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WANL-TME-2740
SEPTEMBER 1970

DATA ITEM S-53
REACTOR SERIES
GROUND TEST PROGRAM
REQUIREMENTS ALLOCATION
SHEETS

MASTER

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Westinghouse Astronuclear Laboratory

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DATA ITEM S-53 REACTOR SERIES GROUND TEST PROGRAM REQUIREMENTS ALLOCATION SHEETS

Approved By
E. J. Ney, Manager
Test Operations

INFORMATION CATEGORY

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FOREWORD

This document is submitted as the WANL expansion of the ANSC Function 7.1 of the NERVA Ground Test Program Functional Flow Diagrams (FFD), Data Item S-052. Reference ANSC Drawing Number 1136522, dated 23 February 1970.

This document should be used in conjunction with the 31 sheets of WANL Drawing No. 613175, "Functional Flow Diagrams for Reactor Series, Ground Test Program". Sheet 1 of 31 of the drawings depicts the top level functions 7.0, 6.0, 5.0, 4.0, 3.0, 2.0, and 1.0. Each of these functions should be considered a lower level breakdown of the ANSC Function 7.1 of the NERVA Ground Test Program.

Requirements Allocation Sheets are not provided for Function 6.0, "Provide Test Assembly Maintenance Support" and Function 2.0, "Conduct R-Series Performance Test". Requirements Allocation Sheets may be developed for Function 6.0 at a later date, however, no Requirements Allocation Sheets will be written for Function 2.0. The requirements for Function 2.0 will be specified in the test planning and facility documentation.

Current planning does not include the use of the nozzle skirt extension during the Reactor Series Ground Test Program. However, the Functional Flow Diagrams depict the use of the nozzle skirt extension for the R-Series testing in the event its use is reconsidered at a later date.

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FUNCTION 7.0

REACTOR SERIES GROUND TEST PROGRAM

FUNCTION

TITLE

PAGE NO.

7.0

Provide Qualified Test Cell C for R-Series

7-1

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Reactor Series Ground Test Program

OR
(A)

NOMENCLATURE AND NUMBER OF CEI

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
			NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.		TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
7.0 Provide Qualified Test Cell C for R-Series	<p>I. <u>Description of Function</u></p> <p>This function provides a qualified facility (Test Cell C) capable of satisfying all the requirements for performing the Reactor Series Ground Test Program.</p> <p>A separate functional analysis or an additional breakdown of this function will not be provided.</p> <p>The purpose of this function is to identify several unique facility systems required to conduct the R-Series Performance Test shown in Function 2.0 and specified in the Reactor Test Plan/Test Specification, Data Item T-102.</p> <p>This function also identifies special test support equipment required to checkout and qualify the overall Test Cell C facility for R-Series Performance Test.</p> <p>A summary of the Test Cell C qualification requirements are given in Data Item F-004, Test Cell C Facility Requirements Document. This document outlines a Phase I Qualification Program to be completed prior to R-1 testing. F-004 also presents a brief description of the unique facility systems and special test equipment required.</p> <p>The qualification program for Test Cell C will be performed in accordance with an approved "Test Cell C Activation Plan" and subordinate procedures. Throughout the qualification program, the TC-C complex will be defined by TC-C Product Configuration Documentation.</p> <p>Data Item T-134, "Test Facility Performance Requirements Document, (TFRD)" will provide more specific facility requirements for Test Cell C.</p>								

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REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Reactor Series Ground Test Program
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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
7.0 Provide Qualified Test Cell C for R Series	<p>As a result of the R-Series requirements for an effluent control system and an altitude simulation system, a trade study must be performed to evaluate the relative advantages and disadvantages of testing the test article in a horizontal or a vertical plane. (Reference TD-70-3) The final results of this trade study will permit a conceptual design to be prepared from which the required facility systems and special test equipment can be identified. The R-1 will be tested in a verticle up-firing position.</p> <p>II. <u>Test Article Design Characteristics Created By This Function</u></p> <p>The results of the horizontal versus vertical testing trade study may identify design characteristics which would be imposed on the test article.</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to verify that various elements of Test Cell C equipment are capable of interfacing with the test assembly and can deliver the required fluids to the test assembly. Verification must be made before mate-up of the actual assembly.</p> <p>This means will be used specifically to checkout the facility programmed LH₂ supply profiles and facility cooldown systems. The means shall be identified as the Test Assembly Impedance Simulator (TAIS).</p> <p>1. <u>Design Requirements</u></p> <p>a. Electrical/Fluid</p> <p>(1) The means will be capable of receiving _____ lb/sec of H₂ at _____ psig and _____ °R while providing an impedance equivalent to that</p>	TS		7.0 Provide Qualified Test Cell C for R-Series	<p>created by the actual test assembly. The impedance must be capable of being varied.</p> <p>(2) The means will be capable of safely disposing of the spent H₂ flow, by burning, without detrimental effects to itself or any other facility component.</p> <p>(3) The means will be capable of circulating _____ lb/sec of ambient temperature borated H₂O at _____ psig while providing an impedance equivalent to the complete privy roof shield H₂O flow path of the actual assembly.</p> <p>(4) The means will provide for mounting and/or terminating the instrumentation required to monitor flow rates, temperatures, pressures, and pressure differential.</p> <p>(5) The means will provide termination and/or transition of the required instrumentation electrical power or signals.</p> <p>b. <u>Mechanical</u></p> <p>(1) The means will adequately sustain any facility imposed load during checkout operations.</p>		

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REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Reactor Series Ground Test Program
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7.0 Provide Qualified Test Cell C for R Series	<p>2. <u>Interface</u></p> <p>a. The means will interface with Test Cell C fluid connections at the test cell face so that III.A.1.a. (1), (2), and (3) are satisfied in a manner similar to that of the actual test assembly.</p> <p>b. The means will interface with the Test Cell C electrical/instrumentation pit coupler so that III.A.1.a.(3) and (4) are satisfied.</p> <p>c. The means will interface with and/or be compatible with other TCC pad installations such as the vertical shield, protective shed or reactor exhaust conditioning equipment.</p> <p>3. <u>Special Considerations</u></p> <p>a. The means will adequately accept the dynamic loadings imposed by rail transit from the assembly area to the Test Cell and during checkout operations.</p> <p>b. The means will provide open work areas and/or inert gas purge systems so that no localized build up of combustible and/or explosive gas mixtures are possible.</p> <p>B. A means is required to checkout the Duct and Scrubber System (DASS) and the Nozzle Altitude Simulator System (NASS) prior to their use in the R-Series Ground Test Program. Such a device shall be identified as the Test Assembly Flow Simulator (TAFS).</p> <p>1. <u>Design Requirements</u> - The design requirements for this means shall be provided in Data Item F-004, Facility Requirements Document, F-007, Facility Design Criteria Document, and T-134, Test Facility Requirements Document.</p> <p>C. A means is required to simulate the test article (NSSM/Nozzle) during the Test Car/Rail Transport System (RTS) checkout. This checkout is</p>			7.0 Provide Qualified Test Cell C for R-Series	<p>required to verify that the Test Assembly can be safely transported between Test Cell C and the MAD facility.</p> <p>1. <u>Design Requirements</u></p> <p>a. Mechanical - The means must simulate the weight and center of gravity and overall dimensions of the test article. It must also have the capability of adjusting these parameters within certain limits to adapt to various test article configurations.</p> <p>b. Interface - The means must interface with the NSSM support stand and attach to the stand in the same manner as the NSSM.</p> <p>c. Special Considerations - The means must provide ready access for mounting of instrumentation and routing of associated wiring.</p> <p>D. A means is required to facilitate the lifting and positioning of the Test Article Mechanical Simulator.</p> <p>1. <u>Design Requirements</u> - The means must be capable of supporting the Test Article Mechanical Simulator weighing approximately 16,000 lb.</p> <p>IV. <u>Facility Design Requirements Created By This Function</u></p> <p>A. A means is required to limit the fission product release to the atmosphere during reactor testing at Test Cell C. Such a device shall be identified as the Duct and Scrubber System (DASS).</p> <p>1. <u>Design Requirements</u> - The design requirements for this means shall be provided in Data Items F-004, F-007, and T-134. It is anticipated that such a device will not be required for R-1 testing. The requirement to limit the fission product release during R-1 testing would therefore be satisfied by increasing the time between each R-1 performance test (Experimental Plan, EP).</p>	TD-70-3 TD-70-10	Test Article Simulator Lifting Sling

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Reactor Series Ground Test Program
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7.0 Provide Qualified Test Cell C for R-Series	<p>B. A means is required to reduce the back pressure on the full-flight nozzle assembly to be used during the R-4 and R-5 test program. The reduced back pressure will allow the nozzle to flow full.</p> <p>1. <u>Design Requirements</u> - The design requirements for this means shall be provided in Data Items F-004, F-007, and T-134.</p> <p>C. A means is required to provide a facility backup system for the flight TPA should hardware development permit its use during the R-Series Ground Test Program.</p> <p>1. <u>Design Requirements</u> - The design requirements for this means shall be provided in Data Item F-007.</p> <p>D. A means is required to provide a facility backup system for the flight SSCSS should hardware development permit its use during the R-Series Ground Test Program.</p> <p>1. <u>Design Requirements</u> - The design requirements for this means shall be provided in Data Item F-007.</p>	TD-70-3					
			Supplemental Guidelines for Definitive CY 70 Proposal and Long Term Program Plan				
			Supplemental Guidelines for Definitive CY 70 Proposal and Long Term Program Plan				

FUNCTION 5.0
PROVIDE TEST ASSEMBLY COMPONENTS

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REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Reactor Series Ground Test Program

OR

NOMENCLATURE AND NUMBER OF CEI _____

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
			NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.		TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.0 Provide Test Assembly Components	<p>1. <u>Description of Function</u></p> <p>This function provides the components required to construct a Test Assembly for use in the Reactor Ground Test Program at NRDS. The Test Assembly is comprised of the test article and the test car. The test article consists primarily of the NSSM and the nozzle.</p> <p>Miscellaneous interface equipment and piping shall be provided to mate the test article to the test car.</p> <p>The following subsystems, components, and hardware will be provided by this function.</p> <ul style="list-style-type: none">a. Test Carb. NSSMc. Nozzle and Assembly Hardwared. Nozzle Skirt Extension (R-4 and R-5 testing only)e. Miscellaneous Test Article/Test Car Interface Equipment and Pipingf. CDDA Equipment (Shipped separated from NSSM for R-1 testing only)g. Non-Nuclear Instrumentation (instrumentation external to NSSM)h. Experimental Hardware								

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REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide Test Assembly Components 5.0

OR

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5.1 Provide Test Car	I. <u>Description of Function</u> A requirement exists to provide a test car at NRDS to be used to transport the test article to and from the test facility, support the test article during testing and supply the required fluid, mechanical and electrical interfaces between the test article and the test facility.	NPRD-1 Oct. 1968							

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REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide Test Car 5.1

OR

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					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.1.1 Provide Test Car Components	<p>I. <u>Description of Function</u></p> <p>A requirement exists to provide the basic components which make up the test car. For planning purposes these components are:</p> <ul style="list-style-type: none">a. Flat Bed Assemblyb. Front Connector Plugc. Privy Structured. Propellant Supply Assemblye. H₂O Coolant Line Assembliesf. Purge Systemsg. Instrumentation Moduleh. Electrical/Instrumentation Termination Assembliesi. Actuator Purge/Coolant Linesj. Turbine Simulation Assemblyk. SSCV&A and SSBV&A Piping <p>If hardware development permits, the flight TPA will be used with a facility backup system. The flight TPA could be located in the facility or on the test car. In either case, a turbine simulator assembly would be required for use with the facility backup system should it be required.</p> <p>II. <u>Test Article Design Requirements Created by this Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created by this Function</u></p> <p>Design requirements will not be prepared for this function. This function is presented for continuity only.</p>

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide Test Car 5.1

OR

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					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.1.2 Assemble Test Car	<p>I. <u>Description of Function</u></p> <p>The test car components listed in 5.1.1 must be assembled into the basic test car assembly. The front connector plug is mounted with its associated electrical conduits, plugs and fluid lines and aligned. The privy structure is completed, purge systems installed and instrumentation and electrical lines installed and properly routed. The central instrumentation module is mounted and sealed, and terminal boxes are installed. Brake systems and the coupler assemblies are aligned and serviced. Water lines, purge lines, and the propellant lines are installed and aligned. The privy roof surface is prepared to receive the NSSM support; the turbine simulator and the structural support coolant system piping and required valving is installed.</p> <p>II. <u>Test Article Design Requirements Created by this Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created by this Function</u></p> <p>Design requirements will not be prepared for this function. This function is presented for continuity only.</p>			<p>The facility capability which must be established to support the following lower level functional operations is defined in terms of general requirements listed below. Specific quantitative requirements will be supplied in the applicable portions of the appropriate facility data items.</p> <p>1. <u>Environment</u></p> <p>a. Temperature and humidity control of general work area.</p> <p>b. Clean rooms</p> <p>c. Illumination</p> <p>2. <u>Utilities</u></p> <p>a. Electrical power</p> <p>b. Filtered and regulated purge gases.</p> <p>3. <u>Civil/Structural/Architectural</u></p> <p>a. Enclosed work area.</p> <p>b. Bonded storage facility.</p> <p>4. <u>Equipment</u></p> <p>a. Overhead, mobile lifting equipment.</p> <p>b. Hydraset or equivalent.</p> <p>c. Forklift truck</p> <p>d. General purpose lifting slings.</p> <p>e. Hand tools</p> <p>f. Radiation Monitoring Equipment</p>					

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REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide Test Car 5.1

OR

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					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.1.3 Store Test Car	<p>I. <u>Description of Function</u></p> <p>A requirement may exist to store the test car once the basic assembly work has been completed. Storage would be required to maintain component integrity and preserve cleanliness while awaiting installation of the NSSM. Access to the test car during storage will be on a controlled basis.</p> <p>II. <u>Test Article Design Requirements Created by this Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created by this Function</u></p> <p>N/A</p>			Reference 5.1.2

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER _____ Store Test Car 5.1.3 _____ OR
NOMENCLATURE AND NUMBER OF CEI _____ (A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.1.3.1 Prepare for Storage	<p>I. <u>Description of Function</u></p> <p>Following completion of basic assembly work, the test car will be prepared for storage if test assembly work needs to be halted for a significant period of time.</p> <p>Preparation for storage will consist of sealing all fluid line openings, bracing unsupported components and piping, covering all electrical terminals and plugs, providing protective coverings for all exposed working areas and components.</p> <p>II. <u>Test Article Design Requirements Created by this Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created by this Function</u></p> <p>A. Means are required to protect and exclude foreign materials from flanges, line openings, electrical plugs, and large sub-assemblies.</p> <p>1. <u>Design Requirements</u></p> <p>Cap plugs, line caps, blank flanges, polyethylene covers, masking tape, special wooden covers will satisfy these requirements.</p>		Test Car Closure Kit	Reference 5.1.2

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Store Test Car 5.1.3

OR

NOMENCLATURE AND NUMBER OF CEI

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.1.3.2 Store Test Car Assembly	I. <u>Description of Function</u> The test car will be moved to the designated storage area and access to it will be controlled per approved procedures. II. <u>Test Article Design Requirements Created by this Function</u> None III. <u>TSE Design Requirements Created by this Function</u> N/A		Existing RTS L3 Locomotive, MCC, Spacer Car	Reference 5.1.2

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Store Test Car 5.1.3

NOMENCLATURE AND NUMBER OF CEI _____

OR
(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.1.3.3 Remove from Storage	<p>I. <u>Description of Function</u></p> <p>The test car will be removed from the storage area and returned to the assembly area. All seals, plugs, and closures will be removed and the car will be rechecked to verify readiness for transfer to the test article installation area. The seals, plugs and closures will not be removed if the test car would be subjected to possible contamination during transfers to the test article installation area.</p> <p>II. <u>Test Article Design Requirements Created by this Function</u></p> <p>None.</p> <p>III. <u>TSE Design Requirements Created by this Function</u></p> <p>N/A.</p>		Existing RTS L3 Locomotive, MCC, Spacer Car

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide Test Car 5.1

OR

NOMENCLATURE AND NUMBER OF CEI _____

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.1.4 Transfer Test Car to MAD Building	<p>I. <u>Description of Function</u></p> <p>A requirement exists to transfer the test car to the MAD assembly area so that assembly work may proceed in a suitably clean and controlled area. This transfer operation is necessary since the test car assembly work will not, in general, be accomplished in an area clean enough or properly equipped for test article assembly.</p> <p>II. <u>Test Article Design Requirements Created by this Function</u></p> <p>None.</p> <p>III. <u>TSE Design Requirements Created by this Function</u></p> <p>A. A means is required to transport the test car from its assembly or storage area to the test assembly area.</p> <p>1. <u>Design Requirements</u></p> <p>The existing Rail Transport System (RTS) will be used to satisfy this requirement.</p>		Existing RTS L-3 Locomotive, MCC, Spacer Car

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide Test Assembly Components 5.0

OR

NOMENCLATURE AND NUMBER OF CEI

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.2 Provide NSSM	<p>1. <u>Description of Function</u></p> <p>This function describes a means to provide an NSSM at NRDS for reactor testing. It is initiated upon release of NSSM components for assembly and is completed when the NSSM is delivered to NRDS.</p> <p>This function includes:</p> <ul style="list-style-type: none">a. Provide NSSM componentsb. Factory acceptance test of NSSM componentsc. Provide a partially assembled NSSM for nuclear calibrationd. Perform the nuclear calibrations (ISA)e. Complete the assembly of the NSSMf. Perform NSSM factory acceptance tests as designated by the contractor.g. Prepare the NSSM for storage and/or shipmenth. Transport the NSSM from WANL to NRDS

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER _____ Provide NSSM 5.2

OR

NOMENCLATURE AND NUMBER OF CEI _____

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.2.1 Provide NSSM Components	<p><u>I. Description of Function</u></p> <p>This function provides the components required to assemble the NSSM at WANL, Large, Pennsylvania.</p> <ul style="list-style-type: none">a. Pressure Vessel and Closureb. Fuel elementsc. Cluster Hardwared. Core Peripherye. Support Plate and Plenaf. Internal Shieldg. Reflector Shieldh. Control Drum Drive Assembly (CDDA) (R-2, 3, 4, and 5)i. Nuclear Instrumentationj. Poison Wires and Retention Plates <p><u>II. Test Article Design Characteristics Created by this Function</u></p> <p>The NSSM shall accommodate means of preventing accidental reactor criticality during all ground operations.</p> <p><u>III. TSE Design Requirements Created By the Function</u></p> <p>A. A means shall be provided for preventing accidental reactor criticality during assembly, transportation and storage.</p> <p>1. Design Requirements</p> <p>The means shall poison the NSSM such that the effective multiplication factor shall not exceed 0.95 when the NSSM is flooded with water, liquid hydrogen or any other hydrogenous fluid credible in the vicinity of the reactor.</p> <p>The poison assembly shall remain effective when subjected to the hypothetical accident conditions specified in AEC Manual, Chapter 0529.</p>		<p>Poison Wires</p> <p>Poison Wire Retention Plate</p> <p>Poison Wire Retainer Hardware</p>

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide NSSM 5.2 OR
NOMENCLATURE AND NUMBER OF CEI (A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.2.2 Factory Acceptance Test NSSM Components	<p>I. <u>Description of Function</u></p> <p>This function provides for inspecting and/or testing all NSSM components at the contractors plant to verify compliance with the appropriate approved specifications. Each component must satisfy the requirements of this function prior to its use in the assembly of the NSSM.</p> <p>II. <u>Test Article Design Characteristics Created by this Function</u></p> <p>None.</p> <p>III. <u>TSE Design Requirements Created by this Function</u></p> <p>Design requirements will not be prepared for this function. This function is presented for continuity only.</p>

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide NSSM 5.2

OR

NOMENCLATURE AND NUMBER OF CEI

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.2.3 Partially Assemble NSSM	<p>I. <u>Description of Function</u></p> <p>This function provides a partially assembled NSSM at the nuclear calibration facility for the purpose of performing an in-place shim adjustment (ISA). Present planning does not anticipate an ISA for R-1; therefore, this function does not apply for R-1. All subsequent reactors, R-2, 3, 4, and 5, will require an ISA.</p> <p>Included in this function are:</p> <ul style="list-style-type: none">a. Prepare the NSSM components for assemblyb. Assemble the NSSM with the exception of installing the internal shield and attaching the instrumentation seal blocks to the forward closure.c. Prepare the NSSM for shipment to the nuclear calibration facility.d. Transport the NSSM to the nuclear calibration facility. <p>II. <u>Test Article Design Characteristics Created by this Function</u></p> <p>None.</p> <p>III. <u>TSE Design Requirements Created by this Function</u></p> <p>Design requirements will not be prepared for this function. This function is presented for continuity only.</p>

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide NSSM 5.2

OR

NOMENCLATURE AND NUMBER OF CEI _____

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.2.4 Perform Nuclear Calibration	<p>I. <u>Description of Function</u></p> <p>This function provides the means to perform an in-place shim adjustment (ISA) on the partially assembled NSSM at the nuclear calibration facility. Present planning does not anticipate an ISA for R-1.</p> <p>Included in this function are:</p> <ul style="list-style-type: none">a. Receive the NSSM at the nuclear calibration facilityb. Prepare the NSSM for nuclear calibrationc. Perform the nuclear calibrationd. Prepare the NSSM for return shipmente. Transport the NSSM to the NSSM assembly facility. <p>II. <u>Test Article Design Characteristics Created by this Function</u></p> <p>None.</p> <p>III. <u>TSE Design Requirements Created by this Function</u></p> <p>Design requirements will not be prepared for this function. This function is presented for continuity only.</p>

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide NSSM 5.2

OR

NOMENCLATURE AND NUMBER OF CEI _____

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.2.5 Complete Assembly of NSSM	<p>I. <u>Description of Function</u></p> <p>This function provides for completing the assembly of the NSSM following the nuclear calibration.</p> <p>Included in this function are:</p> <ul style="list-style-type: none">a. Receiving the NSSM at the NSSM assembly facility from the nuclear calibration facilityb. Completing the assembly of the NSSM which includes installing the internal shields and attaching the instrumentation seal blocks to the forward closure. <p>II. <u>Test Article Design Characteristics Created by this Function</u></p> <p>None.</p> <p>III. <u>TSE Design Requirements Created by this Function</u></p> <p>Design Requirements will not be prepared for this function. This function is presented for continuity only.</p>

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide NSSM 5.2

OR

NOMENCLATURE AND NUMBER OF CEI _____ (A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.2.6 Factory Acceptance Test NSSM	<p>I. <u>Description of Function</u></p> <p>This function provides for testing and inspecting the NSSM at WANL, Large, Pennsylvania to verify compliance with the appropriate approved specifications.</p> <p>II. <u>Test Article Design Characteristics Created by this Function</u></p> <p>None.</p> <p>III. <u>TSE Design Requirements Created by this Function</u></p> <p>Design requirements will not be prepared for this function. This function is presented for continuity only.</p>

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide NSSM 5.2

OR

NOMENCLATURE AND NUMBER OF CEI _____

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.2.7 Prepare NSSM for Shipment	<p>I. <u>Description of Function</u></p> <p>This function describes the requirements for preparing the NSSM for installation into the shipping container.</p> <p>Preparation for shipment consists of the following:</p> <ul style="list-style-type: none">a. Installation of a PV/NSSM shipping closure kitb. Installation of a NSSM nozzle and guide plate.c. Installation of a lifting and handling fixture.d. Installation of the hydrolysis samples.e. Installation of the purge lines. <p>Dummy control drum shafts and cover plates must be installed on the R-1 NSSM since the CDDA will be shipped separate from NSSM.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to prevent the rotation of the R-1 control drums during shipment and prevent contamination from entering the actuator mounting ports</p> <p>1. <u>Design Requirements</u></p> <ul style="list-style-type: none">a. Electrical/Pneumatic - None.b. Mechanical - The means must be capable of restraining drum rotation and provide sealing of the actuator mounting ports. A positive seal for a ΔP of 7 psig is required. <p>2. <u>Interface</u></p> <p>The means must interface the control drum spline and the actuator mounting port flange.</p>			Reference 5.1.2

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide NSSM 5.2
NOMENCLATURE AND NUMBER OF CEI _____

OR
(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
5.2.7 Prepare NSSM for Shipment	<p>3. <u>Special Considerations</u></p> <p>a. Constraints - The means must fit within the shipping container envelope.</p> <p>B. A means of sealing the nozzle end of the NSSM is required.</p> <p>1. <u>Design Requirements</u></p> <p>a. Electrical/Pneumatic - The means must have exit purge ports.</p> <p>b. Mechanical - The means must be capable of covering and sealing the nozzle end. A positive seal for a ΔP of 7 psig is required during the transit however the means must be capable of sustaining a ΔP of approximately 150 psig during subsequent leak check operations.</p> <p>2. <u>Interface</u></p> <p>The means must interface with the nozzle end of the NSSM.</p> <p>C. A means is required to position and prevent any movement of the NSSM in the shipping container during transportation.</p> <p>1. <u>Design Requirements</u></p> <p>a. Electrical/Pneumatic - None.</p> <p>b. Mechanical - The means shall be a guide plate which is capable of positioning the NSSM in the shipping container and transmitting lateral loads to the shipping container.</p> <p>2. <u>Interface</u></p> <p>a. The means must interface with the NSSM nozzle end closure.</p> <p>b. The means must interface with the shipping container internal support frame.</p>		NSSM/PV Shipping Closure Kit	5.2.7 Prepare NSSM for Shipment	<p>D. A means is required to facilitate lifting and handling of the NSSM.</p> <p>1. <u>Design Requirements</u></p> <p>a. Electrical/Pneumatic - None.</p> <p>b. Mechanical - The means must be capable of supporting the entire NSSM weight in the vertical position. Estimated maximum weight is 20,000 lbs.</p> <p>2. <u>Interface</u></p> <p>a. The means must interface with the NSSM forward end flange connection.</p> <p>b. The means must interface with the shipping container internal support frame.</p> <p>c. The means must interface with the crane hook adapter.</p> <p>E. A means is required to attach hydrolysis samples to the NSSM.</p> <p>1. <u>Design Requirements</u></p> <p>a. Electrical/Pneumatic - None.</p> <p>b. Mechanical - The means must provide a method of attachment of hydrolysis samples to the NSSM.</p> <p>2. <u>Interface</u> - None.</p> <p>3. <u>Special Considerations</u></p> <p>a. Constraints</p> <p>(1) The means must fit within the shipping container internal support frame.</p> <p>(2) The means must attach to the NSSM without modification of the NSSM.</p>		Lifting and Handling Fixture, NSSM
			NSSM Nozzle End Guide Plate.				Hydrolysis Sample Mounting Clamps.

