

ILLINOIS POWER COMPANY



CLINTON POWER STATION, P.O. BOX 678, CLINTON, ILLINOIS 61727

March 12, 1986

Docket No. 50-461

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
United States Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Clinton Power Station
Initial Test Program Activities Projected
For Completion After Fuel Load

Dear Mr. Denton:

In an update to the "Readiness to Load Fuel" letter, dated February 17, 1986, Illinois Power Company (IP) provided the current status of the design, construction, and preoperational testing of the Clinton Power Station (CPS) and defined criteria to identify systems required to support Fuel Load. The system requirements for Fuel Load are consistent with current NRC review criteria and support the conditions for operation defined by the CPS Technical Specifications. Using the same criteria, the preoperational test items described in Attachment 1 are hereby requested to be deferred until after Fuel Load. All construction activities required to support Fuel Load will be completed; IP is proposing to defer the test items only. The purpose of this letter is to provide your Staff with detailed technical justifications for each test deferral item (see Attachment 1). These technical justifications support the conclusion that the tests deferred will not affect the safe operation of the plant.

In addition to the technical reviews and evaluations provided in Attachment 1, IP will provide measures for controlling activities deferred past Fuel Load. This will assure that the deferred test activities are performed at the proper time and in the proper sequence to support the safe startup and power ascension operation of CPS with no undue burden on startup test personnel or plant operators. This will be accomplished by (1) scheduling and planning the deferred activities in conformance with the needs of the CPS power ascension program; (2) providing the proper reviews and controls to prevent performance of the activities from adversely impacting other activities; (3) providing sufficient manpower and organizational support to perform the activities; and (4) providing sufficient management control to accomplish the above. In addition, after fuel is loaded IP intends to approach initial criticality with deliberation. In this regard, IP will undertake a pause in plant operations, during which time any essential work in-plant will be performed, operators will be detached to the simulator for dry-runs in preparation for initial criticality and low power testing, and a final management review of readiness for criticality will be completed. IP is currently reviewing the

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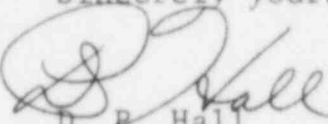
initial test program deferrals requested herein in order to assure that they can be managed without an undue burden on startup personnel and plant operators. The results of our review in this area will be provided to the Staff in a follow-up submittal to support your review of the proposed deferrals prior to Fuel Load.

On December 12, 1985, the NRC published an amendment to 10CFR50.12(a) related to specific exemptions and the standards to be used by the Staff in granting such exemptions from 10CFR50 requirements. IP is currently evaluating the impact of these test deferrals in relation to the revised 10CFR50.12(a) requirements. The impact, if any, of these requirements will be addressed in a followup submittal to the staff.

There are a few items for which completion is not required before Fuel Load by the CPS Initial Test Program defined in FSAR Chapter 14. These items are summarized for your information in Attachment 2.

If you have any questions or comments concerning the information provided herein, please contact me or Frank Spangenberg of my staff.

Sincerely yours,


D. P. Hall
Vice President

TLR/ckc

Attachments

cc: Director, Office of Inspection and Enforcement, USNRC
R. M. Bernero, Director, Division of BWR Licensing
Dr. W. R. Butler, Director, BWR Project Directorate #4
B. L. Siegel, NRC Clinton Licensing Project Manager
NRC Resident Office
Regional Administrator, Region III, USNRC
Illinois Department of Nuclear Safety

Attachment 1
Initial Test Program Items
Remaining to be Completed After Fuel Load

Chapter 14 of the Clinton Power Station Final Safety Analysis Report (CPS-FSAR) describes the basic elements of the CPS Initial Test Program. The initial test program covers the testing of structures, systems and components. The overall objectives of the initial test program are:

- a. to ensure that construction is complete;
- b. to demonstrate the capability of structures, components, and systems to meet performance requirements and to satisfy design criteria;
- c. to load fuel in a safe manner;
- d. to demonstrate, where practical, that the plant is capable of withstanding anticipated transients, unexpected occurrences, and postulated accidents;
- e. to evaluate and demonstrate, to the extent possible, plant operating procedures and to provide assurance that the Plant Staff is knowledgeable about the plant and its procedures and is fully prepared to operate the facility in a safe manner; and
- f. to bring the plant to rated capacity and sustained power operation.

