



## Pre Qualification

for Double Block & Bleed Valves



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## 1. COMPANY PROFILES

Hy-Lok is a world leader in valves and known for more than 40 years of experience in fast track delivery, special materials and special design.

With engineering, production, assembling and testing under one roof, we manufacture valves you urgently need in a very limited time frame.

Our valves are produced from special materials such as Super Duplex, Titanium and Nickel Alloys - suitable for extraordinary applications - and special valves in standard materials like stainless or carbon steels.

With our highest level of flexibility, in-house production, technical know-how and dedicated staff, we look forward to be your perfect business partner in valves.

**Your Perfect**  
**Business Partner**

# 1. COMPANY PROFILES

## COMPANY STATUS

### AT A GLANCE

Country	- South Korea
Established	- 28 <sup>th</sup> July 1977
Turnover	- USD 202 Mil (Year 2015)



### Headquarters

Location	Busan, South Korea
Facilities Area	23,888 m <sup>2</sup>
Working Scope	Fittings & Valves
Employees	505



### Painting Shop

Location	Busan, South Korea
Facilities Area	3,276 m <sup>2</sup>
Working Scope	Valve Painting
Employees	11



### Sinpyeong Factory

Location	Busan, South Korea
Facilities Area	11,150 m <sup>2</sup>
Working Scope	Fittings & Valves, Package System
Employees	65



### Hy-Lok Forging

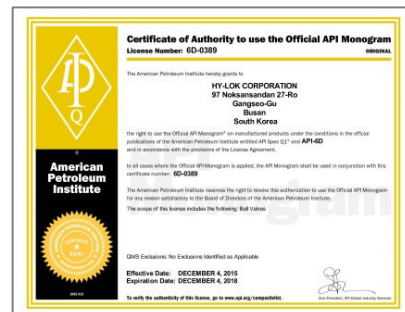
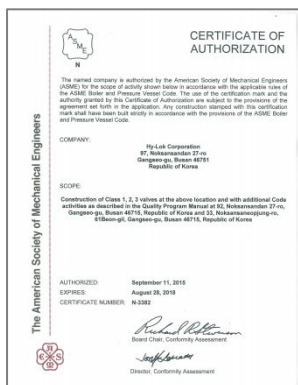
Location	Gimhae, South Korea
Facilities Area	4,067 m <sup>2</sup>
Working Scope	Valve Forging
Employees	22



## 1. COMPANY PROFILES

## QUALITY & CERTIFICATES

It has always been clear to the management of Hy-Lok that quality cannot be an issue in the served industries. It is simply our philosophy. All our employees are well educated and trained and fully aware of the fact that our products have to be of the highest level and quality which cannot be composed in any way. Dedicated in manufacturing the best valves. This is endorsed by the following certifications of our quality management system.



- ASME N / NPT / NS
- 97/23/EC PED, Module H
- ISO 9001 : 2008
- API 6D / 6A / 6DSS Monogram License
- OHSAS 18001 : 2007
- ISO 14001 : 2004
- Achilles JOS

# 1. COMPANY PROFILES

## HISTORY

### Great Distance of Inauguration

**1977** - Established Hyupdong Metal

### Expansion & Exploitation

**1991** - Acquired ASME Certificates

**1996** - Acquired ISO 9001 Certificate

**1998** - Established R&D Center

- Established Hy-Lok USA

### New Challenge

**2000** - Changed Company Name from 'Hyupdong Metal' to 'Hy-Lok Corporation'

- Acquired API 6D Certificate

**2001** - Established Hy-Lok Singapore

**2002** - Acquired CE Mark

- Approved Vendor by Bechtel

**2004** - Acquired ISO 14001 & OHSAS 18001 Certificates

- Approved Vendor by Saudi Aramco

**2007** - Established Hy-Lok Canada

- Established Hy-Lok Nigeria

### Hy-Lok World

**2013** - Acquired API 6A Certificate

- Approved Vendor by ENI Saipem

**2014** - Established Hy-Lok Middle East (Branch Office)

**2015** - Acquired API 6DSS Certificate

- Approved Vendor by ExxonMobil

- Approved Vendor by Emerson

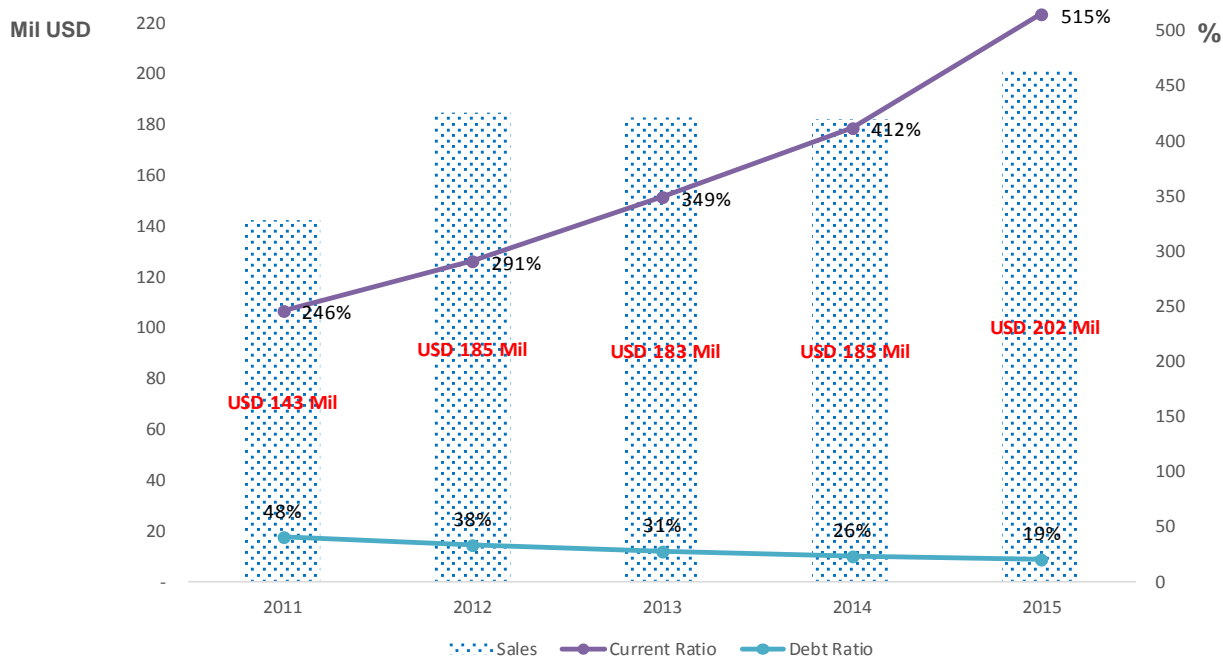
**2016** - NASR Field Development Phase II PKG-2

# 1. COMPANY PROFILES

## FINANCIAL REPORT

Unit : USD

Account	Year 2011	Year 2012	Year 2013	Year 2014	Year 2015
Current Assets	140,434,231	161,743,878	187,559,996	207,178,435	226,235,005
Quick Assets	76,897,609	104,286,829	139,167,563	146,178,854	164,478,508
Inventories	63,536,621	57,457,049	48,392,434	58,820,270	60,977,980
Non-Current Assets	79,553,070	82,673,486	83,789,664	91,113,931	101,764,866
Investments	6,681,108	6,844,103	10,916,510	13,283,026	15,187,960
Tangible Assets	67,217,956	68,933,917	65,818,203	69,188,205	78,440,024
Intangible Assets	5,280,213	6,355,066	6,517,551	6,716,116	6,440,553
Total Assets	219,987,300	244,417,364	271,349,660	298,292,366	327,999,871
Current Liabilities	57,101,316	55,581,023	53,712,609	50,272,143	43,903,267
Non-Current Liabilities	6,235,187	5,514,458	5,080,903	5,811,192	5,213,818
Total Liabilities	63,336,502	61,095,481	58,793,513	56,083,335	49,117,086
Capital	6,806,616	6,806,616	6,806,616	6,806,616	6,806,616
Accumulated Other Comprehensive Income	-	-	-	-	-
Retained Earnings	126,000,584	152,671,669	181,905,934	211,558,818	248,232,571
Total Shareholder's Equity	132,807,200	159,478,285	188,712,550	218,365,434	255,039,187
<b>Current Ratio</b>	<b>246%</b>	<b>291%</b>	<b>349%</b>	<b>412%</b>	<b>515%</b>
<b>Debt Ratio</b>	<b>48%</b>	<b>38%</b>	<b>31%</b>	<b>26%</b>	<b>19%</b>
Sales	142,760,601	184,830,916	183,099,501	182,801,444	201,999,326
Operating Profit	29,347,973	40,406,885	42,375,016	45,918,509	53,374,391
Net Income	23,521,548	28,407,856	32,875,544	35,570,036	43,113,145



# 1. COMPANY PROFILES

## SUB-VENDOR LIST

Scope	Manufacturer	Country	Tel.	Fax.
<b>Raw Material</b>	Special Metals Corp.	Singapore	+65-65323823	+65 65323621
	Allegheny Technologies	USA	+82-51-805-5520	+82-51-806-1238
	Yamashin Steel Co., Ltd.	Japan	+81-6-6763-1395	+81-6-6763-3197
	Hi-Tech Special Steel	U.K	+44-1909-564-545	+44-1909-550-682
	Sandvik Materials Technology	Canada	+82-51-603-3161	+82-51-603-3169
	SeAH Changwon Integrated Special Steel co., Ltd.	Korea	+82-2-3469-6665	+82-2-3469-6888
	SeAH Besteel	Korea	+82-2-6970-2000	+82-2-6790-2181
	Hyundai Steel co., Ltd.	Korea	+82-54-271-1114	+82-54-271-1241
	Poongsan Corporation	Korea	+82-51-319-1278	+82-51-319-1280
	DAE CHANG IND. CO., LTD	Korea	+82-51-313-2100	+82-51-313-3214
	BGH Edelstahl Siegen GmbH	Germany	+49-271-7010	+49-271-701-300
	Valbruna	Italy	+39 0444 968296	+39 0444 962026
	HEXA STAINLESS STEEL	Korea	+82-31-323-1871	+82-31-323-1872
	PJMETEK Ind Co., Ltd.	Korea	+82-31-863-2140	+82-31-863-2143
	Daechang Co., Ltd.	Korea	+82-31-496-3133	+82-31-499-2531
	Outokumpu	Korea	+82-55-379-2100	+82-55-379-2130
	DAIDO SPECIAL STEEL	Japan	+81-3-5495-7239	+81-3-5495-1853
	VDM Metals GmbH	Germany	+49 2392-55-0	+49 2392-55-2217
	NIPPON STEEL & SUMITOMO METAL CORPORATION	Japan	+81-3-6867-4111	+81-3-6867-5607
	S-Tech Corporation	Taiwan	+886-6-6235143	+886-6-6230011
<b>Forging</b>	Sanyo Special Steel Co., LTD.	Japan	+81-79-235-6003	+81-79-234-8571
	BOHLER Bleche GmbH & Co KG	Austria	+43-3852-555-200	+43-3852-555-203
	Abbey Forged Products	UK	+44 0 114 231 8804	+44 0 114 232 4983
	Hy-Lok Forging Corp.	Korea	+82-55-343-1520	+82-55-343-1540
	Hyun Jin Material	Korea	+82-55-379-2100	+82-55-379-2130
	Sae Won Metal Co., Ltd.	Korea	+82-55-338-6448	+82-55-338-6448
	Cheong Un Corp.	Korea	+82-55-587-8982	+82-55-587-8983
	Felix Tech	Korea	+82-51-796-7830	+82-51-796-7898
<b>Casting</b>	Wonil F&T CO.,LTD	Korea	+82-55-346-0680	+82-55-346-4832
	Korea Steel Power Co.Ltd	Korea	+82-55-338-4920	+82-55-338-4924
	MCM Co.	Korea	+82-51-832-0505	+82-51-832-0507
	Juwon Special Metal Co.	Korea	+82-55-551-9191	+82-55-551-9190
<b>Bolt &amp; Nut</b>	DS Castec Co.	Korea	+82-55-322-1174	+82-55-322-1106
	Samjeon Metals Co. Ltd.	Korea	+82-51-305-6446	+82-51-305-6448
	Hwashin Bolt	Korea	+82-51-264-2522	+82-51-264-2527
<b>Seat &amp; Packing</b>	Hwasung Fasteners	Korea	+82-55-366-3456	+82-55-366-3459
	NICHIAS Corporation (Seat)	Japan	+82-51-316-6851	+82-51-316-6852
	QUADRANT (Seat)	Belgium	+82-51-314-1748	+82-51-314-1742
	Graftech (Packing)	USA	+82-51-316-6300	+82-51-314-7171
	Trelleborg (Seat)	U.K	+82-02-402-2770	+82-02-402-2771
	Precision Polymer Engineering (O-Ring ,Lip Seal)	U.K	+82-02-402-2770	+82-02-402-2771
	James Walker (O-Ring, Lip Seal)	U.K	+82-2-860-5770	+82-02-860-5771
	Dupont Kalrez (O-Ring)	USA	+82-2-2676-9192	+82-2-2671-4369
	GREENE TWEED (CHEMRAZ O-Ring)	USA	+82-02-402-2770	+82-02-402-2771
	Jeil E&S Co.,LTD. (Gasket)	Korea	+82-55-370-0831	+82-55-383-0853
	Fluorocarbon Company Ltd, (Lip Seal)	USA	+82-02-402-2770	+82-02-402-2771
<b>Spring</b>	Optimum Spring Solutions	USA	+1-970-795-4890	+1-910-795-0008
	Key Bellevilles, Inc.	USA	+1-724-295-5111	+1-724-295-2570
<b>Gear Box</b>	Sambo Industry	Korea	+82-51-316-2881	+82-51-316-2880
<b>Painting</b>	Sammi Industry	Korea	+82-51-323-9350	+82-51-323-3245
	YL Ind. Co., Ltd.	Korea	+82-51-821-4510	+82-51-831-4539

# 1. COMPANY PROFILES

## WORLDWIDE SERVICE NETWORK

	Country	City	Agency	Tel.	E-mail
Europe	Netherlands	Hoogeveen	Hy-Lok Europe BV	+31 528 23 4084	sales@hy-lok.nl
		Tholen	Bergen Stainless & Steel Products BV	+31 66 60 57 51	bssp@bssp.nl
		Wijchen	Handelsonderneming PD BV	+31 24 3565688	info@pdhandel.nl
	Belgium	Rixensart	Cameco NV SA	+32 2 652 1730	Jacques@cameco.be
	Czech	Most	HACO Merici a Regulacni Technika S.R.O	+420 476 700 509	info@hacomrt.cz
	Denmark	Taastrup	PG Flowteknik	+45 7384 1230	info@pgflowteknik.dk
	Finland	Espoo	AVS-YHTIOT OY	+358 9613 316	info@avs-yhtiot.fi
	France	Argenteuil	DEFA S. A.	+33 1 3025 9420	contact@defa.fr
	Germany	Oyten	Hy-Lok D	+49 420 769 940	info@hy-lok.de
		Bremen	Hansa-Flex Hydraulic GmbH.	+49 421 489 070	info@hansa-flex.com
	Italy	Milano	Indra SRL	+39 029 729 8663	indra@indra.it
	Norway	Sola	Flowtec	+47 47 88 2027	helge@flowtec.no
		Hafslsfjord	HydraServ	+47 911 35 785	ew@hydraserv.no
	Poland	Gdansk	ECOZAM Sp.z.o.o.	+48 58 522 0380	info@verdigroup.pl
	Russia	Moscow	Fluid Line	+7 495 517 7261	slobodov@fluid-line.ru
Middle East	Slovak Republic	Bratislava	ECM ECO Monitoring a.s.	+421 24 342 9417	ecm@ecm.sk
	Spain (& Portugal)	Tarragona	Arcamo Controls SA	+34 977 55 4739	arcamo@arcamo.com
	UK	Aberdeen	TIS Hydraulics	+44 1224 775 277	sales@tis-hydraulics.com
	UAE	Dubai	Hy-Lok Middle East (Branch Office)	+971 4 882 3018	anzal@hy-lok.com
		Dubai	East West Trading International	+971 4 3680249	anwar.q@ewi-intl.com
		Abu Dhabi	Next Engineering Equipments Trading	+971 2 6289100	sales@nextengg.com
	Bahrain	Manama	ALMOAYYED International Group	+973 17700777	cvmurthy@almoayyedintl.com.bh
	Iran	Tehran	ATDM (Avizheh Technology and Development of Middle East)	+98 21 8855 2948	amirsabbagh4@gmail.com
		Tehran	Siraf Tejarat Ltd.,	+98 21 8888 9322	f.khajehpour@siraftejarat.com
	Kuwait	Kuwait City	United Technical Industrial Services Est. (UTIS)	+965 2241 1263	akbar@utis-kw.com
	Oman	Muscat	Abu Ilyas Trading LLC	+968 244 80939	bijuraj@abulyas.co.om
	Qatar	Doha	Well Field Industrial Suppliers & Services WLL	+974 442 9609	nbm@wellfieldqatar.com
	Saudi Arabia	Dammam	Al-Abdulkarim Holding Company (Naizak Global Eng. System Est)	+966 3 897 4721	abdalltm@akh.com.sa
	USA	Houston	Hy-Lok USA	+1 832 634 2000	info@hylokusa.com
America	Canada	Edmonton	Hy-Lok Canada	+1 780 409 4484	info@hylok.ca
	Argentina	Buenos Aires	CPI Suppliers S.A.	+54 11 4701 4386	info@cpisupplierssa.com.ar
	Bolivia	Santa Cruz	Petroplus	+591 3 355 5800	petroplus@petroplus.cc
	Brazil	Sao Paulo	Hy-Lok Brazil Ltd.	+55 19 3432 1444	paulo@hylokbrasil.com.br
	Chile	Santiago	SMC Pneumatics Chile S.A.	+56 2 270 8600	ingenieria@smcchile.cl
	Colombia	Bogota	Imposabys	+57 1 605 3923	vgarcia@imposabys.com
	Costa Rica	Santa Ana	EBM & Associates	+506 8836 0759	e.bejarano@ebmglobal.net
	Mexico	TlanInepantla	QTS Mexico, S.A. de C.V.	+52 5 240 7415	adiaz@hylokmexico.com
	Puerto Rico	Manati	Pharmaceutical Processes Systems, Inc	+1 787 854 5477	eduardo.perez@ppspr.com
	Venezuela	Caracas	Valconca-Valvulas y Conexiones, C.A.	+58 242 364 0111	-
	China	Shanghai	Hy-Lok China Co., Ltd.	+86 21 6230 8533	info@hy-lokchina.com
	Singapore	Singapore	Hy-Lok Singapore	+65 6 862 8811	hylok@singnet.com.sg
	India	Gujarat	Narmada-Fluid Controls	+91 264 224 9432	superdiesels@hotmail.com
		Greater Noida	River Engineering Pvt. Ltd	+91 120 674 9910	Info@riverengg.com
		Mumbai	Rioj International	+91 22 2756 5255	rioj2005@yahoo.co.in
		Kolkata	SSSP Technologies	+91 98306 88788	phalgunibanerjee943@yahoo.in
	Indonesia	Tangerang	PT Duta Excellence Teknindo	+62 21 2225 1009	sales@dex.co.id
		Jakarta	PT. Hydro Industrial Automation	+62 21 5830 3530	hydro_hia@cbn.net.id
		Surabaya	PT Inko Matalindo Ind. Supply Co.	+62 31 3520760	sales@inkomet.com
Asia	Japan	Osaka	Flobal Corporation	+81 6 6457 2688	overseas_sales@flobal.jp
		Osaka	IGETA	+81 6 6754 1523	igeta@fuga.ocn.ne.jp
		Osaka	Daisho Sangyo	+81 6 6121 6011	info@daishosangyo.co.jp
		Tokyo	Umbersoll	+81 3 5642 2071	m.suda@umbersoll.com
	Malaysia	Kuala Lumpur	DEEPLOY Topside SDN BHD	+603 5033 4620	boonte@deeploycom.my
		Klang	Flytech Engineering Bhd. Sdn.	+603 3373 2228	flytech@po.jaring.my
	Pakistan	Karachi	Abugurt (Pvt) Ltd.	+9221 3454 8050	info@abgurt.com
	Philippines	Manila	Morse Hydraulics System Corporation	+63(2) 288-6996	morsehsc@salgroupco.com
		Santa Rosa	BF High Pressure Technology Company	+63 49 544 0918-9	bfbtpct@gmail.com
	Taiwan	Taipei	Ja Chan Co., Ltd.	+886 2 8521 8891	jachanco@ms32.hinet.net
	Thailand	Bangkok	Astute Solution Co.,Ltd.	+66 2300 1789	sales@astute-soln.com
	Vietnam	Ho Chi Minh	KOVIS Engineering & Construction	+84 8 3514 6132	yskim@kovis.com.vn
		Ho Chi Minh	Comnet Industries Company	+84 8 3899 4922	nhtai@cicvietnam.vn
Oceania	Australia	Melbourne	Hy-Lok Oceania P/L (Melbourne)	+61 3 9334 5700	sales@hylok.com.au
Africa		Perth	Hy-Lok Oceania P/L (Perth)	+61 433 761 428	heather@hylok.com.au
	Nigeria	Lagos	Hy-Lok Nigeria	+234 1 4621 606	info@hy-loknigeria.com
	Egypt	Cairo	Gabr Industrial Services (GIS)	+20 2 2690 8933	mgabr@gis-eg.com
	Republic of South Africa	Sandton	Hydramatics Control Equipment	+27 11 608 1340	mjones@hydramatics.co.za



## 2. PRODUCTS RANGE

Our production range covers Double Block & Bleed Valves on customer specification.

We therefore only show a part of our total range. If you are looking for a different valves than shown in this PQ, do not hesitate to contact our sales department.

Hy-Lok valves are based on international codes and standards.



## 2. PRODUCTS RANGE

### Double Block & Bleed Valves

DBB valve was developed primarily to replace conventional multi valve installations with a one-piece compact assembly containing all the required valves and connection. A complete line of DBB valves have been designed to provide saving cost, weight, potential leak points, compact assembly and easy installation & maintenance. We offer a variety of precision engineered DBB valves.



### Features Include

- Designed in accordance with ASME B16.34, ASME B31.3, ASME B16.5, API 6D / 6A / 6DSS, ISO 14313
- Full Bore or Reduced Bore
- Pressure Rating - ASME Class 150 to 2500 / API 5,000 psi to 10,000 psi
- Fire safe according to API 607 and ISO 10497
- Compliant to NACE MR0175 and ISO 15156
- NORSOK M-650 approved mill available
- Fully tested in our factory according to ASME B16.34, API 6D / ISO 14313, ISO 5208
- Ball Seat Materials are PTFE, PEEK or Metal seated
- Stem Seal Materials are FKM, HNBR - RGD resistant or Graphite
- Anti Blow Out Stem Design & Anti Static Design

### Material Supported

Materials supported are 316SS, MONEL®, INCONEL® 625, INCOLOY® 825, HASTELLOY®C, Titanium, Duplex, Super Duplex, 6MO and Brass.

Other special materials are available upon customer requests.



## 2. PRODUCTS RANGE

### Forged Double Block & Bleed Valves

#### Key Features

- Fewer leak paths compared to traditional hook-ups
- Compact Double Block & Bleed Valve
- Designed in accordance with ASME B16.34, ASME B16.5 and API 6D
- 2-Block Ball Valves and 1-Bleed Needle Valve (Standard)
- Configurable option include Single Block, Double Block and Double Block & Bleed
- Full bore and reduced bore available
- Various bleed valve options

#### Technical Specifications

- ASME Class #150 to #2500
- Bore Size 10mm, 14mm and 20mm
- Max. Temperature Up to 540°C (932°F)

#### Carbon Steel

ASTM A350 LF2 body material with B5970 316 S11/S31 bar stock stainless steel trims and head units with Graphite seals and gland packings. Needle valves have non-rotating tip giving metal to metal closure and screw down tee bar operators.

#### Duplex Stainless Steel

ASTM A182 F51 body material with UNS S31803 bar stock steel trims and head units with Graphite seals and gland packings. Needle valves have non-rotating hard tip giving metal to metal closure and screw down tee bar operators.

#### Stainless Steel

ASTM A182 F316 body material with B5970 316S11/S31 bar stock stainless steel trims and head units with Graphite seals and gland packings. Needle valves have non-rotating hard tip giving metal to metal closure and screw down tee bar operators.

**Other materials are available on request.**



### Monoflange Primary Isolation Valves

#### Key Features

- Fewer leak paths compared to traditional hook-ups
- Compact Double Block & Bleed Valve
- Designed in accordance with ASME B16.5
- 2-Block Needle Valves and 1-Bleed Needle Valve (Standard)
- Configurable option include Single Block, Double Block and Double Block & Bleed
- Available vertical or horizontal installation
- Weight, space and hook-up time saving

#### Technical Specifications

- ASME Class #150 to #2500
- Bore Size 5mm
- Max. Temperature Up to 540°C (932°F)



## 2. PRODUCTS RANGE

### Sampling Valves

#### Key Features

- Accomplished with Hy-Lok DBB Valves
- The orientation of sample nozzle is fixed at assembly stage
- Sampling at full system pressure directly from the process line
- Double isolation from process for safety
- Flange machined to ASME B16.5



### Injection Valves

#### Key Features

- Accomplished with Hy-Lok DBB Valves
- The valve inlet houses one way check valve
- The orientation of injection nozzle is fixed at assembly stage
- Flange machined to ASME B16.5



### Flanged Style Double Block & Bleed Valves

#### Key Features

- Fewer leak paths compared to traditional hook-ups
- Compact Double Block & Bleed Valve
- Designed in accordance with ASME B16.34, ASME B16.5 & API 6D, 6A, 6DSS
- Full bore or reduced bore available
- Various bleed valve option
- Various end configurations (Flanges, Hubs, Butt-weld Ends, etc.)

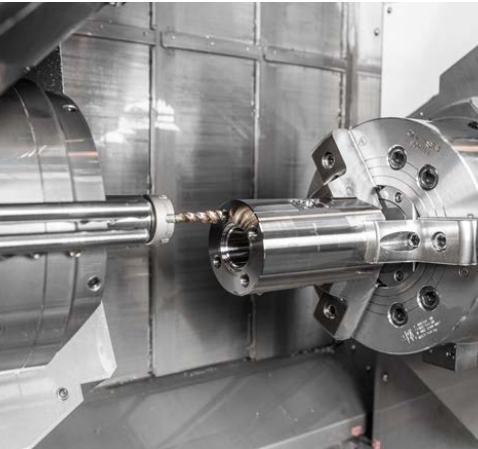
#### Technical Specifications

- |                    |                     |
|--------------------|---------------------|
| ▪ ASME Class       | #150 to #2500       |
| ▪ Bore Size        | 50mm to 150mm       |
| ▪ Max. Temperature | Up to 540°C (932°F) |



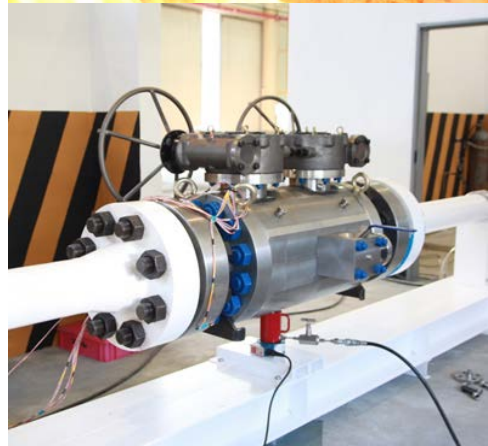


### 3. QUALITY



Our highly qualified staff works with high speed machines to produce your valves according to your specifications. A primary focus of Hy-Lok is continuously investing in state-of-the-art machinery according to the latest technology.

Following tests are performed in accordance with ASME B16.34 and bases on customer's requirements or specification.



- Hydrostatic Test (100% Factory Test)
- High Pressure Gas Test (Optional Factory Test)
- High Temperature Test (Optional Factory Test)
- Low Temperature Test (Optional Factory Test)
- Fugitive Emission Gas Test (Optional Factory Test)
- Anti-Static Test (Optional Factory Test)
- Fire Safety Test



### 3. QUALITY

## BALL & DBB VALVE (A182 F316 / 316L) - 1 1/2" #2500



Certificate No. B-50/2013-0369/004-7

Page 1 of 1

# FUGITIVE EMISSION TEST CERTIFICATE

Date : 30 June, 2014

**Applicant / Manufacturer** : Hy-Lok Corporation

**Date and place of test** : 23 June, 2014 at the manufacturer's premises in Busan, Korea

Kind of test : Witness of Fugitive Emission Test

**Test valve** : BALL & DBB Valve (ASTM A182 F316 / 316L)  
- 1 1/2" CL 2500

**Applicable drawing** : 2014F23V01

**Test standard** : ISO 15848 Part1, 2006 Edition

**Test condition** :

- |                                  |   |
|----------------------------------|---|
| - Test Medium                    | : Helium  |
| - Test Pressure                  | : 413 Bar at Room Temperature<br>413 Bar at -46°C<br>356 Bar at 200°C |
| - Tightness Class                | : BH  |
| - Mechanical-Cycle Class         | : 500 Cycles / CO1  |
| - Number of Thermal Cycles       | : 2   |
| - Number of Stem Seal Adjustment | : 0   |
| - Temperature Class              | : t-46°C, t200°C  |

**Performance Class** : ISO FE BH-CO1- t(-46℃, 200℃)-CL2500-ISO 15848-1

**Extension of Qualification** : As per Para.8 of ISO 15848-1

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This is to certify that the Fugitive Emission Test was performed by the manufacturer under our witness as above, and the results were satisfied within acceptance criteria specified for the target performance class.

