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7. Abstract This documentation assessment was performed to evaluate the effectiveness of management controls on design documents and records submitted for Project C-018H. This assessment focused on the overall adequacy of the documentation submitted to the project document control function.		
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DOCUMENTATION ASSESSMENT
PROJECT C-018H, 200-E AREA EFFLUENT TREATMENT FACILITY

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INTRODUCTION AND ASSESSMENT SUMMARY

A. INTRODUCTION

Project C-018H is one of the fourteen subprojects to the Hanford Environmental Compliance (HEC) Project. Project C-018H provides treatment and disposal for the 242-A Evaporator and PUREX plant process condensate waste streams. This project used the Integrated Management Team (IMT) approach proposed by RL. The IMT approach included all affected organizations on the project team to coordinate and execute all required project tasks, while striving to integrate and satisfy all technical, operational, functional, and organizational objectives.

The HEC Projects were initiated in 1989. Project C-018H began in early 1990, with completion of construction currently targeted for mid-1995.

B. ASSESSMENT SUMMARY

This assessment was performed to evaluate the effectiveness of the management controls on design documents and quality assurance records developed and submitted for processing, use, and retention for Project C-018H. The assessment focused primarily on the overall adequacy and quality of the design documentation currently being submitted to the project document control function.

Part of the assessment process included the development of performance objectives and criteria for evaluating the project's document and records management program. These performance objectives are statements of broad management objectives, while the criteria are more narrowly focused statements of desired activities that meet the performance objectives. Both the performance objectives and criteria were extracted from documents that establish requirements for the project. The performance objectives and criteria have been included with this report as Appendix A.

Where performance objectives have not been attained, or there is a question regarding possible noncompliance to a requirement identified in the criteria, a concern has been identified. A "Summary of Concerns" has been attached that identifies specific concerns, and references their location within the text of the assessment report.

SUMMARY OF CONCERNS

		<u>Page</u>
P.O. I.A	a. There is no two-way traceability between ADTECHS subcontractor drawings/sketches and the corresponding ADTECHS-assigned document number, i.e., the subcontractor documents do not directly reference the ADTECHS number.	5
	b. Drawings could not be retrieved directly by drawing number, if the submittal number for that drawing was unknown. The inability to access or retrieve drawings by drawing number from the Master Submittal database is significant.	5
P.O. I.C	a. ADTECHS drawings do not comply with the SDC-1.3 requirement pertaining to obtaining the written and printed initials and surname of the drawing originator and checker.	7
	b. Hanford index numbers were not provided on ADTECH drawings.	7
	c. Although the "Next Used On" and "Drawing Traceability List" blocks were provided in the format of ADTECHS drawings (to comply with SDC-1.3 requirements), no entries were cited that would facilitate creation of a drawing hierarchy.	7
P.O. II.B	a. Document number(s) were not always referenced on the transmittal form.	9
	b. ADTECHS specifications were not assigned WHC or ICF KH document (specification) numbers in accordance with internal WHC or ICF KH procedures.	9
P.O. III.A	Procedures to be contractually provided by ADTECHS were inadequate, and the procedure development cycle did not include or involve operations personnel.	11
P.O. III.B	a. Startup procedures were not complete, and did not include detailed startup instructions.	12
	b. Maintenance procedures were the least adequate, and did not include required steps for assembly and disassembly of equipment or components.	12
	c. Overall, ADTECHS operating, maintenance, and startup procedures were generally considered less than adequate for safe, efficient operation of the facility.	12

P.O. IV.A	a.	The Master Submittal List identifies document submittal types to be provided by a vendor. It could not be determined whether the vendor information (VI) was specifically requested to be provided in the contract, procurement document, or specification.	15
	b.	There is no standardization for document numbering, revision status, or pagination for subcontractor documents provided to ADTECHS.	15
	c.	Certain document submittals could not be located in the project files.	15
	d.	Some document submittals were illegible and not reproducible.	15
	e.	Some document submittals were not uniquely identified, revision numbers were not indicated, and the documents were not sequentially paginated.	16
P.O. IV.B		The integrated approach did not involve operations at the outset and inception of the project, and did not solicit input from Operations regarding the identification and ordering of vendor manuals and related documentation.	17
P.O. V.A	a.	The Master Submittal List (MSL) did not identify all QA record categories or specific quality assurance documents. Some submittals were stamped "QA Record", but were difficult to retrieve without knowing the submittal number, or performing a manual search of the MSL.	19
	b.	Document numbers were not affixed to documents, and the documents were not paginated.	20
P.O. VI.A	a.	Transmittals did not always list all of the documents submitted in the package. The transmittal form should account for all documents submitted.	23
	b.	The design authority did not always provide the applicable requirements document(s) to the vendor as prescribed by the applicable specification.	23
	c.	The final processing of great quantities of turnover packages at completion of construction and turnover will be time consuming, and may impact the availability and retrieval of information by Operations.	24

DOCUMENTATION ASSESSMENT

PROJECT C-018H, 200-E AREA EFFLUENT TREATMENT FACILITY

1.0 DRAWINGS

1.1 SUBMITTAL CATEGORIES

Drawings reviewed during performance of this assessment were identified from the ICF Kaiser Hanford Company (ICF KH) Master Submittal List. The submittal categories from which the drawings were selected are as follows:

- Submittal #062, "Summary of Work--Drawings--30% Review."
- Submittal #063, "Summary of Work--Drawings--100% Review."

Fifteen drawings were reviewed from these two drawing categories.

1.2 PERFORMANCE OBJECTIVE I.A

NOTE: The complete text of all Performance Objectives and Criteria are provided in Appendix A.

Drawings and sketches received from vendors and contractors performing work for Project C-018H were used to document the designs for systems, structures, and components (SSCs) for construction and fabrication work.

1.2.1 Discussion

Subcontractors and vendors to ADTECHS generally assigned their own unique drawing/sketch numbers and referenced a corresponding ADTECHS document number. In some isolated cases, an H-series number was used by the subcontractor/vendor. ADTECHS drawings that documented the design and had a design review performed (at 30% or 100% completion of design) were assigned "H-2" series numbers obtained from Westinghouse Hanford Company (WHC). WHC-CM-6-1, Standard Engineering Practices, EP-1.3, "Engineering Drawing Requirements," allows that engineering drawings for "turn-key" projects need not conform with the WHC numbering convention or be released into the WHC document control system until the project is completed and transferred to WHC for operations. However, it makes sense and is more efficient to pre-assign the correct numbers to drawings that document the design in anticipation of turnover.

The physical existence of CAD datasets for drawings/sketches produced by ADTECHS vendors and subcontractors was not assessed. However, ADTECHS "H-2" series drawings referenced appropriate and correct CADCODE and CADFILE identifiers in accordance with SDC-1.3 requirements. Transmittal of the CAD data files from ADTECHS to WHC at project completion is anticipated for retention in the Hanford CAD Archival System in accordance with WHC-SD-GN-UM-30009, "Archival of CAD Datasets

Produced by Offsite A-Es." Submittal category #042 entitled "Summary of Work--As-Built Information," showed no actual submittals of as-built information (or corresponding CAD datasets) to date, but listing in the ICF KH Master Submittal List requires the eventual submittal of one original (magnetic media and a mylar) and seven copies of the drawings.

Also, it is expected that ICF KH will process all project documentation upon completion of construction to the WHC Project Integration group for review and approval. The drawings will then be transmitted for release into the engineering release system via engineering data transmittal (EDT) for reproduction, distribution, microfilming, and storage.

1.2.2 Concerns

- a. Two-way traceability of ADTECHS subcontractor drawings and sketches to the corresponding ADTECHS document numbers is a minor concern. The ADTECHS document number is referenced on the ICF KH "Document Transmittal/Review" form, but is not physically located on the title block of the vendor drawing or sketch in all cases. If the transmittal is ever separated from the document, traceability back to the ADTECHS number via the transmittal is lost.
- b. The inability to access or retrieve drawings by drawing number from the ICF KH vendor submittal database is a significant concern. Drawings could not be retrieved directly by drawing number if the specific submittal number for that drawing was not known. Specific ADTECHS drawings, e.g., H-2-89077, Rev. 2, et. al. (as documented in applicable assessment data sheets) were randomly selected from the ADTECHS ECN file (copies maintained by ICF KH). When the assessment team attempted to verify their actual submittal to ICF KH, the drawing number could not be used to obtain the transmittal number. A manual search of the ICF KH Master Submittal List (a computer report consisting of 500+ pages) for the specific drawing number is required to obtain the specific submittal number in order to retrieve the drawing from the submittal file.

