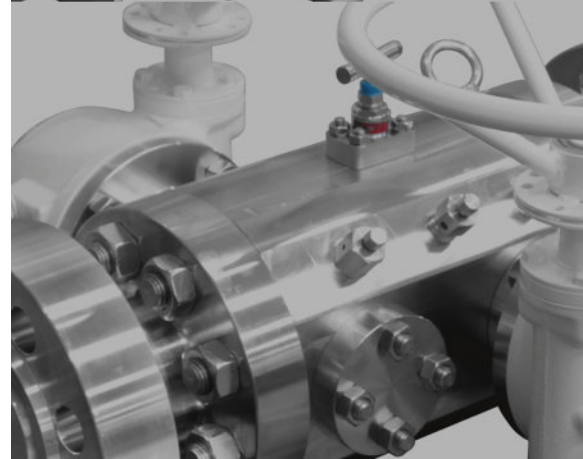
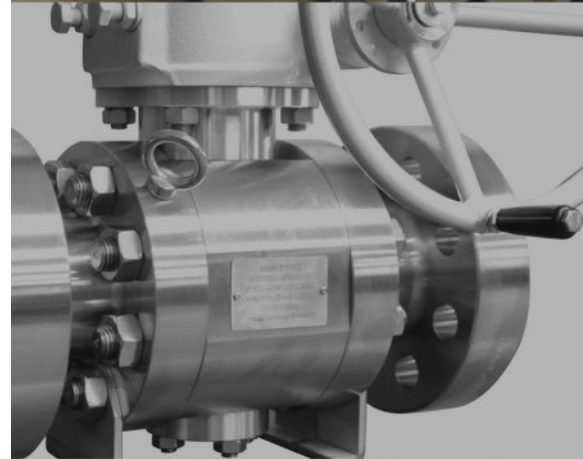




# Pre Qualification for Ball Valves



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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



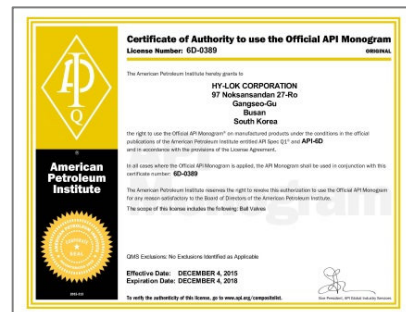
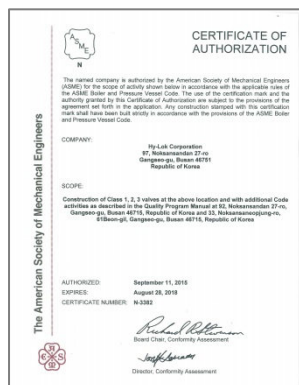
### Hy-Lok Forging

Location	Gimhae, South Korea
Facilities Area	4,067 m <sup>2</sup>
Working Scope	Fitting & 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

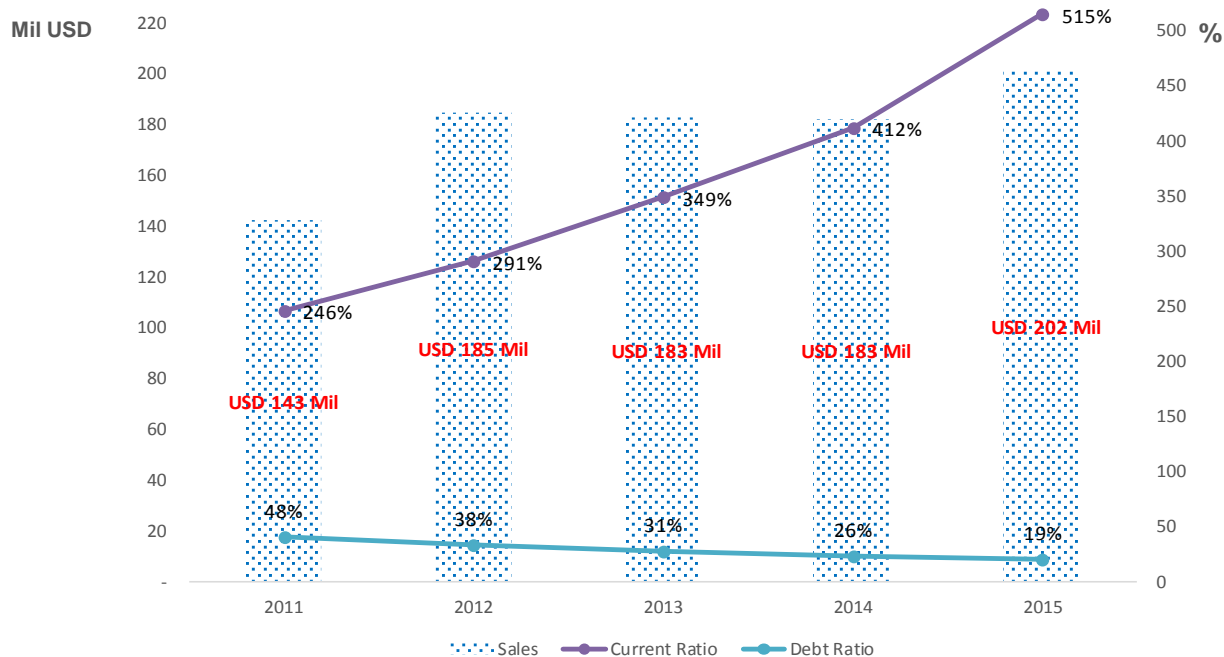


# 1. COMPANY PROFILES

## 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.
Raw Material	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
	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
Forging	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
	Wonil F&T CO.,LTD	Korea	+82-55-346-0680	+82-55-346-4832
Casting	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
	DS Castec Co.	Korea	+82-55-322-1174	+82-55-322-1106
Bolt & Nut	Samjeon Metals Co. Ltd.	Korea	+82-51-305-6446	+82-51-305-6448
	Hwashin Bolt	Korea	+82-51-264-2522	+82-51-264-2527
	Hwasung Fasteners	Korea	+82-55-366-3456	+82-55-366-3459
Seat & Packing	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
Spring	Optimum Spring Solutions	USA	+1-970-795-4890	+1-910-795-0008
	Key Bellevilles, Inc.	USA	+1-724-295-5111	+1-724-295-2570
Gear Box	Sambo Industry	Korea	+82-51-316-2881	+82-51-316-2880
Painting	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	<b>+31 528 23 4084</b>	<b>sales@hy-lok.nl</b>
		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
		Hafrsfjord	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)	<b>+971 4 882 3018</b>	<b>anzal@hy-lok.com</b>
		Dubai	East West Trading International	+971 4 3680249	anwar.q@ewi-intl.com
	Bahrain	Abu Dhabi	Next Engineering Equipments Trading	+971 2 6289100	sales@nextengg.com
		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.khajehepour@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@abuiyas.co.om
	Qatar	Doha	Well Field Industrial Suppliers & Services WLL	+974 442 9609	nbn@wellfieldqatar.com
	Saudi Arabia	Dammam	Al-Abdulkarim Holding Company (Naizak Global Eng. System Est)	+966 3 897 4721	abdalltm@akh.com.sa
America	USA	Houston	Hy-Lok USA	<b>+1 832 634 2000</b>	<b>info@hylokusa.com</b>
	Canada	Edmonton	Hy-Lok Canada	<b>+1 780 409 4484</b>	<b>info@hylok.ca</b>
	Argentina	Buenos Aires	CPI Suppliers S.A.	+54 11 4701 4386	info@cpiimporterssa.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	Tlanlneantla	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
Asia	Venezuela	Caracas	Valconca-Valvulas y Conexiones, C.A.	+58 242 364 0111	-
	China	Shanghai	Hy-Lok China Co., Ltd.	<b>+86 21 6230 8533</b>	<b>info@hy-lokchina.com</b>
	Singapore	Singapore	Hy-Lok Singapore	<b>+65 6 862 8811</b>	<b>hylok@singnet.com.sg</b>
	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
	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	DEEPLY Topside SDN BHD	+603 5033 4620	boonte@deeplycom.my
		Klang	Flytech Engineering Bhd. Sdn.	+603 3373 2228	flytech@po.jaring.my
	Pakistan	Karachi	Abugurt (Pvt) Ltd.	+9221 3454 8050	info@abugurt.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	bfphtc@gmail.com
Oceania	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@civietnam.vn
	Australia	Melbourne	Hy-Lok Oceania P/L (Melbourne)	<b>+61 3 9334 5700</b>	<b>sales@hylok.com.au</b>
Africa	Nigeria	Perth	Hy-Lok Oceania P/L (Perth)	+61 433 761 428	heather@hylok.com.au
		Lagos	Hy-Lok Nigeria	<b>+234 1 4621 606</b>	<b>info@hy-loknigeria.com</b>
	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 Manual Ball 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

### Manual Ball Valves

Hy-Lok Manual Ball Valves have been highly recognized by customers through the safety, reliability and corrosion resistance to meet the severe installation condition for oil & gas processing plant. This is a significant advantage for our customers to have the ability to procure all critical isolation 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

### Manual Ball Valves

#### Key Features

- Compact Design
- Floating or Trunnion Mounted Design
- Designed in accordance with ASME B16.34, ASME B16.5 & API 6D, 6A, 6DSS
- Full bore or reduced bore available
- Various end configurations (Flanges, Hubs, Butt-weld Ends, etc.)

#### Technical Specifications

- ASME Class                #150 to #2500
- Bore Size                50mm to 300mm
- 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

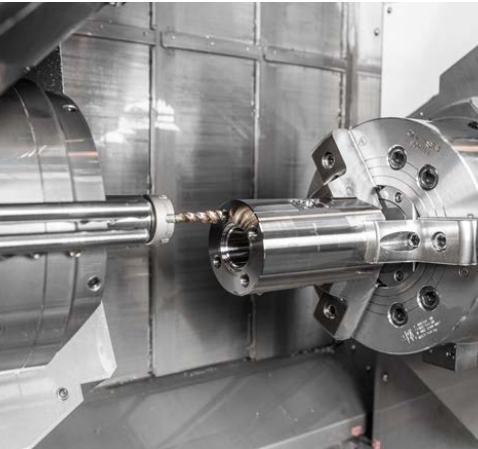
ASTM A182 F316 body material with B5970 316S11/S31 bar stock stainless steel trims and head units with Graphite seals and gland packings. Needle valves have non-rotating hard tip giving metal to metal closure and screw down tee bar operators.

