

Preliminary Inspection Plan for SSSTF Construction Activities

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Bechtel BWXT Idaho, LLC*

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ABSTRACT

This plan establishes the preliminary inspection strategy for construction of the Staging, Storage, Sizing, and Treatment Facility. Upon issuance of the final design documents (for example, installation specifications and drawings), detailed inspection plans will be issued. These plans will provide the specific details and instructions for the contractor's representative (that is, the Bechtel BWXT Idaho certified inspector). The plans will incorporate the specific inspection requirements specified in the final design documents. This plan provides a brief summary of the planned inspections.

CONTENTS

ABSTRACT	iii
ACRONYMS	vii
1. INTRODUCTION	1
1.1 Purpose	1
1.2 History/Background.....	1
2. PLANNING INSPECTIONS.....	2
2.1 General Testing.....	3
2.2 Soils, Asphalt, and Concrete.....	3
2.2.1 Soils.....	3
2.2.2 Asphalt	4
2.2.3 Cast-in-place Concrete.....	4
2.2.4 Post-tensioned Concrete.....	4
2.2.5 Precast/Prestressed Concrete.....	4
2.2.6 Concrete Masonry Units	4
2.3 Secondary Containment Systems	5
2.3.1 Secondary Containment Liner.....	5
2.3.2 Decontamination Water System.....	5
2.4 Air Distribution Systems (Including HEPA Filter Housings)	6
2.4.1 Heating System	6
2.4.2 Air Distribution System	6
2.4.3 HEPA Filter Housings.....	6
2.5 Structural Steel and Metal Building Systems	6
2.6 Fire Protection Systems	6
2.7 Sterilization of Water Piping	6
2.8 Electrical and Communications Installations	6
2.9 Receiving Inspection	7
3. ORGANIZATION	8
4. CODES AND STANDARDS	9
5. REFERENCES	10

FIGURES

1. Map of INEEL and facilities.....	2
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ACRONYMS

AISC	American Institute of Steel Construction
ASME	American Society of Mechanical Engineers
ASNT	American Society of Nondestructive Testing
ASTM	American Society for Testing and Materials
AWS	American Welding Society
BBWI	Bechtel BWXT Idaho, LLC
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CMU	concrete masonry units
DOE-ID	Department of Energy Idaho Operations Office
EPA	Environmental Protection Agency
FFA/CO	Federal Facility Agreement and Consent Order
ICDF	INEEL CERCLA Disposal Facility
IDEQ	Idaho Department of Environmental Quality
IDHW-DEQ	Idaho Department of Health and Welfare Division of Environmental Quality
INEEL	Idaho National Engineering and Environmental Laboratory
INTEC	Idaho Nuclear Technology and Engineering Center
NDE	nondestructive examination
NEC	National Electrical Code
NFPA	National Fire Protection Association
NPL	National Priorities List
OU	operable unit
RD/RA	remedial design/remedial action
RI/BRA	remedial investigation/baseline risk assessment
RI/FS	remedial investigation/feasibility study
ROD	Record of Decision

SSSTF	Staging, Storage, Sizing, and Treatment Facility
TSCA	Toxic Substances Control Act
UBC	Uniform Building Code
UPC	Uniform Plumbing Code
WAG	waste area group

Preliminary Inspection Plan for SSSTF Construction Activities

1. INTRODUCTION

1.1 Purpose

This plan establishes the preliminary inspection plan for construction of the Staging, Storage, Sizing, and Treatment Facility (SSSTF). Upon issuance of the final design documents (i.e., installation specifications and drawings), detailed inspection plans will be issued. These plans will provide the specific details and instructions in which the contractor's representative (i.e., Bechtel BWXT Idaho, LLC [BBWI] certified inspector) will perform and document inspections. These plans will incorporate the specific inspection requirements specified in the final design documents. These inspections will include the areas specified in Section 2 Planning Inspections.