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide NSSM 5.2

OR

NOMENCLATURE AND NUMBER OF CEI

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)
			NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.				NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
5.2.7 Prepare NSSM for Shipment	F. A means is required to allow purge of the hydrolysis samples and the NSSM. 1. <u>Design Requirements</u> a. Electrical/Pneumatic - The means must provide a series flow path through the hydrolysis samples and the NSSM. 2. <u>Interface</u> - None.		NSSM Purge Lines.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide NSSM 5.2

OR

NOMENCLATURE AND NUMBER OF CEI

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.2.8 Store NSSM	I. <u>Description of Function</u> This function describes the requirements for storing the NSSM at WANL should the elapse time between the completion of assembly and its scheduled shipment to NRDS be significant. Storage consists of the following: a. Preparation for storage. b. Storage of NSSM. c. Removal from storage.			Reference 5.1.2

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Store NSSM 5.2.8

OR

NOMENCLATURE AND NUMBER OF CEI _____

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.2.8.1 Prepare NSSM for Storage	<p>I. <u>Description of Function</u></p> <p>This function describes the requirement for preparing the NSSM for storage. Preparation for storage consists of the following.</p> <ul style="list-style-type: none">a. Installation of PV/NSSM shipping closure kit.b. Installation of a lifting and handling fixture.c. Installation of the hydrolysis samples.d. Installation of purge lines. <p>Dummy control drum shafts and cover plates must be installed on the R-1 NSSM since the CDDA will be shipped separated from the NSSM.</p> <p>II. <u>Test Article Design Requirement Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to prevent the rotation of the R-1 control drums during storage and to prevent contamination from entering the actuator mounting ports.</p> <p>1. <u>Design Requirements</u></p> <p>The dummy control drum shafts and cover plates provided in RAS 5.2.7 Paragraph III A. satisfies this requirement.</p> <p>B. A means is required to seal the nozzle end of the NSSM.</p> <p>1. <u>Design Requirements</u></p> <p>The PV/NSSM shipping closure kit provided in RAS 5.2.7 Paragraph III. B. satisfies this requirement.</p>			Reference RAS 5.1.2					
			Dummy Control Drum Shafts and Cover Plates.						
			PV/NSSM Shipping Closure Kit

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Store NSSM 5.2.8
NOMENCLATURE AND NUMBER OF CEI _____

OR
(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)
			NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.				NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
5.2.8.1 Prepare NSSM for Storage	<p>C. A means is required to facilitate lifting and handling of the NSSM.</p> <p>1. <u>Design Requirements</u></p> <p>The NSSM lifting and handling fixture provided in RAS 5.2.7 Paragraph III.D. satisfies this requirement.</p> <p>D. A means is required to attach hydrolysis samples to the NSSM.</p> <p>1. <u>Design Requirements</u></p> <p>The hydrolysis sample mounting clamps provided in RAS 5.2.7 Paragraph III.E. satisfies this requirement.</p> <p>E. A means is required to allow purge of the hydrolysis samples and the NSSM.</p> <p>1. <u>Design Requirements</u></p> <p>The purge lines provided in RAS 5.2.7 paragraph III.F. satisfies this requirement.</p>		<p>NSSM Lifting and Handling Fixture.</p> <p>Hydrolysis Sample Mounting Clamps.</p> <p>NSSM Purge Lines.</p>

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Store NSSM 5.2.8

NOMENCLATURE AND NUMBER OF CEI _____

OR
(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.2.8.2 Storage of NSSM	<p>I. <u>Description of Function</u></p> <p>This function describes the requirement for storing the NSSM at WANL. It includes the following operations:</p> <ul style="list-style-type: none">a. Transfer the NSSM from the final assembly stand to a storage stand.b. Install the NSSM in storage stand.c. Connect the NSSM purge system to the purge gas supply system and activate.d. Activate the nuclear radiation monitoring equipment. <p>II. <u>Test Article Design Requirement Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <ul style="list-style-type: none">A. A means is required for purging the NSSM with dry nitrogen during storage.<ul style="list-style-type: none">1. <u>Design Requirements</u>The means shall satisfy the purge requirements specified in RAS 5.2.9.1 Paragraph III. B.B. A means is required to monitor the nuclear activity of the periodic NSSM effluent gas samples and to monitor the radiation level of the NSSM during storage.		<p>Existing NSSM Storage Area Purge System</p> <p>Existing NSSM Storage Area Nuclear Radiation Monitoring Equip- ment.</p>	Reference RAS 5.1.2

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Store NSSM 5.2.8

OR

NOMENCLATURE AND NUMBER OF CEI _____

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
5.2.8.2 Storage of NSSM	<p>1. <u>Design Requirements</u></p> <p>Existing NSSM storage area nuclear radiation monitoring equipment shall be used to satisfy this requirement. Any modification or additions to the existing equipment will be specified at a later date.</p> <p>C. A means is required to hold the NSSM during storage.</p> <p>1. <u>Design Requirements</u></p> <p>a. Mechanical - The storage stand shall be capable of supporting the NSSM. The NSSM weight will be listed in the Mass Properties Analysis Report.</p>	S-047	NSSM Storage Stand.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Store NSSM 5.2.8

NOMENCLATURE AND NUMBER OF CEI

OR
(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.2.8.3 Remove from Storage (NSSM)	<p>I. <u>Description of Function</u></p> <p>This function describes the requirements for removal of the NSSM from storage. It includes the following operations:</p> <ul style="list-style-type: none">a. Disconnect the purge system.b. Disconnect nuclear radiation monitoring equipment.c. Prepare the NSSM for transfer to NSSM shipping container if the time in storage has been relatively short.d. Prepare the NSSM for an acceptance test (Ref. RAS 5.2.6) if the time in storage has been significant. <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>None</p>			Reference RAS 5.2.8

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER _____ Provide NSSM 5.2 _____ OR
NOMENCLATURE AND NUMBER OF CEI _____ (A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.2.9 Transport NSSM to NRDS	<p>I. <u>Description of Function</u></p> <p>The function provides for the shipment of the NSSM to NRDS via rail flat car and tractor/trailer. It includes preparing the NSSM for transport, transporting the NSSM from WANL to Las Vegas via railroad, transferring the NSSM from Las Vegas to NRDS, and the return shipment of the train, tractor/trailer and NSSM shipping container to WANL.</p> <p>A continuous purge of the NSSM should be maintained during the entire transport operation. The purge, the nuclear activity and the vibration and shock loads will be continuously monitored during this function.</p>

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Transport NSSM to NRDS 5.2.9

NOMENCLATURE AND NUMBER OF CEI _____

OR

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.2.9.1 Prepare for Transport	<p>I. <u>Description of Function</u></p> <p>This function describes the requirements for preparing the NSSM for transporting to NRDS. Preparation for transport consists of the following:</p> <ul style="list-style-type: none">a. Transfer NSSM from the final assembly stand or storage stand to the NSSM shipping container.b. Install NSSM in the shipping container.c. Transfer NSSM/Shipping container from Reactor Assembly Lab (RAL) to NSSM rail flat car.d. Secure NSSM/Shipping container to rail flat car and connect NSSM flat car purge system.e. Couple NSSM flat car to instrumentation rail car.f. Load and secure nitrogen tube trailers on its flat car.g. Load and secure tractor/trailer on its flat car.h. Couple the NSSM flat car and instrumentation car to the nitrogen tube trailer flat car, the tractor/trailer flat car, the sleeping/dining car, the security caboose, the train crew caboose, and the locomotive.i. Connect NSSM purge system to Nitrogen tube trailer supply system. <p>II. <u>Test Article Design Requirements Created by this Function</u></p> <p>None.</p> <p>III. <u>TSE Design Requirements Created by this Function</u></p> <p>A. A means is required for protecting the NSSM during transportation from WANL to NRDS.</p> <ul style="list-style-type: none">1. Design Requirements<ul style="list-style-type: none">a. Electrical/Pneumatic - Nitrogen purge gas flow.b. Mechanical<ul style="list-style-type: none">(1) Vertical shipment for R-1.(2) Vertical or horizontal shipment for R-2 through R-5.								
			NSSM Shipping Container						

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE)(C)	REFERENCE OR TRADE AND DESIGN STUDY NO (H)	EQUIPMENT IDENTIFICATION (E)
			NOMENCLATURE AND CEI,ECC OR DETAIL SPEC OR INDEX NO.				NOMENCLATURE AND CEI,ECC OR DETAIL SPEC OR INDEX NO
5.2.9.1 Prepare for Transport	<p>(3) Shock and vibration isolation.</p> <p>(4) Zero leakage.</p> <p>(5) Handling by crane when loaded, fork lift when empty only.</p> <p>(6) Provision for tiedown during shipment.</p> <p>(7) Less than 190 inches overall height.</p> <p>(8) Meet normal shipping conditions per Code of Federal Regulations 10CFR71, 49CFR173, and 14CFR103.</p> <p>(9) Meet accident conditions per AEC Manual chapter 0529.</p> <p>2. <u>Interface</u> The means must interface with the NSSM, the NSSM purge systems, the rail flat car, and the tractor/trailer, the NSSM and shipping container handling equipment and with the data acquisition and monitoring equipment.</p> <p>B. A means is required for continuous purge of the NSSM with dry nitrogen during shipment to NRDS.</p> <p>1. <u>Design Requirements</u></p> <p>a. <u>Electrical/Pneumatic</u></p> <p>(1) The means must be capable of operating on a 115 volt, 60 cycle AC power supply.</p> <p>(2) The means must be capable of providing a continuous supply of dry purge gas to the NSSM, under the following conditions:</p> <p>(a) 1.5 ± .5 SCFM.</p> <p>(b) 50 psig maximum.</p> <p>(c) 10 micron or less particulate size.</p> <p>(d) Automatic changeover to stand-by gas supply when moisture content reaches a limit of 80 ppm.</p>			5.2.9.1 Prepare for Transport	<p>(3) The means must provide a 115 volt, 60 cycle AC signal to indicate switch-over to stand-by supply in the event of interruption in the purge supply.</p> <p>(4) The means must provide a continuous monitor and strip chart record of the moisture content of the influent and effluent gas.</p> <p>(5) The means must provide for extracting laboratory gas samples from the influent and effluent gas lines of the NSSM shipping container.</p> <p>2. <u>Interface</u> The means must interface with the NSSM/shipping container and the rail flat car purge system primary and standby gas supplies.</p> <p>C. A means is required to monitor the nuclear activity of the periodic NSSM effluent gas samples and to provide nuclear radiation monitoring and safety equipment during all transportation functions from the time the NSSM is installed in its shipping containers until it is received at NRDS.</p> <p>1. <u>Design Requirements</u></p> <p>(a) Existing NSSM Nuclear radiation monitoring and safety equipment shall be used to satisfy this requirement. Any modifications or additions to the existing equipment will be specified at a later date.</p> <p>(b) The existing safety equipment consists of portable alpha, beta, and gamma radiation survey meters, self-reading gamma dosimeters, and personnel protection clothing.</p>		
			Existing NSSM Flat Car Purge System Existing NSSM Tractor/Trailer Purge System				Existing NSSM Transportation Nuclear Radiation Monitoring and Safety Equipment

FUNCTIONAL DIAGRAM TITLE AND NUMBER	Transport NSSM to NRDS	5.2.9
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NOMENCLATURE AND NUMBER OF CELLS

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REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Transfer NSSM to NRDS 5.2.9

OR

NOMENCLATURE AND NUMBER OF CEI _____

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.2.9.2 Transport NSSM from WANL to Las Vegas	<p>I. <u>Description of Function</u></p> <p>This function describes the requirements for transporting the NSSM from WANL to Las Vegas, Nevada by railroad. This is accomplished through shipment by special train composed of the following:</p> <ul style="list-style-type: none">a. NSSM rail flat car.b. Instrumentation rail car.c. Tractor/trailer flat car.d. Nitrogen tube trailer flat car.e. Sleeping/dining car.f. Security caboose.g. Train crew caboose.h. Locomotive. <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to contain and transport all monitoring instrumentation during rail shipment of the NSSM from WANL to Las Vegas.</p> <p>1. <u>Design Requirements</u></p> <p>The existing instrumentation rail car shall be used to satisfy this requirement. The monitoring equipment specified in RAS 5.2.9.1 Paragraphs III. B, C, and D. shall be mounted in this car.</p> <p>B. A means is required to store a large gas volume for use in supplying the NSSM flat car purge system during the rail shipment of the NSSM from WANL to Las Vegas.</p>		<p>Existing Instrumentation Rail Car</p> <p>Nitrogen Tube Trailer (Government Furnished Equipment, GFE)</p>

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Transfer NSSM to NRDS 5.2.9

OR

NOMENCLATURE AND NUMBER OF CEI

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)
			NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.				NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
5.2.9.2 Transport NSSM from WANL to Las Vegas	<p>1. <u>Design Requirements</u> An existing nitrogen tube-trailer with a 30,000 SCF capacity shall be used to satisfy this requirement.</p> <p>C. A means is required to transport the nitrogen tube trailer during the rail shipment of the NSSM from WANL to Las Vegas.</p> <p>1. <u>Design Requirements</u> A standard rail flat car shall be leased to satisfy this requirement.</p> <p>D. A means is required to transport the NSSM tractor/trailer during the rail shipment of the NSSM from WANL to Las Vegas.</p> <p>1. <u>Design Requirements</u> A standard rail flat car shall be leased to satisfy this requirement.</p> <p>E. A means is required to provide personnel sleeping and dining facilities during the rail shipment of the NSSM from WANL to Las Vegas.</p> <p>1. <u>Design Requirements</u> A combination sleeping/dining rail car shall be leased to satisfy this requirement.</p> <p>F. A means is required to provide quarters for the AEC security personnel during the rail shipment of the NSSM from WANL to Las Vegas.</p> <p>1. <u>Design Requirements</u> A standard rail caboose shall be leased to satisfy this requirement.</p> <p>G. A means is required to provide quarters for the train operating crew in compliance with standard railroad regulations.</p>		Tube Trailer Flat Car, Leased	5.2.9.2 Transport NSSM from WANL to Las Vegas	<p>1. <u>Design Requirements</u> A standard rail caboose shall be leased to satisfy this requirement.</p> <p>H. A means is required to transport the special NSSM shipping train from WANL to Las Vegas.</p> <p>1. <u>Design Requirements</u> A standard diesel locomotive shall be leased to satisfy this requirement.</p>		Diesel Locomotive, Leased

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Transport NSSM to NRDS, 5.2.9

OR

NOMENCLATURE AND NUMBER OF CEI _____

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.2.9.3 Transfer NSSM from Rail Flat Car to Tractor/ Trailer	<p>I. <u>Description of Function</u></p> <p>This function describes the requirements for transferring the NSSM/shipping container from the NSSM rail flat car to the tractor/trailer.</p> <p>This function consists of the following operations:</p> <ul style="list-style-type: none">a. Unload the tractor/trailer from its rail flat car.b. Transfer NSSM/shipping container from its rail flat car to the tractor/trailer and secure.c. Remove necessary monitoring equipment from instrumentation car and install in electronic cabinet on the tractor/trailer.d. Switch instrumentation leads to the tractor/trailer instrumentation package.e. Switch the NSSM purge from the nitrogen tube trailer supply systems to the tractor/trailer purge system. <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to facilitate the lifting and handling of the NSSM/shipping container.</p> <p>1. <u>Design Requirements</u></p> <p>The NSSM lifting and handling fixture provided in RAS 5.2.7 Paragraph III.D. satisfies this requirement.</p> <p>B. A means is required to transfer the NSSM from its rail flat car to the tractor/trailer.</p> <p>1. <u>Design Requirements</u></p> <p>A standard mobile crane with a capacity of 25,000 lbs. and a hook height of 25 ft. shall be leased to satisfy this requirement.</p>		Lifting and Handling Fixture, NSSM						
			Mobile Crane, Leased						

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REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Transport NSSM to NRDS, 5.2.9

OR

NOMENCLATURE AND NUMBER OF CEI

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.2.9.4 Transport NSSM from Las Vegas to NRDS	<p>I. <u>Description of Function</u></p> <p>The function describes the requirements for transporting the NSSM/shipping container from Las Vegas to NRDS. This is accomplished by an escorted convoy consisting of a tractor/trailer, led by an advance car and a command car, and followed by a security car.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to transport the NSSM/shipping container from Las Vegas to NRDS.</p> <p>1. <u>Design Requirements</u></p> <p>a. Electrical/Pneumatic - None.</p> <p>b. Mechanical - The following equipment is existing and will be used to satisfy this requirement.</p> <p>(1) Tractor - Single-axle, air-conditioned cab, equipped with two-way radio, provision for observer/passenger.</p> <p>(2) Trailer - Low boy or dropped center style for lowest overall height of lading. Tandem axle. Equipped with mounting and tie-down provisions for the NSSM/shipping container. Provision for an NSSM purge system installation, mounting of an observer's seat on the trailer bed and provision for an electronics equipment cabinet.</p>		Existing NSSM Tractor/Trailer

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Transport NSSM to NRDS, 5,2,9

OR

NOMENCLATURE AND NUMBER OF CEI

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)
			NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.				NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
5.2.9.4 Transport NSSM from Las Vegas to NRDS	B. A requirement for an advance car, command car and security car to be used in escorting the tractor/trailer to NRDS will be satisfied with existing or leased cars. 1. <u>Design Requirements</u> - None		Advance Car Command Car Security Car

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Transport NSSM to NRDS, 5.2.9

NOMENCLATURE AND NUMBER OF CEI

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(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.2.9.5 Return Shipping Train and Tractor/ Trailer to WANL	<p>I. <u>Description of Function</u></p> <p>This function describes the requirements for the return of the shipping train, tractor/trailer and NSSM shipping container. This function consists of the following operations:</p> <ul style="list-style-type: none">a. Return tractor/trailer and NSSM shipping container to Las Vegas from NRDS.b. Load and secure tractor/trailer to its rail flat car.c. Load and secure NSSM shipping container on its rail flat car.d. Return shipping train to WANL from Las Vegas. <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to transport the NSSM tractor/trailer and NSSM shipping container to WANL from Las Vegas.</p> <p>1. <u>Design Requirements</u></p> <p>The standard rail flat car provided in RAS 5.2.9.2, Paragraph III.D. satisfies this requirement.</p>		Tractor Trailer Flat Car, Leased

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide Test Assembly Components 5.0

OR

NOMENCLATURE AND NUMBER OF CEI _____

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.3 Provide Nozzle and Assembly Hardware	I. <u>Description of Function</u> A requirement exists to provide a factory acceptance tested nozzle, with assembly hardware, at the Test Assembly assembly area.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide Nozzle and Assembly Hardware 5.3
NOMENCLATURE AND NUMBER OF CEI _____

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (6)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.3.1 Factory Acceptance Test Nozzle	<p>I. <u>Description of Function</u> This function provides for inspecting and/or testing the nozzle at the contractor's plant to verify compliance with the appropriate approved specifications.</p> <p>II. <u>Test Article Design Characteristics Created By This Function</u> None</p> <p>III. <u>TSE Design Requirements Created By This Function</u> Design requirements will not be prepared for this function. This function is presented for continuity only.</p>								

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REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide Nozzle and Assembly Hardware 5.3

OR

NOMENCLATURE AND NUMBER OF CEI

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.3.2 Prepare Nozzle for Shipment	<p>I. <u>Description of Function</u></p> <p>A requirement exists to prepare the Nozzle for shipment to the assembly site. This function consists of providing the item with protection from contamination and damage during shipping operations.</p> <p>II. <u>Test Article Design Characteristics Created By This Function</u></p> <p>Designated lift points shall be provided in the nozzle design for handling with an overhead crane and lifting sling. The requirement is for lifting the item in a nozzle up attitude for installation into its shipping container.</p> <p>III. <u>TSE Design Characteristics Created By This Function</u></p> <p>A. A means is required to prevent contamination of the various openings of the nozzle. The means must also protect the machined flange surface from nicks, dents and scratches.</p> <p>1. <u>Design Requirements</u></p> <p>a. Electrical/Pneumatic - N/A.</p> <p>b. Mechanical</p> <p>(1) The means must be capable of preventing contaminants larger than _____ microns from entering the specified openings.</p> <p>(2) The material used for the means must not be harder than Rockwell _____.</p> <p>(3) The method of fastening the closure to the nozzle should be such that the closure cannot be accidentally removed during shipping and handling operations.</p>		Nozzle Shipping Closure Kit.