1.3 PERFORMANCE OBJECTIVE I.B

The "H-series" drawings to be provided to WHC from ICF KH and ADTECHS at the completion and turnover of Project C-018H shall be prepared to depict the permanent installation of SSCs. These drawings are considered permanent quality records and subject to "as-built" requirements, including field verification and walkdowns at the completion of construction or fabrication.

1.3.1 Discussion

At present, it is premature to effectively assess ADTECHS/ICF KH compliance to WHC as-built requirements since the 200-E Area Liquid Effluent Facility (LEF) is still under construction. To date, the drawings are not yet as-built, and the documentation has not been officially transmitted to WHC (see Section 1.2.1, second paragraph related to submittal category #042).

ADTECHS, ICF KH, and their vendors and subcontractors provide applicable drawings for construction and fabrication of selected SSCs. ADTECHS is expected to provide design drawings with all engineering changes incorporated for their scope of work. Before turnover, ICF KH, in conjunction with ADTECHS, is expected to field verify that the ADTECHS drawings are as-built. The as-built revisions shall reflect the actual completed installation of all SSCs as substantiated by field inspection. The statement "as-built" shall be entered in the description column of the drawing.

1.3.2 Concerns

There are no specific concerns identified, since the level of compliance of project documentation to WHC as-built requirements cannot be specifically assessed at this time. However, due to the nature of "turnkey" projects, and implementation of the IMT approach, the assessment team observed that the WHC Operations organization must rely solely upon ICF KH to provide the necessary as-built documentation. This documentation shall be previously verified with Operations participation at 30% and 100% completion of design, and ultimately field inspected to ensure that the design and engineering documents provided for facility operations accurately represent the as-constructed/as-installed configuration of the SSCs.

In addition, there is a potential concern that the as-built drawings and corresponding CAD datasets may not be concurrently released through ICF KH to WHC at turnover to ensure that the CAD datasets be verified as being accurate with the drawing plots.

1.4 PERFORMANCE OBJECTIVE I.C

The design drawings prepared by the offsite A-E and transmitted to WHC upon completion of Project C-018H shall comply with the requirements of Hanford Plant Standards, Standard Design Criteria (SDC)-1.3.

1.4.1 Discussion

The primary construction contractor, ADTECHS, has several subcontractors and vendors (approximately 128) preparing engineering and fabrication drawings to satisfy the requirements of the Design/Construction Specification (V-C018HC1-001) and support the scope of work specified in each of their respective contracts. In turn, the major subcontractors to ADTECHS have subcontractors and vendors performing work directly for them that supply supporting documentation and drawings as well.

It is not a requirement, nor is it expected, that each subcontractor or vendor to ADTECHS comply directly with the Hanford drawing requirements as specified in SDC-1.3. If the subcontractor maintains a unique numbering system for their drawings and the drawings are traceable back to the project, contract, and submittal number, the document control methodology is acceptable. In general, the assessment team found that

the subcontractors and vendors were uniquely identifying their documents, and the documentation was traceable to the project, submittal, and contract number.

However, the design drawings prepared by ADTECHS for submittal to ICF KH (and ultimately to WHC) shall comply with the Hanford drawing convention specified in SDC-1.3. The assessment indicated that the drawings prepared by ADTECHS complied with the majority of requirements specified in SDC-1.3. This level of compliance is attributed to ICF KH's familiarity with the Hanford requirements, and the stipulation of those requirements in applicable specifications. An "H-2" series number was assigned, the title and revision blocks conformed to the requirements, accurate CADCODE and CADFILE identifiers were provided, the originator and checker were identified on the drawing, a revision level was indicated on the drawing, Hanford building numbers were identified, etc. However, some areas of noncompliance that should be addressed before turnover and release of the ADTECHS drawings are identified as follows.

1.4.2 Concerns

- a. Generally, the ADTECHS drawings identified the drawing originator and checker, but did not comply with the SDC-1.3 requirement of including the written and printed initials and surname of these individuals.
- b. Although the applicable Hanford building number (e.g., Building 2025E) was identified on the ADTECHS drawings reviewed, the applicable system index number was not provided. The drawing index is a numerical indexing system that aids in the retrieval and storage of drawings based on the subjects or functions they represent.
- c. Although the "Next Used On" and "Drawing Traceability List" blocks were incorporated into the format of the ADTECHS drawings as required by SDC-1.3, no referenced drawings were cited in these blocks for the specific drawings reviewed. An indentured hierarchy of related drawings for an SSC (i.e., physical item hierarchy) could not be established from these drawings, if necessary. The parent drawings and next higher SSC or assembly level drawing(s) could not be determined.

2.0 SPECIFICATIONS

2.1 SUBMITTAL CATEGORIES

The specifications reviewed during the performance of this assessment were randomly selected from the ICF KH Master Submittal List. The submittal categories scanned for possible samples were as follows:

- Submittal #049, "Summary of Work--RCRA--Design Specifications--Tanks." No submittals for this category from ADTECHS or any subcontractor or vendor was received to date.

- Submittal #058, "Summary of Work--Plans and Specifications." No submittals for this category from any contractor was received to date.
- Submittal #064, "Summary of Work--Specifications--30% Review." Five ADTECHS specifications from this category were randomly selected for review.

2.2 PERFORMANCE OBJECTIVE II.A

Specifications are prepared and issued to document SSC requirements and include such items as acceptance criteria, submittal and documentation requirements, type of materials for fabrication or construction, etc. The minimum requirements shall be clear and concise, and consistent with the intended use of the SSC.

2.2.1 Discussion

The specifications chosen for review were prepared, approved, and issued by ADTECHS, and appeared to adequately define the requirements for the specific SSC to which they applied.

2.2.2 Concerns

No specific concerns for this objective were identified.

2.3 PERFORMANCE OBJECTIVE II.B

The format and content of specifications prepared by or for WHC shall comply with internal procedural requirements for release into the WHC document control system. Construction specifications shall also comply with the requirements of the Construction Specification Institute (CSI) Manual of Practice.

2.3.1 Discussion

A unique specification number was assigned to the specifications prepared by ADTECHS, e.g., #S-1222-002, #S-1131-001, etc., but the number did not comply with internal WHC numbering requirements, i.e., ICF KH and WHC specification numbers were not assigned to ADTECHS specifications. Also, although clearly identified on the document, the number was not always referenced on the corresponding transmittal form.

The specification's document number, revision level, and page number were recorded on each page of the applicable specification, and the initial issue of the document was identified as Rev. 0 (subsequent to draft comment submittal to ICF KH, distribution for review, and incorporation of comments). The preparer of the specification was also identified on the document.

The use of an EDT for obtaining specification approvals, release of the specification into the WHC document control system via the EDT, and performance of a clearance review on the specification to comply with

internal WHC requirements is not currently evident. These actions would not be expected to be implemented until project turnover and submittal of as-built specifications to WHC for release. However, based on experience at HWVP and other "turnkey" projects, it is doubtful that the specifications will be renumbered to comply with internal WHC requirements, and will probably be processed as vendor data.

2.3.2 Concerns

- a. In many cases, the document number was not referenced on the transmittal. The specification number should be referenced on the transmittal form that conveys it. If the transmittal becomes separated from the document, it is impossible to retrieve the document without the corresponding transmittal number.
- b. Another concern as mentioned in the "Discussion" section above, was related to the numbering of ADTECHS specifications. Whereas ADTECHS design drawings were assigned Hanford "H-2" series numbers in anticipation of being released into the WHC document control system (see section 1.2.1, second paragraph), the ADTECHS specifications were not assigned WHC or ICF KH specification numbers in accordance with WHC-CM-6-1, EP-1.2, or the onsite A-E's own internal procedure. If ADTECHS is not contractually obligated or does not agree to assign WHC or ICF KH numbers to their specifications, it is recommended, as a minimum, that dual numbers be assigned and cross-referenced. Upon turnover of the as-built specification for release by WHC, the WHC or ICF KH number would be used for release, retrieval, and compliance with Hanford procedural requirements.

An alternative to this process is to release the ADTECHS specifications directly to the VI file, but this puts the burden and cost on WHC Operations to create another document if the vendor specification requires revision.

