OVERVIEW OF FLOATING PRODUCTION, STORAGE AND OFFTAKE (FPSO) SERVICES AGREEMENTS

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This paper provides a basic technical introduction to the FPSO and its use in the offshore petroleum industry. The paper outlines the regulatory framework governing the FPSO and the contracting arrangements applicable to its operation and management. The paper then examines the fundamental terms of one form of contracting arrangement being the FPSO services agreement and identifies some of the key issues relating to such agreements.

1. WHAT IS AN FPSO?

1.1 Introduction to the FPSO

An FPSO is an offshore floating production, storage and offloading vessel and is one of a range of floating systems used by the offshore oil and gas industry today.

An FPSO is commonly a converted oil tanker but can also be a purposely built vessel. It is often similar in appearance to a ship and carries all the necessary production and processing facilities normally associated with a fixed oil and gas platform including accommodation aboard what is know as the "topside". The FPSO may also take the form of a semi-submersible structure (a box type structure similar to a drilling rig), a spar structure (being a long, cylindrical structure positioned vertically above well heads) or a jack-up production unit (again, similar to a drilling rig). An FPSO also has storage capacity within the hull for crude oil recovered from the reservoir. The FPSO is usually moored permanently on location during production and is connected to the wells on the seabed by flexible risers.[1]

The FPSO can be compared with a range of different offshore floating systems that, like the FPSO, are not fixed permanently to the seabed but are designed to be moored on location for a long period of time. Some of these floating systems include:[2]

(a) The floating storage and offloading system (FSO), which is a ship or barge-shaped floating hull incorporating tanks for storage of produced oil, and a method of loading the oil into offtake tankers. These installations do not have any production or processing facilities.

(b) The floating production system (FPS) which is a general term to describe any floating facility designed to receive crude oil from producing wells and process it. It may not have facilities for storage, in which case export would be by pipeline to shore or to a nearby FSO.

(c) The floating storage unit (FSU) which is a floating facility intended only for storage of oil. Export may be by pipeline to an onshore facility or by shuttle tankers.

Although the scope of this paper does not permit review and analysis of the different fixed and floating systems, much of the review and analysis in relation to the FPSO is also applicable to these different systems.

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1 *United Kingdom Offshore Oil and Gas Association*: http://www.oilandgas.org.uk/issues/fpso/faq.htm.

2 *United Kingdom Offshore Oil and Gas Association*: http://www.oilandgas.org.uk/issues/fpso/faq.htm.

1.2 Drivers for the use of an FPSO

The first tanker based FPSO was installed by Shell in its Castellon field offshore Spain in 1977.[3] There are currently approximately 70 FPSOs in operation worldwide, including seven in Australia. As a result of a number of factors, including:

- advances in FPSO and subsea production system technology;
- the FPSO's good safety performance record, economic viability and the decreased development time and cost;
- reduced up-front investment together with lower abandonment costs and higher residual value;
- the ability to refurbish or upgrade the FPSO to tie-in additional fields or use in other projects; and
- the mobility of the FPSO and relative ease of decommissioning,

the FPSO is fast becoming a standard method for exploiting what might be otherwise considered small, inaccessible or subeconomic reserves incapable of supporting the construction and decommissioning costs of a fixed platform.[4]

The FPSO is used to recover petroleum discovered and developed by a company (or more commonly a joint venture) under an exploration permit and production licence.[5] The term "company" will be used in this paper to describe the licence holder and project developer and the term "contractor" will be used to describe the party providing the FPSO and associated services.

1.3 How an FPSO Works[6]

(a) Mooring the FPSO on site

Once the FPSO is constructed or the conversion completed and successfully tested, the FPSO will be mobilised to the field.

The FPSO is secured on site by highly sophisticated mooring and station-keeping systems. In locations subject to extreme weather conditions (such as the cyclone prone North West of Australia) the FPSO will usually have a "turret" or central mooring system. The turret allows the FPSO to rotate freely around the point of mooring in response to shifting weather and sea conditions. Known as "weathervaning," it allows the vessel's bow to point into the prevailing wind and currents, minimising the impact of nature's forces. Often, thruster systems are also used to supplement the station-keeping and to control vessel direction. In

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3 *The Design and Operation of FPSOs Training Manual,* ESD Simulation Training Pty Ltd, Chapter 1, page 1.

4 S Curtis, A *Legal Perspective to FPSO Conversion*, Platform Oil and Gas Technology Review, Issue 43. Note that FPSOs are used primarily for oil production. Gas production is only currently an option if an export pipeline exists.

5 Pursuant to State legislation such as the *Petroleum (Submerged Lands) Act* 1981 (WA) in State waters and the *Petroleum (Submerged Lands) Act* 1967 in Commonwealth waters.

6 *United Kingdom Offshore Oil and Gas Association*: http://www.oilandgas.org.uk/issues/fpso/faq.htm. See also *The Design and Operation of FPSOs Training Manual,* ESD Simulation Training Pty Ltd, Chapter 3.

locations with more benign weather, such an arrangement may not be required and the vessel is kept on station by an array of moorings and anchors known as a spread-moored system.