### Note

The details of the test condition and data are as per manufacturer's Test Report No. TR-140623-01 which were verified and endorsed by us.

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SHJ/yjp

SGS Korea Co., Ltd.

B. I. Lim  
Team Lead, Industrial Division

## 3. QUALITY

## BALL &amp; DBB VALVE (A182 F316) - 1" #600

SGS

ORIGINAL

Certificate No. B-50/2013-0369/008-2  
Page 1 of 1**FUGITIVE EMISSION TEST CERTIFICATE**

Date : 28 Oct, 2014

**Applicant / Manufacturer** : Hy-Lok Corporation

**Date and place of test** : 22 Oct. ~25 Oct., 2014 at the manufacturer's premises in Busan, Korea

**Kind of test** : Witness of Fugitive Emission Test

**Test valve** : BALL & DBB Valve (ASTM A182 F316)  
- 1" CL 600

**Applicable drawing** : 2014J13M25

**Test standard** : ISO 15848 Part1, 2006 Edition

**Test condition** :

- Test Medium : Helium
- Test Pressure : 99.3 Bar at Room Temperature,  
60.7 Bar at 350 °C
- Tightness Class : BH
- Mechanical-Cycle Class : 500 Cycles / CO1
- Number of Thermal Cycles : 2
- Number of Stem seal Adjustment : 0
- Temperature Class : Rt, t350 °C

**Performance Class** : ISO FE BH-CO1- t(Rt, t350 °C)-CL600-ISO 15848-1

**Extension of Qualification** : As per Para.8 of ISO 15848-1

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This is to certify that the Fugitive Emission Test was performed by the manufacturer under our witness as above, and the results were satisfied within acceptance criteria specified for the target performance class.

**Note**

The details of the test condition and data are as per manufacturer's Test Report No. TR-141025-01 which were verified and endorsed by us.

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SHJ/yjp

SGS Korea Co., Ltd.



B. I. Lim  
Team Lead, Industrial Division

## 3. QUALITY

## BALL &amp; DBB VALVE (A182 F316) - 1" #2500



Certificate No. B-50/2013-0369/009-1

**FUGITIVE EMISSION TEST CERTIFICATE**

Date : 27 Nov., 2014

**Applicant / Manufacturer** : Hy-Lok Corporation  
**Date and place of test** : 20 Nov. ~22 Nov., 2014 at the manufacturer's premises in Busan, Korea  
**Kind of test** : Witness of Fugitive Emission Test  
**Test valve** : **BALL & DBB Valve (ASTM A182 F316)**  
                               - 1" CL 2500  
**Applicable drawing** : 2014K17Y01  
**Test standard** : ISO 15848 Part1, 2006 Edition  
**Test condition** :  
     - Test Medium : Helium  
     - Test Pressure : 413.7 Bar at Room Temperature  
                               413.7 Bar at -46°C  
                               311.4 Bar at 170°C  
     - Tightness Class : AH  
     - Mechanical-Cycle Class : 500 Cycles / CO1  
     - Number of Thermal Cycles : 2  
     - Number of Stem seal Adjustment : 0  
     - Temperature Class : t-46°C, t170°C

**Performance Class** : ISO FE AH-CO1- t(-46°C, t170°C)-CL2500-ISO 15848-1

**Extension of Qualification** : As per Para.8 of ISO 15848-1

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This is to certify that the Fugitive Emission Test was performed by the manufacturer under our witness as above, and the results were satisfied within acceptance criteria specified for the target performance class.

**Note**

The details of the test condition and data are as per manufacturer's Test Report No. TR-141122-01 which were verified and endorsed by us.

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SHJ/yjp

SGS Korea Co., Ltd.

  
 B. I. Lim  
 Team Lead, Industrial Division

SGS Korea Co., Ltd. 647-2, Sinpyeong-dong, Saha-gu, Busan, 604-838 Republic of Korea www.kr.sgs.com

IND 001

Member of SGS Group (Société Générale de Surveillance)

Other size &amp; rating available on request.

## 3. QUALITY

## NORSOK M-650 QUALIFICATION TEST RECORD (HY-LOK FORGING) - A182 F51



<b>Hy-Lok</b>	<b>Qualification Test Record (QTR) NORSOK M-650</b>		QTR. No.: QTR-HYLOK-F51		
			Rev. No.: 0		
<b>Manufacturer name/address/ Web page:</b>	HY-LOK FORGING CORPORATION 319-1 Bonsan-ri, Jinyeong-eup, Gimhae-si, Gyeongsangnam-do, Korea, 621-803 www.hy-lok.com				
<b>Reference standard</b>	NORSOK M-650, Edition 4				
<b>Material designation and MDS No.:</b>	ASTM A182 Gr. F51, NORSOK M-630 Edition 5 MDS D44 Rev.4				
<b>Manufacturing Summary doc. No.:</b>	MS-001		Rev. No.: 0		
<b>Products and manufacturing process(es):</b>	Closed die Forging, trimming, heat treatment, shot blasting and tested				
<b>Mandatory conditions and sub-contractors:</b>	Steel from Norsok Qualified Supplier				
<b>Other information:</b>	Cutting by HY-LOK Corporation Shot Blast and Pickling by YOUNG WOO Production Test by HYUN TECH and KTR Nondestructive Test by SAE MYUNG INSPECTION TECHNOLOGY CO., LTD.				
<b>Qualification expires:</b>	5 years from date of qualified/accepted by qualifying company				
<b>Tested and qualified thickness and weight</b>					
<b>Products and manufacturing process(es):</b>	<b>Test record No.</b>	<b>Tested thickness mm</b>	<b>Qualified thickness mm</b>	<b>Test piece weight kg</b>	<b>Qualified weight kg</b>
Closed Die Forgings	Various Attached	76.0	83.6	5.51	11.02
	Various Attached	76.0	83.6	4.21	8.42
<b>Qualification/acceptance signatures</b>					
<b>Manufacturer:</b> HY-LOK FORGING CORPORATION	<b>Prepared by/Date:</b> W. J. Yang 22/03/2013		<b>Checked by/Date:</b> J.K. Lee 22/03/2013		
The manufacturer and this QTR are evaluated and found to be in compliance with the requirements of NORSOK M-650 for supply of the above listed products and materials. This acceptance does not exempt any purchaser from his responsibility to ensure that this qualification is valid for his products within the essential variables of NORSOK M-650.					
<b>Qualified/Accepted by (company name /address):</b>			<b>Signature/Date:</b>		





## 3. QUALITY

## NORSOK M-650 QUALIFICATION TEST RECORD (HY-LOK FORGING) - A182 F53


<b>Hy-Lok</b>	<b>Qualification Test Record (QTR) NORSOK M-650</b>		QTR. No.: QTR-HYLOK-F53		
			Rev. No.: 0		
<b>Manufacturer name/address/ Web page:</b>	HY-LOK FORGING CORPORATION 319-1 Bonsan-ri, Jinyeong-eup, Gimhae-si, Gyeongsangnam-do, Korea, 621-803 www.hy-lok.com				
<b>Reference standard</b>	NORSOK M-650, Edition 4				
<b>Material designation and MDS No.:</b>	ASTM A182 Gr. F53, NORSOK M-630 Edition 5 MDS D54 Rev.4				
<b>Manufacturing Summary doc. No.:</b>	MS-002			Rev. No.: 0	
<b>Products and manufacturing process(es):</b>	Closed die Forging, trimming, heat treatment, shot blasting and tested				
<b>Mandatory conditions and sub-contractors:</b>	Steel from Norsok Qualified Supplier				
<b>Other information:</b>	Cutting by HY-LOK Corporation Shot Blast and Pickling by YOUNG WOO Production Test by HYUN TECH and KTR Nondestructive Test by SAE MYUNG INSPECTION TECHNOLOGY CO., LTD.				
<b>Qualification expires:</b>	5 years from date of qualified/accepted by qualifying company				
<b>Tested and qualified thickness and weight</b>					
<b>Products and manufacturing process(es):</b>	<b>Test record No.</b>	<b>Tested thickness mm</b>	<b>Qualified thickness mm</b>	<b>Test piece weight kg</b>	<b>Qualified weight kg</b>
Closed Die Forgings	Various Attached	76.0	76.0	5.51	11.02
	Various Attached	76.0	76.0	4.21	8.42
<b>Qualification/acceptance signatures</b>					
<b>Manufacturer:</b> HY-LOK FORGING CORPORATION	<b>Prepared by/Date:</b> W. J.  22/03/2013		<b>Checked by/Date:</b>  22/03/2013		
The manufacturer and this QTR are evaluated and found to be in compliance with the requirements of NORSOK M-650 for supply of the above listed products and materials. This acceptance does not exempt any purchaser from his responsibility to ensure that this qualification is valid for his products within the essential variables of NORSOK M-650.					
<b>Qualified/Accepted by(company name /address):</b>			<b>Signature/Date:</b>		





## 3. QUALITY

## NORSOK M-650 QUALIFICATION TEST RECORD (HY-LOK FORGING) - A182 F55

	<b>Qualification Test Record (QTR) NORSOK M-650</b>		QTR. No.: QTR-HYLOK-F55		
			Rev. No.: 0		
<b>Manufacturer name/address/ Web page:</b>	HY-LOK FORGING CORPORATION 319-1 Bonsan-ri, Jinyeong-eup, Gimhae-si, Gyeongsangnam-do, Korea, 621-803 www.hy-lok.com				
<b>Reference standard</b>	NORSOK M-650, Edition 4				
<b>Material designation and MDS No.:</b>	ASTM A182 Gr. F55, NORSOK M-630 Edition 5 MDS D54 Rev.4				
<b>Manufacturing Summary doc. No.:</b>	MS-003			Rev. No.: 0	
<b>Products and manufacturing process(es):</b>	Closed die Forging, trimming, heat treatment, shot blasting and tested				
<b>Mandatory conditions and sub-contractors:</b>	Steel from Norsok Qualified Supplier				
<b>Other information:</b>	Cutting by HY-LOK Corporation Shot Blast and Pickling by YOUNG WOO Production Test by HYUN TECH and KTR Nondestructive Test by SAE MYUNG INSPECTION TESCHNOLOGY CO., LTD.				
<b>Qualification expires:</b>	5 years from date of qualified/accepted by qualifying company				
<b>Tested and qualified thickness and weight</b>					
<b>Products and manufacturing process(es):</b>	<b>Test record No.</b>	<b>Tested thickness mm</b>	<b>Qualified thickness mm</b>	<b>Test piece weight kg</b>	<b>Qualified weight kg</b>
Closed Die Forgings	Various Attached	76.0	76.0	5.51	11.02
	Various Attached	76.0	76.0	4.21	8.42
<b>Qualification/acceptance signatures</b>					
<b>Manufacturer:</b> HY-LOK FORGING CORPORATION	<b>Prepared by/Date:</b> W. J. Yang 22/03/2013		<b>Checked by/Date:</b> J. K. Lee 22/03/2013		
The manufacturer and this QTR are evaluated and found to be in compliance with the requirements of NORSOK M-650 for supply of the above listed products and materials. This acceptance does not exempt any purchaser from his responsibility to ensure that this qualification is valid for his products within the essential variables of NORSOK M-650.					
<b>Qualified/Accepted by (company name /address):</b>			<b>Signature/Date:</b>		



## 4. HSE MANAGEMENT



## HSE POLICY

All the members of Hy-Lok Corporation and relevant interested parties shall minimize the Environment / Safety-Health risk of every activities, recognize it is the basic essence for human-centered and moral enterprise responsibility when the organization develop, purchase, manufacture and service products to customers, implement continuously the followings.

## 4. HSE MANAGEMENT

### HEALTH & SAFETY RECORDS

#### 2016 HSE STATISTICS

☞ Date : 2016.12.30

No.	Data		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1	Workers		516	516	513	515	513	513	511	509	510	516	505	504	6,141
2	Working Days		22	20	25	23	24	24	22	24	20	22	24	24	225
3	Average Monthly Working Hours		30.1	30.6	30.5	30.6	30.6	30.5	30.7	30.2	31.0	30.2	30.6	31.0	126.6
4	Man-Hour		114,201	108,392	134,663	125,557	130,507	129,276	125,757	124,603	122,404	125,790	126,472	123,177	1,448,799
No.	Data	Units & Method for Calculating	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1	Fatalities	Case	0	0	0	0	0	0	0	0	0	0	0	0	0
2	Lost Time Injuries (LTI)	Case	0	0	0	0	0	0	0	0	0	0	0	0	0
3	Medical Treatment Case (MTC)	Case	0	0	0	0	0	0	0	1	0	0	0	0	1
4	Restricted Work Case (RWQ)	Case	0	0	0	0	0	0	0	0	0	0	0	0	0
5	Total Recordable Cases (TRC)	Total Case	0	0	0	0	0	0	0	1	0	0	0	0	1
6	Lost Time Injuries Rate (LTIR)	(1+2+3/Man-Hour)*200,000	0.13												
No.	Data	Units & Method for Calculating	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
7	Total Recordable Incidence Rate (TRIR)	(5/Man-Hour)*200,000	0.13												
8	Medical Care Cost	USD	0	0	0	0	0	0	0	0	0	377	0	0	377
9	Near Miss	Case	0	0	0	0	0	0	0	0	0	1	1	1	3
10	Frequency Rate (FR)	(2+3/Man-Hour)*200,000	0.13												
11	Working Loss Day	Days	0	0	0	0	0	0	0	0	2	0	0	0	2
12	Severity Rate (SR)	(11/Man-Hour)*200,000	0.27												
13	Fork Lift Accident Case	Case	0	0	0	0	0	0	0	0	0	0	0	0	0
14	Crane or Hoist Accident Case	Case	0	0	0	0	0	0	0	0	0	0	0	0	0
15	Musculoskeletal System Accident Case	Case	0	0	0	0	0	0	0	0	0	0	0	0	0
16	Fire Case	Case	0	0	0	0	0	0	0	0	0	0	0	0	0
17	Safety Check Nonperformance	Case	9	2	9	2	2	0	0	5	0	16	10	8	63
18	Waste Solid	Ton	0	0	0.77	0	0.77	0	0.68	0	0	0	0.86	0	3.08
No.	Data	Units & Method for Calculating	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
19	Waste Paint	Ton	0	1.51	0	0	0	0	3.02	0	0	1.49	0	0	6.02
20	Waste water	Ton	52.5	48	52	70	23	63	68	48	46	72	72	74.5	689
21	Car Accident Case	Case	0	0	3	0	2	0	0	2	1	0	1	1	10
22	Environmental Accident Case	Case	0	0	0	0	0	0	0	0	0	0	0	0	0
23	Civil appeal	Case	0	0	0	0	0	0	0	0	0	0	0	0	0
24	Public Office Audit Case	Case	0	0	0	0	0	0	0	0	0	0	0	1	1
25	First AID	Case	124												
26	Patients Who Had Abnormal Findings through the periodic health examination	Person	216												
27	Patients Who Had Abnormal Findings through the Special Health Examination	Person	58												
27	Working Environment Measurement Over Standard	Case	0												
28	Workers Compensation Experience Modification	%	19.63												

## 5. APPROVAL LETTERS

## BP QUAD 204 FPSO PROJECT



BP Exploration Operating Company Limited  
 c/o BP Quad 204 Project Office at KBR  
 60 Anson Road  
 Mapletree Anson, Level 6  
 Singapore 079914  
 Direct: +65 6210 7590  
 graeme.stewart@se1.bp.com

14 July 2012

**Mr. S. H. Kim, Project Director**  
 Hyundai Heavy Industries Co Ltd.  
 1 Jeonha-dong, Dong-gu,  
 Ulsan 682792  
 Republic of Korea

Reference: QD/BP/HH/L/E0826

**CONTRACT NO. GPO-CON-FS-001 / CALL OFF NO.1 / QUAD 204 FPSO EPC**  
**Subject: Clarification on Rejection of Hy-Lok for DBB Valve Supply**

Dear Sir,

COMPANY wishes to clarify its position with regard to the rejection of Hy-Lok for DBB valve supply on the Quad 204 FPSO. This is based on the fact that CONTRACTOR had a technically acceptable alternative offer from a vendor on COMPANY's Approved Vendors List (AVL) in compliance with the requirements of the CALL OFF, and as such the need to consider other suppliers not on the AVL was unnecessary.

COMPANY carried out an audit of the Hy-Lok facilities to assess its capability to supply criticality 3 & 4 DBB valves with the intent, should it prove necessary, to seek COMPANY internal dispensation from use of Hy-Lok. COMPANY's audit of the proposed vendor was successful and identified the supplier as capable of providing these valves for the project, however, due to the existence of an alternative acceptable AVL compliant proposal, inadequate justification existed to support any request for dispensation to use Hy-Lok

COMPANY's assessment of the proposed vendor has identified it to be a high quality supplier. COMPANY therefore intends to undertake an additional qualification process to ensure that Hy-Lok is APPROVED to supply COMPANY projects in the future and potentially for the supply of top up orders for the current project. To this end COMPANY will advise in due course of the necessary course of action to progress such qualification process.

Yours faithfully

**Graeme Stewart**  
 Quad 204 Project General Manager

cc: Mr KH Kim, Project Manager  
 Mr YS Kim, Engineering Manager

Encl: NA

Registered Company:  
 BP Exploration Operating Company Limited  
 Registered company address:  
 Company Number 00305943  
 Chertsey Road, Sunbury on Thames, Middlesex  
 TW16 7BP

## 5. APPROVAL LETTERS

## INPEX ICHTHYS CPF PROJECT



**INPEX Operations Australia Pty Ltd**  
ABN 48 150 217 262

100 St George Terrace, Perth,  
Western Australia 6000

Tel +61 8 6213 6000  
Fax +61 8 6213 6455

INPEX.com.au

**Ref: 800068-IPX-SHI-LE-01849**

27 November 2014

**Mr H. Jeong**  
Project Director  
**Samsung Heavy Industries Co Ltd (SHI)**  
Ichthys CPF Project Team  
530 Jangpyeong Dong, Geosje Si,  
Gyeongsangnam Do, 656-710  
Korea

Dear Mr Jeong,

**ICHTHYS GAS FIELD DEVELOPMENT - CPF CONTRACT NO. 800068  
REQUEST FOR APPROVAL OF ADDITIONAL VENDORS FOR BALL VALVES (1.5" &  
BELOW)**

Company is in receipt of Contractor letter 800068-SHI-IPX-LE-01794 dated 16<sup>th</sup> October 2014 requesting approval for additional vendor (HY-LOK) for ball valves (1.5" & Below). Taking into consideration information provided with the letter and Company knowledge of this vendor we have concluded as follows:

HY-LOK (Korea) for Exhibit J item 4.6 Ball Valves ND  $\leq 1 \frac{1}{2}$ " [Top-Up Order Only]:  
**Approved** [subject to conditions below]

Approval Conditions:

- For Top-Up material only
- Forgings coming from S & W Co are strictly forbidden;
- HY-LOK to provide evidence that findings from TOTAL Audit for Egina project Audit (28th - 29th August and 4th September 2014) have been addressed
- CPY reserves the right to select some sample valves and require verification of details & materials of construction against approved design.
- CPY reserves the right to require appointment of full time 3rd party inspector by Contractor / Hylok to witness all test activities

Yours sincerely,

  
Bernard Tchigique  
**CPF Manager**

MDA  


## 5. APPROVAL LETTERS

### CHEVRON MAFUMEIRA SUL PROJECT

#### TECHNICAL OR ADMINISTRATIVE MEMO

Subject Description: <b>Approval of Hy-Lok Valves</b>	Document Number: <b>MSP-GN00-CTC-MEM-CHV-DSP-00478</b>
Project Name: <b>Mafumeira Sul Project</b>	Date: <b>May 21, 2013</b>
Contract Title: <b>Central Processing Complex &amp; Wellhead Platforms</b>	Contract Number: <b>804338</b>
Originator <b>Lisa Zorich</b>	Signatory <b>Gregory K. Robbins</b>
To: <b>Daewoo Shipbuilding &amp; Marine Engineering Co., Ltd., Daewoo Shipbuilding &amp; Marine Engineering Co., Ltd. – Sucursal Em Angola and Porto Amboim Estaleiros Navais Lda</b>	
Attn: <b>Churl-Gyu Kim</b>	

<b>Detailed Description:</b>  In response to Contractor's Memo No. MSP-GN00-CTC-MEM-DSP-CHV-00392 and upon review of Contractor supplied qualification documentation, and a shop audit by Company QA/QC Manager, Company agrees to extend the approval of Hy-Lok double block and bleed valves rating class to 2500# for 2" and under valves.	
Attachments:  Nil	Cross Reference Document Number(s):  MSP-GN00-CTC-MEM-DSP-CHV-00392

If, in the opinion of Contractor, this memo represents a Change, written notice thereof must be given to Company. Any Work that may result from this memo which Contractor considers a Change shall not commence until written notification has been submitted to Company and Company has issued further instructions giving Contractor authority to proceed pursuant to the Contract.



## 5. APPROVAL LETTERS

## ENI GOLIAT FPSO PROJECT



eni norge

P.O.Box 101 Forus, NO-4064 STAVANGER  
 Vestre Svanholmen 12, NO-4313 SANDNES  
 Tel: +47 52 87 48 00 Fax: +47 52 87 49 30  
 www.eninorge.no

Your ref.: LT-HHI-GOL-2575  
 Our ref.: LT-GOL-HHI-3290  
 DM ref.: ENINO/PRJ/2712951

Hyundai Heavy Industries Co. Ltd  
 1, Jeonha-dong, Dong-gu,  
 Ulsan, 682-792  
 Korea

Attn.: Mr. Y. C. Roh

Ulsan, 12 September 2013

**Contract No. 4600002149 – Goliat Development Project – FPSO EPC**

**Subject: Prequalification Document for Small Ball Valve & Double Block Bleed Valve**

With reference to Contractor's letter LT-HHI-GOL-2575 concerning the above, Company provides its consent to the use of Hy-Lok Corporation for the manufacture of NORSOK M650 standard Manual Modular (Double Block & Bleed) and Ball Valves subject to the following conditions;

- In accordance with the supplied QTR's, see Attachment # 1, all materials for the duplex stainless steel valves are to be purchased from Abbey Forged Products Ltd.
- The material grades permitted, for duplex stainless steel, sizes and pressure class shown in see Attachment # 2.
- In accordance with the requirements for NORSOK M650 standard valves to be fabricated from titanium materials shall be from forged materials only (ASTM B381 F2 – MDS T02). No Valid QTR has been presented for Cast Titanium.
- Titanium ball valves shall be pressure class 600 or lower and be 3" nb size or smaller.
- All valves shall comply with the VDS as specified in TR2000; with the exception that deviation 229A-HHI-L-AD-0024 (Lip Seal Sealing) shall still apply to the ball valves.

Yours faithfully  
 Eni Norge AS

  
 Pellegrino Abbate  
 FPSO Manager

Attachment # 1: QTR's (Pages 3)

Attachment # 2: Allowable Sizes and Pressure Ratings for Duplex/Super Duplex Valves (Page 1)

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eni norge

Enterprise no: 919 160 675 MVA/VAT  
 Subsidiary of the Italian Eni S.p.A.

## 5. APPROVAL LETTERS

### TOTAL MOHO NORD FPU

<b>AUDIT REPORT</b>	Document Number <b>CG-MHN-00-MNQA-200007</b>	
	Revision: <b>00</b>	Status : <b>IFI</b>
	Date: <b>21 Feb-2014</b>	
	Page 10 of 19	

Due to lack of time HSE was only partially assessed, no blocking points have been highlighted.

Extinguishers are identified and monthly verified by 3<sup>rd</sup> party.

Housekeeping is in general good, factory is cleaned and tidy, floor marking is good.

**Observation # 02:**

Machining shop, floor is wet and slippery with presence of lubricant oil from machine.

### 5.1 TLP.

Additional points discussed by Y.PINON during the audit related to TLP order:

- Number of test bench : 5 benches for ball valves/DBB, with ability to test 2 to 5 valves depending the model.
  - Assembly/testing capacity:
    - 250~300 Mix of Ball valves & DBB / 8h shift.
    - 70~120 DBB / 8h shift. It seems consistent with their manufacturing capacity of DBB. For information, their annual production capacity of valves are about 20,000 Ball valves + 20,000 DBB
- Pressure gauge and calibration: different set of pressure gauge available, calibrated.
- Torque wrench keys: available and calibrated
- Test fluid report: they will use filtered water, normally used for their semi-conductor fitting/valves production line. See certificate.
- Calibration of gas flowmeter: not calibrated. For the particular case of TLP order, the acceptable leakage is 0 and won't use this gas flowmeter but soap method instead.
- W point for hardness of pressure containing components for valves used in sour service in accordance of PVV 142 added to the ITP.
- 100% of valves witnessed for pressure testing (in-line or FAT) required.

### 6.0 CONCLUSION

The Assessment has been conducted based on a limited sampling approach.

Therefore there may be issues which have not been discovered in the course of this Assessment. It is the responsibility of HYLOK to identify those issues through its own monitoring process.

The cooperation and helpfulness of HYLOK and the assistance of HSHI was most appreciated throughout the Assessment.

Based on the management response, equipment availability and observations found during this assessment, the Auditors advise that HYLOK is acceptable for Management, Engineering, Design, Assembly and Supply of SBB & DBB manual ball valve for FPU HULL.

From the above audit results it is not expected that a follow-up Assessment Audit is required. However CPY have advised that discipline Engineer will attend the supplier's facility, to monitor SBB & DBB manual ball valve fabrication for FPU HULL and to attend FATs prior to delivery.

### Attachment list

Attachment 01 : Attendance sheet

Attachment 02 : ISO 9001/2008 certificate

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## 5. APPROVAL LETTERS

### EXXONMOBIL

**From:** Dzurec, Nicholas A [mailto:nicholas.a.dzurec@exxonmobil.com]

**Sent:** Friday, December 11, 2015 7:36 AM

**To:** jjpark@hy-lok.com

**Cc:** Kim, Jesse /C; Baek, Douglas /C

**Subject:** Hy-Lok - Qualified for ExxonMobil Upstream

JJ,

I am pleased to inform you that as a result of the recent qualification assessment, Hy-Lok has been approved to provide the following scope of supply to ExxonMobil's upstream projects and producing affiliates and will be added to our upstream Qualified Manufacturers List accordingly.

**Scope of Supply:**

Carbon Steel, Low Temperature Carbon Steel and Austenitic Stainless Steel

- Ball valve, API 6D, Floating Ball or Trunion Mounted, Soft-Sealed, Split body, Classes 150 through 900, Up to NPS 2, Fire-safe to API 607

Location

97, Noksansandan 27-ro, Gangseo-Gu, Busan, Korea

Once again, many thanks to the HY-Lok team for supporting the efficient qualification process, including hosting the site visit by the ExxonMobil survey team. Please forward this on to the appropriate management within Hy-Lok and have a safe and happy holidays.

