TRU

NSRP All Panel Meeting

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SOLUTIONS IN SHIPBUILDING AND SHIP REPAIR

Marine

Vigor Industrial: Environmental, Health and Safety, Paint Quality (since 2015)

Bath Iron Works: Safety, Fleet Maintenance and Paint Quality (since 2015)

Newport News Shipbuilding: Replaced Paint Quality System E4749 (since 2020)

BAE Systems: Paint Quality 009-32 (since 2019)

NAVAIR: F18 and F35 Maintenance Reporting (Two Grants funded)

USCG: Paint, Safety and weld (procurement)

NSRP – Surface Preparation and Coatings Panel

- Project 1: Digitalizing 009-32, 2013, complete
- Project 2: Out of Spec Flagging for 009-32, 2015, complete
- Project 3: Implementing 009-32 on the deck plate, 2017, complete
- Project 4: Standardization and Digitalization of Visual Inspection for Shipbuilding and Ship Repair, 2020, complete

NRL

- Phase I: Digital Paint/Preservation Quality Assurance Records as a Data Source for Improved Decision Making in partnership with Rampart LLC and sponsored by the Navy Corrosion Executive, Ted Lemieux
- Phase II: Optimized Blast and Paint Quality Assurance Data for Improved Operational Availability

NSRP – Weld/Business Technologies Panel

- Project 1: Optimized Weld Records, 2021, Complete
- Project 2: Optimized Weld Records Two, 2024, In process

OPTIMIZED WELD RECORDS

WELD PANEL

Project Lead Organization: TRU
Project Team Members: EWI, Vigor, FMM

Concept/Idea

Problem:

- Welding processes require input from multiple individuals, documents, and specifications, making proper management a challenge
- Quality Assurance (QA) procedures can be expensive, inefficient, and difficult to administer

Proposed Solution:

- TRU, a commercial off-the-shelf (COTS) software, will be configured to manage welding requirements and records
- TRU will be a single access point to the data needed to complete and document welds for engineers, inspectors, supervisors, and welders

Benefits/Justification

- More access to welding requirements and records will improve efficiency of planning, process improvement, and troubleshooting
- Expedite decision-making, reducing analysis costs and associated downtime
- Automated document organization for easier audits
- Consolidates data for re-work tracking with weld specific information
- Minimize or eliminate delays associated with adjudication of out of spec items
- Reduce inspection costs
- Eliminate costs incurred to re-create history of assessments
- Increase transparency of inspection to the welding process

Project Approach

High Level Statement of Work:

- TRU will develop a weld requirement and record specific solution that connects resources and documents
- TRU will work with EWI and Vigor to test and introduce the solution to shipyard personnel

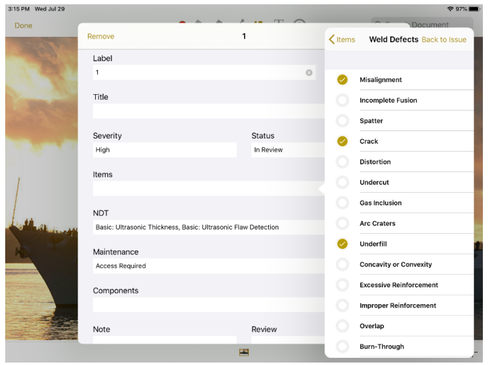
Metrics of Success:

- TRU solution for creating weld requirement documents, collecting weld record data and limited deployment to shipyard personnel for buy-in development
- Compare digitalized weld lifecycle process using TRU to the traditional paper method previously used

Cost/Image/Relevant Information

Project Estimated Cost: $150,000

- TRU will work with partner shipyards to create and administer a survey to shipyard personnel to examine current weld requirements, record management, and NDT requirements with plans to grow this into an RA project



OPTIMIZED WELD RECORDS PHASE TWO

Business Technologies Panel

PROJECT INFORMATION

Prime/Lead: TRU Solutions, LLC

Team Members: EWI, HII – Ingalls Shipbuilding, NAVSEA 05P2, Fincantieri Marinette Marine, HII – Newport News Shipbuilding

Duration: 12 Months

This project builds on the Optimized Weld Project 2021-481-001.

OBJECTIVE

TRU will adapt their current software to meet NAVSEA weld requirements while proving system functionality, savings and data availability. TRU plans to develop flagging and tracking for weld certifications and qualifications, seamless integration for the UT gauge, WPS form and others, management by exception for business intelligence and possible NMD integration.

DELIVERABLES/BENEFITS/ROI

- Deliverables: Project plan and schedule, Quarterly Status Reports, Demo at Panel Meeting, and Final Report
- ROI for the weld process improvements have typically been 7.5 hours per day on average. We plan to see that on this project as well.