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide Nozzle and Assembly Hardware 5.3

NOMENCLATURE AND NUMBER OF CEI _____

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)
			NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.				NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
5.3.2 Prepare Nozzle for Shipment	<p>2. <u>Interface</u></p> <p>The means must interface with the specified nozzle openings, the shipping container and, possibly the overhead crane if the lifting bail concept is employed.</p> <p>B. A means is required to interconnect the overhead crane hook and the nozzle for handling and installation of the nozzle into its shipping container.</p> <p>1. <u>Design Requirements</u></p> <p>a. Electrical/Pneumatic - N/A.</p> <p>b. Mechanical - The device shall be capable of lifting the nozzle. The nozzle weight will be listed in the mass properties analysis report.</p> <p>2. <u>Interface</u></p> <p>The means must interface with the nozzle at the designated lifting points and the facility lifting equipment.</p> <p>C. A means is required to contain and protect the nozzle during shipment to the assembly site. The means must be designed and constructed so that environmental conditions and/or shock and vibration loads imposed by land, sea or air transportation will not degrade the item or the means. The means shall include features for handling with a forklift or overhead crane.</p>	S-047-S038	Nozzle Sling.	5.3.2 Prepare Nozzle for Shipment.	<p>1. <u>Design Requirements</u></p> <p>a. Electrical/Pneumatic - N/A.</p> <p>b. Mechanical</p> <p>(1) <u>Loads</u></p> <p>The nozzle weight will be listed in the mass properties analysis rep. Handling and Transportation Loads: (TBD)</p> <p>(2) <u>Attitude</u> - The means must be designed to support and protect the nozzle in a nozzle up attitude.</p> <p>2. <u>Interface</u></p> <p>The device shall interface with the nozzle, the overhead crane, the forklift and the transport vehicle.</p>	S047

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide Nozzle and Assembly Hardware 5.3
NOMENCLATURE AND NUMBER OF CEI _____

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(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.3.3 Store Nozzle	<p>I. <u>Description of Function</u></p> <p>A requirement exists to store the nozzle until it is needed at the assembly site.</p> <p>This function consists of providing protection from contamination and damage during storage periods.</p> <p>II. <u>Test Article Design Characteristics Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to contain the nozzle. The means must be designed and constructed to protect the item from contamination damage while stored in a controlled environment for a period up to ___ years.</p> <p>1. <u>Design Requirements</u></p> <p>The nozzle shipping container provided in RAS 5.3.2 Paragraph III.C. satisfies this requirement.</p>		Nozzle Shipping Container.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide Nozzle and Assembly Hardware 5.3

OR

NOMENCLATURE AND NUMBER OF CEI _____

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.3.4 Transport Nozzle to NRDS	<p>I. <u>Description of Function</u></p> <p>A requirement exists to ship the nozzle in its shipping container via land or air to the assembly site. The shipping function consists of transporting the nozzle from either the storage or packaging area to the loading area, loading and securing it on the transport vehicle.</p> <p>II. <u>Test Article Design Characteristics Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Characteristics Created By This Function</u></p> <p>A. A means is required to contain and protect the nozzle during shipment to the assembly site. The means must be designed and constructed so that environmental conditions and/or shock and vibration loads imposed by land or air transportation will not degrade the item or the means. The means should include features for handling with a forklift or overhead crane.</p> <p>1. <u>Design Requirements</u></p> <p>The nozzle shipping container provided in RAS 5.3.2 Paragraph III.C. satisfies this requirement.</p>		Nozzle Shipping Container.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide Test Assembly Components 5.0
NOMENCLATURE AND NUMBER OF CEI _____

OR
(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.4 Provide Nozzle Skirt Extension	1. <u>Description of Function</u> A requirement exists to provide a factory acceptance tested nozzle skirt extension at the Test Assembly assembly area.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide Nozzle Skirt Extension 5.4
NOMENCLATURE AND NUMBER OF CEI _____

OR
(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.4.1 Factory Acceptance Test Nozzle Skirt Extension	<p>I. <u>Description of Function</u></p> <p>This function provides for inspecting and/or testing the nozzle skirt extension at the contractor's plant to verify compliance with the appropriate approved specifications.</p> <p>II. <u>Test Article Design Characteristics Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>Design requirements will not be prepared for this function. This function is presented for continuity only.</p>

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide Nozzle Skirt Extension - 5.4

OR

NOMENCLATURE AND NUMBER OF CEI _____

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.4.2 Prepare Nozzle Skirt Extension for Shipment	<p><u>I. Description of Function</u></p> <p>A requirement exists to prepare the Nozzle Skirt Extension for shipment to the assembly site. This function consists of providing the item with protection from contamination and damage during shipping operations.</p> <p><u>II. Test Article Design Characteristics Created by This Function</u></p> <p>Designated lift points shall be provided in the nozzle skirt extension design for handling with an overhead crane and lifting sling. The requirement is for lifting the item in a nozzle down attitude for installation into its shipping container.</p> <p><u>III. TSE Design Characteristics Created by This Function</u></p> <p>A. A means is required to protect the machined flange surface from nicks, dents and scratches.</p> <p><u>1. Design Requirements</u></p> <p>a. Electrical/Pneumatic - N/A.</p> <p>b. Mechanical</p> <p>(1) The method of fastening the closure to the skirt extension should be such that the closure cannot be accidentally removed during shipping and handling operations.</p> <p>(2) The means may include a bail for handling with an overhead crane and/or lifting sling. This requirement shall be coordinated with the skirt extension design as designated in Paragraph II.</p> <p>(3) Loads: The Nozzle Skirt Extension Weight will be listed in the Mass Properties Analysis Report. Handling & Transportation: TBD</p>	S047	Nozzle Skirt Extension Closure.						

REVISION _____ DATE 9/70 APPROVAL _____ DOCUMENT NO. _____ PAGE NO. 5-44 OF _____

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide Nozzle Skirt Extension 5.4

OR

NOMENCLATURE AND NUMBER OF CEI _____

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE)(C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	5.4.2 FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE)(C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
5.4.2 Prepare Nozzle Skirt Extension for Shipment	<p><u>2. Interface</u></p> <p>The means must interface with the specified nozzle skirt extension openings, the shipping container and, possibly the overhead crane if the lifting bail concept is employed.</p> <p>B. A means is required to interconnect the overhead crane hook and the skirt extension for handling and installation of the skirt extension into its shipping container.</p> <p><u>1. Design Requirements</u></p> <p>a. Electrical/Pneumatic - N/A.</p> <p>b. Mechanical - The device shall be capable of lifting the nozzle skirt extension. The nozzle skirt extension weight will be listed in the mass properties analysis report.</p> <p><u>2. Interface</u></p> <p>The means must interface with the skirt extension or the AGE closure and the facility crane hook.</p> <p>C. A means is required to contain and protect the skirt extension during shipment to the assembly site. The means must be designed and constructed so that environmental conditions and/or shock and vibration loads imposed by land, sea or air transportation will not degrade the item or the means. The means shall include features for handling with a forklift or overhead crane.</p> <p><u>1. Design Requirements</u></p> <p>a. Electrical/Pneumatic - N/A.</p>	S047	Nozzle Skirt Extension Sling.	5.4.2 Prepare Nozzle Skirt Extension for Shipment	<p>b. Mechanical</p> <p>(1) Loads</p> <p>Nozzle Skirt Extension Weight: S047 Will be listed in the Mass Properties Analysis Report. Handling & Transportation: TBD</p> <p>(2) Attitude</p> <p>The means must be designed to support and protect the skirt extension in a nozzle down attitude.</p> <p><u>2. Interface</u></p> <p>The device shall interface with the skirt extension, the overhead crane, the forklift and the transport vehicle.</p>	S047

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide Nozzle Skirt Extension 5.4

OR

NOMENCLATURE AND NUMBER OF CEI

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.4.3 Store Nozzle Skirt Extension.	<p>I. <u>Description of Function</u></p> <p>A requirement exists to store the nozzle skirt extension until it is needed at the assembly site.</p> <p>This function consists of providing protection from contamination and damage during storage periods.</p> <p>II. <u>Test Article Design Characteristics Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Characteristics Created By This Function</u></p> <p>A. A means is required to contain the nozzle skirt extension. The means must be designed and constructed to protect the item from contamination damage while stored in a controlled environment for a period up to 5 years.</p> <p>1. <u>Design Requirements</u></p> <p>The nozzle skirt extension shipping container provided in RAS 5.4.2 Paragraph III.C. satisfies this requirement.</p>		Nozzle Skirt Extension Ship- ping Container.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide Nozzle Skirt Extension 5.4

OR

NOMENCLATURE AND NUMBER OF CEI

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.4.4 Transport Nozzle Skirt Extension to NRDS	<p>I. <u>Description of Function</u></p> <p>A requirement exists to ship the nozzle skirt extension in its shipping container via land or air to the assembly site. The shipping function consists of transporting the nozzle skirt extension from either the storage or packaging area, loading and securing it on the transport vehicle.</p> <p>II. <u>Test Article Design Characteristics Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Characteristics Created By This Function</u></p> <p>A. A means is required to contain and protect the nozzle skirt extension during shipment to the assembly site. The means must be designed and constructed so that environmental conditions and/or shock and vibration loads imposed by land or air transportation will not degrade the item or the means. The means should include features for handling with a forklift or overhead crane.</p> <p>1. <u>Design Requirements</u></p> <p>The nozzle skirt extension shipping container provided in RAS 5.4.2 Paragraph III.C. satisfies this requirement.</p>		Nozzle Skirt Extension Ship- ping Container.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide Test Assembly Components 5.0
NOMENCLATURE AND NUMBER OF CEI _____

OR
(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.5 Provide Miscellaneous Test Article/ Test Car Interface Equipment and Piping.	<p>I. <u>Description of Function</u></p> <p>This function provides the miscellaneous interface equipment and piping required to mate the test article to the test car. A detailed list of this equipment cannot be provided until the preliminary design of the test car is available. The equipment will include all electrical, pneumatic, and mechanical hardware which interfaces directly with the test article but has not been previously assembled on the test car.</p> <p>A list of the test car components is provided for RAS 5.1; however, this list is subject to change as the test car design progresses.</p>

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide Miscellaneous Test Article/Test Car Interface Equipment and Piping 5.5

OR
(A)

NOMENCLATURE AND NUMBER OF CEI _____

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.5.1 Factory Acceptance Test Miscel- laneous Equipment.	<p>I. <u>Description of Function</u></p> <p>This function provides for testing and inspecting the miscellaneous equipment at the contractor's plant to verify compliance with the appropriate approved specifications.</p> <p>II. <u>Test Article Design Characteristics Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>Design requirements will not be prepared for this function. This function is shown for continuity only.</p>

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide Miscellaneous Test Article/Test Car Interface Equipment and Piping 5.5

OR

NOMENCLATURE AND NUMBER OF CEI _____ (A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.5.2 Prepare Miscellaneous Equipment for Shipment	<p>I. <u>Description of Function</u></p> <p>This function prepares the miscellaneous interface equipment and piping for shipment to NRDS.</p> <p>Preparation for shipment will include cleaning and packaging all items to the proper specification level and placing the items in shipping and storage containers.</p> <p>II. <u>Test Article Design Characteristics Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>Design requirements will be prepared for this function when equipment definition becomes available.</p>

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide Miscellaneous Test Article/Test Car Interface Equipment and Piping 5.5

OR

NOMENCLATURE AND NUMBER OF CEI

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.5.3 Store Miscellaneous Equipment.	<p>I. <u>Description of Function</u></p> <p>This function provides for the storage of the miscellaneous interface equipment until it is needed at NRDS for the buildup of the test assembly. The maximum storage period is 5 years.</p> <p>The function includes the transporting of the equipment in its shipping or storage container from the packaging area to the storage area.</p> <p>Since the equipment has been packaged for shipment prior to being placed in storage, no additional preparation for storage is anticipated. This function includes the removal of the equipment from the storage area and transporting it to the shipping area for shipment to NRDS when required.</p> <p>II. <u>Test Article Design Characteristics Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Characteristics Created By This Function</u></p> <p>Design requirements will be prepared for this function when equipment definition becomes available.</p>

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide Miscellaneous Test Article/Test Car Interface Equipment and Piping 5.5

NOMENCLATURE AND NUMBER OF CEI

OR

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.5.4 Transport Miscellaneous Equipment to NRDS.	<p>I. <u>Description of Function</u></p> <p>This function provides for the shipment of the miscellaneous interface equipment and piping to NRDS via commercial truck, rail, or air.</p> <p>It includes any pre-transportation function such as loading and securing the equipment on a commercial carrier. This function includes all phases of transportation from the time the items leave the contractor's plant until it arrives at a receiving, inspection area at NRDS.</p> <p>II. <u>Test Article Design Characteristics Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Characteristics Created By This Function</u></p> <p>Design requirements will be prepared for this function when equipment definition becomes available.</p>								

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REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide Test Assembly Components 5.0

OR

NOMENCLATURE AND NUMBER OF CEI

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
			NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO		TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.6 Provide CDDA Equipment.	<p>I. <u>Description of Function</u></p> <p>A requirement exists to provide the following CDDA equipment for the R-1 reactor test. This equipment will be supplied as part of the NSSM for R-2, R-3, R-4, and R-5.</p> <p>Eighteen (18) control drum actuators for mounting under the privy roof. These actuators shall be of the electric stepper motor type.</p> <p>Two spare control drum actuators.</p> <p>Eighteen (18) actuator malfunction override devices plus one (1) spare.</p> <p>Eighteen (18) actuator malfunction override device guide tubes</p> <p>Miscellaneous mounting and assembly hardware.</p>	Trade Study No. 764

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide CDDA Equipment 5.6

OR

NOMENCLATURE AND NUMBER OF CEI _____

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.6 1 Factory Acceptance Test CDDA Equipment.	I. <u>Description of Function</u> This function provides for checkout of the CDDA equipment at the vendor's plant to verify compliance with the appropriate equipment specifications. II. <u>Test Article Design Requirements Created By This Function</u> None III. <u>TSE Design Requirements Created By This Function</u> Design requirements will not be prepared for this function. The function is shown for continuity only.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide CDDA Equipment 5.6

OR

NOMENCLATURE AND NUMBER OF CEI

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQP REQTS (F4)	
5.6.2 Prepare CDDA Equipment for Shipment.	<p>I. <u>Description of Function</u></p> <p>A requirement exists to prepare the CDDA equipment for shipment to NRDS for R-1 testing. This equipment will be supplied as part of the NSSM for R-2, R-3, R-4, and R-5.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to package the CDDA for shipment to NRDS as follows:</p> <p>Eighteen (18) control drum actuators plus two (2) spares.</p> <p>Eighteen (18) actuator malfunction override devices plus one (1) spare.</p> <p>Eighteen (18) actuator malfunction override device guide tubes.</p> <p>Miscellaneous mounting and assembly hardware.</p> <p>1. <u>Design Requirements</u></p> <p>a. Mechanical</p> <p>(1) The means shall contain the CDDA equipment and provide and maintain a positive dry inert atmosphere with a water content of less than (TBD) parts per million by weight. The inert gas shall conform to MSFC Specification 364B.</p>		CDDA Shipping/ Storage Containers

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide CDDA Equipment 5.6 OR
NOMENCLATURE AND NUMBER OF CEI _____ (A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
5.6.2 Prepare CDDA Equipment for Shipment.	(2) The means must be designed and constructed so that the shock and vibration loads imposed by land or air transportation will not degrade this item or the means. (3) The means should include features for handling with a forklift or overhead crane.						

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REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide CDDA Equipment 5.6
NOMENCLATURE AND NUMBER OF CEI _____

OR
(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.6.3 Store CDDA Equipment.	<p>I. <u>Description of Function</u></p> <p>This function provides for the storage of the CDDA equipment until it is needed at NRDS for the build-up of the test assembly. The maximum storage period is 5 years.</p> <p>The function includes the transportation of the equipment in its shipping or storage container from the packaging area to the storage area.</p> <p>Since the equipment has been packaged for shipment prior to being placed in storage, no additional preparation for storage is anticipated.</p> <p>This function includes the removal of the equipment from the storage area and transporting it to the shipping area for shipment to NRDS when required.</p> <p>II. <u>Test Article Design Characteristics Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Characteristics Created By This Function</u></p> <p>A. A means is required to contain and maintain a dry inert atmosphere for the CDDA equipment during storage.</p> <p>1. <u>Design Requirements</u></p> <p>The shipping container provided in RAS 5.6.2 satisfies this requirement.</p>		CDDA Shipping/ Storage Containers

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide CDDA Equipment 5.6 OR
NOMENCLATURE AND NUMBER OF CEI _____ (A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.6.4 Transport CDDA Equipment to NRDS.	I. <u>Description of Function</u> A requirement exists to transport the CDDA equipment as packaged to NRDS by truck, train or air. II. <u>Test Article Design Requirements Created By This Function</u> None III. <u>TSE Design Requirements Created By This Function</u> None

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide Test Assembly Component 5.0

NOMENCLATURE AND NUMBER OF CEI _____

OR
(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND EQUIPMENT REQTS (F4)	
5.7 Provide Non-Nuclear Instrumenta- tion.	1. <u>Description of Function</u> This function provides the non-nuclear instrumenta- tion required to monitor various parameters such as gas concentrations, surface fluid and gas temperatures, and container and area pressure levels on the test assembly. NOTE: A complete list of the required instrumentation cannot be provided until the test car assembly design is completed

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide Non-Nuclear Instrumentation5.7

OR

NOMENCLATURE AND NUMBER OF CEI

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.7.1 Factory Acceptance Tests, Non- Nuclear Instrumenta- tion.	<p>I. <u>Description of Function</u></p> <p>The non-nuclear instrumentation will be tested and inspected at the contractor's plant(s) to verify compliance with the appropriate approved specifications.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>Design requirements will not be prepared for this function. This function is shown for continuity only.</p>

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide Non-Nuclear Instrumentation 5.7

OR

NOMENCLATURE AND NUMBER OF CEI

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.7.2 Prepare Non-Nuclear Instrumenta- tion for Shipment.	<p>I. <u>Description of Function</u></p> <p>A requirement exists to prepare the non-nuclear instrumentation for shipment to the assembly site.</p> <p>This function consists of providing protection from contamination and damage during shipping operations.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to contain and protect the non-nuclear instrumentation during shipment to the assembly site. The means must be designed and constructed so that environmental conditions and/or shock and vibration loads imposed by land or air transportation will not degrade the item or the means. The means shall include features for handling with a forklift.</p> <p>1. <u>Design Requirements</u></p> <p>a. Electrical/Pneumatic - N/A.</p> <p>b. Mechanical</p> <p>(1) The non-nuclear instrumentation weight will be listed in the mass property analysis report. Handling & Transportation Loads: TBD</p> <p>(2) Attitude - The means must be designed to support and protect the non-nuclear instrumentation in any attitude.</p>	S047	Non-Nuclear Instrumentation Shipping Crates.

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide Non-Nuclear Instrumentation 5.7

OR

NOMENCLATURE AND NUMBER OF CEI

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO (H)	EQUIPMENT IDENTIFICATION (E)	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO (H)	EQUIPMENT IDENTIFICATION (E)
			NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.				NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
5.7.2 Prepare Non-Nuclear Instrumenta- tion for Shipment	2. <u>Interface</u> The means must interface with the non-nuclear instrumentation and the facility forklift.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide Non-Nuclear Instrumentation 5.7

OR
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NOMENCLATURE AND NUMBER OF CEI

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.7.3 Store Non-Nuclear Instrumenta- tion.	<p>I. <u>Description of Function</u></p> <p>A requirement exists to store the non-nuclear instrumentation until it is needed at the assembly site.</p> <p>This function consists of providing protection from contamination and damage during storage periods.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to contain the non-nuclear instrumentation. The means must be designed and constructed to protect the item from contamination while stored in a controlled environment for a period up to 5 years.</p> <p>1. <u>Design Requirements</u></p> <p>The shipping crate provided in RAS 5.7.2 satisfies this requirement.</p>		Non-Nuclear Instrumentation Shipping Crates.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide Non-Nuclear Instrumentation 5.7
NOMENCLATURE AND NUMBER OF CEI _____

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.7.4 Transport Non-Nuclear Instrumenta- tion to NRDS	<p>I. <u>Description of Function</u></p> <p>A requirement exists to ship the non-nuclear instrumentation in its shipping container via land or air to NRDS.</p> <p>The shipping function consists of transporting the item from either the storage or packaging area to the loading area, loading and securing it on the transport vehicle.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to contain and protect the non-nuclear instrumentation during shipment to the assembly site. The means must be designed and constructed so that environmental conditions and/or shock and vibration loads imposed by land or air transportation will not degrade the item or the means. The means shall include features for handling with a forklift.</p> <p>1. <u>Design Requirements</u></p> <p>The shipping crate provided in RAS 5.7.2 satisfies this requirement.</p>		Non-Nuclear Instrumentation Shipping Crates.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Provide Test Assembly Components 5.0
NOMENCLATURE AND NUMBER OF CEI _____

OR
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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
5.8 Provide Experimental Hardware	<p>I. <u>Description of Function</u></p> <p>This function provides the experimental hardware required for the reactor series ground test program. Experimental hardware will be required to perform side by side experiments during a reactor test. Two such experiments, planned for R-1, are CDDA and SSCVA side by side tests. Other experiments for the R-1 and other reactor tests will be specified in Data Item T-102, Reactor Test Plan/Test Specification.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>Design requirements will not be provided for this function. This function is shown for continuity only.</p>								

FUNCTION 4.0
ASSEMBLE AND CHECKOUT TEST ASSEMBLY

<u>FUNCTION</u>	<u>TITLE</u>	<u>PAGE NO.</u>
4.0	Assemble and Checkout Test Assembly	4-1
4.1	Receive, Inspect, and Disposition Test Assembly Components	4-2
4.1.1	Receive, Inspect, and Disposition Test Car	4-3
4.1.2	Receive, Inspect, and Disposition Nuclear Subsystem Module (NSSM)	4-4
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4.1.4	Receive, Inspect, and Disposition Nozzle Skirt Extension	4-8
4.1.5	Receive, Inspect, and Disposition Miscellaneous Test Article/ Test Car Interface Equipment and Piping	4-10
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4.2.5	Install Nozzle Skirt Extension	4-23
4.2.6	Assemble Miscellaneous Test Article/Test Car Interface Equipment and Piping	4-24
4.2.7	Install Non-Nuclear Instrumentation	4-25
4.2.8	Install Experimental Hardware	* No RAS Provided for this Function
4.3	Perform Post-Assembly Checkout of the Test Assembly	4-26
4.3.1	Perform Test Assembly Electrical Checkout	4-27
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FUNCTION 4.0 (Continued)

<u>FUNCTION</u>	<u>TITLE</u>	<u>PAGE NO.</u>
4.3.3	Perform Test Assembly Functional Checkout	4-31
4.4	Store Test Assembly	4-33
4.4.1	Prepare Test Assembly for Storage	4-34
4.4.2	Store Test Assembly	4-36
4.4.3	Remove Test Assembly from Storage	4-38

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Reactor Series Ground Test Program