(b) Petroleum recovery
The FPSO recovers petroleum from the reservoir by means of wells located on the seabed. The infrastructure necessary for field development including the production wells and other equipment will be installed by the company or a third party contractor. Untreated liquids and gas are brought from the reservoir via the wells to the FPSO through:

(i) subsea equipment installed on the sea floor;

(ii) a manifold that connects the various wells together into one flexible flowline; and

(iii) flexible "risers" which connect the flowline to the FPSO at the surface.

Petroleum is then processed through a processing plant onboard the FPSO which is usually highly automated and run by remote control from a centralised control room. The petroleum is separated into crude oil, produced formation water[7] and gas and the crude oil is then stabilised to an acceptable chemical specification. The stabilised crude is subsequently stored onboard ready for offtake by tankers.

The associated gas is dewatered, recompressed and is exported via pipeline, reinjected into the well reservoir, used for gas lift or as fuel or energy aboard the FPSO, or flared. The produced formation water is treated to remove any residual oil before being disposed of into the sea. Salt water may also be reinjected back into the reservoir to enhance oil recovery.

(c) Petroleum offtake
The stabilised crude oil is loaded onto the company's offtake tankers at regular intervals. The tanker usually positions itself behind the FPSO and the crude is loaded onto the tanker from the FPSO using a loading buoy system.

(d) Accommodation
The FPSO must accommodate the requisite number of personnel safely for an extended period of time. The accommodation block will also contain the central control room.

(e) Safety
Safety onboard any offshore production facility has the utmost priority. In Commonwealth and State waters, the production licence holder must submit a safety case to the Designated Authority.[8]

Features which contribute to the safe operation of an FPSO include the following:

(i) the hull is designed for the expected life of the field – often five to 15 years and constructed to standards that will permit it to remain at sea during this time without access to dry docking facilities. Of particular importance is how the vessel will

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7 Produced formation water is fossil water associated with a petroleum reservoir.

8 Safety in the petroleum industry is regulated by the *Petroleum (Submerged Lands) Act* 1967 in Commonwealth waters and the equivalent legislation in State waters. The requirement for a safety case is stipulated under clause 200 of the *Schedule of Specific Requirements as to Offshore Exploration and Production* (Commonwealth and State waters) and the *Petroleum (Submerged Lands) (Management of Safety on Offshore Facilities) Regulations* 1996 (Cth). The safety case identifies health and safety risks onboard the vessel or facility and sets out the mechanisms to assess and minimise such risks.

survive a possible collision at sea. The vessel will need to be able to stay afloat with any two hull compartments flooded;

(ii) the introduction of inert gas into the crude storage tanks to maintain a safe environment for loading and discharging the crude oil;

(iii) oil and gas processing that is remotely controlled with built-in shutdown systems to close off the flow and contain hydrocarbons under pressure in an emergency; and

(iv) protection of the FPSO against fire and explosion in the form of protective coatings and blast or firewalls. Water deluge systems and other systems such as halon and foam systems are installed in open areas and sprinkler systems in closed areas. The accommodation block is mechanically ventilated and pressurised, taking fresh air from a safe location remote from the process equipment, and is therefore a safe refuge for personnel.

2. REGULATION OF FPSOS

2.1 Registration of FPSOs

Where the FPSO is a ship, it will be registered under the flag of a State. The "Flag State" will confer nationality upon the FPSO and have effective jurisdiction over the FPSO wherever the FPSO may be located. The Flag State will exercise control over matters such as construction, equipment and seaworthiness and labour on board the FPSO.[9]

In Australia, the registration of Australian owned FPSOs is generally governed by the *Shipping Registration Act* 1981 (Cth).

The FPSO will also be registered with a Classification Society.[10]

2.2 Australian Regulation of FPSOs – FPSO vs Ship Status

In Commonwealth waters, while an FPSO is operating as a ship, it falls under the jurisdiction of the *Navigation Act* 1912 (Cth) (Navigation Act).[11] An FPSO is considered to be operating as a ship when the vessel is disconnected from the seabed riser and is self-propelled. The Navigation Act applies international ship safety standards and some labour conventions. Section 283G of the Navigation Act applies the provisions of that Act to offshore industry vessels that are not registered in Australia *as if* the vessel were registered in Australia and not registered in any other country. That is, a foreign flag vessel in Australian waters is treated as an Australian flag vessel.

When the FPSO is connected to the seabed riser and operating as an offshore facility (rather than as a ship), the FPSO will be regulated by the *Petroleum (Submerged Lands) Act* 1967 (Cth) in Commonwealth waters and the equivalent State legislation when in coastal waters.[12]

The FPSO will therefore need to comply with both sets of legislation together with other applicable legislation. For example, the *Environment Protection (Biodiversity Conservation) Act*

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9 *United Nations Convention on the Law of the Sea* 1982 (UNCLOS) and *United Nations Convention of Conditions for Registration of Ships* 1986 (UNCTAD Convention).

10 Ship Classification involves compliance with rules and regulations pertaining to the integrity, reliability and safety of the vessel. See section 4.7 below.

11 Marine Orders, Part 60 pursuant to the Navigation Act.

12 Note that an FPSO will not usually be subject to an infrastructure licence under Division 3A of the *Petroleum (Submerged Lands) Act* 1967 (Cth). It will be covered by the production licence under Division 3.