1.2 History/Background

The Idaho National Engineering and Environmental Laboratory (INEEL) (Figure 1), including the Idaho Nuclear Technology and Engineering Center (INTEC), was placed on the National Priorities List (NPL) in November 1989. A Federal Facility Agreement and Consent Order (FFA/CO) (DOE-ID 1991) was negotiated with the Environmental Protection Agency (EPA) and Idaho Department of Environmental Quality (IDEQ) (formerly Idaho Department of Health and Welfare Division of Environmental Quality [IDHW-DEQ]) to direct cleanup activities at the INEEL.

A comprehensive study, or remedial investigation/baseline risk assessment (RI/BRA) (DOE-ID 1997), was conducted to evaluate the nature and extent of soil and groundwater contamination at the INTEC. The results of the RI/BRA activities indicate that soil at certain release sites and groundwater contamination, pose a potential risk above acceptable levels to human health and the environment. Therefore, the Department of Energy Idaho Operations Office (DOE-ID) authorized a remedial design/remedial action (RD/RA) for the INTEC resulting in the Waste Area Group (WAG) 3, Operable Unit (OU) 3-13 Record of Decision (ROD) (DOE-ID 1999).

The ROD states that Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) -generated wastes from within the INEEL boundaries will be removed and disposed in the INEEL CERCLA Disposal Facility (ICDF). The ICDF Complex will be an on-Site facility for treatment and disposal of low-level, hazardous, mixed, and some Toxic Substances Control Act (TSCA) wastes. The ICDF Complex includes necessary subsystems and support facilities to provide a complete waste disposal system. The major components of the ICDF Complex are the disposal cells (referred to as the ICDF, and includes the evaporation ponds and leachate collection system) and the SSSTF.

The planned inspections of the SSSTF during construction will help ensure the facility is built to the design requirements and meets the needs of the ICDF Complex.