**Other materials are available on request.**



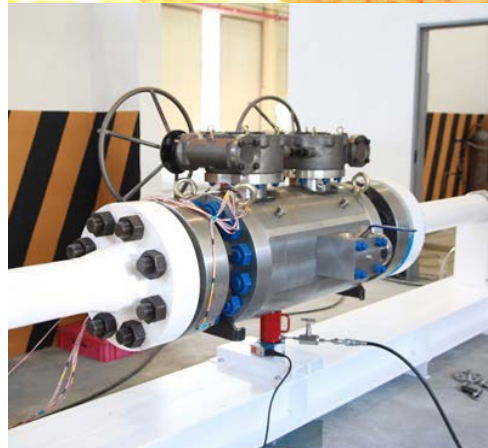


### 3. QUALITY



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 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	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>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>		

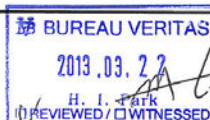




## 3. QUALITY

## 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	508	510	516	505	504	6,141
2	Working Days		22	20	25	23	24	24	22	24	20	22	24	24	275
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	112,404	115,790	116,472	113,177	1,446,799
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, Geoje 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,

A handwritten signature in blue ink, appearing to read 'Bernard Tchigique'.

Bernard Tchigique  
**CPF Manager**

MDA  
 A small circular logo with the letters 'MDA' inside.

## 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)

*A*

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

This document is the property of TOTAL. It must not be stored, reproduced or disclosed to others without written authorisation from the Company.



## 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

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## 6. PRINCIPAL SUPPLY RECORDS

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## 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	Ball	Floating	1/2"	#150	RF	Full Bore	A182 F316	Metal Seat	52
2	Ball	Floating	1/2"	#150	FF	Full Bore	B150 C63000	Soft Seat	14
3	Ball	Floating	1/2"	#150	RF	Full Bore	A182 F316	Soft Seat	3
4	Ball	Floating	1/2"	#150	RF	Full Bore	A350 LF2	Soft Seat	15
5	Ball	Floating	1/2"	#600	RTJ	Full Bore	A182 F44	Metal Seat	1
6	Ball	Floating	1"	#150	FF	Full Bore	A182 F316	Soft Seat	19
7	Ball	Floating	1"	#150	FF	Full Bore	B150 C63000	Soft Seat	281
8	Ball	Floating	1"	#150	RF	Full Bore	A182 F316	Soft Seat	308
9	Ball	Floating	1"	#150	RF	Full Bore	A182 F53	Soft Seat	4
10	Ball	Floating	1"	#150	RF	Full Bore	A350 LF2	Soft Seat	128
11	Ball	Floating	1"	#150	RF	Full Bore	B564 N06625	Soft Seat	24
12	Ball	Floating	1"	#150	RF	Full Bore	A182 F44	Metal Seat	80
13	Ball	Floating	1"	#150	RF	Full Bore	A350 LF2	Metal Seat	56
14	Ball	Floating	1"	#150	RF	Full Bore	B564 N06625	Metal Seat	3
15	Ball	Floating	1"	#300	RTJ	Full Bore	B564 N06625	Metal Seat	28
16	Ball	Floating	1"	#600	RTJ	Full Bore	A182 F316	Metal Seat	69
17	Ball	Floating	1"	#600	RTJ	Full Bore	A182 F44	Metal Seat	13
18	Ball	Floating	1"	#600	RTJ	Full Bore	A350 LF2	Metal Seat	102
19	Ball	Floating	1"	#600	RTJ	Full Bore	B564 N06625	Metal Seat	29
20	Ball	Floating	1"	#600	RTJ	Full Bore	A350 LF2	Soft Seat	6
21	Ball	Floating	1"	#600	RTJ	Full Bore	A694 F65	Soft Seat	4
22	Ball	Floating	1"	#800	-	Full Bore	A350 LF2	Soft Seat	237
23	Ball	Floating	2"	#150	FF	Full Bore	A182 F316	Soft Seat	25
24	Ball	Floating	2"	#150	FF	Full Bore	B150 C63000	Soft Seat	3
25	Ball	Floating	2"	#150	FF	Reduced Bore	A182 F316	Soft Seat	119
26	Ball	Floating	2"	#150	FF	Reduced Bore	B150 C63000	Soft Seat	301
27	Ball	Floating	2"	#150	RF	Full Bore	A182 F53	Soft Seat	2
28	Ball	Floating	2"	#150	RF	Reduced Bore	A182 F53	Soft Seat	27
29	Ball	Floating	2"	#150	RF	Reduced Bore	B381 Gr.2	Soft Seat	1
30	Ball	Floating	2"	#300	RF	Full Bore	A350 LF2	Metal Seat	2
31	Ball	Floating	2"	#300	RF	Reduced Bore	A350 LF2	Metal Seat	14
32	Ball	Floating	2"	#300	RTJ	Full Bore	A182 F316	Metal Seat	3
33	Ball	Floating	2"	#300	RTJ	Full Bore	A182 F44	Metal Seat	93
34	Ball	Floating	2"	#300	RTJ	Full Bore	A350 LF2	Metal Seat	43
35	Ball	Floating	2"	#300	RTJ	Full Bore	B564 N06625	Metal Seat	146
36	Ball	Floating	2"	#300	RTJ	Reduced Bore	A182 F316	Metal Seat	28
37	Ball	Floating	2"	#300	RTJ	Reduced Bore	A182 F44	Metal Seat	236
38	Ball	Floating	2"	#300	RTJ	Reduced Bore	A350 LF2	Metal Seat	205
39	Ball	Floating	2"	#300	RTJ	Reduced Bore	B564 N06625	Metal Seat	108
40	Ball	Floating	2"	#300	RF	Full Bore	A182 F316	Soft Seat	31
41	Ball	Floating	2"	#300	RF	Full Bore	A350 LF2	Soft Seat	57
42	Ball	Floating	2"	#300	RF	Reduced Bore	A182 F316	Soft Seat	541
43	Ball	Floating	2"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	881
44	Ball	Floating	2"	#300	RTJ	Full Bore	A182 F316	Soft Seat	30
45	Ball	Floating	2"	#300	RTJ	Full Bore	A350 LF2	Soft Seat	104
46	Ball	Floating	2"	#300	RTJ	Full Bore	B564 N06625	Soft Seat	34
47	Ball	Floating	2"	#300	RTJ	Reduced Bore	A182 F316	Soft Seat	48
48	Ball	Floating	2"	#300	RTJ	Reduced Bore	A182 F44	Soft Seat	4
49	Ball	Floating	2"	#300	RTJ	Reduced Bore	A350 LF2	Soft Seat	26
50	Ball	Floating	2"	#300	RTJ	Reduced Bore	B564 N06625	Soft Seat	48
51	Ball	Floating	2"	#800	-	Full Bore	A350 LF2	Soft Seat	8
52	Ball	Floating	2"	#800	-	Reduced Bore	A350 LF2	Soft Seat	130
53	Ball	Trunnion	1/2"	#1500	RTJ	Full Bore	A182 F316	Metal Seat	3
54	Ball	Trunnion	1/2"	#2500	RTJ	Full Bore	A182 F316	Metal Seat	8

## 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
55	Ball	Trunnion	1/2"	#1500	RTJ	Full Bore	A350 LF2	Soft Seat	2
56	Ball	Trunnion	1/2"	#1500	RTJ	Full Bore	B564 N06625	Soft Seat	57
57	Ball	Trunnion	1/2"	#2500	RTJ	Full Bore	A350 LF2	Soft Seat	5
58	Ball	Trunnion	1"	#1500	RTJ	Full Bore	A182 F316	Metal Seat	11
59	Ball	Trunnion	1"	#1500	RTJ	Full Bore	A350 LF2	Metal Seat	62
60	Ball	Trunnion	1"	#1500	RTJ	Full Bore	A350 LF2	Soft Seat	32
61	Ball	Trunnion	1"	#1500	RTJ	Full Bore	B564 N06625	Soft Seat	136
62	Ball	Trunnion	1"	#2500	RTJ	Full Bore	A182 F316	Metal Seat	173
63	Ball	Trunnion	1"	#2500	RTJ	Full Bore	A350 LF2	Metal Seat	53
64	Ball	Trunnion	1"	#2500	RTJ	Full Bore	A182 F316	Soft Seat	214
65	Ball	Trunnion	1"	#2500	RTJ	Full Bore	A350 LF2	Soft Seat	50
66	Ball	Trunnion	2"	#600	RTJ	Full Bore	A182 F316	Metal Seat	70
67	Ball	Trunnion	2"	#600	RTJ	Full Bore	A182 F44	Metal Seat	107
68	Ball	Trunnion	2"	#600	RTJ	Full Bore	A350 LF2	Metal Seat	190
69	Ball	Trunnion	2"	#600	RTJ	Full Bore	B564 N06625	Metal Seat	72
70	Ball	Trunnion	2"	#600	RTJ	Reduced Bore	A182 F316	Metal Seat	94
71	Ball	Trunnion	2"	#600	RTJ	Reduced Bore	A182 F44	Metal Seat	71
72	Ball	Trunnion	2"	#600	RTJ	Reduced Bore	A350 LF2	Metal Seat	82
73	Ball	Trunnion	2"	#600	RTJ	Reduced Bore	B564 N06625	Metal Seat	103
74	Ball	Trunnion	2"	#600	RTJ	Full Bore	A350 LF2	Soft Seat	49
75	Ball	Trunnion	2"	#600	RTJ	Reduced Bore	A350 LF2	Soft Seat	1
76	Ball	Trunnion	2"	#1500	RTJ	Full Bore	A350 LF2	Metal Seat	77
77	Ball	Trunnion	2"	#1500	RTJ	Reduced Bore	A182 F316	Metal Seat	28
78	Ball	Trunnion	2"	#1500	RTJ	Reduced Bore	A350 LF2	Metal Seat	101
79	Ball	Trunnion	2"	#1500	RTJ	Full Bore	A182 F316	Soft Seat	2
80	Ball	Trunnion	2"	#1500	RTJ	Full Bore	A182 F53	Soft Seat	4
81	Ball	Trunnion	2"	#1500	RTJ	Full Bore	A350 LF2	Soft Seat	239
82	Ball	Trunnion	2"	#1500	RTJ	Full Bore	A694 F65	Soft Seat	2
83	Ball	Trunnion	2"	#1500	RTJ	Full Bore	B564 N06625	Soft Seat	23
84	Ball	Trunnion	2"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	5
85	Ball	Trunnion	2"	#1500	RTJ	Reduced Bore	A182 F44	Soft Seat	2
86	Ball	Trunnion	2"	#1500	RTJ	Reduced Bore	A182 F53	Soft Seat	3
87	Ball	Trunnion	2"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	239
88	Ball	Trunnion	2"	#1500	RTJ	Reduced Bore	A694 F65	Soft Seat	1
89	Ball	Trunnion	2"	#1500	RTJ	Reduced Bore	B564 N06625	Soft Seat	33
90	Ball	Trunnion	2"	#2500	RTJ	Full Bore	A182 F316	Metal Seat	155
91	Ball	Trunnion	2"	#2500	RTJ	Full Bore	A350 LF2	Metal Seat	110
92	Ball	Trunnion	2"	#2500	RTJ	Reduced Bore	A182 F316	Metal Seat	173
93	Ball	Trunnion	2"	#2500	RTJ	Reduced Bore	A350 LF2	Metal Seat	102
94	Ball	Trunnion	2"	#2500	RTJ	Full Bore	A182 F316	Soft Seat	8
95	Ball	Trunnion	2"	#2500	RTJ	Full Bore	A182 F44	Soft Seat	2
96	Ball	Trunnion	2"	#2500	RTJ	Reduced Bore	A182 F316	Soft Seat	71
97	Ball	Trunnion	2"	#2500	RTJ	Reduced Bore	A182 F44	Soft Seat	1
98	Ball	Trunnion	2"	#2500	RTJ	Reduced Bore	A182 F53	Soft Seat	13
99	Ball	Trunnion	2"	#2500	RTJ	Reduced Bore	A350 LF2	Soft Seat	51

