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35 Station 21

ENGINEERING DATA TRANSMITTAL

Page 1 of 1
1. EDT 606306

2. To: (Receiving Organization) Process Systems	3. From: (Originating Organization) Process Systems	4. Related EDT No.: N/A
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16.				KEY				

Impact Level (F)	Reason for Transmittal (G)	Disposition (H) & (I)
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1	1	Cog.Eng./ J.B. Crystal	<i>J.B. Crystal</i>	8/3/94	R3-86	J.I. Dearing	<i>John Dearing</i>	9/1/94	N1-32	1	1
1	1	Cog. Mngr./ J.R. Frederickson	<i>J.R. Frederickson</i>	8/3/94	R3-86	E.W. Gerber			R3-86	3	
3		Facility Compliance/ D.J. Watson			X0-41	J.D. Mathews			X3-68	3	
3		Facility Safety/ C.L. Bennett			X0-44	F.W. Moore	<i>F.W. Moore</i>	9/1/94	N1-25	1	1
3		Safety/ J. C. Hamrick			T4-18	J.P. Schmidt			X3-73	3	
1	1	QA/ D.W. Smith	<i>D.W. Smith</i>	8/3/94	L6-35	D.L. Sherrell	<i>D.L. Sherrell</i>	8/3/94	R3-86	1	1
1	1	C.J. Alderman	<i>C.J. Alderman</i>	8/3/94	N1-21	J.E. Truax			X3-71	3	
1	1	G.M. Davis	<i>D.W. Smith for</i>	8/3/94	X1-80	M.J. Wiemers		9/1/94	R3-86	3	1

18. <i>D.L. Sherrell</i> D.L. Sherrell Signature of EDT Originator Date 8/10/94	19. <i>D.L. Sherrell for</i> J.R. Frederickson Authorized Representative Date 8/10/94 JAF for Receiving Organization	20. <i>R.W. Moore</i> J.R. Frederickson Cognizant/Project Engineer's Manager Date 9/2/94	21. DOE APPROVAL (if required) Ltr. No. ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments
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Document Number: WHC-SD-SNF-WP-001, Revision 0

Document Title: 105-KE Basin Pilot Run Design Plan

Release Date: September 27, 1994

* * * * *

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WHC Information Release Administration Specialist:

M. Boston

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5. Key Words Pilot Run, ecapsulation, spent nuclear fuel, KE Basin.	6. Author Name: D. L. Sherrell <i>D. L. Sherrell</i> 9/14/94 Signature Organization/Charge Code 2C110 / KK5CB	
7. Abstract This document identifies all design deliverables and procedures applicable to the 105-KE Basin Pilot Run. It also establishes a general design strategy, defines interface control requirements, and covers planning for mechanical, electrical, instrument/control system, and equipment installation design.		
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105-KE BASIN PILOT RUN
DESIGN PLAN

JULY 1994

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105-KE BASIN PILOT RUN DESIGN PLAN

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ACRONYMS

ECN	Engineering Change Notice
EDT	Engineering Data Transmittal
EP	Engineering Practice (requirements from WHC-CM-6-1)
EPG	Engineering Practice Guideline (from WHC-IP-1026)
F&R	Functions and Requirements
I&C	Instrumentation and Control
ICD	Interface Control Drawings
ISA	Instrument Society of America
MRP	WHC Management Requirements and Procedures
P&ID	Piping and Instrumentation Diagrams
SD	Supporting Document
SEL	Safety Equipment List

105-KE BASIN PILOT RUN DESIGN PLAN

1.0 PURPOSE

The purpose of this document is to provide guidance for implementing the design phase of the KE Basin Pilot Run project.

2.0 SCOPE

This document augments and supports the *105-KE Basin Pilot Run Project Management Plan* (WHC-SD-SNF-PMP-001) by identifying all design deliverables and procedures applicable to the Pilot Run. This document establishes a general design strategy, defines interface control requirements, and covers planning for mechanical, electrical, instrument/control system, and equipment installation design. It also spells out applicable requirements, with particular emphasis on WHC-CM-6-1, EP-2.4 requirements for control of the process equipment designs (see section 4.2, below). Software design, if required, will be performed and controlled to the requirements of WHC-CM-3-10, as described in section 4.11, below.

