















TECHNICAL AND COMMERCIAL ADVANTAGES OF THE SSP320 AND SSP+PLUS

COMPARATIVE OPERATIONAL CHARACTERISTICS	 SPAR	 TLP	 SEMI	 FPSO	OTHER ROUND FPSO's	 SSP320	 SSP+ PLUS	WHAT IT MEANS FOR OPERATORS	COST IMPACT/ SAVINGS	SSP AND SSP+ ADDED VALUE
MAIN USE	Exploration and Production Drilling limited storage	Exploration and Production Drilling no storage	Exploration and Production Drilling no Storage	Production, Storage and Offloading	Exploration and Production Drilling	FPSO & General Floating Utility Platform	Multiple Uses FPSO, FPDSO, Dry Trees, SCR applications			SSP and SSP+ represent truly hybrid and versatile units, adding value to the floaters utilization capabilities as it can do be used for multiple purposes to accommodate operator's specific requirements
WET TREES	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Expensive reentry for well maintenance and services; require extra drill rig on location.	Potential OPEX Saving: per workover occurrence: 30 days x \$400,000 day/rate. One well service campaign	SSP+ requires no extra drill rig required to maintain production.
DRY TREES	Yes	Yes	Imminent No storage capability and ballast and payload sensitive (i.e., current low heave GoM, semi-sub approx. 20,000 ton steel hull weight)	No	No	No	Yes	Capable of optimizing characteristics of a complex pre-salt reservoir; eliminating need to bring in specialized deepwater drill rig on location.	CAPEX Savings: Enormous savings as drill rigs focus only on drilling campaign. Does not get diverted to support emergency workovers.	SSP+ can perform production, drilling, workover and storage.
COST STEEL/VOLUME STORAGE RATIO	N/A	N/A	N/A	Variable depending on vessel application	Challenging	Lowest in market	Competitive	Lower CAPEX for hull, shorter building time/fabrication yard friendly.	SSP base approximate 35% savings; SSP+ approximately 10=15% compared ship-shape floaters.	SSP Base rates provides the most economical solution available; SSP+ provides competitive solution
DRILLING/ WORKOVER	Yes	Yes	Yes	Yes, in specific environments	Yes, in specific environments	Yes, in specific environments	Yes, all environments	SSP+capable of serving high temperature reservoirs with high wax/asphaltine complex/ high water content/gas complex.	SSP+ multiple drill rigs extend the life cycle of the reservoir.	SSP+ performs short and long term well testing and production in all environments and potentially manages extension of well life cycle.









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STORAGE	No	No	No	Yes	Yes	Yes	Yes	SSP Plus accelerates cash flow to development contribution. Capability of delivering earlier product to market through offloading.	OPEX Savings: Positively influences overall development cost as a contribution.	SSP Base- 1.2 Mbbls storage SSP Plus-1.6 Mbbls storage SSP Plus provides potential for earlier production to market
CALM BUOY	N/A	N/A	N/A	Needed if Spread Moored	Not needed	Not needed	Not needed	Direct offloading using spot market tankers, eliminating extra pipeline and CALM buoy solution, eliminating maintenance costs.	CAPEX savings of about \$100M+	Single point offloading shuttle tanker NO CALM required
TOPSIDE CAPACITY	Generous	Upgrade sensitive	Upgrade sensitive	Generous	Generous	Generous	Generous	Efficient production layout, cost saving on piping systems and electrical cabling.	About 8%; based on savings in piping and integration	High deckload capacity plus potential for increased/adjusted topsides payload during well life cycle.
EASE OF FABRICATION	No	No	No	Yes	Yes	Yes	Yes	Modular fabrication able to support outsourcing of block sections of vessel hull and components	Shorter fabrication time	Low fabrication cost-repetitive modular design Only uses flat plate construction on hull
GRAVING DOCK	No	No	No	Needed	No	No	No	Less intrusive requirements for permits by States or principals. Leaving no permanent landmark brings value to labor market in other regions of the country.	CAPEX Savings: \$60 M	No graving dock required; require only sufficient quayside water depth for launch
ONSHORE TOPSIDE INTEGRATION	No	No	No	Yes	Yes	Yes	Yes	Cost effective hook-up and commissioning alongside quayside.	Eliminates Heerema/Saipem offshore marine installation costs (i.e., 40 days x \$800,000 day-rate).	Efficient and able commissioning strategy. Less interference with other activities during field development hook-up.\