## 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	Ball	Floating	1/2"	#150	RF	Full Bore	B381 Gr.2	Soft Seat	6
2	Ball	Floating	1/2"	#2500	RTJ	Full Bore	A105	Soft Seat	3
3	Ball	Floating	1"	#150	RF	Full Bore	B381 Gr.2	Soft Seat	7
4	Ball	Floating	1"	#800	-	Full Bore	A105	Soft Seat	3
5	Ball	Floating	1"	#1500	RTJ	Full Bore	A182 F316	Soft Seat	39
6	Ball	Floating	1"	#2500	RTJ	Full Bore	A105	Soft Seat	8
7	Ball	Floating	1"	#2500	RTJ	Full Bore	B564 N06625	Soft Seat	13
8	Ball	Floating	1 1/2"	#1500	RTJ	Full Bore	A182 F316	Soft Seat	4
9	Ball	Floating	2"	#150	RF	Full Bore	A105	Soft Seat	29
10	Ball	Floating	3"	#150	RF	Full Bore	B381 Gr.2	Soft Seat	1
11	Ball	Trunnion	2"	#1500	RTJ	Full Bore	A105	Soft Seat	6
12	Ball	Trunnion	2"	#1500	RTJ	Full Bore	A182 F316	Soft Seat	6
13	Ball	Trunnion	2"	#1500	RTJ	Reduced Bore	A105	Soft Seat	80
14	Ball	Trunnion	2"	#1500	RTJ	Reduced Bore	A182 F316	Soft Seat	49
15	Ball	Trunnion	2"	#2500	RTJ	Full Bore	A105	Soft Seat	10
16	Ball	Trunnion	2"	#2500	RTJ	Full Bore	A182 F316	Soft Seat	3
17	Ball	Trunnion	2"	#2500	RTJ	Full Bore	B564 N06625	Soft Seat	1
18	Ball	Trunnion	2"	#2500	RTJ	Reduced Bore	A105	Soft Seat	250
19	Ball	Trunnion	2"	#2500	RTJ	Reduced Bore	A182 F316	Soft Seat	21
20	Ball	Trunnion	2"	#2500	RTJ	Reduced Bore	B564 N06625	Soft Seat	538

## 6. PRINCIPAL SUPPLY RECORDS - PLATFORM

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	Ball	Floating	1/2"	#150	RF	Full Bore	B564 N06625	Metal Seat	17
2	Ball	Floating	1/2"	#1500	RTJ	Full Bore	B564 N06625	Metal Seat	31
3	Ball	Floating	1/2"	#300	RF	Full Bore	A105	Metal Seat	12
4	Ball	Floating	1/2"	#300	RTJ	Full Bore	A182 F316	Metal Seat	12
5	Ball	Floating	3/4"	#300	RF	Full Bore	A105	Metal Seat	6
6	Ball	Floating	1"	#150	RF	Full Bore	A182 F316	Metal Seat	14
7	Ball	Floating	1"	#300	RF	Full Bore	A105	Metal Seat	106
8	Ball	Floating	1"	#300	RTJ	Full Bore	A182 F316	Metal Seat	3
9	Ball	Floating	1/2"	#150	RF	Full Bore	A182 F316	Soft Seat	32
10	Ball	Floating	1/2"	#150	RF	Full Bore	A182 F44	Soft Seat	57
11	Ball	Floating	1/2"	#150	RF	Full Bore	B148 C95800	Soft Seat	16
12	Ball	Floating	1/2"	#300	RF	Full Bore	A105	Soft Seat	5
13	Ball	Floating	1/2"	#300	RTJ	Full Bore	A182 F44	Soft Seat	33
14	Ball	Floating	1/2"	#300	RTJ	Full Bore	B564 N06625	Soft Seat	6
15	Ball	Floating	1/2"	#600	RTJ	Full Bore	A182 F316	Soft Seat	9
16	Ball	Floating	1/2"	#600	RTJ	Full Bore	A182 F44	Soft Seat	7
17	Ball	Floating	1/2"	#600	RTJ	Full Bore	B564 N06625	Soft Seat	51
18	Ball	Floating	1/2"	#1500	RTJ	Full Bore	B564 N06625	Soft Seat	28
19	Ball	Floating	1/2"	#2500	RTJ	Full Bore	B564 N06625	Soft Seat	139
20	Ball	Floating	3/4"	#150	RF	Full Bore	A105	Soft Seat	6
21	Ball	Floating	3/4"	#150	RF	Full Bore	A182 F316	Soft Seat	2
22	Ball	Floating	3/4"	#150	RF	Full Bore	A182 F44	Soft Seat	26
23	Ball	Floating	3/4"	#150	RF	Full Bore	B148 C95800	Soft Seat	33
24	Ball	Floating	3/4"	#300	RF	Full Bore	A105	Soft Seat	11
25	Ball	Floating	1"	#150	FF	Full Bore	A105	Soft Seat	18
26	Ball	Floating	1"	#150	FF	Full Bore	A182 F44	Soft Seat	3
27	Ball	Floating	1"	#150	FF	Full Bore	B148 C95800	Soft Seat	448
28	Ball	Floating	1"	#150	RF	Full Bore	A105	Soft Seat	247
29	Ball	Floating	1"	#150	RF	Full Bore	A182 F316	Soft Seat	596
30	Ball	Floating	1"	#150	RF	Full Bore	A182 F44	Soft Seat	155
31	Ball	Floating	1"	#150	RF	Full Bore	A350 LF2	Soft Seat	5
32	Ball	Floating	1"	#150	RF	Full Bore	B381 Gr.2	Soft Seat	7
33	Ball	Floating	1"	#300	RF	Full Bore	A105	Soft Seat	11
34	Ball	Floating	1"	#300	RF	Full Bore	A182 F316	Soft Seat	9
35	Ball	Floating	1"	#300	RTJ	Full Bore	A182 F316	Soft Seat	16
36	Ball	Floating	1"	#300	RTJ	Full Bore	A182 F44	Soft Seat	64
37	Ball	Floating	1"	#300	RTJ	Full Bore	B564 N06625	Soft Seat	51
38	Ball	Floating	1"	#600	RTJ	Full Bore	A105	Soft Seat	2
39	Ball	Floating	1"	#600	RTJ	Full Bore	A182 F316	Soft Seat	70
40	Ball	Floating	1"	#600	RTJ	Full Bore	A182 F44	Soft Seat	64
41	Ball	Floating	1"	#600	RTJ	Full Bore	B564 N06625	Soft Seat	3
42	Ball	Floating	1"	#1500	RTJ	Full Bore	A350 LF2	Soft Seat	50
43	Ball	Floating	1"	#2500	RTJ	Full Bore	A105	Soft Seat	13
44	Ball	Floating	1"	#2500	RTJ	Full Bore	A182 F316	Soft Seat	12
45	Ball	Floating	1"	#2500	RTJ	Full Bore	A350 LF2	Soft Seat	115
46	Ball	Floating	2"	#150	RF	Full Bore	A182 F316	Soft Seat	96
47	Ball	Floating	2"	#150	RF	Full Bore	A351 CF8M	Soft Seat	97
48	Ball	Floating	2"	#300	RF	Full Bore	A182 F316	Soft Seat	152
49	Ball	Floating	3"	#150	RF	Full Bore	A351 CF8M	Soft Seat	10



