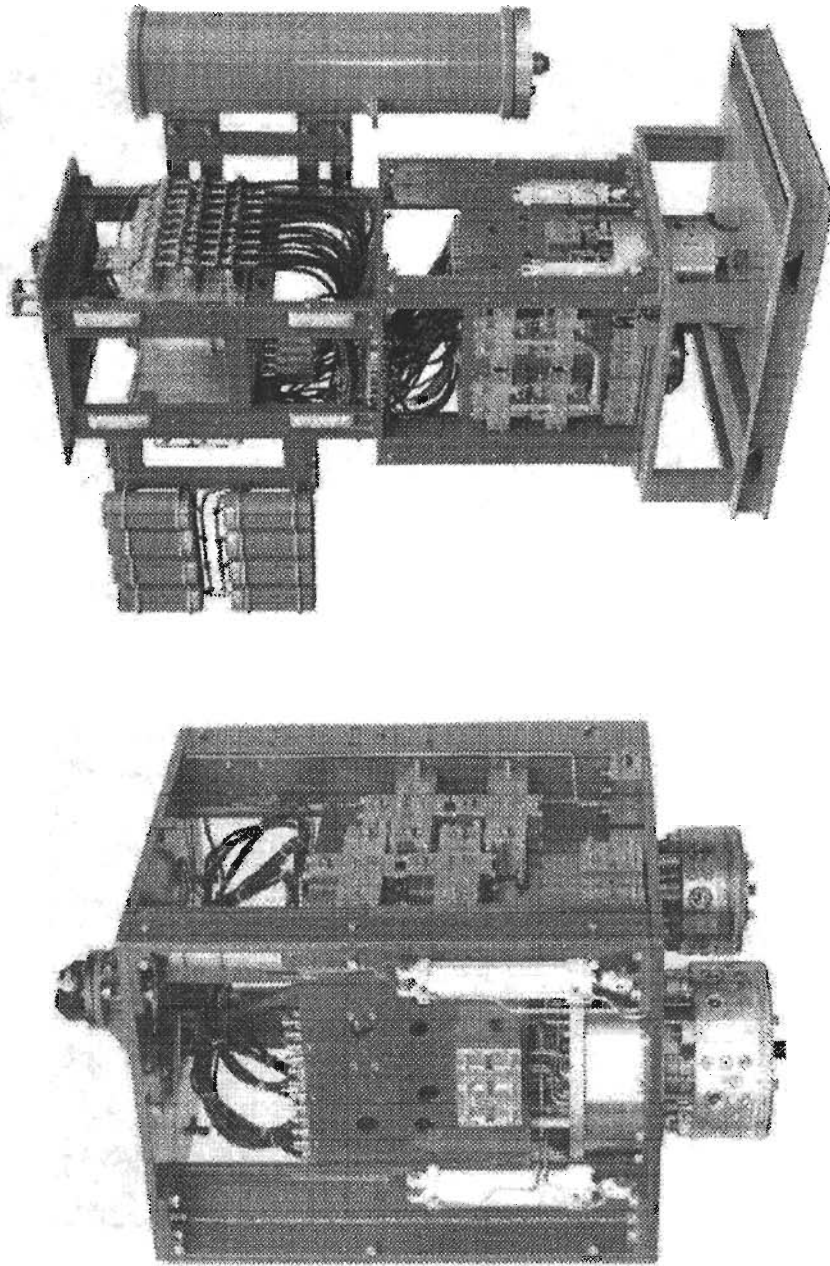
### Current Generation (began development 2004)

- Mark III Model 80 (80 functions, base footprint)
- Mark III Model 120 (120 functions, rectangular footprint)

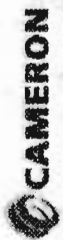


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## PODS

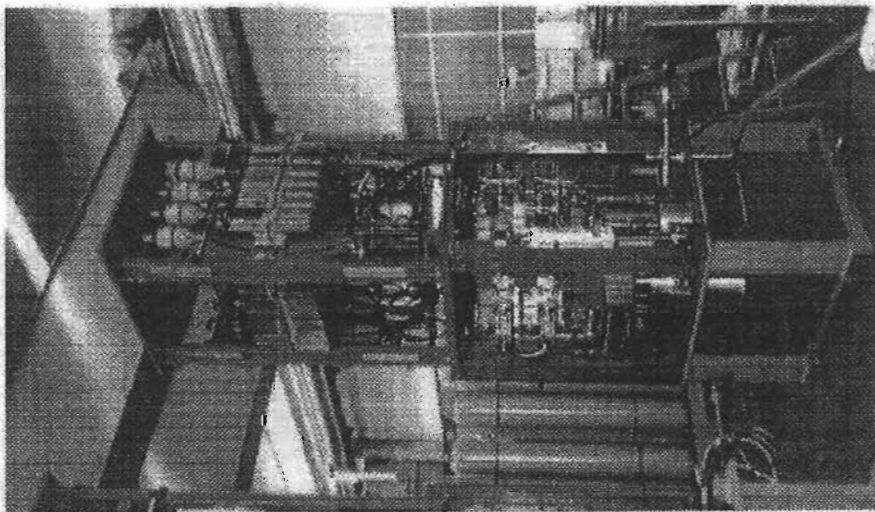


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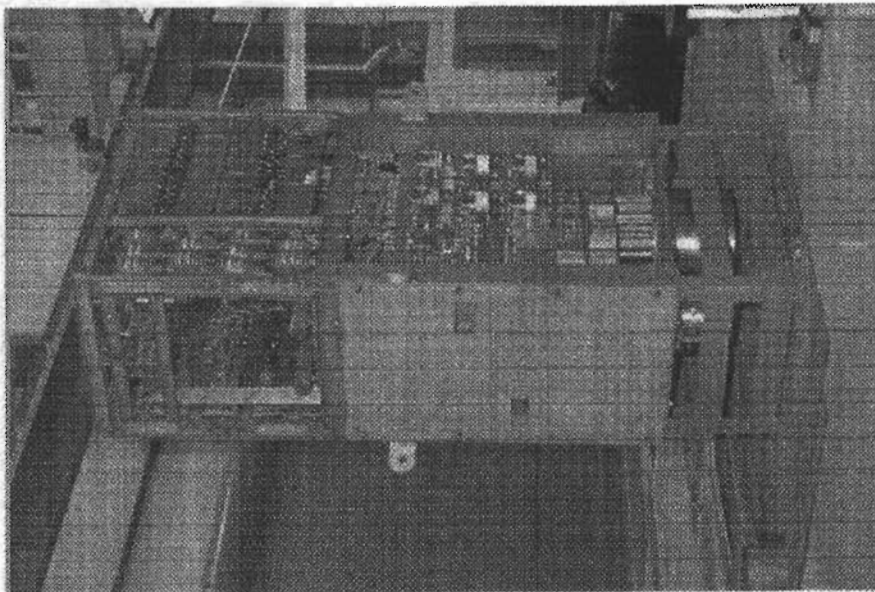


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## PODS



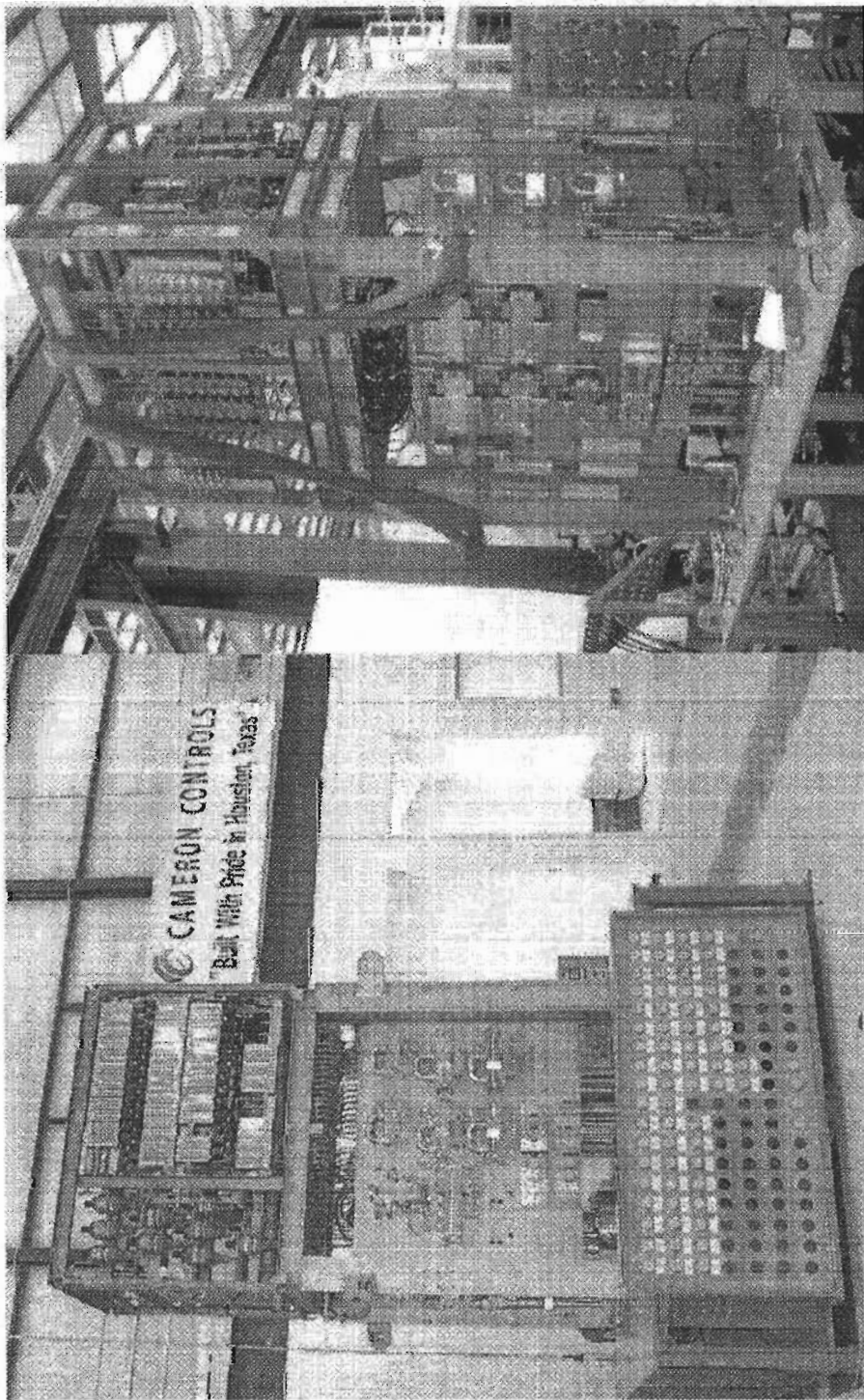
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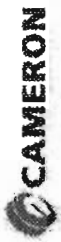


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## Mark II & Mark III Model 120 Pods

