

Floating Production What's New In June

Jim McCaul – IMA Studies

Current Inventory – 320 oil/gas floating production units are now in service, on order or available for reuse on another field. FPSOs account for 65% of the existing systems, 76% of systems on order. Production semis, barges, spars and TLPs comprise the balance. Total oil/gas inventory is down two units since last month – two off-field FPSOs have been scrapped.

Another 27 floating LNG processing systems are in service or on order. Liquefaction floaters account for 15%, regasification floaters 85%. No liquefaction floaters are yet in service – all 4 are on order. Total LNG inventory is down one unit since last month. A regas carrier used as an interim FSRU in Brazil has resumed trading following delivery of the permanent FSRU.

In addition, 102 floating storage units are in service, on order or available. There has been a decrease of one unit since last month. An LNG carrier utilized in Chile as an interim storage unit has been replaced by permanent land storage tanks.

Number of Floating Production and Storage Units In Service, On Order or Available for Reuse

(As of 1 June 2014)

	<u>Total</u>	<u>Active</u>	<u>On Order</u>	<u>Available</u>
<u>Oil/Gas Production</u>				
FPSO	213	156	41	16
Production Barge	10	8	2	0
Production Semi	47	40	3	4
Production Spar	22	18	4	0
TLP	28	24	4	0
Total	320	246	54	20
<u>LNG Processing</u>				
FLNG	4	0	4	0
FSRU	23	13	10	0
<u>Storage Systems</u>				
FSO	102	91	10	1

Production Floater Order Backlog – 68 production floaters are currently on order. The figure includes 41 FPSOs, 13 other oil/gas production units and 14 LNG processing units. In the later are 4 floating liquefaction plants and 10 regasification terminals.

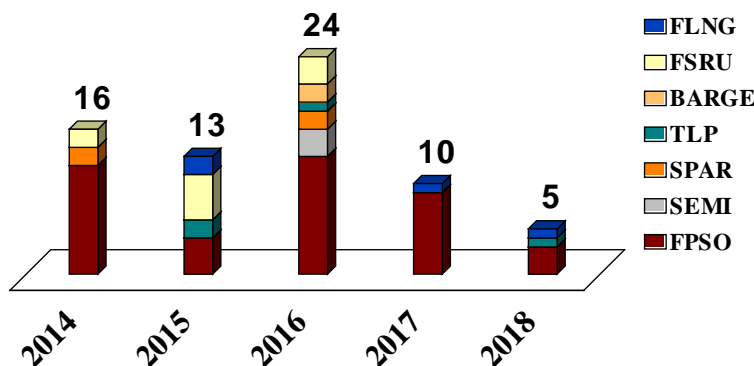
Current backlog includes an FPSO order placed in May. TH Heavy Engineering received an EPCI contract + 7 year lease with 3 year option from JX Nippon to supply an FPSO for the

Layang gas/condensate field offshore Sarawak. The lease day rate is \$144,500 over the initial firm period of the lease.

The partially completed *Deep Producer 1* will be used for the Layang project. This had been a speculative FPSO conversion contracted by FPSOcean with Dubai Drydocks in 2006. FPSOcean could not obtain a field contract, ran out of money and could not find a buyer for the unit – and in February 2009 filed for bankruptcy protection. Malaysia-based TH Heavy Eng. acquired the unit in October 2011 for \$82.5 mil for use on marginal oilfields.

Delivery of the 68 production floaters now on order is spread over the next five years. The units with delivery furthest out are the three final FPSOs in the eight serial hulls on order in Brazil, a TLP being designed for use in the GOM and an FLNG for use in Malaysia. These five units are scheduled for completion in 2018.

**Scheduled Delivery Year of
Production Floaters Now on Order**



Backlog of Planned Floater Projects – 224 floating production projects are in various stages of planning as of beginning June. Of these, 58% involve an FPSO, 14% another type oil/gas production floater, 22% liquefaction or regasification floater and 6% storage/offloading floater.

**Breakdown of Planned Projects by
Type Production System Required**
(As of 1 June 2014)

Type System Required	Number of Projects
FPSO	130
OTHER FPS	31
FLNG	31
FSRU	19
FSO	13
Total	224

Brazil, Africa and SE Asia continue to be the major locations of floating production projects in the visible planning stage. We are tracking 44 projects in Brazil, 48 in Africa and 38 projects in SEA – 58% of the visible planned floating production projects worldwide.