3.0 ORGANIZATIONAL RESPONSIBILITIES AND INTERFACES

The *105-KE Basin Pilot Run Project Management Plan*, (WHC-SD-SNF-PMP-001) establishes fundamental organizational charters and interfaces for the design.

4.0 DESIGN CONTROL/DOCUMENTATION

Individual documents and activities that are required to complete, document, and implement the designs are defined in this section, along with the means by which they will be controlled.

The overall project shall be developed and controlled as a minor project along the general guidelines provided by WHC-IP-1026 EPG-2.0 (Engineering System Design Control). While design and fabrication of most Pilot Run test articles and at least some Pilot Run support equipment is expected to fall under the special development control provisions afforded by

WHC-CM-6-1 EP-2.4 (see section 4.2 below), all site installations shall be performed to drawings which have been prepared, released, and controlled per WHC-CM-6-1 EP-1.3 and EP-2.2. Where formally released supporting documents (SD) are required, they shall be prepared and controlled per EP-1.12 and EP-2.2.

4.1 SAFETY CLASSES

Equipment safety classes shall be determined and documented in accordance with the requirements of WHC-CM-1-3, MRP 5.46.

4.2 SPECIAL DEVELOPMENT CONTROL PROVISIONS

At the discretion of the cognizant engineer, fabrication and assembly drawings (but not KE Basin facility installation drawings) for first-of-a-kind equipment and/or equipment modifications may be controlled via the special provisions afforded by EP-2.4 (Development Control).

Figure 11 of WHC-IP-1026 EPG-1.0 depicts two markedly different levels of control which may be appropriate for design of test articles and other equipment under EP-2.4. The following subsections spell out conditions for application of these different levels of control (or formality) to design, fabrication/procurement, and assembly of Pilot Run test articles and support equipment.

4.2.1 Test Articles Designated Not For Facility Use

Where it would be beneficial to feature test a prototype component or assembly in a cold facility, prior to designing and fabricating the actual pilot run test article or Pilot Run support equipment item, the prototype may be fabricated and cold tested under the non-facility use provisions of EP 2.4.

4.2.1.1 Work Planning. Section 2.2-2 of EP 2.4 allows design and fabrication of non-facility use equipment to be controlled by an informal work plan. The work plan is required to identify the following:

- a. Description of the work to be performed, supported by applicable sketches, drawings, and specifications;
- b. Any restrictions and/or special conditions;
- c. Work order number and/or charge code number (not required for initial

design plan);

- d. Inspection/fabrication criteria (Hold points shall be established when critical features require verification.);
- e. Material requirements;
- f. Special testing requirements or practices;
- g. Shipping and handling instructions;
- h. Delivery date.

4.2.1.2 Control of Documentation. Section 2.3.2-1 of EP 2.4 allows the cognizant engineer to determine the degree of design documentation and change control appropriate for non-facility use hardware. Section 2.3.2-2 assumes that all drawings, sketches, or specifications are attachments to the informal work plan and requires that all changes to them be documented in accordance with a control method established within the informal work plan. It further requires that all changes be authorized by the cognizant engineer.

4.2.1.3 Control of Non-Facility Use Hardware. Section 2.3.2-3 of EP 2.4 requires that all "... hardware produced from informal workplan documentation ..." be clearly identified "not for use" and either properly disposed, or retained in segregated storage.

4.2.1.3.1 Disposition of Off-The-Shelf Hardware. The EP does not directly address disposition of off-the-shelf components (pumps, flow meters, etc.), which have been removed from non-facility use test assemblies. For the work covered by this design plan, off-the-shelf items purchased prior to release of a formal development control work plan may be incorporated into final pilot run assemblies which have been designed and fabricated under the formal work plan control provisions of section 4.2.2 below, provided that: (1) the purchased items have not been modified; and (2) the procurement actions for the items in question have been controlled and documented in accordance with requirements which are appropriate to the assigned Safety Class(s) of the associated pilot run assemblies (see sections 4.1 above, and 4.13 below).