OR

NOMENCLATURE AND NUMBER OF CEI

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
4.0 Assemble and Checkout Test Assembly	I. <u>Description of Function</u> This function describes the assembly and checkout of the test assembly for reactor ground testing. The test assembly components will be received, inspected, installed, and functionally tested at the assembly facility.			The facility capability which must be established to support the following lower level functional operations is defined in terms of general requirements listed below. Specific quantitative requirements will be supplied in the applicable portions of the appropriate facility data items. 1. <u>Environment</u> a. Temperature and humidity control of general work area. b. Clean rooms c. Illumination 2. <u>Utilities</u> a. Electrical power b. Filtered and regulated purge gas. 3. <u>Civil/Structural/Architectural</u> a. Enclosed work area. b. Bonded storage facility. 4. <u>Equipment</u> a. Overhead, mobile lifting equipment. b. Hydraset or equivalent c. Forklift truck d. General purpose lifting slings. e. Hand tools f. Radiation Monitoring Equipment

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Assemble and Checkout Test Assembly 4.0
NOMENCLATURE AND NUMBER OF CEI _____

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
4.1 Receive, Inspect and Disposition Test Assembly Components	<p>I. <u>Description of Function</u></p> <p>This function describes receiving, inspection, and disposition of the test assembly components and is required to verify that all parts are received and that no damage has incurred during transit.</p> <p>The following major components will be received at the assembly facility:</p> <ol style="list-style-type: none">1) Test Car2) Nuclear Subsystem Module (NSSM)3) Nozzle & Nozzle Assembly Hardware4) Nozzle Skirt Extension (Required for R-4 and R-5 tests only)5) Miscellaneous Test Article/Test Car Interface Equipment and Piping6) Control Drum Drive Assembly Equipment (For R-1 only)7) Non-Nuclear Instrumentation8) Experimental Hardware			Reference RAS 4.0.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Receive, Inspect, and Disposition Test Assembly Components 4.1

OR

NOMENCLATURE AND NUMBER OF CEI

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
4.1.1 Receive, Inspect, and Disposition Test Car	I. <u>Description of Function</u> A requirement exists to receive, inspect and disposition the test car A. <u>Receive</u> Upon arrival of the test car at the Test Assembly assembly area an accountability inspection shall be accomplished to verify the presence of all hardware B. <u>Inspect</u> Closures and packaging required for trans- portation shall be removed from the test car to provide visual access to all components A thorough visual examination shall be conducted for evidence of damage or mis- handling C. <u>Disposition</u> No further disposition is required. II. <u>Test Article Design Requirements Created By This Function</u> None III. <u>TSE Design Requirements Created By This Function</u> N/A			Reference RAS 4.0.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Receive, Inspect, and Disposition Test Assembly Components 4.1
NOMENCLATURE AND NUMBER OF CEI _____

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
4.1.2 Receive, Inspect and Dis- position Nuclear Subsystem Module (NSSM)	<p>I. <u>Description of Function</u></p> <p>A requirement exists to receive, inspect and disposition the NSSM.</p> <p>A. <u>Receive</u></p> <p>Upon arrival of the NSSM at the receiving station, an accountability inspection shall be accomplished to verify the presence of all hardware. A visual inspection of the shipping container, purge and monitoring system and the transport vehicle shall be accomplished.</p> <p>The NSSM shall be disconnected and removed from its shipping container and placed in a stand which will allow an inspection of the outer surfaces of the NSSM. The shipping container would remain on the transport vehicle.</p> <p>The NSSM purge shall be maintained during the entire receive, inspect and disposition operation.</p> <p>B. <u>Inspect</u></p> <p>Closures and packaging required for transporting shall be removed to provide visual access to the NSSM.</p> <p>A thorough visual inspection shall be conducted for evidence of damage or mishandling.</p> <p>After inspection, all closures and protective devices necessary to protect the NSSM from contaminants shall be reinstalled.</p>			Reference RAS 4.0.

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Receive, Inspect and Disposition Test Assembly Components 4.1

OR

NOMENCLATURE AND NUMBER OF CEI

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
4.1.2 Receive, Inspect and Disposition Nuclear Subsystem Module (NSSM)	<p>C. <u>Disposition</u></p> <p>The NSSM shall be removed from the storage/inspection stand and transported to the Test Assembly assembly area.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>The pressure vessel shall serve as the attachment point during all NSSM lifting and positioning operations.</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to facilitate lifting and handling of the NSSM from the shipping container to the NSSM storage stand.</p> <p>1. <u>Design Requirements</u></p> <p>The NSSM lifting and handling fixture specified in RAS 5.2.7 Paragraph III.D. satisfies this requirement.</p> <p>B. A means is required for continuous purge of the NSSM during the entire function.</p> <p>1. <u>Design Requirements</u></p> <p>The means shall satisfy the purge requirements specified in RAS 5.2.9.1 Paragraph III.B.</p> <p>C. A means is required to hold the NSSM during a visual inspection.</p>			4.1.2 Receive, Inspect and Disposition Nuclear Subsystem Module (NSSM)	<p>1. <u>Design Requirements</u></p> <p>Mechanical - The PV/NSSM holding stand shall be capable of supporting the NSSM. The NSSM weight will be listed in the mass properties analysis report. It shall maximize the visual access to the NSSM. The requirements for this storage stand are identical to the storage stand identified in RAS 5.2.8.2, Paragraph III.C.</p> <p>2. <u>Interface</u></p> <p>The storage/inspection stand shall interface with the NSSM.</p>	S-047

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Receive, Inspect and Disposition Test Assembly Components 4.1

OR

NOMENCLATURE AND NUMBER OF CEI _____

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
4.1.3 Receive, Inspect and Disposition Nozzle	<p>I. <u>Description of Function</u></p> <p>A requirement exists to receive, inspect and disposition the nozzle.</p> <p>A. <u>Receive</u></p> <p>Upon arrival of the nozzle at the receiving station, an accountability inspection shall be accomplished to verify the presence of all hardware and paperwork. The nozzle will then be off-loaded from the transporter. The nozzle weight will be listed in the mass properties analysis report.</p> <p>B. <u>Inspect</u></p> <p>Closures and packaging required for transporting shall be removed to provide visual access.</p> <p>A thorough visual inspection shall be conducted for evidence of damage or mishandling.</p> <p>After inspection all closures and protective devices necessary to protect the nozzle from environmental contaminants shall be reinstalled.</p> <p>C. <u>Disposition</u></p> <p>The nozzle shall be transported to the Test Assembly assembly area or to an approved storage area.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>Designated lift points shall be provided in the nozzle design.</p>	S047- CP090290-F1

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Receive, Inspect and Disposition Test Assembly Components 4.1 OR
NOMENCLATURE AND NUMBER OF CEI _____ (A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)
			NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.				NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
4.1.3 Receive, Inspect and Disposition Nozzle	III. <u>TSE Design Requirements Created By This Function</u> A. A means is required to lift the nozzle for receiving, inspection, storage and on-site transfer. 1. <u>Design Requirements</u> The nozzle sling provided in RAS 5.3.2 Paragraph III. B. satisfies this requirement. 2. <u>Interface</u> a. Nozzle - The device shall interface with the nozzle at designated lifting points. b. Facility - The device shall interface with facility lifting equipment.	S047- CP090290-F1	Nozzle Sling

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Receive, Inspect and Disposition Test Assembly Components 4.1

OR

NOMENCLATURE AND NUMBER OF CEI _____

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
4.1.4 Receive, Inspect and Disposition Nozzle Skirt Extension	<p>I. <u>Description of Function</u></p> <p>A requirement exists to receive, inspect and disposition the nozzle skirt extension.</p> <p>A. <u>Receive</u></p> <p>Upon arrival of the nozzle skirt extension at the receiving station, an accountability inspection shall be accomplished to verify the presence of all hardware and paperwork. The nozzle skirt extension will then be off-loaded from the transporter. The nozzle skirt extension weight will be listed in the mass properties analysis report.</p> <p>B. <u>Inspect</u></p> <p>Closures and packaging required for transporting shall be removed to provide visual access</p> <p>A thorough visual inspection shall be conducted for evidence of damage or mishandling.</p> <p>After inspection all closures and protective devices necessary to protect the nozzle skirt extension from environmental contaminants shall be reinstalled.</p> <p>C. <u>Disposition</u></p> <p>The nozzle skirt extension shall be transported to the Test Assembly assembly area or to an approved storage area.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>Designated lift points shall be provided in the nozzle skirt extension design.</p>	S047-CP090290-F1

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Receive, Inspect and Disposition Test Assembly Components 4.1 OR
NOMENCLATURE AND NUMBER OF CEI _____ (A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
4.1.4 Receive, Inspect, and Disposition Nozzle Skirt Extension	III. <u>TSE Design Requirements Created By This Function</u> A. A means is required to lift the nozzle skirt extension for receiving, inspection, storage and on-site transfer. 1. <u>Design Requirements</u> The nozzle skirt extension sling provided in RAS 5.4.2 Paragraph III. B. satisfies the requirement. 2. <u>Interface</u> a. Nozzle Skirt Extension - The device shall interface with the nozzle skirt extension at designated lifting points. b. Facility - The device shall interface with facility lifting equipment.	S047- CP090290-F1	Nozzle Skirt Extension Sling

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Receive, Inspect and Disposition Test Assembly Components 4.1

OR

NOMENCLATURE AND NUMBER OF CEI

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
4.1.5 Receive, Inspect and Disposition Miscellaneous Test Article/ Test Car Interface Equipment and Piping	<p>I. <u>Description of Function</u></p> <p>A requirement exists to receive, inspect and disposition the miscellaneous interface equipment and piping at the assembly facility.</p> <p>A. <u>Receive</u></p> <p>Upon arrival of the miscellaneous equipment at the receiving station an accountability inspection shall be accomplished to verify the presence of all hardware. The miscellaneous equipment shall be off-loaded from the transporter</p> <p>B <u>Inspect</u></p> <p>Closures and packaging required for transporting shall be removed from the miscellaneous equipment to provide visual access to all components. A through visual examination shall be conducted for evidence of damage or mishandling</p> <p>C <u>Disposition</u></p> <p>The miscellaneous equipment shall be transported to the Test Assembly assembly area or an approved storage area.</p> <p>II <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III <u>TSE Design Requirements Created By This Function</u></p> <p>Design requirements will be prepared for this function when equipment definition becomes available.</p>			Reference RAS 4.0

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Receive, Inspect and Disposition Test Assembly Components 4.1

OR

NOMENCLATURE AND NUMBER OF CEI _____

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
4.1.6 Receive, Inspect and Disposition CDDA Equip- ment.	I. <u>Description of Function</u> A requirement exists to receive, inspect and disposition the CDDA equipment at NRDS for R-1 testing only. This equipment will be shipped as part of the NSSM for R-2, 3, 4, and 5 testing. A. <u>Receive</u> Upon arrival of the CDDA equipment at the receiving station an accountability inspection shall be accomplished to verify the presence of all hardware. The CDDA equipment shall be off loaded from the transporter. B. <u>Inspect</u> Closures and packaging required for transporting shall be removed from the CDDA equipment to provide visual access to all components. A thorough visual examination shall be conducted for evidence of damage or mishandling. C. <u>Disposition</u> The CDDA equipment shall be transported to the Test Assembly assembly area or an approved storage area. II. <u>Test Article Design Requirements Created By This Function</u> None III. <u>TSE Design Requirements Created By This Function</u> None			Reference RAS 4.0.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Receive, Inspect and Disposition Test Assembly Components 4.1
NOMENCLATURE AND NUMBER OF CEI _____

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
4.1.7 Receive, Inspect and Disposition Non-Nuclear Instrumentation	<p>I. <u>Description of Function</u></p> <p>A requirement exists to receive, inspect and disposition the non-nuclear instrumentation.</p> <p>A. <u>Receive</u></p> <p>Upon arrival of the non-nuclear instrumentation at the receiving station, an accountability inspection shall be accomplished to verify the presence of all hardware and paperwork.</p> <p>The instrumentation will then be off-loaded from the transporter. The non-nuclear instrumentation weight will be listed in the mass properties analysis report.</p> <p>B. <u>Inspect</u></p> <p>Closures and packaging required for transporting shall be removed to provide visual access to all components.</p> <p>A thorough visual inspection shall be conducted for evidence of damage or mishandling.</p> <p>After inspection all closures and protective devices necessary to protect the instrumentation from environmental contaminants shall be reinstalled.</p> <p>C. <u>Disposition</u></p> <p>The instrumentation shall be transported to the Test Assembly assembly area or to an approved storage area.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>None</p>			Reference RAS 4.0.					

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REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Receive, Inspect and Disposition Test Assembly Components 4.1

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
4.1.8 Receive, Inspect & Disposition Experimental Hardware.	<p>I. <u>Description of Function</u></p> <p>A requirement exists to receive, inspect and disposition the experimental hardware.</p> <p>A. <u>Receive</u></p> <p>Upon arrival of the experimental hardware at the receiving station, an accountability inspection shall be accomplished to verify the presence of all hardware. The experimental hardware shall be off-loaded from the transporter.</p> <p>B. <u>Inspect</u></p> <p>Closures and packaging required for transporting shall be removed from the experimental hardware to provide visual access to all components. A thorough visual examination shall be conducted for evidence of damage or mishandling.</p> <p>C. <u>Disposition</u></p> <p>The experimental hardware shall be transported to the Test Assembly assembly area or an approved storage area.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>Design requirements will be prepared for this function when equipment definition becomes available.</p>			Reference RAS 4.0.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Assemble and Checkout Test Assembly 4.0

OR

NOMENCLATURE AND NUMBER OF CEI

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
4.2 Assemble Test Assembly.	<p>I. <u>Description of Function</u></p> <p>This function describes the assembly of the Test Assembly at NRDS. It includes the installation of the NSSM on the test car, removal of the peripheral poison wires, installation of the nozzle, correction of the miscellaneous interface equipment and piping to the test article/test car and the installation of the non-nuclear instrumentation.</p> <p>For R-1 test this function includes the installation of the CDDA. For R-2, 3, 4, and 5, this function includes the installation of the nozzle extension skirt.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required for a continuous purge of the NSSM with dry nitrogen during the entire assembly operation.</p> <p>1. <u>Design Requirements</u></p> <p>The existing assembly area purge system specified in RAS 4.1.2 Paragraph III.B. satisfies this requirement.</p>		Existing Assembly Area Purge System.	Reference RAS 4.0.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Assemble Test Assembly 4.2

OR

NOMENCLATURE AND NUMBER OF CEI

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
4.2.1 Install the NSSM on Test Car.	<p>I. <u>Description of Function</u></p> <p>This function describes the preparation of the NSSM for installation and the installation of the NSSM on the Test Car.</p> <p>The NSSM shall be placed in a holding fixture and the NSSM support stand and NSSM adapter ring shall be assembled to the NSSM. The NSSM nozzle end guide plate shall be removed.</p> <p>For R-1, the dummy drive shaft and cover plates used for shipment shall be removed and the actuator malfunction override device (AMOD) and guide tubes shall be installed.</p> <p>The AMOD and guide tubes are shipped separately from the NSSM for R-1 testing, as part of the CDDA equipment (Reference RAS 5.6) since the control drum actuators are mounted under the privy roof. For R-2, 3, 4, and 5 this CDDA equipment is shipped installed on the NSSM.</p> <p>During this function the NSSM will be required to be pivoted between the nozzle up and the nozzle down attitude. With the NSSM in the nozzle up attitude, the NSSM assembly shall be lifted from the holding fixture and installed on the test car.</p> <p>For R-1, the holding fixture used during this function will also be used for disassembly. This fixture will be used in the disassembly bay for the disassembly of all R-series reactors.</p> <p>Consequently, a separate assembly holding fixture will be used during this function for R-2, 3, 4, and 5.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>The pressure vessel shall serve as the attachment point during the NSSM lifting and positioning operation.</p>			Reference RAS 4.0.

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Assemble Test Assembly 4.2
NOMENCLATURE AND NUMBER OF CEI _____

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
4.2.1 Install the NSSM on Test Car.	III. <u>TSE Design Requirements Created By This Function</u> A. A means is required to hold and position the (R-1) NSSM during the assembly of the NSSM adapter ring, NSSM support stand, and the AMOD and AMOD guide tubes. 1. <u>Design Requirements</u> The existing NRX trunnion cage and trunnion fixture shall be used to satisfy this requirement. Any modification to this equipment will be specified at a later date. B. A means is required to hold and position the R-2, 3, 4, and 5 NSSM during the assembly of the NSSM adapter ring and NSSM support stand. 1. <u>Mechanical Design Requirements</u> Means are required to position the NSSM in several attitudes. The means must be capable of rotating the NSSM from the nozzle up to the nozzle down positions in a controlled manner with adequate safety considerations. The rotation device must be capable of locking the NSSM in position for various assembly tasks. The existing NSSM trunnion cage referenced in Paragraph III.A above satisfies this requirement. 2. <u>Interface</u> A means is required to interface between the rotation device and the NSSM.		Existing NSSM Trunnion Cage. Existing NSSM Trunnion Fixture. NSSM Trunnion Stand. Existing NSSM Trunnion Cage.	4.2.1 Install the NSSM on Test Car.	3. <u>Special Considerations</u> To facilitate assembly operation the interface means and rotation device must be separate components providing the necessary requirements independent of each other. C. A means is required to lift the NSSM in the nozzle up attitude. 1. <u>Design Requirements</u> A lifting fixture capable of supporting the NSSM. The NSSM weight will be listed in the Mass Properties Analysis Report. 2. <u>Interface</u> The lifting fixture shall interface with the NSSM at the designated lift points on the pressure vessel and the facility lifting equipment. D. A means is required to support the NSSM on the test car privy roof. 1. <u>Mechanical Design Requirements</u> The means must: a) Support the NSSM during transit and testing. b) Accept coolant flow during testing to maintain its temperature at a safe level. (The coolant, flow rate, and path will be determined by an engineering study.) c) Provide clearance between the NSSM and the privy roof for piping, instrumentation, working space, and CDDA's. (R-2 thru R-5 only)	S-047	Lifting Fixture, NSSM Trunnion Cage. NSSM Support Stand.

FUNCTIONAL DIAGRAM TITLE AND NUMBER Assemble Test Assembly 4.2

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REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Assemble Test Assembly 4.2

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
4.2.2 Install Control Drum Actuators	<p>I. <u>Description of Function</u></p> <p>This function describes the requirement for installing the control drum actuators inside the test car privy after the NSSM has been installed on the test car. The control drum actuators are part of the CDDA equipment which is shipped separately from the NSSM for R-1 testing only. (Reference RAS 5.6).</p> <p>The CDDA is shipped installed on the NSSM for R-2, R-3, R-4, and R-5.</p> <p>II. <u>TSE Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to install the control drum actuators to the under side of the privy roof.</p> <p>1. <u>Interface</u></p> <p>The control drum actuators must interface with the privy roof and the control drum drive shaft.</p>			Reference RAS 4.0.					

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
4.2.3 Remove Peripheral Poison Wires	<p>I. <u>Description of Function</u></p> <p>This function describes the removal of the peripheral poison wires from the NSSM. The PV/NSSM shipping closure and poison wire retention plate and ring must be removed. Each peripheral poison wire must then be removed. Retention hardware and poison wires will be returned to WANL. The peripheral poison wires are removed at this time because they cannot be removed after the nozzle is installed.</p> <p>II. <u>Test Article Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to remove the PV/NSSM shipping closure, and poison wire retention plate and ring.</p> <p>1. <u>Design Requirements</u></p> <p>The lifting fixture included in the PV/NSSM shipping closure kit (ref.RAS5.2.7, Paragraph III.B.) satisfies this requirement.</p> <p>2. <u>Interface</u></p> <p>The lifting fixture will interface with the PV/NSSM shipping closure or retention plate and ring and the facility crane.</p> <p>B. A means is required to remove each peripheral poison wire.</p> <p>1. <u>Mechanical Design Requirements</u></p> <p>A poison wire retraction tool is required to attach to the poison wire.</p>			Reference RAS 4.0.					
			PV/NSSM Shipping Closure Lift Fixture						
			Peripheral Poison Wire Retraction Tool

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Assemble Test Assembly 4.2
NOMENCLATURE AND NUMBER OF CEI _____

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
4.2.3 Remove Peripheral Poison Wires	<p>2. <u>Interface</u> The retraction tool shall interface with the poison wire and facility crane.</p> <p>C. A means is required to package and ship retention hardware to WANL.</p> <p>1. <u>Mechanical Design Requirements</u> A shipping container will be provided.</p> <p>D. A means is required to package and ship the poison wires to WANL.</p> <p>1. <u>Mechanical Design Requirements</u> Shipping containers will be provided.</p> <p>E. A means is required to package and ship the NSSM nozzle end guide plate to WANL.</p> <p>1. <u>Mechanical Design Requirement</u> A shipping container will be provided.</p>						
			Retention Hardware Shipping Container				
			Poison Wire Shipping Containers				
			NSSM Nozzle End Guide Plate Shipping Container				

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FUNCTIONAL DIAGRAM TITLE AND NUMBER Assemble Test Assembly 4.2

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
4.2.4 Install Nozzle to NSSM	<p>I. <u>Description of Function</u> This function describes the requirements for installing the nozzle on the NSSM. This function includes lifting the nozzle and installing it on the NSSM. It includes the installation of the nozzle seal, bolt seals and nozzle bolts.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u> -- NONE</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to facilitate the lifting of the nozzle for installation on the NSSM.</p> <p>1. <u>Design Requirements</u> The nozzle sling provided in RAS 5.3.2 Paragraph III.B. satisfies this requirement.</p> <p>2. <u>Interface</u> The means must interface with the nozzle at designated lift points and facility lifting equipment.</p> <p>B. A means is required to guide and position the nozzle during installation with the NSSM.</p> <p>1. <u>Design Requirements</u> a. Mechanical - The means must guide the nozzle into its final position so that the nozzle seal is not disturbed and must provide a method for centering the nozzle over the appropriate bolt holes in the pressure vessel nozzle end lip.</p> <p>2. <u>Interface</u> The means will interface with the pressure vessel, the nozzle and, if necessary, portions of the aft end of the NSS required to provide proper seating for the nozzle interfaces.</p>		<p>Nozzle Sling.</p> <p>Nozzle Installation Tools</p>	Reference RAS 4.0.

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Assemble Test Assembly 4.2

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NOMENCLATURE AND NUMBER OF CEI

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)
			NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.				NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
4.2.4 Install Nozzle to NSSM	<p>C. A means is required for personnel to gain access to the NSSM/nozzle interface for assembly operations.</p> <p>1. <u>Design Requirements</u></p> <p>The Test Assembly personnel stand provided in RAS 4.2.1 Paragraph III.F. satisfies this requirement.</p> <p>D. A means is required to install and torque the nozzle bolts during the installation of the nozzle.</p> <p>1. <u>Design Requirements</u></p> <p>A torque wrench with a 1/2 inch drive and a 250 ft-lb. capacity is required to satisfy this requirement.</p>		Test Assembly Personnel Stand				Nozzle Bolt Torque Wrench

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FUNCTIONAL DIAGRAM TITLE AND NUMBER Assemble Test Assembly 4.2

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NOMENCLATURE AND NUMBER OF CEI _____

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
4.2.5 Install Nozzle Skirt Extension	<p>I. <u>Description of Function</u></p> <p>A requirement exists to install the nozzle skirt extension on the nozzle. At this stage of test assembly the nozzle has been assembled to the NSSM and the NSSM to the test car.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to lift the nozzle skirt extension for installation onto the NSSM.</p> <p>1. <u>Design Requirements</u></p> <p>The nozzle skirt extension sling provided in RAS 5.4.2 Paragraph III, B, satisfies this requirement.</p> <p>2. <u>Interface</u></p> <p>The means shall interface with the nozzle skirt extension at designated lift points and with facility lifting equipment.</p>		Nozzle Skirt Extension Sling

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FUNCTIONAL DIAGRAM TITLE AND NUMBER Assemble Test Assembly 4.2
NOMENCLATURE AND NUMBER OF CEI _____

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
4.2.6 Assemble Miscellaneous Test Article/ Test Car Interface Equipment and Piping.	I. <u>Description of Function</u> This function describes the requirements for installing the miscellaneous Test Article/Test Car interface equipment and piping on the test assembly. II. <u>Test Article Design Requirements Created By This Function</u> None III. <u>TSE Design Requirements Created By This Function</u> Design requirements for this function will be prepared when the preliminary design of the test car and the miscellaneous equipment becomes available.			Reference RAS 4.0.					

