



## Safe Marine Transfer LLC Meeting Minutes

Meeting: Final Project Presentation to RPSEA WPG; July 14, 2016 8:30 AM – 2:30 PM  
Location: Helix Board Room, 3505 W Sam Houston Parkway North, Houston, Texas  
RPSEA Project No: 11121-5302-01  
Project Title: Deepwater Subsea Pressure Compensated Chemical Reservoir and Injection System  
Attendees: See Attached Meeting Sign-In List  
Agenda: See Attached Agenda.

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In compliance with the RPSEA Project Deliverables a final project presentation was prepared and presented at the subject Working Project Group (WPG) meeting. Forty-three SMEs including regulators and government officials participated in this meeting and queried the presenters where clarification was needed. As a pre-read a copy of the project's 127 page final report was electronically distributed to all meeting invitees.

Upon conclusion of the presentation there was an Open Session chaired by Dr. Tom Gay, RPSEA's Technical Champion for this project. The following queries were asked of the SMEs for their personal opinions:

- Similar to earlier meetings, the attendees were asked if they observed any “show-stoppers” in the design or system concept.
  - No one identified anything significant.
- Operator reps were asked to identify anything they would further evaluate in future work. Responses included:
  - Pump and power delivery details.
  - Bladder material reliability for a 5 year service life. (SMT is sponsoring currently running accelerated chemical exposure and aging of the materials. When these tests are completed there will be an addendum to the final report provided.)
  - Representatives for the bladder suppliers were queried for long-life product examples they had fabricated and had in service. Aire mentioned fuel bladders are typical 3+ years and they have some applications operating in excess of 7 years. Trelleberg has jet fuel (JP8) storage tanks that have been in service in excess of 10+ years.
  - SMT is using ABS as a classification society which covers deployment and recovery operations. Once connected to the subsea facility, it will fall under BSEE jurisdiction. Regulatory handover will need to be clearly defined.
  - Does SMT have any IP on the shuttle? Yes. There are patents, applied for patents and trade secrets that have all been developed.
- Regulatory representatives were asked what they would look for in the new SMT technologies. They responded generically they would review the complete system for function and reliability. This includes:
  - All safety systems
  - Connection to and interaction of system with the Xmas tree and well.
  - Evaluate the leakage risk of chemicals, from the shuttle and during any refill operations. What are the isolation capabilities inherent within the system?
  - Verification of material qualification procedures.



- Planned testing for all shuttle safety barriers when in service.
- Operations representatives were asked about:
  - What is the operability of the entire system? (The system is constructed with redundant critical equipment, consequently the system availability is high.)
  - What is the required time to replace a bladder? Philosophically, this type issue is off the critical path as a replacement shuttle would be installed when the faulty one is recovered for refurbishment.)
  - What is the typical shelf life of these production chemicals? The Baker Hughes representative indicated 3.5 years is typical. Seafloor storage represents ideal conditions. SMT replied if some chemical were aged, it could be recovered from the seafloor shuttle through the refill riser equipment.
  - A comment was made that close linkage of the shuttle to the injection point should enable much better chemical dosage control when compared to chemical treatment through long umbilical tubes.

The meeting was adjourned when no additional issues for future work was identified. If anyone thought of something later, SMT requested they be contact so that the issue may be addressed moving forward.

The presentation slides and presenters are identified in the agenda and are attached to these minutes. All presenters identified their respective success in developing the shuttle and its subsystems to the TRL 4 level of technical development. Further technical work will be site specific for the field and the shipyard.

Attachments: Agenda  
Attendees  
Photos  
Presentations



Start Time = 8:00 AM	Duration	Agenda Item	Lead
<b>Agenda</b>			
<b>Location</b>	<b>Helix / Canyon office</b> (Tim Krasin- POC) Corporate Board conference room 3505 W. Sam Houston Parkway North, Suite 400 Houston, Texas 77043		
<b>Date</b>	Thursday, July 14, 2016		
<b>Time</b>	8:00 am - 2:00 pm (CT)		
<b>Objectives</b>	<b>SMT Final Project Presentation</b> <ul style="list-style-type: none"> <li>• PI and subcontractor summary presentation of project results</li> <li>• Solicit opportunities for SMT to follow-up with individual business need driven, targeted presentations</li> <li>• Solicit potential site-specific applications for subsequent business case analysis</li> </ul>		
8:00 AM – 8:30 AM	30	Arrival and pre-meeting networking	
8:30 AM – 8:35 AM	5	Building safety	Canyon
8:35 AM – 8:55 AM	20	Introductions & meeting "process"	RPSEA Technical Champion Tom Gay
8:55 AM – 9:15 AM	20	Project scope & results - overview	SMT
9:15 AM – 9:45 AM	30	Shuttle a) Design b) Analysis & CFD c) ABS - AiP	ACMA Scott McClure
9:45 AM – 10:00 AM	15	Break	
10:00 AM – 10:10 AM	10	Subsea Chemical Storage System (SCSS); overview	SMT Art Schroeder
10:10 AM – 10:20 AM	10	Bladder material; elastomeric material	Trelleborg Jay Poole
10:20 AM – 10:30 AM	10	Bladder fabrication; plastic material	AIRE Industrial Tim Lewis
10:30 AM – 10:45 AM	15	Material - chemical; validation	Argen polymer, LLC Jeff Bahr
10:45 AM – 11:00 AM	15	Scale Model Test Apparatus	SMT Jim Chitwood
11:00 AM – 11:45 AM	45	Lunch provided	
11:45 AM – 12:30 PM	45	Subsea Chemical Injection Unit (SCIU)	OceanWorks Int'l Menno Huizinga
12:30 PM – 12:45 PM	15	Break	
12:45 PM – 1:15 PM	30	Marine operations Ops simulation and operational planning	Helix / Canyon offshore Tim Krasin GRI Steve Dodd
1:15 PM – 1:45 PM	30	Open discussion	RPSEA Technical Champion- Tom Gay lead
1:45 PM – 2:00 PM	15	6) Meeting Summary a) Action items (what) b) Follow-up (who & when)	RPSEA technical Champion- Tom Gay lead
2:00 PM – 2:00 PM	0	Adjourn	All



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