4.2.1.4 Non-Facility Use Design Process Guidelines Guidelines for application of the non-facility use provisions of EP-2.4 are provided in section 3.0 of WHC-IP-1026 EPG-2.4. A schematic diagram of the engineering process for control of non-facility use hardware is provided in Figure 3 of EPG-2.4.

4.2.2 Hardware Destined for KE Basin

Where the intent is to fabricate test articles, Pilot Run support equipment, etc., which will eventually be operated at KE Basin, it will be necessary to maintain rigorous control throughout all stages of the design. Note, however, that fabrication and assembly of initial feature test articles and prototypes for cold testing need not be rigorously controlled, unless it is desirable to retain an option for eventual KE Basin testing of the hardware in question (see section 4.2.1 above).

The following subsections spell out the minimum design control requirements for fabrication/procurement and assembly of all hardware which will either be tested by the KE Basin Pilot Run or which will be installed at KE Basin to support the Pilot Run. Note that in the particular case of the Pilot Run, the minimum design control requirements are the "facility-use potential" sections of EP 2.4 (DEVELOPMENT CONTROL). Where more rigorous controls are considered desirable by the cognizant equipment development engineers, they may apply them at their discretion.

4.2.2.1 Work Planning. Section 2.2 of EP 2.4 requires that "the development process for hardware with facility-use potential" be documented by an engineering work plan which has been approved and released in accordance with EP-1.12. The work plan is required to identify the following:

- a) "A description of the work to be performed, supported by applicable ... drawings and specifications." For the purposes of this document, the appendices should include an itemized list of the H-1 drawing numbers, sheet numbers, and titles for all drawings to be used under the development control provisions of EP-2.4. The drawing list will effectively attach those drawings to this document (assumed by section 2.3.1-1 of EP-2.4).
- b) "Any restrictions and/or special conditions."
- c) "Work order number and/or charge code number." [Supply with the fabrication requests.]
- d) "Inspection/fabrication criteria. The cognizant engineer shall establish hold points when critical features require verification."
- e) "Material requirements."
- f) "Special testing requirements or practices."
- g) "Safety class designation in accordance with WHC-CM-4-46 " (Use WHC-

CM-1-3, MRP 5.46)

- h) "Approval designator assignment in accordance with WHC-CM-3-5, Section 12.7."
- i) "Shipping and handling instructions."
- j) "Delivery date." [Provide an overall schedule for design, fabrication, cold testing, and KE Basins installation.]

4.3 FUNCTIONS AND REQUIREMENTS

In addition to the overall project functions and requirements provided in WHC-SD-SNF-FRD-002, detailed functional descriptions and requirements (including performance requirements) shall be provided for all systems and major assemblies to provide and document the design bases. These may be issued as separate SDs, or included in the engineering work plan documents (see section 4.2 above). The functions and requirements shall be the basis against which all designs are ultimately reviewed and evaluated.

4.4 ENGINEERING DRAWINGS

The following sections address preparation and control of drawings and/or sketches used for fabrication, assembly, or installation of hardware.

4.4.1 Test Articles Designated Not For Facility Use

Shop fabrication of feature test articles and other prototype equipment which has been designated "not for facility use" per section 4.2.1 above, may be accomplished via informal sketches, formal drawings, or any combination of these deemed appropriate by the responsible cognizant engineer.

4.4.2 Hardware Destined for KE Basin

4.4.2.1 Drawing Format and Control All fabrication, assembly, and installation of facility-use hardware shall be performed using two dimensional, AutoCad format, H-1 drawings, drawn to the requirements of EP-1.3 (PREPARATION OF ENGINEERING DRAWINGS) and Appendix A of this document. All H-1 drawing numbers shall be assigned from a block of drawing numbers controlled by the cognizant design organization's designated lead designer.

