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Advanced Energy Systems Division

Spent Fuel Dry Storage Technology Development: THERMAL EVALUATION OF ISOLATED DRYWELLS CONTAINING SPENT FUEL (1KW PWR Spent Fuel Assembly)

R. Unterzuber
J.B. Wright

Prepared For
THE UNITED STATES DEPARTMENT OF ENERGY
Contract No. DE-AC08-76NVOO597

SEPTEMBER 1980

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ABSTRACT

A spent fuel Isolated Drywell Test was conducted at the Engine-Maintenance, Assembly and Disassembly (E-MAD) facility on the Nevada Test Site. Two pressurized water reactor spent fuel assemblies having a decay heat level of approximately 1.1 kW were encapsulated inside the E-MAD Hot Bay and placed in instrumented near-surface drywell storage cells spaced 50 feet apart during January 1979 for thermal testing. Each fuel assembly was sealed inside a 14 inch diameter, 168 inch long stainless steel canister and attached to a concrete-filled, 20 inch diameter, 34 inch long, carbon steel shield plug. Each canister assembly was then placed in a carbon steel drywell liner which had been grouted into a hole drilled in the soil adjacent to E-MAD.

Instrumentation provided to measure canister, liner and soil temperatures consisted of thermocouples which were inserted into tubes on the outside of the canister and drywell liner and thermocouples which were attached to plastic pipe and grouted into holes in the soil. Temperatures from the two isolated drywells and the adjacent soil have been recorded throughout the 19 month Isolated Drywell Test. Canister and drywell liner temperatures reached their peak values (254°F and 203°F, respectively) during August 1979. Thereafter, all temperatures decreased and showed a cycling pattern which responded to seasonal atmospheric temperature changes.

A computer model was utilized to predict the thermal response of the drywell. Computer predictions of the drywell temperatures and the temperatures of the surrounding soil are presented and show good agreement with the test data.

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1.0 INTRODUCTION

1.1 PURPOSE OF REPORT

The purpose of this report is to provide a test description, test results, and conclusions for the Isolated Drywell Test portion of the spent fuel Drywell Test performed at the E-MAD facility on the Nevada Test Site. This test was conducted as part of the Spent Fuel Handling and Packaging Program (SFHPP) 1978 Demonstration (further discussed in Section 1.3). The Drywell Test primary objective was to confirm, by actual testing, that commercial reactor spent fuel could be passively stored in a near-surface storage cell (drywell) at the Nevada Test Site.

The Isolated Drywell Test was begun on January 12, 1979, when a pressurized water reactor (PWR) spent fuel assembly was placed into a drywell storage cell near the E-MAD facility. The test hardware (shown in Figure 1) consisted of an instrumented carbon steel drywell liner, an instrumented stainless steel canister (containing the PWR spent fuel assembly) and a concrete-filled shield plug which supported the canister from the top of the liner. The drywell liner was grouted into a hole in the soil to assure intimate contact. A field of thermocouple wells was installed to measure ground temperature response to the spent fuel decay heat. Throughout the test period, temperature readings from thermocouples on the canister, liner, and in the soil were recorded.

A finite difference computer model (described in Section 6.0) was utilized to predict transient and steady-state canister, drywell, and soil temperatures. Results from the computer predictions and comparisons of the analytical predictions with the test data are presented in Section 7.0.

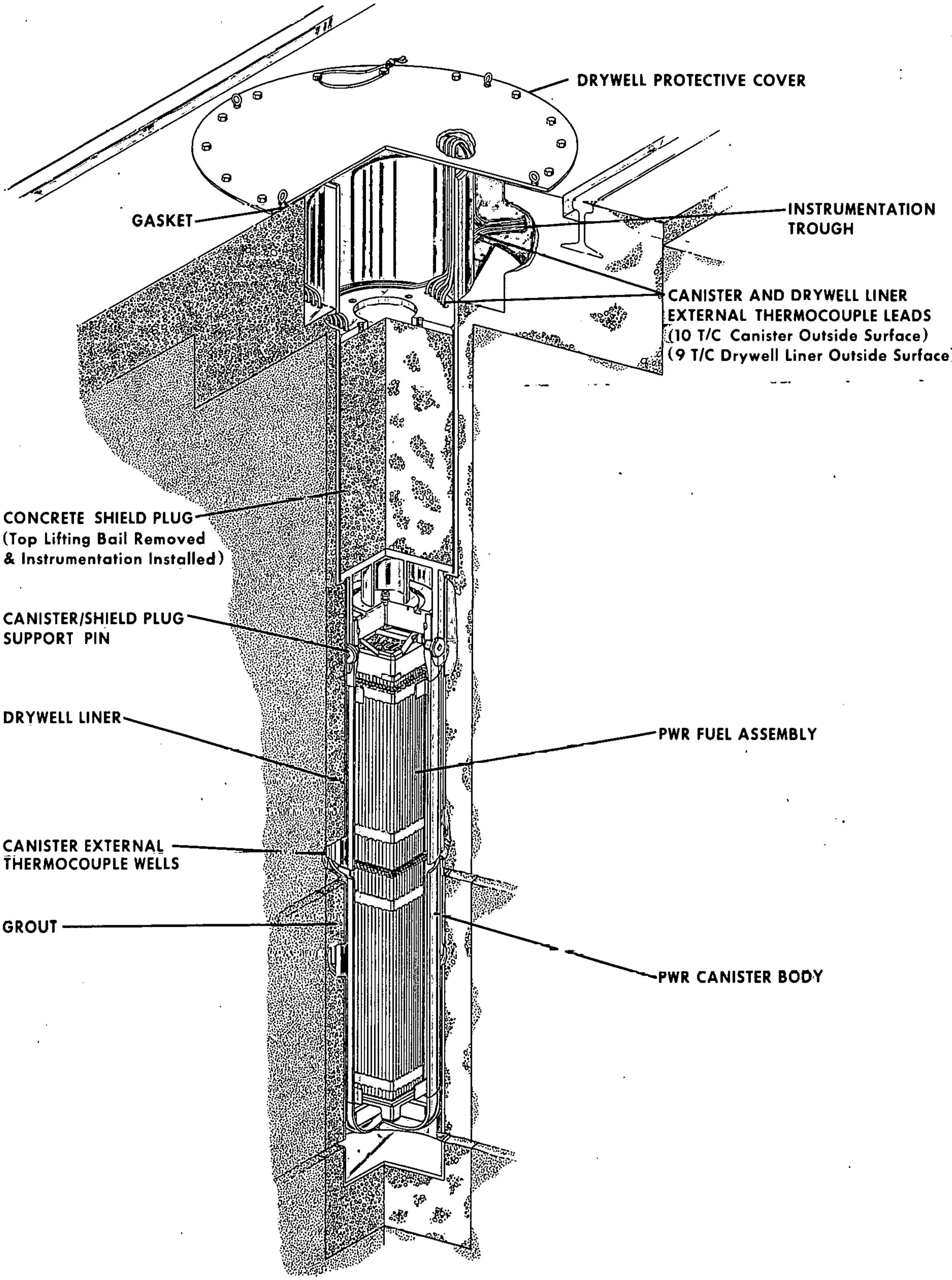

Figure 1. Drywell Configuration

1.2 ORGANIZATION

This report is organized to present the Isolated Drywell Test and its results in the following order:

- Introduction (including background of Spent Fuel Handling and Packaging Program).
- Conclusions drawn from the test results.
- Test objectives.
- Test hardware description.
- Test operation and results.
- Thermal model description.
- Comparison of test results with model predictions.
- Photographs of test hardware, assembly and installation.
- Test temperature data.
- Illustrations of test data.
- Computer code input and output data.

1.3 BACKGROUND

The Isolated Drywell Test described in this report was initiated as part of the Spent Fuel Handling and Packaging Program (SFHPP) 1978 Demonstration Drywell Test in support of spent unreprocessed fuel storage at the Nevada Test Site. The objective of the SFHPP 1978 Demonstration was to develop and test the capability of satisfactorily encapsulating typical spent fuel assemblies from commercial nuclear power plants and to establish the suitability of one or more surface and near-surface concepts for the interim dry storage of the encapsulated fuel assemblies.

The E-MAD (Engine Maintenance, Assembly, and Disassembly) facility, constructed at the Nevada Test Site as part of the Nuclear Rocket Development Station, was chosen as the location for this demonstration because of its extensive existing capabilities for handling highly radioactive components and because of the desirable site characteristics for the proposed storage concepts. The E-MAD facility, operated for the Department of Energy by the Advanced Energy Systems Division (AESD) of the Westinghouse Electric Corporation, is described in more detail in Reference 1.

Near-surface and above-surface storage concepts were chosen for testing during the SFHPP 1978 Demonstration. Each storage cell is designed to accommodate one canister, and the canister is designed to contain either one pressurized water reactor (PWR) fuel assembly or two boiling water reactor (BWR) fuel assemblies. The near-surface storage concept or drywell, shown in Figure 1, consists of a steel liner grouted into a shallow hole drilled in the alluvial soil at the E-MAD facility. A sealed canister containing the fuel assembly in a helium atmosphere is suspended from a shield plug which, in turn, is supported by a step in the liner. The above-ground storage concept, or Surface Storage Cask (SSC), is shown in Figure 2. Here, a steel liner identical to that used in the drywell is encased in a reinforced concrete silo, and the canister/shield plug package is supported in the liner in the same manner as in the drywell. In both of these storage systems, the decay heat of the fuel assembly is passively transmitted to the storage cell and then dissipated to the environment. The drywell and SSC storage cells themselves were constructed in an area immediately adjacent to the E-MAD facility.

An overriding requirement for the SFHPP 1978 Demonstration Program was that the spent fuel storage system and associated activities not result in an undue risk to the public, property, environment, or site employees. One means of assuring that this requirement would be met was to maintain the leak tight integrity of the fuel cladding and the canister. Because high temperature can affect the long-term integrity of both of these barriers to fission product release, thermal considerations were an important concern in the design of the storage cells. Preliminary analyses performed by the Hanford Engineering Development Laboratory (HEDL) established 715°F (380°C) as the fuel cladding temperature limit below which fuel cladding integrity would be maintained in a helium

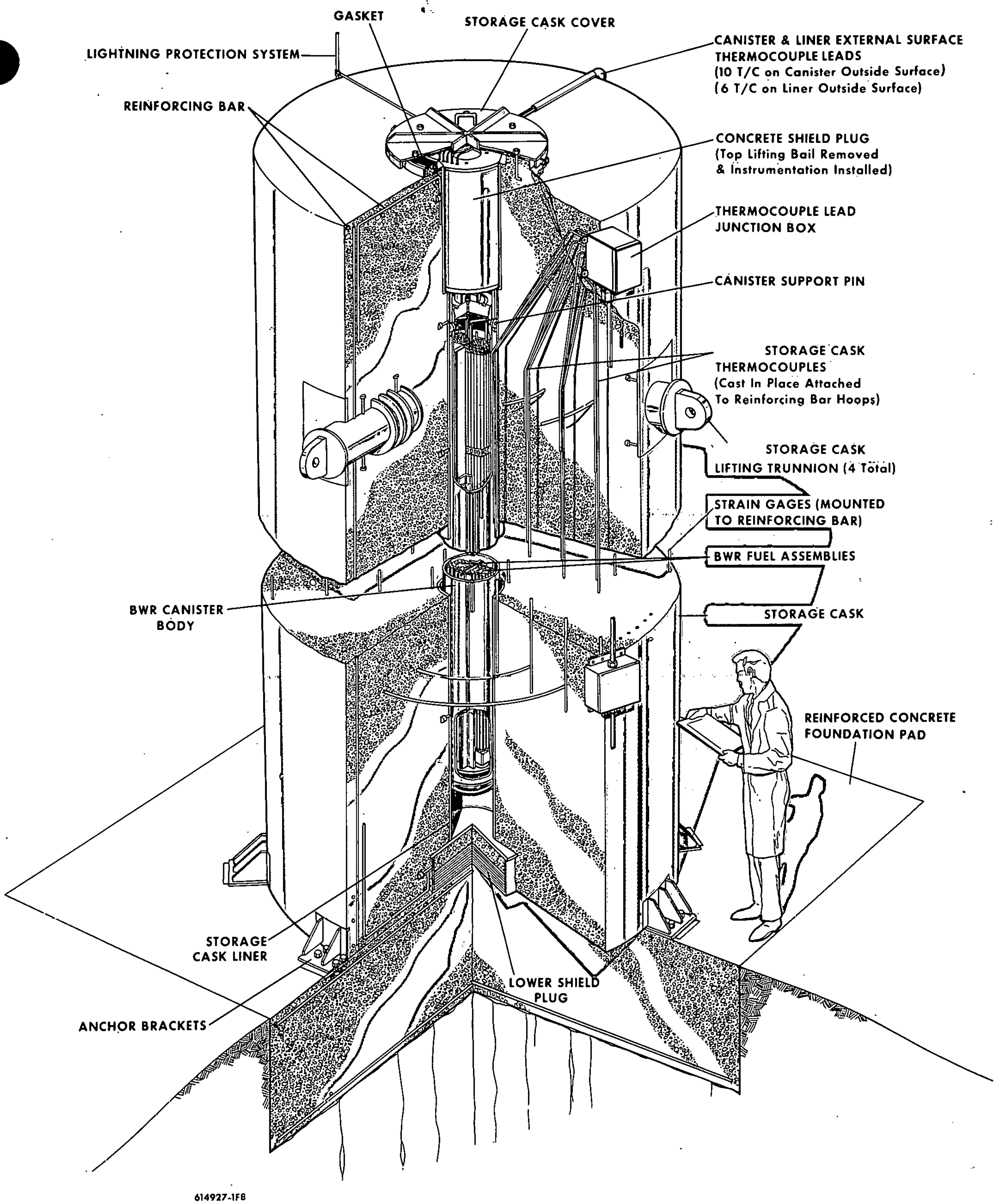

Figure 2. Surface Storage Cask Configuration

environment for long storage times (100 years). Scoping thermal analyses of the storage cell concepts indicated that cladding temperatures reached in the SSC would be well below the limit, but that those reached in the drywell could approach the limit for the fuel assembly decay heat levels being considered. Therefore, a series of tests was initiated to experimentally verify that fuel cladding temperatures would remain below the established limit and to obtain data for use in qualifying the thermal design model.

Two verification tests were defined which would provide temperature measurements, 1) from the canister out into the soil, and 2) inside a canister containing a spent fuel assembly. In the first test, the Soil Temperature Test (shown in Figure 3) was designed to utilize an in-ground electrically heated drywell configuration to measure the spatial temperature distributions on the canister surface, the drywell liner surface, and in the surrounding grout and soil. Canister temperatures from the Soil Temperature Test would then be input to a Fuel Temperature Test to determine peak fuel cladding temperatures. The Fuel Temperature Test apparatus (shown in Figure 4) was designed to utilize a canister containing a spent fuel assembly and internal temperature instrumentation to measure fuel cladding thermal response to an imposed canister axial temperature profile measured during the Soil Temperature Test to approximate the thermal environment that would be present in an actual drywell. The canister is installed in a drywell liner which has electrical band heaters along the liner axial length. The Fuel Temperature Test apparatus is located in one of the large hot cells (West Process Cell) inside the E-MAD facility. It was decided to use a test within the E-MAD facility hot cells to determine canister interior temperatures rather than provide internal canister instrumentation wells in the actual storage canisters. It was judged that the addition of multiple thin-wall internal canister instrumentation tubes would greatly decrease the reliability of the canister to provide a leak tight radioactive containment boundary. The Soil Temperature Test coupled with the Fuel Temperature Test would provide canister and spent fuel clad temperature data for storage of the original SFHPP 1978 Demonstration spent fuel assemblies at E-MAD.

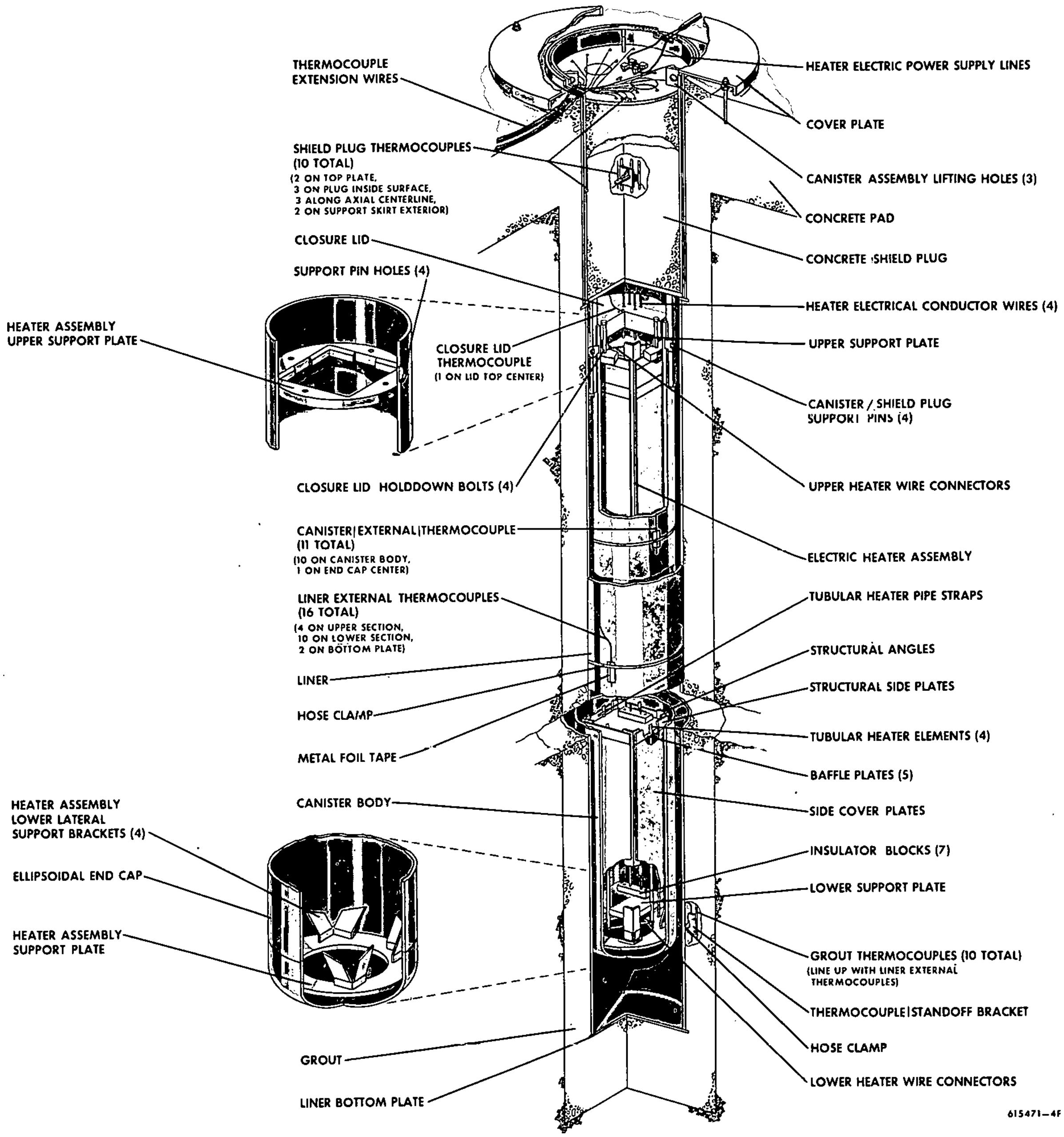

Figure 3. Soil Temperature Test Configuration

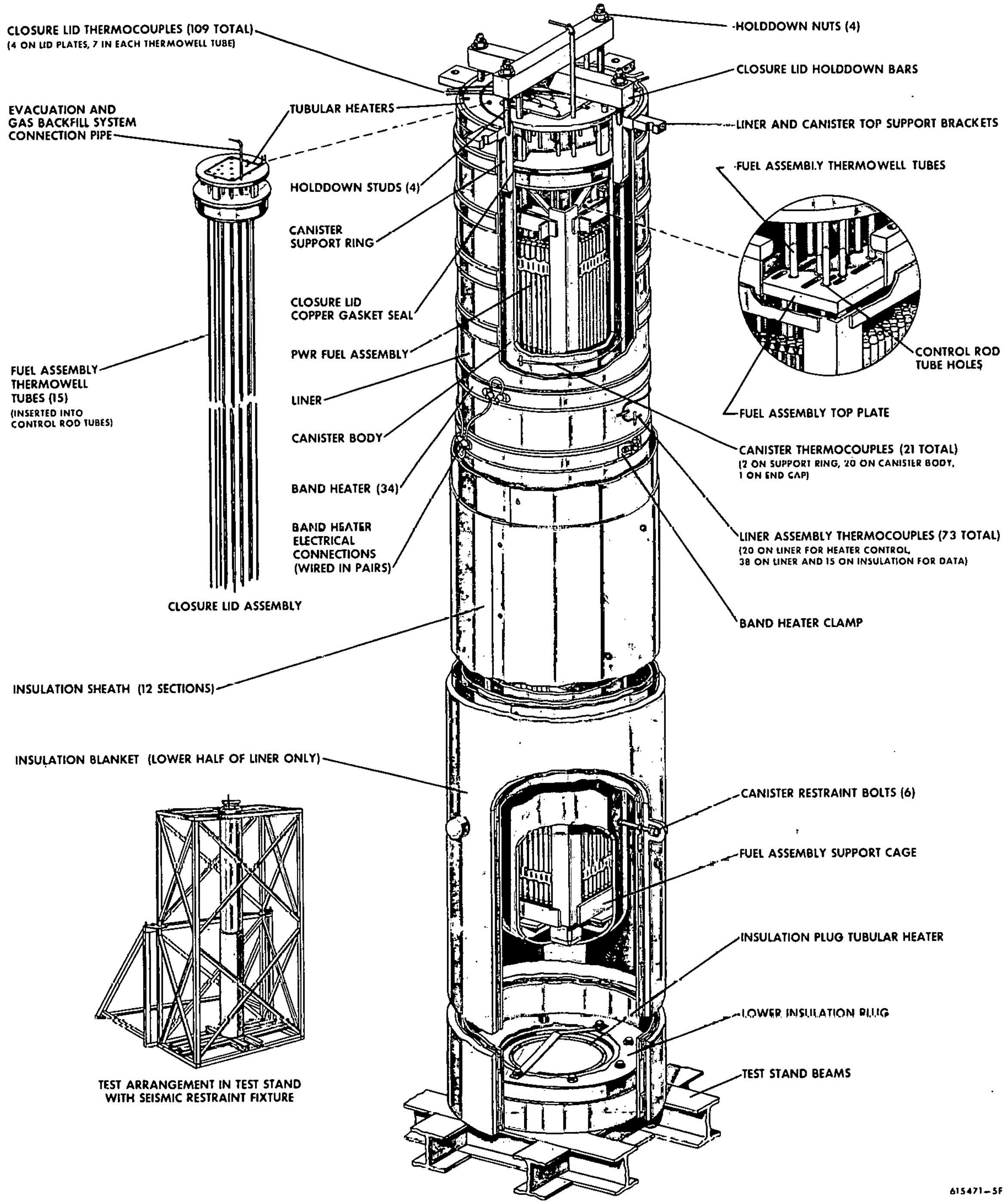

Figure 4. Fuel Temperature Test Configuration

The storage cell experiments consisted of encapsulating spent fuel assemblies and placing them in storage with thermocouple instrumentation on the exterior of the fuel storage canister and throughout the storage cell. The fuel assemblies selected were characteristic of high burnup (25,000 MWD/MTU) fuel assemblies approximately three years out of the reactor with a thermal power level of approximately 1.25 kW. The initial plan for the SFHPP 1978 Demonstration storage cell experiments was to place three canisters containing one PWR fuel assembly in drywells, to place one PWR canister in a Surface Storage Cask, and to place a canister containing two BWR fuel assemblies in the remaining drywell and Surface Storage Cask. In addition, it was planned to place the first PWR fuel assembly into the Fuel Temperature Test stand to determine fuel cladding temperatures using the measured canister temperatures from the Soil Temperature Test. Due to delays in procurement of BWR fuel assemblies, the plan was revised to place the first PWR fuel assembly into a Surface Storage Cask, to place the second and third PWR fuel assemblies into drywells, and to place the fourth PWR fuel assembly into the Fuel Temperature Test. Fuel encapsulations were performed at E-MAD during December 1978 and January 1979. An encapsulated PWR fuel assembly was placed in a Surface Storage Cask on December 12, 1978, and two other encapsulated PWR fuel assemblies were placed in drywells on January 12 and 24, 1979. The fourth PWR fuel assembly was placed in the Fuel Temperature Test on July 16, 1979.

Results from the Soil Temperature Test (Reference 2) provided sufficient data prior to the spent fuel storage cell testing schedular objective (late 1978) to confirm that fuel cladding temperatures for the spent fuel assemblies selected for testing would remain below established limits. Results from the Fuel Temperature Test (Reference 3) provided additional confirmation that fuel cladding temperatures are well below the limits. The Surface Storage Cask test is described and results are presented in Reference 4. The results from the Isolated Drywell Test are presented and the Drywell Test hardware is described in this document.

2.0 CONCLUSIONS

The following conclusions can be drawn from the results of the Isolated Drywell Test:

1. The peak measured canister temperature for an encapsulated PWR spent fuel assembly with an initial decay heat level of about 1.1 kW stored in a drywell configuration in soil typical of the Nevada Test Site was 254°F. The peak measured liner temperature adjacent to the canister was 203°F.

2. A 50 foot spacing between adjacent drywells in Nevada Test Site alluvial soil is judged to thermally isolate spent fuel assemblies with decay heat levels of about 1.0 kW.

3. Peak drywell canister and liner temperatures occurred about 7 months after canister emplacement. The time to reach the peak temperatures was influenced by the seasonal ambient air temperatures, by the decrease in decay heat level, and by the amount of moisture in the soil.

4. Day-night variations in ambient air temperature have no effect on peak canister temperatures.

5. Combining the Isolated Drywell Test canister temperature data with results from the Fuel Temperature Test (Reference 3) shows that peak fuel cladding temperatures were about 360°F, which is well below the established 715°F temperature limit.

3.0 TEST OBJECTIVES

The objectives of the spent fuel Drywell Test (as defined for the SFHPP 1978 Demonstration) were 1) to verify that spent fuel assemblies can be safely stored in Nevada Test Site soil, 2) to determine storage cell thermal properties and interface and boundary conditions to calibrate and verify thermal models, and 3) to determine thermal interactions of adjacent drywells.

The test objectives would be met by a combination of actual test results and calibrated computer model predictions. Encapsulated spent fuel assemblies would be installed into drywells and the thermal response of the canisters, drywell liners, and surrounding soil recorded. In addition, a computer model of the drywell would be prepared for comparison with the test results. The drywell model would be used to evaluate drywell performance beyond the limits of the test.

The maximum canister temperature level attained would be compared with the results of the Fuel Temperature Test measured temperatures and/or existing fuel assembly/canister thermal models to evaluate drywell performance. Acceptable drywell storage capabilities would be verified if fuel cladding temperatures meet the 715°F criteria (see Section 1.3).

Transient test results would be compared to computer code predictions using the thermal power versus time predicted for the actual spent fuel assembly as input. Computer model thermal property and heat transfer correlation revisions would be made as necessary to update the model for good model/test agreement. Good agreement between computer model predictions and test data would qualify the computer model for use in evaluation of storage of various decay heat level fuel assemblies and for evaluation of drywell spacing variations.

Due to delays in completion of the Fuel Temperature Test and delays in procurement of BWR spent fuel assemblies, the Drywell Test was limited to two drywells rather than the four originally planned. Two drywells were chosen for use such that the data provided would be for two thermally isolated drywells. The computer model to be utilized would be limited to a single thermally isolated drywell for comparison with results of the two isolated drywells. This first portion of the Drywell tests was, therefore, termed the Isolated Drywell Test.

As part of the Commercial Waste and Spent Fuel Package Program, several additional objectives were identified for the Drywell Test. To complete the originally planned testing, a Drywell Thermal Interaction Test was identified which would utilize three of the SFHPP 1978 Demonstration PWR spent fuel assemblies placed in adjacent drywells spaced 25 feet apart. The objective of this test was to provide additional data which could be used to evaluate arrays of drywells and which would be compared to computer code predictions for an array of drywells. In addition, it was decided to install a higher decay heat level (approximately 2 kW) spent fuel assembly in the fourth drywell to evaluate isolated drywell response to higher power levels. This additional portion of the Drywell Test was termed the Nominal 2 kW Isolated Drywell Test.

This report provides the test data and computer model predictions from the Isolated Drywell Test. Test data and computer predictions from the planned Drywell Thermal Interaction Test and Nominal 2 kW Isolated Drywell Test will be the subject of subsequent reports.

4.0 TEST HARDWARE DESCRIPTION

4.1 TEST ARRANGEMENT

The Drywell Test hardware arrangement is shown in Figures 1, 5 and 6. The test hardware consists of 1) a drywell liner grouted into a 26 inch diameter hole drilled approximately 23 feet deep, 2) a canister assembly consisting of a canister body, a closure lid and a concrete filled shield plug which supports the canister from the top section of the liner, 3) a PWR spent fuel assembly, 4) an array of soil instrumentation wells to measure ground temperature response and 5) a data acquisition system to record thermocouple data. Photographs of the Drywell Test hardware and its installation are shown in Appendix A.

4.2 DRYWELL LINER

The drywell liner is illustrated in Figure 7. The lower section of the liner consists of a 17 foot long section of 18 inch diameter by 0.375 inch wall pipe. The upper section of the liner is manufactured from a 51.5 inch long, 22 inch diameter, 0.75 inch wall pipe. The upper and lower sections of the liner are positioned concentrically to one another and welded to opposite sides of a 22 inch outside diameter, 17.25 inch inside diameter, 0.5 inch thick ring. This ring forms the ledge on which the 20 inch diameter shield plug (which is connected to the canister assembly) is supported. A 20 inch diameter, 0.5 inch thick plate is welded to the bottom of the lower portion of the liner to seal the lower end. Four 1.0 inch diameter holes spaced 90° apart are located 1.5 inches below the top of the liner for handling and installation. The liner material is carbon steel. The assembly liner is shown in Figure A-1 in Appendix A.

4.2.1 INSTRUMENTATION

Nine tubes, 0.156 inch outside diameter and 0.086 inch inside diameter are attached to the outside of the liner and serve as thermocouple wells. The nine tubes extend from about 17 inches below the top of the liner to about 2 inches

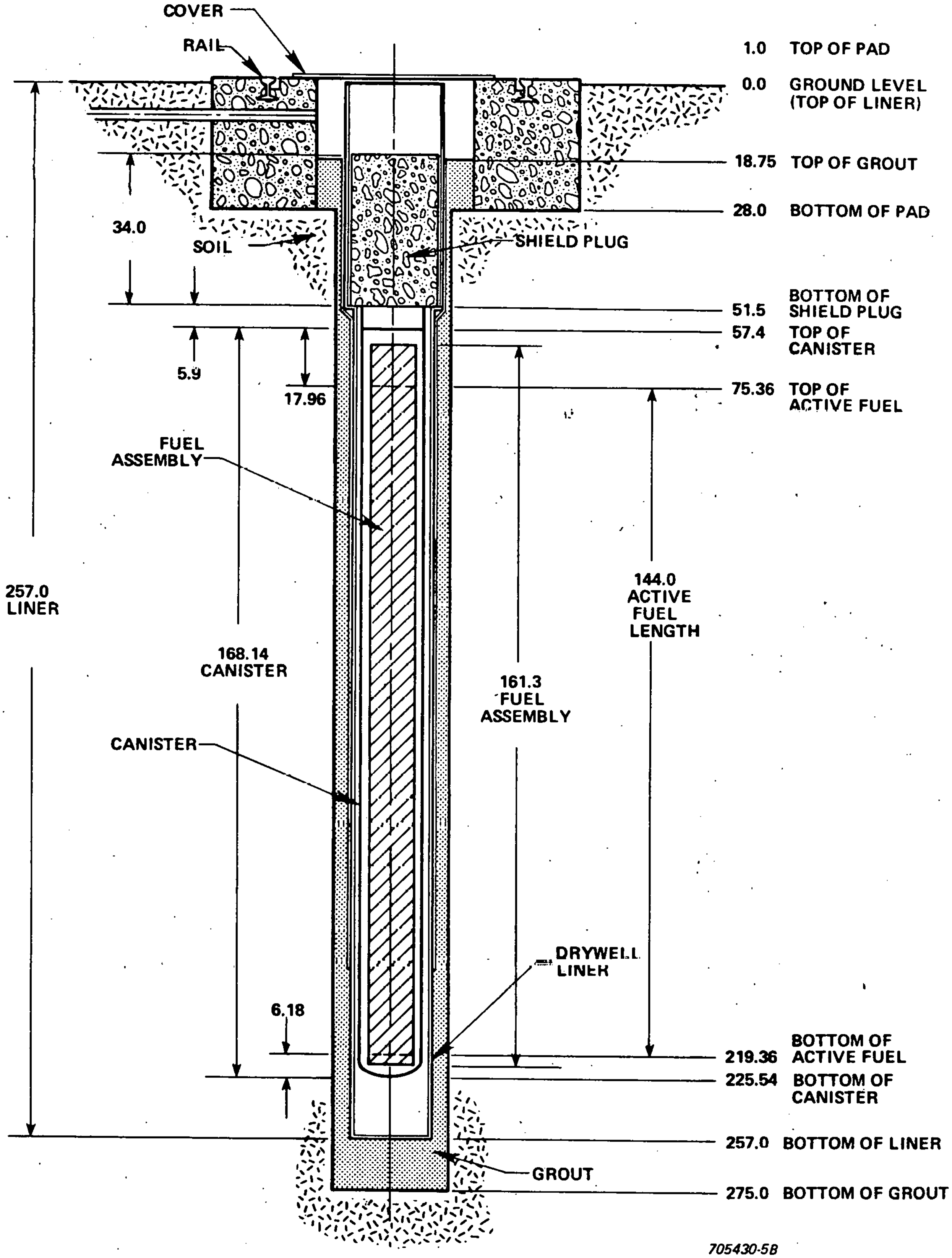

Figure 5. Drywell Schematic

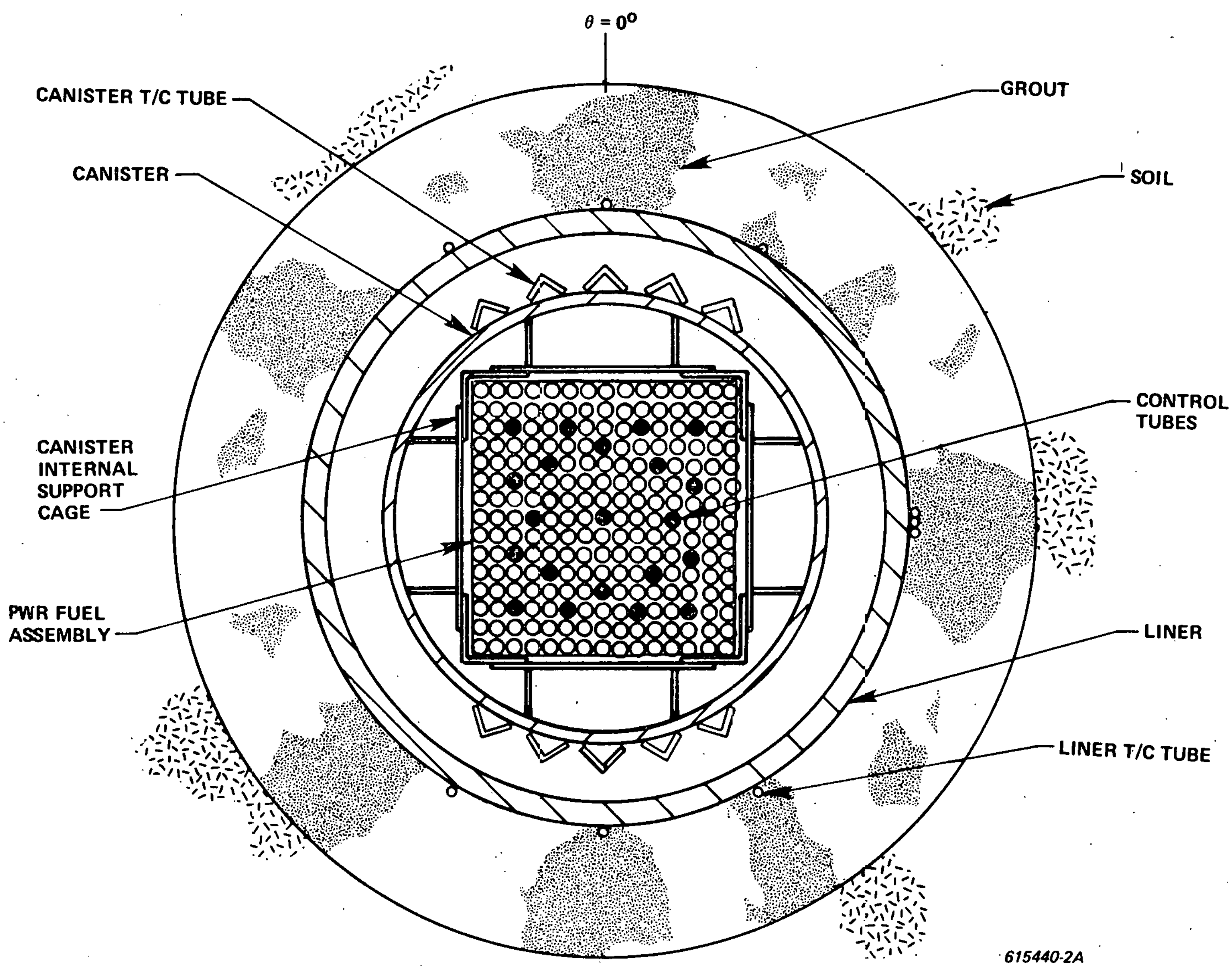

Figure 6. Drywell Section View

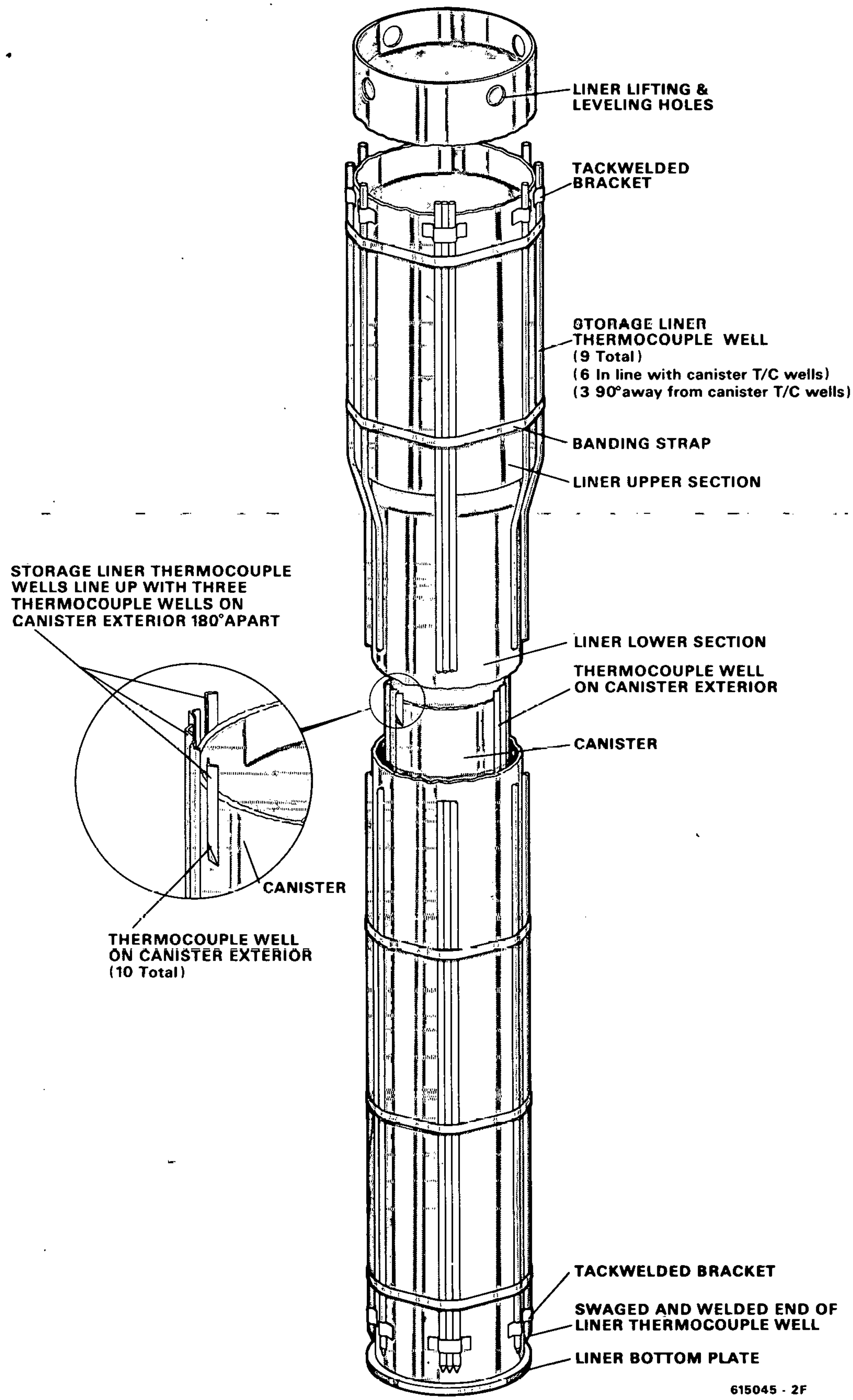

Figure 7. Drywell Liner and Canister Showing Instrumentation Configuration

from the bottom of the liner. The tubes are clamped onto the liner by ten large hose clamps. The tubes are secured to liner near the top and bottom and at two intermediate points by 0.03 inch thick brackets spot welded to the liner as shown in Figure 7.

The thermocouple tubes are oriented around the liner in three groups as shown in Figures 6 and 7. The first two groups each contain three tubes that are spaced 30° apart. The middle tubes of these groups are 180° apart. The third group has three tubes banded together. The middle tube of the third group is spaced 90° from the middle tubes of the other groups. The six thermocouple tubes spaced 30° apart match six of the ten thermocouple tubes on the canister when the canister is installed (see Figure 7). The third group of thermocouple tubes provides additional circumferential temperature reading positions. The tubes allow thermocouple installation to any elevation. The ends of the tubes are swaged and tack welded to prevent grout from filling the tubes during liner installation.

The installed elevation of the thermocouples in the tubes is controlled by the thermocouple length. The thermocouples are inserted until the transition boot between thermocouple and extension lead (see Section 4.7.1) contacts the top of the tube thus controlling the position of the thermocouple tip. The thermocouples are installed in each group of tubes so that there is one positioned at the middle of the PWR fuel assembly active fuel length, another one foot above the bottom of the active fuel and the other one foot below the top of the active fuel. These positions line up with positions on the canister. Table 1 provides depth and position data for the installed liner thermocouples.

4.2.2 LINER INSTALLATION

The liner assembly was positioned and leveled inside of a 26 inch diameter, 23 foot deep hole drilled into E-MAD soil. The liner is shown during installation in Figure A-5. Prior to drilling the emplacement hole, an 84 inch wide by 28 inch deep concrete pad with standard gauge rails was poured (see Section 4.5).

TABLE 1

DRYWELL THERMOCOUPLE LOCATIONS

T/C No.	Distance Below Ground Level (In.)	Radius (In.)	Orientation (Degrees)	Location
		Drywell No. 5		
861	203.5	120	150	Instrumentation Well A*
862	203.5	60	90	Instrumentation Well B
863	203.5	120	90	Instrumentation Well C
864	203.5	120	30	Instrumentation Well D
865	205.75	9	30	Liner
866	205.75	9	210	Liner
867	205.75	9	90	Liner
868	206.0	7	30	Canister
869	206.0	7	210	Canister
870	176.0	7	15	Canister
871	176.0	7	195	Canister
872	143.5	120	150	Instrumentation Well A
873	143.5	60	90	Instrumentation Well B
874	143.5	120	90	Instrumentation Well C
875	143.5	120	30	Instrumentation Well D
876	145.75	9	0	Liner
877	205.75**	9	180	Liner
878	145.75	9	90	Liner
879	146.0	7	0	Canister
880	146.0	7	180	Canister
881	116.0	7	345	Canister
882	116.0	7	165	Canister
883	83.5	120	150	Instrumentation Well A
884	83.5	60	90	Instrumentation Well B
885	83.5	120	90	Instrumentation Well C
886	83.5	120	30	Instrumentation Well D
887	85.75	9	330	Liner
888	85.75	9	150	Liner
889	85.75	9	90	Liner
890	86.0	7	330	Canister
891	86.0	7	150	Canister

*See Figure 15 for Instrumentation Well Identification

**Broken thermocouple was replaced by longer length thermocouple. Original thermocouple length was 145.75 inches.

TABLE 1 (Cont'd)

T/C No.	Distance Below Ground Level (In.)	Radius (In.)	Orientation (Degrees)	Location
		Drywell No. 3		
824	203.5	120	150	Instrumentation Well E*
825	203.5	60	90	Instrumentation Well F
826	203.5	120	90	Instrumentation Well G
827	203.5	120	30	Instrumentation Well H
828	205.75	9	30	Liner
829	205.75	9	210	Liner
830	205.75	9	90	Liner
831	206.0	7	30	Canister
832	206.0	7	210	Canister
833	176.0	7	15	Canister
834	176.0	7	195	Canister
835	143.5	120	150	Instrumentation Well E
836	143.5	60	90	Instrumentation Well F
837	143.5	120	90	Instrumentation Well G
838	143.5	120	30	Instrumentation Well H
839	145.75	9	0	Liner
840	145.75	9	180	Liner
841	145.75	9	90	Liner
842	146.0	7	0	Canister
843	146.0	7	180	Canister
844	116.0	7	345	Canister
845	116.0	7	165	Canister
846	83.5	120	150	Instrumentation Well E
847	83.5	60	90	Instrumentation Well F
848	83.5	120	90	Instrumentation Well G
849	83.5	120	30	Instrumentation Well H
850	85.75	9	330	Liner
851	85.75	9	150	Liner
852	85.75	9	90	Liner
853	86.0	7	330	Canister
854	86.0	7	150	Canister

*See Figure 15 for Instrumentation Well Identification

The pad has an 18.75 inch deep by 37.25 inch diameter annulus around the upper section of the liner in which a portable lead shield adapter is installed prior to emplacement of the canister (see Section 4.8.2).

The pad provided a reference datum to aid in drilling and liner installation operations. After the positioning of the liner into the emplacement hole, grout was pumped into the bottom of the emplacement hole until it reached a level about 1 to 2 feet above the bottom of the liner. The aggregate used in the grout consisted of 2 parts soil removed from the emplacement hole to 1 part luminite. This grout was allowed to set to secure the liner in its properly aligned position and to reduce the bouyancy effect of the grout on the liner assembly. After this grout set, the annulus between the liner and the emplacement hole was filled with grout to the top of the instrumentation tubes. After the grout was installed, 0.072 inch diameter wires, installed prior to liner shipment to protect the tubes and to keep them clean, were removed from the nine instrumentation wells.

4.3 CANISTER ASSEMBLY

The canister assembly consists of a canister body, a closure lid and a shield plug. The canister assembly in a drywell is illustrated in Figure 1. The canister described below was designed to accommodate one PWR spent fuel assembly.

4.3.1 CANISTER BODY

The canister body is illustrated in Figure 8. The main body of a PWR canister is a standard 14 inch outside diameter, 0.375 inch wall, 304 stainless steel pipe 154 inches long. Welded to the bottom of this pipe is a standard 14 inch diameter, 6.5 inch high ellipsoidal end cap. This end cap has welded into it a cruciform formed of a 0.75 inch thick 304 stainless steel plate with four 0.25 inch thick 304 stainless steel vertical gussets welded to the underside. This cruciform supports the bottom of a PWR fuel assembly.

The top of the PWR canister body consists of a section of 14 inch outside diameter, 0.937 inch wall, 304 stainless steel pipe approximately 9 inches

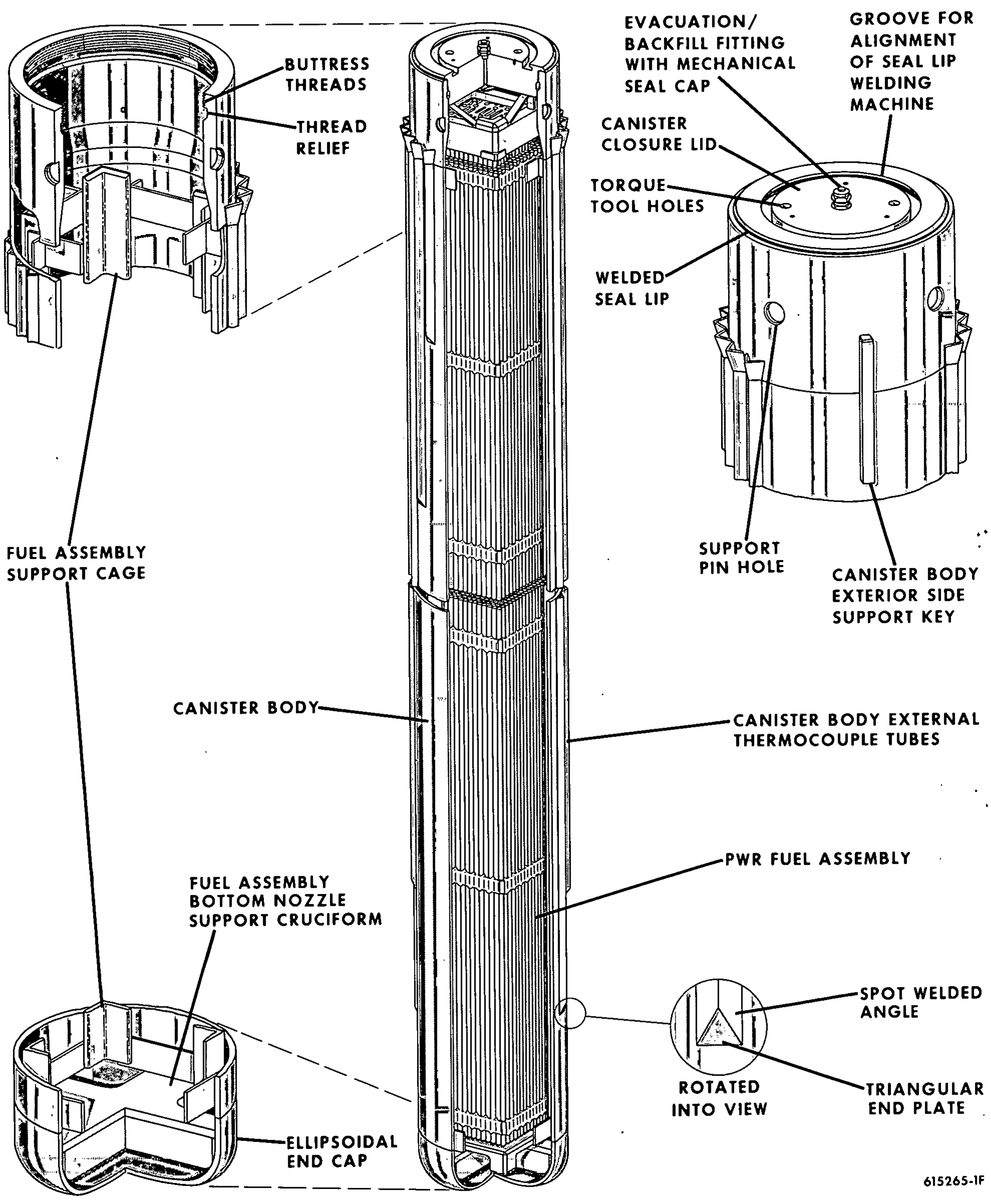

Figure 8. Canister Configuration

long. This section is welded to the 0.375 inch thick main body pipe and contains machined threads which mate with the closure lid. The outside upper surface of the canister body contains 4 blind holes equally spaced around the pipe circumference for the attachment of the shield plug. Two 0.75 inch square bars (keys) are welded to the outside of the canister body to support the canister during remote operations and to align the shield plug so that the instrumentation tubes on both components are properly aligned.

Welded to the inside of the PWR canister body is a fuel assembly support cage formed of standard 2 inch by 2 inch by 0.18 inch thick 304 stainless steel angles tied together on four sides at six elevations by 7.12 inch long by 2 inches high by 0.18 inch thick plates. At the top of the cage, eight additional straps are welded between the canister body pipe and the top cage straps to provide cage centering and support.

4.3.2 INSTRUMENTATION

The canister has ten thermocouple "tubes" for insertion of thermocouples after emplacement in a drywell. The thermocouple "tubes" consist of 0.75 inch by 0.75 inch angles, spot-welded to the outside of the canister body. A funnel is formed at the top of each tube by a 1.25 inch by 1.25 inch angle, cut to match the smaller angle and welded to the top of the tube (see Figure 8). The funnel is provided to allow for potential radial and azimuthal mismatch between shield plug and canister body instrumentation tubes and thereby assure proper thermocouple installation. A triangular plate is welded to the bottom of each tube. Contact with the angled plate at the bottom of each tube is intended to cause the tip of the thermocouple to be diverted toward and eventually touch the canister body.

Five thermocouple tubes are located on opposite sides of the canister. The five tubes in each group are spaced 15° apart and extend down the canister to lengths matching the PWR fuel assembly active fuel middle, 2.5 feet above and below the active fuel middle and 1.0 foot from each end of the active fuel. Each different tube length is matched by a tube of the same length 180° away.

The thermocouples are installed through tubes in the shield plug until they contact the bottom of each instrumentation tube. When installed, the thermocouples measure temperatures at five different elevations on both sides of the canister to determine the axial canister temperature profile. The uppermost, middle and lowermost thermocouples are located at the same elevations as those in the drywell liner. Table 1 identifies the thermocouples installed in the canisters for the Isolated Drywell Test.

4.3.3 CANISTER CLOSURE LID

The canister closure lid is illustrated in Figure 9. The closure lid is a flat disc, 3.5 inches thick and 12.5 inches in diameter. This disc has approximately 1.0 inch of buttress threads machined near the top which mate with threads machined into the thicker section of 14 inch diameter pipe at the top of the canister body. The top outside surface of the closure lid is machined to form a seal lip for remote seal welding of the canister after the fuel assembly is installed. Features on the top surface of the closure lid include a machined groove for alignment of the seal welding machine with the machined seal lip, provisions for the lifting and torquing tool, and a fitting with a mechanically sealed cap through which helium is introduced into the canister. The bottom 1.0 inch of the closure lid serves as a lead-in for the installation of the lid into the canister body.

The seal lip on the canister closure lid is welded to the canister body to complete the containment boundary. The gas fitting on the top of the closure lid is used to evacuate the canister and backfill with helium. The helium serves to provide an indicator for initial leak checking of the closure lid seal weld and the gas fitting mechanical seal, to stabilize the fuel assembly in an inert atmosphere, and to enhance conductive heat transfer to the canister.

4.3.4 SHIELD PLUG

The canister is attached to a shield plug before emplacement into storage. The shield plug shown in Figure 10 is a 20 inch outside diameter, 0.25 inch wall

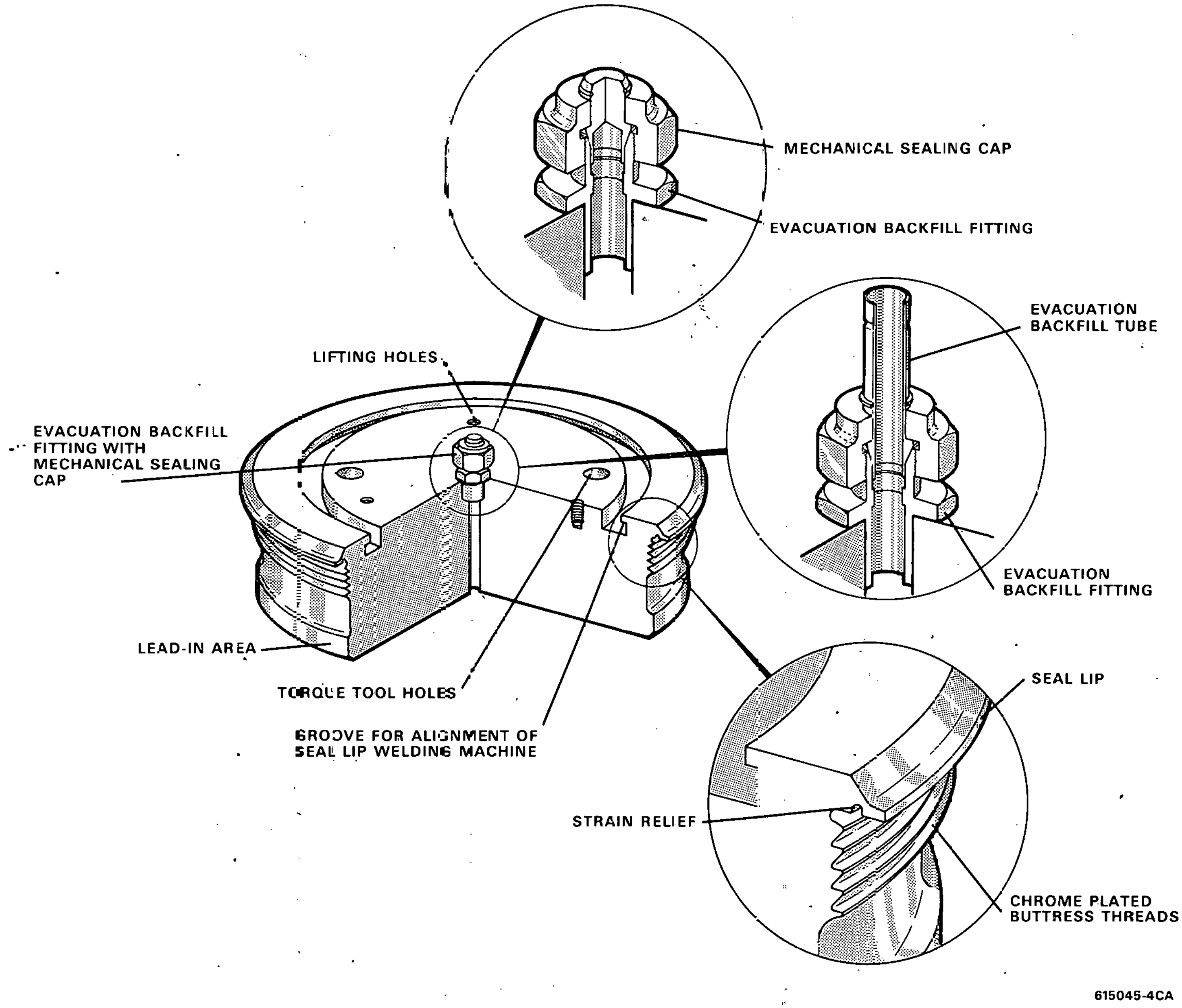

Figure 9. Canister Closure Lid Configuration

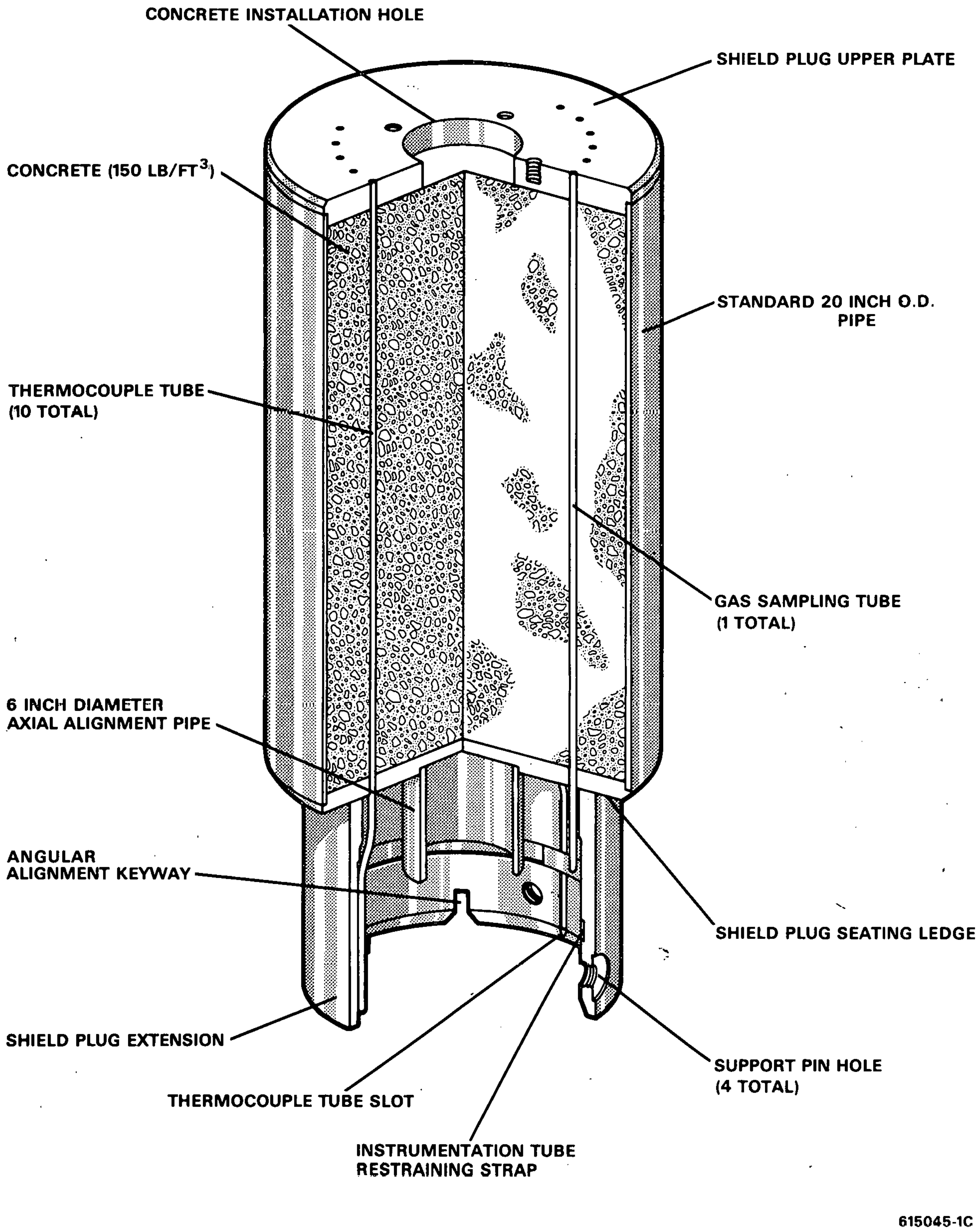

Figure 10. Shield Plug Configuration

carbon steel pipe approximately 34 inches long with a 1.5 inch thick plate welded to the top and a 1.0 inch thick plate welded to the bottom. The volume between the two end plates is filled with concrete for shielding. Extending from the bottom plate of the assembly is a 16 inch outside diameter, 1.031 inch wall, carbon steel pipe approximately 13.5 inches long. This pipe extension contains four tapped holes 90° apart which accept the canister support pins. It is through these pins that the canister is secured to the shield plug. The shield plug is lowered over the canister (which fits inside of the 16 inch diameter extension) and the support pins are threaded into the shield plug extension. The pins protrude from the inside of the extension into four flat-bottomed holes in the upper portion of the canister.

The shield plug has eleven 0.086 inch inside diameter tubes which extend from the upper plate, through the lower plate down to the bottom of the shield plug extension, ten for routing thermocouples to the canister and one for sampling the atmosphere above the closure lid. The tubes are routed through slots in the bottom portion of the extension so as not to interfere with the canister body. The tubes are secured to the extension by spot welded straps. The shield plug has two sets of five tubes with 15° spacing between tubes. The tubes are oriented with respect to the thermocouple tubes on the canister by an alignment keyway in the shield plug extension and a bar (key) on the outside of the canister.

4.3.5 CANISTER ASSEMBLY INSTALLATION

The encapsulated fueled canister assemblies are installed into the drywell using a railcar mounted transfer shield and a drywell shield adapter which are described in Section 4.8. The Engine Installation Vehicle, Manned Control Car and L-3 locomotive previously used as part of the Nuclear Rocket Development Station are used to transport the canister to the drywell. The drywells are centered between rails and the concrete shield pad above each drywell is level to facilitate transfer shield and drywell alignment for transfer of the canister into the drywell. Horizontal alignment of the transfer shield with the drywell is accomplished by aligning a pointer on the transfer shield foot valve housing with targets inscribed on the top of the drywell concrete pad. The operations of the transfer shield are described in detail in Reference 1.

4.4 PWR SPENT FUEL ASSEMBLY

Five specific PWR spent fuel assemblies were selected for the SFHPP 1978 Demonstration from the Florida Power and Light Turkey Point reactor. A representative Turkey Point fuel assembly is shown schematically in Figure 11. The selected assemblies are 161.3 inches long (prior to irradiation) with a square cross section having a maximum distance across flats of 8.43 inches (including grids). The overall length is made up of a top nozzle, the fuel rods, and the bottom nozzle. The fuel rods consist of a 15 by 15 array of 0.422 inch diameter Zircaloy cladding around UO_2 pellets. The fuel rods are arranged on a square pitch of 0.563 inches. The active fuel length is 144 inches. The fuel rods are laterally constrained by a series of seven grids located along the length of the rods. The PWR fuel assemblies are supported by the bottom nozzle when in the vertical position. The bottom nozzle has four square feet located at the corners of the assembly. These feet interface with the cruciform in the bottom of the canister. A PWR fuel assembly weighs approximately 1450 pounds.

The specific PWR fuel assemblies were chosen based on their approximately 25,000 MWD/MTU burnup and their 3 year decay time (time out of reactor). Initial predictions of cladding temperatures in drywells and SSC's indicated that maximum decay heat levels for spent fuel should be limited to less than 1.25 kW. The five Turkey Point fuel assemblies (Serial Numbers B02, B03, B17, B41, and B43) were chosen based on an estimated decay heat level slightly less than 1.25 kW at the earliest dry storage emplacement date at E-MAD (November 1978). This decay heat level was based on the nominal predicted decay heat curve (Figure 12) and the October 1975 discharge date for the assemblies. Specific data (operating statistics, dimensional measurements, weight data, flux and gamma scan data, etc.) concerning the spent fuel assemblies was collected during nondestructive examination prior to their shipment to E-MAD and is reported

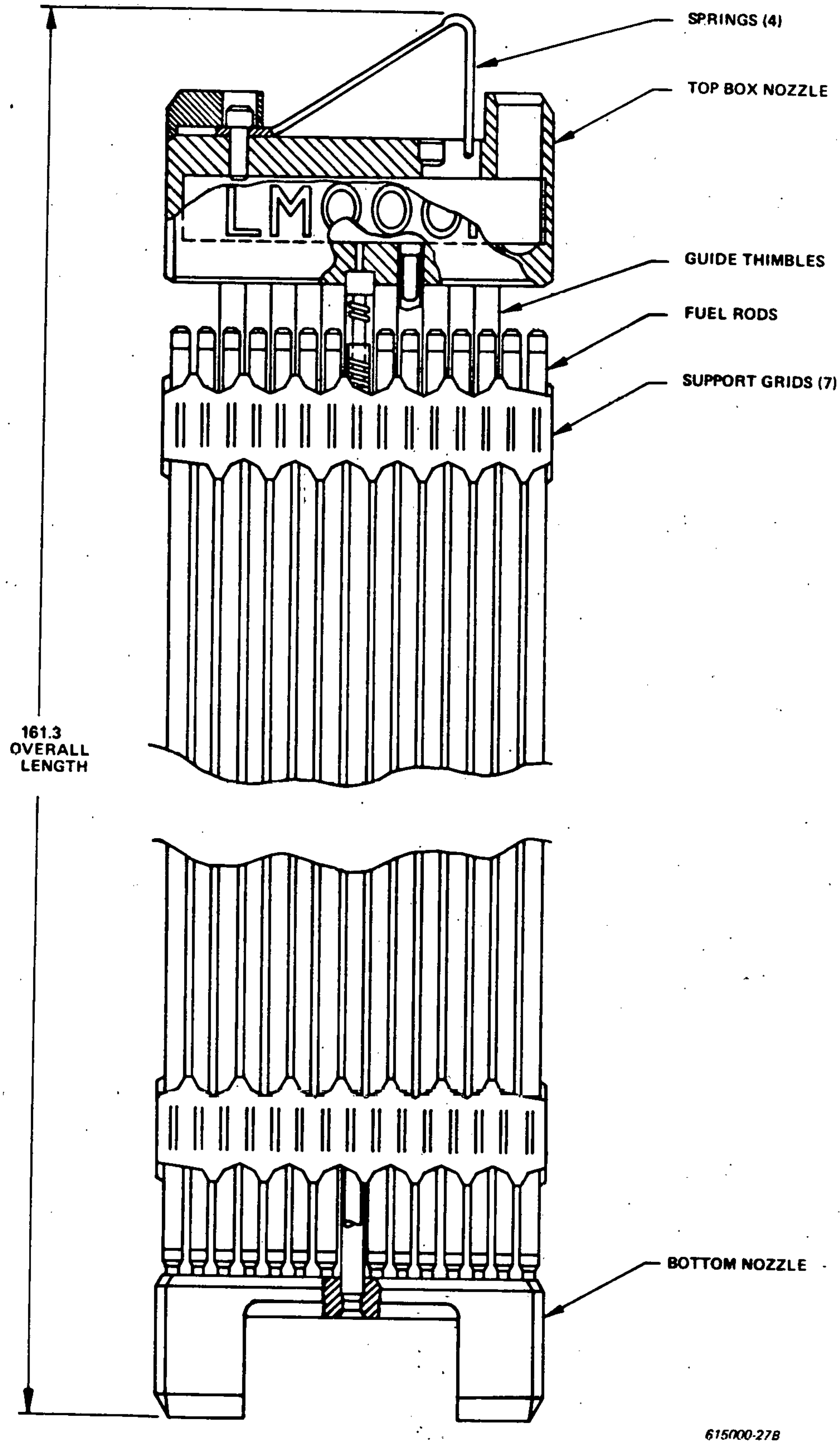

Figure 11. PWR Fuel Assembly Configuration

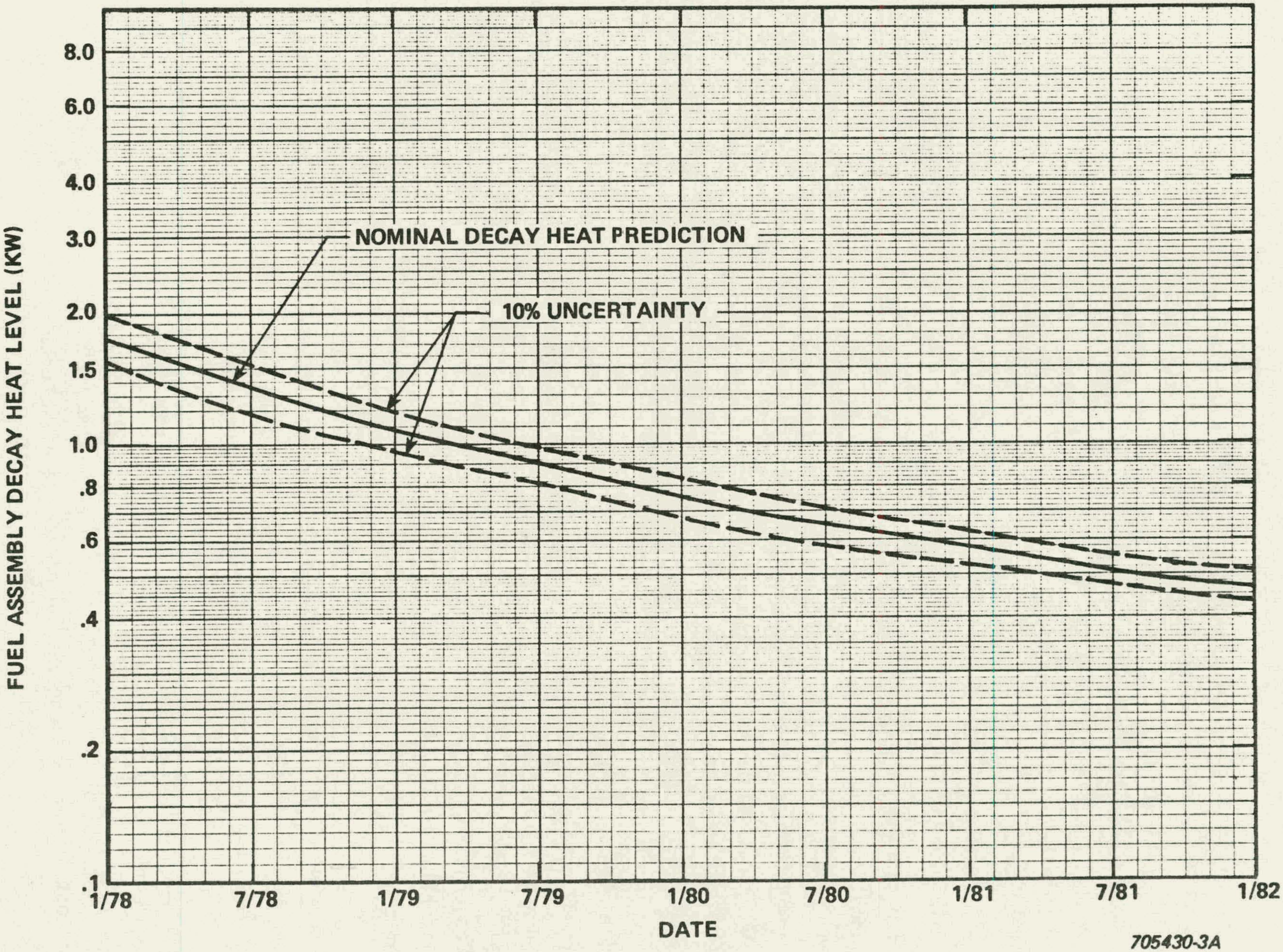

Figure 12. PWR Spent Fuel Assembly Predicted Nominal Decay Heat Curve

in Reference 5. Fuel assemblies Serial Numbers B03 and B41 were selected for testing in the drywells. Specific physical data from Reference 5 pertinent to this test are provided in Table 2. This data shows that the overall fuel assembly length increased to slightly more than 161.55 inches and that the active fuel length increased to about 144.5 inches from the irradiation. Figure A-8 shows one of these two fuel assemblies being lowered into a canister.