1999 (Cth), the *Environmental Protection (Sea Dumping) Act* 1981 (Cth) and the *Protection of the Sea (Prevention of Pollution from Ships) Act* 1983 (Cth) will also apply to the FPSO and the development.

2.3 International Regulation

Much of the law regulating FPSOs derives from internationally agreed conventions, rules, regulations and treaties which have been incorporated into Australian domestic law. For example, the *International Convention for the Prevention of Pollution from Ships (and Annexures) 1978* and the *Protocol for the Prevention of Pollution from Ships* (MARPOL 73/78) are incorporated into domestic law through the Navigation Act and the *Protection of the Sea (Prevention of Pollution from Ships) Act* 1983 (Cth).[13]

Other international conventions that may be applicable to FPSOs include the *International Convention on the Control of Harmful Anti-Fouling Systems on Ships* 2001 (which defines a ship to include an FPSO) and the *International Convention on Oil Pollution Preparedness, Response and Co-operation* 1990 (which defines a ship to include any kind of floating craft or offshore unit which includes an FPSO).

There are also a suite of international standards relating to the construction and operation of an FPSO.[14]

2.4 Operation and Management of the FPSO

An FPSO may be operated and managed in the following ways:

(a) FPSO acquisition
An FPSO may be owned and operated by the titleholder/operator of the petroleum field. The company being the titleholder and or operator, will contract for the engineering, procurement and construction of an FPSO which it will then own and operate.

The benefits associated with ownership of the FPSO include taxation benefits such as the ability to depreciate the FPSO as an asset and claim Petroleum Resource Rent Tax[15] deductions. The other major advantages are the ability to maintain overall control of the production process, and therefore control risk, the ability to tie-in new discoveries in the vicinity of the field and extend the life of the project or to refurbish and mobilise the FPSO to another field for production. It should be noted however, that these benefits (particularly the tax benefits) are also available under a lease or charter arrangement or an FPSO services agreement (described below).

The risks associated with ownership of the FPSO include:

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13 Note that application of amendments to MARPOL Annexure 1 to FPSOs (including the requirement for a double-hulled vessel) has been vigorously debated by the International Maritime Organisation (IMO) and the issue does not yet appear to have been resolved. However, it should also be noted that most companies are nevertheless applying the requirements of MARPOL Annexure 1 to FPSOs.

14 These include *Guidance Notes for the Design and Construction of Offshore Installations,* 4th ed, UK, Health and Safety Executive, Oil Companies International Marine Forum, *Recommendations on Equipment and Towing of Disabled Tankers*, September 1981 and the *ICS/OMCIMF Ship-to-Ship Transfer Guide*.

15 Pursuant to the *Petroleum Resource Rent Tax Assessment Act* 1987 (Cth).

(i) the large capital expenditure associated with ownership of the FPSO and the related financing risks;

(ii) potential lack of technical capability and experience within the company of operating and maintaining the FPSO which may not be part of the company's core business, together with the associated risks and liabilities;

(iii) potential claw-back of taxation benefits in the event the FPSO is sold or leased to another party (for example, Petroleum Resource Rent Tax deductions may be clawed back in the form of Petroleum Resource Rent Tax income in the event the FPSO is later sold or leased);

(iv) the need to arrange for redeployment (via sale or lease) or decommissioning of the FPSO at the end of the project; and

(v) in jurisdictions operating under a Production Sharing Contract (PSC) regime, the willingness of the government to accept such a high capital expenditure which may be 100% recoverable by the company and ultimately adversely affect the government's percentage of profit oil may be an issue. An associated concern is the requirement in many PSCs that facilities acquired for the purpose of operations become the property of the State upon cessation of production.

(b) FPSO lease or charter

The field titleholder/operator (the company) may charter or "lease" an FPSO from an offshore vessel owner. The field titleholder/operator will then either operate the leased or chartered FPSO itself, or contract out operation and management of the FPSO to a third party service provider. The contractual arrangement may involve a construction contract and separate lease or bareboat charter. Alternatively the parties may agree to a contract combining the construction and lease and the ability to refurbish and mobilise the FPSO to another field for production or charter. Depending on the jurisdiction, separate contracts are often more tax effective.

The benefits associated with a lease or "bareboat" charter include the ability to exercise greater control over the operation of the field and processing facilities aboard the FPSO and thereby control risk. An FPSO lease or charter will not require the massive upfront capital expenditure associated with the acquisition of an FPSO. The tax benefits available through Petroleum Resource Rent Tax (or in the case of a PSC, the recoverability of costs will also be available to an operator leasing or chartering an FPSO).

The risks associated with the bareboat charter or lease of an FPSO are similar to those associated with the acquisition of an FPSO, including the potential lack of technical capability and experience within the company to operate and maintain the FPSO where the company chooses to operate the FPSO. Difficulties may potentially arise in relation to responsibilities and liabilities as a result of the split between ownership and operatorship for example, where the FPSO does not perform as required when operated by the company. The same issues may arise where a third party is contracted to operate and maintain the vessel together with the problems associated with having multiple contractors.