4.4.2.2 Development Control Drawings. Per section 4.2 above, fabrication and assembly drawings (but not installation drawings) may be controlled via the special provisions afforded by EP-2.4 (DEVELOPMENT CONTROL). However, despite their acceptability per EP-2.4, engineering sketches shall not be used to control shop fabrication and assembly of any hardware with the potential for use at the KE Basin. This work will instead be performed using H-1 format drawings, prepared to the requirements of EP-1.3 and Appendix A of this document.

All unreleased fabrication and assembly drawings that are used (per section 2.3.1 of EP-2.4) to fabricate and/or assemble equipment shall be marked "development control." All changes, additions, or deletions shall be approved by the cognizant engineer's dated signature next to each change. Affected drawings shall not be revised by an Engineering Change Notice (ECN) while under development control. At the end of the fabrication and/or assembly process, all changes shall be formally incorporated onto the drawings, and the drawings shall be released per EP-1.7. This process shall include as-building, in accordance with section 2.4 (Prototype Conversion) of EP-2.4. Any discrepancies discovered during the as-building process shall be documented, evaluated, and dispositioned per section QI 15.1, "Nonconforming Item Reporting," of WHC's *Quality Assurance Manual*, (WHC-CM-4-2).

4.4.2.3 Three Dimensional Drawings. Unreleased three dimensional AutoCad drawings (i.e., sketches), may be used for conceptual design support purposes, and/or for figures in SDs, along with unreleased two-dimensional sketches. However, three dimensional drawings shall not be used for fabrication and/or assembly, nor shall they be released.

4.4.3 Drawing Types

The following subsections list and describe the types of drawings which will be issued to support fabrication, assembly, and installation of facility-use hardware.

4.4.3.1 Process Flow Diagrams (PFD). Process Flow Diagrams shall be issued as H-1 drawings to provide schematic process overview information which will be used to describe and control the functional design of all major assemblies and systems. The PFDs shall: outline the major process activities and material flow streams and track critical process information (e.g., material flow rates, etc.) All PFDs shall be released prior to installation of all systems, assemblies, and other equipment which they describe.

4.4.3.2 Interface Control. Interface Control Drawings as such, are not required for fabrication, assembly, nor installation of any equipment

associated with the Pilot Run project. In lieu of interface control drawings, all critical physical and functional interfaces (power connections, clear openings, installation/operating envelopes, etc.) shall be documented directly on other drawings, as appropriate. All physical interfaces shall be identified by enumerated interface control symbols (described in WHC-CM-6-3) on appropriate drawing views.

4.4.3.3 Installation Drawings. The installation drawing category covers all design information required for installation of major equipment assemblies and systems (including electrical and instrumentation). These typically include a combination of arrangements, elevations, layouts, and details. The detail drawings may include fabrication and assembly drawings for conduit supports, equipment foundations, and other detailed views required to install the major assemblies and systems.

4.4.3.4 Existing KE Basin Drawings. In addition to those new drawings required for installation of the Pilot Run Project, a number of ECNs may be required against existing KE Basin drawings to implement and document installation of the equipment into the Basin.

4.4.3.5 Fabrication and Assembly Drawings. The fabrication and assembly category covers all of the traditional layout, elevation, and detail drawings required to procure, fabricate, and/or assemble parts into major equipment assemblies. With a few exceptions (i.e., vendor drawings, or shop drawings for support equipment such as skid mounted hydraulic power systems, etc.) these drawings will be directed to the Westinghouse Hanford (WHC) shops for fabrication and/or assembly of the process equipment and/or equipment modifications. Therefore, most fabrication and assembly drawings will fall under the special development control provisions of EP-2.4, per section 4.4.2.2 above.

