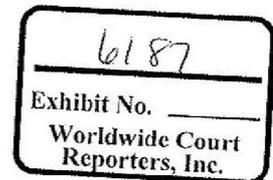


From: McDonald, W Leith  
Sent: Wed May 05 11:34:04 2010  
To: Tooms, Paul J  
Cc: Hill, Trevor; Turnbull, Jon B; Horsley, David  
Subject: Options & Data Requirements  
Importance: Normal  
Attachments: Paul Tooms - Data logic (revision 1).xls

Paul,

Update Options and Data Requirements spreadsheet attached.  
<<...>>

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BP-HZN-2179MDL02203232

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**Document Produced Natively**

**BP-HZN-2179MDL02203233**

**TREX 006187.0002**

TREX-006187.0002

Options and Data Requirements

Option	Key Success Factors	Data which would increase probability of success	Measurement technique which would provide this data	Confidence in data		Impact on schedule	Confirmation of outcome	Impact on data collection opportunities to the benefit of other options
				Accuracy	Materiality			
1. Installation of coffer dam	Site selected to optimise HC capture and flow processing (e.g. higher temperatures reduces the possibility of hydrate in collection facility) Sustainability of long term operation, with considerations for hurricanes	Cutting of choke lines in trench... (no regrets)... data opportunity to confirm what is in the trench	Sub-bottom profile?	H	L	Required before Sunday deployment	Increases stability of the coffer dam	Availability of survey equipment tool uncertain
2. Closing VBR to seal on drill pipe	Successfully attaching hoses Drill pipe present Ram rubbers intact	Pressure at kink both in annulus and drill pipe - Assessment of choke point	Pressure measurements at mud boost line, via BOP transducer, via kill and choke lines	M	H		Allows for collection site to be moved closer to well	This is relevant to future options and will not materially impact initial solution.
		Survey of riser on seabed	Acoustic Array of transponders mounted to Riser	H	H	Survey needed by Friday for Sunday Deployment	Enables Enterprise riser team to prevent clashing during deployment	Allows for monitoring during operation to manage clashing issues and see changes in riser position
3. Top kill - junk shot	Junk shot material sized such that it will block the restricted flow path in the BOP Sufficient operating pressure window C&K hydrate assessment	Flow restrictions in the BOP Configuration of rams and drill pipe in BOP	Pressure upstream and downstream of BOP	H	H	Required for planned loading of junk on May 8	Review based on integrity due to limited pressure surge capability 300psi surge capability above shut-in tubing pressure	Ideally get measurement of current pressure below BOP rams before the action, valuable for well kill planning, risk assessment of riser cutting, pressure-flow system modelling, LMRP removal
4. Top kill - well kill	Required mud kill density Sufficient operating pressure window Knowledge of flow path	Pressure downstream of BOP	Pressure downstream of BOP	H	H	Required to start mixing mud on May 7	Review based on integrity due to limited pressure surge capability 300psi surge capability above shut-in tubing pressure	
5. Riser hot tap	Location of riser hot tap to maximise mixing of dispersant with crude	Output from flow modelling	Already available	H	H	Done		Opportunity to take pressure measurement upstream of buoyant loop prior to restarting dispersant injection

Paul Tooms - 05 May 2010

Options and Data Requirements

Option	Key Success Factors	Data which would increase probability of success	Measurement technique which would provide this data	Confidence in data		Impact on schedule	Confirmation of outcome	Impact on data collection opportunities to the benefit of other options
				Accuracy	Materiality			
6. Drill pipe capping	ROV operations and obtaining good seal	No regrets		H	H		Elimination of one leak Measure pressure	Opportunity to observe pressure build up, and associated flow behaviour in trench and at kink leaks
7. Riser removal	Flow increase is fully predicted	Pressure at kink both in annulus and drill pipe Assessment of choke point	Pressure measurements at mud boost line; via BOP transducer; via kill and choke lines	M M H	H			
8. LMRP removal / BOP installation	As per riser removal plus very high confidence in being able to install replacement							

Paul Tooms - 05 May 2010