3.0 PROCEDURES

3.1 BACKGROUND

Procedures, including operating, maintenance, and startup procedures, are of particular importance to operations, since almost every aspect of an operating plant relies upon procedures. Since operations is (should be) heavily involved in the development, preparation, and review of the operating procedures, it was decided by the assessment team that the most effective and least time consuming method for obtaining information on the adequacy of the procedures developed and provided by ADTECHS was to poll the WHC cognizant engineers who were directly involved in the review of those procedures. The specific criteria identified in the Transition Plan for assessing the adequacy of procedures was reformatted

in the form of a questionnaire/survey that could be readily replied to by persons who participated in reviewing applicable procedure submittals (see Appendix B). The results of the survey are summarized in the "Discussion" sections that follow.

3.2 PERFORMANCE OBJECTIVE III.A

An objective of the DOE is to conduct operations in a safe and controlled manner. The use of valid procedures is one of the most formal, direct, and effective methods to communicate detailed expectations and instructions to workers for performing specific tasks in a safe, efficient manner.

3.2.1 Discussion

In general, the procedures that were contractually required to be provided by ADTECHS were less than adequate in the opinion of Operations personnel. The first criteria for procedures pertains to the level of detail being compatible with the user's level of experience and training. Presumably the user personnel were assumed to be highly experienced (in operating a new plant unfamiliar to them) since the ADTECHS procedures submitted and subsequently reviewed by LEF Engineering personnel were lacking in sufficient operational detail.

In defining specific tasks to be accomplished, the procedures assumed many of the process evolutions were "understood" rather than defining the actual task or procedural process. Also, the "why" or "when" the tasks were to be accomplished were not described, and notable deficiencies in the procedures related to the lack of "Notes," "Cautions," and "Warnings."

Regarding the involvement of operational personnel during the procedure development cycle, ADTECHS exclusion of operations input to the procedures resulted in a decision being made in early 1992 that caused 200 Area LEF Engineering personnel to write procedures for their own use upon commencement of operations.

3.2.2 Concern

The concern identified is directly related to the last paragraph in the "Discussion" section above. ADTECHS was contractually obligated to provide suitable procedures for operation and maintenance of the 200-E Area LEF facility. However, the Design/Construct Specification originally provided to ADTECHS did not specify the equivalent level of detail currently provided in DOE Standard, DOE-STD-1029-92, "Writer's Guide for Technical Procedures", nor was there sufficient involvement of operations personnel during procedure development. Operating, maintenance, and startup procedures are documents for the operators of a facility, and should contain a prescribed level of detail adequate for operations. Operators should also be a significant source of information for development of the applicable procedures.

3.3 PERFORMANCE OBJECTIVE III.B

Procedures must be technically and operationally accurate, up-to-date, and easy to follow. Operators should have confidence that the procedures meet this objective or they will not use them.

3.3.1 Discussion

Responses to the survey generally indicated that the ADTECHS procedures submitted for operations' review and eventual use did not address all applicable technical and administrative requirements, nor directly relate to or adequately reference other applicable and affected procedures for the specific SSC.

In many cases, the procedures did not stipulate step-by-step instructions for the operator to follow, i.e., the procedure assumed the actions of the operator. Hence, the procedures were not deemed to be clear, concise, or valid for the process in question. In addition, there was no order or sequence relative to the integration of related procedures and/or processes. In some cases, the procedure could probably be performed in the sequence written, if the system or process had been deemed to be a unique and independent process. Most of the procedures assumed a "standalone" system, which was likely not the case for the process described.

One example was the lack of a valve line-up in Procedure S-1230-103, "UV Startup to Ready Mode", in which the user/operator was not able to locate and identify all equipment referred to in the procedure. In addition, it was thought that an operator would not be able to perform a process prescribed by the procedure without obtaining additional information or assistance from other persons or procedures, since no operator was an expert on the overall effluent treatment process or knowledgeable about the entire plant.

The procedures also did not generally include operating parameters such as temperature, pressure flow, etc., or readings indicating normal operating ranges and setpoints for such things as instrument alarms.

3.3.2 Concerns

- a. In many cases, startup procedures were not complete and did not include detailed, step-by-step startup instructions for the equipment provided. Precautions and critical points to be observed during startup were not noted.
- b. Maintenance procedures were considered to be the least adequate procedures of all. The procedures did not include steps required to assemble and disassemble the equipment and components provided, nor did they include instructions for settings, clearance, or adjustment data. Many of the maintenance procedures merely stated "Refer to the Vendor Manual."

- c. In general, the operating, maintenance, and startup procedures submitted by ADTECHS were considered to be less-than-adequate for the conduct of safe and efficient operations. This prompted WHC engineering and operations personnel to initiate and implement their own internal system for operational procedure development, preparation, and issuance.

3.4 PERFORMANCE OBJECTIVE III.C

The technical, management control, and design basis documents provide information used in developing a facility's procedures. If the design basis documentation is incomplete, out-of-date, or not yet developed, it must be created and maintained. Any change to the design basis will likely require procedure revisions.

3.4.1 Discussion

Since it has been determined that the ADTECHS procedures developed to date are less than adequate, no assessment can be accurately made at this time as to whether available design basis information was used in the initial development of the procedures. It also cannot be accurately determined whether adequate design basis documentation is even available. Design basis information is being prepared, i.e., design calculations have been produced, a FSAR is in work, etc., but it is presumptuous to assume that it is complete and up-to-date. It is assumed that WHC LEF personnel are using all design basis information that is available or at their disposal to develop the procedures they will require for operations.

3.4.2 Concerns

See "Discussion", paragraph 3.4.1 above.

3.5 PERFORMANCE OBJECTIVE III.D

A facility's procedures define how requirements, management philosophies and strategies, and technical knowledge will be integrated and applied to performing work. The safe operation of the facility depends upon the interrelationship of requirements, the design basis documentation, and the procedures, all of which define the facility safety envelope.

3.5.1 Discussion

Again, since it has been determined that the ADTECHS procedures developed to date are less than adequate, no assessment could be accurately made to determine whether the above performance objective has been satisfied. It is assumed that WHC LEF personnel are using all available information, including applicable requirements, management guidance, and technical knowledge and documentation to develop the procedures they will require for operations in order to ensure the safety envelope is maintained. Assessment of the adequacy of operating

procedures developed by WHC was beyond the scope of this assessment, i.e., a self-assessment performed by LEF personnel to the procedural criteria contained in the Transition Plan is recommended.

3.5.2 Concerns

See "Discussion," paragraph 3.5.1 above.

4.0 VENDOR INFORMATION

4.1 SUBMITTAL CATEGORIES

VI reviewed during performance of this assessment was selected at random from the ICF KH Master Submittal List. Retrieval from the project file was via the unique submittal number assigned by ICF KH. The submittal categories from which the VI was selected included the following:

- Submittal #066, "Summary of Work--Submittals from Vendors or Subcontractors." Two vendor submittals were selected from this category.
- Submittal #121, "Operations and Maintenance Data--Vendor Information Submittals." Three vendor submittals were selected from this category.
- Submittal #150, "Pre-engineered Structures--Vendor Information and Drawings." A single submittal was selected from this category.
- Submittal #157, "Monitor and Control System--Hardware Manuals". No entries for this category were received from any vendor/subcontractor at the time this assessment was conducted; hence, no submittal for this category could be reviewed.
- Submittal #158, "Monitor and Control System--Software Manuals". No entries for this category were received from any vendor/subcontractor to date; hence no submittal for this category could be assessed.
- Submittal #159, "Monitor and Control System--Configuration Manuals." Only one entry received for this category was listed in the ICF KH Master Submittal List; it was consequently the only submittal reviewed.
- Submittal #160, "Monitor and Control System--Process Control Operating Manuals." No entries for this category were received; hence no submittal could be reviewed or assessed.
- Submittal #179, "Chemical Plant and Petroleum Refinery Piping Systems--Vendor Information". Two submittals from this category were selected for review. (Submittals in this category consisted mostly of vendor fabrication drawings.)

- Submittal #191, "Service and Distribution--Vendor Information". A single submittal was selected from this category for review.

4.2 PERFORMANCE OBJECTIVE IV.A

VI is ordered, received, controlled, and maintained by the operating contractor to support facility operations, maintenance, modifications, and ultimately decontamination and decommissioning activities.

4.2.1 Discussion

The type of VI and the number of copies received from each subcontractor or vendor was listed in the ICF KH Master Submittal List. The date of receipt and distribution of the data was also indicated.

However, in most cases it could not be determined whether a Statement of Work (SOW), purchase order (PO), or other procurement document actually stipulated the submittal of the requested document type or whether the document was even submitted to satisfy a specific contractual requirement. Only one document assessed included a summary statement indicating that the submittal complied with a specific purchase order number (Ref. Resources Conservation Company (RCC) document #520-55000, a.k.a. ADTECHS #V-135A-004-122, Rev. 0, that complied with JGC purchase order number P-135-004). Most of the documentation referenced a contract number, but it could not be determined whether the contract actually specified submittal of the specific document type.