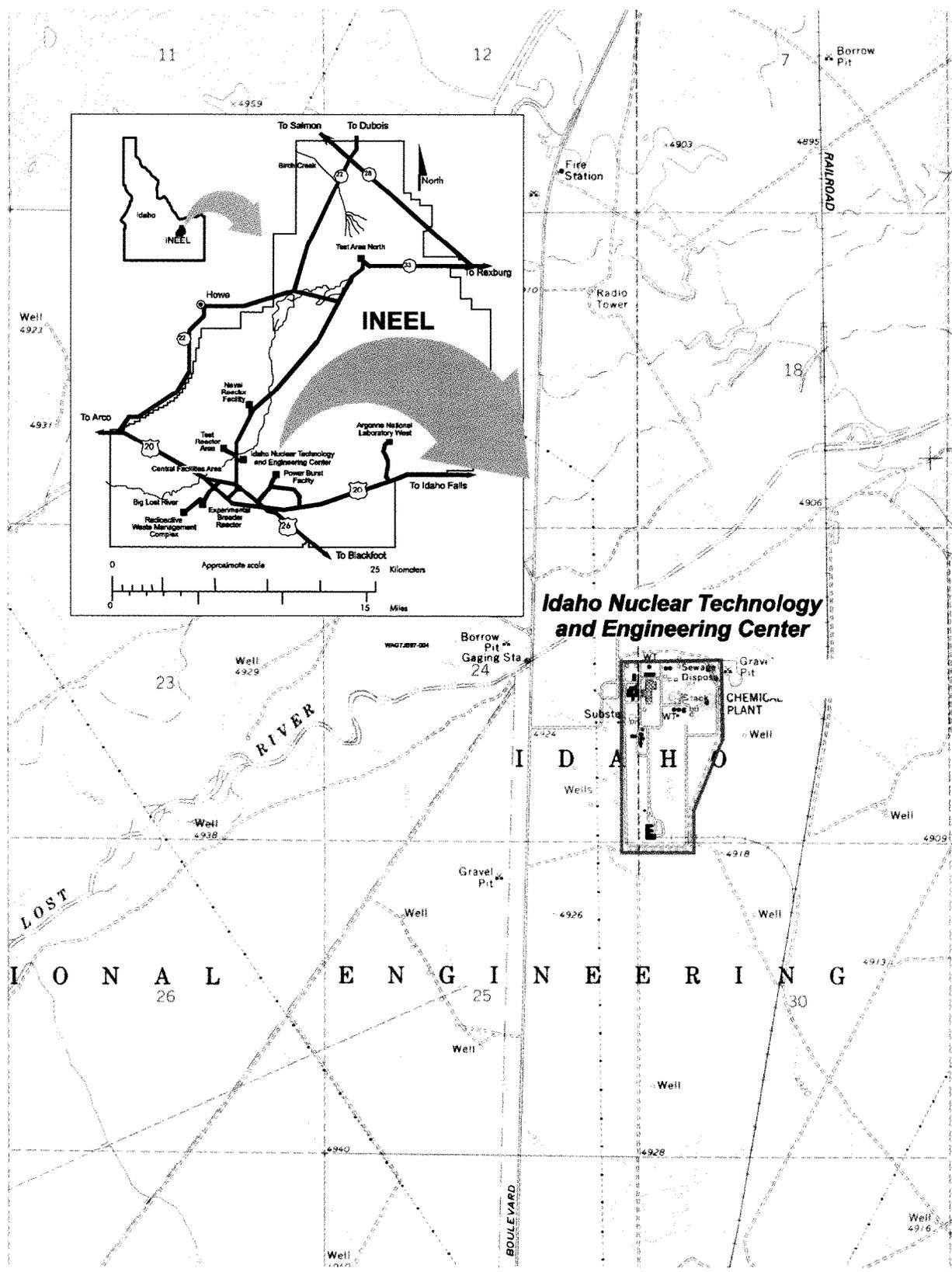


Figure 1. Map of INEEL and facilities.

2. PLANNING INSPECTIONS

The need for a high-level inspection plan was determined after the design review of the SSSTF. Recognizing that the detailed inspection plans could not be established until the final design documents were finalized, this plan was developed to define the overall scope and types of inspections planned for the SSSTF during construction. Inspection hold-points will be established based on the final design and specifications.

Hold points may include verification of slope before work may proceed; compaction tests at prescribed intervals or as deemed necessary by the inspectors; verification of reinforcing steel placement before concrete pours; compression testing of concrete before final acceptance; and continuity checks on electrical installation before termination. Additional hold points will be identified during the design review process.

There will be a general oversight to ensure installations comply with the specifications and drawings. This overview will consist of process monitoring (surveillances) to verify the quality of work in progress and compliance with applicable governing documents.

In addition to these overviews, there will be detailed inspections, either performed or witnessed, of the following areas.

2.1 General Testing

Inspection will include physical witnessing of construction activities; performance of civil, mechanical, and electrical tests specified in the specifications; and documentation of those inspections. At completion of construction, punch list(s) will be used during turnover of the project from construction to operations. Photographs may be used to document visual conditions of equipment, if deemed appropriate by the inspectors.

The detailed inspection plan will identify the specific civil, mechanical, electrical, etc. inspections needed to verify the SSSTF is installed in accordance with the specifications and drawings. BBWI internal inspection procedures MCP-2482 and MCP-2490 will be used to develop the inspection plans. The results of the inspections will be documented and documents will be available during on-site visits. Ultimately, the inspection documents will become part of the project file and designated as quality assurance records. The construction hold points will be provided to the Agencies in the weekly reports.

2.2 Soils, Asphalt, and Concrete

2.2.1 Soils

- Acceptance of the sub-grade surface by the contractor's representative and the liner manufacturer's representative is required before proceeding with the installation of the liner.
- The contractor's representative shall observe backfill and fill operations where compaction is required of the specification and measure density and moisture content, as deemed necessary, to ensure compaction meets the specification requirements.
- The BBWI inspector and the construction quality assurance monitor will ensure specified slope criteria are met.

