

CHPRC ADMINISTRATIVE DOCUMENT PROCESSING AND APPROVAL

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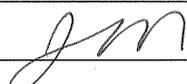
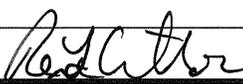
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    FIELD AUTOMATED CHECKLIST TRACKING SYSTEM (FACTS) for public
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    Thanks, Ashley Jenkins, Information Clearance 376-6146</comments>
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Software Functional Requirements Document - FIELD AUTOMATED CHECKLIST TRACKING SYSTEM (FACTS)

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Contractor for the U.S. Department of Energy
under Contract DE-AC06-08RL14788



**P.O. Box 1600
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February 2016

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Release Approval

Date

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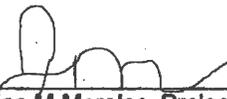
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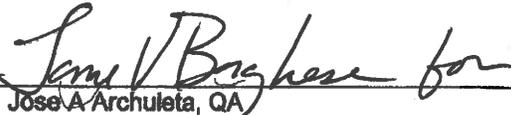
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**FIELD AUTOMATED CHECKLIST TRACKING SYSTEM (FACTS)
FUNCTIONAL REQUIREMENTS DOCUMENT**

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1 Introduction

ACRONYM:	FACTS	HISI ID:	3871	SOFTWARE GRADE:	D
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Currently, CH2M HILL Plateau Remediation Company (CHPRC) uses a paper-based forms to perform daily, weekly, monthly, and quarterly inspection and surveillance activities known as “Operator Rounds” or “Routines”. A project was initiated to define, develop, and implement the Field Automated Checklist Tracking System (FACTS) for improved process control, performance efficiency, and information management.

The intent of the FACTS project is to 1) eliminate the paper-based system, 2) transition to an electronic data collection and capture process, 3) to provide field personnel with a mobile hardware device for the recording of the data, and 4) a hosted application for more efficient data collection, analysis, processing, and transfer to the Hanford Site electronic records repository.

FACTS will convert the tedious paper-based data collection process to an electronic tool for creating and managing the Operator Rounds and Routines inspection and surveillance checklists. The automation will eliminate the manual forms and data entry method, improve the correctness of the information recorded, and enhance the efficiency of field personnel.

Additionally, the solution will eliminate additional manual input by clerical staff into IDMS, the records database and replace the management of paperwork by the field and clerical personnel with an electronic process. These activities will include the following: 1) scheduling the activities, 2) electronically recording rounds data, and 3) electronically create and transfer round sheets into IDMS.

A new process will be defined and procedure developed to drive the implementation and change management as part of the FACTS project.

1.1 Overview

Historically, field personnel or “operators” have been issued pre-printed checklist style forms with data fields for capturing specified information about a particular location or activity. The operators document information which provides proof of compliance with a variety of operations and environmental requirements. After recording the entries in the field, the operators turn the forms in of the day to the supervisor. The forms are then reviewed, corrected or approved, and submitted to records staff for processing into the Hanford Site Integrated Document Management System (IDMS) as electronic records for historical retention.

1.2 Scope

The scope of this project is a CHPRC automated RCRA checklist and inspection system for the Central Waste Complex (CWC). Specifically, this project will be managed and implemented for the CHPRC Waste and Fuels project at CWC. This project will automate the process and forms contained in the following, at a minimum:

- PRC-PRO-OP-52330 (WMP-200-4.15), *SWOC Surveillance Program*
- SWSD-PRO-OP-51714 (SW-040-043), *Inspect CWC & Miscellaneous Buildings*
- SWSD-PRO-OP-51716 (SW-040-051), *Cold Weather Protection Plan*

2 Concept Definition

The goal of this project is to 1) provide uniform, acceptable and compliant “Operator Rounds” or “Routines” process in electronic format, and 2) an implementing procedure which provides conformance to electronic standards and practices.

The solution is intended to provide consistent format, language, approvals, and corrective action tracking standards for the Central Waste Complex (CWC).

This project addresses the need as identified by the Waste and Fuels project. In consideration of adoption of the process developed during this project, regulatory bodies should be aware that application of the process may already be covered by one or more existing technical procedures. As a result, this document is not intended to supersede existing procedures.