## 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	Ball	Floating	1/2"	#300	RF	Full Bore	A351 CF8M	Soft Seat	5
2	Ball	Floating	1/2"	#600	RF	Full Bore	A351 CF8M	Soft Seat	7
3	Ball	Floating	3/4"	#150	RF	Full Bore	A216 WCB	Soft Seat	8
4	Ball	Floating	3/4"	#150	RF	Full Bore	A351 CF8M	Soft Seat	2
5	Ball	Floating	3/4"	#150	RF	Full Bore	A352 LCC	Soft Seat	71
6	Ball	Floating	3/4"	#300	RF	Full Bore	A351 CF8M	Soft Seat	64
7	Ball	Floating	3/4"	#600	RF	Full Bore	A351 CF8M	Soft Seat	18
8	Ball	Floating	1"	#150	FF	Full Bore	B584 C95400	Soft Seat	98
9	Ball	Floating	1"	#150	RF	Full Bore	A216 WCB	Soft Seat	117
10	Ball	Floating	1"	#150	RF	Full Bore	A351 CF8M	Soft Seat	59
11	Ball	Floating	1"	#300	RF	Full Bore	A182 F51	Soft Seat	15
12	Ball	Floating	1"	#300	RF	Full Bore	A351 CF8M	Soft Seat	106
13	Ball	Floating	1"	#300	RF	Full Bore	A352 LCC	Soft Seat	6
14	Ball	Floating	1"	#600	RF	Full Bore	A182 F51	Soft Seat	61
15	Ball	Floating	1"	#600	RF	Full Bore	A351 CF8M	Soft Seat	95
16	Ball	Floating	1"	#600	RF	Full Bore	A352 LCC	Soft Seat	22
17	Ball	Floating	1 1/2"	#150	FF	Full Bore	B584 C95400	Soft Seat	8
18	Ball	Floating	1 1/2"	#150	RF	Full Bore	A351 CF8M	Soft Seat	28
19	Ball	Floating	2"	#150	FF	Full Bore	B584 C95400	Soft Seat	76
20	Ball	Floating	2"	#150	RF	Full Bore	A216 WCB	Soft Seat	75
21	Ball	Floating	2"	#150	RF	Full Bore	A351 CF8M	Soft Seat	45
22	Ball	Floating	2"	#150	RF	Full Bore	A352 LCC	Soft Seat	4
23	Ball	Floating	2"	#300	RF	Full Bore	A182 F51	Soft Seat	18
24	Ball	Floating	2"	#300	RF	Full Bore	A351 CF8M	Soft Seat	93
25	Ball	Floating	2"	#300	RF	Full Bore	A352 LCC	Soft Seat	4
26	Ball	Floating	3"	#150	FF	Full Bore	B584 C95400	Soft Seat	2
27	Ball	Floating	3"	#150	FF	Reduced Bore	B584 C95400	Soft Seat	12
28	Ball	Floating	3"	#150	RF	Full Bore	A216 WCB	Soft Seat	2
29	Ball	Floating	3"	#150	RF	Full Bore	A352 LCC	Soft Seat	27
30	Ball	Floating	3"	#150	RF	Reduced Bore	A216 WCB	Soft Seat	3
31	Ball	Floating	3"	#300	RF	Full Bore	A351 CF8M	Soft Seat	12
32	Ball	Floating	3"	#300	RF	Reduced Bore	A182 F51	Soft Seat	27
33	Ball	Floating	3"	#300	RF	Reduced Bore	A351 CF8M	Soft Seat	5
34	Ball	Floating	3"	#600	RF	Reduced Bore	A182 F51	Soft Seat	16
35	Ball	Floating	4"	#150	FF	Full Bore	B584 C95400	Soft Seat	22
36	Ball	Floating	4"	#150	RF	Full Bore	A216 WCB	Soft Seat	2
37	Ball	Floating	4"	#150	RF	Full Bore	A352 LCC	Soft Seat	8
38	Ball	Floating	4"	#150	RF	Reduced Bore	A216 WCB	Soft Seat	10
39	Ball	Floating	4"	#300	RF	Full Bore	A182 F51	Soft Seat	4
40	Ball	Floating	4"	#300	RF	Full Bore	A352 LCC	Soft Seat	1
41	Ball	Floating	4"	#300	RF	Reduced Bore	A351 CF8M	Soft Seat	10
42	Ball	Floating	4"	#600	RF	Reduced Bore	A182 F51	Soft Seat	12
43	Ball	Floating	6"	#150	RF	Full Bore	A216 WCB	Soft Seat	2
44	Ball	Floating	6"	#150	RF	Full Bore	A352 LCC	Soft Seat	4
45	Ball	Floating	6"	#600	RF	Reduced Bore	A351 CF8M	Soft Seat	6
46	Ball	Trunnion	2"	#2500	RTJ	Reduced Bore	A182 F316	Soft Seat	1
47	Ball	Trunnion	2"	#600	RF	Full Bore	A182 F51	Soft Seat	93
48	Ball	Trunnion	2"	#600	RF	Full Bore	A351 CF8M	Soft Seat	66
49	Ball	Trunnion	2"	#600	RF	Full Bore	A352 LCC	Soft Seat	4
50	Ball	Trunnion	3"	#600	RF	Reduced Bore	A351 CF8M	Soft Seat	14
51	Ball	Trunnion	4"	#600	RF	Full Bore	A352 LCC	Soft Seat	9
52	Ball	Trunnion	6"	#300	RF	Reduced Bore	A351 CF8M	Soft Seat	1

## 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	Ball	Floating	3"	#300	RF	Full Bore	A216 WCB	Metal Seat	5
2	Ball	Floating	4"	#300	RF	Full Bore	A216 WCB	Metal Seat	3
3	Ball	Floating	1/2"	#1500	-	Full Bore	A105	Soft Seat	10
4	Ball	Floating	1/2"	#1500	-	Full Bore	A182 F316	Soft Seat	3
5	Ball	Floating	1/2"	#600	-	Full Bore	A105	Soft Seat	79
6	Ball	Floating	3/4"	#150	RF	Full Bore	A216 WCB	Soft Seat	5
7	Ball	Floating	3/4"	#300	-	Full Bore	A182 F316L	Soft Seat	2
8	Ball	Floating	3/4"	#600	-	Full Bore	A105	Soft Seat	45
9	Ball	Floating	3/4"	#1500	-	Full Bore	A105	Soft Seat	278
10	Ball	Floating	3/4"	#1500	-	Full Bore	A182 F316	Soft Seat	4
11	Ball	Floating	3/4"	#1500	-	Full Bore	A182 F316L	Soft Seat	25
12	Ball	Floating	3/4"	#1500	-	Full Bore	A350 LF2	Soft Seat	36
13	Ball	Floating	3/4"	#1500	-	Full Bore	B164 N04400	Soft Seat	9
14	Ball	Floating	3/4"	#2500	-	Full Bore	A105	Soft Seat	27
15	Ball	Floating	1"	#150	-	Full Bore	B148 C95500	Soft Seat	1
16	Ball	Floating	1"	#150	FF	Full Bore	B148 C95500	Soft Seat	3
17	Ball	Floating	1"	#150	RF	Full Bore	A216 WCB	Soft Seat	1
18	Ball	Floating	1"	#1500	-	Full Bore	A105	Soft Seat	66
19	Ball	Floating	1"	#1500	-	Full Bore	A182 F316	Soft Seat	2
20	Ball	Floating	1"	#1500	-	Full Bore	B164 N04400	Soft Seat	37
21	Ball	Floating	1"	#300	RF	Full Bore	A216 WCB	Soft Seat	4
22	Ball	Floating	1"	#300	RF	Full Bore	A351 CF8M	Soft Seat	1
23	Ball	Floating	1"	#600	-	Full Bore	A105	Soft Seat	142
24	Ball	Floating	1"	#600	RF	Full Bore	A216 WCB	Soft Seat	3
25	Ball	Floating	1 1/2"	#300	RF	Full Bore	A216 WCB	Soft Seat	1
26	Ball	Floating	1 1/2"	#600	-	Full Bore	A105	Soft Seat	4
27	Ball	Floating	1 1/2"	#900	RTJ	Full Bore	A105	Soft Seat	2
28	Ball	Floating	1 1/2"	#1500	-	Full Bore	A105	Soft Seat	1
29	Ball	Floating	2"	#150	-	Full Bore	B148 C95500	Soft Seat	28
30	Ball	Floating	2"	#150	FF	Full Bore	B148 C95500	Soft Seat	3
31	Ball	Floating	2"	#150	RF	Full Bore	A216 WCB	Soft Seat	144
32	Ball	Floating	2"	#150	RF	Full Bore	A351 CF8M	Soft Seat	9
33	Ball	Floating	2"	#150	RF	Full Bore	A352 LCC	Soft Seat	1
34	Ball	Floating	2"	#300	RF	Full Bore	A216 WCB	Soft Seat	35
35	Ball	Floating	2"	#300	RF	Full Bore	A351 CF8M	Soft Seat	3
36	Ball	Floating	2"	#600	RF	Full Bore	A216 WCB	Soft Seat	20
37	Ball	Floating	2"	#600	RF	Full Bore	A351 CF8M	Soft Seat	1
38	Ball	Floating	3"	#150	RF	Full Bore	A216 WCB	Soft Seat	10
39	Ball	Floating	3"	#300	RF	Full Bore	A216 WCB	Soft Seat	2
40	Ball	Floating	3"	#300	RF	Full Bore	A351 CF8M	Soft Seat	3
41	Ball	Floating	3"	#300	RF	Full Bore	A352 LCC	Soft Seat	1
42	Ball	Floating	4"	#150	RF	Full Bore	A216 WCB	Soft Seat	9
43	Ball	Floating	4"	#300	RF	Full Bore	A216 WCB	Soft Seat	6
44	Ball	Floating	4"	#300	RF	Full Bore	A352 LCC	Soft Seat	2
45	Ball	Trunnion	3"	#300	RF	Full Bore	A216 WCB	Metal Seat	2
46	Ball	Trunnion	4"	#300	RF	Full Bore	A216 WCB	Metal Seat	2
47	Ball	Trunnion	2"	#150	RF	Full Bore	A351 CF8M	Soft Seat	3
48	Ball	Trunnion	2"	#300	RF	Full Bore	A351 CF8M	Soft Seat	2
49	Ball	Trunnion	2"	#600	RF	Full Bore	A216 WCB	Soft Seat	9
50	Ball	Trunnion	2"	#600	RF	Full Bore	A351 CF8M	Soft Seat	1
51	Ball	Trunnion	2"	#900	RTJ	Full Bore	A216 WCB	Soft Seat	8
52	Ball	Trunnion	3"	#150	RF	Full Bore	A216 WCB	Soft Seat	9
53	Ball	Trunnion	3"	#150	RF	Full Bore	A351 CF8M	Soft Seat	4
54	Ball	Trunnion	3"	#150	RF	Full Bore	A352 LCC	Soft Seat	6
55	Ball	Trunnion	3"	#300	RF	Full Bore	A216 WCB	Soft Seat	2
56	Ball	Trunnion	3"	#300	RF	Full Bore	A216 WCB	Soft Seat	2
57	Ball	Trunnion	3"	#300	RF	Full Bore	A351 CF8M	Soft Seat	2
58	Ball	Trunnion	3"	#600	RF	Full Bore	A216 WCB	Soft Seat	4