Sincerely,  
Nick Dzurec

**Nicholas A. Dzurec, P.E.**

Supervisor - Facilities/Mechanical Engineering

**ExxonMobil Development Company**

22777 Springwoods Village Parkway

Wellness 2, 3B 558

Spring, TX 77389

(+1) 832-624-0906 Tel

(+1) 832-571-8792 Mobile

## 6. PRINCIPAL SUPPLY RECORDS

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52	FPSO	Goliath FPSO	ENI NORGE	HHI	Norway	2011	63
53	FPSO	Ichthys FPSO Project	INPEX	DSME	Australia	2013	64
54	FPSO	NEXUS FPSO Project	NEXUS FLOATING PRODUCTION	SHI	Norway	2008	65
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## 6. PRINCIPAL SUPPLY RECORDS

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## 6. PRINCIPAL SUPPLY RECORDS - PLATFORM

### Rumaitha & Shanayel Phase III (ADCO / GS E&C, Dodsai - UAE / 2015)

NO	VALVE TYPE	MOUNTING	SIZE	RATING	FLANGE FACE	BORE	BODY MATERIAL	SEAT MATERIAL	QTY
1	DBB	Floating	1/2"	#150	RF	Full Bore	B564 N08825	Metal Seat	2
2	DBB	Floating	1/2"	#300	RF	Full Bore	A182 F316L	Metal Seat	11
3	DBB	Floating	1"	#150	RF	Reduced Bore	A182 F316L	Metal Seat	1
4	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F316L	Metal Seat	5
5	DBB	Floating	2"	#150	RF	Reduced Bore	B564 N08825	Metal Seat	27
6	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316L	Metal Seat	18
7	DBB	Floating	1/2"	#150	RF	Full Bore	A182 F316L	Soft Seat	37
8	DBB	Floating	1/2"	#150	RF	Full Bore	A350 LF2	Soft Seat	21
9	DBB	Floating	1/2"	#150	RF	Full Bore	B564 N08825	Soft Seat	33
10	DBB	Floating	1/2"	#300	RF	Full Bore	A350 LF2	Soft Seat	15
11	DBB	Floating	1/2"	#300	RF	Full Bore	B564 N08825	Soft Seat	43
12	DBB	Floating	1/2"	#600	RF	Full Bore	A182 F316L	Soft Seat	18
13	DBB	Floating	1/2"	#600	RF	Full Bore	A350 LF2	Soft Seat	6
14	DBB	Floating	1/2"	#600	RF	Full Bore	B564 N08825	Soft Seat	5
15	DBB	Floating	1/2"	#900	RF	Full Bore	A182 F316L	Soft Seat	1
16	DBB	Floating	1/2"	#900	RF	Full Bore	A350 LF2	Soft Seat	11
17	DBB	Floating	1/2"	#1500	RF	Full Bore	A182 F316L	Soft Seat	9
18	DBB	Floating	1/2"	#2500	RF	Full Bore	A182 F316L	Soft Seat	16
19	DBB	Floating	1"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	11
20	DBB	Floating	1 1/2"	#150	RF	Reduced Bore	A350 LF2	Soft Seat	3
21	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	119
22	DBB	Floating	2"	#150	RF	Reduced Bore	A350 LF2	Soft Seat	89
23	DBB	Floating	2"	#150	RF	Reduced Bore	B148 C95800	Soft Seat	6
24	DBB	Floating	2"	#150	RF	Reduced Bore	B564 N08825	Soft Seat	172
25	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	39
26	DBB	Floating	2"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	45
27	DBB	Floating	2"	#300	RF	Reduced Bore	B148 C95800	Soft Seat	3
28	DBB	Floating	2"	#300	RF	Reduced Bore	B564 N08825	Soft Seat	116
29	DBB	Floating	2"	#600	RF	Reduced Bore	A182 F316L	Soft Seat	57
30	DBB	Floating	2"	#600	RF	Reduced Bore	A350 LF2	Soft Seat	173
31	DBB	Floating	2"	#600	RF	Reduced Bore	B564 N08825	Soft Seat	26
32	DBB	Floating	2"	#900	RF	Reduced Bore	A182 F316L	Soft Seat	9
33	DBB	Floating	2"	#900	RF	Reduced Bore	A350 LF2	Soft Seat	101
34	DBB	Floating	2"	#900	RF	Reduced Bore	B564 N08825	Soft Seat	3
35	DBB	Floating	2"	#1500	RF	Reduced Bore	A182 F316L	Soft Seat	52
36	DBB	Floating	2"	#1500	RF	Reduced Bore	A350 LF2	Soft Seat	304
37	DBB	Floating	2"	#2500	RF	Reduced Bore	A182 F316L	Soft Seat	113
38	DBB	Floating	2"	#2500	RF	Reduced Bore	A350 LF2	Soft Seat	133
39	DBB	Floating	2"	#2500	RF	Reduced Bore	B564 N08825	Soft Seat	294
40	DBB	Floating	3"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	12
41	DBB	Floating	3"	#150	RF	Reduced Bore	B564 N08825	Soft Seat	4
42	DBB	Floating	3"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	8
43	DBB	Floating	3"	#300	RF	Reduced Bore	B564 N08825	Soft Seat	4
44	DBB	Floating	3"	#600	RF	Reduced Bore	A182 F316L	Soft Seat	2
45	DBB	Floating	3"	#900	RF	Reduced Bore	A182 F316L	Soft Seat	6
46	DBB	Trunnion	1 13/16"	10000 PSI	RTJ	Full Bore	A694 F60	Soft Seat	25

### IGD-Das Island Project (ADGAS / HHI - UAE / 2011)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1/2"	#600	RF	Full Bore	A350 LF2	Soft Seat	48
2	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A182 F316	Soft Seat	13
3	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A350 LF2	Soft Seat	8
4	DBB	Floating	3/4"	#600	RF	Reduced Bore	A350 LF2	Soft Seat	7
5	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	4
6	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	4
7	DBB	Floating	1 1/2"	#600	RF	Reduced Bore	A182 F316	Soft Seat	5
8	DBB	Floating	1 1/2"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	2
9	DBB	Trunnion	2"	#600	RF	Full Bore	A182 F316	Soft Seat	84
10	DBB	Trunnion	2"	#600	RF	Full Bore	A350 LF2	Soft Seat	275
11	DBB	Trunnion	2"	#1500	RTJ	Full Bore	A182 F316	Soft Seat	16
12	DBB	Trunnion	2"	#1500	RTJ	Full Bore	A350 LF2	Soft Seat	169

## 6. PRINCIPAL SUPPLY RECORDS - PLATFORM

### NASR Field Development Phase II PKG-2 (ADMA OPCO / HHI - UAE / 2016)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1/2"	#150	RF	Full Bore	A182 F44	Metal Seat	2
2	DBB	Floating	1/2"	#150	RF	Full Bore	A350 LF2	Metal Seat	4
3	DBB	Floating	1/2"	#300	RTJ	Full Bore	B564 N06625	Metal Seat	20
4	DBB	Floating	1/2"	#600	RTJ	Full Bore	A182 F44	Metal Seat	4
5	DBB	Floating	1/2"	#600	RTJ	Full Bore	A350 LF2	Metal Seat	6
6	DBB	Floating	1/2"	#600	RTJ	Full Bore	A182 F316	Metal Seat	6
7	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A350 LF2	Metal Seat	6
8	DBB	Floating	1/2"	#2500	RTJ	Full Bore	A350 LF2	Metal Seat	4
9	DBB	Floating	1/2"	#2500	RTJ	Full Bore	A182 F316	Metal Seat	20
10	DBB	Floating	1/2"	#150	RF	Full Bore	A350 LF2	Soft Seat	3
11	DBB	Floating	1/2"	#150	RF	Full Bore	A182 F316	Soft Seat	6
12	DBB	Floating	1/2"	#600	RTJ	Full Bore	A350 LF2	Soft Seat	8
13	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A350 LF2	Soft Seat	10
14	DBB	Floating	1/2"	#2500	RTJ	Full Bore	A350 LF2	Soft Seat	6
15	DBB	Floating	1"	#2500	RTJ	Full Bore	A182 F316	Metal Seat	2
16	DBB	Floating	1"	#150	FF	Full Bore	B150 C63000	Soft Seat	10
17	DBB	Floating	1"	#150	FF	Reduced Bore	B150 C63000	Soft Seat	9
18	DBB	Floating	1"	#150	RF	Full Bore	A182 F316	Soft Seat	16
19	DBB	Floating	1"	#150	RF	Full Bore	B381 Gr.2	Soft Seat	7
20	DBB	Floating	1"	#150	RF	Reduced Bore	A182 F316	Soft Seat	18
21	DBB	Floating	1"	#150	RF	Reduced Bore	B381 Gr.2	Soft Seat	9
22	DBB	Floating	1"	#600	RTJ	Full Bore	A182 F316	Soft Seat	18
23	DBB	Floating	1"	#600	RTJ	Reduced Bore	A182 F316	Soft Seat	27
24	DBB	Floating	1"	#1500	RTJ	Full Bore	A350 LF2	Soft Seat	1
25	DBB	Floating	1"	#1500	RTJ	Full Bore	A182 F316	Soft Seat	12
26	DBB	Floating	1"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	18
27	DBB	Floating	1"	#2500	RTJ	Full Bore	A182 F316	Soft Seat	96
28	DBB	Floating	1"	#2500	RTJ	Reduced Bore	A182 F316	Soft Seat	62
29	DBB	Floating	2"	#300	RTJ	Reduced Bore	A182 F44	Metal Seat	69
30	DBB	Floating	2"	#300	RTJ	Reduced Bore	B564 N06625	Metal Seat	111
31	DBB	Floating	2"	#300	RTJ	Reduced Bore	A350 LF2	Metal Seat	50
32	DBB	Floating	2"	#300	RTJ	Reduced Bore	A182 F316	Metal Seat	3
33	DBB	Floating	2"	#300	RF	Full Bore	A182 F316	Soft Seat	14
34	DBB	Floating	2"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	103
35	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316	Soft Seat	20
36	DBB	Floating	2"	#300	RTJ	Full Bore	B564 N06625	Soft Seat	17
37	DBB	Floating	2"	#300	RTJ	Reduced Bore	A182 F44	Soft Seat	18
38	DBB	Floating	2"	#300	RTJ	Reduced Bore	B564 N06625	Soft Seat	140
39	DBB	Floating	2"	#300	RTJ	Reduced Bore	A350 LF2	Soft Seat	9
40	DBB	Floating	2"	#300	RTJ	Reduced Bore	A182 F316	Soft Seat	7
41	DBB	Floating	3"	#300	RTJ	Reduced Bore	A182 F44	Metal Seat	3
42	DBB	Floating	3"	#300	RTJ	Reduced Bore	B564 N06625	Metal Seat	1
43	DBB	Floating	3"	#300	RTJ	Reduced Bore	A182 F316	Metal Seat	1
44	DBB	Floating	3"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	11
45	DBB	Floating	3"	#300	RTJ	Reduced Bore	B564 N06625	Soft Seat	2
46	DBB	Trunnion	2"	#600	RTJ	Full Bore	B564 N06625	Metal Seat	1
47	DBB	Trunnion	2"	#600	RTJ	Reduced Bore	A182 F44	Metal Seat	44
48	DBB	Trunnion	2"	#600	RTJ	Reduced Bore	B564 N06625	Metal Seat	161
49	DBB	Trunnion	2"	#600	RTJ	Reduced Bore	A350 LF2	Metal Seat	129
50	DBB	Trunnion	2"	#600	RTJ	Reduced Bore	A182 F316	Metal Seat	41
51	DBB	Trunnion	3"	#600	RTJ	Reduced Bore	A182 F44	Metal Seat	2
52	DBB	Trunnion	3"	#600	RTJ	Reduced Bore	B564 N06625	Metal Seat	4
53	DBB	Trunnion	3"	#600	RTJ	Reduced Bore	A350 LF2	Metal Seat	3
54	DBB	Trunnion	3"	#1500	RTJ	Reduced Bore	A350 LF2	Metal Seat	3
55	DBB	Trunnion	2"	#1500	RTJ	Reduced Bore	A350 LF2	Metal Seat	82
56	DBB	Trunnion	2"	#1500	RTJ	Reduced Bore	A182 F316	Metal Seat	4
57	DBB	Trunnion	2"	#2500	RTJ	Reduced Bore	A350 LF2	Metal Seat	60
58	DBB	Trunnion	2"	#2500	RTJ	Reduced Bore	A182 F316	Metal Seat	41
59	DBB	Trunnion	2"	#600	RTJ	Reduced Bore	A694 F65	Soft Seat	7

## 6. PRINCIPAL SUPPLY RECORDS - PLATFORM

### NASR Field Development Phase II PKG-2 (ADMA OPCO / HHI - UAE / 2016)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
60	DBB	Trunnion	2"	#600	RTJ	Reduced Bore	A350 LF2	Soft Seat	58
61	DBB	Trunnion	2"	#600	RTJ	Reduced Bore	A182 F316	Soft Seat	1
62	DBB	Trunnion	2"	#1500	RTJ	Reduced Bore	A182 F44	Soft Seat	1
63	DBB	Trunnion	2"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	175
64	DBB	Trunnion	2"	#2500	RTJ	Reduced Bore	A350 LF2	Soft Seat	73
65	DBB	Trunnion	2"	#2500	RTJ	Reduced Bore	A182 F316	Soft Seat	2

### Umm LuLu Package-2 (ADMA OPCO / NPCC, Technip - UAE / 2015)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1"	#600	RTJ	Full Bore	B564 N06625	Soft Seat	6
2	DBB	Floating	2"	#300	RTJ	Full Bore	A182 F44	Soft Seat	16
3	DBB	Floating	2"	#600	RTJ	Reduced Bore	A182 F44	Soft Seat	4
4	DBB	Floating	2"	#600	RTJ	Reduced Bore	B564 N06625	Soft Seat	18
5	DBB	Trunnion	2"	#600	RTJ	Full Bore	A182 F44	Soft Seat	4
6	DBB	Trunnion	2"	#600	RTJ	Full Bore	B564 N06625	Soft Seat	16

### Umm LuLu Package-1 (ADMA OPCO / NPCC - UAE / 2014)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1"	#2500	RTJ	Full Bore	A182 F316L	Soft Seat	196
2	DBB	Floating	2"	#300	RTJ	Reduced Bore	B564 N06625	Soft Seat	24
3	DBB	Floating	2"	#2500	RTJ	Reduced Bore	B564 N06625	Soft Seat	180
4	DBB	Trunnion	2"	#2500	RTJ	Full Bore	B564 N06625	Soft Seat	147

## 6. PRINCIPAL SUPPLY RECORDS - PLATFORM

### SARB Package 4 (ADMA OPCO / HDEC - UAE / 2014)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1/2"	#300	RF	Full Bore	A105	Metal Seat	24
2	DBB	Floating	3/4"	#300	RF	Reduced Bore	A105	Metal Seat	5
3	DBB	Floating	2"	#150	RF	Reduced Bore	A105	Metal Seat	11
4	DBB	Floating	2"	#300	RF	Reduced Bore	A105	Metal Seat	88
5	DBB	Floating	2"	#300	RTJ	Reduced Bore	B564 N06625	Metal Seat	52
6	DBB	Floating	1/2"	#150	RF	Full Bore	A105	Soft Seat	255
7	DBB	Floating	1/2"	#150	RF	Full Bore	A182 F316	Soft Seat	259
8	DBB	Floating	1/2"	#150	RF	Full Bore	A350 LF2	Soft Seat	62
9	DBB	Floating	1/2"	#150	RF	Full Bore	B564 N06625	Soft Seat	37
10	DBB	Floating	1/2"	#300	RF	Full Bore	A105	Soft Seat	77
11	DBB	Floating	1/2"	#300	RTJ	Full Bore	A105	Soft Seat	135
12	DBB	Floating	1/2"	#300	RTJ	Full Bore	A182 F316	Soft Seat	194
13	DBB	Floating	1/2"	#300	RTJ	Full Bore	B564 N06625	Soft Seat	216
14	DBB	Floating	1/2"	#600	RTJ	Full Bore	A105	Soft Seat	58
15	DBB	Floating	1/2"	#600	RTJ	Full Bore	A182 F316	Soft Seat	383
16	DBB	Floating	1/2"	#600	RTJ	Full Bore	B564 N06625	Soft Seat	136
17	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A105	Soft Seat	92
18	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A182 F316	Soft Seat	66
19	DBB	Floating	1/2"	#2500	RTJ	Full Bore	A105	Soft Seat	217
20	DBB	Floating	1/2"	#2500	RTJ	Full Bore	A182 F316	Soft Seat	78
21	DBB	Floating	1/2"	#2500	RTJ	Full Bore	B564 N06625	Soft Seat	466
22	DBB	Floating	3/4"	#300	RF	Reduced Bore	A105	Soft Seat	5
23	DBB	Floating	3/4"	#300	RTJ	Reduced Bore	A182 F316	Soft Seat	6
24	DBB	Floating	1"	#150	RF	Reduced Bore	A105	Soft Seat	7
25	DBB	Floating	1"	#150	RF	Reduced Bore	A182 F316	Soft Seat	19
26	DBB	Floating	1"	#150	RF	Reduced Bore	B381 Gr.2	Soft Seat	3
27	DBB	Floating	1"	#150	RF	Reduced Bore	B564 N06625	Soft Seat	9
28	DBB	Floating	1"	#300	RF	Reduced Bore	A105	Soft Seat	3
29	DBB	Floating	1"	#300	RF	Reduced Bore	A182 F316	Soft Seat	6
30	DBB	Floating	1"	#300	RTJ	Reduced Bore	B564 N06625	Soft Seat	7
31	DBB	Floating	1"	#600	RTJ	Reduced Bore	A182 F316	Soft Seat	13
32	DBB	Floating	1"	#2500	RTJ	Reduced Bore	A182 F316	Soft Seat	49
33	DBB	Floating	1 1/2"	#600	RTJ	Reduced Bore	A105	Soft Seat	5
34	DBB	Floating	1 1/2"	#600	RTJ	Reduced Bore	A182 F316	Soft Seat	3
35	DBB	Floating	1 1/2"	#2500	RTJ	Reduced Bore	A105	Soft Seat	7
36	DBB	Floating	2"	#150	FF	Reduced Bore	B148 C95800	Soft Seat	7
37	DBB	Floating	2"	#150	RF	Reduced Bore	A105	Soft Seat	58
38	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F316	Soft Seat	2
39	DBB	Floating	2"	#300	FF	Reduced Bore	A182 F53	Soft Seat	2
40	DBB	Floating	2"	#300	RF	Reduced Bore	A105	Soft Seat	187
41	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316	Soft Seat	3
42	DBB	Floating	2"	#300	RTJ	Reduced Bore	A105	Soft Seat	214
43	DBB	Floating	2"	#300	RTJ	Reduced Bore	A182 F316	Soft Seat	657
44	DBB	Floating	2"	#300	RTJ	Reduced Bore	A350 LF2	Soft Seat	83
45	DBB	Floating	2"	#300	RTJ	Reduced Bore	B564 N06625	Soft Seat	294
46	DBB	Floating	2"	#600	RTJ	Reduced Bore	A105	Soft Seat	148
47	DBB	Floating	2"	#600	RTJ	Reduced Bore	A182 F316	Soft Seat	367
48	DBB	Floating	2"	#600	RTJ	Reduced Bore	B564 N06625	Soft Seat	148
49	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A105	Soft Seat	36
50	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	51
51	DBB	Floating	2"	#2500	RTJ	Reduced Bore	A105	Soft Seat	129
52	DBB	Floating	2"	#2500	RTJ	Reduced Bore	A182 F316	Soft Seat	59
53	DBB	Floating	2"	#2500	RTJ	Reduced Bore	B564 N06625	Soft Seat	345
54	DBB	Floating	3"	#300	RTJ	Reduced Bore	A105	Soft Seat	3
55	DBB	Floating	3"	#300	RTJ	Reduced Bore	B564 N06625	Soft Seat	3
56	DBB	Floating	3"	#600	RTJ	Reduced Bore	B564 N06625	Soft Seat	3
57	DBB	Trunnion	1/2"	10000 PSI	FF	Full Bore	A694 F60	Soft Seat	308
58	DBB	Trunnion	1/2"	10000 PSI	HUB	Full Bore	A694 F60	Soft Seat	95
59	DBB	Trunnion	2"	10000 PSI	FF	Reduced Bore	A694 F60	Soft Seat	16
60	DBB	Trunnion	2"	10000 PSI	HUB	Reduced Bore	A694 F60	Soft Seat	8

## 6. PRINCIPAL SUPPLY RECORDS - PLATFORM

### ZAKUM Oil Lines Replacement Project Phase 1 (ADMA OPCO / NPCC - UAE / 2014)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	2"	#150	RF	Full Bore	A105	Soft Seat	1
2	DBB	Floating	2"	#150	RF	Full Bore	A350 LF2	Soft Seat	110
3	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A105	Soft Seat	658
4	DBB	Trunnion	2"	#1500	RTJ	Full Bore	A105	Soft Seat	23
5	DBB	Trunnion	3"	#1500	RTJ	Reduced Bore	A105	Soft Seat	17

### ADMA-OPCO 100MBD (ADMA OPCO / CCC - UAE / 2012)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1"	#600	RTJ	Full Bore	A182 F316	Soft Seat	8
2	DBB	Floating	2"	#150	RF	Full Bore	A105	Soft Seat	46
3	DBB	Floating	2"	#300	RF	Full Bore	A105	Soft Seat	4
4	DBB	Trunnion	2"	#600	RTJ	Full Bore	A105	Soft Seat	5
5	DBB	Trunnion	2"	#600	RTJ	Full Bore	A182 F316	Soft Seat	1



## 6. PRINCIPAL SUPPLY RECORDS - PLATFORM

### Umm Shaif Facilities Project (ADMA OPCO / HHI - UAE / 2009)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1/2"	#150	RF	Full Bore	A350 LF2	Soft Seat	15
2	DBB	Floating	1/2"	#150	RF	Full Bore	B564 N06625	Soft Seat	4
3	DBB	Floating	1/2"	#300	RF	Full Bore	A182 F316	Soft Seat	2
4	DBB	Floating	1/2"	#300	RF	Full Bore	A350 LF2	Soft Seat	4
5	DBB	Floating	1/2"	#300	RF	Full Bore	B564 N06625	Soft Seat	41
6	DBB	Floating	1/2"	#600	RF	Full Bore	A182 F316	Soft Seat	18
7	DBB	Floating	1/2"	#600	RF	Full Bore	A350 LF2	Soft Seat	16
8	DBB	Floating	1/2"	#600	RF	Full Bore	B564 N06625	Soft Seat	18
9	DBB	Floating	1/2"	#900	RTJ	Full Bore	A182 F316	Soft Seat	10
10	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A182 F316	Soft Seat	44
11	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A694 F60	Soft Seat	6
12	DBB	Floating	1/2"	#2500	RTJ	Full Bore	A694 F60	Soft Seat	6
13	DBB	Floating	1/2"	#2500	RTJ	Full Bore	B564 N06625	Soft Seat	20
14	DBB	Floating	3/4"	#300	RF	Reduced Bore	B564 N06625	Soft Seat	35
15	DBB	Floating	3/4"	#600	RF	Reduced Bore	B564 N06625	Soft Seat	14
16	DBB	Floating	1"	#600	RF	Reduced Bore	A182 F316	Soft Seat	6
17	DBB	Floating	1"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	12
18	DBB	Floating	2"	#150	RF	Full Bore	A350 LF2	Soft Seat	5
19	DBB	Floating	2"	#150	RF	Full Bore	B564 N06625	Soft Seat	2
20	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F316	Soft Seat	2
21	DBB	Floating	2"	#150	RF	Reduced Bore	A350 LF2	Soft Seat	96
22	DBB	Floating	2"	#150	RF	Reduced Bore	B564 N06625	Soft Seat	82
23	DBB	Floating	2"	#300	RF	Full Bore	A182 F316	Soft Seat	6
24	DBB	Floating	2"	#300	RF	Full Bore	A350 LF2	Soft Seat	36
25	DBB	Floating	2"	#300	RF	Full Bore	B564 N06625	Soft Seat	49
26	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	12
27	DBB	Floating	2"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	1
28	DBB	Floating	2"	#300	RF	Reduced Bore	B564 N06625	Soft Seat	76
29	DBB	Floating	2"	#600	RF	Reduced Bore	A182 F316L	Soft Seat	2
30	DBB	Floating	2"	#600	RF	Reduced Bore	A350 LF2	Soft Seat	131
31	DBB	Floating	2"	#600	RF	Reduced Bore	B564 N06625	Soft Seat	103
32	DBB	Floating	2"	#900	RTJ	Reduced Bore	A350 LF2	Soft Seat	6
33	DBB	Floating	2"	#900	RTJ	Reduced Bore	B564 N06625	Soft Seat	12
34	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A694 F60	Soft Seat	57
35	DBB	Floating	2"	#1500	RTJ	Reduced Bore	B564 N06625	Soft Seat	2
36	DBB	Floating	2"	#2500	RTJ	Reduced Bore	A182 F316	Soft Seat	1
37	DBB	Floating	2"	#2500	RTJ	Reduced Bore	A694 F60	Soft Seat	67
38	DBB	Floating	2"	#2500	RTJ	Reduced Bore	B564 N06625	Soft Seat	80
39	DBB	Floating	3"	#300	RF	Full Bore	A350 LF2	Soft Seat	2
40	DBB	Trunnion	2"	#600	RF	Full Bore	A350 LF2	Soft Seat	22
41	DBB	Trunnion	2"	#600	RF	Full Bore	B564 N06625	Soft Seat	82
42	DBB	Trunnion	2"	#1500	RTJ	Full Bore	A182 F316	Soft Seat	2
43	DBB	Trunnion	2"	#1500	RTJ	Full Bore	A694 F60	Soft Seat	14
44	DBB	Trunnion	2"	#2500	RTJ	Full Bore	A694 F60	Soft Seat	24
45	DBB	Trunnion	3"	#600	RF	Full Bore	B564 N06625	Soft Seat	12
46	DBB (Needle)	-	1/2"	#150	RF	Reduced Bore	B564 N06625	Metal Seat	4
47	DBB (Needle)	-	1/2"	#600	NPT	Reduced Bore	A182 F316L	Metal Seat	40
48	DBB (Needle)	-	1/2"	#600	NPT	Reduced Bore	B564 N06625	Metal Seat	22
49	DBB (Needle)	-	2"	#300	RF	Reduced Bore	B564 N06625	Metal Seat	58
50	DBB (Needle)	-	2"	#600	RF	Reduced Bore	A182 F316	Metal Seat	2
51	DBB (Needle)	-	2"	#600	RF	Reduced Bore	B564 N06625	Metal Seat	14
52	DBB (Needle)	-	2"	#2500	RF	Reduced Bore	A182 F316	Metal Seat	1
53	DBB (Needle)	-	2"	#2500	RTJ	Reduced Bore	A182 F316	Metal Seat	3

## 6. PRINCIPAL SUPPLY RECORDS - PLATFORM

### Hout Onshore Gas Facilities (AL-KHAFJI JOINT OPERATIONS / Daewoo - Saudi Arabia)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB (Needle)	-	1/2"	#1500	NPT	Reduced Bore	A105	Metal Seat	44
2	DBB (Needle)	-	1/2"	#1500	NPT	Reduced Bore	A182 F51	Metal Seat	9
3	DBB (Needle)	-	1/2"	#1500	NPT	Reduced Bore	A479 TYPE347H	Metal Seat	9
4	DBB (Needle)	-	3/4"	#150	RF	Reduced Bore	A105	Metal Seat	114
5	DBB (Needle)	-	3/4"	#150	RF	Reduced Bore	A350 LF2	Metal Seat	7
6	DBB (Needle)	-	3/4"	#300	RF	Reduced Bore	A105	Metal Seat	45
7	DBB (Needle)	-	3/4"	#300	RF	Reduced Bore	A182 F51	Metal Seat	24
8	DBB (Needle)	-	3/4"	#600	RF	Reduced Bore	A105	Metal Seat	15
9	DBB (Needle)	-	3/4"	#600	RF	Reduced Bore	A182 F44	Metal Seat	12
10	DBB (Needle)	-	3/4"	#1500	RTJ	Reduced Bore	A479 TYPE347H	Metal Seat	2
11	DBB (Needle)	-	2"	#150	RF	Reduced Bore	A105	Metal Seat	13
12	DBB (Needle)	-	2"	#150	RF	Reduced Bore	A350 LF2	Metal Seat	10
13	DBB (Needle)	-	2"	#300	RF	Reduced Bore	A105	Metal Seat	146
14	DBB (Needle)	-	2"	#300	RF	Reduced Bore	A182 F44	Metal Seat	18
15	DBB (Needle)	-	2"	#300	RF	Reduced Bore	A182 F51	Metal Seat	66
16	DBB (Needle)	-	2"	#300	RF	Reduced Bore	A350 LF2	Metal Seat	15

### MINERVA Gas Plant (BHP BILLITON PETROLEUM / McConnell Dowell & Saipem - Australia / 2003)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A182 F316	Soft Seat	5
2	DBB	Floating	1/2"	#2500	NPT	Full Bore	A105	Soft Seat	10
3	DBB	Floating	1/2"	#2500	NPT	Full Bore	A182 F316	Soft Seat	3
4	DBB	Floating	1"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	8
5	DBB	Floating	1 1/2"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	30
6	DBB	Floating	1 1/2"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	21
7	DBB	Floating	1 1/2"	#300	RF	Reduced Bore	A182 F316	Soft Seat	11
8	DBB	Floating	1 1/2"	#300	RTJ	Reduced Bore	A105	Soft Seat	13
9	DBB	Floating	1 1/2"	#300	RTJ	Reduced Bore	A182 F316	Soft Seat	1
10	DBB	Floating	1 1/2"	#900	RTJ	Reduced Bore	A105	Soft Seat	2
11	DBB	Floating	1 1/2"	#900	RTJ	Reduced Bore	A182 F316	Soft Seat	1
12	DBB	Floating	1 1/2"	#900	RTJ	Reduced Bore	A350 LF2	Soft Seat	10
13	DBB	Floating	2"	#150	RF	Full Bore	A105	Soft Seat	30
14	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	4
15	DBB	Floating	2"	#300	RF	Full Bore	A105	Soft Seat	18
16	DBB	Floating	2"	#300	RF	Reduced Bore	A105	Soft Seat	1
17	DBB	Floating	2"	#900	RTJ	Reduced Bore	A350 LF2	Soft Seat	10
18	DBB	Trunnion	2"	#1500	RTJ	Full Bore	A182 F316	Soft Seat	7
19	DBB	Trunnion	2"	#1500	RTJ	Full Bore	A350 LF2	Soft Seat	4
20	DBB	Trunnion	2"	#900	RTJ	Full Bore	A350 LF2	Soft Seat	8
21	DBB (Needle)	-	1/2"	#1500	RTJ	Reduced Bore	A350 LF2	Metal Seat	6
22	DBB (Needle)	-	1 1/2"	#1500	RTJ	Reduced Bore	A350 LF2	Metal Seat	9

## 6. PRINCIPAL SUPPLY RECORDS - PLATFORM

### Lan Tay Platform (BP / HHI - Vietnam / 2001)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1/2"	#150	RF	Full Bore	B164 N04400	Soft Seat	2
2	DBB	Floating	1/2"	#300	RF	Full Bore	A182 F316	Soft Seat	18
3	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A182 F316	Soft Seat	3
4	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A182 F51	Soft Seat	3
5	DBB	Floating	3/4"	#150	RF	Reduced Bore	A182 F316	Soft Seat	1
6	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A182 F316	Soft Seat	2
7	DBB	Floating	1"	#2500	RTJ	Reduced Bore	A182 F316	Soft Seat	13
8	DBB	Floating	1 1/2"	#150	RF	Reduced Bore	A182 F316	Soft Seat	27
9	DBB	Floating	1 1/2"	#150	RF	Reduced Bore	B164 N04400	Soft Seat	26
10	DBB	Floating	1 1/2"	#300	RF	Reduced Bore	A182 F316	Soft Seat	9
11	DBB	Floating	1 1/2"	#300	RF	Reduced Bore	A182 F316	Soft Seat	11
12	DBB	Floating	1 1/2"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	2
13	DBB	Floating	1 1/2"	#1500	RTJ	Reduced Bore	A182 F51	Soft Seat	9
14	DBB	Floating	1 1/2"	#2500	RTJ	Reduced Bore	A182 F316	Soft Seat	10
15	DBB	Floating	1 1/2"	#2500	RTJ	Reduced Bore	A182 F316	Soft Seat	7
16	DBB	Floating	2"	#300	RF	Full Bore	A182 F316	Soft Seat	6
17	DBB	Floating	2"	#300	RF	Full Bore	A350 LF2	Soft Seat	4
18	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316	Soft Seat	11
19	DBB	Floating	2"	#600	RF	Reduced Bore	A182 F316	Soft Seat	2
20	DBB	Floating	2"	#2500	RTJ	Reduced Bore	A182 F316	Soft Seat	2
21	DBB	Trunnion	1 1/2"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	1
22	DBB	Trunnion	2"	#2500	RTJ	Full Bore	A350 LF2	Soft Seat	2