The following: 1) describes each requested test deferral item; 2) defines the proposed test completion milestone; and 3) presents the technical justification for deferral of each such test item. Table 1 summarizes the status of each test deferral request contained in this attachment. On the basis of these technical justifications, all proposed test items can be deferred without undue risk to public health and safety, can be completed without undue interference with post Fuel Load operations and testing, will not impact plant operating procedures, and, with one exception, can be accomplished without exception to the CPS Technical Specifications. In this case (see item 10.c.), adequate compensating measures will be taken or the affected equipment will not be needed for the plant conditions existing until the completion milestone.

1. Plant Process Computer (CX/CZ)

Request - Deferral of the acceptance testing of the Plant Process Computer historical recording services, Balance of Plant (BOP) performance calculations and Nuclear Steam Supply System (NSSS) performance calculations until after Fuel Load.

Completion Milestone - prior to Initial Criticality.

Technical Justification - CPS-TS do not contain requirements for operability of the Plant Process Computer. However, the computer is used to establish operability of the Self Test System (STS). The STS is an automatic system that injects short duration pulses into the solid state Nuclear System Protection System (NSPS) logic circuits to verify proper response and is required to be operable during plant Operational Conditions 1 through 5. STS operability will not be impacted by this test deferral.

In addition, plant Display Control System (DCS) displays will be available for operator use prior to Fuel Load, as required. DCS and Performance Monitoring System (PMS) functions required to support the Safety Parameter Display System (SPDS) will also be completed and available at Fuel Load.

Plant Process Computer performance calculation testing is not required until Initial Criticality to support plant performance monitoring needs. Historical recording services are not required prior to Fuel Load. These services are beyond those required to support the operability of the post-trip review logs.

2. Turbine Electrohydraulic Control (EH) System

Request - Deferral of the acceptance testing of the Turbine Electrohydraulic Control System until after Fuel Load.

Completion Milestone - prior to Heatup.

Technical Justification - CPS-TS 3/4.7.8 requires that the Main Turbine Bypass System be operable in plant Operational Condition 1. The Reactor Protection System position switches (scram) for the stop valves and the control valves must be operable prior to Operational Condition 1. Completion of the EH System acceptance test prior to Heatup will fulfill these CPS-TS requirements.

3. Traversing Incore Probe (TP) System

Request - Deferral of the TP System preoperational phase test (i.e., operation of the drive control units, verification of control, interlock, alarm and indication functions, and purge operation) until after Fuel Load.

Completion Milestone - prior to 5% power.

Technical Justification - CPS-TS 3/4.3.7.7 requires the TP System to be operable when the TP probe is used for the recalibration of Local Power Range Monitor (LPRM) detectors and monitoring of core thermal limits. LPRM calibrations are performed at various phases of the power ascension program to satisfy the objectives of Regulatory Guide 1.68, Appendix A, paragraph 5.y. The first LPRM recalibration occurs during Test Condition 1 at about 15% power. Subsequently, at each major power level thereafter (i.e., 25%, 60% and 100%), the Process Computer program OD-1 is used in conjunction with the TP system to provide information on the gross power distribution. This information is used to monitor core thermal limits. TP System testing will be completed in a manner to support these CPS-TS requirements.

4. Off-Gas (OG) System

Request - Deferral of the OG System preoperational test (i.e., operation and verification of refrigeration units, dryers, interlocks, controls & alarms, hydrogen analyzers, remotely operated valves, and filter efficiency) until after Fuel Load. In addition, deferral of the OG System in-place charcoal filter loading/testing, performed per Special Test Procedure XTP-00-12, and the Off-Gas Vault HVAC (VO) System preoperational test and final air balancing until after Fuel Load is also requested.

Completion Milestone - prior to reactor pressure vessel (RPV) headset before Heatup.

Technical Justification - CPS-TS 3/4.11.2.4. requires the OG System to be operable whenever the Main Condenser Steam Jet Air Ejector System is in operation.

Deferral of the OG and VO testing described above is technically justified, based on the following:

- a. Prior to Initial Criticality, there are no significant radioactive fission products in the reactor coolant;
- b. Prior to Heatup, the main turbine condenser is not utilized (i.e., the steam jet air ejectors are not in operation);
- c. The OG and VO Systems are not required until the main turbine condenser is needed for Heatup; and
- d. Charcoal filter loading/testing should be deferred to avoid contamination from painting, welding, construction fumes, etc. Radioactive contaminants are not expected prior to or during Fuel Load and subsequent open vessel testing.