4.4.3.6 Instrumentation and Control Drawings. With the exception of electrical power drawings, the instrumentation and control category includes all drawings required to procure, fabricate/assemble and install the sensors, effectors, control equipment, instrument runs (including pneumatic sensor or control lines), and electrical signal wiring. While this category does include all required electrical instrument wiring and conduit runs, it does not include electrical power distribution drawings (see section 4.4.3.7 below). Typical drawing types include: circuit schedules; elementary wiring diagrams; electrical connection diagrams; wire run lists; panel assemblies; conduit runs; and pneumatic or hydraulic tube runs. Much of the required functional interface information could also be shown on these drawings. Any installation details which do not fall into the above mentioned drawing types may be placed on Installation Drawings, if desired.

4.4.3.7 Electrical Power Distribution Drawings. This category includes all drawings required to procure, fabricate/assemble and install motor control centers, breaker panels, and/or electrical power distribution wiring/conduit runs. Typical drawing types include: circuit and breaker schedules; elementary wiring diagrams; electrical connection diagrams; wire run lists; panel assemblies; and conduit. Much of the required functional interface information could also be shown on these drawings. Any installation details which do not fall into the above mentioned drawing types may be placed on Installation Drawings, if desired.

4.5 ENGINEERING SPECIFICATIONS

With the exception of procurements which utilize WHC produced detailed design drawings, engineering specifications shall be required for those procurement contracts that are not limited to off-the-shelf equipment (i.e., catalog items). In addition, any outside contracts for testing or assembly shall be controlled by an engineering specification. Such specifications shall be written to the requirements of EP-1.2 and EP-5.8.

4.6 VENDOR INFORMATION

Vendor information shall be documented per EP-3.3.

4.7 ENGINEERING ANALYSES

Various engineering analyses may be required to define design requirements and verify adequacy of designs. These analyses will generally fall into one of the following analysis categories: Structural, Shielding, Thermal, Seismic, Failure Modes and Effects, and various process specific categories (fluid flow, etc.). In most cases, these analyses will also be used to support a project level safety analysis.

4.8 EQUIPMENT NUMBERING

All electrical, pneumatic, and mechanical equipment items shall be uniquely identified. The controlling document for equipment numbering shall be the Installation Drawing (see section 4.4.3.3 above).

4.9 EQUIPMENT LIST

A listing of major equipment items shall be maintained as an uncontrolled report throughout the project design. The listing shall include equipment numbers, descriptive titles, and drawing numbers for the lowest level drawing which includes the equipment number for a given item (e.g., "UX001, Canister Unloading Table, H-1-XXXXXX).

4.10 UTILITY LOAD SUMMARY

A utility load summary shall be maintained as an uncontrolled report throughout the project design. The summary shall describe the electrical power requirements of all major equipment items by circuit size and type (e.g., "Pump No. XXXX: 50 kVA (60 Amps) of 480 V three phase"). It shall also list any significant requirements for other utilities (e.g., process water, compressed air, nitrogen, steam, etc.) to a similar level of detail.

4.11 SOFTWARE DESIGN

Software design, including preparation of analytical models for input to commercial programs, shall be performed and controlled to the requirements of EP-2.1. Where an analytical model is specific to a given analysis (e.g., a shielding analysis, etc.) the source code may be documented as part of the analysis in accordance with WHC-CM-3-10.

4.12 RADIOLOGICAL CONTROL DESIGN

4.12.1 Shielding

4.12.1.1 General Design Requirements. Guidelines for radiological design are provided in: (1) the *Hanford Site Radiological Control Manual* (HSRCM-1); (2) WHC-CM-4-9 (RADIOLOGICAL DESIGN); and (3) in WHC-CM-4-10 (RADIATION PROTECTION). The shielding design criteria specified in section 8 of WHC-CM-4-9 shall be used to determine the shielding requirements for different areas in the facility. As specified by Table 2-1 of HSRCM-1, the shielding design goal shall be that the maximum annual exposure to an individual from all sources must not exceed a cumulative 500 mRem, summed over all controlled access areas. The source term used for shielding design should be the maximum expected during normal operation. Consideration shall be given to normal operation, abnormal events, and maintenance activities. Where there is a potential for airborne contamination, allowance shall be made for internal deposition of radionuclides in determining the total dose. Allowable airborne

contamination levels are provided in WHC-CM-4-10. Source terms which may develop in operating areas, such as in closed-loop heating or cooling systems, shall be considered.