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MOORING SYSTEM	Yes	Challenging and expensive	Yes	Yes	Yes	Yes	Yes	Spread moored system	Significant reductions in cost and complexity compared to TLP	Omni-directional shape accommodates compact, optimized semi-taut mooring system or on DP
FLOATER RELOCATION	No	No	Yes	Yes	Yes	Yes	Yes	Asset become a flexible solution for field	Extends life of asset	Can be relocated to any region in the world. SSP offers valid residual value.
SUPPORTS STEEL CATENARY RISERS (SCRs)	Yes	Yes	No	Limited	No	No	Yes	<p>Susceptible to ultra deep and deep water potential issues related to high temperature, and high pressure collapsing high pressure pipe line collapsing such as and insulation criteria currently seriously limited by flexible pipe; therefore steel pipeline and risers become requirement.</p> <p>Only a very limited number of floaters can accommodate SCR risers, thus avoiding fatigue and stress related issues.</p> <p>Current riser solutions: Standalone hybrid with flexible transition or SCR.</p>	<p>Stand-alone hybrids are approximately four times the cost of SCRs.</p> <p>In addition, they require a significantly larger subsea footprint in order to avoid clashing or the hybrid riser array.</p>	<p>All SSP's Supports large number of risers (no clashing)</p> <p>SSP+ supports flexible and lazy wave SCRs.</p> <p>SSP+ accommodates multiple SCRs through the center of the floater while able to accommodate production risers as well.</p>



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TURRET	N/A	N/A	N/A	Needed to weathervane	Not needed	Not needed	Not needed	Selecting spread moored anchor system vs. a turret moored system. Accommodating a turret increases costs for floater structural integrity and maintenance services.	CAPEX Savings: \$250-800M Current cost: 20 risers: approximately \$200 million 60 risers: \$100 million. The alternative is to have all the risers tightly connected to one side of the FPSO, thus increasing the potential for clashing and large subsea footprint.	No turret needed
PRE-SALT SUITABLE FOR PRODUCTION/ DRILLING	Challenging	No	Imminent, but sensitive	Yes	Sensitive	Yes	Yes	Expensive and limited amount of floaters available; most of them not local- content friendly and can/cannot accommodate storage.		Suitable for drilling, deep-sea and pre-salt environment. Tank tested for the 18.5s Brazil wave spectrum. Compliant to operate under extreme conditions.
Expensive / Complex Offshore Installation Procedure	Yes	Yes	No	No	No	No	No	Only two companies have sufficient offshore hook-up and lifting capabilities for SPAR and TLP.	Very significant	Cost effective. Mooring and riser systems to be pre-installed upon arrival of SSP+; shorter hook-up time.
FLAT PLATE CONSTRUCTION METHODOLOGY	No	No	Combo	Combo	Yes	Yes	Yes	Cost-effective fabrication method.		Beam girder limited bulkheads flat plated
EASE OF FABRICATION	No	No	No	Moderate	Yes	Yes	Yes	Modular fabrication able to support outsourcing of block sections of vessel hull and components	Shorter fabrication time	Low fabrication cost-repetitive modular design



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MOTIONS: PITCH / ROLL STABILITY	Yes	Yes, but only with tendons intact	Yes	Limited	Yes	Yes Premium pitch / roll stability	Yes	Capable of optimizing load-out or relocating asset upon completion of field life cycle. Reducing personnel and environmental exposure to human or mechanical errors. Operational comfort	Liability and image SSP Base obtains stability with no active ballast, reducing CAPEX and OPEX	Exceptional stability in extreme environmental conditions - NO greenwater No vortex shedding
MOTIONS: HEAVE SENSITIVITY	Excellent T23	Good	Workable T18-19	Poor T12	Poor T16	Workable /Not designed for maximum heave limitation T17	Excellent T23	Reservoir development selection and pipeline infrastructure. To accommodate cost effective delivery of hydrocarbon to market.		Accommodates wet and dry tree reservoir solutions.
MAXIMUM WATER DEPTH LIMITATIONS	None	Max 4000 ft	None	None	None	None	None			
VIM/LOOP CURRENT	Workable	Workable	Sensitive	Sensitive	Sensitive	Excellent	Currently being validated	Riser and floater oscillation can affect design criteria and operability of units.		Less sensitive. Tank tests on SSP+ current being completed on current