2.2.2 Asphalt

The contractor's representative shall observe placement of asphalt and concrete and take random density tests to ensure asphalt meets requirements of the specification and mix design.

2.2.3 Cast-in-place Concrete

The contractor's representative shall

- Inspect completed formwork, reinforcing steel, and items to be embedded prior to concrete placement for compliance to specification and drawings
- Ensure concrete being placed is consistent with approved mix design
- Perform testing during the placement of the concrete to include slump, air content, concrete temperature, and the collection and testing of compression test specimens
- Observe placement of concrete to ensure compliance with the specification
- Witness or perform any required nondestructive testing used to determine relative strengths of concrete.

2.2.4 Post-tensioned Concrete

The contractor's representative shall

- Verify that tendons and accessories are as specified by the specification and the approved subcontractor's drawings
- Verify placement of tendons and conventional reinforcement prior to placing concrete
- Verify that stressing equipment has certified calibration
- Verify that concrete is of proper strength and cure prior to stressing
- Witness the stressing operations for compliance to manufacturer's requirements and the approved subcontractor's drawings.

2.2.5 Precast/Prestressed Concrete

The contractor's representative shall perform factory inspections to ensure compliance with the specification and subcontractor's approved drawings on the first precast/prestressed concrete items and may perform surveillance of the subcontractor during completion of the balance of the order. The inspector shall ensure panels meet dimensions specified on drawings and embedments are located as required.

2.2.6 Concrete Masonry Units

The contractor's representative shall

- Inspect concrete masonry units (CMUs) at delivery to site for damage and consistency in appearance and ensure the units compare in quality with the preconstruction samples previously submitted and accepted

- Randomly select CMUs from stockpiled units at job site for additional testing
- Ensure that units are properly reinforced and that the insulation is installed
- Verify that the indentation and/or projection of the wall falls within maximum tolerances
- Randomly sample grout mixture for compliance with the specification.

2.3 Secondary Containment Systems

2.3.1 Secondary Containment Liner

- The project quality engineer or the contractor's representative shall perform oversight of the fabrication and installation of the secondary containment liner to confirm compliance with the approved subcontractor's quality control plan.
- The contractor's representative shall
 - Verify welder qualifications.
 - Witness the preparation of the trial welds and their actual testing for compliance with specifications and the subcontractor's quality plan. This is to be conducted daily.
 - Verify proper sealing around concrete structures and other openings. Ensure seals comply with specification and drawings. Ensure concrete surfaces are properly prepared.
 - Inspect the installed liner for defects, holes, blisters, undispersed raw materials, and any sign of contamination by foreign matter and ensure the installation is in a relaxed condition (i.e., not stretched, free from stress or tension).
 - Witness the welding of field joints. If more than one welder is used for a specific event (field joints, field repairs, etc.), the contractor's representative(s) will witness all of the field joints or repairs unless random surveillance is allowed by the detailed inspection plan.
 - Verify cleanliness prior to sealing and ensure proper seal overlap, weld alignment, and bonding.
 - Witness all nondestructive seam strength testing (i.e., vacuum box testing, air pressure testing, and/or spark testing).
 - Witness the preparation, installation, and testing of all field repairs to the liner.

2.3.2 Decontamination Water System

The contractor's representative shall

- Ensure the system materials and components (i.e., piping, fittings, pumps, valves, and fiberglass basin) comply with specification and drawing requirements
- Witness the flushing and testing of the system to ensure compliance with the specification and the approved subcontractor's procedure
- Ensure proper separation, both vertically and horizontally, from potable water systems.

2.4 Air Distribution Systems (Including HEPA Filter Housings)

2.4.1 Heating System

The contractor's representative shall witness the testing of each heater operation.

2.4.2 Air Distribution System

The contractor's representative shall witness the testing, adjusting, and balancing of the entire air distribution system.