4.5 STORAGE SITE

The storage site for the Drywell Test as well as the Surface Storage Casks is located on the west side of the E-MAD building within the security fenced area surrounding the E-MAD complex as shown in Figure 13. Early in the SFHPP 1978 Demonstration, it was decided that canister emplacement into the drywells would utilize existing rail equipment at E-MAD. The area west of the E-MAD building was chosen as the storage site since it is fairly level and would allow rail spur installation with a minimum of site modifications.

The main railroad track extends directly north from the E-MAD Hot Bay to the E-MAD complex security fence and beyond. A switch located 100 feet south of the north fence was used to start a new rail spur for the drywell storage site. The spur consists of one track which parallels the main track and descends a 2.5 percent grade to the storage site. An additional switch was installed to permit later construction of additional spurs for future expansion of the site.

The drywells are centered between rail tracks embedded in a reinforced concrete pad as illustrated in Figure 14. The pad is 84 inches wide by 28 inches deep by 235 feet long. The pad provides 1) a level surface to facilitate emplacement of the canister with the transfer shield, 2) support for the rail equipment during emplacement and 3) shielding in the immediate area around the drywell. The pad was constructed in stages. First, the periphery forms, the reinforcing rod, and five 37.25 inch outside diameter drywell forms spaced at 25 foot intervals along the length of the drywell storage area were installed.

TABLE 2

NONDESTRUCTIVE EXAMINATION DATA FOR FUEL ASSEMBLIES (REFERENCE 5)

Average Burnup - 25,595 MWD/MTU
Discharge Date - October 25, 1975

Measured Weight	B03	B41
	1450 Pounds	1452 Pounds

Measured Irradiated Length (from bottom of top plate to top of bottom nozzle plate, nominally 153.12 inches) -

	B03	B41
A-B Corner	153.356 Inches	153.368 Inches
A-D Corner	153.365 Inches	153.382 Inches

Measured Irradiated Across Flats Dimensions (pin to pin, nominally 8.302 inches)

	B03		B41	
Height Above Bottom Nozzle(In.)	Across Flats 0° to 180°(In.)	Across Flats 90° to 270°(In.)	Across Flats 0° to 180°(In.)	Across Flats 90° to 270°(In.)
15	8.279	8.301	8.312	8.307
46	8.308	8.317	8.296	8.308
72	8.283	8.298	8.299	8.322
99	8.313	8.291	8.277	8.317
125	8.298	8.305	8.292	8.301
146	8.285	8.308	8.289	8.302

Measured Irradiated Rod Dimensions

	B03		B41	
Fuel Pin	Overall Length (In.)	Fuel Stack Length (In.)	Overall Length (In.)	Fuel Stack Length (In.)
G7	152.455	144.50	152.426	144.31
G9	152.386	144.50	152.644	144.81
J8	152.266	144.56	152.616	144.31
I9	152.414	144.44	152.513	144.50
H6	152.430	144.56	152.452	144.81

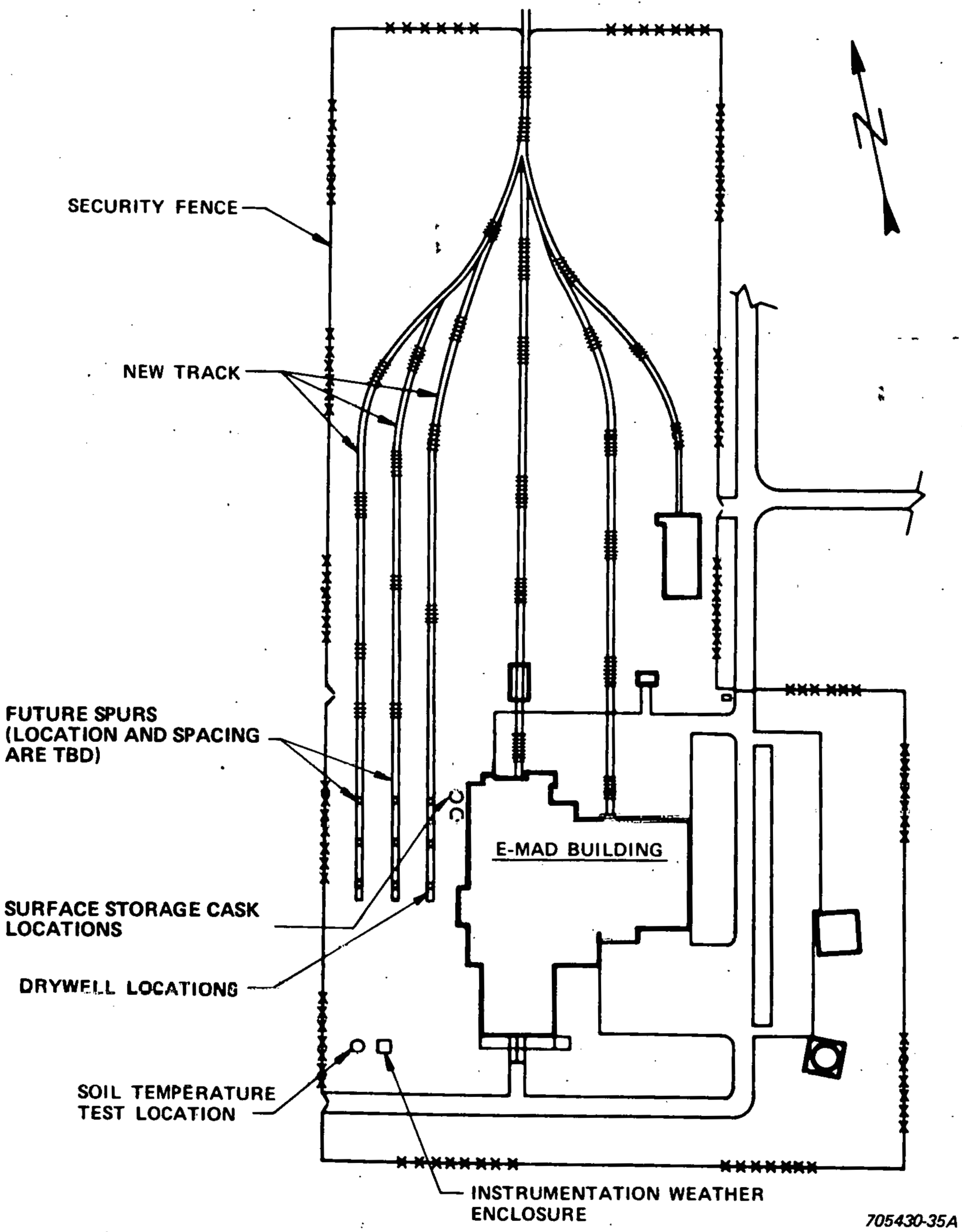

Figure 13. E-MAD Storage Site Configuration

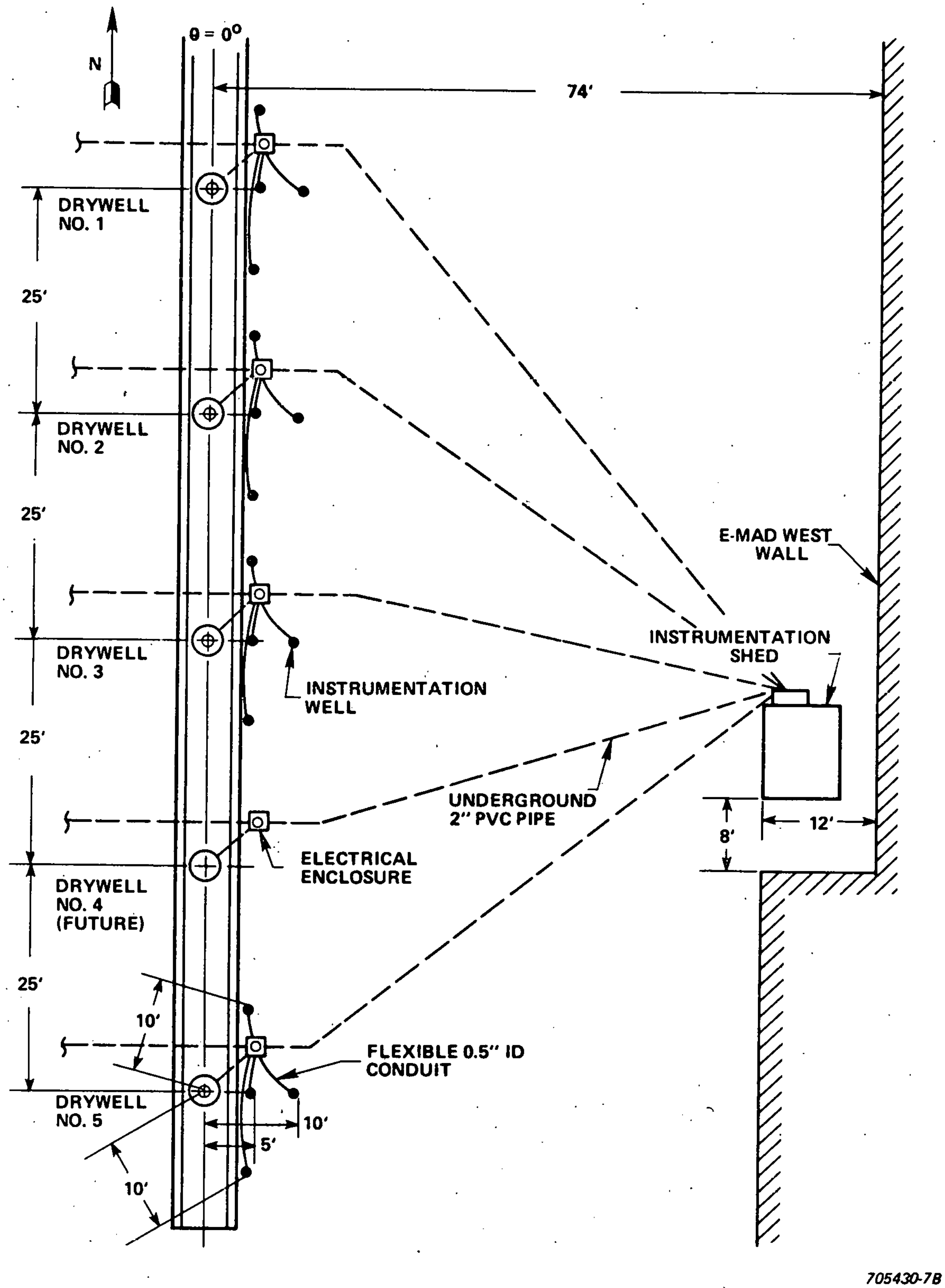

Figure 14. Drywell Storage Area Configuration

The northernmost drywell form was placed 120 feet from the north end of the pad. Second, 20 inches of concrete was poured in which were set 1.0 inch diameter studs every 6 feet to support the two rail tracks. Next, the two tracks were installed on 6 inch wide by 12 inch long by 0.5 inch thick plates which were placed over adjacent studs and supported by hex nuts threaded on the studs. The tracks were centered and leveled on the plates and secured using two rail clamps and hex nuts at each plate. The top 8 inches of concrete was poured level with the top of the two rails with 2 inch wide by 2.5 inch deep recesses on the inside of both rails to allow for the rail car wheels. Concrete pad construction is shown in Figures A-2, A-3 and A-4 in Appendix A.

Four drywell liners were installed for the SFHPP 1978 Demonstration. Twenty-six inch diameter by 23 foot deep holes were drilled in the soil for drywell liners using the three northernmost and the southernmost concrete pad holes for alignment and spacing. The spacing between the three northernmost drywells (25 feet) was chosen to provide test data for thermally interacting drywells whereas the southernmost drywell was placed 50 feet from an adjacent drywell to thermally isolate it from the others. After each drywell hole was drilled, a 37.25 inch diameter by 9.25 inch high by 0.062 inch thick galvanized steel sleeve was installed in the lower portion of the concrete pad to provide a slip plane between the grout installed around the liner and the concrete pad. The drywell liner was then installed and leveled at the top to within ± 0.03 inches. Grout was poured into the bottom of the drywell hole until it reached a level about 1 to 2 feet above the bottom of the liner. After this grout set, the entire annulus between the liner and hole was filled to the top of the galvanized steel sleeve to provide an 18.75 inch deep recess at the top of the liner to allow for drywell shield adapter installation (see Section 4.8.2). Figure A-5 in Appendix A shows the drywell liner being lowered through the concrete pad prior to grout installation.

Each drywell has a cover plate which is bolted to the top of the concrete pad. The drywell cover plate is 46 inches in diameter by 0.25 inches thick and is made of carbon steel. Four lifting eyes are welded to the top of the cover plate to facilitate handling. A 41 inch outside diameter by 39 inch inside diameter by 0.25 inch thick neoprene gasket is cemented to the underside of the cover plate to seal the plate against the concrete pad. The cover plate has sixteen 0.625 inch diameter clearance holes for the 0.5 inch diameter by 1.25 inch long hex head bolts used to secure the cover plate to the concrete pad. Anchors are installed in the top of the pad to mate with the bolts. Four bolts on each cover plate have a hole through the hex head which allows security wires to be placed through two pair of bolts on each drywell after the canister has been installed. The drywell cover plate is shown in Figure A-14 in Appendix A.

Prior to drywell concrete pad construction, underground pipe and conduit was laid to allow for instrumentation routing for three spurs of drywells. Fifteen lines of 2 inch diameter PVC pipe were installed approximately 2 feet below ground level running from the instrumentation shed to each of 15 drywell locations including ten future drywell locations on proposed second and third rail spurs as shown in Figure 13. Vertical sections of metal conduit were installed at the end of each pipe to attach a large waterproof, dustproof electrical enclosure near each of the drywells. An additional five metal conduits were installed between the 37.25 inch diameter drywell pad recesses and the enclosure positions. The instrumentation conduit is connected to an environmentally controlled instrumentation shed located outside the E-MAD building (see Figure 14).

Four instrumentation wells (described in Section 4.6) and four electrical enclosures were installed near each of the four drywells. Figure 15 shows the location and orientation of the instrumentation wells for drywells number 3 and 5. Flexible conduit from each of these four wells was attached to the nearby electrical enclosure (see Figure 15).

4.6 INSTRUMENTATION WELLS

The soil surrounding each drywell was instrumented with a total of 12 thermocouples divided and grouped into four instrumentation wells. The orientation

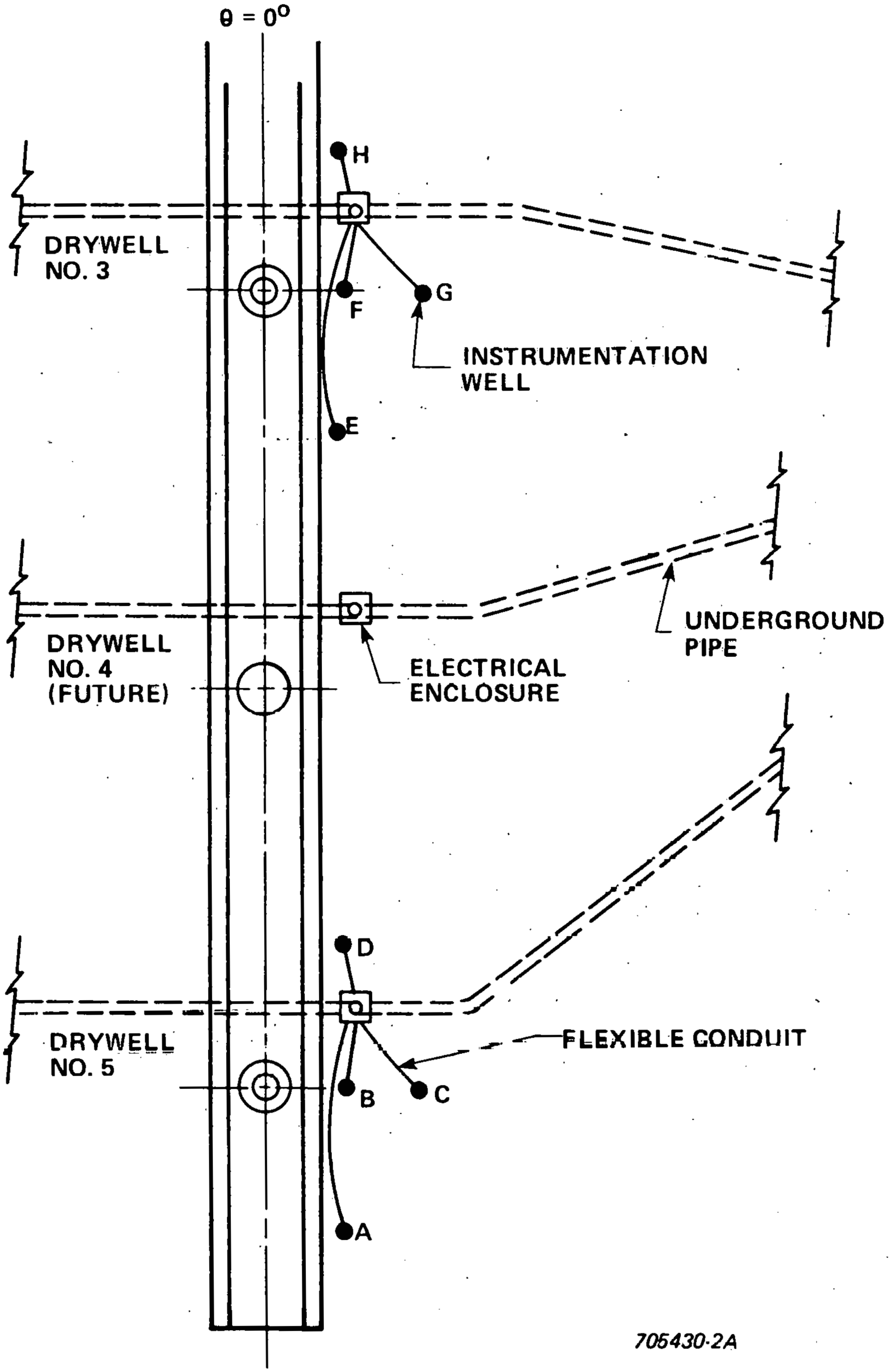

Figure 15. Drywell Number 3 and Number 5 Storage Area

of the instrumentation wells is shown in Figure 15 for drywells number 3 and 5. Each instrumentation well consists of a 19 foot long 1.0 inch diameter schedule 80 PVC pipe. The sheathed thermocouples for each instrumentation well were attached to the outside surface of the PVC pipe at three axial locations as shown in Figure 16. The thermocouples were attached using wire ties and epoxy patches spaced 12 inches apart. Table 1 provides the location data for each of the instrumentation wells and attached thermocouples.

Each instrumented pipe was inserted into a 3.5 inch diameter hole and grouted in place. The top of each pipe extended inches above ground level. At the top of each pipe, an enclosure box was provided and to attach a 0.5 inch inside diameter flexible conduit routed to the storage site instrumentation shed. The enclosure boxes were used to route the thermocouple leads through the flexible conduit after installation of the well and conduit. Figures A-6 and A-7 show thermocouple well installation activities.

4.7 DATA ACQUISITION SYSTEM

The data acquisition system for the Drywell Test consists of the array of thermocouples, a data logger, and a remote scanning/multiplexing unit. The thermocouples are attached to the test hardware as described earlier in this section of the report. The thermocouple leads are routed to sealed electrical enclosures and to the multiplexer unit located in the instrumentation shed outside the E-MAD west wall. Multiplexer signal cables are routed through underground conduit to the data logger which is located inside the E-MAD building in the West Operator Gallery.

4.7.1 THERMOCOUPLES

All thermocouples used in the Drywell Test described in the previous sections consist of a Type K, chromel-alumel thermocouple with ungrounded junction enclosed in a 304 stainless steel sheath. The canister and liner thermocouples have a 0.062 inch diameter sheath and the Instrumentation Well thermocouples have a 0.125 inch diameter sheath. Two 24 gauge Type K extension wires are brazed to the thermocouple wires and are enclosed in a 0.187 inch diameter by

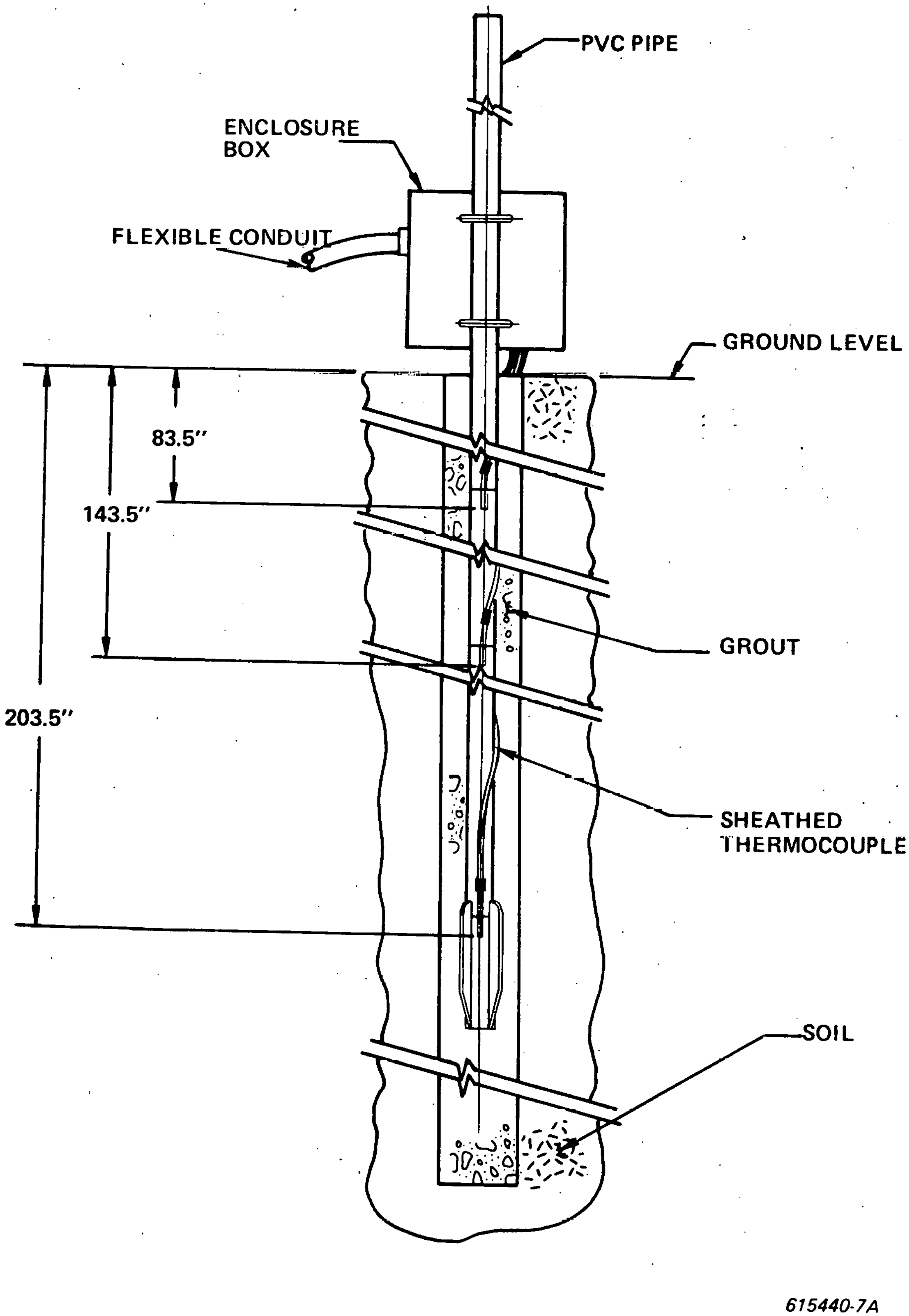

Figure 16. Instrumentation Well Configuration

0.025 inch wall by 2.75 inch long stainless steel transition boot. The transition boot is crimped onto the end of the thermocouple cable sheath and filled with epoxy. Heat shrink tubing is installed on the Instrumentation Well thermocouples transition boot and a length of the extension wires to provide additional moisture protection for the portion of those thermocouples installed underground. Table 1 provides the identification and location data for all the thermocouples installed in and around drywells number 3 and 5. Figure 17 shows the typical drywell thermocouple elevations.

4.7.2 DATA LOGGER SYSTEM

An Acurex Autodata IX data logger with one remote scanning/ multiplexing unit is used for the Drywell Test. The data logger is shown in Figure A-15 in its installed configuration. The data logger is also used for other experiments at E-MAD (Soil Temperature Test, Surface Storage Cask fueled storage cell and Fuel Temperature Test) and for monitoring spent fuel temperatures within the E-MAD hot cells. The data logger operates on 120 volt, 60 Hz AC electrical power and is rated for operation in the range of 32°F to 110°F and 0 to 90 percent relative humidity. This data logger system was selected with capabilities to meet the test needs of the SFHPP 1978 Demonstration with considerations for future expansion. Some of the capabilities being utilized for the Drywell Test are as follows:

- Measurement of Type K thermocouple temperatures from up to 1000 thermocouples.
- Thermocouple open detection circuit (to determine failures).
- Remote signal conditioning and multiplexing for remote instrumentation up to 5000 feet from data logger mainframe.
- Console digital readout in identified engineering units (selectable on the front panel).
- Printer for output data with header and engineering unit identification.

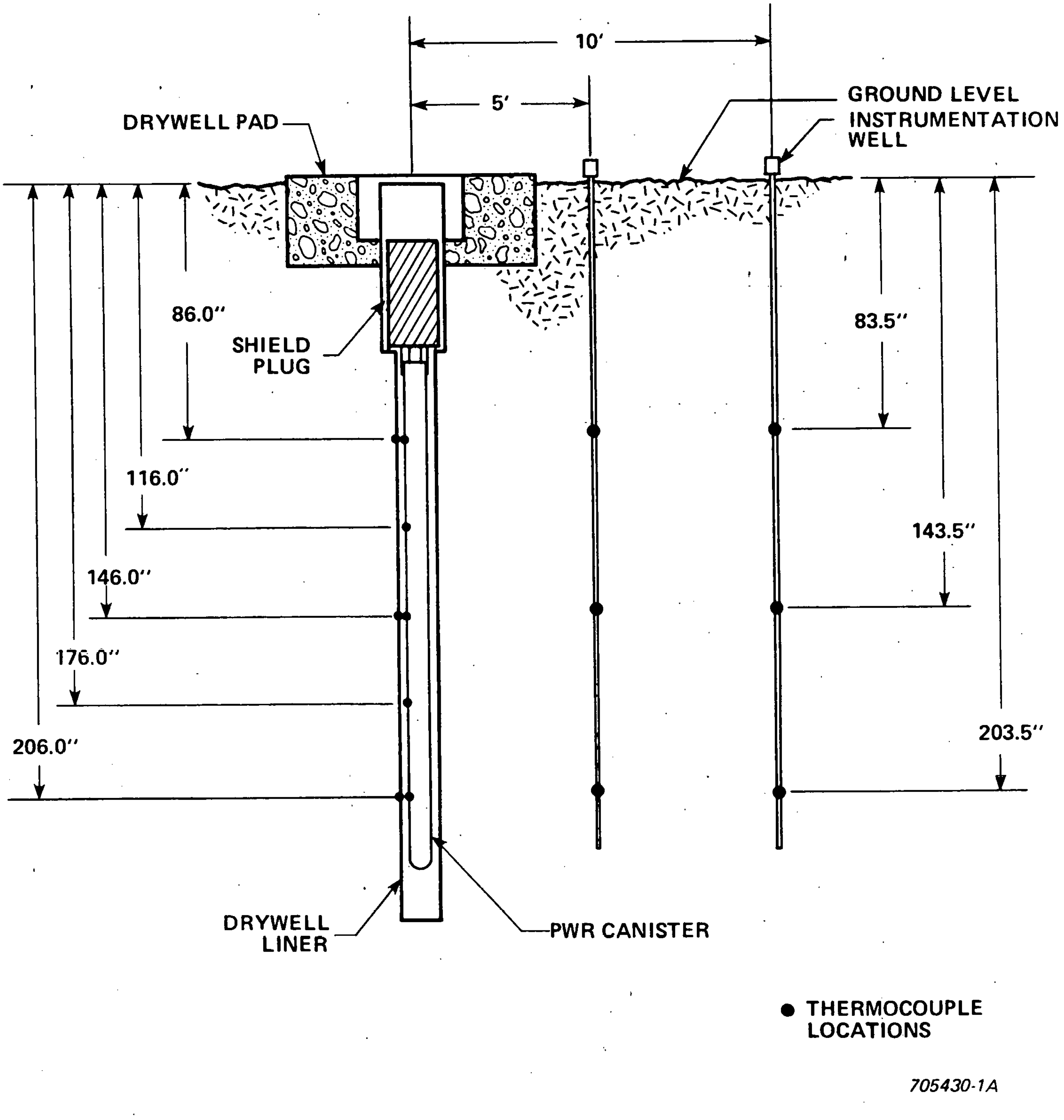

Figure 17. Typical Drywell Thermocouple Elevations

- Variable scan modes (single, continuous, and intervals) with adjustable scan intervals.
- High performance analog to digital conversion.

4.8 DRYWELL CANISTER EMPLACEMENT EQUIPMENT

4.8.1 TRANSFER SHIELD

The transfer shield shown in Figure 18 is used to transfer the canister/shield plug assemblies from the transfer pit in the Hot Bay to the drywells in the storage area. The transfer shield is mounted on the Engine Installation Vehicle (EIV). The transfer shield provides personnel radiation shielding during transfer operations. Motive power for the transfer shield and EIV is provided by the Manned Control Car and the L-3 locomotive. Movement of the train comprised of these three vehicles is controlled from the Manned Control Car. The transfer shield and three rail vehicles are shown in Figures A-10 to A-12 in Appendix A. These vehicles are described in Reference 1.

The transfer shield/EIV assembly has the following features:

- A drive system on the EIV that can move the shield vertically, longitudinally, and laterally with respect to the EIV.
- A winch to raise and lower the canister/shield plug assembly.
- A foot valve to open and close the bottom of the shield to permit pickup and discharge of a canister assembly while providing shielding during transport.
- An electrical control system to prevent operator error and damage to equipment or exposure of personnel to excessive radiation levels.

The transfer shield assembly consists of two concentric carbon steel cylinders with the 6.5 inch annular space between the cylinders filled with 0.030 inch to 0.045 inch diameter lead shot. The lead shot is installed from the top of the shield annulus and is vibrated and tamped into place. The void space in the lead shot is filled with neutron absorbing shielding oil. The total shield

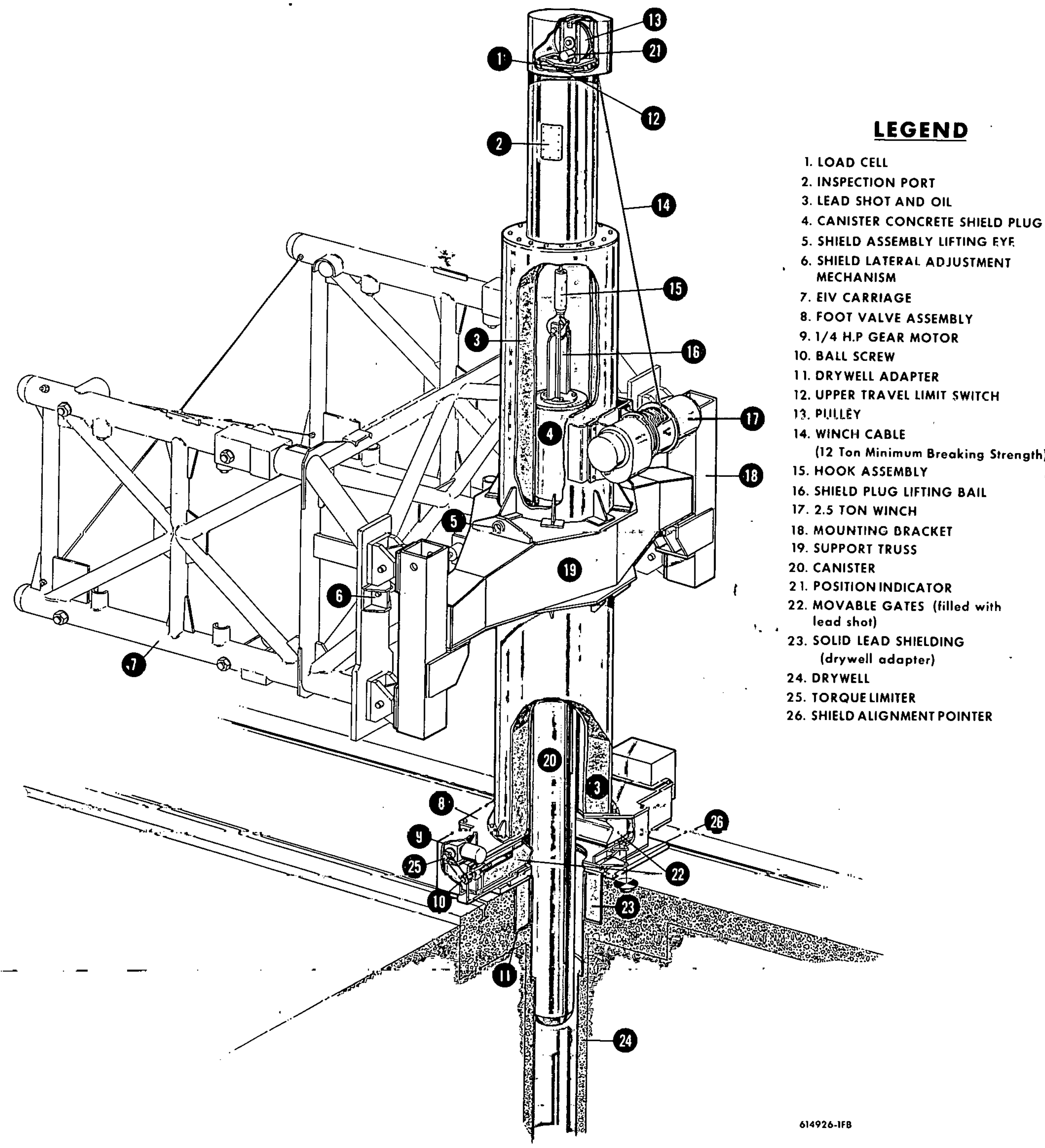

Figure 18. Transfer Shield/Canister Installation Configuration

assembly is approximately 25 feet high and 3 feet in diameter. A rectangular foot valve assembly extends approximately 3 feet on either side of the vertical centerline. The transfer shield weighs approximately 50,000 pounds.

The shield support truss is attached to existing mounting holes on the carriage of the EIV. The EIV has vertical, longitudinal, and lateral carriage drives which are used to position the shield with respect to the transfer pit and drywell.

The transfer shield winch and cable assembly are designed to raise and lower a canister and shield plug having a combined weight of approximately 4000 pounds. The winch, with a rated capacity of 2.5 tons, is an electric motor driven hoist attached to the side of the shield assembly. The cable is a 6 x 37 class, steel core, high strength, steel cable which has a breaking strength greater than 12 tons. The cable is routed from the hoist drum to the top of the shield assembly, around a 11.75 inch diameter sheave, and then into the transfer shield interior to the hook assembly. The hoist has the capability for hand cranking for raising or lowering a canister assembly in the event of power failure.

The foot valve assembly consists of two gates which are filled with 8.3 inches of lead shot. A "V" shaped interface between the gates limits radiation streaming during canister assembly transport. Each gate in the foot valve, supported by cam rollers, is individually driven by a 1/4 horsepower electric motor (with gear reducer) connected by a chain drive to a ballscrew. Limit switches control the travel of the two gates and a slip clutch is provided to protect the mechanism in the event of a limit switch malfunction. The foot valve gates also have the capability for hand cranking in the event of power failure.

An electrical control system is provided to permit remote operation of the EIV and the transfer shield components. Control panels are provided in the Manned Control Car (MCC) cab and at the back end of the EIV (opposite end of the EIV from the shield). A third portable control panel can be used to operate the system from the E-MAD gallery when the EIV is located in the Hot Bay. Operation is normally from the MCC panel. The electrical control system has provisions to limit winch and foot valve travel, to limit shield travel via the EIV carriage motion mechanisms, and to interlock operating modes to prevent inadvertent winch, foot valve, or shield motions from causing exposure of personnel to a bare (unshielded) canister assembly. A series of sensing switches are provided on the transfer shield and EIV to indicate load on the cable, winch hook full up and down position, shield full up and down position, foot valve open and closed position, and EIV lateral and longitudinal travel limit positions.

The details of transfer shield/EIV transfer operations are provided in Reference 1.

4.8.2 DRYWELL SHIELD ADAPTER

A special shield adapter is installed in the annular region around the upper drywell liner during canister assembly emplacement and removal operations. This drywell shield adapter limits radiation levels in the area immediately surrounding the drywell while the canister is being raised or lowered. The drywell shield adapter is illustrated as installed in the drywell in Figure 19.

The drywell shield adapter is made of carbon steel and consists of two 17.5 inch long concentric pipes having a 22.5 inch inside diameter and a 36 inch outside diameter. The 5.75 inch wide annulus between the pipes is filled with lead shot which was vibrated and tamped in place. A 0.5 inch thick bottom plate and a 2 inch thick top plate are welded to the two pipes. The top plate is 49 inches square and has a 1.0 inch deep by 39 inch diameter recess machined in the top to interface with the bottom of the transfer shield. Four 1.5 inch diameter rods, which were welded to the top and bottom plates to provide additional support, each have 0.5 inch diameter threaded holes which are fitted with lifting rings for handling the shield adapter. The adapter weighs approximately 4000 pounds.

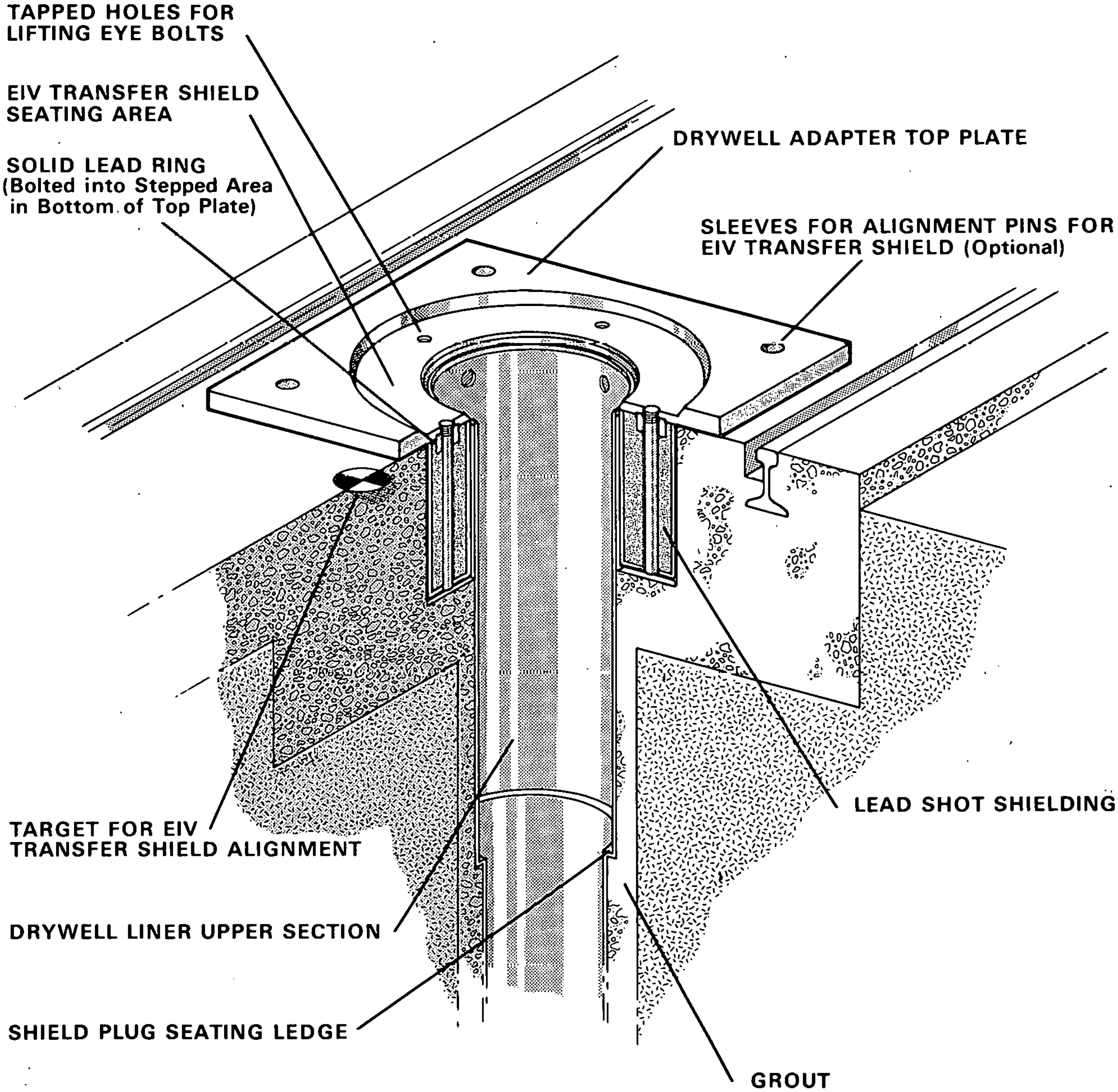

Figure 19. Drywell Shield Adapter Configuration (Shown Installed in Drywell)

5.0 TEST OPERATIONS AND RESULTS

5.1 TEST OPERATIONS

5.1.1 CONSTRUCTION

The drywell storage area construction was completed in September, 1978. Four drywell liners were installed in positions 1, 2, 3, and 5 (drywell positions numbered from north to south, see Figure 14). The drywell liner positions were chosen based on the initial thermal analyses to provide one thermally isolated drywell (50 feet from adjacent drywell) and three drywells which would provide test data on drywell thermal interactions.

Storage area instrumentation well installation was completed in October, 1978. Sixteen instrumentation wells were installed with four wells near each of the four installed drywell liners. After the instrumentation wells were installed, the 19 canister and liner thermocouples for each drywell were coiled and placed in the adjacent electrical enclosures. The thermocouple leads for each drywell and adjacent four instrumentation wells were bundled together and routed from the electrical enclosures to the multiplexer unit in the instrumentation shed through the underground pipes installed in the storage area.

5.1.2 FUEL ASSEMBLY ENCAPSULATION

Isolated Drywell Test spent fuel assembly encapsulation operations occurred during the second and fourth weeks of January, 1979. The following presents a brief summary of the typical E-MAD encapsulation operations performed. Further details of the operations and equipment are found in Reference 1. The operations began with the spent fuel shipping cask preparation for fuel assembly unloading. Using the vendor supplied lifting yoke and E-MAD overhead crane, the cask is upended, lifted, and placed in the cask work platform. Hands-on cask operations include installation of the cask vent line, removal of lifting yoke, removal of closure lid holddown bolts, attaching the lid lifting fixture, and venting of the cask internal pressure through the ventilation system north stack.

After the cask is ready for fuel unloading, operations are performed remotely. The cask closure lid is removed and placed on its stand. The fuel handling tool is inserted in the cask, the tool fingers are engaged, and the handling tool and fuel are lifted by the overhead crane. Once out of the cask, each fuel assembly is visually examined along the full length of each side by a remotely held TV camera. The fuel is then placed in a canister located in the Hot Bay weld pit (Figure A-8), the fuel handling tool disengaged and replaced on its stand. The canister thread protector is removed, and the threads are inspected and cleaned, if required. The closure lid is placed on the canister and torqued down by the large Wall Mounted Handling System (WMHS). The welding head is placed on the canister and secured prior to canister seal welding.

The weld is made remotely and the completed weld visually inspected using a wall mounted periscope. The welding head is then removed by the WMHS and placed on a stand. The canister is evacuated and backfilled with helium utilizing the evacuation and backfill system which is remotely connected to a fitting on the closure lid. When backfilling is complete, the hose is remotely disconnected and a plug fitting installed. The leak check system vacuum chamber hood is placed over the weld pit by the WMHS, and the vacuum chamber is evacuated by the evacuation system attached to the lower part of the chamber. A sample is drawn from the vacuum chamber into a helium leak detector in the gallery and examined for helium. The vacuum chamber hood is removed and placed on its stand and the sealed and leak checked canister is ready for storage. The shield plug is placed on the canister by the overhead crane and secured in place. The canister and shield plug are moved to the survey pit where swipes are made of the canister surface using the master-slave manipulators. The swipes are removed from the Hot Bay using the pass-through drawer. The swipes are checked for contamination and the canister decontaminated, if necessary. Prior to transfer to the storage site, the canister and shield plug are moved to the transfer pit and lowered into place as shown in Figure A-9 in Appendix A.

5.1.3 TRANSFER TO THE DRYWELL

Prior to transferring the canister to the drywell, a special lifting bail is installed on the shield plug in the transfer pit. The Engine Installation Vehicle (EIV) and transfer shield are moved into the Hot Bay by the Manned Control Car and L-3 locomotive and centered over the transfer pit as shown in Figure A-10. The shield foot valve is opened and the transfer shield hook assembly lowered remotely. The hook is engaged on the lifting bail and the shield lowered until it seats on the top of the transfer pit. The canister and shield plug are then raised into the transfer shield, the foot valve closed, and transfer shield raised prior to removing the rail vehicles, shield and canister from the Hot Bay. The drywell shield adapter is installed in the drywell prior to canister movement to the storage area. The rail vehicles move the transfer shield and canister assembly out to the storage site and then maneuver the transfer shield to a position directly above a drywell. The transfer shield is lowered until it seats on top of the drywell shield adapter as shown in Figure A-11. The foot valve is opened and the canister lowered into position in the drywell. After the transfer shield is raised, the hook is removed and raised into the shield, the foot valve closed, and the rail vehicles moved to a parking location. Figure A-12 shows the transfer completed in Drywell 5. To complete the drywell operations, the drywell shield adapter is removed using a mobile crane, the lifting bail removed, the thermocouples inserted through the shield plug and liner as shown in Figure A-13, the instrumentation connections made at the multiplexer unit, and the cover secured over the drywell.

The first canister assembly containing fuel assembly Serial Number B03 was installed in Drywell 5 on January 12, 1979. The second canister assembly containing fuel assembly Serial Number B41 was installed in Drywell 3 on January 24, 1979. Thermocouples for both drywells were attached to the multiplexer and a set of reference temperature readings were taken prior to thermocouple insertion.

5.1.4 TEMPERATURE MONITORING

Temperature data from the two drywells have been monitored from their dates of emplacement. For each drywell, data logger printouts were made every hour for the first day, every four hours for the next six days and twice a day thereafter at 4:00 a.m. and 4:00 p.m. In May 1979, the printouts were made at 8:00 a.m. and 4:00 p.m. and continued at those times throughout the remainder of the test period. Appendix B provides temperature readings recorded by the data logger for Drywells 3 and 5 at two week intervals. Table 1 provides a listing of thermocouple positions and data logger data channels used to read out the temperature data.

5.1.5 SUBSEQUENT REPAIR ACTIVITIES

Following drywell emplacement operations, repair activities pertinent to the Isolated Drywell Test and its data occurred.

During thermocouple routing from the electrical enclosure to Drywell 5, one of the liner thermocouples (T/C 877) was broken. A replacement thermocouple was installed in the liner thermocouple tube and a Type K thermocouple connector was used to join the replacement thermocouple extension wire and the existing wire leading to the instrumentation shed. This connection was made in the electrical enclosure. It was later determined that the replacement thermocouple was 60 inches longer than it should have been. This information has been noted on Table 1.

During thermocouple installation activities for both drywells, it was noted that some of the pad concrete in the area of the drywell cover gasket had cracked or was broken and that a good seal between the gasket and concrete would not occur. Some of the broken concrete at Drywell 5 is visible in Figure A-13. The top of the pad was repaired using epoxy grout which provided a 53 inch square by 1.0 inch high raised area on the top of the pad. Drywell 5 concrete pad repairs were completed on January 22, 1979, and Drywell 3 concrete pad repairs were completed on February 12, 1979.

Two liner thermocouples failed during the Isolated Drywell Test. Data readings from Drywell 3 liner thermocouple 829 greatly differed from the similar position thermocouples (T/C 876 and 878) soon after thermocouple installation (no irregularity in reading had been noted during the initial temperature readouts). Following an integrity check, this thermocouple was removed and replaced on March 16, 1979. A Type K thermocouple connector was used to join the replacement thermocouple with the extension wire connected to the data logger system multiplexer. Later in the test on February 15, 1980, Drywell 3 liner thermocouple 828 stopped providing data. After an integrity check, this thermocouple was found to have failed and was disconnected. Since no replacement thermocouple was available, further data readings from this channel were not taken.

Following canister thermocouple installation, an evaluation of the canister thermocouple tube/thermocouple interface was conducted due to the fact that the thermocouple transition boots, which should have been about 6 inches above the top of the shield plug when the thermocouple end contacted the bottom of the canister tube, were in contact with the top of the shield plug. The evaluation showed that the ten canister thermocouples could pass between the canister and thermocouple tube angle and plate, and in fact, may be measuring air temperatures between the canister and liner. It was determined that the thermocouples should be raised so that the transition boots were about 5.5 inches above the top of the shield plug. This was accomplished on April 30, 1979. The test data results presented in the next section and in Appendix C show that the temperatures from all 20 canister thermocouples were affected by this action indicating that the thermocouples were outside the canister tubes. Due to a communication problem, the nine liner thermocouples for each drywell were also raised by 5.5 inches on April 30. An evaluation of the liner temperature versus time curves shortly thereafter revealed the change in thermocouple position. The liner thermocouples were reinserted to their proper position on May 22, 1979.

5.2 TEST RESULTS

This section presents the thermal test tesults for the isolated drywells (numbers 3 and 5) from drywell and soil thermocouples (thermocouple channels and positions are identified in Table 1). Thermal test results are shown in Figures 20 to 27 with all temperature data being shown in Figures C-1 to C-12 in Appendix C.

The peak measured temperatures for Drywell 3 are presented in the form of canister, liner, and soil temperature distributions throughout the test period in Figure 20 and as canister and liner axial temperature profiles in Figure 21. Figures 22 and 23 present the peak measured temperatures for Drywell 5. The peak temperatures occurred several inches below the canister midplane during August 1979. For Drywell 3, the peak canister temperature was 254°F, and the peak liner temperature was 198°F. For Drywell 5, the peak canister temperature was 253°F, and the peak liner temperature was 203°F. After the peak temperatures occurred, all temperatures decreased and began a cycling pattern in response to seasonal atmospheric temperature changes. If data were recorded over a period of several years, the temperatures would continue showing seasonal cycles superimposed on decreasing mean temperatures which result from the gradually decreasing decay heat level.

Also shown in Figures 20 and 22 are soil temperatures measured at the Soil Temperature Test Reference Well. The Reference Well is positioned 60 feet from the Soil Temperature Test, nearly 100 feet from Drywell 5 and 150 feet from Drywell 3. These distances are sufficient that Reference Well soil temperatures would not be affected by the drywell tests or the Soil Temperature Test. Therefore, the Reference Well data provide a valid base from which the thermal effect of drywell operation on near-field soil temperatures can be ascertained. In addition, they provide data illustrating the influence of seasonal changes on soil temperatures at the various thermocouple depths.

During the initial testing period (January 1979 thorugh April 1979), canister thermocouples were positioned incorrectly on both drywells as previously

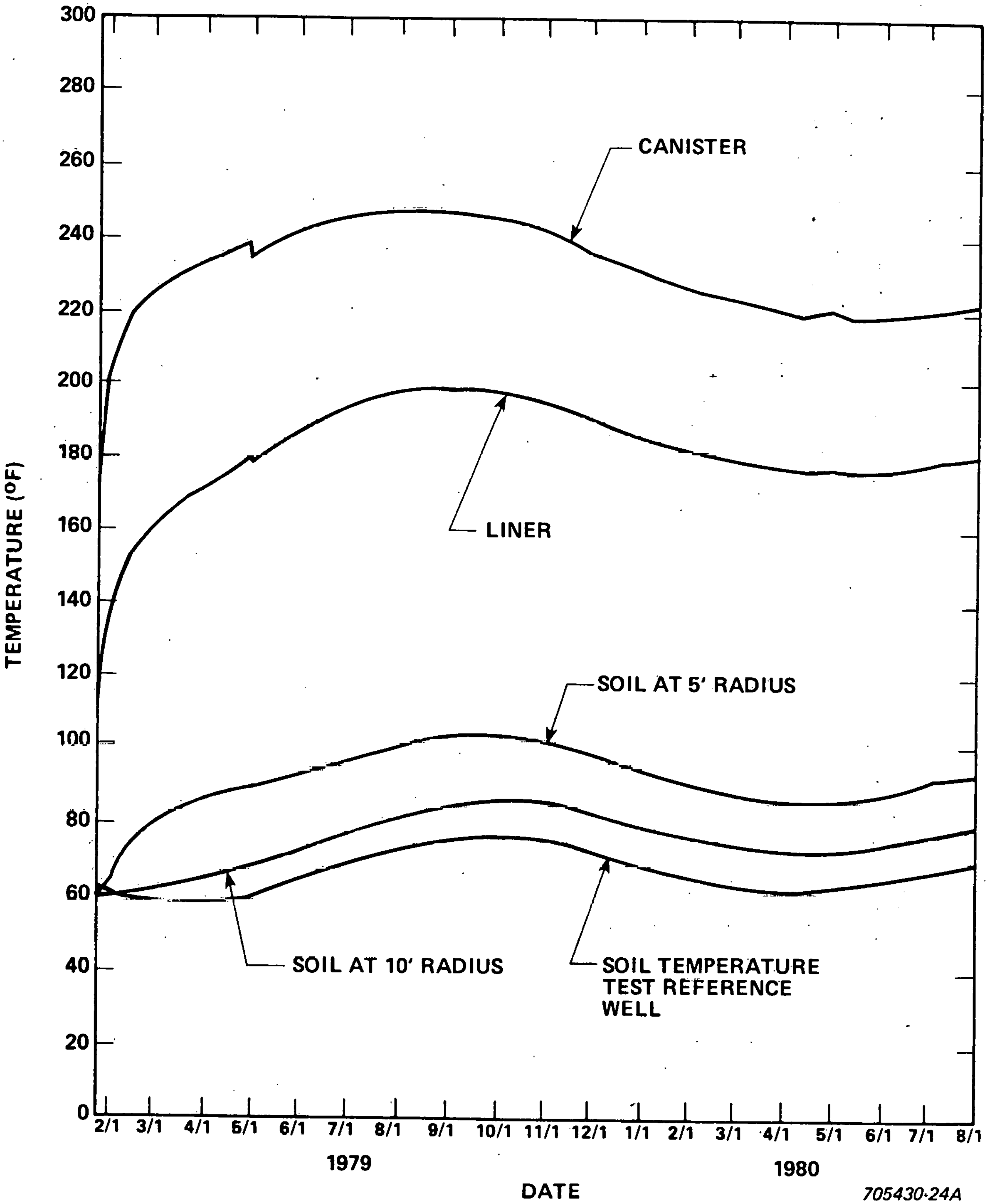

Figure 20. Drywell 3 Peak Canister, Liner and Soil Temperature Distributions

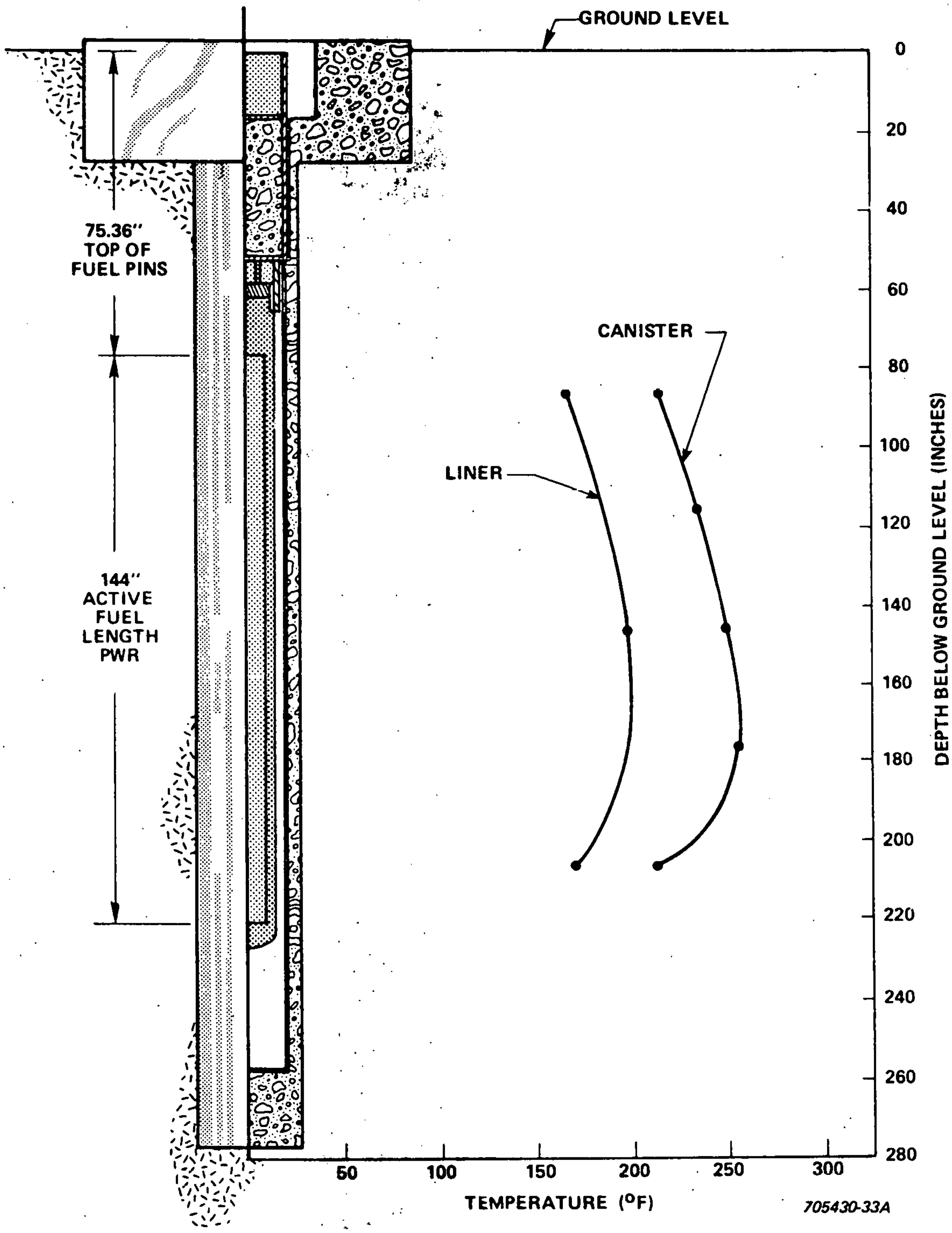

Figure 21. Drywell 3 Peak Canister and Liner Axial Temperature Profiles

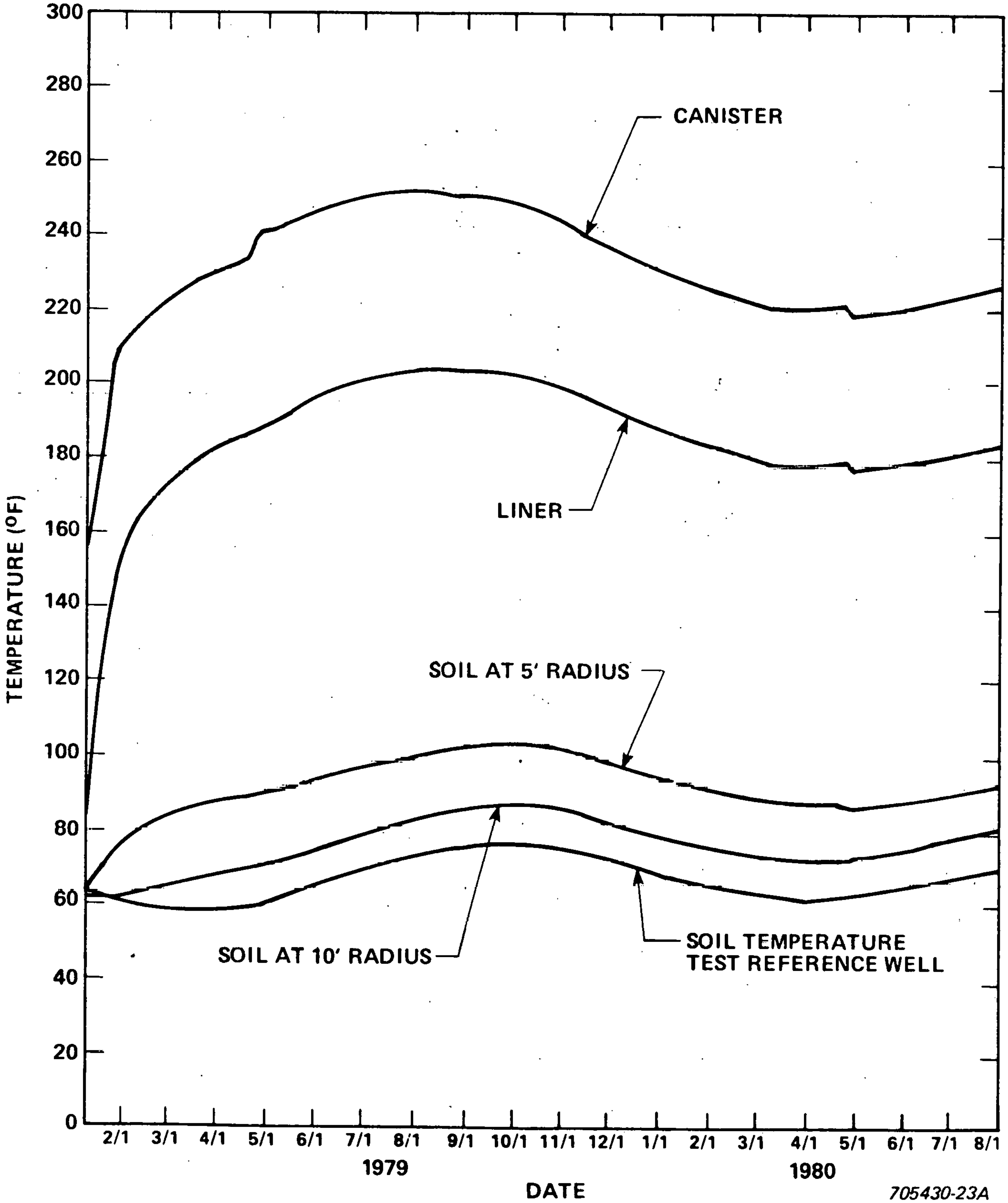

Figure 22. Drywell 5 Peak Canister, Liner and Soil Temperature Distributions

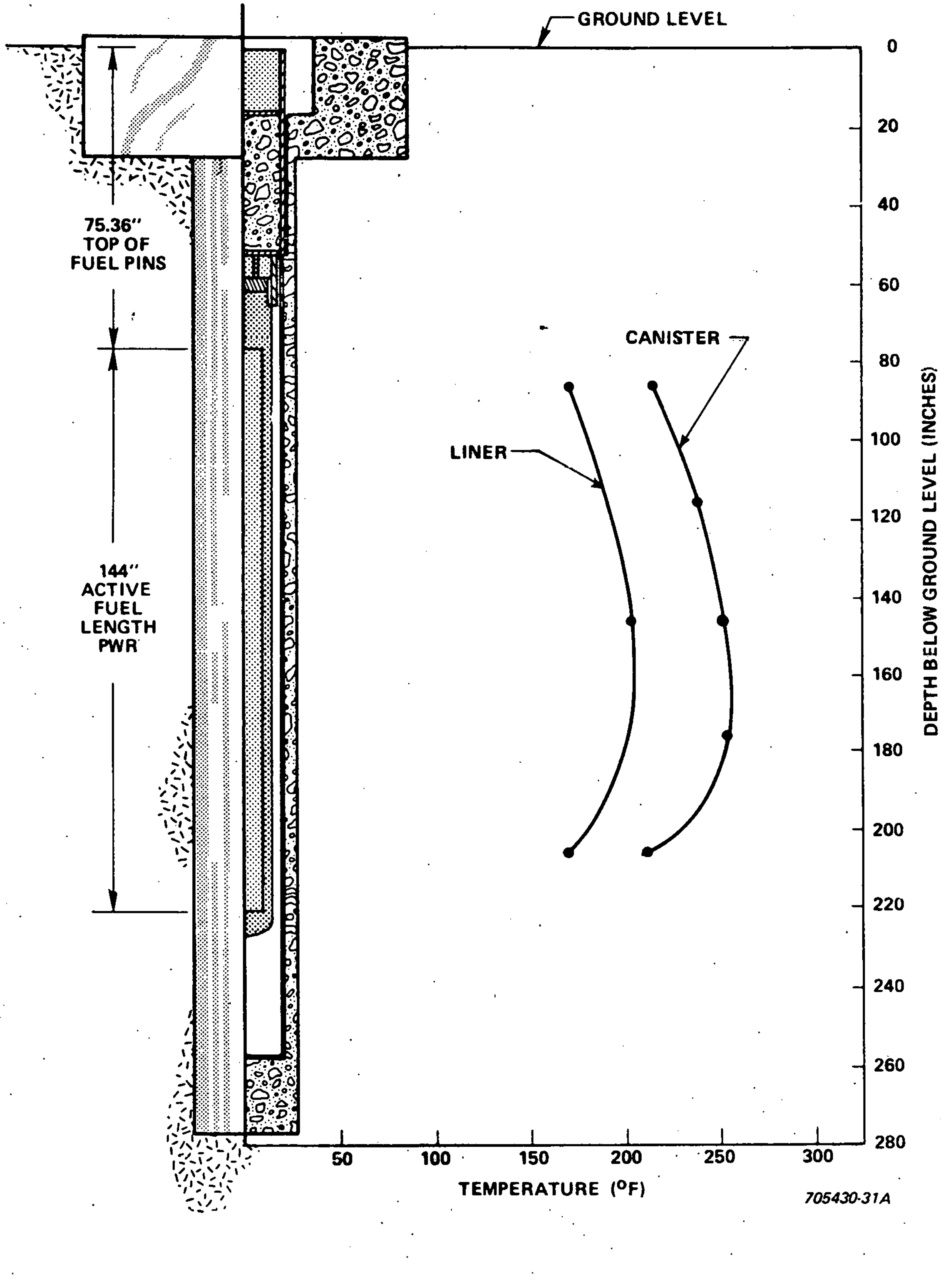

Figure 23. Drywell 5 Peak Canister and Liner Axial Temperature Profiles

noted. The effect of the thermocouples being outside the instrumentation tubes accounts for the large early differences between canister temperatures at several elevations and also accounts for the abrupt temperature changes recorded on April 30, 1979, when thermocouple position adjustments were made. For the test period after April, 1979, the temperature versus time curves show small (10°F or less) circumferential temperature variations at all instrument elevations. In addition, a comparison of the four Drywell 5 liner thermocouples at an elevation 205 inches below ground level showed a variation of less than 2°F until about March 1, 1980 when one of the thermocouples (867) varied between 3°F and 6°F. This information indicates that uniform soil properties exist circumferentially; and, concerning the soil temperature data particularly, it shows no thermal effect of one drywell on another.