(c) FPSO services agreement

In this arrangement, the FPSO is owned and operated by a contractor who provides operating services using the FPSO to the field titleholder/operator (the company) on a contract basis. Again the arrangement may consist of a construction contract (where the contractor is providing a new vessel) and a separate operations and maintenance contract, or a

combination of the two.[16] The main benefits in the company contracting for the supply, operation and maintenance of a FPSO (as opposed to acquiring the FPSO, or leasing or chartering the vessel) include the avoidance by the company of the massive upfront capital expenditure required to acquire an FPSO. The benefits of contracting out "non-core" company business to specialist contractors with the technical capability and experience to operate and maintain the FPSO will include transferring the risks associated with acquiring, operating and maintaining the FPSO to the contractor to the extent permitted in the contract.

The balance of this is paper will focus on the basic terms of, and key issues arising from, an FPSO services agreement. The scope of this paper does not permit analysis of the other contractual arrangements outlined above, however, much of the commentary in relation to a services agreement is equally relevant to these contractual arrangements.

3. STRUCTURE OF AN FPSO SERVICES AGREEMENT

An FPSO services agreement may consist of a traditional charterparty.[17] The charter may be a demise charter (whereby the ship is chartered with or without master and crew and the shipowner completely gives up possession and control of the vessel) or a time charter (whereby the shipowner retains possession of the vessel and the master and crew remain servants of the shipowner). Whether or not the agreement is structured as a charterparty will depend on a number of considerations including local law issues in the country of operation and particularly, the tax implications to both parties.

Depending on the circumstances, a services agreement may be the most appropriate arrangement as opposed to a charter. Where the agreement is solely a services agreement, ownership and control of the FPSO will at all times remain with the FPSO contractor. The FPSO contractor will be an independent contractor retaining direction and control over provision of the services set out in the scope of work in the agreement. The advantage in having an FPSO services agreement as opposed to a charterparty is that the company contracting for the services is able to avoid the different law and interpretation applicable to shipping contracts such as charterparties, including the associated international law much of which may be inappropriate to an FPSO service agreement.[18] For example, the company may avoid the Hague Rules which may limit the contractor's liability (as vessel owner) to the company and impose strict limitations on time for commencement of proceedings by the company.[19]

As noted above, an FPSO services agreement usually consists of three parts:

(a) engineering, design and construction or conversion of the FPSO;
(b) delivery, hook-up, testing and acceptance of the FPSO; and
(c) the operating and management services to be provided by the contractor.

Occasionally, the above components are broken up into two individual contracts (that is, the construction contract and the operations and maintenance contract). Where there are individual contractors for each contract, much time and effort may be involved in coordinating the different

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16 This will usually be dictated by the taxation benefits and disadvantages of the differing contractual arrangements.

17 A charterparty is a contract by which the whole of the services of a ship, or by which the services of a ship for a particular period or voyage are let by the shipowners.

18 M R David (ed), *Oil and Gas Infrastructure and Midstream Agreements* (1997), 221.

19 Ibid.

contracts and contractors. The company should ensure contracts are executed simultaneously or provide some other mechanism to avoid exposing the company where one contract has been executed before all other requisite contracts are negotiated and executed.[20]

Most companies will be obliged by joint venture agreement requirements to request contractors to qualify and tender for the contract. A proforma FPSO contract will generally include the form of contract, general terms and conditions and the schedules or appendices (including the specifications, scope of work, project schedule, remuneration, insurance and company policies to be adhered to).

4. KEY ELEMENTS OF AN FPSO SERVICES AGREEMENT

4.1 Construction of FPSO

The provision of the FPSO may involve a "new build," the conversion of an existing oil tanker into an FPSO, or modification to an existing FPSO to make it suitable for the relevant project. This section of the agreement may be referred to as construction, conversion or development work and is often completed on a lump–sum basis

This section of the agreement will include the scope of work, provisions relating to specification and the schedule for completion of the construction work. The provisions will also include engineering, procurement and construction in accordance with the "Basis of Design" together with any associated project management, planning and scheduling, reporting, input into the safety case and any interface management required. Some form of testing and commissioning of the FPSO will also take place at the shipyard. A notice provision will set out the procedure to be undertaken when the FPSO is ready to mobilise from the shipyard to the field.

The contractor will generally be required to deliver the FPSO to the field fully equipped and furnished (including the mooring system), suitable for the environmental conditions (eg water depth, marine and weather conditions), generally fit for purpose and compliant with an objective quality standard within the timeframe dictated in the agreement.

The company will generally seek the right to participate in the review of design, engineering and construction work. This will include the right to review and request modifications to design and engineering documentation, conduct audits and attend testing. However the contractor will argue for a limited company role.

There are many risks to both parties at this stage of the contractual relationship. An important risk to be managed on the part of the company is the risk of delay in the construction process which may cause production schedule delays, cost implications or the missed opportunity to commission the FPSO during suitable weather and sea conditions. This can be dealt with by making time "of the essence" and therefore a fundamental term of the contract enabling the company to terminate for breach, although in practice this may provide little comfort to the company. Liquidated damages may provide incentive for the contractor to avoid undue delay and the contractor will usually request a bonus payment on terms similar to the liquidated damages for early delivery of the FPSO.

