Floating Production
What's New In May

Jim McCaul – IMAstudies

Current Inventory – 322 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, 75% of systems on order. Production semis, barges, spars and TLPs comprise the balance. Total oil/gas inventory is up one unit since last month – two FPSOs were ordered and a Spar was scrapped.

Another 28 floating LNG processing systems are in service or on order. Liquefaction floaters account for 14%, regasification floaters 86%. No liquefaction floaters are yet in service – all 4 are on order. Several of the 13 active FSRUs are interim regasification units being used until the long term unit is delivered. Total LNG inventory is down one unit since last month. An FSRU (Tianjin) has been removed from inventory – the unit was placed back in LNG trading service.

In addition, 103 floating storage units are in service, on order or available. There has been an increase of one unit since last month – a cylindrical FSO ordered for use in the UK North Sea.

Number of Floating Production and Storage Units
In Service, On Order or Available for Reuse
(As of 1 May 2014)

	Total	Active	On Order	Available
Oil/Gas Production				
FPSO	215	156	40	19
Production Barge	10	8	2	0
Production Semi	47	40	3	4
Production Spar	22	18	4	0
TLP	28	24	4	0
Total	322	246	53	23
LNG Processing				
FLNG	4	0	4	0
FSRU	24	13	11	0
Storage Systems				
FSO	103	92	10	1

Production Floater Order Backlog – 68 production floaters are currently on order. The figure includes 40 FPSOs, 13 other oil/gas production units and 15 LNG processing units. In the later are 4 floating liquefaction plants and 11 regasification terminals.

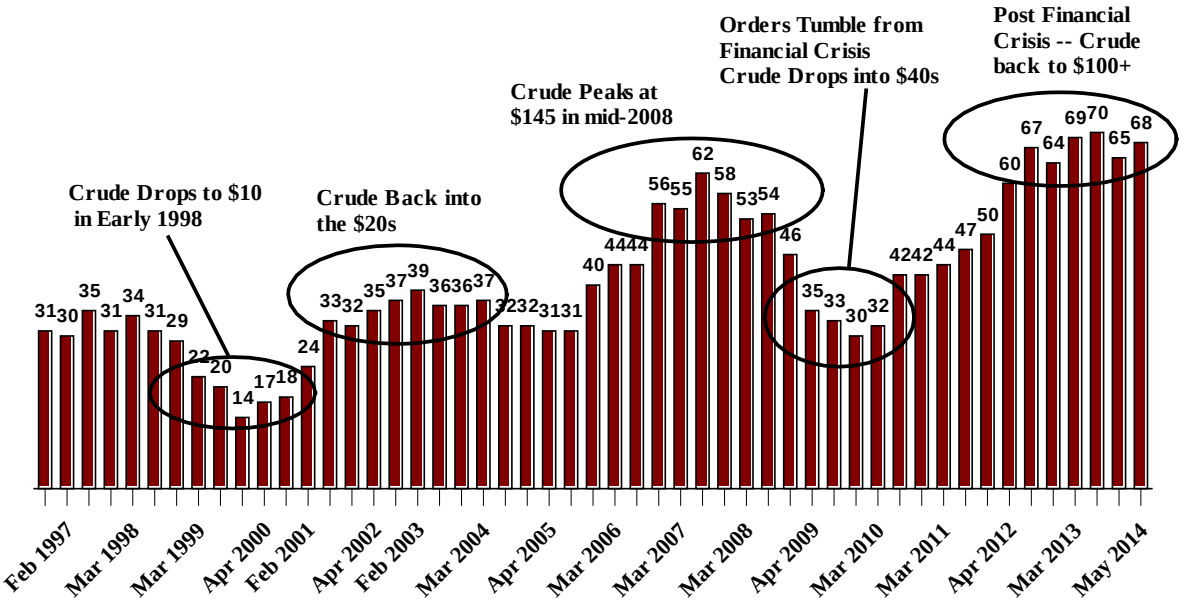
The backlog includes two FPSOs that were ordered by Total in mid-April. Saipem won the $3.0+ billion EPCI contract + $1.0 billion 7 year O&M contract for two similar FSPOs for use on the Kaombo field offshore Angola. The units are to be installed in 2017.

Details for the 40 FPSOs on order as of May 2014 are available on our website www.imastudies.com.

Trend in Order Backlog – The backlog of production floater orders has had several peaks and troughs over the past two decades. The most recent low was hit in late 2009 when the financial collapse created havoc in the offshore sector. Crude prices dropped into the $40s, production floater orders dried up and the order backlog dropped to 30 units in November 2009. Since then order backlog has climbed to a new high that has remained between 65 to 70 units since mid-2012.

Production Floater Backlog Peaks and Troughs

(Includes FPSOs, Semis, Spars, TLPs, FLNGs and FSRUs)



Strong backlog reflects a healthy business sector. But strong backlog can cause delays and cost growth as capacity limits are approached in the supply chain. These limits could be set by the availability of specific components, such as supply of compressors. Or limits can be set by engineering capability for concept design, FEED and detailed design/engineering involving production floaters.

Capability to manage multiple projects simultaneously could also be the limiting factor – as even the largest field operators and EPC contractors have a finite number of experienced project managers. Two to three projects executed simultaneously may be feasible for major contractors – but more projects at one time could result in performance problems.