### MB Platform and Pipeline Project (BRITISH GAS / L&T - India / 2014)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A105	Soft Seat	2
2	DBB	Floating	1 1/2"	#1500	RTJ	Reduced Bore	A105	Soft Seat	74
3	DBB	Floating	1 1/2"	#150	RF	Reduced Bore	A105	Soft Seat	3
4	DBB	Floating	1 1/2"	#1500	RTJ	Full Bore	A105	Soft Seat	5
5	DBB	Floating	2"	#300	RF	Reduced Bore	A105	Soft Seat	5
6	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A105	Soft Seat	26
7	DBB	Floating	4"	#300	RF	Reduced Bore	A105	Soft Seat	8
8	DBB	Trunnion	3"	#1500	RTJ	Reduced Bore	A105	Soft Seat	4
9	DBB	Trunnion	4"	#1500	RTJ	Reduced Bore	A105	Soft Seat	6

## 6. PRINCIPAL SUPPLY RECORDS - PLATFORM

Carigali Booster Compression Project (CARIGALI HESS / HHI - Malaysia / 2013)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1 1/2"	#300	RF	Reduced Bore	A182 F316	Metal Seat	2
2	DBB	Floating	2"	#300	RF	Full Bore	A182 F316L	Metal Seat	38
3	DBB	Floating	3"	#300	RF	Full Bore	A182 F316L	Metal Seat	10
4	DBB	Floating	1 1/2"	#150	FF	Reduced Bore	B148 C95800	Soft Seat	1
5	DBB	Floating	2"	#150	RF	Full Bore	A182 F316L	Soft Seat	1
6	DBB	Floating	2"	#300	RF	Full Bore	A182 F316L	Soft Seat	29
7	DBB	Floating	3"	#300	RF	Full Bore	A182 F316L	Soft Seat	34
8	DBB	Trunnion	2"	#600	RF	Full Bore	A182 F316L	Soft Seat	19
9	DBB	Trunnion	2"	#600	RF	Full Bore	A182 F51	Soft Seat	4
10	DBB	Trunnion	2"	#2500	RTJ	Full Bore	A182 F316	Soft Seat	1
11	DBB	Trunnion	3"	#600	RF	Full Bore	A182 F316L	Soft Seat	42
12	DBB (Needle)	-	1/2"	#150	RF	Reduced Bore	A350 LF2	Metal Seat	10
13	DBB (Needle)	-	1/2"	#300	RF	Reduced Bore	A182 F316	Metal Seat	25
14	DBB (Needle)	-	3/4"	#150	RF	Reduced Bore	A182 F316	Metal Seat	8
15	DBB (Needle)	-	3/4"	#300	RF	Reduced Bore	A182 F316	Metal Seat	8
16	DBB (Needle)	-	1"	#150	FF	Reduced Bore	B148 C95800	Metal Seat	7
17	DBB (Needle)	-	1"	#150	RF	Reduced Bore	A350 LF2	Metal Seat	82
18	DBB (Needle)	-	1"	#300	RF	Reduced Bore	A182 F316	Metal Seat	112
19	DBB (Needle)	-	1"	#300	RF	Reduced Bore	A182 F51	Metal Seat	58
20	DBB (Needle)	-	1"	#300	RF	Reduced Bore	A350 LF2	Metal Seat	1
21	DBB (Needle)	-	2"	#150	FF	Reduced Bore	B148 C95800	Metal Seat	38
22	DBB (Needle)	-	2"	#150	RF	Reduced Bore	A182 F316	Metal Seat	2
23	DBB (Needle)	-	2"	#150	RF	Reduced Bore	A350 LF2	Metal Seat	4
24	DBB (Needle)	-	2"	#300	RF	Reduced Bore	A182 F316	Metal Seat	42

## 6. PRINCIPAL SUPPLY RECORDS - PLATFORM

### Mafumeira Sul Fixed Platform (CHEVRON / DSME - Angola / 2013)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A182 F316L	Metal Seat	44
2	DBB	Floating	3/4"	#300	RF	Reduced Bore	A350 LF2	Metal Seat	88
3	DBB	Floating	3/4"	#600	RF	Reduced Bore	A182 F316L	Metal Seat	141
4	DBB	Floating	3/4"	#600	RF	Reduced Bore	A350 LF2	Metal Seat	194
5	DBB	Floating	1"	#1500	RTJ	Reduced Bore	A182 F316L	Metal Seat	8
6	DBB	Floating	2"	#300	RF	Reduced Bore	A350 LF2	Metal Seat	6
7	DBB	Floating	2"	#600	RF	Reduced Bore	A182 F316L	Metal Seat	27
8	DBB	Floating	2"	#600	RF	Reduced Bore	A350 LF2	Metal Seat	18
9	DBB	Floating	1/2"	#2500	NPT	Full Bore	A182 F316L	Soft Seat	128
10	DBB	Floating	3/4"	#300	FF	Reduced Bore	B148 C95800	Soft Seat	37
11	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	227
12	DBB	Floating	3/4"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	916
13	DBB	Floating	3/4"	#600	RF	Reduced Bore	A182 F316L	Soft Seat	46
14	DBB	Floating	3/4"	#600	RF	Reduced Bore	A350 LF2	Soft Seat	7
15	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A182 F316L	Soft Seat	3
16	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	272
17	DBB	Floating	3/4"	#2500	NPT	Reduced Bore	A182 F53	Soft Seat	47
18	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A182 F53	Soft Seat	25
19	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A350 LF2	Soft Seat	31
20	DBB	Floating	1"	#300	FF	Reduced Bore	B148 C95800	Soft Seat	34
21	DBB	Floating	1"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	5
22	DBB	Floating	1"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	26
23	DBB	Floating	1"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	265
24	DBB	Floating	1 1/2"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	6
25	DBB	Floating	1 1/2"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	2
26	DBB	Floating	1 1/2"	#1500	RTJ	Reduced Bore	A182 F316L	Soft Seat	2
27	DBB	Floating	1 1/2"	#2500	RTJ	Reduced Bore	A182 F316L	Soft Seat	76
28	DBB	Floating	1 1/2"	#2500	RTJ	Reduced Bore	A182 F53	Soft Seat	4
29	DBB	Floating	2"	#150	FF	Reduced Bore	B148 C95800	Soft Seat	8
30	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	72
31	DBB	Floating	2"	#300	FF	Reduced Bore	B148 C95800	Soft Seat	1
32	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	72
33	DBB	Floating	2"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	45
34	DBB	Floating	2"	#600	RF	Reduced Bore	A182 F316L	Soft Seat	60
35	DBB	Floating	2"	#900	RTJ	Reduced Bore	A182 F316L	Soft Seat	28
36	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A182 F316L	Soft Seat	53
37	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	36
38	DBB	Floating	2"	#2500	RTJ	Reduced Bore	A350 LF2	Soft Seat	12



## 6. PRINCIPAL SUPPLY RECORDS - PLATFORM

### Takula Gas Processing Platform (CHEVRON / SHI - Angola / 2007)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1/2"	#300	RF	Full Bore	A105	Soft Seat	1
2	DBB	Floating	1/2"	#600	RF	Full Bore	A105	Soft Seat	4
3	DBB	Floating	1/2"	#900	RTJ	Full Bore	A105	Soft Seat	1
4	DBB	Floating	3/4"	#150	RF	Reduced Bore	A105	Soft Seat	10
5	DBB	Floating	3/4"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	3
6	DBB	Floating	3/4"	#300	RF	Reduced Bore	A105	Soft Seat	12
7	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	3
8	DBB	Floating	3/4"	#600	RF	Reduced Bore	A105	Soft Seat	16
9	DBB	Floating	3/4"	#900	RTJ	Reduced Bore	A105	Soft Seat	17
10	DBB	Floating	2"	#150	RF	Reduced Bore	A105	Soft Seat	17
11	DBB	Floating	2"	#300	RF	Reduced Bore	A105	Soft Seat	1
12	DBB	Floating	2"	#600	RF	Reduced Bore	A105	Soft Seat	8
13	DBB	Floating	2"	#900	RTJ	Reduced Bore	A105	Soft Seat	1

### Tombua Landana Platform (CHEVRON / DSME - Angola / 2007)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1/2"	#150	FF	Full Bore	B164 N04400	Soft Seat	2
2	DBB	Floating	1/2"	#150	RF	Full Bore	A182 F316	Soft Seat	2
3	DBB	Floating	1/2"	#150	RF	Full Bore	A350 LF2	Soft Seat	23
4	DBB	Floating	1/2"	#300	RF	Full Bore	A182 F316	Soft Seat	4
5	DBB	Floating	1/2"	#300	RF	Full Bore	A350 LF2	Soft Seat	29
6	DBB	Floating	1/2"	#600	RF	Full Bore	A182 F316	Soft Seat	2
7	DBB	Floating	1/2"	#600	RF	Full Bore	A350 LF2	Soft Seat	9
8	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A182 F316	Soft Seat	2
9	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A350 LF2	Soft Seat	23
10	DBB	Floating	1/2"	#2500	NPT	Full Bore	A182 F316	Soft Seat	67
11	DBB	Floating	1/2"	#2500	NPT	Full Bore	A350 LF2	Soft Seat	34
12	DBB	Floating	1/2"	#2500	PLAIN END	Full Bore	A182 F316	Soft Seat	163
13	DBB	Floating	1/2"	#2500	RTJ	Full Bore	A182 F316	Soft Seat	1
14	DBB	Floating	1/2"	#2500	RTJ	Full Bore	A350 LF2	Soft Seat	46
15	DBB	Floating	3/4"	#150	RF	Reduced Bore	A182 F316	Soft Seat	41
16	DBB	Floating	3/4"	#150	RF	Reduced Bore	A350 LF2	Soft Seat	191
17	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F316	Soft Seat	48
18	DBB	Floating	3/4"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	152
19	DBB	Floating	3/4"	#600	RF	Reduced Bore	A182 F316	Soft Seat	16
20	DBB	Floating	3/4"	#600	RF	Reduced Bore	A350 LF2	Soft Seat	27
21	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	12
22	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	73
23	DBB	Floating	3/4"	#2500	NPT	Reduced Bore	A350 LF2	Soft Seat	128
24	DBB	Floating	3/4"	#2500	PLAIN END	Reduced Bore	A182 F316	Soft Seat	63
25	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A350 LF2	Soft Seat	198
26	DBB	Floating	1"	#150	FF	Reduced Bore	A182 F316	Soft Seat	2
27	DBB	Floating	1"	#150	FF	Reduced Bore	B164 N04400	Soft Seat	53
28	DBB	Floating	1"	#300	RF	Reduced Bore	A182 F316	Soft Seat	4
29	DBB	Floating	2"	#150	FF	Reduced Bore	B164 N04400	Soft Seat	26
30	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F316	Soft Seat	18
31	DBB	Floating	2"	#150	RF	Reduced Bore	A350 LF2	Soft Seat	166
32	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316	Soft Seat	22
33	DBB	Floating	2"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	93
34	DBB	Floating	2"	#600	RF	Reduced Bore	A182 F316	Soft Seat	10
35	DBB	Floating	2"	#600	RF	Reduced Bore	A350 LF2	Soft Seat	65
36	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	47
37	DBB	Floating	2"	#2500	RTJ	Reduced Bore	A350 LF2	Soft Seat	29

## 6. PRINCIPAL SUPPLY RECORDS - PLATFORM

SHWE Project (DAEWOO INTERNATIONAL / HHI - Myanmar / 2011)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1/2"	#150	FF	Full Bore	B148 C95800	Soft Seat	24
2	DBB	Floating	1/2"	#150	RF	Full Bore	A105	Soft Seat	16
3	DBB	Floating	1/2"	#150	RF	Full Bore	A182 F316	Soft Seat	2
4	DBB	Floating	1/2"	#300	RF	Full Bore	A105	Soft Seat	8
5	DBB	Floating	1/2"	#600	RF	Full Bore	A182 F316L	Soft Seat	34
6	DBB	Floating	1/2"	#600	RF	Full Bore	A350 LF2	Soft Seat	8
7	DBB	Floating	1/2"	#900	RTJ	Full Bore	A105	Soft Seat	12
8	DBB	Floating	1/2"	#900	RTJ	Full Bore	A350 LF2	Soft Seat	4
9	DBB	Floating	1/2"	#2500	RTJ	Full Bore	A105	Soft Seat	8
10	DBB	Floating	3/4"	#150	FF	Reduced Bore	B148 C95800	Soft Seat	102
11	DBB	Floating	3/4"	#150	RF	Reduced Bore	A105	Soft Seat	142
12	DBB	Floating	3/4"	#150	RF	Reduced Bore	A182 F316	Soft Seat	58
13	DBB	Floating	3/4"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	6
14	DBB	Floating	3/4"	#300	RF	Reduced Bore	A105	Soft Seat	18
15	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F316	Soft Seat	20
16	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	1
17	DBB	Floating	3/4"	#600	RF	Reduced Bore	A105	Soft Seat	19
18	DBB	Floating	3/4"	#600	RF	Reduced Bore	A182 F316L	Soft Seat	112
19	DBB	Floating	3/4"	#600	RF	Reduced Bore	A182 F53	Soft Seat	9
20	DBB	Floating	3/4"	#600	RF	Reduced Bore	A350 LF2	Soft Seat	38
21	DBB	Floating	3/4"	#900	RTJ	Reduced Bore	A105	Soft Seat	33
22	DBB	Floating	3/4"	#900	RTJ	Reduced Bore	A182 F316L	Soft Seat	9
23	DBB	Floating	3/4"	#900	RTJ	Reduced Bore	A350 LF2	Soft Seat	15
24	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A105	Soft Seat	9
25	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A105	Soft Seat	16
26	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A182 F316L	Soft Seat	36
27	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A182 F51	Soft Seat	50
28	DBB	Floating	1"	#2500	RTJ	Reduced Bore	A182 F51	Soft Seat	3
29	DBB	Floating	2"	#150	FF	Full Bore	B148 C95800	Soft Seat	4
30	DBB	Floating	2"	#150	FF	Reduced Bore	B148 C95800	Soft Seat	2
31	DBB	Floating	2"	#150	RF	Full Bore	A182 F316L	Soft Seat	6
32	DBB	Floating	2"	#150	RF	Reduced Bore	A105	Soft Seat	103
33	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F316	Soft Seat	26
34	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	9
35	DBB	Floating	2"	#300	RF	Reduced Bore	A105	Soft Seat	14
36	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	5
37	DBB	Floating	2"	#600	RF	Reduced Bore	A105	Soft Seat	9
38	DBB	Floating	2"	#600	RF	Reduced Bore	A182 F316L	Soft Seat	14
39	DBB	Floating	2"	#600	RF	Reduced Bore	A350 LF2	Soft Seat	26
40	DBB	Floating	2"	#900	RTJ	Reduced Bore	A105	Soft Seat	5
41	DBB	Floating	2"	#900	RTJ	Reduced Bore	A182 F316L	Soft Seat	9
42	DBB	Floating	2"	#900	RTJ	Reduced Bore	A350 LF2	Soft Seat	13
43	DBB	Floating	3"	#150	FF	Full Bore	B148 C95800	Soft Seat	6
44	DBB	Floating	3"	#150	RF	Full Bore	A105	Soft Seat	6
45	DBB	Floating	3"	#150	RF	Reduced Bore	A105	Soft Seat	47
46	DBB	Floating	3"	#150	RF	Reduced Bore	A182 F316	Soft Seat	8
47	DBB	Floating	3"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	6
48	DBB	Floating	3"	#150	RF	Reduced Bore	A350 LF2	Soft Seat	16
49	DBB	Floating	3"	#300	RF	Reduced Bore	A105	Soft Seat	4
50	DBB	Trunnion	2"	#600	RF	Reduced Bore	A105	Metal Seat	22
51	DBB	Trunnion	3"	#600	RF	Reduced Bore	A105	Metal Seat	8
52	DBB	Trunnion	3"	#600	RF	Full Bore	A105	Soft Seat	8
53	DBB	Trunnion	3"	#600	RF	Full Bore	A350 LF2	Soft Seat	8
54	DBB (Needle)	-	1/2"	#150	RF	Reduced Bore	A105	Metal Seat	3
55	DBB (Needle)	-	1/2"	#150	RF	Reduced Bore	B148 C95800	Metal Seat	2

## 6. PRINCIPAL SUPPLY RECORDS - PLATFORM

### Dong Hejre Field Fixed Platform (DONG E&P AS / DSME - Denmark / 2013)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	2"	#300	RF	Full Bore	A105	Metal Seat	8
2	DBB	Floating	1"	#150	RF	Full Bore	A182 F316L	Soft Seat	2
3	DBB	Floating	1"	#600	RTJ	Full Bore	A350 LF2	Soft Seat	1
4	DBB	Floating	1 1/2"	#600	RTJ	Full Bore	A350 LF2	Soft Seat	1
5	DBB	Floating	2"	#150	RF	Full Bore	A182 F316L	Soft Seat	4
6	DBB	Floating	2"	#300	RF	Full Bore	A182 F316L	Soft Seat	26
7	DBB	Floating	2"	#300	RF	Full Bore	A182 F51	Soft Seat	4
8	DBB	Floating	2"	#300	RF	Full Bore	A350 LF2	Soft Seat	6
9	DBB	Trunnion	2"	#600	RTJ	Full Bore	A350 LF2	Soft Seat	6

### East Area EPC-1B (EXXON MOBIL / HHI - Nigeria / 2006)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	2"	#300	RF	Reduced Bore	A350 LF2	Metal Seat	1
2	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A182 F316	Soft Seat	11
3	DBB	Floating	1/2"	#2500	NPT	Full Bore	A350 LF2	Soft Seat	4
4	DBB	Floating	1/2"	#2500	PLAIN END	Full Bore	A182 F316	Soft Seat	18
5	DBB	Floating	1/2"	#2500	PLAIN END	Full Bore	A350 LF2	Soft Seat	32
6	DBB	Floating	3/4"	#2500	PLAIN END	Reduced Bore	A182 F316	Soft Seat	46
7	DBB	Floating	3/4"	#2500	PLAIN END	Reduced Bore	A182 F316L	Soft Seat	6
8	DBB	Floating	3/4"	#2500	PLAIN END	Reduced Bore	A350 LF2	Soft Seat	116
9	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F316	Soft Seat	6
10	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	2
11	DBB	Floating	2"	#150	RF	Reduced Bore	A350 LF2	Soft Seat	4
12	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316	Soft Seat	8
13	DBB	Floating	2"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	2
14	DBB	Floating	2"	#600	RF	Reduced Bore	A182 F316	Soft Seat	1
15	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	2
16	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	2
17	DBB	Trunnion	1/2"	#2500	PLAIN END	Full Bore	A350 LF2	Metal Seat	8
18	DBB	Trunnion	3/4"	#2500	PLAIN END	Reduced Bore	A350 LF2	Metal Seat	20

### EAST AREA EPC1A (EXXON MOBIL / SHI - Nigeria / 2004)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	3/4"	#300	PLAIN END	Reduced Bore	A350 LF2	Metal Seat	48
2	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A182 F51	Metal Seat	1
3	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A350 LF2	Metal Seat	1
4	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A350 LF2	Metal Seat	12
5	DBB	Floating	1/2"	#600	RTJ	Full Bore	A182 F316	Soft Seat	2
6	DBB	Floating	1/2"	#600	RTJ	Full Bore	A182 F51	Soft Seat	8
7	DBB	Floating	3/4"	#300	PLAIN END	Reduced Bore	A182 F316L	Soft Seat	72
8	DBB	Floating	3/4"	#300	PLAIN END	Reduced Bore	A182 F51	Soft Seat	12
9	DBB	Floating	3/4"	#300	PLAIN END	Reduced Bore	A350 LF2	Soft Seat	198
10	DBB	Floating	3/4"	#300	PLAIN END	Reduced Bore	A350 LF3	Soft Seat	3
11	DBB	Floating	3/4"	#2500	PLAIN END	Reduced Bore	A182 F316L	Soft Seat	15
12	DBB	Floating	3/4"	5000 PSI	PLAIN END	Reduced Bore	A350 LF2	Soft Seat	23
13	DBB	Floating	2"	#150	RF	Reduced Bore	A350 LF2	Soft Seat	27
14	DBB	Floating	2"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	26
15	DBB	Floating	2"	#600	RTJ	Reduced Bore	A350 LF2	Soft Seat	26
16	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A182 F51	Soft Seat	3
17	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	20

## 6. PRINCIPAL SUPPLY RECORDS - PLATFORM

**SABLE Tier 2 Compression Platform (EXXON MOBIL / Saiwoo - Canada / 2004)**

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F316	Soft Seat	8
2	DBB	Floating	3/4"	#600	RF	Reduced Bore	A182 F316	Soft Seat	14
3	DBB	Floating	3/4"	#600	RF	Reduced Bore	A182 F51	Soft Seat	28
4	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	13
5	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A182 F51	Soft Seat	15
6	DBB	Floating	1"	#600	RF	Reduced Bore	A182 F316	Soft Seat	1
7	DBB	Floating	1"	#1500	RTJ	Full Bore	A182 F316	Soft Seat	6
8	DBB	Floating	1"	#1500	RTJ	Full Bore	A350 LF2	Soft Seat	13
9	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	21
10	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A182 F51	Soft Seat	10
11	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	5
12	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316	Soft Seat	3
13	DBB	Floating	2"	#600	RF	Reduced Bore	A182 F316	Soft Seat	17
14	DBB	Floating	2"	#600	RF	Reduced Bore	A182 F51	Soft Seat	18
15	DBB	Floating	3"	#600	RF	Reduced Bore	A182 F316	Soft Seat	8
16	DBB	Floating	3"	#600	RF	Reduced Bore	A182 F51	Soft Seat	7
17	DBB	Floating	3"	#900	RTJ	Reduced Bore	A182 F51	Soft Seat	3
18	DBB	Floating	3"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	4
19	DBB	Trunnion	3"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	2
20	DBB	Trunnion	3"	#600	RTJ	Reduced Bore	A182 F316	Soft Seat	6

## 6. PRINCIPAL SUPPLY RECORDS - PLATFORM

Badra EPC CPF PHASE 2 (GAZPROM / SECL - Iraq / 2014)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1/2"	#150	RF	Full Bore	A350 LF2	Metal Seat	4
2	DBB	Floating	1"	#800	PLAIN END	Reduced Bore	A350 LF2	Metal Seat	2
3	DBB	Floating	2"	#300	RF	Reduced Bore	A350 LF2	Metal Seat	148
4	DBB	Floating	2"	#300	RF	Reduced Bore	A479 TYPE321	Metal Seat	18
5	DBB	Floating	1/2"	#150	RF	Full Bore	A182 F316	Soft Seat	24
6	DBB	Floating	1/2"	#150	RF	Full Bore	A182 F316L	Soft Seat	21
7	DBB	Floating	1/2"	#150	RF	Full Bore	A350 LF2	Soft Seat	32
8	DBB	Floating	1/2"	#150	RF	Full Bore	A479 TYPE321	Soft Seat	97
9	DBB	Floating	1/2"	#150	RF	Full Bore	B564 N08825	Soft Seat	24
10	DBB	Floating	1/2"	#300	RF	Full Bore	A182 F316	Soft Seat	28
11	DBB	Floating	1/2"	#300	RF	Full Bore	A182 F316L	Soft Seat	28
12	DBB	Floating	1/2"	#300	RF	Full Bore	A350 LF2	Soft Seat	16
13	DBB	Floating	1/2"	#300	RF	Full Bore	B564 N08825	Soft Seat	70
14	DBB	Floating	1/2"	#600	RF	Full Bore	A350 LF2	Soft Seat	13
15	DBB	Floating	1/2"	#600	RF	Full Bore	B564 N08825	Soft Seat	16
16	DBB	Floating	1/2"	#800	NPT	Full Bore	A350 LF2	Soft Seat	27
17	DBB	Floating	1/2"	#800	PLAIN END	Full Bore	A182 F316L	Soft Seat	1
18	DBB	Floating	1/2"	#800	PLAIN END	Full Bore	A350 LF2	Soft Seat	9
19	DBB	Floating	1/2"	#1500	NPT	Full Bore	A350 LF2	Soft Seat	29
20	DBB	Floating	1/2"	#1500	PLAIN END	Full Bore	A350 LF2	Soft Seat	8
21	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A182 F316	Soft Seat	41
22	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A182 F316L	Soft Seat	12
23	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A350 LF2	Soft Seat	13
24	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A479 TYPE321	Soft Seat	27
25	DBB	Floating	1/2"	#1500	RTJ	Full Bore	B564 N08825	Soft Seat	33
26	DBB	Floating	1"	#150	RF	Reduced Bore	A350 LF2	Soft Seat	78
27	DBB	Floating	1"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	72
28	DBB	Floating	1"	#800	FF	Reduced Bore	A350 LF2	Soft Seat	4
29	DBB	Floating	1"	#800	PLAIN END	Reduced Bore	A182 F316L	Soft Seat	19
30	DBB	Floating	1"	#800	PLAIN END	Reduced Bore	A350 LF2	Soft Seat	316
31	DBB	Floating	1"	#800	PLAIN END	Reduced Bore	A479 TYPE321	Soft Seat	12
32	DBB	Floating	1"	#800	PLAIN END	Reduced Bore	B564 N08825	Soft Seat	12
33	DBB	Floating	1"	#1500	PLAIN END	Reduced Bore	A350 LF2	Soft Seat	161
34	DBB	Floating	1"	#1500	PLAIN END	Reduced Bore	B564 N08825	Soft Seat	8
35	DBB	Floating	1 1/2"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	13
36	DBB	Floating	1 1/2"	#300	RF	Reduced Bore	A479 TYPE321	Soft Seat	2
37	DBB	Floating	1 1/2"	#600	RF	Reduced Bore	A182 F316L	Soft Seat	1
38	DBB	Floating	1 1/2"	#1500	RTJ	Reduced Bore	A182 F316L	Soft Seat	2
39	DBB	Floating	1 1/2"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	6
40	DBB	Floating	1 1/2"	#1500	RTJ	Reduced Bore	A479 TYPE321	Soft Seat	2
41	DBB	Floating	2"	#150	RF	Reduced Bore	B564 N08825	Soft Seat	8
42	DBB	Floating	2"	#300	RF	Full Bore	A350 LF2	Soft Seat	6
43	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316	Soft Seat	42
44	DBB	Floating	2"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	180
45	DBB	Floating	2"	#300	RF	Reduced Bore	A479 TYPE321	Soft Seat	22
46	DBB	Floating	2"	#300	RF	Reduced Bore	B564 N08825	Soft Seat	41
47	DBB	Floating	2"	#600	RF	Reduced Bore	A182 F316	Soft Seat	15
48	DBB	Floating	2"	#600	RF	Reduced Bore	A350 LF2	Soft Seat	17
49	DBB	Floating	2"	#600	RF	Reduced Bore	B564 N08825	Soft Seat	4
50	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	28
51	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	144
52	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A479 TYPE321	Soft Seat	48
53	DBB	Floating	2"	#1500	RTJ	Reduced Bore	B564 N08825	Soft Seat	40
54	DBB	Floating	3"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	22
55	DBB	Floating	3"	#300	RF	Reduced Bore	B564 N08825	Soft Seat	44
56	DBB	Floating	3"	#600	RF	Reduced Bore	A350 LF2	Soft Seat	4
57	DBB	Floating	3"	#600	RF	Reduced Bore	B564 N08825	Soft Seat	22
58	DBB	Floating	3"	#1500	RTJ	Reduced Bore	B564 N08825	Soft Seat	22
59	DBB	Trunnion	2"	#1500	RTJ	Full Bore	A182 F316	Soft Seat	8
60	DBB	Trunnion	3"	#600	RF	Reduced Bore	B564 N08825	Soft Seat	6
61	DBB	Trunnion	3"	#900	RTJ	Reduced Bore	B564 N08825	Soft Seat	6



