



Block Island Wind Farm CVA

Status of Verification of Substructure
Installation (July 19 to November 24)

Presented by
Theodore Hofbauer
Director Power Sector

November 24, 2015



Status of BIWF - Overview

ABS Status Update of 11/24/2015

- EHS Installation
- 2015 Installation Status
 - Jacket/TP #1
 - Jacket/TP #2
 - Jacket/TP #3
 - Jacket/TP #4
 - Jacket/TP #5
 - Repairs
 - 2016 work
- 2016 FDR
 - Alstom
 - Cable/Electrical
- 2016 FIR
 - Alstom
 - Cable/Electrical
- 2016 Fabrication
 - Alstom
 - Cable/Electrical

Safety

- Full time safety reps on the LB Robert have been proactive in continued implementation and performance of the safety plan.
- Regular safety meetings and safety meetings have been held with the crew and with the safety committee
- Safety concerns identified by personnel have been addressed and corrected in a timely manner

Status of Weld and NDE Recommendations

ABS Recommendations October 9th Weld Process	Current Status on October 27th
1. Implement proper rod storage and re-drying procedures according to AWS D1.1 and manufacturers recommendations.	Confirmed being done on an ongoing basis.
2. Perform Pre-heat and inter-pass heat according to weld procedure, verify and document heat input	Confirmed being done on an ongoing basis.
3. Supply and use operable calibrated Volt-meters	Confirmed being done on an ongoing basis.
4. Check accuracy welding machines volt and amp readings per operation (i.e. each shift)	Confirmed being done on an ongoing basis.
5. Perform grinding of welds instead of wire brushing of welds.	Confirmed being done on an ongoing basis.

Status of Weld and NDE Recommendations

No change from previous update

ABS Recommendations October 9 th NDE and Quality Control	Current Status on October 27 th
1. Records of processes above should be available daily to ABS inspectors on site.	Completed
2. Provide electronic copy of UT scan (from device SIM card) of welds completed to date to ABS for independent interpretation	Awaiting information from DWBI
3. UT operator to clarify which acceptance/ rejection criteria are being used for joint being examined (A-Qualified procedure includes criteria for multiple joint types and sizes, please have operator confirm which one is being used for P1-P2 splice)	Awaiting information from DWBI
4. Perform X-ray examinations of a sample of remaining offshore welds in addition to UT to check for porosity or cracking caused by moisture content (UT not appropriate for this type of defect).	Not used due to radiological concerns and time constraints
5. Include visual inspection results, description of weld (size, length) and base material (thickness, diameter) in subsequent inspection reports	Awaiting information from DWBI
6. Provide Outstanding quality records as noted in document review section	Completed

Status of Installation – Week 19



Deck 5 Setting Nov 21

Completed

- All decks have been set and levelled
- All deck to pile welding completed
- Temporary finishing for over-wintering (primer and sealing deck legs) planned to be completed next week*