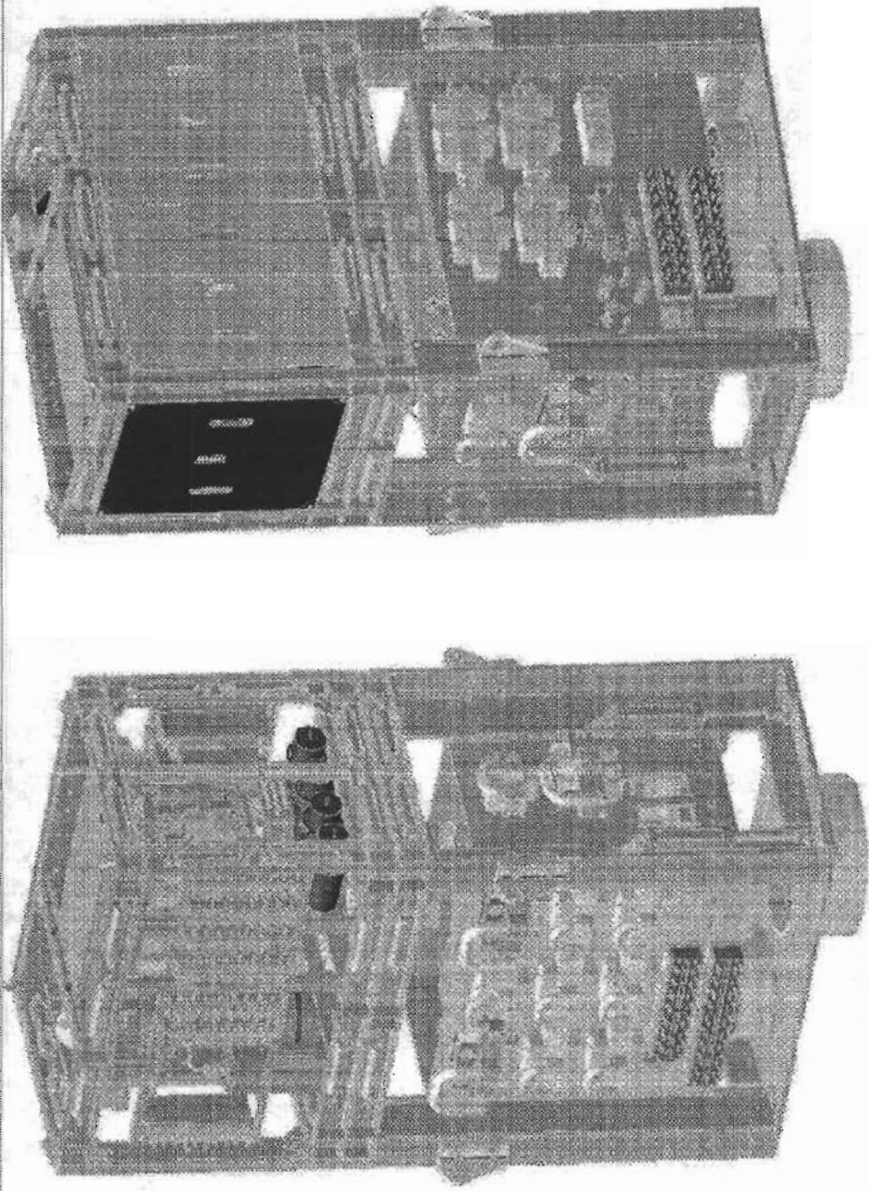


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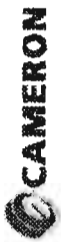
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## Mark III Model 120



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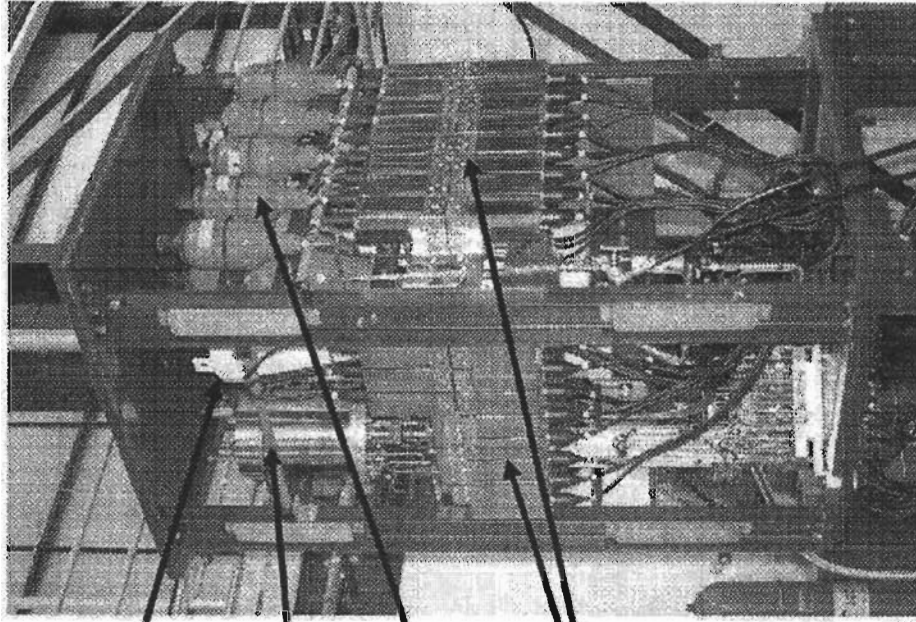
## Mark I MUX Package

Subsea Electronics  
Module

Subsea Transmitter  
Module

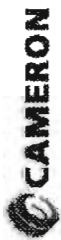
Accumulators

Solenoid Valves



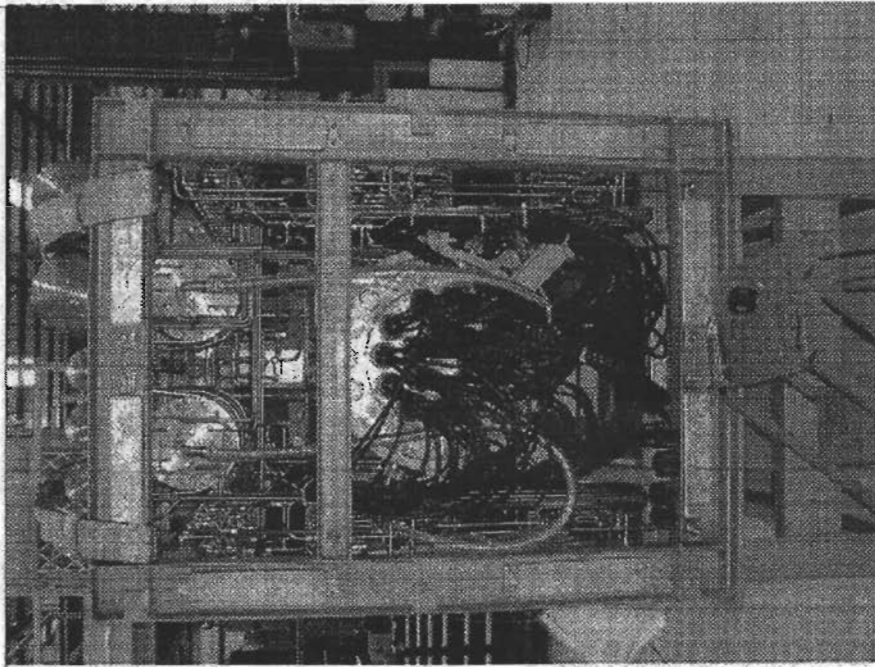
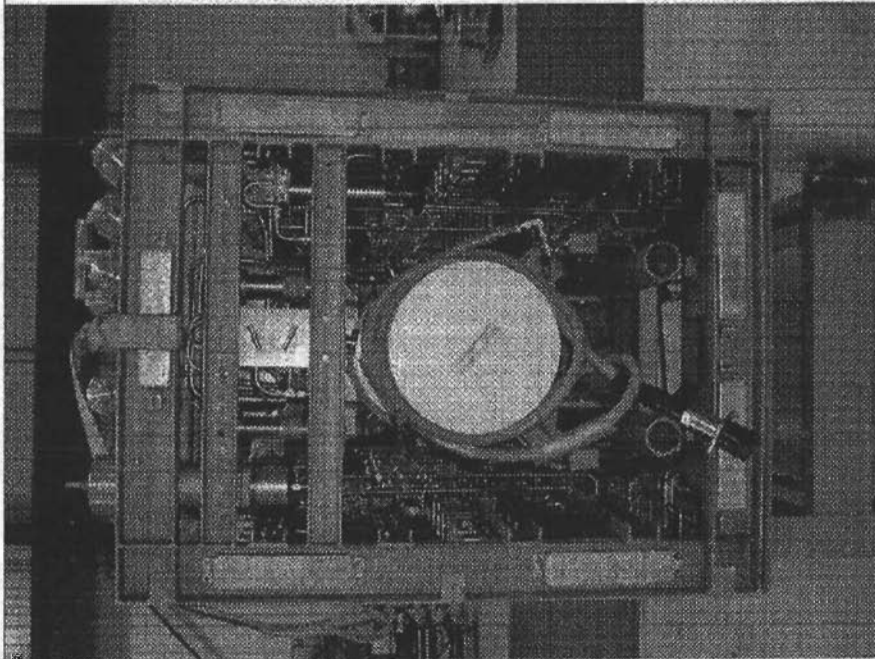
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## Mark II MUX Package

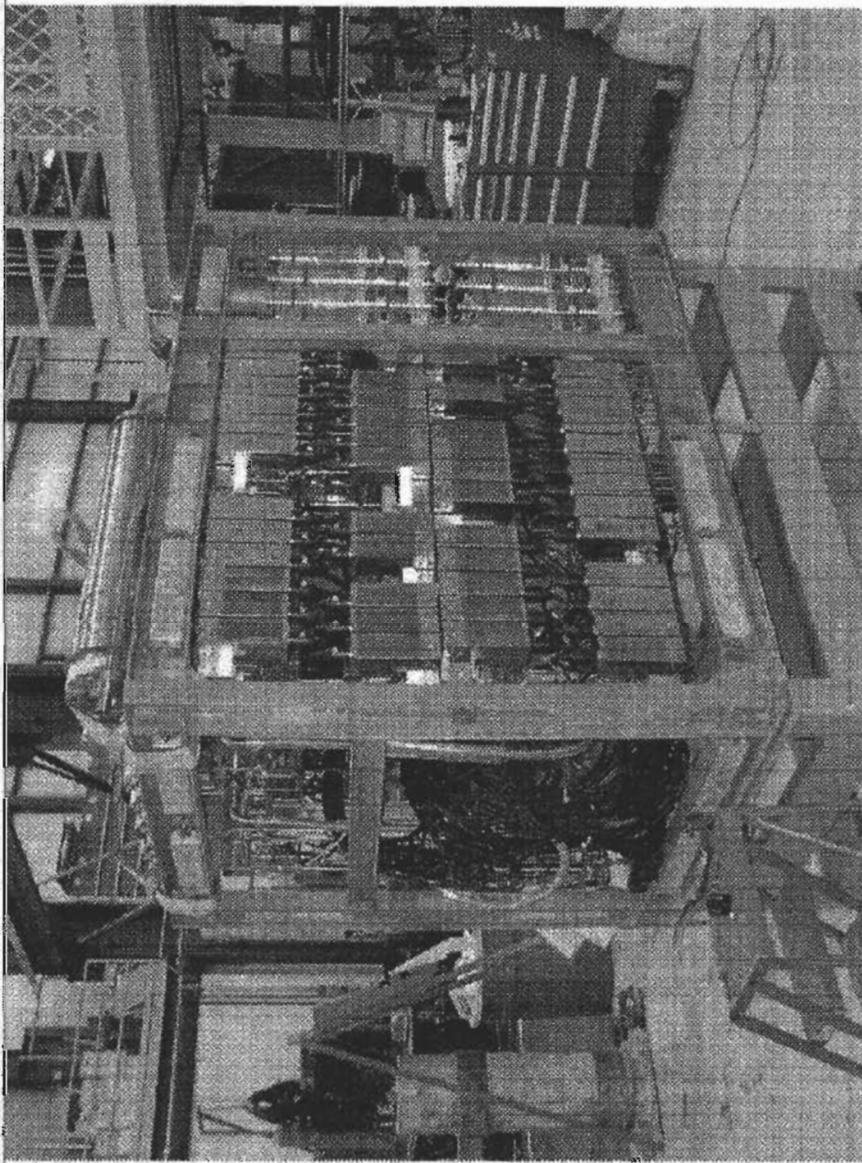


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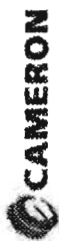