**Breakdown of Planned Projects by
Location of Field
(As of 1 June 2014)**

Project Location	Number of Projects
Africa	48
Brazil	44
SE Asia	38
GOM	22
No. Europe	22
Aust/NZ	16
Medit	10
SW Asia	10
Other	14
Total	224

Several large projects in Brazil will entail use of multiple production units. Development of the Libra complex, which is counted as one project, could require as many as 18 FPSOs. The Lula and Jupiter complexes could each require 3 to 6 FPSOs. So while Africa currently has greatest number of projects in the planning stage, Brazil clearly leads in number of future production units required.

Around 14% of the 224 visible planned projects are likely to advance to the EPC contracting stage within the next 12 months. These near term projects typically have either entered the FEED phase, pre-qualification of floater contractors has been initiated or bidding/negotiation is in progress.

Another 50% of the visible projects are at a stage of development where the EPC contract for the production unit is likely within the next 2 to 5 years. The remaining projects are less advanced in planning, with the EPC contract likely 5 to 10 years out.

Near term projects vary significantly by region. Brazil will likely produce at least 5 major contract awards for FPSOs over the next year. Africa has 3 major FPSO contracts pending. SEA has 8 contracts in the near term, mostly FSOs. The US GOM will likely produce contracts for several FLNG export terminals and two major production floaters. The Mexican GOM will require 2 major FPSOs. Northern Europe will likely produce orders for several FSOs and a cylindrical FPSO. The Mediterranean will produce a major FPSO contract.

A list of near term projects is provided on the following page. For each project the likely lease/buy acquisition strategy and mooring system is indicated. Please note that the list is a snapshot as of beginning June. Information in the list changes as more details come available.

Floating Production Projects in the Near Term Contracting Stage

Project	Country	Field Operator	Water Depth	Planned Production Start	Type Production Unit	Likely Acquisition Strategy	Likely Mooring System
Sankofa	Ghana	ENI	1000	2017/20	FPSO	Lease	ET
Bonga SW	Nigeria	Shell	1200	2020/21	FPSO	Own	S
Chissonga	Angola	Maersk Oil	1355	2017/18	FPSO + TLWP	Own	ET
Libra EWT	Brazil	Petrobras	2200	2016	FPSO	Lease	S
Tartaruga Verde	Brazil	Petrobras	930-980	2017	FPSO	Lease	S
Park of the Sweets	Brazil	Petrobras	1900	2017	FPSO	Lease	S
Sul Parque Baleias	Brazil	Petrobras	1010	2018	FPSO	Lease	S
Oliva/Atlanta	Brazil	Queiroz Gal	1560	2017/19	FPSO	Lease	ET or S
Lavaca Bay LNG	USA	Excelerate	<50	2018/20	FLNG	Own	J/P
West Cameron LNG	USA	Delfin	<100	2017/18	FLNG	Own	ET
Main Pass LNG	USA	Freeport	65	2017/20	FLNG	Own	ET
Ayatsil/Tekel	Mexico	Pemex	120	2017/18	FPSO	Lease	IT
Pemex EWT	Mexico	Pemex	80-700	2016/17	FPSO	Lease	IT or DP
Appomattox	USA	Shell	2270	2017/18	SEMI	Own	S
Mad Dog 2	USA	BP	1370	2018/19	TLP	Own	T
Leviathan Phase 1	Israel	Noble	1630	2017/19	FPSO	Lease	ET
Bream	Norway	Premier	~100	2016/18	FPSO	Lease	S
Mariner	UK	Statoil	107	2017/18	FSO	Own	IT
Bressay	UK	Statoil	91	2018/19	FSO	Own	IT
Port Meridian Regas	UK	Meridian	<50	2016/18	FSRU	Lease	IT
Madura BD	Indonesia	CNOOC	55	2016/17	FPSO	Lease	ET or S
Gehem/Gendalo	Indonesia	Chevron	1830	2017/18	FPU (2)	Own	S
Ubon	Thailand	Chevron	75	2018	FSO	Own	ET
Nong Yao	Thailand	Mubadada	60-75	2014/16	FSO	Lease	ET
Bangka Strait	Indonesia	Conoco		2016	FSO	Lease	SPM
North Malay	Malaysia	Hess	55	2016/17	FSO	Own	ET
Tembikai	Malaysia	Vestigo	50-100	2016/17	FSO	Lease	SPM
Ham Rong	Vietnam	Petronas	30	2015	FSO	Lease	SPM
Port Qasim Regas	Pakistan	Engro	<50	2015/16	FSRU	Lease	IT