*ABS Awaiting details of temporary finishing and risks including

- corrosion protection
- structural integrity

Status of Installation– Week 15



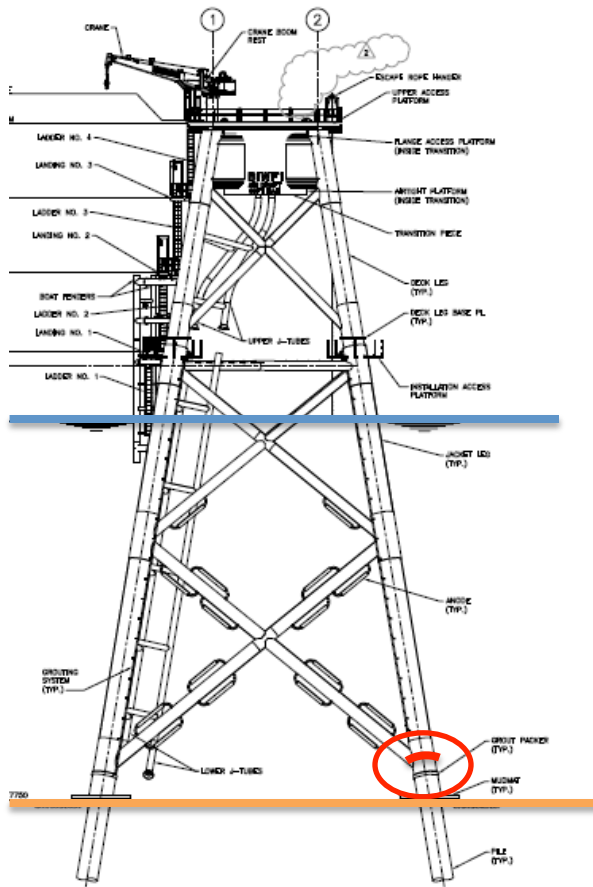
Deck 1 Set and Levelled Nov 2

Postponed to Spring 2016*

- Grouting
- Sealing tops of legs
- Final Painting

*ABS Awaiting updated FIR to reflect change

Repair of P1 Piles at Site 1

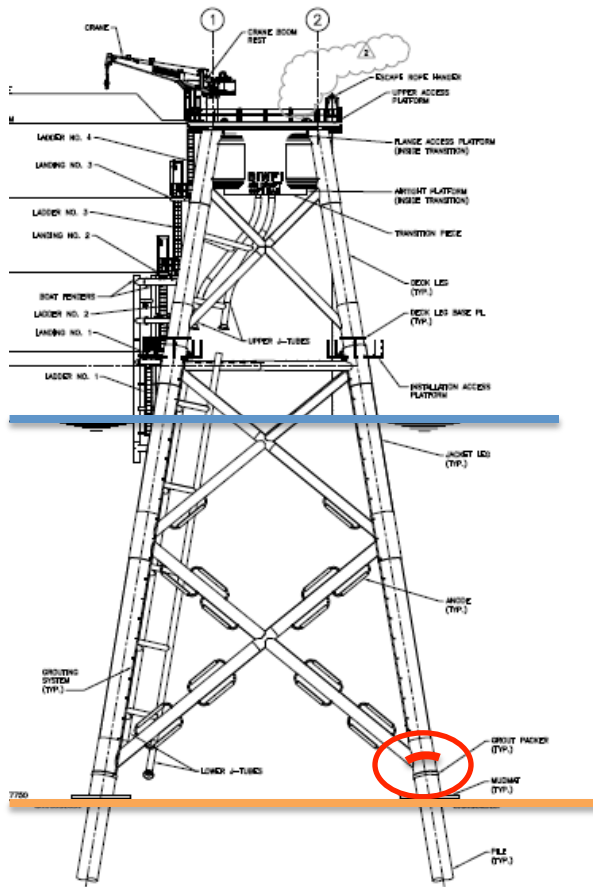


Location of Pile Weld Repair

Repaired circumferential weld on four Jacket 1 piles at approx 2.5m above mudline

- Lifetime estimate based on scaling factors completed by designer
- DWBI agreed to perform an updated pile driving analysis during the last meeting (Oct 27), but now has requested ABS to reconsider where it is necessary based on the results of the estimate

Repair of P1 Piles at Site 1

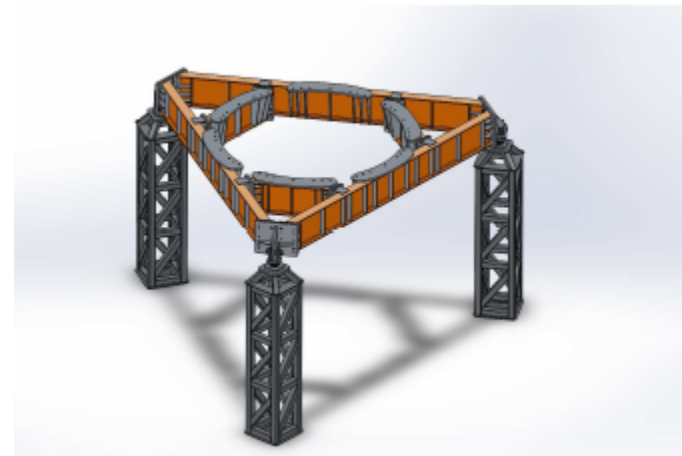
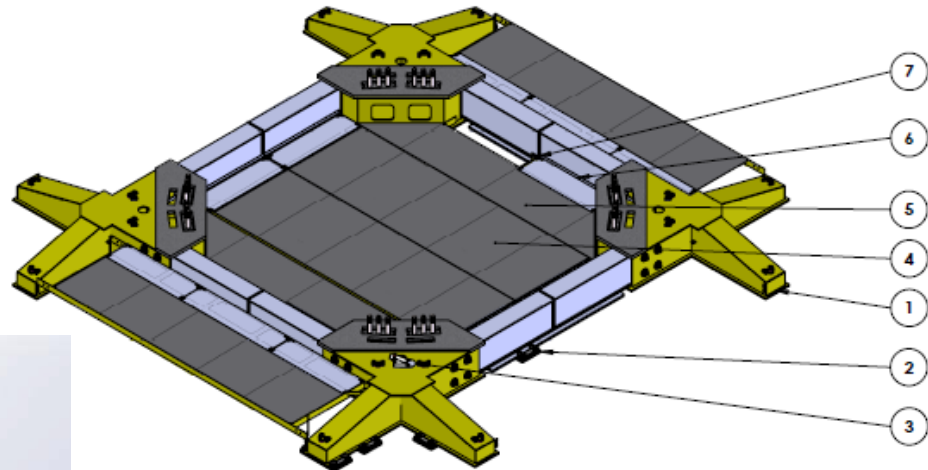
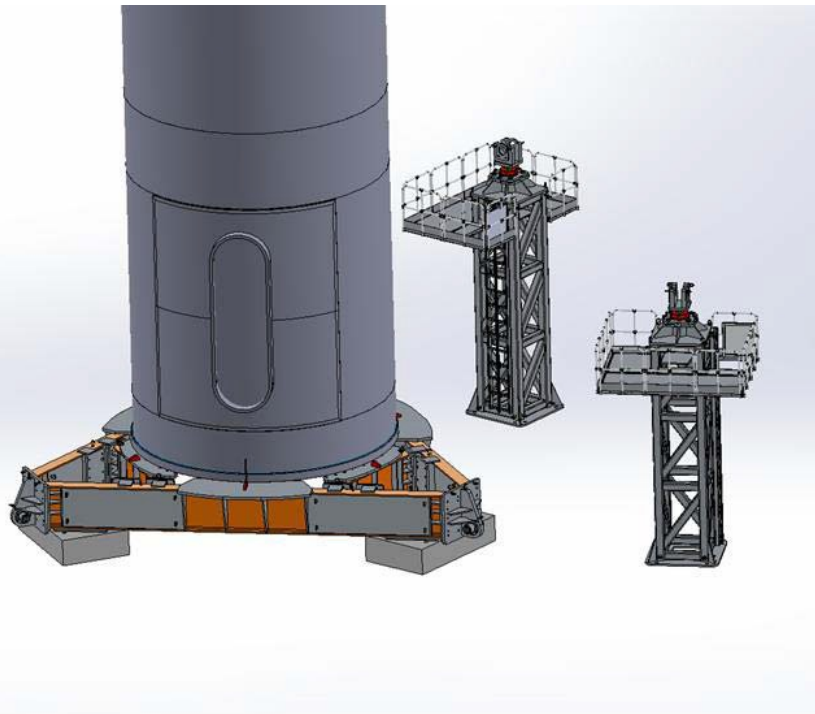