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## Mark II MUX Package

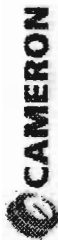


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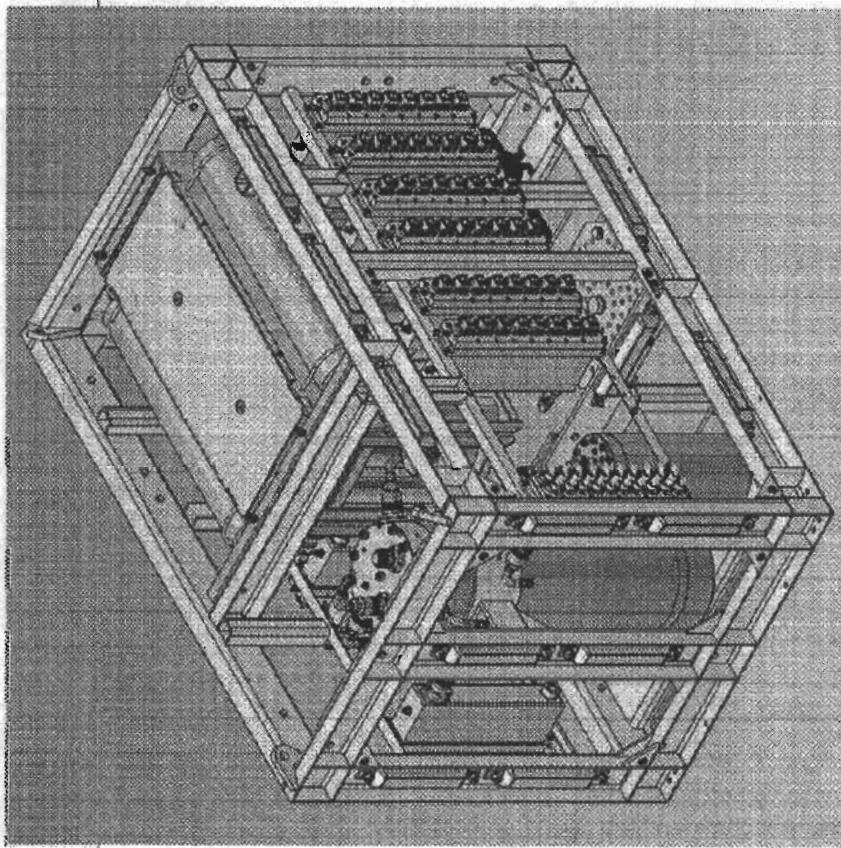
## Mark III MUX Section

- Completely Repackaged for ease of maintenance
- Pressure compensated dielectric filled chambers
  - Solenoids
  - Transducers
- Modular construction
  - Solenoid chambers
  - Transducer chambers
  - Pilot Accumulator, Regulator & Filter rack
- Junction Plate for hydraulic interface between MUX / Mod
- New compact SEM design with next-gen electronics
- Rechargeable batteries for AMF/Deadman System

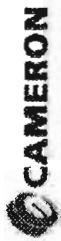


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## Mark III Model 120 MUX Section

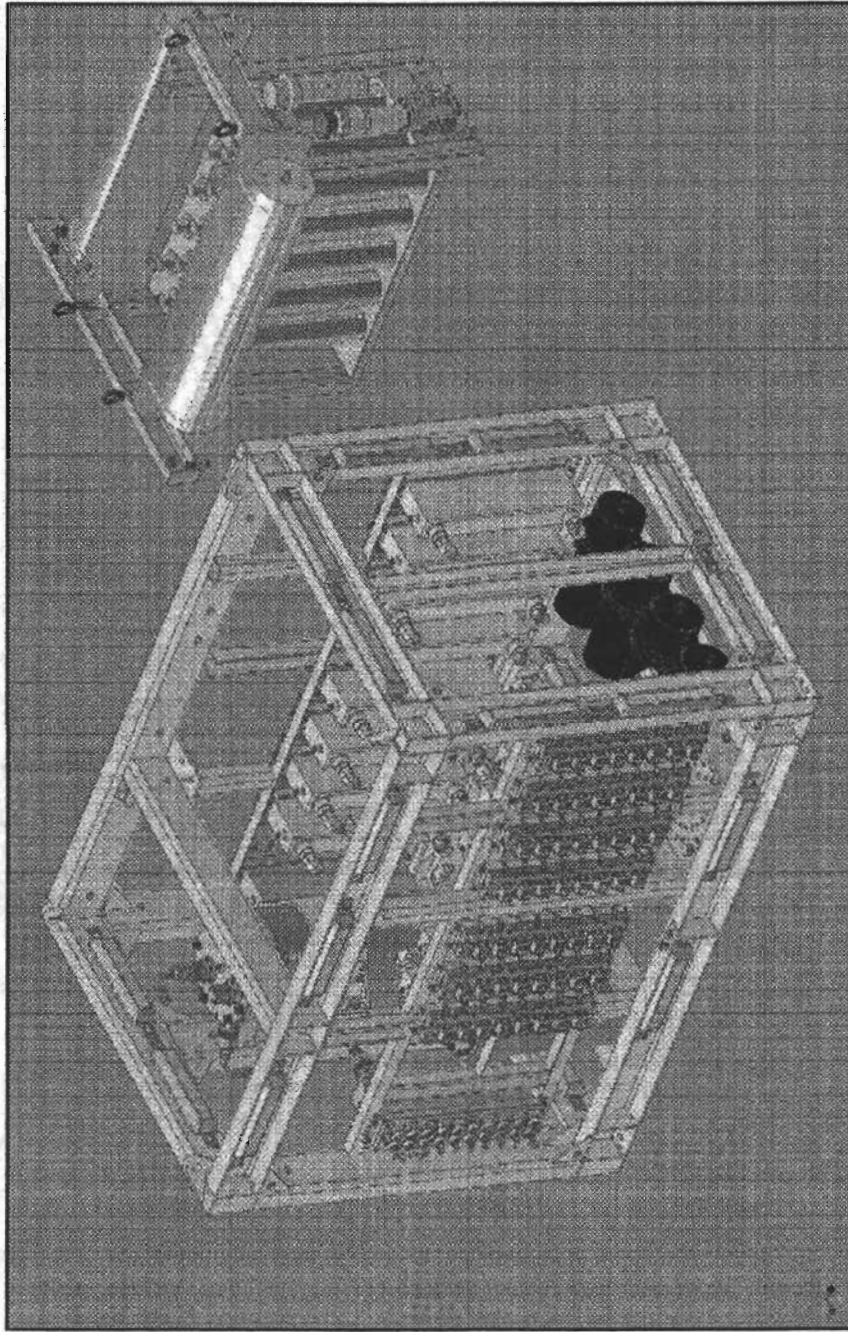


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## Mark III Model 120 MUX Section



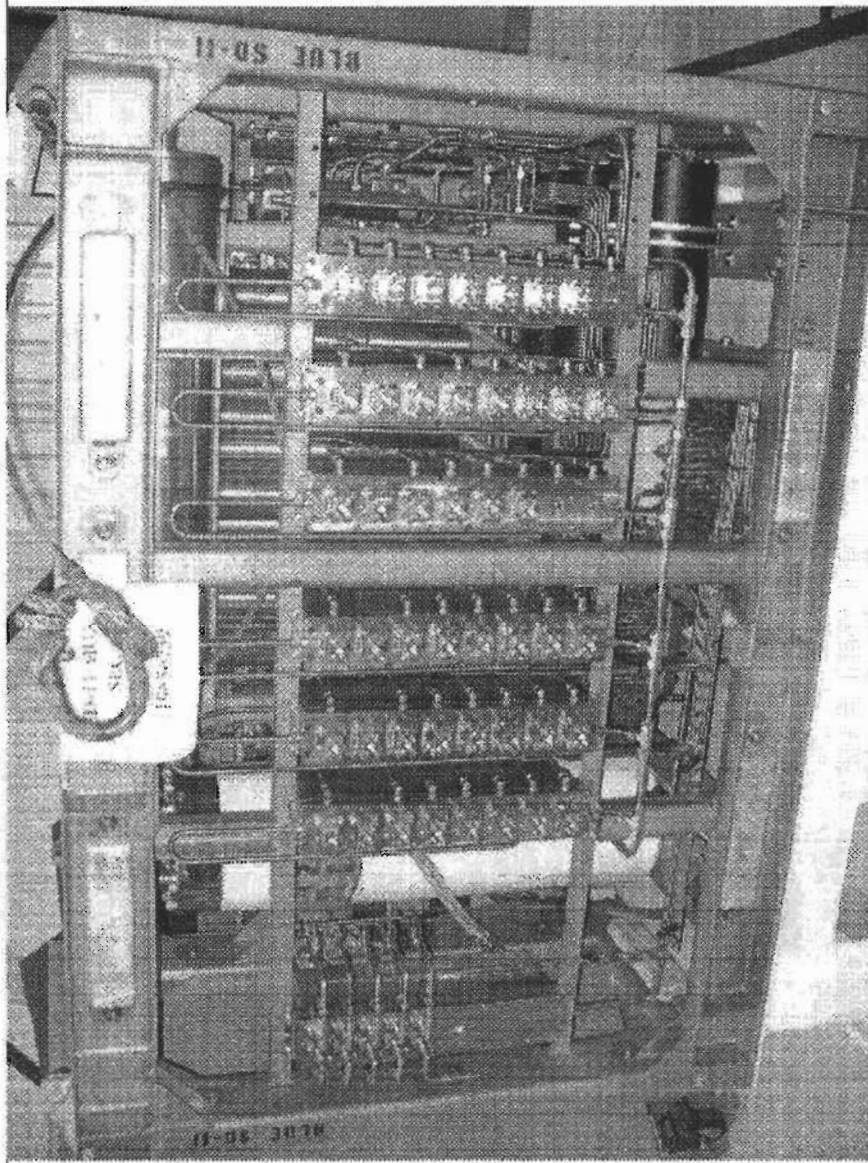
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## Mark III Model 120 MUX Section

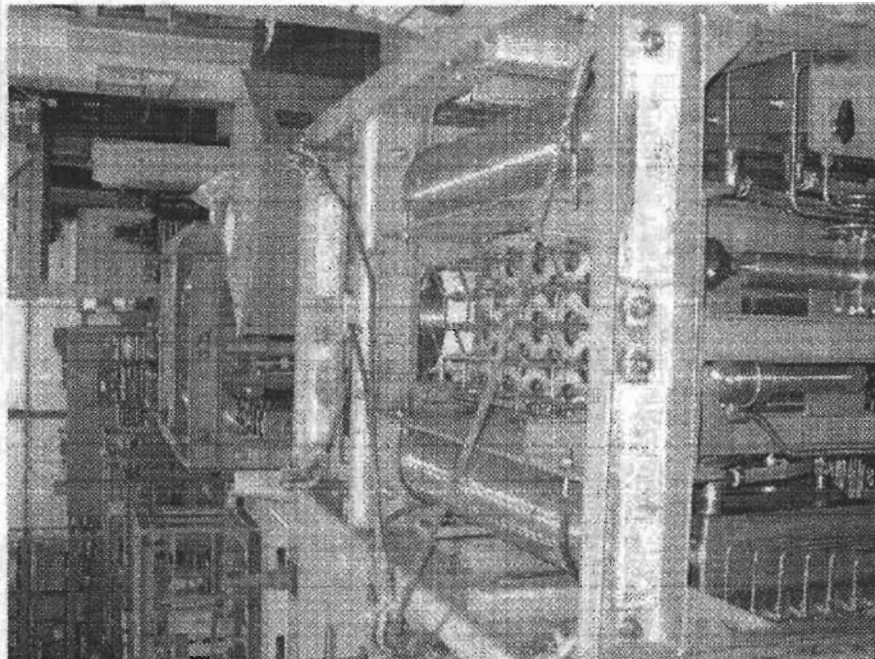


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## Mark III Model 120 MUX Section