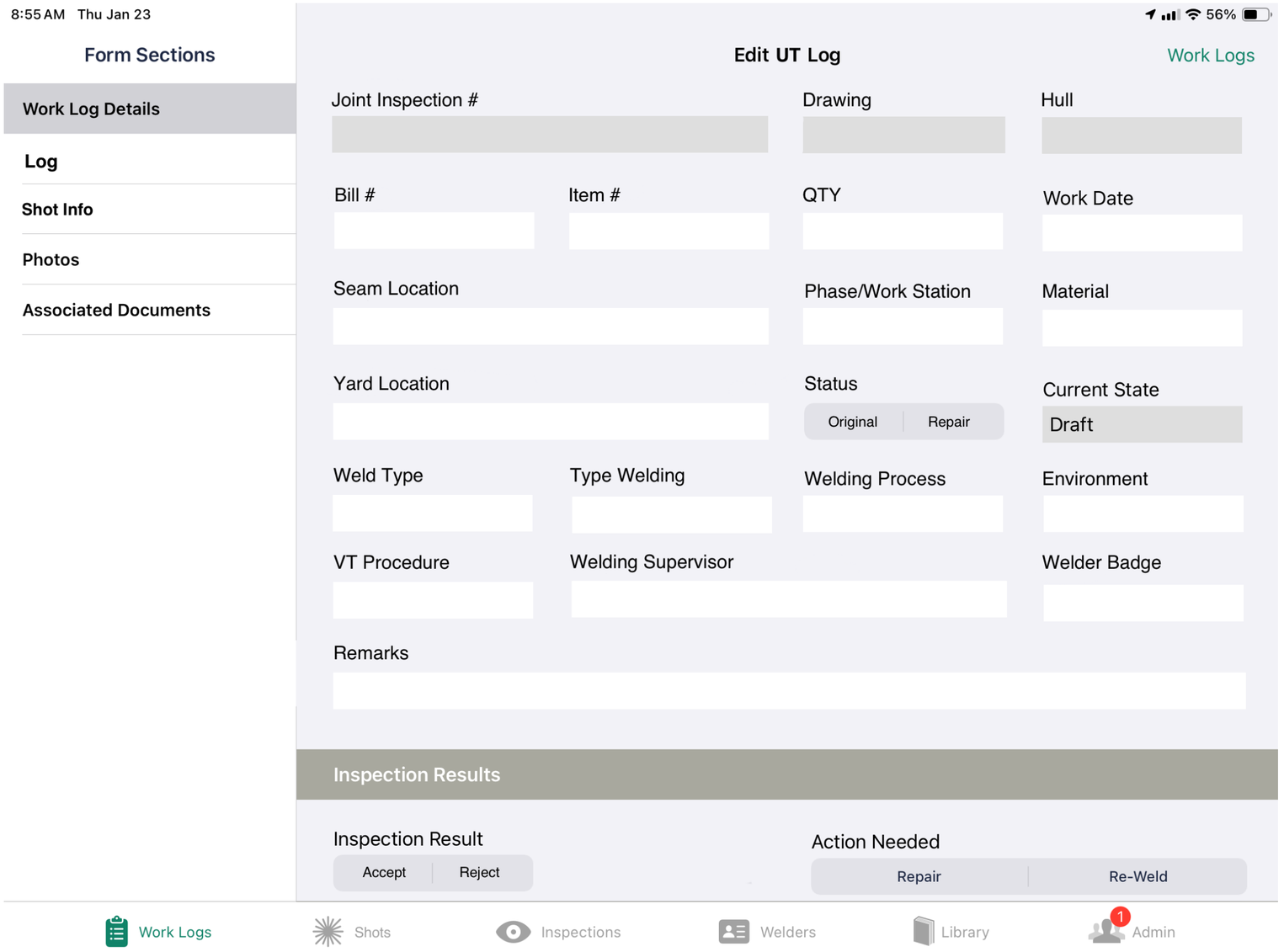
FINANCIAL

Program Funds: $149,739K
Cost Share: $ 0K

OPTIMIZED WELD RECORDS PHASE TWO

Potential Solution Enhancements

- Out of Spec Flagging
- Inspector Certification Flagging and tracking for different weld types
- NDT Gauge Integration
- Possible integration with NMD and other legacy systems
- Defect tracking to resolution
- Importing of Welding standards and specifications