## 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
59	Ball	Trunnion	4"	#150	RF	Full Bore	A216 WCB	Soft Seat	22
60	Ball	Trunnion	4"	#150	RF	Full Bore	A351 CF8M	Soft Seat	5
61	Ball	Trunnion	4"	#150	RF	Full Bore	A352 LCC	Soft Seat	6
62	Ball	Trunnion	4"	#300	RF	Full Bore	A351 CF8M	Soft Seat	4
63	Ball	Trunnion	4"	#600	RF	Full Bore	A216 WCB	Soft Seat	4
64	Ball	Trunnion	4"	#600	RF	Full Bore	A351 CF8M	Soft Seat	4
65	Ball	Trunnion	4"	#900	RTJ	Full Bore	A216 WCB	Soft Seat	2
66	Ball	Trunnion	6"	#150	RF	Full Bore	A216 WCB	Soft Seat	15
67	Ball	Trunnion	6"	#150	RF	Full Bore	A352 LCC	Soft Seat	2
68	Ball	Trunnion	6"	#300	RF	Full Bore	A216 WCB	Soft Seat	4
69	Ball	Trunnion	6"	#600	RF	Full Bore	A216 WCB	Soft Seat	4
70	Ball	Trunnion	8"	#150	RF	Full Bore	A216 WCB	Soft Seat	7
71	Ball	Trunnion	8"	#150	RF	Full Bore	A351 CF8M	Soft Seat	1
72	Ball	Trunnion	8"	#300	RF	Full Bore	A216 WCB	Soft Seat	2
73	Ball	Trunnion	8"	#900	RTJ	Full Bore	A216 WCB	Soft Seat	2
74	Ball	Trunnion	10"	#150	RF	Full Bore	A216 WCB	Soft Seat	2

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

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	Ball	Floating	3/4"	#2500	RTJ	Full Bore	A182 F51	Metal Seat	10
2	Ball	Floating	1"	#2500	RTJ	Full Bore	A182 F51	Metal Seat	3
3	Ball	Floating	3/4"	#150	RF	Full Bore	A105	Soft Seat	23
4	Ball	Floating	3/4"	#150	RF	Full Bore	A182 F51	Soft Seat	33
5	Ball	Floating	3/4"	#150	RF	Full Bore	A182 F53	Soft Seat	15
6	Ball	Floating	3/4"	#300	RF	Full Bore	A182 F316	Soft Seat	2
7	Ball	Floating	3/4"	#300	RF	Full Bore	A182 F51	Soft Seat	6
8	Ball	Floating	3/4"	#600	RF	Full Bore	A105	Soft Seat	4
9	Ball	Floating	3/4"	#600	RF	Full Bore	A182 F316	Soft Seat	6
10	Ball	Floating	3/4"	#1500	RTJ	Full Bore	A182 F51	Soft Seat	4
11	Ball	Floating	3/4"	#2500	RTJ	Full Bore	A182 F316	Soft Seat	8
12	Ball	Floating	3/4"	#2500	RTJ	Full Bore	A350 LF2	Soft Seat	1
13	Ball	Floating	3/4"	#600	RF	Full Bore	A182 F51	Soft Seat	3
14	Ball	Floating	1"	#150	RF	Full Bore	A105	Soft Seat	1
15	Ball	Floating	1"	#150	RF	Full Bore	A182 F51	Soft Seat	183
16	Ball	Floating	1"	#150	RF	Full Bore	A216 WCB	Soft Seat	8
17	Ball	Floating	1"	#150	RF	Full Bore	B546 N10276	Soft Seat	1
18	Ball	Floating	1"	#600	RF	Full Bore	A182 F51	Soft Seat	1
19	Ball	Floating	1 1/2"	#150	RF	Full Bore	A105	Soft Seat	1
20	Ball	Floating	1 1/2"	#150	RF	Full Bore	A182 F51	Soft Seat	22
21	Ball	Floating	1 1/2"	#150	RF	Full Bore	B546 N10276	Soft Seat	1
22	Ball	Floating	2"	#150	RF	Full Bore	A351 CF8M	Soft Seat	4

### 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

## 6. PRINCIPAL SUPPLY RECORDS - PLATFORM

### 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

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

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	Ball	Floating	1/2"	#150	RF	Full Bore	A479 TYPE321H	Soft Seat	1
2	Ball	Floating	1/2"	#1500	-	Full Bore	A479 TYPE321H	Soft Seat	2
3	Ball	Floating	3/4"	#150	RF	Full Bore	A351 CF8M	Soft Seat	2
4	Ball	Floating	3/4"	#800	-	Full Bore	A182 F51	Soft Seat	16
5	Ball	Floating	3/4"	#800	-	Full Bore	A350 LF2	Soft Seat	27
6	Ball	Floating	3/4"	#800	-	Full Bore	A479 TYPE321H	Soft Seat	14
7	Ball	Floating	3/4"	#1500	-	Full Bore	A182 F51	Soft Seat	10
8	Ball	Floating	3/4"	#1500	-	Full Bore	A350 LF2	Soft Seat	1
9	Ball	Floating	3/4"	#1500	-	Full Bore	A479 TYPE321H	Soft Seat	8
10	Ball	Floating	1"	#150	RF	Full Bore	A350 LF2	Soft Seat	1
11	Ball	Floating	1"	#150	RF	Full Bore	A479 TYPE321H	Soft Seat	3
12	Ball	Floating	1"	#800	-	Full Bore	A350 LF2	Soft Seat	39
13	Ball	Floating	1"	#800	-	Full Bore	A479 TYPE321H	Soft Seat	9
14	Ball	Floating	1"	#1500	-	Full Bore	A182 F51	Soft Seat	9
15	Ball	Floating	1"	#1500	-	Full Bore	A350 LF2	Soft Seat	8
16	Ball	Floating	1"	#1500	-	Full Bore	A479 TYPE321H	Soft Seat	35
17	Ball	Floating	1 1/2"	#150	RF	Full Bore	A351 CF8M	Soft Seat	2
18	Ball	Floating	1 1/2"	#800	-	Full Bore	A479 TYPE321H	Soft Seat	2
19	Ball	Floating	1 1/2"	#1500	-	Full Bore	A479 TYPE321H	Soft Seat	1
20	Ball	Floating	2"	#150	RF	Full Bore	A350 LF2	Soft Seat	13
21	Ball	Floating	2"	#150	RF	Reduced Bore	A479 TYPE321H	Soft Seat	2
22	Ball	Trunnion	1"	#1500	-	Full Bore	A182 F51	Metal Seat	4
23	Ball	Trunnion	2"	#2500	RTJ	Reduced Bore	A182 F316	Soft Seat	1