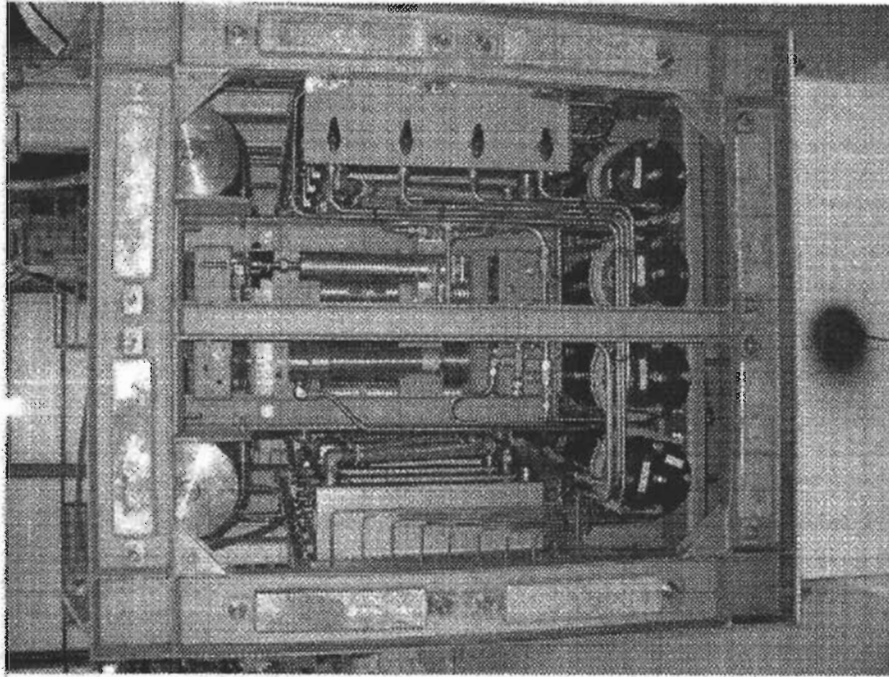
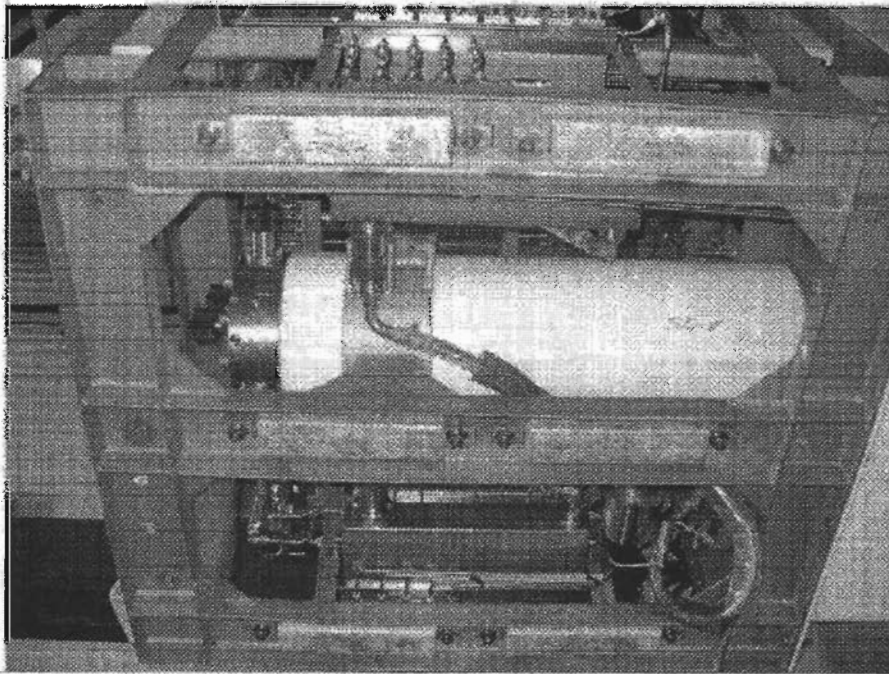
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## Mark III Model 120 MUX Section

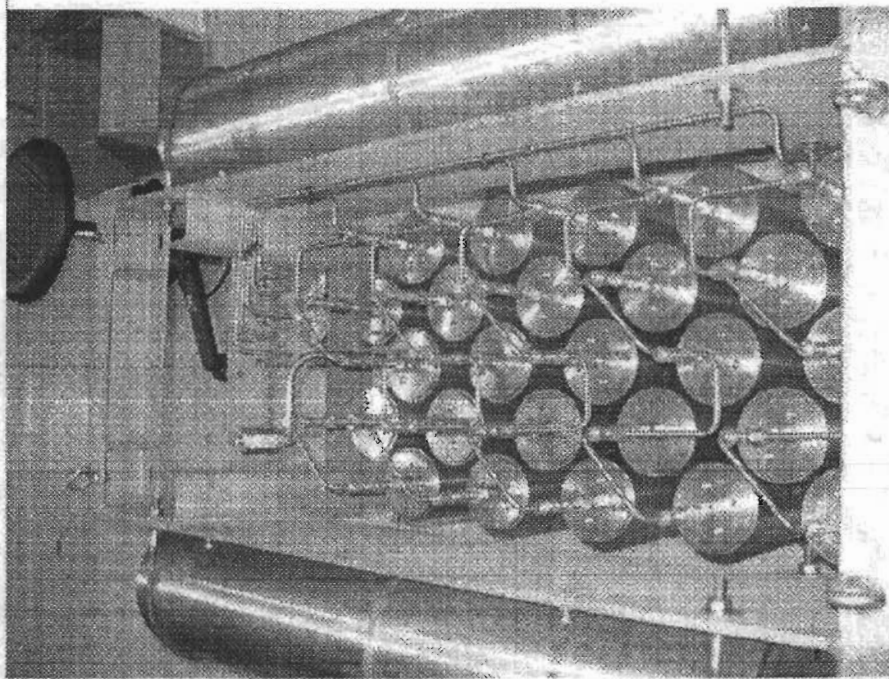
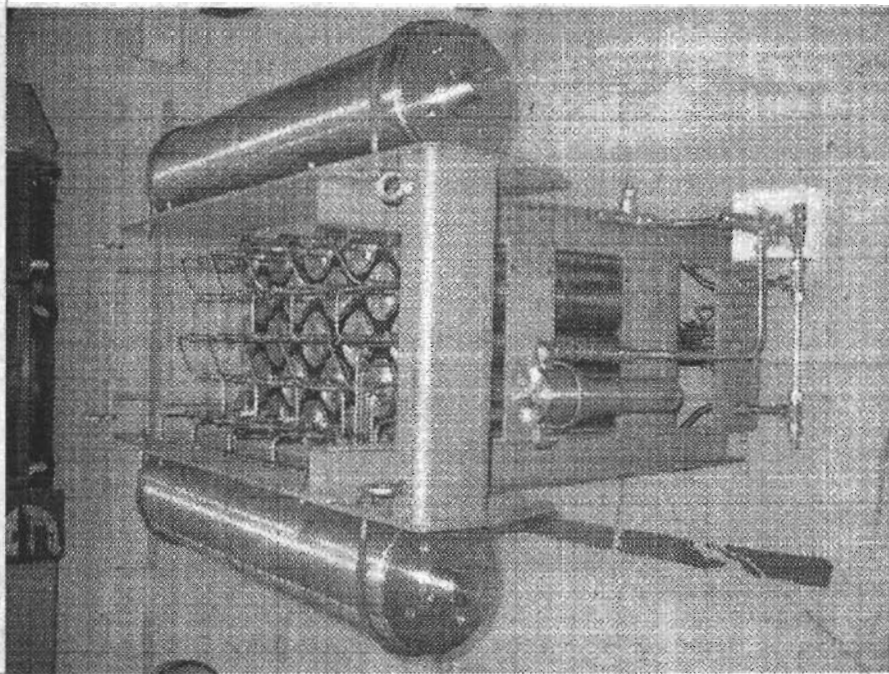


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## Mark III Model 120 Pilot Accumulator Rack

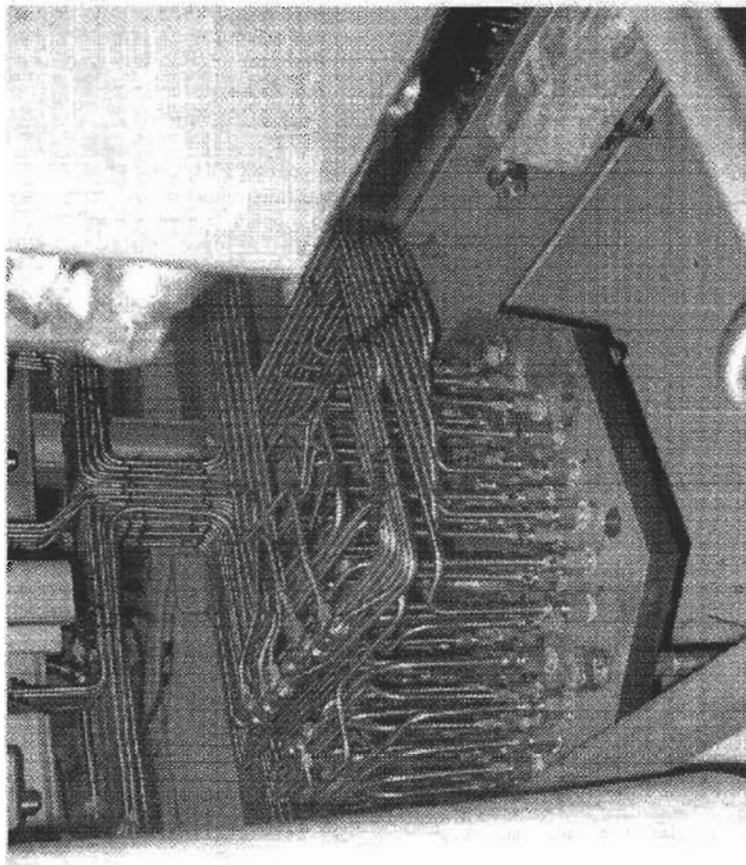
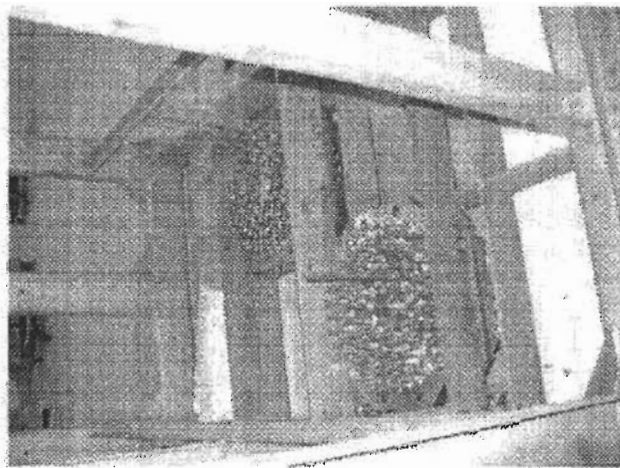


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## Mark III Model 120 Junction Plates

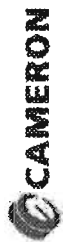


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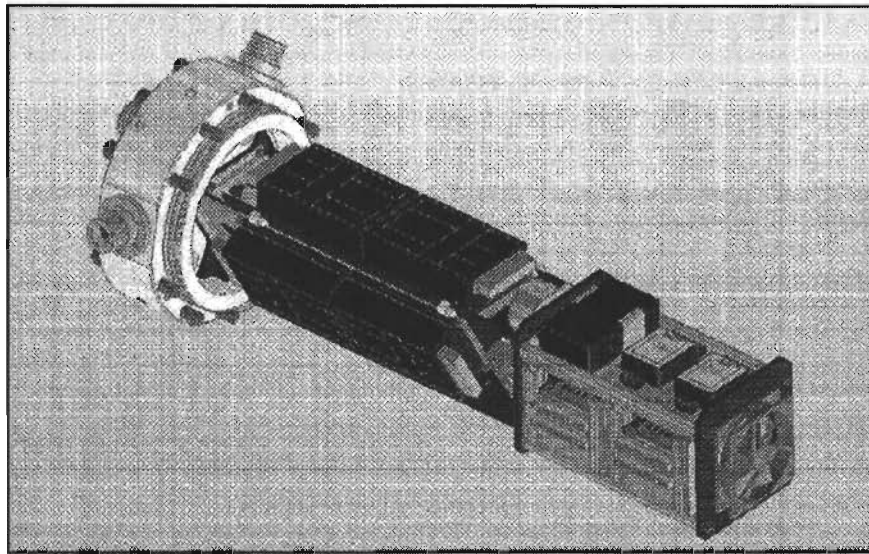
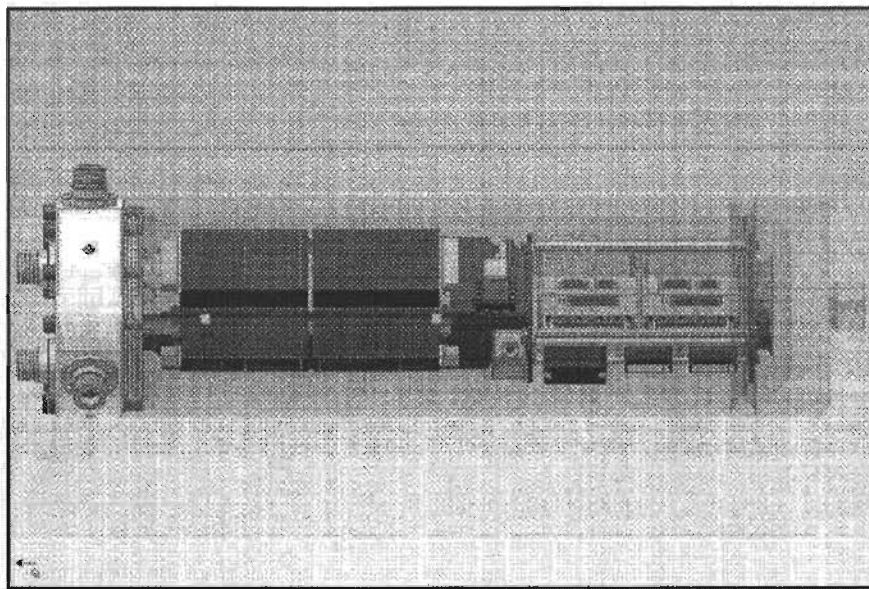
## Mark III SEM Features