Location of Pile Weld Repair

- ABS considers the full analysis important for increased confidence in lifetime of joint
- ABS does not consider estimate to be accurate enough to ensure life of joint; joint is not inspectable (above mudline, within grouted section of leg)
- Lifetime calculation is very sensitive to alignment of pile sections during the offshore repair – introduces uncertainty in the calculation
- If mitigation were found to be required, the only possibilities are during operation... Structural Monitoring, inspection or retrofit may or may not be feasible/ cost effective.

Status – ProvPort Tower Assembly

ABS is reviewing design calculations for concrete footings to hold tower storage frames and assembly frame.



Status – WTG Fabrication

Complete

- Blades
- All Castings
- Converter
- Switch Gear
- Transformer
- Yaw and Pitch Bearings
- Main Bearings
- Controller
- Yaw System

Ongoing

- Tower (flanges) - Inspections scheduled
- Generator– Awaiting information for scheduling
- Onboard Cranes
- Tooling
- Pitch System
- Rotor Nacelle Assembly

Status – 2016 Installation

FDR

- Received one FDR document for the 2016 installation
- Awaiting further design information on site specific deviations from type-certification (believed to be primarily NEC and OSHA compliance related)
- Awaiting tooling design information for tower assembly in ProvPort
- Schedule for submitting complete FDR to CRMC?

FIR

- **Awaiting schedule, assembly processes, QC and safety plans for tower assembly in ProvPort**
- Awaiting schedule, manufacturing process and QC plan for sub-sea cable manufacturing
- Schedule for submitting complete FIR to CRMC?

Fabrication and Installation Surveillance

- Manufacturing Surveillance of Wind turbine components ongoing
- **Missed review of tower transportation to ProvPort** (loading, sea-fastening, off-loading, and arrival inspection)
- Status of subsea cable fabrication not known

Overview – Status of Phases

	FDR/FIR STATUS			
	2015		2016	
	Substructure	Turbine (Loads and Type Cert)	Turbine (Project specific changes)	Cable and BOP
FDR	Complete*	Complete	Ongoing - Open Items	No Info Received
FIR	Complete**	No Info Received		No Info Received
Fabrication	Complete	Ongoing - Open Items		No Info Received
Installation	Nearing completion – Open Items	Not started		Not started
Operation	Not started		Not started	

* Changes made by Keystone Engineering following initial completion and submittal by DWBI. FDR requires revision submittal to CRMC

** Changes to installation sequence and schedule from 2015 FIR. FIR requires revision submittal to CRMC

Next Steps

Substructures

- Understanding of condition of structures for over-wintering and risks
- Planning for Spring 2016 completion of substructures
- DWBI to submit updates to FDR and FIR

Wind Turbine Fabrication and Installation

- Continue with Fabrication Verification
- Planning for Tower T1 assembly at ProvPort
- Further information for draft 2016 FDR
- DWBI to submit 2016 FIR

Cable Fabrication

- DWBI to submit 2016 FDR and FIR
- Fabrication verification not scheduled

Design and Procedures for 2016 season should be submitted soon... It will be 2016 in 5 weeks!