The effects of axial heat convection inside the canister were evident in Drywells 3 and 5. Convection effects within an air filled canister were evident in the Soil Temperature Test data as discussed in Reference 2. It was noted there that convection currents could cause canister temperature variations at one elevation to occur more rapidly due to temperature changes at other elevations than would be possible by conduction heat transfer alone. Thus, canister temperatures at two different elevations tended to be more closely in phase than soil temperatures at the same elevations. The same phenomenon is apparent in data from Drywells 3 and 5. Comparing canister temperature data from three elevations on Drywell 3 in Figure 24 with soil temperature data at a 10 foot radius in Figure 25 for the same elevations, the canister traces all peak within a period of approximately 30 days, while the soil temperature peaks are distributed over a period of 60 to 70 days. This is also the case for Drywell 5 as shown by comparing the canister and soil data in Figures 26 and 27.

The thermal data from Drywells 3 and 5 showed that the day-night atmospheric temperature changes had little or no effect on the drywell temperatures. Comparing the temperatures of the canister, liner, and soil at the 5 foot and 10 foot radius at the uppermost thermocouple elevation showed a maximum 0.5°F difference between the early morning and mid-afternoon data recordings.

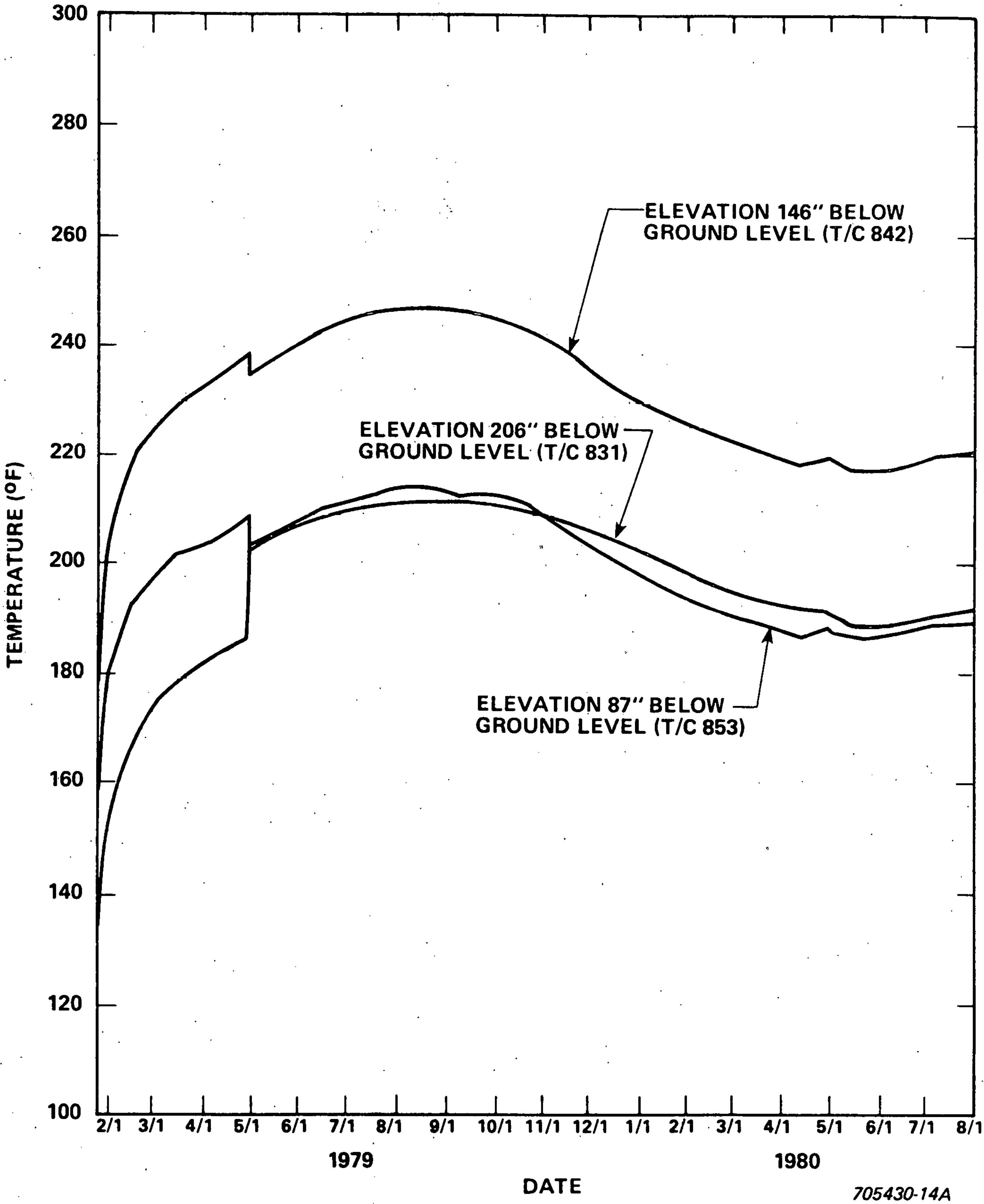

Figure 24. Drywell 3 Canister Temperature Distributions

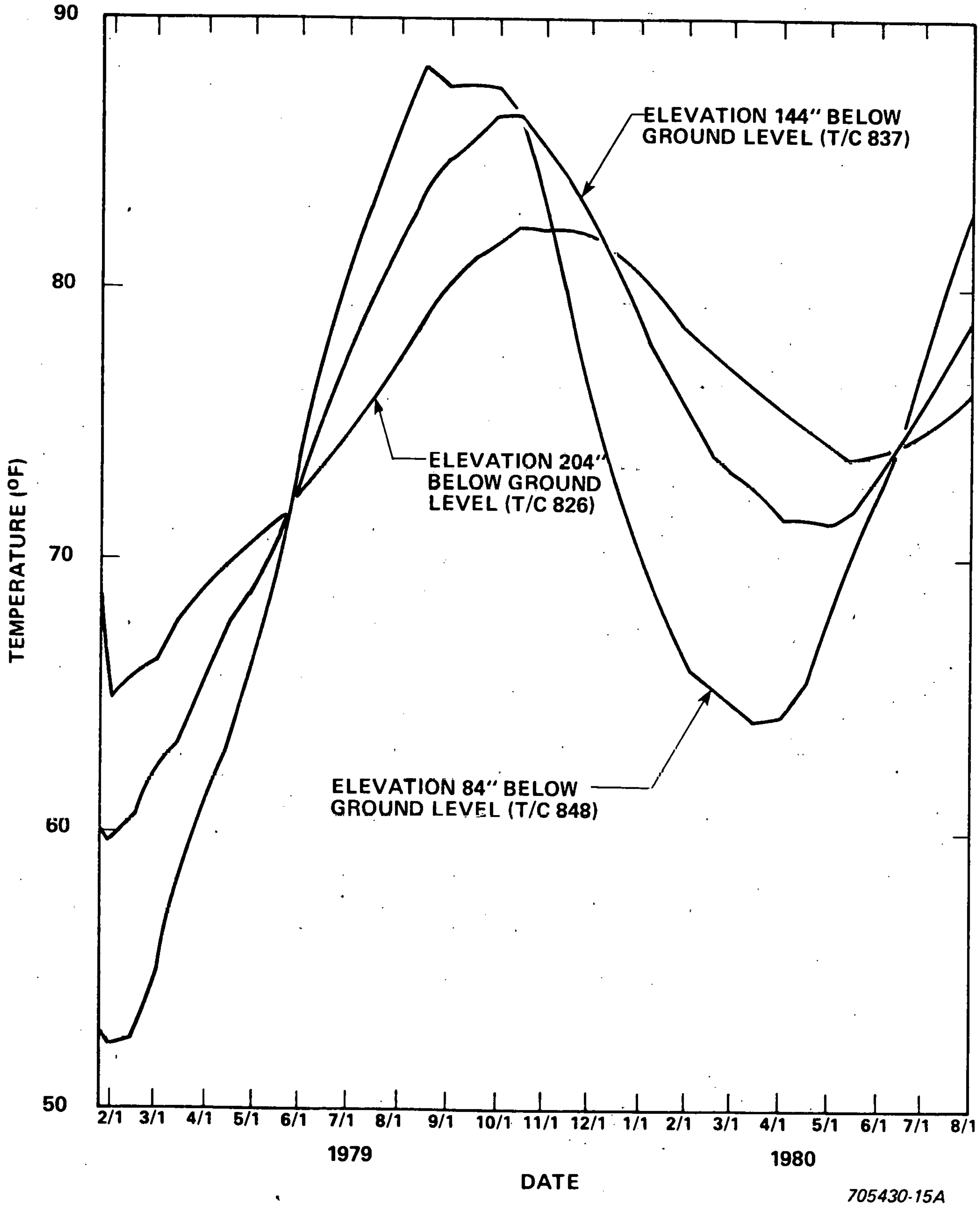

Figure 25. Drywell 3 Soil Temperature Distributions

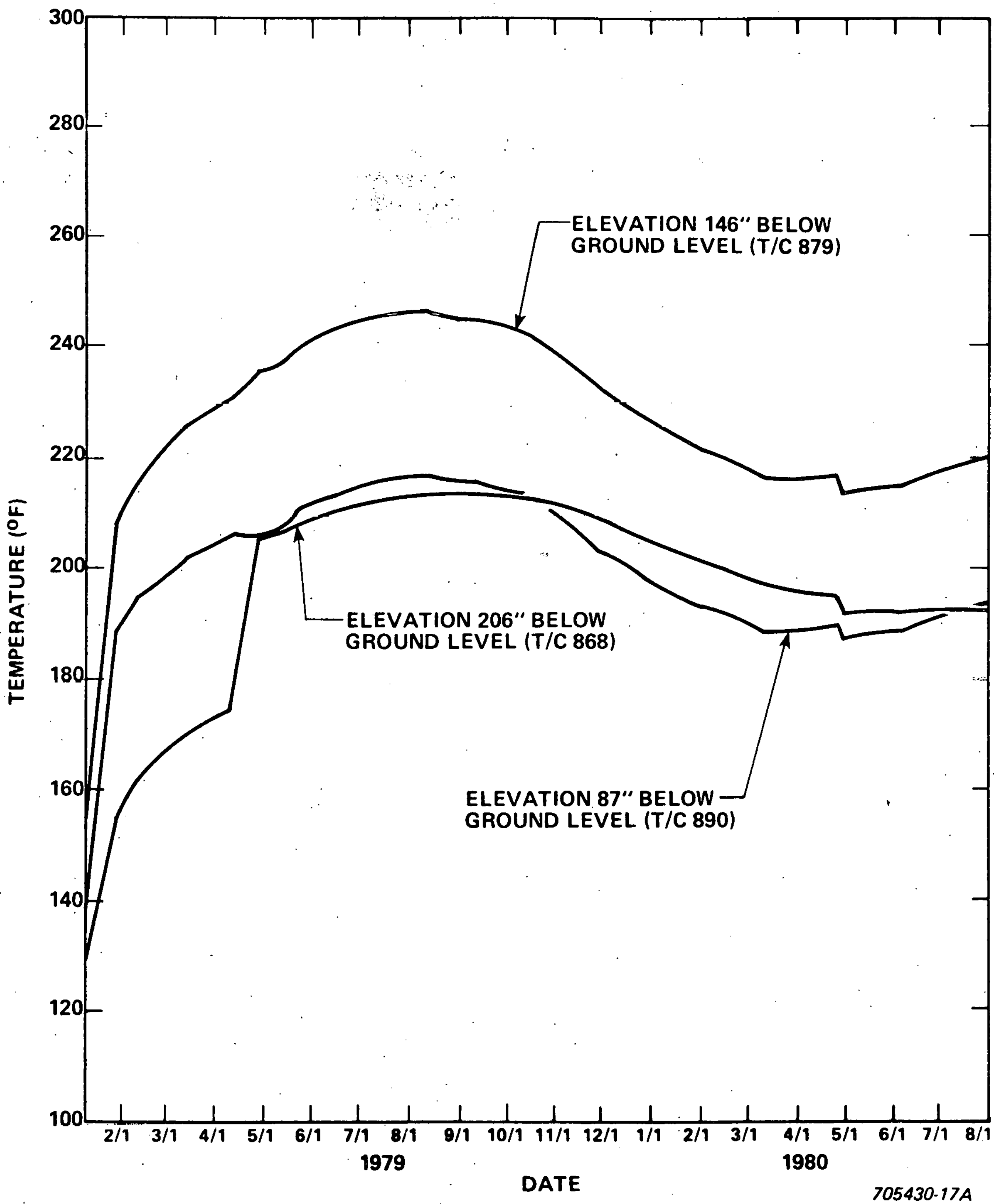

Figure 26. Drywell 5 Canister Temperature Distributions

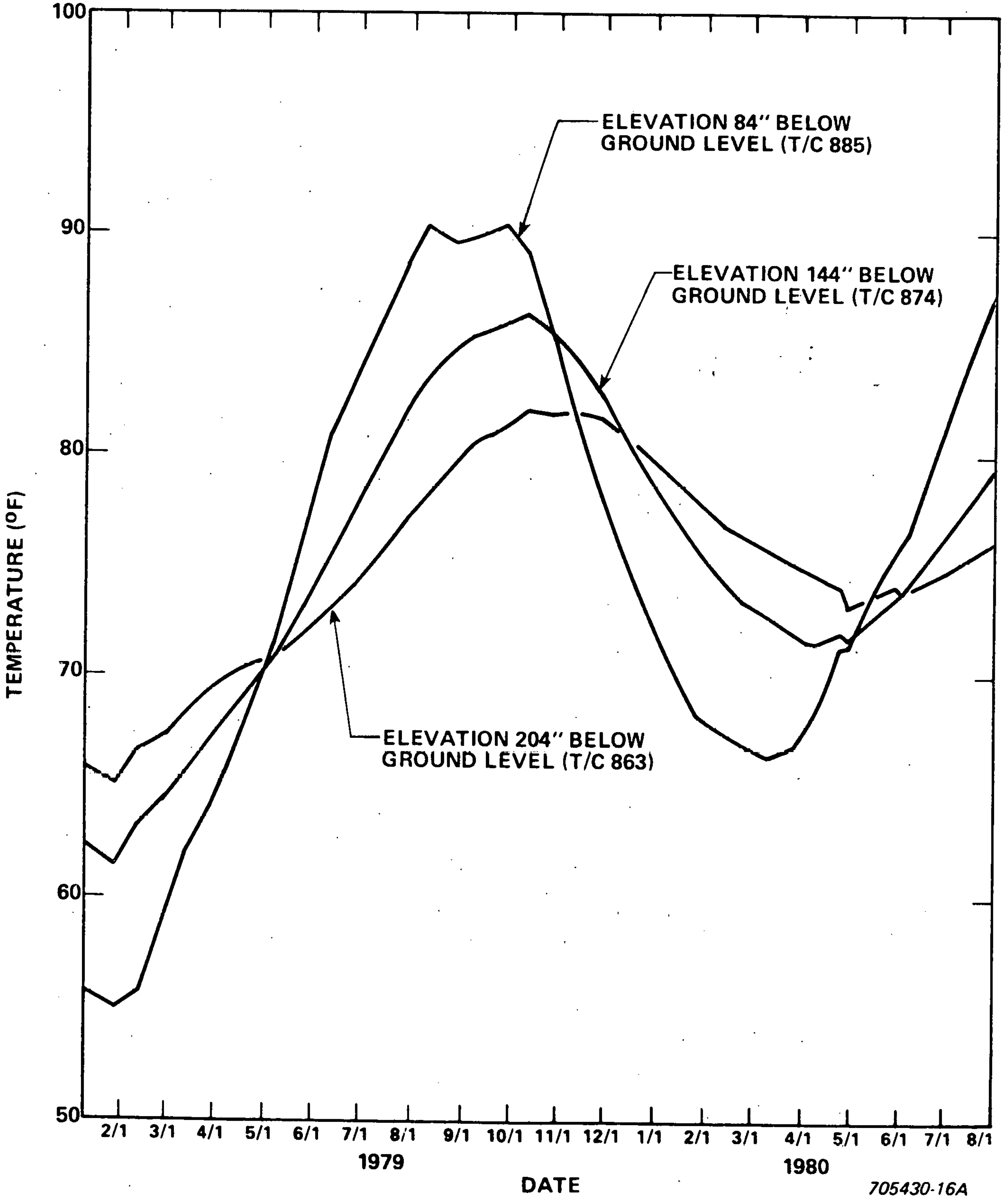

Figure 27. Drywell 5 Soil Temperature Distributions

Figures C-1 to C-12 show plots of all the temperature data measured for both drywells. Figures C-1, C-2, and C-3 show sets of canister, liner, soil, and Reference Well temperature data for the top, middle, and lower thermocouple levels, respectively, for Drywell 3. Figures C-6, C-7, and C-8 show the same data for Drywell 5. Figures C-4 and C-5 present the canister temperatures measured at depths of 116 and 176 inches for Drywell 3 and Figures C-9 and C-10 present the same data for Drywell 5. Figures C-11 and C-12 show all the canister and liner temperature data in the form of axial profiles for Drywell 3 and Drywell 5, respectively. It should be noted that these data plots were generated by a computer code which provided straight lines between data points (except Figures C-11 and C-12) for data at two week intervals. Variations in measured data plotted, except for that from the thermocouple positioning change previously described, are suspected to be due to infrequent periods of heavy rainfall which occurred during the test period.

5.3 ACCURACY OF TEST DATA

Inaccuracies in test data recorded could be a result of thermocouple measurement inaccuracy and/or the position of the thermocouples inside the canister and liner tubes. The accuracy of the ungrounded Type K thermocouples utilized in the Isolated Drywell Test is typically ± 2°F based on calibration data.

An examination of the Fuel Temperature Test data was made to evaluate the effect of having canister thermocouples inside the 0.75 inch by 0.75 inch angle instrumentation tubes. Four thermocouples were spaced around the Fuel Temperature Test canister at two separate elevations corresponding to 40 inches above and 30 inches below the fuel assembly active fuel midplane level. Two of the four thermocouples were attached directly to the canister and two were inserted into instrumentation tubes identical to those on the drywell canister (see Reference 3). Thermocouple data recorded for all of the helium backfill tests run during Fuel Temperature Testing showed temperatures inside the tubes were lower than those on the canister surface by an average of between 2°F and 6°F. This is expected to be the average inaccuracy in canister temperature measurements due to the instrumentation tubes. For the liner thermocouples, the close proximity of the thermocouple tube to the liner wall and the geometry of a 0.062 inch thermocouple diameter inside a 0.083 inch inside diameter tube is expected to yield a smaller inaccuracy than for the canister thermocouples.

The overall test data recorded are judged to be within about 8°F of the actual canister temperatures, and within about 4°F of the actual liner and soil temperatures.

5.4 POST-ISOLATED DRYWELL TEST OBSERVATIONS

In addition to the Isolated Drywell Test described in this test report, other drywell tests have been planned. An isolated drywell test using a higher decay heat level fuel assembly and a drywell thermal interaction test using three of the four PWR fuel assemblies utilized in the SFHPP 1978 Demonstration were scheduled to begin in September, 1980. To accommodate these two tests, it was decided to rearrange the two existing drywells so that the canister assembly in Drywell 3 would be placed in Drywell 2, and the canister assembly in Drywell 5 would be placed in Drywell 3. Drywell rearrangement activities marking the end of the Isolated Drywell Test with 1 kW fuel assemblies occurred during the first week in August, 1980. Several observations which were made relative to the condition of Drywells 3 and 5 are discussed in the following paragraphs.

Each drywell was inspected both before and after the two canisters were removed. Once the drywell covers were removed, it was noted that much of the epoxy grout placed above the concrete pad had cracked and that there was a lack of adhesion to the concrete as shown in the photographs in Figures A-16 and A-17. In addition, both of the drywell cover gaskets were uneven and not flat enough to seal. The cover gasket for Drywell 3 is shown in Figure A-18. The annulus around each liner showed quite a bit of sand and small concrete chunks as shown in the photograph in Figure A-19 for Drywell 3. Both annuli also showed evidence of water having been present.

To allow handling of the canister assemblies, the drywell liner thermocouples had to be removed. Problems were experienced in removing the Drywell 5 thermocouples and four thermocouples were broken off. Those thermocouple portions removed showed sheath damage in the form of cracking caused by some type of corrosion. After the canisters were removed, a visual inspection of the drywells showed several inches of water at the bottom of both liners. Both liners also had surface rust and evidence of water having run down the liner lower section. It has been postulated that the water entered the drywell annulus from under the cover gasket or was driven up through the grout/concrete pad annular gap by the drywell heat source; that once inside the annulus, the water could condense on the drywell cover and drip onto the shield plug; and that the water could run down the shield plug/liner gap and into the liner/canister annulus.

The overall effects of the water in Drywells 3 and 5 have not been completely evaluated. However, based on the thermal data results from the two isolated drywells and the amount of water present, water should have had little effect on the drywell and soil temperatures. Water vapor in the annulus between the canister and liner would be expected to increase the heat transfer between canister and liner which may cause the canister temperatures to be slightly lower than they would have been if the drywells were dry. Since the majority of the resistance to heat flow from the fuel assembly to the surrounding atmosphere is due to the low thermal conductivity of the soil around the drywell, the effect of water vapor inside the drywell should be minor. Water in the liner thermocouple tubes could have affected the temperature readings and could have caused the failure of thermocouple 828. Examining the overall temperature versus time curves for both sets of drywell liner thermocouples shows that none of the liner temperature readings exceeded 203°F, which is below the boiling point of water at E-MAD. In addition, the liner temperature transient curves do not show any unexpected changes which could have been caused by water in the liner tubes. Therefore, the water present in the two isolated drywells was not expected to have influenced the overall drywell and soil temperature data presented in this report.

A relatively simple design solution to prevent water from getting into drywell liners and liner thermocouple tubes during future drywell testing has been proposed. The engineered "fix" includes a sealing cover to be placed at the top of each liner and some waterproof sealing compound to be installed at the top of the liner thermocouple tubes. These two items would prevent water which gets into the drywell concrete pad annulus from entering the liner and/or the thermocouple tubes.

The above discussed Post-Isolated Drywell Test observations illustrate the need and benefits gained from demonstration tests performed prior to any large-scale spent fuel dry storage activity. The evaluation of all of the observations should lead to a better drywell design which can be utilized in large-scale dry storage.

6.0 THERMAL ANALYSIS MODEL

6.1 ANALYSIS PURPOSE AND METHOD

The purpose of the drywell thermal analysis is to continue developing a thermal model for the isolated drywell configuration and to demonstrate that the model can produce satisfactory predictions of soil and drywell temperatures. Once that goal is achieved, the model and/or the modeling techniques may be applied with increased confidence at E-MAD to spent fuel storage configurations such as the fueled drywells, the Surface Storage Casks, in-line drywells, and arrays of drywells.

Drywell test predictions and data analyses have been performed using the TAP-A digital computer program, Reference 6. TAP-A was developed at AESD and has been used extensively during the past ten years at that division and at the Westinghouse Advanced Reactors Division. It is a finite difference program which calculates steady-state and transient temperature distributions in a configuration of solid materials utilizing the radiation, convection, and conduction modes of heat transfer. To apply the program, a twoor three-dimensional configuration is divided into elements called nodes. The nodes, which are connected to each other by heat transfer links having lengths and cross-sectional areas, can have time and temperature dependent thermal properties (density, heat capacity, and conductivity) as well as time dependent heat generation rates. Outer surfaces are assigned time dependent temperatures or convective heat transfer coefficients that may also vary with time or with a surface-to-ambient temperature differential.

6.2 MODEL DESCRIPTION

6.2.1 MODEL SIZE AND BOUNDARY CONDITIONS

The TAP-A nodal model applied to both Drywell 3 and Drywell 5 is depicted in Figures 28 and 29, and the nodes representing each test component are identified in Table 3. The model is two-dimensional in the r and z directions

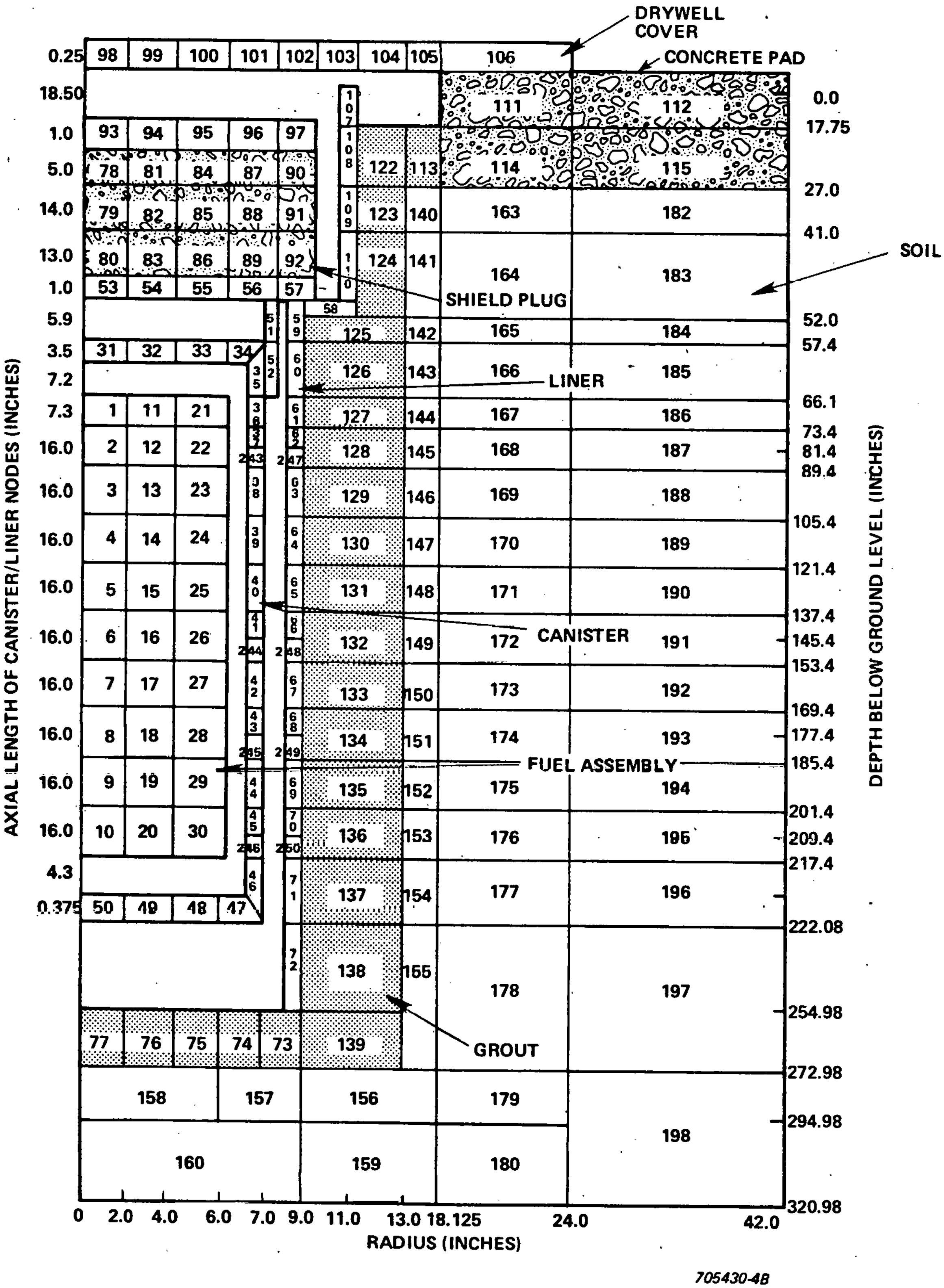

Figure 28. Near-Field Isolated Drywell Thermal Model

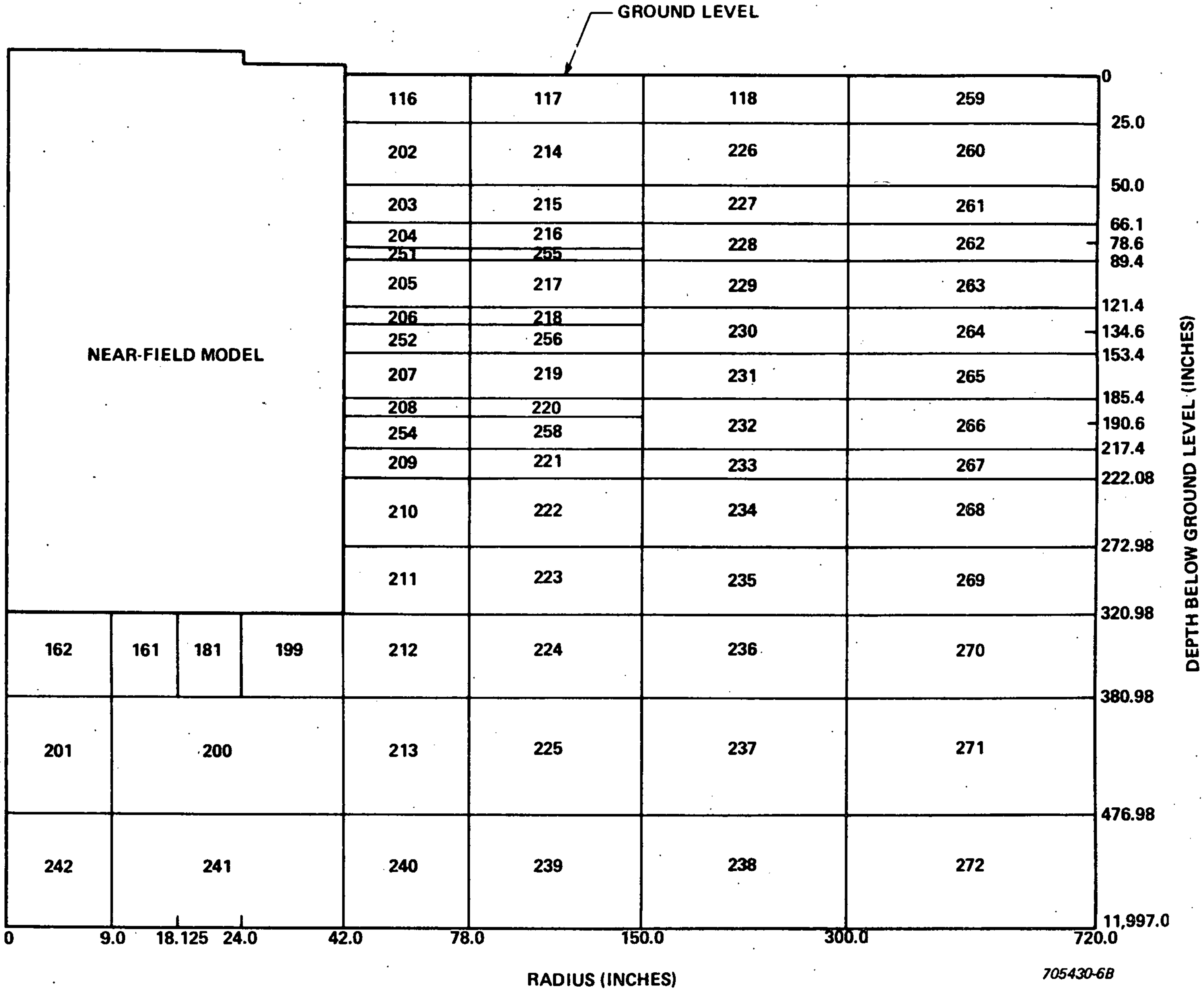

Figure 29. Far-Field Isolated Drywell Thermal Model

TABLE 3

TAP-A MODEL NODE DESCRIPTION

Nodes	Test Components
1-30	Fuel Assembly
31-50	Canister
51-52	Shield Plug Skirt
53-57	Shield Plug Bottom Plate
58-72	Liner Lower Section
73-77	Grout at Bottom of Liner
78-92	Concrete in Shield Plug
93-97	Shield Plug Top Plate
98-106	Drywell Cover Plate
107-110	Liner Upper Section
111-112	Concrete Pad
113	Grout
114-115	Concrete Pad
116-118	Soil
122-139	Grout Between Liner and Soil
140-242	Soil
243-246	Canister
247-250	Liner Lower Section
251-272	Soil

(radius and depth, respectively) with no variations circumferentially. With several minor exceptions, it is identical to the Soil Temperature Test thermal model described in Reference 2. The exceptions pertain to the depth of the top of the shield plug/ canister assembly relative to the ground level (18.5 inches below ground level in Drywell 3 and Drywell 5 versus 2.5 inches above ground level in the Soil Temperature Test) and to the slight rearrangement of nodes to calculate temperatures at drywell thermocouple locations. The rearrangement resulted in several nodes being eliminated which explains the reduction in node number from 289 for the Soil Temperature Test to 272.

Drywells 3 and 5 were treated as being isolated. This assumption is based upon Soil Temperature Test results where ambient soil temperatures were found to exist at all radii beyond 20 feet, even while operating at 2 kW. Therefore, Drywells 3 and 5, separated by 50 feet with spent fuel decay heat levels at approximately 1.0 kW or less, were expected to have no thermal influence on each other. This assumption is further verified by the similarity in soil temperature data from Instrumentation Wells E and H for Drywell 3 and from Instrumentation Wells A and D for Drywell 5 (see Figure 15). The drywell thermal model extends to a radius of 60 feet, which is given an adiabatic boundary condition. The assignment of the model radius is arbitrary and it could be given any value greater than the radius at which the radial temperature gradients are expected to be zero (20 feet based on Soil Temperature Test results). The model lower boundary is located at a depth of 1000 feet which approximately corresponds to the E-MAD water table depth. A constant 70°F boundary condition is applied at that boundary simulating the water table's constant temperature heat source and sink effect.

6.2.2 HEAT TRANSFER MECHANISMS

Fuel Assembly/Canister Model

Heat transfer from the fuel assembly (nodes 1 to 30) to the canister occurs by conduction, convection, and radiation but was modeled in this analysis only by conduction. Since TAP-A has no mass flow capability, natural circulation within the canister, as well as convection heat transfer effects, cannot be calculated. However, since the main objective of the analysis was the prediction of temperatures from the canister outward, this can be accomplished with a simplified fuel/ canister model. The model calculations applied an effective thermal conductivity to the fuel zone that approximates all three heat transfer modes. This effective conductivity versus temperature was calculated so that it produces reasonable fuel assembly temperatures in the 300°F to 800°F range. This was necessary for proper drywell transient response. The fuel assembly heat capacity is modeled accurately to also produce a proper transient response. The model was supplied with an accurate estimate of the fuel assembly mass of 1450 pounds and a specific heat capacity of 0.066 Btu/lb-°F which represented, in proper proportions, the heat capacities of the Zircaloy clad, the UO_2 fuel and the stainless steel nozzle plates.

Air Filled Spaces

Heat transfer across air filled spaces (between the canister and liner, the canister lid and shield plug, the shield plug and cover plate, and the shield plug and upper liner) are modeled considering radiation and a combination of conduction and convection. Radiation is included in the analysis by supplying shape factors that depend upon emissivities and areas of the radiating surfaces. For convection and conduction, correlations are available that allow both heat transfer modes to be handled in a single calculation. Between the canister and liner side walls, for example, convection and conduction were simulated using the "effective conductivity" method described in Reference 7 (pages 330, 331). For an annulus thickness of 1.625 inches and a temperature differential of 50°F, the effective thermal conductivity is 1.5 to 3 times larger than the conductivity of air for temperatures between 200°F and 600°F. For narrow annuli, such as that between the shield plug and upper liner, convection is suppressed, conduction dominates, and the correlation reduces to air's thermal conductivity. Convection effects were also assumed to be negligible in the region below the canister assuming air at that location would tend to stratify.

Convection should be more significant above the canister between the canister lid and shield plug. A correlation presented in Reference 8 (page 182, Eq. 7-9d) predicts an effective thermal conductivity across the 5.9 inch gap of approximately 0.2 Btu/hr-ft-°F. This assumes a temperature differential of 60°F, based on Soil Temperature Test data taken during 1.0 kW operation and is 12 times larger than air's thermal conductivity at 200°F. The difference is due to free convection.

Convection was ignored between the shield plug and drywell cover plate. Those effects are probably appreciable during the nighttime hours and winter months. However, they were neglected since the result of averaging them with time would be very uncertain and, since heat transfer rates through the shield plug are small compared to the total heat generation rate, their omission will have a very small effect on the analysis. The same is probably true for any of the canister end effect calculations and, therefore, most attention was given to the canister/liner side wall model.

Ground-to-Ambient Heat Transfer

The Soil Temperature Test analysis, reported in Reference 2, considered solar effects at ground level as well as convection to and from the ambient air. Further work has confirmed, however, that the ground level model can be simplified, with satisfactory results, by equating air and surface temperatures and ignoring the solar effects. This approach has been applied throughout the drywell analyses; the air temperatures used are monthly temperature averages taken from E-MAD site weather data and are provided in Table 4. This approach is confirmed in that the model predicts seasonal soil temperature variations with good accuracy and, at any particular time, Reference Well temperatures are predicted to within 5°F of the measured values. The ground-to-ambient heat transfer model's acceptability is apparent in Section 7.0 where transient soil temperatures at various depths and radii are compared with predictions with favorable results.

TABLE 4

E-MAD SITE OUTDOOR AIR TEMPERATURES - MONTHLY AVERAGES

Month	Temperature (°F)
January	36
February	50
March	55
April	60
May	75
June	82
July	90
August	88
September	80
October	75
November	50
December	35

6.2.3 MATERIAL PROPERTIES

Thermal properties used in the analysis of Drywells 3 and 5 are identified in Table 5 and are identical to those applied in the Soil Temperature Test analysis. The concrete and steel properties are from handbook and textbook sources, while the density and thermal conductivity data for grout and soil were obtained during laboratory tests performed by Holmes and Narver, Inc. The grout conductivity data are plotted in Figure 30. As discussed in Reference 2, the development of a soil thermal conductivity model for use in the drywell analyses was based upon the Holmes and Narver data, but the data were adjusted, mainly at temperatures below 200°F to include additional moisture effects. The resulting conductivity model is shown in Figure 31. The soil conductivity model exhibits a strong temperature dependency due to drying that occurs when temperatures exceed 200°F (the approximate boiling point of water at E-MAD). For Drywells 3 and 5, however, the heat generation rates are low such that predicted soil temperatures were never greater than 160°F. Therefore, throughout the drywell analysis, the soil thermal conductivity value was set at 0.9 Btu/hr-ft-°F. In sandy soils, this corresponds to a moisture content of approximately 5 percent, which is the moisture level detected in E-MAD soil samples during preparations for the Soil Temperature Test (Reference 2).

With this conductivity value, the thermal model predicted liner and soil temperatures accurately during the first four months of drywell testing. Thereafter, however, the model underpredicted the liner temperatures by increasing amounts until, at the end of the test period, the discrepancy was as high as 30°F. This discrepancy was assumed to have been caused by a drying out of the soil around the drywell due to the heat source. The drying effect would decrease the thermal conductivity of the soil and consequently cause the liner and soil temperatures to be higher. To improve the liner and canister predictions, a soil conductivity versus time relationship was derived from the decay heat curve, Figure 12, and measured values of midplane liner and soil temperatures at the 5 foot radius. The resulting relationship is plotted in Figure 32 and was used to obtain the temperature predictions presented herein. It is

TABLE 5

DRYWELL MATERIAL THERMAL PROPERTIES

Material	Drywell Component	Density ρ (lb/ft^3)	Heat Capacity C_p (Btu/lb-°F)	Thermal Conductivity K(Btu/hr-ft-°F)	Source
Concrete	Shield plug, ground level pad	142.0	0.2	1.05	Ref. 9, pp. 4-9, 4-97
Stainless Steel	Canister	490.0	0.11	10.0	Ref. 10, p. 533
Carbon Steel	Liner, drywell cover plate, shield plug can	490.0	0.11	23.0	Ref. 10, p. 533
Grout	Grout	117.0	0.20*	See Fig. 30	
Soil	Soil	105.0	0.25**	See Figs. 31 & 32	

*Value based on dry soil, dry concrete C_p values.

**Dry soil plus 5 percent moisture assumed.

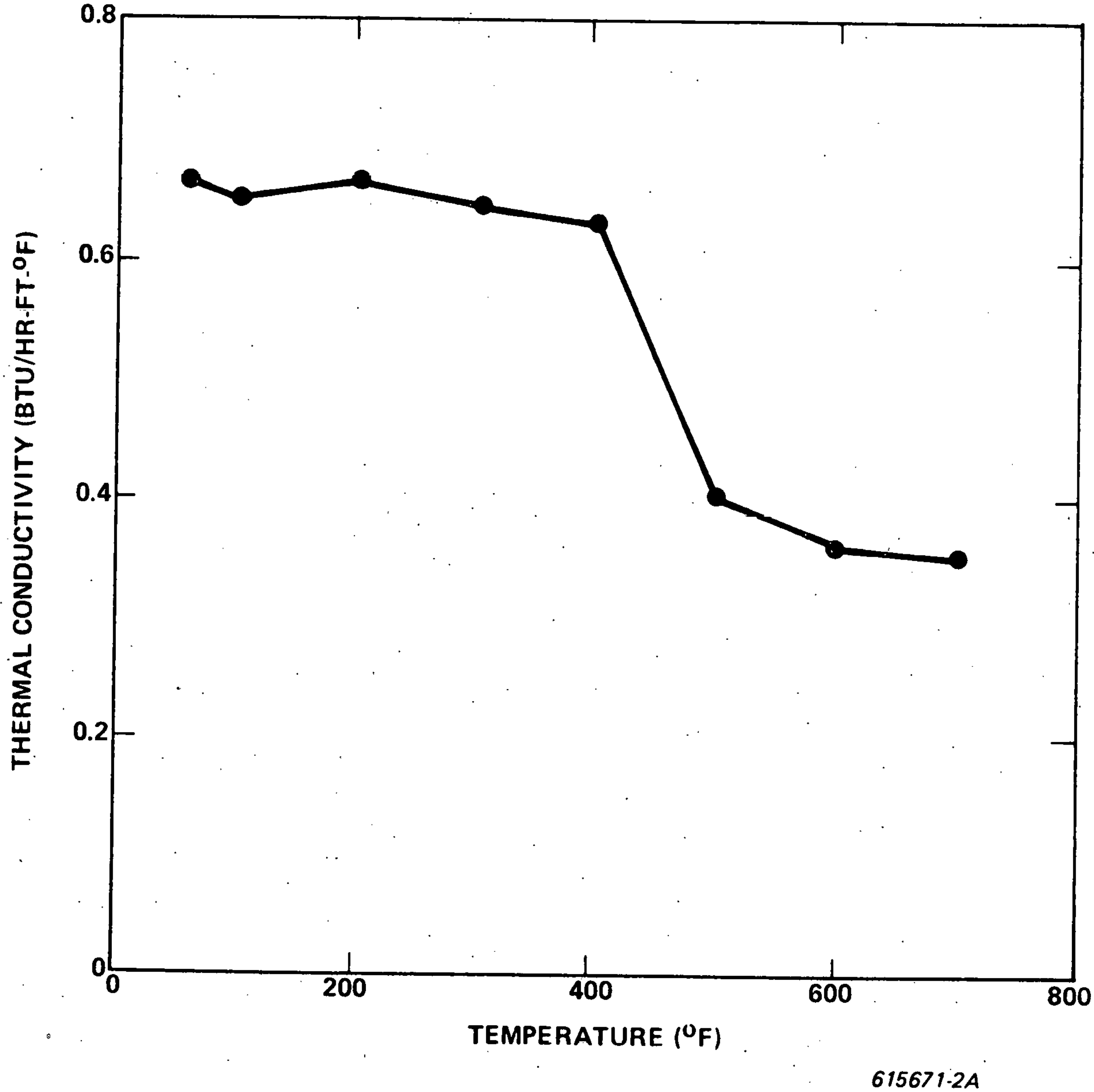

Figure 30. Laboratory Measured Grout Thermal Conductivity

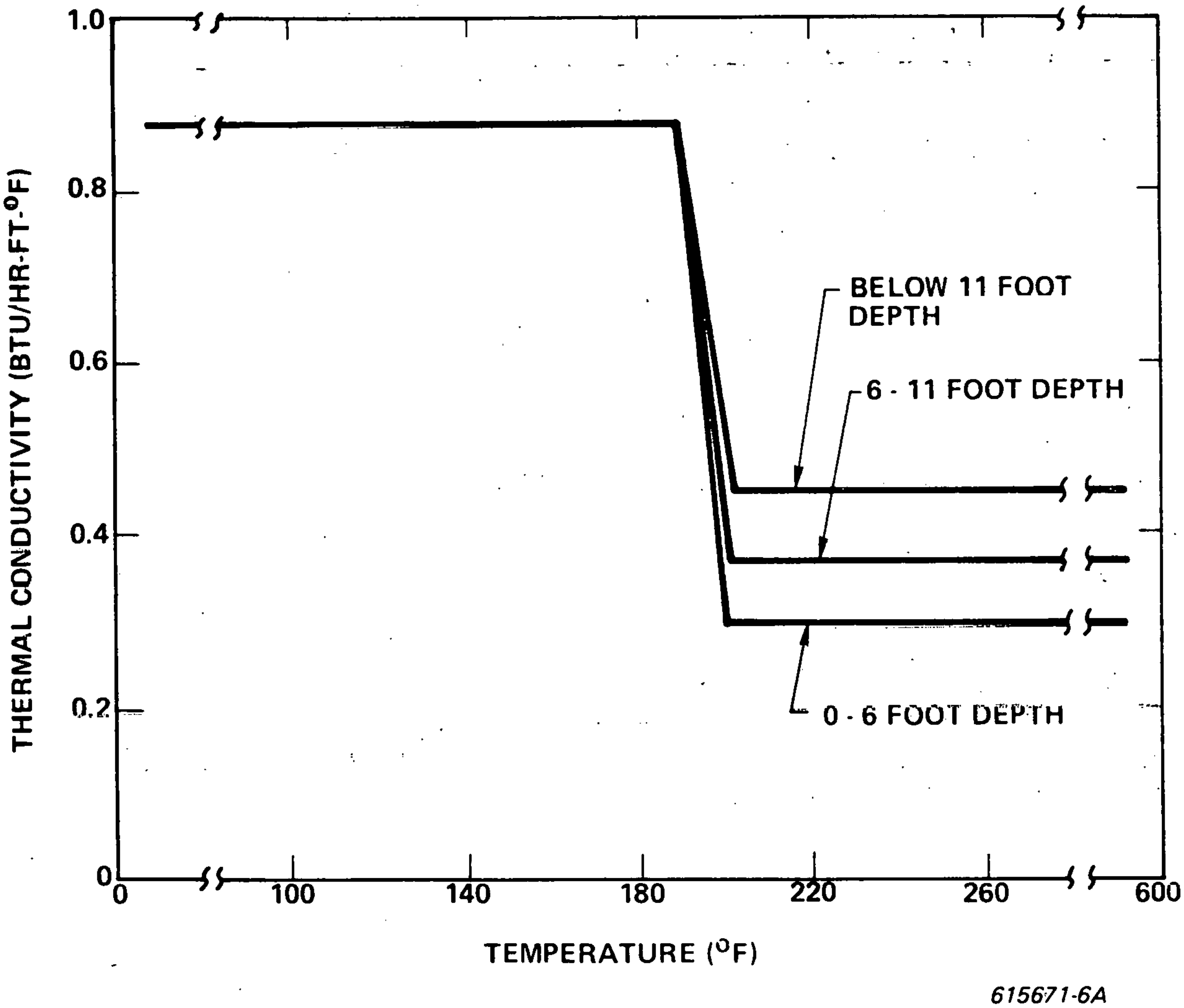

Figure 31. E-MAD Soil Thermal Conductivity Derived From Soil Temperature Test Data (Reference 2)

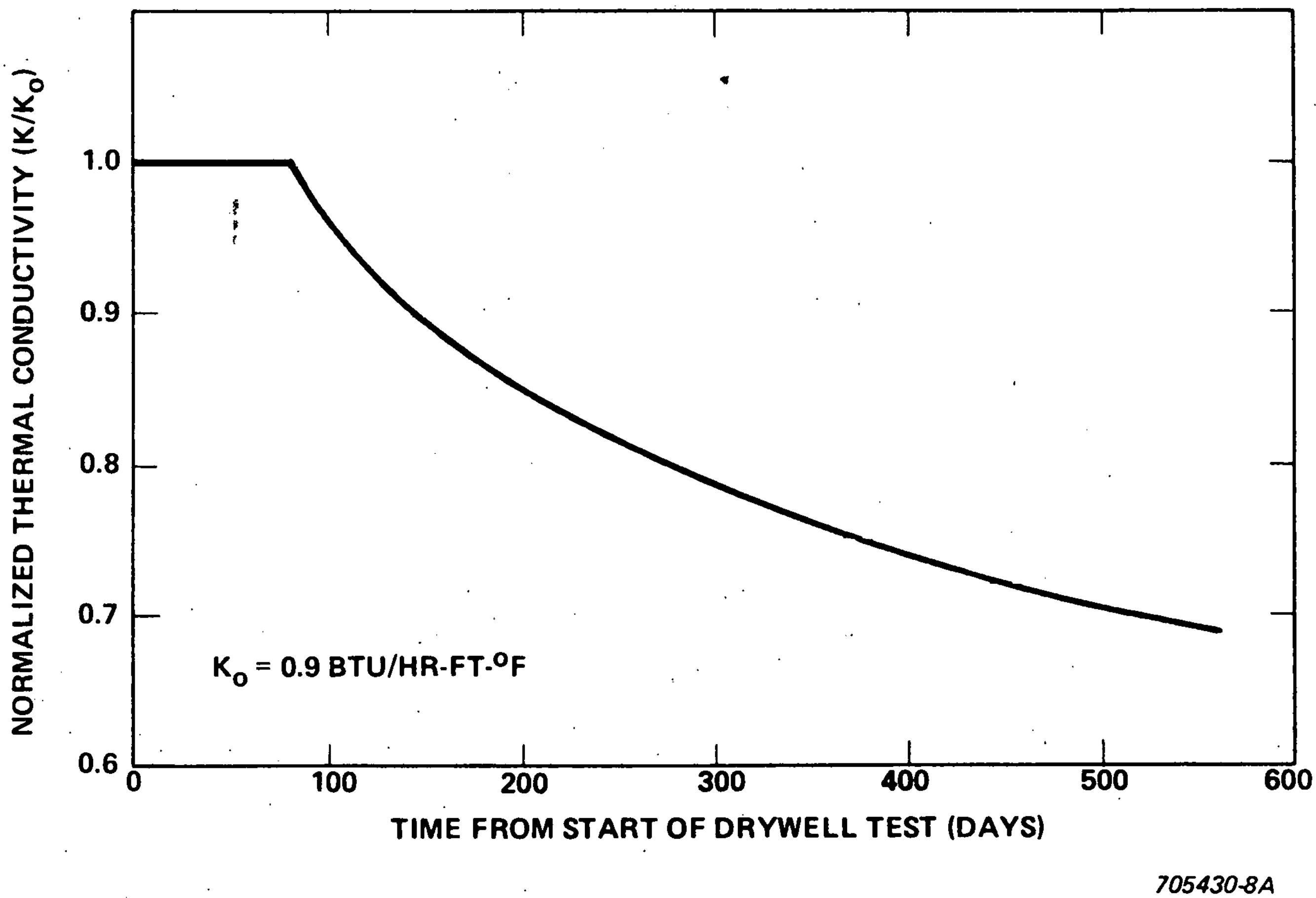

Figure 32. Near-Field Soil Thermal Conductivity Derived From Drywell 5 Decay Heat Levels and Temperature Data

noted that the time dependent conductivity curve was applied only to near-field soil (thermal model nodes 140-155, 163-178, and 182-197); all other soil nodes were assigned a constant thermal conductivity of 0.9 Btu/hr-ft-°F throughout the calculations.

6.2.4 FUEL ASSEMBLY HEAT GENERATION RATE

The thermal analyses applied the transient spent fuel decay heat curve shown in Figure 12. The curve is the result of calculations using the ORIGEN code (Reference 11) that apply to the fuel assemblies installed in Drywells 3 and 5. At emplacement, the decay heat level for the Drywell 5 fuel assembly was about 1.09 kW (January 12, 1979) and about 1.03 kW (Janaury 25, 1979) for the Drywell 3 fuel assembly. The drywell analysis discussed herein assumed all heat was produced in the fuel zone (nodes 1 to 30). The small effect of gamma heating in the system steel structures was neglected. The volumetric heat generation rate was distributed uniformly over the entire fuel zone. This resulted in a cosine shaped heat flux distribution at the canister wall that is similar to that deduced from canister and liner temperature data.

7.0 THERMAL ANALYSIS RESULTS

7.1 MODEL EVALUATION CRITERIA

With proper input, the drywell thermal model should produce accurate temperature predictions for the canister, liner, and near-field soil zone. Accurate canister temperatures are important as input to independent fuel assembly studies (Fuel Temperature Test, etc.) while accurate soil temperatures are important for drywell array and thermal interaction analyses. The most important model evaluation criteria is that it must correctly predict temperature trends and relationships over a range of power levels and as the seasons vary. Satisfying this third criteria will demonstrate that the thermal model correctly simulates the appropriate heat transfer mechanisms and maintains the proper relationships between these mechanisms as system forcing functions and boundary conditions change. As long as the model satisfies this criteria, small differences between predicted and measured temperatures should not be of concern. In most cases, the differences can be recognized and explained based upon inaccuracies in model input, actual test configuration uncertainties and/or heat transfer mechanism uncertainties.

7.2 MODEL/DATA COMPARISONS

In the following sections, thermal model temperature predictions are compared with test data from Drywell 5. Predictions for Drywell 3 are not discussed since they, as well as the Drywell 3 test data, are very similar in trend and magnitude to the Drywell 5 data and calculations.

7.2.1 CANISTER AND LINER AXIAL TEMPERATURE PROFILES

Predicted temperature profiles for the Drywell 5 canister and liner are compared with test data in Figure 33. The curves apply to August, 1979, when the peak canister temperatures occurred. Generally, the test data and predictions are in good agreement. This is an indication that the heat transfer model for the canister/liner region is satisfactory, and also that for a helium-filled

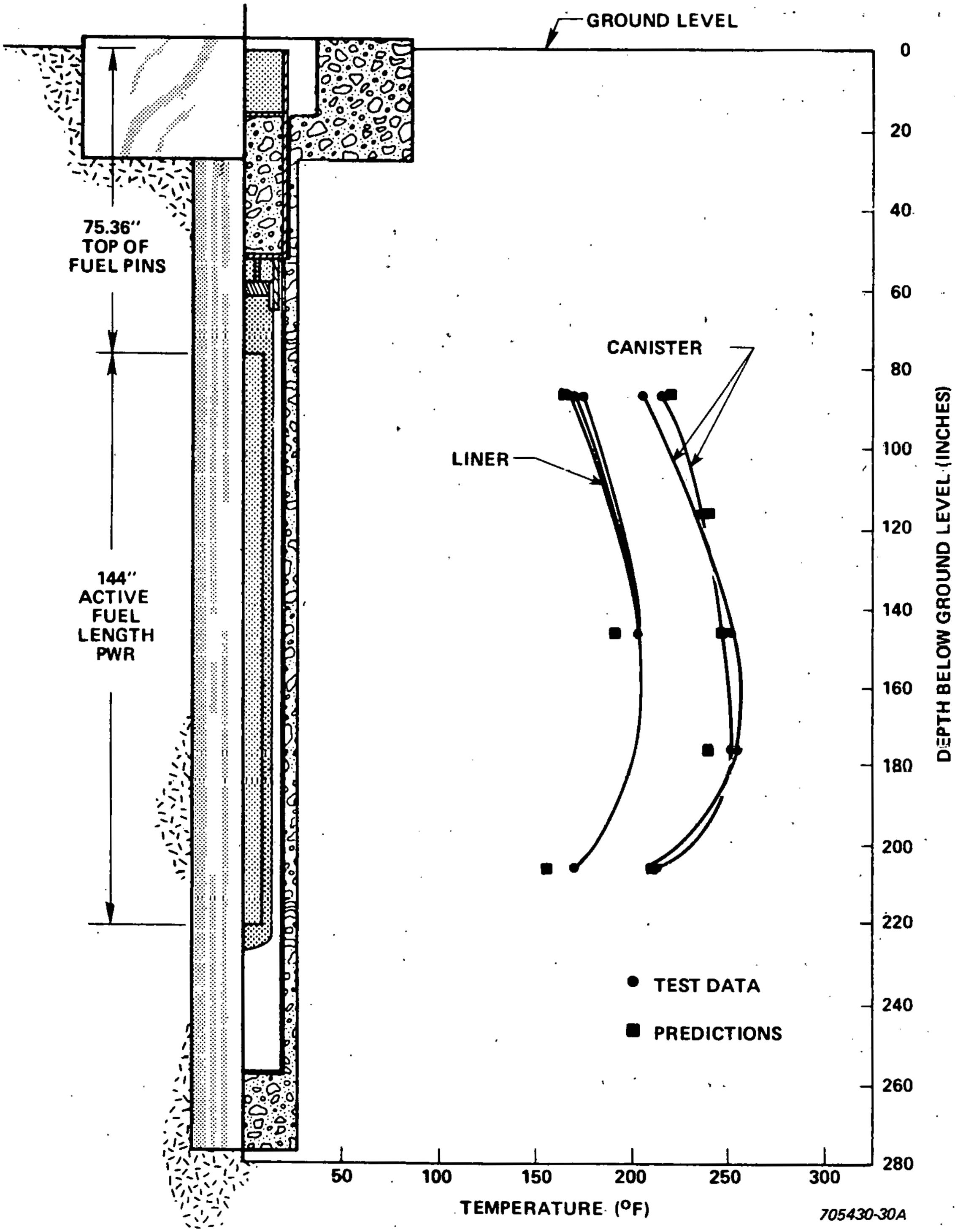

Figure 33. Drywell 5 Test Data and Predictions Comparison of Canister and Liner Axial Temperature Profiles

canister, the fuel assembly can be represented as a uniform heat generating zone. With an air-filled canister, as discussed in Reference 2, it was necessary to skew the heat generation towards the top of the canister to account for the heat redistributing effects of natural circulation within the canister and its impact on the predictions of canister, liner, and soil temperature at elevations near the canister ends. Thus, as noted in Reference 2, analyses of air-filled canisters should include a more detailed model that includes natural circulation. With helium, circulation effects are apparently not so significant, as evidenced by the results of the present analysis, and the simpler canister model with no circulation is suitable.

7.2.2 TRANSIENT CANISTER, LINER, AND SOIL TEMPERATURES

Measured and predicted drywell temperatures are plotted as functions of time in Figures 34 to 38. Each figure applies to a specific instrument elevation and includes all test data recorded at that elevation. Comparing predictions with all available data is necessary when, as in several canister and liner cases, the data indicate some circumferential temperature variations. As noted earlier, the variations can be explained by instrument inaccuracies and errors in thermocouple placement; they are not taken necessarily as evidence that canister and liner temperatures actually vary with angular position.

In general, the agreement between the predicted and measured temperatures is satisfactory. In particular, the soil temperature predictions at the 5 and 10 foot radii are very accurate. The correct differential is maintained between them, the amplitude of the seasonal temperature variations shows the correct depth dependency and the temperature traces at the three elevations are correctly phased relative to each other. These observations indicate the soil's thermal conductivity and thermal diffusivity at the 5 and 10 foot radii are modeled properly.

Although the thermal model tends to overpredict the canister/ liner temperature differential, the calculations displayed in Figures 34, 36, and 38 are still reasonably accurate and acceptable. Of most importance is the fact that the

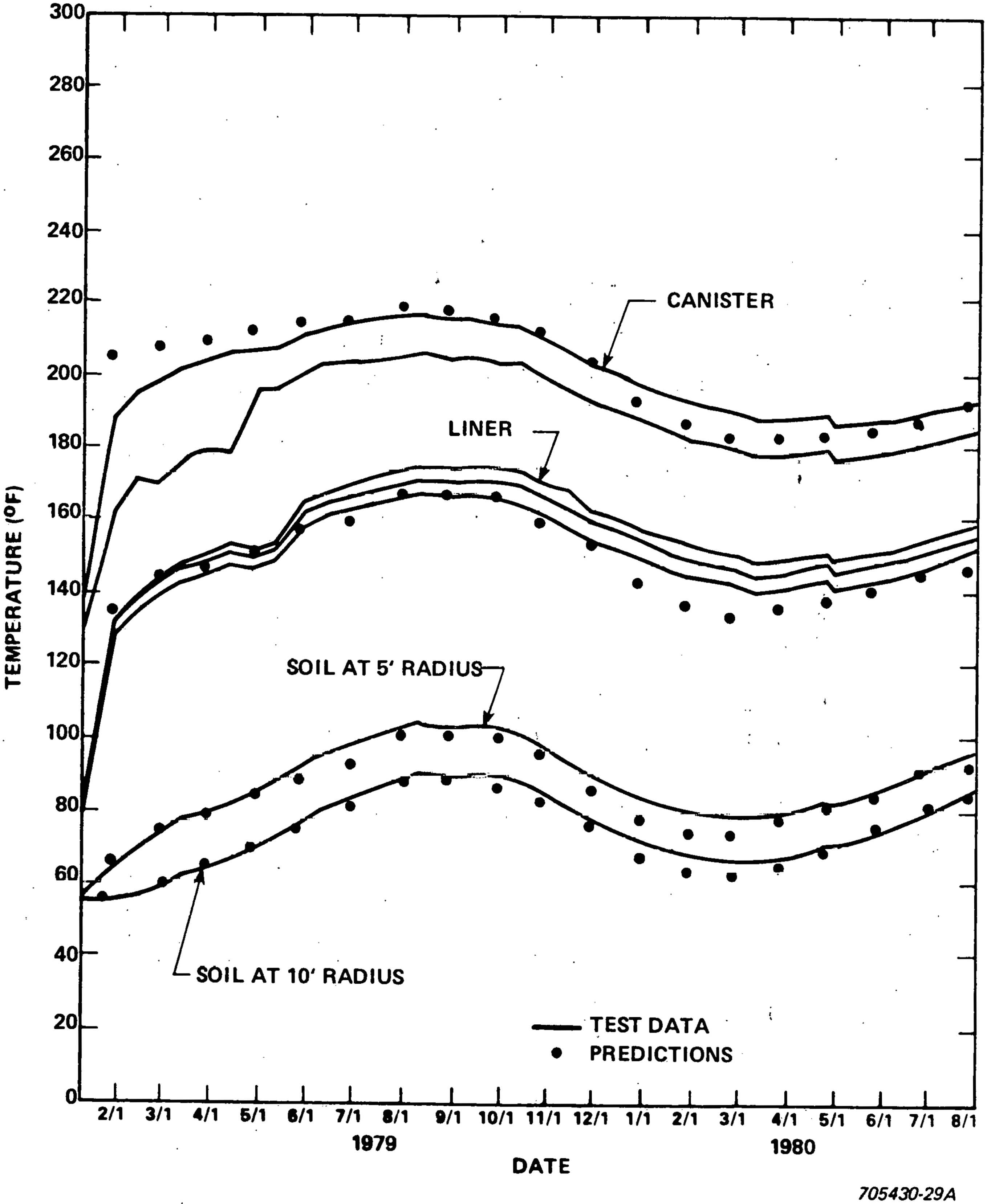

Figure 34. Drywell 5 Test Data and Predictions Comparison at About 85 Inches Below Ground Level

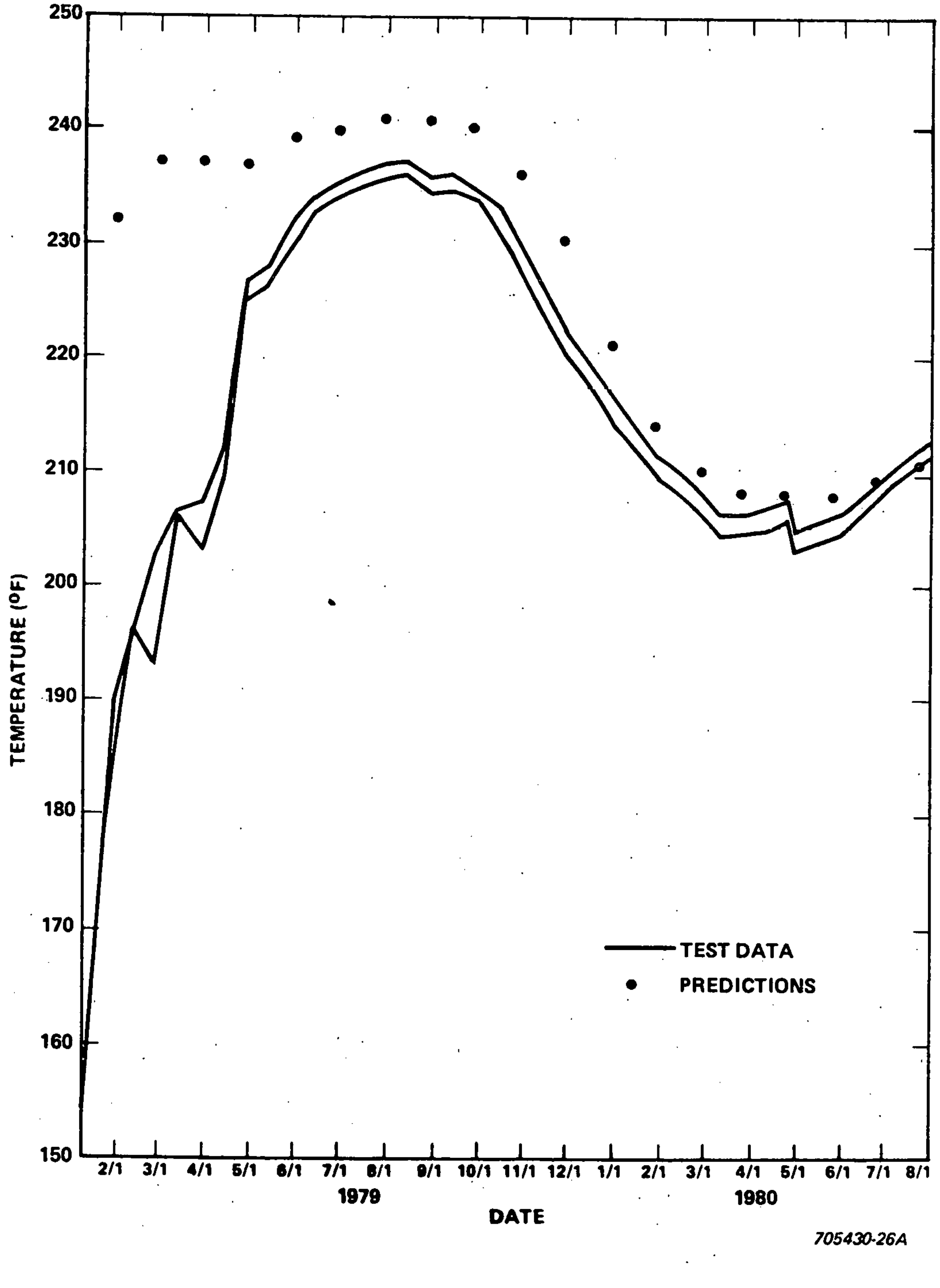

Figure 35. Drywell 5 Canister Test Data and Predictions Comparison at 116 Inches Below Ground Level

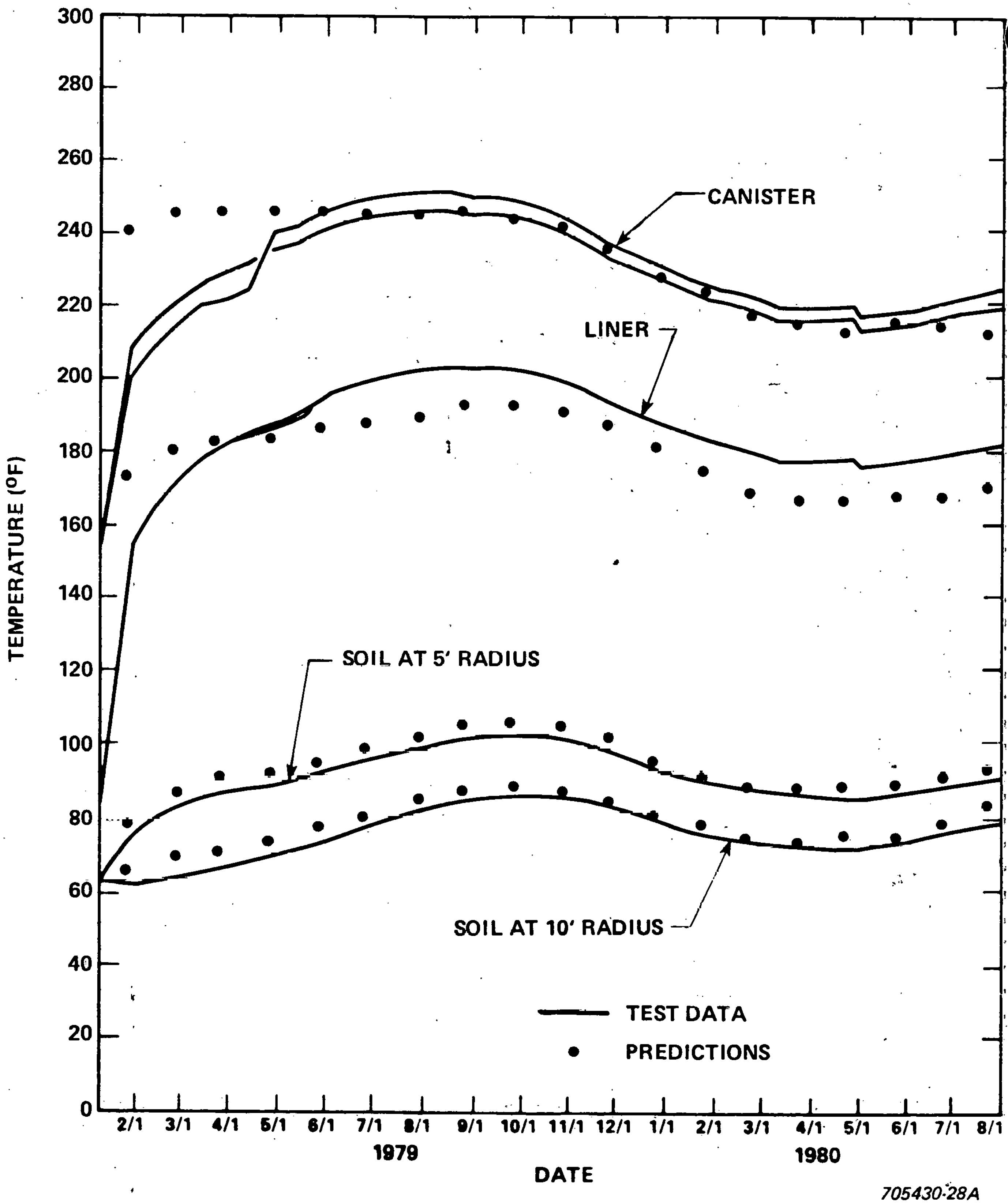

Figure 36. Drywell 5 Test Data and Predictions Comparison at About 145 Inches Below Ground Level

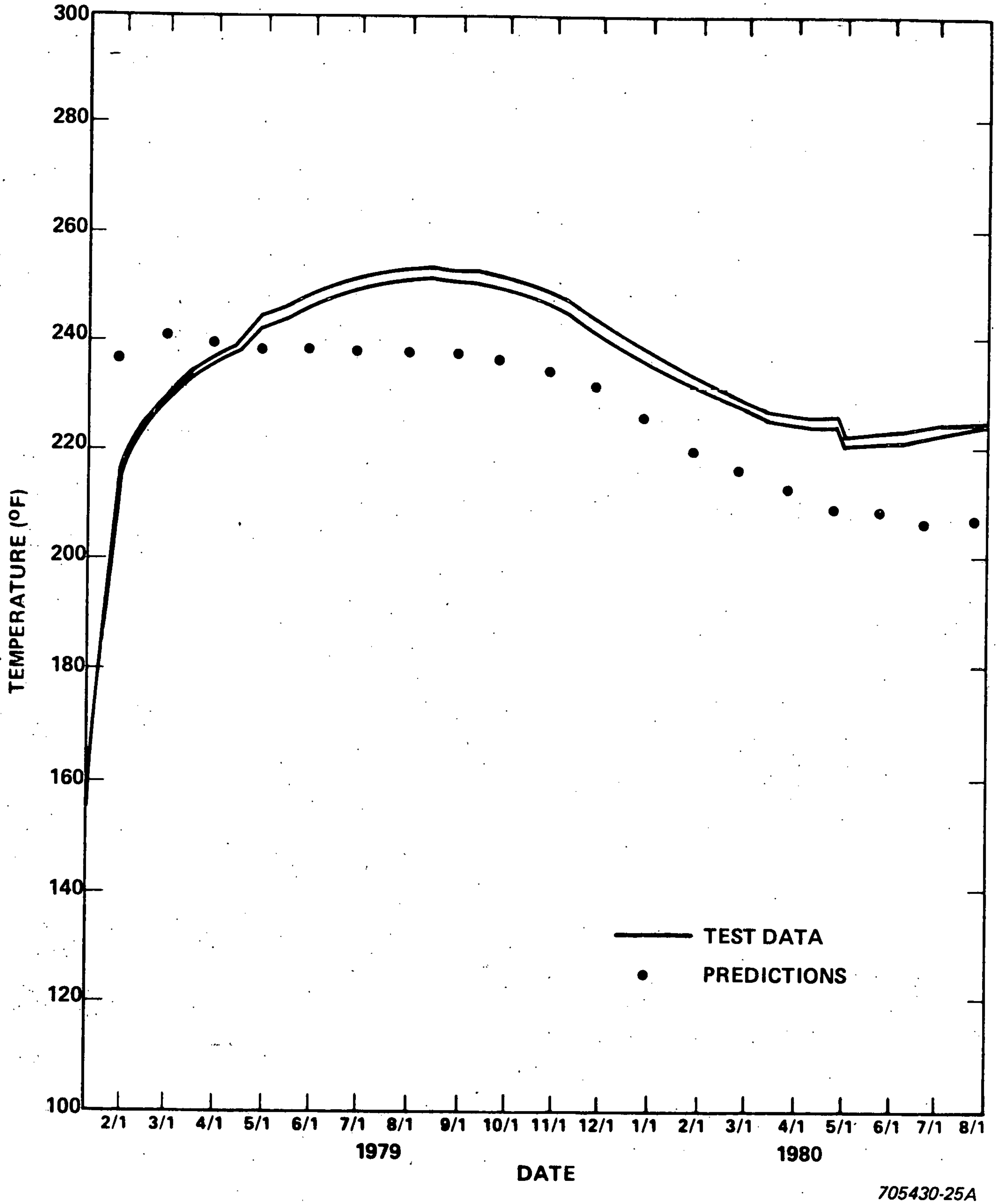

Figure 37. Drywell 5 Canister Test Data and Predictions Comparison at 176 Inches Below Ground Level

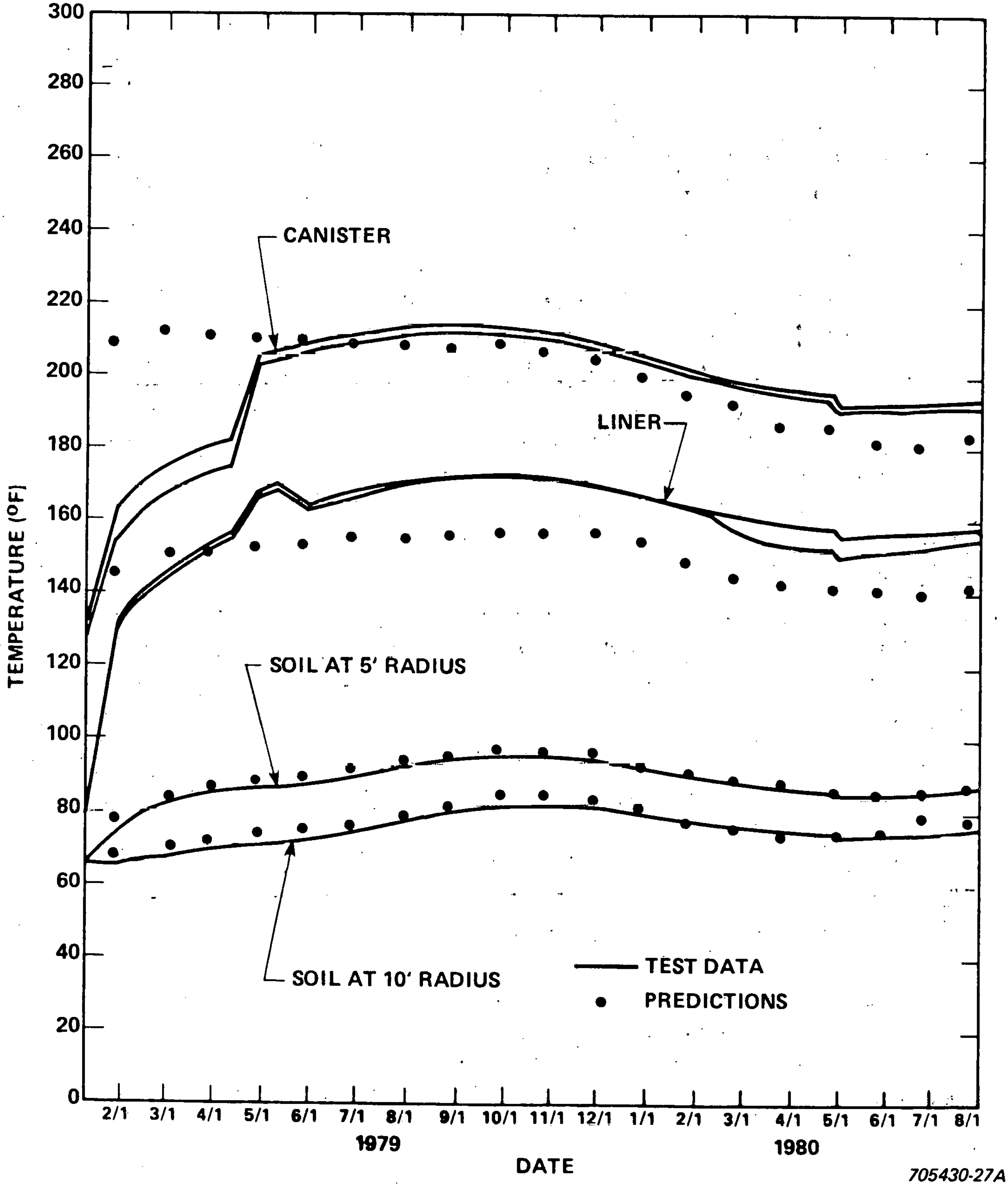

Figure 38. Drywell 5 Test Data and Predictions Comparison at About 205 Inches Below Ground Level

model correctly predicted the tendency of the differential to remain essentially constant over most of the 19 month test period. During that time, the decay heat level decreased from about 1.1 kW to approximately 0.65 kW, and the model's good performance is an indication that radiation and conduction/ convection between the canister and liner are calculated in the proper proportions. The tendency to overpredict the temperature differential is attributed to inaccuracies input to the radiation and conduction/convection models. The accuracy of the "effective conductivity" type of correlation is typically no better than about ± 20 percent while emissivities and reflectivities of surfaces are known with less accuracy. In design analyses, such inaccuracies would be accounted for by estimating them and selecting conservative parameter values for use in the calculations.