5. Containment Monitoring (CM) System

Request - Deferral of those portions of the CM preoperational test related to the humidity monitors, Containment and Drywell H₂/O₂ concentration monitors, hi-range gamma radiation monitors, containment pressure monitors, and Suppression Pool and Drywell excess flow instrument line check valves until after Fuel Load.

Completion Milestone - prior to Initial Criticality.

Technical Justification - The CPS-TS requirements which must be met to fulfill CM System operability requirements are as follows:

- a. CPS-TS 3/4.5.3 establishes that the Suppression Pool Water Level instruments must be operable in all plant Operational Conditions. Testing of these instruments, both C&IO and preoperational testing, will be completed prior to Fuel Load.
- b. CPS-TS 3/4.3.7.5 establishes operability requirements for accident monitoring instrumentation. The deferred CM instruments identified above are required to be operable in plant Operational Conditions 1 and 2, with the exception of the Containment/Drywell Hi-Range Gross Gamma Radiation monitors which are required in Operational Conditions 1, 2 and 3. Preoperational phase testing of these instruments will be completed prior to Initial Criticality. Therefore, testing will be done prior to entering these operational conditions.

Deferral of this testing is justified based on the following technical considerations:

- a. Humidity and Containment Pressure Monitors - During open vessel phase testing, reactor coolant temperature is maintained less than 140°F. If a Loss-of-Coolant-Accident (LOCA) were to occur, containment pressure and humidity would not rise significantly. Reactor Pressure Vessel (RPV) instrumentation will provide an indication of RPV level.
- b. H₂/O₂ Monitors - With reactor coolant temperature less than 140°F and no decay heat present, a LOCA would not result in the formation of any hydrogen. Thus, the H₂/O₂ monitors are not required prior to Initial Criticality.
- c. Hi-Range Gamma Monitors - Prior to Initial Criticality, there are no appreciable quantities of fission products present in the fuel. Therefore, the Containment/Drywell Hi-Range Gross Gamma Radiation monitors are not needed until Initial Criticality.

6. Leak Detection (LD) System

Request - Deferral of the LD System preoperational testing until after Fuel Load.

Completion Milestone - prior to Initial Criticality.

Technical Justification - The Leak Detection System consists of temperature, pressure, flow, airborne gaseous and particulate fission product sensors, and process radiation sensors with associated instrumentation used to indicate and alarm leakage from the reactor coolant pressure boundary.

CPS-TS 3/4.4.3.1 requires the following reactor coolant system leakage detection systems to be operable in plant Operational Conditions 1, 2 and 3:

- a. The Drywell Atmosphere Particulate Radioactivity Monitoring System;
- b. The Drywell Sump Flow Monitoring System; and
- c. Either the Drywell Atmosphere Gaseous Radioactivity Monitoring System or the Drywell Air Coolers Condensate Flow Rate Monitoring System.

LD System testing will be completed prior to Initial Criticality. Therefore, these CPS-TS requirements will be met.

In addition, those LD components required to monitor radioactivity are not required prior to Initial Criticality since no appreciable quantities of fission products exist in the reactor coolant prior to that time.

7. Solid Radwaste System (WX)

Request - Deferral of the WX system preoperational phase test (i.e., demonstration of trash compacting & handling equipment and integrated system performance testing) until after Fuel Load.

Completion Milestone - prior to Heatup.

Technical Justification - A vendor supplied, portable solid radwaste system will be used at CPS. The vendor's Process Control Program and description details of the system were provided to the Staff by IP letter U-600224, dated September 5, 1985. This system meets all process quality requirements and will support the plant needs.

Deferral of the WX system preoperational phase test until prior to Heatup will not affect CPS-TS requirements.

8. Fuel Pool Cooling and Cleanup (FC) System

Request - Deferral of that portion of the FC System preoperational phase test related to demonstration of design ability to maintain and alter pool water levels until after Fuel Load.

Completion Milestone - prior to exceeding 5% of rated reactor power.

Technical Justification - All other portions of the FC system preoperational test and C&IO testing of FC System components will be completed prior to Fuel Load.