Delays and cost increases will also be caused by numerous variations to the agreement during the construction stage. Where the scope of work in relation to the construction phase is insufficient to

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[20] M R David (ed), *Oil and Gas Infrastructure and Midstream Agreements* (1997), 228.

meet the requirements of the company, or is not adequately described, the contractor (or indeed the company) may request variations which may cause disputes and delays. The company will want to limit the number and scope of variations to control cost and avoid delays and the contractor will want to make certain the required variations are implemented to ensure the vessel is fit for purpose. The variation procedure needs to be clear and equitable and tied to an effective dispute resolution procedure.

Other risks that the parties will need to address in the agreement include the risk that the FPSO may not meet testing and pre-commissioning requirements and the risk that the FPSO is damaged or lost when mobilising to the field.

4.2 Delivery, Hook-up, Testing, Commissioning and Acceptance of FPSO

The agreement will deal with the obligations of the contractor in relation to mobilisation and delivery of the FPSO to the field, installation of the mooring system, installation and hook-up of the FPSO to the subsea facilities, flowlines, risers and umbilicals, pre-commissioning tests, commissioning of the FPSO and start-up of the FPSO processing facilities.

Responsibility for the FPSO and subsea equipment hook-up and testing should be set out in the agreement. The subsea equipment will frequently be the subject of a separate contract with third party service provider and although the subsea equipment will ultimately be controlled by the company, the FPSO contractor may be required to operate it. Each party's obligations and liabilities in respect of the subsea equipment, infrastructure and operating consol should also be clearly set out in the agreement. The contractor will generally not accept any liability in respect of the operation and maintenance of such equipment.

Depending on the scope of the agreement, other components, such as the mooring system may be separately contracted. The associated interface issues should be addressed to avoid issues, such as the incompatibility of equipment from arising. This will include ensuring all contracts are consistent and will work together to the extent required.

The agreement will also establish specified performance requirements and acceptance criteria to be met at various contractual milestones, during testing and during commissioning of the FPSO. Such criteria will determine when the company will be willing to accept the FPSO. Acceptance should not prejudice warranty obligations.[21] The company will want to ensure that the warranties applicable to the FPSO and associated rectification obligations apply for at least a minimum duration, such as 12 months. It is preferable for the warranty period to commence upon commencement of operations and not upon acceptance of the FPSO in order to ensure the rectification period runs for the maximum amount of time during normal operations.

The company will usually accept the FPSO when the contractor has provided notice that the FPSO is "ready for start-up." This means the FPSO is ready to receive hydrocarbons from the subsea production system, process the hydrocarbons, reinject water and gas, store and offload crude in accordance with set performance requirements and generally operate in accordance with the agreement. At this point the contractor will want to be entitled receive full remuneration for the operation and maintenance services.

Risks for both parties at this point may include inclement weather conditions causing delay and problems in hooking up the FPSO with the subsea facilities, and problems with equipment being incompatible. Disputes may arise as to the satisfaction of testing requirements and there is also the

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[21] M R David (ed), *Oil and Gas Infrastructure and Midstream Agreements* (1997), 203.

risk of an incident causing damage to the systems and or pollution. The outcome where such events arise must be dealt with in the agreement.

4.3 Scope of Operating Services

Once the FPSO has been delivered, hooked-up, commissioned, tested and accepted by the company, the FPSO can "ramp-up" and commence normal operations. The scope of the operating services provided by the contractor will usually involve:

(a) operation, management and maintenance of the FPSO, including the process plant and offtake system;
(b) operation and management of the subsea and associated equipment in accordance with directions from the company;
(c) ensuring that the FPSO meets performance requirements, including maintaining the required rate of oil production, water injection and gas reinjection;
(d) supply and management of spare parts and logistics including an onshore base, support vessel and emergency systems;
(e) the requirement to dedicate sufficient resources to accomplish the scope of work to standard;
(f) the requirement to interface smoothly with company representatives and other contractors; and
(g) reporting and provision of information to the company on a regular basis.

The scope of operating services or work is usually detailed in an appendix or schedule and is typically very prescriptive and largely technical in nature. It is important that the contract accurately reflects each party's expectations in relation to the scope of work to avoid the risk of disputes arising. The parties will usually have the ability to vary the scope of work through a variation mechanism, each party will seek to have a variation mechanism which benefits itself. The company will want to ensure that the scope of work is only varied with the company's authorisation to control the risk of budget overruns. Conversely, the contractor will want to ensure they are compensated for the actual services performed. The company will need to allow variations where reasonable under the circumstances to ensure smooth operation and performance of the agreement and the project.

The company will normally be responsible for scheduling offtake tankers and may also be required to provide tugs or other vessels to assist with berthing and station keeping during offtake. The issue as to who will bear responsibility in the event of a spill during offtake will need to be addressed. The company (with the assistance of the contractor) will also supply various handbooks including terminal handbooks, occupational health, safety and environmental handbooks for use by the contractor in the provision of the services. Responsibility for updating handbooks should be addressed. The company should bear in mind the liability implications that may arise where the contractor has complied with the requirements of its handbooks and something has subsequently gone wrong as a result.