## 6. PRINCIPAL SUPPLY RECORDS - PLATFORM

Ichthys CPF Project (INPEX / SHI - Australia / 2013)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1/2"	#150	RF	Full Bore	A182 F51	Soft Seat	29
2	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A182 F51	Soft Seat	26
3	DBB	Floating	3/4"	#150	FF	Reduced Bore	B148 C95800	Soft Seat	30
4	DBB	Floating	3/4"	#150	RF	Reduced Bore	A105	Soft Seat	202
5	DBB	Floating	3/4"	#150	RF	Reduced Bore	A182 F316	Soft Seat	30
6	DBB	Floating	3/4"	#150	RF	Reduced Bore	A182 F51	Soft Seat	96
7	DBB	Floating	3/4"	#150	RF	Reduced Bore	A182 F53	Soft Seat	38
8	DBB	Floating	3/4"	#150	RF	Reduced Bore	B564 N10276	Soft Seat	80
9	DBB	Floating	3/4"	#300	RF	Reduced Bore	A105	Soft Seat	7
10	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F316	Soft Seat	4
11	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F51	Soft Seat	4
12	DBB	Floating	3/4"	#300	RF	Reduced Bore	B564 N10276	Soft Seat	3
13	DBB	Floating	3/4"	#600	RF	Reduced Bore	A105	Soft Seat	3
14	DBB	Floating	3/4"	#600	RF	Reduced Bore	A182 F316	Soft Seat	35
15	DBB	Floating	3/4"	#600	RF	Reduced Bore	A182 F51	Soft Seat	16
16	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A105	Soft Seat	12
17	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	9
18	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A182 F51	Soft Seat	75
19	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	12
20	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A105	Soft Seat	20
21	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A182 F316	Soft Seat	8
22	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A182 F51	Soft Seat	32
23	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A350 LF2	Soft Seat	4
24	DBB	Floating	1"	#150	RF	Reduced Bore	A105	Soft Seat	1
25	DBB	Floating	1"	#150	RF	Reduced Bore	A182 F51	Soft Seat	10
26	DBB	Floating	2"	#150	FF	Reduced Bore	B148 C95800	Soft Seat	15
27	DBB	Floating	2"	#150	RF	Full Bore	A105	Soft Seat	5
28	DBB	Floating	2"	#150	RF	Full Bore	A182 F51	Soft Seat	9
29	DBB	Floating	2"	#150	RF	Reduced Bore	A105	Soft Seat	7
30	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F316	Soft Seat	1
31	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F51	Soft Seat	13
32	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F53	Soft Seat	10
33	DBB	Floating	2"	#150	RF	Reduced Bore	B564 N10276	Soft Seat	17
34	DBB	Floating	2"	#300	RF	Full Bore	A182 F51	Soft Seat	8
35	DBB	Floating	2"	#300	RF	Reduced Bore	A105	Soft Seat	24
36	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316	Soft Seat	16
37	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F51	Soft Seat	76
38	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F53	Soft Seat	2
39	DBB	Floating	2"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	3
40	DBB	Floating	2"	#300	RF	Reduced Bore	B564 N10276	Soft Seat	11
41	DBB	Floating	2"	#600	RF	Reduced Bore	A182 F51	Soft Seat	29
42	DBB	Floating	3"	#300	RF	Full Bore	A182 F316	Soft Seat	4
43	DBB	Floating	3"	#300	RF	Reduced Bore	A105	Soft Seat	10
44	DBB	Floating	3"	#300	RF	Reduced Bore	A182 F316	Soft Seat	6
45	DBB	Floating	3"	#300	RF	Reduced Bore	A182 F51	Soft Seat	24
46	DBB	Floating	3"	#600	RF	Reduced Bore	A182 F51	Soft Seat	9
47	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	1
48	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A182 F51	Soft Seat	139
49	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	95
50	DBB	Floating	2"	#2500	RTJ	Reduced Bore	A182 F316	Soft Seat	3
51	DBB	Floating	2"	#2500	RTJ	Reduced Bore	A182 F51	Soft Seat	12
52	DBB	Floating	2"	#2500	RTJ	Reduced Bore	A350 LF2	Soft Seat	8
53	DBB	Trunnion	3/4"	#2500	RTJ	Reduced Bore	A182 F51	Metal Seat	5
54	DBB	Trunnion	2"	#600	RF	Reduced Bore	A182 F51	Metal Seat	112
55	DBB	Trunnion	2"	#1500	RTJ	Reduced Bore	A182 F51	Metal Seat	30
56	DBB	Trunnion	2"	#2500	RTJ	Reduced Bore	A182 F51	Metal Seat	93
57	DBB	Trunnion	3"	#600	RF	Full Bore	A182 F51	Metal Seat	4
58	DBB	Trunnion	3"	#600	RF	Reduced Bore	A182 F51	Metal Seat	12
59	DBB	Trunnion	2"	#1500	RTJ	Full Bore	A182 F316	Soft Seat	2
60	DBB	Trunnion	2"	10000 PSI	HUB	Reduced Bore	A182 F51	Soft Seat	1

## 6. PRINCIPAL SUPPLY RECORDS - PLATFORM

### Ichthys CPF Project (INPEX / SHI - Australia / 2013)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
61	DBB	Trunnion	2"	10000 PSI	HUB	Reduced Bore	B564 N06625	Soft Seat	2
62	DBB	Trunnion	3"	#600	RF	Full Bore	A182 F51	Soft Seat	8
63	DBB	Trunnion	3"	#900	RTJ	Full Bore	A182 F51	Soft Seat	14
64	DBB	Trunnion	3"	#900	RTJ	Reduced Bore	A182 F51	Soft Seat	30
65	DBB	Trunnion	3"	#2500	RTJ	Full Bore	A182 F316	Soft Seat	2
66	DBB	Trunnion	4"	#900	RTJ	Full Bore	A182 F51	Soft Seat	6
67	DBB	Trunnion	4"	#2500	RTJ	Full Bore	A105	Soft Seat	1
68	DBB (Needle)	-	2"	#300	RF	Reduced Bore	A182 F51	Metal Seat	36

### Rong Doi Gas Field Development (KNOC / HHI - Vietnam / 2009)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1/2"	#600	RF	Full Bore	A182 F51	Soft Seat	2
2	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A182 F316	Soft Seat	3
3	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	1
4	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A182 F51	Soft Seat	4
5	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F316	Soft Seat	2
6	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F51	Soft Seat	2
7	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F316	Soft Seat	5
8	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316	Soft Seat	20
9	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F51	Soft Seat	12
10	DBB	Floating	2"	#600	RF	Reduced Bore	A182 F316	Soft Seat	1
11	DBB	Floating	2"	#600	RF	Reduced Bore	A182 F51	Soft Seat	10
12	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	41
13	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A182 F51	Soft Seat	33
14	DBB	Floating	2"	#2500	HUB	Reduced Bore	A182 F316	Soft Seat	6
15	DBB	Floating	2"	#2500	HUB	Reduced Bore	A182 F51	Soft Seat	12
16	DBB	Trunnion	3"	#900	RTJ	Full Bore	A182 F51	Soft Seat	2
17	DBB (Needle)	-	3/4"	#300	RF	Reduced Bore	A182 F316	Metal Seat	1
18	DBB (Needle)	-	2"	#300	RF	Reduced Bore	A182 F316	Metal Seat	18

### Kandym Early Gas Production (LUKOIL OIL COMPANY / HEC - Uzbekistan / 2014)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1/2"	#150	RF	Full Bore	A182 F316L	Soft Seat	2
2	DBB	Floating	1/2"	#300	RF	Full Bore	A182 F316L	Soft Seat	2
3	DBB	Floating	1/2"	#600	NPT	Full Bore	A182 F316L	Soft Seat	2
4	DBB	Floating	1/2"	#600	RF	Full Bore	A182 F316L	Soft Seat	1
5	DBB	Floating	3/4"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	10
6	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	1
7	DBB	Floating	1"	#150	RF	Full Bore	A105	Soft Seat	204
8	DBB	Floating	1"	#150	RF	Full Bore	A182 F316L	Soft Seat	13
9	DBB	Floating	1"	#600	RF	Full Bore	A105	Soft Seat	85
10	DBB	Floating	1"	#600	RF	Full Bore	A182 F316L	Soft Seat	9
11	DBB	Floating	1"	#1500	RTJ	Full Bore	A105	Soft Seat	73
12	DBB	Floating	1"	#1500	RTJ	Full Bore	A182 F51	Soft Seat	10
13	DBB	Floating	2"	#150	RF	Reduced Bore	A105	Soft Seat	192
14	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	5
15	DBB	Floating	2"	#300	RF	Reduced Bore	A105	Soft Seat	4
16	DBB	Floating	2"	#600	RF	Reduced Bore	A105	Soft Seat	140

## 6. PRINCIPAL SUPPLY RECORDS - PLATFORM

### LUNDIN #2,3 (LUNDIN / HHI - Norway / 2002)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1/2"	#150	FF	Full Bore	B148 C95800	Soft Seat	3
2	DBB	Floating	1/2"	#150	RF	Full Bore	A105	Soft Seat	4
3	DBB	Floating	1/2"	#150	RF	Full Bore	A182 F51	Soft Seat	4
4	DBB	Floating	1/2"	#150	RF	Full Bore	A350 LF2	Soft Seat	23
5	DBB	Floating	1/2"	#600	RF	Full Bore	A182 F51	Soft Seat	2
6	DBB	Floating	1/2"	#600	RF	Full Bore	A350 LF2	Soft Seat	6
7	DBB	Floating	1/2"	#900	RTJ	Full Bore	A350 LF2	Soft Seat	1
8	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A350 LF2	Soft Seat	4
9	DBB	Floating	1/2"	#2500	NPT	Full Bore	A105	Soft Seat	18
10	DBB	Floating	1/2"	#2500	NPT	Full Bore	A182 F51	Soft Seat	10
11	DBB	Floating	1/2"	#2500	NPT	Full Bore	A350 LF2	Soft Seat	44
12	DBB	Floating	1"	#150	FF	Reduced Bore	B148 C95800	Soft Seat	1
13	DBB	Floating	1"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	2
14	DBB	Floating	1"	#150	RF	Reduced Bore	A350 LF2	Soft Seat	2
15	DBB	Floating	1"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	16
16	DBB	Floating	1"	#600	RF	Reduced Bore	A182 F316L	Soft Seat	1
17	DBB	Floating	1"	#1500	RTJ	Reduced Bore	A182 F316L	Soft Seat	2
18	DBB	Floating	2"	#150	FF	Reduced Bore	B148 C95800	Soft Seat	2
19	DBB	Floating	2"	#150	RF	Full Bore	A105	Soft Seat	1
20	DBB	Floating	2"	#150	RF	Full Bore	A182 F51	Soft Seat	3
21	DBB	Floating	2"	#150	RF	Full Bore	A350 LF2	Soft Seat	8
22	DBB	Floating	2"	#150	RF	Full Bore	B148 C95800	Soft Seat	2
23	DBB	Floating	2"	#150	RF	Reduced Bore	A105	Soft Seat	28
24	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F51	Soft Seat	41
25	DBB	Floating	2"	#150	RF	Reduced Bore	A350 LF2	Soft Seat	120
26	DBB	Floating	2"	#300	RF	Reduced Bore	A105	Soft Seat	6
27	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F51	Soft Seat	6
28	DBB	Floating	2"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	17
29	DBB	Floating	2"	#600	RF	Reduced Bore	A105	Soft Seat	20
30	DBB	Floating	2"	#600	RF	Reduced Bore	A182 F51	Soft Seat	19
31	DBB	Floating	2"	#600	RF	Reduced Bore	A350 LF2	Soft Seat	36
32	DBB	Floating	2"	#900	RTJ	Reduced Bore	A105	Soft Seat	3
33	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A105	Soft Seat	6
34	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	34
35	DBB	Trunnion	2"	#600	RF	Full Bore	A182 F51	Soft Seat	1
36	DBB	Trunnion	2"	#600	RF	Full Bore	A350 LF2	Soft Seat	3
37	DBB	Trunnion	2"	#900	RTJ	Full Bore	A350 LF2	Soft Seat	1
38	DBB	Trunnion	2"	#1500	RTJ	Full Bore	A350 LF2	Soft Seat	1

## 6. PRINCIPAL SUPPLY RECORDS - PLATFORM

### BLOCK #5 DEVELOPMENT PJT (MAERSK / HHI - Angola / 2002)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F316	Soft Seat	36
2	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316	Soft Seat	7
3	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F44	Soft Seat	4
4	DBB	Floating	2"	#600	RTJ	Reduced Bore	A182 F316	Soft Seat	27
5	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	9
6	DBB (Needle)	-	1"	#150	FF	Reduced Bore	A182 F316	Metal Seat	24
7	DBB (Needle)	-	1"	#150	FF	Reduced Bore	B164 N04400	Metal Seat	47
8	DBB (Needle)	-	1"	#150	RF	Reduced Bore	A182 F316	Metal Seat	138
9	DBB (Needle)	-	1"	#300	RF	Reduced Bore	A182 F316	Metal Seat	108
10	DBB (Needle)	-	1"	#300	RF	Reduced Bore	A182 F44	Metal Seat	16
11	DBB (Needle)	-	1"	#600	RTJ	Reduced Bore	A182 F316	Metal Seat	75
12	DBB (Needle)	-	1"	#600	RTJ	Reduced Bore	A182 F44	Metal Seat	21
13	DBB (Needle)	-	1"	#900	RTJ	Reduced Bore	A182 F316	Metal Seat	104
14	DBB (Needle)	-	1"	#1500	RTJ	Reduced Bore	A182 F316	Metal Seat	12
15	DBB (Needle)	-	1"	#2500	RTJ	Reduced Bore	A182 F316	Metal Seat	7
16	DBB (Needle)	-	2"	#150	FF	Reduced Bore	A182 F316	Metal Seat	6
17	DBB (Needle)	-	2"	#150	FF	Reduced Bore	B164 N04400	Metal Seat	33
18	DBB (Needle)	-	2"	#150	RF	Reduced Bore	A182 F316	Metal Seat	24
19	DBB (Needle)	-	2"	#150	RF	Reduced Bore	A182 F51	Metal Seat	4
20	DBB (Needle)	-	2"	#300	RF	Reduced Bore	A182 F316	Metal Seat	13
21	DBB (Needle)	-	2"	#300	RF	Reduced Bore	A182 F44	Metal Seat	12
22	DBB (Needle)	-	2"	#300	RF	Reduced Bore	A182 F51	Metal Seat	4
23	DBB (Needle)	-	2"	#600	RTJ	Reduced Bore	A182 F316	Metal Seat	12
24	DBB (Needle)	-	2"	#600	RTJ	Reduced Bore	A182 F44	Metal Seat	4
25	DBB (Needle)	-	2"	#900	RTJ	Reduced Bore	A182 F316	Metal Seat	10

### Maari Field Development (OMV NEW ZEALAND / Clough Ltd - New Zealand / 2006)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A105	Soft Seat	31
2	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A182 F51	Soft Seat	7
3	DBB	Floating	1 1/2"	#1500	RTJ	Reduced Bore	A105	Soft Seat	36
4	DBB	Floating	1 1/2"	#1500	RTJ	Reduced Bore	A182 F51	Soft Seat	5
5	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A105	Soft Seat	10
6	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A182 F51	Soft Seat	7
7	DBB (Needle)	-	3/4"	#1500	RTJ	Reduced Bore	A105	Metal Seat	8
8	DBB (Needle)	-	1 1/2"	#1500	RTJ	Reduced Bore	A105	Metal Seat	7

### GTPOGT Expansion and Modification Project (PETRONAS CARIGALI / HEC - Turkmenistan / 2014)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1/2"	#150	RF	Full Bore	A350 LF2	Soft Seat	208
2	DBB	Floating	1/2"	#300	RF	Full Bore	A350 LF2	Soft Seat	4
3	DBB	Floating	1/2"	#600	RF	Full Bore	A350 LF2	Soft Seat	3
4	DBB	Floating	1/2"	#2500	RF	Full Bore	A350 LF2	Soft Seat	3
5	DBB	Floating	3/4"	#600	RF	Reduced Bore	A350 LF2	Soft Seat	3
6	DBB	Floating	3/4"	#2500	RF	Reduced Bore	A350 LF2	Soft Seat	23
7	DBB	Floating	1"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	1
8	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	21
9	DBB	Floating	2"	#150	RF	Reduced Bore	A350 LF2	Soft Seat	82
10	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316	Soft Seat	2
11	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	9
12	DBB	Floating	2"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	138
13	DBB (Needle)	-	1/2"	#150	RF	Reduced Bore	A182 F316	Metal Seat	92
14	DBB (Needle)	-	1/2"	#300	RF	Reduced Bore	A182 F316	Metal Seat	145

## 6. PRINCIPAL SUPPLY RECORDS - PLATFORM

### SABAH OIL AND GAS TERMINAL (PETRONAS CARIGALI / SECL - Malaysia / 2012)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1/2"	#900	RF	Full Bore	A105	Soft Seat	55
2	DBB	Floating	1/2"	#900	RF	Full Bore	A350 LF2	Soft Seat	24
3	DBB	Floating	1 1/2"	#150	RF	Reduced Bore	A105	Soft Seat	19
4	DBB	Floating	1 1/2"	#150	RF	Reduced Bore	A182 F316	Soft Seat	2
5	DBB	Floating	1 1/2"	#300	RF	Reduced Bore	A105	Soft Seat	10
6	DBB	Floating	1 1/2"	#300	RF	Reduced Bore	A182 F316	Soft Seat	5
7	DBB	Floating	1 1/2"	#600	RF	Reduced Bore	A105	Soft Seat	1
8	DBB	Floating	1 1/2"	#600	RF	Reduced Bore	A350 LF2	Soft Seat	6
9	DBB	Floating	1 1/2"	#900	RF	Reduced Bore	A105	Soft Seat	1
10	DBB	Floating	1 1/2"	#1500	RF	Reduced Bore	A105	Soft Seat	3
11	DBB	Floating	2"	#900	RF	Reduced Bore	A105	Soft Seat	23
12	DBB	Floating	2"	#900	RF	Reduced Bore	A350 LF2	Soft Seat	22
13	DBB	Floating	2"	#1500	RF	Reduced Bore	A105	Soft Seat	28
14	DBB	Floating	3"	#900	RF	Reduced Bore	A105	Soft Seat	12
15	DBB (Needle)	-	3/4"	#1500	RF	Reduced Bore	A105	Metal Seat	8
16	DBB (Needle)	-	3/4"	#1500	RF	Reduced Bore	A350 LF2	Metal Seat	2

### Flow Assurance Project (RAS GAS / HHI - Qatar / 2014)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	Ball	Floating	3/4"	#600	FF	Reduced Bore	A350 LF2	Soft Seat	17
2	Ball	Floating	1"	#150	RF	Full Bore	A351 CF8M	Soft Seat	9
3	Ball	Floating	2"	#150	RF	Full Bore	A351 CF8M	Soft Seat	40
4	Ball	Floating	3"	#150	RF	Full Bore	A351 CF8M	Soft Seat	20
5	Ball	Trunnion	2"	#2500	FF	Reduced Bore	B564 N06625	Metal Seat	1
6	Ball	Trunnion	6"	#2500	FF	Reduced Bore	A350 LF2	Metal Seat	2
7	Ball	Trunnion	3/4"	#2500	FF	Reduced Bore	A350 LF2	Soft Seat	190
8	Ball	Trunnion	3/4"	#2500	FF	Reduced Bore	B564 N08825	Soft Seat	10
9	Ball	Trunnion	3/4"	#600	FF	Reduced Bore	A182 F316	Soft Seat	142
10	Ball	Trunnion	1 1/2"	#2500	FF	Full Bore	B564 N08825	Soft Seat	1
11	Ball	Trunnion	2 1/16"	API 5000 PSI	FF	Full Bore	A694 F65	Soft Seat	22
12	Ball	Trunnion	2 1/16"	API 5000 PSI	FF	Full Bore	B564 N06625	Soft Seat	14
13	Ball	Trunnion	2 1/16"	API 5000 PSI	FF	Reduced Bore	A694 F65	Soft Seat	41
14	Ball	Trunnion	3 1/8"	API 5000 PSI	FF	Reduced Bore	A694 F65	Soft Seat	4
15	Ball	Trunnion	3 1/8"	API 5000 PSI	FF	Reduced Bore	B564 N06625	Soft Seat	5
16	Ball	Trunnion	6"	#2500	RTJ	Reduced Bore	A350 LF2	Soft Seat	1
17	DBB	Floating	3/4"	#2500	FF	Reduced Bore	A182 F316	Soft Seat	81
18	DBB	Floating	3/4"	#2500	FF	Reduced Bore	B564 N06625	Soft Seat	31
19	DBB	Floating	2"	#2500	FF	Reduced Bore	A350 LF2	Soft Seat	6
20	DBB	Trunnion	6"	#2500	FF	Full Bore	A350 LF2	Metal Seat	15
21	DBB	Trunnion	2"	#2500	FF	Full Bore	A350 LF2	Soft Seat	33
22	DBB	Trunnion	2 1/16"	5000 PSI	FF	Reduced Bore	B564 N06625	Soft Seat	11

## 6. PRINCIPAL SUPPLY RECORDS - PLATFORM

### BARZAN Gas Platform & Pipe line Project (RAS GAS / HHI - Qatar / 2012)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	Ball	Trunnion	1/2"	#1500	RTJ	Full Bore	A182 F316	Soft Seat	5
2	Ball	Trunnion	3/4"	#900	RTJ	Reduced Bore	A350 LF2	Soft Seat	28
3	Ball	Trunnion	3/4"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	17
4	Ball	Trunnion	3/4"	#2500	RTJ	Reduced Bore	A182 F316	Soft Seat	197
5	Ball	Trunnion	1"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	4
6	Ball	Trunnion	1"	#2500	RTJ	Reduced Bore	A182 F316	Soft Seat	11
7	Ball	Trunnion	1 1/2"	#2500	RTJ	Full Bore	A182 F316	Soft Seat	3
8	Ball	Trunnion	2"	#900	RTJ	Reduced Bore	A350 LF2	Soft Seat	8
9	Ball	Trunnion	2"	#2500	RTJ	Reduced Bore	A182 F316	Soft Seat	30
10	DBB	Floating	1/2"	#2500	RTJ	Full Bore	A182 F316	Soft Seat	30
11	DBB	Floating	1/2"	#2500	RTJ	Full Bore	B564 N08825	Soft Seat	104
12	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F316	Soft Seat	10
13	DBB	Floating	3/4"	#900	RTJ	Reduced Bore	A350 LF2	Soft Seat	10
14	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	4
15	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	4
16	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A182 F316	Soft Seat	45
17	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	B564 N08825	Soft Seat	390
18	DBB	Floating	1"	#2500	RTJ	Reduced Bore	B564 N08825	Soft Seat	66
19	DBB	Trunnion	3/4"	#2500	RTJ	Reduced Bore	B564 N08825	Metal Seat	2
20	DBB	Trunnion	2"	#2500	RTJ	Full Bore	A182 F316	Soft Seat	48
21	DBB	Trunnion	2"	#2500	RTJ	Full Bore	B564 N08825	Soft Seat	32
22	DBB(Needle)	-	1"	#2500	RTJ	Reduced Bore	B564 N08825	Metal Seat	95

### Sakhalin 2 Platform Project (SHELL / SHI - Russia / 2005)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1/2 "	#300	RF	Full Bore	A350 LF2	Soft Seat	1
2	DBB	Floating	1/2 "	#600	RF	Full Bore	A182 F316	Soft Seat	8
3	DBB	Floating	1/2 "	#900	RF	Full Bore	A350 LF2	Soft Seat	4
4	DBB	Floating	1"	#300	RF	Reduced Bore	A182 F316	Soft Seat	2
5	DBB	Floating	1"	#600	RF	Reduced Bore	A182 F316	Soft Seat	8
6	DBB	Floating	1"	#900	RF	Reduced Bore	A350 LF2	Soft Seat	6
7	DBB	Floating	2"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	1
8	DBB	Floating	2"	#900	RF	Reduced Bore	A350 LF2	Soft Seat	30
9	DBB	Trunnion	2"	#900	RF	Full Bore	A350 LF2	Soft Seat	8
10	DBB	Trunnion	3"	#900	RF	Full Bore	A350 LF2	Soft Seat	8
11	DBB (Needle)	-	1 1/2 "	#150	RF	Reduced Bore	A182 F316	Metal Seat	1
12	DBB (Needle)	-	2"	#1500	RF	Reduced Bore	A182 F316	Metal Seat	2



## 6. PRINCIPAL SUPPLY RECORDS - PLATFORM

CAFC(Central Area Field Complex) PROJECT (SONATRACH / DAEWOO - Algeria / 2015)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1 1/2"	#150	RF	Reduced Bore	A350 LF2	Soft Seat	2
2	DBB	Floating	1"	#1500	RTJ	Reduced Bore	A182 F51	Soft Seat	43
3	DBB	Floating	1"	#2500	RTJ	Reduced Bore	A182 F51	Soft Seat	42
4	DBB	Floating	1"	#2500	RTJ	Reduced Bore	A350 LF2	Soft Seat	2
5	DBB	Floating	1/2"	#150	RF	Full Bore	A182 F316L	Soft Seat	5
6	DBB	Floating	1/2"	#150	RF	Full Bore	A182 F51	Soft Seat	7
7	DBB	Floating	1/2"	#150	RF	Full Bore	A350 LF2	Soft Seat	25
8	DBB	Floating	1/2"	#300	RF	Full Bore	A182 F316L	Soft Seat	10
9	DBB	Floating	1/2"	#300	RF	Full Bore	A350 LF2	Metal Seat	14
10	DBB	Floating	1/2"	#300	RF	Full Bore	A350 LF2	Soft Seat	27
11	DBB	Floating	1/2"	#600	RTJ	Full Bore	A182 F316L	Soft Seat	13
12	DBB	Floating	1/2"	#600	RTJ	Full Bore	A182 F51	Soft Seat	3
13	DBB	Floating	1/2"	#600	RTJ	Full Bore	A350 LF2	Soft Seat	7
14	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	19
15	DBB	Floating	2"	#150	RF	Reduced Bore	A350 LF2	Soft Seat	2
16	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A182 F316L	Soft Seat	14
17	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A182 F51	Soft Seat	13
18	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	15
19	DBB	Floating	2"	#2500	RTJ	Reduced Bore	A182 F51	Soft Seat	6
20	DBB	Floating	2"	#2500	RTJ	Reduced Bore	A350 LF2	Soft Seat	15
21	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316L	Metal Seat	8
22	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	98
23	DBB	Floating	2"	#300	RF	Reduced Bore	A350 LF2	Metal Seat	27
24	DBB	Floating	2"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	5
25	DBB	Floating	2"	#600	RTJ	Reduced Bore	A182 F316L	Soft Seat	83
26	DBB	Floating	2"	#600	RTJ	Reduced Bore	A182 F51	Soft Seat	16
27	DBB	Floating	3/4"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	29
28	DBB	Floating	3/4"	#150	RF	Reduced Bore	A350 LF2	Metal Seat	14
29	DBB	Floating	3/4"	#150	RF	Reduced Bore	A350 LF2	Soft Seat	25
30	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A182 F316L	Soft Seat	12
31	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A182 F51	Soft Seat	186
32	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	44
33	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A182 F316L	Soft Seat	6
34	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A182 F51	Soft Seat	158
35	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A350 LF2	Soft Seat	26
36	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F316L	Metal Seat	1
37	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	45
38	DBB	Floating	3/4"	#300	RF	Reduced Bore	A350 LF2	Metal Seat	25
39	DBB	Floating	3/4"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	25
40	DBB	Floating	3/4"	#600	RTJ	Reduced Bore	A182 F316L	Soft Seat	19
41	DBB	Floating	3/4"	#600	RTJ	Reduced Bore	A182 F51	Soft Seat	95
42	DBB	Floating	3/4"	#600	RTJ	Reduced Bore	A350 LF2	Metal Seat	12
43	DBB	Floating	3/4"	#600	RTJ	Reduced Bore	A350 LF2	Soft Seat	10

## 6. PRINCIPAL SUPPLY RECORDS - PLATFORM

### Badamayar Wellhead Platform Project (TOTAL / HHI - Myanmar / 2015)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1/2"	#150	RF	FB	A350 LF2	Soft Seat	4
2	DBB	Floating	1/2"	#600	RF	FB	A182 F51	Soft Seat	8
3	DBB	Floating	1/2"	#1500	RTJ	FB	A479 TYPE321H	Soft Seat	8
4	DBB	Floating	3/4"	#150	FF	FB	B148 C95800	Soft Seat	18
5	DBB	Floating	3/4"	#150	RF	FB	A350 LF2	Soft Seat	31
6	DBB	Floating	3/4"	#150	RF	FB	A479 TYPE321H	Soft Seat	13
7	DBB	Floating	3/4"	#300	RF	FB	A182 F316	Soft Seat	4
8	DBB	Floating	3/4"	#300	RF	FB	A479 TYPE321H	Soft Seat	2
9	DBB	Floating	3/4"	#600	RF	FB	A182 F51	Soft Seat	36
10	DBB	Floating	3/4"	#600	RF	FB	A479 TYPE321H	Soft Seat	8
11	DBB	Floating	3/4"	#1500	RTJ	FB	A182 F51	Soft Seat	12
12	DBB	Floating	3/4"	#1500	RTJ	FB	A350 LF2	Soft Seat	6
13	DBB	Floating	3/4"	#1500	RTJ	FB	A479 TYPE321H	Soft Seat	53
14	DBB	Floating	2"	#300	RF	FB	A182 F316L	Soft Seat	2
15	DBB	Floating	2"	#300	RF	FB	A350 LF2	Soft Seat	9
16	DBB	Floating	2"	#300	RF	FB	A479 TYPE321H	Soft Seat	35
17	DBB	Floating	2"	#600	RF	FB	A182 F51	Soft Seat	14
18	DBB	Floating	2"	#900	RTJ	FB	A350 LF2	Soft Seat	1
19	DBB	Floating	2"	#1500	RTJ	FB	A182 F51	Soft Seat	2
20	DBB	Floating	2"	#1500	RTJ	FB	A350 LF2	Soft Seat	2
21	DBB	Floating	2"	#1500	RTJ	FB	A479 TYPE321H	Soft Seat	1
22	DBB	Trunnion	2"	#1500	RTJ	FB	A479 TYPE321H	Soft Seat	1