An interesting observation in Figures 34, 36, and 38 concerns the fact that the temperature differentials between the liner and the 5 foot radius remained practically constant during most of the test period while, as noted above, the heat load was decreasing by nearly 40 percent. The most probable explanation is that soil in the near-field zone dried gradually as the test progressed. This caused, in turn, a continual reduction in the thermal conductivity of the soil which would result in higher temperature differentials while the heat transfer rate declined.

In Figures 34 to 38, the largest discrepancies between the predicted and measured temperatures occur early in the test period when drywell temperatures were rising rapidly. Regarding the canister and liner, the predicted temperatures rise more rapidly and tend to overshoot the measured values. This is judged to be a heat capacity prediction inaccuracy most likely caused by soil and grout moisture and the inability of the current thermal model to accurately treat moisture evaporation. The inaccuracy is not of great concern since peak temperatures and their times of occurrence are predicted fairly accurately. It is only during the initial heatup period that calculated temperatures tend to be overly conservative.

8.0 REFERENCES

1. NVO-198, "Safety Assessment Document for the Spent Fuel Handling and Packaging Program Demonstration at the Nevada Test Site," U. S. Department of Energy, December, 1978.

2. DOE/NV/00597-2, "Spent Fuel Dry Storage Technology Development: Electrically Heated Drywell Storage Test (1 kW and 2 kW Operation)," Westinghouse Advanced Energy Systems Division, June, 1980.

3. DOE/NV/00597-4, "Spent Fuel Dry Storage Technology Development: Fuel Temperature Measurements Under Imposed Dry Storage Conditions (1 kW PWR Spent Fuel Assembly)," Westinghouse Advanced Energy Systems Division, September, 1980.

4. DOE/NV/00597-3, "Spent Fuel Dry Storage Technology Development: Thermal Evaluation of Sealed Storage Cask Containing Spent Fuel," Westinghouse Advanced Energy Systems Division, August, 1980.

5. HEDL-TME-79-68, "Data Report for the Nondestructive Examination of Turkey Point Spent Fuel Assemblies B02, B03, B17, B41, and B43," Hanford Engineering Development Laboratory, April, 1980.

6. WANL-TME-1872, Pierce, B. L., and Stumpf, H. J., "TAP-A Program for Computing Transient or Steady-State Temperature Distributions," Westinghouse Astronuclear Laboratory (now Advanced Energy Systems Division), December, 1969.

7. Eckert, E. R., and Drake, R. M., Jr., "Heat and Mass Transfer," Second Edition, McGraw-Hill Book Co., Inc., 1959.

8. McAdams, W. H., "Heat Transmission," McGraw-Hill Book Co., Third Edition, 1954.

9. Mark's Mechanical Engineers Handbook, McGraw-Hill Book Co., 6th Edition, 1958.

10. Kreith, F., "Principles of Heat Transfer," Scranton International Textbook Co., 1958.

11. ORNL-4628, Bell, M. J., "ORIGEN - The ORNL Isotope Generation and Depletion Code," Oak Ridge National Laboratory, May 1973.

APPENDIX A

DRYWELL TEST HARDWARE AND INSTALLATION

This Appendix provides additional illustrations of Drywell Test hardware and installation. Figures A-1 through A-15 show photographs taken during the construction, assembly, and installation of the Drywell Test hardware. Figures A-16 through A-19 show photographs taken during drywell rearrangement activities at the conclusion of the Isolated Drywell Test.

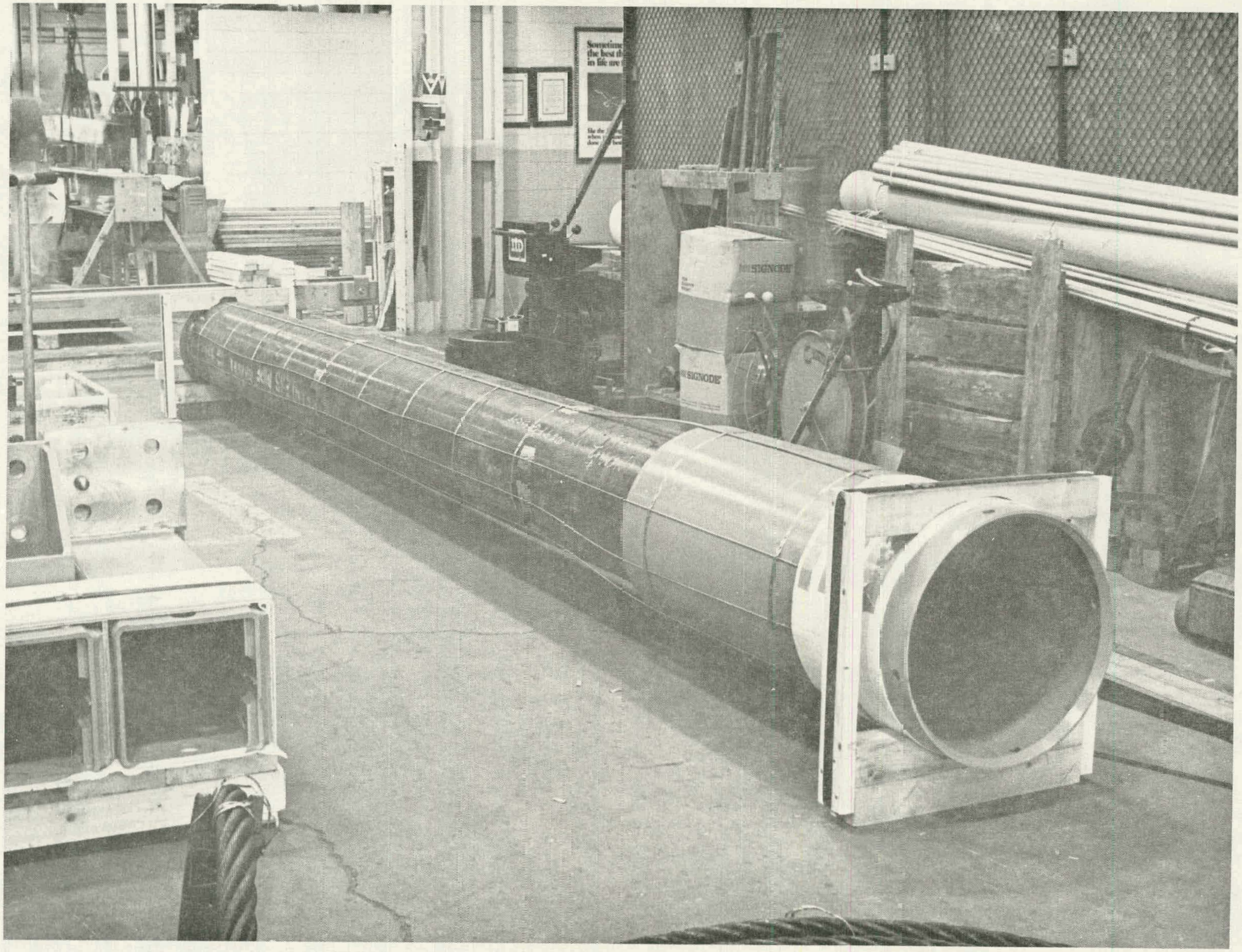

Figure A-1. Drywell Liner Prior to Shipment

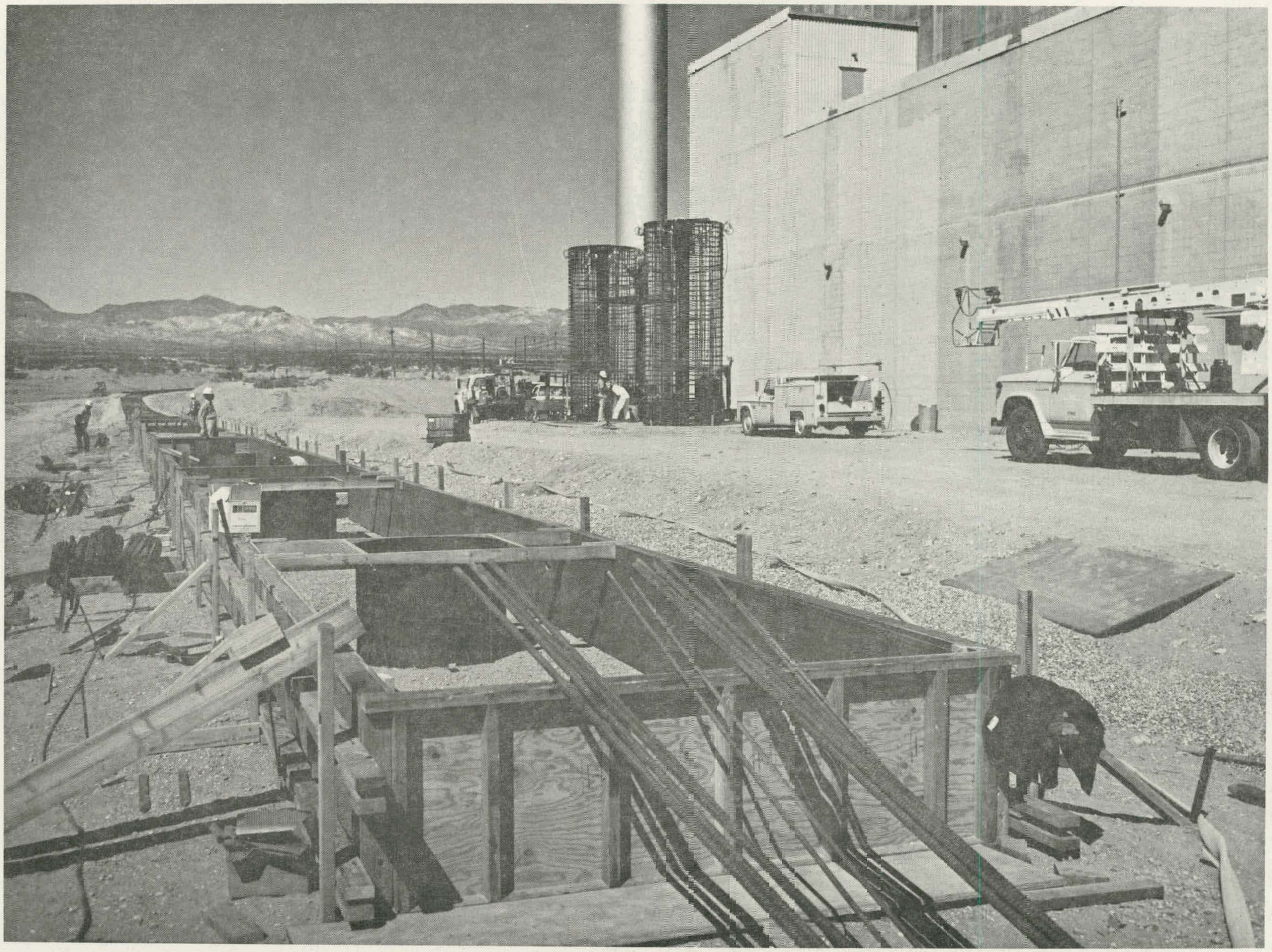

Figure A-2. Drywell Storage Area Construction

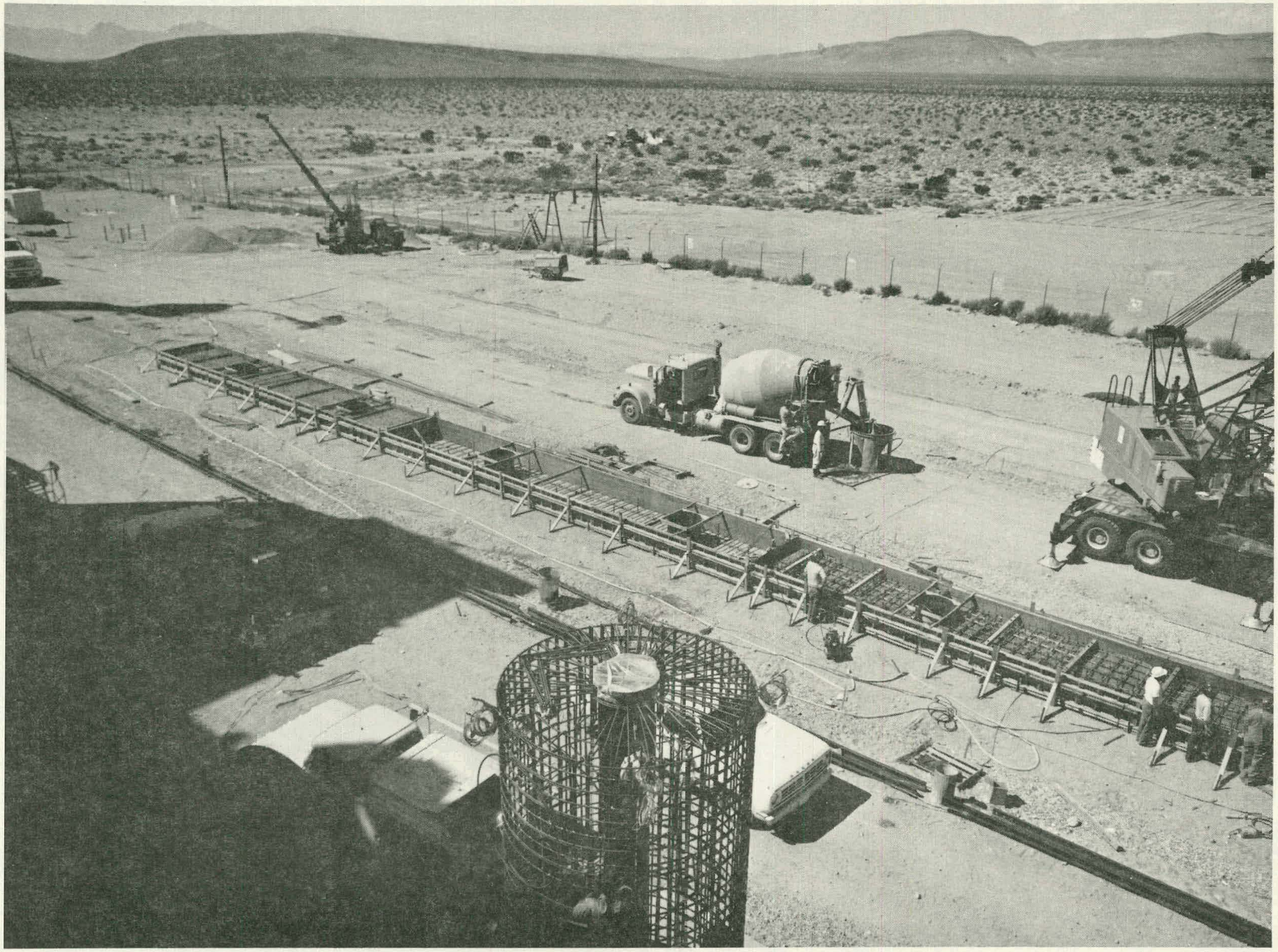

Figure A-3. Drywell Storage Area Construction

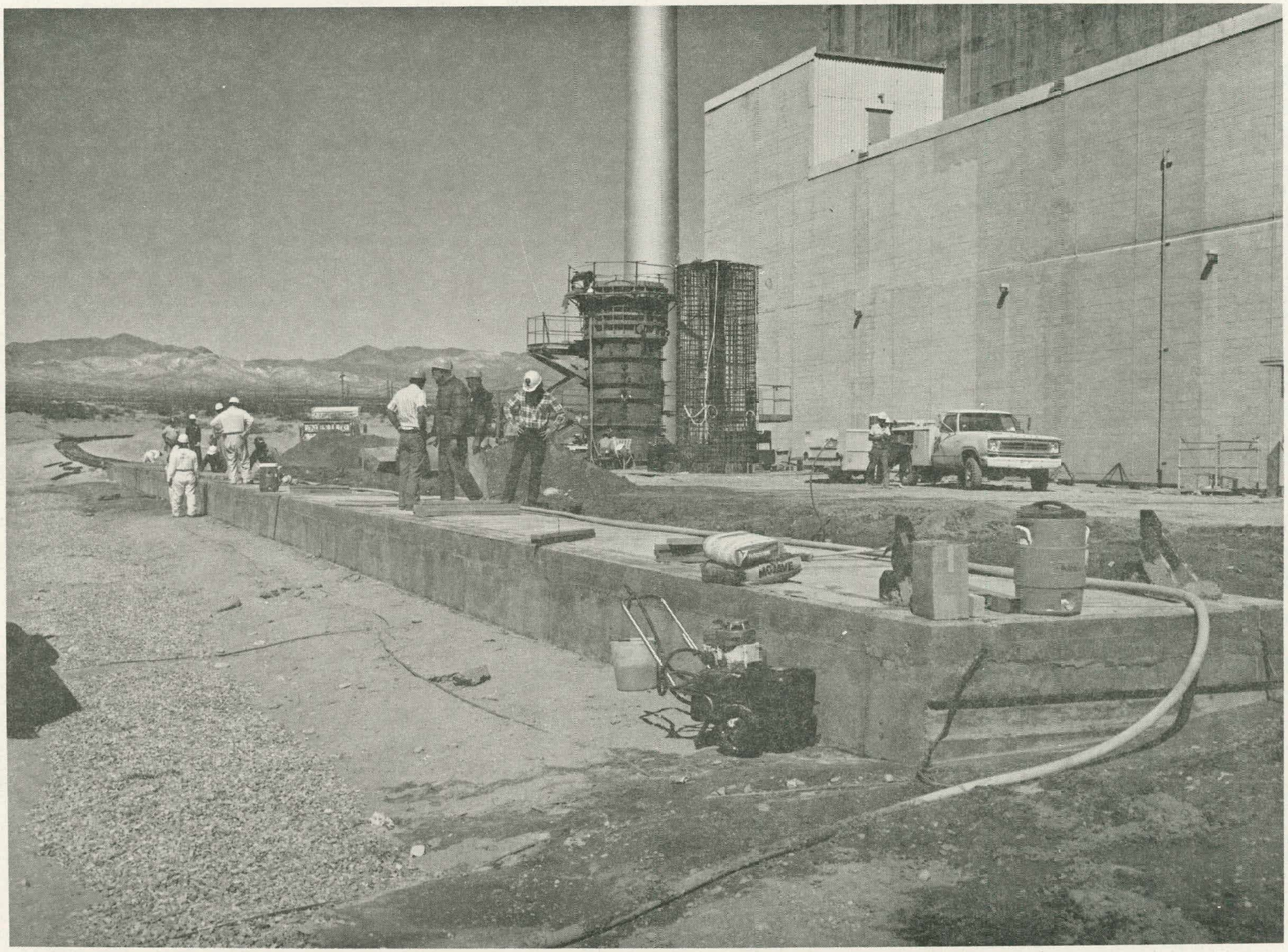

Figure A-4. Drywell Storage Area Construction Completed

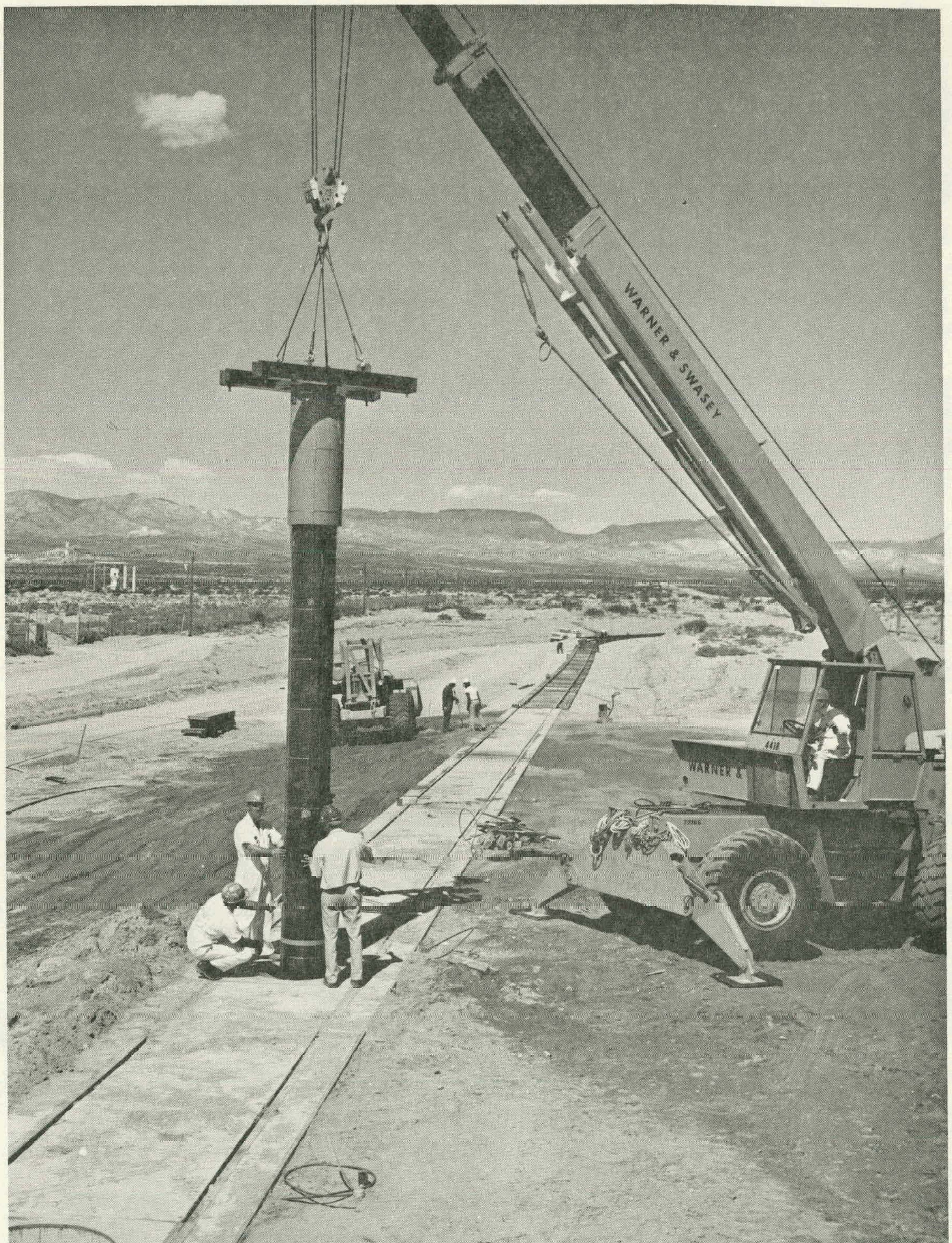

Figure A-5. Drywell Liner Installation Into Storage Area

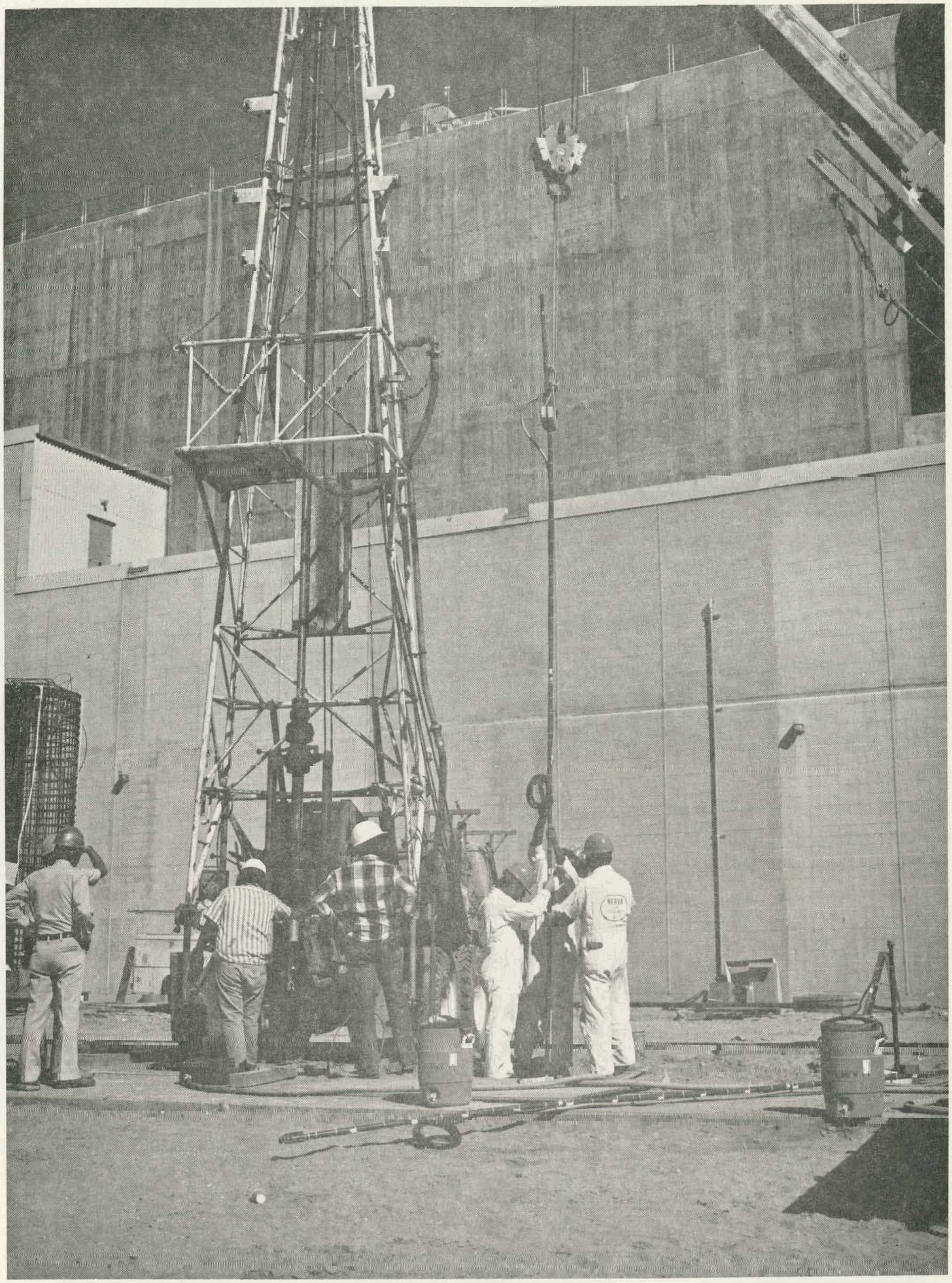

Figure A-6. Instrumentation Well Installation

Figure A-7. Instrumentation Wells Installed in Drywell Storage Area

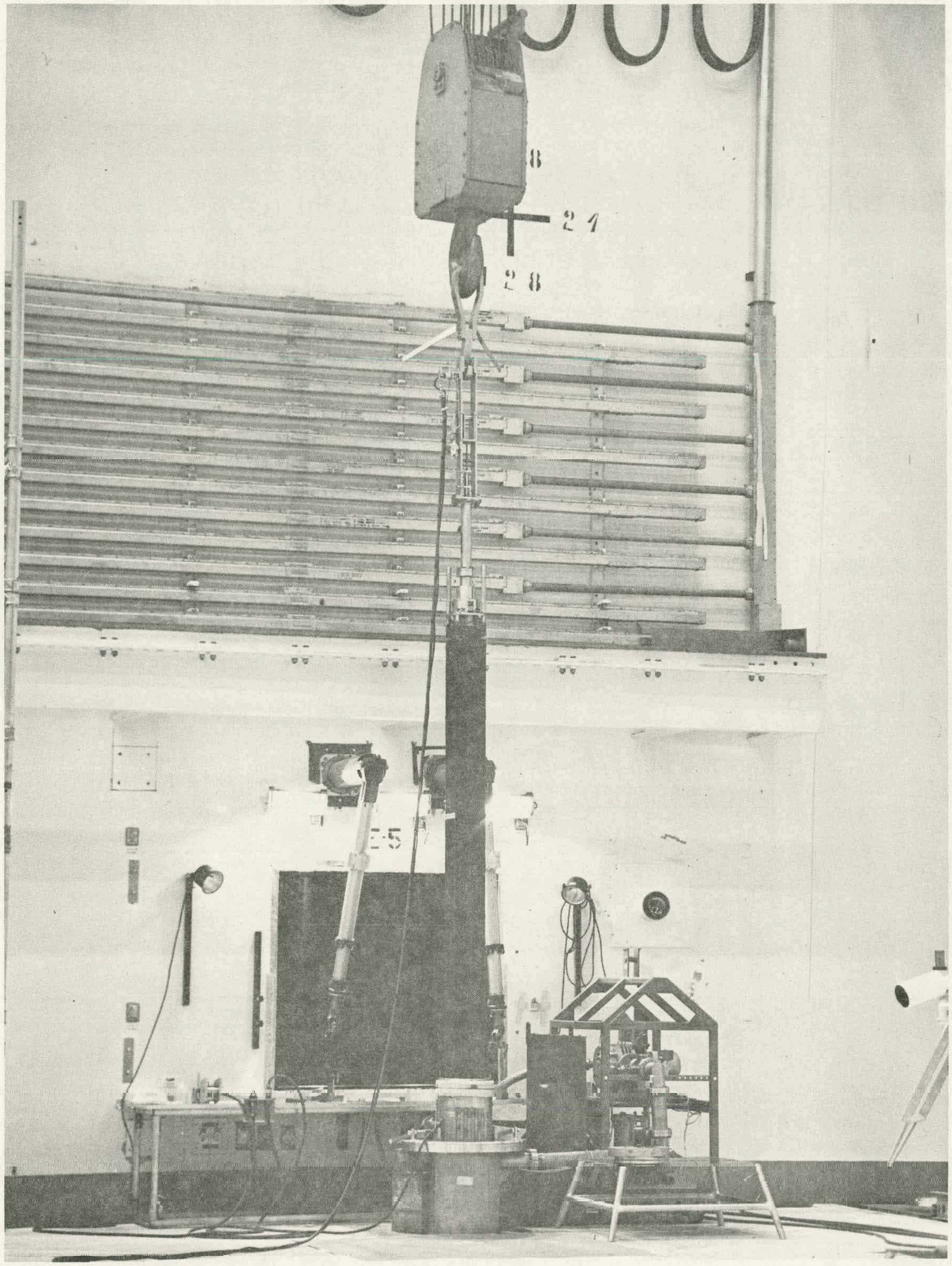

Figure A-8. PWR Fuel Assembly Being Installed Into Canister

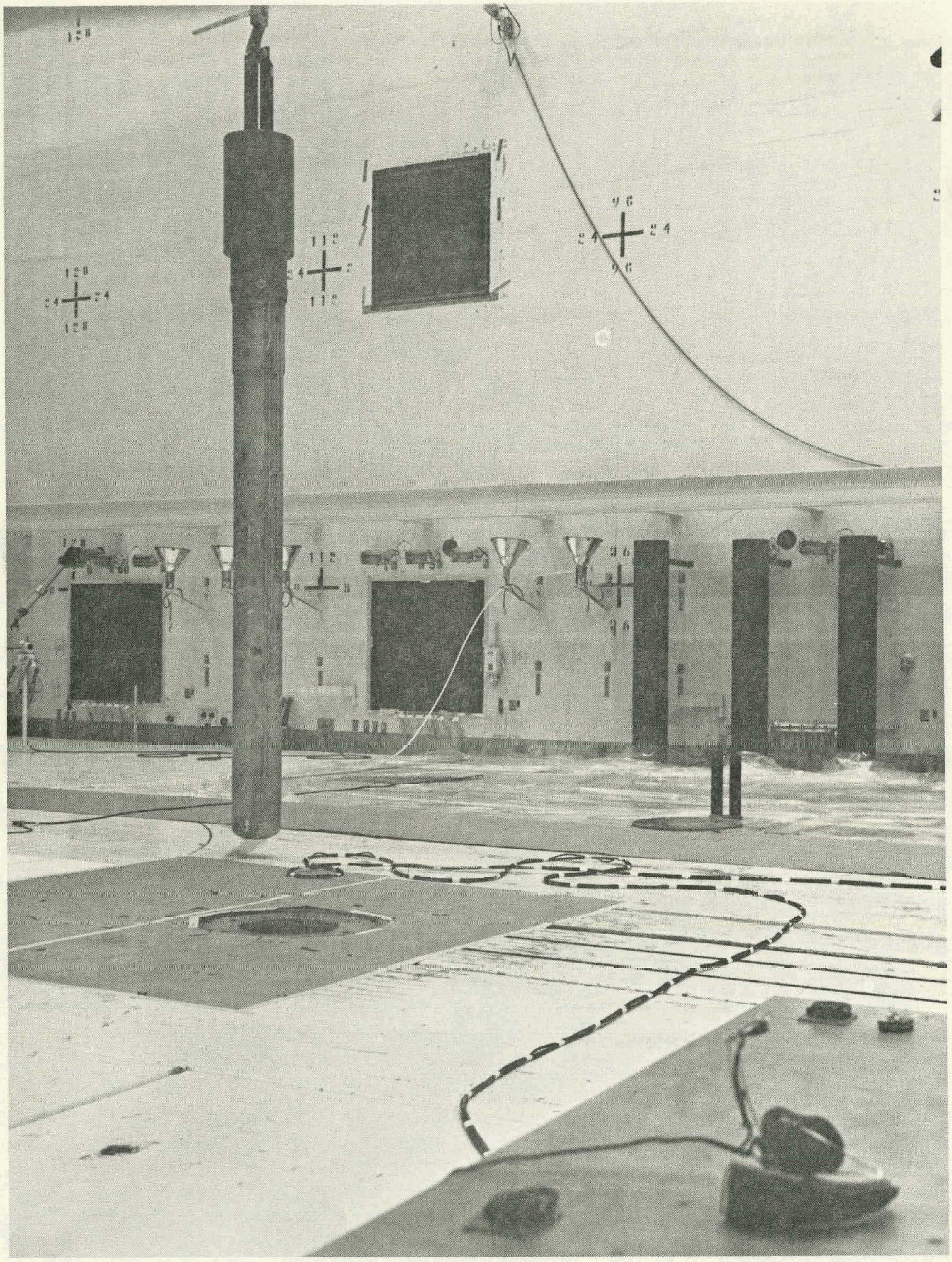

Figure A-9. Placing Completed Canister Assembly in Hot Bay Transfer Pit

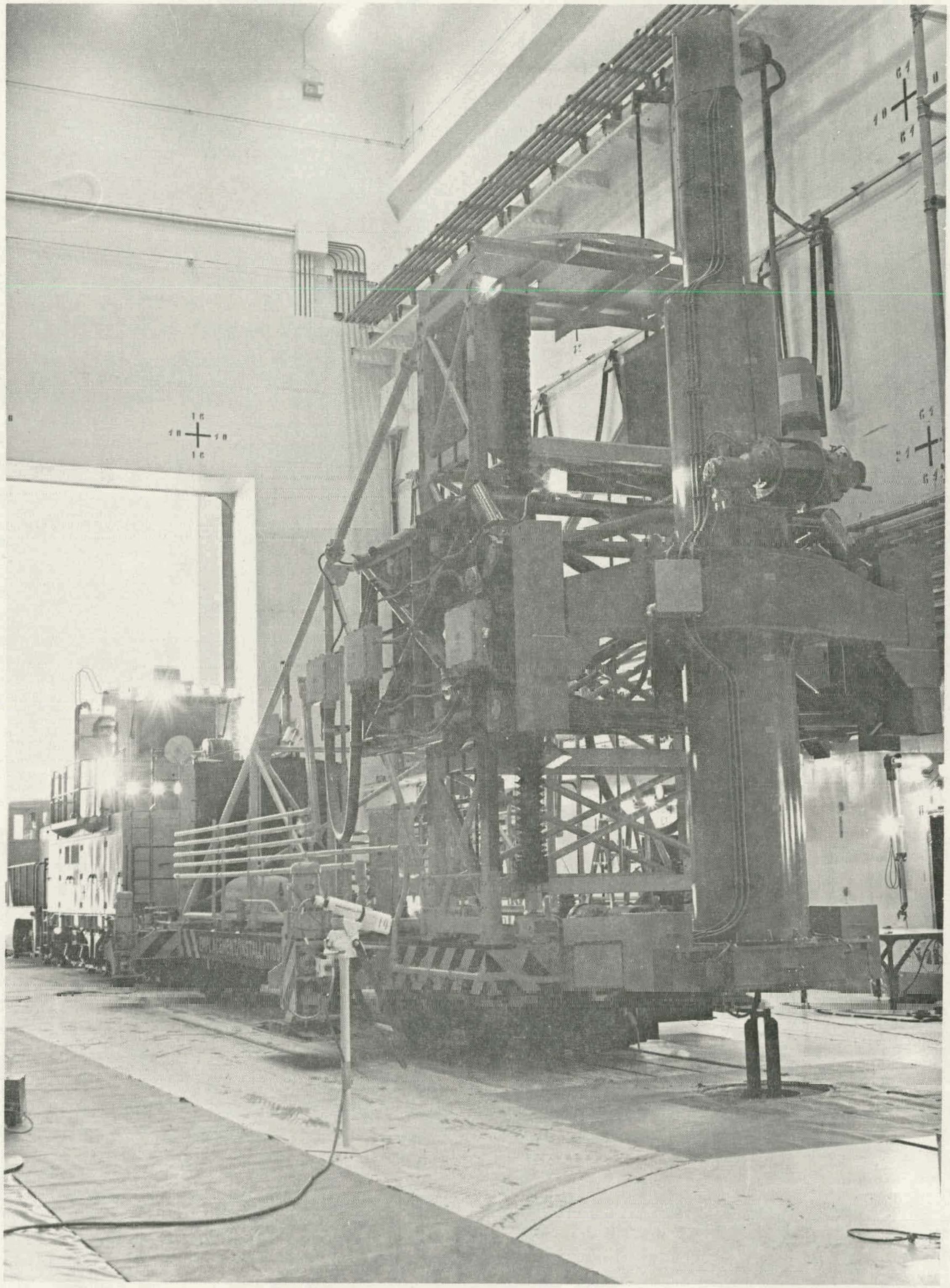

Figure A-10. Positioning Transfer Cask Over Hot Bay Transfer

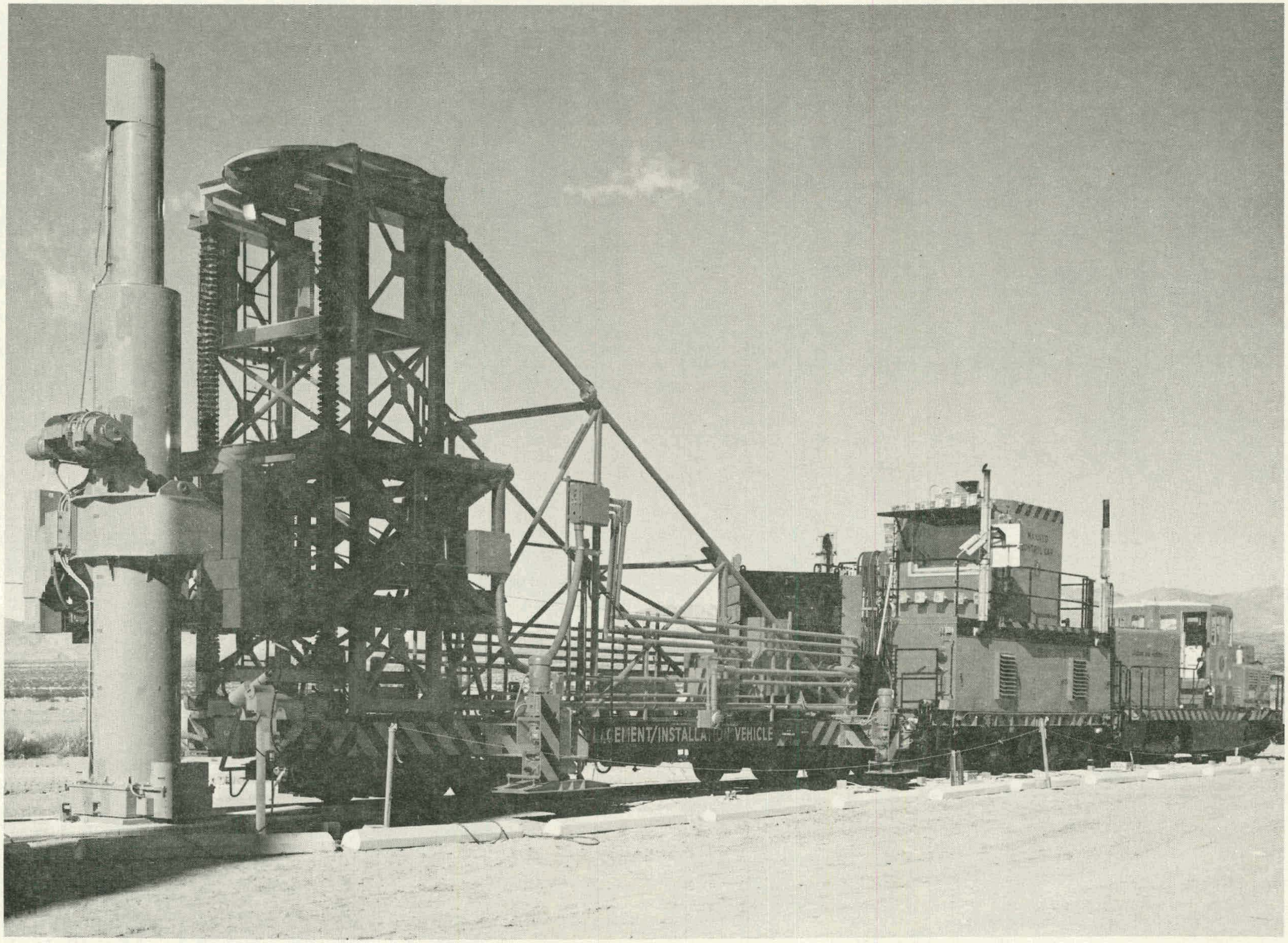

Figure A-11. Transfer Shield Positioned Over Drywell Emplacing Canister Assembly in Drywell

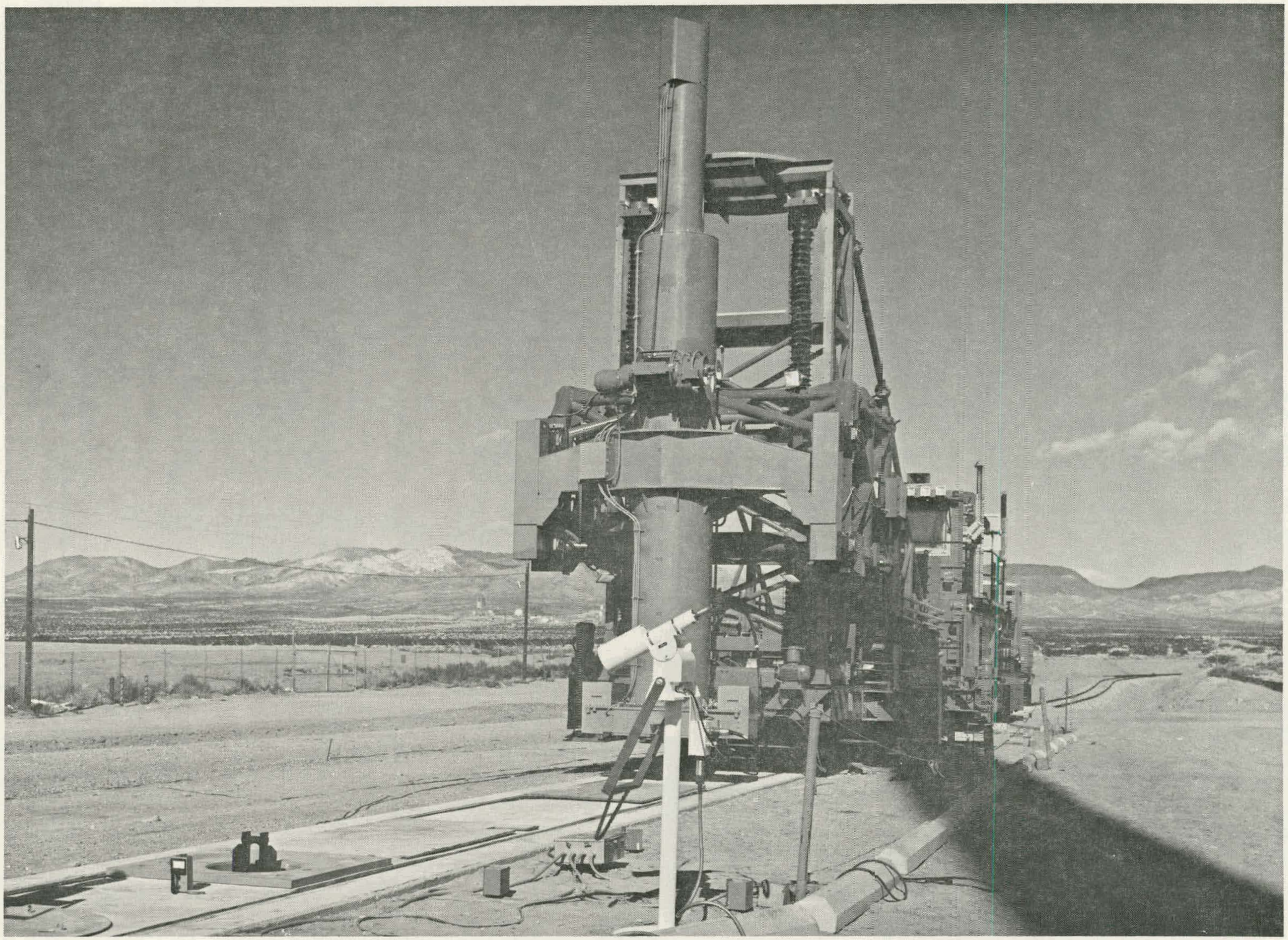

Figure A-12. Transfer of Canister to Drywell Completed

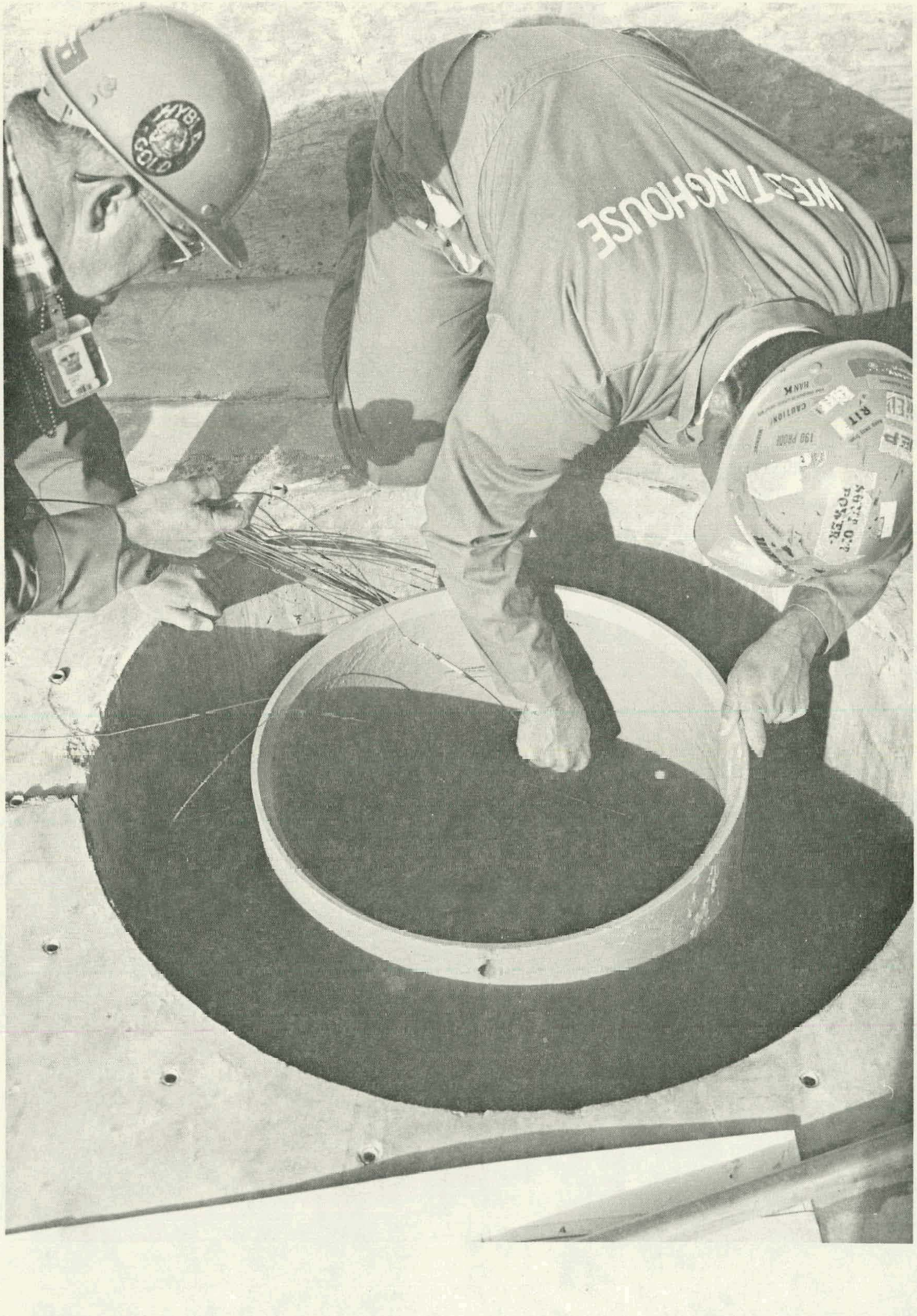

Figure A-13. Insertion of Thermocouples Into Drywell and Into Canister Through Shield Plug

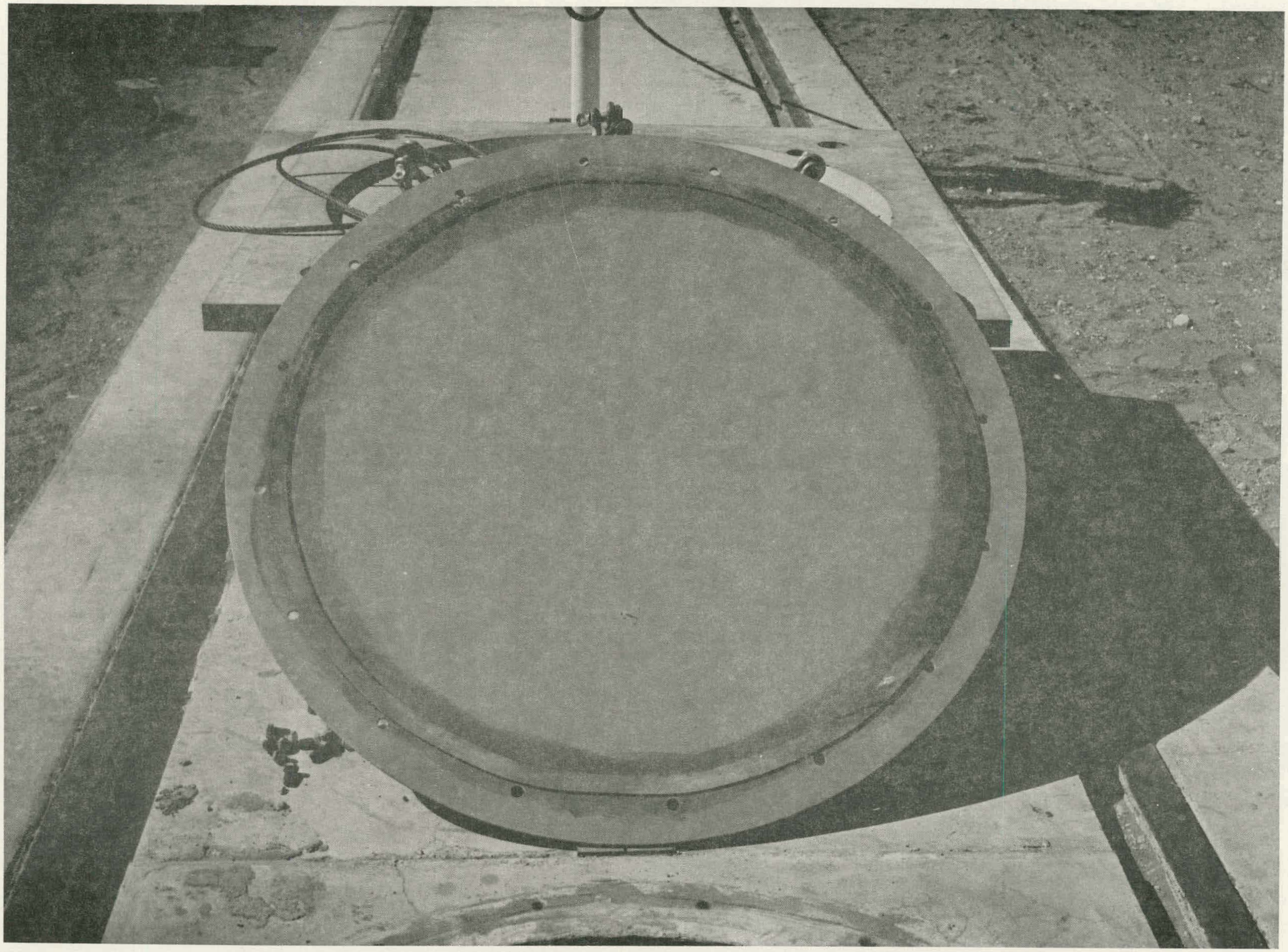

Figure A-14. Drywell Cover Plate Showing Neoprene Gasket

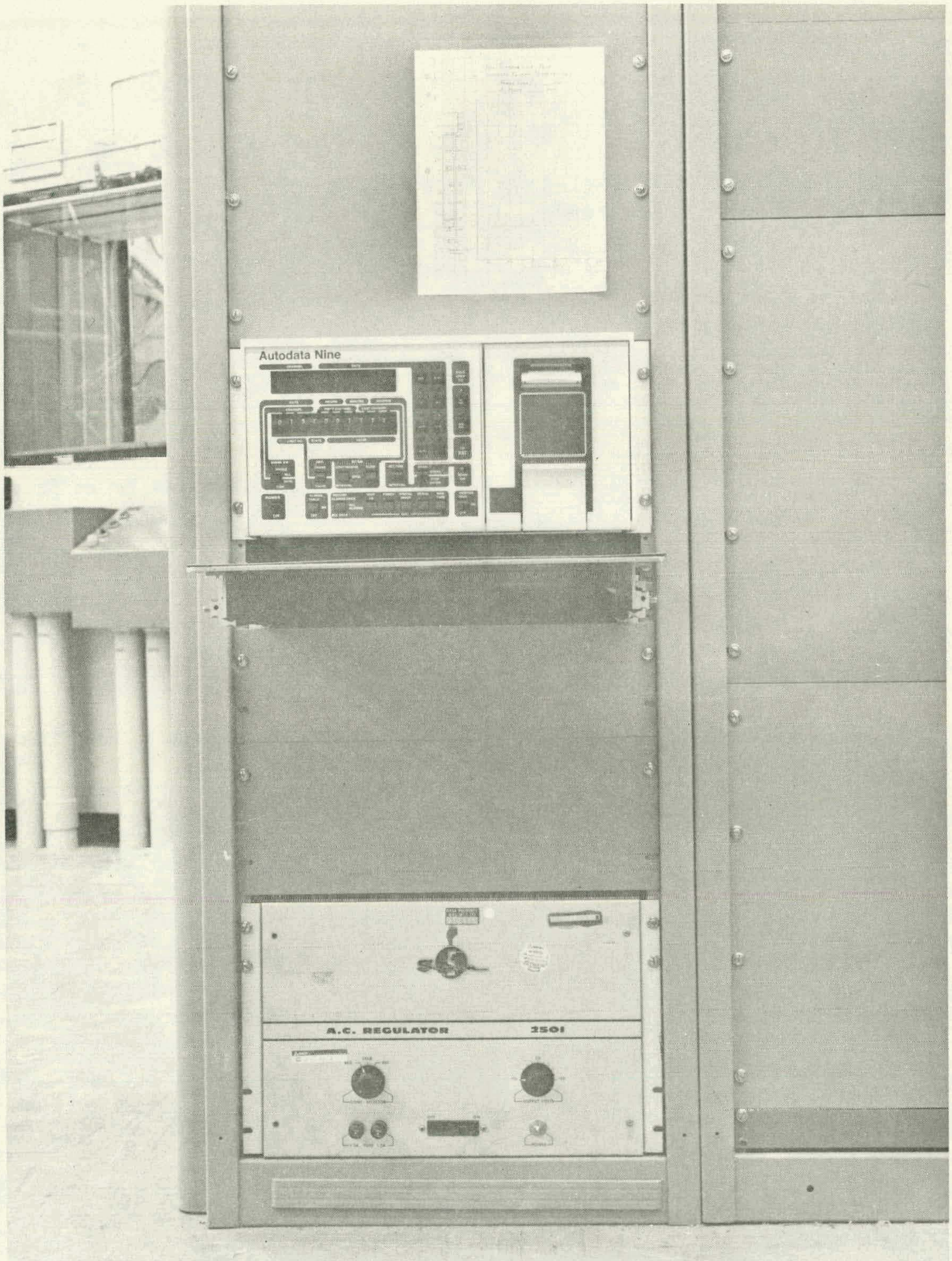

Figure A-15. Data Logger Installation in West Gallery

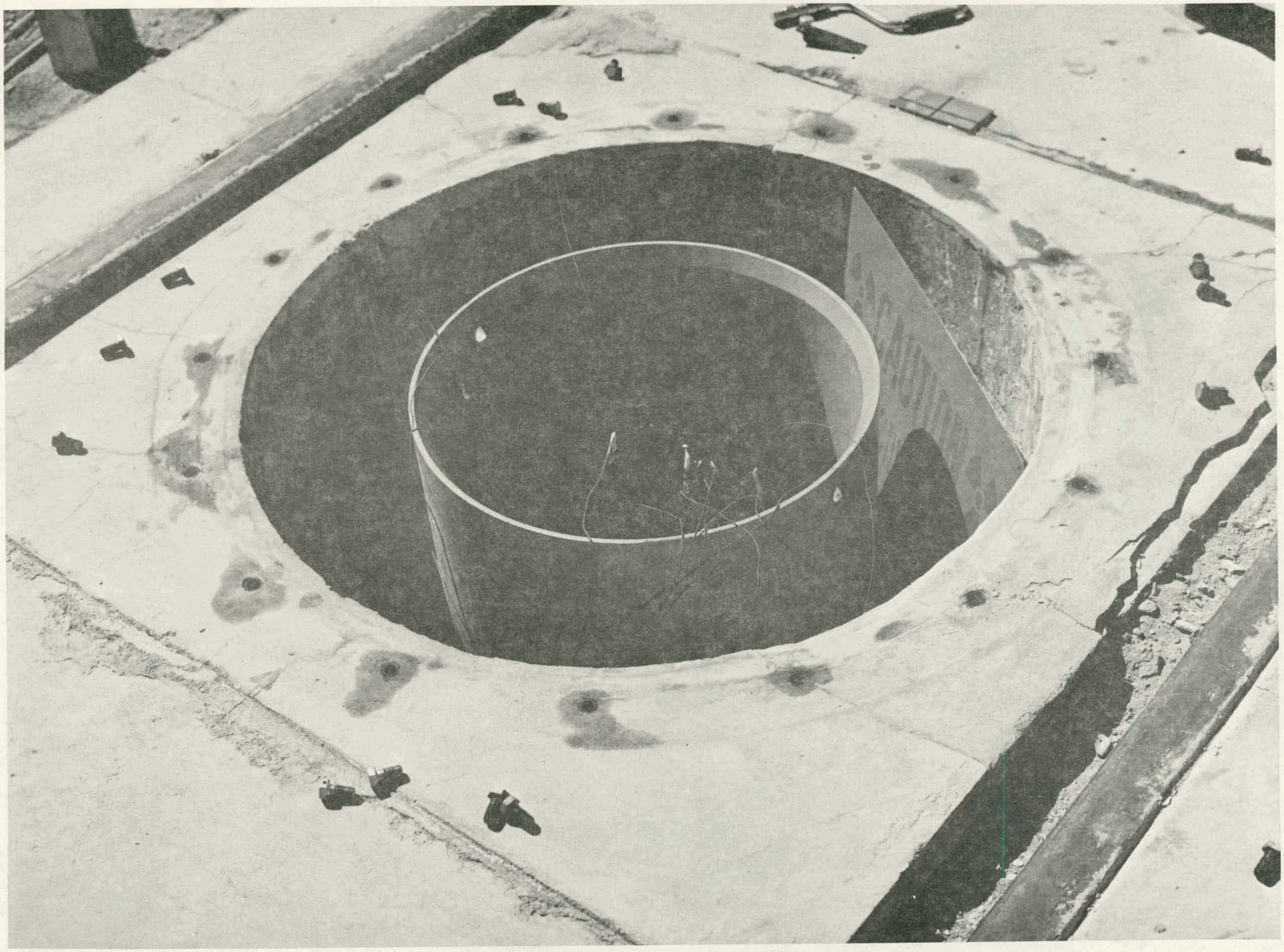

Figure A-16. Drywell 3 at End of Isolated Drywell Test With Cover Plate Removed

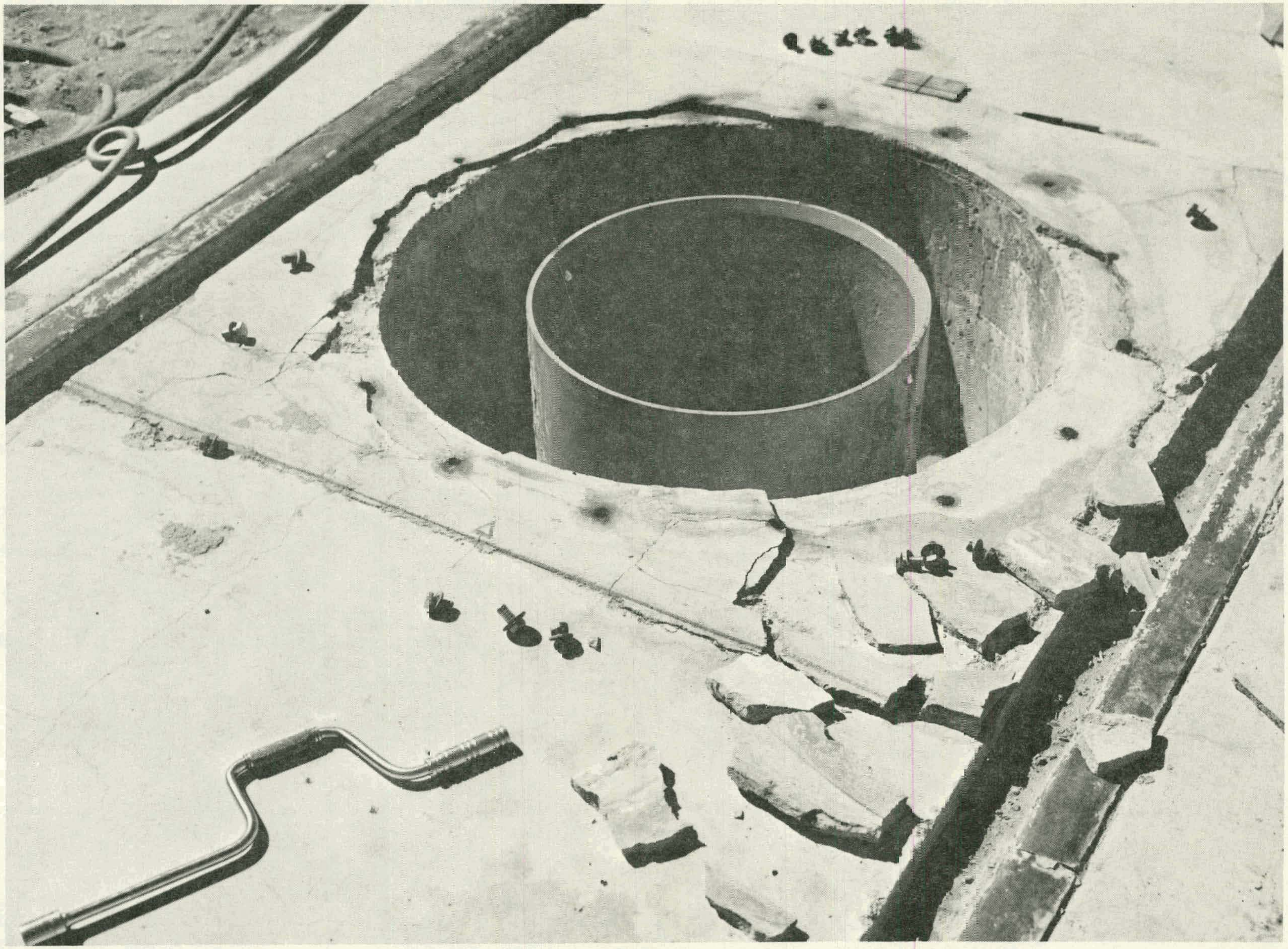

Figure A-17. Drywell 5 at End of Isolated Drywell Test With Cover Plate and Canister Removed