There are no CPS-TS requirements relative to the operability of the FC System.

Testing of the FC System water level control function cannot be completed prior to Fuel Load since fuel is currently being stored in these areas. To test this FC System function at this time would require filling the pools with water while fuel is present or relocating the fuel until testing is completed. Neither of these options is feasible or necessary at this time. Prior to Fuel Load, the FC System with this exception will have been completed. Final testing can be performed after the fuel is moved from the pool area into the reactor vessel.

9. Fuel Handling (FH) System

Request - Deferral of that portion of the FH System preoperational phase test related to transfer of fuel bundles under wet loading conditions until after Fuel Load.

Completion Milestone - prior to exceeding 5% of rated reactor power.

Technical Justification - The FH System preoperational phase testing will be completed prior to Fuel Load as required to support system operability needs for transferring fuel to the reactor. The initial Fuel Load at CPS will be performed under dry conditions (i.e., with reactor vessel water level near the main steam line and cavities and pools dry). Therefore, operation of the FH System under wet conditions (i.e., water in the fuel transfer tubes) is not required.

10. Heating, Ventilation and Air Conditioning (HVAC) System Test Deferrals

Various system test deferrals will be required and are categorized and discussed below.

a. Preoperational Phase Testing Incomplete at Fuel Load

(1) Auxiliary Building HVAC (VA) System

Request - Deferral of the VA System preoperational phase test until after Fuel Load.

Completion Milestone - prior to Heatup.

Technical Justification - Vital areas throughout these buildings will be maintained by the Switchgear Heat Removal (VX) System and the ECCS Equipment Cooling (VY) System. Additional area heat loads beyond that controlled by VX and VY are not expected prior to power ascension.

(2) Drywell Purge (VQ) System

Request - Deferral of the VQ System preoperational phase test until after Fuel Load.

Completion Milestone - prior to Heatup.

Technical Justification - CPS-TS 3/4.6.2.7 requires the VQ System 24" supply and exhaust isolation valves and the 10" exhaust isolation valves to be operable (with the 24" supply isolation valves sealed closed) during plant Operational Conditions 1, 2 and 3. Since these valves will be operational prior to Fuel Load, this test deferral will not affect the ability to implement these CPS-TS requirements.

This is considered technically justified based on the following:

- (a) The system is not required to support personnel access to the Drywell during Open Vessel and Initial Criticality testing phases;
- (b) Prior to power operation, there will not be any appreciable amounts of airborne radioactivity in the Drywell requiring purge operation;
- (c) Prior to Heatup, there will not be any significant heat loads inside the Drywell; and

- (d) Prior to power operation, a design basis LOCA would not result in the production of any appreciable quantities of hydrogen. In any case, hydrogen control is only a secondary backup function of the VQ System. The Containment Combustible Gas Control System controls hydrogen as its primary function.

b. HVAC Systems With Final Air Balancing Incomplete at Fuel Load

Requests and Completion Milestones -

The following HVAC systems will require deferral of the final air balancing as noted:

- (1) Auxiliary Building HVAC (VA) System - complete prior to Heatup.
- (2) Drywell Cooling (VP) System - complete prior to Heatup.
- (3) Drywell Purge (VQ) System - complete prior to Heatup.
- (4) Containment Building HVAC (VR) System - complete prior to Heatup.
- (5) Turbine Building HVAC (VT) System - complete prior to Heatup.
- (6) Radwaste Building HVAC (VW) System - complete prior to Heatup.

Technical Justification - For each of these systems (except VA), C&IO phase testing, preoperational phase testing and preliminary air balancing will be completed prior to Fuel Load. Final air balancing is not needed until system heat loads are developed during preoperational phase testing. As such, these systems will be essentially functional to fulfill anticipated needs prior to completion of these final air balancing tests. CPS-TS 3/4.6.1.8 requires the VR System 36" and 12" supply and exhaust valves to be operable in plant Operational Conditions 1, 2, and 3. This CPS-TS Limiting Condition for Operation and the associated Surveillance Requirements will be fulfilled prior to Fuel Load.

c. HVAC Systems With In-Place Filter Testing Incomplete at Fuel Load

Requests and Completion Milestones - The following HVAC systems will require deferral of the in-place filter testing as noted:

- (1) Control Room HVAC (VC) System - complete prior to Initial Criticality.