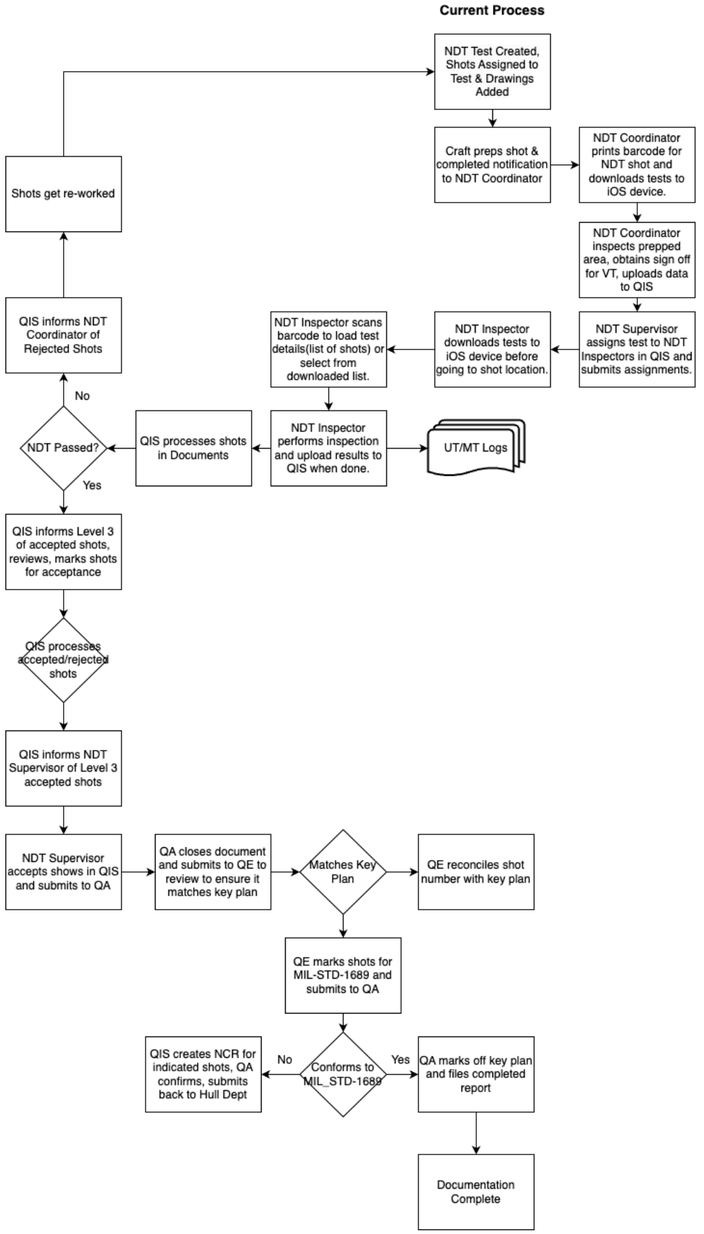
OPTIMIZED WELD RECORDS PHASE TWO

- Proper management of weld lifecycle requires input from multiple individuals, documents and specifications.
- Such quality assurance procedures can be expensive, inefficient, and difficult to administer.
- The data collected can be quite copious and each inspection may generate several sheets of paper records. Over the course of a project these records may occupy several hundred pages.
- By taking advantage of existing technology, the Navy and Commercial Shipbuilding communities can improve the efficiency of managing and collecting their weld lifecycle data.
- In short, all the requirements and records for a weld and the documents driving those welding practices are connected and accessible from a single software application.
- This project builds on the Optimized Weld Project 2021-481-001 by expanding the functionality of the software to include gauge integration, WPS form and others, welder qualification tracking and flagging, possible path to NMD integration and management by exception for business intelligence.

