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COLLINS,S.J.

SUBJECT: Forwards plant simulation facility four year rept,per 10CFR55.45(b)(5)(ii).

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WASHINGTON PUBLIC POWER SUPPLY SYSTEM
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December 21, 1998
GO2-98-214

Docket No. 50-397

Samuel J. Collins
Director Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Mail Station 5 E7
Washington, DC 20555

Dear Mr. Collins:

Subject: **WNP-2 OPERATING LICENSE NPF-21**
PLANT SIMULATION FACILITY FOUR YEAR REPORT

In accordance with 10CFR55.45(b)(5)(ii), enclosed is the Plant Simulation Facility Four Year Report.

If you have any questions, please contact Mr. PM Taylor, Superintendent, Operations Training, at (509) 377-8274.

Respectfully,

JV Parrish
Chief Executive Officer
Mail Drop 1023

Attachments: 1) Plant Simulation Facility Four Year Report
2) Testing Schedule From 1994, Form 474 Submittal
3) WNP-2 Simulator Re-host Project Plan

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Washington Public Power Supply System

Attachment 1

PLANT SIMULATION FACILITY FOUR YEAR REPORT

WNP-2

PLANT SIMULATION FACILITY FOUR YEAR REPORT

A. Purpose

The WNP-2 Plant simulator is used in the training, certification and licensing of operations personnel and is therefore required to meet the criteria established in 10 CFR 55 Subpart E, Section 55.45. To comply with 10 CFR 55.45, a report to the Commission which identifies simulator testing status must be submitted by the fourth anniversary of original certification.

B. References

1. Title 10, Code of Federal Regulations, Part 55, "Operator Licenses," Subpart E, Section 45.

2. U. S. Nuclear Regulatory Guide 1.149 "Nuclear Power Plant Simulation Facilities for use in Operator License Examinations."

3. ANSI 3.5, 1985, "Nuclear Power Plant Simulators for use in Operator Training."

C. Reporting Requirements

The requirements of this report as outlined in 10 CFR 55 are:

1. Identification of any uncorrected performance test failures and a schedule for correction of such performance failures, if any, Subpart E, Section 55.45 (b)(5)(ii).

2. A description of performance testing completed for the simulation facility, Subpart E, Section 55.45 (b)(5)(vi).

3. A description of the performance tests, if different, to be conducted on the simulation facility during the subsequent four-year period, Subpart E, Section 55.45 (b)(5)(vi).

4. A schedule for the conduct of approximately 25 percent of the performance tests per year for the subsequent 4 years, Subpart E, Section 55.45 (b)(5)(vi).

D. Certification Report

This certification submittal documents the performance and testing methodology of the WNP-2 simulator during the period of January 1995, through December of 1998. Major changes made to the simulator since submittal of the NRC Form 474 in December, 1994, are also documented within. The WNP-2 simulator was tested in accordance with the plan attached to the original NRC Form 474 submitted in 1994. A copy of that plan is included as Attachment 2.

Simulator Performance Testing

The performance tests conducted for certification were developed to address the specific requirements of ANSI/ANS-3.5 (1985). WNP-2's NRC Form 474 listed the tests and the schedule for performance. All performance test results were satisfactory except as noted under Performance Test Failures. Performance issues were identified, evaluated for training impact and resolved to the satisfaction of both Operations and Training personnel.

Several plant events and major plant modifications have taken place since WNP-2 submitted the original NRC Form 474 in 1994:

- Two major plant modifications were installed during the refueling outage of 1996, a Digital Feedwater Level Control system and a Variable Speed Recirculation Pump Drive system.

- Upgraded the simulator's core model from a model based on the cycle 8 fuel load to one based on fuel cycle 12.

- Plant transients occurred in March of 1997 and in February and March of 1998, that allowed simulator engineering to obtain current, real-time, data on plant performance during several major plant transients.

