13 February 2014

To: Department of the Navy
   Texas Historical Commission
   Advisory Council on Historic Preservation

**Battleship TEXAS Project Update**

Report Number: 002
Report Period: August 1, 2013 through January 31, 2014
Purpose: Per the Programmatic Agreement (PA) among the Department of the Navy (Navy), the Texas Historical Commission (THC), Texas Parks and Wildlife Department (TPWD) and the Advisory Council on Historic Preservation (ACHP) concerning the Battleship Texas, TPWD is required every six months to submit a summary report detailing the work done on the ship pursuant to the terms of the PA. This document is intended to meet that requirement for the period indicated above.

*Note: Subsequent reports will be issued during the first full week February and during the first full week of August.*

**August 2013**

- **TMC tasks:**
  - Installed monorail system in engine room C-1 for material handling
  - Began work on Frame 129 ½ (aft bulkhead of space D-12)
  - Continued cleaning of engine room spaces
  - Completed upgrades to staging area
  - Received hardware for monopile mooring system retrofit associated with TPWD initiated Change Order #1; hardware not to specification; task delay incurred

- **TPWD tasks:**
  - Review, monitor and coordinate with all above TMC work
  - Briefly issued a stop work order due to safety concerns over inconclusive asbestos samples taken in engine room C-1 during cleaning activities.
    - Additional asbestos samples were taken and were clear. Inconclusive samples were a result of non-hazardous particulates in the air.
● TPWD coordinated with TMC to revise future sampling procedures to avoid inconclusive tests.

September 2013

● TMC tasks:
  o Completed all tank cleaning included in base bid work
  o Completed all asbestos and lead paint remediation included in base bid work
  o Began cleaning and remediation of spaces included in TMC initiated Change Order #2 for additional lead based paint removal from workspaces
  o Began installation of strain-monitoring system for engine ‘suspension’
  o 40% completion of structural framing work on L45S outboard of engine room (see attached key for space nomenclature)
  o 20% completion of structural framing work on L45P
  o 15% completion of structural framing work in space D-12
  o Returned non-conforming hardware for monopile mooring system retrofit to supplier;
  o Addressed several leaks in space D-12 that impacted work (no leaks caused by TMC work)

● TPWD tasks:
  o Review, monitor and coordinate with all above TMC work

October 2013

● TMC tasks:
  o Continued cleaning and remediation of spaces included in Change Order #2 for additional lead based paint removal from workspaces
  o Began cleaning and remediation of potential hazardous materials in spaces included in TPWD initiated Change Order #3 for spaces in and around “dynamo complex.”
  o Completed installation of strain-monitoring system for engine ‘suspension’
  o Began calibration of strain-monitoring system for engine ‘suspension’
  o 70% completion of structural framing work on L45S
  o 50% completion of structural framing work on L45P
  o 10% completion of structural framing work on K1S
  o 10% completion of structural framing work on K1P
  o 25% completion of structural framing work in space D-12
  o Addressed several continuing leaks in space D-12 (no leaks caused by TMC work)

● TPWD tasks:
  o Review, monitor and coordinate with all above TMC work

November 2013

● TMC tasks:
  o Completed cleaning and remediation of spaces included in Change Order #2 for additional lead based paint removal from workspaces
  o Continued cleaning and remediation of potential hazardous materials in spaces included in Change Order #3 for spaces in and around “dynamo complex.”
Completed calibration of strain-monitoring system for engine ‘suspension’
  ▪ Determined that baseline strain data needed to include variations caused by tidal cycles for accuracy; adjustments made.

Began monitoring of strain-monitoring system for engine ‘suspension’
Began work in D-12 associated with TMC initiated Change Order #4 for alternate framing solution
Began installation of new hatches associated with TPWD initiated Change Order #5
95% completion of structural framing work on L45S
80% completion of structural framing work on L45P
40% completion of structural framing work on K1S
35% completion of structural framing work on K1P
10% completion of structural framing work on L34S
34% completion of structural framing work on L34P
50% completion of structural framing work in space D-12

TPWD tasks:
  ○ Review, monitor and coordinate with all above TMC work

December 2013
  TMC tasks:
  ○ Continued cleaning and remediation of potential hazardous materials in spaces included in Change Order #3 for spaces in and around “dynamo complex.”
  ○ Continued monitoring of strain-monitoring system for engine ‘suspension’
  ○ 100% completion of structural framing work on L45S
  ○ 95% completion of structural framing work on L45P
  ○ 75% completion of structural framing work on K1S
  ○ 75% completion of structural framing work on K1P
  ○ 45% completion of structural framing work on L34S
  ○ 40% completion of structural framing work on L34P
  ○ 60% completion of structural framing work in space D-12
  ○ Ordered hardware from new supplier to replace non-conforming hardware for monopile mooring system retrofit returned to supplier