### Martin Linge Platform (TOTAL / SHI - Norway / 2014)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1/2"	#300	RF	Full Bore	A182 F51	Metal Seat	17
2	DBB	Floating	1/2"	#600	RTJ	Full Bore	A182 F51	Metal Seat	9
3	DBB	Floating	3/4"	#600	RTJ	Reduced Bore	A182 F51	Metal Seat	1
4	DBB	Floating	2"	#300	RF	Full Bore	A182 F51	Metal Seat	72
5	DBB	Floating	2"	#300	RF	Full Bore	A182 F53	Metal Seat	4
6	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F51	Metal Seat	32
7	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F53	Metal Seat	3
8	DBB	Floating	2"	#600	RTJ	Reduced Bore	A182 F51	Metal Seat	2
9	DBB	Floating	1/2"	#300	RF	Full Bore	A182 F44	Soft Seat	2
10	DBB	Floating	1/2"	#300	RF	Full Bore	A182 F51	Soft Seat	21
11	DBB	Floating	1/2"	#600	RTJ	Full Bore	A182 F51	Soft Seat	3
12	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F51	Soft Seat	18
13	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F53	Soft Seat	8
14	DBB	Floating	3/4"	#600	RTJ	Reduced Bore	A182 F51	Soft Seat	4
15	DBB	Floating	2"	#150	RF	Full Bore	A182 F51	Soft Seat	5
16	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F51	Soft Seat	5
17	DBB	Floating	2"	#300	RF	Full Bore	A182 F44	Soft Seat	18
18	DBB	Floating	2"	#300	RF	Full Bore	A182 F51	Soft Seat	202
19	DBB	Floating	2"	#300	RF	Full Bore	A182 F53	Soft Seat	36
20	DBB	Floating	2"	#300	RF	Full Bore	B381 Gr.2	Soft Seat	29
21	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F44	Soft Seat	6
22	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F51	Soft Seat	57
23	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F53	Soft Seat	8
24	DBB	Floating	2"	#300	RF	Reduced Bore	B381 Gr.2	Soft Seat	1
25	DBB	Floating	2"	#600	RTJ	Reduced Bore	A182 F51	Soft Seat	6
26	DBB	Trunnion	2"	#600	RTJ	Full Bore	A182 F51	Metal Seat	20
27	DBB	Trunnion	2"	#600	RTJ	Full Bore	A182 F51	Soft Seat	26

## 6. PRINCIPAL SUPPLY RECORDS - PLATFORM

### MOHO NORD TLP (TOTAL / HHI - Congo / 2014)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1/2"	#150	FF	Full Bore	B148 C95800	Soft Seat	8
2	DBB	Floating	1/2"	#150	RF	Full Bore	A105	Soft Seat	10
3	DBB	Floating	1/2"	#1500	NPT	Full Bore	A182 F316	Soft Seat	16
4	DBB	Floating	1/2"	#2500	RTJ	Full Bore	A105	Soft Seat	62
5	DBB	Floating	3/4"	#150	FF	Reduced Bore	B148 C95800	Soft Seat	35
6	DBB	Floating	3/4"	#150	RF	Reduced Bore	A105	Soft Seat	72
7	DBB	Floating	3/4"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	36
8	DBB	Floating	3/4"	#150	RF	Reduced Bore	B148 C95800	Soft Seat	8
9	DBB	Floating	3/4"	#150	RF	Reduced Bore	B564 N10276	Soft Seat	5
10	DBB	Floating	3/4"	#300	RF	Reduced Bore	A105	Soft Seat	14
11	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	10
12	DBB	Floating	3/4"	#300	RF	Reduced Bore	B148 C95800	Soft Seat	7
13	DBB	Floating	3/4"	#600	RF	Reduced Bore	A105	Soft Seat	24
14	DBB	Floating	3/4"	#600	RF	Reduced Bore	A182 F51	Soft Seat	5
15	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A105	Soft Seat	2
16	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	9
17	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A105	Soft Seat	90
18	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A182 F316L	Soft Seat	74
19	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A182 F51	Soft Seat	91
20	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	1
21	DBB	Floating	2"	#300	RF	Reduced Bore	A105	Soft Seat	26
22	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	23
23	DBB	Floating	2"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	3
24	DBB	Floating	2"	#600	RF	Reduced Bore	A105	Soft Seat	2
25	DBB	Floating	3"	#300	RF	Full Bore	A182 F316L	Soft Seat	14
26	DBB	Floating	3"	#300	RF	Reduced Bore	A105	Soft Seat	26
27	DBB	Floating	3"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	4
28	DBB	Floating	3"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	8
29	DBB	Trunnion	2"	#600	RF	Full Bore	A105	Soft Seat	3

### Yucal Placer Phase 300 (TOTAL / Peerless - Venezuela / 2014)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1/2"	#150	RF	Full Bore	A105	Soft Seat	2
2	DBB	Floating	3/4"	#150	RF	Reduced Bore	A105	Soft Seat	18
3	DBB	Floating	3/4"	#150	RF	Reduced Bore	A182 F316	Soft Seat	6
4	DBB	Floating	2"	#300	RF	Reduced Bore	A105	Soft Seat	8
5	DBB	Floating	3"	#300	RF	Reduced Bore	A105	Soft Seat	16

## 6. PRINCIPAL SUPPLY RECORDS - PLATFORM

Bongkot Field Development Project Phase 4A (TOTAL / HHI - Thailand / 2000)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1/2"	#150	RF	Full Bore	A182 F316L	Metal Seat	16
2	DBB	Floating	1/2"	#300	RF	Full Bore	A182 F316L	Metal Seat	8
3	DBB	Floating	1/2"	#300	RF	Full Bore	A182 F51	Metal Seat	6
4	DBB	Floating	1/2"	#300	RF	Full Bore	A350 LF2	Metal Seat	19
5	DBB	Floating	1/2"	#600	RF	Full Bore	A182 F51	Metal Seat	1
6	DBB	Floating	1/2"	#600	RF	Full Bore	A350 LF2	Metal Seat	2
7	DBB	Floating	1/2"	#900	RTJ	Full Bore	A182 F316L	Metal Seat	12
8	DBB	Floating	3/4"	#150	RF	Reduced Bore	A182 F316L	Metal Seat	47
9	DBB	Floating	3/4"	#150	RF	Reduced Bore	A182 F51	Metal Seat	14
10	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F316L	Metal Seat	15
11	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F51	Metal Seat	31
12	DBB	Floating	3/4"	#300	RF	Reduced Bore	A350 LF2	Metal Seat	48
13	DBB	Floating	3/4"	#600	RF	Reduced Bore	A182 F51	Metal Seat	5
14	DBB	Floating	3/4"	#600	RF	Reduced Bore	A350 LF2	Metal Seat	25
15	DBB	Floating	3/4"	#600	RF	Reduced Bore	A479 TYPE321	Metal Seat	26
16	DBB	Floating	3/4"	#600	RF	Reduced Bore	B564 N08825	Metal Seat	9
17	DBB	Floating	3/4"	#900	RTJ	Reduced Bore	A182 F316L	Metal Seat	7
18	DBB	Floating	1"	#300	RF	Full Bore	A350 LF2	Metal Seat	2
19	DBB	Floating	1"	#300	RF	Reduced Bore	A182 F316L	Metal Seat	4
20	DBB	Floating	2"	#300	RF	Full Bore	A182 F51	Metal Seat	2
21	DBB	Floating	2"	#300	RF	Full Bore	A350 LF2	Metal Seat	15
22	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316L	Metal Seat	4
23	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F51	Metal Seat	9
24	DBB	Floating	2"	#300	RF	Reduced Bore	A350 LF2	Metal Seat	2
25	DBB	Floating	2"	#600	RF	Reduced Bore	A479 TYPE321	Metal Seat	8
26	DBB	Floating	3"	#300	RF	Full Bore	A182 F51	Metal Seat	4
27	DBB	Floating	3"	#300	RF	Full Bore	A350 LF2	Metal Seat	8
28	DBB	Floating	1/2"	#150	FF	Full Bore	B148 C95800	Soft Seat	4
29	DBB	Floating	1/2"	#150	RF	Full Bore	A182 F316L	Soft Seat	4
30	DBB	Floating	1/2"	#150	RF	Full Bore	A350 LF2	Soft Seat	15
31	DBB	Floating	1/2"	#300	RF	Full Bore	A182 F316L	Soft Seat	16
32	DBB	Floating	1/2"	#600	RF	Full Bore	A182 F316L	Soft Seat	39
33	DBB	Floating	1/2"	#600	RF	Full Bore	A350 LF2	Soft Seat	46
34	DBB	Floating	1/2"	#900	RTJ	Full Bore	A182 F316L	Soft Seat	6
35	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A182 F316L	Soft Seat	3
36	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A350 LF2	Soft Seat	4
37	DBB	Floating	3/4"	#150	FF	Reduced Bore	B148 C95800	Soft Seat	6
38	DBB	Floating	3/4"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	49
39	DBB	Floating	3/4"	#150	RF	Reduced Bore	A350 LF2	Soft Seat	40
40	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	20
41	DBB	Floating	3/4"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	3
42	DBB	Floating	3/4"	#600	RF	Reduced Bore	A182 F316L	Soft Seat	81
43	DBB	Floating	3/4"	#600	RF	Reduced Bore	A350 LF2	Soft Seat	169
44	DBB	Floating	3/4"	#900	RTJ	Reduced Bore	A182 F316L	Soft Seat	44
45	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A182 F316L	Soft Seat	3
46	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	68
47	DBB	Floating	1"	#150	FF	Reduced Bore	B148 C95800	Soft Seat	13
48	DBB	Floating	1"	#600	RF	Reduced Bore	A350 LF2	Soft Seat	13
49	DBB	Floating	1"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	6
50	DBB	Floating	2"	#150	RF	Full Bore	A350 LF2	Soft Seat	1
51	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	6
52	DBB	Floating	2"	#300	RF	Full Bore	A182 F316L	Soft Seat	90
53	DBB	Floating	2"	#300	RF	Full Bore	A350 LF2	Soft Seat	25
54	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	16
55	DBB	Floating	2"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	4
56	DBB	Floating	2"	#600	RF	Reduced Bore	A182 F316L	Soft Seat	12
57	DBB	Floating	2"	#600	RF	Reduced Bore	A350 LF2	Soft Seat	4
58	DBB	Floating	2"	#900	RTJ	Reduced Bore	A182 F316L	Soft Seat	8
59	DBB	Floating	3"	#300	RF	Full Bore	A182 F316L	Soft Seat	43

## 6. PRINCIPAL SUPPLY RECORDS - PLATFORM

### Bongkot Field Development Project Phase 4A (TOTAL / HHI - Thailand / 2000)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
60	DBB	Floating	3"	#300	RF	Full Bore	A350 LF2	Soft Seat	14
61	DBB	Trunnion	2"	#600	RF	Full Bore	A182 F51	Metal Seat	20
62	DBB	Trunnion	2"	#600	RF	Full Bore	A350 LF2	Metal Seat	38
63	DBB	Trunnion	3"	#600	RF	Full Bore	A182 F51	Metal Seat	6
64	DBB	Trunnion	2"	#600	RF	Full Bore	A182 F316L	Soft Seat	46
65	DBB	Trunnion	2"	#600	RF	Full Bore	A350 LF2	Soft Seat	9
66	DBB	Trunnion	2"	#900	RTJ	Full Bore	A182 F316L	Soft Seat	8
67	DBB	Trunnion	2"	#1500	RTJ	Full Bore	A350 LF2	Soft Seat	8
68	DBB	Trunnion	3"	#600	RF	Full Bore	A182 F316L	Soft Seat	74
69	DBB	Trunnion	3"	#600	RF	Full Bore	A350 LF2	Soft Seat	14
70	DBB	Trunnion	3"	#900	RTJ	Full Bore	A182 F316L	Soft Seat	16
71	DBB	Trunnion	3"	#1500	RTJ	Full Bore	A350 LF2	Soft Seat	8

## 6. PRINCIPAL SUPPLY RECORDS - PLATFORM

OFON Field Development Phase-2 (TOTAL / HHI - Nigeria / 2009)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1/2"	#600	RF	Full Bore	A105	Metal Seat	6
2	DBB	Floating	3/4"	#600	RF	Reduced Bore	A105	Metal Seat	3
3	DBB	Floating	1/2"	#150	FF	Full Bore	B148 C95800	Soft Seat	6
4	DBB	Floating	1/2"	#150	RF	Full Bore	A105	Soft Seat	6
5	DBB	Floating	1/2"	#300	RF	Full Bore	A105	Soft Seat	14
6	DBB	Floating	1/2"	#300	RF	Full Bore	A182 F51	Soft Seat	4
7	DBB	Floating	1/2"	#300	RF	Full Bore	A479 TYPE321	Soft Seat	6
8	DBB	Floating	3/4"	#150	FF	Reduced Bore	B148 C95800	Soft Seat	4
9	DBB	Floating	3/4"	#150	RF	Reduced Bore	A105	Soft Seat	130
10	DBB	Floating	3/4"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	76
11	DBB	Floating	3/4"	#150	RF	Reduced Bore	A479 TYPE321	Soft Seat	7
12	DBB	Floating	3/4"	#300	RF	Reduced Bore	A105	Soft Seat	47
13	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	92
14	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F51	Soft Seat	17
15	DBB	Floating	3/4"	#300	RF	Reduced Bore	A479 TYPE321	Soft Seat	28
16	DBB	Floating	3/4"	#300	RF	Reduced Bore	B164 N04400	Soft Seat	2
17	DBB	Floating	3/4"	#600	RF	Reduced Bore	A105	Soft Seat	1
18	DBB	Floating	3/4"	#600	RF	Reduced Bore	A182 F316L	Soft Seat	12
19	DBB	Floating	3/4"	#600	RF	Reduced Bore	A182 F51	Soft Seat	3
20	DBB	Floating	3/4"	#600	RF	Reduced Bore	A479 TYPE321	Soft Seat	15
21	DBB	Floating	3/4"	#900	RTJ	Reduced Bore	A105	Soft Seat	16
22	DBB	Floating	3/4"	#900	RTJ	Reduced Bore	A182 F51	Soft Seat	21
23	DBB	Floating	3/4"	#900	RTJ	Reduced Bore	A479 TYPE321	Soft Seat	2
24	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A182 F316L	Soft Seat	11
25	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A182 F51	Soft Seat	8
26	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A105	Soft Seat	15
27	DBB	Floating	2"	#300	RF	Full Bore	A105	Soft Seat	16
28	DBB	Floating	2"	#300	RF	Reduced Bore	A105	Soft Seat	26
29	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	2
30	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F51	Soft Seat	4
31	DBB	Floating	2"	#300	RF	Reduced Bore	A479 TYPE321	Soft Seat	69
32	DBB	Floating	2"	#600	RF	Reduced Bore	A182 F316L	Soft Seat	10
33	DBB	Floating	2"	#600	RF	Reduced Bore	A182 F51	Soft Seat	8
34	DBB	Floating	2"	#600	RF	Reduced Bore	A479 TYPE321	Soft Seat	1
35	DBB	Floating	2"	#900	RTJ	Reduced Bore	A105	Soft Seat	10
36	DBB	Floating	2"	#900	RTJ	Reduced Bore	A182 F51	Soft Seat	21
37	DBB	Floating	2"	#900	RTJ	Reduced Bore	A479 TYPE321	Soft Seat	7
38	DBB	Floating	3"	#300	RF	Full Bore	A105	Soft Seat	96
39	DBB	Floating	3"	#300	RF	Full Bore	A182 F316L	Soft Seat	2
40	DBB	Floating	3"	#300	RF	Full Bore	A182 F51	Soft Seat	4
41	DBB	Floating	3"	#300	RF	Full Bore	A350 LF2	Soft Seat	12
42	DBB	Trunnion	2"	#900	RTJ	Full Bore	A105	Soft Seat	13
43	DBB	Trunnion	2"	#900	RTJ	Full Bore	A182 F51	Soft Seat	4
44	DBB	Trunnion	2"	#900	RTJ	Full Bore	A350 LF2	Soft Seat	2
45	DBB	Trunnion	3"	#600	RF	Full Bore	A182 F51	Soft Seat	9
46	DBB	Trunnion	3"	#900	RTJ	Full Bore	A105	Soft Seat	4
47	DBB	Trunnion	3"	#900	RTJ	Full Bore	A182 F51	Soft Seat	18
48	DBB (Needle)	-	1/2"	#150	FF	Reduced Bore	B164 N04400	Metal Seat	3
49	DBB (Needle)	-	1/2"	#150	RF	Reduced Bore	A105	Metal Seat	2
50	DBB (Needle)	-	3/4"	#150	FF	Reduced Bore	A182 F316L	Metal Seat	8



## 6. PRINCIPAL SUPPLY RECORDS - PLATFORM

### South Yoloten Gas Development (TURKMEN GAS / POSCO Plantec - Turkmenistan / 2012)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316	Metal Seat	8
2	DBB	Floating	3"	#150	RF	Reduced Bore	A105	Metal Seat	4
3	DBB	Floating	3"	#150	RF	Reduced Bore	A182 F316	Metal Seat	8
4	DBB	Floating	1/2"	#1500	RF	Full Bore	A105	Soft Seat	8
5	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F316	Soft Seat	8
6	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316	Soft Seat	20
7	DBB	Floating	2"	#1500	RF	Reduced Bore	A105	Soft Seat	10
8	DBB	Floating	3"	#150	RF	Reduced Bore	A182 F316	Soft Seat	16

### Turkmenistan Gas Desulfurization Plant (TURKMEN GAS / HEC - Turkmenistan / 2010)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	3/4"	#1500	RF	Reduced Bore	A105	Soft Seat	169
2	DBB	Floating	3/4"	#1500	RF	Reduced Bore	A182 F316L	Soft Seat	94
3	DBB	Floating	3/4"	#1500	RF	Reduced Bore	A350 LF2	Soft Seat	161
4	DBB	Floating	1"	#1500	RF	Full Bore	A105	Soft Seat	2
5	DBB	Floating	1"	#1500	RF	Full Bore	A350 LF2	Soft Seat	8
6	DBB	Floating	1 1/2"	#1500	RF	Reduced Bore	A105	Soft Seat	16
7	DBB	Floating	1 1/2"	#1500	RF	Reduced Bore	A182 F316L	Soft Seat	12
8	DBB	Floating	1 1/2"	#1500	RF	Reduced Bore	A350 LF2	Soft Seat	57
9	DBB	Floating	2"	#1500	RF	Reduced Bore	A105	Soft Seat	12
10	DBB	Floating	2"	#1500	RF	Reduced Bore	A182 F316L	Soft Seat	36
11	DBB	Floating	2"	#1500	RF	Reduced Bore	A350 LF2	Soft Seat	73

### BLACKTIP Gas Field Project (WOODSIDE ENERGY LIMITED / ENI - Australia / 2008)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB (Needle)	-	1/2"	#150	RF	Reduced Bore	A182 F316	Metal Seat	4
2	DBB (Needle)	-	1/2"	#150	RF	Reduced Bore	A182 F51	Metal Seat	122
3	DBB (Needle)	-	1/2"	#300	RF	Reduced Bore	A182 F316	Metal Seat	12
4	DBB (Needle)	-	1/2"	#300	RF	Reduced Bore	A182 F51	Metal Seat	28
5	DBB (Needle)	-	1/2"	#600	RF	Reduced Bore	A182 F51	Metal Seat	8
6	DBB (Needle)	-	1/2"	#1500	RTJ	Reduced Bore	A182 F51	Metal Seat	24
7	DBB (Needle)	-	3/4"	#150	RF	Reduced Bore	A182 F316	Metal Seat	40
8	DBB (Needle)	-	3/4"	#150	RF	Reduced Bore	A182 F51	Metal Seat	170
9	DBB (Needle)	-	3/4"	#300	RF	Reduced Bore	A182 F316	Metal Seat	4
10	DBB (Needle)	-	3/4"	#300	RF	Reduced Bore	A182 F51	Metal Seat	16
11	DBB (Needle)	-	3/4"	#600	RF	Reduced Bore	A182 F51	Metal Seat	24
12	DBB (Needle)	-	3/4"	#1500	RTJ	Reduced Bore	A182 F316	Metal Seat	36
13	DBB (Needle)	-	3/4"	#1500	RTJ	Reduced Bore	A182 F51	Metal Seat	104
14	DBB (Needle)	-	1"	#150	RF	Reduced Bore	A182 F51	Metal Seat	46
15	DBB (Needle)	-	1"	#2500	RTJ	Reduced Bore	A182 F51	Metal Seat	4
16	DBB (Needle)	-	1 1/2"	#150	RF	Reduced Bore	A182 F316	Metal Seat	6
17	DBB (Needle)	-	1 1/2"	#150	RF	Reduced Bore	A182 F51	Metal Seat	4
18	DBB (Needle)	-	1 1/2"	#1500	RTJ	Reduced Bore	A182 F316	Metal Seat	2
19	DBB (Needle)	-	1 1/2"	#2500	RTJ	Reduced Bore	A182 F51	Metal Seat	16
20	DBB (Needle)	-	2"	#150	RF	Reduced Bore	A182 F316	Metal Seat	8
21	DBB (Needle)	-	2"	#150	RF	Reduced Bore	A182 F51	Metal Seat	44
22	DBB (Needle)	-	2"	#300	RF	Reduced Bore	A182 F51	Metal Seat	22
23	DBB (Needle)	-	2"	#600	RF	Reduced Bore	A182 F51	Metal Seat	4
24	DBB (Needle)	-	2"	#1500	RTJ	Reduced Bore	A182 F51	Metal Seat	12
25	DBB (Needle)	-	2"	#2500	RTJ	Reduced Bore	A182 F51	Metal Seat	16

## 6. PRINCIPAL SUPPLY RECORDS - PLATFORM

Upper Zakum 750 Project (ZADCO / DSME - UAE / 2014)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1/2"	#150	RF	Full Bore	A105	Soft Seat	20
2	DBB	Floating	1/2"	#300	RF	Full Bore	A105	Soft Seat	24
3	DBB	Floating	1/2"	#300	RF	Full Bore	B564 N08825	Soft Seat	24
4	DBB	Floating	1/2"	#600	RF	Full Bore	A105	Soft Seat	48
5	DBB	Floating	1/2"	#600	RF	Full Bore	A182 F316	Soft Seat	38
6	DBB	Floating	1/2"	#600	RF	Full Bore	A350 LF2	Soft Seat	12
7	DBB	Floating	1/2"	#900	RTJ	Full Bore	A350 LF2	Soft Seat	8
8	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A182 F316	Soft Seat	88
9	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A350 LF2	Soft Seat	8
10	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A694 F60	Soft Seat	2
11	DBB	Floating	1"	#300	RF	Reduced Bore	A105	Soft Seat	6
12	DBB	Floating	1"	#1500	RTJ	Reduced Bore	A105	Soft Seat	1
13	DBB	Floating	1"	#1500	RTJ	Reduced Bore	A694 F60	Soft Seat	2
14	DBB	Floating	2"	#150	RF	Full Bore	A182 F316	Soft Seat	6
15	DBB	Floating	2"	#150	RF	Reduced Bore	A105	Soft Seat	71
16	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F316	Soft Seat	3
17	DBB	Floating	2"	#150	RF	Reduced Bore	B564 N08825	Soft Seat	5
18	DBB	Floating	2"	#300	RF	Reduced Bore	A105	Soft Seat	196
19	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316	Soft Seat	24
20	DBB	Floating	2"	#300	RF	Reduced Bore	B564 N08825	Soft Seat	51
21	DBB	Floating	2"	#600	RF	Reduced Bore	A105	Soft Seat	61
22	DBB	Floating	2"	#600	RF	Reduced Bore	A350 LF2	Soft Seat	43
23	DBB	Floating	2"	#900	RTJ	Reduced Bore	A182 F316	Soft Seat	8
24	DBB	Floating	2"	#900	RTJ	Reduced Bore	A350 LF2	Soft Seat	16
25	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A105	Soft Seat	4
26	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	4
27	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	10
28	DBB	Floating	2"	#1500	RTJ	Reduced Bore	B564 N08825	Soft Seat	36
29	DBB	Floating	3"	#150	RF	Full Bore	A105	Soft Seat	4
30	DBB	Floating	3"	#150	RF	Full Bore	A182 F316	Soft Seat	2
31	DBB	Floating	3"	#300	RF	Full Bore	A105	Soft Seat	8

## 6. PRINCIPAL SUPPLY RECORDS - FPSO

### Pyrenees FPSO (BHP BILLITON PETROLEUM / Dalian Shipbuilding - Australia / 2008)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1/2"	#300	RF	Full Bore	A105	Soft Seat	4
2	DBB	Floating	1/2"	#300	RF	Full Bore	A182 F316	Soft Seat	8
3	DBB	Floating	1/2"	#2500	PLAIN END	Full Bore	A105	Soft Seat	14
4	DBB	Floating	1/2"	#2500	PLAIN END	Full Bore	A182 F316	Soft Seat	18
5	DBB	Floating	1"	#150	FF	Reduced Bore	B150 C63200	Soft Seat	13
6	DBB	Floating	1"	#150	RF	Reduced Bore	A105	Soft Seat	149
7	DBB	Floating	1"	#150	RF	Reduced Bore	A182 F316	Soft Seat	43
8	DBB	Floating	1"	#150	RF	Reduced Bore	A350 LF2	Soft Seat	1
9	DBB	Floating	1"	#300	RF	Reduced Bore	A105	Soft Seat	56
10	DBB	Floating	1"	#300	RF	Reduced Bore	A182 F316	Soft Seat	23
11	DBB	Floating	1"	#600	RF	Reduced Bore	A105	Soft Seat	18
12	DBB	Floating	1"	#600	RF	Reduced Bore	A182 F316	Soft Seat	6
13	DBB	Floating	1"	#900	RTJ	Reduced Bore	A105	Soft Seat	14
14	DBB	Floating	1"	#900	RTJ	Reduced Bore	A182 F316	Soft Seat	2
15	DBB	Floating	1"	#1500	RTJ	Reduced Bore	A105	Soft Seat	21
16	DBB	Floating	1"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	15
17	DBB	Floating	2"	#150	FF	Reduced Bore	B150 C63200	Soft Seat	1
18	DBB	Floating	2"	#150	RF	Reduced Bore	A105	Soft Seat	104
19	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F316	Soft Seat	3
20	DBB	Floating	2"	#150	RF	Reduced Bore	A350 LF2	Soft Seat	13
21	DBB	Floating	2"	#300	RF	Reduced Bore	A105	Soft Seat	58
22	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316	Soft Seat	40
23	DBB	Floating	2"	#600	RF	Reduced Bore	A105	Soft Seat	11
24	DBB	Floating	2"	#600	RF	Reduced Bore	A182 F316	Soft Seat	22
25	DBB	Floating	2"	#900	RTJ	Reduced Bore	A105	Soft Seat	2
26	DBB	Floating	2"	#900	RTJ	Reduced Bore	A182 F316	Soft Seat	1
27	DBB	Floating	2"	#1500	RF	Reduced Bore	A182 F316	Soft Seat	1
28	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A105	Soft Seat	10
29	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	7
30	DBB	Floating	2"	#2500	RTJ	Reduced Bore	A105	Soft Seat	2

### Stybarrow Field FPSO (BHP BILLITON PETROLEUM / MODEC - Australia / 2006)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1/2"	#2500	NPT	Full Bore	A182 F316	Soft Seat	4
2	DBB	Floating	1"	#150	RF	Full Bore	A105	Soft Seat	34
3	DBB	Floating	1"	#150	RF	Full Bore	A182 F316L	Soft Seat	4
4	DBB	Floating	1"	#300	RF	Full Bore	A105	Soft Seat	2
5	DBB	Floating	1"	#600	RF	Full Bore	A105	Soft Seat	2
6	DBB	Floating	1 1/2"	#600	RF	Full Bore	A105	Soft Seat	6
7	DBB	Floating	1 1/2"	#600	RF	Full Bore	A182 F316L	Soft Seat	6
8	DBB	Floating	1 1/2"	#1500	RTJ	Full Bore	A105	Soft Seat	1
9	DBB	Floating	2"	#150	RF	Reduced Bore	A105	Soft Seat	62
10	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F316	Soft Seat	2
11	DBB	Floating	2"	#300	RF	Reduced Bore	A105	Soft Seat	8
12	DBB	Floating	2"	#600	RF	Reduced Bore	A105	Soft Seat	2
13	DBB	Trunnion	3"	#600	RF	Full Bore	A105	Soft Seat	2

## 6. PRINCIPAL SUPPLY RECORDS - FPSO

### QUAD 204 FPSO (BP / HHI - UK / 2014~2015) - Top Up Order

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1"	#150	RF	Reduced Bore	A182 F51	Soft Seat	1
2	DBB	Floating	1"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	4
3	DBB	Floating	1"	#600	RF	Reduced Bore	A182 F316L	Soft Seat	5
4	DBB	Floating	1"	#1500	RTJ	Reduced Bore	A182 F51	Soft Seat	2
5	DBB	Floating	1 1/2"	#150	RF	Reduced Bore	A182 F51	Soft Seat	1
6	DBB	Floating	2"	#600	RF	Reduced Bore	A182 F51	Soft Seat	1
7	DBB	Trunnion	3/4"	#150	RF	Reduced Bore	A350 LF2	Metal Seat	2
8	DBB	Trunnion	1"	#150	RF	Full Bore	A182 F51	Metal Seat	2
9	DBB	Trunnion	1"	#150	RF	Full Bore	A182 F55	Metal Seat	2
10	DBB	Trunnion	1"	#150	RF	Full Bore	A350 LF2	Metal Seat	10
11	DBB	Trunnion	1"	#300	RF	Full Bore	A182 F51	Metal Seat	3
12	DBB	Trunnion	1"	#300	RF	Full Bore	A182 F55	Metal Seat	1
13	DBB	Trunnion	1"	#300	RF	Full Bore	A350 LF2	Metal Seat	3
14	DBB	Trunnion	1"	#2500	RTJ	Full Bore	A350 LF2	Metal Seat	1
15	DBB	Trunnion	1 1/2"	#150	RF	Full Bore	A182 F55	Metal Seat	1