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FUNCTIONAL DIAGRAM TITLE AND NUMBER Assemble Test Assembly 4.2

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
			NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO		TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
4.2.7 Install Non-Nuclear Instrumenta- tion	I. <u>Description of Function</u> This function provides for mounting and installing the non-nuclear instrumentation onto and within the test assembly. II. <u>Test Article Design Requirements Created By This Function</u> None III. <u>TSE Design Requirements Created By This Function</u> Design requirements for this function will be provided when the instrumentation definition becomes available.			Reference RAS 4.0.					

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REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Assemble and Checkout Test Assembly 4.0 OR
NOMENCLATURE AND NUMBER OF CEI _____ (A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
4.3 Perform Post-Assembly Checkout of the Test Assembly	I. <u>Description of Function</u> This function describes the post-assembly checkout which will consist of an electrical checkout, leak checks, and a functional checkout of the test assembly.			Reference RAS 4.0.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Perform Post Assembly Checkout of Test Assembly 4.3

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
			NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.		TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
4.3.1 Perform Test Assembly Electrical Checkout	<p>I. <u>Description of Function</u></p> <p>This function describes the checkout of all electrical components of the test assembly through the Test Car instrument plug. The checkout is to verify that the electrical component and its associated equipment is functioning properly after installation.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to check the electrical integrity of all electrical components of the test assembly through the Test Car instrument plug.</p> <p>1. <u>Design Requirements</u></p> <p>a. Electrical/Pneumatic</p> <p>(1) Electrical - The means shall provide electrical signals for performing the following checks:</p> <p>(a) Capacitance Measurements.</p> <p>(b) Circuit Resistance Measurements.</p> <p>(c) Insulation Resistance Measurements.</p> <p>(d) Transducer electrical stimulus checks including strain gage bridge completion or shunt calibration tests.</p> <p>(e) Transducer electrical measurements at ambient.</p>		Test Assembly Checkout Unit	Reference RAS 4.0.

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Perform Post Assembly Checkout of Test Assembly 4.3 OR
NOMENCLATURE AND NUMBER OF CEI _____ (A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO
4.3.1 Perform Test Assembly Electrical Checkout	(f) Short circuit check, wire to wire, wire to ground, and shield to ground. (g) Inductance Measurements. (h) Thermocouple voltage measurements at ambient and with heat applied. 2. <u>Interface</u> The means shall interface with the electri- cal connectors of the test assembly and facility power.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Perform Post Assembly Checkout of Test Assembly 4.3
NOMENCLATURE AND NUMBER OF CEI _____

OR
(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
4 3 2 Perform Test Assembly Leak Check	<p>I. <u>Description of Function</u></p> <p>This function describes the requirements to leak check the test assembly lines and connections to insure system integrity. All vents and connections along with the nozzle shall be capped-off. Helium shall be used as the pressurizing gas at the specified leak test pressure, and a Leak Detector shall be used to discover any leaking gas.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created by This Function</u></p> <p>A. A means is required to close the nozzle and all vents and connections to perform the leak checks.</p> <p>1. <u>Design Requirements</u></p> <p>a. Mechanical - All end caps or closures shall mate with the pressure lines or nozzle to form a leak tight joint. The supply end-cap shall have a supply connection and the nozzle closure shall have a vent valve connection.</p> <p>The means shall provide pressure relief features to preclude damage to the test assembly components in case of inadvertent over pressurization.</p> <p>The end-caps shall withstand 1.5 times the design leak test pressure.</p>			Reference RAS 4.0.					
			Nozzle Throat Plug Test Assembly Leak Test Closure Kit

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Perform Post Assembly Checkout of Test Assembly 4.3

OR

NOMENCLATURE AND NUMBER OF CEI

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
4.3.2 Perform Test Assembly Leak Check	<p>2. <u>Interface</u></p> <p>The end caps shall interface with the test assembly. The supply end-caps shall interface with the test assembly leak test set.</p> <p>B. A means is required to regulate helium to the test assembly at the required pressure for leak checking.</p> <p>1. <u>Design Requirements</u></p> <p>a. Pneumatic</p> <p>(1) A means shall be provided to regulate helium gas to the test assembly from the helium storage at the required pressure. Helium supplied to the test assembly shall conform to TBD specification.</p> <p>(2) The means shall be capable of limiting the pressuring medium to a maximum pressurization rate of one PSI/sec.</p> <p>(3) The means shall provide pressure relief features to preclude damage to the test assembly components in case of inadvertent over pressurization.</p> <p>(4) The means shall provide a manually operated bleed system to allow complete depressurization of the test assembly and associated pressurization lines.</p> <p>2. <u>Interface</u></p> <p>The test assembly leak test set shall interface between the test assembly and the facility helium storage.</p>		Test Assembly Pressurization Unit	4.3.2 Perform Test Assembly Leak Check	<p>C. A means is required to detect helium leaking from various test assembly joints and connections.</p> <p>1. <u>Design Requirements</u></p> <p>The leak detector shall emit an audible sound or deflect a meter when a leak of TBD magnitude is found.</p> <p>2. <u>Interface</u></p> <p>The detector shall be manually held.</p>		Helium Leak Detector

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Perform Post Assembly Checkout of Test Assembly 4.3 OR
NOMENCLATURE AND NUMBER OF CEI _____ (A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
4.3.3 Perform Test Assembly Functional Checkout	<p>I. <u>Description of Function</u></p> <p>This function describes the requirement to function-ally checkout the test assembly to verify operation after installation. The check will consist of operating the following components to verify their readiness:</p> <ol style="list-style-type: none">Control Drum ActuatorsControl Valves and Binary Valves <p>Selected test assembly instrumentation channels shall be monitored to verify that the components are functioning properly and to insure that there is no impedance safety hazard.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to regulate power and supply a demand signal to the control drum actuators, one at a time, and to monitor the drum response during various checkout tests.</p> <ol style="list-style-type: none"><u>Electrical Design Requirements</u> <p>The drum actuator checker shall regulate power to the actuators and provide a means of varying the control signal either by pre-programmed input or manual to conform to the required functional test profiles. The checker shall also provide a means of displaying selected parameters.</p> <ol style="list-style-type: none"><u>Interface</u> <p>The checker shall interface between the test assembly instrument plug and facility power supply.</p>			Reference RAS 4.0.

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Perform Post Assembly Checkout of Test Assembly 4.3

OR

NOMENCLATURE AND NUMBER OF CEI _____ (A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)
			NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO				NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO
4.3.3 Perform Test Assembly Functional Checkout	B. A means is required to regulate power and supply a demand signal to each control valve and binary valve and to monitor the valve response during various checkout tests. 1. <u>Electrical Design Requirements</u> The valve checker shall regulate power to the valve actuators and provide a means of varying the control signal either by pre-programmed input or manually to conform to the required functional test profiles. The checker shall also provide a means of displaying selected parameters. 2. <u>Interface</u> The checker shall interface between the test assembly instrument plug and the facility power supply.		Valve Actuator Checker				

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REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Assemble and Checkout Test Assembly 4.0 OR
NOMENCLATURE AND NUMBER OF CEI _____ (A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
4.4 Store Test Assembly	<p>I. <u>Description of Function</u></p> <p>A requirement exists to store the test assembly should the elapsed time between the completion of the assembly and checkout operation and the scheduled transfer to Test Cell C be significant.</p> <p>The storage operation will provide protection against mechanical and environmental conditions that would be hazardous to personnel, equipment and/or facilities, or in any way degrade the test assembly.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>N/A</p>			Reference RAS 4.0.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Store Test Assembly 4.4

OR

NOMENCLATURE AND NUMBER OF CEI

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
4.4.1 Prepare Test Assembly for Storage	<p>I. <u>Description of Function</u></p> <p>A requirement exists to prepare the test assembly for storage.</p> <p>Preparation for storage will consist of fitting closures on all fluid lines, effluent ports and electrical connectors.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to prevent contamination from entering the fluid systems of the test assembly.</p> <p>In order to accomplish this, closures must be installed on all fluid and gaseous inlet and effluent line openings.</p> <p>1. <u>Design Requirements</u></p> <p>The leak test closures and nozzle throat plug identified in RAS 4.3.2.Paragraph III. A. satisfies this requirement.</p> <p>B. A means is required to prevent contamination from entering and/or protect from damage the exposed electrical connectors and/or connector enclosures of the test assembly. In order to accomplish this, closures or caps must be installed on all exposed electrical connectors.</p>		<p>Test Assembly Leak Test Closure Kit.</p> <p>Nozzle Throat Plug.</p> <p>Test Assembly Electrical Connector Closure Kit.</p>

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Store Test Assembly 4.4
NOMENCLATURE AND NUMBER OF CEI _____

OR
(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
4.4.1 Prepare Test Assembly for Storage	1. <u>Design Requirements</u> N/A. 2. <u>Interface</u> The means must interface with the electrical connectors and/or connector enclosures of the test assembly.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Store Test Assembly 4.4

OR

NOMENCLATURE AND NUMBER OF CEI _____

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
4.4.2 Store Test Assembly	<p>I. <u>Description of Function</u></p> <p>A requirement exists to store the test assembly. The test assembly must be transported from the MAD assembly area to the storage area.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to provide a controlled and monitored supply of purge gas to the test assembly and to monitor the effluent from the test assembly.</p> <p>1. <u>Design Requirements</u></p> <p>a. Electrical/Pneumatic</p> <p>(1) The means must be capable of operating on a 115 volt, 60 cycle, AC power supply.</p> <p>(2) The means must be capable of providing a continuous supply of dry purge gas to the test assembly under the following conditions:</p> <p>(a) 1.5 ± 0.5 SCFM.</p> <p>(b) 50 psig maximum.</p> <p>(c) 10 micron or less particle size.</p> <p>(d) Automatic change-over to stand-by gas supply when moisture content reaches a limit of 80 ppm.</p>		Test Assembly Storage Area Purge System	Reference RAS 4.0.

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Store Test Assembly 4.4 OR

NOMENCLATURE AND NUMBER OF CEI _____ (A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
4.4.2 Store Test Assembly	<p>(3) The means must provide a 115 volt, 60 cycle, AC signal to indicate switch-over to stand-by supply or interruption of purge supply.</p> <p>(4) The means must provide a continuous monitor and strip chart record of the moisture content of the purge effluent.</p> <p>(5) The means must provide a facility for extracting laboratory gas samples from the inlet gas lines and the test assembly purge effluent.</p> <p>2. <u>Interface</u></p> <p>The means will interface with the facility gas supply, the test assembly propellant line and the nozzle closure.</p>

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Store Test Assembly 4.4
NOMENCLATURE AND NUMBER OF CEI _____

OR
(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
4.4.3 Remove Test Assembly From Storage	I. <u>Description of Function</u> A requirement exists to remove the test assembly from storage. Removing the test assembly from storage will consist of disconnecting the test assembly purge system and preparing this test assembly for a post assembly checkout (Reference RAS 4.3) if the time in storage has been significant. II. <u>Test Article Design Requirements Created By This Function</u> None III. <u>TSE Design Requirements Created By This Function</u> None								

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FUNCTION 3.0
CONDUCT PRE-TEST OPERATION

<u>FUNCTION</u>	<u>TITLE</u>	<u>PAGE NO.</u>
3.0	Conduct Pre-Test Operations	3-1
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3.1.1	Prepare Test Assembly for Transfer	3-3
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REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Reactor Series Ground Test Program

OR

NOMENCLATURE AND NUMBER OF CEI _____

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
3.0 Conduct Pre-Test Operations	I. <u>Description of Function</u> This function provides the means to prepare the assembled test assembly and test facility for NSS performance testing. Included in the pre-test operations are the following activities: 1. Transfer and installation of the test assembly to Test Cell "C". 2. Post Transfer Checkout. 3. Pre-performance Test Operations.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Conduct Pre-Test Operations 3,0

OR

NOMENCLATURE AND NUMBER OF CEI

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
3.1 Transfer/ Mate-Up Test Assembly To Test Cell "C"	<p>I. <u>Description of Function</u></p> <p>A requirement exists to transfer and mate-up the test assembly to Test Cell "C".</p> <p>The transfer function will consist of the preparation and transfer of the test assembly from the MAD assembly area (or from the storage area) to Test Cell "C".</p> <p>The mate-up function will consist of mate-up of the test assembly with the test cell and test cell facilities prior to conducting pre-test operations.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>N/A.</p>

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Transfer/Mateup Test Assembly to Test Cell "C" 3.1 OR
NOMENCLATURE AND NUMBER OF CEI _____ (A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
3.1.1 Prepare Test Assembly for Transfer	<p>I. <u>Description of Function</u></p> <p>A requirement exists to prepare the test assembly for transfer.</p> <p>Preparation for transfer will consist of removing the central poison wires and preparing the wires for shipment to WANL, in addition to fitting closures on all fluid lines, effluent ports and electrical connectors.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to remove the central poison wires from the test assembly.</p> <p>1. <u>Design Requirements</u></p> <p>a. Mechanical - The means shall be designed for manual or automatic latching when engaged with the wire retraction hardware.</p> <p>2. <u>Interface</u></p> <p>The means shall interface with the poison wire retraction hardware, lifting sling and nozzle throat (open area).</p> <p>B. A means is required to package and ship the central poison wires to WANL.</p> <p>1. <u>Design Requirements</u></p> <p>The poison wire shipping containers provided in RAS 4.2.3 Paragraph III.D, will be used to satisfy this requirement.</p>		Central Poison Wire Retractor Tool	<p>The facility capability which must be established to support the following lower level functional operations is defined in terms of general requirements listed below. Specific quantitative requirements will be supplied in the applicable portions of the appropriate facility data item.</p> <p>1. <u>Environment</u></p> <p>a. Temperature and humidity control of general work area.</p> <p>b. Clean rooms</p> <p>c. Illumination</p> <p>2. <u>Utilities</u></p> <p>a. Electrical power</p> <p>b. Filtered and regulated purge gases.</p> <p>3. <u>Civil/Structural/Architectural</u></p> <p>a. Enclosed work area.</p> <p>b. Bonded storage facility</p> <p>4. <u>Equipment</u></p> <p>a. Overhead, mobile lifting equipment.</p> <p>b. Hydraset or equivalent.</p> <p>c. Forklift truck</p> <p>d. General purpose lifting slings.</p> <p>e. Hand tools</p> <p>f. Radiation Monitoring Equipment</p>

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Transfer/Mateup Test Assembly to Test Cell "C" 3.1
NOMENCLATURE AND NUMBER OF CEI _____

OR
(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)
			NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.				NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
3.1.1 Prepare Test Assembly For Transfer	<p>C. A means is required to prevent contamination from entering the fluid systems of the test assembly. Closures must be installed on all fluid and gaseous inlet and effluent line openings.</p> <p>1. <u>Design Requirements</u></p> <p>The test assembly leak test closure kit and the nozzle throat plug identified in RAS 4.3.2 Paragraph III.A. satisfies this requirement.</p> <p>D. A means is required to protect the exposed electrical connectors and/or connector enclosures of the test assembly from contamination and/or damage.</p> <p>1. <u>Design Requirements</u></p> <p>The electrical connector closure kit in RAS 4.4.1 Paragraph III.B. satisfies this requirement.</p> <p>E. A means is required for a continuous purge of the test article with dry nitrogen during the transfer of the test assembly from MAD to Test Cell "C".</p> <p>1. <u>Design Requirements</u></p> <p>The means shall satisfy the purge requirements specified in RAS 5.2.9.1 Paragraph III.B.</p> <p>F. A means is required to monitor the nuclear activity of the test assembly during its transfer from MAD to Test Cell "C".</p> <p>1. <u>Design Requirements</u></p> <p>Existing portable equipment capable of monitoring gamma ray and neutron activity and providing audible response signals</p>		Test Assembly Leak Test Closure Kit. Nozzle Throat Plug. Test Assembly Electrical Connector Closure Kit. Test Assembly Purge System Test Assembly Nuclear Radiation Monitoring System	3.1.1 Prepare Test Assembly For Transfer	<p>will be used to satisfy these requirements. The specific hardware employed will be prescribed by cognizant safety personnel who will insure its proper operation, adequacy and calibration prior to transit operation.</p> <p>G. Means are required to detect and record the vibration levels to which the NSSM is subjected during transit from MAD to TCC.</p> <p>1. <u>Design Requirements</u></p> <p>Suitable vibration monitoring transducers will be mounted on the test assembly. Ranges, locations and types of instrumentation as well as the required recording equipment will be determined as a result of the Test Car/RTS checkout (Reference: RAS 7.0, Para. III. C.)</p>		Test Assembly Vibration Monitoring System

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Transfer/Mateup Test Assembly to Test Cell "C" 3.1
NOMENCLATURE AND NUMBER OF CEI _____

OR
(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
3.1.2 Transfer Test Assembly	<p>I. <u>Description of Function</u></p> <p>A requirement exists to transfer the test assembly to Test Cell "C".</p> <p>The test assembly must be transported from the MAD assembly area or the storage area to a point 18 inches from the test cell wall.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to transfer the test assembly from MAD to the test cell.</p> <p>1. <u>Design Requirements</u></p> <p>The existing Rail Transport System (RTS) will be used to satisfy this requirement. (Reference RAS 5.1.4 Paragraph III.A.)</p>		Existing RTS L-3 Locomotive MCC Spacer Car

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Transfer/Mateup Test Assembly to Test Cell "C" 3.1
NOMENCLATURE AND NUMBER OF CEI

OR
(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
3.1.3 Mateup Test Assembly with Test Cell "C"	<p>I. <u>Description of Function</u></p> <p>A requirement exists to mateup the test assembly with Test Cell "C".</p> <p>The mateup will consist of joining the test assembly fluid, gaseous and electrical connections with the appropriate facility points. The 360° shield halves are also driven inward to mate with the test assembly privy roof.</p> <p>Facility interface equipment will be used to mate the fluid and gaseous lines of the test assembly to the test cell lines, following removal of closures installed in RAS 4.3.2 and 4.4.1.</p> <p>The existing test cell pit coupler will be mated to the test assembly bottom electrical plug subsequent to removal of the closures installed in RAS 4.4.1</p> <p>The existing facility shield drive system and the shield-to-test car seal system of the test car will be used to mate the facility (360°) shield with the test assembly.</p> <p>The existing test cell jack system will be used to move the test assembly the remaining 18 in. to the test wall interface.</p> <p>The existing test cell lock bolt system will be used to lock the test assembly to the cell wall.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>None</p>								

REVISION _ _ _ DATE 9/70

APPROVAL

DOCUMENT NO.

PAGE NO 3-6 OF

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Conduct Pre-Test Operations 3.0

NOMENCLATURE AND NUMBER OF CEI _____

OR

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
			NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.		TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
3.2 Perform Post Transfer Checkout	1. <u>Description of Function</u> This function provides the means to perform a series of tests, calibrations, and checkouts in order to acquire confidence in the various test article, facility, control, and data systems, their interfaces and interactions, and their operational capabilities. This function will include, but is not limited to the following activities: 1. Electrical Checkouts. 2. Leak Tests. 3. Functional Checkouts.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Perform Post Transfer Checkout 3.2

OR

NOMENCLATURE AND NUMBER OF CEI

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
3.2.1 Perform Test Assembly Electrical Checkout.	<p>I. <u>Description of Function</u></p> <p>This function describes the checkout of all electrical components through the first termination in the Test Cell "C". The checkout is to verify that the electrical component and its associated equipment is functioning properly after Test Assembly transfer and installation at Test Cell "C". This will include continuity checks and instrumentation calibrations.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to checkout all test assembly electrical components at the facility signal conditioning or at a point between the sensor and circuit electronics which will be accessible after the test series.</p> <p>1. <u>Design Requirements</u></p> <p>a. Electrical - The electrical checkout system shall supply signals to verify that the electrical hardware is functioning properly and that the electrical connections have been made correctly.</p> <p>b. Mechanical - The electrical checkout system shall attach to test points.</p> <p>2. <u>Interface</u></p> <p>The electrical checkout system shall interface between the facility test points and the facility electrical power supply.</p>		Test Cell "C"/Test Assembly Checkout Equipment.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Perform Post Transfer Checkout 3.2

NOMENCLATURE AND NUMBER OF CEI

OR

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
3.2.2 Perform Test Assembly Leak Check	<p>I. <u>Description of Function</u></p> <p>This function describes the requirement to leak check the test assembly lines and connections to verify system integrity after test assembly transfer and installation at Test Cell "C". All vents, including the nozzle, shall be capped-off. Helium shall be used as the pressurizing gas at the specified leak test pressure and a leak detector shall be used to discover any leakage gas.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to close the nozzle and all vents to perform the leak check.</p> <p>1. <u>Design Requirements</u></p> <p>The test assembly leak test closure kit and the nozzle throat plug identified in RAS 4.3.2 Paragraph III.A. satisfies this requirement.</p> <p>B. A means is required to regulate helium to the test assembly at the required pressure for leak checking.</p> <p>1. <u>Design Requirements</u></p> <p>The test assembly pressurization unit identified in RAS 4.3.2 Paragraph III.B. satisfies this requirement.</p>		<p>Test Assembly Leak Closure Kit</p> <p>Nozzle Throat Plug</p> <p>Test Assembly Pressurization Unit</p>

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Perform Post Transfer Checkout 3.2
NOMENCLATURE AND NUMBER OF CEI _____

OR
(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)
			NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.				NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
3.2.2 Perform Test Assembly Leak Check	C. A means is required to detect helium leaking from various test assembly points and connec- tions. 1. <u>Design Requirements</u> The helium leak detector identified in RAS 4.3.2 Paragraph III.C. satisfies this requirement.		Helium Leak Detector

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Perform Post Transfer Checkout 3.2

OR

NOMENCLATURE AND NUMBER OF CEI

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
3.2.3 Perform Test Assembly Functional Checkout	I. <u>Description of Function</u> This function describes the requirement to function- ally checkout the Test Assembly to verify operation after installation. The check will consist of operating the control drum actuators and Test Assembly control valves and binary valves from the control point. II. <u>Test Article Design Requirements Created By This Function</u> None III. <u>TSE Design Requirements Created By This Function</u> None

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Conduct Pre-Test Operations 3.0

OR

NOMENCLATURE AND NUMBER OF CEI _____ (A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
3.3 Perform Pre-Perfor- mance Test Operations	<p>I. <u>Description of Function</u></p> <p>The pre-performance test operations will prepare the test assembly for powered operations, and verify some of the test predictions.</p> <p>The operations will include, but are not limited to, the following activities:</p> <ol style="list-style-type: none">1. Initial Criticality Tests.2. Control Drum Calibration Test.3. Nuclear Instrumentation Calibration Test.4. Flow Test.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Perform Pre-Performance Test Operations 3 3

NOMENCLATURE AND NUMBER OF CEI _____

OR
(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
3.3 1 Perform Initial Criticality Test	I <u>Description of Function</u> This function will establish the requirements for achieving critical operation of the test article and for determining the cold critical drum angle for comparison with predicted values II <u>Test Article Design Characteristics Created By</u> <u>This Function</u> None III. <u>TSE Design Requirements Created By</u> <u>This Function</u> None

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Perform Pre-Performance Test Operations 3.3
NOMENCLATURE AND NUMBER OF CEI _____

OR
(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
3.3.2 Perform Control Drum Calibration Tests	<p>I. <u>Description of Function</u></p> <p>This function will establish the requirements for calibrating selected individual control drums and confirming that the control drum capability is adequate for power testing. During this test, the integral worth of (TBD) control drums, the relative integral worth of each of the drums, and the differential reactivity worth of the control drum bank near the critical drum bank position shall be determined at ambient conditions.</p> <p>II. <u>Test Article Design Characteristics Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>None</p>

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Perform Pre-Performance Test Operations 3.3
NOMENCLATURE AND NUMBER OF CEI _____

OR
(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
3.3.3 Perform Nuclear Instrumenta- tion Calibration Tests	I. <u>Description of Function</u> This function will establish the requirements for calibrating the test article nuclear instrumentation to be employed for nuclear power control and/or monitoring during subsequent testing. The results obtained from irradiation of in-core wires will be used for calibrating the nuclear instrumentation. II. <u>Test Article Design Requirements Created By This Function</u> None III. <u>TSE Design Requirements Created By This Function</u> None

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Perform Pre-Performance Operations 3.3
NOMENCLATURE AND NUMBER OF CEI _____

OR
(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
3.3.4 Perform Flow Test Operations	<p>I. <u>Description of Function</u></p> <p>This function includes all flow test operations to be performed prior to conducting a reactor performance test in which flow is provided to the test article. It is anticipated that a high flow, GH_2 or GN_2 test may be performed to accomplish the following objectives:</p> <ol style="list-style-type: none">1. Verify the operability and polarity of test article/test cell pressure transducers.2. Obtain pressure drop data for comparison with predicted data.3. Verify the integrity of the valves and piping mounted on the test assembly.4. Obtain data on GH_2 reactivity. <p>A requirement may also be identified at a later date for performing a cold flow test of the cryogenic systems and the test article prior to conducting the reactor performance test.</p> <p>Detail description of the flow test operations will be provided in Data Item T-102, Test Plan/Test Specification Document, or subsequent test planning documentation. No additional design requirements will be provided for this function.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>N/A</p>								

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FUNCTION 1.0
CONDUCT POST TEST OPERATION

<u>FUNCTION</u>	<u>TITLE</u>	<u>PAGE NO.</u>
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FUNCTION 1.0 (Continued)

<u>FUNCTION</u>	<u>TITLE</u>	<u>PAGE NO.</u>
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REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Reactor Series Ground Test Program

OR

NOMENCLATURE AND NUMBER OF CEI _____

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.0 Conduct Post-Test Operations	1. <u>Description of Function</u> This function describes the requirements for conducting post-test operations of the test assembly and consists of the following: a. Preparation of test assembly for transfer. b. Transfer of test assembly to disassembly facility. c. Disassembly. d. Perform post operative examination. e. Disposition of test assembly components.								