4.12.1.2 As Low As Reasonably Achievable (ALARA). Requirements to maintain radiation exposure levels As Low As Reasonably Achievable (ALARA) are provided in DOE Order 5480.11 and HSRM-1. Guidelines for achieving ALARA exposure levels are provided by DOE/EV/1830-T5. Westinghouse Hanford's implementation of the ALARA program is described in the ALARA PROGRAM MANUAL (WHC-CM-4-11).

4.12.1.3 Human Factors. All designs shall include consideration of human engineering and biomedical factors that affect human performance, as described and referenced in Appendix A (Human Factors Considerations) of WHC-CM-4-9, RADIOLOGICAL DESIGN.

4.13 QUALITY ASSURANCE PROGRAM PLAN

All design tasks shall be performed and documented in accordance with the requirements of the *Quality Assurance Program Plan (QAPP) for 105-KE Basin Spent Nuclear Fuel Pilot Run*, WHC-SD-SNF-QAPP-001 (WHC, 1994).

5.0 DESIGN VERIFICATION

All designs for facility-use equipment must be verified to meet all quality, performance, and safety requirements, as specified by the 105-KE Basin Pilot Run Functions and Requirements (WHC-SD-SNF-FRD-002), by the 105-KE Basin Pilot Run Test Plan (WHC-SD-SNF-TP-002), and/or by other applicable project documentation. Verification shall be performed to the requirements of EP-4.1. In addition to the formal design review described in section 5.1 below, which will combine all Pilot Run task inputs into a single, project level design review, the following types of verification may be employed to support the design of any given process or equipment item: (1) independent review, (2) alternate calculations; (3) qualification testing (4) informal review. These are described in sections 5.2 through 5.5 below. Results and other documentation from the various verifications performed shall be incorporated into the formal design review packages.

5.1 FORMAL DESIGN REVIEWS

As a minimum, a formal, project level design review shall be held just prior to design completion. Specific requirements for deliverables are given in section 5.1.1 below. In general, these will include all drawings and other documentation necessary to describe the equipment design, and all engineering

analyses or similar documents necessary to support the design.

The formal design reviews shall be conducted and documented in accordance with the requirements of EP-4.1. The design review report shall include a trackable comment action item list, which shall be made part of the permanent project file records.

5.1.1 Design Review Deliverables

The design review shall be conducted when the design is essentially complete. The purpose of this review is to verify the final design via examination by peers and outside experts. A formal design review package shall be distributed to the design review committee within 10 working days of the scheduled design review date. As a minimum, this package shall include the following:

- Executive Summary and Project Overview
- Project Level Functions & Requirements
- Project Level Design Plan
- Systems/Equipment Level Engineering Work Plans (including F&Rs)
- Shielding/Dose (ALARA) Analysis
- Process Flow Diagrams
- Equipment Design Analyses and Drawings
- Facility Modification Design Analyses, Drawings, and/or ECNs
- Seismic Evaluation

5.2 INDEPENDENT REVIEWS

The independent review process, as distinct from the larger formal review format required by section 5.1 above, would typically be used (in combination with alternate calculations) to obtain release of engineering analyses which support the design (e.g., stress analyses, shielding analyses).

Section 2.2.1 of EP-4.1 defines independent reviews as evaluations of the design conducted by competent individuals who did not produce the design. The reviewer(s) may be from the initiating cognizant engineering group. The

originator's manager may also perform the review, providing the manager did not specify a singular design approach, nor rule out certain design considerations, nor establish the design inputs.

5.3 ALTERNATE CALCULATIONS

Alternate calculations may be used to check and ensure the correctness and applicability of engineering analyses and/or pertinent design calculations, as described in EP-4.1, section 2.2.2.