## 6. PRINCIPAL SUPPLY RECORDS - FPSO

### AGBAMI FPSO (CHEVRON / DSME - Nigeria / 2005)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	Ball	Floating	3/4"	#150	RF	Full Bore	A216 WCB	Metal Seat	69
2	Ball	Floating	3/4"	#300	RF	Full Bore	A216 WCB	Metal Seat	53
3	Ball	Floating	3/4"	#600	RF	Full Bore	A216 WCB	Metal Seat	9
4	Ball	Floating	1"	#150	RF	Full Bore	A216 WCB	Metal Seat	6
5	Ball	Floating	1"	#300	RF	Full Bore	A216 WCB	Metal Seat	12
6	Ball	Floating	2"	#150	RF	Full Bore	A216 WCB	Metal Seat	6
7	Ball	Floating	2"	#300	RF	Full Bore	A216 WCB	Metal Seat	18
8	Ball	Floating	JIS 20A	JIS 10K	RF	Full Bore	SCS14A	Metal Seat	10
9	Ball	Floating	JIS 20A	JIS 30K	RF	Full Bore	SC48	Metal Seat	4
10	Ball	Floating	JIS 20A	JIS 30K	RF	Full Bore	SCS14A	Metal Seat	12
11	Ball	Floating	JIS 25A	JIS 30K	RF	Full Bore	SC48	Metal Seat	5
12	Ball	Floating	JIS 50A	JIS 5K	FF	Full Bore	SCS14A	Metal Seat	6
13	Ball	Floating	1/2"	#150	RF	Full Bore	ALBC2	Soft Seat	5
14	Ball	Floating	1/2"	#300	RF	Full Bore	A216 WCB	Soft Seat	1
15	Ball	Floating	3/4"	#150	FF	Full Bore	ALBC2	Soft Seat	9
16	Ball	Floating	3/4"	#150	RF	Full Bore	A216 WCB	Soft Seat	289
17	Ball	Floating	3/4"	#150	RF	Full Bore	A351 CF8M	Soft Seat	228
18	Ball	Floating	3/4"	#150	RF	Full Bore	SCS14A	Soft Seat	49
19	Ball	Floating	3/4"	#2500	RTJ	Full Bore	A182 F53	Soft Seat	7
20	Ball	Floating	3/4"	#300	RF	Full Bore	A216 WCB	Soft Seat	118
21	Ball	Floating	3/4"	#300	RF	Full Bore	A351 CF8M	Soft Seat	6
22	Ball	Floating	3/4"	#300	RF	Full Bore	SCS14A	Soft Seat	150
23	Ball	Floating	3/4"	#600	RF	Full Bore	A216 WCB	Soft Seat	80
24	Ball	Floating	3/4"	#600	RF	Full Bore	A351 CF8M	Soft Seat	25
25	Ball	Floating	1"	#150	FF	Full Bore	ALBC2	Soft Seat	14
26	Ball	Floating	1"	#150	RF	Full Bore	A216 WCB	Soft Seat	79
27	Ball	Floating	1"	#150	RF	Full Bore	A351 CF8M	Soft Seat	26
28	Ball	Floating	1"	#150	RF	Full Bore	ALBC2	Soft Seat	3
29	Ball	Floating	1"	#300	RF	Full Bore	A216 WCB	Soft Seat	26
30	Ball	Floating	1"	#600	RF	Full Bore	A216 WCB	Soft Seat	4
31	Ball	Floating	1 1/2"	#150	RF	Full Bore	A216 WCB	Soft Seat	8
32	Ball	Floating	1 1/2"	#150	RF	Full Bore	A351 CF8M	Soft Seat	30
33	Ball	Floating	1 1/2"	#300	RF	Full Bore	A216 WCB	Soft Seat	6
34	Ball	Floating	1 1/2"	#600	RF	Full Bore	A216 WCB	Soft Seat	3
35	Ball	Floating	1 1/2"	#600	RF	Full Bore	A351 CF8M	Soft Seat	4
36	Ball	Floating	2"	#150	RF	Full Bore	A216 WCB	Soft Seat	47
37	Ball	Floating	2"	#150	RF	Full Bore	A351 CF8M	Soft Seat	15
38	Ball	Floating	2"	#1500	RTJ	Full Bore	A182 F316	Soft Seat	3
39	Ball	Floating	2"	#300	RF	Full Bore	A216 WCB	Soft Seat	35
40	Ball	Floating	3"	#150	RF	Full Bore	A216 WCB	Soft Seat	1
41	Ball	Floating	3"	JIS 10K	FF	Full Bore	ALBC2	Soft Seat	2
42	Ball	Floating	3"	JIS 10K	FF	Full Bore	SCS14A	Soft Seat	2
43	Ball	Floating	3"	JIS 16K	RF	Full Bore	ALBC2	Soft Seat	4
44	Ball	Floating	3"	JIS 5K	FF	Full Bore	ALBC2	Soft Seat	3
45	Ball	Floating	3"	JIS 5K	RF	Full Bore	SC48	Soft Seat	1
46	Ball	Floating	3"	JIS 5K	RF	Full Bore	SCS14A	Soft Seat	1
47	Ball	Floating	4"	#150	RF	Full Bore	A216 WCB	Soft Seat	3
48	Ball	Floating	JIS 15A	JIS 10K	FF	Full Bore	ALBC2	Soft Seat	22
49	Ball	Floating	JIS 15A	JIS 10K	FF	Full Bore	SCS14A	Soft Seat	54
50	Ball	Floating	JIS 15A	JIS 16K	FF	Full Bore	ALBC2	Soft Seat	6
51	Ball	Floating	JIS 15A	JIS 16K	FF	Full Bore	SCS14A	Soft Seat	53
52	Ball	Floating	JIS 15A	JIS 16K	RF	Full Bore	SC48	Soft Seat	4
53	Ball	Floating	JIS 15A	JIS 16K	RF	Full Bore	SCS14A	Soft Seat	14
54	Ball	Floating	JIS 15A	JIS 30K	RF	Full Bore	SCS14A	Soft Seat	52
55	Ball	Floating	JIS 15A	JIS 5K	FF	Full Bore	ALBC2	Soft Seat	76
56	Ball	Floating	JIS 15A	JIS 5K	FF	Full Bore	SCS14A	Soft Seat	16
57	Ball	Floating	JIS 15A	JIS 5K	RF	Full Bore	SCS14A	Soft Seat	67
58	Ball	Floating	JIS 20A	JIS 10K	FF	Full Bore	ALBC2	Soft Seat	77
59	Ball	Floating	JIS 20A	JIS 10K	FF	Full Bore	SCS14A	Soft Seat	112
60	Ball	Floating	JIS 20A	JIS 10K	RF	Full Bore	SCS14A	Soft Seat	14
61	Ball	Floating	JIS 20A	JIS 16K	FF	Full Bore	ALBC2	Soft Seat	20
62	Ball	Floating	JIS 20A	JIS 16K	FF	Full Bore	SC48	Soft Seat	163
63	Ball	Floating	JIS 20A	JIS 16K	FF	Full Bore	SCS14A	Soft Seat	99
64	Ball	Floating	JIS 20A	JIS 16K	RF	Full Bore	ALBC2	Soft Seat	3

## 6. PRINCIPAL SUPPLY RECORDS - FPSO

### AGBAMI FPSO (CHEVRON / DSME - Nigeria / 2005)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
65	Ball	Floating	JIS 20A	JIS 16K	RF	Full Bore	SC48	Soft Seat	10
66	Ball	Floating	JIS 20A	JIS 16K	RF	Full Bore	SCS14A	Soft Seat	101
67	Ball	Floating	JIS 20A	JIS 20K	RF	Full Bore	SCS14A	Soft Seat	22
68	Ball	Floating	JIS 20A	JIS 30K	RF	Full Bore	SC48	Soft Seat	9
69	Ball	Floating	JIS 20A	JIS 30K	RF	Full Bore	SCS14A	Soft Seat	18
70	Ball	Floating	JIS 20A	JIS 5K	FF	Full Bore	ALBC2	Soft Seat	74
71	Ball	Floating	JIS 20A	JIS 5K	FF	Full Bore	SCS14A	Soft Seat	151
72	Ball	Floating	JIS 20A	JIS 5K	RF	Full Bore	ALBC2	Soft Seat	10
73	Ball	Floating	JIS 20A	JIS 5K	RF	Full Bore	SCS14A	Soft Seat	42
74	Ball	Floating	JIS 25A	JIS 10K	FF	Full Bore	ALBC2	Soft Seat	21
75	Ball	Floating	JIS 25A	JIS 10K	FF	Full Bore	SC48	Soft Seat	9
76	Ball	Floating	JIS 25A	JIS 10K	FF	Full Bore	SCS14A	Soft Seat	62
77	Ball	Floating	JIS 25A	JIS 10K	RF	Full Bore	ALBC2	Soft Seat	43
78	Ball	Floating	JIS 25A	JIS 10K	RF	Full Bore	SCS14A	Soft Seat	25
79	Ball	Floating	JIS 25A	JIS 16K	FF	Full Bore	ALBC2	Soft Seat	10
80	Ball	Floating	JIS 25A	JIS 16K	FF	Full Bore	SC48	Soft Seat	13
81	Ball	Floating	JIS 25A	JIS 16K	FF	Full Bore	SCS14A	Soft Seat	11
82	Ball	Floating	JIS 25A	JIS 16K	RF	Full Bore	ALBC2	Soft Seat	79
83	Ball	Floating	JIS 25A	JIS 16K	RF	Full Bore	SC48	Soft Seat	18
84	Ball	Floating	JIS 25A	JIS 16K	RF	Full Bore	SCS14A	Soft Seat	5
85	Ball	Floating	JIS 25A	JIS 20K	RF	Full Bore	ALBC2	Soft Seat	15
86	Ball	Floating	JIS 25A	JIS 20K	RF	Full Bore	SC48	Soft Seat	9
87	Ball	Floating	JIS 25A	JIS 30K	RF	Full Bore	SCS14A	Soft Seat	19
88	Ball	Floating	JIS 25A	JIS 5K	FF	Full Bore	ALBC2	Soft Seat	8
89	Ball	Floating	JIS 25A	JIS 5K	FF	Full Bore	SC48	Soft Seat	5
90	Ball	Floating	JIS 25A	JIS 5K	RF	Full Bore	ALBC2	Soft Seat	31
91	Ball	Floating	JIS 25A	JIS 5K	RF	Full Bore	SC48	Soft Seat	8
92	Ball	Floating	JIS 40A	JIS 10K	FF	Full Bore	ALBC2	Soft Seat	21
93	Ball	Floating	JIS 40A	JIS 10K	FF	Full Bore	SC48	Soft Seat	8
94	Ball	Floating	JIS 40A	JIS 10K	FF	Full Bore	SCS14A	Soft Seat	21
95	Ball	Floating	JIS 40A	JIS 10K	RF	Full Bore	SCS14A	Soft Seat	4
96	Ball	Floating	JIS 40A	JIS 16K	FF	Full Bore	ALBC2	Soft Seat	1
97	Ball	Floating	JIS 40A	JIS 16K	FF	Full Bore	SC48	Soft Seat	22
98	Ball	Floating	JIS 40A	JIS 16K	RF	Full Bore	ALBC2	Soft Seat	6
99	Ball	Floating	JIS 40A	JIS 16K	RF	Full Bore	SC48	Soft Seat	7
100	Ball	Floating	JIS 40A	JIS 16K	RF	Full Bore	SCS14A	Soft Seat	7
101	Ball	Floating	JIS 40A	JIS 20K	RF	Full Bore	SC48	Soft Seat	4
102	Ball	Floating	JIS 40A	JIS 30K	RF	Full Bore	A182 F316	Soft Seat	2
103	Ball	Floating	JIS 40A	JIS 30K	RF	Full Bore	SCS14A	Soft Seat	4
104	Ball	Floating	JIS 40A	JIS 5K	FF	Full Bore	SC48	Soft Seat	5
105	Ball	Floating	JIS 40A	JIS 5K	RF	Full Bore	ALBC2	Soft Seat	9
106	Ball	Floating	JIS 50A	JIS 10K	FF	Full Bore	ALBC2	Soft Seat	10
107	Ball	Floating	JIS 50A	JIS 10K	FF	Full Bore	SCS14A	Soft Seat	2
108	Ball	Floating	JIS 50A	JIS 16K	FF	Full Bore	ALBC2	Soft Seat	1
109	Ball	Floating	JIS 50A	JIS 16K	FF	Full Bore	SC48	Soft Seat	1
110	Ball	Floating	JIS 50A	JIS 16K	FF	Full Bore	SCS14A	Soft Seat	2
111	Ball	Floating	JIS 50A	JIS 16K	RF	Full Bore	ALBC2	Soft Seat	5
112	Ball	Floating	JIS 50A	JIS 16K	RF	Full Bore	SC48	Soft Seat	5
113	Ball	Floating	JIS 50A	JIS 16K	RF	Full Bore	SCS14A	Soft Seat	2
114	Ball	Floating	JIS 50A	JIS 5K	FF	Full Bore	ALBC2	Soft Seat	8
115	Ball	Floating	JIS 50A	JIS 5K	RF	Full Bore	ALBC2	Soft Seat	4
116	Ball	Floating	JIS 50A	JIS 5K	RF	Full Bore	SCS14A	Soft Seat	2
117	Ball	Floating	JIS 65A	JIS 5K	FF	Full Bore	ALBC2	Soft Seat	1
118	Ball	Floating	JIS 100A	JIS 16K	RF	Full Bore	ALBC2	Soft Seat	1
119	Ball	Floating	JIS 100A	JIS 30K	RF	Full Bore	SCS14A	Soft Seat	2
120	Ball	Floating	JIS 100A	JIS 5K	FF	Full Bore	SCS14A	Soft Seat	2
121	Ball	Floating	JIS 100A	JIS 5K	RF	Full Bore	ALBC2	Soft Seat	2
122	Ball	Floating	JIS 100A	JIS 5K	RF	Full Bore	SC48	Soft Seat	1
123	Ball	Floating	JIS 100A	JIS 5K	RF	Full Bore	SCS14A	Soft Seat	3
124	Ball	Trunnion	6"	JIS 5K	RF	Full Bore	ALBC2	Soft Seat	1
125	Ball	Trunnion	6"	JIS 5K	RF	Full Bore	SCS14A	Soft Seat	2
126	Ball	Trunnion	8"	JIS 5K	FF	Full Bore	ALBC2	Soft Seat	1
127	Ball	Trunnion	JIS 150A	JIS 5K	FF	Full Bore	ALBC2	Soft Seat	1
128	Ball	Trunnion	JIS 250A	JIS 16K	RF	Full Bore	ALBC2	Soft Seat	1