In the majority of cases, the documentation reviewed was legible, reproducible, uniquely numbered, and presented in a clear, concise, and logical manner. Specific instances where requirements were not satisfied are listed in the "Concerns" section (see 4.2.2) below.

For the scope of this assessment, it was premature to determine whether the VI would be specifically identified with the applicable Hanford VI file number, since the information had not yet been processed to the WHC VI files. It is presumed that the VI number would be referenced on the as-built engineering documentation for the applicable SSC submitted at turnover, but that could not be determined at this time. It also could not be determined whether the VI would be traceable from the documentation to the SSC or hardware item, i.e., whether the item would be actually marked with or identified by the VI number. It was determined that ICF KH would process the documentation to the BCS Richland (BCSR) VI file for retention. Project Data Systems (PDS), which processes VI for WHC, would not be involved.

4.2.2 Concerns

- a. The ICF KH Master Submittal List for Project C-018H identifies the general document/submittal type to be provided by the subcontractor, and the date the documentation is actually received and distributed to the project. This listing was created from the Design/Construction Specification, V-C018HC1-001, Section 01300, "Submittals." However, it could not be determined whether the VI

was specifically requested in the contract, procurement document, or specification based on the specific scope of work to be performed by the subcontractor. When asked about this condition, ICF KH personnel responded that it was ADTECHS responsibility to provide the information or obtain the applicable documentation from their subcontractors, and that ICF KH simply processed what was received. It is uncertain whether the correct information will be provided by the subcontractor and/or ultimately received by operations if it is not specifically requested in the procurement document or specification.

- b. There is no standardization or minimum requirements for document numbering, revision status, or pagination for subcontractor documents. A VI submittal received from LCI Corporation was not uniquely identified. There was no document number indicated on the document itself, and the ADTECHS number, V-135Z-005-902, Rev. 0, was only referenced on the submittal cover sheet. The document was not paginated, and an "issue number" and date was only identified on page 1 of the document. However, an attached drawing to the installation/operating instruction being reviewed was uniquely identified.
- c. ADTECHS #V-135A-004-901, Rev. 0, RCC Instruction and Maintenance Manual for High Pressure Thru Flow Indicators could not be located in the working files at Station #1. The document was presumed lost or misfiled.
- d. A copy of Shamrock Construction, drawing (sketch) SK-14, a.k.a. ADTECHS #Y-D-1685-311, Rev. N/A(?), was partially illegible and not reproducible.
- e. ADTECHS #V-1372-003-073, Rev. 0, Configuration Printout, Volume 1, did not carry a unique document number on the document itself. The ADTECHS number was only referenced on the transmittal. A revision number was also not indicated, and the document was not sequentially paginated.

4.3 PERFORMANCE OBJECTIVE IV.B

Vendor manuals that support facility operations, maintenance, and modification activities are ordered, received, controlled, and maintained by the operating contractor.

4.3.1 Discussion

Since the C-018H Project is a "turnkey" project, it was acknowledged at the outset that the vendor manuals were not controlled or maintained at this stage of the project by the operating contractor. However, copies were distributed by ICF KH upon receipt, and were available to operations personnel for their review and use at Station #3 in the 200 West Area.

Of the ten vendor submittals reviewed in this phase of the assessment, two were vendor manuals. One manual dealt with the operation of the LEF evaporator system, and the other contained operating and installation instructions applicable to the facility's flow controllers. These manuals were applicable to specific pieces of plant equipment, and the level of quality relative to legibility and reproducibility was acceptable. The manuals were formatted in a clear, concise, and logical manner.

The manuals also contained adequate information related to equipment design and appropriate technical data, as well as equipment descriptions and applicable installation instructions. As an example, RCC #520-51000 Operating Instructions Manual for Evaporator System (ADTECHS #V-135A-004-123, Rev. 0), contained the specific design and technical data in Sections 2.0 and 4.0. This data was related specifically to brine concentration and included design parameters for temperature, pH, suspended solids, total dissolved solids, total organic carbon, etc. Specific design data included tables of operating process parameters, including operating pressures, operating temperatures, tank volumes, and lists of controllers, indicators, alarms, and trips. The installation and operating instructions for the flow controllers, #V-135Z-005-902, Rev. 0, contained design data pertaining to pressure ratings, capacity, range, total pressure drop (minimum/maximum), maximum temperature ratings, etc.

With regard to equipment descriptions, the Evaporator System Manual described the controls and indicators in Section 2.0. General and detailed descriptions of specific SSCs were provided in Section 1.0, including descriptions of the Feed/Distillate Heat Exchanger, Evaporator and Heater, Entrainment Separator, Vapor Compressor, Inlet and Outlet Silencers, Concentrate Transfer Pump, Electric Steam Boiler, etc.

Installation instructions for the flow controllers were included in a manual section entitled "Panel Mounting." Section 3.0 in the Evaporator System Manual contained instructions for evaporator startup, including filling the system with feed, heating the system, and starting the evaporator system.

Appendix B of the Evaporator System Manual provided troubleshooting guidelines for the Brine Concentrator. Topics addressed included malfunctions of the annunciator alarm; malfunctions, cause, and troubleshooting for the distillate tank level; condensate conductivity evaporator level and pressure; etc. The operating instructions for the flow controllers indicated that troubleshooting was not applicable to the equipment; however, a follow-on section pertaining to maintenance of the controllers was included.

Drawings referenced in each of the manuals were included as a part of the Evaporator System Manual. The Evaporator System Manual incorporated the P&ID drawings and data sheets in Appendix D; the manual for the flow controllers included a single drawing as an attachment at the end of the Evaporator System Manual.

4.3.2 Concern

One concern pertains to the lack of input by end-user operators and other affected personnel relative to the initial identification and ordering of documentation (and in particular vendor information manuals) to support facility operations and maintenance.

Since the Design/Construct (D/C) contractor is solely responsible for the project until completion of construction and turnover, Operations (the customer) is completely reliant upon the D/C contractor to identify, order, receive, control, and maintain adequate documentation until the project is turned over to Operations. It was noted that ADTECHS was solely responsible for preparing the design documentation and obtaining applicable documentation from subcontractors, including vendor manuals, for eventual submittal to ICF KH for processing.

A truly integrated approach would actively involve end-user operators at the outset and inception of a project, and solicit input from those same personnel regarding the identification and ordering of appropriate vendor manuals and all related documentation for operations.

5.0 QUALITY ASSURANCE RECORDS

5.1 SUBMITTAL CATEGORIES

Quality assurance records reviewed for this assessment were selected at random from the submittal categories listed below. The submittal number assigned by ICF KH and listed in the ICF KH Master Submittal List was used to retrieve the specific documentation from the project files.

- Submittal #121, "Operations and Maintenance Data--Vendor Information Submittals." One "Certificate of Conformance" quality record submittal was selected from this category.
- Submittal #151, "Pre-engineered Structures--Certificates of Conformance or Compliance." Three submittals were selected from this category.
- Submittal #165, "Fire Protection--Qualification of Welders." No entries for this category were reviewed since no submittals had been transmitted from any contractor to date.
- Submittal #166, "Fire Protection--Qualification of NDE Personnel." No submittals for this category were received to date.
- Submittal #169, "Fire Protection--NFPA Test Certificate." No submittals for this category were received to date.
- Submittal #173, "Power Piping Systems--Qualification of NDE Personnel and Procedures." Two submittals were selected from this category.

- Submittal #183, "Chemical Plant and Petroleum Refinery Piping Systems--Fabrication Drawings." One submittal was selected from this category.
- Submittal #184, "Chemical Plant and Petroleum Refinery Piping Systems--Quality Assurance Documentation." Two submittals were selected from this category.
- Submittal #190, "HVAC--Quality Assurance Documentation." One submittal was selected.
- Submittal #195, "Alarm and Detection Systems--Quality Assurance Documentation." No submittals for this category were received to date.

5.2 PERFORMANCE OBJECTIVE V.A

Quality assurance records shall be identified and retained for the life of the facility to support facility operations, maintenance, modifications, deactivation, and D&D activities.

5.2.1 Discussion

The quality assurance records that were reviewed were not originals, i.e., the assessment team was allowed unrestricted access to Station #1 working files. However, legibility of the records was not an issue, and all of the documentation appeared reproducible to the fourth generation.

The records were generated using permanent, reproducible ink, and from all appearances on the copies reviewed, signatures were affixed in reproducible ink. An illegible copy of a document requiring a statement "Best Available Copy" was not found. The use of pencil or water soluble ink also was not evident.