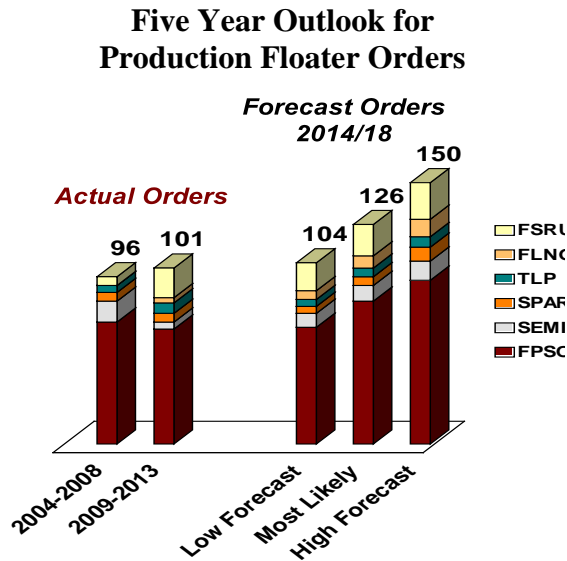
Notes:

(1) IT = Internal turret ET = External turret S = Spread moored DP = Dynamic positioning J/P = Jetty/pier moored SPM = Single pt mooring
T = Tendons

(2) This information is as of beginning June 2014. While every effort is made to ensure information on near term contracts is accurate, IMA makes no representations or warranties, expressed or implied, about the accuracy of the information.

How's Our Production Floater Forecast Doing? – At the beginning of each year we forecast the number of production floater orders likely over the next five years. The forecast is based on our analysis of (1) projects in the planning cycle that appear ready to move to the contracting stage and (2) future underlying market conditions that will impact the timing of the project investment decision. We have been making an annual five year forecast since the mid-1990s.

Our forecast in 2014 anticipates orders for 104 to 150 production floaters between 2014 -2018. This is an average of ~20 to 30 production floater orders annually. As indicated below, the most likely forecast of orders is 25 to 30% greater than actual orders over previous five year periods.



How does this forecast correspond with events over the past five months? Did we get it right so far?

Since January 2014 there have been orders for 7 production floaters – 5 FPSOs, 1 gas/condensate production barge and 1 LNG regas barge. The five-month order pace equates to ~17 units on an annualized basis. So at the moment our forecast is higher than actual experience.

Looking forward through the remainder of the year, at least a dozen of the production floaters listed on the preceding page appear ready to go to contract by the end of 2014. This would bring the 2014 orders to within the forecast range – though at the lower end of the forecast range.

But near term underlying market conditions have been trending a bit south. Energy companies have been reducing capex budgets and unconventional oil projects are drawing investment resources from deepwater. This could delay some investment decisions and dampen production floater contracts over the next 6 to 12 months.

We will keep checking to see how the forecast compares with actual orders over the next several months. In the Fall we will revisit the forecast and make any adjustments that seem needed.

Further Details – We have the capability to prepare detailed customized reports on all aspects of the floating production systems market. For further information, please contact Jim McCaul at imaassoc@msn.com or call 202 333 8501. We will be pleased to discuss how we might be of assistance.

Terms Used

FPSO – Floating Production, Storage and Offloading Vessel
FSO – Floating Storage and Offloading Vessel (no production plant)
FSRU – Floating LNG Storage and Regasification Unit
FLNG – Floating LNG Liquefaction Plant
Semi – Production Semisubmersible
TLP – Tension Leg Platform
SPAR – Production Spar (cylindrical shape)
FPS – Floating Production System (all types)
EWT – Extended Well Test
FEED – Front End Engineering and Design
EPC – Engineering Procurement Construction contract

About Jim McCaul

Jim is the founder and manager of IMA, a consulting firm providing market analysis, competitive benchmarking and business planning support in the maritime and offshore sectors. Over the past 40 years IMA has performed more than 350 business consulting assignments for 170+ clients in 40+ countries.

One of the firm's specialties is analyzing requirements for floating production systems. IMA has published more than 50 reports since 1996 analyzing this business sector and has been engaged by numerous clients to assist in analyzing specific market opportunities in the floating production sector.

Please visit our website www.imastudies.com for more information about Jim McCaul and IMA.