## 6. PRINCIPAL SUPPLY RECORDS - FPSO

### PLUTONIO FPSO (BP / HHI - UK / 2005-2006)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1/2"	#600	RF	Full Bore	A182 F51	Soft Seat	9
2	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A182 F51	Soft Seat	6
3	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A350 LF2	Soft Seat	13
4	DBB	Floating	1/2"	#2500	NPT	Full Bore	A182 F53	Soft Seat	9
5	DBB	Floating	1/2"	#2500	RTJ	Full Bore	A182 F316	Soft Seat	27
6	DBB	Floating	1/2"	#2500	RTJ	Full Bore	A182 F316	Soft Seat	6
7	DBB	Floating	1/2"	#2500	RTJ	Full Bore	A182 F51	Soft Seat	8
8	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F51	Soft Seat	2
9	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F53	Soft Seat	3
10	DBB	Floating	3/4"	#600	RF	Reduced Bore	A182 F316	Soft Seat	5
11	DBB	Floating	3/4"	#600	RF	Reduced Bore	A182 F316	Soft Seat	5
12	DBB	Floating	3/4"	#600	RF	Reduced Bore	A182 F51	Soft Seat	15
13	DBB	Floating	3/4"	#600	RF	Reduced Bore	A182 F51	Soft Seat	17
14	DBB	Floating	3/4"	#600	RF	Reduced Bore	A350 LF2	Soft Seat	2
15	DBB	Floating	3/4"	#600	RF	Reduced Bore	A350 LF2	Soft Seat	5
16	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A182 F51	Soft Seat	20
17	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	8
18	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A182 F316	Soft Seat	4
19	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A182 F316	Soft Seat	24
20	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A182 F51	Soft Seat	2
21	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A182 F51	Soft Seat	27
22	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A182 F53	Soft Seat	9
23	DBB	Floating	1"	#300	RF	Reduced Bore	A182 F53	Soft Seat	2
24	DBB	Floating	1"	#600	RF	Reduced Bore	A105	Soft Seat	10
25	DBB	Floating	1"	#600	RF	Reduced Bore	A182 F316	Soft Seat	6
26	DBB	Floating	1"	#600	RF	Reduced Bore	A182 F51	Soft Seat	8
27	DBB	Floating	1"	#600	RF	Reduced Bore	A350 LF2	Soft Seat	4
28	DBB	Floating	1"	#1500	RTJ	Reduced Bore	A105	Soft Seat	17
29	DBB	Floating	1"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	12
30	DBB	Floating	1"	#1500	RTJ	Reduced Bore	A182 F51	Soft Seat	40
31	DBB	Floating	1"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	9
32	DBB	Floating	1"	#2500	RTJ	Reduced Bore	A105	Soft Seat	3
33	DBB	Floating	1"	#2500	RTJ	Reduced Bore	A182 F316	Soft Seat	6
34	DBB	Floating	1"	#2500	RTJ	Reduced Bore	A182 F316	Soft Seat	3
35	DBB	Floating	1"	#2500	RTJ	Reduced Bore	A182 F316	Soft Seat	31
36	DBB	Floating	1"	#2500	RTJ	Reduced Bore	A182 F51	Soft Seat	3
37	DBB	Floating	1"	#2500	RTJ	Reduced Bore	A182 F51	Soft Seat	28
38	DBB	Floating	1"	#2500	RTJ	Reduced Bore	A182 F53	Soft Seat	16
39	DBB	Floating	1"	#2500	RTJ	Reduced Bore	B564 N06625	Soft Seat	13
40	DBB	Floating	1 1/2"	#150	RF	Reduced Bore	A182 F53	Soft Seat	5
41	DBB	Floating	1 1/2"	#300	RF	Reduced Bore	A182 F51	Soft Seat	2
42	DBB	Floating	1 1/2"	#600	RF	Reduced Bore	A182 F51	Soft Seat	8
43	DBB	Floating	1 1/2"	#1500	RTJ	Reduced Bore	A182 F51	Soft Seat	5
44	DBB	Floating	1 1/2"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	4
45	DBB	Floating	1 1/2"	#2500	RTJ	Reduced Bore	A182 F316	Soft Seat	5
46	DBB	Floating	1 1/2"	#2500	RTJ	Reduced Bore	A182 F316	Soft Seat	2
47	DBB	Floating	1 1/2"	#2500	RTJ	Reduced Bore	A182 F51	Soft Seat	8
48	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F316	Soft Seat	18
49	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F53	Soft Seat	6
50	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316	Soft Seat	1
51	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F51	Soft Seat	2
52	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	1
53	DBB	Floating	2"	#2500	RTJ	Reduced Bore	A182 F51	Soft Seat	3
54	DBB (Gate)	-	3/4"	#1500	RTJ	Reduced Bore	A182 F51	Metal Seat	2
55	DBB (Gate)	-	3/4"	#1500	RTJ	Reduced Bore	A182 F51	Metal Seat	7
56	DBB (Gate)	-	3/4"	#1500	RTJ	Reduced Bore	A350 LF2	Metal Seat	9
57	DBB (Gate)	-	1"	#1500	RTJ	Reduced Bore	A105	Metal Seat	8
58	DBB (Gate)	-	1"	#1500	RTJ	Reduced Bore	A182 F51	Metal Seat	39
59	DBB (Gate)	-	1"	#1500	RTJ	Reduced Bore	A350 LF2	Metal Seat	21
60	DBB (Gate)	-	1 1/2"	#1500	RTJ	Reduced Bore	A182 F51	Metal Seat	13

## 6. PRINCIPAL SUPPLY RECORDS - FPSO

### AGBAMI FPSO (CHEVRON / DSME - Nigeria)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	3/4"	#300	RF	Reduced Bore	A105	Metal Seat	12
2	DBB	Floating	2"	#150	RF	Full Bore	A105	Metal Seat	30
3	DBB	Floating	3/4"	#150	RF	Reduced Bore	A105	Soft Seat	8
4	DBB	Floating	3/4"	#300	RF	Reduced Bore	A105	Soft Seat	1
5	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	2
6	DBB	Floating	2"	#150	RF	Reduced Bore	A105	Soft Seat	2
7	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F316	Soft Seat	2
8	DBB	Floating	2"	#300	RF	Reduced Bore	A105	Soft Seat	4
8	DBB	Floating	2"	#600	RF	Reduced Bore	A105	Soft Seat	8
9	DBB	Floating	JIS 50A	5K	FF	Full Bore	A182 F316	Soft Seat	1
10	DBB (Needle)	-	3/8"	#2500	NPT	Reduced Bore	A182 F316	Metal Seat	4
11	DBB (Needle)	-	3/8"	#2500	NPT	Reduced Bore	B164 N04400	Metal Seat	4

### Goliat FPSO (ENI NORGE / HHI - Norway / 2011)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty'
1	DBB	Floating	3/4"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	11
2	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	40
3	DBB	Floating	3/4"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	19
4	DBB	Floating	2"	#150	RF	Full Bore	A182 F316L	Soft Seat	11
5	DBB	Floating	2"	#150	RF	Full Bore	A182 F55	Soft Seat	2
6	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	32
7	DBB	Floating	2"	#300	RF	Full Bore	A182 F316L	Soft Seat	30
8	DBB	Floating	2"	#300	RF	Full Bore	A350 LF2	Soft Seat	1
9	DBB	Floating	2"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	1



## 6. PRINCIPAL SUPPLY RECORDS - FPSO

### Ichthys FPSO Project (INPEX / DSME - Australia)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	2"	#300	RF	Full Bore	A182 F51	Metal Seat	33
2	DBB	Floating	3"	#300	RF	Full Bore	A182 F51	Metal Seat	1
3	DBB	Floating	1/2"	#150	RF	Full Bore	A182 F51	Soft Seat	196
4	DBB	Floating	1/2"	#150	RF	Full Bore	A182 F53	Soft Seat	4
5	DBB	Floating	1/2"	#300	RF	Full Bore	A105	Soft Seat	16
6	DBB	Floating	1/2"	#300	RF	Full Bore	A182 F316	Soft Seat	22
7	DBB	Floating	1/2"	#300	RF	Full Bore	A182 F51	Soft Seat	20
8	DBB	Floating	1/2"	#600	RF	Full Bore	A182 F51	Soft Seat	100
9	DBB	Floating	1/2"	#2500	RTJ	Full Bore	A105	Soft Seat	16
10	DBB	Floating	3/4"	#150	FF	Reduced Bore	B148 C95800	Soft Seat	18
11	DBB	Floating	3/4"	#150	FF	Reduced Bore	B564 N10276	Soft Seat	34
12	DBB	Floating	3/4"	#150	RF	Reduced Bore	A105	Soft Seat	390
13	DBB	Floating	3/4"	#150	RF	Reduced Bore	A182 F316	Soft Seat	46
14	DBB	Floating	3/4"	#150	RF	Reduced Bore	A182 F51	Soft Seat	385
15	DBB	Floating	3/4"	#150	RF	Reduced Bore	A182 F53	Soft Seat	2
16	DBB	Floating	3/4"	#150	RF	Reduced Bore	B462 N10665	Soft Seat	10
17	DBB	Floating	3/4"	#150	RF	Reduced Bore	B564 N10276	Soft Seat	92
18	DBB	Floating	3/4"	#300	RF	Reduced Bore	A105	Soft Seat	31
19	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F51	Soft Seat	62
20	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F53	Soft Seat	14
21	DBB	Floating	3/4"	#600	RF	Reduced Bore	A182 F316	Soft Seat	65
22	DBB	Floating	3/4"	#600	RF	Reduced Bore	A182 F51	Soft Seat	52
23	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	33
24	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A182 F51	Soft Seat	3
25	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A105	Soft Seat	32
26	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A182 F51	Soft Seat	3
27	DBB	Floating	1"	#150	FF	Full Bore	B148 C95800	Soft Seat	2
28	DBB	Floating	1"	#150	RF	Full Bore	A182 F51	Soft Seat	54
29	DBB	Floating	1"	#150	RF	Full Bore	B462 N10665	Soft Seat	2
30	DBB	Floating	1"	#300	RF	Full Bore	A182 F51	Soft Seat	10
31	DBB	Floating	1"	#600	RF	Full Bore	A182 F51	Soft Seat	10
32	DBB	Floating	1"	#1500	RF	Full Bore	A182 F51	Soft Seat	17
33	DBB	Floating	1 1/2"	#1500	RTJ	Full Bore	A182 F51	Soft Seat	8
34	DBB	Floating	2"	#150	FF	Full Bore	B148 C95800	Soft Seat	6
35	DBB	Floating	2"	#150	FF	Reduced Bore	B148 C95800	Soft Seat	100
36	DBB	Floating	2"	#150	RF	Full Bore	A105	Soft Seat	27
37	DBB	Floating	2"	#150	RF	Full Bore	A182 F51	Soft Seat	20
38	DBB	Floating	2"	#150	RF	Full Bore	B462 N10665	Soft Seat	1
39	DBB	Floating	2"	#150	RF	Reduced Bore	B564 N10276	Soft Seat	2
40	DBB	Floating	2"	#300	RF	Full Bore	A105	Soft Seat	193
41	DBB	Floating	2"	#300	RF	Full Bore	A182 F316	Soft Seat	19
42	DBB	Floating	2"	#300	RF	Full Bore	A182 F51	Soft Seat	600
43	DBB	Floating	2"	#300	RF	Full Bore	A182 F53	Soft Seat	52
44	DBB	Floating	2"	#300	RF	Full Bore	B462 N10665	Soft Seat	29
45	DBB	Floating	2"	#300	RF	Full Bore	B564 N10276	Soft Seat	28
46	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F51	Soft Seat	41
47	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F53	Soft Seat	3
48	DBB	Floating	2"	#300	RF	Reduced Bore	B564 N10276	Soft Seat	1
49	DBB	Floating	3"	#300	RF	Full Bore	A105	Soft Seat	40
50	DBB	Floating	3"	#300	RF	Full Bore	A182 F316	Soft Seat	4
51	DBB	Floating	3"	#300	RF	Full Bore	A182 F51	Soft Seat	79
52	DBB	Floating	3"	#300	RF	Full Bore	A182 F53	Soft Seat	8
53	DBB	Trunnion	2"	#600	RF	Full Bore	A182 F51	Metal Seat	36
54	DBB	Trunnion	2"	#1500	RTJ	Full Bore	A182 F51	Metal Seat	10
55	DBB	Trunnion	3"	#600	RF	Full Bore	A182 F51	Metal Seat	10
56	DBB	Trunnion	3/4"	#2500	RTJ	Reduced Bore	A182 F51	Metal Seat	4
57	DBB	Trunnion	2"	#600	RF	Full Bore	A182 F316	Soft Seat	16
58	DBB	Trunnion	2"	#600	RF	Full Bore	A182 F51	Soft Seat	78
59	DBB	Trunnion	2"	#600	RF	Full Bore	A182 F53	Soft Seat	26
60	DBB	Trunnion	2"	#1500	RTJ	Full Bore	A182 F316	Soft Seat	59

## 6. PRINCIPAL SUPPLY RECORDS - FPSO

### Ichthys FPSO Project (INPEX / DSME - Australia)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
61	DBB	Trunnion	2"	#1500	RTJ	Full Bore	A182 F51	Soft Seat	63
62	DBB	Trunnion	2"	#1500	RTJ	Full Bore	A182 F53	Soft Seat	5
63	DBB	Trunnion	3"	#600	RF	Full Bore	A182 F51	Soft Seat	4
64	DBB	Trunnion	3"	#900	RTJ	Full Bore	A182 F316	Soft Seat	5
65	DBB	Trunnion	3"	#900	RTJ	Full Bore	A182 F51	Soft Seat	2
66	DBB	Trunnion	3"	#1500	RTJ	Full Bore	A182 F51	Soft Seat	1
67	DBB (Gate)	-	1/2"	#300	RF	Full Bore	A105	Metal Seat	42
68	DBB (Gate)	-	3/4"	#300	RF	Reduced Bore	A105	Metal Seat	93
69	DBB (Needle)	-	2"	#300	RF	Reduced Bore	A182 F51	Metal Seat	30

### NEXUS FPSO (NEXUS FLOATING PRODUCTION / SHI - Norway)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1/2"	#150	RF	Full Bore	A182 F316	Soft Seat	11
2	DBB	Floating	1/2"	#300	RF	Full Bore	A182 F316	Soft Seat	5
3	DBB	Floating	1/2"	#600	RTJ	Full Bore	A182 F316	Soft Seat	2
4	DBB	Floating	1/2"	#2500	RTJ	Full Bore	A182 F316	Soft Seat	2
5	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A182 F51	Soft Seat	1
6	DBB	Floating	1"	#600	RTJ	Full Bore	A350 LF2	Soft Seat	23
7	DBB	Floating	1"	#1500	RTJ	Full Bore	A350 LF2	Soft Seat	18
8	DBB	Floating	1"	#2500	RTJ	Full Bore	A350 LF2	Soft Seat	27
9	DBB	Floating	2"	#150	RF	Full Bore	A105	Soft Seat	4
10	DBB	Floating	2"	#150	RF	Full Bore	A350 LF2	Soft Seat	16
11	DBB	Floating	2"	#300	RF	Full Bore	A105	Soft Seat	4
12	DBB	Floating	2"	#300	RF	Full Bore	A350 LF2	Soft Seat	12
13	DBB	Floating	3"	#150	RF	Full Bore	A105	Soft Seat	18
14	DBB	Floating	3"	#150	RF	Full Bore	A350 LF2	Soft Seat	16
15	DBB	Trunnion	2"	#1500	RTJ	Full Bore	A350 LF2	Soft Seat	29
16	DBB	Trunnion	2"	#600	RTJ	Full Bore	A182 F51	Soft Seat	12
17	DBB	Trunnion	2"	#600	RTJ	Full Bore	A350 LF2	Soft Seat	39

## 6. PRINCIPAL SUPPLY RECORDS - FPSO

### Teekay Petrojarl Knarr FPSO (Teekay Petrojarl Knarr / SHI - Norway)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1/2"	#300	RF	Full Bore	A105	Metal Seat	2
2	DBB	Floating	3/4"	#300	RF	Reduced Bore	A105	Metal Seat	26
3	DBB	Floating	2"	#150	RF	Full Bore	A105	Metal Seat	2
4	DBB	Floating	1/2"	#300	RF	Full Bore	A105	Soft Seat	36
5	DBB	Floating	1/2"	#300	RF	Full Bore	A182 F51	Soft Seat	20
6	DBB	Floating	1/2"	#300	RF	Full Bore	A350 LF2	Soft Seat	6
7	DBB	Floating	1/2"	#600	RTJ	Full Bore	A182 F51	Soft Seat	2
8	DBB	Floating	1/2"	#600	RTJ	Full Bore	A350 LF2	Soft Seat	6
9	DBB	Floating	3/4"	#300	RF	Reduced Bore	A105	Soft Seat	70
10	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	8
11	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F51	Soft Seat	84
12	DBB	Floating	3/4"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	29
13	DBB	Floating	3/4"	#600	RTJ	Reduced Bore	A182 F51	Soft Seat	25
14	DBB	Floating	3/4"	#600	RTJ	Reduced Bore	A350 LF2	Soft Seat	24
15	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A105	Soft Seat	10
16	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	32
17	DBB	Floating	1 1/2"	#300	RF	Full Bore	A105	Soft Seat	8
18	DBB	Floating	2"	#150	RF	Full Bore	A105	Soft Seat	12
19	DBB	Floating	2"	#150	RF	Full Bore	A182 F51	Soft Seat	4
20	DBB	Floating	2"	#150	RF	Full Bore	A182 F53	Soft Seat	6
21	DBB	Floating	2"	#150	RF	Full Bore	A350 LF2	Soft Seat	2
22	DBB	Floating	2"	#150	RF	Reduced Bore	A105	Soft Seat	4
23	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	2
24	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F51	Soft Seat	3
25	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F53	Soft Seat	2
26	DBB	Floating	2"	#300	RF	Full Bore	A182 F51	Soft Seat	38
27	DBB	Floating	2"	#300	RF	Full Bore	A182 F53	Soft Seat	35
28	DBB	Floating	2"	#300	RF	Full Bore	A350 LF2	Soft Seat	4
29	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	1
30	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F51	Soft Seat	5
31	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F53	Soft Seat	6
32	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	2
33	DBB	Floating	JIS 15A	JIS 5K	RF	Full Bore	A182 F316L	Soft Seat	29
34	DBB	Trunnion	1/2"	10000 PSI	RTJ	Full Bore	A105	Metal Seat	1
35	DBB	Trunnion	1/2"	10000 PSI	RTJ	Full Bore	A519 4130	Metal Seat	9
36	DBB	Trunnion	3/4"	10000 PSI	RTJ	Reduced Bore	A182 F53	Metal Seat	4
37	DBB	Trunnion	1 13/16"	10000 PSI	RTJ	Full Bore	A105	Metal Seat	1
38	DBB	Trunnion	1 13/16"	10000 PSI	RTJ	Full Bore	A182 F53	Metal Seat	12
39	DBB	Trunnion	1 13/16"	10000 PSI	RTJ	Full Bore	A519 4130	Metal Seat	15
40	DBB	Trunnion	2"	#600	RTJ	Full Bore	A182 F51	Soft Seat	13
41	DBB	Trunnion	2"	#600	RTJ	Full Bore	A350 LF2	Soft Seat	12

### Egina FPSO (TOTAL / SHI - Nigeria / 2015)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1/2"	#300	RF	Full Bore	A182 F316L	Soft Seat	6
2	DBB	Floating	1/2"	#300	RF	Full Bore	A350 LF2	Soft Seat	32
3	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	117
4	DBB	Floating	3/4"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	416
5	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A182 F316L	Soft Seat	51
6	DBB	Floating	1"	#300	FF	Reduced Bore	A182 F316L	Soft Seat	4
7	DBB	Floating	1"	#300	FF	Reduced Bore	B148 C95800	Soft Seat	80
8	DBB	Floating	1"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	20
9	DBB	Floating	1"	#300	RF	Reduced Bore	B148 C95800	Soft Seat	36
10	DBB	Floating	1"	#600	RF	Reduced Bore	A182 F316L	Soft Seat	19
11	DBB	Floating	1"	#2500	RTJ	Reduced Bore	A182 F316L	Soft Seat	2
12	DBB	Floating	2"	#300	FF	Full Bore	B148 C95800	Soft Seat	4
13	DBB	Floating	2"	#300	RF	Full Bore	A350 LF2	Soft Seat	2
14	DBB	Floating	2"	#300	RF	Full Bore	B148 C95800	Soft Seat	4
15	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	18
16	DBB	Floating	2"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	4

## 6. PRINCIPAL SUPPLY RECORDS - FPSO

### CLOV FPSO (TOTAL / DSME - Angola / 2011)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	2"	#300	RF	Full Bore	A105	Metal Seat	1
2	DBB	Floating	2"	#300	RF	Full Bore	A182 F316	Metal Seat	8
3	DBB	Floating	3"	#300	RF	Full Bore	A182 F316	Metal Seat	32
4	DBB	Floating	1/2"	#150	RF	Full Bore	B148 C95800	Soft Seat	8
5	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A182 F51	Soft Seat	36
6	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A350 LF2	Soft Seat	20
7	DBB	Floating	1/2"	#2500	NPT	Full Bore	A182 F316L	Soft Seat	12
8	DBB	Floating	1/2"	#300	PLAIN END	Full Bore	A182 F316L	Soft Seat	4
9	DBB	Floating	1/2"	#300	RF	Full Bore	A105	Soft Seat	45
10	DBB	Floating	1/2"	#300	RF	Full Bore	A182 F316	Soft Seat	40
11	DBB	Floating	1/2"	#300	RF	Full Bore	A182 F316L	Soft Seat	84
12	DBB	Floating	1/2"	#600	RF	Full Bore	A105	Soft Seat	8
13	DBB	Floating	1/2"	#600	RF	Full Bore	A182 F316	Soft Seat	14
14	DBB	Floating	1/2"	#600	RF	Full Bore	A479 TYPE321	Soft Seat	6
15	DBB	Floating	3/4"	#150	FF	Reduced Bore	B564 N10276	Soft Seat	10
16	DBB	Floating	3/4"	#150	NPT	Reduced Bore	A182 F316	Soft Seat	33
17	DBB	Floating	3/4"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	17
18	DBB	Floating	3/4"	#150	RF	Reduced Bore	B148 C95800	Soft Seat	134
19	DBB	Floating	3/4"	#300	PLAIN END	Reduced Bore	A182 F316L	Soft Seat	3
20	DBB	Floating	3/4"	#300	RF	Reduced Bore	A105	Soft Seat	205
21	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F316	Soft Seat	207
22	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	568
23	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F53	Soft Seat	2
24	DBB	Floating	3/4"	#300	RF	Reduced Bore	A479 TYPE321	Soft Seat	2
25	DBB	Floating	3/4"	#600	PLAIN END	Reduced Bore	A182 F316L	Soft Seat	4
26	DBB	Floating	3/4"	#600	RF	Reduced Bore	A105	Soft Seat	53
27	DBB	Floating	3/4"	#600	RF	Reduced Bore	A182 F316	Soft Seat	45
28	DBB	Floating	3/4"	#600	RF	Reduced Bore	A182 F53	Soft Seat	16
29	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A105	Soft Seat	28
30	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	8
31	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A182 F51	Soft Seat	77
32	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	73
33	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A105	Soft Seat	10
34	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A182 F316	Soft Seat	25
35	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A182 F316L	Soft Seat	74
36	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A350 LF2	Soft Seat	28
37	DBB	Floating	1"	#150	FF	Reduced Bore	B148 C95800	Soft Seat	23
38	DBB	Floating	1"	#150	RF	Full Bore	A182 F316L	Soft Seat	2
39	DBB	Floating	1"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	24
40	DBB	Floating	1"	#2500	NPT	Reduced Bore	A182 F316	Soft Seat	7
41	DBB	Floating	1"	#300	RF	Full Bore	A182 F316L	Soft Seat	6
42	DBB	Floating	2"	#150	FF	Reduced Bore	B148 C95800	Soft Seat	8
43	DBB	Floating	2"	#150	RF	Full Bore	B564 N10276	Soft Seat	6
44	DBB	Floating	2"	#150	RF	Reduced Bore	A105	Soft Seat	1
45	DBB	Floating	2"	#300	RF	Full Bore	A105	Soft Seat	106
46	DBB	Floating	2"	#300	RF	Full Bore	A182 F316	Soft Seat	17
47	DBB	Floating	2"	#300	RF	Full Bore	A182 F316L	Soft Seat	40
48	DBB	Floating	2"	#300	RF	Reduced Bore	A105	Soft Seat	47
49	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316	Soft Seat	25
50	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	40
51	DBB	Floating	2"	#600	RF	Reduced Bore	A105	Soft Seat	4
52	DBB	Floating	2"	#600	RF	Reduced Bore	A182 F316	Soft Seat	6
53	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A105	Soft Seat	4
54	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	14
55	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A182 F51	Soft Seat	8
56	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	4
57	DBB	Floating	2"	#2500	RTJ	Reduced Bore	A105	Soft Seat	1
58	DBB	Floating	3"	#300	RF	Full Bore	A105	Soft Seat	85
59	DBB	Floating	3"	#300	RF	Full Bore	A182 F316	Soft Seat	26

## 6. PRINCIPAL SUPPLY RECORDS - FPSO

### CLOV FPSO (TOTAL / DSME - Angola / 2011)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
60	DBB	Floating	3"	#300	RF	Full Bore	A182 F316L	Soft Seat	48
61	DBB	Floating	3"	#300	RF	Reduced Bore	A105	Soft Seat	8
62	DBB	Floating	3"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	16
63	DBB	Trunnion	2"	#600	RF	Full Bore	A105	Soft Seat	2
64	DBB	Trunnion	2"	#600	RF	Full Bore	A182 F316	Soft Seat	16
65	DBB	Trunnion	2"	#900	RTJ	Full Bore	A182 F316	Soft Seat	26
66	DBB	Trunnion	2"	#1500	RTJ	Full Bore	A105	Soft Seat	4
67	DBB	Trunnion	2"	#1500	RTJ	Full Bore	A350 LF2	Soft Seat	16
68	DBB	Trunnion	2"	#2500	RTJ	Full Bore	A182 F316L	Soft Seat	2
69	DBB	Trunnion	2"	#2500	RTJ	Full Bore	A350 LF2	Soft Seat	1
70	DBB	Trunnion	3"	#600	RF	Full Bore	A182 F316	Soft Seat	8
71	DBB	Trunnion	3"	#900	RTJ	Full Bore	A182 F316	Soft Seat	36
72	DBB	Trunnion	3"	#1500	RTJ	Full Bore	A350 LF2	Soft Seat	16

### Pazflor FPSO (TOTAL / DSME - Angola / 2009)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	3/4"	#600	PLAIN END	Reduced Bore	A105	Metal Seat	1
2	DBB	Floating	3/4"	#600	PLAIN END	Reduced Bore	A182 F51	Metal Seat	3
3	DBB	Floating	1/2"	#300	NPT	Full Bore	A105	Soft Seat	4
4	DBB	Floating	1/2"	#300	NPT	Full Bore	A182 F316L	Soft Seat	4
5	DBB	Floating	1/2"	#300	NPT	Full Bore	A182 F51	Soft Seat	1
6	DBB	Floating	1/2"	#1500	NPT	Full Bore	A105	Soft Seat	12
7	DBB	Floating	1/2"	#1500	NPT	Full Bore	A182 F316L	Soft Seat	10
8	DBB	Floating	1/2"	#2500	NPT	Full Bore	A182 F316L	Soft Seat	4
9	DBB	Floating	3/4"	#300	PLAIN END	Reduced Bore	A105	Soft Seat	7
10	DBB	Floating	3/4"	#300	PLAIN END	Reduced Bore	A182 F51	Soft Seat	5
11	DBB	Floating	3/4"	#600	PLAIN END	Reduced Bore	A105	Soft Seat	32
12	DBB	Floating	3/4"	#600	PLAIN END	Reduced Bore	A182 F316L	Soft Seat	8
13	DBB	Floating	3/4"	#600	PLAIN END	Reduced Bore	A479 TYPE321	Soft Seat	4
14	DBB	Floating	3/4"	#900	PLAIN END	Reduced Bore	A350 LF2	Soft Seat	3
15	DBB	Floating	3/4"	#1500	PLAIN END	Reduced Bore	A182 F316L	Soft Seat	3
16	DBB	Floating	3/4"	#2500	PLAIN END	Reduced Bore	A182 F51	Soft Seat	3
17	DBB	Floating	3/4"	#2500	PLAIN END	Reduced Bore	A479 TYPE321	Soft Seat	6
18	DBB	Floating	1"	#150	FF	Reduced Bore	B148 C95800	Soft Seat	27
19	DBB	Floating	1"	#300	FF	Reduced Bore	B148 C95800	Soft Seat	9
20	DBB	Floating	1"	#300	RF	Reduced Bore	B148 C95800	Soft Seat	14
21	DBB	Floating	1"	#600	RF	Reduced Bore	A182 F316L	Soft Seat	1
22	DBB	Floating	1"	#2500	RTJ	Full Bore	A182 F51	Soft Seat	4
23	DBB	Floating	1"	#2500	RTJ	Reduced Bore	A182 F316L	Soft Seat	3
24	DBB	Floating	2"	#300	RF	Full Bore	A105	Soft Seat	9
25	DBB	Floating	2"	#300	RF	Full Bore	A182 F316L	Soft Seat	11
26	DBB	Floating	2"	#300	RF	Full Bore	B148 C95800	Soft Seat	4
27	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	5
28	DBB	Floating	2"	#2500	RTJ	Reduced Bore	A182 F316L	Soft Seat	3
29	DBB	Trunnion	2"	#900	RTJ	Full Bore	A182 F316L	Soft Seat	4