5.4 QUALIFICATION TESTING

As stipulated by section 2.2.3 of EP-4.1, design adequacy may be verified through the use of laboratory or field tests on prototype or production hardware. In addition to the applicable requirements of EP-4.2 ("Testing Practices"), design verification by qualification testing shall be conducted and documented in accordance with the requirements of EP-4.1, section 2.2.3.

5.5 INFORMAL REVIEWS

As described in section 2.2.5 of EP-4.1, informal reviews may be conducted on all "not-final" design documents (e.g., engineering studies, test plans, functional criteria, preliminary drawings/specifications). In accordance with that EP, informal reviews may be documented on EDTs or ECNs, which are approved by the cognizant manager (as a minimum). They consist of an examination by the cognizant manager and/or other reviewers examining the design documents, providing comments informally, and indicating concurrence with the design by signature on the transmitting EDT or ECN.

6.0 REFERENCES

HSRCM-1, *Hanford Site Radiological Control Manual*
WHC-CM-1-3, *Management Requirements and Procedures*
WHC-CM-4-2, *Quality Assurance Manual*
WHC-CM-4-9, *Radiological Design Criteria*
WHC-CM-4-10, *Radiation Protection*
WHC-CM-4-11, *ALARA Program Manual*
WHC-CM-6-1, *Standard Engineering Practices*
WHC-CM-6-3, *Drafting Standards Manual*
WHC-IP-1026, *Engineering Practice Guidelines*
WHC-SD-GN-UM-30005, *Autocad Discipline Layering Conventions*
WHC-SD-SNF-PMP-001, *105-KE Basin Pilot Run Project Management Plan*
WHC-SD-SNF-FRD-002, *105-KE Basin Pilot Run Functions and Requirements*
WHC-SD-SNF-QAPP-001, *Quality Assurance Program Plan (QAPP) for 105-KE Basin
Spent Nuclear Fuel Pilot Run*

WHC-SD-SNF-WP-001 Rev. 0

APPENDIX A: DRAWING REQUIREMENTS

DRAWING REQUIREMENTS FOR KE BASIN PILOT RUN

1. All drawings shall be created with 1 Autocad unit equal to 1 inch.
2. Scales and/or settings not shown on the following table must be approved by the Design Service organization's designated Lead Designer.

SCALE	DIMSCALE	LTSCALE	DTEXT HEIGHT 1/8 1/4
FULL	1	0.375	0.125 / 0.25
1/2	2	0.75	0.25 / 0.5
1/4	4	1.5	0.5 / 1.0
1/8	8	3.0	1.0 / 2.0
1/16	16	6.0	2.0 / 4.0
1/2" = 1' - 0"	24	9.0	3.0 / 6.0
1/4" = 1' - 0"	48	18.0	6.0 / 12.0
1/8" = 1' - 0"	96	36.0	12.0 / 24.0

3. All drawings shall have H-1 numbers, assigned by the Lead Designer.
4. Neither Attributes nor Xrefs shall be used on this project.
5. Text style STANDARD shall have font set to Romans. Text style RD shall be created and set to text font Romand. Text styles STANDARD and RD will be the only styles used on this project. Any deviation must be approved by the Lead Designer.
6. PLINES shall be used only in special cases.
7. All drawings shall have a date within the title block. The date shall be revised each time the dateset is updated.
8. Drawings shall be plotted to 8.5 X 11, after each drawing session and forwarded to the Lead Designer. The Lead Designer shall maintain a log book of all project drawings, and a current copy of the drawings.
9. All drawing modifications and alterations (i.e., per design change) shall

be coordinated through the Lead Designer.

10. Drawing datasets shall be maintained and controlled by the Lead Designer prior to release.
11. Drawings shall be created to the current revision of WHC-CM-6-3 Level III.
12. Layers shall be used and set per WHC-SD-GN-UM-30005, Autocad Discipline Layering Conventions.
14. Drawings shall only be modified per Engineering Controlled red line markups once the drawings have been submitted to the fabrication shops.