Digital Feedwater Level Control

The first plant modification was a conversion of the feedwater level control system from an older analog design to a new digital, fault-tolerant, system produced by G.E. Two special test procedures were written and performed to verify the operation of the system in the simulator. The first procedure was based on the G.E. Digital Feedwater Level Control (DFWLC) Factory Acceptance Test. This test covered all of the software logic and system components installed in the simulator. The second test was based on the G.E. Power Ascension Test Program for DFWLC. It tested the dynamic response of the DFWLC system in all modes of power operation both in MANUAL and AUTO. The system's response to step changes at various power levels and to interrelated system and component failures was also tested. All testing was completed and operator training was conducted prior to the scheduled plant startup.

Variable Speed Recirculation Pump Drive System

The second plant modification made at this time was the installation of systems and equipment necessary to allow variable speed operation of reactor recirculation pumps. This was a complex modification to both the plant and the simulator. Four special test procedures were developed and performed to ensure that the simulator's response was virtually identical to the plant.

- Test ASD-1 performed a functional test of the adjustable speed drive system and it's dynamic response to step changes from startup to 100% power. The response of the DFWLC system was also observed and evaluated during this test.

- Test ASD-2 verified the logic associated with the ASD system power supplies and controls including all interlocks and runback signals associated with interrelated systems.

- Test ASD-3 verified annunciator response and evaluated the fault tolerance of the system.

- Test ASD-4 verified operation of the hardware components of the system including computers, displays and panel components manipulated by operators during training.

Cycle 12 Core Model Upgrade

During 1998, WNP-2 contracted to have the simulator core parameters upgraded to reflect the operating characteristics of fuel cycle 12. The simulator was originally certified with a core that modeled core conditions during fuel cycle 8. A complete set of benchmark transient tests were done to ensure that simulator performance was not adversely affected as a result of the changes made. No problems were uncovered during testing.

Reactor Feedwater Pump Trip from 97% Power, March 1997

On March 27, 1997, with the plant in Mode 1, plant operators manually scrammed the reactor following the planned trip of a single main feedwater pump from approximately 97 percent power. The post-modification testing was being performed to demonstrate that the feedwater level control system and recirculation flow runback feature would prevent a scram following the trip of a single feedwater pump during power operation. During the test and after the planned trip of pump RFW-P-1B, an expected reactor recirculation pump speed runback to 27 Hz was observed. Following this planned runback, a second unexpected runback to 15 Hz occurred, which placed the reactor into Region A of the power-to-flow map. The second runback was caused by a reactor recirculation pump differential temperature cavitation interlock condition. Extensive analysis was done on the response of the simulator as compared to that of the plant, and several changes were made to both the plant and simulator.

Loss of a 4160VAC Bus, February 1998

On February 3, 1998, during surveillance testing, with the plant in Mode 1, a control room operator mistakenly tripped the supply breaker for 4160V electrical bus SM-2 by inadvertent operation of the breaker handswitch. This resulted in the loss of electrical bus SM-2 which was accompanied by tripping of condensate pump COND-P-1B, condensate booster pump COND-P-2B, condenser circulating water pump CW-P-1B and the supply breaker to bus SM-4, and automatic starting of the high pressure core spray emergency diesel generator (HPCS DG). This resulting level transient provided the simulator engineering group with additional plant performance data to be used to benchmark simulator transient response. Simulator response to this transient closely matched the changes that took place in the plant.

MSIV Closure Event, March 1998

On March 11, 1998, MSIV-V-22C drifted closed due to a broken air line. The resulting transient caused a closure of the remaining MSIVs on high steam flow. During the transient reactor pressure vessel level reached -53", which caused the automatic initiation of a variety of emergency core cooling systems. When the identical event was run on the simulator, RPV water level only reached -43" at it's lowest point. This was consistent with the transient data obtained during a similar event in 1988 which was used to develop the simulator models. This transient gave WNP-2 the opportunity to update the response of the simulator to match the new data obtained from the plant. Once changes were completed a complete set of benchmark transients affecting RPV water level were completed to verify simulator response.

Performance Test Failures

As identified in 10 CFR 55, the certification report includes any performance test failures that remain uncorrected when the report is submitted to the NRC. The WNP-2 simulator currently fails the Computer Spare Capacity Test, Test No. 14.5.2. This test is designed to evaluate the spare computer processing capacity during a design basis loss of coolant accident. To successfully pass this test the computer duty cycle is verified not to exceed 75% for any one of the central processing unit, intermediate processing unit or the compute node during the transient. The simulation computer must also not "lose" more than 5 seconds during a one hour period after initiating the transient.