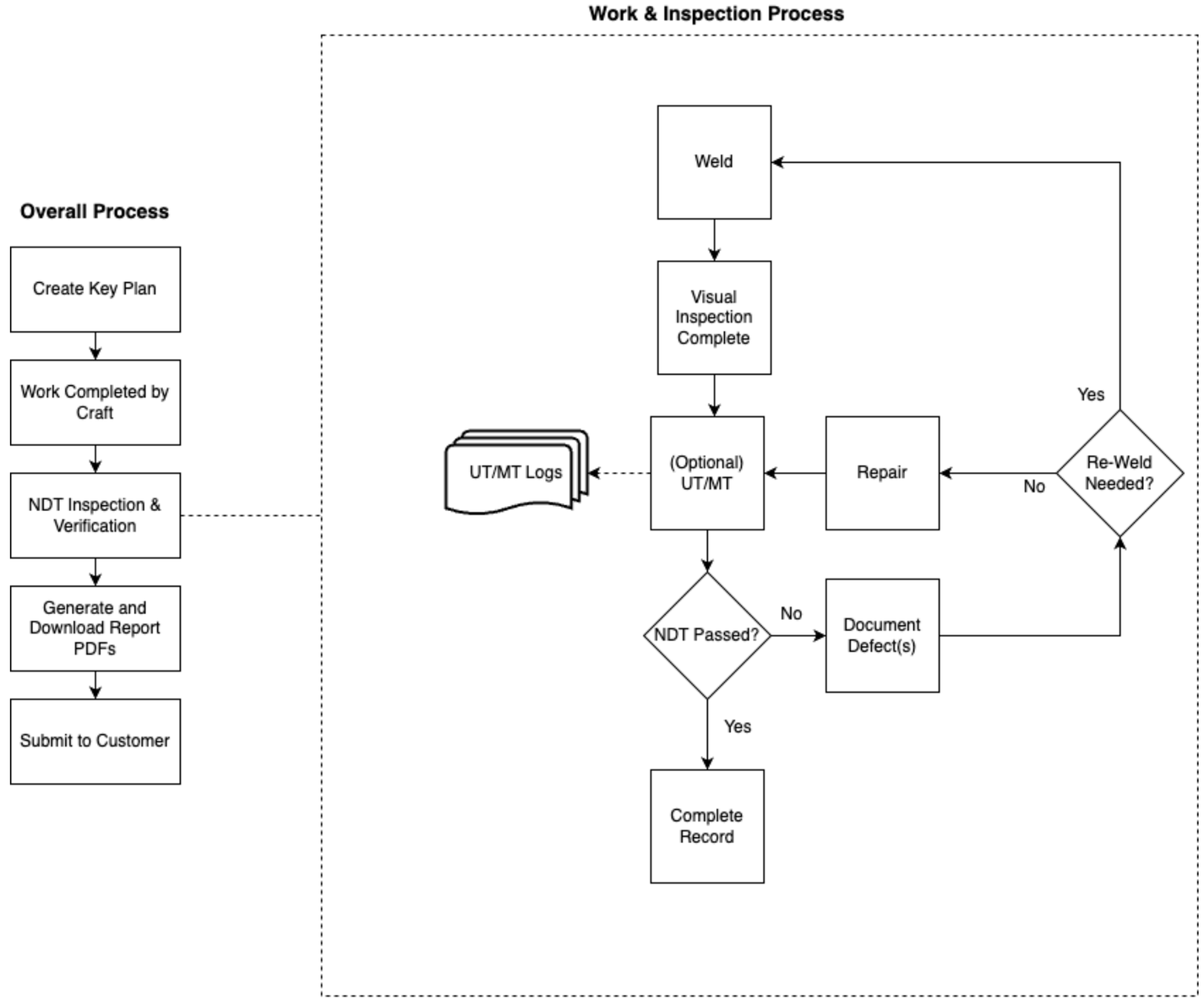
OPTIMIZED WELD RECORDS CURRENT PROGRESS

Deliverable	Due Date (ACD= After Contract Date)
Project Plan & Schedule	2 months ACD
Group Meetings	Weekly
Develop Criteria & Metrics	3 months ACD
Project Status Report 1	4 months ACD
Testing	11 months ACD
Project Status Report 2	13 months ACD
Briefing at Panel Meeting	16 months ACD
Briefing and Demo at Panel Meeting	16 months ACD
Final Report with Recommendations	16 months ACD

OPTIMIZED WELD RECORDS CURRENT WORKFLOW



OPTIMIZED WELD RECORDS PROPOSED WORKFLOW



RESULTS AND DISCUSSION

- Proper management of weld lifecycle requires input from multiple individuals, documents and specifications.
- Reviewed paper workflows, weld symbols and intranet use with Ingalls
- Identified gaps and integrated feedback into new wireframes
- Built test environment for digital weld reporting:
  - Linked jobs to work items and locations
  - Enabled data imports and Excel exports
  - Developed digital reports for NDE, MT/UT, devices, and operator qualifications
- Digital tools improved efficiency, consistency, and data accessibility
- Conducted site visit at Ingalls (May 20, 2025)
- Positive reception and interest in AI integration

ROI AND CONCLUSIONS

ROI

- TRU saves inspectors and foremen **2–3 hours daily** on record management
- Replaces error-prone paper processes with **standardized digital workflows**
- Enables instant digital access to weld data for **audits and corrective actions**
- Simplifies audits with **instant search and retrieval** of weld records
- Delivers significant **time and cost reductions** across inspection and documentation
- Standardized digital reports support future **AI and machine learning use**