- Major SEM Electronics, SEM Controller I/O Board, Solenoid Drivers & Pressure Transducers are derivatives of the field proven CamTrol technology and are Proprietary to Cameron
- Electronics packaged to increase efficiency of heat dissipation
- Solenoid driver modules removed from SEM
- Mark III SEM is smaller than Mark I & Mark II
- 1 SEM for both the Model 80 or 120
- Pie connectors eliminated



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## Mark III SEM (Subsea Electronics Module)



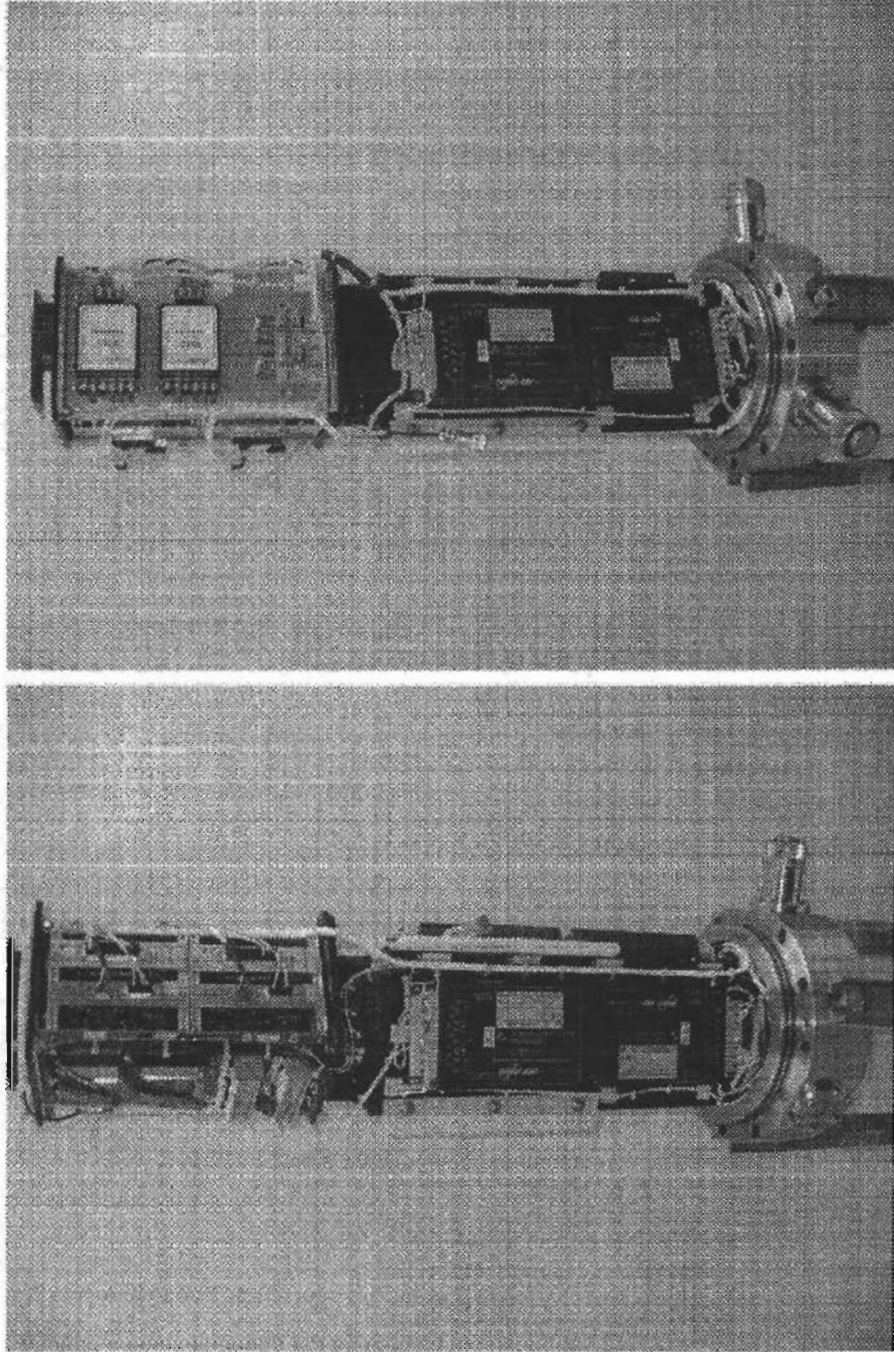
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## Mark III SEM (Subsea Electronics Module)

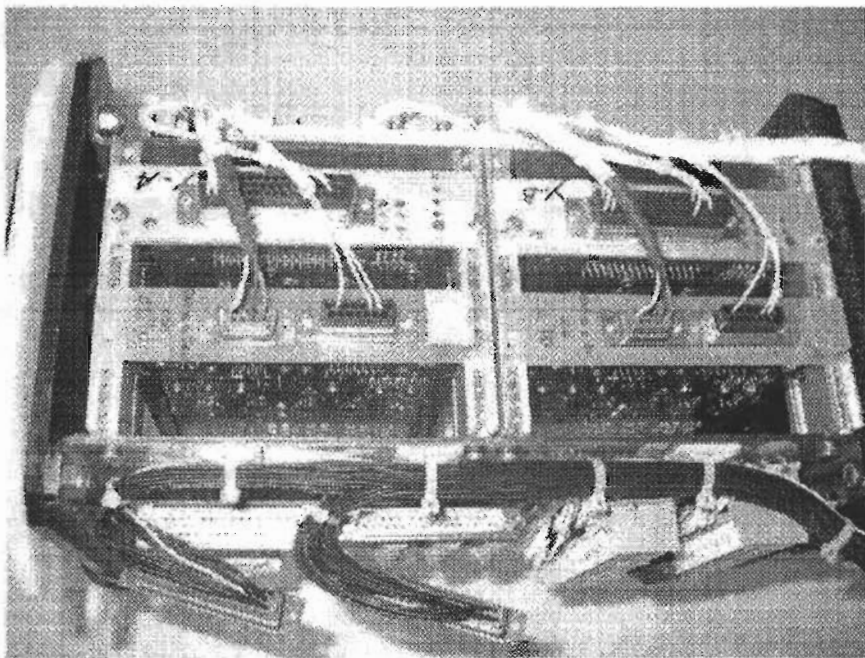
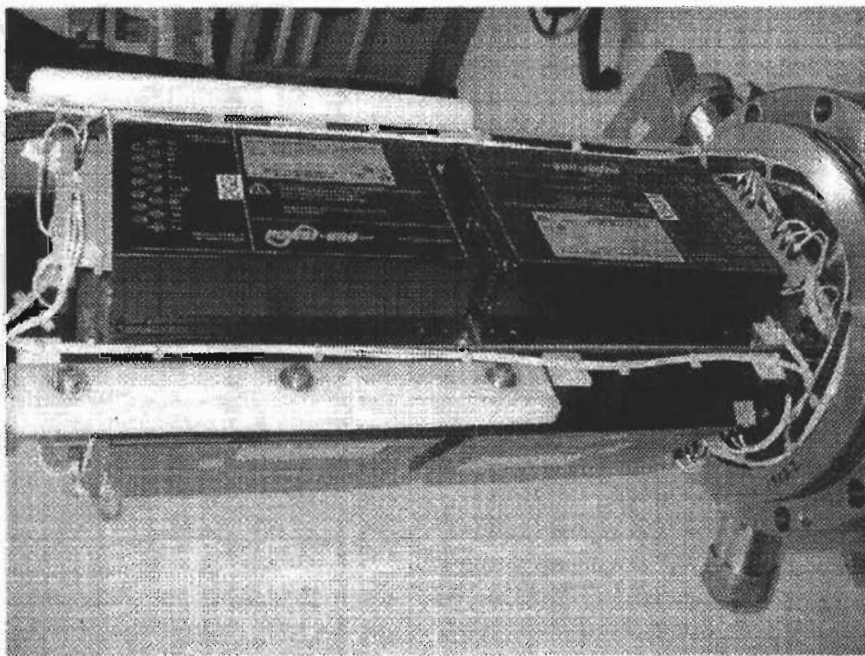


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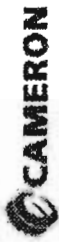
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## Mark III SEM (Subsea Electronics Module)



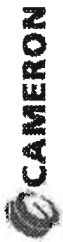
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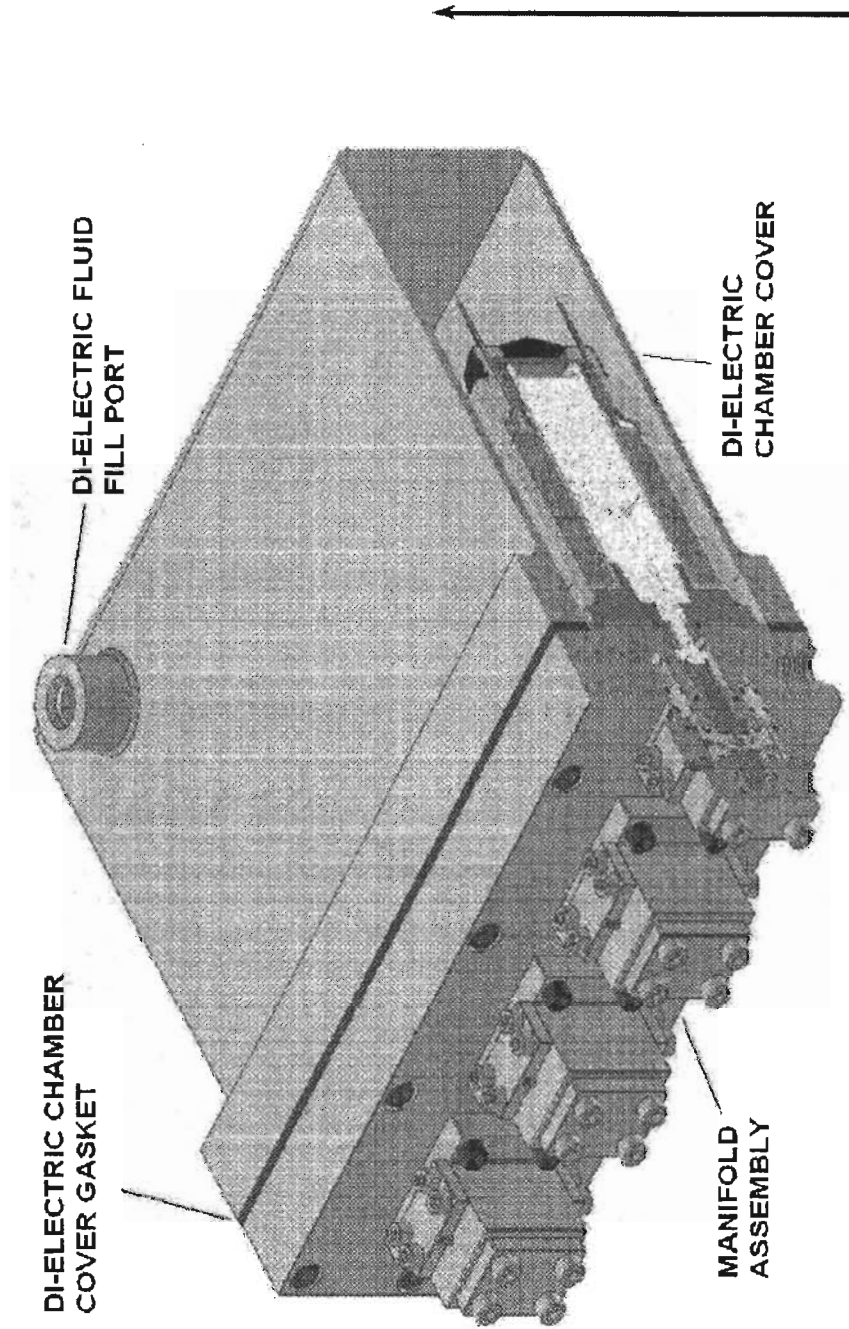


