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To Distribution	From Process Systems	Page 1 of 1
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16. KEY

Approval Designator (F)	Reason for Transmittal (G)	Disposition (H) & (I)
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Reason	Disp.									Reason	Disp.
1	1	Cog. Eng. J.B. Crystal <i>Jeremy Crystal</i> 2/28/95 R3-86									
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18. <i>[Signature]</i> Signature of EDT Originator Date: 2/28/95	19. J.R. Frederickson <i>[Signature]</i> Authorized Representative for Receiving Organization Date: 3/2/95	20. J.R. Frederickson <i>[Signature]</i> Cognizant Manager Date: 3/9/95	21. DOE APPROVAL (if required) Ctrl. No. <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/comments <input type="checkbox"/> Disapproved w/comments
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APPROVED FOR PUBLIC RELEASE

WHC Information Release Administration Specialist:


Kara M. Broz

March 2, 1995

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K-BASIN DEBRIS REMOVAL EQUIPMENT
TEST PLAN

WHC-SD-SNF-TP-011, Rev. 0

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K-BASIN DEBRIS REMOVAL EQUIPMENT TEST PLAN

1.0 INTRODUCTION

An undetermined amount of debris remains in the K-Basins which must be removed. Due to the different types of debris that will be removed a variety of tools will be required to complete this project. This test plan give a broad scope of the requirements that will be used to test equipment for use in the debris removal activities.

2.0 OBJECTIVE

The purpose of this test plan is to outline the requirements for testing of equipment that will be used to remove debris in the K-Basins.

3.0 SCOPE

The equipment tested will be used in a radioactive environment. The equipment tested will be used to retrieve, cut, clean, and package debris from both K West and K East Basins.

Equipment, both designed and fabricated on site and off site will be tested in the 305 Facility to support debris removal in the K-Basins. Each test procedure will specify the requirements for the equipment being tested. A description of which test being performed will be included in the test procedure.

4.0 DESCRIPTION OF TEST

4.1 TYPE OF TESTING

Testing is typically divided into six primary categories: development testing, acceptance testing, qualification testing, pre-operational testing, operational testing, and production/process testing.

Development testing is performed to provide or develop design information, concepts, or criteria. Development testing may also be performed to calculate and verify design, safety, or reliability concepts or criteria. It may also be performed to develop performance characteristics through the use of mock-ups or test facilities, for studies and research activities, and for the development of engineering specification requirements and specific design objectives or the resolution of engineering or technological issues.

Acceptance testing is performed to demonstrate that fabrication, assembly, installation, and construction requirements have been met as required in the design documents. Acceptance testing may include:

1. Testing that typically includes visual inspection for proper installation, alignment, accessibility, wiring, mechanical operability, insulation, ventilation, and heat dissipation.
2. Flushing, strength, and leak tests, where fluid systems may be flushed and filled, including hydrostatical and/or leak testing.

3. Testing to demonstrate that equipment will operate satisfactorily and safely in accordance with the plans, specifications, and operations and maintenance manuals. This includes required hydrostatic, pneumatic, electrical, ventilation, mechanical functioning, and run-in tests of portions of systems or completed systems.

Qualification testing is performed to verify adequacy of design. The test configuration shall be clearly defined and documented. Testing shall demonstrate adequacy of performance under conditions that simulate the most adverse design conditions. Operating modes and environmental conditions in which the item must perform satisfactorily shall be considered in determining the most adverse conditions. When the test is intended to verify only specific design features, the other features of the design shall be verified by other means. Test results shall be documented and reviewed to ensure that test requirements have been met.

If qualification testing indicates that modifications to the item are necessary to obtain acceptable performance, the modification shall be documented and the item modified and retested or otherwise verified to assure satisfactory performance. When tests are being performed on models or mock-ups, scaling laws shall be established and verified. When applicable, the results of model test work shall be subject to error analysis before using in final design work.

Pre-operational testing is performed in preparation for operational testing. During pre-operational testing, systems and components are operated at defined parameters to ensure they are ready for full operational testing. When the systems and components have been tested sufficiently at the defined parameters to indicate that normal operating parameters can be achieved, they are tested at designated higher parameters. At the completion of pre-operational testing, the test results are evaluated, and a determination to initiate operational testing is made.

Operational testing is performed by the operator with items in their final in-service configuration (including interfaces) to verify that functional, operational, and design requirements have been met. The tested and accepted systems and components are integrated and tested through various operational levels to verify that they will function as required by the Functional Design Criteria and other design criteria. This testing may include both normal and off-normal conditions.

Many projects (such as those for relatively standard structures, simple piping systems, and other non-electromechanical systems) typically do not require operational testing, and may only require acceptance testing.