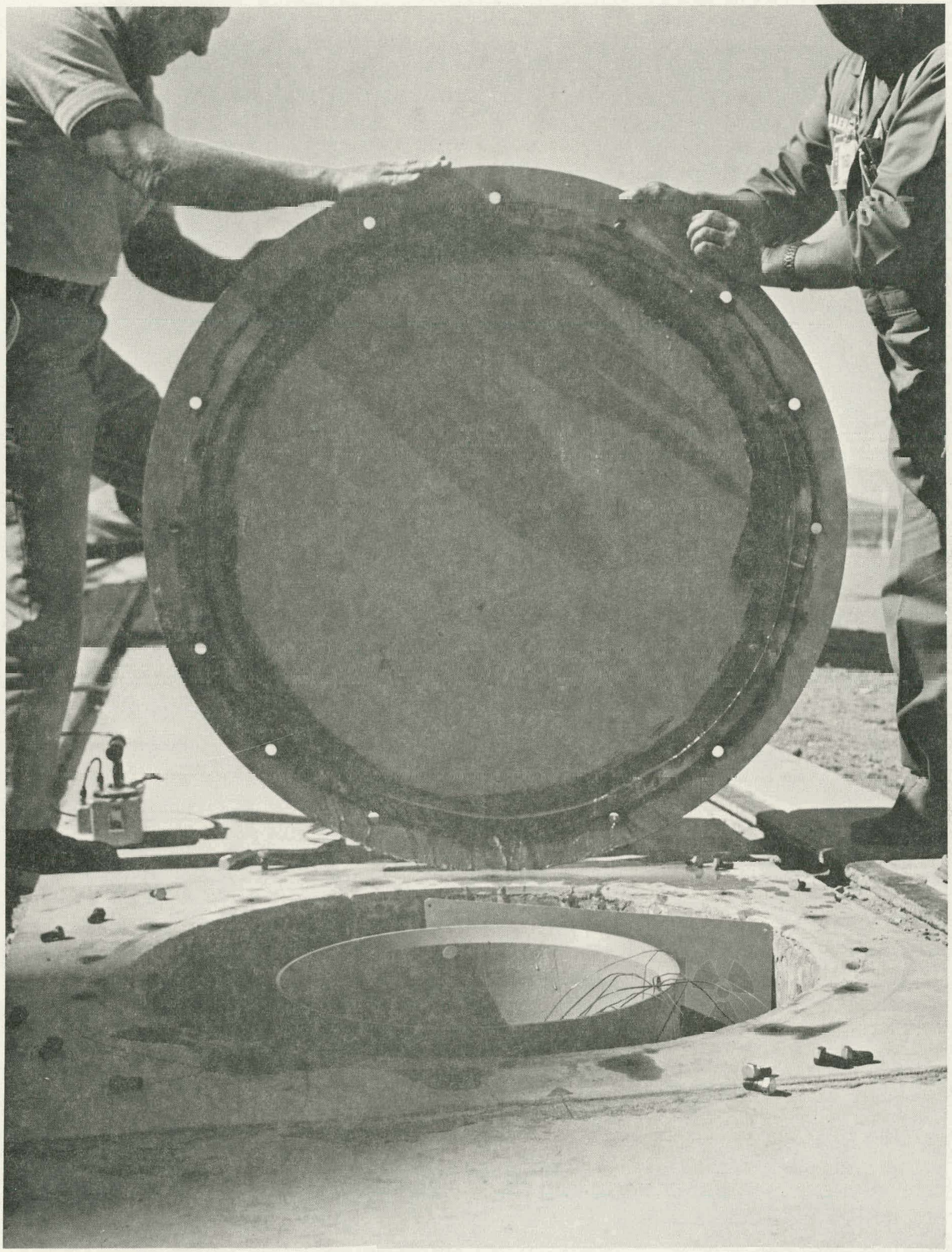

Figure A-18. Drywell 3 Cover Plate Removed After Isolated Drywell Test

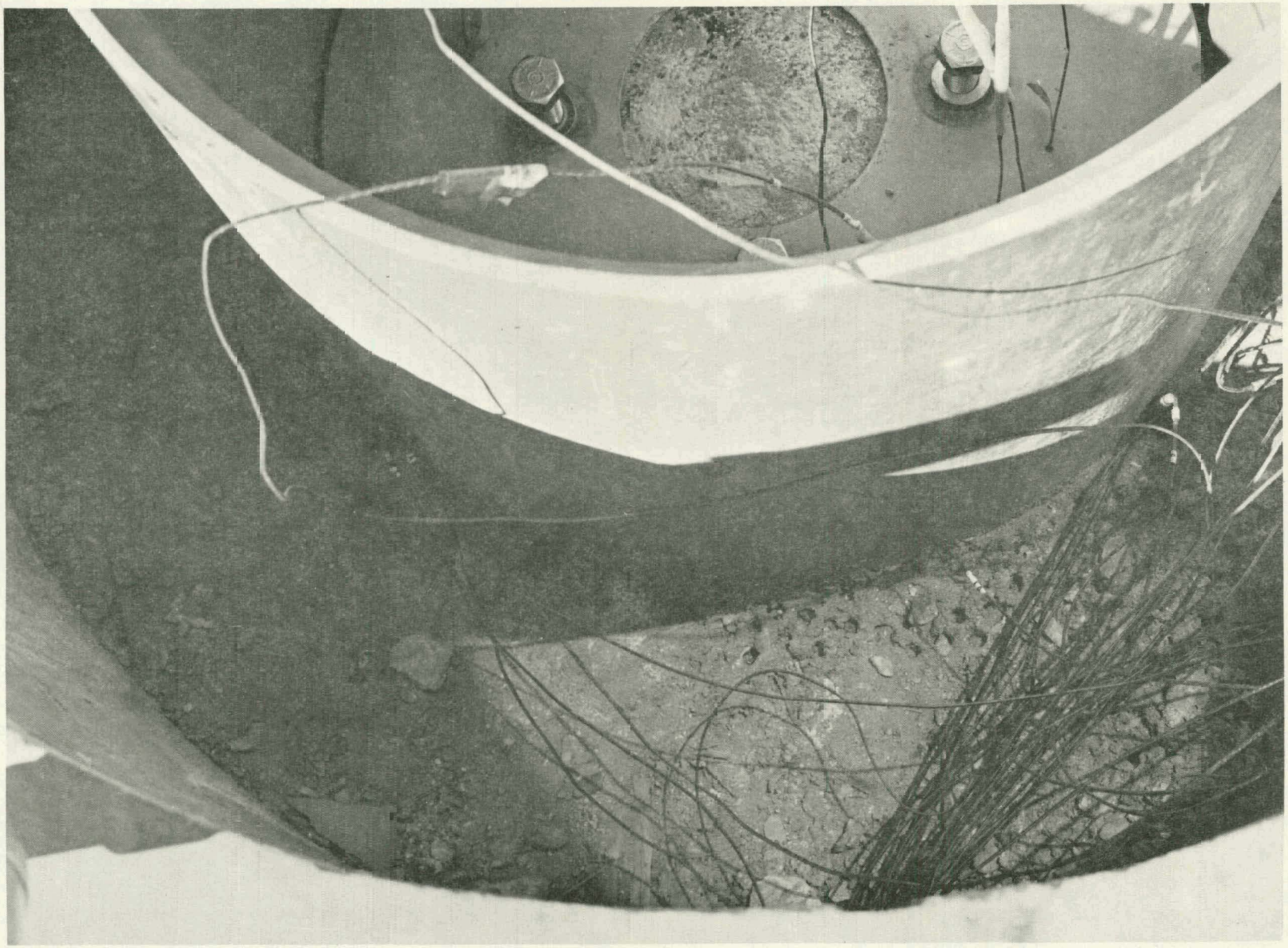

Figure A-19. Drywell 3 Concrete Pad Annulus

APPENDIX B

ISOLATED DRYWELL TEST DATA

Test data are provided in this Appendix for the Isolated Drywell Test thermocouples. See Table 1 for the detailed identification and the location of the Isolated Drywell Test thermocouples. Tables B-1 through B-39 provide thermocouple readings at the times and for the test operating hours shown below:

Table	Date	Operating Hours	
		Drywell 5	Drywell 3
B-1	1/12/79	6	-
B-2	1/25/79	318	5
B-3	2/1/79	486	173
B-4	2/15/79	822	509
B-5	3/1/79	1158	845
B-6	3/15/79	1494	1181
B-7	4/1/79	1902	1589
B-8	4/15/79	2238	1925
B-9	5/1/79	2622	2309
B-10	5/16/79	2986	2673
B-11	6/1/79	3366	3053
B-12	6/15/79	3702	3389
B-13	7/1/79	4086	3773
B-14	7/15/79	4422	4109
B-15	8/1/79	4830	4517
B-16	8/15/79	5166	4853
B-17	9/1/79	5574	5261
B-18	9/15/79	5910	5597
B-19	10/1/79	6294	5981
B-20	10/15/79	6630	6317
B-21	11/1/79	7038	6725
B-22	11/15/79	7374	7061
B-23	12/1/79	7758	7445
B-24	12/15/79	8094	7781
B-25	1/1/80	8502	8189
B-26	1/15/80	8838	8525
B-27	2/1/80	9246	8933
B-28	2/15/80	9582	9269
B-29	3/1/80	9942	9629

Table	Date	Operating Hours	
		Drywell 5	Drywell 3
B-30	3/15/80	10,278	9965
B-31	4/1/80	10,686	10,373
B-32	4/15/80	11,022	10,709
B-33	5/1/80	11,406	11,093
B-34	5/14/80	11,718	11,405
B-35	5/28/80	12,054	11,741
B-36	6/11/80	12,390	12,077
B-37	6/25/80	12,726	12,413
B-38	7/16/80	13,230	12,917
B-39	7/30/80	13,566	13,253

TABLE B-1

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE: 1/12/79 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 6 DRYWELL NO. 3: N/A

THERMOCOUPLE READINGS

DRYWELL NO. 5		DRYWELL NO. 3	
T/C No.	Temp(°F)	T/C No.	Temp (°F)
891	128.2	854	No Readings
890	135.5	853	
889	74.0	852	
888	73.3	851	
887	74.5	850	
886	55.4	849	
885	55.8	848	
884	55.5	847	
883	55.4	846	
882	157.0	845	
881	151.7	844	
880	160.1	843	
879	151.0	842	
878	80.6	841	
877	23.0	840	
876	79.5	839	
875	62.0	838	
874	62.5	837	
873	61.9	836	
872	62.5	835	
871	156.4	834	
870	151.1	833	
869	129.8	832	
868	128.3	831	
867	75.6	830	
866	76.6	829	
865	75.9	828	
864	65.8	827	
863	65.9	826	
862	65.5	825	
861	66.1	824	No Readings

TABLE B-2

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE: 1/25/79 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 318 DRYWELL NO. 3: 5

THERMOCOUPLE READINGS

DRYWELL NO. 5		DRYWELL NO. 3	
T/C No.	Temp(°F)	T/C No.	Temp (°F)
891	158.2	854	128.9
890	177.0	853	150.6
889	126.8	852	83.2
888	124.0	851	81.0
887	127.7	850	84.0
886	55.0	849	52.6
885	55.1	848	53.2
884	68.7	847	52.8
883	55.5	846	52.5
882	181.1	845	134.9
881	184.3	844	159.6
880	207.0	843	170.6
879	191.3	842	171.0
878	147.7	841	98.5
877	124.4	840	98.8
876	143.6	839	98.2
875	56.1	838	60.4
874	61.2	837	60.5
873	49.6	836	60.0
872	61.9	835	60.2
871	204.7	834	172.9
870	197.5	833	147.1
869	159.2	832	112.7
868	159.6	831	129.0
867	124.2	830	86.5
866	125.4	829	-3.8
865	124.6	828	88.3
864	65.0	827	65.5
863	65.4	826	69.2
862	77.7	825	65.0
861	65.5	824	65.4

TABLE B-3

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE : 2/1/79 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 486 DRYWELL NO. 3: 173

THERMOCOUPLE READINGS

DRYWELL NO. 5		DRYWELL NO. 3	
T/C No.	Temp(°F)	T/C No.	Temp (°F)
891	161.4	854	154.9
890	188.0	853	179.8
889	130.8	852	113.1
888	127.7	851	109.9
887	131.8	850	114.8
886	54.5	849	51.7
885	55.0	848	52.3
884	64.6	847	55.3
883	54.6	846	51.6
882	183.9	845	163.4
881	189.3	844	189.2
880	200.5	843	202.4
879	208.0	842	203.6
878	154.1	841	136.5
877	129.9	840	136.4
876	152.6	839	135.9
875	60.9	838	59.7
874	61.4	837	59.7
873	73.9	836	63.7
872	61.3	835	59.5
871	216.5	834	205.8
870	215.7	833	184.1
869	162.5	832	137.8
868	154.5	831	154.6
867	129.6	830	115.3
866	131.0	829	-31.5
865	130.1	828	117.2
864	65.0	827	64.8
863	65.1	826	64.9
862	73.7	825	67.5
861	65.3	824	64.8

TABLE B-4

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE: 2/15/79 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 822 DRYWELL NO. 3: 509

THERMOCOUPLE READINGS

DRYWELL NO. 5		DRYWELL NO. 3	
T/C No.	Temp(°F)	T/C No.	Temp (°F)
891	171.1	854	169.7
890	194.6	853	192.5
889	137.7	852	127.7
888	134.7	851	124.3
887	138.7	850	129.2
886	55.5	849	51.8
885	55.7	848	52.5
884	69.0	847	62.8
883	55.5	846	51.8
882	195.7	845	177.3
881	195.8	844	203.2
880	208.7	843	216.8
879	215.7	842	218.6
878	164.5	841	153.6
877	137.9	840	153.6
876	163.8	839	153.0
875	62.6	838	60.5
874	63.2	837	60.5
873	79.7	836	74.7
872	63.2	835	60.4
871	224.7	834	221.4
870	223.8	833	199.5
869	169.4	832	152.0
868	161.7	831	168.1
867	137.6	830	130.9
866	139.1	829	-13.0
865	138.0	828	132.1
864	66.7	827	65.5
863	66.6	826	65.8
862	78.9	825	75.6
861	66.7	824	65.7

TABLE B-5

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE : 3/1/79 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 1158 DRYWELL NO. 3: 845

THERMOCOUPLE READINGS

DRYWELL NO. 5		DRYWELL NO. 3	
T/C No.	Temp(°F)	T/C No.	Temp (°F)
891	169.6	854	179.6
890	197.5	853	197.0
889	141.7	852	133.5
888	138.7	851	130.2
887	142.9	850	134.4
886	58.4	849	54.4
885	58.4	848	54.6
884	73.3	847	68.7
883	58.3	846	54.3
882	192.6	845	188.0
881	202.3	844	207.8
880	214.4	843	221.9
879	220.8	842	224.2
878	171.2	841	160.7
877	142.8	840	160.2
876	170.6	839	160.2
875	63.7	838	61.9
874	64.2	837	62.3
873	82.5	836	80.0
872	64.2	835	62.1
871	229.4	834	228.2
870	228.3	833	207.6
869	173.4	832	158.6
868	165.7	831	174.4
867	142.3	830	138.3
866	143.8	829	-23.2
865	142.7	828	139.0
864	67.1	827	66.5
863	67.1	826	66.3
862	81.0	825	79.9
861	67.3	824	66.0

TABLE B-6

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE : 3/15/79 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 1494 DRYWELL NO. 3: 1181

THERMOCOUPLE READINGS

DRYWELL NO. 5		DRYWELL NO. 3	
T/C No.	Temp(°F)	T/C No.	Temp (°F)
891	175.8	854	179.7
890	201.4	853	201.6
889	146.2	852	138.5
888	142.9	851	135.2
887	147.8	850	139.5
886	61.2	849	57.9
885	61.7	848	58.2
884	76.9	847	73.4
883	61.8	846	58.0
882	200.8	845	192.0
881	207.4	844	212.4
880	217.8	843	226.5
879	224.8	842	228.4
878	177.1	841	166.0
877	147.6	840	165.6
876	176.4	839	165.5
875	65.2	838	63.7
874	65.6	837	63.8
873	04.7	836	83.6
872	65.6	835	63.5
871	233.3	834	233.0
870	232.3	833	213.8
869	176.7	832	162.9
868	169.1	831	178.3
867	146.9	830	143.4
866	148.5	829	-7.0
865	147.7	828	145.0
864	68.4	827	67.7
863	68.4	826	67.8
862	83.0	825	82.8
861	68.5	824	67.5

TABLE B-7

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE : 4/1/79 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 1902 DRYWELL NO. 3: 1589

THERMOCOUPLE READINGS

DRYWELL NO. 5		DRYWELL NO. 3	
T/C No.	Temp(°F)	T/C No.	Temp (°F)
891	179.3	854	180.6
890	203.6	853	202.9
889	148.4	852	140.7
888	144.7	851	137.4
887	150.3	850	141.8
886	63.5	849	60.8
885	64.0	848	61.1
884	79.4	847	77.1
883	64.2	846	60.8
882	202.8	845	193.1
881	206.8	844	214.4
880	221.1	843	229.2
879	228.2	842	231.9
878	181.3	841	170.3
877	152.2	840	170.4
876	180.8	839	169.7
875	67.0	838	65.3
874	67.2	837	65.7
873	86.6	836	86.1
872	67.4	835	65.4
871	236.6	834	236.5
870	235.5	833	219.2
869	180.1	832	176.1
868	172.3	831	181.5
867	151.3	830	147.9
866	153.0	829	151.5
865	152.4	828	150.2
864	69.2	827	68.9
863	69.3	826	68.9
862	84.4	825	84.9
861	69.4	824	68.5

TABLE B-8

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE : 4/15/79 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 2238 DRYWELL NO. 3: 1925

THERMOCOUPLE READINGS

DRYWELL NO. 5 T/C No.	DRYWELL NO. 5 Temp(°F)	DRYWELL NO. 3 T/C No.	DRYWELL NO. 3 Temp (°F)
891	177.8	854	181.7
890	205.8	853	205.3
889	150.8	852	142.9
888	147.0	851	139.5
887	153.1	850	143.8
886	65.7	849	63.0
885	66.3	848	63.0
884	81.7	847	79.4
883	66.5	846	62.9
882	208.7	845	196.2
881	211.6	844	217.0
880	224.1	843	232.0
879	230.6	842	234.5
878	184.7	841	173.4
877	155.3	840	174.2
876	184.1	839	173.7
875	68.3	838	67.1
874	68.5	837	67.5
873	87.7	836	88.1
872	68.6	835	67.3
871	238.9	834	239.7
870	237.6	833	221.1
869	182.1	832	178.8
868	174.6	831	184.2
867	154.3	830	151.6
866	155.9	829	154.9
865	155.4	828	153.4
864	69.9	827	69.8
863	70.0	826	69.8
862	85.1	825	86.1
861	70.1	824	69.4

TABLE B-9

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE : 5/1/79 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 2622 DRYWELL NO. 3: 2309

THERMOCOUPLE READINGS

DRYWELL NO. 5		DRYWELL NO. 3	
T/C No.	Temp(°F)	T/C No.	Temp (°F)
891	195.2	854	192.7
890	205.9	853	202.9
889	149.4	852	143.2
888	146.4	851	139.9
887	151.6	850	144.5
886	69.1	849	66.7
885	69.5	848	66.4
884	84.9	847	82.9
883	69.9	846	66.3
882	224.9	845	215.1
881	226.3	844	221.4
880	240.1	843	233.3
879	235.4	842	235.0
878	187.2	841	177.4
877	166.1	840	177.9
876	185.5	839	177.0
875	69.5	838	68.5
874	69.8	837	68.8
873	88.9	836	89.5
872	70.0	835	68.7
871	244.4	834	244.2
870	242.1	833	241.3
869	202.7	832	203.1
868	204.9	831	203.5
867	165.3	830	162.9
866	167.0	829	167.1
865	165.7	828	163.3
864	70.5	827	70.5
863	70.5	826	70.6
862	85.8	825	86.9
861	70.7	824	70.3

TABLE B-10

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE : 5/16/79 TIME: 8:00 a.m.

OPERATING HOURS: DRYWELL NO. 5: 2986 DRYWELL NO. 3: 2673

THERMOCOUPLE READINGS

DRYWELL NO. 5		DRYWELL NO. 3	
T/C No.	Temp(°F)	T/C No.	Temp (°F)
891	196.1	854	194.4
890	207.1	853	204.8
889	151.6	852	145.4
888	148.4	851	142.0
887	153.3	850	146.9
886	72.4	849	69.8
885	72.4	848	69.6
884	88.0	847	86.0
883	72.8	846	69.8
882	226.4	845	216.9
881	227.6	844	223.7
880	242.0	843	234.7
879	236.8	842	237.3
878	189.9	841	180.9
877	168.1	840	181.5
876	188.2	839	180.3
875	70.9	838	70.6
874	71.5	837	70.7
873	90.0	836	91.3
872	71.7	835	70.6
871	245.7	834	246.2
870	243.6	833	243.2
869	204.0	832	205.0
868	206.4	831	205.2
867	167.5	830	166.1
866	169.2	829	169.6
865	167.8	828	165.9
864	71.2	827	71.0
863	70.9	826	71.4
862	86.3	825	87.4
861	71.1	824	71.1

TABLE B-11

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE: 6/1/79 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 3366 DRYWELL NO. 3: 3053

THERMOCOUPLE READINGS

DRYWELL NO. 5		DRYWELL NO. 3	
T/C No.	Temp(°F)	T/C No.	Temp (°F)
891	200.2	854	198.6
890	210.9	853	207.5
889	161.6	852	153.9
888	157.7	851	151.0
887	164.8	850	153.9
886	76.8	849	74.7
885	77.3	848	74.2
884	92.3	847	90.7
883	77.9	846	74.6
882	229.4	845	220.6
881	231.8	844	226.3
880	245.1	843	238.2
879	240.6	842	240.2
878	195.0	841	186.0
877	163.0	840	186.6
876	194.5	839	186.0
875	73.2	838	72.6
874	73.4	837	73.0
873	92.1	836	93.0
872	73.6	835	72.8
871	248.4	834	248.8
870	246.1	833	245.9
869	206.0	832	206.1
868	208.1	831	206.7
867	162.1	830	159.3
866	163.3	829	163.0
865	163.0	828	161.5
864	72.0	827	72.3
863	72.1	826	72.4
862	87.1	825	88.6
861	72.2	824	72.0

TABLE B-12

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE : 6/15/79 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 3702 DRYWELL NO. 3: 3389

THERMOCOUPLE READINGS

DRYWELL NO. 5		DRYWELL NO. 3	
T/C No.	Temp(°F)	T/C No.	Temp (°F)
891	203.1	854	200.9
890	212.4	853	209.8
889	164.5	852	156.4
888	161.0	851	153.9
887	167.4	850	156.6
886	80.3	849	78.5
885	80.8	848	78.0
884	95.6	847	94.1
883	81.5	846	78.4
882	232.5	845	223.0
881	233.8	844	229.0
880	247.4	843	240.4
879	242.8	842	242.6
878	197.5	841	189.2
877	164.8	840	189.7
876	197.1	839	189.0
875	75.2	838	75.0
874	75.5	837	75.2
873	93.9	836	95.1
872	75.9	835	75.2
871	250.1	834	250.6
870	248.0	833	247.8
869	207.4	832	207.7
868	209.6	831	208.2
867	164.0	830	161.4
866	165.2	829	165.0
865	164.9	828	163.4
864	73.1	827	73.3
863	73.1	826	73.5
862	88.2	825	89.5
861	73.3	824	73.2

TABLE B-13

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE : 7/1/79 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 4086 DRYWELL NO. 3: 3773

THERMOCOUPLE READINGS

DRYWELL NO. 5 T/C No.	DRYWELL NO. 5 Temp(°F)	DRYWELL NO. 3 T/C No.	DRYWELL NO. 3 Temp (°F)
891	203.1	854	202.3
890	214.2	853	211.1
889	166.1	852	158.8
888	162.6	851	155.8
887	169.6	850	158.6
886	83.0	849	81.3
885	83.3	848	80.9
884	98.0	847	96.6
883	84.0	846	80.4
882	233.7	845	224.5
881	235.1	844	230.5
880	249.3	843	242.0
879	244.0	842	244.2
878	199.4	841	191.5
877	166.5	840	192.5
876	199.1	839	191.3
875	77.4	838	77.6
874	77.8	837	77.5
873	95.7	836	97.2
872	78.2	835	77.7
871	251.3	834	252.2
870	249.3	833	249.1
869	208.3	832	208.8
868	210.6	831	209.2
867	165.6	830	163.4
866	166.9	829	166.7
865	166.4	828	165.2
864	74.3	827	74.6
863	74.1	826	74.7
862	89.2	825	90.5
861	74.4	824	74.6

TABLE B-14

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE: 7/15/79 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 4422 DRYWELL NO. 3: 4109

THERMOCOUPLE READINGS

DRYWELL NO. 5		DRYWELL NO. 3	
T/C No.	Temp(°F)	T/C No.	Temp (°F)
891	204.3	854	203.7
890	215.3	853	212.3
889	167.8	852	160.4
888	164.4	851	157.6
887	171.4	850	160.4
886	85.2	849	83.8
885	85.3	848	83.3
884	99.9	847	96.7
883	86.1	846	83.7
882	234.8	845	226.0
881	235.8	844	231.6
880	250.0	843	243.0
879	245.1	842	245.5
878	200.9	841	193.2
877	168.0	840	194.4
876	200.8	839	193.0
875	79.3	838	79.5
874	79.6	837	79.4
873	97.2	836	98.7
872	80.1	835	79.6
871	252.1	834	252.8
870	250.1	833	250.0
869	209.1	832	209.4
868	211.3	831	209.9
867	167.1	830	164.8
866	168.3	829	168.1
865	168.0	828	166.8
864	75.5	827	75.7
863	75.3	826	76.0
862	90.2	825	91.6
861	75.6	824	75.8

TABLE B-15

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE : 8/1/79 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 4380 DRYWELL NO. 3: 4517

THERMOCOUPLE READINGS

DRYWELL NO. 5		DRYWELL NO. 3	
T/C No.	Temp(°F)	T/C No.	Temp (°F)
891	204.9	854	205.1
890	216.1	853	213.4
889	169.1	852	162.1
888	165.9	851	159.4
887	173.5	850	162.1
886	88.2	849	86.8
885	88.3	848	86.2
884	102.6	847	101.3
883	89.1	846	86.7
882	235.5	845	226.8
881	236.8	844	232.8
880	250.9	843	244.2
879	245.8	842	246.2
878	202.4	841	195.0
877	169.8	840	196.3
876	202.3	839	194.8
875	81.5	838	81.8
874	81.7	837	81.7
873	99.0	836	100.6
872	82.3	835	81.9
871	252.8	834	253.6
870	250.8	833	250.7
869	210.3	832	210.2
868	212.5	831	210.8
867	169.1	830	166.1
866	170.2	829	169.6
865	169.9	828	168.3
864	77.1	827	77.3
863	77.0	826	77.5
862	91.6	825	92.8
861	77.2	824	77.3

TABLE B-16

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE : 8/15/79 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 5166 DRYWELL NO. 3: 4853

THERMOCOUPLE READINGS

DRYWELL NO. 5		DRYWELL NO. 3	
T/C No.	Temp(°F)	T/C No.	Temp (°F)
891	205.9	854	204.6
890	216.4	853	213.9
889	170.6	852	162.9
888	167.1	851	159.9
887	174.5	850	162.9
886	90.2	849	88.7
885	90.3	848	88.2
884	104.3	847	103.0
883	91.0	846	88.6
882	235.8	845	227.5
881	237.0	844	233.2
880	251.0	843	244.9
879	246.3	842	247.0
878	203.3	841	196.2
877	170.7	840	197.7
876	203.2	839	196.2
875	83.2	838	83.6
874	83.5	837	83.4
873	100.5	836	102.0
872	84.0	835	83.7
871	253.3	834	254.2
870	251.2	833	251.4
869	210.9	832	210.8
868	213.0	831	211.3
867	170.1	830	167.1
866	171.2	829	170.4
865	170.8	828	170.3
864	78.4	827	78.6
863	78.2	826	78.7
862	92.6	825	93.8
861	78.5	824	78.6

TABLE B-17

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE: 9/1/79 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 5574 DRYWELL NO. 3: 5261

THERMOCOUPLE READINGS

DRYWELL NO. 5		DRYWELL NO. 3	
T/C No.	Temp(°F)	T/C No.	Temp (°F)
891	204.2	854	203.1
890	215.2	853	212.7
889	169.8	852	161.6
888	166.1	851	158.7
887	173.9	850	162.0
886	89.3	849	87.6
885	89.5	848	87.4
884	103.0	847	101.8
883	89.8	846	87.5
882	234.1	845	226.0
881	235.5	844	232.3
880	249.7	843	243.5
879	244.9	842	246.2
878	202.8	841	196.1
877	171.4	840	197.5
876	202.5	839	196.1
875	84.6	838	85.1
874	84.8	837	84.9
873	101.3	836	103.0
872	85.2	835	85.1
871	252.5	834	253.4
870	250.6	833	250.6
869	211.1	832	210.8
868	213.3	831	211.1
867	170.9	830	167.5
866	172.0	829	171.0
865	171.6	828	172.2
864	79.8	827	80.0
863	79.7	826	80.1
862	93.6	825	94.8
861	79.9	824	80.1

TABLE B-18

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE : 9/15/79 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 5910 DRYWELL NO. 3: 5597

THERMOCOUPLE READINGS

DRYWELL NO. 5		DRYWELL NO. 3	
T/C No.	Temp(°F)	T/C No.	Temp (°F)
891	204.8	854	202.9
890	215.5	853	213.1
889	170.9	852	162.2
888	166.9	851	159.2
887	174.8	850	162.7
886	89.8	849	87.9
885	89.8	848	87.4
884	103.3	847	101.6
883	90.3	846	87.5
882	234.3	845	225.9
881	235.8	844	232.3
880	249.8	843	243.3
879	244.8	842	245.7
878	203.0	841	196.3
877	172.0	840	197.7
876	202.8	839	196.3
875	85.0	838	85.6
874	85.4	837	85.5
873	101.5	836	103.2
872	85.7	835	85.6
871	252.3	834	252.8
870	250.3	833	250.2
869	211.2	832	210.6
868	213.2	831	211.0
867	171.5	830	167.8
866	172.5	829	171.4
865	172.1	828	171.5
864	80.7	827	80.9
863	80.6	826	80.9
862	94.3	825	95.5
861	80.9	824	80.9

TABLE B-19

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE: 10/1/79 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 6294 DRYWELL NO. 3: 5981

THERMOCOUPLE READINGS

DRYWELL NO. 5		DRYWELL NO. 3	
T/C No.	Temp(°F)	T/C No.	Temp (°F)
891	203.3	854	201.1
890	214.2	853	212.3
889	170.5	852	161.1
888	165.9	851	158.2
887	174.5	850	162.2
886	90.0	849	87.7
885	90.4	848	87.4
884	103.3	847	101.4
883	90.7	846	87.4
882	233.6	845	224.8
881	234.5	844	231.2
880	248.7	843	242.3
879	243.7	842	244.7
878	202.3	841	195.9
877	172.0	840	197.1
876	202.0	839	196.4
875	85.8	838	86.3
874	85.8	837	86.2
873	101.9	836	103.3
872	86.2	835	86.3
871	251.6	834	252.2
870	249.4	833	249.8
869	210.9	832	210.4
868	212.8	831	210.7
867	171.5	830	167.6
866	172.4	829	171.4
865	172.2	828	170.7
864	81.3	827	81.7
863	81.2	826	81.6
862	94.5	825	95.9
861	81.5	824	81.4

TABLE B-20

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE: 10/15/79 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 6630 DRYWELL NO. 3: 6317

THERMOCOUPLE READINGS

DRYWELL NO. 5 T/C No.	DRYWELL NO. 5 Temp(°F)	DRYWELL NO. 3 T/C No.	DRYWELL NO. 3 Temp (°F)
891	203.1	854	200.3
890	213.6	853	211.1
889	169.7	852	160.5
888	164.7	851	157.6
887	173.5	850	161.6
886	88.7	849	86.5
885	89.2	848	86.5
884	101.9	847	100.2
883	89.4	846	86.5
882	231.2	845	223.7
881	233.2	844	230.1
880	246.9	843	241.0
879	242.6	842	243.9
878	201.6	841	195.5
877	172.3	840	196.5
876	201.3	839	195.7
875	86.2	838	86.2
874	86.3	837	86.3
873	102.1	836	103.1
872	86.5	835	86.4
871	250.7	834	251.0
870	248.6	833	248.6
869	210.8	832	209.7
868	212.6	831	210.0
867	171.6	830	167.2
866	172.7	829	171.5
865	172.4	828	170.6
864	82.1	827	82.5
863	82.0	826	82.3
862	95.2	825	96.4
861	82.3	824	82.2

TABLE B-21

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE : 11/1/79 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 7038 DRYWELL NO. 3: 6725

THERMOCOUPLE READINGS

DRYWELL NO. 5		DRYWELL NO. 3	
T/C No.	Temp(°F)	T/C No.	Temp (°F)
891	200.1	854	195.8
890	210.3	853	208.5
889	166.3	852	156.6
888	161.2	851	153.7
887	169.9	850	158.9
886	84.7	849	82.6
885	85.5	848	83.1
884	97.7	847	96.3
883	85.4	846	82.7
882	227.3	845	220.1
881	229.6	844	227.1
880	243.6	843	238.1
879	239.5	842	241.5
878	199.1	841	193.2
877	171.7	840	194.5
876	198.8	839	193.4
875	85.3	838	85.0
874	85.4	837	85.1
873	100.9	836	101.6
872	85.7	835	85.2
871	248.7	834	248.5
870	246.6	833	246.4
869	209.9	832	208.6
868	211.6	831	208.8
867	170.9	830	166.2
866	171.9	829	170.7
865	171.6	828	173.9
864	81.9	827	82.3
863	81.8	826	82.1
862	94.8	825	96.0
861	82.1	824	82.2

TABLE B-22

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE : 11/15/79 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 7374 DRYWELL NO. 3: 7061

THERMOCOUPLE READINGS

DRYWELL NO. 5		DRYWELL NO. 3	
T/C No.	Temp(°F)	T/C No.	Temp (°F)
891	196.4	854	192.5
890	206.9	853	205.8
889	163.2	852	153.3
888	157.9	851	150.6
887	166.8	850	156.0
886	80.9	849	78.9
885	81.9	848	79.6
884	93.8	847	92.6
883	81.5	846	78.9
882	224.0	845	216.9
881	225.9	844	224.0
880	240.0	843	234.9
879	236.4	842	238.5
878	196.5	841	190.9
877	170.8	840	192.0
876	196.0	839	191.1
875	84.2	838	83.9
874	84.3	837	84.3
873	99.5	836	100.3
872	84.4	835	84.3
871	246.0	834	245.9
870	243.9	833	244.1
869	208.7	832	207.5
868	210.4	831	207.6
867	170.1	830	165.4
866	171.0	829	169.5
865	170.7	828	178.6
864	81.8	827	82.3
863	81.9	826	82.1
862	94.3	825	95.9
861	82.1	824	82.3

TABLE B-23

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE: 12/1/79 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 7758 DRYWELL NO. 3: 7445

THERMOCOUPLE READINGS

DRYWELL NO. 5		DRYWELL NO. 3	
T/C No.	Temp(°F)	T/C No.	Temp (°F)
891	193.0	854	189.3
890	203.0	853	202.2
889	159.9	852	150.0
888	154.6	851	147.1
887	163.2	850	152.4
886	76.9	849	74.6
885	78.0	848	75.7
884	89.7	847	88.3
883	77.4	846	74.7
882	220.0	845	212.9
881	222.2	844	220.4
880	236.2	843	231.3
879	232.7	842	234.7
878	193.3	841	187.8
877	169.3	840	189.0
876	192.7	839	188.0
875	82.5	838	82.4
874	82.7	837	82.6
873	97.5	836	98.5
872	82.8	835	82.6
871	243.1	834	242.9
870	241.1	833	241.0
869	207.1	832	205.9
868	208.8	831	205.8
867	168.8	830	164.1
866	169.9	829	168.0
865	169.2	828	176.2
864	81.9	827	81.9
863	81.7	826	82.0
862	94.1	825	95.2
861	82.1	824	82.0

TABLE B-24

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE : 12/15/79 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 8094 DRYWELL NO. 3: 7781

THERMOCOUPLE READINGS

DRYWELL NO. 5		DRYWELL NO. 3	
T/C No.	Temp(°F)	T/C No.	Temp (°F)
891	191.1	854	186.8
890	201.0	853	200.4
889	158.0	852	147.6
888	152.7	851	144.9
887	161.2	850	150.6
886	74.3	849	71.9
885	75.4	848	73.0
884	87.3	847	85.7
883	74.9	846	72.1
882	217.6	845	210.3
881	219.8	844	218.3
880	234.0	843	228.7
879	229.8	842	232.8
878	190.8	841	185.6
877	168.0	840	186.9
876	190.2	839	185.9
875	80.6	838	80.5
874	80.9	837	80.8
873	95.5	836	96.5
872	80.9	835	80.7
871	240.8	834	240.7
870	238.8	833	238.8
869	205.2	832	204.4
868	207.0	831	204.2
867	167.1	830	162.9
866	168.3	829	166.5
865	167.6	828	173.7
864	80.9	827	81.2
863	80.8	826	81.4
862	92.9	825	94.3
861	81.2	824	81.4

TABLE B-25

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE: 1/1/80 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 8502 DRYWELL NO. 3: 8189

THERMOCOUPLE READINGS

DRYWELL NO. 5		DRYWELL NO. 3	
T/C No.	Temp(°F)	T/C No.	Temp (°F)
891	188.4	854	184.4
890	197.6	853	197.3
889	155.1	852	145.0
888	149.8	851	142.3
887	158.0	850	147.8
886	71.3	849	68.8
885	72.4	848	70.1
884	84.2	847	82.6
883	71.8	846	69.0
882	214.2	845	207.5
881	216.7	844	215.1
880	230.4	843	225.6
879	226.9	842	229.8
878	187.9	841	182.9
877	166.3	840	184.2
876	187.5	839	183.4
875	78.6	838	78.6
874	78.9	837	78.9
873	93.4	836	94.4
872	78.9	835	78.7
871	237.8	834	237.9
870	235.9	833	236.1
869	203.4	832	202.6
868	205.1	831	202.2
867	165.6	830	161.3
866	166.7	829	164.8
865	166.1	828	168.4
864	80.1	827	80.3
863	79.9	826	80.5
862	91.9	825	93.2
861	80.3	824	80.5

TABLE B-26

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE : 1/15/80 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 8838 DRYWELL NO. 3: 8525

THERMOCOUPLE READINGS

DRYWELL NO. 5		DRYWELL NO. 3	
T/C No.	Temp(°F)	T/C No.	Temp (°F)
891	185.4	854	183.2
890	195.6	853	195.4
889	152.1	852	143.3
888	147.7	851	141.0
887	156.1	850	145.8
886	69.2	849	66.7
885	70.3	848	67.9
884	82.0	847	80.5
883	69.6	846	66.9
882	212.4	845	205.9
881	214.1	844	213.7
880	228.3	843	223.7
879	224.9	842	228.0
878	186.0	841	181.2
877	164.9	840	182.4
876	185.4	839	181.8
875	77.0	838	76.8
874	77.3	837	77.3
873	91.7	836	92.6
872	77.3	835	77.1
871	235.7	834	235.8
870	233.9	833	234.1
869	201.7	832	200.8
868	203.4	831	200.8
867	164.9	830	159.9
866	165.3	829	163.5
865	164.7	828	175.0
864	79.1	827	79.5
863	79.0	826	79.7
862	90.8	825	92.3
861	79.3	824	79.7

TABLE B-27

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE: 2/1/80 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 9246 DRYWELL NO. 3: 8933

THERMOCOUPLE READINGS

DRYWELL NO. 5		DRYWELL NO. 3	
T/C No.	Temp(°F)	T/C No.	Temp (°F)
891	182.7	854	180.3
890	193.2	853	193.0
889	149.6	852	141.3
888	145.3	851	138.9
887	153.7	850	143.7
886	67.5	849	65.1
885	68.2	848	66.1
884	80.3	847	78.6
883	67.9	846	65.2
882	209.4	845	203.0
881	211.3	844	210.8
880	225.3	843	221.0
879	221.8	842	225.1
878	183.3	841	178.9
877	163.2	840	180.2
876	182.9	839	179.5
875	75.1	838	75.1
874	75.5	837	75.4
873	89.7	836	90.8
872	75.5	835	75.2
871	232.9	834	232.9
870	231.3	833	231.3
869	199.7	832	198.8
868	201.3	831	198.5
867	163.0	830	158.0
866	163.6	829	161.7
865	162.9	828	164.3
864	78.0	827	78.1
863	77.9	826	78.5
862	89.7	825	91.0
861	78.1	824	78.5

TABLE B-28

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE: 2/15/80 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 9582 DRYWELL NO. 3: 9269

THERMOCOUPLE READINGS

DRYWELL NO. 5 T/C No.	DRYWELL NO. 5 Temp(°F)	DRYWELL NO. 3 T/C No.	DRYWELL NO. 3 Temp (°F)
891	182.0	854	179.4
890	192.1	853	192.1
889	148.2	852	140.4
888	144.3	851	138.0
887	152.1	850	142.8
886	67.0	849	64.6
885	67.5	848	65.5
884	79.7	847	78.0
883	67.3	846	64.8
882	208.0	845	201.7
881	210.2	844	209.5
880	224.0	843	219.7
879	220.4	842	223.8
878	182.0	841	177.8
877	162.0	840	179.1
876	181.5	839	178.1
875	73.9	838	73.7
874	74.3	837	74.0
873	88.5	836	89.4
872	74.3	835	73.8
871	231.5	834	231.5
870	229.8	833	229.8
869	198.5	832	197.4
868	200.1	831	197.1
867	160.9	830	156.9
866	162.5	829	160.5
865	161.8	828	
864	77.2	827	77.3
863	77.0	826	77.7
862	88.7	825	90.7
861	77.3	824	77.7

TABLE B-29

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE: 3/1/80 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 9942 DRYWELL NO. 3: 9629

THERMOCOUPLE READINGS

DRYWELL NO. 5		DRYWELL NO. 3	
T/C No.	Temp(°F)	T/C No.	Temp (°F)
891	180.6	854	179.6
890	190.5	853	190.1
889	146.9	852	140.1
888	142.9	851	137.7
887	151.2	850	141.0
886	66.5	849	64.1
885	66.9	848	64.8
884	79.1	847	77.3
883	66.8	846	64.2
882	206.4	845	201.4
881	208.2	844	207.9
880	222.1	843	218.8
879	218.5	842	222.5
878	179.8	841	176.8
877	160.8	840	178.0
876	179.6	839	177.2
875	73.1	838	72.8
874	73.4	837	73.2
873	87.8	836	88.4
872	73.5	835	73.0
871	229.4	834	230.1
870	227.8	833	228.3
869	197.0	832	195.8
868	198.5	831	195.7
867	156.3	830	155.7
866	161.2	829	159.5
865	160.7	828	
864	76.6	827	76.6
863	76.4	826	77.0
862	88.1	825	89.4
861	76.6	824	77.0

TABLE B-30

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE: 3/15/80 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 10,278 DRYWELL NO. 3: 9,965

THERMOCOUPLE READINGS

DRYWELL NO. 5		DRYWELL NO. 3	
T/C No.	Temp(°F)	T/C No.	Temp (°F)
891	178.5	854	177.6
890	188.3	853	189.6
889	145.0	852	139.1
888	140.8	851	136.3
887	149.1	850	140.2
886	66.4	849	63.9
885	66.4	848	64.2
884	78.7	847	76.9
883	66.8	846	64.0
882	204.3	845	199.4
881	206.2	844	206.7
880	219.7	843	217.1
879	216.3	842	221.2
878	177.7	841	175.7
877	159.6	840	176.8
876	177.2	839	176.0
875	72.5	838	72.1
874	72.8	837	72.6
873	87.0	836	87.6
872	72.9	835	72.4
871	227.3	834	228.5
870	225.8	833	226.9
869	195.6	832	194.5
868	197.1	831	194.5
867	153.9	830	154.5
866	159.9	829	158.4
865	159.4	828	
864	75.9	827	75.9
863	75.8	826	76.3
862	87.3	825	88.7
861	75.9	824	76.3

TABLE B-31

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE : 4/1/80 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 10,686 DRYWELL NO. 3: 10,373

THERMOCOUPLE READINGS

DRYWELL NO. 5 T/C No.	DRYWELL NO. 5 Temp(°F)	DRYWELL NO. 3 T/C No.	DRYWELL NO. 3 Temp (°F)
891	178.5	854	176.3
890	188.3	853	187.7
889	145.6	852	137.7
888	141.4	851	134.8
887	149.6	850	138.1
886	66.8	849	63.9
885	66.9	848	64.3
884	78.9	847	76.6
883	67.1	846	64.1
882	204.4	845	198.0
881	206.0	844	205.0
880	219.7	843	215.5
879	215.9	842	219.1
878	177.6	841	174.4
877	158.5	840	175.6
876	177.3	839	174.5
875	71.8	838	71.5
874	72.0	837	71.6
873	86.1	836	86.8
872	72.2	835	71.6
871	226.6	834	226.9
870	225.1	833	225.1
869	194.6	832	193.3
868	196.2	831	193.1
867	153.3	830	153.5
866	159.2	829	157.1
865	158.6	828	
864	75.2	827	75.1
863	75.1	826	75.5
862	86.6	825	87.7
861	75.3	824	75.5

TABLE B-32

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE: 4/15/80 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 11,022 DRYWELL NO. 3: 10,709

THERMOCOUPLE READINGS

DRYWELL NO. 5		DRYWELL NO. 3	
T/C No.	Temp(°F)	T/C No.	Temp (°F)
891	179.5	854	176.0
890	188.9	853	186.6
889	147.5	852	136.5
888	142.8	851	133.1
887	150.9	850	136.8
886	68.0	849	65.3
885	68.5	848	65.3
884	80.1	847	77.6
883	68.6	846	65.0
882	204.6	845	197.4
881	206.7	844	204.3
880	219.6	843	214.8
879	216.2	842	218.0
878	177.6	841	173.6
877	158.2	840	174.6
876	177.6	839	174.3
875	71.7	838	71.1
874	71.6	837	71.6
873	85.8	836	86.4
872	71.7	835	71.6
871	226.1	834	225.7
870	224.3	833	224.2
869	193.7	832	191.9
868	195.1	831	192.1
867	152.4	830	152.5
866	158.4	829	156.6
865	158.2	828	
864	74.7	827	74.8
863	74.6	826	75.0
862	85.8	825	87.3
861	74.6	824	74.8

TABLE B-33

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE: 5/1/80 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 11,406 DRYWELL NO. 3: 11,093

THERMOCOUPLE READINGS

DRYWELL NO. 5		DRYWELL NO. 3	
T/C No.	Temp(°F)	T/C No.	Temp (°F)
891	180.2	854	178.3
890	189.9	853	188.4
889	149.1	852	140.0
888	144.1	851	136.8
887	151.6	850	139.8
886	71.1	849	68.4
885	71.3	848	68.4
884	83.1	847	80.6
883	71.6	846	68.3
882	205.7	845	199.1
881	207.3	844	205.6
880	220.7	843	216.1
879	216.9	842	219.2
878	178.6	841	174.7
877	157.8	840	175.8
876	178.6	839	174.9
875	71.8	838	71.2
874	72.0	837	71.4
873	85.9	836	86.4
872	72.2	835	71.4
871	226.4	834	226.1
870	224.7	833	224.0
869	193.2	832	191.2
868	194.8	831	191.4
867	152.1	830	152.2
866	158.2	829	155.8
865	157.8	828	
864	74.2	827	74.0
863	74.0	826	74.4
862	85.4	825	86.5
861	74.2	824	74.5

TABLE B-34

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE: 5/14/80 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 11,718 DRYWELL NO. 3: 11,405

THERMOCOUPLE READINGS

DRYWELL NO. 5		DRYWELL NO. 3	
T/C No.	Temp(°F)	T/C No.	Temp (°F)
891	179.1	854	177.7
890	188.4	853	186.8
889	148.0	852	139.6
888	143.5	851	136.4
887	150.9	850	139.3
886	72.8	849	70.1
885	73.0	848	70.0
884	84.5	847	82.1
883	73.2	846	70.0
882	204.3	845	198.0
881	206.0	844	203.6
880	218.9	843	214.2
879	214.8	842	217.2
878	177.3	841	173.5
877	156.2	840	174.5
876	177.2	839	173.7
875	72.1	838	71.6
874	72.3	837	71.7
873	86.0	836	86.5
872	72.6	835	71.7
871	224.1	834	224.0
870	222.3	833	221.9
869	191.1	832	189.2
868	192.7	831	189.3
867	151.0	830	150.7
866	156.7	829	154.3
865	156.2	828	
864	73.7	827	73.5
863	73.5	826	73.8
862	84.9	825	85.8
861	73.7	824	73.8

TABLE B-35

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE: 5/28/80 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 12,054 DRYWELL NO. 3: 11,741

THERMOCOUPLE READINGS

DRYWELL NO. 5		DRYWELL NO. 3	
T/C No.	Temp(°F)	T/C No.	Temp. (°F)
891	179.3	854	178.0
890	188.5	853	186.5
889	148.2	852	140.0
888	144.1	851	137.0
887	151.5	850	139.8
886	74.5	849	72.1
885	74.9	848	72.0
884	86.1	847	83.9
883	75.1	846	72.0
882	204.3	845	198.2
881	206.1	844	203.7
880	218.7	843	214.4
879	214.7	842	217.2
878	177.5	841	173.9
877	156.1	840	174.8
876	177.4	839	174.2
875	73.0	838	72.6
874	73.1	837	72.7
873	86.6	836	87.2
872	73.3	835	72.8
871	223.5	834	223.9
870	221.9	833	221.9
869	191.0	832	188.7
868	192.6	831	188.9
867	151.4	830	150.6
866	156.9	829	154.1
865	156.6	828	
864	74.2	827	73.7
863	74.0	826	73.9
862	85.1	825	85.8
861	74.1	824	73.8

TABLE B-36

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE: 6/11/80 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 12,390 DRYWELL NO. 3: 12,077

THERMOCOUPLE READINGS

DRYWELL NO. 5		DRYWELL NO. 3	
T/C No.	Temp(°F)	T/C No.	Temp (°F)
891	179.6	854	178.2
890	188.4	853	187.5
889	149.2	852	140.4
888	144.8	851	137.4
887	152.2	850	140.5
886	75.8	849	73.6
885	76.3	848	73.3
884	87.4	847	85.3
883	76.6	846	73.4
882	205.0	845	198.4
881	206.4	844	204.0
880	219.1	843	214.6
879	215.0	842	217.1
878	177.9	841	174.1
877	156.1	840	175.0
876	177.7	839	174.7
875	73.9	838	73.7
874	73.9	837	74.0
873	87.3	836	88.1
872	74.1	835	74.0
871	223.4	834	223.8
870	221.6	833	221.8
869	190.3	832	188.5
868	191.9	831	188.9
867	151.5	830	150.6
866	156.4	829	154.2
865	156.2	828	
864	74.0	827	74.0
863	73.8	826	74.1
862	84.9	825	86.1
861	74.0	824	74.0

TABLE B-37

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE: 6/25/80 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 12,726 DRYWELL NO. 3: 12,413

THERMOCOUPLE READINGS

DRYWELL NO. 5 T/C No.	DRYWELL NO. 5 Temp(°F)	DRYWELL NO. 3 T/C No.	DRYWELL NO. 3 Temp (°F)
891	182.3	854	181.9
890	190.9	853	189.7
889	152.2	852	144.3
888	147.9	851	141.2
887	155.2	850	143.4
886	79.0	849	76.9
885	79.4	848	76.4
884	90.5	847	88.6
883	80.0	846	76.7
882	207.7	845	201.6
881	209.2	844	206.1
880	221.5	843	217.0
879	217.3	842	219.1
878	179.9	841	176.2
877	157.0	840	177.1
876	179.9	839	176.7
875	75.1	838	75.0
874	75.1	837	75.3
873	88.5	836	89.5
872	75.4	835	75.4
871	225.1	834	225.5
870	223.2	833	223.3
869	191.2	832	189.2
868	192.8	831	189.5
867	153.6	830	151.3
866	157.3	829	154.9
865	157.2	828	
864	74.7	827	74.6
863	74.6	826	74.7
862	85.5	825	86.6
861	74.7	824	74.5

TABLE B-38

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE: 7/16/80 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 13,230 DRYWELL NO. 3: 12,917

THERMOCOUPLE READINGS

DRYWELL NO. 5		DRYWELL NO. 3	
T/C No.	Temp(°F)	T/C No.	Temp (°F)
891	183.3	854	183.7
890	192.0	853	191.3
889	154.5	852	146.5
888	150.2	851	143.5
887	157.5	850	145.9
886	83.0	849	80.9
885	83.3	848	80.2
884	94.3	847	92.3
883	83.9	846	80.7
882	209.3	845	203.1
881	210.6	844	207.6
880	223.2	843	218.5
879	218.2	842	220.4
878	181.2	841	177.8
877	157.6	840	178.6
876	181.2	839	178.6
875	77.2	838	77.6
874	77.2	837	77.8
873	90.5	836	91.9
872	77.5	835	78.0
871	225.6	834	226.6
870	223.7	833	224.4
869	191.0	832	189.6
868	192.7	831	190.0
867	153.7	830	152.3
866	157.5	829	155.4
865	157.5	828	
864	75.0	827	75.4
863	75.0	826	75.4
862	85.8	825	87.2
861	75.0	824	75.3

TABLE B-39

ISOLATED DRYWELL TEST - THERMOCOUPLE DATA

DATE: 7/30/80 TIME: 4:00 p.m.

OPERATING HOURS: DRYWELL NO. 5: 13,566 DRYWELL NO. 3: 13,253

THERMOCOUPLE READINGS

DRYWELL NO. 5		DRYWELL NO. 3	
T/C No.	Temp(°F)	T/C No.	Temp (°F)
891	185.3	854	185.8
890	194.2	853	192.3
889	156.5	852	149.1
888	152.5	851	146.0
887	159.4	850	148.0
886	85.8	849	83.8
885	85.8	848	83.2
884	97.0	847	95.0
883	86.6	846	83.8
882	210.8	845	204.8
881	212.0	844	208.8
880	224.5	843	219.7
879	219.7	842	221.4
878	182.9	841	179.2
877	157.9	840	180.1
876	183.0	839	179.3
875	78.9	838	78.8
874	78.9	837	78.8
873	91.9	836	93.1
872	79.3	835	79.1
871	226.0	834	226.4
870	224.5	833	224.1
869	191.4	832	188.8
868	193.0	831	189.5
867	154.9	830	152.3
866	158.3	829	155.3
865	158.2	828	
864	76.3	827	76.0
863	76.0	826	76.3
862	87.0	825	87.8
861	76.2	824	76.4

APPENDIX C

TEST DATA ILLUSTRATIONS

This appendix provides supplementary test data illustrations.

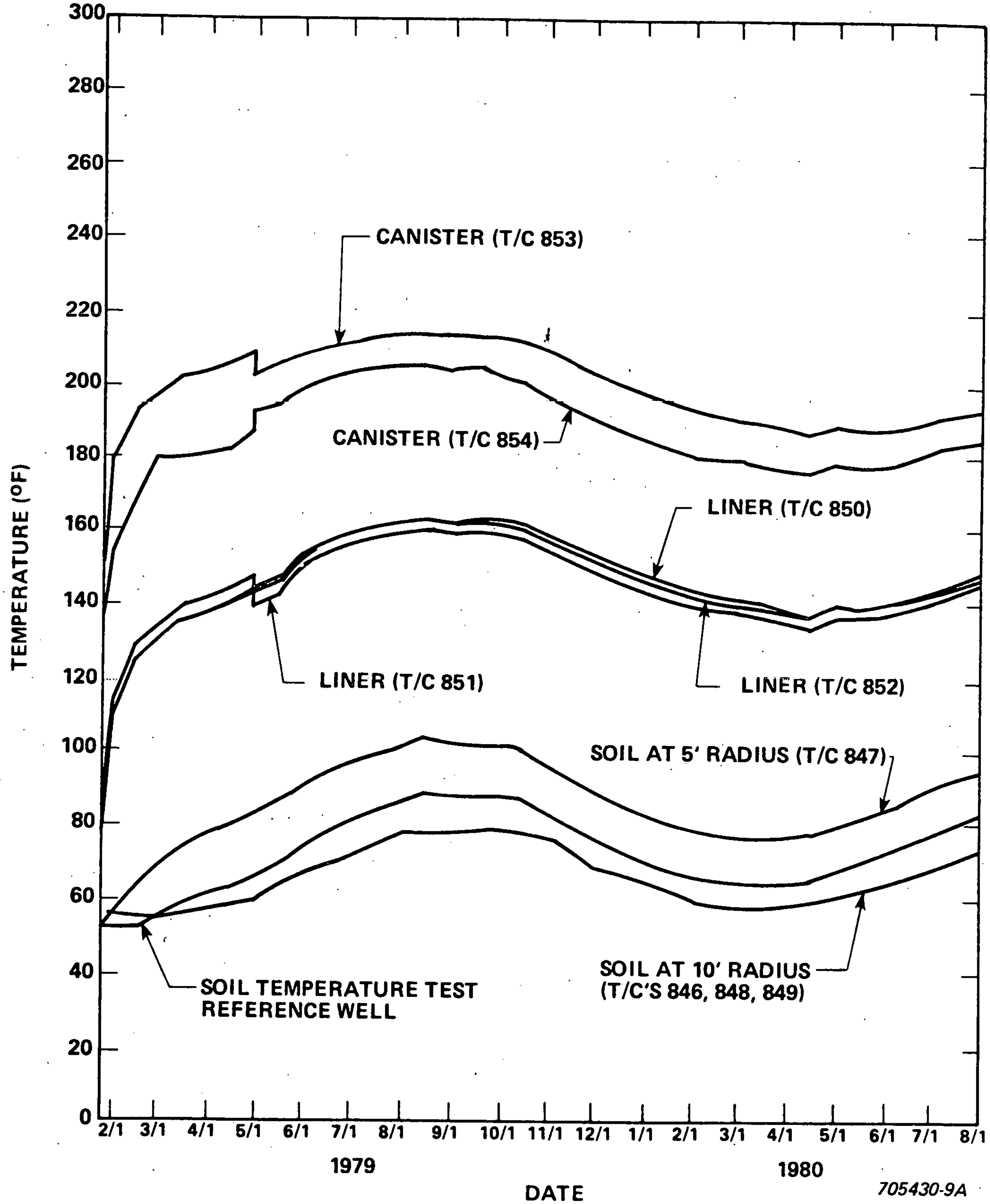

Figure C-1. Drywell 3 Canister, Liner, and Soil Temperature Distributions at About 85 Inches Below Ground Level

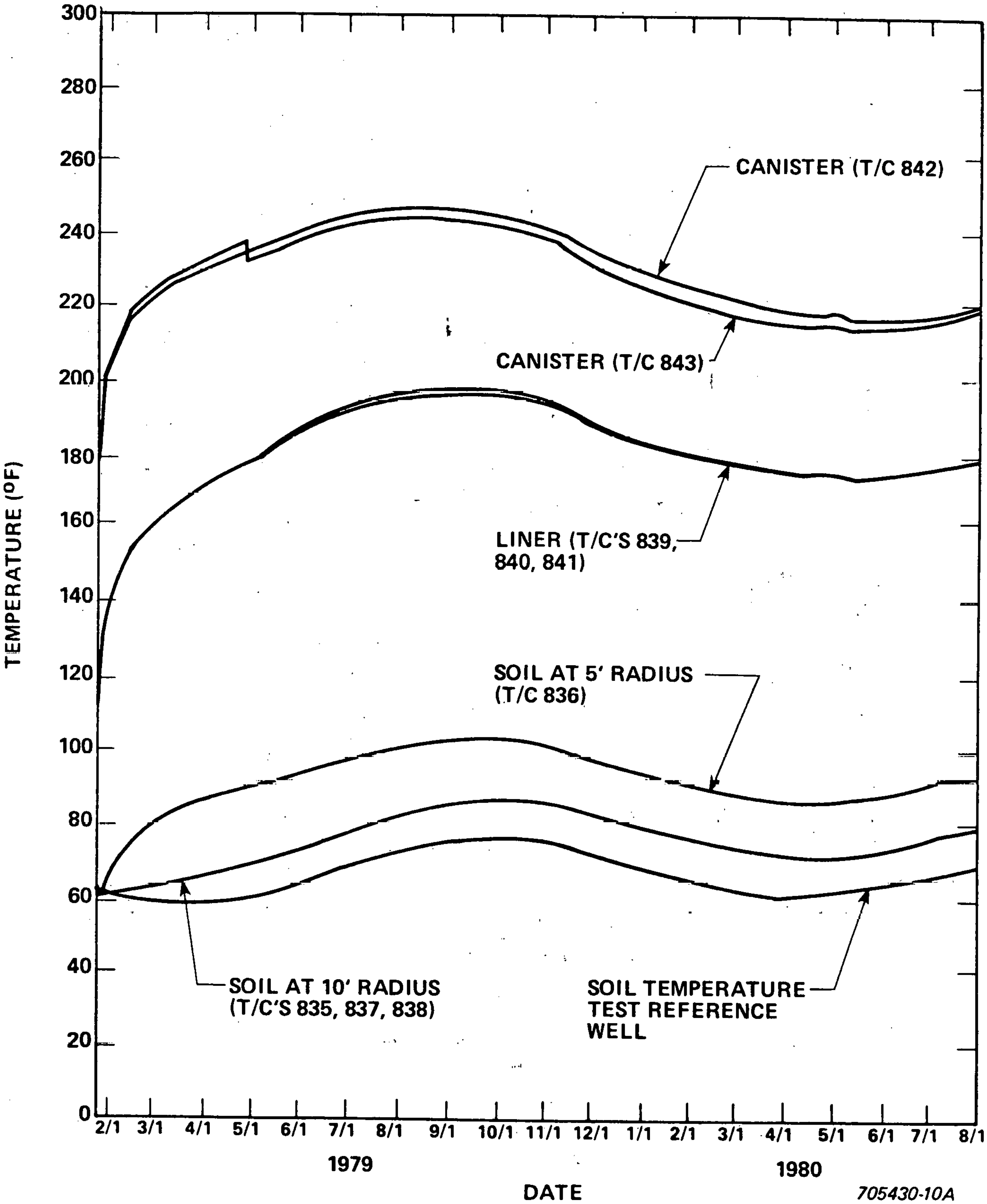

Figure C-2. Drywell 3 Canister, Liner, and Soil Temperature Distributions at About 145 Inches Below Ground Level

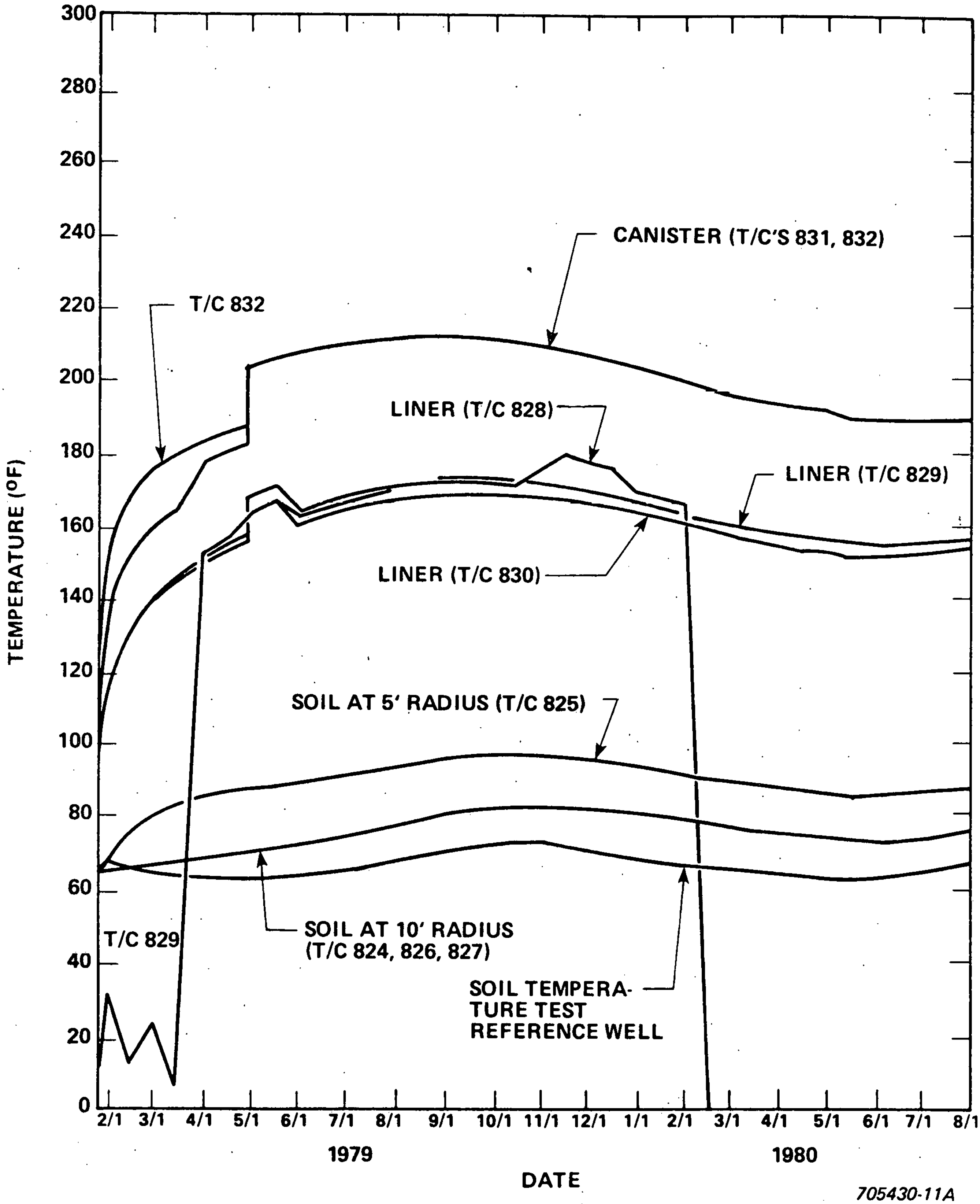

Figure C-3. Drywell 3 Canister, Liner, and Soil Temperature Distributions at About 205 Inches Below Ground Level