- (2) Radwaste Building HVAC (VW) System - complete prior to Heatup (involves HEPA filters only).
- (3) Drywell Purge (VQ) System - complete prior to Heatup.

Technical Justification - The loading of activated charcoal into HVAC filters, installation of HEPA filters, and final in-place filter testing for the Control Room HVAC (VC) System is delayed until prior to Initial Criticality to avoid contamination from fumes (e.g., welding, cleaning fluids, etc.) generated during construction.

CPS-TS 3/4.7.2 requires two independent control room ventilation system subsystems to be operable in all plant Operational Conditions. As a result of the proposed test deferral, an exception to the CPS-TS Limiting Condition for Operation and the associated Surveillance Requirements of the VC System is requested. Upon completion of satisfactory in-place filter testing for the VC System, but prior to Initial Criticality, this CPS-TS exception will no longer be required.

Justification for the deferral of charcoal and HEPA-filter loading and final in-place filter testing for the VC System includes:

- (1) No fuel will be irradiated; and
- (2) This system will be essentially functional to fulfill anticipated needs prior to completion of these tests.
- (3) The Standby Gas Treatment (VG) System will be operable in order to mitigate the consequences of a potential fuel handling accident in the Secondary Containment.

The deferral of charcoal loading and final in-place filter testing is requested for the Radwaste Building HVAC (VW) System and the Drywell Purge (VQ) System until prior to Heatup to avoid contamination from fumes generated during construction. The C&IO phase testing will be completed prior to Fuel Load and these systems will be essentially functional to fulfill anticipated needs prior to completion of these tests.

d. Pressure Boundary Testing Incomplete at Fuel Load

Request - Deferral of pressure boundary testing of the Radwaste, Turbine, Auxiliary, Fuel, and Containment Buildings until after Fuel Load.

Completion Milestone - prior to Heatup.

Technical Justification - All vital areas (i.e., Main Control Room and Secondary Containment) will be pressure boundary tested prior to Fuel Load. Prior to Heatup there will not be any appreciable quantities of airborne radioactivity in these areas. There are no CPS-TS requirements related to the deferral of these tests.

TABLE 1

INITIAL TEST PROGRAM ACTIVITIES PROJECTED
FOR COMPLETION AFTER FUEL LOAD

SYSTEM	DEFERRED TEST ACTIVITY	TEST DEFERRAL PARTIAL/FULL	FSAR CHAPT. 14 TEST (YES/NO)	SAFETY-RELATED SYSTEM	TECH. SPEC. EXCEPTION	PROJECTED COMPLETION MILESTONE
Plant Process Computer (CX/CZ)	Acceptance Tests ATP-CX-01	Partial	YES (14.2.12.3.13)	NO	NO	Prior to Initial Criticality
	ATP-CX-02					
Turbine Electro-hydraulic Control System (EH)	Acceptance Test ATP-EH-01	Full	YES (14.2.12.3.2)	NO	NO	Prior to Heatup
Traversing In-Core Probe System (TP)	Preoperational Test PTP-TP-01	Full	YES (14.2.12.1.18)	NO	NO	Prior to 5% Power
	Preoperational Test 1) PTP-OG-02	1) Full	YES (14.2.12.1.21)	NO	NO	Prior to RPV head set before Heatup
	2) XTP-00-12	2) Partial	(14.2.12.1.44)			
Off-Gas System (OG)	3) PTP-VO-01	3) Full				
	4) PTP-00-01 (VO)	4) Partial				
Containment Monitoring system (CM)	Preoperational Test PTP-CM-01	Partial	YES (14.2.12.1.39)	YES	NO	Prior to Initial Criticality
Leak Detection System (LD)	Preoperational Test PTP-LD-01	Full	YES (14.2.12.1.63)	YES (Some)	NO	Prior to Initial Criticality
Solid Radwaste System (WX)	Preoperational Test PTP-WX-01	Full	YES (14.2.12.1.15)	NO	NO	Prior to Heatup
Fuel Pool Cooling and Cleanup System (FC)	Preoperational Test PTP-FC/SM-01	Partial	YES (14.2.12.1.13)	YES (Some)	NO	Prior to 5% Power
Fuel Handling System (FH)	Preoperational Test PTP-FH-01	Partial	YES (14.2.12.1.10)	YES (Some)	NO	Prior to 5% Power
Auxiliary Building HVAC System (VA)	Preoperational Testing 1) PTP-VA-01	1) Full	YES (14.2.12.1.41)	NO	NO	Prior to Heatup
	2) PTP-00-01	2) Partial				