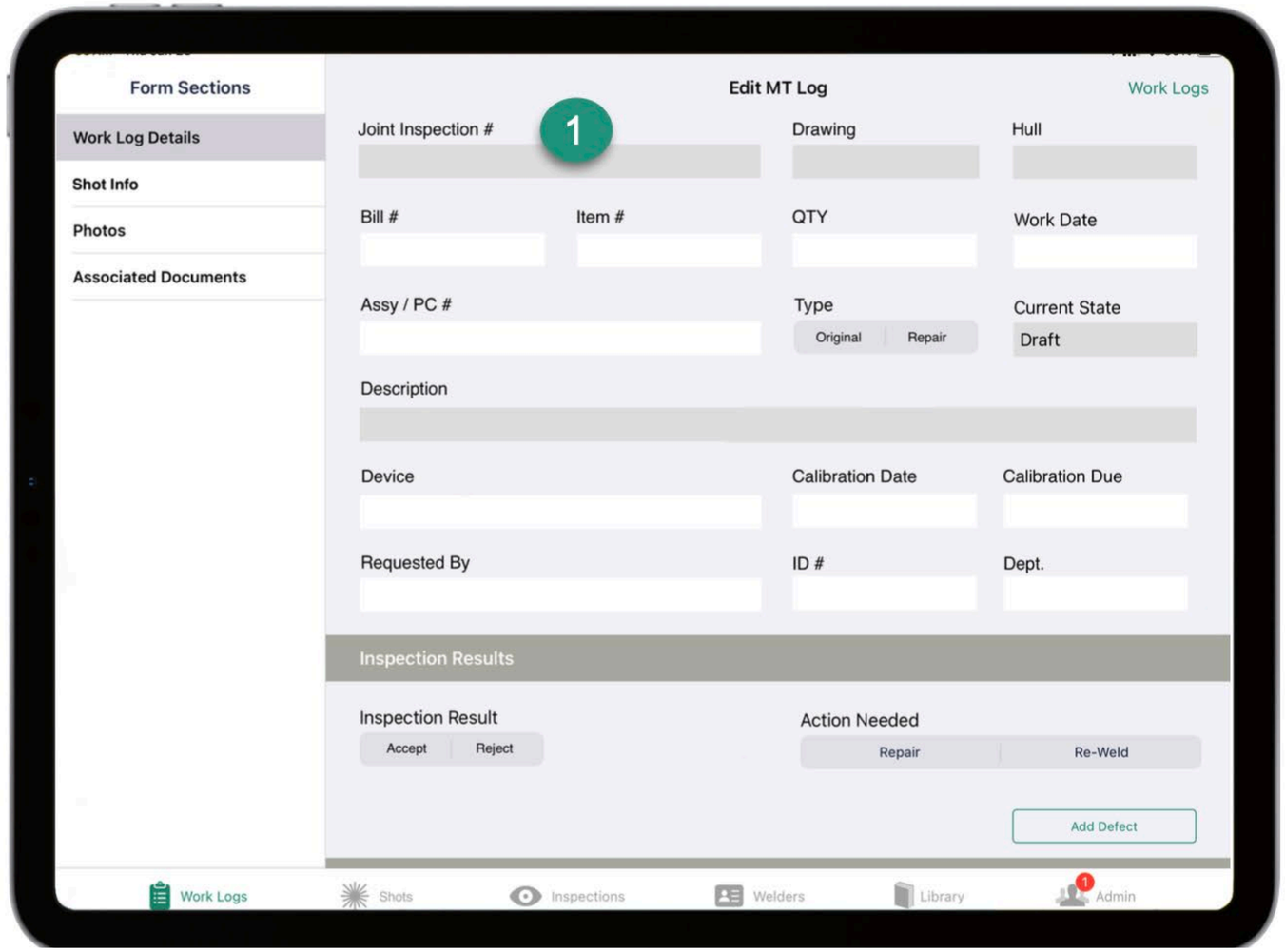
Conclusions & Next Steps

- TRU has positioned shipyards for future AI and machine learning integration
- Lessons learned will benefit future NSRP and Navy projects
- Future focus areas:
  - Digitize welder/operator qualifications to **prevent unqualified work**
  - Integrate more **NDE devices** into TRU
  - Collaborate with **shipyard model providers for seamless data integration**
  - Expand TRU’s role in **production tracking and issue resolution**