As of this date, the WNP-2 simulator runs at approximately 85% of CPU/IPU capacity during a design basis accident. The simulator does not slip from real time operation at any point during the transient, so there is no impact on operator training.

In response to this test failure, the Supply System is replacing the existing ENCORE simulation computers with a new system based on the INTEL/Windows NT platform. The work is being done with the help of a subcontractor, RNI Technologies. The project plan for the simulator computer replacement work is included as Attachment 3.

A complete set of acceptance tests will be run prior to conversion to the new computer platform. Once acceptance testing is completed, the new platform will be declared ready for training and the existing ENCORE platform will be removed. During the testing periods, the existing certified computer platform will remain in place and be used to conduct operator training.

Performance Testing 1999-2002

For the four year period beginning in January, 1999, and extending through December, 2002, WNP-2 will continue to conduct performance testing to ensure compliance with 10CFR50.45, and ANSI/ANS 3.5 (1985). When the new ANSI/ANS-3.5 standard is approved the Supply System will evaluate its program against the new standard. Any adjustments required to

continue certification will be made to the testing program once the standard is officially endorsed by the NRC.

Annual Testing

Two new tests are being added to the annual testing schedule. These new tests are designed to provide additional information on containment response and auxiliary system performance and are not mandated as part of the ANSI/ANS 3.5 test program. The new tests that were not included with the 1994 NRC submittal are identified with an "*" below:

Steady State and Stability Tests:

100% Stability Test
100% Plant vs. Simulator Steady State Test
66% Plant vs. Simulator Steady State Test
24% Plant vs. Simulator Steady State Test
Simulator Computer Spare Capacity Test

Benchmark Transient Tests:

Manual Scram
Loss of High Pressure Feedwater
MSIV Closure (all)
Loss of Both Reactor Recirculation Pumps
Loss of One RRC Pump
Main Turbine Trip from 100%
Turbine Trip from 30% power
Power Changes 100%-75%-100%
Loss of Coolant Accident with Loss of Offsite power
Maximum Design Main Steam Line Rupture
MSIV Closure with 1 Stuck Open Safety Relief Valve
*Anticipated Transcient without Scram with MSIV Closure and Standby Liquid Control Injection
Loss of a Single Reactor Feedwater Pump
*500K lbm/hr Steam Leak upstream of Flow Restrictors
*500K lbm/hr Steam Leak upstream of Flow Restrictors with Drywell Spray
*50K lbm/hr Steam Leak Upstream of Flow Restrictors
*Steam Leak (500K lbm/hr) with Fuel Damage Outside Containment

Normal Plant Evolutions

These tests are designed to measure the simulator's ability to be operated using existing plant procedures. The tests selected are based on ANSI/ANS-3.5 (1985) section 3.1.1 (1) through 3.1.1 (10), and on the plant surveillances selected for training by the Operator training program task analysis. With the implementation of "Improved" Technical Specifications, surveillance procedures were re-numbered and are referenced in this section.

General Plant Operating Procedures

Startup from Cold Shutdown to Hot Shutdown
Startup from Hot Shutdown to Rated Conditions
S/D to Hot Standby
S/D from Hot Standby to Cold Shutdown
Core Reactivity & Shutdown Margin Test
Fission Product Poison Test

Malfunction Testing

Malfunction tests will be conducted on the same schedule as submitted on the 1994, NRC Form 474. A complete re-evaluation of the simulator tests that support normal plant evolutions and surveillance tasks is planned after the completion of the current Initial License Class in April of 1999. Based on an analysis of the exam results, changes to the Licensed Operator task list and feedback surveys from the license candidates, WNP-2 will determine if there are additional areas which need to be included as part of the simulator testing program or if there are systems or components that may be dropped from testing. The currently planned test schedule is:

Calendar 1999

Instrument Line break
Loss of All Offsite Power
Condenser Air Leak
ADS Logic Failure
Dropped Rod
BPV Failure (one)
IRM Failure - High
RHR-P-2A Trip
DEH Pump Trip
Overcurrent Lockout SM-1
Battery Charger C1-1 Trip
COND Pump Trip
Rod Drift
Main Turbine Trip
MSL Rupture in Turbine Building
RFW-LI-606B Fails High
RPS Spurious Scram

Calendar 2000

Instrument Line Break
S1-2 DC Ground
TSW Pump B Trip
RFPT B Trip
RDCS Failure
RCIC Steam Line Break at Turbine
RCIC Turbine Trip - Mech O-Speed
SRV Fails Open
DEH Press Reg Output Fails High
MSIV Isolation with SRV Open
DG-2 Trip - High Diff Current
ATWS/ARI Failure
Stuck Rod
Main Generator Trip
LPRM Failure - Downscale
Hydraulic ATWS
HPCS-V-4 Fails to Open
RHR-P-2B Shaft Shear

Calendar 2001

CIA Leak
S1-1 Trip
SW Pump A Trip
Loss of Norm & Emerg Feedwater
Uncoupled Rod
DEH Pressure Reg. Failure - HIGH
SRM A Failure - Low
Annunciator Failure
S1-1 DC Ground
TSW Pump A Trip
RFPT A Trip
RPS Failure to SCRAM
Small Cladding Failure
RFW Rupture in Turbine Building
RCIC Turbine Trip

Calendar 2002

RFW Line Break in Drywell
SM-7 Overcurrent Lockout
Loss of RPS B Power
SW-V-2B Fails to Open
HPCS Logic Failure
Gross Cladding Failure
MSL Rupture in Drywell
RFW-LI-606B Fails - LOW
SRVs Failure to Open
SH-6 Overcurrent Lockout
RCC-P-1A Trip
COND Pump 2A Shaft Break
Single Rod Scram
DEH Pressure Regulator Output Fails LOW
APRM Failure

Surveillance Testing

Licensed Operators are required to perform a number of surveillances in the simulator that are routinely performed in the plant. Each of these surveillances should be able to be successfully completed using a current copy of the plant surveillance procedure. The following list of routine and Technical Specification surveillances will be tested, 25% per year, during the four year certification period. WNP-2 changed the identification system for all surveillance procedures as part of a site-wide procedure upgrade. Some of the surveillance titles were changed and will be different than those submitted in 1994, but are equivalent surveillances.

Surveillance	Title
OSP-CAC/IST-Q701, Q702	Direct drywell isolation, atmosphere control and sump drain valves logic system test.
OSP-CONT/IST-Q702	Test reactor building isolation valve closure.
OSP-CONT/IST-Q703, OSP-CONT/IST-Q701	Exercise primary containment isolation valve.
OSP-CRD-C701	Test control rod coupling integrity.
OSP-CRD-M101	Perform scram discharge volume operability surveillance.

Surveillance	Title
OSP-CRD-W701, W702, M701	Exercise control rods
OSP-CVB/IST-M701	Direct pressure suppression chamber-drywell vacuum breakers opening and closing test (Rep Tsk 223032020).
OSP-ELEC-M701	Perform diesel generator (DG) #1 operability surveillance.
OSP-ELEC-M702	Perform diesel generator (DG) #2 operability surveillance.
OSP-ELEC-M703	Perform High Pressure Core Spray (HPCS) diesel generator (DG) operability surveillance .
OSP-HPCS/IST-Q701	Test high pressure core spray (HPCS) operability.
OSP-INST-M101	Conduct control room/remote shutdown panel non-nuclear instrumentation channel check
OSP-LPCS/IST-Q702	Test low pressure core spray (LPCS) operability.
OSP-MS-M701,	Manually operate steam dump/turbine bypass control system.
OSP-MS-Q701	Perform monthly main turbine valve surveillance.
OSP-MS/IST-Q701	Test main steam isolation valve (MSIV) fast closure.
OSP-RCIC/IST-R701	Test reactor core isolation cooling (RCIC) valve.
OSP-RHR/IST-Q702,	Operate suppression pool spray system.
OSP-RHR/IST-Q703	Test residual heat removal (RHR) operability.
OSP-RHR/IST-Q704	Test low pressure coolant injection (LPCI) mode operability.
OSP-RPS-Q402	Perform main steam isolation valve (MSIV) scram relay function test.
OSP-RPS-W401	Conduct manual scram functional test.
OSP-RRC-C101	Test reactor recirculation loop valve operability
OSP-RRC-D701	Test jet pump operability.