Production/process testing is performed at operating facilities. The testing generally consists of making a controlled change in a production or processing operation to evaluate potential improvements, develop optimum process parameters, or establish new criteria.

The test procedures, one for each piece of equipment tested, will specify the type(s) of testing that will be conducted on each piece of equipment.

4.2 DEFINITIONS

TEST CONTROL COPY - The single copy of all record documentation maintained at the facility and used for all required signatures, approvals, and data recording.

WORKING COPY - The single copy of all record documentation maintained within the radiation zone used for all required record signatures, approvals, and data recording. Signatures shall be transferred to the "Control Test Copy".

TEST LOGBOOK - A logbook for recording all data and observations by the test performer which are not included in a test procedure. A copy of the test logbook will be attached to the test report.

4.3 AUTHORITY

Specific testing responsibilities are defined in the following sections.

TEST ENGINEER

The Test Engineer reports to Spent Nuclear Fuel (SNF) and represents SNF during the conduct of the test. The test Engineer is responsible for technical direction of the test and assuring the test will meet the requirements of SNF.

TEST DIRECTOR

The Test Director Reports to the Manager of Engineering Testing Laboratories. The Test Director is responsible for assuring 305 resources are available to support the test and coordination with other test activities conducted in 305 Facility. The Test Director is responsible for personnel safety during testing.

TEST PERFORMERS/OPERATORS

305 Building engineering and technical personnel shall be the primary test performers. WHC and contractor personnel assigned testing related tasks shall report to the Test Engineer.

4.4 CHANGES TO TEST PROCEDURES OR EQUIPMENT

Changes made during testing can be made immediately in the working copy of the Test Procedures, provided that the changes cannot affect facility or equipment safety, function, or performance and will not compromise or influence test data. Any such change must be recorded in the change log/procedure as a change exception. Changes made per a change authorization sheet which details retesting shall be signed by the Test Engineer, QC, and Cognizant Engineer.

Changes made to the test procedure that affect operating facility safety, function, or performance or will compromise or influence test data shall be made via an Engineering Change Notice (ECN) to the Supporting Document (SD).

4.5 ACCEPTANCE CRITERIA

For any step in the test procedure that has a associated acceptance requirement, the requirement will be so designated in the step.

4.6 TEST LOG

A narrative log of testing activities is to be maintained by the Test Engineer. Page numbers and date shall be entered as new pages are added. Each added page will be stamped "TEST CONTROL COPY". Black ink shall be used for all entries.

4.7 TEST FAILURE

All steps in the test procedure involving equipment operation or data verification must pass their acceptance criteria. Failures must be recorded in the Test Log or in the test procedure with a change authorization sheet. The Test Engineer will has the ability to stop testing and repair equipment or alter test steps then continue with test provided all changes/repairs have been recorded.

5.0 QUALITY ASSURANCE

The test procedure will call out the quality assurance requirements for that series of testing.

6.0 TEST PROCEDURES

Test procedures will be written for all equipment tested in the 305 cold test facility that has potential for K-Basin use. The test procedures as a minimum will contain the following information.

- Test objective
- Test Item Identification
- Test Condition Limits
- Instruments and Calibration requirements
- Facility, Equipment, and Materials
- QA requirements
- Test operating procedure and data collection
- Witnesses and Hold Points
- Disposition of test equipment
- Personnel requirements for performing the test
- Change authorization Sheet

Test procedures that are red lined during testing will not require ECN changes. All changes shall be incorporated into the test procedure and attached to the test report. A 305 Building work plan/Instructions shall be submitted in accordance with WHC-SD-SNF-PCP-001 and a Job Hazards Analysis will be completed.

7.0 TEST REPORT

A test report shall be prepared, approved, and released per WHC-CM-6-1,EP-4-2. A related series of tests may be reported in one test report. The approved original of the test report shall be maintained as a QA record.

8.0 APPLICABLE/REQUIRED DOCUMENTS

- WHC-CM-6-1, Standard Engineering Practices, E-4.2, "Testing Requirements"
- WHC-CM-3-5, Document Control and Records Management, Section 12.7, "Approval of Environmental, Safety, and Quality-Affecting Documents"
- WHC-CM-4-3, Industrial Safety Manual
- WHC-IP-1026, Engineering Practice Guidelines, Appendix K, Test Plans, Specifications, Procedures and Reports
- Test reports verifying completion of all required tests
- WHC-SD-SNF-PCP-001 "305 Building Cold Test Facility Management Plan

Example

Change Authorization Sheet

Steps Changed: _____

Change Justification: _____

Re-test Requirements: _____

Authorization

Test Engineer

Quality Control

Cognizant Engineer