MT WORK LOG DETAILS WIREFRAMES

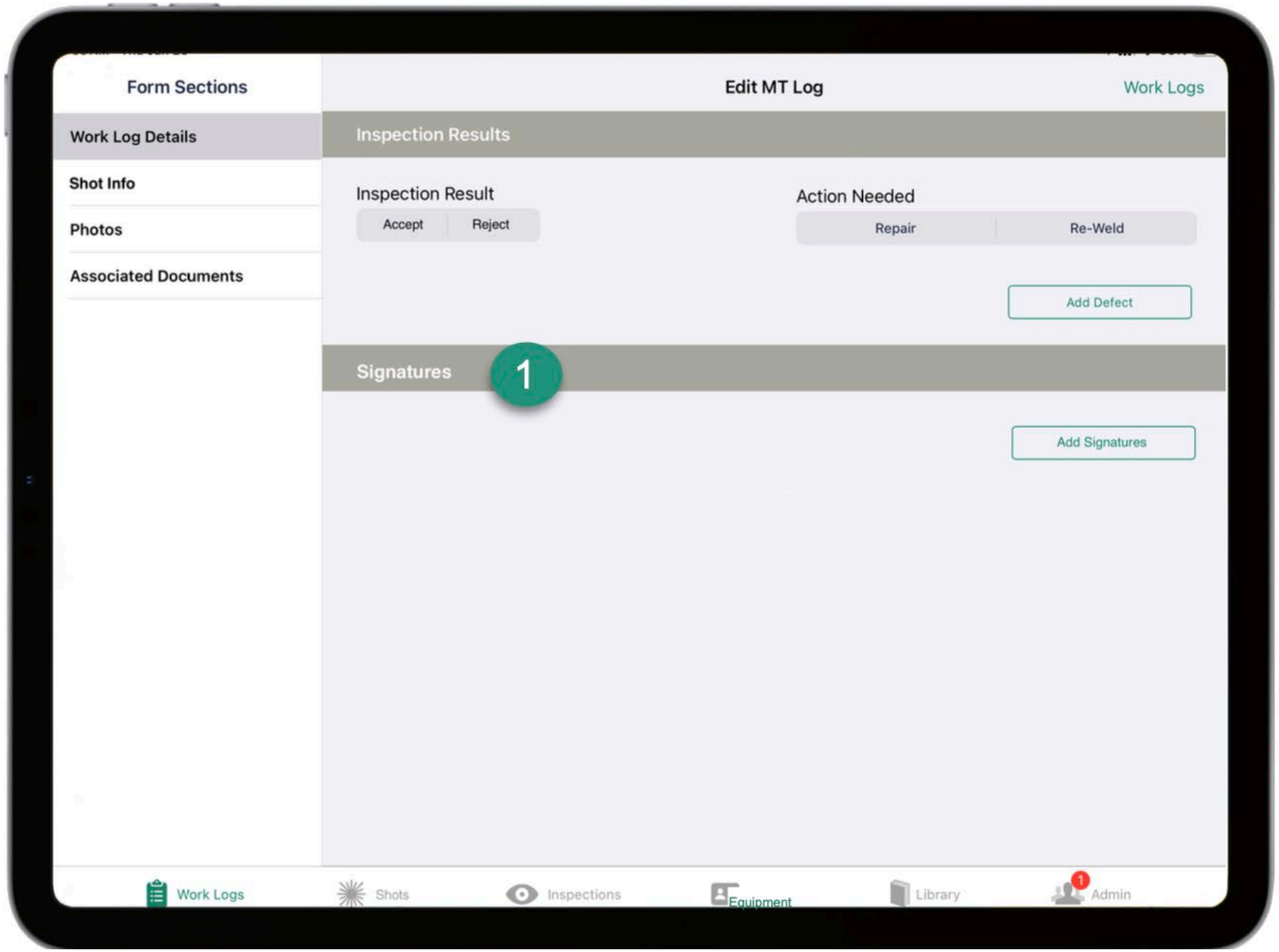
1 Fields in gray tint will display data from the imported Key Plan.

All other fields are manual entry and field types are configurable.



MT WORK LOG DETAILS CONT. WIREFRAMES

1 Signatures can be added at the bottom of this section.



UT WORK LOG DETAILS WIREFRAMES

1

Much like the MT form, fields in gray tint will display data from the imported Key Plan.

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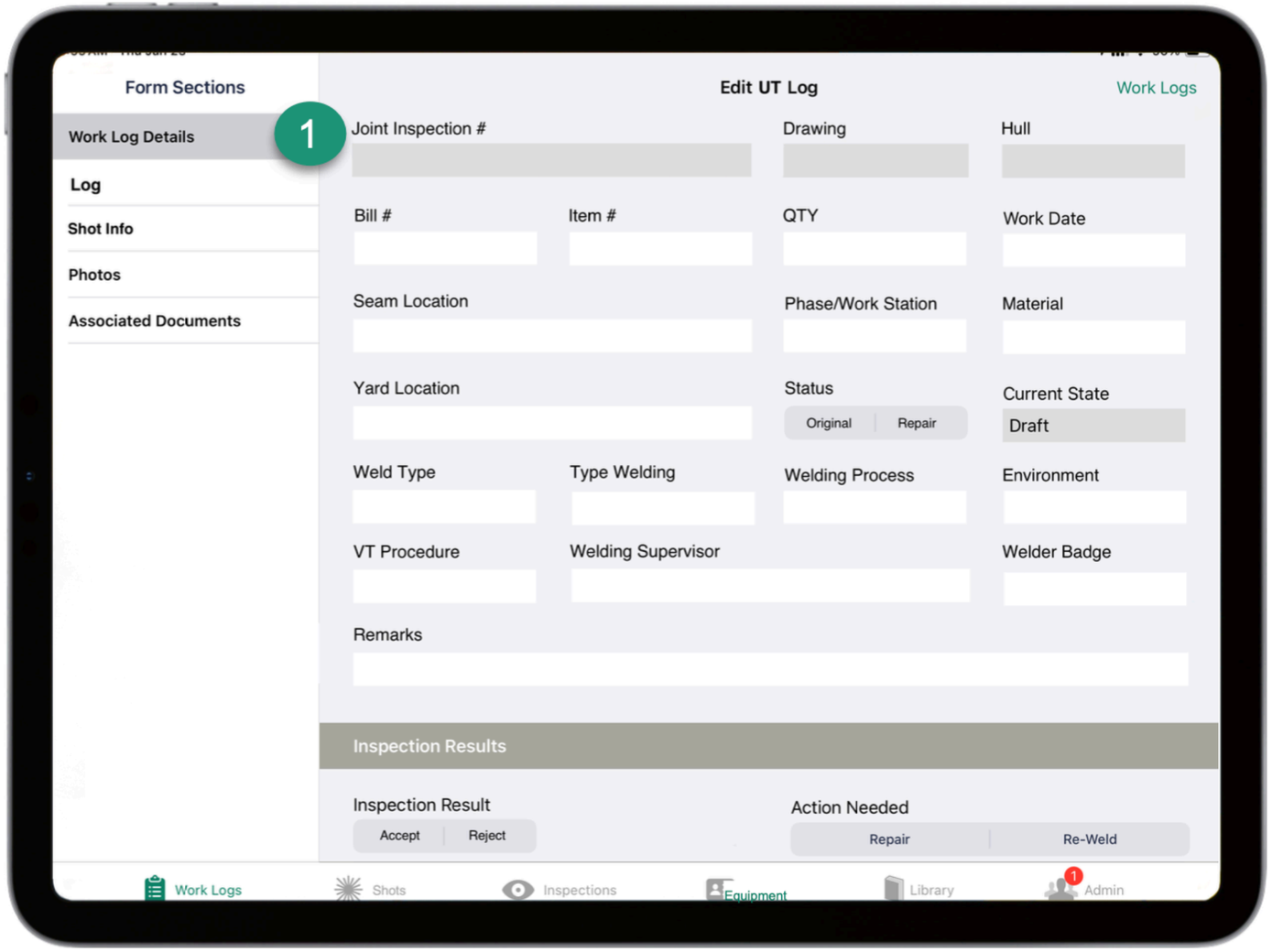