## 6. PRINCIPAL SUPPLY RECORDS - FPSO

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

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty'
1	Ball	Floating	1/2"	#150	RF	Full Bore	A351 CF8M	Soft Seat	52
2	Ball	Floating	1/2"	#150	RF	Full Bore	A352 LCC	Soft Seat	13
3	Ball	Floating	3/4"	#150	RF	Full Bore	A351 CF8M	Soft Seat	223
4	Ball	Floating	3/4"	#150	RF	Full Bore	A352 LCC	Soft Seat	5
5	Ball	Floating	3/4"	#300	RF	Full Bore	A351 CF8M	Soft Seat	8
6	Ball	Floating	1"	#150	RF	Full Bore	A351 CF8M	Soft Seat	317
7	Ball	Floating	1"	#150	RF	Full Bore	A352 LCC	Soft Seat	3
8	Ball	Floating	1"	#300	RF	Full Bore	A351 CF8M	Soft Seat	4
9	Ball	Floating	1 1/2"	#150	RF	Full Bore	A351 CF8M	Soft Seat	63
10	Ball	Floating	2"	#150	RF	Full Bore	A351 CF8M	Soft Seat	240
11	Ball	Floating	2"	#150	RF	Full Bore	A352 LCC	Soft Seat	5
12	Ball	Floating	2"	#300	RF	Full Bore	A351 CF8M	Soft Seat	39
13	Ball	Floating	2"	#1500	RTJ	Full Bore	A182 F316L	Soft Seat	2
14	Ball	Floating	3"	#150	RF	Full Bore	A351 CF8M	Soft Seat	56
15	Ball	Floating	3"	#150	RF	Full Bore	A352 LCC	Soft Seat	16
16	Ball	Floating	3"	#300	RF	Full Bore	A351 CF8M	Soft Seat	6
17	Ball	Floating	3"	#300	RF	Full Bore	A352 LCC	Soft Seat	4
18	Ball	Floating	8"	#150	RF	Full Bore	A351 CF8M	Soft Seat	1

## 6. PRINCIPAL SUPPLY RECORDS - FPSO

Egina FPSO (TOTAL / SHI - Nigeria / 2015)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	Ball	Floating	1/2"	#150	RF	Full Bore	A350 LF2	Soft Seat	8
2	Ball	Floating	1/2"	#300	RF	Full Bore	A350 LF2	Soft Seat	2
3	Ball	Floating	1/2"	#800	-	Full Bore	A182 F316L	Soft Seat	13
4	Ball	Floating	1/2"	#800	-	Full Bore	A350 LF2	Soft Seat	26
5	Ball	Floating	1/2"	#800	FF	Full Bore	A182 F316L	Soft Seat	138
6	Ball	Floating	1/2"	#800	FF	Full Bore	A350 LF2	Soft Seat	54
7	Ball	Floating	1/2"	#1500	FF	Full Bore	A182 F316L	Soft Seat	20
8	Ball	Floating	1/2"	#1500	FF	Full Bore	A182 F51	Soft Seat	4
9	Ball	Floating	1/2"	#1500	FF	Full Bore	A350 LF2	Soft Seat	4
10	Ball	Floating	3/4"	#150	RF	Full Bore	A350 LF2	Soft Seat	29
11	Ball	Floating	3/4"	#300	RF	Full Bore	A182 F51	Soft Seat	4
12	Ball	Floating	3/4"	#300	RF	Full Bore	A350 LF2	Soft Seat	32
13	Ball	Floating	3/4"	#800	-	Full Bore	A182 F316L	Soft Seat	75
14	Ball	Floating	3/4"	#800	-	Full Bore	A350 LF2	Soft Seat	529
15	Ball	Floating	3/4"	#800	FF	Full Bore	A182 F316L	Soft Seat	265
16	Ball	Floating	3/4"	#800	FF	Full Bore	A350 LF2	Soft Seat	487
17	Ball	Floating	3/4"	#1500	-	Full Bore	A350 LF2	Soft Seat	48
18	Ball	Floating	3/4"	#1500	FF	Full Bore	A182 F316L	Soft Seat	52
19	Ball	Floating	3/4"	#1500	FF	Full Bore	A182 F51	Soft Seat	10
20	Ball	Floating	3/4"	#1500	FF	Full Bore	A350 LF2	Soft Seat	30
21	Ball	Floating	3/4"	#2500	-	Full Bore	A182 F316L	Soft Seat	190
22	Ball	Floating	3/4"	#2500	-	Full Bore	A182 F51	Soft Seat	12
23	Ball	Floating	3/4"	#2500	-	Full Bore	A350 LF2	Soft Seat	73
24	Ball	Floating	1"	#150	RF	Full Bore	A350 LF2	Soft Seat	3
25	Ball	Floating	1"	#800	-	Full Bore	A182 F316L	Soft Seat	29
26	Ball	Floating	1"	#800	-	Full Bore	A350 LF2	Soft Seat	96
27	Ball	Floating	1"	#800	FF	Full Bore	A182 F316L	Soft Seat	68
28	Ball	Floating	1"	#800	FF	Full Bore	A350 LF2	Soft Seat	155
29	Ball	Floating	1"	#2500	-	Full Bore	A182 F316L	Soft Seat	2
30	Ball	Floating	1"	#2500	-	Full Bore	A182 F51	Soft Seat	8
31	Ball	Floating	1 1/2"	#800	-	Full Bore	A182 F316L	Soft Seat	23
32	Ball	Floating	1 1/2"	#800	FF	Full Bore	A182 F316L	Soft Seat	8
33	Ball	Floating	1 1/2"	#2500	-	Full Bore	A182 F316L	Soft Seat	4
34	Ball	Floating	2"	#150	FF	Full Bore	A182 F316L	Soft Seat	60
35	Ball	Floating	2"	#150	FF	Full Bore	A350 LF2	Soft Seat	122
36	Ball	Floating	2"	#150	FF	Reduced Bore	A182 F316L	Soft Seat	114
37	Ball	Floating	2"	#150	FF	Reduced Bore	A350 LF2	Soft Seat	137
38	Ball	Floating	2"	#150	RF	Full Bore	A182 F316L	Soft Seat	24
39	Ball	Floating	2"	#150	RF	Full Bore	A350 LF2	Soft Seat	112
40	Ball	Floating	2"	#150	RF	Reduced Bore	A182 F316L	Soft Seat	46
41	Ball	Floating	2"	#150	RF	Reduced Bore	A350 LF2	Soft Seat	220
42	Ball	Floating	2"	#1500	FF	Full Bore	A182 F316L	Soft Seat	26
43	Ball	Floating	2"	#1500	FF	Full Bore	A182 F51	Soft Seat	31
44	Ball	Floating	2"	#1500	FF	Full Bore	A350 LF2	Soft Seat	2
45	Ball	Floating	2"	#1500	FF	Reduced Bore	A182 F316L	Soft Seat	48
46	Ball	Floating	2"	#1500	FF	Reduced Bore	A182 F51	Soft Seat	18
47	Ball	Floating	2"	#1500	FF	Reduced Bore	A350 LF2	Soft Seat	6
48	Ball	Floating	2"	#1500	RTJ	Reduced Bore	A350 LF2	Soft Seat	20
49	Ball	Floating	2"	#2500	RTJ	Reduced Bore	A182 F316L	Soft Seat	66
50	Ball	Floating	2"	#2500	RTJ	Reduced Bore	A182 F51	Soft Seat	16
51	Ball	Floating	2"	#2500	RTJ	Reduced Bore	A350 LF2	Soft Seat	30
52	Ball	Floating	2"	#300	FF	Full Bore	A182 F316L	Soft Seat	20
53	Ball	Floating	2"	#300	FF	Full Bore	A350 LF2	Soft Seat	53
54	Ball	Floating	2"	#300	FF	Reduced Bore	A182 F316L	Soft Seat	25
55	Ball	Floating	2"	#300	FF	Reduced Bore	A350 LF2	Soft Seat	49