There are indications that overheating in the sector is now occurring. For example, Statistics Norway in a December 2013 report said "the high activity in the oil and gas sector has resulted in higher costs in many of the development projects." In a November 2013 review of Norwegian

offshore projects, the NPD said "a high activity level has resulted in increased prices for input factors and scarcity of certain resources … and is a contributing cause of the major time and cost overruns incurred in some of the projects in this review."

Backlog of Planned Floater Projects – 243 floating production projects are in various stages of planning as of beginning May. Of these, 57% involve an FPSO, 16% another type oil/gas production floater, 23% liquefaction or regasification floater and 5% storage/offloading floater.

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

Type System Required	Number of Projects
FPSO	138
OTHER FPS	38
FLNG	31
FSRU	24
FSO	12
Total	243

Brazil, Africa and SE Asia are the major locations of floating production projects in the visible planning stage. We are tracking 50 projects in Brazil, 49 in Africa and 46 projects in SEA – 60% of the visible planned floating production projects worldwide.

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

Project Location	Number of Projects
Brazil	50
Africa	49
SE Asia	46
GOM	24
No. Europe	20
Aust/NZ	15
Medit	12
SW Asia	11
Other	16
Total	243

Around 25% of the projects are at an advanced stage of development. They typically have either entered the FEED phase, pre-qualification of floater contractors has been initiated or bidding/negotiation is in progress. Award of the production floater contract in these projects is likely within the next 2-3 years.

The remaining 75% of the planned projects are in an early stage of development. Contract awards are more likely in the 3+ year time frame.

A list of production floater contracts likely to be awarded over the next 12 months is provided below

- ***Bream*** (Norway) – Teekay is likely to receive a contract from Premier to build/lease a cylindrical 30kb/d FPSO for use off Norway
- ***Atlanta*** (Brazil) – QGEP is set to award a ten year lease for an 80-100kb/d FPSO and a three year lease for a 25kb/d EWT FPSO to use until the large unit is completed
- ***Tartaruga Verde*** (Brazil) – Petrobras has invited bids to supply a 150kb/d + 140mmcf/d FPSO under a 20 year lease in Campos Basin
- **Sul Parque Baleias** (Brazil) – Petrobras in 2H 2014 will likely invite offers for a 150kb/d FPSO to produce a cluster of light oil discoveries in Campos Basin
- **Parque dos Doces** (Brazil) – Petrobras this year will likely tender for a 100+kb/d FPSO to develop a cluster of discoveries in the Espirito Santo basin
- ***Libra EWT*** (Brazil) – Petrobras has invited bids to lease a 50kb/d + 140mmcf/d FPSO to use as an EWT unit on the Libra complex
- ***FLNG export terminal*** (US GOM) – Likely that construction of at least one of the half dozen proposed US FLNG export terminals will be contracted within this year
- ***Ayatsil*** (Mexico GOM) – Pemex is evaluating offers from Exmar and BWO to supply a 300kb/d $2bil+ FPSO for use in shallow water off Mexico
- ***EWT Pemex*** (Mexico GOM) – Pemex will likely lease an FPSO with ~15kb/d and DP2 to use for well test/early production in the GOM
- ***Mad Dog 2*** (US GOM) – BP will likely proceed with KBR into the FEED stage to acquire a production semi for Mad Dog, but the EPC contract could slip into 2H 2015
- ***Rosebank*** (UK) – Chevron will probably revive the suspended contract with Hyundai to build a 100kb/d + 190mmcf/d FPSO for use off the Shetlands
- ***Abadi LNG (***Indonesia) – Inpex will likely contract with either JCG/Technip/Modec or Saipem/Chiyoda/SBM for a 2.5 mtpa FLNG
- ***Gehem/Gendalo*** (Indonesia) **–** Chevron will likely contract with McDermott to supply two 25-30kb/d + 420-700mmcf/d production barges for East Kalimantan
- ***Ubon*** (Thailand) – Chevron is likely to award the contract to supply a 650-750kbbl condensate FSO for use in the Gulf of Thailand
- **Chissonga** (Angola) – Maersk is planning to order a 150kb/d FPSO + wellhead TLP for deepwater use off Angola.
- ***Regas terminals*** **(**various locations) – Several regas terminal projects will likely proceed, with 5 speculatively ordered FSRUs lined up for the contracts

Market outlook – Global oil demand keeps growing, a large number of deepwater discoveries are ready to move to development, oil spot prices have remained above $100 and an increasing

number of deepwater drill rigs are searching for oil. These are all positive indicators for future production floater orders.

But growth in unconventional oil supply is pressuring future crude prices, energy companies are cutting back on capital expenditures, drillers are reporting market softening and shale/tight oil and gas opportunities are attracting investment resources that otherwise might be used for deepwater projects. These are clearly negative indicators for production floater orders.

Time will tell how these positive and negative drivers combine to impact future orders in the sector. But it appears that a dampening impact is already being felt. Since the beginning of this year there have been orders for six production floaters – 4 FPSOs, an FLNG and a production barge. While roughly in line with the average ordering pace over the past ten years – in terms of percentage increment to inventory (orders/inventory) the ordering pace has slowed.

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