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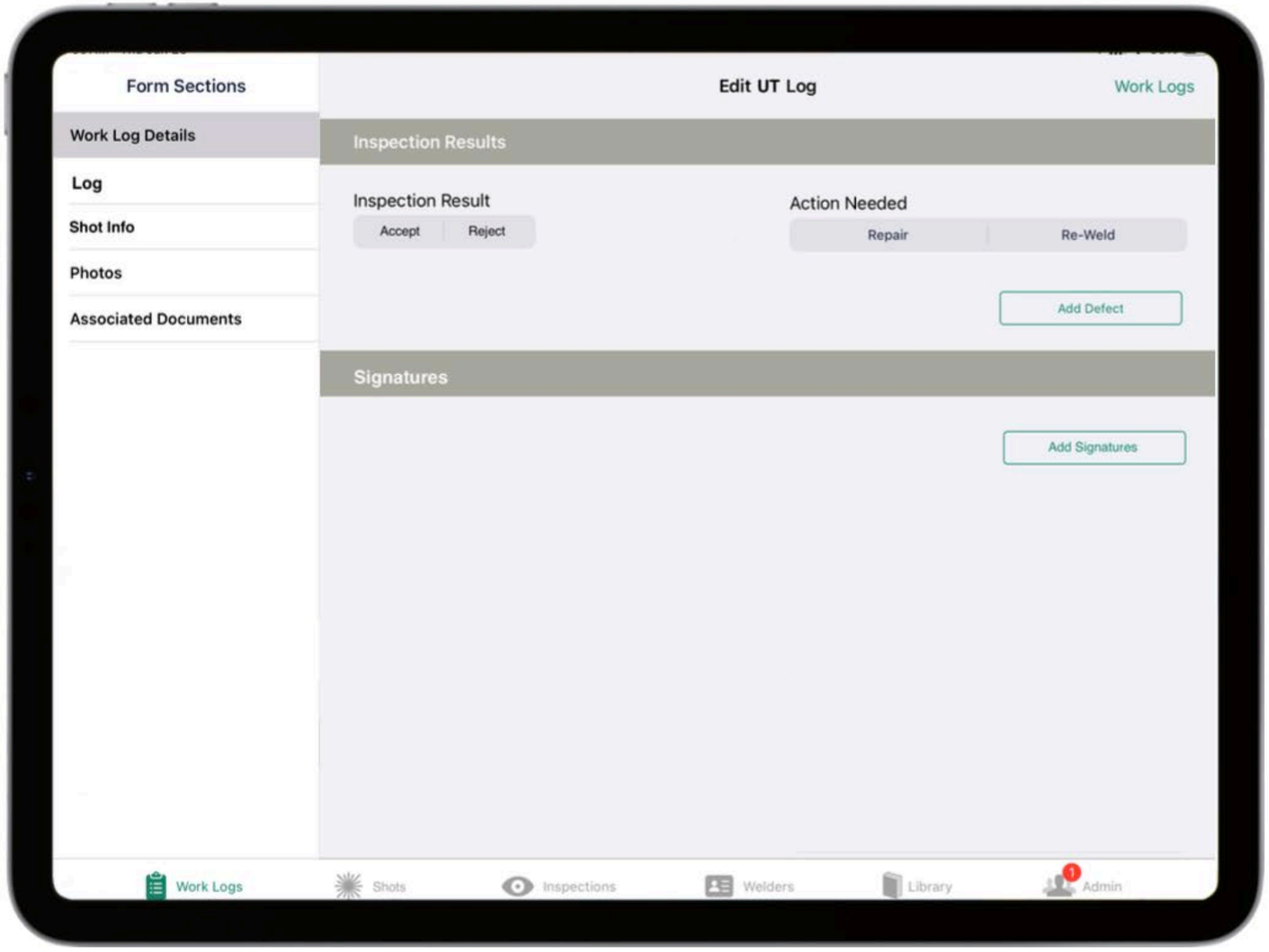