Surveillance	Title
OSP-RSCS-C401	Conduct RSCS precritical functional test
OSP-RSCS-C402	Conduct RSCS pre-shutdown functional test.
OSP-RWM-C401	Conduct rod worth minimizer (RWM) precritical functional test.
OSP-RWM-C402	Conduct rod worth minimizer (RWM) pre-shutdown functional test.
OSP-SGT-M701, OSP-SGT-B701	Perform standby gas treatment (SGTS) manual supply valve operability and simulated automatic actuation test.
OSP-SLC-B701	Test standby liquid control (SLC) and demineralized water injection into reactor vessel.
OSP-SLC-M101	Verify standby liquid control (SLC) explosive valve continuity.
OSP-SW/IST-Q701, Q702, Q703	Test Standby Service Water (SW) loop operability
TSP-ADSA-B501	ADS Logic System Functional Check
TSP-HPCS-B501	HPCS Logic System Functional Check
TSP-RHR/LPCS-B501	LPCS/RHR Logic System Functional Check

Washington Public Power Supply System

Attachment 2

Testing Schedule from 1994, Form 474 Submittal

WASHINGTON PUBLIC POWER SUPPLY SYSYTEM

QUADRENNIAL TESTING

ANNUAL TESTING

1. Computer Spare Capacity Verification
   - Test No. 14.5.2 - Simulator Computer Spare Capacity Test

2. Steady-State Operation Tests
   - Test No. 14.4.3.1 - 1 Hour Stability
   - Test No. 14.4.4.1 - 100% SS Accuracy
   - Test No. 14.4.4.2 - 66% SS Accuracy
   - Test No. 14.4.4.3 - 40% SS Accuracy
   - Test No. 14.4.4.4 - Intentionally Deleted

3. Benchmark Transient Tests
   - Test No. 14.4.7.1 - Normal Plant Operations
   - Test No. 14.4.9.24.33 - Manual Scram
   - Test No. 14.4.10.5 - Simultaneous Trip of All RFP's
   - Test No. 14.4.10.3 - Closure of All Main Steam Isolation Valves
   - Test No. 14.4.10.6 - Trip of All Recirculation Pumps
   - Test No. 14.4.9.24.34 - Recirculation Pump B Trip
   - Test No. 14.4.9.24.31A - Main Turbine Trip from LT 30%
   - Test No. 14.4.8.4 - Power Ramp from 100% PWR to 75% to 100%
   - Test No. 14.4.10.7 - Maximum Size Reactor Coolant System Rupture w/Loss of Offsite Power
   - Test No. 14.4.10.9 - Maximum Size Unisolatable MSL Rupture
   - Test No. 14.4.10.10 - MSIV ISOL with SRV Full Open

WASHINGTON PUBLIC POWER SUPPLY SYSYTEM

QUADRENNIAL TESTING

Year 1

1. Normal Plant Evolutions
   - 07.04.00.05.13 - Reactor Vx & Trip Valve Operability
   - 07.04.01.03.01.02 - Control Rod Exercise
   - 07.04.03.07.04.01 - Remote Shutdown Panel Channel Check
   - 07.04.04.07 - MSIV Closure Test
   - 07.04.05.01.11 - HPCS System Operability Test
   - 07.04.06.03.03 - Containment Isolation Valve Operability
   - 07.04.06.05.03.01A - Standby Gas Treatment Operability Test
   - 07.04.07.09.01 - Weekly Bypass Valves Test
   - 07.04.08.01.01.02.06 - HPCS Diesel Generator - Loss of Power Test