2.4.3 HEPA Filter Housings

The contractor's representative shall witness the housing leak test, filter fix test, and in-place diocyl phthalate (DOP) test.

2.5 Structural Steel and Metal Building Systems

The contractor's representative shall

- Inspect all high-strength bolted connections
- Inspect all field welds in accordance with American Welding Society (AWS) D1.1 and verify that qualified welders and qualified procedures are being used
- Inspect accessible shop welds for compliance to AWS D1.1
- Perform surveillances to ensure materials and installation comply with specification and approved subcontractor's shop drawings.

2.6 Fire Protection Systems

The contractor's representative shall witness all flushing and system testing performed by the subcontractor.

2.7 Sterilization of Water Piping

The contractor's representative shall witness the cleaning and sterilizing of the potable water and raw water systems.

2.8 Electrical and Communications Installations

The contractor's representative shall

- Witness the performance of all operational tests of all equipment, controls, and devices that are installed or modified by the subcontractor.
- Perform random inspection to ensure electrical components are installed in accordance with National Electrical Code (NEC), drawings, and specification.
- Witness the performance of cable and wire meggering and continuity tests performed by the subcontractor.

- Witness the torquing of all electrical terminations performed by the subcontractor.
- Witness the installation (pulling), splicing, terminating, and testing of fiber optic cables.
- Perform random surveillances to ensure labels and identifications are installed per specification.
- Verify that the medium- and high-voltage pole hardware and equipment comply with the specification and drawings and meet sag requirements of manufacturer sag charts. Verify that the electrical connections and splices are properly made and that the continuity tests are witnessed.
- Perform surveillance to verify noncurrent-carrying metallic parts of electrical equipment, raceway systems, building steel, and the neutral conductor of the wiring system are grounded as required by specification and NEC.

2.9 Receiving Inspection

The contractor's representative shall

- Perform receiving inspection of all material and components required of the vendor data schedule to ensure compliance with specification and drawings
- Perform surveillance to ensure no suspect or counterfeit materials or components are installed.

3. ORGANIZATION

The inspection organization is independent of the SSSTF project. The inspectors work for the manager of nuclear operations quality assurance who reports to the director of quality assurance. The director of quality assurance reports to the vice president in charge of environment, safety, health, and quality assurance. The ICDF project manager for SSSTF works for the WAG 3 manager who reports to the director of environmental restoration. The director of environmental restoration reports to the vice president of environmental management.

The inspectors are certified using nationally recognized standards where available. The inspector certification process includes the following scope: general inspection, nondestructive examination (NDE), mechanical, electrical, and civil subdivided into various methods. The certification process conforms to the requirements of ASME-NQA-1-1997, "Quality Assurance Requirements for Nuclear Facility Applications," Requirement 2, Subsection 300, and SNT-TC-1A, Editions 1980 through 1992.

To execute this construction inspection plan, the inspectors report to the construction quality engineer who reports indirectly to the STR/construction coordinator and directly to the WAG 3 quality engineer. The STR/construction coordinator directs the subcontractor regarding acceptance of work and any resolution of inspection issues. The WAG 3 quality engineer and STR/construction coordinator report to the ICDF project manager and jointly resolve inspection issues.

4. CODES AND STANDARDS

The following codes and standards are examples of those used during the inspections. The specific criteria are established by the design specifications and drawings.

- American Society for Testing and Materials (ASTM)
- American Society of Heating, Refrigerating & Air Conditioning Engineers (ASHRAE)
- American Society of Nondestructive Testing (ASNT)
- American Institute of Steel Construction (AISC)
- American Welding Society (AWS)
- Idaho T-87, Test for Surface Smoothness of Finished Pavement
- National Electrical Code (NEC)
- National Fire Protection Association (NFPA)
- Uniform Building Code (UBC)
- Uniform Plumbing Code (UPC).

5. REFERENCES

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