TABLE 1 (Continued)

 INITIAL TEST PROGRAM ACTIVITIES PROJECTED
 FOR COMPLETION AFTER FUEL LOAD

SYSTEM	DEFERRED TEST ACTIVITY	TEST DEFERRAL PARTIAL/FULL	FEAR CHAPT. 14 TEST (YES/NO)	SAFETY- RELATED SYSTEM	TECH. SPEC. EXCEPTION	PROJECTED COMPLETION MILESTONE
Drywell Purge System (VQ)	Preoperational Testing 1) PTP-VQ-01 2) XTP-00-12 3) PTP-00-01	1) Full 2) Partial 3) Partial	YES (14.2.12.1.32)	NO	NO	Prior to Heatup
Drywell Cooling System (VP)	Preoperational Testing PTP-00-01	Partial	YES (14.2.12.1.33)	NO	NO	Prior to Heatup
Containment Building HVAC (VR)	Preoperational Testing PTP-00-01	Partial	YES (14.2.12.1.34)	NO	NO	Prior to Heatup
Turbine Building HVAC System (VT)	Preoperational Testing PTP-00-01	Partial	YES (14.2.12.1.54)	NO	NO	Prior to Heatup
Radwaste Building HVAC System (VW)	Preoperational Testing 1) PTP-00-01 2) XTP-00-12	Partial (both)	YES (14.2.12.1.42)	NO	NO	Prior to Heatup
Control Room HVAC System (VC)	Preoperational Testing XTP-00-12	Partial	YES (14.2.12.1.29)	YES	YES (3/4.7.2)	Prior to Initial Criticality
Pressure Boundary Testing for the Containment, Auxiliary, Radwaste, Fuel, and Turbine Buildings	Preoperational Testing PTP-00-02	Full	YES (14.2.12.1.34) (14.2.12.1.41) (14.2.12.1.42) (14.2.12.1.43) (14.2.12.1.54)	NO	NO	Prior to Heatup

Attachment 2
Items Not Required by the Initial Test Program
Remaining to be Completed After Fuel Load

The following items are not required to be completed before Fuel Load by the CPS Initial Test Program defined in FSAR Chapter 14: full flow testing of the Reactor Core Isolation Cooling (RCIC) System with reactor steam; miscellaneous cranes, hoists and door operators; area temperature surveys; heat tracing on systems not required for fuel load; and HEPA filter loading and final in-place filter testing for the Machine Shop HVAC System.

The RCIC System is not required to be operable for Fuel Load, but it will be demonstrated operational to the extent possible (Special Test XTP-RI-01 includes some flow testing) prior to Fuel Load. This is consistent with FSAR Chapter 14 preoperational test requirements for this system. The RCIC System full flow test requires reactor steam. To perform the full flow test before fuel load would require a portable auxiliary boiler system of sufficient steam flow capability to be brought on site. The temporary high pressure piping and boiler would present a safety hazard and interfere with work in progress. The RCIC system is not required until reactor steam dome pressure is greater than 150 psig. The full flow test will be conducted at approximately 135 psig in support of the next phase of RCIC System testing, i.e., Startup Test 14.0 in Test Condition 1, which verifies the proper operation of the RCIC over the required operating pressures.

The Miscellaneous Cranes, Hoists, and Door Operators System includes various cranes, hoists, and door operators throughout the plant which are to be used during normal plant maintenance activities. These components will be installed prior to Fuel Load, but not all of them are required for initial startup and operation of the plant. Final tests of wiring, operational modes, etc., will be completed prior to the first design use of the cranes and hoists, but not later than plant Commercial Operations. However, equipment required for initial startup and operation, such as the Containment polar crane, Fuel Building crane, and Containment Personnel Airlock Doors will be fully tested prior to Fuel Load.

Area temperature surveys will be completed as heat loads are developed throughout the power ascension phase. Final system verification and balancing is accomplished by monitoring temperatures and performing heat load calculations. These activities cannot be performed until adequate heat loads are available.