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REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Conduct Post Test Operations 1.0
NOMENCLATURE AND NUMBER OF CEI _____

— OR
(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO (H)	EQUIPMENT IDENTIFICATION (E)	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
			NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO		TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.1 Perform Post Performance Test Operations	I. <u>Description of Function</u> This function describes the post performance test operations. These operations will include criticality test, Test Assembly electrical, and functional checkout.								

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REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Perform Post Performance Test Operations 1.1 OR
NOMENCLATURE AND NUMBER OF CEI _____ (A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.1.1 Perform Criticality Test	1. <u>Description of Function</u> For reference only. No RAS to be prepared at this date.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Perform Post Performance Test Operations 1.1

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NOMENCLATURE AND NUMBER OF CEI

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.1.2 Perform Electrical Checkout	<p>I. <u>Description of Function</u></p> <p>This function describes the electrical checkout to be performed after the test operations at TCC. The check will be used to determine if characteristics of the electrical components and its associated equipment changed during the test series.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to checkout all Test Assembly electrical components at the facility signal conditioning or at a point between the sensor and circuit electronics which will be accessible after the test series.</p> <p>1. <u>Design Requirements</u></p> <p>The Test Cell "C"/Test Assembly checkout equipment provided in RAS 3.2.1, Paragraph III.A, satisfies this requirement.</p>		Test Cell "C"/Test Assembly Checkout Equipment

OF

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
			NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO		TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.1.3 Perform Functional Checkout	<p>I. <u>Description of Function</u></p> <p>This function describes the functional checkout to be performed after the test operations at TCC. The check will be used to determine if characteristics of the control drum actuators and the Test Assembly control valves and binary valves changed during the test series. This checkout would be performed from the control point.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>None</p>

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Conduct Post Test Operations 1.0

OR

NOMENCLATURE AND NUMBER OF CEI _____

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.2 Transfer Test Assembly to Disassembly Facility	I. <u>Description of Function</u> This function describes disengaging the Test Assembly from Test Cell "C", installation of covers and closures, and the transfer to the disassembly facility.								

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REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Transfer Test Assembly to Disassembly Facility 1.2 OR
NOMENCLATURE AND NUMBER OF CEI (A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.2.1 Disengage Connections	I. <u>Description of Function</u> A requirement exists to disengage all connections between the test assembly and the test cell. This function will include all mechanical, fluid and gaseous lines and electrical connections installed during mateup in RAS 3.1.3. II. <u>Test Article Design Requirements Created By This Function</u> None III. <u>TSE Design Requirements Created By This Function</u> None

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Transfer Test Assembly to Disassembly Facility 1.2 OR
NOMENCLATURE AND NUMBER OF CEI (A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.2.2 Install Nozzle Cover	<p>I. <u>Description of Function</u></p> <p>A requirement exists to install a nozzle cover on the test assembly subsequent to testing using the existing facility nozzle hood emplacement system.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to cover the nozzle exhaust opening.</p> <p>1. <u>Design Requirements</u></p> <p>a. Mechanical - The means must prevent contamination from entering the nozzle and be capable of being remotely installed.</p>		Nozzle Cover, (R-1, 2, and 3) . Nozzle Skirt Extension Cover, (R-4, R-5).

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Transfer Test Assembly to Disassembly Facility 1.2

OR

NOMENCLATURE AND NUMBER OF CEI

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.2.3 Transfer Test Assembly	<p>I. <u>Description of Function</u></p> <p>The test assembly will be transported to the MAD building as it was brought to Test Cell "C". (Reference: RAS 3.1.2.)</p> <p>All operations will be performed remotely except the examination of the railroad track.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to transfer the test assembly from the Test Cell "C" to the MAD.</p> <p>1. <u>Design Requirements</u></p> <p>The existing RTS locomotive, (Reference: RAS 5.1.4, Para. III. A.) the existing manned control car (MCC) and the existing spacer car satisfies this requirement.</p> <p>B. Means are required to provide nuclear, vibration and temperature monitoring during transfer from TCC to MAD once testing has been completed.</p> <p>1. <u>Design Requirements</u></p> <p>The means employed to satisfy this requirement will consist of appropriate instruments and recording devices but the exact configuration will be determined by an engineering study at a later date.</p>	DS	Existing RTS Locomotive Existing Manned Control Car (MCC) Existing Spacer Car Post Test Nuclear Radiation Monitoring Systems Post Test Environmental Monitoring System

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Conduct Post Test Operations 1.0

OR

NOMENCLATURE AND NUMBER OF CEI _____

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.3 Disassemble Test Assembly	I. <u>Description of Function</u> Upon completion of the performance tests, the test assembly will be remotely disassembled and examined to determine operational effects, component condition, and structural integrity of the reactor.			The facility capability which must be established to support the following lower level functional operations is defined in terms of general requirements listed below. Specific quantitative requirements will be supplied in the applicable portions of the appropriate facility data items. 1. <u>Environment</u> a. Temperature and humidity control of general work area. b. Clean rooms c. Illumination 2. <u>Utilities</u> a. Electrical power b. Filtered and regulated purge gases. 3. <u>Civil/Structural/Architectural</u> a. Enclosed work area. b. Bonded storage facility. 4. <u>Equipment</u> a. Overhead, mobile lifting equipment. b. Hydraset or equivalent. c. Forklift truck d. General purpose lifting slings. e. Hand tools f. Radiation Monitoring Equipment.					

REVISION _____ DATE 9/70 APPROVAL _____ DOCUMENT NO. _____ PAGE NO. 1-10 OF _____

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Test Assembly 1,3

NOMENCLATURE AND NUMBER OF CEI

OR
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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.3.1 Receive Test Assembly into Disassembly Facility	<p>I. <u>Description of Function</u></p> <p>All equipment required during the initial dis-assembly operations must be placed in the bay.</p> <p>The test assembly will be remotely positioned on the MAD disassembly bay turntable for visual examination.</p> <p>The nozzle cover will be removed and disassembly after-cooling equipment will be installed.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to locate the test assembly on a rotatable platform in the MAD dis-assembly bay.</p> <p>1. <u>Design Requirements</u></p> <p>The existing, RTS locomotive, manned control car and spacer car provided in RAS 1.2.3 Paragraph III.A.1. satisfies this requirement.</p> <p>B. A means may be required to maintain temperature in the test article due to decay heat at a safe level during the initial phases of disassembly.</p>	DS-	<p>Existing RTS Locomotive, Existing Manned Control Car, Existing Spacer Car.</p> <p>Disassembly After-Cooling System.</p>	Reference RAS 1.3.

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Test Assembly 1.3

OR

NOMENCLATURE AND NUMBER OF CEI

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
1.3.1(cont) Receive Test Assembly Into Disassembly Facility	1. <u>Design Requirements</u> a. A design study must be performed to determine if a requirement for this system exists for the R-Series Ground Test Program.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Test Assembly 1.3

NOMENCLATURE AND NUMBER OF CEI

OR

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.3.2 Separate Test Article from Test Car	<p>I. <u>Description of Function</u></p> <p>The test article must be removed from the test car to permit further disassembly.</p> <p>All hardware and instrumentation which interfere with the installation of the handling fixtures or prevent removal of the test article from the test car must be removed or severed.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>N/A</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>N/A</p>			Reference RAS 1.3.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Separate Test Article from Test Car 1.3.2

OR

NOMENCLATURE AND NUMBER OF CEI

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.3.2.1 Disengage all Connections Between Test Article and Test Car	<p>I. <u>Description of Function</u></p> <p>A requirement exists to disengage all connections between the test article and the test car. The following operations must be performed prior to separation of the test article from the test car.</p> <p>A. Remove the propellant inlet line and turbine inlet and exhaust line by disconnecting the connecting clamp(s) and severing the line at the designated location(s).</p> <p>B. External instrumentation leads must be severed between the test article and test car privy plug.</p> <p>C. Sever the SSCSS feed and bypass lines and the pressurization line.</p> <p>D. Remove the fasteners that attache the test article support stand to the forward closure.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None.</p> <p>III. <u>TSE Design</u></p> <p>A. A means is required to hold and remove the section of the propellant line that has been severed.</p> <p>1. <u>Design Requirements</u></p> <p>a. Mechanical - A mechanical device is required that can be remotely attached to the horizontal section of the propellant line.</p> <p>2. <u>Interface</u></p> <p>The device will interface with the propellant line, ten-ton crane and WMHS.</p>			Reference RAS 1.3.					
			Propellant Line Handling Fixture.

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Separate Test Article from Test Car 1,3,2
NOMENCLATURE AND NUMBER OF CEI _____

OR
(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)
			NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.				NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
1.3.2.1 Disengage all Connections Between Test Article and Test Car	<p>B. A means is required to disconnect the propellant line connecting clamps and to remove the fasteners that attach the forward closure to the test article support stand.</p> <p>1. <u>Design Requirements</u></p> <p>a. Pneumatic/mechanical - A pneumatic impact wrench of sufficient torque capacity to remove the support stand fasteners.</p> <p>2. <u>Interface</u></p> <p>a. WMHS and the Maman clamp threaded line.</p> <p>b. WMHS and support stand fasteners.</p> <p>C. A means is required to sever the propellant line, SSCSS lines, and pressurization line.</p> <p>1. <u>Design Requirements</u></p> <p>a. Pneumatic/Mechanical - A pneumatically operated cut-off device of sufficient capacity to sever the lines.</p> <p>2. <u>Interface</u></p> <p>The device will interface with the WMHS and the lines.</p> <p>D. A means is required to cut the instrumentation leads between the forward closure and the test car privy roof.</p> <p>1. <u>Design Requirements</u></p> <p>a. Pneumatic/Mechanical - A pneumatic device of sufficient capacity to sever the instrumentation leads.</p> <p>2. <u>Interface</u></p> <p>The device will interface with the WMHS and the instrumentation leads.</p>		Disassembly Tool Kit- Remote				
			WMHS Grinder.				
			Pneumatic Grinder.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Separate Test Article from Test Car 1.3.2

NOMENCLATURE AND NUMBER OF CEI

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.3.2.2 Remove Test Article from Test Car	<p>I. <u>Description of Function</u></p> <p>The test article must be lifted from the test car and placed on a stand to permit further disassembly.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>The pressure vessel shall serve as the attachment point during test article lifting and positioning operations.</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to lift and position the test article.</p> <p>1. <u>Design Requirements</u></p> <p>Mechanical - The disassembly cage lift fixture will be remotely attached to the nozzle/pressure vessel flange and be capable of handling the test article weight. The test article weight will be listed in the Mass Properties Analysis Report.</p> <p>2. <u>Interface</u></p> <p>The fixture will interface with the nozzle/pressure vessel flange and the 40-ton crane and WMHS.</p> <p>B. A means is required to support the test article while it is in a trunnion fixture.</p> <p>1. <u>Design Requirements</u></p> <p>Mechanical - A disassembly cage is required to hold the forward closure flange of the test article while it is in a trunnion stand. The cage must support the weight of the test article.</p>	S-047	Disassembly Cage Lift Fixture	Reference RAS 1.3.					
			Disassembly Cage- Remote

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Separate Test Article from Test Car 1,3,2 OR
NOMENCLATURE AND NUMBER OF CEI _____ (A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
1.3.2.2 Remove Test Article from Test Car	<p>2. <u>Interface</u></p> <p>The cage interfaces with the forward closure/pressure vessel flange and the trunnion fixture.</p> <p>C. A means is required to rotate the test assembly about its longitudinal axis to provide accessibility to the forward and aft components of the test article.</p> <p>1. <u>Design Requirements</u></p> <p>The NSSM trunnion fixture (R-1) provided in RAS 4.2.1 Paragraph III.A.1. satisfies this requirement.</p> <p>2. <u>Interface</u></p> <p>The fixture will mechanically interface with the remote disassembly cage.</p>		NSSM Trunnion Fixture.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Test Assembly 1.3

OR

NOMENCLATURE AND NUMBER OF CEI

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.3.3 Disassemble Test Article	<p>I. <u>Description of Function</u></p> <p>The test article must be completely disassembled to determine the operational effects, component conditions, and structural integrity of the reactor.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>N/A</p>			Reference RAS 1.3.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Test Article 1.3.3

NOMENCLATURE AND NUMBER OF CEI _____

OR
(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
			NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.		TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.3.3.1 Remove Nozzle	<p>I. <u>Description of Function</u></p> <p>The nozzle must be removed to permit access to the reactor/vessel aft support. In preparation for nozzle removal, all external instrumentation leads must be severed at the nozzle/vessel flange.</p> <p>Designated bolts will be placed in trays for transfer to the post-operative cell.</p> <p>The nozzle will be placed on a stand to permit detailed visual examination and removal of instrumentation.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>Lift areas shall be provided in the nozzle design.</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to sever all instrumentation leads at the nozzle/vessel flange.</p> <p>1. <u>Design Requirements</u></p> <p>The pneumatic grinder provided in RAS 1.3.2.1. Paragraph III.D. satisfies this requirement.</p> <p>2. <u>Interface</u></p> <p>WMHS</p> <p>B. A means is required to remove the nozzle bolts at the nozzle/vessel flange.</p> <p>1. <u>Design Requirements</u></p> <p>a. The remote disassembly tool kit provided in RAS 1.3.2.1. Paragraph B. satisfies part of the requirements.</p>		Pneumatic Grinder	Reference RAS 1.3.					
			Disassembly Tool Kit - Remote

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Test Article 1.3.3 OR

NOMENCLATURE AND NUMBER OF CEI _____ (A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
1.3.3.1 Remove Nozzle	<p>b. A device for removing frozen or stripped bolts must be provided.</p> <p>2. <u>Interface</u></p> <p>a. WMHS.</p> <p>b. Nozzle bolt, 13/16 AF-12 point.</p> <p>C. A means is required to contain nozzle bolts after removal from the nozzle/vessel flange.</p> <p>1. <u>Design Requirements</u></p> <p>A container capable of holding nozzle bolts.</p> <p>D. A means is required to lift and position the nozzle.</p> <p>1. <u>Design Requirements</u></p> <p>a. Mechanical - A remotely operated handling fixture capable of lifting and positioning the nozzle. The nozzle weight will be listed in the Mass Properties Analysis Report.</p> <p>2. <u>Interface</u></p> <p>a. A 10-ton crane and WMHS.</p> <p>b. Nozzle exit flange.</p> <p>E. A means is required to support the nozzle to permit detailed visual inspection.</p> <p>1. <u>Design Requirements</u></p> <p>a. Mechanical - A stand must be provided that will position and orient the nozzle to permit visual examination of both the internal and external surfaces.</p>	S-047	<p>Bolt Head Mill</p> <p>Small Parts Container</p> <p>Nozzle Handling Fixture, Remote</p> <p>Nozzle Examination Stand</p>	1.3.3.1 Remove Nozzle	<p>2. <u>Interface</u></p> <p>The stand will interface with the nozzle/vessel flange.</p> <p>F. A means is required to remotely remove all external nozzle instrumentation.</p> <p>1. <u>Design Requirements</u></p> <p>a. Standard wrenches which have been adapted for use with the WMHS manipulator.</p> <p>2. <u>Interface</u></p> <p>a. WMHS.</p> <p>b. Nozzle instrumentation.</p>		Instrumentation Removal Tool Kit

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Test Article 1.3.3

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REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Test Article 1.3.3

OR

NOMENCLATURE AND NUMBER OF CEI _____

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
1.3.3.2 Remove Reactor/Vessel Axial Support.	<p>1. <u>Design Requirements</u></p> <p>a. Pneumatic/Mechanical - A pneumatic impact wrench with a right-angled drive and of sufficient torque capacity to remove the fasteners shall be provided.</p> <p>2. <u>Interface</u></p> <p>The wrench shall interface with the WMHS and the locating cone fasteners.</p> <p>C. A means is required to sever the axial support stand-offs in the event that all of the support cone fasteners cannot be removed.</p> <p>1. <u>Design Requirements</u></p> <p>a. Pneumatic/Mechanical - A pneumatic device of sufficient capacity to cut or shear the stand-offs shall be provided.</p> <p>2. <u>Interface</u></p> <p>The device shall interface with the WMHS and the axial support stand-offs.</p>		Disassembly Cutting Tools.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Test Article 1.3.3
NOMENCLATURE AND NUMBER OF CEI _____

OR
(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.3.3.3 Remove Forward Closure/ Control Shaft Assembly	<p>I. <u>Description of Function</u></p> <p>The forward closure and control drive shafts will be removed as a unit. To prevent the drive shafts from falling out of the tube housings, retainers must be installed on the shafts.</p> <p>The instrumentation leads at all instrumentation ports must be severed below the brazed plugs and all instrumentation leads at the closure/vessel flange must be cut.</p> <p>The closure/control shaft assembly will be placed on a stand for further disassembly. (See RAS 1.3.3.7). This function applies for R-1 testing only. For R-2, 3, 4, and 5 see RAS 1.3.3.6.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to sever the instrumentation leads and brazed plugs on the forward closure.</p> <p>1. <u>Design Requirements</u></p> <p>a. Pneumatic/Mechanical - A pneumatic device capable of sufficient capacity to sever the instrumentation and brazed plugs shall be provided. The pneumatic grinder provided in RAS 1.3.2.1 Paragraph III.D. satisfies this requirement.</p> <p>2. <u>Interface</u></p> <p>The device shall interface with the WMHS and the brazed plugs and instrumentation.</p>		Pneumatic Grinder.	Reference RAS 1.3.

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Test Article 1.3.3

OR

NOMENCLATURE AND NUMBER OF CEI

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
1.3.3.3 Remove Forward Closure/Control Shaft Assembly.	<p>B. A means is required to remove the forward closure fasteners.</p> <p>1. <u>Design Requirements</u></p> <p>a. Pneumatic/Mechanical - A pneumatic impact wrench of sufficient capacity to remove the fasteners shall be provided. The disassembly tool kit - remote provided in RAS 1.3.2.1 Paragraph III.B. satisfies the requirements.</p> <p>b. A device for removing frozen or stripped bolts must be provided. The bolt head mill provided in RAS 1.3.3.1 Paragraph III. B. satisfies this requirement.</p> <p>2. <u>Interface</u></p> <p>a. WMHS.</p> <p>b. Closure bolts, 13/16 AF-12 point.</p> <p>C. A means is required to lift the forward closure from the pressure vessel and place it on a disassembly stand.</p> <p>1. <u>Design Requirements</u></p> <p>a. Mechanical - The handling fixture shall be remotely actuated and be capable of lifting a closure/drive shaft assembly. The closure/drive shaft assembly weight will be listed in the Mass Properties Analysis Report.</p> <p>2. <u>Interface</u></p> <p>The handling fixture shall interface with the closure flange and the 10 ton crane. The lifting clamps will be actuated by the WMHS.</p>	S-047	Fixture Bolt Holding Bolt Head Mill Disassembly Tool Kit - Remote Forward Closure Handling Fixture - Remote 10-Ton Crane Hook Adapter.	1.3.3.3 Remove Forward Closure/ Control Shaft Assembly.	<p>D. A means is required to prevent the drive shafts from falling out of the drive shaft guide tubes.</p> <p>1. <u>Design Requirements</u></p> <p>A retainer clip shall be inserted under the drive shaft spline and supported by the guide tubes.</p> <p>2. <u>Interface</u></p> <p>a. WMHS.</p> <p>b. Drive shaft and guide tubes.</p> <p>E. A means is required to support the forward closure/control shaft assembly.</p> <p>1. <u>Design Requirements</u></p> <p>The stand will be capable of supporting the forward closure/control shaft assembly and to allow for further disassembly. The stand will provide rotation about the closure's vertical axis. The closure/drive shaft assembly weight will be listed in the Mass Properties Analysis Report.</p> <p>2. <u>Interface</u></p> <p>a. Closure Flange</p>	S-047	Control Shaft Retainer Clips. Forward Closure/Control Shaft Disassembly Stand.