## SVM (Solenoid Valve Module)

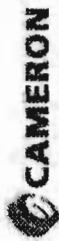
- SDM (Solenoid Driver Module) included in each SVM
- Module is dielectrically compensated
- Wires between SDM and coils are booted
- PBOF hose for SVM interconnect
- CANBUS communication to SEM



## Solenoid Valve Module

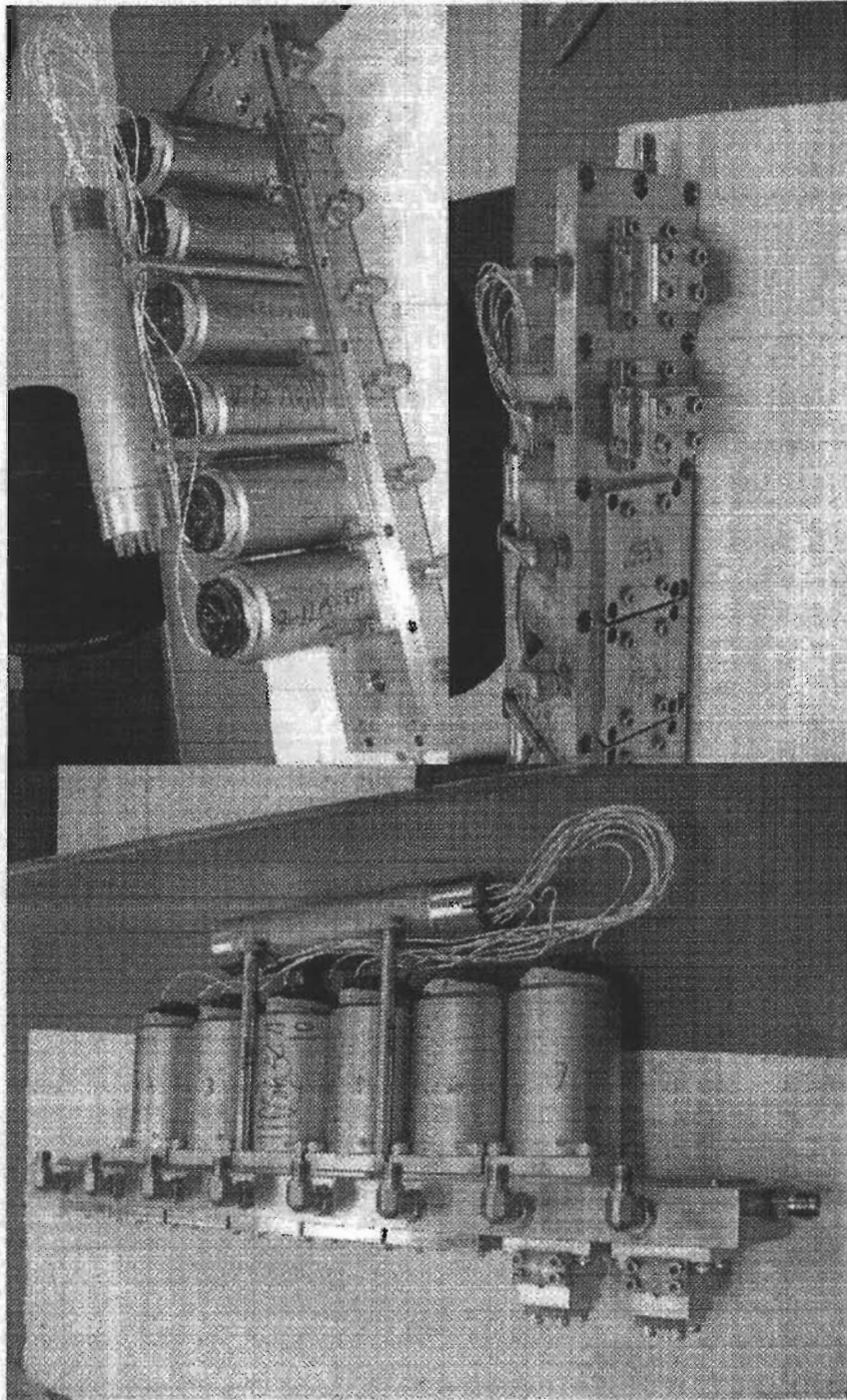


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## Solenoid Valve Module

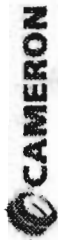


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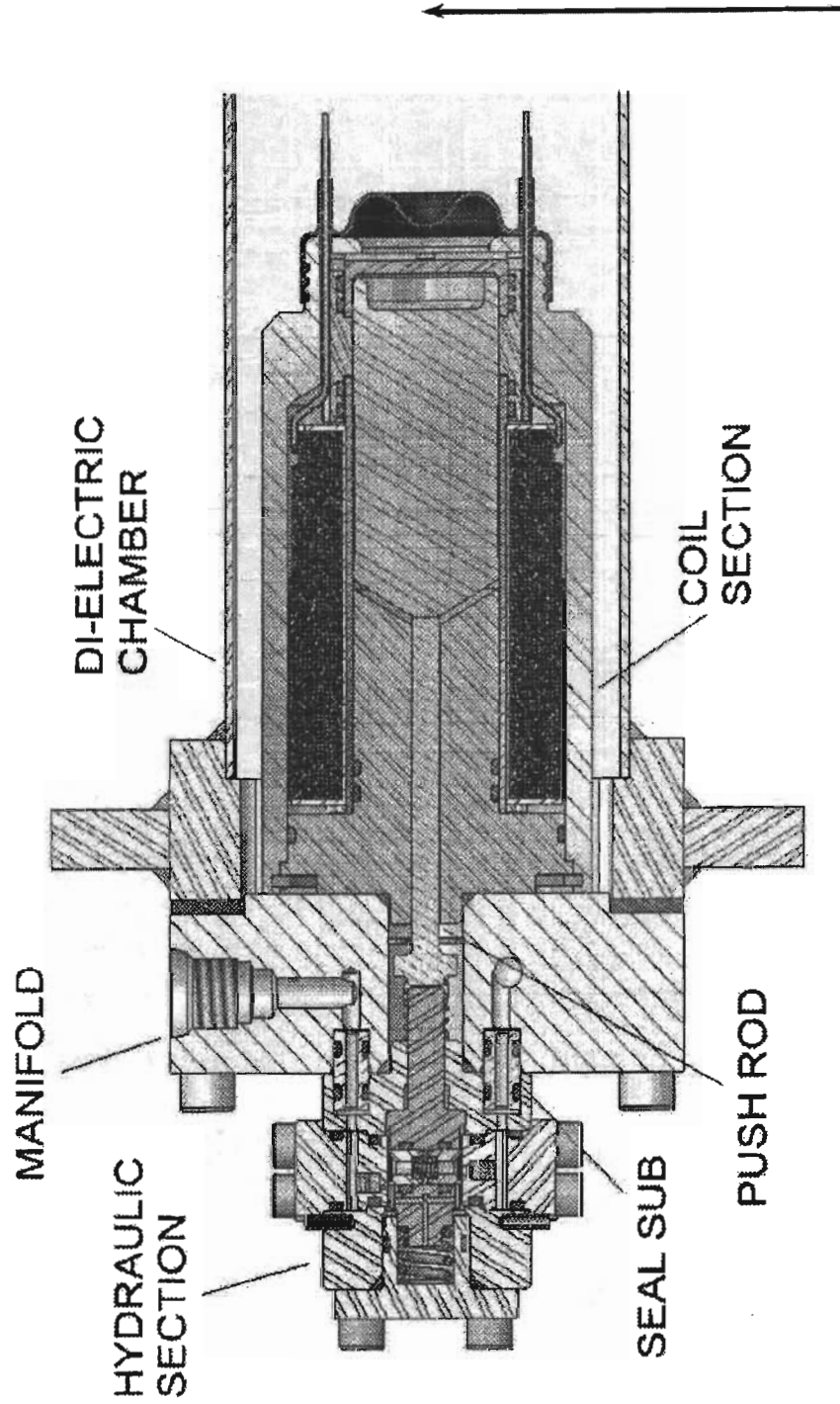
## Solenoid Valve Features

- Hydraulic section is divorce mounted
- Coil section is compensated with dielectric
- Single coil design with higher pull-in force
- Premium seal plates and seal ring materials

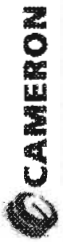


DRILLING & PRODUCTION SYSTEMS

## Solenoid Valve Assembly

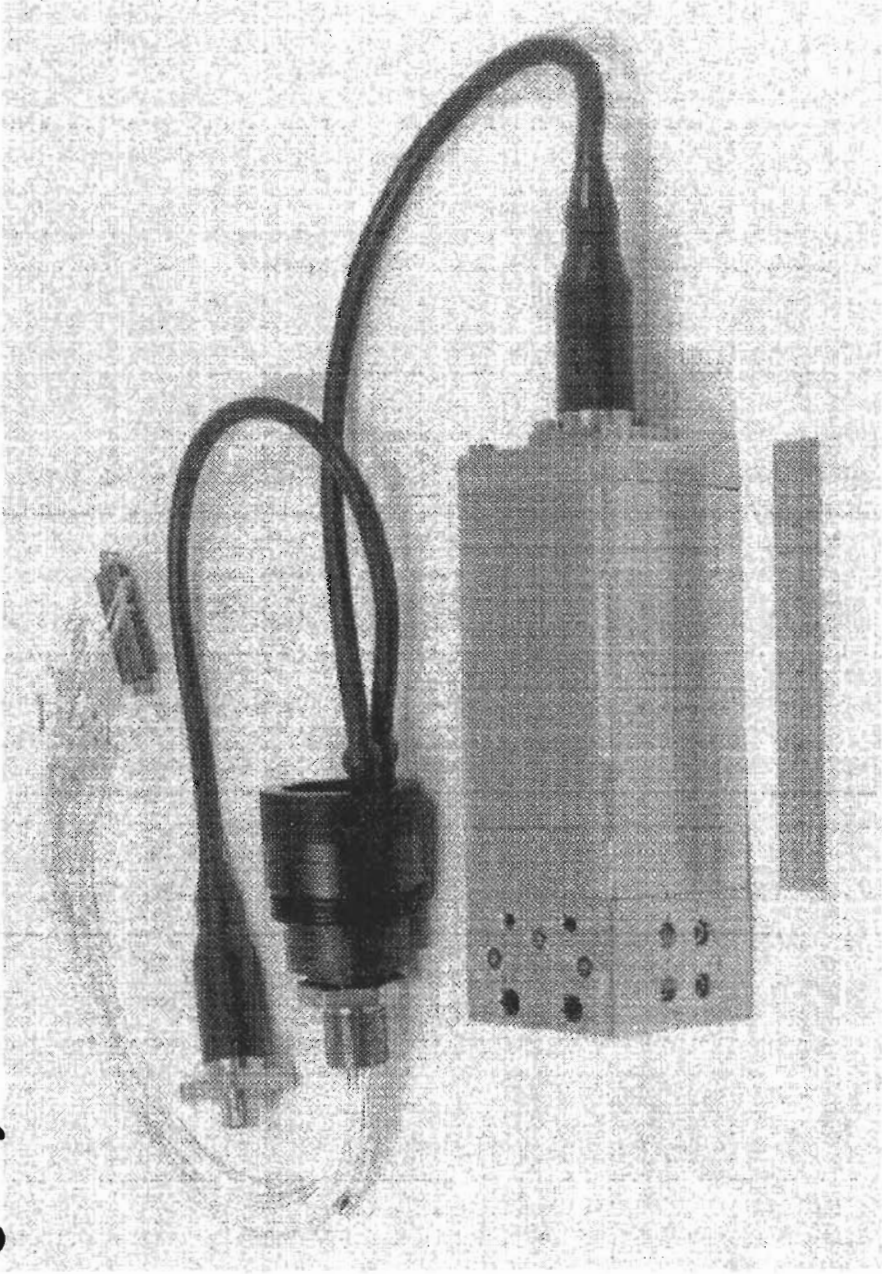


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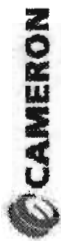
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## Legacy -63 Solenoid Valve & Pie Connector