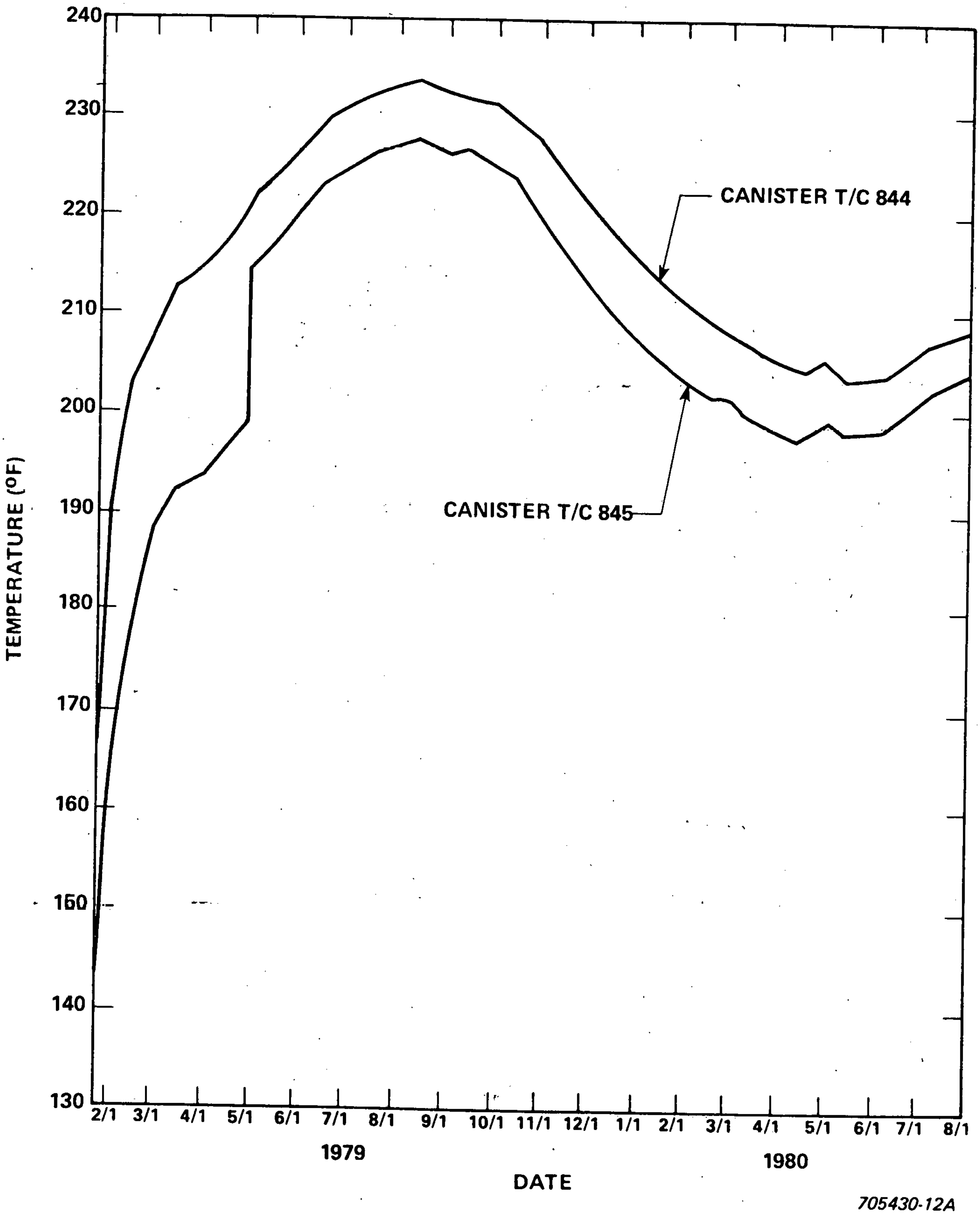

Figure C-4. Drywell 3 Canister Temperature Distribution at 116 Inches Below Ground Level

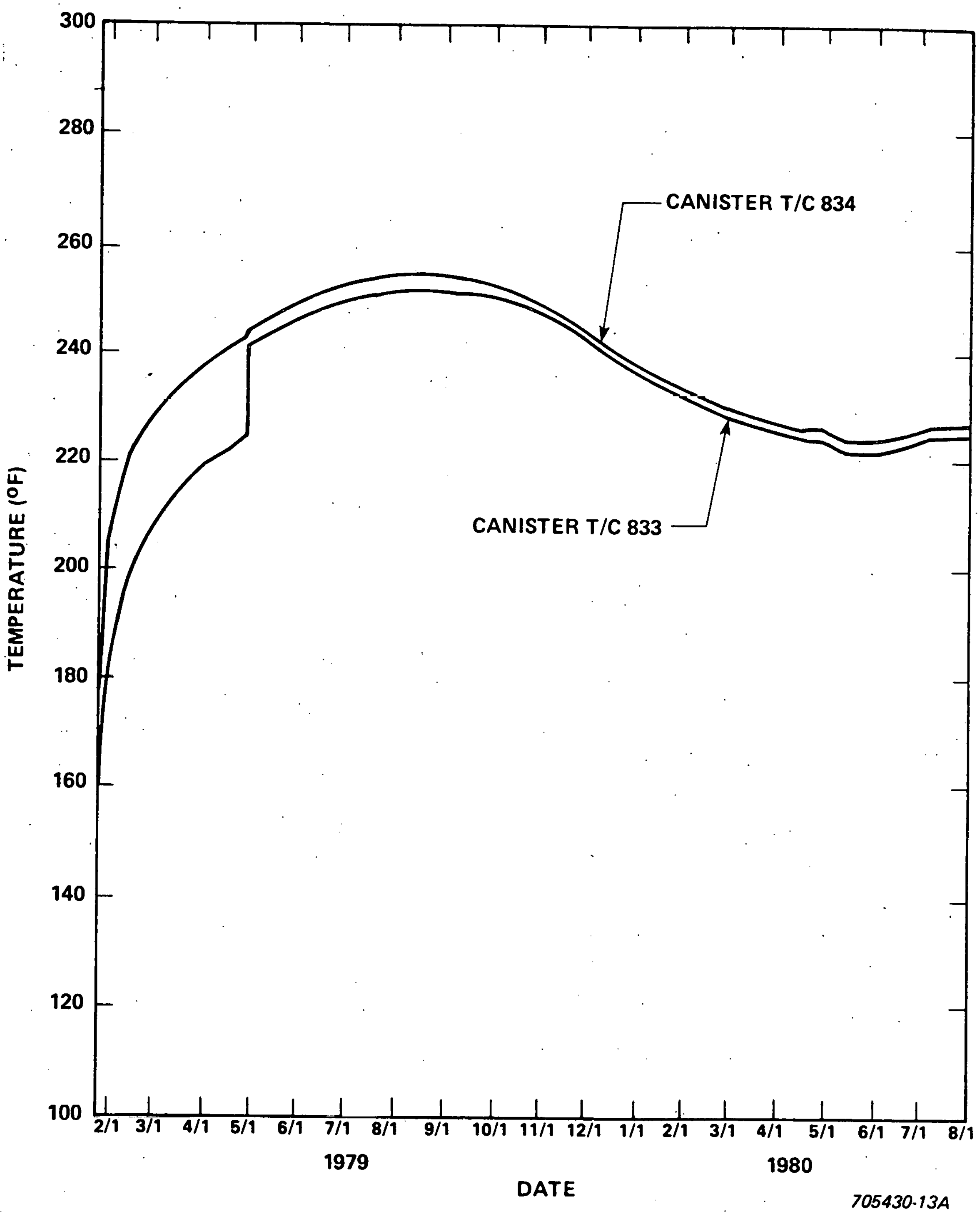

Figure C-5. Drywell 3 Canister Temperature Distribution at 176 Inches Below Ground Level

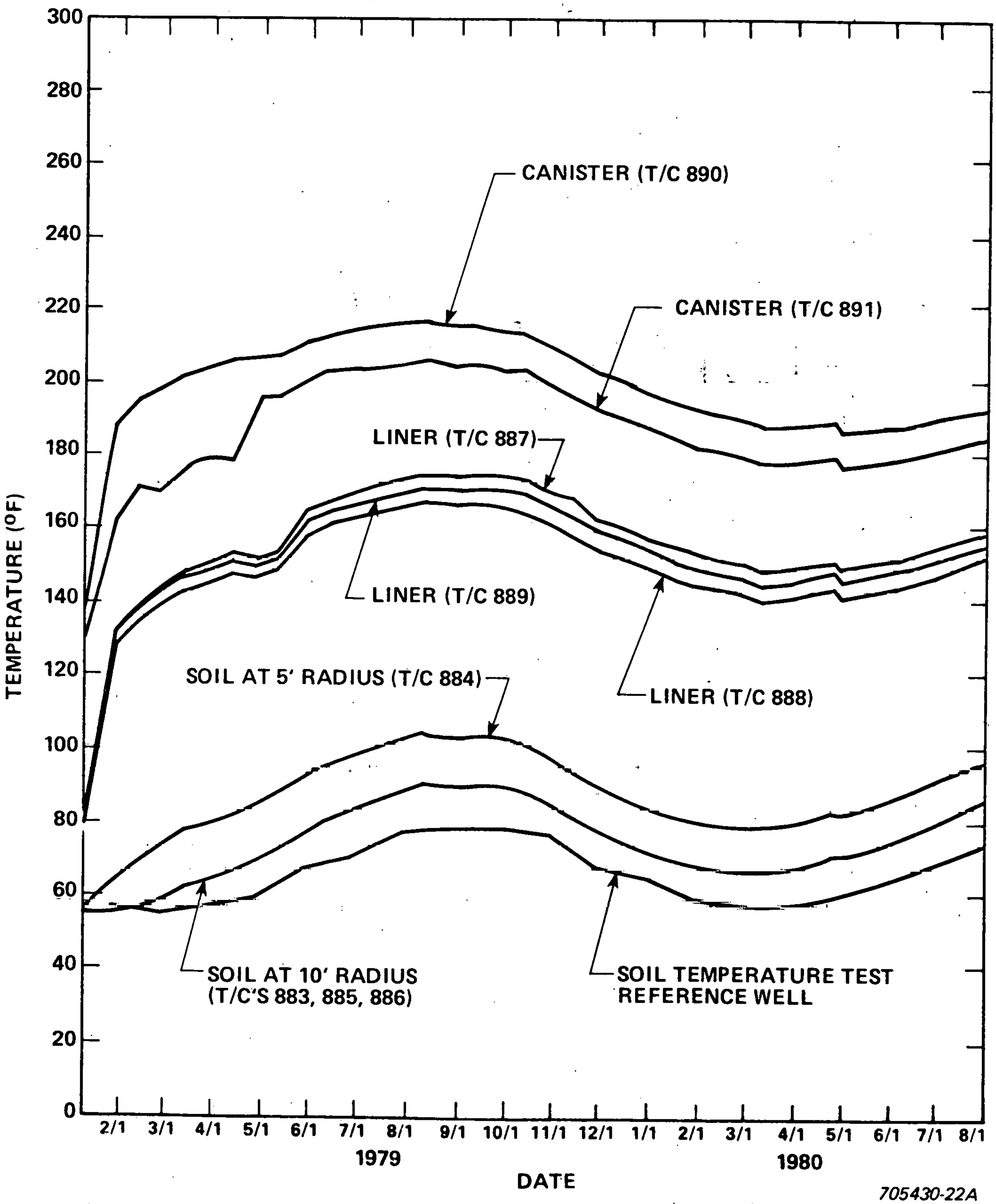

Figure C-6. Drywell 5 Canister, Liner, and Soil Temperature Distributions at About 85 Inches Below Ground Level

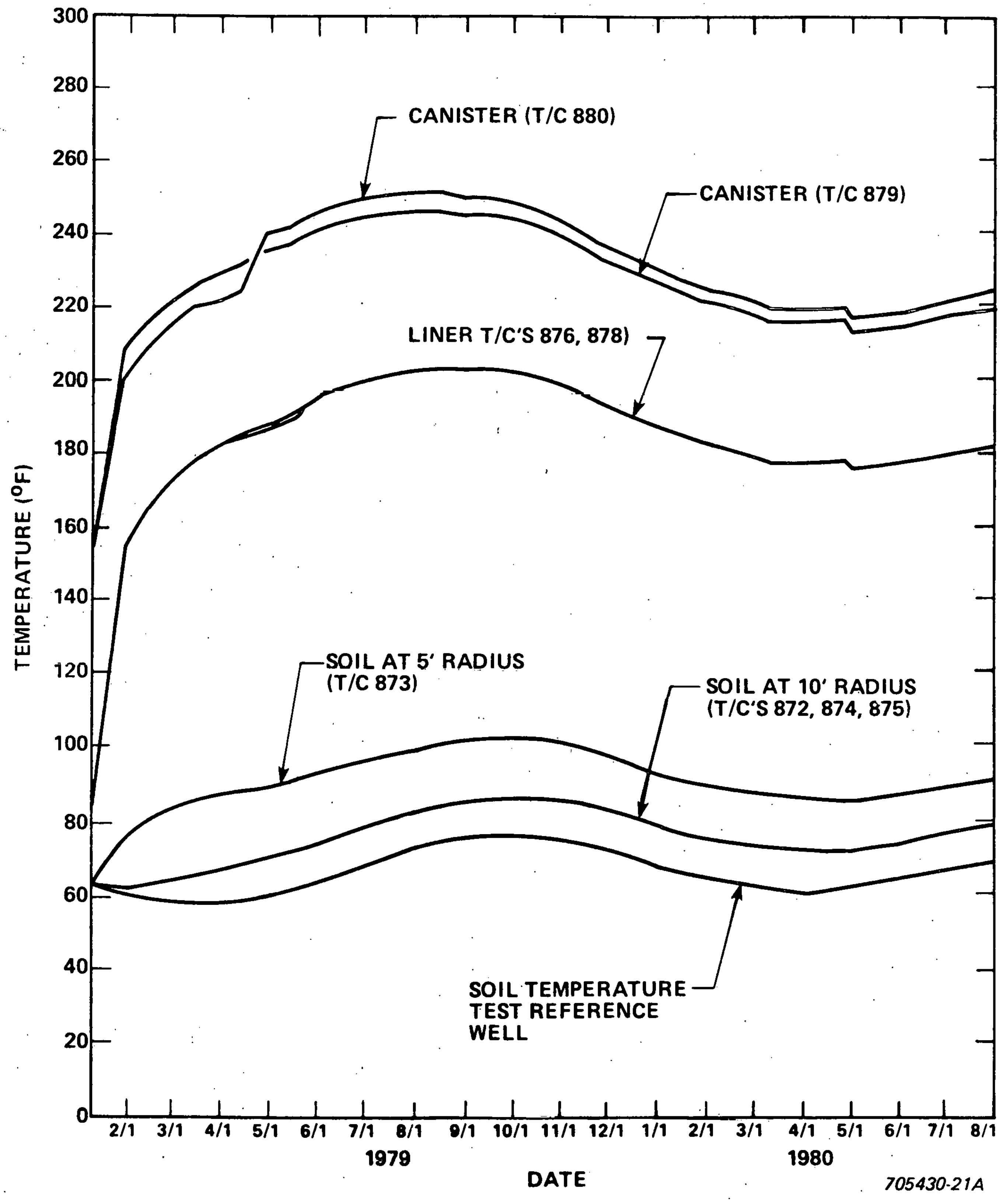

Figure C-7. Drywell 5 Canister, Liner, and Soil Temperature Distribution at About 145 Inches Below Ground Level

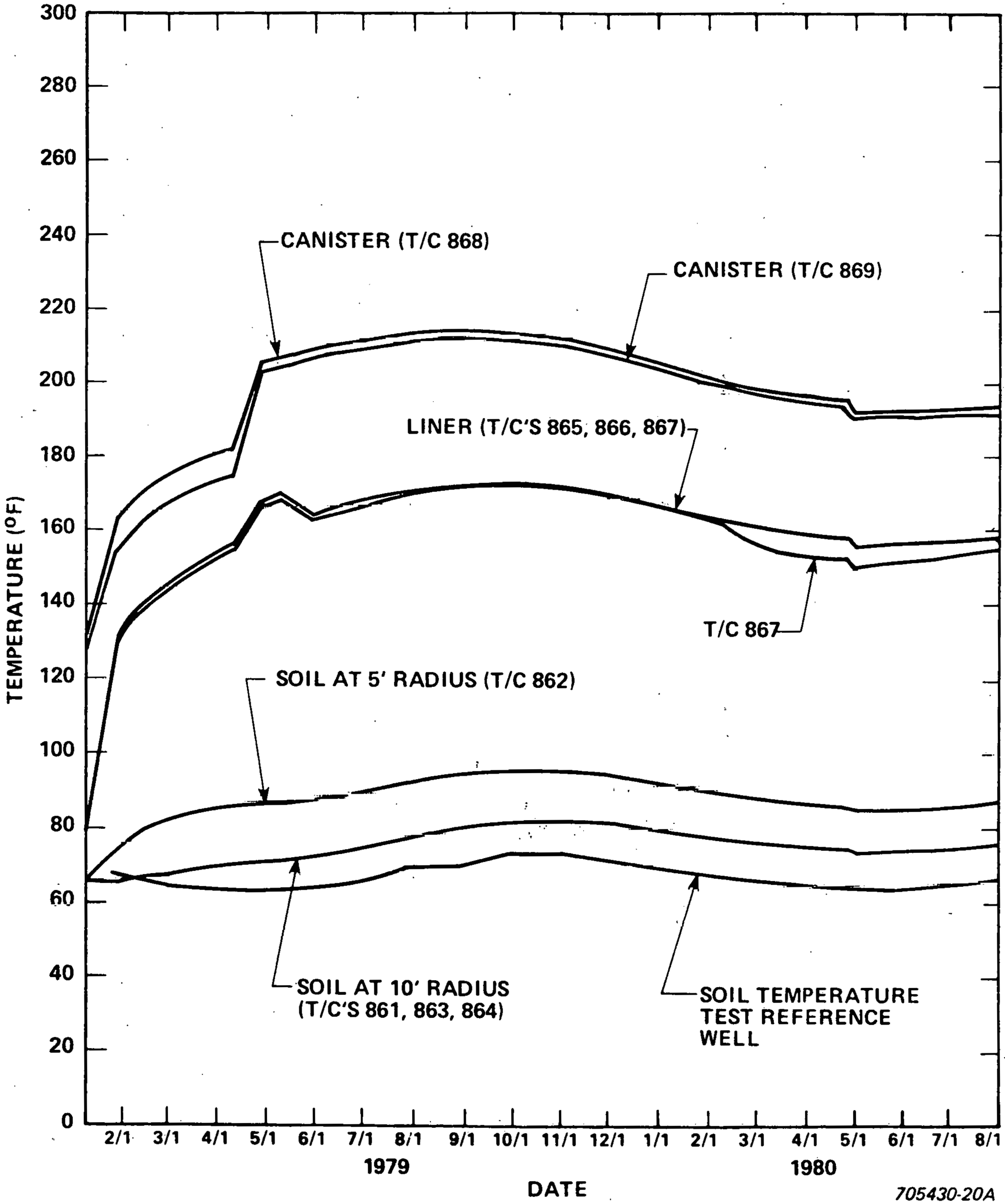

Figure C-8. Drywell 5 Canister, Liner, and Soil Temperature Distributions at About 205 Inches Below Ground Level

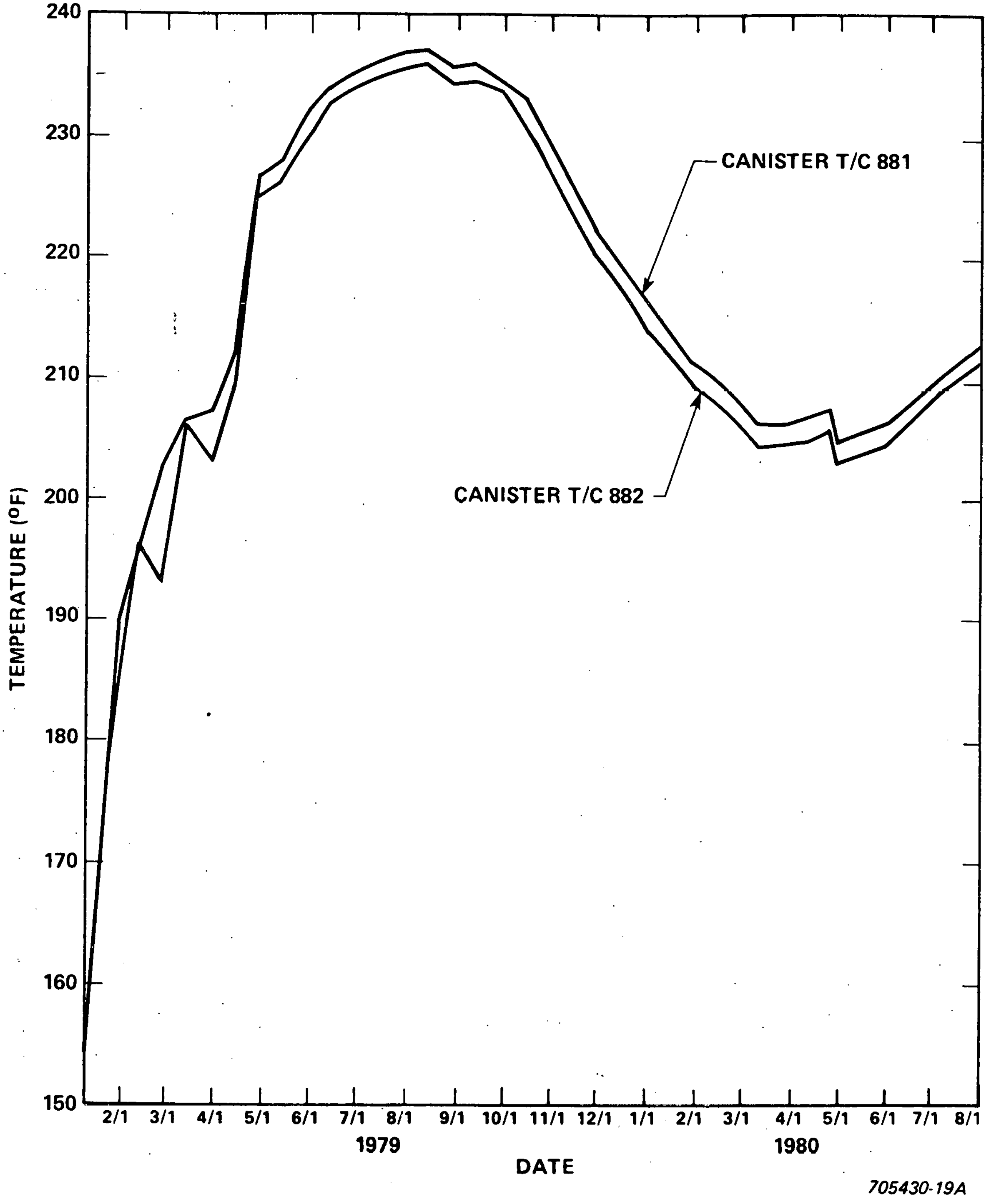

Figure C-9. Drywell 5 Canister Temperature Distribution at 116 Inches Below Ground Level

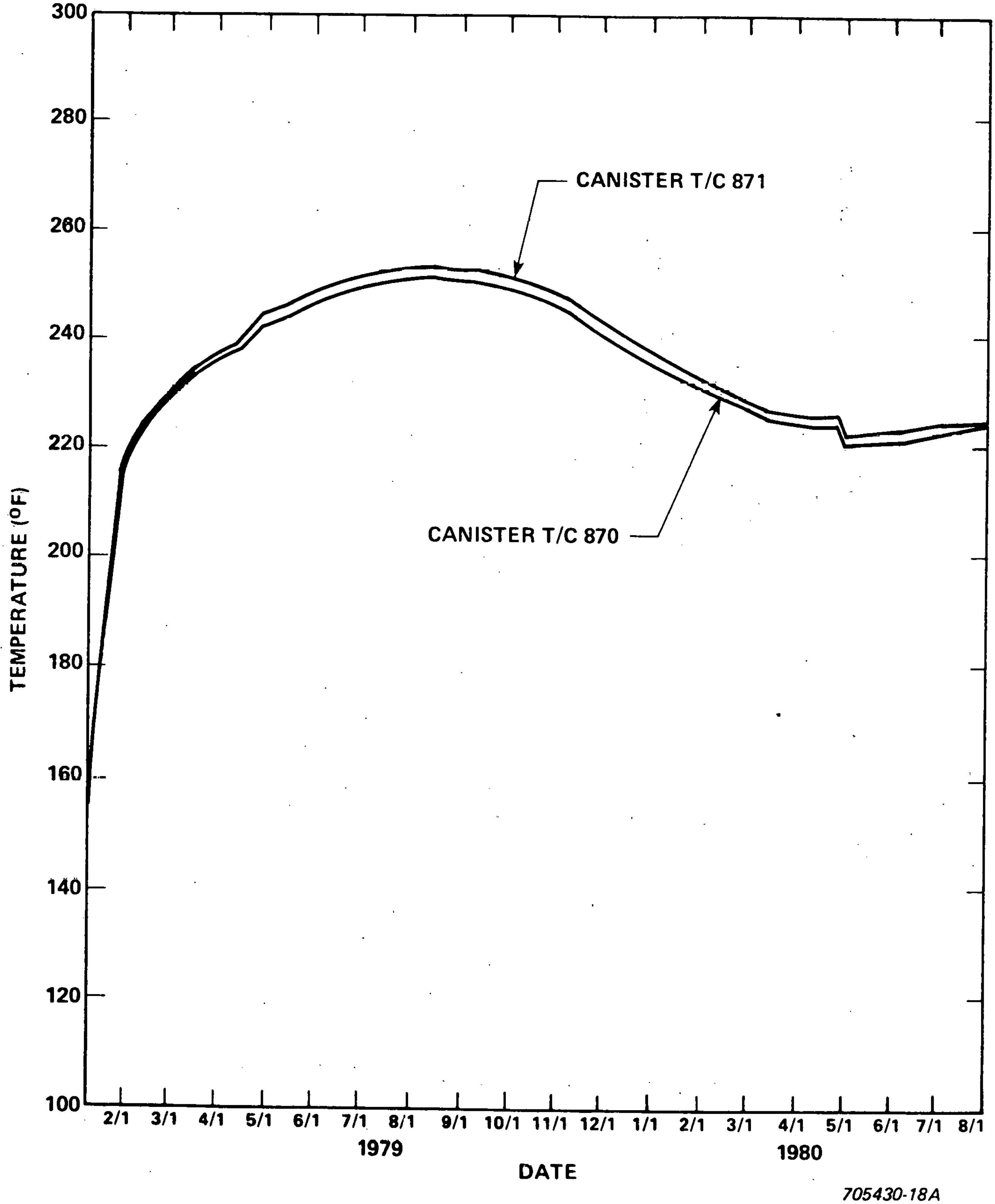

Figure C-10. Drywell 5 Canister Temperature Distribution at 176 Inches Below Ground Level

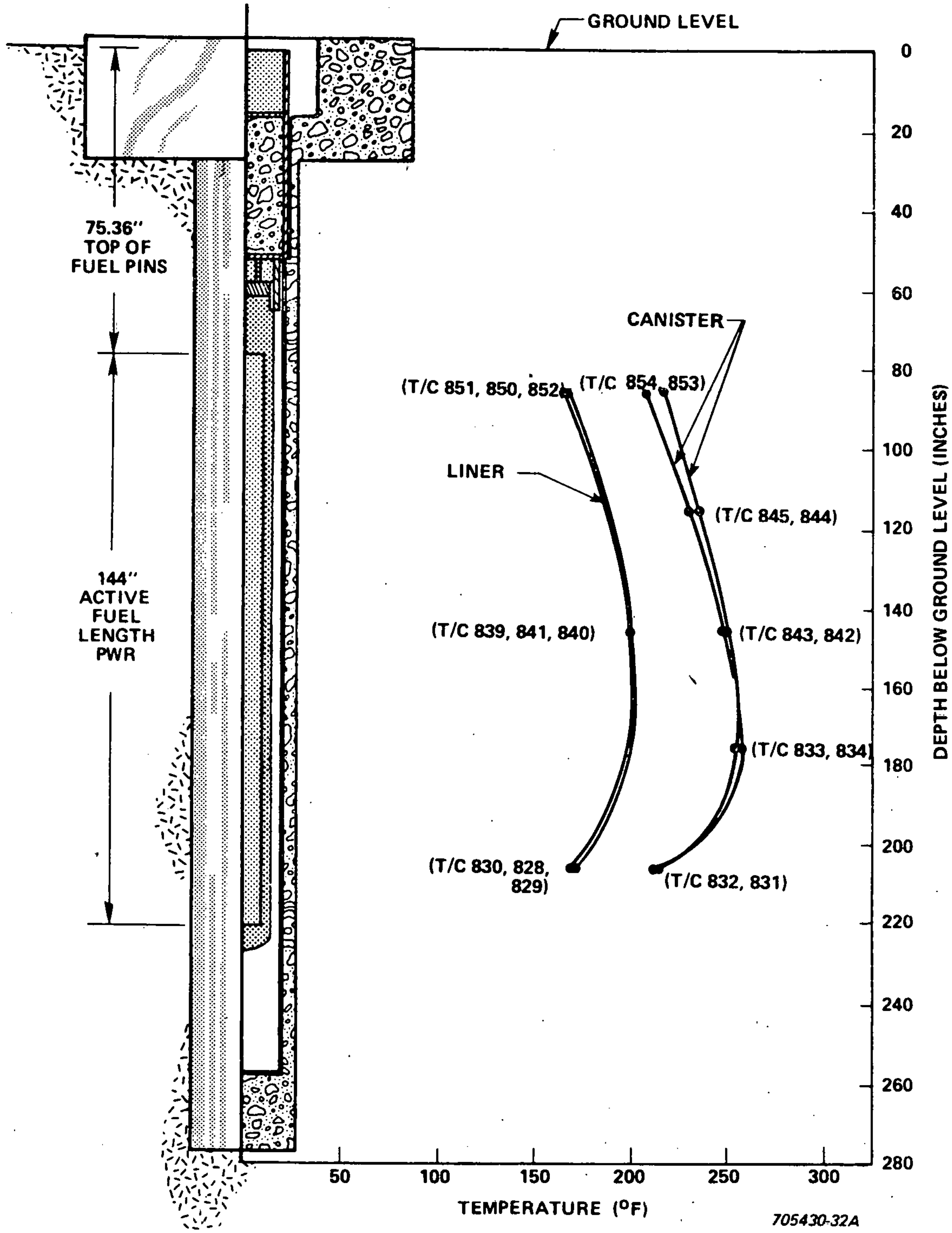

Figure C-11. Drywell 3 Axial Canister and Liner Temperature Profiles, August 15, 1979

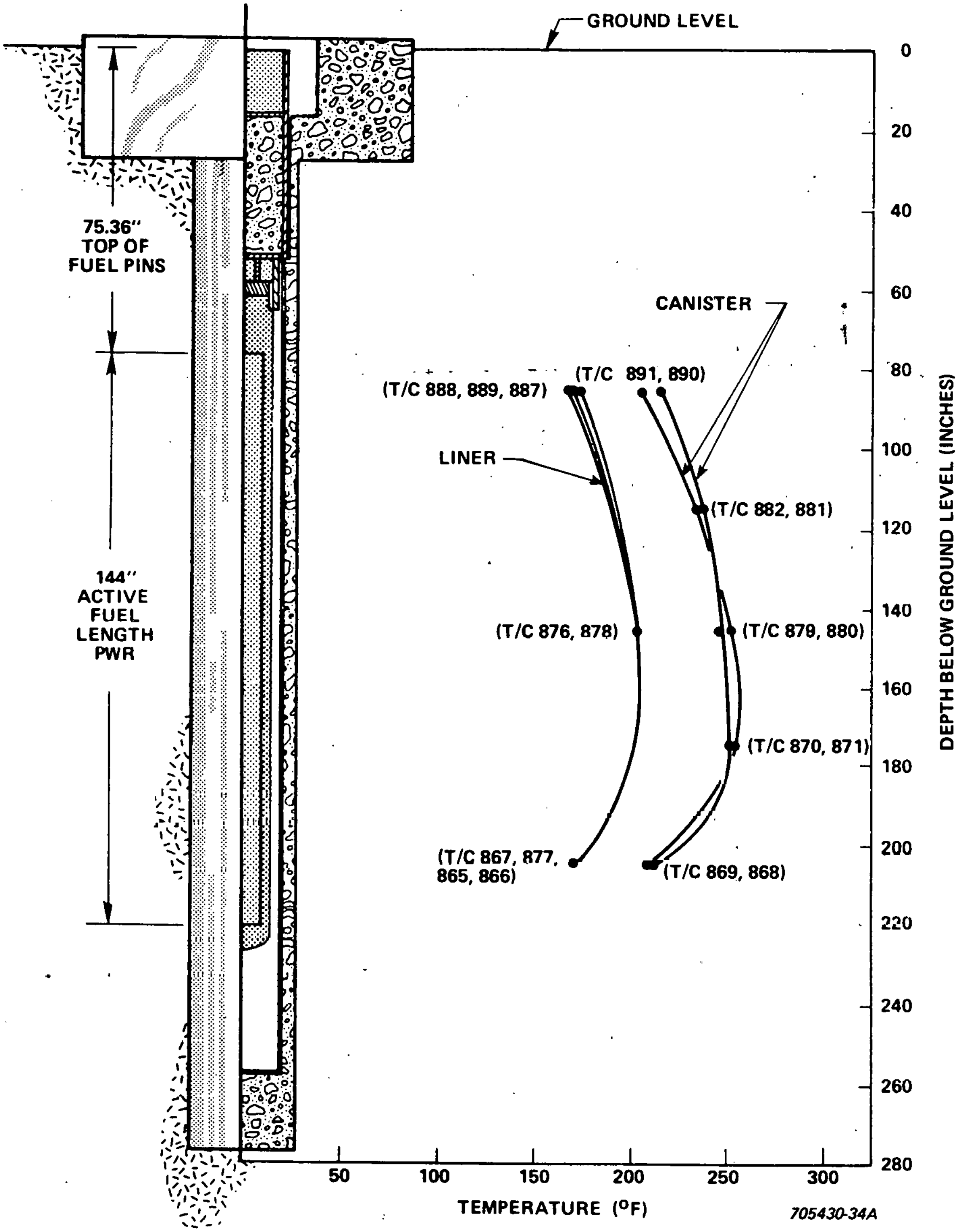

Figure C-12. Drywell 5 Axial Canister and Liner Temperature Profiles, August 15, 1979

APPENDIX D

TAP-A INPUT AND OUTPUT

This Appendix contains a copy of typical computer printout of the TAP-A input data and output data. Model predicted temperatures are provided in the output printouts for Drywell 5 on the first day of each month from February, 1979 to August, 1980. The nodes are identified and their locations are shown in Figures 28 and 29. For an explanation of the input data and its format, see Reference 6.

TAP-A INPUT DATA

FIELD LENGHT(OCTAL) NEEDED FOR THIS TAP-A RUN = 0000000000000101746
FIELD LENGTH SPECIFIED BY YOU = 0000000000000035500
DRYWELL NO. 5 SIMULATION - START JANUARY 12, 1979
0. .683E+07 .216E+05 .500E-02 .300E+01 .500E+02 .300E+04

1	1.	30.	.2000E+03	0.	0.	0.	0.	0.
1	31.	50.	.1500E+03	0.	0.	0.	0.	0.
1	51.	57.	.1000E+03	0.	0.	0.	0.	0.
1	58.	0.	.5234E+02	0.	0.	0.	0.	0.
1	59.	0.	.5246E+02	0.	0.	0.	0.	0.
1	60.	0.	.5378E+02	0.	0.	0.	0.	0.
1	61.	0.	.5518E+02	.5640E+02	.5917E+02	.6119E+02	.6302E+02	.6455E+02TEMP
1	67.	0.	.6584E+02	.6673E+02	.6750E+02	.6798E+02	.6829E+02	.6869E+02TEMP
1	73.	0.	.6875E+02	0.	0.	0.	0.	0.
1	74.	0.	.6876E+02	0.	0.	0.	0.	0.
1	75.	0.	.6876E+02	0.	0.	0.	0.	0.
1	76.	0.	.6876E+02	0.	0.	0.	0.	0.
1	77.	0.	.6876E+02	0.	0.	0.	0.	0.
1	78.	96.	.1000E+03	0.	0.	0.	0.	0.
1	97.	0.	.1000E+03	.3600E+02	.3600E+02	.3600E+02	.3600E+02	.3600E+02TEMP
1	103.	0.	.3600E+02	.3600E+02	.3600E+02	.3600E+02	.4547E+02	.4544E+02TEMP
1	109.	0.	.4736E+02	.5040E+02	.3852E+02	.3838E+02	.4397E+02	.4299E+02TEMP
1	115.	0.	.4193E+02	.3938E+02	.3897E+02	.3911E+02	.7000E+02	.7000E+02TEMP
1	122.	0.	.4496E+02	.4719E+02	.5029E+02	.5215E+02	.5349E+02	.5494E+02TEMP
1	128.	0.	.5643E+02	.5914E+02	.6117E+02	.6302E+02	.6456E+02	.6584E+02TEMP
1	134.	0.	.6674E+02	.6749E+02	.6798E+02	.6826E+02	.6869E+02	.6873E+02TEMP
1	140.	0.	.4668E+02	.4971E+02	.5146E+02	.5301E+02	.5458E+02	.5641E+02TEMP
1	146.	0.	.5907E+02	.6112E+02	.6299E+02	.6455E+02	.6583E+02	.6673E+02TEMP
1	152.	0.	.6747E+02	.6797E+02	.6821E+02	.6870E+02	.6870E+02	.6871E+02TEMP
1	158.	0.	.6871E+02	.6866E+02	.6866E+02	.6830E+02	.6830E+02	.4611E+02TEMP
1	164.	0.	.4912E+02	.5096E+02	.5262E+02	.5431E+02	.5632E+02	.5902E+02TEMP
1	170.	0.	.6104E+02	.6295E+02	.6452E+02	.6582E+02	.6670E+02	.6745E+02TEMP
1	176.	0.	.6795E+02	.6818E+02	.6870E+02	.6869E+02	.6866E+02	.6829E+02TEMP
1	182.	0.	.4537E+02	.4825E+02	.5029E+02	.5204E+02	.5393E+02	.5611E+02TEMP
1	188.	0.	.5899E+02	.6085E+02	.6288E+02	.6446E+02	.6581E+02	.6662E+02TEMP
1	194.	0.	.6742E+02	.6790E+02	.6814E+02	.6868E+02	.6867E+02	.6829E+02TEMP
1	200.	0.	.6778E+02	.6779E+02	.4612E+02	.5096E+02	.5396E+02	.5980E+02TEMP
1	206.	0.	.6257E+02	.6614E+02	.6705E+02	.6810E+02	.6866E+02	.6866E+02TEMP
1	212.	0.	.6829E+02	.6778E+02	.4637E+02	.5089E+02	.5379E+02	.5962E+02TEMP
1	218.	0.	.6242E+02	.6604E+02	.6697E+02	.6806E+02	.6864E+02	.6865E+02TEMP
1	224.	0.	.6829E+02	.6778E+02	.4531E+02	.5003E+02	.5419E+02	.5914E+02TEMP
1	230.	0.	.6330E+02	.6601E+02	.6760E+02	.6804E+02	.6862E+02	.6864E+02TEMP
1	236.	0.	.6828E+02	.6778E+02	.7000E+02	.7000E+02	.7000E+02	.7000E+02TEMP
1	242.	0.	.7000E+02	0.	0.	0.	0.	0.
1	243.	246.	.1500E+03	0.	0.	0.	0.	0.
1	247.	0.	.5747E+02	0.	0.	0.	0.	0.
1	248.	0.	.6515E+02	.6705E+02	.6814E+02	.5613E+02	.6419E+02	.7000E+02TEMP
1	254.	0.	.6773E+02	.5594E+02	.6405E+02	.7000E+02	.6769E+02	.5909E+02TEMP
1	260.	0.	.4525E+02	.4995E+02	.5411E+02	.5907E+02	.6326E+02	.6599E+02TEMP
1	266.	0.	.6759E+02	.6803E+02	.6862E+02	.6864E+02	.6829E+02	.6779E+02TEMP
1	272.	0.	.7000E+02	0.	0.	0.	0.	0.
1	3001.	0.	.5628E+02	.5626E+02	.5623E+02	.5620E+02	.5384E+02	.5603E+02TEMP
1	3007.	0.	.5603E+02	.5662E+02	.5923E+02	.6120E+02	.6301E+02	.6453E+02TEMP
1	3013.	0.	.6585E+02	.6668E+02	.6751E+02	.6790E+02	.6828E+02	.6832E+02TEMP
1	3019.	0.	.6833E+02	.6834E+02	.6834E+02	.5303E+02	.5301E+02	.5299E+02TEMP
1	3025.	0.	.5296E+02	.5246E+02	.5378E+02	.5518E+02	.5640E+02	.5917E+02TEMP
1	3031.	0.	.6119E+02	.6302E+02	.6455E+02	.6584E+02	.6673E+02	.6750E+02TEMP
1	3037.	0.	.6798E+02	.6829E+02	.6863E+02	.6864E+02	.6864E+02	.6864E+02TEMP
1	3043.	0.	.4513E+02	.4513E+02	.4511E+02	.4510E+02	.4508E+02	.4563E+02TEMP
1	3049.	0.	.4768E+02	.5084E+02	.3600E+02	.3600E+02	.3600E+02	.3600E+02TEMP
1	3055.	0.	.3600E+02	.4544E+02	.4738E+02	.5040E+02	.4324E+02	.4288E+02TEMP
1	3061.	0.	.3600E+02	.3600E+02	.3600E+02	.3600E+02	.3600E+02	.3600E+02TEMP
1	3067.	0.	.3600E+02	.3600E+02	.3600E+02	.3600E+02	.3600E+02	.3600E+02TEMP
1	3073.	0.	.3600E+02	.3600E+02	.3600E+02	.3600E+02	.3600E+02	0. TEMP
1	3089.	0.	0.	0.	0.	.5756E+02	.6514E+02	.6703E+02TEMP
1	3095.	0.	.6811E+02	.5747E+02	.6515E+02	.6705E+02	.6814E+02	.6869E+02TEMP
1	3101.	0.	.7000E+02	.7000E+02	.7000E+02	.7000E+02	.7000E+02	.7000E+02TEMP
1	5001.	0.	.5628E+02	.5626E+02	.5623E+02	.5620E+02	.5384E+02	.5603E+02TEMP
1	5007.	0.	.5603E+02	.5662E+02	.5923E+02	.6120E+02	.6301E+02	.6453E+02TEMP
1	5013.	0.	.6585E+02	.6668E+02	.6751E+02	.6790E+02	.6828E+02	.6832E+02TEMP
1	5019.	0.	.6833E+02	.6834E+02	.6834E+02	.5303E+02	.5301E+02	.5299E+02TEMP
1	5025.	0.	.5296E+02	.5246E+02	.5378E+02	.5518E+02	.5640E+02	.5917E+02TEMP
1	5031.	0.	.6119E+02	.6302E+02	.6455E+02	.6584E+02	.6673E+02	.6750E+02TEMP
1	5037.	0.	.6798E+02	.6829E+02	.6863E+02	.6864E+02	.6864E+02	.6864E+02TEMP
1	5043.	0.	.4513E+02	.4513E+02	.4511E+02	.4510E+02	.4508E+02	.4563E+02TEMP
1	5049.	0.	.4768E+02	.5084E+02	.3600E+02	.3600E+02	.3600E+02	.3600E+02TEMP
1	5055.	0.	.3600E+02	.4544E+02	.4738E+02	.5040E+02	.4324E+02	.4288E+02TEMP
1	5061.	0.	.3600E+02	.3600E+02	.7000E+02	.7000E+02	.7000E+02	.7000E+02TEMP
1	5079.	0.	.5756E+02	.6514E+02	.6703E+02	.6811E+02	.5747E+02	.6515E+02TEMP
1	5085.	0.	.6705E+02	.6814E+02	0.	0.	0.	0.
2	1.	1.	0.	.3600E+02	.1555E+08	.9000E+02	.1814E+08	.8800E+02
2	1.	4.	.2333E+08	.7500E+02	.2851E+08	.3500E+02	.3110E+08	.3600E+02
2	1.	7.	.4666E+08	.9000E+02	.4925E+08	.8800E+02	.5443E+08	.7500E+02
3	201.	0.	.7800E-01	0.	0.	0.	0.	0.
3	202.	0.	.6130E-01	0.	0.	0.	0.	0.
3	203.	0.	.5960E-01	0.	0.	0.	0.	0.
3	205.	0.	.6770E-01	0.	0.	0.	0.	0.
3	226.	0.	.2836E+00	0.	0.	0.	0.	0.

3	227.	0.	.2836E+00	0.	0.	0.	0.	0.	
3	228.	0.	.8220E-01	0.	0.	0.	0.	0.	
3	229.	0.	.8220E-01	0.	0.	0.	0.	0.	
3	230.	0.	.6000E-01	0.	0.	0.	0.	0.	
4	201.	1.	.6600E-01	.1620E-05	.1000E+03	.6600E-01	.1620E-05	.3450E+03	
4	201.	3.	.6600E-01	.2360E-05	.5000E+03	.6600E-01	.3009E-05	.6000E+03	
4	201.	5.	.6600E-01	.3704E-05	.7000E+03	.6600E-01	.4398E-05	.8000E+03	
4	201.	7.	.6600E-01	.5092E-05	.9000E+03	.6600E-01	.6020E-05	.1000E+04	
4	201.	9.	.6600E-01	.6020E-05	.1300E+04	0.	0.	0.	
4	202.	1.	.2500E+00	.2026E-04	.4000E+02	.2500E+00	.2026E-04	.1900E+03	
4	202.	3.	.2500E+00	.6944E-05	.2000E+03	.2500E+00	.6944E-05	.5000E+03	
4	203.	1.	.2500E+00	.2026E-04	.4000E+02	.2500E+00	.2026E-04	.1900E+03	
4	203.	3.	.2500E+00	.1042E-04	.2000E+03	.2500E+00	.1042E-04	.5000E+03	
4	205.	1.	.2000E+00	.1538E-04	.6000E+02	.2000E+00	.1512E-04	.1000E+03	
4	205.	3.	.2000E+00	.1538E-04	.2000E+03	.2000E+00	.1485E-04	.3000E+03	
4	205.	5.	.2000E+00	.1458E-04	.4000E+03	.2000E+00	.9230E-05	.5000E+03	
4	205.	7.	.2000E+00	.8290E-05	.6000E+03	.2000E+00	.8030E-05	.7000E+03	
4	226.	0.	.1100E+00	.2315E-03	0.	0.	0.	0.	
4	227.	0.	.1100E+00	.5324E-03	0.	0.	0.	0.	
4	226.	0.	.2000E+00	.2431E-04	0.	0.	0.	0.	
4	229.	0.	.2000E+00	.2431E-04	0.	0.	0.	0.	
4	230.	0.	.2500E+00	.2026E-04	0.	0.	0.	0.	
5	1.	0.	.2010E+03	.3142E+01	.4000E+01	.7300E+01	0.	0.	NODE
5	2.	10.	.2010E+03	.3142E+01	.4000E+01	.1600E+02	0.	0.	NODE
5	11.	0.	.2010E+03	.3142E+01	.1200E+02	.7300E+0[illegible]	0.	0.	
5	12.	20.	.2010E+03	.3142E+01	.1200E+02	.1600E+02	0.	0.	
5	21.	0.	.2010E+03	.3142E+01	.2000E+02	.7300E+01	0.	0.	
5	22.	30.	.2010E+03	.3142E+01	.2000E+02	.1600E+02	0.	0.	
5	31.	0.	.2260E+03	.3142E+01	.4000E+01	.3500E+01	0.	0.	
5	32.	0.	.2260E+03	.3142E+01	.1200E+02	.3500E+01	0.	0.	NODE
5	33.	0.	.2260E+03	.3142E+01	.2000E+02	.3500E+01	0.	0.	
5	34.	0.	.2260E+03	.1429E+03	.1000E+01	.1000E+01	0.	0.	NODE
5	35.	0.	.2260E+03	.1156E+03	.1000E+01	.1000E+01	0.	0.	NODE
5	36.	0.	.2260E+03	.3142E+01	.5109E+01	.7300E+01	0.	0.	NODE
5	37.	0.	.2260E+03	.3142E+01	.5109E+01	.5200E+01	0.	0.	
5	38.	0.	.2260E+03	.3142E+01	.5109E+01	.1600E+02	0.	0.	
5	39.	0.	.2260E+03	.3142E+01	.5109E+01	.1600E+02	0.	0.	
5	40.	0.	.2260E+03	.3142E+01	.5109E+01	.1600E+02	0.	0.	
5	41.	0.	.2260E+03	.3142E+01	.5109E+01	.1320E+02	0.	0.	
5	42.	0.	.2260E+03	.3142E+01	.5109E+01	.1600E+02	0.	0.	
5	43.	0.	.2260E+03	.3142E+01	.5109E+01	.9200E+01	0.	0.	
5	44.	0.	.2260E+03	.3142E+01	.5109E+01	.1600E+02	0.	0.	
5	45.	0.	.2260E+03	.3142E+01	.5109E+01	.5200E+01	0.	0.	
5	46.	0.	.2260E+03	.3142E+01	.5109E+01	.4300E+01	0.	0.	
5	47.	0.	.2260E+03	.3142E+01	.1300E+02	.3750E+00	0.	0.	
5	48.	0.	.2260E+03	.3142E+01	.2000E+02	.3750E+00	0.	0.	NODE
5	49.	0.	.2260E+0[illegible]	.3142E+01	.1200E+02	.3750E+00	0.	0.	NODE
5	50.	0.	.2260E+03	.3142E+01	.4000E+01	.3750E+00	0.	0.	NODE
5	51.	0.	.2270E+03	.3142E+01	.1341E+02	.5900E+01	0.	0.	NODE
5	52.	0.	.2270E+03	.3142E+01	.1341E+02	.1070E+02	0.	0.	NODE
5	53.	0.	.2270E+03	.3142E+01	.4000E+01	.1000E+01	0.	0.	NODE
5	54.	0.	.2270E+03	.3142E+01	.1200E+02	.1000E+01	0.	0.	NODE
5	55.	0.	.2270E+03	.3142E+01	.2000E+02	.1000E+01	0.	0.	NODE
5	56.	0.	.2270E+03	.3142E+01	.1300E+02	.1000E+01	0.	0.	NODE
5	57.	0.	.2270E+03	.3142E+01	.5100E+02	.1000E+01	0.	0.	NODE
5	58.	0.	.2270E+03	.3142E+01	.4000E+02	.5000E+00	0.	0.	NODE
5	59.	0.	.2270E+03	.3142E+01	.6609E+01	.5900E+01	0.	0.	NODE
5	60.	0.	.2270E+03	.3142E+01	.6609E+01	.1070E+02	0.	0.	NODE
5	61.	0.	.2270E+03	.3142E+01	.6609E+01	.7300E+01	0.	0.	NODE
5	62	0.	.2270E+03	.3142E+01	.6609E+01	.5200E+01	0.	0.	
5	63.	0.	.2270E+03	.3142E+01	.6609E+01	.1600E+02	0.	0.	
5	64.	0.	.2270E+03	.3142E+01	.6609E+01	.1600E+02	0.	0.	
5	65.	0.	.2270E+03	.3142E+01	.6609E+01	.1600E+02	0.	0.	
5	66.	0.	.2270E+03	.3142E+01	.6609E+01	.1320E+02	0.	0.	
5	67.	0.	.2270E+03	.3142E+01	.6609E+01	.1600E+02	0.	0.	
5	68.	0.	.2270E+03	.3142E+01	.6609E+01	.9200E+01	0.	0.	
5	69.	0.	.2270E+03	.3142E+01	.6609E+01	.1600E+02	0.	0.	
5	70.	0.	.2270E+03	.3142E+01	.6609E+01	.5200E+01	0.	0.	
5	71.	0.	.2270E+03	.3142E+01	.6609E+01	.4675E+01	0.	0.	
5	72.	0.	.2270E+03	.3142E+01	.6609E+01	.3[illegible]E+02	0.	0.	NODE
5	73.	0.	.2050E+03	.3142E+01	.3200E+02	.1800E+02	0.	0.	
5	74.	0.	.2050E+03	.3142E+01	.1300E+02	.1800E+02	0.	0.	
5	75.	0.	.2050E+03	.3142E+01	.2000E+02	.1800E+02	0.	0.	
5	76.	0.	.2050E+03	.3142E+01	.1200E+02	.1800E+02	0.	0.	
5	77.	0.	.2050E+03	.3142E+01	.4000E+01	.1800E+02	0.	0.	
5	78.	0.	.2280E+03	.3142E+01	.4000E+01	.5000E+01	0.	0.	NODE
5	79.	0.	.2280E+03	.3142E+01	.4000E+01	.1400E+02	0.	0.	NODE
5	80.	0.	.2280E+03	.3142E+01	.4000E+01	.1300E+02	0.	0.	NODE
5	81.	0.	.2280E+03	.3142E+01	.1200E+02	.5000E+01	0.	0.	NODE
5	82.	0.	.2280E+03	.3142E+01	.1200E+02	.1400E+02	0.	0.	NODE
5	83.	0.	.2280E+03	.3142E+01	.1200E+02	.1300E+02	0.	0.	NODE
5	84.	0.	.2280E+03	.3142E+01	.2000E+02	.5000E+01	0.	0.	NODE
5	85.	0.	.2280E+03	.3142E+01	.2000E+02	.1400E+02	0.	0.	NODE
5	86.	0.	.2280E+03	.3142E+01	.2000E+02	.1300E+02	0.	0.	NODE
5	87.	0.	.2280E+03	.3142E+01	.1300E+02	.5000E+01	0.	0.	NODE
5	88.	0.	.2280E+03	.3142E+01	.1300E+02	.1400E+02	0.	0.	NODE
5	89.	0.	.2280E+03	.3142E+01	.1300E+02	.1300E+02	0.	0.	NODE
5	90.	0.	.2280E+03	.3142E+01	.5100E+02	.5000E+01	0.	0.	NODE
5	91.	0.	.2280E+03	.3142E+01	.5100E+02	.1400E+02	0.	0.	NODE
5	92.	0.	.2280E+03	.3142E+01	.5100E+02	.1300E+02	0.	0.	NODE
5	93.	0.	.2270E+03	.3142E+01	.4000E+01	.1000E+01	0.	0.	NODE
5	94.	0.	.2270E+03	.3142E+01	.1200E+02	.1000E+01	0.	0.	NODE
5	95.	0.	.2270E+03	.3142E+01	.2000E+02	.1000E+01	0.	0.	NODE
5	96.	0.	.2270E+03	.3142E+01	.1300E+02	.1000E+01	0.	0.	NODE

TAP-A INPUT DATA (Cont'd)

5	97.	0.	.2270E+03	.3142E+01	.5100E+02	.1000E+01	0.	0.	NODE
5	98.	0.	.2270E+03	.3142E+01	.4000E+01	.2500E+00	0.	0.	NODE
5	99.	0.	.2270E+03	.3142E+01	.1200E+02	.2500E+00	0.	0.	NODE
5	100.	0.	.2270E+03	.3142E+01	.2000E+02	.2500E+00	0.	0.	NODE
5	101.	0.	.2270E+03	.3142E+01	.1300E+02	.2500E+00	0.	0.	NODE
5	102.	0.	.2270E+03	.3142E+01	.5100E+02	.2500E+00	0.	0.	NODE
5	103.	0.	.2270E+03	.3142E+01	.2100E+02	.2500E+00	0.	0.	NODE
5	104.	0.	.2270E+03	.3142E+01	.4800E+02	.2500E+00	0.	0.	NODE
5	105.	0.	.2270E+03	.3142E+01	.1595E+03	.2500E+00	0.	0.	NODE
5	106.	0.	.2270E+03	.3142E+01	.2475E+03	.2500E+00	0.	0.	NODE
5	107.	0.	.2270E+03	.3142E+01	.1594E+02	.1850E+02	0.	0.	NODE
5	108.	0.	.2270E+03	.3142E+01	.1594E+02	.9250E+01	0.	0.	NODE
5	109.	0.	.2270E+03	.3142E+01	.1594E+02	.1400E+02	0.	0.	NODE
5	110.	0.	.2270E+03	.3142E+01	.1594E+02	.1050E+02	0.	0.	NODE
5	111.	0.	.2290E+03	.3142E+01	.2475E+03	.1875E+02	0.	0.	
5	112.	0.	.2290E+03	.3142E+01	.1188E+04	.1875E+02	0.	0.	
5	113.	0.	.2290E+03	.3142E+01	.1595E+03	.9250E+01	0.	0.	
5	114.	0.	.2290E+03	.3142E+01	.2475E+03	.9250E+01	0.	0.	
5	115.	0.	.2290E+03	.3142E+01	.1188E+04	.9250E+01	0.	0.	
5	116.	0.	.2020E+03	.3142E+01	.4320E+04	.2500E+02	0.	0.	NODE
5	117.	0.	.2020E+03	.3142E+01	.1642E+05	.2500E+02	0.	0.	NODE
5	122.	0.	.2050E+03	.3142E+01	.4800E+02	.9250E+01	0.	0.	
5	123.	0.	.2050E+03	.3142E+01	.4800E+02	.1400E+02	0.	0.	
5	124.	0.	.2050E+03	.3142E+01	.4800E+02	.1100E+02	0.	0.	
5	125.	0.	.2050E+03	.3142E+01	.8800E+02	.5400E+01	0.	0.	
5	126.	0.	.2050E+03	.3142E+01	.8800E+02	.1070E+02	0.	0.	
5	127.	0.	.2050E+03	.3142E+01	.8800E+02	.7300E+01	0.	0.	
5	128.	136.	.2050E+03	.3142E+01	.8800E+02	.1600E+02	0.	0.	
5	137.	0.	.2050E+03	.3142E+01	.8800E+02	.4675E+01	0.	0.	
5	138.	0.	.2050E+03	.3142E+01	.8800E+02	.3290E+02	0.	0.	
5	139.	0.	.2050E+03	.3142E+01	.8800E+02	.1800E+02	0.	0.	
5	140.	0.	.2300E+03	.3142E+01	.1595E+03	.1400E+02	0.	0.	
5	141.	0.	.2300E+03	.3142E+01	.1595E+03	.1100E+02	0.	0.	
5	142.	0.	.2300E+03	.3142E+01	.1595E+03	.5400E+01	0.	0.	
5	143.	0.	.2300E+03	.3142E+01	.1595E+03	.1070E+02	0.	0.	
5	144.	0.	.2300E+03	.3142E+01	.1595E+03	.7300E+01	0.	0.	
5	145.	149.	.2300E+03	.3142E+01	.1595E+03	.1600E+02	0.	0.	
5	150.	153.	.2300E+03	.3142E+01	.1595E+03	.1600E+02	0.	0.	
5	154.	0.	.2300E+03	.3142E+01	.1595E+03	.4675E+01	0.	0.	
5	155.	0.	.2300E+03	.3142E+01	.1595E+03	.5090E+02	0.	0.	
5	156.	0.	.2030E+03	.3142E+01	.2475E+03	.1200E+02	0.	0.	NODE
5	157.	0.	.2030E+03	.3142E+01	.4500E+02	.1200E+02	0.	0.	NODE
5	158.	0.	.2030E+03	.3142E+01	.3600E+02	.1200E+02	0.	0.	NODE
5	159.	0.	.2030E+03	.3142E+01	.2475E+03	.3600E+02	0.	0.	NODE
5	160.	0.	.2030E+03	.3142E+01	.8100E+02	.3600E+02	0.	0.	NODE
5	161.	0.	.2030E+03	.3142E+01	.2475E+03	.6000E+02	0.	0.	NODE
5	162.	0.	.2030E+03	.3142E+01	.8100E+02	.6000E+02	0.	0.	NODE
5	163.	0.	.2300E+03	.3142E+01	.2475E+03	.1400E+02	0.	0.	
5	164.	0.	.2300E+03	.3142E+01	.2475E+03	.1100E+02	0.	0.	
5	165.	0.	.2300E+03	.3142E+01	.2475E+03	.5400E+01	0.	0.	
5	166.	0.	.2300E+03	.3142E+01	.2475E+03	.1070E+02	0.	0.	
5	167.	0.	.2300E+03	.3142E+01	.2475E+03	.7300E+01	0.	0.	
5	168.	172.	.2300E+03	.3142E+01	.2475E+03	.1600E+02	0.	0.	
5	173.	176.	.2300E+03	.3142E+01	.2475E+03	.1600E+02	0.	0.	
5	177.	0.	.2300E+03	.3142E+01	.2475E+03	.4675E+01	0.	0.	
5	178.	0.	.2300E+03	.3142E+01	.2475E+03	.5090E+02	0.	0.	
5	179.	0.	.2030E+03	.3142E+01	.2475E+03	.1200E+02	0.	0.	NODE
5	180.	0.	.2030E+03	.3142E+01	.2475E+03	.3600E+02	0.	0.	NODE
5	181.	0.	.2030E+03	.3142E+01	.2475E+03	.6000E+02	0.	0.	NODE
5	182.	0.	.2300E+03	.3142E+01	.1188E+04	.1400E+02	0.	0.	
5	183.	0.	.2300E+03	.3142E+01	.1188E+04	.1100E+02	0.	0.	
5	184.	0.	.2300E+03	.3142E+01	.1188E+04	.5400E+01	0.	0.	
5	185.	0.	.2300E+03	.3142E+01	.1188E+04	.1070E+02	0.	0.	
5	186.	0.	.2300E+03	.3142E+01	.1188E+04	.7300E+01	0.	0.	
5	187.	191.	.2300E+03	.3142E+01	.1188E+04	.1600E+02	0.	0.	
5	192.	195.	.2300E+03	.3142E+01	.1188E+04	.1600E+02	0.	0.	
5	196.	0.	.2300E+03	.3142E+01	.1188E+04	.4675E+01	0.	0.	
5	197.	0.	.2300E+03	.3142E+01	.1188E+04	.5090E+02	0.	0.	
5	198.	0.	.2030E+03	.3142E+01	.1188E+04	.4800E+02	0.	0.	NODE
5	199.	0.	.2030E+03	.3142E+01	.1188E+04	.6000E+02	0.	0.	NODE
5	200.	0.	.2030E+03	.3142E+01	.1683E+04	.9600E+02	0.	0.	NODE
5	201.	0.	.2030E+03	.3142E+01	.8100E+02	.9600E+02	0.	0.	NODE
5	202.	0.	.2020E+03	.3142E+01	.4320E+04	.2500E+02	0.	0.	NODE
5	203.	0.	.2020E+03	.3142E+01	.4320E+04	.1610E+02	0.	0.	NODE
5	204.	0.	.2020E+03	.3142E+01	.4320E+04	.1250E+02	0.	0.	NODE
5	205.	0.	.2020E+03	.3142E+01	.4320E+04	.3200E+02	0.	0.	
5	206.	0.	.2020E+03	.3142E+01	.4320E+04	.1320E+02	0.	0.	
5	207.	0.	.2030E+03	.3142E+01	.4320E+04	.2520E+02	0.	0.	
5	208.	0.	.2030E+03	.3142E+01	.4320E+04	.5200E+01	0.	0.	
5	209.	0.	.2030E+03	.3142E+01	.4320E+04	.4675E+01	0.	0.	
5	210.	0.	.2030E+03	.3142E+01	.4320E+04	.5090E+02	0.	0.	NODE
5	211.	0.	.2030E+03	.3142E+01	.4320E+04	.4800E+02	0.	0.	NODE
5	212.	0.	.2030E+03	.3142E+01	.4320E+04	.6000E+02	0.	0.	NODE
5	213.	0.	.2030E+03	.3142E+01	.4320E+04	.9600E+02	0.	0.	NODE
5	214.	0.	.2020E+03	.3142E+01	.1642E+05	.2500E+02	0.	0.	NODE
5	215.	0.	.2020E+03	.3142E+01	.1642E+05	.1610E+02	0.	0.	NODE
5	216.	0.	.2020E+03	.3142E+01	.1642E+05	.1250E+02	0.	0.	NODE
5	217.	0.	.2020E+03	.3142E+01	.1642E+05	.3200E+02	0.	0.	
5	218.	0.	.2020E+03	.3142E+01	.1642E+05	.1320E+02	0.	0.	
5	219.	0.	.2030E+03	.3142E+01	.1642E+05	.2520E+02	0.	0.	
5	220.	0.	.2030E+03	.3142E+01	.1642E+05	.5200E+01	0.	0.	
5	221.	0.	.2030E+03	.3142E+01	.1642E+05	.4675E+01	0.	0.	NODE
5	222.	0.	.2030E+03	.3142E+01	.1642E+05	.5090E+02	0.	0.	NODE
5	223.	0.	.2030E+03	.3142E+01	.1642E+05	.4800E+02	0.	0.	NODE

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5	224.	0.	.2030E+03	.3142E+01	.1642E+05	.6000E+02	0.	0.	NODE
5	225.	0.	.2030E+03	.3142E+01	.1642E+05	.9600E+02	0.	0.	NODE
5	118.	0.	.2020E+03	.3142E+01	.6750E+05	.2500E+02	0.	0.	
5	226.	0.	.2020E+03	.3142E+01	.6750E+05	.2500E+02	0.	0.	
5	227.	0.	.2020E+03	.3142E+01	.6750E+05	.1610E+02	0.	0.	
5	228.	0.	.2020E+03	.3142E+01	.6750E+05	.2330E+02	0.	0.	
5	229.	0.	.2020E+03	.3142E+01	.6750E+05	.3200E+02	0.	0.	
5	230.	0.	.2020E+03	.3142E+01	.6750E+05	.3200E+02	0.	0.	
5	231.	0.	.2030E+03	.3142E+01	.6750E+05	.3200E+02	0.	0.	
5	232.	0.	.2030E+03	.3142E+01	.6750E+05	.3200E+02	0.	0.	
5	233.	0.	.2030E+03	.3142E+01	.6750E+05	.4675E+01	0.	0.	
5	234.	0.	.2030E+03	.3142E+01	.6750E+05	.5090E+02	0.	0.	
5	235.	0.	.2030E+03	.3142E+01	.6750E+05	.4800E+02	0.	0.	
5	236.	0.	.2030E+03	.3142E+01	.6750E+05	.6000E+02	0.	0.	
5	237.	0.	.2030E+03	.3142E+01	.6750E+05	.9600E+02	0.	0.	
5	238.	0.	.2030E+03	.3142E+01	.6750E+05	.1152E+05	0.	0.	
5	239.	0.	.2030E+03	.3142E+01	.1642E+05	.1152E+05	0.	0.	NODE
5	240.	0.	.2030E+03	.3142E+01	.4320E+04	.1152E+05	0.	0.	NODE
5	241.	0.	.2030E+03	.3142E+01	.1683E+04	.1152E+05	0.	0.	NODE
5	242.	0.	.2030E+03	.3142E+01	.8100E+02	.1152E+05	0.	0.	NODE
5	243.	0.	.2260E+03	.3142E+01	.5109E+01	.1080E+02	0.	0.	
5	244.	0.	.2260E+03	.3142E+01	.5109E+01	.2800E+01	0.	0.	
5	245.	0.	.2260E+03	.3142E+01	.5109E+01	.6800E+01	0.	0.	
5	246.	0.	.2260E+03	.3142E+01	.5109E+01	.1080E+02	0.	0.	
5	247.	0.	.2270E+03	.3142E+01	.6609E+01	.1080E+02	0.	0.	
5	248.	0.	.2270E+03	.3142E+01	.6609E+01	.2800E+01	0.	0.	
5	249.	0.	.2270E+03	.3142E+01	.6609E+01	.6800E+01	0.	0.	
5	250.	0.	.2270E+03	.3142E+01	.6609E+01	.1080E+02	0.	0.	
5	251.	0.	.2020E+03	.3142E+01	.4320E+04	.1080E+02	0.	0.	
5	252.	0.	.2020E+03	.3142E+01	.4320E+04	.1880E+02	0.	0.	
5	254.	0.	.2030E+03	.3142E+01	.4320E+04	.2680E+02	0.	0.	
5	255.	0.	.2020E+03	.3142E+01	.1642E+05	.1080E+02	0.	0.	
5	256.	0.	.2020E+03	.3142E+01	.1642E+05	.1880E+02	0.	0.	
5	258.	0.	.2030E+03	.3142E+01	.1642E+05	.2680E+02	0.	0.	
5	259.	0.	.2020E+03	.3142E+01	.4284E+06	.2500E+02	0.	0.	
5	260.	0.	.2020E+03	.3142E+01	.4284E+06	.2500E+02	0.	0.	
5	261.	0.	.2020E+03	.3142E+01	.4284E+06	.1610E+02	0.	0.	
5	262.	0.	.2020E+03	.3142E+01	.4284E+06	.2330E+02	0.	0.	
5	263.	0.	.2020E+03	.3142E+01	.4284E+06	.3200E+02	0.	0.	
5	264.	0.	.2020E+03	.3142E+01	.4284E+06	.3200E+02	0.	0.	
5	265.	0.	.2030E+03	.3142E+01	.4284E+06	.3200E+02	0.	0.	
5	266.	0.	.2030E+03	.3142E+01	.4284E+06	.3200E+02	0.	0.	
5	267.	0.	.2030E+03	.3142E+01	.4284E+06	.4675E+01	0.	0.	
5	268.	0.	.2030E+03	.3142E+01	.4284E+06	.5090E+02	0.	0.	
5	269.	0.	.2030E+03	.3142E+01	.4284E+06	.4800E+02	0.	0.	
5	270.	0.	.2030E+03	.3142E+01	.4284E+06	.6000E+02	0.	0.	
5	271.	0.	.2030E+03	.3142E+01	.4284E+06	.9600E+02	0.	0.	