## 6. PRINCIPAL SUPPLY RECORDS - FPSO

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

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
56	Ball	Floating	2"	#300	RF	Full Bore	A182 F51	Soft Seat	15
57	Ball	Floating	2"	#300	RF	Full Bore	A350 LF2	Soft Seat	6
58	Ball	Floating	2"	#300	RF	Reduced Bore	A182 F316L	Soft Seat	3
59	Ball	Floating	2"	#300	RF	Reduced Bore	A182 F51	Soft Seat	34
60	Ball	Floating	2"	#300	RF	Reduced Bore	A350 LF2	Soft Seat	50
61	Ball	Floating	2"	#600	FF	Full Bore	A182 F316L	Soft Seat	58
62	Ball	Floating	2"	#600	FF	Full Bore	A350 LF2	Soft Seat	6
63	Ball	Floating	2"	#600	FF	Reduced Bore	A182 F316L	Soft Seat	77
64	Ball	Floating	2"	#600	RF	Full Bore	A350 LF2	Soft Seat	5
65	Ball	Floating	2"	#600	RF	Reduced Bore	A350 LF2	Soft Seat	10
66	Ball	Floating	JIS 25A	JIS 16K	FF	Full Bore	BC6	Soft Seat	1
67	Ball	Trunnion	1/2"	#1500	RTJ	Full Bore	A350 LF2	Soft Seat	2
68	Ball	Trunnion	1/2"	#2500	RTJ	Full Bore	A182 F316L	Soft Seat	1
69	Ball	Trunnion	3/4"	#1500	RTJ	Full Bore	A182 F51	Soft Seat	6
70	Ball	Trunnion	3/4"	#2500	RTJ	Full Bore	A182 F316L	Soft Seat	2
71	Ball	Trunnion	1"	#1500	RTJ	Full Bore	A350 LF2	Soft Seat	2
72	Ball	Trunnion	1"	#2500	RTJ	Full Bore	A182 F316L	Soft Seat	4
73	Ball	Trunnion	1"	#2500	RTJ	Full Bore	A182 F51	Soft Seat	8
74	Ball	Trunnion	2"	#1500	RTJ	Full Bore	A350 LF2	Soft Seat	8
75	Ball	Trunnion	2"	#2500	RTJ	Full Bore	A182 F316L	Soft Seat	24
76	Ball	Trunnion	2"	#2500	RTJ	Full Bore	A182 F51	Soft Seat	36
77	Ball	Trunnion	2"	#2500	RTJ	Full Bore	A350 LF2	Soft Seat	10

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

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	Ball	Floating	1/2"	#2500	-	Full Bore	A105	Soft Seat	1
2	Ball	Floating	3/4"	#1500	-	Full Bore	A105	Soft Seat	12
3	Ball	Floating	3/4"	#1500	-	Full Bore	A182 F316L	Soft Seat	13
4	Ball	Floating	3/4"	#1500	-	Reduced Bore	A105	Soft Seat	9
5	Ball	Floating	3/4"	#1500	-	Reduced Bore	A350 LF2	Soft Seat	10
6	Ball	Floating	3/4"	#1500	RTJ	Full Bore	A105	Soft Seat	60
7	Ball	Floating	3/4"	#1500	RTJ	Full Bore	A182 F316L	Soft Seat	42
8	Ball	Floating	3/4"	#1500	RTJ	Full Bore	A350 LF2	Soft Seat	65
9	Ball	Floating	3/4"	#2500	-	Full Bore	A182 F316L	Soft Seat	20
10	Ball	Floating	3/4"	#2500	-	Reduced Bore	A105	Soft Seat	4
11	Ball	Floating	3/4"	#2500	RTJ	Full Bore	A105	Soft Seat	9
12	Ball	Floating	3/4"	#2500	RTJ	Full Bore	A182 F316L	Soft Seat	55
13	Ball	Floating	3/4"	#2500	RTJ	Full Bore	A350 LF2	Soft Seat	26
14	Ball	Floating	3/4"	#2500	RTJ	Reduced Bore	A105	Soft Seat	2
15	Ball	Floating	1"	#1500	-	Full Bore	A182 F316L	Soft Seat	8
16	Ball	Floating	1"	#1500	-	Reduced Bore	A105	Soft Seat	4
17	Ball	Floating	1"	#1500	RTJ	Full Bore	A105	Soft Seat	8
18	Ball	Floating	1 1/2"	#1500	-	Full Bore	A105	Soft Seat	6
19	Ball	Floating	1 1/2"	#2500	-	Full Bore	A105	Soft Seat	4

## 6. PRINCIPAL SUPPLY RECORDS - FPU

### Chevron Jack & St.Malo FPU (CHEVRON / SHI - USA / 2012)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	Ball	Floating	3/4"	#800	-	Reduced Bore	A182 F53	Soft Seat	23
2	Ball	Floating	2"	#150	RF	Full Bore	A216 WCB	Soft Seat	15
3	Ball	Floating	2"	#150	RF	Full Bore	A351 CF8M	Soft Seat	46
4	Ball	Floating	4"	#150	RF	Full Bore	A216 WCB	Soft Seat	8

### Jangkrik FPU (ENI / HHI - Indonesia / 2015)

No	Valve Type	Mounting	Size	Rating	Flange Face	Bore	Body Material	Seat Material	Qty
1	Ball	Floating	1/2"	#150	RF	Full Bore	A105	Soft Seat	1
2	Ball	Floating	1/2"	#600	RF	Full Bore	A105	Soft Seat	22
3	Ball	Floating	1/2"	#600	RF	Full Bore	A182 F316	Soft Seat	6
4	Ball	Floating	1/2"	#800	-	Full Bore	A182 F316	Soft Seat	14
5	Ball	Floating	1/2"	PN16	-	Full Bore	EN1982 CC333G	Soft Seat	12
6	Ball	Floating	3/4"	#600	RF	Full Bore	A105	Soft Seat	3
7	Ball	Floating	3/4"	#600	RF	Full Bore	A182 F316	Soft Seat	181
8	Ball	Floating	3/4"	#600	RTJ	Full Bore	A182 F316	Soft Seat	6
9	Ball	Floating	3/4"	#800	-	Full Bore	A182 F316	Soft Seat	262
10	Ball	Floating	3/4"	#1500	RTJ	Full Bore	A105	Soft Seat	10
11	Ball	Floating	3/4"	#2500	RTJ	Full Bore	A182 F316L	Soft Seat	5
12	Ball	Floating	3/4"	PN16	-	Full Bore	EN1982 CC333G	Soft Seat	223
13	Ball	Floating	3/4"	PN20	-	Full Bore	EN1982 CC333G	Soft Seat	2
14	Ball	Floating	1"	#600	RF	Full Bore	A105	Soft Seat	2
15	Ball	Floating	1"	#600	RF	Full Bore	A182 F316	Soft Seat	61
16	Ball	Floating	1"	#800	-	Full Bore	A182 F316	Soft Seat	131
17	Ball	Floating	1"	PN16	-	Full Bore	EN1982 CC333G	Soft Seat	34
18	Ball	Floating	1 1/2"	#600	RF	Full Bore	A105	Soft Seat	5
19	Ball	Floating	1 1/2"	#600	RF	Full Bore	A182 F316	Soft Seat	6
20	Ball	Floating	1 1/2"	#800	-	Full Bore	A182 F316	Soft Seat	6
21	Ball	Floating	1 1/2"	#2500	RTJ	Full Bore	A182 F316L	Soft Seat	4
22	Ball	Floating	1 1/2"	PN16	-	Full Bore	EN1982 CC333G	Soft Seat	6
23	Ball	Floating	2"	#150	FF	Full Bore	A216 WCB	Soft Seat	2
24	Ball	Floating	2"	#150	RF	Full Bore	A216 WCB	Soft Seat	224
25	Ball	Floating	2"	#150	RF	Full Bore	A351 CF8M	Soft Seat	16
26	Ball	Floating	2"	#300	RF	Full Bore	A182 F316	Soft Seat	4
27	Ball	Floating	2"	#300	RF	Full Bore	A216 WCB	Soft Seat	23
28	Ball	Floating	2"	PN16	-	Full Bore	EN1982 CC333G	Soft Seat	64
29	Ball	Floating	3"	#150	RF	Full Bore	A216 WCB	Soft Seat	107
30	Ball	Floating	3"	#150	RF	Full Bore	A351 CF8M	Soft Seat	4
31	Ball	Floating	4"	#150	RF	Full Bore	A216 WCB	Soft Seat	39
32	Ball	Floating	6"	#150	RF	Full Bore	A216 WCB	Soft Seat	4
33	Ball	Floating	6"	#150	RF	Full Bore	A351 CF8M	Soft Seat	4
34	Ball	Floating	8"	#150	RF	Full Bore	A216 WCB	Soft Seat	2
35	Ball	Trunnion	2"	#1500	RTJ	Full Bore	A105	Soft Seat	5
36	Ball	Trunnion	2"	#2500	RTJ	Full Bore	A182 F316L	Soft Seat	2
37	Ball	Trunnion	6"	#150	RF	Full Bore	A216 WCB	Soft Seat	6
38	Ball	Trunnion	8"	#150	RF	Full Bore	A216 WCB	Soft Seat	8

## 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	Ball	Floating	3/4"	#1500	-	Full Bore	A182 F316L	Soft Seat	7
2	Ball	Floating	3/4"	#1500	-	Full Bore	A350 LF2	Soft Seat	2
3	Ball	Floating	3/4"	#2500	-	Full Bore	A182 F316L	Soft Seat	3
4	Ball	Floating	3/4"	#300	RF	Full Bore	B148 C95800	Soft Seat	1
5	Ball	Floating	3/4"	#800	-	Full Bore	A105	Soft Seat	59
6	Ball	Floating	3/4"	#800	-	Full Bore	A182 F316L	Soft Seat	45
7	Ball	Floating	3/4"	#800	-	Full Bore	A350 LF2	Soft Seat	7
8	Ball	Floating	1"	#150	RF	Full Bore	A216 WCB	Soft Seat	2
9	Ball	Floating	1"	#800	-	Full Bore	A105	Soft Seat	1
10	Ball	Floating	1"	#2500	-	Reduced Bore	A182 F316L	Soft Seat	2
11	Ball	Floating	1 1/2"	#800	-	Full Bore	A182 F316L	Soft Seat	12
12	Ball	Floating	2"	#150	RF	Full Bore	A105	Soft Seat	9
13	Ball	Floating	2"	#150	RF	Full Bore	A350 LF2	Soft Seat	2
14	Ball	Floating	2"	#300	RF	Full Bore	A105	Soft Seat	1
15	Ball	Floating	2"	#300	RF	Full Bore	A350 LF2	Soft Seat	5
16	Ball	Floating	2"	#300	RF	Full Bore	B148 C95800	Soft Seat	2
17	Ball	Floating	2"	#600	RF	Full Bore	A350 LF2	Soft Seat	1
18	Ball	Floating	2"	#1500	RTJ	Reduced Bore	A105	Soft Seat	3
19	Ball	Floating	3"	#150	RF	Full Bore	A182 F316L	Soft Seat	2
20	Ball	Floating	3"	#150	RF	Full Bore	A351 CF8M	Soft Seat	2
21	Ball	Trunnion	3"	#1500	RTJ	Full Bore	A182 F316L	Soft Seat	1



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