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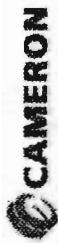


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## PTM (Pressure Transducer Module)

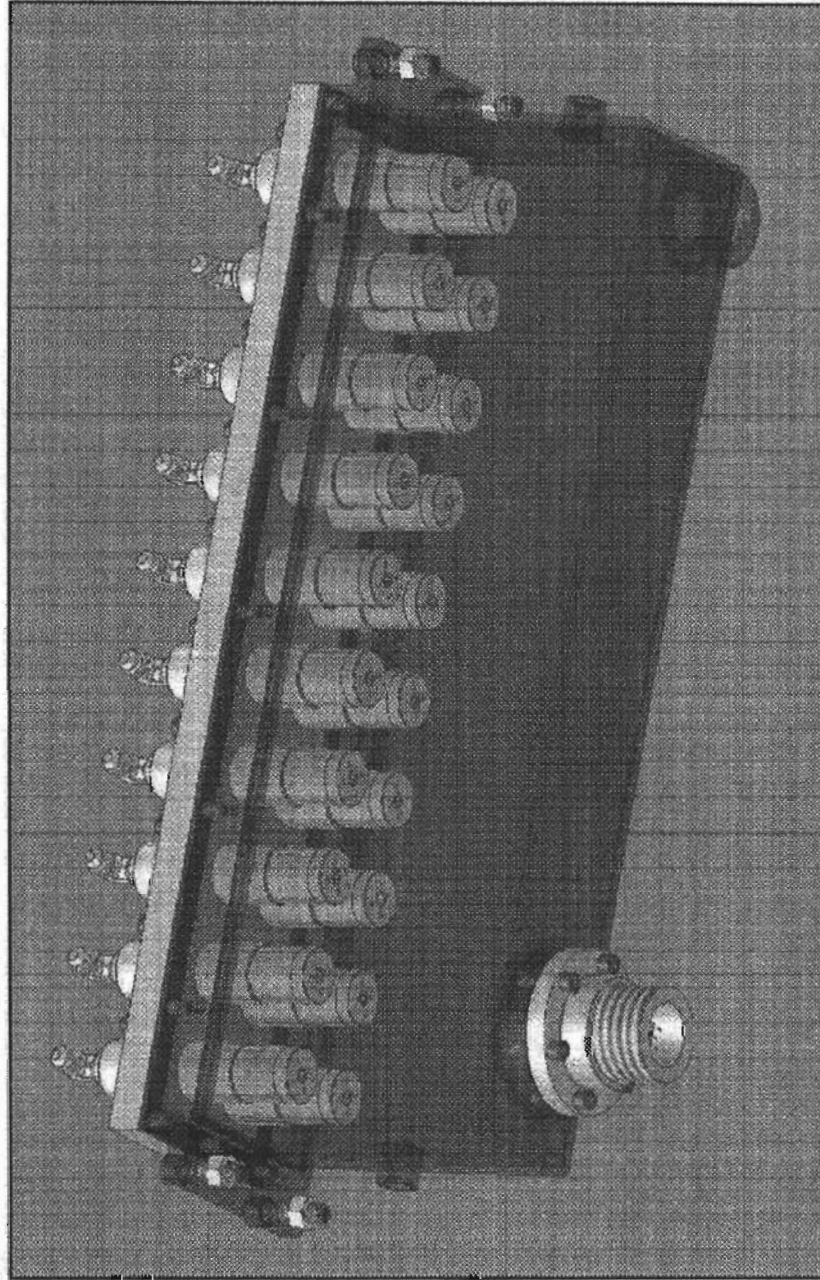
- Compensated Dielectric chamber
- External mounting
- Wires between Transducers are booted
- CANBUS communication to SEM
- Eliminates 1 ATM chambers

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## Pressure Transducer Module

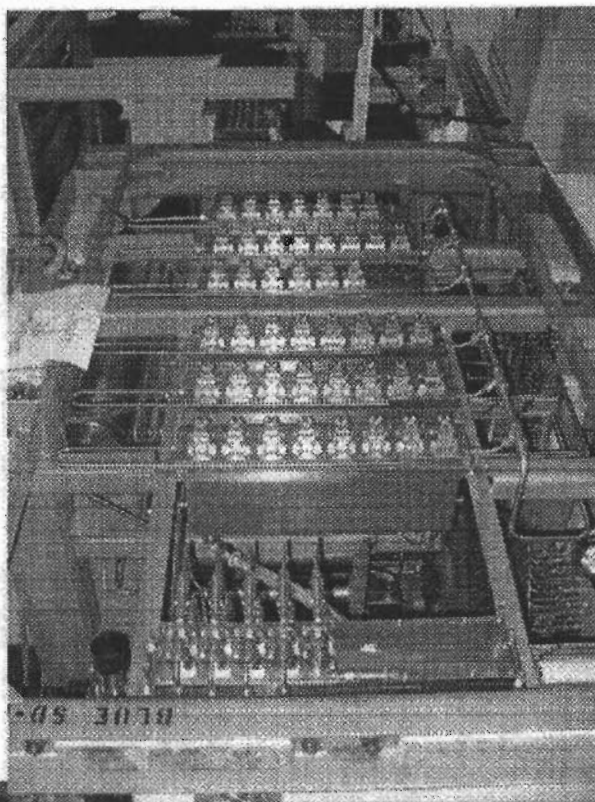
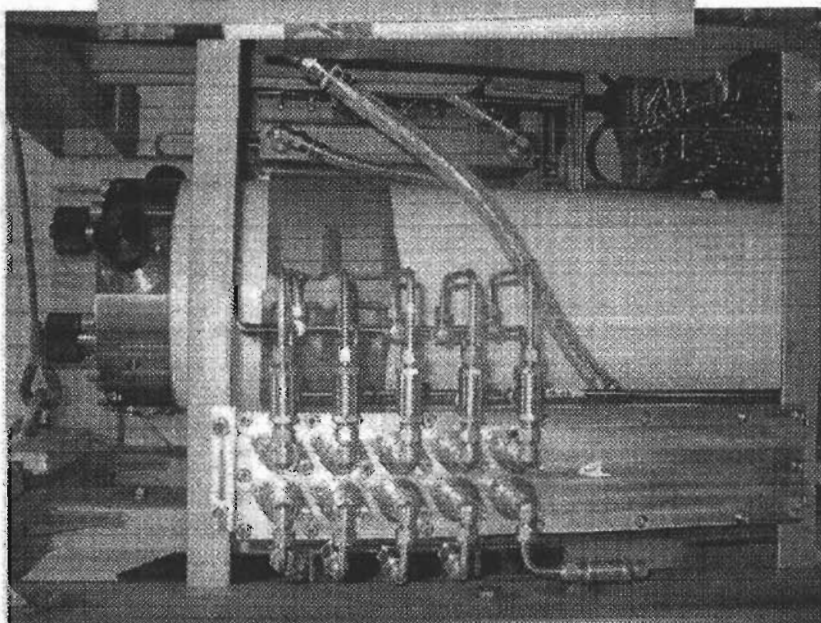


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## Pressure Transducer Module