TPWD tasks:
  ○ Review, monitor and coordinate with all above TMC work

January 2014
  TMC tasks:
  ○ Continued cleaning and remediation of potential hazardous materials in spaces included in Change Order #3 for spaces in and around “dynamo complex.”
  ○ Continued monitoring of strain-monitoring system for engine ‘suspension’
  ○ 100% completion of structural framing work on L45S
  ○ 100% completion of structural framing work on L45P
  ○ 100% completion of structural framing work on K1S
  ○ 100% completion of structural framing work on K1P
  ○ 80% completion of structural framing work on L34S
  ○ 70% completion of structural framing work on L34P
  ○ 90% completion of structural framing work in space D-12
• TPWD tasks:
  o Review, monitor and coordinate with all above TMC work

Photos and other images follow on the subsequent pages.

Submitted by:

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Structural Repair of Battleship Texas

Photos and Exhibits
Report 002
Engine Room Work Areas

Hold Level is the “floor” of the engine rooms, or is the “tank top” level for the Inner Bottom. The bottom of the Inner Bottom Level is the hull of the ship. All the framing to be replaced under the engine rooms is in the Inner Bottom.
Engine Room Work Area Nomenclature

The port side space between the keel and longitudinal #1 is “K-L1-P,” or “K1P” for short. The port side space between longitudinal #1 and longitudinal #2 is “L1-L2-P,” or “L12P,” and so on.
August 2013

Typical tops of tanks at spaces outboard of engine rooms prior to repair. Note frames below.
August 2013

The first new plate installed at Frame 129 ½ (aft bulkhead of space D-12)
August 2013
Keel, vertical stanchion and frames in bottom of D-12 prior to repair.
August 2013

Work platforms in D-12 suspended from overhead, looking aft. Note monorail for rigging of steel plate.
August 2013

Vacuum tanker for removal of liquid waste from ship’s spaces.
August 2013

Temporary access to bottom of engine room. Frames to be replaced are below the deck sole at the bottom of the stairs.
August 2013
Temporary access along engine room. Neon tabs denote where grating was removed for access.
August 2013
Typical D-12 framing before repair.
August 2013

New bulkhead at Frame 129 ½ in space D-12. Note weld testing dye at seams, and keel in foreground.
September 2013
New steel plates for framing, cut to fit and ready to install. Staged in yard.
Structural Repair of Battleship Texas

September 2013
Staged waste material from clean up of ship, ready for disposal.
September 2013

Brackets in fabrication shop for the bottom of the strain gauge system
September 2013

Typical frame “doubling” or “sistering” method, showing new top flange for weld point, old frame in foreground and new plate visible through wasted steel and “lightning” hole.
September 2013
New keel in space D-12.
September 2013

Framing in portside space outboard of engine room. Deck sole of space, or “tank tops” have been removed for access to framing below.
September 2013

New frame installed in port side space outboard of engine room. Timbers at bottom of image are resting on concrete cloth placed inside the bottom hull of ship.
October 2013

Typical state of frames under engine rooms before repair. Note frames under engine room are on 2-foot centers.
October 2013
New frame at installed at L45P. Note dye and developer for weld testing.
October 2013

New frames on port side in D-12. Pipe stanchions at top of image are temporary.
October 2013

Steel plate being lowered from 2nd deck through removed engine room access hatch. Typical rigging.
October 2013

Top of strain rod #8. A total of 12 strain rods are used to take some load of the engines off of the frames below. Also used to monitor any movements of the engines during repair.
October 2013

The bottoms of strain rods #4 and #6. The rods are bolted with custom made brackets to the existing engine foundation with no modification of the foundation necessary.
November 2013

Remote monitoring hardware for the strain rods. Strain gauges are mounted near the tops of each rod, and this control module is mounted on the main deck.
November 2013

Condition of framing under engine room just aft of Frame 89, the forward bulkhead under the engines.
November 2013

New framing installed at Frame 104, the aft bulkhead of the engine rooms. Note the oval lightning hole cut out of the new frame to match existing.
November 2013

New framing installed in tanks outboard of engine rooms.
December 2013

Staging area for steel removed from ship, headed for recycling.
December 2013

New floating work platforms, constructed to safely execute monopile repairs.
January 2014

New framing installed in tanks outboard of engine rooms, with final paint installed. All that remains is to install new tank tops.
January 2014

Fitting of new tank tops onto spaces outboard of engine rooms. All new framing below.
January 2014

Steel plate maneuvered into place for lowering through 2nd deck sole. Note use of monorail.
January 2014

New tank top installed onto spaces outboard of engine rooms, including new access hatch replacing old one. Weld testing phase, prior to painting.