4.4 Term of the Agreement

The FPSO services agreement will usually be for a minimum fixed term with multiple options to extend for further terms. Alternatively, the term may simply be for a fixed period or the term may coincide with the expected life of the field. Where the term of the agreement is for a fixed period, the company will need to consider whether such a term (and any options to extend) adequately secures the FPSO for the appropriate period to avoid the risk of the contract expiring mid-project

and requiring re-negotiation of the terms and rates, or suspension of production while another FPSO is sourced. Another issue the company will need to consider is the prospect of discovery of new fields in the vicinity of the current field and the possibility of a "tie-in" to the existing field and FPSO, thereby extending the life of the project. Conversely, the contractor will also wish to ensure the term is definite so that it may market and assign the services of the FPSO to other projects after expiration of the term. Another alternative is to link the term to the cessation of commercial production. However, this phrase needs to be carefully defined. There may also be automatic extensions for periods of force majeure and other acceptable causes of delay such as delay caused by the company.

4.5 Independent Contractor

The contractor will want to maintain independence from the company, although the company may wish to exert control over the performance and management of the services. It is necessary that the relationship and the terms of the agreement reflect the status of an arm's-length, independent contractor relationship so to avoid the danger of the company being deemed to have waived its rights to enforce the obligations of the contractor and for insurance purposes.

4.6 Company Obligations

The company will usually be required to provide certain materials, equipment and, most importantly, essential project and field information to the contractor to ensure the contractor can perform the services as required. The company will wish to limit its risk associated with the provision of materials, equipment and information. However, this may not be equitable where the contractor is entirely dependent upon the company as its source. For example, where the company provides certain confidential information relating to the field or subsea conditions to the contractor.

4.7 Classification

The contractor will be required to maintain the FPSO in accordance with the requirements of an agreed Classification Society.[22] The contractor will usually request that any changes in classification requirements resulting in increased costs be passed onto the company.

4.8 Maintenance, Repair, Suspension and Down-time

A set period of time for maintenance, repair and (possibly) downtime is usually established in the FPSO services agreement to enable the contractor to carry out such tasks without penalty. The remuneration arrangements during periods of maintenance, repair and downtime caused by the contractor must be structured to account for the fact that the FPSO is not operating at full contracted capacity (if at all), balanced against the contractor's requirement to maintain cash-flow

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[22] Ship Classification, involves the implementation of published rules and/or regulations which will provide for:

(a) the structural strength of (and where necessary the watertight integrity of) all essential parts of the hull and its appendages; and

(b) the safety and reliability of the propulsion and steering systems, and those other features and auxiliary systems which have been built into the ship in order to establish and maintain basic conditions on board

thereby enabling the ship to operate in its intended service.

The achievement of these goals is conditional upon continued compliance with the rules and/or regulations and proper care and conduct on the part of the owner and operator. Ship classification is managed by a Classification Society.

to cover ongoing costs and investment. Suspension or delay caused by the company should also be addressed in the agreement. The company will usually want the right to suspend operations and services and may argue for a reduced day rate during this period. However, the contractor will usually resist this. The company may also wish to encourage the minimisation of downtime and the associated loss of production. Excessive downtime will usually incur some form of penalty, usually also in the form of a reduced day rate However the contractor will usually argue for a "grace" period before the penalties are incurred.

4.9 Dry Docking

The contractor will usually have an obligation to avoid the requirement to "dry-dock" the FPSO during the term of the agreement in order to avoid adverse impact on production operations and offtake obligations. The risk of dry-docking is usually borne by the contractor unless it is as a result of changes to the Classification Society's rules or caused by the company. The agreement should address consequences of dry-docking (depending on the cause) including mechanisms such as a reduction in rates, liquidated damages and possibly termination.

4.10 Acquaintance with Area of Operations

It is important that the contractor is familiar with the area of operations to avoid the risks that may arise if the contractor is unfamiliar and illprepared for the conditions in that area. The contractor is usually required to accept such a risk and warrant that it is acquainted with all areas of operations including political, fiscal, logistical, environmental, climatic and marine conditions. The contractor may also be required to declare that it has assessed and accounted for the associated risks in remuneration structure and staffing levels. However, the contractor will not accept such risk where it has relied upon information provided by the company that it cannot verify such as information relating to seabed and subsoil conditions, and may request the company provides a warranty in relation to such information.

4.11 Employees and Subcontractors

The agreement will set out the contractor's obligations in relation to personnel and the contractor will be required to warrant as to their suitability, qualifications and experience. The company may demand the right to have employees removed from the FPSO in certain circumstances. For example, in the event of a breach of the company's occupational health and safety or drugs and alcohol policy.

The agreement will usually restrict the contractor's ability to subcontract out work. The contractor may need to obtain the consent of the company before it subcontracts out work (which the company may withhold at the company's discretion). Alternatively, the contractor may be obliged only to notify the company where any of the services are to be subcontracted out and ensure any subcontracts are consistent with the terms of the agreement. Either way, the company should ensure that the primary liability for the work always remains with the contractor.[23]

4.12 Option to Purchase

An option to purchase or right of first refusal in respect of the FPSO is often sought by the company to avoid the risk of loss of access to the FPSO if it is on-sold and to secure continued utilisation of the FPSO as required by the company.

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[23] M R David (ed), *Oil and Gas Infrastructure and Midstream Agreements* (1997), 220.

An option to purchase or right of first refusal should include:

(a) a clear mechanism to trigger the option or right of refusal;

(b) a mechanism to establish the price of the FPSO;

(c) a mechanism to discharge any encumbrances; and

(d) a mechanism governing the transfer of title to the FPSO.