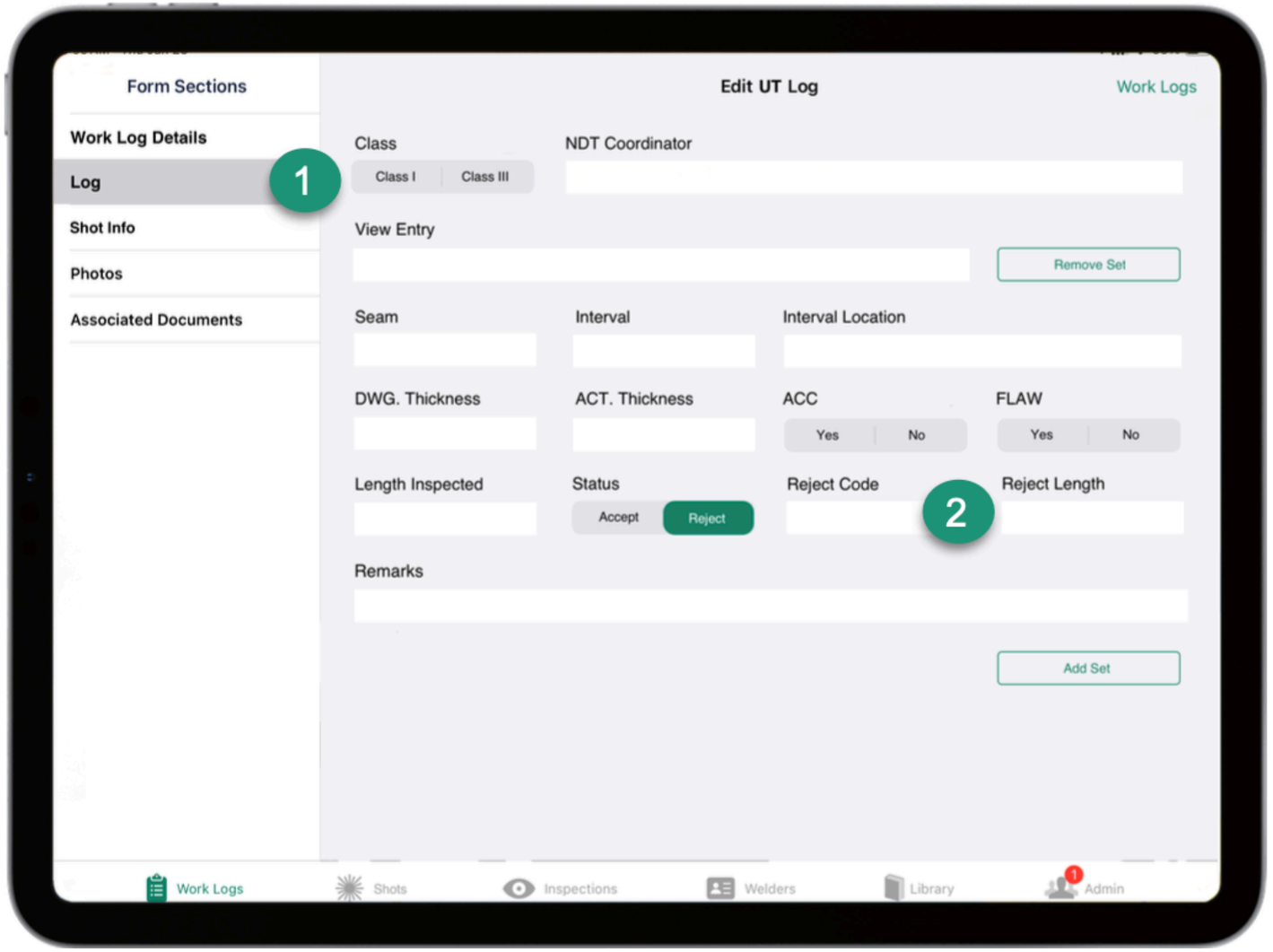
UT LOG WIREFRAMES

1 Fields added within this section are added as part of a collection.

Data for this grouping can be added as many times as necessary.

2 If a *Status* if marked as Reject, a *Reject Code* and *Reject Length* field will display.

If Accept is selected, those fields will not display.



TRU

Demo + Questions

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