The unique identification of records, and in particular, the affixing of a unique document number (either by the subcontractor or ADTECHS) physically to the record was an issue. In some cases, a subcontractor number was not assigned or missing, but an ADTECHS number was typically assigned to the document via the ICF KH transmittal. Traceability to the document would be lost if the transmittal were physically separated from the document itself. Pagination of a complete record was also lacking in many cases. The lack of pagination would hinder reassembly of the document if it were dropped or otherwise disassembled.

Generally, the QA records required for submittal were identified. A listing of the quality assurance records to be provided by ADTECHS was included as an appendix in an applicable procurement specification. There was also a current contractor listing for Project C-018H (in support of KEH contract 5232) at Station #4 that listed the QA/QC records required from each subcontractor for turnover.

5.2.2 Concerns

- a. A major concern was related to the identification and retrieval of quality assurance records. In some cases, the ICF KH Master Submittal List identified a specific submittal category as being "Quality Assurance Documentation"; e.g., submittal numbers #184, #190, and #195 were identified as containing such documentation. However, in many other cases, it was not evident that another submittal category contained quality assurance records. As an example, Submittal #183/V40-112 (category #183, "Chemical Plant and Petroleum Refinery Piping Systems--Fabrication Drawings") was a vendor submittal describing the Hydrogen Peroxide Storage/Feed Module. This submittal was specifically stamped "QA Record," but would have been difficult to identify and/or retrieve without knowing the specific submittal number or manually searching for the document. There was no indication or flag on the ICF KH Master Submittal List that this document was a quality assurance record. Also, such categories as #151, "Pre-Engineered Structures--Certificates of Compliance or Conformance;" #165, "Fire Protection---Qualification of Welders;" #166, "Fire Protection--Qualification of NDE Personnel;" etc., all contained quality assurance records, but were not identified as such.
- b. As previously stated in other "Concerns", many documents reviewed did not have a document number affixed and were not paginated. For example, Submittal #184/V10-1 was not uniquely identified by the originating subcontractor, Alaskan Copper Works. There also was no control number assigned by the contractor (Resources Conservation Co. (RCC)), and the ADTECHS number was contained on an approval stamp on a separate transmittal/approval page. Since the document did not carry the same document number referenced on the transmittal, it would be difficult to retrieve the document if it was separated from its corresponding transmittal form.
- c. The Welding Procedure Specification (WPS) transmitted by Submittal #184/V30-4 was identified with a WPS number 1.8-1 that was referenced on the transmittal (along with the ADTECHS number). However, only Pages 1 and 2 of a total of eight pages were paginated. The lack of pagination would make reassembly of the document difficult.

5.3 PERFORMANCE OBJECTIVE V.B

Quality assurance records shall be identified within the configuration management program and maintained consistent with the physical configuration and design requirements of the facility.

5.3.1 Discussion

It was premature at the time of this assessment to accurately determine whether the quality assurance records were being maintained consistent with the physical configuration and design requirements of the facility, since construction of the LEF facility had not been completed and

turnover of as-builts to the operating contractor had not occurred. However, proposed physical walkdowns and vertical-slice assessments of selected facility systems to be performed by 200 Area LEF Process Engineering should determine whether the documentation actually reflected the as-constructed configuration of the facility.

As regards the correlation of a record submitted to the item(s) or activity(ies) to which it applies, the records reviewed satisfied this requirement. In specific cases, for example, resumes were submitted to qualify subcontractor NDE and inspection personnel, qualification records for a specific welding process were provided for a specific welder, and a specific WPS was provided for a specific welding process.

In all cases, the records submitted and reviewed during conduct of this assessment were approved by the originating organization. The records were validated by approval signatures obtained from ADTECHS personnel on an approval stamp containing blocks for identification of the approving discipline and the corresponding signature.

5.3.2 Concerns

No concerns were specifically identified for this area. However, as indicated in the "Discussion" section above, it was beyond the scope of this assessment to determine whether the quality assurance documentation actually reflected the as-constructed configuration of the facility. Additional assessments and physical walkdowns of the plant were being planned by operations personnel before completion of construction to ascertain whether the quality assurance documentation was current and reflected the as-built configuration.

6.0 DESIGN BASIS INFORMATION

6.1 SUBMITTAL CATEGORIES

Design basis information reviewed during performance of this assessment was identified from the ICF KH Master Submittal List. The submittal categories from which the information was selected were as follows:

- Submittal #064, "Summary of Work--Specifications--30% Review." Five submittals were selected for review from this category.
- Submittal #076, "Project Meetings--Design Media for Periodic Progress Meetings." No entries in this category had been submitted to date.
- Submittal #077, "Project Meetings--Approved Design Media." The sole submittal in this category was reviewed.

6.2 PERFORMANCE OBJECTIVE VI.A

The design basis should be established, documented, and maintained. The design basis documentation includes the design inputs, design

constraints, design analysis, and calculations that support/justify the design. Documentation of the design basis is essential for correlation with the associated design requirements.

6.2.1 Discussion

At present, vendor calculations have not been released into the WHC documentation system. Typically, calculations received from vendors are released as VI in accordance with the requirements of WHC-CM-6-1, EP-3.3. Due to the fragmentation of the Hanford document control system and the fact that Project C-018H is a "turnkey" project, it is highly unlikely that these calculations will be released into the engineering release system in accordance with WHC-CM-6-1, EP-3.3. However, the documentation will be released by ICF KH at project completion and transmitted to BCSR for retention in the vendor files. Calculations from ADTECHS/vendors have been transmitted to ICF KH under Submittal category #077, "Project Meetings--Approved Design Media." The following specifications (some containing calculations) are listed as examples of design basis information submittals.

- Specification C-13G1-001, Rev. 1, "Structural Design Calculations."
- Specification C-13K1-001, Rev. 2, "HVAC Design Calculations."
- Specification S-1380-102, Rev. 1, "Power System Studies."
- Specification S-1131-103, Rev. 1, "Construction Specification, Vol. II."

With regard to facility safety documentation being available to describe the "safety envelope" and systems important to safe operations, WHC-SD-C018H-PSAR-001, "Preliminary Safety Analysis Report (PSAR)," has been released into the WHC document system. The Final Safety Analysis Report (FSAR) is currently in work, and should be issued before startup of operations.

Current plant design requirements that include the design basis information appear to be contained in applicable system specifications submitted by ADTECHS. As an example, S-1222-001, Rev. 0 (submittal #064/V1), contains the following design requirements and information.

1. Lists applicable requirements for standardizing the units of measurement, e.g., area=square feet; gas pressure=pounds per square inch (psi); temperature=air: degrees Fahrenheit, waste: degrees Celsius; contaminate concentrations=parts per billion (ppb), etc.
2. Specifies acceptable design standards for the basic design:
 - References D/C specification V-C018HC1-001 for the basic design.

- Requires that drawing and Cadfile numbering be in accordance with SDC-1.3 "...which can be found in Vol. 8 of 14 of the DOE documents sent with the RFP."
- Drafting is to be done in accordance with ANSI Y14.1, 1980, with very minor exceptions as described in SDC-1.3. Drawings shall be made using Autocad version 10 or later, and printed on "E" size paper.
- "Hanford Plant Standards (HPS) exist to define symbols to be used on drawings, but those standards have not been transmitted to us. Our ASA Y32.11-1961 is not current, but shall be used until further notice."
- Identifies site conditions such as weather (humidity, lowest temperature for freeze protection, etc.). Refers to a Safety Class 3 structure in SDC-1.4, Vol. 8 of 14 of the referenced standards (attached to the RFP).
- Identifies the function and capacity of the facility, including sources of influent, characteristics of influent, treatment targets (referenced in Appendix H of the D/C Specification), operating efficiency, e.g., throughput shall be 150 gpm at a total operating efficiency of 72 percent, etc.
- Addresses the Environmental Protection treatment targets for the removal of contaminants (also given in Appendix H of the D/C Specification). This specification also references those contaminants not addressed/identified in Appendix H to Appendix A in WHC-CM-7-5.

In addition to the above types of information, S-135A-002, Rev. 0, (submittal #064.B/V5) contained additional requirements including the following.

- a. Quality Assurance requirements are identified, including the requirement that the vendor and subordinate manufacturers have a documented inspection, testing, and documentation program that ensures equipment furnished meets the requirements of the specification.
- b. Documentation is to be provided at the conclusion of design, procurement, and the manufacturing phases, and before shipment a "Certificate of Conformance" shall be provided stating that all referenced standards, specifications, codes, and procedures have been complied with.
- c. Documentation and submittals shall be submitted and prepared in accordance with Section 01730 of the D/C Specification, V-C018HC1-001.