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					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.3.3.4 Remove Reactor from Pressure Vessel.	<p>I. <u>Description of Function</u></p> <p>The reactor assembly must be removed from the pressure vessel for subsequent disassembly and post-operative examination.</p> <p>In preparation for removal of the reactor the locating cone retaining fixture will be removed.</p> <p>The pressure vessel will additionally be removed from the trunnion stand and placed on an inspection stand.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to lift the reactor from the pressure vessel and place it on a disassembly stand.</p> <p>1. <u>Design Requirements</u></p> <p>a. Mechanical - The handling fixture shall be remotely actuated and be capable of lifting the reactor. The reactor weight will be listed in the Mass Properties Analysis Report.</p> <p>2. <u>Interface</u></p> <p>The handling fixture shall interface with the support dome inlet port and the 40-ton crane. The lifting clamps will be actuated by the WMHS.</p> <p>B. A means is required to lift the pressure vessel from the trunnion stand adapter and place it on an inspection stand.</p>			Reference RAS 1.3.					
		S-047	Reactor Handling Fixture						
			Pressure Vessel Handling Fixture - Remote

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1.3.3.4 Remove Reactor from Pressure Vessel.	<p>1. <u>Design Requirements</u></p> <p>a. Mechanical - The handling fixture shall be remotely actuated and be capable of lifting the pressure vessel. The PV weight will be listed in the Mass Properties Analysis Report.</p> <p>2. <u>Interface</u></p> <p>The handling fixture shall interface with forward flange of the pressure vessel and the 40-ton crane. The lifting clamps will be actuated by the WMHS.</p> <p>C. A means is required to support the pressure vessel while its outer surface is being inspected.</p> <p>1. <u>Design Requirements</u></p> <p>The stand will support the pressure vessel and provide 360° rotation about its longitudinal axis. The pressure vessel weights will be listed in the Mass Properties Analysis Report.</p> <p>2. <u>Interface</u></p> <p>10-ton crane and pressure vessel aft flange.</p>	S-047	Adapter, 40-ton Crane Hook				
		S-047	Holding Stand - Pressure Vessel

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			NOMENCLATURE AND GEI, ECC OR DETAIL SPEC OR INDEX NO.		TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.3.3.5 Disassemble Reactor	<p>I. <u>Description of Function</u></p> <p>A complete disassembly of the reactor is required to enable post-operative examination and evaluation of the component parts.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to support and position the reactor assembly at universal attitudes during inspection and disassembly.</p> <p>1. <u>Design Requirements</u></p> <p>a. An electrically-operated reactor disassembly stand will provide the following functions: Continuous CW and CCW rotation of the reactor about its axis. Approximately 90° trunnion about the reactor's longitudinal axis. Continuous horizontal rotation. The weight of the reactor will be listed in the Mass Properties Analysis Report.</p> <p>2. <u>Interface</u></p> <p>The reactor disassembly stand will interface with the outside diameter of the reflector and the locating cone.</p> <p>B. A means is required to provide an interim support for the reactor assembly in the event that repair of the reactor disassembly stand is required.</p>	S-047	<p>Reactor Disassembly Stand.</p> <p>Reactor Support Stand.</p>	Reference RAS 1.3.

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
1.3.3.5 Disassemble Reactor.	<p>1. <u>Design Requirements</u></p> <p>a. Mechanical - The stand must be capable of supporting the reactor assembly in a vertical attitude.</p> <p>2. <u>Interface</u></p> <p>This stand will interface with the reactor assembly locating cone.</p>

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					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.3.3.5.1 Remove SSCSS Piping and Shield Baffle.	<p>I. <u>Description of Function</u></p> <p>The SSCSS manifolding and shield baffle must be removed to provide access to the upper shield support ring fasteners.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to sever the manifold piping and remove it from the reactor assembly.</p> <p>1. <u>Design Requirements</u></p> <p>A pneumatic device capable of severing the manifold piping. The disassembly cutting tools provided in RAS 1.3.3.2 Paragraph III. C. satisfies the requirements.</p> <p>2. <u>Interface</u></p> <p>The disassembly cutting tools will interface with the M/S manipulator.</p> <p>B. A means is required to cut interfacing instrumentation leads.</p> <p>1. <u>Design Requirements</u></p> <p>A pneumatic device capable of severing the instrumentation leads.</p> <p>2. <u>Interface</u></p> <p>The instrumentation lead shears will interface with the M/S manipulator.</p>		Disassembly Cutting Tools.	Reference RAS 1.3. M/S manipulator.					
			Instrumentation Lead Shears.						

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			NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.				NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
1.3.3.5.1 Remove SSCSS Piping and Shield Baffle	C. A means is required to remove the shield baffle fasteners. 1. <u>Design Requirements</u> The Reactor Fastener Removal Tools provided in RAS 1.3.3.2 Paragraph III.B. and the Bolt Head Mill provided in RAS 1.3.3.1 Paragraph III.B. satisfies this requirement. 2. <u>Interface</u> The fastener removal tool will interface with the M/S manipulator. D. A means is required to remove the loosened SSCSS manifold and baffle assembly and place it on a disposal pallet.		Reactor Fastener Removal Tools. Bolt Head Mill Disposal Pallet.

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					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.3.3.5.2 Remove Support Dome and Central Shield.	<p>I. <u>Description of Function</u></p> <p>A requirement exists to remove the support dome and central shield.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to remove the fasteners holding the dome and central shield to the support ring.</p> <p>1. <u>Design Requirements</u></p> <p>a. The fastener removal tools provided in RAS 1.3.3.2 Paragraph III.B. satisfies this requirement</p> <p>b. A tool is required for removing frozen or stripped fasteners. The bolt head mill provided in RAS 1.3.3.1 Paragraph III.B. satisfies the requirements.</p> <p>2. <u>Interface</u></p> <p>The wrench will interface with the M/S manipulator.</p> <p>B. A means is required to remove the support dome from the reactor assembly and place it on a disposal pallet.</p>		Reactor Fastener Removal Tools Bolt Head Mill Support Dome Handling Fixture	Reference RAS 1.3.

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					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.3.3.5.3 Remove Peripheral Shield.	<p>I. <u>Description of Function</u></p> <p>A requirement exists to remove the peripheral shield.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to remove the fasteners from the lower flange of the shield support ring.</p> <p>1. <u>Design Requirements</u></p> <p>a. The reactor fastener removal tools provided in RAS 1.3.3.2 Paragraph III.B. satisfies the requirements.</p> <p>b. A tool is required for removing frozen or stripped fasteners. The bolt head mill provided in RAS 1.3.3.1 Paragraph III.B. satisfies the requirements.</p> <p>2. <u>Interface</u></p> <p>The means will interface with the M/S manipulator.</p> <p>B. A means is required to remove the peripheral shield from the reactor assembly and place it on a disposal pallet.</p> <p>1. <u>Design Requirements</u></p> <p>a. Mechanical - The means must be capable of safely lifting the peripheral shields. The weight of the peripheral shields will be listed in the Mass Properties Analysis Report.</p>	S-047	Reactor Fastener Removal Tools. Bolt Head Mill. Peripheral Shield Handling Fixture. Disposal Pallet.	Reference RAS 1.3.

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1.3.3.5.3 Remove Peripheral Shield.	b. The disposal pallet provided in RAS 1.3.3.5.1 Paragraph III.D. satisfies this requirement. 2. <u>Interface</u> The peripheral shield handling fixture will interface with the peripheral shield and will attach to the overhead crane for lifting.

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					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.3.3.5.4 Remove Miscellaneous Support Plate and Plena Hardware.	<p>I. <u>Description of Function</u></p> <p>A requirement exists to remove the miscellaneous support plate and plena hardware from the reactor assembly.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to sever all instrumentation leads routed through the support plate.</p> <p>1. <u>Design Requirements</u></p> <p>The instrumentation lead shears provided in RAS 1.3.3.5.1 Paragraph III.B. satisfies the requirement.</p> <p>B. A means is required to remove all instrumentation mounted on the support plate.</p> <p>1. <u>Design Requirements</u></p> <p>a. Mechanical - The means must be designed to assure the proper removal of all instrumentation mounted on the support plate. The instrumentation removal tool kit provided in RAS 1.3.3.1 Paragraph III.F. satisfies the requirement.</p> <p>C. A means is required to remove closure caps from the face of the support plate.</p>		<p>Instrumentation Lead Shears.</p> <p>Instrumentation Removal Tool Kit.</p> <p>Reactor Fastener Removal Tools.</p>	Reference RAS 1.3.

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1.3.3.5.4 Remove Miscellaneous Support Plate and Plena Hardware.	<p>1. <u>Design Requirements</u></p> <p>a. Mechanical - The means must be able to remove all closure caps from the face of the support plate. The reactor fastener removal tools provided in RAS 1.3.3.2 Paragraph III.B. satisfies the requirements.</p> <p>D. A means is required to remove the fasteners from the support plate/support ring flange.</p> <p>1. <u>Design Requirements</u></p> <p>a. Mechanical - The means must be able to remove all fasteners for support ring flange. The reactor fastener removal tools provided in RAS 1.3.3.2 Paragraph III.B. satisfies the requirements.</p> <p>b. A tool must be provided to remove frozen or stripped fasteners. The bolt head mill provided in RAS 1.3.3.1 Paragraph III.B. satisfies the requirements.</p> <p>E. A means is required to sever the closure cap in the event of galling.</p> <p>1. <u>Design Requirements</u></p> <p>The means must be a pneumatic device capable of cutting off the top half of the closure cap. The disassembly cutting tools provided in RAS 1.3.3.2 Paragraph III.C. satisfies the requirements.</p>		Reactor Fastener Removal Tools. Bolt Head Mill. Disassembly Cutting Tools.

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					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.3.3.5.5 Disassemble Internal Shields	<p>I. <u>Description of Function</u></p> <p>The internal shields consisting of central and peripheral modules must be disassembled into their component parts for visual examination and photography. Neutronic instrumentation must also be removed from the forward and aft faces of the central shield.</p> <p>Selected shield components and instrumentation will be placed on trays and transferred to the hot cells for further post-operative examinations and post-test calibrations.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Considerations Created By This Function</u></p> <p>A. A means is required to position the central and peripheral shields to permit examination and disassembly.</p> <p>1. <u>Design Requirements</u></p> <p>A positioning stand is required to support and to permit access to both faces of the shields. The weight of the shields will be listed in the Mass Properties Analysis Report.</p> <p>2. <u>Interface</u></p> <p>The stand shall interface with either the central or the peripheral shields.</p> <p>B. A means is required to lift the central and peripheral shields and place them in a disassembly stand.</p>			Reference RAS 1.3.					
		S-047	Shield Disassembly Stand.						
			Central Shield Handling Fixture. Peripheral Shield Handling Fixture.

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					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.3.3.5.5 Disassemble Internal Shields	<p>1. <u>Design Requirements</u></p> <p>The central shield handling fixture and peripheral shield handling fixture provided in RAS 1.3.3.5.2 Paragraph III.C. and RAS 1.3.3.5.3 Paragraph III.B. satisfies the requirements.</p> <p>C. A means is required to remove the central and peripheral shield fasteners.</p> <p>1. <u>Design Requirements</u></p> <p>a. The reactor fastener removal tools provided in RAS 1.3.3.2 Paragraph III.B. satisfies the requirements.</p> <p>D. A means is required to remove the neutronic instrumentation from the shields.</p> <p>1. <u>Design Requirements</u></p> <p>a. The instrumentation removal tools provided in RAS 1.3.3.1 Paragraph III.F. satisfies the requirements.</p> <p>b. The small parts containers provided in RAS 1.3.3.1 Paragraph III.C. satisfies the requirements.</p> <p>E. A means is required to permit a remote viewing of the internal shield disassembly.</p> <p>1. <u>Design Requirements</u></p> <p>A means is required to view disassembly operations and to permit remote photography.</p>		<p>Reactor Fastener Removal Tools.</p> <p>Instrumentation Removal Tools kit. Small Parts Containers.</p> <p>Wall Periscope.</p>

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					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.3.3.5.8 Remove Core Assembly.	<p>I. <u>Description of Function</u></p> <p>A requirement exists to remove the core assembly from within the reflector and transport it to the core disassembly and examination cell for final disassembly of the core.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to remove the core assembly from the reflector.</p> <p>1. <u>Design Requirements</u></p> <p>a. Mechanical - The means must be capable of safely lifting the core assembly, bundle it as it comes out of the reflector and place it on the floor - mounted handling system mobile carriage. The weight of the core will be listed in the Mass Properties Analysis Report.</p> <p>B. A means is required to transfer the core assembly in the core removal cage to the CDAE cell.</p> <p>1. <u>Design Requirements</u></p> <p>The means must be capable of transporting on tracks in the MAD building, the core assembly in the core removal cage, to the CDAE Cell.</p>			Reference RAS 1.3.					
		S-047	Core Removal Cage.						
			Existing Floor Mounted Handling System.

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NOMENCLATURE AND NUMBER OF CEI

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.3.3.5.9 Disassemble Core Assembly.	<p>I. <u>Description of Function</u></p> <p>Disassembly of the core requires placing the core removal cage, which contains the core, into the core disassembly stand. The stand must provide positioning capabilities during subsequent disassembly operations.</p> <p>Overhead photography and low magnification viewing will be required during all phases of core disassembly.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to support, position, and trunnion the core during disassembly.</p> <p>1. <u>Design Requirements</u></p> <p>A core disassembly stand capable of providing 360° rotation around the vertical axis and 180° trunnion motions with the core removal cage enclosed in it. The weight of the core assembly will be listed in the Mass Properties Analysis Report.</p> <p>2. <u>Interface</u></p> <p>The core disassembly stand interfaces with the core removal cage and CDAE cell electrical facilities.</p> <p>B. A means is required to photograph the core from overhead during the core unstacking operations.</p>	S-047	<p>Core Disassembly Stand.</p> <p>Core Photographic System.</p>	Reference RAS 1.3.

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Reactor 1.3.3.5

NOMENCLATURE AND NUMBER OF CEI

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE)(C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE)(C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
1.3.3.5.9 Disassemble Core Assembly.	<p>1. <u>Design Requirements</u></p> <p>The core photographic system will provide a high resolution, flat field of view of the entire exposed surface of the core.</p> <p>2. <u>Interface</u></p> <p>CDAE cell.</p>

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Core Assembly 1.3.3.5.9
NOMENCLATURE AND NUMBER OF CEI

OR
(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.3.3.5.9.1 Remove Cluster Nuts	<p>I. <u>Description of Function</u></p> <p>All the cluster nuts must be removed before the support plate/plena can be separated from the cluster support stems.</p> <p>The aft end of the core must be supported after removal of the cluster nuts and prior to the vertical trunnion of the core.</p> <p>Certain designated cluster nuts must be placed in a tray for transfer to hot cell area for POE.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to remove the cluster nuts from the support stems and place them in transfer containers.</p> <p>1. <u>Design Requirements</u></p> <p>a. An air impact wrench of sufficient capacity to remove the cluster nuts.</p> <p>b. A tool is required to remove frozen or stripped cluster nuts. The bolt head mill provided in RAS 1.3.3.1 Paragraph III.B. satisfies the requirements.</p> <p>c. A container is required to hold the cluster nuts. The small parts container provided in RAS 1.3.3.1 Paragraph III. C. satisfies the requirements.</p>			Reference RAS 1.3. <u>Equipment</u> 3000 PAR manipulator.					
			Core Fastener Removal Tools.						
			Bolt Head Mill.						
			Small Parts Container.

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Core Assembly 1.3.3.5.9

NOMENCLATURE AND NUMBER OF CEI _____

OR
(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
1.3.3.5.9.1 Remove Cluster Nuts	<p>B. A means is required to support the core aft end after removing cluster nuts and prior to vertical trunnion of the core.</p> <p>1. <u>Design Requirements</u></p> <p>The supporting plate must protect the cluster hot end hardware from damage and support the core aft end. The weight of the core aft end will be listed in the Mass Properties Analysis Report.</p> <p>2. <u>Interface</u></p> <p>3000 PAR; M/S manipulator.</p> <p>Cluster hot end hardware and core removal cage.</p>	S-047	Core Holding Plate.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Core Assembly 1.3.3.5.9

OR

NOMENCLATURE AND NUMBER OF CEI _____

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
			NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.		TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.3.3.5.9.2 Remove Filler Strip Axial Support Rods	<p>I. <u>Description of Function</u></p> <p>The filler strip axial support rods must be severed prior to removing the support plate/plena.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to sever the filler strip axial support rods between the seal ring and forward end of the filler strips.</p> <p>1. <u>Design Requirements</u></p> <p>A pneumatic cutting or shearing device capable of severing the rods. The disassembly cutting tool provided in RAS 1.3.3.2 Paragraph III.C. satisfies this requirement.</p> <p>2. <u>Interface</u></p> <p>M/S manipulator. 174 axial support rods.</p>		Disassembly Cutting Tools.	Reference RAS 1.3.					

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FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Core Assembly 1.3.3.5.9
NOMENCLATURE AND NUMBER OF CEI _____

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.3.3.5.9.3 Remove Support Plate/Plena	<p>I. <u>Description of Function</u></p> <p>The core support plate/plena must be elevated vertically until it is clear of all extending support stems and instrumentation leads. The support plate/plena will be placed on an inspection stand for POE and removal of the seal ring.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to lift and position the core support plate/plena.</p> <p>1. <u>Design Requirements</u></p> <p>a. Mechanical - The fixture will vertically elevate the support plate/plena clear of the support stems without permitting axial movement of the clusters. The weight of the support plate/plena will be listed in the Mass Properties Analysis Report.</p> <p>2. <u>Interface</u></p> <p>a. 15-ton crane, M/S manipulator. b. Core support plate/plena flange.</p> <p>B. A means is required to support the support plate/plena for removal of the steel ring and inspection.</p>	S-047	<p>Support Plate/Plena Handling Fixture.</p> <p>Support Plate/Plena Inspection Stand.</p>	Reference RAS. 1.3.

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Core Assembly 1.3.3.5.9

NOMENCLATURE AND NUMBER OF CEI _____

OR

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
1.3.3.5.9.3 Remove Support Plate/Plena	<p>1. <u>Design Requirements</u></p> <p>a. The stand will support the support plate/plena and provide rotation around its center line. The weight of the support plate/plena will be listed in the Mass Properties Analysis Report.</p> <p>2. <u>Interface</u></p> <p>The stand will interface with the support plate/plena flange.</p> <p>C. A means is required to remove the seal ring fasteners.</p> <p>1. <u>Design Requirements</u></p> <p>The core fastener removal tools provided in RAS 1.3.3.5.9.1 Paragraph III.A. satisfies the requirements.</p>	S-047	Core Fastener Removal Tools.				

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REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Core Assembly 1.3.3.5.9

OR

NOMENCLATURE AND NUMBER OF CEI

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.3.3.5.9.4 Remove Filler Strips and Wrapper	<p>I. <u>Description of Function</u></p> <p>Approximately a 180° section of the peripheral filler strips and wrapper foil must be removed prior to removing clusters. The core is positioned horizontally during removal of filler strips and wrapper.</p> <p>In preparation for this function, the upper half of the core removal cage and the core holding plate must be removed.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to retain the filler strips.</p> <p>1. <u>Design Requirements</u></p> <p>The device must retain the remaining filler strips to the core periphery as the strips are sequentially removed.</p> <p>2. <u>Interface</u></p> <p>M/S manipulator. Filler strips.</p> <p>B. A means is required to store and transfer fillers during post-operative examinations.</p> <p>1. <u>Design Requirements</u></p> <p>a. A parts tray suitable for storing and transferring filler strips is required.</p>		Filler Strip Retaining Fixture.	Reference RAS 1.3.					
			Long Parts Trays.

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Core Assembly 1.3.3.5.9

OR

NOMENCLATURE AND NUMBER OF CEI

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE)(C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE)(C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
1.3.3.5.9.4 Remove Filler Strips and Wrapper.	<p>b. Tray must be lined with soft material (e.g., rubber) to prevent damage to graphite components.</p> <p>c. Must accommodate parts approximately 55 inches long.</p> <p>2. <u>Interface</u></p> <p>W/S manipulator.</p> <p>C. A means is required to hold filler strips for transfer to disposal area.</p> <p>D. A means is required to remove the insulation foil from the core periphery.</p> <p>1. <u>Design Requirements</u></p> <p>Miscellaneous mechanical gripping tools and pneumatic cutting tools.</p> <p>2. <u>Interface</u></p> <p>W/S manipulator.</p>		<p>Long Parts Containers.</p> <p>Insulation Foil Removal Tools.</p>

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Core Assembly 1.3.3.5.9

OR

NOMENCLATURE AND NUMBER OF CEI

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.3.3.5.9.5 Remove Clusters.	I. <u>Description of Function</u> Clusters must be individually removed from the core stack and transferred to a disassembly station. II. <u>Test Article Design Requirements Created By This Function</u> None III. <u>TSE Design Requirements Created By This Function</u> A. A means is required to transfer the clusters from the core to a disassembly table. 1. <u>Design Requirements</u> The existing cluster transfer stand provides the means. B. A means is required to support the clusters as they are being individually disassembled. 1. <u>Design Requirements</u> The existing cluster disassembly station provides the means.		Existing Cluster Transfer Stand. Existing Cluster Disassembly Stand.	Reference RAS 1.3.					

<div style="display: flex; align-items: center;"> <div> <h2 style="margin: 0;">REQUIREMENTS ALLOCATION SHEET</h2> </div> </div>									
FUNCTIONAL DIAGRAM TITLE AND NUMBER <u>Disassemble Core Assembly 1.3.3.5.9</u> OR NOMENCLATURE AND NUMBER OF CEI _____ (A)									
FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.3.3.5.9.6 Disassemble Clusters.	<p><u>I. Description of Function</u></p> <p>The clusters must be disassembled into fueled and non-fueled components for subsequent post-operative examination and measurements.</p> <p>The clusters must be alternately disassembled in the core stack in the event of fuel element bonding.</p> <p><u>II. Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p><u>III. TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to disassemble the clusters into fueled and non-fueled components.</p> <p style="margin-left: 20px;"><u>1. Design Requirements</u></p> <p style="margin-left: 40px;">Miscellaneous mechanical and pneumatic manipulator tools to cut, remove fasteners, and position cluster components are required.</p> <p style="margin-left: 40px;">The core fastener removal tools provided in RAS 1.3.3.5.9.1 Paragraph III.A. satisfies part of this requirement.</p> <p>B. A means is required to store and transfer cluster components during the post-operative examination phase.</p> <p style="margin-left: 20px;"><u>1. Design Requirements</u></p> <p style="margin-left: 40px;">The cluster parts will be stored and transferred in containers, trays, and inserts. (Continued)</p>		Core Fastener Removal Tools. SSA and CHEH Disassembly Tools. Cluster Disassembly Tools. Long Parts Con- tainers. Fuel Element Cask Inserts Fuel Element Trays Cask Insert Handling Fixture. Small Parts Containers.	Reference RAS 1.3.

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Core Assembly 1.3.3.5.9

OR

NOMENCLATURE AND NUMBER OF CEI

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
1.3.3.5.9.6 Disassemble Clusters.	<p>1. <u>Design Requirements (Continued)</u></p> <p>The small parts containers provided in RAS 1.3.3.1 Paragraph III.C. and long parts containers provided in RAS 1.3.3.5.9.4 Paragraph III.C. satisfies part of this requirement.</p> <p>C. A means is required to remove the internal components of the center element.</p> <p>1. <u>Design Requirements</u></p> <p>An electromechanical fixture will remotely eject the internal components.</p> <p>D. A means is required to disassemble the clusters in the core stack and separate the fuel elements.</p> <p>1. <u>Design Requirements</u></p> <p>Miscellaneous mechanical and pneumatic manipulator tools to remove the center element and separate the fuel elements is required.</p>		<p>Center Element Disassembly Fixture.</p> <p>Fuel Element Se- paration Tools.</p>

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Reactor 1.3.3.5

OR

NOMENCLATURE AND NUMBER OF CEI _____

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.3.3.5.10 Disassemble Reflector.	<p>I. <u>Description of Function</u></p> <p>The reflector, while on the reactor disassembly stand, must be disassembled for visual and post-operative examination of its components.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>N/A.</p>			Reference RAS 1.3.					