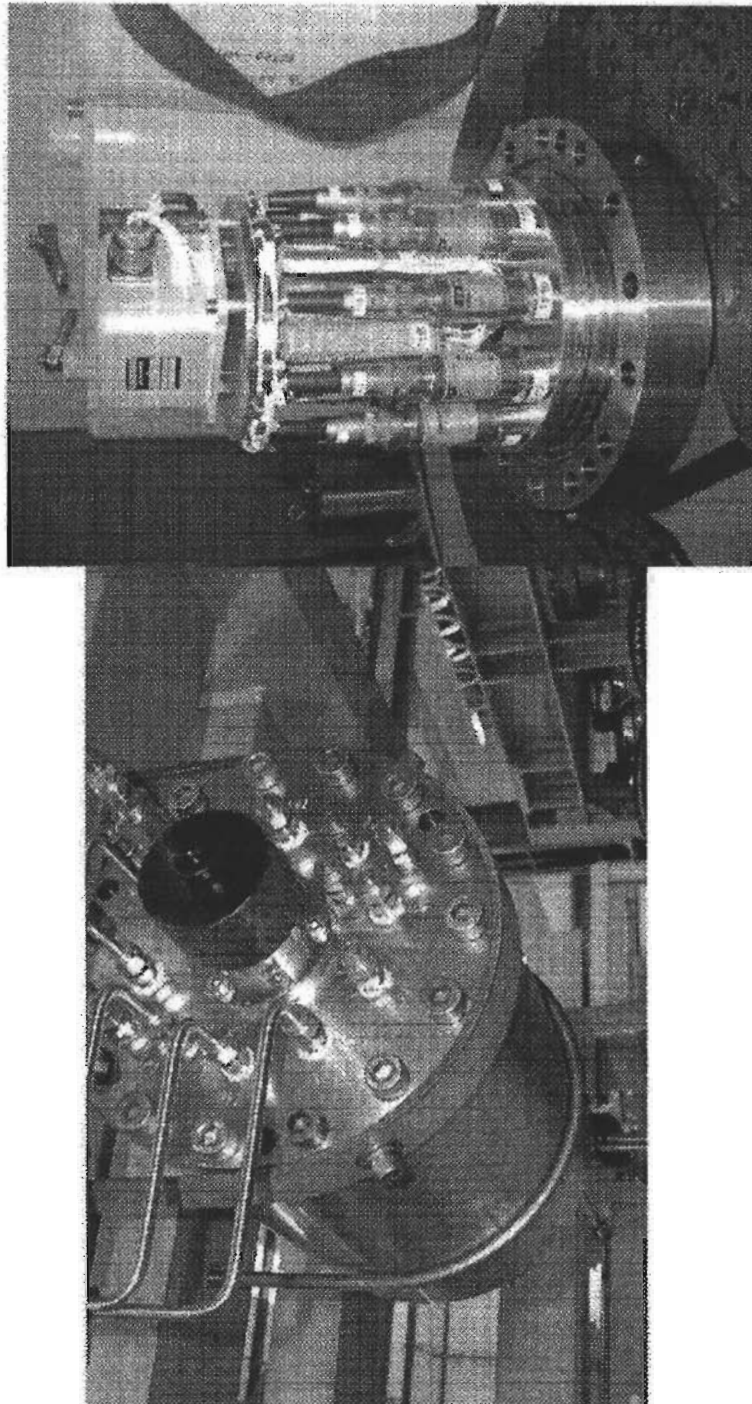


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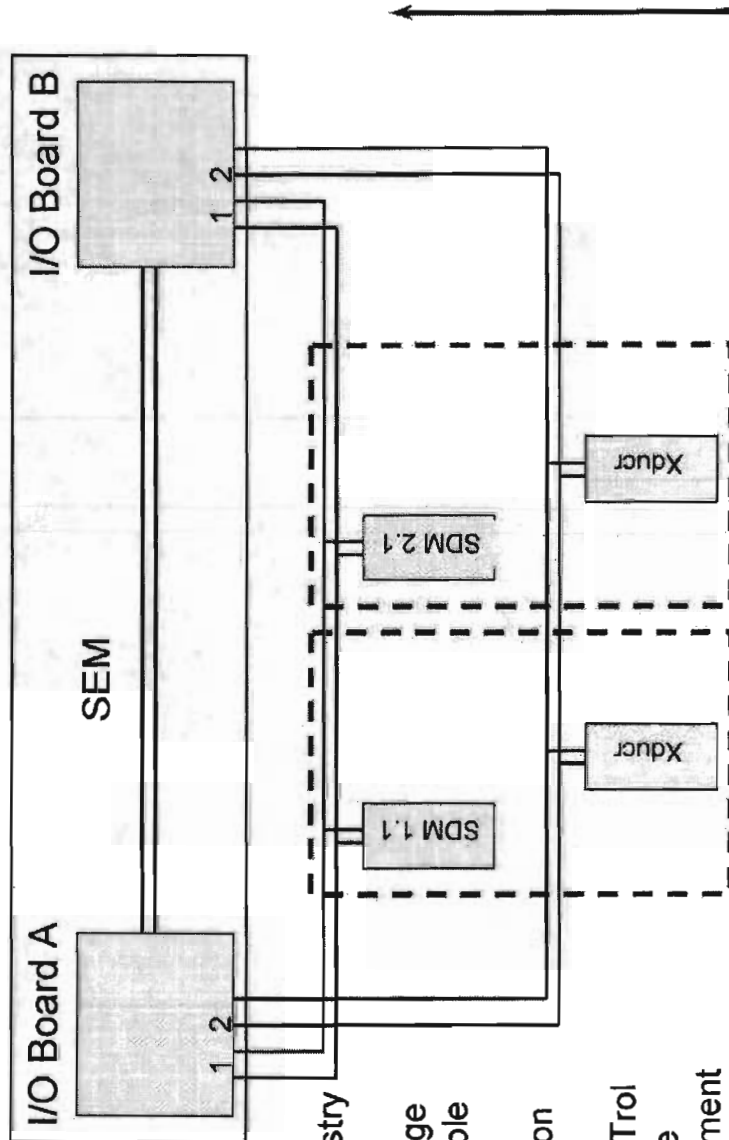
## Legacy Pressure Transducer Module



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# MUX System Architecture

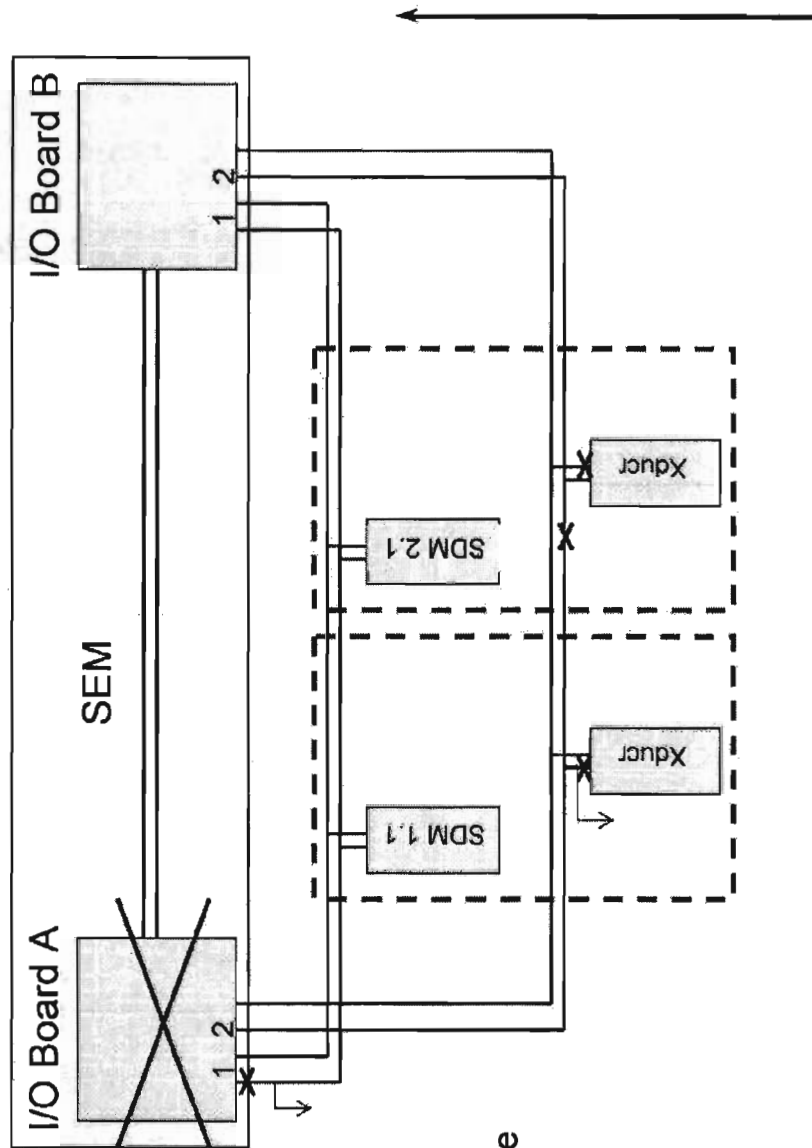


## Why CAN?

- used in the auto industry
- fault tolerant
- wide temperature range
- compact chips available
- cost effective
- low power consumption
- industry standard
- used in the new CamTrol SEM, as well as in the Electric Tree development

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# MUX System Architecture

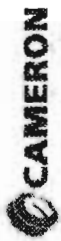


Fault Tolerant  
against:

- Wire breaks
- Connector problems
- Seawater ingress
- Electronic faults
- Combinations of above

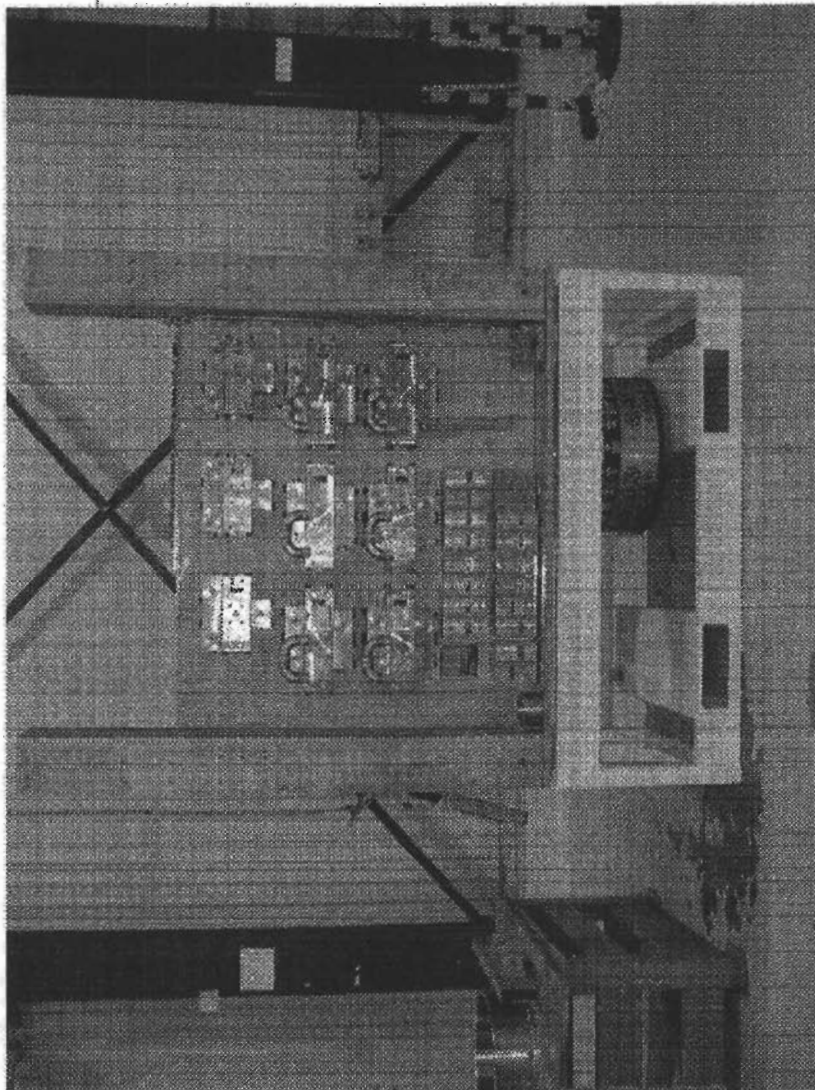
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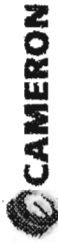


DRILLING & PRODUCTION SYSTEMS

## Mod Section

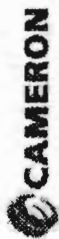


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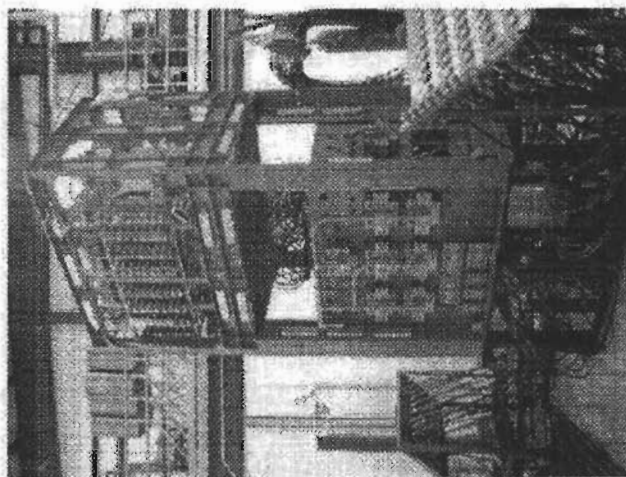
## Mark III MOD Features

- Premium Deepwater Valve and Regulator series
- 1-1/2" and 3/4" Regulators
- 1-1/2", 1", 3/4", 1/2", and 1/4" Valves
- Field Proven Pressure Balanced Retractable Stingers

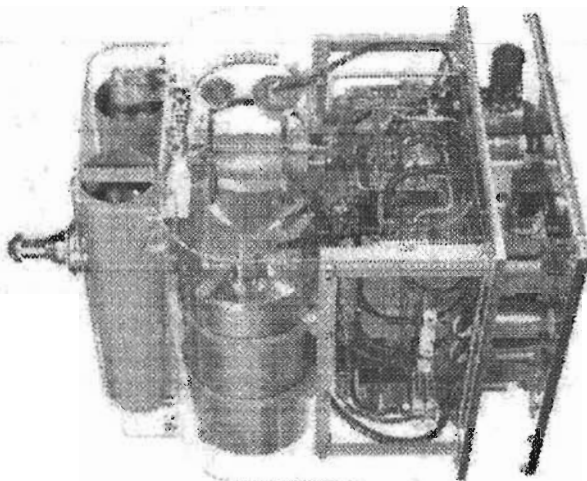


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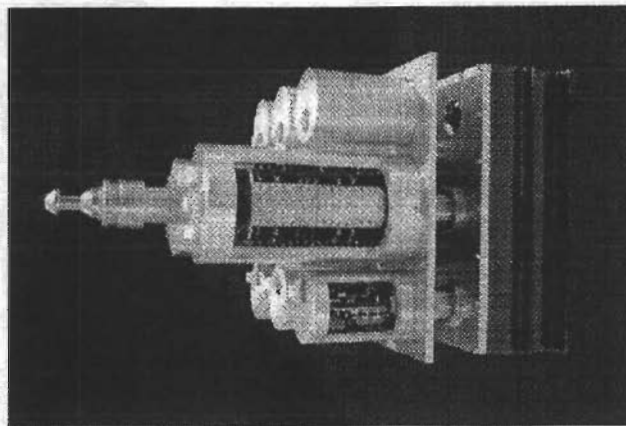
## Why Cameron Mark III?



MUX Drilling Systems



Camtrol SCM



Camtrol DC SCM

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