As mentioned in Item 1 above, design basis information such as calculations are also being provided by the contractor in the referenced specifications.

6.2.2 Concerns

- a. The transmittal forms provided to the document processing center by the vendor(s) do not identify or list all of the documentation being transmitted in the package. The transmittal should identify and account for all of the documents or data being submitted under that transmittal.
- b. The design authority for "turnkey" projects (ICF KH for Project C-018H) has not identified or provided the applicable requirements or documents to the vendor. The contractor cannot be expected to comply with specific requirements, if those requirements are not identified, or the vendor is not contractually obligated to comply with a certain requirement. See paragraph 3, Item 2, fourth bullet above.
- c. Another concern is the turnover of documentation at completion of construction. At present, it appears that the bulk of the documentation required by operations for facility operations, maintenance, etc., will be processed by ICF KH simultaneously and in a large quantity at turnover. The concern is that if it takes six months to process the turnover packages, it will not be readily available for operational use. The documentation should be processed to the operating contractor as soon as possible, and/or as it is approved for use to avoid the deluge of information at project turnover.

APPENDIX A

ASSESSMENT PLAN FOR PROJECT C-018H, 200 EAST AREA EFFLUENT TREATMENT FACILITY

This document provides performance objectives and criteria for assessing compliance to operational requirements for the 200 East Area Effluent Treatment Facility (ETF). The performance objectives are statements of broad management objectives, while the criteria are more narrowly focused statements of desired activities that meet the performance objectives. The performance objectives and criteria have been extracted from documents that stipulate requirements for Project C-018H including:

1. V-C018HC1-001, "Design Construction Specification, Project C-018H, 242-A Evaporator/PUREX Plant Process Condensate Treatment Facility."
2. Hanford Plant Standards, Standard Design Criteria (SDC)-1.3, "Preparation and Control of Engineering and Fabrication Drawings."
3. WHC-SD-C018H-RRR-001, "Readiness Plan for the 200-E Area Effluent Treatment Facility."
4. WHC-CM-6-1, Standard Engineering Practices.
5. WHC-SD-ETF-PLN-002, "Transition Plan, Project C-018H, 200-E Area Effluent Treatment Facility."
6. DOE-STD-1029-92, DOE Standard, Writer's Guide for Technical Procedures.
7. WHC-SD-GN-UM-30009, "Archival of CAD Datasets Produced by Offsite A-Es."
8. WHC-CM-3-5, Document Control and Records Management Manual.
9. Construction Specification Institute (CSI), Manual of Practice.

This appendix is organized into six sections. A section was developed to addresses each of the six major areas to be assessed, including as-built drawings, specifications, procedures, vendor information, quality assurance records, and design basis information.

The assessment will evaluate the effectiveness of existing programs, procedures, and controls in meeting the identified performance objectives. Where performance objectives have not been attained, a concern will be identified and recommendations for corrective action provided.

APPENDIX A

ASSESSMENT PLAN FOR PROJECT C-018H, 200 EAST AREA EFFLUENT TREATMENT FACILITY (cont.)

I. AS-BUILT DRAWINGS

A. PERFORMANCE OBJECTIVE

Hanford Site drawings fall into two categories, "H" or "SK" series drawings. Drawings are used to document conceptual designs, modifications, prototype designs, construction, fabrication, and non-fabrication work. "H" or "SK" drawing numbers shall be issued and controlled by the Hanford Operating/Engineering (O/E) Contractor.

Criteria

1. The O/E Contractor is responsible for assigning engineering drawing numbers and maintaining accountability of all engineering drawings and CAD datasets.
2. Hanford onsite contractors shall submit CAD data files for retention into the Hanford CAD Archival System concurrent with the release of the hard copy engineering drawings (i.e., upon completion of construction and turnover to WHC for operations).
3. Approved drawings shall be transmitted to the O/E Contractor for reproduction, distribution, microfilming, and storage.

B. PERFORMANCE OBJECTIVE

"H" series drawings shall be prepared to depict permanent installation of facilities, hardware, and equipment. These drawings are permanent records, and subject to "as-built" requirements at the completion of construction or fabrication.

Criteria

1. Vendors, design contractors, or A-E contractors shall provide "as-built" engineering drawings with all engineering changes incorporated and field verified.
2. As-built revisions shall reflect the actual completed installation substantiated by field inspection. The statement "as-built" is entered in the description column of the drawing. (Reference SDC-1.3, Section H.6.)
3. As-built documentation is verified through design verification and field inspection to ensure that the engineering document accurately represents the as-constructed and as-installed configuration.

APPENDIX A

ASSESSMENT PLAN FOR PROJECT C-018H,
200 EAST AREA EFFLUENT TREATMENT FACILITY (cont.)

4. As-built engineering drawings and CAD datasets shall be released concurrently to the O/E Contractor.

C. PERFORMANCE OBJECTIVE

Engineering drawings prepared and approved by an A-E shall be prepared in accordance with SDC-1.3. Drawing sizes, material, arrangement, assignment of building/index numbers, and other general format requirements shall comply with SDC-1.3.

Criteria

1. Size of drawings shall comply with five standard sheet sizes specified in SDC-1.3, Section B, and Section G, Figure 2.

<u>Size</u>	<u>Dimensions in inches</u>
A	8 1/2 x 11
B	11 x 17
C	17 x 22
D	22 x 34
F	28 x 40

2. Manually drafted drawings shall be drawn on 4 or 5 mil polyester drafting film, matte both sides, with 8 x 8 per inch, blue nonreproducing cross section grid, 8th lines heavy (reference SDC-1.3, Section C).
3. CAD drawing material shall be 3 mil minimum drafting film, matte on one side, or 100% rag vellum, 17 pound minimum (reference SDC-1.3, Section C).
4. The title block shall be sized and configured as identified in SDC-1.3, Section D.3.(4) and Section G, Figure 2.
5. The revision block shall be sized and configured as identified in SDC-1.3, Section D.3.(5).
6. The CADFILE and CADCODE identifiers shall be assigned as specified by SDC-1.3, Section D.3.(8) and WHC-SD-GN-UM-30009, "Archival of CAD Datasets Produced by Offsite A-Es."
7. When twenty or more drawings are prepared for a single project, a list of all drawings shall be made on a separate sheet showing the drawing number, index number(s), and drawing title in accordance with SDC-1.3, Section E.5.

APPENDIX A

ASSESSMENT PLAN FOR PROJECT C-018H,
200 EAST AREA EFFLUENT TREATMENT FACILITY (cont.)

8. Lettering shall be all upper case gothic except where lower case is standard (e.g., Na, Km, g.). Letters and figures shall be at least 1/8 inch high. (Reference SDC-1.3, Section E.5.).
9. As a minimum, each drawing shall show the names of the originator and checker. The initials and surname of the originator shall be written or printed. The initials and surname of the checker shall be written. (Reference SDC-1.3, Section E.10. and Section G.1.(13) & (14).).
10. The official project title preceded by the project number shall be used where applicable. The (drawing) title shall not include the project or building number and shall include the area number only for area-wide presentations. (Reference SDC-1.3, Section G.1.(3); Figure 2; Section G.1.(2)b., respectively.)
11. The current revision number shall be used. "0" shall be used for initial release. Only released (issued) drawings can be revised and each subsequent revision shall be released before another revision can be made. (Reference SDC-1.3, Section G.1.(7) and Section H.2., respectively.)
12. Building numbers shall be assigned before the drawing is approved. (Reference SDC-1.3, Section G (4).)
13. Index numbers shall be listed in Appendix A (of SDC-1.3). A number shall be used for each major category and is required on each drawing. (Reference SDC-1.3, Section G (5).)
14. Existing equipment shall be referenced by a VI number when such exists. (Reference SDC-1.3, Section I.2. and Figure 4.)
15. The "Next Used On" space is provided where it is applicable to link together certain drawings such as subassembly, detail, and installation drawings. Drawings shall be linked by referencing the parent drawing, i.e., the next level or generation up. Drawing list numbers shall not be placed in this space. (Reference SDC-1.3, Section I.2.(3).)
16. Existing drawings that are modified by the work depicted on a drawing are entered into the drawing traceability list. (Reference SDC-1.3, Section J.)

APPENDIX A

ASSESSMENT PLAN FOR PROJECT C-018H, 200 EAST AREA EFFLUENT TREATMENT FACILITY (cont.)

