

# Platform Group

Day II Discussion

# Challenges and Risks

<b>Topic</b>	<b>Engineering or Operating Challenges for OTEC (failure risks)</b>
PROCESSES:	
<i>Fabrication</i>	State-of-the-art
<i>Deployment</i>	State-of-the-art
<i>Construction</i>	N/A
<i>Installation (integration and commissioning)</i>	-Deck equipment modules sized for lifting capability at integration site -Floating draft less than depth at integration site
<i>OMR&amp;R</i>	State-of-the-art
<i>Monitoring</i>	State-of-the-art
<i>Safe Operating Procedures</i>	State-of-the-art
<i>Decommissioning</i>	State-of-the-art
<i>Component Viability</i>	Little or no risk of component failure under standard operating conditions

# Processes

Topic: Semi-submersible	Manufacturability	Operability	Reliability	Logistics	Scalability
PROCESSES:					
<i>Fabrication</i>	Semi-Submersible: Standard offshore rig fabrication Spar: Fewer qualified manufacturing facilities Monohull: Acceptable FPSO Construction	--	High	Less than established offshore industry	No issues
<i>Deployment</i>	N/A	N/A	High	Standard heavy-lift ships sufficient up to 20,000 tons Spar: ~165 m length limitation	Adequate for 20,000 ton total weight (hull and equipment)
<i>Construction</i>	(Assumed same as fabrication) Spar: Outfitting with OTEC equip is more complicated Monohull: Ship is more amenable to installation of internal OTEC equip	--	--	--	--

# Processes

Topic: Semi-submersible	Manufacturability	Operability	Reliability	Logistics	Scalability
PROCESSES:					
<i>Installation (Integration and commissioning)</i>	Quayside deck commissioning <b>Spar: Requires deepwater for deck installation and heavy lift or float over</b>	Local lift capacity for integration may be an issue (eg. pacific islands)	High (if the equipment is available)	Wet-tow to final site (short distance) or dry-tow (long distance)	Standard oil rig techniques
<i>OMR&amp;R</i>		Routine/ Standard maintenance (simpler than typical oil rig) <b>Spar: More Difficult to access</b> Monohull: Greater response to sea states		Close to shore	
<i>Monitoring</i>		Performance monitoring			Monohull: Instrumentation advised to monitor fatigue

# Processes

Topic: Semi-submersible	Manufacturability	Operability	Reliability	Logistics	Scalability
PROCESSES:					
<i>Safe Operating Procedures</i>		Meet regulatory and company HSE operating requirements	High		
<i>Decommissioning</i>	In accordance with current practices <i>Spar: Harder</i>	N/A	High	Transporting to desired location for disposal	N/A
<i>Relocation</i>	NA	Consistent with Normal Practices <i>Spar: Difficult, may not be cost effective</i>	High	Requires new moorings; <i>Spar: Extensive disassembly + reassembly</i>	NA
	Manufacturability	Operability	Reliability	Logistics	Scalability

# Economic Drivers

	Semi-Submersible/ Spar/ Monohull
Cost Limiting Factors/cost drivers?	Labor rates/productivity Outfitting (equipment in hull) Steel costs Transportation
Possible Cost Savings?	Design for inexpensive manufacturing; Minimize internal equipment; optimize schedule
What Research can be done on Cost Reduction	Low cost manufacturing techniques, materials; developing OTEC standards based on cost/risk
Are Technologies viable?	Yes

# Semi-Submersible Used for Oil and Gas Drilling



# Ship Shape





# “Red Hawk” Spar Platform