2. Malfunction Tests
   - 14.4.9.18.3 - Instrument Line Break (Ref)
   - 14.4.9.8.3B - Overcurrent SM-1
   - 14.4.9.8.7 - Loss of All Offsite Power
   - 14.4.9.24.56 - Battery Charger C1-1 Trip
   - 14.4.9.2.2 - Condenser Air Leak
   - 14.4.9.24.48A - COND-P-1A Trip
   - 14.4.9.21.1 - ADS Logic Failure
   - 14.4.9.3.1 - Rod Drift
   - 14.4.9.3.13 - Dropped Rod
   - 14.4.9.24.31 - Main Turbine Trip
   - 14.4.9.24.40 - BPV-1 Failure
   - 14.4.9.24.33 - Tested in Annual - Intentionally Deleted from Year 1
   - 14.4.9.21.5A - MS Rupture In Turbine Bldg.
   - 14.4.9.14.5 - IRM Failure - High
   - 14.4.9.24.67C - RFW-L1-606B Fails High
   - 14.4.9.25.5 - RHR-P-2A Trip
   - 14.4.9.25.19 - RPS Spurious Scram A
   - 14.4.9.24.63 - DEH Pump 1A Trip

WASHINGTON PUBLIC POWER SUPPLY SYSYTEM

QUADRENNIAL TESTING

Year 2

1. Normal Plant Evolutions
   - 14.4.7.2.1 - Startup from Hot Shutdown to Rated Pressure
   - 14.4.7.2.3 - SD to HSD
   - 14.4.6.1 - Core Reactivity/Shutdown Margin
   - 14.4.6.3 - Fission Product Poison Test
   - 07.04.00.05.15 - CIA Valve Operability
   - 07.04.03.08.02.01 - Monthly Turbine Valve Tests
   - 07.04.06.01.04.02 - MSIV Leakage Control System
   - 07.04.06.04.01.02 - Suppression Chamber-Dry Well Vacuum Breaker Operability
   - 07.04.06.05.03.04A - Standby Gas Treatment Manual Initiation Bypass Damper & Heater Test

2. Malfunction Tests
   - 14.4.9.18.6 - Instrument Line Break (Var)
   - 14.4.10.10 - MSIV ISOL with SRV FO
   - 14.4.9.8.4 - S1-2 DC Ground
   - 14.4.9.8.8 - DG-2 Trip High Diff. Current
   - 14.4.9.24.64A - TSW Pump B Trip
   - 14.4.9.24.78 - ATWS/ARI Failure
   - 14.4.9.2.9 - RFPT B Trip
   - 14.4.9.3.2 - Stuck Rod
   - 14.4.9.3.6 - RDCS Failure
   - 14.4.9.13.1 - Main Generator Trip
   - 14.4.9.21.6 - RCIC Steam Line Break at Turbine
   - 14.4.9.14.8 - LPRM Failure - Downscale
   - 14.4.9.9.4C - RCIC Turbine Trip - (Mechanical Overspeed)
   - 14.4.9.3.12 - Hydraulic ATWS
   - 14.4.9.23.3 - DEH Press Reg. Output Failure High
   - 14.4.9.24.27 - Main Steam Safety Relief Valve Fails Open
   - 14.4.9.24.37A - HPCS-V-4 Fails to Open
   - 14.4.9.25.2 - RHR-P-2B Shaft Shear

WASHINGTON PUBLIC POWER SUPPLY SYSYTEM

QUADRENNIAL TESTING

Year 3

1. Normal Plant Evolutions

   14.4.6.5 - SRM/IRM vs. Control Rod Motion

   07.04.00.05.18 HPCS Service Water Operability/Demo

   07.04.03.01.01.22 - Manual SCRAM Function Test

   07.04.05.01.05 - LPCS Valve Lineup/Ads Inhibit CFT

   07.04.06.01.04.02A - MSIV Valve Operability

   07.04.06.05.02.01 - Reactor Building Ventilation Isolation Valve Operability

   07.04.07.01.01.02 - Standby Service Water Loop B valve Position Verification

   07.04.08.01.01.01.02 - 18 Month Manual & Auto XFR Test, Start-Up to Backup Station Power