The agreement should also detail the responsibility for and control over the operation of the FPSO pending completion of the sale and handover.

An option to purchase or right of first refusal should be considered in the event of the insolvency of the contractor. A form of security for the option to purchase or right of first refusal or, alternatively a tripartite agreement with the financiers to secure the company's rights should be considered. The tax implications of an option to purchase or right of first refusal should also be considered.

4.13 Default, Insolvency and Security

The company will usually require a parent company guarantee or bond from the contractor and strong remedies for default and insolvency. The company will also be required to provide a parent company guarantee or bond. If the FPSO is financed, the company will need to recognise the interests of the financiers. Where the FPSO is financed, a tripartite agreement is a good mechanism to deal with each party's rights and obligations in the event of insolvency or default. The company should seek an undertaking from the financiers of continued availability of the vessel or right to quiet enjoyment in the event of default by the contractor or the exercise of step-in rights by the financier.

4.14 Representations, Warranties

Representations and warranties in relation to the contractor's standard of performance of the agreement should be sought from the contractor for both the construction and operation phases. The contractor should also warrant that it is fully acquainted with the terms and requirements of the agreement and that it is not aware of any aspects that would prevent, interrupt or delay performance of its obligations under the agreement. The contractor may request the company warrant information it has provided to the contractor upon which it must rely and cannot independently verify.

4.15 Liability and Indemnity

Liabilities will generally fall into three categories. The liability for negligence, third party liability and liability for consequential loss.

The company may try to pass on as much liability to the contractor as possible and the contractor will try to contain its liability by requiring some form of limitation on its liability (for example, a financial cap on the liability for which it will be responsible). Liabilities will be tied to the insurances carried by each party and liability caps may be tied to the level of insured loss above which the other party may be required to sustain. Often liability and indemnity between the contractor and company will be "knock for knock" or "back-to-back" whereby each party will carry its own risk for its personnel and damage to property owned by it and third party liability. This may either include or exclude negligence or wilful misconduct. It should be noted that it is common for the contractor to assume full liability during the construction phase of the agreement.

It is relatively standard to exclude consequential loss for all parties. However if the company demands indemnification for loss of production caused by the contractor, the indemnity is likely to be capped in some way

The allocation of risk for pollution will depend on the negotiating strength of each party and its ability to obtain the requisite insurance. Generally the contractor will want to limit liability for pollution as a result of well damage and pollution associated with subsea equipment which it does not own, but which it operates on behalf of the company and at the company's direction together with pollution caused during offtake.

4.16 Insurance

Insurance will play a major part is covering the risks and liabilities arising out of the project for both parties and as noted above, the indemnities will need to be backed by adequate insurance. Therefore, both parties are likely to have broad insurance obligations which need to be carefully detailed in the agreement (usually in a schedule or appendix). Thought should be given to which party is best able to obtain the broadest and most appropriate level of insurance. For example, it may be cost effective for the company to obtain overall or umbrella project insurance which also covers the contractor in some instances.

The principal categories of insurance cover the contractor will be required to obtain and maintain include statutory insurance such as worker's compensation and employer's liability insurance, motor vehicle insurance, public liability insurance, aircraft insurance (where the contractor owns or operates aircraft in connection with the provision of services), hull and machinery, collision liability and wreckage removal insurance for all vessels associated with the performance of the services, protection and indemnity insurance (including coverage for pollution), professional indemnity insurance, war strikes insurance and contractor's all risk insurance (from the commencement of the operation and maintenance services). Where liability for consequential loss has been accepted by the contractor, consequential loss insurance or business interruption insurance should also be requested by the company. The company will usually request the contractor's insurances are endorsed in its name and that contractor's insurers waive their rights of subrogation and recourse against the company and the company's insurers.

The company will be required to provide insurance similar to that required by the contractor and in accordance with good oilfield practice including insurance for its property and for pollution emanating from its wells and subsea equipment.

Each party will be obliged to ensure its subcontractors obtain and maintain the appropriate insurances. Both parties may be required to produce the certificates of insurance upon request of the other party.

4.17 Total Loss (Actual or Constructive) of the FPSO

The consequences in the event of a total loss of the FPSO must be considered and detailed in the agreement. Depending on the cause of the loss, the company will seek a right to terminate without prejudice to the accrued rights of the parties or require replacement of the FPSO. The contractor, on the other hand, depending on its level of insurance, may wish to recover some of its investment by requiring continued remuneration for a period of time or may even demand payment of the value of the FPSO.

4.18 Title to Petroleum Production

Title to petroleum produced on the FPSO always remains with the company. The contractor is usually prevented from asserting any lien or proprietary interest over the produced petroleum.

4.19 Ability to Terminate the Agreement

The company will usually wish to reserve the right to terminate the agreement at will, at any time, in addition to standard termination for default. The corollary is that the contractor may require an early termination fee. In such a case there are a number of ways in which the early termination fee may be calculated. The contractor may be required to use all reasonable endeavours to contract the FPSO to third parties on the basis that the fees earned by third party contract of the FPSO are set-off against the early termination fee.