## 6. PRINCIPAL SUPPLY RECORDS - FPSO

### USAN FPSO (TOTAL / HHI - Nigeria / 2009)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	3/4"	#150	RF	Reduced Bore	A105	Metal Seat	14
2	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A105	Metal Seat	5
3	DBB	Floating	2"	#300	RF	Reduced Bore	A105	Metal Seat	14
4	DBB	Floating	3"	#300	RF	Reduced Bore	A105	Metal Seat	10
5	DBB	Floating	1/2"	#150	FF	Full Bore	B148 C95800	Soft Seat	52
6	DBB	Floating	1/2"	#150	RF	Full Bore	A105	Soft Seat	46
7	DBB	Floating	1/2"	#150	RF	Full Bore	A182 F316L	Soft Seat	5
8	DBB	Floating	1/2"	#150	RF	Full Bore	A479 TYPE321	Soft Seat	11
9	DBB	Floating	1/2"	#300	FF	Full Bore	B148 C95800	Soft Seat	18
10	DBB	Floating	1/2"	#300	RF	Full Bore	A105	Soft Seat	16
11	DBB	Floating	1/2"	#300	RF	Full Bore	A479 TYPE321	Soft Seat	7
12	DBB	Floating	1/2"	#600	RF	Full Bore	A105	Soft Seat	18
13	DBB	Floating	1/2"	#600	RF	Full Bore	A182 F51	Soft Seat	12
14	DBB	Floating	1/2"	#1500	NPT	Full Bore	A182 F316L	Soft Seat	34
15	DBB	Floating	1/2"	#2500	NPT	Full Bore	A182 F316L	Soft Seat	42
16	DBB	Floating	1/2"	#2500	RTJ	Full Bore	A105	Soft Seat	16
17	DBB	Floating	3/4"	#150	FF	Reduced Bore	B148 C95800	Soft Seat	240
18	DBB	Floating	3/4"	#150	FF	Reduced Bore	B164 N04400	Soft Seat	17
19	DBB	Floating	3/4"	#150	RF	Reduced Bore	A105	Soft Seat	431
20	DBB	Floating	3/4"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	259
21	DBB	Floating	3/4"	#150	RF	Reduced Bore	A479 TYPE321	Soft Seat	56
22	DBB	Floating	3/4"	#300	RF	Reduced Bore	A105	Soft Seat	99
23	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	42
24	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F51	Soft Seat	11
25	DBB	Floating	3/4"	#300	RF	Reduced Bore	A479 TYPE321	Soft Seat	8
26	DBB	Floating	3/4"	#600	RF	Reduced Bore	A105	Soft Seat	37
27	DBB	Floating	3/4"	#600	RF	Reduced Bore	A182 F316L	Soft Seat	18
28	DBB	Floating	3/4"	#600	RF	Reduced Bore	A182 F51	Soft Seat	36
29	DBB	Floating	3/4"	#600	RF	Reduced Bore	A479 TYPE321	Soft Seat	9
30	DBB	Floating	3/4"	#1500	NPT	Reduced Bore	A182 F316L	Soft Seat	2
31	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A105	Soft Seat	14
32	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A182 F316L	Soft Seat	20
33	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	15
34	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A105	Soft Seat	56
35	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A182 F316L	Soft Seat	37
36	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A350 LF2	Soft Seat	11
37	DBB	Floating	1"	#150	FF	Reduced Bore	B164 N04400	Soft Seat	3
38	DBB	Floating	1"	#600	RF	Reduced Bore	A182 F316	Soft Seat	4
39	DBB	Floating	2"	#150	RF	Full Bore	A105	Soft Seat	32
40	DBB	Floating	2"	#150	RF	Full Bore	A182 F316L	Soft Seat	15
41	DBB	Floating	2"	#150	RF	Full Bore	A350 LF2	Soft Seat	6
42	DBB	Floating	2"	#150	RF	Full Bore	B148 C95800	Soft Seat	18
43	DBB	Floating	2"	#150	RF	Reduced Bore	A105	Soft Seat	12
44	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	4
45	DBB	Floating	2"	#150	RF	Reduced Bore	A350 LF2	Soft Seat	6
46	DBB	Floating	2"	#2500	RTJ	Reduced Bore	A105	Soft Seat	16
47	DBB	Floating	2"	#300	FF	Reduced Bore	B148 C95800	Soft Seat	14
48	DBB	Floating	2"	#300	FF	Reduced Bore	B164 N04400	Soft Seat	10
49	DBB	Floating	2"	#300	RF	Full Bore	A105	Soft Seat	39
50	DBB	Floating	2"	#300	RF	Full Bore	A182 F316L	Soft Seat	6
51	DBB	Floating	2"	#300	RF	Full Bore	A350 LF2	Soft Seat	10
52	DBB	Floating	2"	#300	RF	Reduced Bore	A105	Soft Seat	113
53	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316	Soft Seat	16
54	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	37
55	DBB	Floating	2"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	12
56	DBB	Floating	2"	#300	RF	Reduced Bore	A479 TYPE321	Soft Seat	12
57	DBB	Floating	2"	#300	RF	Reduced Bore	B148 C95800	Soft Seat	10
58	DBB	Floating	2"	#600	RF	Reduced Bore	A105	Soft Seat	12
59	DBB	Floating	2"	#600	RF	Reduced Bore	A182 F316L	Soft Seat	15
60	DBB	Floating	2"	#600	RF	Reduced Bore	A182 F51	Soft Seat	43



## 6. PRINCIPAL SUPPLY RECORDS - FPSO

### USAN FPSO (TOTAL / HHI - Nigeria / 2009)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
61	DBB	Floating	3"	#150	RF	Full Bore	A105	Soft Seat	5
62	DBB	Floating	3"	#300	FF	Reduced Bore	B148 C95800	Soft Seat	10
63	DBB	Floating	3"	#300	RF	Reduced Bore	A105	Soft Seat	61
64	DBB	Floating	3"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	21
65	DBB	Floating	3"	#300	RF	Reduced Bore	B148 C95800	Soft Seat	6
66	DBB	Trunnion	3/4"	#2500	RTJ	Reduced Bore	A105	Metal Seat	55
67	DBB	Trunnion	3/4"	#2500	RTJ	Reduced Bore	A350 LF2	Metal Seat	17
68	DBB	Trunnion	2"	#1500	RTJ	Full Bore	A105	Soft Seat	19
69	DBB	Trunnion	2"	#2500	RTJ	Full Bore	A105	Soft Seat	40
70	DBB	Trunnion	3"	#600	RF	Reduced Bore	A105	Soft Seat	10
71	DBB	Trunnion	3"	#600	RF	Reduced Bore	A182 F51	Soft Seat	60
72	DBB	Trunnion	3"	#2500	RTJ	Reduced Bore	A105	Soft Seat	10

### AKPO FPSO (TOTAL / HHI, HSHI - Nigeria / 2006)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1/2"	#150	RF	Full Bore	A105	Soft Seat	8
2	DBB	Floating	1/2"	#150	RF	Full Bore	A182 F316L	Soft Seat	50
3	DBB	Floating	1/2"	#150	FF	Full Bore	B148 C95200	Soft Seat	12
4	DBB	Floating	1/2"	#150	RF	Full Bore	B148 C95200	Soft Seat	40
5	DBB	Floating	1/2"	#300	RF	Full Bore	A105	Soft Seat	18
6	DBB	Floating	1/2"	#300	RF	Full Bore	A182 F316L	Soft Seat	8
7	DBB	Floating	1/2"	#600	RF	Full Bore	A105	Soft Seat	16
8	DBB	Floating	1/2"	#600	RF	Full Bore	A182 F316L	Soft Seat	3
9	DBB	Floating	1/2"	#600	NPT	Full Bore	B150 C63200	Soft Seat	26
10	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A182 F316L	Soft Seat	2
11	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A350 LF2	Soft Seat	4
12	DBB	Floating	1/2"	#2500	RTJ	Full Bore	A105	Soft Seat	8
13	DBB	Floating	1/2"	#2500	RTJ	Full Bore	A182 F51	Soft Seat	2
14	DBB	Floating	3/4"	#150	RF	Reduced Bore	A105	Soft Seat	268
15	DBB	Floating	3/4"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	246
16	DBB	Floating	3/4"	#150	FF	Reduced Bore	B148 C95200	Soft Seat	158
17	DBB	Floating	3/4"	#150	RF	Reduced Bore	B148 C95200	Soft Seat	57
18	DBB	Floating	3/4"	#300	RF	Reduced Bore	A105	Metal Seat	12
19	DBB	Floating	3/4"	#300	RF	Reduced Bore	A105	Soft Seat	21
20	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	63
21	DBB	Floating	3/4"	#600	RF	Reduced Bore	A105	Soft Seat	52
22	DBB	Floating	3/4"	#600	RF	Reduced Bore	A182 F316L	Soft Seat	15
23	DBB	Floating	3/4"	#600	RF	Reduced Bore	A182 F51	Soft Seat	30
24	DBB	Floating	3/4"	#600	RF	Reduced Bore	A350 LF2	Soft Seat	4
25	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A105	Soft Seat	6
26	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A182 F316L	Soft Seat	2
27	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	2
28	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	31
29	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A105	Soft Seat	8
30	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A182 F51	Soft Seat	145
31	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A182 F316L	Soft Seat	3
32	DBB	Floating	3/4"	#300	RF	Reduced Bore	A105	Soft Seat	1
33	DBB	Floating	1 1/2"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	8
34	DBB	Floating	2"	#150	RF	Reduced Bore	B164 N04400	Soft Seat	1
35	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	4
36	DBB	Floating	2"	#150	RF	Full Bore	A105	Metal Seat	30
37	DBB	Floating	2"	#150	RF	Reduced Bore	A105	Soft Seat	2
38	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F316	Soft Seat	2
39	DBB	Floating	2"	#300	RF	Reduced Bore	A105	Soft Seat	55
40	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	114
41	DBB	Floating	2"	#300	FF	Reduced Bore	B148 C95200	Soft Seat	18
42	DBB	Floating	2"	#300	RF	Reduced Bore	B148 C95200	Soft Seat	8
43	DBB	Floating	2"	#600	RF	Reduced Bore	A105	Soft Seat	11
45	DBB	Floating	2"	#600	RF	Reduced Bore	A182 F316L	Soft Seat	42
46	DBB	Floating	2"	#600	RF	Reduced Bore	A182 F51	Soft Seat	11

## 6. PRINCIPAL SUPPLY RECORDS - FPSO

### AKPO FPSO (TOTAL / HHI, HSHI - Nigeria / 2006)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
47	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A182 F51	Soft Seat	6
48	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	5
49	DBB	Floating	2"	#2500	RTJ	Reduced Bore	A182 F51	Soft Seat	11
50	DBB	Floating	3"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	10
51	DBB	Floating	JIS 50A	JIS 5K	FF	Full Bore	A182 F316	Soft Seat	1

### EN-FIELD FPSO (WOODSIDE ENERGY LIMITED / SHI - Australia / 2004)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB (Needle)	-	1/2"	#150	RF	Reduced Bore	A182 F51	Metal Seat	6
2	DBB (Needle)	-	1/2"	#300	RF	Reduced Bore	A105	Metal Seat	4
3	DBB (Needle)	-	1/2"	#300	RF	Reduced Bore	A182 F51	Metal Seat	2
4	DBB (Needle)	-	1/2"	#600	RF	Reduced Bore	A182 F51	Metal Seat	4
5	DBB (Needle)	-	1/2"	#900	RF	Reduced Bore	A350 LF2	Metal Seat	4
6	DBB (Needle)	-	1/2"	#1500	RF	Reduced Bore	A350 LF2	Metal Seat	2
7	DBB (Needle)	-	1/2"	#2500	RF	Reduced Bore	A182 F51	Metal Seat	4
8	DBB (Needle)	-	3/4"	#2500	RF	Reduced Bore	A182 F51	Metal Seat	2
9	DBB (Needle)	-	3/4"	#2500	RF	Reduced Bore	A350 LF2	Metal Seat	2
10	DBB (Needle)	-	1"	#150	RF	Reduced Bore	A182 F316	Metal Seat	1
11	DBB (Needle)	-	1"	#1500	RF	Reduced Bore	A350 LF2	Metal Seat	2
12	DBB (Needle)	-	1 1/2"	#300	RF	Reduced Bore	A182 F316	Metal Seat	2
13	DBB (Needle)	-	2"	#150	FF	Reduced Bore	B148 C95800	Metal Seat	44
14	DBB (Needle)	-	2"	#150	RF	Reduced Bore	A105	Metal Seat	34
15	DBB (Needle)	-	2"	#150	RF	Reduced Bore	A182 F316	Metal Seat	7
16	DBB (Needle)	-	2"	#150	RF	Reduced Bore	A182 F51	Metal Seat	37
17	DBB (Needle)	-	2"	#150	RF	Reduced Bore	A350 LF2	Metal Seat	2
18	DBB (Needle)	-	2"	#300	RF	Reduced Bore	A105	Metal Seat	12
19	DBB (Needle)	-	2"	#300	RF	Reduced Bore	A182 F51	Metal Seat	4
20	DBB (Needle)	-	2"	#300	RF	Reduced Bore	A350 LF2	Metal Seat	10
21	DBB (Needle)	-	2"	#600	RF	Reduced Bore	A182 F51	Metal Seat	11
22	DBB (Needle)	-	2"	#900	RF	Reduced Bore	A182 F51	Metal Seat	7
23	DBB (Needle)	-	2"	#900	RF	Reduced Bore	A350 LF2	Metal Seat	9
24	DBB (Needle)	-	2"	#1500	RF	Reduced Bore	A182 F51	Metal Seat	27
25	DBB (Needle)	-	2"	#1500	RF	Reduced Bore	A350 LF2	Metal Seat	4
26	DBB (Needle)	-	2"	#2500	RF	Reduced Bore	A105	Metal Seat	8
27	DBB (Needle)	-	2"	#2500	RF	Reduced Bore	A182 F51	Metal Seat	6
28	DBB (Needle)	-	2"	#2500	RF	Reduced Bore	A350 LF2	Metal Seat	7

## 6. PRINCIPAL SUPPLY RECORDS - FPU

### MOHO NORD FPU (TOTAL / HHI, HSHI - Congo / 2014)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	2"	#300	RF	Reduced Bore	A105	Metal Seat	4
2	DBB	Floating	3"	#300	RF	Full Bore	A105	Metal Seat	4
3	DBB	Floating	1/2"	#150	FF	Full Bore	B148 C95800	Soft Seat	30
4	DBB	Floating	1/2"	#150	RF	Full Bore	A105	Soft Seat	126
5	DBB	Floating	1/2"	#300	RF	Full Bore	A105	Soft Seat	4
6	DBB	Floating	1/2"	#300	RF	Full Bore	A182 F53	Soft Seat	4
7	DBB	Floating	1/2"	#600	RF	Full Bore	A105	Soft Seat	2
8	DBB	Floating	1/2"	#600	RF	Full Bore	A182 F316L	Soft Seat	12
9	DBB	Floating	1/2"	#600	RF	Full Bore	A350 LF2	Soft Seat	2
10	DBB	Floating	1/2"	#900	RTJ	Full Bore	A350 LF2	Soft Seat	8
11	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A105	Soft Seat	2
12	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A350 LF2	Soft Seat	4
13	DBB	Floating	1/2"	#2500	RTJ	Full Bore	A105	Soft Seat	4
14	DBB	Floating	3/4"	#150	FF	Reduced Bore	B148 C95800	Soft Seat	65
15	DBB	Floating	3/4"	#150	NPT	Reduced Bore	A105	Soft Seat	10
16	DBB	Floating	3/4"	#150	RF	Reduced Bore	A105	Soft Seat	564
17	DBB	Floating	3/4"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	88
18	DBB	Floating	3/4"	#150	RF	Reduced Bore	A182 F53	Soft Seat	2
19	DBB	Floating	3/4"	#150	RF	Reduced Bore	A350 LF2	Soft Seat	2
20	DBB	Floating	3/4"	#150	RF	Reduced Bore	B148 C95800	Soft Seat	26
21	DBB	Floating	3/4"	#300	RF	Reduced Bore	A105	Soft Seat	77
22	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	9
23	DBB	Floating	3/4"	#300	RF	Reduced Bore	A182 F53	Soft Seat	13
24	DBB	Floating	3/4"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	15
25	DBB	Floating	3/4"	#600	RF	Reduced Bore	A105	Soft Seat	53
26	DBB	Floating	3/4"	#600	RF	Reduced Bore	A182 F316	Soft Seat	14
27	DBB	Floating	3/4"	#600	RF	Reduced Bore	A182 F316L	Soft Seat	34
28	DBB	Floating	3/4"	#600	RF	Reduced Bore	A182 F51	Soft Seat	7
29	DBB	Floating	3/4"	#600	RF	Reduced Bore	A182 F53	Soft Seat	13
30	DBB	Floating	3/4"	#600	RF	Reduced Bore	A350 LF2	Soft Seat	11
31	DBB	Floating	3/4"	#900	RTJ	Reduced Bore	A105	Soft Seat	8
32	DBB	Floating	3/4"	#900	RTJ	Reduced Bore	A182 F316L	Soft Seat	4
33	DBB	Floating	3/4"	#900	RTJ	Reduced Bore	A350 LF2	Soft Seat	19
34	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A105	Soft Seat	68
35	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A182 F316L	Soft Seat	4
36	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	23
37	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A105	Soft Seat	32
38	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A182 F316	Soft Seat	2
39	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A182 F316L	Soft Seat	3
40	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A182 F51	Soft Seat	20
41	DBB	Floating	3/4"	#2500	RTJ	Reduced Bore	A350 LF2	Soft Seat	6
42	DBB	Floating	1"	#2500	NPT	Reduced Bore	A182 F316	Soft Seat	3
43	DBB	Floating	2"	#150	FF	Full Bore	B148 C95800	Soft Seat	2
44	DBB	Floating	2"	#150	FF	Reduced Bore	B148 C95800	Soft Seat	12
45	DBB	Floating	2"	#150	RF	Full Bore	A105	Soft Seat	71
46	DBB	Floating	2"	#150	RF	Full Bore	A182 F316L	Soft Seat	6
47	DBB	Floating	2"	#150	RF	Reduced Bore	A105	Soft Seat	82
48	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F316	Soft Seat	1
49	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	12
50	DBB	Floating	2"	#150	RF	Reduced Bore	A350 LF2	Soft Seat	5
51	DBB	Floating	2"	#300	RF	Full Bore	A105	Soft Seat	41
52	DBB	Floating	2"	#300	RF	Full Bore	A182 F316	Soft Seat	2
53	DBB	Floating	2"	#300	RF	Reduced Bore	A105	Soft Seat	86
54	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	19
55	DBB	Floating	2"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	4
56	DBB	Floating	2"	#600	RF	Reduced Bore	A105	Soft Seat	5
57	DBB	Floating	2"	#600	RF	Reduced Bore	A182 F316L	Soft Seat	40
58	DBB	Floating	2"	#600	RF	Reduced Bore	A350 LF2	Soft Seat	12

## 6. PRINCIPAL SUPPLY RECORDS - FPU

### MOHO NORD FPU (TOTAL / HHI, HSHI - Congo / 2014)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
59	DBB	Floating	2"	#600	RTJ	Reduced Bore	A182 F51	Soft Seat	4
60	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A105	Soft Seat	6
61	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A182 F316L	Soft Seat	15
62	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	6
63	DBB	Floating	2"	#2500	RTJ	Reduced Bore	A182 F51	Soft Seat	2
64	DBB	Floating	3"	#150	FF	Full Bore	B148 C95800	Soft Seat	6
65	DBB	Floating	3"	#150	RF	Full Bore	A105	Soft Seat	40
66	DBB	Floating	3"	#150	RF	Full Bore	A182 F316L	Soft Seat	24
67	DBB	Floating	3"	#150	RF	Full Bore	A350 LF2	Soft Seat	2
68	DBB	Floating	3"	#300	RF	Full Bore	A105	Soft Seat	20
69	DBB	Floating	3"	#300	RF	Full Bore	A182 F316L	Soft Seat	13
70	DBB	Floating	3"	#300	RF	Full Bore	A350 LF2	Soft Seat	6
71	DBB	Trunnion	2"	#600	RF	Full Bore	A105	Soft Seat	10
72	DBB	Trunnion	2"	#600	RF	Full Bore	A182 F316L	Soft Seat	1
73	DBB	Trunnion	2"	#1500	RTJ	Full Bore	A105	Soft Seat	14
74	DBB	Trunnion	3"	#600	RF	Reduced Bore	A105	Soft Seat	12
75	DBB	Trunnion	3"	#600	RF	Reduced Bore	A182 F316L	Soft Seat	24
76	DBB	Trunnion	3"	#600	RF	Reduced Bore	A350 LF2	Soft Seat	20
77	DBB	Trunnion	3"	#900	RTJ	Reduced Bore	A182 F316L	Soft Seat	20
78	DBB	Trunnion	3"	#900	RTJ	Reduced Bore	A350 LF2	Soft Seat	12
79	DBB (Needle)	-	2"	#300	RF	Reduced Bore	A182 F316	Metal Seat	10

### Moho Bilondo FPU Project (TOTAL / HHI - Congo)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A350 LF2	Metal Seat	4
2	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A182 F51	Soft Seat	12
3	DBB	Floating	2"	#600	RF	Reduced Bore	A105	Soft Seat	12
4	DBB	Trunnion	2"	#1500	RTJ	Full Bore	A182 F316L	Soft Seat	4
5	DBB	Trunnion	2"	#1500	RTJ	Full Bore	A350 LF2	Soft Seat	8
6	DBB	Trunnion	3"	#1500	RTJ	Full Bore	A182 F316L	Soft Seat	16
7	DBB	Trunnion	3"	#1500	RTJ	Full Bore	A350 LF2	Soft Seat	6
8	DBB (Needle)	-	1/2"	#2500	NPT	Reduced Bore	A105	Metal Seat	61
9	DBB (Needle)	-	1/2"	#2500	NPT	Reduced Bore	A182 F316L	Metal Seat	6
10	DBB (Needle)	-	1/2"	#2500	NPT	Reduced Bore	B164 N04400	Metal Seat	10
11	DBB (Needle)	-	1/2"	10000 PSI	NPT	Reduced Bore	A105	Metal Seat	54
12	DBB (Needle)	-	1/2"	10000 PSI	NPT	Reduced Bore	A182 F316L	Metal Seat	10
13	DBB (Needle)	-	1/2"	10000 PSI	NPT	Reduced Bore	A182 F51	Metal Seat	4
14	DBB (Needle)	-	1/2"	10000 PSI	NPT	Reduced Bore	A350 LF2	Metal Seat	17
15	DBB (Needle)	-	3/4"	#2500	NPT	Reduced Bore	A105	Metal Seat	283
16	DBB (Needle)	-	3/4"	#2500	NPT	Reduced Bore	A182 F316L	Metal Seat	61
17	DBB (Needle)	-	3/4"	#2500	NPT	Reduced Bore	A350 LF2	Metal Seat	6
18	DBB (Needle)	-	3/4"	#2500	NPT	Reduced Bore	B164 N04400	Metal Seat	37
19	DBB (Needle)	-	3/4"	10000 PSI	PLAIN END	Reduced Bore	A105	Metal Seat	42
20	DBB (Needle)	-	3/4"	10000 PSI	PLAIN END	Reduced Bore	A182 F316L	Metal Seat	3
21	DBB (Needle)	-	3/4"	10000 PSI	PLAIN END	Reduced Bore	A182 F51	Metal Seat	32
22	DBB (Needle)	-	3/4"	10000 PSI	PLAIN END	Reduced Bore	A350 LF2	Metal Seat	70
23	DBB (Needle)	-	2"	#150	RF	Reduced Bore	A105	Metal Seat	7
24	DBB (Needle)	-	2"	#300	RF	Reduced Bore	A182 F316L	Metal Seat	2

## 6. PRINCIPAL SUPPLY RECORDS - ONSHORE

### Longford Gas Conditioning Plant Project (EXXON MOBIL / CB&I - Australia / 2014)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1/2"	#2500	PLAIN END	Full Bore	A182 F316L	Metal Seat	30
2	DBB	Floating	1/2"	#2500	PLAIN END	Full Bore	A350 LF2	Metal Seat	80
3	DBB	Floating	1"	#600	-	Full Bore	A182 F316	Metal Seat	1
4	DBB	Floating	1"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	10
5	DBB	Floating	1"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	16
6	DBB	Floating	1"	#600	RF	Reduced Bore	A182 F316L	Soft Seat	3
7	DBB	Floating	1"	#600	RF	Reduced Bore	A350 LF2	Soft Seat	51
8	DBB	Floating	1"	#1500	RF	Reduced Bore	A182 F316L	Soft Seat	10
9	DBB	Floating	1 1/2"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	15
10	DBB	Floating	1 1/2"	#1500	RF	Reduced Bore	A182 F316L	Soft Seat	18
11	DBB	Floating	1 1/2"	#1500	RF	Reduced Bore	A350 LF2	Soft Seat	12
12	DBB	Floating	1 1/2"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	22
13	DBB	Floating	1 1/2"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	19
14	DBB	Floating	1 1/2"	#600	RF	Reduced Bore	A182 F316L	Soft Seat	3
15	DBB	Floating	1 1/2"	#600	RF	Reduced Bore	A350 LF2	Soft Seat	24
16	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	15
17	DBB	Floating	2"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	3
18	DBB	Floating	2"	#600	RF	Reduced Bore	A182 F316L	Soft Seat	11
19	DBB	Floating	2"	#600	RF	Reduced Bore	A350 LF2	Soft Seat	53
20	DBB	Floating	2"	#1500	RF	Reduced Bore	A350 LF2	Soft Seat	1

### Habshan-5 Utilities & Offsites PJT (GASCO / HDEC - UAE / 2010)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	1/2"	#600	RTJ	Full Bore	A350 LF2	Metal Seat	3
2	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A350 LF2	Metal Seat	18
3	DBB	Floating	3/4"	#600	RTJ	Reduced Bore	A350 LF2	Metal Seat	9
4	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A350 LF2	Metal Seat	2
5	DBB	Floating	1/2"	#600	RTJ	Full Bore	A182 F316L	Soft Seat	5
6	DBB	Floating	1/2"	#600	RTJ	Full Bore	A350 LF2	Soft Seat	17
7	DBB	Floating	1/2"	#1500	RTJ	Full Bore	A350 LF2	Soft Seat	9
8	DBB	Floating	1/2"	#1500	RTJ	Full Bore	B564 N08825	Soft Seat	3
9	DBB	Floating	3/4"	#600	RTJ	Reduced Bore	A182 F316L	Soft Seat	5
10	DBB	Floating	3/4"	#600	RTJ	Reduced Bore	A350 LF2	Soft Seat	7
11	DBB	Floating	3/4"	#600	RTJ	Reduced Bore	B564 N08825	Soft Seat	2
12	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A182 F316L	Soft Seat	8
13	DBB	Floating	3/4"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	92
14	DBB	Floating	1"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	22
15	DBB	Floating	1 1/2"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	5

### Group 3 Base Oil Production Facilities (TAKREER / HEC - UAE / 2011)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	DBB	Floating	3/4"	#1500	RF	Reduced Bore	A182 F316	Soft Seat	62
2	DBB	Floating	2"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	8
3	DBB (Needle)	-	1/2"	#2500	RTJ	Reduced Bore	A479 TYPE321	Metal Seat	15

### Djeno Water Treatment of Moho Nord (TOTAL / RENCO - Congo / 2014)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty's
1	DBB	Floating	1/2"	#150	RF	Full Bore	A182 F316L	Metal Seat	6
2	DBB	Floating	3/4"	#150	RF	Reduced Bore	A182 F316L	Metal Seat	25
3	DBB	Floating	2"	#150	RF	Reduced Bore	A182 F316	Metal Seat	5
4	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316L	Metal Seat	12
5	DBB	Floating	3"	#300	RF	Full Bore	A105	Metal Seat	16
6	DBB	Floating	3/4"	#150	RF	Reduced Bore	A105	Soft Seat	8
7	DBB	Floating	3/4"	#150	RF	Reduced Bore	A182 F316	Soft Seat	12
8	DBB	Floating	2"	#300	RF	Reduced Bore	A105	Soft Seat	3
9	DBB	Floating	2"	#300	RF	Reduced Bore	A182 F316	Soft Seat	3
10	DBB	Floating	3"	#300	RF	Full Bore	A182 F316	Soft Seat	4
11	DBB (Needle)	-	1/2"	#2500	NPT	Reduced Bore	A182 F316L	Metal Seat	32







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# 97, Noksansandan 27-ro, Gangseo-gu, Busan, Korea

Tel : +82-51-970-0800

Fax : +82-51-831-7920

[info@hy-lok.com](mailto:info@hy-lok.com)