5	272.	0.	.2030E+03	.3142E+01	.4284E+06	.1152E+05	0.	0.	
7	1.	0.	.2000E+01	.3650E+01	.8000E+01	.4000E+01	.3142E+01	0.	VCONN
7	2.	0.	.3000E+01	.8000E+01	.8000E+01	.4000E+01	.3142E+01	0.	VCONN
7	3.	0.	.4000E+01	.8000E+01	.8000E+01	.4000E+01	.3142E+01	0.	VCONN
7	4.	0.	.5000E+01	.8000E+01	.8000E+01	.4000E+01	.3142E+01	0.	VCONN
7	5.	0.	.6000E+01	.8000E+01	.8000E+01	.4000E+01	.3142E+01	0.	VCONN
7	6.	0.	.7000E+01	.8000E+01	.8000E+01	.4000E+01	.3142E+01	0.	VCONN
7	7.	0.	.8000E+01	.8000E+01	.8000E+01	.4000E+01	.3142E+01	0.	VCONN
7	8.	0.	.9000E+01	.8000E+01	.8000E+01	.4000E+01	.3142E+01	0.	VCONN
7	9.	0.	.1000E+02	.8000E+01	.8000E+01	.4000E+01	.3142E+01	0.	VCONN
7	1.	0.	.1100E+02	.1386E+01	.8110E+00	.7300E+01	.1257E+02	0.	HCONN
7	2.	0.	.1200E+02	.1386E+01	.8110E+00	.1600E+02	.1257E+02	0.	HCONN
7	3.	0.	.1300E+02	.1386E+01	.8110E+00	.1600E+02	.1257E+02	0.	HCONN
7	4.	0.	.1400E+02	.1386E+01	.8110E+00	.1600E+02	.1257E+02	0.	HCONN
7	5.	0.	.1500E+02	.1386E+01	.8110E+00	.1600E+02	.1257E+02	0.	HCONN
7	6.	0.	.1600E+02	.1386E+01	.8110E+00	.1600E+02	.1257E+02	0.	HCONN
7	7.	0.	.1700E+02	.1386E+01	.8110E+00	.1600E+02	.1257E+02	0.	HCONN
7	8.	0.	.1800E+02	.1386E+01	.8110E+00	.1600E+02	.1257E+02	0.	HCONN
7	9.	0.	.1900E+02	.1386E+01	.8110E+00	.1600E+02	.1257E+02	0.	HCONN
7	10.	0.	.2000E+02	.1386E+01	.8110E+00	.1600E+02	.1257E+02	0.	HCONN
7	11.	0.	.1200E+02	.3650E+01	.8000E+01	.1200E+02	.3142E+01	0.	VCONN
7	12.	0.	.1300E+02	.8000E+01	.8000E+01	.1200E+02	.3142E+01	0.	VCONN
7	13.	0.	.1400E+02	.8000E+01	.8000E+01	.1200E+02	.3142E+01	0.	VCONN
7	14.	0.	.1500E+02	.8000E+01	.8000E+01	.1200E+02	.3142E+01	0.	VCONN
7	15.	0.	.1600E+02	.8000E+01	.8000E+01	.1200E+02	.3142E+01	0.	VCONN
7	16.	0.	.1700E+02	.8000E+01	.8000E+01	.1200E+02	.3142E+01	0.	VCONN
7	17.	0.	.1800E+02	.8000E+01	.8000E+01	.1200E+02	.3142E+01	0.	VCONN
7	18.	0.	.1900E+02	.8000E+01	.8000E+01	.1200E+02	.3142E+01	0.	VCONN
7	19.	0.	.2000E+02	.8000E+01	.8000E+01	.1200E+02	.3142E+01	0.	VCONN
7	11.	0.	.2100E+02	.1151E+01	.8930E+00	.7300E+01	.2513E+02	0.	HCONN
7	12.	0.	.2200E+02	.1151E+01	.8930E+00	.1600E+02	.2513E+02	0.	HCONN
7	13.	0.	.2300E+02	.1151E+01	.8930E+00	.1600E+02	.2513E+02	0.	HCONN
7	14.	0.	.2400E+02	.1151E+01	.8930E+00	.1600E+02	.2513E+02	0.	HCONN
7	15.	0.	.2500E+02	.1151E+01	.8930E+00	.1600E+02	.2513E+02	0.	HCONN
7	16.	0.	.2600E+02	.1151E+01	.8930E+00	.1600E+02	.2513E+02	0.	HCONN
7	17.	0.	.2700E+02	.1151E+01	.8930E+00	.1600E+02	.2513E+02	0.	HCONN
7	18.	0.	.2800E+02	.1151E+01	.8930E+00	.1600E+02	.2513E+02	0.	HCONN
7	19.	0.	.2900E+02	.1151E+01	.8930E+00	.1600E+02	.2513E+02	0.	HCONN
7	20.	0.	.3000E+02	.1151E+01	.8930E+00	.1600E+02	.2513E+02	0.	HCONN
7	21.	0.	.2200E+02	.3650E+01	.8000E+01	.2000E+02	.3142E+01	0.	VCONN
7	22.	0.	.2300E+02	.8000E+01	.8000E+01	.2000E+02	.3142E+01	0.	VCONN
7	23.	0.	.2400E+02	.8000E+01	.8000E+01	.2000E+02	.3142E+01	0.	VCONN
7	24.	0.	.2500E+02	.8000E+01	.8000E+01	.2000E+02	.3142E+01	0.	VCONN
7	25.	0.	.2600E+02	.8000E+01	.8000E+01	.2000E+02	.3142E+01	0.	VCONN
7	26.	0.	.2700E+02	.8000E+01	.8000E+01	.2000E+02	.3142E+01	0.	VCONN
7	27.	0.	.2800E+02	.8000E+01	.8000E+01	.2000E+02	.3142E+01	0.	VCONN
7	28.	0.	.2900E+02	.8000E+01	.8000E+01	.2000E+02	.3142E+0	0.	VCONN

TAP-A INPUT DATA (Cont'd)

?	29.	0.	.3000E+02	.8000E+01	.8000E+01	.2000E+02	.3142E+01	0.	VCONN
?	31.	0.	.3200E+02	.1386E+01	.8110E+00	.3500E+01	.1257E+02	0.	HCONN
?	32.	0.	.3300E+02	.1151E+01	.8930E+00	.3500E+01	.2513E+02	0.	HCONN
?	33.	0.	.3400E+02	.1094E+01	.4803E+00	.3500E+01	.3770E+02	0.	HCONN
?	34.	0.	.3500E+02	.3225E+00	.2885E+01	.4400E+02	.1000E+01	0.	VCONN
?	35.	0.	.3600E+02	.3600E+01	.3650E+01	.3142E+01	.5109E+01	0.	
?	36.	0.	.3700E+02	.3650E+01	.2600E+01	.5109E+01	.3142E+01	0.	VCONN
?	37.	0.	.2430E+03	.2600E+01	.5400E+01	.5109E+01	.3142E+01	0.	
?	243.	0.	.3800E+02	.5400E+01	.8000E+01	.5109E+01	.3142E+01	0.	
?	38.	0.	.3900E+02	.8000E+01	.8000E+01	.5109E+01	.3142E+01	0.	VCONN
?	39.	0.	.4000E+02	.8000E+01	.8000E+01	.5109E+01	.3142E+01	0.	VCONN
?	40.	0.	.4100E+02	.8000E+01	.8000E+01	.5109E+01	.3142E+01	0.	VCONN
?	41.	0.	.2440E+03	.6600E+01	.1400E+01	.5109E+01	.3142E+01	0.	
?	244.	0.	.4200E+02	.1400E+01	.8000E+01	.5109E+01	.3142E+01	0.	
?	42.	0.	.4300E+02	.8000E+01	.4600E+01	.5109E+01	.3142E+01	0.	CONN
?	43.	0.	.2450E+03	.4600E+01	.3400E+01	.5109E+01	.3142E+01	0.	
?	245.	0.	.4400E+02	.3400E+01	.8000E+01	.5109E+01	.3142E+01	0.	
?	44.	0.	.4500E+02	.8000E+01	.2600E+01	.5109E+01	.3142E+01	0.	
?	45.	0.	.2460E+03	.2600E+01	.5400E+01	.5109E+01	.3142E+01	0.	
?	246.	0.	.4600E+02	.5400E+01	.2150E+01	.5109E+01	.3142E+01	0.	
?	46.	0.	.4700E+02	.2150E+01	.2000E+00	.5109E+01	.3142E+01	0.	
?	47.	0.	.4800E+02	.4803E+00	.1094E+01	.3750E+00	.3770E+02	0.	HCONN
?	48.	0.	.4900E+02	.8930E+00	.1151E+01	.3750E+00	.2513E+02	0.	HCONN
?	49.	0.	.5000E+02	.8110E+00	.1386E+01	.3750E+00	.1257E+02	0.	HCONN
?	53.	0.	.8000E+02	.5000E+00	.6500E+01	.3142E+01	.4000E+01	0.	VCONN
?	54.	0.	.8300E+02	.5000E+00	.6500E+01	.3142E+01	.1200E+02	0.	VCONN
?	55.	0.	.8600E+02	.5000E+00	.6500E+01	.3142E+01	.2000E+02	0.	VCONN
?	56.	0.	.8900E+02	.5000E+00	.6500E+01	.3142E+01	.1301E+02	0.	VCONN
?	57.	0.	.9200E+02	.5000E+00	.6500E+01	.3142E+01	.5100E+02	0.	VCONN
?	57.	0.	.5800E+02	.5000E+00	.2500E+00	.3142E+01	.1900E+02	0.	VCONN
?	57.	0.	.5900E+02	.5000E+00	.3000E+01	.3142E+01	.6609E+01	0.	VCONN
?	58.	0.	.1100E+03	.2500E+00	.7000E+01	.3142E+01	.1594E+02	0.	VCONN
?	58.	0.	.1250E+03	.5000E+00	.2750E+01	.3142E+01	.4000E+02	0.	VCONN
?	59.	0.	.6000E+02	.3000E+01	.5350E+01	.3142E+01	.6609E+01	0.	VCONN
?	60.	0.	.6100E+02	.4635E+01	.3650E+01	.3142E+01	.6609E+01	0.	VCONN
?	61.	0.	.6200E+02	.3650E+01	.2600E+01	.3142E+01	.6609E+01	0.	VCONN
?	62.	0.	.2470E+03	.2600E+01	.5400E+01	.3142E+01	.6609E+01	0.	
?	247.	0.	.6300E+02	.5400E+01	.8000E+01	.3142E+01	.6609E+01	0.	
?	63.	0.	.6400E+02	.8000E+01	.8000E+01	.3142E+01	.6609E+01	0.	VCONN
?	64.	0.	.6500E+02	.8000E+01	.8000E+01	.3142E+01	.6609E+01	0.	VCONN
?	65.	0.	.6600E+02	.8000E+01	.8000E+01	.3142E+01	.6609E+01	0.	VCONN
?	66.	0.	.2480E+03	.6600E+01	.1400E+01	.3142E+01	.6609E+01	0.	
?	248.	0.	.6700E+02	.1400E+01	.8000E+01	.3142E+01	.6609E+01	0.	
?	67.	0.	.6800E+02	.8000E+01	.8000E+01	.3142E+01	.6609E+01	0.	VCONN
?	68.	0.	.2490E+03	.4600E+01	.3400E+01	.3142E+01	.6609E+01	0.	
?	249.	0.	.6900E+02	.3400E+01	.8000E+01	.3142E+01	.6609E+01	0.	
?	69.	0.	.7000E+02	.8000E+01	.8000E+01	.3142E+01	.6609E+01	0.	VCONN

?	70.	0.	.2500E+03	.2600E+01	.5400E+01	.3142E+01	.6609E+01	0.	
?	250.	0.	.7100E+02	.5400E+01	.2340E+01	.3142E+01	.6609E+01	0.	
?	71.	0.	.7200E+02	.2340E+01	.1645E+02	.3142E+01	.6609E+01	0.	VCONN
?	72.	0.	.7300E+02	.1645E+02	.9000E+01	.3142E+01	.6609E+01	0.	VCONN
?	73.	0.	.1570E+03	.9000E+01	.6000E+01	.3142E+01	.3200E+02	0.	VCONN
?	74.	0.	.1570E+03	.9000E+01	.6000E+01	.3142E+01	.1300E+02	0.	VCONN
?	75.	0.	.1580E+03	.9000E+01	.6000E+01	.3142E+01	.2000E+02	0.	VCONN
?	76.	0.	.1580E+03	.9000E+01	.6000E+01	.3142E+01	.1200E+02	0.	VCONN
?	77.	0.	.1580E+03	.9000E+01	.6000E+01	.3142E+01	.4000E+01	0.	
?	78.	0.	.9300E+02	.2500E+01	.5000E+00	.3142E+01	.4000E+01	0.	VCONN
?	78.	0.	.7900E+02	.2500E+01	.7000E+01	.3142E+01	.4000E+01	0.	CONN
?	79.	0.	.8000E+02	.7000E+01	.6500E+01	.3142E+01	.4000E+01	0.	VCONN
?	81.	0.	.9400E+02	.2500E+01	.5000E+00	.3142E+01	.1200E+02	0.	VCONN
?	81.	0.	.8200E+02	.2500E+01	.7000E+01	.3142E+01	.1200E+02	0.	VCONN
?	82.	0.	.8300E+02	.7000E+01	.6500E+01	.3142E+01	.1200E+02	0.	VCONN
?	84.	0.	.9500E+02	.2500E+01	.5000E+00	.3142E+01	.2000E+02	0.	VCONN
?	84.	0.	.8500E+02	.2500E+01	.7000E+01	.3142E+01	.2000E+02	0.	VCONN
?	85.	0.	.8600E+02	.7000E+01	.6500E+01	.3142E+01	.2000E+02	0.	VCONN
?	87.	0.	.9600E+02	.2500E+01	.5000E+00	.3142E+01	.1300E+02	0.	VCONN
?	87.	0.	.8800E+02	.2500E+01	.7000E+01	.3142E+01	.1300E+02	0.	VCONN
?	88.	0.	.8900E+02	.7000E+01	.6500E+01	.3142E+01	.1300E+02	0.	VCONN
?	90.	0.	.9700E+02	.2500E+01	.5000E+00	.3142E+01	.5100E+02	0.	VCONN
?	90.	0.	.9100E+02	.2500E+01	.7000E+01	.3142E+01	.5100E+02	0.	VCONN
?	91.	0.	.9200E+02	.7000E+01	.6500E+01	.3142E+01	.5100E+02	0.	VCONN
?	93.	0.	.9800E+02	.5000E+00	.1250E+00	.3142E+01	.4000E+01	.5000E+01	
?	94.	0.	.9900E+02	.5000E+00	.1250E+00	.3142E+01	.1200E+02	.5000E+01	VCONN
?	95.	0.	.1000E+03	.5000E+00	.1250E+00	.3142E+01	.2000E+02	.5000E+01	VCONN
?	96.	0.	.1010E+03	.5000E+00	.1250E+00	.3142E+01	.1300E+02	.5000E+01	VCONN
?	97.	0.	.1020E+03	.5000E+00	.1250E+00	.3142E+01	.5100E+02	.5000E+01	VCONN
?	104.	0.	.1220E+03	.1250E+00	.3000E+01	.3142E+01	.4800E+02	.5000E+01	VCONN
?	105.	0.	.1130E+03	.1250E+00	.3000E+01	.3142E+01	.1595E+03	.5000E+01	VCONN
?	106.	0.	.1110E+03	.1250E+00	.9250E+01	.3142E+01	.2475E+03	0.	
?	107.	0.	.1080E+03	.9250E+01	.4625E+01	.3142E+01	.1594E+02	0.	VCONN
?	108.	0.	.1090E+03	.4625E+01	.7000E+01	.3142E+01	.1594E+02	0.	VCONN
?	109.	0.	.1100E+03	.7000E+01	.5250E+01	.3142E+01	.1594E+02	0.	VCONN
?	111.	0.	.1140E+03	.9375E+01	.4625E+01	.3142E+01	.2475E+03	0.	VCONN
?	112.	0.	.1150E+03	.9375E+01	.4625E+01	.3142E+01	.1188E+04	0.	VCONN
?	113.	0.	.1400E+03	.4625E+01	.7000E+01	.3142E+01	.1595E+03	0.	VCONN
?	114.	0.	.1630E+03	.4625E+01	.7000E+01	.3142E+01	.2475E+03	0.	VCONN
?	115.	0.	.1820E+03	.4625E+01	.7000E+01	.3142E+01	.1188E+04	0.	VCONN
?	116.	0.	.2020E+03	.1250E+02	.1250E+02	.3142E+01	.4320E+04	0.	VCONN
?	117.	0.	.2140E+03	.1250E+02	.1250E+02	.3142E+01	.1296E+05	0.	VCONN
?	122.	0.	.1230E+03	.4625E+01	.7000E+01	.3142E+01	.4800E+02	0.	VCONN
?	123.	0.	.1240E+03	.7000E+01	.5500E+01	.3142E+01	.4800E+02	0.	VCONN
?	122.	0.	.1230E+03	.4625E+01	.7000E+01	.3142E+01	.4800E+02	0.	VCONN
?	123.	0.	.1240E+03	.7000E+01	.5500E+01	.3142E+01	.4800E+02	0.	VCONN
?	124.	0.	.1250E+03	.5500E+01	.2750E+01	.3142E+01	.4800E+02	0.	VCONN

TAP-A INPUT DATA (Cont'd)

7	125.	0.	.1260E+03	.2750E+01	.5350E+01	.3142E+01	.8800E+02	0.	VCONN
7	126.	0.	.1270E+03	.5350E+01	.3650E+01	.3142E+01	.8800E+02	0.	VCONN
7	127.	0.	.1280E+03	.3650E+01	.8000E+01	.3142E+01	.8800E+02	0.	VCONN
7	128.	0.	.1290E+03	.8000E+01	.8000E+01	.3142E+01	.8800E+02	0.	VCONN
7	129.	0.	.1300E+03	.8000E+01	.8000E+01	.3142E+01	.8800E+02	0.	VCONN
7	130.	0.	.1310E+03	.8000E+01	.8000E+01	.3142E+01	.8800E+02	0.	VCONN
7	131.	0.	.1320E+03	.8000E+01	.8000E+01	.3142E+01	.8800E+02	0.	VCONN
7	132.	0.	.1330E+03	.8000E+01	.8000E+01	.3142E+01	.8800E+02	0.	VCONN
7	133.	0.	.1340E+03	.8000E+01	.8000E+01	.3142E+01	.8800E+02	0.	VCONN
7	134.	0.	.1350E+03	.8000E+01	.8000E+01	.3142E+01	.8800E+02	0.	VCONN
7	135.	0.	.1360E+03	.8000E+01	.8000E+01	.3142E+01	.8800E+02	0.	VCONN
7	136.	0.	.1370E+03	.8000E+01	.2340E+01	.3142E+01	.8800E+02	0.	VCONN
7	137.	0.	.1380E+03	.2340E+01	.1645E+02	.3142E+01	.8800E+02	0.	VCONN
7	138.	0.	.1390E+03	.1645E+02	.9000E+01	.3142E+01	.8800E+02	0.	VCONN
7	139.	0.	.1560E+03	.9000E+01	.6000E+01	.3142E+01	.8800E+02	0.	VCONN
7	140.	0.	.1410E+03	.7000E+01	.5500E+01	.3142E+01	.1595E+03	0.	VCONN
7	141.	0.	.1420E+03	.5500E+01	.2750E+01	.3142E+01	.1595E+03	0.	VCONN
7	142.	0.	.1430E+03	.2750E+01	.5350E+01	.3142E+01	.1595E+03	0.	VCONN
7	143.	0.	.1440E+03	.5350E+01	.3650E+01	.3142E+01	.1595E+03	0.	VCONN
7	144.	0.	.1450E+03	.3650E+01	.8000E+01	.3142E+01	.1595E+03	0.	VCONN
7	145.	0.	.1460E+03	.8000E+01	.8000E+01	.3142E+01	.1595E+03	0.	VCONN
7	146.	0.	.1470E+03	.8000E+01	.8000E+01	.3142E+01	.1595E+03	0.	VCONN
7	147.	0.	.1480E+03	.8000E+01	.8000E+01	.3142E+01	.1595E+03	0.	VCONN
7	148.	0.	.1490E+03	.8000E+01	.8000E+01	.3142E+01	.1595E+03	0.	VCONN
7	149.	0.	.1500E+03	.8000E+01	.8000E+01	.3142E+01	.1595E+03	0.	VCONN
7	150.	0.	.1510E+03	.8000E+01	.8000E+01	.3142E+01	.1595E+03	0.	VCONN
7	151.	0.	.1520E+03	.8000E+01	.8000E+01	.3142E+01	.1595E+03	0.	VCONN
7	152.	0.	.1530E+03	.8000E+01	.8000E+01	.3142E+01	.1595E+03	0.	VCONN
7	153.	0.	.1540E+03	.8000E+01	.2340E+01	.3142E+01	.1595E+03	0.	
7	154.	0.	.1550E+03	.2340E+01	.2545E+02	.3142E+01	.1595E+03	0.	
7	155.	0.	.1560E+03	.2545E+02	.6000E+01	.3142E+01	.1595E+03	0.	
7	156.	0.	.1590E+03	.6000E+01	.1800E+02	.3142E+01	.2475E+03	0.	VCONN
7	157.	0.	.1600E+03	.6000E+01	.1800E+02	.3142E+01	.4500E+02	0.	VCONN
7	158.	0.	.1600E+03	.6000E+01	.1800E+02	.3142E+01	.3600E+02	0.	VCONN
7	159.	0.	.1610E+03	.1800E+02	.3000E+02	.3142E+01	.2475E+03	0.	VCONN
7	160.	0.	.1620E+03	.1800E+02	.3000E+02	.3142E+01	.8100E+02	0.	VCONN
7	161.	0.	.2000E+03	.3000E+02	.4800E+02	.3142E+01	.2475E+03	0.	VCONN
7	162.	0.	.2010E+03	.3000E+02	.4800E+02	.3142E+01	.8100E+02	0.	VCONN
7	163.	0.	.1640E+03	.7000E+01	.5500E+01	.3142E+01	.2475E+03	0.	
7	164.	0.	.1650E+03	.5500E+01	.2750E+01	.3142E+01	.2475E+03	0.	
7	165.	0.	.1660E+03	.2750E+01	.5350E+01	.3142E+01	.2475E+03	0.	
7	166.	0.	.1670E+03	.5350E+01	.3650E+01	.3142E+01	.2475E+03	0.	
7	167.	0.	.1680E+03	.3650E+01	.3000E+01	.3142E+01	.2475E+03	0.	VCONN
7	168.	0.	.1690E+03	.8000E+01	.8000E+01	.3142E+01	.2475E+03	0.	VCONN
7	169.	0.	.1700E+03	.8000E+01	.8000E+01	.3142E+01	.2475E+03	0.	VCONN
7	170.	0.	.1710E+03	.8000E+01	.8000E+01	.3142E+01	.2475E+03	0.	VCONN
7	171.	0.	.1720E+03	.8000E+01	.8000E+01	.3142E+01	.2475E+03	0.	VCONN
7	172.	0.	.1730E+03	.8000E+01	.8000E+01	.3142E+01	.2475E+03	0.	VCONN
7	173.	0.	.1740E+03	.8000E+01	.8000E+01	.3142E+01	.2475E+03	0.	VCONN
7	174.	0.	.1750E+03	.8000E+01	.8000E+01	.3142E+01	.2475E+03	0.	VCONN
7	175.	0.	.1760E+03	.8000E+01	.8000E+01	.3142E+01	.2475E+03	0.	VCONN
7	176.	0.	.1770E+03	.8000E+01	.2340E+01	.3142E+01	.2475E+03	0.	
7	177.	0.	.1780E+03	.2340E+01	.2545E+02	.3142E+01	.2475E+03	0.	
7	178.	0.	.1790E+03	.2545E+02	.6000E+01	.3142E+01	.2475E+03	0.	
7	179.	0.	.1800E+03	.6000E+01	.1800E+02	.3142E+01	.2475E+03	0.	VCONN
7	180.	0.	.1810E+03	.1800E+02	.3000E+02	.3142E+01	.2475E+03	0.	VCONN
7	181.	0.	.2000E+03	.3000E+02	.4800E+02	.3142E+01	.2475E+03	0.	VCONN
7	182.	0.	.1830E+03	.7000E+01	.5500E+01	.3142E+01	.1188E+04	0.	
7	183.	0.	.1840E+03	.5500E+01	.2750E+01	.3142E+01	.1188E+04	0.	
7	184.	0.	.1850E+03	.2750E+01	.5350E+01	.3142E+01	.1188E+04	0.	
7	185.	0.	.1860E+03	.5350E+01	.3650E+01	.3142E+01	.1188E+04	0.	
7	186.	0.	.1870E+03	.3650E+01	.8000E+01	.3142E+01	.1188E+04	0.	VCONN
7	187.	0.	.1880E+03	.8000E+01	.8000E+01	.3142E+01	.1188E+04	0.	VCONN
7	188.	0.	.1890E+03	.8000E+01	.8000E+01	.3142E+01	.1188E+04	0.	VCONN
7	189.	0.	.1900E+03	.8000E+01	.8000E+01	.3142E+01	.1188E+04	0.	VCONN
7	190.	0.	.1910E+03	.8000E+01	.8000E+01	.3142E+01	.1188E+04	0.	VCONN
7	191.	0.	.1920E+03	.8000E+01	.8000E+01	.3142E+01	.1188E+04	0.	VCONN
7	192.	0.	.1930E+03	.8000E+01	.8000E+01	.3142E+01	.1188E+04	0.	VCONN
7	193.	0.	.1940E+03	.8000E+01	.8000E+01	.3142E+01	.1188E+04	0.	VCONN
7	192.	0.	.1930E+03	.8000E+01	.8000E+01	.3142E+01	.1188E+04	0.	VCONN
7	193.	0.	.1940E+03	.8000E+01	.8000E+01	.3142E+01	.1188E+04	0.	VCONN
7	194.	0.	.1950E+03	.8000E+01	.8000E+01	[illegible]	.1188E+04	0.	VCONN
7	195.	0.	.1960E+03	.8000E+01	.2340E+01	.3142E+01	.1188E+04	0.	
7	196.	0.	.1970E+03	.2340E+01	.2545E+02	.3142E+01	.1188E+04	0.	
7	197.	0.	.1980E+03	.2545E+02	.2400E+02	.3142E+01	.1188E+04	0.	
7	198.	0.	.1990E+03	.2400E+02	.3000E+02	.3142E+01	.1188E+04	0.	VCONN
7	199.	0.	.2000E+03	.3000E+02	.4800E+02	.3142E+01	.1188E+04	0.	VCONN
7	200.	0.	.2410E+03	.4800E+02	.5760E+04	.3142E+01	.1683E+04	0.	
7	201.	0.	.2420E+03	.4800E+02	.5760E+04	.3142E+01	.8100E+02	0.	
7	202.	0.	.2030E+03	.1250E+02	.8050E+01	.3142E+01	.4320E+04	0.	
7	203.	0.	.2040E+03	.8050E+01	.6250E+01	.3142E+01	.4320E+04	0.	
7	204.	0.	.2510E+03	.6250E+01	.5400E+01	.3142E+01	.4320E+04	0.	
7	251.	0.	.2050E+03	.5400E+01	.1600E+02	.3142E+01	.4320E+04	0.	
7	205.	0.	.2060E+03	.1600E+02	.6600E+01	.3142E+01	.4320E+04	0.	
7	206.	0.	.2520E+03	.6600E+01	.9400E+01	.3142E+01	.4320E+04	0.	
7	252.	0.	.2070E+03	.9400E+01	.1600E+02	.3142E+01	.4320E+04	0.	
7	207.	0.	.2080E+03	.1600E+02	.2600E+01	.3142E+01	.4320E+04	0.	
7	208.	0.	.2540E+03	.2600E+01	.1340E+02	.3142E+01	.4320E+04	0.	
7	254.	0.	.2090E+03	.1340E+02	.2340E+01	.3142E+01	.4320E+04	0.	
7	209.	0.	.2100E+03	.2340E+01	.2545E+02	.3142E+01	.4320E+04	0.	
7	210.	0.	.2110E+03	.2545E+02	.2400E+02	.3142E+01	.4320E+04	0.	
7	211.	0.	.2120E+03	.2400E+02	.3000E+02	.3142E+01	.4320E+04	0.	VCONN
7	212.	0.	.2130E+03	.3000E+02	.4800E+02	.3142E+01	.4320E+04	0.	VCONN
7	213.	0.	.2400E+03	.4800E+02	.5760E+04	.3142E+01	.4320E+04	0.	

TAP-A INPUT DATA (Cont'd)

7	214.	0.	.2150E+03	.1250E+02	.8050E+01	.3142E+01	.1642E+05	0.
7	215.	C.	.2160E+03	.8050E+01	.6255E+01	.3142E+01	.1642E+05	0.
7	216.	0.	.2550E+03	.6250E+01	.5400E+01	.3142E+01	.1642E+05	0.
7	255.	0.	.2170E+03	.5400E+01	.1600E+02	.3142E+01	.1642E+05	0.
7	217.	0.	.2180E+03	.1600E+02	.6600E+0'	.3142E+01	.1642E+05	0.
7	218.	0.	.2560E+03	.6600E+01	.9400E+01	.3142E+01	.1642E+05	0.
7	256.	0.	.2190E+03	.9400E+01	.1600E+02	.3142E+01	.1642E+05	0.
7	219.	0.	.2200E+03	.1600E+02	.2600E+01	.3142E+01	.1642E+05	0.
7	220.	0.	.2580E+03	.2600E+01	.1340E+02	.3142E+01	.1642E+05	0.
7	258.	0.	.2210E+03	.1340E+02	.2340E+01	.3142E+01	.1642E+05	0.
7	221.	0.	.2220E+03	.2340E+01	.2545E+02	.3142E+01	.1642E+05	0.
7	222.	0.	.2230E+03	.2545E+02	.2400E+02	.3142E+01	.1642E+05	0.
7	223.	0.	.2240E+03	.2400E+02	.3000E+02	.3142E+01	.1642E+05	[illegible]
7	224.	0.	.2250E+03	.3000E+02	.4800E+02	.3142E+01	.1642E+05	0.
7	225.	0.	.2390E+03	.4800E+02	.5760E+04	.3142E+01	.1642E+05	0.
7	118.	0.	.2260E+03	.1250E+02	.1250E+02	.3142E+01	.6750E+05	0.
7	226.	0.	.2270E+03	.1250E+02	.8050E+01	.3142E+01	.6750E+05	0.
7	227.	0.	.2280E+03	.8050E+01	.1165E+02	.3142E+01	.6750E+05	0.
7	228.	0.	.2290E+03	.1165E+02	.1600E+02	.3142E+01	.6750E+05	0.
7	229.	0.	.2300E+03	.1600E+02	.1600E+02	.3142E+01	.6750E+05	0.
7	230.	0.	.2310E+03	.1600E+02	.1600E+02	.3142E+01	.6750E+05	0.
7	231.	0.	.2320E+03	.1600E+02	.1600E+02	.3142E+01	.6750E+05	0.
7	232.	0.	.2330E+03	.1600E+02	.2340E+01	.3142E+01	.6750E+05	0.
7	233.	0.	.2340E+03	.2340E+01	.2545E+02	.3142E+01	.6750E+05	0.
7	234.	0.	.2350E+03	.2545E+02	.2400E+02	.3142E+01	.6750E+05	0.
7	235.	0.	.2360E+03	.2400E+02	.3000E+02	.3142E+01	.6750E+05	0.
7	236.	0.	.2370E+03	.3000E+02	.4800E+02	.3142E+01	.6750E+05	0.
7	237.	0.	.2380E+03	.4800E+02	.5760E+04	.3142E+01	.6750E+05	0.
7	259.	0.	.2600E+03	.1250E+02	.1250E+02	.3142E+01	.4284E+06	0.
7	260.	0.	.2610E+03	.1250E+02	.8050E+01	.3142E+01	.4284E+06	0.
7	261.	0.	.2620E+03	.8050E+01	.1165E+02	.3142E+01	.4284E+06	0.
7	262.	0.	.2630E+03	.1165E+02	.1600E+02	.3142E+01	.4284E+06	0.
7	263.	0.	.2640E+03	.1600E+02	.1600E+02	.3142E+01	.4284E+06	0.
7	264.	0.	.2650E+03	.1600E+02	.1600E+02	.3142E+01	.4284E+06	0.
7	265.	0.	.2660E+03	.1600E+02	.1600E+02	.3142E+01	.4284E+06	0.
7	266.	0.	.2670E+03	.1600E+02	.2340E+01	.3142E+01	.4284E+06	0.
7	267.	0.	.2680E+03	.2340E+01	.2545E+02	.3142E+01	.4284E+06	0.
7	268.	0.	.2690E+03	.2545E+02	.2400E+02	.3142E+01	.4284E+06	0.
7	269.	0.	.2700E+03	.2400E+02	.3000E+02	.3142E+01	.4284E+06	0.
.	268.	0.	.2390E+03	.2545E+02	.2400E+02	.3142E+01	.4284E+06	0.
7	269.	0.	.2700E+03	.2400E+02	.3000E+02	.3142E+01	.4284E+06	0.
7	270.	0.	.2710E+03	.3000E+02	.4800E+02	.3142E+01	.4284E+06	0.
7	271.	0.	.2720E+03	.4800E+02	.5760E+04	.3142E+01	.4284E+06	0.
7	187.	0.	.2510E+03	.1013E+02	.1498E+02	.2639E+03	.1080E+02	0.
7	190.	0.	.2520E+03	.1013E+02	.1498E+02	.2639E+03	.2800E+01	0.
7	194.	0.	.2540E+03	.1013E+02	.1498E+02	.2639E+03	.1080E+02	0.
7	251.	0.	.2550E+03	.2046E+02	.2960E+02	.4901E+03	.1080E+02	0.

7	252.	0.	.2560E+03	.2046E+02	.2960E+02	.4901E+03	.1880E+02	0.	
7	254.	0.	.2580E+03	.2046E+02	.2960E+02	.4901E+03	.2680E+02	0.	
7	255.	0.	.2280E+03	.4117E+02	.6082E+02	.9425E+03	.1080E+02	0.	
7	256.	0.	.2300E+03	.4117E+02	.6082E+02	.9425E+03	.1880E+02	0.	
7	258.	0.	.2320E+03	.4117E+02	.6082E+02	.9425E+03	.2680E+02	0.	
7	118.	0.	.2590E+03	.8631E+02	.1592E+03	.1885E+04	.2500E+02	0.	
7	226.	0.	.2600E+03	.8631E+02	.1592E+03	.1885E+04	.2500E+02	0.	
7	227.	0.	.2610E+03	.8631E+02	.1592E+03	.1885E+04	.1610E+02	0.	
7	228.	0.	.2620E+03	.8631E+02	.1592E+03	.1885E+04	.2330E+02	0.	
7	229.	0.	.2630E+03	.8631E+02	.1592E+03	.1885E+04	.3200E+02	0.	
7	230.	0.	.2640E+03	.8631E+02	.1592E+03	.1885E+04	.3200E+02	0.	
7	231.	0.	.2650E+03	.8631E+02	.1592E+03	.1885E+04	.3200E+02	0.	
7	232.	0.	.2660E+03	.8631E+02	.1592E+03	.1885E+04	.3200E+02	0.	
7	233.	0.	[illegible]	.8631E+02	.1592E+03	.1885E+04	.4675E+01	0.	
7	234.	0.	.2680E+03	.8631E+02	.1592E+03	.1885E+04	.5090E+02	0.	
7	235.	0.	.2690E+03	.8631E+02	.1592E+03	.1885E+04	.4800E+02	0.	
7	236.	0.	.2700E+03	.8631E+02	.1592E+03	.1885E+04	.6000E+02	0.	
7	237.	0.	.2710E+03	.8631E+02	.1592E+03	.1885E+04	.9600E+02	0.	
7	238.	0.	.2720E+03	.8631E+02	.1592E+03	.1885E+04	.1152E+05	0.	
7	1.	0.	.3100E+02	.3650E+01	.1750E+01	.3142E+01	.4000E+01	0.	CONN
7	11.	0.	.3200E+02	.8000E+01	.1750E+01	.3142E+01	.1200E+02	0.	CONN
7	21.	0.	.3300E+02	.8000E+01	.1750E+01	.3142E+01	.2000E+02	0.	CONN
7	21.	0.	.3600E+02	.1094E+01	.1849E+00	.3770E+02	.7300E+01	0.	CONN
7	22.	0.	.3700E+02	.1094E+01	.1849E+00	.3770E+02	.5200E+01	0.	CONN
7	22.	0.	.2430E+03	.1094E+01	.1849E+00	.3770E+02	.1080E+02	0.	CONN
7	23.	0.	.3800E+02	.1094E+01	.1849E+00	.3770E+02	.1600E+02	0.	CONN
.	24.	0.	.3900E+02	.1094E+01	.1849E+00	.3770E+02	.1600E+02	0.	CONN
7	25.	0.	.4000E+02	.1094E+01	.1849E+00	.3770E+02	.1600E+02	0.	CONN
7	26.	0.	.4100E+02	.1094E+01	.1849E+00	.3770E+02	.1320E+02	0.	
7	26.	0.	.2440E+03	.1094E+01	.1849E+00	.3770E+02	.2800E+01	0.	
7	27.	0.	.4200E+02	.1094E+01	.1849E+00	.3770E+02	.1600E+02	0.	CONN
7	28.	0.	.4300E+02	.1094E+01	.1849E+00	.3770E+02	.9200E+01	0.	
7	28.	0.	.2450E+03	.1094E+01	.1849E+00	.3770E+02	.6800E+01	0.	
7	29.	0.	.4400E+02	.1094E+01	.1849E+00	.3770E+02	.1600E+02	0.	CONN
7	30.	0.	.4500E+02	.1094E+01	.1849E+00	.3770E+02	.5200E+01	0.	
7	[illegible]	0.	.2460E+03	.1094E+01	.1849E+00	.3770E+02	.1080E+02	0.	
7	.	0.	.4800E+02	.8000E+01	.1875E+00	.3142E+01	.2000E+02	0.	CONN
7	20.	0.	.4900E+02	.8000E+01	.1875E+00	.3142E+01	.1200E+02	0.	CONN
7	10.	0.	.5000E+02	.8000E+01	.1875E+00	.3142E+01	.4000E+01	0.	CONN
7	35.	0.	.5200E+02	.1900E+00	.4361E+00	.4398E+02	.7500E+01	0.	
7	51.	0.	.5200E+02	.3000E+01	.5350E+01	.3142E+01	.1341E+02	0.	
7	51.	0.	.5600E+02	.3000E+01	.5000E+00	.3142E+01	.1341E+02	0.	CONN
7	31.	0.	.5300E+02	.1750E+01	.5000E+00	.3142E+01	.4000E+01	.1000E+01	CONN
7	32.	0.	.5400E+02	.1750E+01	.5000E+00	.3142E+01	.1200E+02	.1000E+01	CONN
7	33.	0.	.5500E+02	.1750E+01	.5000E+00	.3142E+01	.2000E+02	.1000E+01	CONN
7	34.	0.	.5600E+02	.1750E+01	.5000E+00	.3142E+01	.1300E+02	.1000E+01	CONN
7	51.	0.	.5900E+02	.4633E+00	.3671E+00	.5027E+02	.6000E+01	.2000E+01	CONN

TAP-A INPUT DATA (Cont'd)

?	52.	0.	.6000E+02	.4633E+00	.3671E+00	.5027E+02	.7500E+01	.2000E+01	CONN
?	36.	0.	.6100E+02	.1900E+00	.1241E+00	.4398E+02	.7300E+01	.3000E+01	
?	37.	0.	.6200E+02	.1900E+00	.1241E+00	.4398E+02	.5200E+01	.3000E+01	CONN
?	243.	0.	.2470E+03	.1900E+00	.1241E+00	.4398E+02	.1080E+02	.3000E+01	CONN
?	38.	0.	.6300E+02	.1900E+00	.1241E+00	.4398E+02	.1600E+02	.3000E+01	CONN
?	39.	0.	.6400E+02	.1900E+00	.1241E+00	.4398E+02	.1600E+02	.3000E+01	CONN
?	40.	0.	.6500E+02	.1900E+00	.1241E+00	.4398E+02	.1600E+02	.3000E+01	CONN
?	41.	0.	.6600E+02	.1900E+00	.1241E+00	.4398E+02	.1320E+02	.3000E+01	CONN
?	244.	0.	.2480E+03	.1900E+00	.1241E+00	.4398E+02	.2800E+01	.3000E+01	CONN
?	42.	0.	.6700E+02	.1900E+00	.1241E+00	.4398E+02	.1600E+02	.3000E+01	CONN
?	43.	0.	.6800E+02	.1900E+00	.1241E+00	.4398E+02	.9200E+01	.3000E+01	CONN
?	245.	0.	.2490E+03	.1900E+00	.1241E+00	.4398E+02	.6800E+01	.3000E+01	CONN
?	44.	0.	.6900E+02	.1900E+00	.1241E+00	.4398E+02	.1600E+02	.3000E+01	CONN
?	45.	0.	.7000E+02	.1900E+00	.1241E+00	.4398E+02	.5200E+01	.3000E+01	CONN
?	246.	0.	.2500E+03	.1900E+00	.1241E+00	.4398E+02	.1080E+02	.3000E+01	CONN
?	46.	0.	.7100E+02	.1900E+00	.1241E+00	.4398E+02	.6100E+01	.3000E+01	CONN
?	47.	0.	.7400E+02	.1875E+00	.9000E+01	.3142E+01	.1300E+02	.4000E+01	CONN
?	48.	0.	.7500E+02	.1875E+00	.9000E+01	.3142E+01	.2000E+02	.4000E+01	CONN
?	49.	0.	.7600E+02	.1875E+00	.9000E+01	.3142E+01	.1200E+02	.4000E+01	CONN
?	50.	0.	.7700E+02	.1875E+00	.9000E+01	.3142E+01	.4000E+01	.4000E+01	CONN
?	53.	0.	.5400E+02	.1386E+01	.8109E+00	.1257E+02	.1000E+01	0.	HCONN
?	54.	0.	.5500E+02	.1151E+01	.8926E+00	.2513E+02	.1000E+01	0.	HCONN
?	55.	0.	.5600E+02	.1094E+01	.8819E+00	.3770E+02	.1000E+01	0.	HCONN
?	56.	0.	.5700E+02	.1012E+01	.9858E+00	.4964E+02	.1000E+01	0.	HCONN
?	58.	0.	.1240E+03	.1048E+01	.9571E+00	.6912E+02	.5000E+00	0.	HCONN
?	58.	0.	.5900E+02	.9482E+00	.1894E+00	.5655E+02	.5000E+00	0.	HCONN
?	59.	0.	.1250E+03	.1894E+00	.1806E+01	.5655E+02	.5500E+01	0.	HCONN
?	60.	0.	.1260E+03	.1894E+00	.1806E+01	.5655E+02	.1070E+02	0.	
?	61.	0.	.1270E+03	.1894E+00	.1806E+01	.5655E+02	.7300E+01	0.	HCONN
?	62.	0.	.1280E+03	.1894E+00	.1806E+01	.5655E+02	.5200E+01	0.	HCONN
?	63.	0.	.1290E+03	.1894E+00	.1806E+01	.5655E+02	.1600E+02	0.	HCONN
?	64.	0.	.1300E+03	.1894E+00	.1806E+01	.5655E+02	.1600E+02	0.	HCONN
?	65.	0.	.1310E+03	.1894E+00	.1806E+01	.5655E+02	.1600E+02	0.	HCONN
?	66.	0.	.1320E+03	.1894E+00	.1806E+01	.5655E+02	.1320E+02	0.	
?	67.	0.	.1330E+03	.1894E+00	.1806E+01	.5655E+02	.1600E+02	0.	HCONN
?	68.	0.	.1340E+03	.1894E+00	.1806E+01	.5655E+02	.9200E+01	0.	
?	69.	0.	.1350E+03	.1894E+00	.1806E+01	.5655E+02	.1600E+02	0.	HCONN
?	70.	0.	.1360E+03	.1894E+00	.1806E+01	.5655E+02	.5200E+01	0.	
?	71.	0.	.1370E+03	.1894E+00	.1806E+01	.5655E+02	.4675E+01	0.	
?	72.	0.	.1380E+03	.1894E+00	.1806E+01	.5655E+02	.3290E+02	0.	
?	128.	0.	.2470E+03	.1806E+01	.1894E+00	.5655E+02	.1080E+02	0.	
?	132.	0.	.2480E+03	.1806E+01	.1894E+00	.5655E+02	.2800E+01	0.	
?	134.	0.	.2490E+03	.1806E+01	.1894E+00	.5655E+02	.6800E+01	0.	
?	136.	0.	.2500E+03	.1806E+01	.1894E+00	.5655E+02	.1080E+02	0.	
?	73.	0.	.1390E+03	.1060E+01	.1806E+01	.5655E+02	.1800E+02	0.	
?	73.	0.	.7400E+02	.9347E+00	.5188E+00	.4398E+02	.1800E+02	0.	
?	74.	0.	.7500E+02	.4803E+00	.1094E+01	.3770E+02	.1800E+02	0.	

?	75.	0.	.7600E+02	.8926E+00	.1151E+01	.2513E+02	.1800E+02	0.	
?	76.	0.	.7700E+02	.8109E+00	.1387E+01	.1257E+02	.1800E+02	0.	
?	75.	0.	.7600E+02	.8926E+00	.1151E+01	.2513E+02	.1800E+02	0.	
?	76.	0.	.7700E+02	.8109E+00	.1387E+01	.1257E+02	.1800E+02	0.	
?	78.	0.	.8100E+02	.1386E+01	.8109E+00	.1257E+02	.5000E+01	0.	HCONN
?	79.	0.	.8200E+02	.1386E+01	.8109E+00	.1257E+02	.1400E+02	0.	HCONN
?	80.	0.	.8300E+02	.1386E+01	.8109E+00	.1257E+02	.1300E+02	0.	HCONN
?	81.	0.	.8400E+02	.1151E+01	.8926E+00	.2513E+02	.5000E+01	0.	HCONN
?	82.	0.	.8500E+02	.1151E+01	.8926E+00	.2513E+02	.1400E+02	0.	HCONN
?	83.	0.	.8600E+02	.1151E+01	.8926E+00	.2513E+02	.1300E+02	0.	HCONN
?	84.	0.	.8700E+02	.1094E+01	.8819E+00	.3770E+02	.5000E+01	0.	HCONN
?	85.	0.	.8800E+02	.1094E+01	.8819E+00	.3770E+02	.1400E+02	0.	HCONN
?	86.	0.	.8900E+02	.1094E+01	.8819E+00	.3770E+02	.1300E+02	0.	HCONN
?	87.	0.	.9000E+02	.1012E+01	.9858E+00	.4964E+02	.5000E+01	0.	HCONN
?	88.	0.	.9100E+02	.1012E+01	.9858E+00	.4964E+02	.1400E+02	0.	HCONN
?	89.	0.	.9200E+02	.1012E+01	.9858E+00	.4964E+02	.1300E+02	0.	HCONN
?	90.	0.	.1080E+03	.1109E+01	.3683E+00	.6283E+02	.5000E+01	.6000E+01	HCONN
?	91.	0.	.1090E+03	.1109E+01	.3683E+00	.6283E+02	.1400E+02	.6000E+01	H
?	92.	0.	.1100E+03	.1109E+01	.3683E+00	.6282E+02	.1300E+02	.6000E+01	
?	93.	0.	.9400E+02	.1386E+01	.8109E+00	.1257E+02	.1000E+01	0.	HCONN
?	94.	0.	.9500E+02	.1151E+01	.8926E+00	.2513E+02	.1000E+01	0.	HCONN
?	95.	0.	.9600E+02	.1094E+01	.9249E+00	.3770E+02	.1000E+01	0.	HCONN
?	96.	0.	.9700E+02	.1068E+01	.8304E+00	.4964E+02	.1000E+01	0.	HCONN
?	98.	0.	.9900E+02	.1386E+01	.8109E+00	.1257E+02	.2500E+00	0.	HCONN
?	99.	0.	.1000E+03	.1151E+01	.8926E+00	.2513E+02	.2500E+00	0.	HCONN
?	100.	0.	.1010E+03	.1094E+01	.9249E+00	.3770E+02	.2500E+00	0.	HCONN
?	101.	0.	.1020E+03	.1068E+01	.8304E+00	.4964E+02	.2500E+00	0.	HCONN
?	102.	0.	.1030E+03	.1109E+01	.4879E+00	.6283E+02	.2500E+00	0.	HCONN
?	103.	0.	.1040E+03	.5117E+00	.9571E+01	.6912E+02	.2500E+00	0.	HCONN
?	104.	0.	.1050E+03	.1041E+01	.2339E+01	.8168E+02	.2500E+00	0.	HCONN
?	105.	0.	.1060E+03	.2763E+01	.2722E+01	.1139E+03	.2500E+00	0.	HCONN
?	108.	0.	.1220E+03	.3815E+00	.9571E+00	.6912E+02	.9250E+01	0.	
?	109.	0.	.1230E+03	.3815E+00	.9571E+00	.6912E+02	.1400E+02	0.	HCONN
?	110.	0.	.1240E+03	.3815E+00	.9571E+00	.6912E+02	.1400E+02	0.	
?	111.	0.	.1120E+03	.3133E+01	.7643E+01	.1508E+03	.1875E+02	0.	
?	112.	0.	.1160E+03	.1013E+02	.1498E+02	.2639E+03	.1575E+02	0.	
?	113.	0.	.1140E+03	.2763E+01	.2722E+01	.1139E+03	.9250E+01	0.	
?	114.	0.	.1150E+03	.3133E+01	.7643E+01	.1508E+03	.9250E+01	0.	
?	115.	0.	.1160E+03	.1013E+02	.1498E+02	.2639E+03	.9250E+01	0.	
?	116.	0.	.1170E+03	.2046E+02	.2960E+02	.4901E+03	.2500E+02	0.	
?	122.	0.	.1130E+03	.1041E+01	.2339E+01	.8168E+02	.9250E+01	0.	
?	123.	0.	.1400E+03	.1041E+01	.2339E+01	.8168E+02	.1400E+02	0.	HCONN
?	124.	0.	.1410E+03	.1041E+01	.2339E+01	.8168E+02	.1100E+02	0.	
?	125.	0.	.1420E+03	.2172E+01	.2339E+01	.8168E+02	.5500E+01	0.	HCONN
?	126.	0.	.1430E+03	.2172E+01	.2339E+01	.8168E+02	.1070E+02	0.	
?	127.	0.	.1440E+03	.2172E+01	.2339E+01	.8168E+02	.7300E+01	0.	HCONN
?	128.	0.	.1450E+03	.2172E+01	.2339E+01	.8168E+02	.1600E+02	0.	HCONN

TAP-A INPUT DATA (Cont'd)

7	129.	0.	.1460E+03	.2172E+01	.2339E+01	.8168E+02	.1600E+02	0.	HCONN
7	130.	0.	.1470E+03	.2172E+01	.2339E+01	.8168E+02	.1600E+02	0.	HCONN
7	131.	0.	.1480E+03	.2172E+01	.2339E+01	.8168E+02	.1600E+02	0.	HCONN
7	132.	0.	.1490E+03	.2172E+01	.2339E+01	.8168E+02	.1600E+02	0.	HCONN
7	133.	0.	.1500E+03	.2172E+01	.2339E+01	.8168E+02	.1600E+02	0.	HCONN
7	134.	0.	.1510E+03	.2172E+01	.2339E+01	.8168E+02	.1600E+02	0.	HCONN
7	135.	0.	.1520E+03	.2172E+01	.2339E+01	.8168E+02	.1600E+02	0.	HCONN
7	136.	0.	.1530E+03	.2172E+01	.2339E+01	.8168E+02	.1600E+02	0.	HCONN
7	137.	0.	.1540E+03	.2172E+01	.2339E+01	.8168E+02	.4675E+01	0.	
7	138.	0.	.1550E+03	.2172E+01	.2339E+01	.8168E+02	.3290E+02	0.	
7	139.	0.	.1550E+03	.2172E+01	.2339E+01	.8168E+02	.1800E+02	0.	
7	140.	0.	.1630E+03	.2763E+01	.2722E+01	.1139E+03	.1400E+02	0.	HCONN
7	141.	0.	.1640E+03	.2763E+01	.2722E+01	.1139E+03	.1100E+02	0.	
7	142.	0.	.1650E+03	.2763E+01	.2722E+01	.1139E+03	.5500E+01	0.	HCONN
7	143.	0.	.1660E+03	.2763E+01	.2722E+01	.1139E+03	.1070E+02	0.	
7	144.	0.	.1670E+03	.2763E+01	.2722E+01	.1139E+03	.7300E+01	0.	HCONN
7	145.	0.	.1680E+03	.2763E+01	.2722E+01	.1139E+03	.1600E+02	0.	HCONN
7	146.	0.	.1690E+03	.2763E+01	.2722E+01	.1139E+03	.1600E+02	0.	HCONN
7	147.	0.	.1700E+03	.2763E+01	.2722E+01	.1139E+03	.1600E+02	0.	HCONN
7	148.	0.	.1710E+03	.2763E+01	.2722E+01	.1139E+03	.1600E+02	0.	HCONN
7	149.	0.	.1720E+03	.2763E+01	.2722E+01	.1139E+03	.1600E+02	0.	HCONN
7	150.	0.	.1730E+03	.2763E+01	.2722E+01	.1139E+03	.1600E+02	0.	HCONN
7	151.	0.	.1740E+03	.2763E+01	.2722E+01	.1139E+03	.1600E+02	0.	HCONN
7	152.	0.	.1750E+03	.2763E+01	.2722E+01	.1139E+03	.1600E+02	0.	HCONN
7	153.	0.	.1760E+03	.2763E+01	.2722E+01	.1139E+03	.1600E+02	0.	HCONN
7	154.	0.	.1770E+03	.2763E+01	.2722E+01	.1139E+03	.4675E+01	0.	
7	155.	0.	.1780E+03	.2763E+01	.2722E+01	.1139E+03	.5090E+02	0.	
7	156.	0.	.1570E+03	.3814E+01	.1641E+01	.5655E+02	.1200E+02	0.	HCONN
7	156.	0.	.1790E+03	.5256E+01	.2722E+01	.1139E+03	.1200E+02	0.	HCONN
7	157.	0.	.1580E+03	.1339E+01	.4159E+01	.3770E+02	.1200E+02	0.	HCONN
7	159.	0.	.1600E+03	.3814E+01	.6238E+01	.5655E+02	.3600E+02	0.	HCONN
7	159.	0.	.1800E+03	.5256E+01	.2722E+01	.1139E+03	.3600E+02	0.	HCONN
7	161.	0.	.1620E+03	.3814E+01	.6238E+01	.5655E+02	.6000E+02	0.	HCONN
7	161.	0.	.1810E+03	.5256E+01	.2722E+01	.1139E+03	.6000E+02	0.	HCONN
7	163.	0.	.1820E+03	.3133E+01	.7643E+01	.1508E+03	.1400E+02	0.	HCONN
7	164.	0.	.1830E+03	.3133E+01	.7643E+01	.1508E+03	.1100E+02	0.	
7	165.	0.	.1840E+03	.3133E+01	.7643E+01	.1508E+03	.5500E+01	0.	HCONN
7	166.	0.	.1850E+03	.3133E+01	.7643E+01	.1508E+03	.1070E+02	0.	
7	167.	0.	.1860E+03	.3133E+01	.7643E+01	.1508E+03	.7300E+01	0.	HCONN
7	168.	0.	.1870E+03	.3133E+01	.7643E+01	.1508E+03	.1600E+02	0.	HCONN
7	169.	0.	.1880E+03	.3133E+01	.7643E+01	.1508E+03	.1600E+02	0.	HCONN
7	170.	0.	.1890E+03	.3133E+01	.7643E+01	.1508E+03	.1600E+02	0.	HCONN
7	171.	0.	.1900E+03	.3133E+01	.7643E+01	.1508E+03	.1600E+02	0.	HCONN
7	172.	0.	.1910E+03	.3133E+01	.7643E+01	.1508E+03	.1600E+02	0.	HCONN
7	173.	0.	.1920E+03	.3133E+01	.7643E+01	.1508E+03	.1600E+02	0.	HCONN
7	174.	0.	.1930E+03	.3133E+01	.7643E+01	.1508E+03	.1600E+02	0.	HCONN
7	175.	0.	.1940E+03	.3133E+01	.7643E+01	.1508E+03	.1600E+02	0.	HCONN
7	176.	0.	.1950E+03	.3133E+01	.7643E+01	.1508E+03	.1600E+02	0.	HCONN
7	177.	0.	.1960E+03	.3133E+01	.7643E+01	.1508E+03	.4675E+01	0.	
7	178.	0.	.1970E+03	.3133E+01	.7643E+01	.1508E+03	.5090E+02	0.	
7	179.	0.	.1980E+03	.3133E+01	.7643E+01	.1508E+03	.1200E+02	0.	
7	180.	0.	.1980E+03	.3133E+01	.7643E+01	.1508E+03	.3600E+02	0.	HCONN
7	181.	0.	.1990E+03	.3133E+01	.7643E+01	.1508E+03	.6000E+02	0.	HCONN
7	182.	0.	.2020E+03	.1013E+02	.1498E+02	.2639E+03	.1400E+02	0.	HCONN
7	183.	0.	.2020E+03	.1013E+02	.1498E+02	.2639E+03	.1100E+02	0.	
7	184.	0.	.2030E+03	.1013E+02	.1498E+02	.2639E+03	.5500E+01	0.	HCONN
7	185.	0.	.2030E+03	.1013E+02	.1498E+02	.2639E+03	.1070E+02	0.	
7	186.	0.	.2040E+03	.1013E+02	.1498E+02	.2639E+03	.7300E+01	0.	HCONN
7	187.	0.	.2040E+03	.1013E+02	.1498E+02	.2639E+03	.5200E+01	0.	
7	188.	0.	.2050E+03	.1013E+02	.1498E+02	.2639E+03	.1600E+02	0.	HCONN
7	189.	0.	.2050E+03	.1013E+02	.1498E+02	.2639E+03	.1600E+02	0.	HCONN
7	190.	0.	.2060E+03	.1013E+02	.1498E+02	.2639E+03	.1320E+02	0.	
7	191.	0.	.2520E+03	.1013E+02	.1498E+02	.2639E+03	.1600E+02	0.	
7	192.	0.	.2070E+03	.1013E+02	.1498E+02	.2639E+03	.1600E+02	0.	HCONN
7	193.	0.	.2070E+03	.1013E+02	.1498E+02	.2639E+03	.1600E+02	0.	HCONN
7	194.	0.	.2080E+03	.1013E+02	.1498E+02	.2639E+03	.5200E+01	0.	
7	195.	0.	.2540E+03	.1013E+02	.1498E+02	.2639E+03	.1600E+02	0.	
7	196.	0.	.2090E+03	.1013E+02	.1498E+02	.2639E+03	.4675E+01	0.	
7	197.	0.	.2100E+03	.1013E+02	.1498E+02	.2639E+03	.5090E+02	0.	
7	198.	0.	.2110E+03	.1013E+02	.1498E+02	.2639E+03	.4800E+02	0.	HCONN
7	199.	0.	.2120E+03	.1013E+02	.1498E+02	.2639E+03	.6000E+02	0.	HCONN
7	200.	0.	.2130E+03	.1613E+02	.1498E+02	.2639E+03	.9600E+02	0.	HCONN
7	200.	0.	.2010E+03	.1084E+02	.6238E+01	.5655E+02	.9600E+02	0.	HCONN
7	202.	0.	.2140E+03	.2046E+02	.2960E+02	.4901E+03	.2500E+02	0.	
7	203.	0.	.2150E+03	.2046E+02	.2960E+02	.4901E+03	.1610E+02	0.	
7	204.	0.	.2160E+03	.2046E+02	.2960E+02	.4901E+03	.1250E+02	0.	
7	205.	0.	.2170E+03	.2046E+02	.2960E+02	.4901E+03	.3200E+02	0.	CONN H
7	206.	0.	.2180E+03	.2046E+02	.2960E+02	.4901E+03	.1320E+02	0.	
7	207.	0.	.2190E+03	.2046E+02	.2960E+02	.4901E+03	.3200E+02	0.	CONN H
7	208.	0.	.2200E+03	.2046E+02	.2960E+02	.4901E+03	.5200E+01	0.	
7	209.	0.	.2210E+03	.2046E+02	.2960E+02	.4901E+03	.4675E+01	0.	
7	210.	0.	.2220E+03	.2046E+02	.2960E+02	.4901E+03	.5090E+02	0.	
7	211.	0.	.2230E+03	.2046E+02	.2960E+02	.4901E+03	.4800E+02	0.	CONN H
7	212.	0.	.2240E+03	.2046E+02	.2960E+02	.4901E+03	.6000E+02	0.	CONN H
7	213.	0.	.2250E+03	.2046E+02	.2960E+02	.4901E+03	.9600E+02	0.	CONN H
7	117.	0.	.1180E+03	.4117E+02	.6082E+02	.9425E+03	.2500E+02	0.	
7	214.	0.	.2260E+03	.4117E+02	.6082E+02	.9425E+03	.2500E+02	0.	
7	215.	0.	.2270E+03	.4117E+02	.6082E+02	.9425E+03	.1610E+02	0.	
7	216.	0.	.2280E+03	.4117E+02	.6082E+02	.9425E+03	.1250E+02	0.	
7	217.	0.	.2290E+03	.4117E+02	.6082E+02	.9425E+03	.3200E+02	0.	
7	218.	0.	.2300E+03	.4117E+02	.6082E+02	.9425E+03	.1320E+02	0.	
7	219.	0.	.2310E+03	.4117E+02	.6082E+02	.9425E+03	.3200E+02	0.	
7	220.	0.	.2320E+03	.4117E+02	.6082E+02	.9425E+03	.5200E+01	0.	
7	221.	0.	.2330E+03	.4117E+02	.6082E+02	.9425E+03	.4675E+01	0.	

TAP-A INPUT DATA (Cont'd)

?	222.	0.	.2340E+03	.4117E+02	.6082E+02	.9425E+03	.5090E+02	0.	
?	223.	0.	.2350E+03	.4117E+02	.6082E+02	.9425E+03	.4800E+02	0.	
?	224.	0.	.2360E+03	.4117E+02	.6082E+02	.9425E+03	.6000E+02	0.	
?	225.	0.	.2370E+03	.4117E+02	.6082E+02	.9425E+03	.9600E+02	0.	
?	239.	0.	.2380E+03	.4117E+02	.6082E+02	.9425E+03	.1152E+05	0.	
?	240.	0.	.2390E+03	.2046E+02	.2960E+02	.4901E+03	.1152E+05	0.	
?	240.	0.	.2410E+03	.1498E+02	.1413E+02	.2639E+03	.1152E+05	0.	
?	241.	0.	.2420E+03	.1084E+02	.6238E+01	.5655E+02	.1152E+05	0.	
?	31.	0.	.3001E+04	.1750E+01	0.	.3142E+01	.4000E+01	0.	SURF
?	32.	0.	.3002E+04	.1750E+01	0.	.3142E+01	.1200E+02	0.	SURF
?	33.	0.	.3003E+04	.1750E+01	0.	.3142E+01	.2000E+02	0.	SURF
?	34.	0.	.3004E+04	.1750E+01	0.	.3142E+01	.1300E+02	0.	SURF
?	36.	0.	.3007E+04	.1901E+00	0.	.4398E+02	.7300E+01	0.	SURF
?	37.	0.	.3008E+04	.1901E+00	0.	.4398E+02	.5200E+01	0.	SURF
?	38.	0.	.3009E+04	.1901E+00	0.	.4398E+02	.1600E+02	0.	SURF
?	39.	0.	.3010E+04	.1901E+00	0.	.4398E+02	.1600E+02	0.	SURF
?	40.	0.	.3011E+04	.1901E+00	0.	.4398E+02	.1600E+02	0.	SURF
?	41.	0.	.3012E+04	.1901E+00	0.	.4398E+02	.1320E+02	0.	SURF
?	42.	0.	.3013E+04	.1901E+00	0.	.4398E+02	.1600E+02	0.	SURF
?	43.	0.	.3014E+04	.1901E+00	0.	.4398E+02	.9200E+01	0.	SURF
?	44.	0.	.3015E+04	.1901E+00	0.	.4398E+02	.1600E+02	0.	SURF
?	45.	0.	.3016E+04	.1901E+00	0.	.4398E+02	.5200E+01	0.	SURF
?	46.	0.	.3017E+04	.1901E+00	0.	.4398E+02	.1600E+02	0.	SURF
?	47.	0.	.3018E+04	.1875E+00	0.	.3142E+01	.1300E+02	0.	SURF
?	48.	0.	.3019E+04	.1875E+00	0.	.3142E+01	.2000E+02	0.	SURF
?	49.	0.	.3020E+04	.1875E+00	0.	.3142E+01	.1200E+02	0.	SURF
?	50.	0.	.3021E+04	.1875E+00	0.	.3142E+01	.4000E+01	0.	SURF
?	51.	0.	.3005E+04	.4633E+00	0.	.4964E+02	.6000E+01	0.	SURF
?	52.	0.	.3006E+04	.4633E+00	0.	.4964E+02	.1080E+02	0.	SURF
?	53.	0.	.3022E+04	.5000E+00	0.	.3142E+01	.4000E+01	0.	SURF
?	54.	0.	.3023E+04	.5000E+00	0.	.3142E+01	.1200E+02	0.	SURF
?	55.	0.	.3024E+04	.5000E+00	0.	.3142E+01	.2000E+02	0.	SURF
?	56.	0.	.3025E+04	.5000E+00	0.	.3142E+01	.1300E+02	0.	SURF
?	59.	0.	.3026E+04	.1241E+00	0.	.5419E+02	.6000E+01	0.	SURF
?	60.	0.	.3027E+04	.1241E+00	0.	.5419E+02	.1070E+02	0.	SURF
?	61.	0.	.3028E+04	.1241E+00	0.	.5419E+02	.7300E+01	0.	SURF
?	62.	0.	.3029E+04	.1241E+00	0.	.5419E+02	.5200E+01	0.	SURF
?	63.	0.	.3030E+04	.1241E+00	0.	.5419E+02	.1600E+02	0.	SURF
?	64.	0.	.3031E+04	.1241E+00	0.	.5419E+02	.1600E+02	0.	SURF
?	65.	0.	.3032E+04	.1241E+00	0.	.5419E+02	.1600E+02	0.	SURF
?	66.	0.	.3033E+04	.1241E+00	0.	.5419E+02	.1320E+02	0.	SURF
?	67.	0.	.3034E+04	.1241E+00	0.	.5419E+02	.1600E+02	0.	SURF
?	68.	0.	.3035E+04	.1241E+00	0.	.5419E+02	.9200E+01	0.	SURF
?	69.	0.	.3036E+04	.1241E+00	0.	.5419E+02	.1600E+02	0.	SURF
?	70.	0.	.3037E+04	.1241E+00	0.	.5419E+02	.5200E+01	0.	SURF
?	71.	0.	.3038E+04	.1241E+00	0.	.5419E+02	.4675E+01	0.	SURF
?	72.	0.	.3100E+04	.1241E+00	0.	.5419E+02	.3290E+02	0.	

?	74.	0.	.3039E+04	.9000E+01	0.		.3142E+01	.1300E+02	0.	SURF
?	75.	0.	.3040E+04	.9000E+01	0.		.3142E+01	.2000E+02	0.	SURF
?	76.	0.	.3041E+04	.9000E+01	0.		.3142E+01	.1200E+02	0.	SURF
?	77.	0.	.3042E+04	.9000E+01	0.		.3142E+01	.4000E+01	0.	SURF
?	93.	0.	.3043E+04	.5000E+00	0.		.3142E+01	.4000E+01	0.	SURF
?	94.	0.	.3044E+04	.5000E+00	0.		.3142E+01	.1200E+02	0.	SURF
?	95.	0.	.3045E+04	.5000E+00	0.		.3142E+01	.2000E+02	0.	SURF
?	96.	0.	.3046E+04	.5000E+00	0.		.3142E+01	.1300E+02	0.	SURF
?	97.	0.	.3047E+04	.5000E+00	0.		.3142E+01	.5100E+02	0.	SURF
?	90.	0.	.3048E+04	.1109E+01	0.		.6283E+02	.6000E+01	0.	SURF
?	91.	0.	.3049E+04	.1109E+01	0.		.6283E+02	.1400E+02	0.	SURF
?	92.	0.	.3050E+04	.1109E+01	0.		.6283E+02	.1300E+02	0.	SURF
?	98.	0.	.3051E+04	.1250E+00	0.		.3142E+01	.4000E+01	0.	SURF
?	99.	0.	.3052E+04	.1250E+00	0.		.3142E+01	.1200E+02	0.	SURF
?	100.	0.	.3053E+04	.1250E+00	0.		.3142E+01	.2000E+02	0.	SURF
?	101.	0.	.3054E+04	.1250E+00	0.		.3142E+01	.1300E+02	0.	OURF
?	102.	0.	.3055E+04	.1250E+00	0.		.3142E+01	.5100E+02	0.	SURF
?	108.	0.	.3056E+04	.3683E+00	0.		.6440E+02	.9250E+01	0.	SURF
?	109.	0.	.3057E+04	.3683E+00	0.		.6440E+02	.1400E+02	0.	SURF
?	110.	0.	.3058E+04	.3683E+00	0.		.6440E+02	.1050E+02	0.	SURF
?	122.	0.	.3059E+04	.4625E+01	0.		.3142E+01	.4800E+02	0.	SURF
?	113.	0.	.3060E+04	.4625E+01	0.		.3142E+01	.1595E+03	0.	SURF
?	104.	0.	.3061E+04	.1250E+00	0.		.3142E+01	.4800E+02	0.	SURF
?	105.	0.	.3062E+04	.1250E+00	0.		.3142E+01	.1595E+03	0.	SURF
?	98.	0.	.3063E+04	.1250E+00	0.		.3142E+01	.4000E+01	0.	SURF
?	99.	0.	.3064E+04	.1250E+00	0.		.3142E+01	.1200E+02	0.	SURF
?	100.	0.	.3065E+04	.1250E+00	0.		.3142E+01	.2000E+02	0.	SURF
?	101.	0.	.3066E+04	.1250E+00	0.		.3142E+01	.1300E+02	0.	SURF
?	102.	0.	.3067E+04	.1250E+00	0.		.3142E+01	.5100E+02	0.	SURF
?	103.	0.	.3068E+04	.1250E+00	0.		.3142E+01	.2100E+02	0.	SURF
?	104.	0.	.3069E+04	.1250E+00	0.		.3142E+01	.4800E+02	0.	SURF
?	105.	0.	.3070E+04	.1250E+00	0.		.3142E+01	.1595E+03	0.	SURF
?	106.	0.	.3071E+04	.1250E+00	0.		.3142E+01	.2475E+03	0.	SURF
?	106.	0.	.3072E+04	.3133E+01	0.		.1508E+03	.2500E+00	0.	SURF
?	112.	0.	.3073E+04	.9375E+01	0.		.3142E+01	.1188E+04	0.	SURF
?	112.	0.	.3074E+04	.1013E+02	0.		.2639E+03	.3000E+01	0.	SURF
?	116.	0.	.3075E+04	.1250E+02	0.		.3142E+01	.4320E+04	0.	SURF
?	117.	0.	.3076E+04	.1250E+02	0.		.3142E+01	.1642E+05	0.	CONN
?	118.	0.	.3077E+04	.1250E+02	0.		.3142E+01	.6750E+05	0.	
?	259.	0.	.3107E+04	.1250E+02	0.		.3142E+01	.4284E+06	0.	
?	238.	0.	.3101E+04	.5760E+04	0.		.3142E+01	.6750E+05	0.	
?	239.	0.	.3102E+04	.5760E+04	0.		.3142E+01	.1642E+05	0.	
?	240.	0.	.3103E+04	.5760E+04	0.		.3142E+01	.4320E+04	0.	
?	241.	0.	.3104E+04	.5760E+04	0.		.3142E+01	.1683E+04	0.	
?	242.	0.	.3105E+04	.5760E+04	0.		.3142E+01	.8100E+02	0.	
?	243.	0.	.3092E+04	.1900E+00	0.		.4398E+02	.1080E+02	0.	
?	244.	0.	.3093E+04	.1900E+00	0.		.4398E+02	.2800E+01	0.	