17. Legibility and contrast of media shall be capable of maintaining enough clarity that a fifth-generation copy that has every line, number, and character clearly readable. Drawings shall be prepared so that prints are legible when reduced on microfilm and then re-enlarged. (Reference WHC-CM-3-5, Section 12.3; SDC-1.3, Section E.4.)

II. SPECIFICATIONS

A. PERFORMANCE OBJECTIVE

Specifications shall be prepared to document needed requirements, including product delivery, handling and storage, execution of work, type of materials, acceptance criteria, submittal and documentation requirements, and the quality of workmanship. The minimum requirements shall be clearly and concisely stated and consistent with the intended use.

Criteria

A specification shall be prepared and issued for use by Project C-018H to identify and document the above objective.

B. PERFORMANCE OBJECTIVE

The format and content of specifications shall comply with WHC internal procedural requirements and the CSI Manual of Practice, which contains editorial and content guidelines and sample specifications.

Criteria

1. Unique identifying numbers shall be issued by the O/E Contractor (WHC) for engineering specifications prepared by or for WHC, unless the onsite A-E (ICF KH) was the preparer and has assigned its own unique identifying number. (Reference WHC-CM-6-1, Standard Engineering Practices, EP-1.2, "Engineering Specifications," paragraph 2.4.)
2. The engineering specification's number, revision, and page number shall be recorded on each page of the specification. Construction specification pages shall be numbered and formatted to comply with the CSI Manual of Practice. (Reference also WHC-CM-6-1, EP-1.2, paragraph 2.1, Item 6, and paragraph 2.3, Item 3.)

APPENDIX A

ASSESSMENT PLAN FOR PROJECT C-018H, 200 EAST AREA EFFLUENT TREATMENT FACILITY (cont.)

3. The method of recording approval signatures shall be via the EDT. Approved engineering specifications shall be sent to a WHC configuration documentation work station for release. (Reference WHC-CM-6-1, paragraphs 2.5 and 2.6, respectively.)
4. Initial release is the indication by a release stamp on a (usually) Rev. 0 engineering document that the engineering document (including specifications) has been reviewed, approved, and is authorized for issue, and may be used for procurement, fabrication, construction, or operations. (Reference WHC-CM-6-1, Glossary, definition of "Release, Initial;" EP-1.7, "Engineering Document Approval and Release Requirements.")
5. Construction specifications shall have a cover sheet. (Reference WHC-CM-6-1, EP-1.2, Section 2.3, Item 2.)
6. Engineering specifications that potentially contain limited use information shall be reviewed in accordance with WHC-CM-3-4. (Reference WHC-CM-6-1, EP-1.2, paragraph 2.5, Item 3.)
7. The cognizant organization shall identify the cognizant engineer of the specification. A change of cognizant engineer or cognizant organization shall be by memo to the configuration documentation work station. (Reference WHC-IP-1026, EPG-1.2, paragraph 1.0, Item 1.)

III. PROCEDURES

A. PERFORMANCE OBJECTIVE

A primary objective of DOE is that operations be conducted in a safe, deliberate, and controlled manner. Providing sound procedures and requiring their use are among the most formal, direct, and effective methods available to facility managers to ensure safe and efficient operations. Procedures provide managers with the tool to communicate detailed expectations for how workers are to perform those specific tasks in a safe and efficient manner.

Criteria

1. The procedure identifies the end user and is written to a level of detail compatible with the user's level of experience and training.
2. The procedure defines the specific task(s) to be accomplished.

APPENDIX A

ASSESSMENT PLAN FOR PROJECT C-018H, 200 EAST AREA EFFLUENT TREATMENT FACILITY (cont.)

3. The procedure describes "why" and "when" the task(s) are to be accomplished.
4. Procedures are documents for operators of a facility, and operators are a significant source of information for development of the procedure. The procedure should have involvement of the operational organization and its personnel through the procedure development cycle, including preparation, verification, and validation of the procedure.

B. PERFORMANCE OBJECTIVE

Procedures must be technically and operationally accurate, up-to-date, and easy to follow. Workers will not use nor have confidence in procedures that do not meet this objective.

Criteria

1. The procedure addresses all applicable technical and administrative requirements.
2. The procedure relates to and adequately references other applicable and affected procedures for the specific SSC within the facility.
3. The materials, equipment, and facilities to be used in implementing the process described by the procedure are identified.
4. The entire procedure is clear, concise, valid, and consistent with other applicable/affected procedures.
5. The procedure outlines where and how the task(s) are to be accomplished.
6. Can the procedure be performed in the sequence it is written?
7. Can the user/operator locate and identify all equipment referred to in the procedure?
8. Can the user perform the process prescribed by the procedure without obtaining additional information or assistance from persons or procedures not specified by the procedure?
9. Startup procedures. Complete and detailed starting instructions for all equipment furnished should be provided, noting the step-by-step procedure to be followed for starting the equipment, and precautions and critical points to be observed, noted, and emphasized, as required.

APPENDIX A

ASSESSMENT PLAN FOR PROJECT C-018H, 200 EAST AREA EFFLUENT TREATMENT FACILITY (cont.)

10. Operating procedures. Complete and detailed operating procedures should be provided for all equipment furnished, including precautions and critical points to be observed, possible operating difficulties, and probable causes listed and remedial action to be taken for each incident. Special tools required to operate the equipment should be specified.
11. Maintenance procedures. The maintenance procedures should include those steps required to disassemble and assemble the equipment and its components. The instructions should also include settings, clearance, and adjustment data for all equipment covering instrument settings for operation, alarm and shutdown, and operating clearances for equipment and adjustments for proper operation. Replacement parts should be listed, including the part name, part number, and recommended quantity to stock as spares. Special tools required to maintain or repair the equipment should be specified.
12. Preventive Maintenance/Periodic Testing. Tests, inspections, and parts renewal to be performed after various periods of operation should be included. The frequency of performance should be included.
13. The procedures should include a tabulation of the operating parameters for temperature, pressure flow, etc., indicating readings for normal operation (including ranges) and setpoints for instrument alarms.

C. PERFORMANCE OBJECTIVE

The technical, management control, and design bases documents provide much of the information used in developing a facility's procedures. In many DOE facilities, basis documentation is out-of-date, incomplete, or not yet developed. This information must be created and/or maintained, as any change to the bases for facility operations will likely require procedure revisions.

Criteria

1. An administrative program is established to ensure that modifications to systems important to operations are adequately reflected in revised operations procedures.
2. Adequate procedures are in place and implemented to inform operations personnel of equipment and systems that are deactivated, inoperable, and/or removed from service.

APPENDIX A

ASSESSMENT PLAN FOR PROJECT C-018H, 200 EAST AREA EFFLUENT TREATMENT FACILITY (cont.)

D. PERFORMANCE OBJECTIVE

A facility's procedures define how requirements, management philosophies and strategies, and technical knowledge will be integrated and applied to performing work in a facility. The overall safe operation of the facility depends upon the interrelationship of requirements, the bases documentation, and the facility's procedures, all of which define the facility safety envelope.

Criteria

1. The procedure maintains the safety envelope of the facility. (The safety envelope is defined as those interrelated elements that are minimum bases required to ensure safe operations of a facility.) The elements of the safety envelope are the design basis, design verification, functional test results, safety analysis, operating limits, surveillance requirements, and operating and maintenance procedures. The procedures are based on the same technical information, operational data, and analyses that were used in establishing the safety envelope. The procedure preparer must therefore identify, assemble, and document the technical basis for the procedure.
2. Procedures for operations reflect the configuration of all systems important to safe operations and environmental compliance, including the following:
 - Operations procedures have been verified to reflect the current configuration of systems important to safe operations and environmental compliance.
 - When appropriate, the sequence for conducting operations and plant equipment lineups is specified and understood.
 - Technical details are correct and consistent among procedures, drawings, system descriptions, etc.
3. The adequacy of operating procedures is demonstrated during equipment and system operability checks.
 - A program is in place to verify that operating procedures prescribe correct performance as written and are "user friendly."
 - The startup test program is used to verify that existing procedures support safe operations.

APPENDIX A

ASSESSMENT PLAN FOR PROJECT C-018H, 200 EAST AREA EFFLUENT TREATMENT FACILITY (cont.)

- Administrative procedures are in place that explicitly identify and correct procedural inadequacies and conflicts, and identify action to be taken when procedures are found to be inadequate for the intended task or when unexpected results occur.
4. Operations test procedures for systems important to safe operations include approved engineering design acceptance criteria.