   07.04.08.01.01.02.11 - Diesel Generator #2 - Operability Test

2. Malfunction Tests

   14.4.9.24.27 - Tested In Year 2- Intentionally Deleted from Year 3

   14.4.9.4.4 - Leak Downstream Control Air Dryer

   14.4.9.24.15 - S1-1 DC Ground

   14.4.9.24.15A - S1-1 Trip

   14.4.9.24.34 - Tested in Annual - Intentionally Deleted from Year 3

   14.4.9.24.64 - TSW Pump A Trip

   14.4.9.24.5 - SW Pump A Trip

   14.4.9.2.9 - RFPT A Trip

   14.4.10.40 - Loss of Normal and Emergency FW

   14.4.9.24.80 - RPS Fails to SCRAM

   14.4.9.3.3 - Uncoupled Rod

   14.4.9.7.1 - Small Clad Fail

   14.4.9.23.3 - DEH Press Reg. Output Failure High

   14.4.9.2.8 - FW Rupture in Turbine Bldg

   14.4.9.14.1 - SRM A Failure - Low

   14.4.9.9.4A - RCIC Turbine Trip Due to RCIC-V-8 Closure

   14.4.9.24.43 - Annunciator Failure

WASHINGTON PUBLIC POWER SUPPLY SYSYTEM

QUADRENNIAL TESTING

Year 4

1. Normal Plant Evolutions

   07.04.00.05.06 - EDR, FDR, RRC, MS & RRC Valve Ops
   07.04.01.03.01.01 - Scram Discharge Volume Vent & Drain Valves Operability
   07.04.03.06.09 - SDV Bypass Rod Block
   07.04.05.01.06 - HPCS Valve Lineup
   07.04.06.02.02.01 - RHR Valve Position Verification
   07.04.08.01.01.02.01 - Diesel Generator #1 - Operability Test
   07.04.08.01.01.02.12 - HPCS Diesel Generator - Operability Test

2. Malfunction Tests

   14.4.9.2.3 - Feed Line Break in DW
   14.4.9.25.14 - SRV's - Fail Closed
   14.4.9.8.3 - 4160 Vac Bus Sm-7 Overcurrent
   14.4.9.8.5 - 6900 Vac Bus SH-6 OL-GND
   14.4.9.24.18 - RPS B MG Set Trip
   14.4.10.6 - Tested in Annual - Intentionally Deleted from Year 4
   14.4.9.25.15 - RCC-P-1A - Trip
   14.4.9.24.73 - SW-V-2B Fails Closed
   14.4.9.24.2 - COND-P-2A Shaft Break
   14.4.9.16.4 - HPCS Logic Failure
   14.4.9.3.4 - Single Rod SCRAM
   14.4.9.7.2 - Gross Clad Fail
   14.4.9.23.3A - DEH Press Reg. Output Fails Low
   14.4.9.21.4A - MS Rupture In DW
   14.4.9.14.2 - APRM Failure
   14.04.09.24.67B - RFW-L1-606B - Fails Low