2.1 Solution Objective

The objective of the FACTS solution is to resolve the following problems, at a minimum:

- Paper-based checklists are hard to complete in the field and often damaged during the process.
- Multiple inspections and surveillances along with coinciding forms are being completed simultaneously during this activity by a single operator.
- Difficult to review multiple checklists in the field.
- Various tasks are missed or overlooked and rework is necessary
- Common comments for “out of compliance” or “out of tolerance” items are not used.
- Signatures are being missed.
- Clipboards and paper are susceptible to environmental factors.
- No reference guides if there are questions on a procedure.
- Status tracking of forms is not possible in order to maintain control and compliance.
- Fields to add comments or notes are small and do not allow for adequate input.
- General questions that may require a supervisor are not captured.

3 Sponsoring Organizations

CHPRC will be the owner of the FACTS application. Projects and Strategic Programs organization within the CHPRC Waste and Fuels Project is the appointed project sponsor. Supervisors, Nuclear Chemical Operators (NCO's), Shift Operating Engineers (SOE's) and the Environmental Programs are the primary stakeholders for the FACTS project. Their requirements input will be mandatory to ensure compliance with regulations and process improvement realization is critical to determine a suitable software product selection and system development.

The CHPRC primary stakeholders will be closely involved during the project to support development of training and procedures, and assist in development of process/interface required to provide procedures and attached checklists from the existing PRC Procedures System (PPS) while maintaining configuration control.

Safety, Quality, Information Management, Subject Matter Experts (SME's) from other projects, will play a role in reviewing the field requirements to establish the controls and compliance basis along with potential opportunities for future expansion to other areas of the company.

3.1 Strategic Direction

Contractual requirements, and state and federal regulations dictate that legible, accurate records are produced as the deliverable of each inspection and/or surveillance.

3.2 Risk Analysis

The following risks are addressed by this project:

- 1) Potential violation of Washington Department of Ecology (WDOE) and other regulations which could result in enforcement actions. State regulations, require inspections include:
 - a. A record of inspection date and time,,
 - b. A printed name and handwritten signature of the inspector,
 - c. Notations of any observations made,
 - d. The date and nature of any repairs or remedial-corrective actions taken on these inspection records or logs.

In the past year, state regulators identified a population of inspection records with missing or inaccurate information. To date, the WDOE has not issued any fines or penalties relative to these non-compliances. However, WDOE has indicated continued repeat offenses could result in increased enforcement actions, including penalties and fines. In addition, any resulting negative publicity could impact the company reputation with the DOE client and other stakeholders.

4 Problem Definition

Current "Operator Rounds" performance is sub-optimal compared to requirements and expectations. Specific issues to be addressed are process management, configuration control, data capture improvement, forms legibility, terminology consistency, and documented traceability of completed activities.

4.1 Business Process

Operator Rounds are required to be taken at the CWC, T-Plant, and Waste Receiving and Processing (WRAP) facilities on the Hanford site. The task is assigned to the NCO and SOE personnel who are responsible for the collection of inspection and surveillance data.

4.1.1 Current Process

The current process for scheduling, collecting, and inputting the data is a time consuming and error-prone process for both the field and office staff. The business requirements, which necessitate the taking of these measurements, are better served by a process that is primarily electronic and paperless.

Operators print inspection and surveillance checklists to be performed during rounds on specified days. Checklists may be used for multiple buildings or sites and for multiple daily, weekly, monthly, or quarterly due dates. Currently, the checklists are placed on a clip board and the surveillance and inspection rounds are performed in accordance with the related procedures.

Based upon the current method, the form could be lost, destroyed, or illegible, due to various weather and other environmental factors. Under these circumstances, the operator is required to rewrite and/or rework the forms.

Supervisors are required to review the completed forms and determine if clarification, rework, or other courses of action are needed prior to approval and submission as a record of performance.

4.1.2 Proposed Process

The conceptual idea for the solution is to upload the procedure and pre-defined forms onto a mobile outdoor use tablet for the operators to perform the rounds. Operators will perform the rounds, followed by a review and approval process, then data will be uploaded and a rendition of completed forms will be created and transferred to IDMS. The process would be institutionalized to ensure legibility, compliance, accuracy, and traceability along with an electronic system that supports the process.