IV. VENDOR INFORMATION

A. PERFORMANCE OBJECTIVE

Vendor information shall be ordered, received, controlled, and maintained by the O/E Contractor to support facility operations, maintenance, modification, and D&D activities.

Criteria

1. The quantity, quality, and type of VI requested and received from the contractor/vendor meets the terms and conditions of the applicable procurement document, statement of work, contract, etc.
2. VI is legible, reproducible, and suitable for the use for which it was purchased/intended.
3. The vendor submittal/material is presented in a clear, concise, and logical manner.
4. The VI shall be uniquely identified.
5. The VI shall be identified in the engineering documentation (i.e., on the engineering drawing) and traceable back to the SSC or hardware item. Hardware shall be marked with the VI number.
6. All VI identified on the ICF KH Master Submittal List to support the project has been received, and the tracking history of submittals issued and maintained by Project Data Systems (PDS) at closeout of the project.

APPENDIX A

ASSESSMENT PLAN FOR PROJECT C-018H,
200 EAST AREA EFFLUENT TREATMENT FACILITY (cont.)

B. PERFORMANCE OBJECTIVE

Vendor Operations and Maintenance (O&M) manuals shall be ordered, received, controlled, and maintained by the O/E Contractor to support facility operations, maintenance, and modification activities.

Criteria

1. Ensure that the manual is applicable to installed plant equipment.
2. The manual is legible, reproducible, and the material is presented in a clear, concise, and logical manner.
3. Check the manual for adequate information in the following areas. Some information may require incorporation into applicable plant procedures.
 - Equipment technical data. Design data should be included. Information on horsepower, kilowatts, voltage, amperage, pressure, temperature, flow, rpm, cooling or heating requirements, fastener torque values, etc., should be provided. The operating characteristics and requirements of the equipment should match the application requirements of the plant.
 - Equipment description. The equipment description(s) should include all components and subassemblies, including major parts, and fully describe the function of all controls, indicators, and instruments.
 - Installation instructions. Unpacking, installing, aligning, checking, and testing of the equipment before operation should be covered.
4. Troubleshooting guidelines should be provided. Possible equipment malfunctions, probable cause, method of detection, and corrective action should be provided.
5. Drawings referenced in the manual(s) should be included as a section of the manual. Wherever possible, these drawings should include the outline, cross-sectional, assembly, piping, and electrical elementary and connection diagrams.

APPENDIX A

ASSESSMENT PLAN FOR PROJECT C-018H, 200 EAST AREA EFFLUENT TREATMENT FACILITY (cont.)

V. QUALITY ASSURANCE RECORDS

A. PERFORMANCE OBJECTIVE

Quality assurance records shall be identified and provided to the O/E Contractor and maintained/retained for the life of the facility to support facility operations, maintenance, modifications, and decontamination and decommissioning activities.

Criteria

1. The records need not be originals, but shall be reproducible to the fourth generation when reproduced in any media. If this level of legibility is not achievable, the copy shall be identified as the "Best Available Copy."
2. The records shall be uniquely numbered or identified and paginated in a manner that allows for easy reassembly of the record in the correct order.
3. Records shall be generated using a permanent, reproducible black ink whenever possible. Signatures should be affixed, and handwritten corrections made, using a black, medium point ball point pen whenever possible. Use of pencil is discouraged, and the use of water soluble ink is prohibited.

B. PERFORMANCE OBJECTIVE

Quality records shall be identified within the configuration management program and maintained consistent with the physical configuration and design requirements of the facility.

Criteria

1. Sufficient information should be provided with the record or on the transmittal to permit correlation between the record and the item(s) or activity(ies) to which it applies.
2. The records are considered valid only after stamping, initialing, or signing and dating by authorized personnel, or otherwise authenticated by the preparing organization.

APPENDIX A

ASSESSMENT PLAN FOR PROJECT C-018H, 200 EAST AREA EFFLUENT TREATMENT FACILITY (cont.)

VI. DESIGN BASIS INFORMATION

A. PERFORMANCE OBJECTIVE

The design basis should be established, documented, and maintained. The design basis information includes the identification of design inputs, applicable design constraints, and system design analysis and calculations. Documentation of the design basis is essential for correlation with associated design requirements.

Criteria

1. All vendor calculations shall be released into the WHC documentation system as VI in accordance with WHC-CM-6-1, EP-3.3.
2. Facility safety documentation is in place that describes the safety envelope of the facility.
3. Systems important to safe operations have been identified in the FSAR. Verify that systems important to safe operations are adequately defined, identified, and described in the FSAR or engineering documents.
4. When applicable, Technical Safety Requirements (TSRs) have been established for systems important to safe operations and environmental compliance.
5. Applicable Operating Specification Documents (OSDs) and TSRs are within the FSAR design bases for systems important to waste handling operations.
6. An adequate configuration management program is in place to ensure necessary change and drawing control of plant SSCs and that changes are reflected in training, procedures, and maintenance instructions.
 - Current plant design requirements are readily available to facility staff and used in designing plant changes, preparing facility procedures, and troubleshooting.
 - Management should ensure that changes to the facility are warranted and properly controlled.
 - Design documentation should be current and reflect the facility as-built configuration.

APPENDIX B

PROJECT C-018H, PROCEDURE SURVEY/QUESTIONNAIRE

PROCEDURE NO.: _____
REV. NO.: _____
TITLE: _____

A. PERFORMANCE OBJECTIVE

A primary objective of the DOE is that operations be conducted in a safe, deliberate, and controlled manner. Providing sound procedures and requiring their use are among the most formal, direct, and effective methods to ensure safe and efficient operations. Procedures provide the tools to communicate detailed expectations for how workers are to perform those specific tasks in a safe and efficient manner.

Criteria

1. Does the procedure identify the end-user, and is it written to a level of detail compatible with the user's level of experience and training?

2. Does the procedure define the specific task(s) to be accomplished?

3. Does the procedure describe "why" and "when" the task(s) are to be accomplished?

4. Procedures are documents for operators of a facility, and operators are a significant source of information for development of the procedure. Does the procedure have involvement of the operational organization and its personnel through the procedure development cycle, including preparation, verification, and validation of the procedure?

APPENDIX B

PROJECT C-018H, PROCEDURE SURVEY/QUESTIONNAIRE (cont.)

B. PERFORMANCE OBJECTIVE

Procedures must be technically and operationally accurate, up-to-date, and easy to follow. Workers will not use nor have confidence in procedures that do not meet this objective.

Criteria

1. Does the procedure address all applicable technical and administrative requirements?

2. Does the procedure relate to and adequately reference other applicable and affected procedures for the specific SSC within the facility?

3. Are the materials, equipment, and facilities to be used in implementing the process described by the procedure identified?

4. Is the procedure is clear, concise, valid, and consistent with other applicable/affected procedures?

5. Does the procedure outline where and how the task(s) are to be accomplished?

6. Can the procedure be performed in the sequence it is written?

7. Can the user/operator locate and identify all equipment referred to in the procedure?

APPENDIX B

PROJECT C-018H, PROCEDURE SURVEY/QUESTIONNAIRE (cont.)

8. Can the user perform the process prescribed by the procedure without obtaining additional information or assistance from persons or procedures not specified by the procedure?
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9. Startup procedures. Are complete and detailed starting instructions for all equipment provided, noting the step-by-step procedure to be followed for starting the equipment, and precautions and critical points to be observed, noted, and emphasized, as required?
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10. Operating procedures. Are complete and detailed operating procedures provided for all equipment furnished, including precautions and critical points to be observed, possible operating difficulties, with the probable causes listed and remedial action to be taken for each incident? Are special tools required to operate the equipment specified?
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11. Maintenance procedures. Do the maintenance procedures include those steps required to disassemble and assemble the equipment and its components? Do the instructions include settings, clearance, and adjustment data for all equipment covering instrument settings for operation, alarm and shutdown, and operating clearances for equipment and adjustments for proper operation? Are replacement parts listed, including the part name, part number, and recommended quantity to stock as spares? Are special tools required to maintain or repair the equipment specified?
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12. Preventive Maintenance/Periodic Testing. Are tests, inspections, and parts renewal performed after various periods of operation identified? Is the frequency of performance included?
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APPENDIX B

PROJECT C-018H, PROCEDURE SURVEY/QUESTIONNAIRE (cont.)

- Are administrative procedures in place that explicitly identify and correct procedural inadequacies and conflicts, and identify action to be taken when procedures are found to be inadequate for the intended task or when unexpected results occur?
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4. Do operations test procedures for systems important to safe operations include approved engineering design acceptance criteria?
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