4.20 Miscellaneous Risks

The parties will usually seek to allocate miscellaneous risks between themselves, expressly or implicitly. Where the FPSO is required to operate in a politically unstable environment, the company will often be required to assume some responsibility for this type of risk. This may include risk associated with suspension of the services due to political unrest or requisition of the FPSO by the relevant government authorities. However, the contractor will generally be expected to have accounted for other risks associated with the location of the FPSO in the remuneration structure and other terms of the agreement (for example, logistical risk associated with site, geology and climate of the location of the FPSO).

4.21 Remuneration Structure

The remuneration structure for an FPSO services agreement is generally complex, reflecting the different construction phase and operating scenarios. For example, it may incorporate:

(a) a lump sum fee for the construction and mobilisation of the FPSO to the field;
(b) a daily compensation fee representing the contractor's capital investment;
(c) a daily operating fee representing the fee for service;
(d) demobilisation and re-delivery fees;
(e) reimbursables;
(f) rates for additional personnel;
(g) the amendment of rates due to variation orders; and
(h) early termination fees.

The fee structure may also include disincentives for non-performance (for example, the daily operating fee may incorporate the ability for the company to pay a reduced daily operating fee in the event of a decrease in the rate of petroleum production, water or gas reinjection, partial shutdown or excessive downtime caused by the contractor). The remuneration structure is usually detailed in a schedule or appendix.

4.22 Taxes

The parties will need to determine which taxes are legitimately payable by each party and will seek to protect themselves against changes in the applicable taxation regime. The contractor will usually argue for any new taxes to be for the account of the company. However, it is difficult to assign such unascertainable exposure and the final allocation of this risk between the parties may ultimately depend on the negotiating strength of each party.

4.23 Local Content

Depending on the location and governing regime of the site and the company's production title conditions, the company may, where appropriate require the contractor to give due consideration and opportunity to local sub-contractors, labour and local business.

4.24 Environmental Obligations and Pollution

The contractor will be required to comply with local and internationally accepted environmental standards and laws. It may also be required to remove or salvage the FPSO if wrecked.

The contractor will also be required to comply with the company's environmental policies or guidelines for example, "zero flaring" policies or the requirement to reinject produced formation water into a disused reservoir rather than disposal at sea.

The company will generally be responsible for any environmental damage caused by its subsea and associated infrastructure.

4.25 Assignment

The company will generally seek control over the contractor's ability to assign the vessel. This may be in the form of a requirement to obtain the company's approval which must not be unreasonably withheld (for example, subject to demonstrated financial and technical capability) or an outright prohibition on the right to assign. Where the contractor has obtained finance for the FPSO, consideration will need to be given to the financiers' rights. The company on the other hand, will usually seek unfettered rights of assignment.

4.26 Force Majeure

Force majeure will usually be divided into force majeure occurring prior to acceptance of the FPSO, and force majeure occurring after acceptance and start-up. The contractor is likely to bear the burden of force majeure prior to delivery and start-up. The general terms of force majeure are usually fairly standard however, the parties will need to consider to what extent bad weather conditions will constitute force majeure and whether the agreement is extended by the period of the force majeure or and whether it may be terminated after extended force majeure. The contractor is likely to require the continuation of some form of payment during an event of force majeure after acceptance of the FPSO to ensure it continues to recover its capital investment and is able to meet any financing obligations.

4.27 Decommissioning

Demobilisation of the FPSO upon expiration of the contract will usually be for the cost of the company. The company will also be responsible for decommissioning the subsea equipment, pipelines and plugging and abandoning wells in accordance with the terms of the production licence and governing legislation including the *Petroleum (Submerged Lands) Act* 1967 (Cth) where the FPSO is located in Commonwealth waters.

4.28 Parties

Where the company is acting as operator for and on behalf of a joint venture, the joint venture participants may themselves want direct recourse against the contractor for the performance of its obligations. In such a case, the joint venture participants should each enter into the contract or, the operator should enter into the contract as agent of the joint venture participants. This will also

ensure the contractor has a right of recourse against each joint venture participant and not just the operator.

4.29 Other General Clauses and Boilerplate Clauses

Other common clauses in FPSO services agreements include clauses giving the company rights to conduct audits, inspections and surveys, clauses relating to intellectual property and confidentiality, no charterparty clauses, clauses relating to working conditions, dispute resolution clauses, clauses relating to the obligations of the company under the title, obligations on the contractor to obtain all required licences and approvals, clauses relating to emergency assistance and diving operations.

Standard boilerplate clauses such as notice clauses, survival clauses and compliance with law and governing law clauses will also form part of the agreement.

4.30 Appendices or Schedules

The appendices will contain the bulk of the technical content of the agreement. The appendices will usually include the basis of design, FPSO specification, scope of work, contract schedule, remuneration schedule, organisation and personnel charts, project procedures, variation procedures and forms, insurances and company policies (eg. environmental health and safety).

5. CONCLUSION

The aim of this paper is to provide a basic introduction to the FPSO and FPSO services agreements. It provides a brief overview of what can potentially be a very complex agreement requiring substantial input from legal, technical and commercial advisors. The array of contracting arrangements for an FPSO has been briefly noted and there are undoubtedly varied and diverse approaches to such contracts and the allocation of risk than as described in this paper. It remains to be seen whether as the use of the FPSO in petroleum production increases, there is scope for a standard or model FPSO agreement to be developed and used as a basis to commence negotiations.