The process activities can be categorized into three areas:

- 1) Pre-field activities include importing scheduled inspections and surveillances, entering scheduled assignments into FACTS, and syncing the data between the master FACTS database and the field tablets.
- 2) Field activities include collecting and validating specifically identified field data.
- 3) Post-field activities include updating the master FACTS database with the collected field data, and using the IDMS interface to upload the finalized document into IDMS for record storage.

4.2 System Users

The user community falls into three categories: Operators, Supervisors and Administrator. Only users with at least supervisory access and permissions ('Scheduler') will be allowed to perform the scheduling component.

There are currently 12 operators in CWC and 6 per shift that will be conducting rounds. Operators will need operator training with similar levels of expertise to the existing process.

There are currently 2 supervisors for CWC and 1 per shift that will review the operator submitted rounds. The supervisors will need operator training along with additional permissions to schedule, edit, and submit completed forms.

There are 2 administrators for CWC. Administrators will need operator training, as well as permissions to update or modify configured forms and to provide basic trouble shooting to field and supervisory staff.

4.3 Dependencies, Limitations, and Constraints

- Sufficient funding for project execution is allocated.
- Dedicated and part-time technical and SME resources are available to support the project
- Washington Department of Ecology acceptance of electronic approvals or electronic signatures in lieu of physical signature requirement.
- Contract J-3 Hanford Site Services Matrix items compliance.
- Software Quality Assurance and Acquisition process compliance.
- Hanford Local Area Network and Cyber Security requirements compliance.

4.4 Regulations, Procedures, and Policies

The FACTS project and resulting procedure and software application must be developed in accordance with and/or comply with the following, at a minimum:

- PRC-PRO-IRM-309, *Controlled Software Management*
- WMP-200-4.15, *SWOC Surveillance Program*
- SW-040-043, *Inspect CWC & Miscellaneous Buildings*
- SW-040-051, *Cold Weather Protection Plan*

4.5 Acceptance Criteria

FACTS acceptance is predicated on documented evidence of, at a minimum:

1. Operator Rounds process under new method defined and issued as a CHPRC procedure.
2. Fully operational application in production environment.
3. Software, hardware, system integration, and field testing completed.
4. User community trained and proficient with new system.

5 Functional Requirements

The requirements below represent a high-level overview. Detailed requirement development is expected to be performed during the project.

5.1 Structure

1. Software and hardware implemented must conform to site standards as follows:
 - a. Operate on the Hanford Local Area Network (HLAN) to include:
 - Programming in site supported software languages.
 - Databases construction in SQL or Oracle.
 - Windows Server 2008 capable server-based application.
 - Mobile device docking and reconciliation capability.
 - Wi-Fi capable rugged Tablet PCs with Windows 7 or 8 capable of holding an HLAN image.
 - Open architecture for programming electronic interface to the IDMS certified records repository.
2. Host desktop computers using the FACTS application require a connection to the HLAN for performing data uploads and downloads.
3. Lack of existing wireless infrastructure and coverage for PCs containing FACTS inability to support wireless will prevent instant data transfers. For this reason, the initial process will be predicated on docked downloads and uploads.
4. During development, consideration should be given for future implementation in wireless capable environments.

5.2 Data Design and Control

1. FACTS will be a commercial off the shelf (COTs) system configured to mimic current rounds performance with embedding of control features and enhancements to resolve identified issues.
2. Configuration control over the rounds forms and data management of the data collected are extremely critical.
3. Rounds forms will be under change control with historical change capture logs and traceability.
4. Data will require save and reconciliation routines be instituted with software and procedural controls to ensure validation and transfer of data between system components is performed.
5. Data modifications will be done using standard conduct of operations practices and principles in an electronic environment.
6. At no time will any FACTS data be stored outside of the HLAN.
7. Backup of system, the data resident on the HLAN will be backed up in accordance with the current Hanford network backup policy.