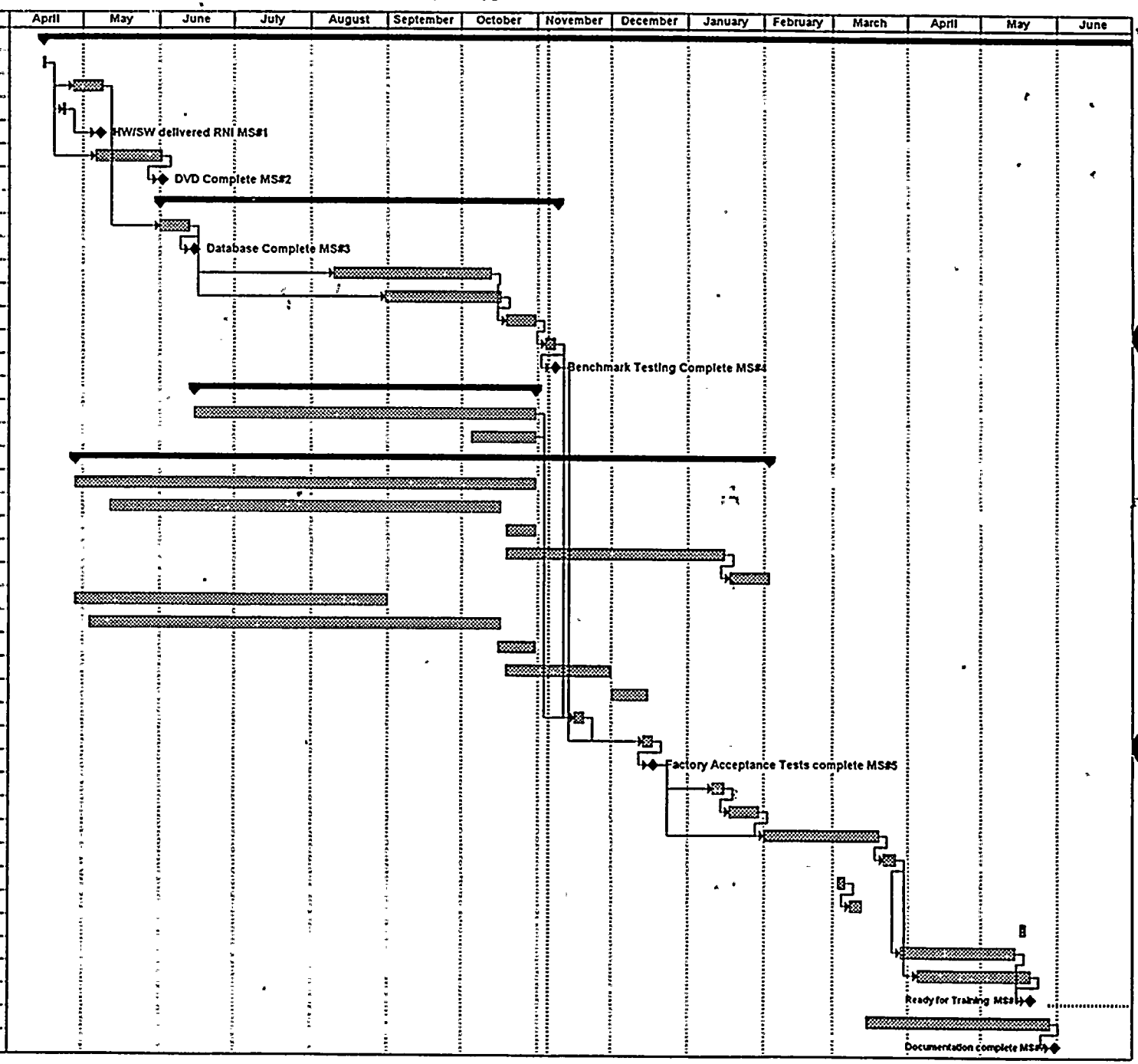
Washington Public Power Supply System

Attachment 3

WNP-2 Simulator Re-host Project Plan

WNP-2 Simulator Computer Upgrade

ID	Task Name
1	WNP-2 Simulator Computer Upgrade
2	Contract Award
3	Data Delivered by WNP-2
4	HW/SW ordered
5	HW/SW delivered RNI MS#1
6	Develop DVD for WNP-2
7	DVD Complete MS#2
8	Software Port
9	Datapool into Database
10	Database Complete MS#3
11	Assembly Routine Conversions
12	Model Port
13	Test Model Port
14	Benchmark Testing
15	Benchmark Testing Complete MS#4
16	Ryan Changes for WNP-2
17	CMS Interface
18	IS Features
19	Develop IS Graphics
20	Submit Panel Drawings
21	Panel Graphics Phase 1
22	Panel Graphics Phase 2
23	Implement all panel graphics
24	Integrate all IS panel graphics
25	Submit IS P&ID graphics
26	Implement IS P&ID graphics
27	Integrate IS P&ID graphics
28	Implement all P&ID graphics
29	Integrate all P&ID graphics
30	IS Factory Acceptance Test
31	Factory Acceptance Test
32	Factory Acceptance Tests complete MS#5
33	Deliver HW to WNP-2
34	Switching & I/O Modifications
35	On-site Integration
36	Software Reconciliation
37	Software Training - IS
38	Software Training - OS/Exec
39	Instructor Training on IS
40	On-site acceptance Test
41	Trouble Report Resolution
42	Ready for Training MS#6
43	Final Documentation
44	Documentation complete MS#7



Thu 11/5/98