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REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Reflector 1.3.3.5.10

OR

NOMENCLATURE AND NUMBER OF CEI

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.3.3.5.10.1 Remove Control Drums	<p>I. <u>Description of Function</u></p> <p>All control drums must be removed from reflector to permit removal of the reflector rings. Control drums and selected components will be subjected to further examination and/or disassembly.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to remove the fasteners from each dome end bearing housing.</p> <p>1. <u>Design Requirements</u></p> <p>The reactor fastener removal tools provided in RAS 1.3.3.2, Paragraph III.8, satisfies the requirements.</p> <p>2. <u>Interface</u></p> <p>a. M/S manipulator.</p> <p>b. Dome end bearing housing bolts.</p> <p>B. A means is required to lift each control drum from the reflector, and place control drum in a storage stand.</p> <p>1. <u>Design Requirements</u></p> <p>a. Electrical/pneumatic - N/A.</p> <p>b. Mechanical</p> <p>(1) A means is required to support the control drum. The weight of the control drum will be listed in the Mass Properties Analysis Report.</p>		Reactor Fastener Removal Tools.	Reference RAS 1.3.					
			Control Drum Handling Fixture.

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Reflector 1.3.3.5.10

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NOMENCLATURE AND NUMBER OF CEI _____

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
1.3.3.5.10.1 Remove Control Drums	(2) Attitude - vertical. 2. <u>Interface</u> a. WMHS b. Control drum assembly dome end bearing housing. C. A means is required to store 18 control drum as- semblies between removal from reflector and dis- assembly of control drums. 1. <u>Design Requirements</u> a. Electrical/pneumatic N/A b. Mechanical (1) A means is required to support the weight of each control drum assembly. The weight of the control drum assembly will be listed in the Mass Properties Analysis Report. (2) Attitude - vertical. 2. <u>Interface</u> a. Control drum assembly.	S-047	Control Drum Storage Stand

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Reflector 1.3.3.5.10
NOMENCLATURE AND NUMBER OF CEI _____

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.3.3.5.10.2 Remove Tie Bolt Nuts	<p>I. <u>Description of Function</u></p> <p>All tie bolt nuts must be removed from the reflector in order to free the various support and reflector rings.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to remove the nuts from the dome end of the reflector tie bolts.</p> <p>1. <u>Design Requirements</u></p> <p>a. Electrical/Pneumatic - A pneumatic torque wrench of sufficient torque capacity.</p> <p>b. A tool is required to remove frozen or stripped fasteners.</p> <p>2. <u>Interface</u></p> <p>a. W/HIS.</p> <p>b. M/S manipulator.</p> <p>c. Tie bolt nuts.</p>		Tie Bolt Nut Removal Tool.	Reference RAS 1.3.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Reflector 1,3,3,5,10

OR
(A)

NOMENCLATURE AND NUMBER OF CEI _____

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1,3,3,5,10.3 Remove Reflector Components	<p>I. <u>Description of Function</u></p> <p>The following reflector components are to be removed from the assembly for further examination and/or disassembly.</p> <ul style="list-style-type: none">a. Core Support Ring.b. Reflector Rings.c. Seal Segments.d. Aft Support Ring.e. Locating Cone.f. Tie Bolts. <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to remove the core support ring and place core support ring on a disposal pallet.</p> <ul style="list-style-type: none">1. <u>Design Requirements</u><ul style="list-style-type: none">a. Electrical/Pneumatic - N/A.b. Mechanical<ul style="list-style-type: none">1. A means is required to support a weight of 60 pounds.2. A means is required to handle the core support ring in a centerline vertical attitude.2. <u>Interface</u><ul style="list-style-type: none">a. WMHS.b. Core support ring.			Reference RAS 1.3.					
			Core Support Ring Handling Fixture.

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Reflector 1.3.3.5.10
NOMENCLATURE AND NUMBER OF CEI _____

OR
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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE)(C)	REFERENCE OR TRADE AND DESIGN STUDY NO (H)	EQUIPMENT IDENTIFICATION (E)
			NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.				NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
1.3.3.5.10.3 Remove Reflector Components.	B. A means is required to remove the reflector rings and place them in storage containers. 1. Design Requirements a. Electrical/Pneumatic - N/A. b. Mechanical (1) A means is required to support the reflector rings. The weight of the reflector rings will be listed in the Mass Properties Analysis Report. (2) A means is required to handle the reflector rings in a center-line vertical attitude. 2. Interface a. WMHS. b. Reflector ring. C. A means is required to store the reflector rings after removal from the reflector assembly and prior to disassembly. 1. Design Requirements a. Electrical/Pneumatic - N/A. b. Mechanical - (1) A means is required to support the reflector rings. The weight of the reflector rings will be provided in the Mass Properties Analysis Report. (2) A means is required to store the reflector rings in a center-line vertical attitude. 2. Interface a. Reflector Ring. b. Ten-ton crane. D. A means is required to remove the aft support ring and place it on a disposal pallet.	S-047	Reflector Ring Handling Fixture.	1.3.3.5.10.3 Remove Reflector Components.	1. Design Requirements a. Electrical/Pneumatic - N/A. b. Mechanical (1) A means is required to support the aft support ring. The weight of the aft support ring is listed in the Mass Properties Analysis Report. (2) A means is required to handle the aft support ring in a center-line vertical attitude. 2. Interface a. WMHS. b. Aft Support ring. E. A means is required to remove the locating cone and place it on a disposal pallet. 1. Design Requirements a. Electrical/Pneumatic - N/A. b. Mechanical (1) A means is required to support the locating cone. The weight of the locating cone is listed in the Mass Properties Analysis Report. (2) A means is required to handle the locating cone in a center-line vertical attitude. 2. Interface a. WMHS. b. Locating cone. F. A means is required to support the core support ring, the aft support ring, or the locating cone for disposal.	S-047	Locating Cone Handling Fixture.
		S-047	Reflector Ring Storage Containers			S-047	Disposal Pallet.
			Aft Support Ring Handling Fixture.

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Reflector 1.3.3.5.10

OR

NOMENCLATURE AND NUMBER OF CEI

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
1.3.3.5.10.3 Remove Reflector Components.	<p>1. <u>Design Requirements</u></p> <p>a. Electrical/Pneumatic - N/A. b. Mechanical - The disposal pallet provided in RAS 1.3.3.5.1 satisfies this requirement.</p> <p>2. <u>Interfaces</u></p> <p>a. Core support ring. b. Aft support ring. c. Locating cone.</p> <p>G. A means is required to remove the tie bolts from the aft support ring to permit further post-operative examination.</p> <p>1. <u>Design Requirements</u></p> <p>The disassembly cutting tools provided in RAS 1.3.3.2 Paragraph III.C. and long parts trays provided in RAS 1.3.3.5.9.4 Paragraph III.B. satisfy the requirements.</p> <p>2. <u>Interface</u></p> <p>M/S manipulators.</p>		Long Parts Tray. Disassembly Cutting Tools.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Reflector 1,3,3,5,10

NOMENCLATURE AND NUMBER OF CEI _____

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1,3,3,5,10,4 Disassemble Reflector Rings.	<p>I. <u>Description of Function</u></p> <p>Designated reflector rings must be completely disassembled for post-operative examination of the following components:</p> <ul style="list-style-type: none">a. Backup seals and insulation.b. Seal Ring.c. Lateral support spring plunger capsules and hardware.d. Beryllium segments and inner ring.e. Ring mounted instrumentation. <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to place the reflector ring on the disassembly stand.</p> <p>1. <u>Design Requirements</u></p> <p>The reflector ring handling fixture provided in RAS 1,3,3,5,10,3 Paragraph III, B, satisfy the requirements.</p> <p>2. <u>Interface</u></p> <ul style="list-style-type: none">a. WMHS.b. Reflector ring. <p>B. A means is required to support the reflector ring for complete disassembly.</p>			Reference RAS 1,3.					
			Reflector Ring Handling Fixture.						
			Reflector Ring Disassembly Stand.

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Reflector 1.3.3.5.10

OR

NOMENCLATURE AND NUMBER OF CEI _____

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)
			NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.				NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
1.3.3.5.10.4 Disassemble Reflector Rings.	<p>1. <u>Design Requirements</u></p> <p>a. Electrical/pneumatic - N/A. b. Mechanical</p> <p>(1) A means is required to support the reflector ring. The weight of the reflector ring will be listed in the Mass Properties Analysis Report.</p> <p>(2) A means is required to rotate the reflector ring between centerline vertical and centerline horizontal, and lock in either attitude.</p> <p>2. <u>Interface</u></p> <p>a. Reflector ring.</p> <p>C. A means is required to remove ring mounted instrumentation from the reflector ring, and place in trays.</p> <p>1. <u>Design Requirements</u></p> <p>The instrumentation removal tools provided in RAS 1.3.3.1 Paragraph III.F. satisfy the requirements.</p> <p>D. A means is required to remove the lateral support spring plunger capsules from the reflector ring, and place in trays.</p> <p>1. <u>Design Requirements</u></p> <p>a. Electrical/pneumatic - A pneumatic impact wrench of sufficient torque capacity. The lateral support removal tools provided in RAS 1.3.3.5.7 Paragraph III.A. satisfies this requirement.</p> <p>Mechanical - N/A.</p>	S-047		1.3.3.5.10.4 Disassemble Reflector Rings.	<p>2. <u>Interface</u></p> <p>a. M/S manipulator. b. Lateral support spring plunger capsules.</p>		
			Instrumentation Removal Tools kit.				
			Lateral Support Removal Tools.				

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REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Reflector 1.3.3.5.10

NOMENCLATURE AND NUMBER OF CEI

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.3.3.5.10.5 Disassemble Control Drums.	<p>I. <u>Description of Function</u></p> <p>All mechanically attached hardware must be removed from control drum such as: coupling, return spring, bearing housing, bearings, etc., in preparation for further destructive disassembly of the control drum in the hot cell area.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to lift the control drum assembly from the storage stand and place it in the disassembly stand.</p> <p>1. <u>Design Requirements</u></p> <p>The control drum handling fixture provided in RAS 1.3.3.5.10.1 Paragraph III. B. satisfies the requirements.</p> <p>2. <u>Interface</u></p> <p>a. WMHS.</p> <p>b. Control drum assembly dome end bearing housing.</p> <p>B. A means is required to store 18 control drum assemblies after removal from the reflector and prior to being placed in the control drum disassembly stand.</p>		Control Drum Handling Fixture.	Reference RAS 1.3.					
			Control Drum Storage Stand

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Reflector 1.3.3.5.10

OR

NOMENCLATURE AND NUMBER OF CEI

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)
			NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.				NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
1.3.3.5.10.5 Disassemble Control Drums.	<p>1. <u>Design Requirements</u></p> <p>The control drum storage stand provided in RAS 1.3.3.5.10.1 Paragraph III.C. satisfies the requirements.</p> <p>C. A means is required to support the control drum assembly during removal of mechanically attached components such as: coupling, return spring, bearing housing, bearings, etc.</p> <p>1. <u>Design Requirements</u></p> <p>A means is required to receive the control drum assembly in a vertical attitude and rotate to a horizontal position.</p> <p>2. <u>Interface</u></p> <p>a. Control drum assembly. b. Manipulators.</p> <p>D. A means is required to handle the removed control drum parts subsequent to disassembly for transport to post-operative cells.</p> <p>1. <u>Design Requirements</u></p> <p>This requirement is satisfied through the use of existing trays provided in RAS 1.3.3.5.9.4 Paragraph III.B.</p>		Control Drum Disassembly Stand				
			Long Parts Trays.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Test Article 1.3.3 OR
NOMENCLATURE AND NUMBER OF CEI _____ (A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.3.3.6 Remove Forward Closure and Actuators.	<p>I. <u>Description of Function</u></p> <p>The forward closure and actuators will be removed from the vessel and placed on a disassembly stand.</p> <p>In preparation for removal of the closure, the instrumentation leads and all instrumentation ports must be cut off below the brazed plugs and all instrumentation leads the closure/vessel flange must be severed.</p> <p>Designated bolts will be placed in trays for transfer to the post-operative cells.</p> <p>After removal of the closure, the drive shafts will be removed and placed in a storage stand. This function applies to R-2, 3, 4, and 5 testing only. For R-1 testing, see RAS 1.3.3.3.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to sever all instrumentation leads and brazed plugs on the forward closure.</p> <p>1. <u>Design Requirements</u></p> <p>The pneumatic grinder provided in RAS 1.3.2.1 Paragraph III.D. satisfies the requirement.</p>			Reference RAS 1.3.					
			Pneumatic Grinder.

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Test Article 1.3.3
NOMENCLATURE AND NUMBER OF CEI _____

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)
			NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.				NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
1.3.3.6 Remove Forward Closure and Actuators.	<p>B. A means is required to remove the forward closure fastener.</p> <p>1. <u>Design Requirements</u></p> <p>The disassembly tool kit -remote test assembly fastener removal tool provided in RAS 1.3.2.1, Paragraph III. B. satisfies the requirements.</p> <p>2. <u>Interface</u></p> <p>Forward closure bolts.</p> <p>C. A means is required to store selected closure bolts for transfer to the hot cells. This requirement is fulfilled by the bolt holding fixture provided in RAS 1.3.3.3 Paragraph III. B.</p> <p>D. A means is required to lift and position the forward closure and actuator assembly.</p> <p>1. <u>Design Requirements</u></p> <p>The forward closure handling fixture provided in RAS 1.3.3.3 Paragraph III. B. satisfies the requirements.</p> <p>E. A means is required to support and position the forward closure and actuator assembly to permit removal of the actuators.</p> <p>1. <u>Design Requirements</u></p> <p>The stand will support the forward closure and provide rotation about the closure's vertical axis. The forward closure and actuator assembly weight will be listed in the Mass Property Analysis Report.</p>		Disassembly Tool Kit - Remote	1.3.3.6 Remove Forward Closure and Actuators	<p>2. <u>Interface</u></p> <p>Forward closure.</p> <p>F. A means is required to lift and store the drive shafts.</p> <p>1. <u>Design Requirements</u></p> <p>A stand capable of vertically storing 18 drive shafts.</p> <p>2. <u>Interface</u></p> <p>WMHS, drive shafts, and actuators.</p>		Drive Shaft Storage Stand

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Test Article 1.3.3

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.3.3.7 Disassemble Forward Closure/ Control Shaft Assembly.	<p>I. <u>Description of Function</u></p> <p>The drive shaft will be removed from the forward closure to permit examination of the components. This function applies to R-1 testing only. For R-2, 3, 4, and 5, see RAS 1.3.3.8.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to lower the control shafts from the closure and support the closure for storage.</p> <p>B. A means is required to lift the control shafts.</p> <p>1. <u>Design Requirements</u></p> <p>a. Mechanical - A lifting device to vertically handle the control shaft will be used.</p> <p>2. <u>Interface</u></p> <p>The lifting device will interface with the control shaft and WMHS.</p> <p>C. A means is required to store the control shafts.</p>		Forward Closure Stand. Drive Shaft Handling Fixture. Drive Shaft Storage Stand	Reference RAS 1.3.

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Test Article 1,3,3
NOMENCLATURE AND NUMBER OF CEI _____

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
1.3.3.7 Disassemble Forward/ Closure/Control Shaft Assembly	<p>1. <u>Design Requirements</u> The drive shaft storage stand provided in RAS 1.3.3.6 Paragraph III.F. satisfies this requirement.</p> <p>2. <u>Interface</u> Control shafts and 10-ton crane hook.</p> <p>D. A means is required to store the forward closure.</p> <p>1. <u>Design Requirements</u> The disposal pallet provided in RAS 1.3.3.5.1 Paragraph III.D. satisfies this requirement.</p>		Disposal Pallet

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Test Article 1.3.3

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NOMENCLATURE AND NUMBER OF CEI

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
			NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.		TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.3.3.8 Disassemble Forward Closure and Actuators.	<p>I. <u>Description of Function</u></p> <p>The actuators will be removed from the forward closure for further examination and disassembly.</p> <p>Designated actuators will be completely disassembled for post-operations evaluation. This function applies to R-2, 3, 4, and 5 testing only. For R-1 testing, see RAS 1.3.3.7.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to disengage the actuator/forward closure coupling.</p> <p>1. <u>Design Requirements</u></p> <p>A pneumatic wrench of sufficient torque capacity to disengage the coupling.</p> <p>2. <u>Interface</u></p> <p>M/S manipulator.</p> <p>B. A means is required to store 18 actuators individually.</p> <p>C. A means is required to disassemble an actuator into its component parts.</p>			Reference RAS 1.3.					
			Actuator Coupling Removal Tool.						
			Actuator Storage Containers.						
			Actuator Disassembly Tools.

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Test Article 1.3.3

OR

NOMENCLATURE AND NUMBER OF CEI

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
1.3.3.8 Disassemble Forward Closure and Actuators.	<p>1. <u>Design Requirements</u></p> <p>Miscellaneous positioning fixtures and pneumatic wrenches.</p> <p>2. <u>Interface</u></p> <p>M/S manipulators.</p> <p>D. A means is required to store the forward closure.</p> <p>1. <u>Design Requirements</u></p> <p>The disposal pallet provided in RAS 1.3.3.5.1 Paragraph III.D. satisfies the requirement.</p>		Disposal Pallet.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Test Assembly 1.3

NOMENCLATURE AND NUMBER OF CEI

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
			NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.		TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.3.4 Prepare Test Car for Disposition.	<p>I. <u>Description of Function</u></p> <p>The test car must be removed from the disassembly bay and transferred to an area where the car can be decontaminated and inspected under rad-safe conditions.</p> <p>For R-1, when radiation levels permit, the control drum actuators will be manually removed from the privy. The actuators will be disassembled and inspected.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to transfer test car from the disassembly bay to the decontamination storage area.</p> <p>The MCC and RTS locomotive provided in RAS 1.2.3 Paragraph III.A. satisfies the requirements.</p>			Ref. RAS 1.3					
			RTS Locomotive. MCC Spacer Car

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Test Assembly 1.3

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.3.5 Perform Visual and Photographic Examinations	<p>I. <u>Description of Function</u></p> <p>The test assembly will have complete visual inspection performed for any anomalies in the form of cracks, scratches, burns, ruptures, etc., that have occurred during test. Photography will be used to document the condition and anomalies of the test assembly.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>A. A means is required to enable a detailed visual examination of the test assembly remotely through shielded windows. The wall periscope provided in RAS 1.3.3.5.5. Paragraph III.E. satisfies part of the requirement.</p> <p>B. A means is required to photograph defects, damage and details of components and hardware exposed during test assembly and disassembly.</p>		Wall Periscope Existing TV Systems Equip. Existing Photographic Processing Equipment	Reference RAS 1.3					

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FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Test Assembly 1.3

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NOMENCLATURE AND NUMBER OF CEI

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FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E)	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
			NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO		TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.3.6	I. <u>Description of Function</u> The actuator test package shall be removed from the test car privy roof for disassembly and examination. See RAS 1.3.3.8 for disassembly function.			Reference RAS 1.3					
Remove Miscellaneous Test Packages	II. <u>Test Article Design Requirements Created By This Function</u> None								
	III. <u>TSE Design Requirements Created By This Function</u>								
	A. A means is required to sever the inter-connecting instrumentation, control and coolant lines.		Pneumatic Grinder						
	1. <u>Design Requirements</u> The pneumatic grinder provided in RAS 1.3.2.1 Paragraph III.D. satisfies the requirements.								
	B. A means is required to disconnect the test package coupling clamp.		Disassembly Tool Kit - Remote						
	1. <u>Design Requirements</u> The disassembly tool kit - remote provided in RAS 1.3.2.1, Paragraph III.B. satisfies the requirements.

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Test Assembly 1.3

OR

NOMENCLATURE AND NUMBER OF CEI

— (A)

[illegible]

REQUIREMENTS ALLOCATION SHEET (CONTINUED)

FUNCTIONAL DIAGRAM TITLE AND NUMBER Disassemble Test Assembly 1.3

NOMENCLATURE AND NUMBER OF CEI

OR
(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (TYPE) (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.
1.3.7 Separate Nozzle Skirt Extension from Test Assembly	<p>b. Mechanical - The means shall attach to the nozzle skirt extension by remote actuation. The means shall be capable of lifting the nozzle skirt extension. The weight of the nozzle skirt extension will be listed in the Mass Properties Analysis Report.</p> <p>2. <u>Interface</u> The means must interface with the facility lifting equipment and the nozzle skirt extension.</p> <p>C. A means is required to support the nozzle skirt extension following removal from the test assembly.</p> <p>1. <u>Design Requirements</u></p> <p>a. Electrical/Pneumatic - N/A.</p> <p>b. Mechanical - The means shall provide a stable platform for supporting the nozzle skirt extension. The weight of the nozzle skirt extension will be listed in the Mass Properties Analysis Report.</p> <p>2. <u>Interface</u> The means must interface with the nozzle skirt extension at the skirt to skirt extension attachment plane.</p>	S-047	Nozzle Skirt Extension Examination Stand.

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Conduct Post Test Operations 1.0

OR

NOMENCLATURE AND NUMBER OF CEI

(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.4 Perform Post-Opera- tive Examinations	I. <u>Description of Function</u> Post-operative examinations and tests will be conducted to determine the effects of the test article environments on materials and designs of the nuclear and non-nuclear components and associated subcomponents. II. <u>Test Article Design Requirements Created By This Function</u> None III. <u>TSE Design Requirements Created By This Function</u> TBD			Reference RAS 1.3

REQUIREMENTS ALLOCATION SHEET

FUNCTIONAL DIAGRAM TITLE AND NUMBER Conduct Post Test Operations 1.0
NOMENCLATURE AND NUMBER OF CEI _____

OR
(A)

FUNCTION NAME AND NUMBER (B)	DESIGN REQUIREMENTS (C)	REFERENCE OR TRADE AND DESIGN STUDY NO. (H)	EQUIPMENT IDENTIFICATION (E) NOMENCLATURE AND CEI, ECC OR DETAIL SPEC OR INDEX NO.	FACILITY REQUIREMENTS (D)	PERSONNEL AND TRAINING EQUIPMENT REQUIREMENT (F)				PROCEDURAL DATA REQTS (G)
					TASKS (F1)	TIME REQD (F2)	PERFORMANCE REQTS (F3)	TRAINING AND TRAINING EQPT REQTS (F4)	
1.5 Dispose of Test Assembly Components.	<p>I. <u>Description of Function</u></p> <p>Following post-operative examinations and tests at NRDS, disposition must be made of the radioactive components of the test assembly.</p> <p>The components must be either decontaminated and stored for subsequent analysis or transported to an area where they may be discarded.</p> <p>II. <u>Test Article Design Requirements Created By This Function</u></p> <p>None</p> <p>III. <u>TSE Design Requirements Created By This Function</u></p> <p>TBD</p>			Reference RAS 1, 3

TITLE Reactor Series Ground Test Program Requirement Allocation Sheets	
	DOCUMENT NO. WANL-TME-2740	DATE September 1970
ABSTRACT This data item describes the functions which must be performed to successfully complete the Reactor Test Series of the NERVA Program. In addition, it describes the Test Article design and Test Support Equipment (TSE) design requirements necessitated by each function. This document is a fulfillment of Work Statement number 4b of Project number 717.		
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