5.3 Human-Machine Interface Design

1. FACTS will include the following three possible starting points, at a minimum, to query from the list of available documents:

- a. Dashboard view consisting of operating record types, operator round inspection and surveillance types, technical procedure types, etc., and quick retrieval and status.
 - b. Summary listing with filters for rounds and/or document type. This will allow the user to specify the document type. If the documents are specified, a summary of available rounds will be provided from which the user can select and retrieve the associated procedures or forms needed.
 - c. Detail listing with filters for rounds and/or technical procedure document type. This will allow the user to specify either the rounds checklist, technical procedure document type, or both. The report returned will be a listing by rounds checklist and technical procedure document for all the associated documents.
2. FACTS processing shall be developed using a configurable workflow concept. The workflow will be developed in detail during the project. At a minimum, the workflow will include:
- a. Approval processing for multiple reviewers/approvers.
 - b. "Send back" for rework.
 - c. Reassignment of workflow assignments.
 - d. Capture of comments, changes, and approvals at specific workflow steps.
- At initial implementation, FACTS will contain three procedures and 21 surveillance checklists (rounds) available for use identified in technical procedures: WMP-200-4.15, *SWOC Surveillance Program*, SW-040-043, *Inspect CWC & Miscellaneous Buildings*, and SW-040-051, *Cold Weather Protection Plan*.

5.4 System Interface Design

1. The system interface will be a "docking" protocol between an HLAN hosted application and user managed mobile tablet PC device with an HLAN image installed.
2. Completed forms/checklists will be capable of export, including wholly incorporated approval information, in a PDF format.
3. Exported PDF format shall be presented with headers and footers including at a minimum, the document number and page numbering in an "x of y" format.

5.5 Security Structure

1. FACTS use will be limited to a group of authorized users based on an access and permissions model.
2. Access and permission controls will be managed by the system administrator.
3. Access to the completed record files stored in IDMS will be controlled, based on user permissions within IDMS.

5.6 Implementation

The FACTS project will include the preparation and issuance of a procedure which coincides with performing “Operator Rounds” using the new electronic methodology, personnel trained, the system tested in pilot mode, and project manager turnover to operations for production use, if adjustments are necessary. Project completion is scheduled for September 30, 2016.

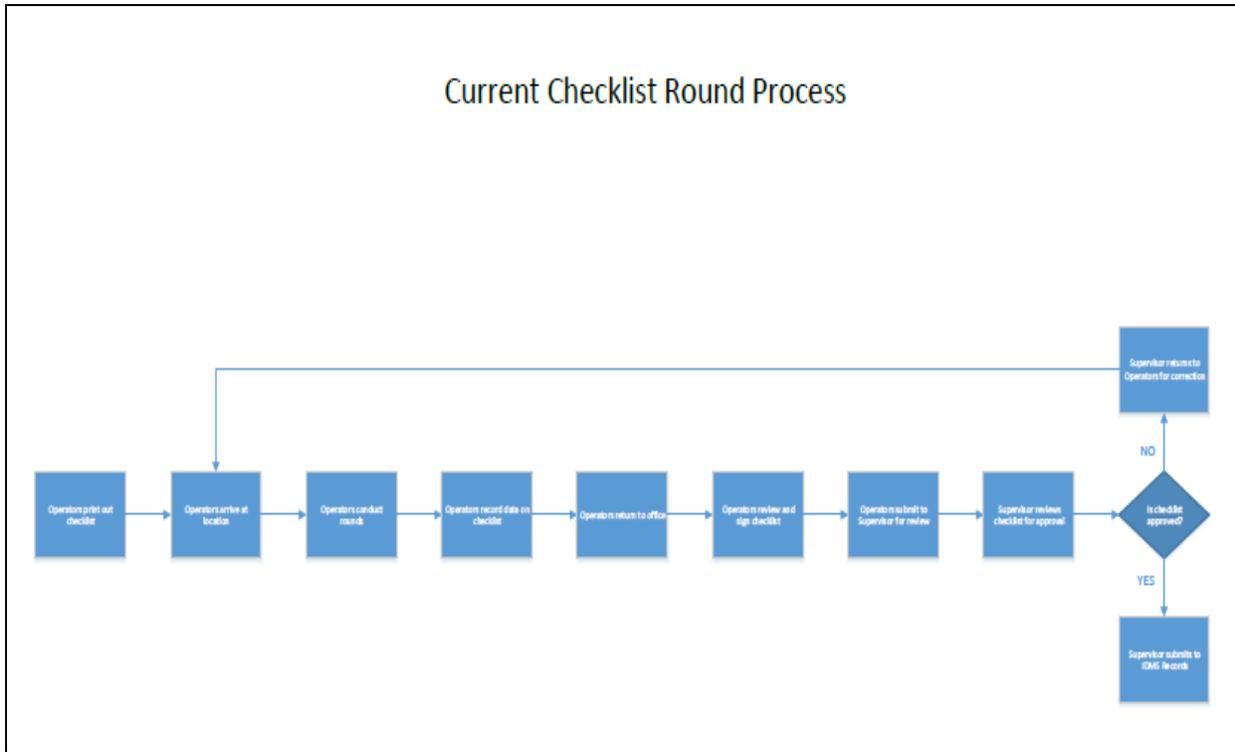
FACTS is part of a Department of Energy (DOE) buy-back efficiency and compliance initiative for which CHPRC has been incentivized to complete in FY16. Based upon the deliverable date, the high level scheduled activities and estimated times frames are reflected in the table below:

Deliverable	Timeframe
Software and hardware research	October 10, 2015 to December 9, 2015
System requirements gathering	December 10, 2015 to December 28, 2015
Functional Requirements Document (FRD)	December 29, 2015 to January 21, 2016
FACTS Alternatives Analysis and Product Selection	January 22, 2016 to February 28, 2016
Procurement proposal, requisitions, and processing	January 22, 2016 to March 17, 2016
Configure and document software	March 17 th , 2016 to July 18, 2016
Develop User Training	June 6, 2016 to July 14, 2016
Field Pilot Testing	April 4, 2016 to August 3, 2016
Develop FACTS Procedure	June 13, 2016 to July 14, 2016
Deliver User Training	July 19, 2016 to August 15, 2016
Issue Procedure and Deploy Production Software	August 16, 2016 to September 13, 2016
Generate and submit incentive completion package	September 14, 2016 to September 30, 2016

6 References

- 40 CFR 265, *Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities*
- 40 CFR 761, *Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions*
- WAC 173-303, *Dangerous Waste Regulations*

7 Current Checklist Process



7.1 Procedures to be Automated

SWSD-PRO-OP-51716 (SW-040-051), *Cold Weather Protection Plan*

- Appendix A - Cold Weather Surveillance Checklist for CWC
- Appendix B - Cold Weather Surveillance Checklist for SWSD Facilities

SWSD-PRO-OP-51714 (SW-040-043), *Inspect CWC & Miscellaneous Buildings*

- Appendix A - Weekly CWC RCRA/Non-RCRA Inspection Checklists
- Appendix B - Weekly CWC RCRA 90-day AA Inspections
- Appendix C - Weekly Non-RCRA Inspection Checklist: Bldg 2727-W & SAMSM
- Appendix D - Typical Post Indicator Valve Diagram
- Appendix E - Weekly CWC Fire System Checklist (Page 1 of 2)
- Appendix F - Fire System Water & Air Pressure Gauge Diagram
- Appendix G - Monthly Non-RCRA CWC Housekeeping Inspection Checklist
- Appendix H - Monthly RCRA CWC Fire Extinguisher Inspection Checklist
- Appendix I - Monthly/Quarterly RCRA CWC Spill Kit Inventory Checklist
- Appendix J - Monthly CWC First Aid Kit & Personal Particulate Eyewash Bottle Checklist
- Appendix K - Monthly Non-RCRA CWC Telephone & Windsock Inspection Checklist
- Appendix L - Weekly/Quarterly RCRA Emergency Response Trailer Inventory Checklist
- Appendix M - Monthly Non-RCRA AED Inspection Checklist

Appendix N - CWC End of Workday Security Checklist
Appendix O - Monthly CWC SAA(s) Inspections Checklist
Appendix P - Monthly Combustible Loading Surveillance Checklist
Appendix Q - Criteria for Entry in the Abnormal Container Management Program

WMP-200-4.15, SWOC Surveillance Program

Appendix B - T Plant Surveillance Checklist
Appendix C - WRAP Surveillance Checklist

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