7	245.	0.	.3094E+04	.1900E+00	0.	.4398E+02	.6800E+01	0.	
7	246.	0.	.3095E+04	.1900E+00	0.	.4398E+02	.1080E+02	0.	
7	247.	0.	.3096E+04	.1241E+00	0.	.5419E+02	.1080E+02	0.	
7	248.	0.	.3097E+04	.1241E+00	0.	.5419E+02	.2800E+01	0.	
7	249.	0.	.3098E+04	.1241E+00	0.	.5419E+02	.6800E+01	0.	
7	250.	0.	.3099E+04	.1241E+00	0.	.5419E+02	.1080E+02	0.	
7	272.	0.	.3106E+04	.5760E+04	0.	.3142E+01	.4284E+06	0.	
8	1.	1.	.5000E+02	.8584E-06	.8000E+03	.8584E-06	0.	0.	
8	2.	1.	.5000E+02	.5580E-06	.6000E+03	.9621E-06	0.	0.	
8	3.	1.	.1000E+03	.8744E-06	.2000E+03	.7949E-06	.3000E+03	.7313E-06	
8	3.	4.	.4000E+03	.6677E-06	.5000E+03	.6359E-06	.6000E+03	.6121E-06	
8	3.	7.	.7000E+03	.5962E-06	.8000E+03	.5882E-06	0.	0.	
8	4.	1.	.5000E+02	.1024E-07	.1000E+03	.1091E-07	.2000E+03	.1224E-07	
8	4.	4.	.4000E+03	.1492E-07	.6000E+03	.1759E-07	.8000E+03	.2026E-07	
8	5.	1.	.5000E+02	.1821E-07	.1000E+03	.1940E-07	.2000E+03	.2177E-07	
8	5.	4.	.3000E+03	.2415E-07	0.	0.	0.	0.	
8	6.	1.	0.	.1275E-05	.8000E+03	.2700E-05	0.	0.	
9	3001.	0.	.5001E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3002.	0.	.5002E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3003.	0.	.5003E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3004.	0.	.5004E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3005.	0.	.5005E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3006.	0.	.5006E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3007.	0.	.5007E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3008.	0.	.5008E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3009.	0.	.5009E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3010.	0.	.5010E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3011.	0.	.5011E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3012.	0.	.5012E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3013.	0.	.5013E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3014.	0.	.5014E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3015.	0.	.5015E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3016.	0.	.5016E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3017.	0.	.5017E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3018.	0.	.5018E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3019.	0.	.5019E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3020.	0.	.5020E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3021.	0.	.5021E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3022.	0.	.5022E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3023.	0.	.5023E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3024.	0.	.5024E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3025.	0.	.5025E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3026.	0.	.5026E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3027.	0.	.5027E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3028.	0.	.5028E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3029.	0.	.5029E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3030.	0.	.5030E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3031.	0.	.5031E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3032.	0.	.5032E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3033.	0.	.5033E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3034.	0.	.5034E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3035.	0.	.5035E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3036.	0.	.5036E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3037.	0.	.5037E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3038.	0.	.5038E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3039.	0.	.5039E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3040.	0.	.5040E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3041.	0.	.5041E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3042.	0.	.5042E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3043.	0.	.5043E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3044.	0.	.5044E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3045.	0.	.5045E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3046.	0.	.5046E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3047.	0.	.5047E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3048.	0.	.5048E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3049.	0.	.5049E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3050.	0.	.5050E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3051.	0.	.5051E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3052.	0.	.5052E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3053.	0.	.5053E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3054.	0.	.5054E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3055.	0.	.5055E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3056.	0.	.5056E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3057.	0.	.5057E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3058.	0.	.5058E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3059.	0.	.5059E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3060.	0.	.5060E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3061.	0.	.5061E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3062.	0.	.5062E+04	-.2000E+01	0.	0.	0.	0.	BONN
9	3092.	0.	.5079E+04	-.2000E+01	0.	0.	0.	0.	
9	3093.	0.	.5080E+04	-.2000E+01	0.	0.	0.	0.	
9	3094.	0.	.5081E+04	-.2000E+01	0.	0.	0.	0.	
9	3095.	0.	.5082E+04	-.2000E+01	0.	0.	0.	0.	
9	3096.	0.	.5083E+04	-.2000E+01	0.	0.	0.	0.	
9	3097.	0.	.5084E+04	-.2000E+01	0.	0.	0.	0.	
9	3098.	0.	.5085E+04	-.2000E+01	0.	0.	0.	0.	
9	3099.	0.	.5086E+04	-.2000E+01	0.	0.	0.	0.	
9	3092.	0.	.5083E+04	-.1000E+01	0.	.3620E+00	0.	0.	
9	3093.	0.	.5084E+04	-.1000E+01	0.	.3620E+00	0.	0.	
9	3094.	0.	.5085E+04	-.1000E+01	0.	.3620E+00	0.	0.	
9	3095.	0.	.5086E+04	-.1000E+01	0.	.3620E+00	0.	0.	
9	3096.	0.	.5079E+04	-.1000E+01	0.	.2940E+00	0.	0.	
9	3097.	0.	.5080E+04	-.1000E+01	0.	.2940E+00	0.	0.	
9	3098.	0.	.5081E+04	-.1000E+01	0.	.2940E+00	0.	0.	

9	3099.	0.	.5082E+04	-.1000E+01	0.	.2940E+00	0.	0.	
9	3001.	0.	.5022E+04	-.1000E+01	0.	.4400E+00	0.	0.	BONN
9	3002.	0.	.5023E+04	-.1000E+01	0.	.4400E+00	0.	0.	BONN
9	3003.	0.	.5024E+04	-.1000E+01	0.	.4400E+00	0.	0.	BONN
9	3004.	0.	.5025E+04	-.1000E+01	0.	.4400E+00	0.	0.	BONN
9	3005.	0.	.5026E+04	-.1000E+01	0.	.5980E+00	0.	0.	BONN
9	3006.	0.	.5027E+04	-.1000E+01	0.	.5980E+00	0.	0.	BONN
9	3007.	0.	.5028E+04	-.1000E+01	0.	.3620E+00	0.	0.	BONN
9	3008.	0.	.5029E+04	-.1000E+01	0.	.3620E+00	0.	0.	6
9	3009.	0.	.5030E+04	-.1000E+01	0.	.3620E+00	0.	0.	BONN
9	3010.	0.	.5031E+04	-.1000E+01	0.	.3620E+00	0.	0.	BONN
9	3011.	0.	.5032E+04	-.1000E+01	0.	.3620E+00	0.	0.	BONN
9	3012.	0.	.5033E+04	-.1000E+01	0.	.3620E+00	0.	0.	BONN
9	3013.	0.	.5034E+04	-.1000E+01	0.	.3620E+00	0.	0.	BONN
9	3014.	0.	.5035E+04	-.1000E+01	0.	.3620E+00	0.	0.	BONN
9	3015.	0.	.5036E+04	-.1000E+01	0.	.3620E+00	0.	0.	BONN
9	3016.	0.	.5037E+04	-.1000E+01	0.	.3620E+00	0.	0.	BONN
9	3017.	0.	.5038E+04	-.1000E+01	0.	.3620E+00	0.	0.	BONN
9	3018.	0.	.5039E+04	-.1000E+01	0.	.3462E+00	0.	0.	BONN
9	3019.	0.	.5040E+04	-.1000E+01	0.	.3462E+00	0.	0.	BONN
9	3020.	0.	.5041E+04	-.1000E+01	0.	.3462E+00	0.	0.	BONN
9	3021.	0.	.5042E+04	-.1000E+01	0.	.3462E+00	0.	0.	BONN
9	3022.	0.	.5001E+04	-.1000E+01	0.	.4400E+00	0.	0.	BONN
9	3023.	0.	.5002E+04	-.1000E+01	0.	.4400E+00	0.	0.	BONN
9	3024.	0.	.5003E+04	-.1000E+01	0.	.4400E+00	0.	0.	BONN
9	3025.	0.	.5004E+04	-.1000E+01	0.	.4400E+00	0.	0.	BONN
9	3026.	0.	.5005E+04	-.1000E+01	0.	.5550E+00	0.	0.	BONN
9	3027.	0.	.5006E+04	-.1000E+01	0.	.5550E+00	0.	0.	BONN
9	3028.	0.	.5007E+04	-.1000E+01	0.	.2940E+00	0.	0.	BONN
9	3029.	0.	.5008E+04	-.1000E+01	0.	.2940E+00	0.	0.	BONN
9	3030.	0.	.5009E+04	-.1000E+01	0.	.2940E+00	0.	0.	653
9	3031.	0.	.5010E+04	-.1000E+01	0.	.2940E+00	0.	0.	BONN
9	3032.	0.	.5011E+04	-.1000E+01	0.	.2940E+00	0.	0.	BONN
9	3033.	0.	.5012E+04	-.1000E+01	0.	.2940E+00	0.	0.	BONN
9	3034.	0.	.5013E+04	-.1000E+01	0.	.2940E+00	0.	0.	BONN
9	3035.	0.	.5014E+04	-.1000E+01	0.	.2940E+00	0.	0.	BONN
9	3036.	0.	.5015E+04	-.1000E+01	0.	.2940E+00	0.	0.	BONN
9	3037.	0.	.5016E+04	-.1000E+01	0.	.2940E+00	0.	0.	BONN
9	3038.	0.	.5017E+04	-.1000E+01	0.	.2940E+00	0.	0.	BONN
9	3039.	0.	.5018E+04	-.1000E+01	0.	.3462E+00	0.	0.	BONN
9	3040.	0.	.5019E+04	-.1000E+01	0.	.3462E+00	0.	0.	BONN
9	3041.	0.	.5020E+04	-.1000E+01	0.	.3462E+00	0.	0.	BONN
9	3042.	0.	.5021E+04	-.1000E+01	0.	.3462E+00	0.	0.	BONN
9	3043.	0.	.5051E+04	-.1000E+01	0.	.9050E+00	0.	0.	BONN
9	3044.	0.	.5052E+04	-.1000E+01	0.	.9050E+00	0.	0;	BONN
9	3045.	0.	.5053E+04	-.1000E+01	0.	.9050E+00	0.	0.	BONN
9	3046.	0.	.5054E+04	-.1000E+01	0.	.9050E+00	0.	0.	BONN
9	3047.	0.	.5055E+04	-.1000E+01	0.	.9050E+00	0.	0.	BONN
9	3048.	0.	.5056E+04	-.1000E+01	0.	.5840E+00	0.	0.	BONN
9	3049.	0.	.5057E+04	-.1000E+01	0.	.5840E+00	0.	0.	BONN
9	3050.	0.	.5058E+04	-.1000E+01	0.	.5840E+00	0.	0.	BONN
9	3051.	0.	.5043E+04	-.1000E+01	0.	.9050E+00	0.	0.	BONN
9	3052.	0.	.5044E+04	-.1000E+01	0.	.9050E+00	0.	0.	BONN
9	3053.	0.	.5045E+04	-.1000E+01	0.	.9050E+00	0.	0.	BONN
9	3054.	0.	.5046E+04	-.1000E+01	0.	.9050E+00	0.	0.	BONN
9	3055.	0.	.5047E+04	-.1000E+01	0.	.9050E+00	0.	0.	BONN
9	3056.	0.	.5048E+04	-.1000E+01	0.	.5770E+00	0.	0.	BONN
9	3057.	0.	.5049E+04	-.1000E+01	0.	.5770E+00	0.	0.	BONN
9	3058.	0.	.5050E+04	-.1000E+01	0.	.5770E+00	0.	0.	BONN
9	3059.	0.	.5061E+04	-.1000E+01	0.	.8590E+00	0.	0.	BONN
9	3060.	0.	.5062E+04	-.1000E+01	0.	.8590E+00	0.	0.	BONN
9	3061.	0.	.5059E+04	-.1000E+01	0.	.8590E+00	0.	0.	BONN
9	3062.	0.	.5060E+04	-.1000E+01	0.	.8590E+00	0.	0.	BONN
9	3063.	3077.	.5063E+04	-.5000E+01	.1000E+01	0.	0:	0.	
9	3107.	0.	.5063E+04	-.5000E+01	.1000E+01	0.	0.	0.	
9	3101.	0.	.5078E+04	-.5000E+01	0.	0.	0.	0.	
9	3102.	0.	.5078E+04	-.5000E+01	0.	0.	0.	0.	
9	3103.	0.	.5078E+04	-.5000E+01	0.	0.	0.	0.	
9	3104.	0.	.5078E+04	-.5000E+01	0.	0.	0.	0.	
9	3105.	0.	.5078E+04	-.5000E+01	0.	0.	0.	0.	
9	3106.	0.	.5078E+04	-.5000E+01	0.	0.	0.	0.	
10	1.	0.	0.	.1090E+00	0.	.4147E+07	.1030E+00	0.	
10	3.	0.	.9418E+07	.9700E-01	0.	.1469E+08	.9100E-01	0.	
10	5.	0.	.2004E+08	.8600E-01	0.	.2532E+08	.8200E-01	0.	
10	7.	0.	.3059E+08	.7700E-01	0.	.3577E+08	.7400E-01	0.	
10	9.	0.	.4104E+08	.7000E-01	0.	.4631E+08	.6700E-01	0.	
10	11.	0.	.5167E+08	.6400E-01	0.	0.	0.	0.	
11	1.	0.	.1728E+07	.4147E+07	.6826E+07	.9418E+07	.1210E+08	.1469E+08	
11	7.	0.	.1737E+08	.2004E+08	.2264E+08	.2532E+08	.2791E+08	.3059E+08	
11	13.	0.	.3326E+08	.3577E+08	.3845E+08	.4104E+08	.4372E+08	.4631E+08	
11	19.	0.	.4899E+08	0.	0.	0.	0.	0.	
12	1.	30.	.5540E-03	0.	0.	0.	0.	0.	
25	0.	0.	.1000E+01	0.	0.	0.	0.	0.	

TAP-A OUTPUT

TAP--TRANSIENT ANALYSIS PROGRAM

DRYWELL NO. 5 SIMULATION - START JANUARY 12, 1979

SPECIFICATIONS

INITIAL TIME	FINAL TIME	TIME INCREMENT	CONVERGE CRITERIA	PROBLEM TYPE	STEPS BEFORE ACCELERATE	MAXIMUM NO. ITERATION
0.0000	6825600.0000	21600.0000	.0050	3.0000	50	3000

BOUNDARY TEMPERATURE TABLES

TABLE	TIME	TEMP	TIME	TEMP	TIME	TEMP	TIME	TEMP	TIME	TEMP
1										
	0.00	36.00	**********	90.00	**********	88.00	**********	75.00	**********	35.00
	31104000.00	36.00	**********	90.00	**********	88.00	**********	75.00		

MATERIALS

NO.	DENSITY	HEAT CAP.	CONDUCTIVITY	TEMP.	HEAT CAP.	CONDUCTIVITY	TEMP.	HEAT CAP.	CONDUCTIVITY	TEMP.
201	.0780	.0660	.1620E-05	100.00	.0660	.1620E-05	345.00	.0660	.2360E-05	500.00
		.0660	.3009E-05	600.00	.0660	.3704E-05	700.00	.0660	.4398E-05	800.00
		.0660	.5092E-05	900.00	.0660	.6020E-05	1000.00	.0660	.6020E-05	1300.00
202	.0613	.2500	.2026E-04	40.00	.2500	.2026E-04	190.00	.2500	.6944E-05	200.00
		.2500	.6944E-05	500.00						
203	.0596	.2500	.2026E-04	40.00	.2500	.2026E-04	190.00	.2500	.1042E-04	200.00
		.2500	.1042E-04	500.00						
205	.0677	.2000	.1538E-04	60.00	.2000	.1512E-04	100.00	.2000	.1538E-04	200.00
		.2000	.1485E-04	300.00	.2000	.1458E-04	400.00	.2000	.9230E-05	500.00
		.2000	.8290E-05	600.00	.2000	.8030E-05	700.00			
226	.2836	.1100	.2315E-03							
227	.2836	.1100	.5324E-03							
228	.0822	.2000	.2431E-04							
229	.0822	.2000	.2431E-04							
230	.0600	.2500	.2026E-04							

INTERNAL HEAT GENERATION MULTIPLIER TABLES

TABLE ONE	TABLE TWO	TIME
.1090	0.0000	0.0000
.1030	0.0000	4147200.0000
.0970	0.0000	9417600.0000
.0910	0.0000	14688000.0000
.0860	0.0000	20044800.0000
.0820	0.0000	25315200.0000
.0770	0.0000	30585600.0000
.0740	0.0000	35769600.0000
.0700	0.0000	41040000.0000
.0670	0.0000	46310400.0000
.0640	0.0000	51667200.0000

INTERNAL NODES

NODE	MATERIAL	VOLUME	BASE GEN.1	BASE GEN.2	TEMPERATURE
1	201	.9173E+02	.5082E-01	0.	200.00
2	201	.2011E+03	.1114E+00	0.	200.00
3	201	.2011E+03	.1114E+00	0.	200.00
4	201	.2011E+03	.1114E+00	0.	200.00
5	201	.2011E+03	.1114E+00	0.	200.00
6	201	.2011E+03	.1114E+00	0.	200.00
7	201	.2011E+03	.1114E+00	0.	200.00
8	201	.2011E+03	.1114E+00	0.	200.00
9	201	.2011E+03	.1114E+00	0.	200.00
10	201	.2011E+03	.1114E+00	0.	200.00
11	201	.2752E+03	.1525E+00	0.	200.00
12	201	.6032E+03	.3342E+00	0.	200.00
13	201	.6032E+03	.3342E+00	0.	200.00
14	201	.6032E+03	.3342E+00	0.	200.00
15	201	.6032E+03	.3342E+00	0.	200.00
16	201	.6032E+03	.3342E+00	0.	200.00
17	201	.6032E+03	.3342E+00	0.	200.00
18	201	.6032E+03	.3342E+00	0.	200.00
19	201	.6032E+03	.3342E+00	0.	200.00
20	201	.6032E+03	.3342E+00	0.	200.00
21	201	.4587E+03	.2541E+00	0.	200.00
22	201	.1005E+04	.5570E+00	0.	200.00
23	201	.1005E+04	.5570E+00	0.	200.00
24	201	.1005E+04	.5570E+00	0.	200.00
25	201	.1005E+04	.5570E+00	0.	200.00
26	201	.1005E+04	.5570E+00	0.	200.00
27	201	.1005E+04	.5570E+00	0.	200.00
28	201	.1005E+04	.5570E+00	0.	200.00
29	201	.1005E+04	.5570E+00	0.	200.00
30	201	.1005E+04	.5570E+00	0.	200.00
31	226	.4398E+02	0.	0.	150.00
32	226	.1319E+03	0.	0.	150.00
33	226	.2199E+03	0.	0.	150.00
34	226	.1429E+03	0.	0.	150.00
35	226	.1156E+03	0.	0.	150.00
36	226	.1172E+03	0.	0.	150.00
37	226	.8347E+02	0.	0.	150.00
38	226	.2568E+03	0.	0.	150.00
39	226	.2568E+03	0.	0.	150.00
40	226	.2568E+03	0.	0.	150.00
41	226	.2119E+03	0.	0.	150.00
42	226	.2568E+03	0.	0.	150.00
43	226	.1477E+03	0.	0.	150.00

TAP-A OUTPUT (Cont'd)

44	226	.2568E+03	0.	0.	150.00
45	226	.8347E+02	0.	0.	150.00
46	226	.6902E+02	0.	0.	150.00
47	226	.1532E+02	0.	0.	150.00
48	226	.2356E+02	0.	0.	150.00
49	226	.1414E+02	0.	0.	150.00
50	226	.4712E+01	0.	0.	150.00
51	227	.2486E+03	0.	0.	100.00
52	227	.4508E+03	0.	0.	100.00
53	227	.1257E+02	0.	0.	100.00
54	227	.3770E+02	0.	0.	100.00
55	227	.6283E+02	0.	0.	100.00
56	227	.4084E+02	0.	0.	100.00
57	227	.1602E+03	0.	0.	100.00
58	227	.6283E+02	0.	0.	52.34
59	227	.1225E+03	0.	0.	52.46
60	227	.2222E+03	0.	0.	53.78
61	227	.1516E+03	0.	0.	55.18
62	227	.1080E+03	0.	0.	56.40
63	227	.3322E+03	0.	0.	59.17
64	227	.3322E+03	0.	0.	61.19
65	227	.3322E+03	0.	0.	63.02
66	227	.2741E+03	0.	0.	64.55
67	227	.3322E+03	0.	0.	65.84
68	227	.1910E+03	0.	0.	66.73
69	227	.3322E+03	0.	0.	67.50
70	227	.1080E+03	0.	0.	67.98
71	227	.9707E+02	0.	0.	68.29
72	227	.6831E+03	0.	0.	68.69
73	205	.1810E+04	0.	0.	68.75
74	205	.7351E+03	0.	0.	68.76
75	205	.1131E+04	0.	0.	68.76
76	205	.6786E+03	0.	0.	68.76
77	205	.2262E+03	0.	0.	68.76
78	228	.6283E+02	0.	0.	100.00
79	228	.1759E+03	0.	0.	100.00
80	228	.1634E+03	0.	0.	100.00
81	228	.1885E+03	0.	0.	100.00
82	228	.5278E+03	0.	0.	100.00
83	228	.4901E+03	0.	0.	100.00
84	228	.3142E+03	0.	0.	100.00
85	228	.8796E+03	0.	0.	100.00
86	228	.8168E+03	0.	0.	100.00
87	228	.2042E+03	0.	0.	100.00
88	228	.5718E+03	0.	0.	100.00
89	228	.5309E+03	0.	0.	100.00
90	228	.8011E+03	0.	0.	100.00
91	228	.2243E+04	0.	0.	100.00
92	228	.2083E+04	0.	0.	100.00
93	227	.1257E+02	0.	0.	100.00
94	227	.3770E+02	0.	0.	100.00
95	227	.6283E+02	0.	0.	100.00
96	227	.4084E+02	0.	0.	100.00
97	227	.1602E+03	0.	0.	100.00
98	227	.3142E+01	0.	0.	36.00
99	227	.9425E+01	0.	0.	36.00
100	227	.1571E+02	0.	0.	36.00
101	227	.1021E+02	0.	0.	36.00
102	227	.4006E+02	0.	0.	36.00
103	227	.1649E+02	0.	0.	36.00
104	227	.3770E+02	0.	0.	36.00
105	227	.1253E+03	0.	0.	36.00
106	227	.1944E+03	0.	0.	36.00
107	227	.9263E+03	0.	0.	45.47
108	227	.4631E+03	0.	0.	45.44
109	227	.7010E+03	0.	0.	47.38
110	227	.5257E+03	0.	0.	50.40
111	229	.1458E+05	0.	0.	38.52
112	229	.6998E+05	0.	0.	38.38
113	229	.4635E+04	0.	0.	43.97
114	229	.7192E+04	0.	0.	42.99
115	229	.3452E+05	0.	0.	41.93
116	202	.3393E+06	0.	0.	39.38
117	202	.1289E+07	0.	0.	38.97
118	202	.5301E+07	0.	0.	39.11
122	205	.1395E+04	0.	0.	44.96
123	205	.2111E+04	0.	0.	47.19
124	205	.1659E+04	0.	0.	50.29
125	205	.1493E+04	0.	0.	52.15
126	205	.2958E+04	0.	0.	53.49
127	205	.2018E+04	0.	0.	54.94
128	205	.4423E+04	0.	0.	56.43
129	205	.4423E+04	0.	0.	59.14
130	205	.4423E+04	0.	0.	61.17
131	205	.4423E+04	0.	0.	63.02
132	205	.4423E+04	0.	0.	64.56
133	205	.4423E+04	0.	0.	65.84
134	205	.4423E+04	0.	0.	66.74
135	205	.4423E+04	0.	0.	67.49
136	205	.4423E+04	0.	0.	67.98
137	205	.1292E+04	0.	0.	68.26
138	205	.9096E+04	0.	0.	58.69
139	205	.4976E+04	0.	0.	68.73
140	230	.7016E+04	0.	0.	46.68

TAP-A OUTPUT (Cont'd)

141	230	.5512E+04	0.	0.	49.71
142	230	.2706E+04	0.	0.	51.46
143	230	.5362E+04	0.	0.	53.01
144	230	.3658E+04	0.	0.	54.[illegible]
145	230	.8018E+04	0.	0.	56.41
146	230	.8018E+04	0.	0.	59.07
147	230	.8018E+04	0.	0.	61.12
148	230	.8018E+04	0.	0.	62.99
149	230	.8018E+04	0.	0.	64.55
150	230	.8018E+04	0.	0.	65.83
151	230	.8018E+04	0.	0.	66.73
152	230	.8018E+04	0.	0.	67.47
153	230	.8018E+04	0.	0.	67.97
154	230	.2343E+04	0.	0.	68.21
155	230	.2551E+05	0.	0.	68.70
156	203	.9331E+04	0.	0.	68.70
157	203	.1696E+04	0.	0.	68.71
158	203	.1357E+04	0.	0.	68.71
159	203	.2799E+05	0.	0.	68.66
160	203	.9161E+04	0.	0.	68.66
161	203	.4666E+05	0.	0.	68.30
162	203	.1527E+05	0.	0.	68.30
163	230	.1088E+05	0.	0.	46.11
164	230	.8552E+04	0.	0.	49.12
165	230	.4198E+04	0.	0.	50.9[illegible]
166	230	.8319E+04	0.	0.	52.62
167	230	.5676E+04	0.	0.	54.31
168	230	.1244E+05	0.	0.	56.32
169	230	.1244E+05	0.	0.	59.02
170	230	.1244E+05	0.	0.	61.04
171	230	.1244E+05	0.	0.	62.95
172	230	.1244E+05	0.	0.	64.52
173	230	.1244E+05	0.	0.	65.82
174	230	.1244E+05	0.	0.	66.70
175	230	.1244E+05	0.	0.	67.4[illegible]
176	230	.1244E+05	0.	0.	67.9[illegible]
177	230	.3635E+04	0.	0.	68.[illegible]
178	230	.3957E+05	0.	0.	68.70
179	203	.9330E+04	0.	0.	68.69
180	203	.2799E+05	0.	0.	68.66
181	203	.4665E+05	0.	0.	68.29
182	230	.5225E+05	0.	0.	45.37
183	230	.4105E+05	0.	0.	48.25
184	230	.2015E+05	0.	0.	50.29
185	230	.3993E+05	0.	0.	52.04
186	230	.2725E+05	0.	0.	53.93
187	230	.5972E+05	0.	0.	56.11
188	230	.5972E+05	0.	0.	58.99
189	230	.5972E+05	0.	0.	60.85
190	230	.5972E+05	0.	0.	62.88
191	230	.5972E+05	0.	0.	64.46
192	230	.5972E+05	0.	0.	65.81
193	230	.5972E+05	0.	0.	[illegible]
194	230	.5972E+05	0.	0.	67.42
195	230	.5972E+05	0.	0.	67.90
196	230	.1745E+05	0.	0.	68.14
197	230	.1900E+06	0.	0.	68.68
198	203	.1791E+06	0.	0.	68.67
199	203	.2239E+06	0.	0.	68.29
200	203	.5076E+06	0.	0.	67.78
201	203	.2443E+05	0.	0.	67.79
202	202	.3393E+06	0.	0.	46.12
203	202	.2185E+06	0.	0.	50.96
204	202	.1696E+06	0.	0.	53.96
205	202	.4343E+06	0.	0.	59.80
206	202	.1791E+06	0.	0.	62.57
207	203	.3420E+0[illegible]	0.	0.	66.14
208	203	.7057E+05	0.	0.	67.05
209	203	.6345E+05	0.	0.	68.10
210	203	.6908E+06	0.	0.	68.66
211	203	.6514E+06	0.	0.	68.66
212	203	.8143E+06	0.	0.	68.29
213	203	.1303E+07	0.	0.	67.78
214	202	.1289E+07	0.	0.	46.37
215	202	.8303E+06	0.	0.	50.89
216	202	.6447E+06	0.	0.	53.79
217	202	.1650E+07	0.	0.	59.62
218	202	.6808E+06	0.	0.	62.42
219	203	.1300E+07	0.	0.	66.04
220	203	.2682E+06	0.	0.	66.97
221	203	.2411E+06	0.	0.	68.06
222	203	.2625E+07	0.	0.	68.64
223	203	.2475E+07	0.	0.	68.65
224	203	.3094E+07	0.	0.	68.29
225	203	.4951E+07	0.	0.	67.78
226	202	.5301E+07	0.	0.	45.31
227	202	.3414E+07	0.	0.	50.03
228	202	.4941E+07	0.	0.	54.19
229	202	.6786E+07	0.	0.	59.14
230	202	.6786E+07	0.	0.	63.30
231	203	.6786E+07	0.	0.	66.01
232	203	.6786E+07	0.	0.	67.60
233	203	.9914E+06	0.	0.	68.04
234	203	.1079E+08	0.	0.	68.62

235	203	.1018E+08	0.	0.	68.64
236	203	.1272E+08	0.	0.	68.28
237	203	.2036E+08	0.	0.	67.78
238	203	.2443E+10	0.	0.	70.00
239	203	.5941E+09	0.	0.	70.00
240	203	.1563E+09	0.	0.	70.00
241	203	.6091E+08	0.	0.	70.00
242	203	.2931E+07	0.	0.	70.00
243	226	.1734E+03	0.	0.	150.00
244	226	.4494E+02	0.	0.	150.00
245	226	.1092E+03	0.	0.	150.00
246	226	.1734E+03	0.	0.	150.00
247	227	.2243E+03	0.	0.	57.47
248	227	.5814E+02	0.	0.	65.15
249	227	.1412E+03	0.	0.	67.05
250	227	.2243E+03	0.	0.	68.14
251	202	.1466E+06	0.	0.	56.13
252	202	.2551E+06	0.	0.	64.19
254	203	.3637E+06	0.	0.	67.73
255	202	.5570E+06	0.	0.	55.94
256	202	.9696E+06	0.	0.	64.05
258	203	.1382E+07	0.	0.	67.69
259	202	.3365E+08	0.	0.	39.09
260	202	.3365E+08	0.	0.	45.25
261	202	.2167E+08	0.	0.	49.95
262	202	.3136E+08	0.	0.	54.11
263	202	.4307E+08	0.	0.	59.07
264	202	.4307E+08	0.	0.	63.26
265	203	.4307E+08	0.	0.	65.99
266	203	.4307E+08	0.	0.	67.59
267	203	.6292E+07	0.	0.	68.03
268	203	.6850E+08	0.	0.	68.62
269	203	.6460E+08	0.	0.	68.64
270	203	.8075E+08	0.	0.	68.29
271	203	.1292E+09	0.	0.	67.79
272	203	.1550E+11	0.	0.	70.00

INTERNAL ADMITTANCES

INTERNAL NODE	SELF ADMIT	BORDER NODE	ADMIT	BORDER NODE	ADMIT	BORDER NODE	ADMIT	BORDER NODE	ADMIT	BORDER NODE	ADMIT
1	-.749E-04	2	.175E-05	11	.676E-04	31	.556E-05				
2	-.151E-03	1	.175E-05	3	.127E-05	12	.148E-03				
3	-.151E-03	2	.127E-05	4	.127E-05	13	.148E-03				
4	-.151E-03	3	.127E-05	5	.127E-05	14	.148E-03				
5	-.151E-03	4	.127E-05	6	.127E-05	15	.148E-03				
6	-.151E-03	5	.127E-05	7	.127E-05	16	.148E-03				
7	-.151E-03	6	.127E-05	8	.127E-05	17	.148E-03				
8	-.151E-03	7	.127E-05	9	.127E-05	18	.148E-03				
9	-.151E-03	8	.127E-05	10	.127E-05	19	.148E-03				
10	-.152E-03	9	.127E-05	20	.148E-03	50	.254E-05				
11	-.226E-03	1	.676E-04	12	.524E-05	21	.145E-03	32	.762E-05		
12	-.476E-03	2	.148E-03	11	.524E-05	13	.382E-05	22	.319E-03		
13	-.475E-03	3	.148E-03	12	.382E-05	14	.382E-05	23	.319E-03		
14	-.475E-03	4	.148E-03	13	.382E-05	15	.382E-05	24	.319E-03		
15	-.475E-03	5	.148E-03	14	.382E-05	16	.382E-05	25	.319E-03		
16	-.475E-03	6	.148E-03	15	.382E-05	17	.382E-05	26	.319E-03		
17	-.475E-03	7	.148E-03	16	.382E-05	18	.382E-05	27	.319E-03		
18	-.475E-03	8	.148E-03	17	.382E-05	19	.382E-05	28	.319E-03		
19	-.475E-03	9	.148E-03	18	.382E-05	20	.382E-05	29	.319E-03		
20	-.478E-03	10	.148E-03	19	.382E-05	30	.319E-03	49	.763E-05		
21	-.574E-03	11	.145E-03	22	.874E-05	33	.127E-04	36	.407E-03		
22	-.123E-02	12	.319E-03	21	.874E-05	23	.636E-05	37	.290E-03	243	.602E-03
23	-.122E-02	13	.319E-03	22	.636E-05	24	.636E-05	38	.892E-03		
24	-.122E-02	14	.319E-03	23	.636E-05	25	.636E-05	39	.892E-03		
25	-.122E-02	15	.319E-03	24	.636E-05	26	.636E-05	40	.892E-03		
26	-.122E-02	16	.319E-03	25	.636E-05	27	.636E-05	41	.736E-03	244	.156E-03
27	-.122E-02	17	.319E-03	26	.636E-05	28	.636E-05	42	.892E-03		
28	-.122E-02	18	.319E-03	27	.636E-05	29	.636E-05	43	.513E-03	245	.379E-03
29	-.122E-02	19	.319E-03	28	.636E-05	30	.636E-05	44	.892E-03		
30	-.123E-02	20	.319E-03	29	.636E-05	45	.290E-03	246	.602E-03	48	.127E-04
31	-.631E-02	32	.463E-02	1	.556E-05	53	.107E-04	3001	.166E-02		
32	-.196E-01	31	.463E-02	33	.996E-02	11	.762E-05	54	.321E-04	3002	.499E-02
33	-.377E-01	32	.996E-02	34	.194E-01	21	.127E-04	55	.535E-04	3003	.831E-02
34	-.280E-01	33	.194E-01	35	.318E-02	56	.348E-04	3004	.540E-02		
35	-.205E+00	34	.318E-02	36	.513E-03	52	.201E+00				
36	-.393E+00	35	.513E-03	37	.595E-03	21	.407E-03	61	.280E-03	3007	.391E+00
37	-.280E+00	36	.595E-03	243	.464E-03	22	.290E-03	62	.199E-03	3008	.279E+00
38	-.859E+00	243	.277E-03	39	.232E-03	23	.892E-03	63	.612E-03	3009	.857E+00
39	-.859E+00	38	.232E-03	40	.232E-03	24	.892E-03	64	.612E-03	3010	.857E+00
40	-.859E+00	39	.232E-03	41	.232E-03	25	.892E-03	65	.611E-03	3011	.857E+00
41	-.709E+00	40	.232E-03	244	.464E-03	26	.736E-03	66	.504E-03	3012	.707E+00
42	-.859E+00	244	.395E-03	43	.295E-03	27	.892E-03	67	.610E-03	3013	.857E+00

TAP-A OUTPUT (Cont'd)

43	-.494E+00	42	.295E-03	245	.464E-03	28	.513E-03	68	.351E-03	3014	.493E+00
44	-.859E+00	245	.326E-03	45	.351E-03	29	.892E-03	69	.610E-03	3015	.857E+00
45	-.280E+00	44	.351E-03	246	.464E-03	30	.290E-03	70	.198E-03	3016	.279E+00
46	-.859E+00	246	.492E-03	47	.158E-02	71	.232E-03	3017	.857E+00		
47	-.541E-01	46	.158E-02	48	.208E-02	74	.448E-06	3018	.504E-01		
48	-.807E-01	47	.208E-02	49	.107E-02	30	.127E-04	75	.689E-06	3019	.776E-01
49	-.481E-01	48	.107E-02	50	.497E-03	20	.763E-05	76	.413E-06	3020	.465E-01
50	-.160E-01	49	.497E-03	10	.254E-05	77	.138E-06	3021	.155E-01		
51	-.351E+00	52	.269E-02	56	.641E-02	59	.174E-03	3005	.342E+00		
52	-.820E+00	35	.201E+00	51	.269E-02	60	.218E-03	3006	.616E+00		
53	-.165E-01	80	.468E-04	31	.107E-04	54	.304E-02	3022	.134E-01		
54	-.499E-01	83	.141E-03	32	.321E-04	53	.304E-02	55	.655E-02	3023	.401E-01
55	-.839E-01	86	.234E-03	33	.535E-04	54	.655E-02	56	.102E-01	3024	.669E-01
56	-.735E-01	89	.152E-03	51	.641E-02	34	.348E-04	55	.102E-01	57	.132E-01
		3025	.435E-01								
57	-.594E-01	92	.597E-03	58	.424E-01	59	.316E-02	56	.132E-01		
58	-.605E-01	57	.424E-01	110	.368E-02	125	.701E-03	124	.540E-03	59	.132E-01
59	-.142E+01	57	.316E-02	60	.132E-02	51	.174E-03	58	.132E-01	125	.265E-02
		3026	.139E+01								
60	-.250E+01	59	.132E-02	61	.133E-02	52	.218E-03	126	.515E-02	3027	.249E+01
61	-.170E+01	60	.133E-02	62	.177E-02	36	.280E-03	127	.351E-02	3028	.170E+01
62	-.121E+01	61	.177E-02	247	.138E-02	37	.199E-03	128	.250E-02	3029	.121E+01
63	-.373 +01	247	.825E-03	64	.691E-03	38	.612E-03	129	.768E-02	3030	.372E+01
64	-.373E+01	63	.691E-03	65	.691E-03	39	.612E-03	130	.768E-02	3031	.372E+01
65	-.373E+01	64	.691E-03	66	.691E-03	40	.611E-03	131	.767E-02	3032	.372E+01
66	-.308E+01	65	.691E-03	248	.138E-02	41	.504E-03	132	.635E-02	3033	.307E+01
67	-.373E+01	248	.118E-02	68	.691E-03	42	.610E-03	133	.766E-02	3034	.372E+01
68	-.215E+01	67	.691E-03	249	.138E-02	43	.351E-03	134	.440E-02	3035	.214E+01
69	-.373E+01	249	.970E-03	70	.691E-03	44	.610E-03	135	.766E-02	3036	.372E+01
70	-.121E+01	69	.691E-03	250	.138E-02	45	.198E-03	136	.249E-02	3037	.121E+01
71	-.109E+01	250	.143E-02	72	.588E-03	46	.232E-03	137	.224E-02	3038	.109E+01
72	-.767E+01	71	.588E-03	73	.336E-04	138	.157E-01	3100	.765E+01		
73	.139E 01	72	.336E-04	157	.114E-02	139	.844E-02	74	.835E-02		
74	-.151E-01	157	.462E-04	47	.448E-06	73	.835E-02	75	.661E-02	3039	.695E-04
75	-.102E-01	158	.711E-04	48	.689E-06	74	.661E-02	76	.339E-02	3040	.107E-03
76	-.508E-02	158	.427E-04	49	.413E-06	75	.339E-02	77	.158E-02	3041	.642E-04
77	-.161E-02	158	.142E-04	50	.138E-06	76	.158E-02	3042	.214E-04		
78	-.868E-03	93	.121E-03	79	.322E-04	81	.695E-03				
79	-.200E-02	78	.322E-04	80	.226E-04	82	.195E-02				
80	-.188E-02	53	.468E-04	79	.226E-04	83	.181E-02				
81	-.265E-02	94	.363E-03	82	.965E-04	78	.695E-03	84	.150E-02		
82	-.630E-02	81	.965E-04	83	.679E-04	79	.195E-02	85	.419E-02		
83	-.590E-02	54	.141E-03	82	.679E-04	80	.181E-02	86	.389E-02		
84	-.458E-02	95	.605E-03	85	.161E-03	81	.150E-02	87	.232E-02		
85	-.110E-01	84	.161E-03	86	.113E-03	82	.419E-02	88	.649E-02		
86	-.103E-01	55	.234E-03	85	.113E-03	83	.389E-02	89	.603E-02		
87	-.584E-02	96	.394E-03	88	.105E-03	84	.232E-02	90	.302E-02		
88	-.151E-01	87	.105E-03	89	.735E-04	85	.649E-02	91	.846E-02		
89	-.141E-01	56	.152E-03	88	.735E-04	86	.603E-02	92	.785E-02		
90	-.136E-01	97	.154E-02	91	.410E-03	87	.302E-02	108	.414E-03	3048	.826E-02
91	-.296E-01	90	.410E-03	92	.289E-03	88	.846E-02	109	.116E-02	3049	.193E-01
92	-.277E-01	57	.597E-03	91	.289E-03	89	.785E-02	110	.108E-02	3050	.179E-01
93	-.165E-01	78	.121E-03	98	.234E-06	94	.304E-02	3043	.134E-01		
94	-.501E-01	81	.363E-03	99	.703E-06	93	.304E-02	95	.655E-02	3044	.401E-01
95	-.840E-01	84	.605E-03	100	.117E-05	94	.655E-02	96	.994E-02	3045	.669E-01
96	-.677E-01	87	.394E-03	101	.761E-06	95	.994E-02	97	.139E-01	3046	.435E-01
97	-.186E+00	90	.154E-02	102	.299E-05	96	.139E-01	3047	.171E+00		
98	-.108E+00	93	.234E-06	99	.761E-03	3051	.535E-01	3063	.535E-01		
99	-.324E+00	94	.703E-06	98	.761E-03	100	.164E-02	3052	.161E+00	3064	.161E+00
100	-.539E+00	95	.117E-05	99	.164E-02	101	.249E-02	3053	.268E+00	3065	.268E+00
101	-.354E+00	96	.761E-06	100	.249E-02	102	.348E-02	3054	.174E+00	3066	.174E+00

TAP-A OUTPUT (Cont'd)

102	-.137E+01	97	.299E-05	101	.348E-02	103	.524E-02	3055	.682E+00	3067	.682E+00
103	-.287E+00	102	.524E-02	104	.912E-03	3068	.281E+00				
104	-.129E+01	122	.270E-05	103	.912E-03	105	.322E-02	3061	.642E+00	3069	.642E+00
105	-.427E+01	113	.899E-05	104	.322E-02	106	.276E-02	3062	.213E+01	3070	.213E+01
106	-.332E+01	111	.204E-02	105	.276E-02	3071	.331E+01	3072	.641E-02		
107	-.192E-02	108	.192E-02								
108	-.876E+00	107	.192E-02	109	.229E-02	90	.414E-03	122	.102E-01	3056	.861E+00
109	-.132E+01	108	.229E-02	110	.218E-02	91	.116E-02	123	.155E-01	3057	.130E+01
110	-.100E+01	58	.368E-02	109	.218E-02	92	.108E-02	124	.154E-01	3058	.978E+00
111	-.977E-02	106	.204E-02	114	.135E-02	112	.638E-02				
112	-.280E-01	115	.648E-02	111	.638E-02	116	.359E-02	3073	.968E-02	3074	.190E-02
113	-.129E-01	105	.899E-05	140	.935E-03	114	.467E-02	122	.462E-02	3060	.263E-02
114	-.106E-01	111	.135E-02	163	.145E-02	113	.467E-02	115	.315E-02		
115	-.187E-01	112	.648E-02	182	.697E-02	114	.315E-02	116	.211E-02		
116	-.437E-01	202	.110E-01	112	.359E-02	115	.211E-02	117	.496E-02	3075	.220E-01
117	-.126E+00	214	.330E-01	116	.496E-02	118	.468E-02	3076	.836E-01		
118	-.524E+00	226	.172E+00	259	.389E-02	117	.468E-02	3077	.344E+00		
122	-.156E-01	104	.270E-05	123	.201E-03	108	.102E-01	113	.462E-02	3059	.505E-03
123	-.221E-01	122	.201E-03	124	.186E-03	109	.155E-01	140	.626E-02		
124	-.214E-01	123	.186E-03	125	.282E-03	58	.540E-03	110	.154E-01	141	.491E-02
125	-.591E-02	58	.701E-03	124	.282E-03	126	.526E-03	59	.265E-02	142	.175E-02
126	-.956E-02	125	.526E-03	127	.474E-03	60	.515E-02	143	.341E-02		
127	-.668E-02	126	.474E-03	128	.366E-03	61	.351E-02	144	.233E-02		
128	-.134E-01	127	.366E-03	129	.266E-03	62	.250E-02	247	.519E-02	145	.510E-02
129	-.133E-01	128	.266E-03	130	.266E-03	63	.768E-02	146	.509E-02		
130	-.133E-01	129	.266E-03	131	.266E-03	64	.768E-02	147	.509E-02		
131	-.133E-01	130	.266E-03	132	.265E-03	65	.767E-02	148	.509E-02		
132	-.133E-01	131	.265E-03	133	.265E-03	66	.633E-02	248	.134E-02	149	.509E-02
133	-.133E-01	132	.265E-03	134	.265E-03	67	.766E-02	150	.509E-02		
134	-.133E-01	133	.265E-03	135	.265E-03	68	.440E-02	249	.326E-02	151	.508E-02
135	-.133E-01	134	.265E-03	136	.265E-03	69	.766E-02	152	.508E-02		
136	-.134E-01	135	.265E-03	137	.410E-03	70	.249E-02	250	.517E-02	153	.508E-02
137	-.436E-02	136	.410E-03	138	.225E-03	71	.224E-02	154	.149E-02		
138	-.266E-01	137	.225E-03	139	.166E-03	72	.157E-01	155	.104E-01		
139	-.116E-01	138	.166E-03	156	.313E-03	73	.544E-02	155	.572E-02		
140	-.139E-01	113	.935E-03	141	.812E-03	123	.626E-02	163	.589E-02		
141	-.116E-01	140	.812E-03	142	.123E-02	124	.491E-02	164	.463E-02		
142	-.655E-02	141	.123E-02	143	.125E-02	125	.175E-02	165	.231E-02		
143	-.103E-01	142	.125E-02	144	.113E-02	126	.341E-02	166	.450E-02		
144	-.740E-02	143	.113E-02	145	.871E-03	127	.233E-02	167	.307E-02		
145	-.133E-01	144	.871E-03	146	.635E-03	128	.510E-02	168	.673E-02		
146	-.131E-01	145	.635E-03	147	.635E-03	129	.509E-02	169	.673E-02		
147	-.131E-01	146	.635E-03	148	.635E-03	130	.509E-02	170	.673E-02		
148	-.131E-01	147	.635E-03	149	.635E-03	131	.509E-02	171	.673E-02		
149	-.131E-01	148	.635E-03	150	.635E-03	132	.509E-02	172	.673E-02		
150	-.131E-01	149	.635E-03	151	.635E-03	133	.509E-02	173	.673E-02		
151	-.131E-01	150	.635E-03	152	.635E-03	134	.508E-02	174	.673E-02		
152	-.131E-01	151	.635E-03	153	.635E-03	135	.508E-02	175	.673E-02		
153	-.134E-01	152	.635E-03	154	.982E-03	136	.508E-02	176	.673E-02		
154	-.480E-02	153	.982E-03	155	.365E-03	137	.149E-02	177	.197E-02		
155	-.383E-01	154	.365E-03	156	.323E-03	138	.104E-01	139	.572E-02	178	.214E-01
156	-.728E-02	139	.313E-03	155	.323E-03	159	.656E-03	157	.252E-02	179	.347E-02
157	-.447E-02	73	.114E-03	74	.462E-04	160	.119E-03	156	.252E-02	158	.167E-02
158	-.189E-02	75	.711E-04	76	.427E-04	77	.142E-04	160	.956E-04	157	.167E-02
159	-.155E-01	156	.656E-03	161	.328E-03	160	.410E-02	180	.104E-01		
160	-.442E-02	157	.119E-03	158	.954E-04	162	.107E-03	159	.410E-02		
161	-.247E-01	159	.328E-03	200	.202E-03	162	.684E-02	181	.173E-01		
162	-.701E-02	160	.107E-03	201	.661E-04	161	.684E-02				
163	-.126E-01	114	.145E-02	164	.126E-02	140	.589E-02	182	.397E-02		
164	-.109E-01	163	.126E-02	165	.191E-02	141	.463E-02	183	.312E-02		
165	-.773E-02	164	.191E-02	166	.194E-02	142	.231E-02	184	.156E-02		
166	-.112E-01	165	.194E-02	167	.175E-02	143	.450E-02	185	.303E-02		
167	-.824E-02	166	.175E-02	168	.135E-02	144	.307E-02	186	.207E-02		
168	-.136E-01	167	.135E-02	169	.985E-03	145	.673E-02	187	.454E-02		
169	-.132E-01	168	.985E-03	170	.985E-03	146	.673E-02	188	.454E-02		
170	-.132E-01	169	.985E-03	171	.985E-03	147	.673E-02	189	.454E-02		
171	-.132E-01	170	.985E-03	172	.985E-03	148	.673E-02	190	.454E-02		
172	-.132E-01	171	.985E-03	173	.985E-03	149	.673E-02	191	.454E-02		
173	-.132E-01	172	.985E-03	174	.985E-03	150	.673E-02	192	.454E-02		
174	-.132E-01	173	.985E-03	175	.985E-03	151	.673E-02	193	.454E-02		
175	-.132E-01	174	.985E-03	176	.985E-03	152	.673E-02	194	.454E-02		
176	-.138E-01	175	.985E-03	177	.152E-02	153	.673E-02	195	.454E-02		
177	-.538E-02	176	.152E-02	178	.567E-03	154	.197E-02	196	.133E-02		
178	-.369E-01	177	.567E-03	179	.501E-03	155	.214E-01	197	.144E-01		

TAP-A OUTPUT (Cont'd)

179	-.803E-02	178	.501E-03	180	.656E-03	156	.347E-02	198	.340E-02		
180	-.216E-01	179	.656E-03	181	.328E-03	159	.104E-01	198	.102E-01		
181	-.349E-01	180	.328E-03	200	.202E-03	161	.173E-01	199	.170E-01		
182	-.200E-01	115	.697E-02	183	.605E-02	163	.397E-02	202	.298E-02		
183	-.207E-01	182	.605E-02	184	.917E-02	164	.312E-02	202	.234E-02		
184	-.212E-01	183	.917E-02	185	.934E-02	165	.156E-02	203	.117E-02		
185	-.230E-01	184	.934E-02	186	.840E-02	166	.303E-02	203	.228E-02		
186	-.185E-01	185	.840E-02	187	.649E-02	167	.207E-02	204	.155E-02		
187	-.192E-01	186	.649E-02	188	.473E-02	251	.230E-02	168	.454E-02	204	.111E-02
188	-.174E-01	187	.473E-02	189	.473E-02	169	.454E-02	205	.341E-02		
189	-.174E-01	188	.473E-02	190	.473E-02	170	.454E-02	205	.341E-02		
190	-.174E-01	189	.473E-02	191	.473E-02	252	.596E-03	171	.454E-02	206	.281E-02
191	-.174E-01	190	.473E-02	192	.473E-02	172	.454E-02	252	.341E-02		
192	-.174E-01	191	.473E-02	193	.473E-02	173	.454E-02	207	.341E-02		
193	-.174E-01	192	.473E-02	194	.473E-02	174	.454E-02	207	.341E-02		
194	-.174E-01	193	.473E-02	195	.473E-02	254	.230E-02	175	.454E-02	208	.111E-02
195	-.200E-01	194	.473E-02	196	.731E-02	176	.454E-02	254	.341E-02		
196	-.124E-01	195	.731E-02	197	.272E-02	177	.133E-02	209	.995E-03		
197	-.295E-01	196	.272E-02	198	.153E-02	178	.144E-01	210	.108E-01		
198	-.268E-01	197	.153E-02	199	.140E-02	179	.340E-02	180	.102E-01	211	.102E-01
199	-.321E-01	198	.140E-02	200	.969E-03	181	.170E-01	212	.128E-01		
200	-.255E-01	161	.202E-03	181	.202E-03	199	.969E-03	241	.184E-04	213	.176E-01
		201	.644E-02								
201	-.651E-02	162	.661E-04	242	.887E-06	200	.644E-02				
202	-.347E-01	116	.110E-01	203	.134E-01	182	.298E-02	183	.234E-02	214	.496E-02
203	-.392E-01	202	.134E-01	204	.192E-01	184	.117E-02	185	.228E-02	215	.319E-02
204	-.480E-01	203	.192E-01	251	.236E-01	186	.155E-02	187	.111E-02	216	.248E-02
205	-.382E-01	251	.128E-01	206	.122E-01	188	.341E-02	189	.341E-02	217	.634E-02
206	-.348E-01	205	.122E-01	252	.172E-01	190	.281E-02	218	.262E-02		
207	-.388E-01	252	.108E-01	208	.148E-01	192	.341E-02	193	.341E-02	219	.634E-02
208	-.341E-01	207	.148E-01	254	.172E-01	194	.111E-02	220	.103E-02		
209	-.293E-01	254	.175E-01	210	.989E-02	196	.995E-03	221	.927E-03		
210	-.364E-01	209	.989E-02	211	.556E-02	197	.108E-01	222	.101E-01		
211	-.304E-01	210	.556E-02	212	.509E-02	198	.102E-01	223	.952E-02		
212	-.333E-01	211	.509E-02	213	.352E-02	199	.128E-01	224	.119E-01		
213	-.402E-01	212	.352E-02	240	.473E-04	200	.176E-01	225	.190E-01		
214	-.935E-01	117	.330E-01	215	.508E-01	202	.496E-02	226	.468E-02		
215	-.130E+00	214	.508E-01	216	.730E-01	203	.319E-02	227	.301E-02		
216	-.168E+00	215	.730E-01	255	.897E-01	204	.248E-02	228	.234E-02		
217	-.107E+00	255	.488E-01	218	.462E-01	205	.634E-02	229	.599E-02		
218	-.117E+00	217	.462E-01	256	.653E-01	206	.262E-02	230	.247E-02		
219	-.110E+00	256	.411E 01	220	.562E 01	207	.634E 02	231	.599E 02		
220	-.123E+00	219	.562E-01	258	.653E-01	208	.103E-02	232	.973E-03		
221	-.106E+00	258	.664E-01	222	.376E-01	209	.927E-03	233	.875E-03		
222	-.783E-01	221	.376E-01	223	.211E-01	210	.101E-01	234	.953E-02		
223	-.590E-01	222	.211E-01	224	.193E-01	211	.952E-02	235	.898E-02		
224	-.559E-01	223	.193E-01	225	.134E-01	212	.119E-01	236	.112E-01		
225	-.506E-01	224	.134E-01	239	.180E-03	213	.190E-01	237	.180E-01		
226	-.389E+00	118	.172E+00	227	.209E+00	260	.389E-02	214	.468E-02		
227	-.633E+00	226	.209E+00	228	.218E+00	261	.250E-02	215	.301E-02		
228	-.381E+00	227	.218E+00	229	.155E+00	255	.202E-02	262	.362E-02	216	.234E-02
229	-.301E+00	228	.155E+00	230	.136E+00	263	.498E-02	217	.599E-02		
230	-.279E+00	229	.134E+00	231	.134E+00	256	.352E-02	264	.498E-02	218	.247E-02
231	-.279E+00	230	.134E+00	232	.134E+00	265	.498E-02	219	.599E-02		
232	-.379E+00	231	.134E+00	233	.234E+00	258	.502E-02	266	.498E-02	220	.973E-03
233	-.390E+00	232	.234E+00	234	.155E+00	267	.727E-03	221	.875E-03		
234	-.259E+00	233	.155E+00	235	.869E-01	268	.792E-02	222	.953E-02		
235	-.183E+00	234	.869E-01	236	.795E-01	269	.747E-02	223	.898E-02		
236	-.155E+00	235	.795E-01	237	.551E-01	270	.933E-02	224	.112E-01		
237	-.887E-01	236	.551E-01	238	.740E-03	271	.149E-01	225	.180E-01		
238	-.395E+01	237	.740E-03	272	.179E+01	239	.216E+01	3101	.746E-03		
239	-.444E+01	225	.180E-03	238	.216E+01	240	.228E+01	3102	.181E-03		
240	-.440E+01	213	.473E-04	239	.228E+01	241	.212E+01	3103	.477E-04		
241	-.289E+01	200	.184E-04	240	.212E+01	242	.773E+00	3104	.186E-04		
242	-.773E+00	201	.887E-06	241	.773E+00	3105	.895E-06				
243	-.581E+00	37	.464E-03	38	.277E-03	22	.602E-03	247	.414E-03	3092	.579E+00
244	-.151E+00	41	.464E-03	42	.395E-03	26	.156E-03	248	.107E-03	3093	.150E+00
245	-.366E+00	43	.464E-03	44	.326E-03	28	.379E-03	249	.259E-03	3094	.364E+00
246	-.581E+00	45	.464E-03	46	.492E-03	30	.602E-03	250	.412E-03	3095	.579E+00
247	-.252E+01	62	.138E-02	63	.825E-03	243	.414E-03	128	.519E-02	3096	.251E+01
248	-.655E+00	66	.138E-02	67	.118E-02	244	.107E-03	132	.134E-02	3097	.651E+00
249	-.159E+01	68	.138E-02	69	.970E-03	245	.259E-03	134	.326E-02	3098	.158E+01
250	-.252E+01	70	.138E-02	71	.143E-02	246	.412E-03	136	.517E-02	3099	.251E+01
251	-.409E-01	204	.236E-01	205	.128E-01	187	.230E-02	255	.214E-02		

252	-.357E-01	206	.172E-01	207	.108E-01	190	.596E-03	256	.373E-02	191	.341E-02
254	-.457E-01	208	.172E-01	209	.175E-01	194	.230E-02	258	.531E-02	195	.341E-02
255	-.143E+00	216	.897E-01	217	.488E-01	251	.214E-02	228	.202E-02		
256	-.114E+00	218	.653E-01	219	.411E-01	252	.373E-02	230	.352E-02		
258	-.142E+00	220	.653E-01	221	.664E-01	254	.531E-02	232	.502E-02		
259	-.328E+01	260	.109E+01	118	.389E-02	3107	.218E+01				
260	-.242E+01	259	.109E+01	261	.133E+01	226	.389E-02				
261	-.271E+01	260	.133E+01	262	.138E+01	227	.250E-02				
262	-.237E+01	261	.138E+01	263	.986E+00	228	.362E-02				
263	-.184E+01	262	.986E+00	264	.852E+00	229	.498E-02				
264	-.171E+01	263	.852E+00	265	.852E+00	230	.498E-02				
265	-.171E+01	264	.852E+00	266	.852E+00	231	.498E-02				
266	-.234E+01	265	.852E+00	267	.149E+01	232	.498E-02				
267	-.247E+01	266	.149E+01	268	.981E+00	233	.727E-03				
268	-.154E+01	267	.981E+00	269	.551E+00	234	.792E-02				
269	-.106E+01	268	.551E+00	270	.505E+00	235	.747E-02				
270	-.864E+00	269	.505E+00	271	.349E+00	236	.933E-02				
271	-.369E+00	270	.349E+00	272	.469E-02	237	.149E-01				
272	-.180E+01	271	.469E-02	238	.179E+01	3106	.473E-02				

INTERNAL CONTACT CONDUCTANCES

NODE	TO NODE-TABLE		NODE-TABLE	NODE-TABLE	NODE-TABLE	NODE-TABLE	NODE-TABLF	NODE-TABLE
31	53	1.						
32	54	1.						
33	55	1.						
34	56	1.						
36	61	3.						
37	62	3.						
38	63	3.						
39	64	3.						
40	65	3.						
41	66	3.						
42	67	3.						
43	68	3.						
44	69	3.						
45	70	3.						
46	71	3.						
47	74	4.						
48	75	4.						
49	76	4.						
50	77	4.						
51	59	2.						
52	60	2.						
53	31	1.						
54	32	1.						
55	33	1.						
56	34	1.						
59	51	2.						
60	52	2.						
61	36	3.						
62	37	3.						
63	38	3.						
64	39	3.						
65	40	3.						
66	41	3.						
67	42	3.						
68	43	3.						
69	44	3.						
70	45	3.						
71	46	3.						
74	47	4.						
75	48	4.						
76	49	4.						
77	50	4.						
90	108	6.						
91	109	6.						
92	110	6.						
93	98	5.						
94	99	5.						
95	100	5.						
96	101	5.						
97	102	5.						
98	93	5.						
99	94	5.						
100	95	5.						
101	96	5.						
102	97	5.						
104	122	5.						
105	113	5.						
108	90	6.						
109	91	6.						
110	92	6.						
113	105	5.						
122	104	5.						
243	247	3.						
244	248	3.						
245	249	3.						
246	250	3.						
247	243	3.						
248	244	3.						
249	245	3.						
250	246	3.						

TAP-A OUTPUT (Cont'd)

FORCED CONVECTION,GAS CONDUCTIVITY OR CONTACT [illegible] CTANCE TABLES

TABLE	TIME (TEMP)	COEFF.	TIME (TEMP)	COEFF.	TIME (TEMP)	COEFF.	TIME (TEMP)	COEFF.	TIME (TEMP)	COEFF.
1										
	50.000	.858E-06	800.000	.858E-06						
2										
	50.000	.558E-06	600.000	.962E-06						
3										
	100.000	.874E-06	200.000	.795E-06	300.000	.731E-06	400.000	.668E-06	500.000	.636E-06
	600.000	.612E-06	700.000	.596E-06	800.000	.588E-06				
4										
	50.000	.102E-07	100.000	.109E-07	200.000	.122E-07	400.000	.149E-07	600.000	.176E-07
	800.000	.203E-07								
5										
	50.000	.182E-07	100.000	.194E-07	200.000	.218E-07	300.000	.242E-07		
6										
	0.000	.128E-05	800.000	.270E-05						

SURFACE TO BOUNDARY CONNECTORS

NODE	TEMP	NODE	TEMP	MECHANISM	AREA	FILM COEF	ADMIT	GAP
3001	56.28	5022	53.03	RADIATION CONNECT	12.5664	.8082E-06	.1016E-04	
3002	56.26	5023	53.01	RADIATION CONNECT	37.6991	.8082E-06	.3047E-04	
3003	56.23	5024	52.99	RADIATION CONNECT	62.8318	.8081E-06	.5077E-04	
3004	56.20	5025	52.96	RADIATION CONNECT	40.8407	.8080E-06	.3300E-04	
3005	53.84	5026	52.46	RADIATION CONNECT	297.8230	.1091E-05	.3248E-03	
3006	56.03	5027	53.78	RADIATION CONNECT	536.0813	.1098E-05	.5884E-03	
3007	56.03	5028	55.18	RADIATION CONNECT	321.0707	.6645E-06	.2133E-03	
3008	56.62	5029	56.40	RADIATION CONNECT	228.7079	.6656E-06	.1522E-03	
3009	59.23	5030	59.17	RADIATION CONNECT	703.7166	.6707E-06	.4720E-03	
3010	61.20	5031	61.19	RADIATION CONNECT	703.7166	.6745E-06	.4747E-03	
3011	63.01	5032	63.02	RADIATION CONNECT	703.7166	.6781E-06	.4772E-03	
3012	64.53	5033	64.55	RADIATION CONNECT	580.5662	.6810E-06	.3954E-03	
3013	65.85	5034	65.84	RADIATION CONNECT	703.7166	.6837E-06	.4811E-03	
3014	66.68	5035	66.73	RADIATION CONNECT	404.6371	.6853E-06	.2773E-03	
3015	67.51	5036	67.50	RADIATION CONNECT	703.7166	.6869E-06	.4834E-03	
3016	67.90	5037	67.98	RADIATION CONNECT	228.7079	.6877E-06	.1573E-03	
3017	68.28	5038	68.29	RADIATION CONNECT	703.7166	.6885E-06	.484[illegible]E-03	
3018	68.32	5039	68.63	RADIATION CONNECT	40.8407	.6584E-06	.2689E-04	
3019	68.33	5040	68.64	RADIATION CONNECT	62.8318	.6584E-06	.4137E-04	
3020	68.34	5041	68.64	RADIATION CONNECT	37.6991	.6585E-06	.2482E-04	
3021	68.34	5042	68.64	RADIATION CONNECT	12.5664	.6585E-06	.8274E-05	
3022	53.03	5001	56.28	RADIATION CONNECT	12.5664	.8006E-06	.1006E-04	
3023	53.01	5002	56.26	RADIATION CONNECT	37.6991	.8006E-06	.3018E-04	
3024	52.99	5003	56.23	RADIATION CONNECT	62.8318	.8005E-06	.5030E-04	
3025	52.96	5004	56.20	RADIATION CONNECT	40.8407	.8004E-06	.3269E-04	
3026	52.46	5005	53.84	RADIATION CONNECT	325.1520	.1008E-05	.3278E-03	
3027	53.78	5006	56.03	RADIATION CONNECT	579.8544	.1012E-05	.[illegible]869E-03	
3028	55.18	5007	56.03	RADIATION CONNECT	395.6016	.5383E-06	.2130E-03	
3029	56.40	5008	56.62	RADIATION CONNECT	281.7984	.5402E-06	.1522E-03	
3030	59.17	5009	59.23	RADIATION CONNECT	867.0720	.5446E-06	.4722E-03	
3031	61.19	5010	61.20	RADIATION CONNECT	867.0720	.5478E-06	.4750E-03	
3032	63.02	5011	63.01	RADIATION CONNECT	867.0720	.5507E-06	.4775E-03	
3033	64.55	5012	64.53	RADIATION CONNECT	715.3344	.5531E-06	.3957E-03	
3034	65.84	5013	65.85	RADIATION CONNECT	867.0720	.5552E-06	.4814E-03	
3035	66.73	5014	66.68	RADIATION CONNECT	498.5664	.5567E-06	.2775E-03	
3036	67.50	5015	67.51	RADIATION CONNECT	867.0720	.5579E-06	.4837E-03	
3037	67.98	5016	67.90	RADIATION CONNECT	281.7984	.5587E-06	.1574E-03	
3038	68.29	5017	68.28	RADIATION CONNECT	253.3476	.5592E-06	.1617E-03	
3039	68.63	5018	68.32	RADIATION CONNECT	40.8407	.6590E-06	.2691E-04	
3040	68.64	5019	68.33	RADIATION CONNECT	62.8318	.6590E-06	.4141E-04	
3041	68.64	5020	68.34	RADIATION CONNECT	37.6991	.6590E-06	.24[illegible]E-04	
3042	68.64	5021	68.34	RADIATION CONNECT	12.5664	.6590E-06	.8282E-05	
3043	45.13	5051	36.00	RADIATION CONNECT	12.5664	.1609E-05	.2022E-04	
3044	45.13	5052	36.00	RADIATION CONNECT	37.6991	.1609E-05	.6067E-04	
3045	45.11	5053	36.00	RADIATION CONNECT	62.8318	.1609E-05	.1011E-03	
3046	45.10	5054	36.00	RADIATION CONNECT	40.8407	.1609E-05	.6572E-04	
3047	45.08	5055	36.00	RADIATION CONNECT	160.2211	.1609E-05	.2578E-03	
3048	45.63	5056	45.44	RADIATION CONNECT	376.9908	.1040E-05	.3921E-03	
3049	47.68	5057	47.38	RADIATION CONNECT	879.6452	.1046E-05	.9203E-03	
3050	50.84	5058	50.40	RADIATION CONNECT	816.8134	.1056E-05	.8625E-03	
3051	36.00	5043	45.13	RADIATION CONNECT	12.5664	.1567E-05	.1969E-04	
3052	36.00	5044	45.13	RADIATION CONNECT	37.6991	.1567E-05	.5907E-04	
3053	36.00	5045	45.11	RADIATION CONNECT	62.8318	.1567E-05	.9845E-04	
3054	36.00	5046	45.10	RADIATION CONNECT	40.8407	.1567E-05	.6399E-04	
3055	36.00	5047	45.08	RADIATION CONNECT	160.2211	.1567E-05	.2511E-03	
3056	45.44	5048	45.63	RADIATION CONNECT	595.7241	.1027E-05	.6118E-03	
3057	47.38	5049	47.68	RADIATION CONNECT	901.6364	.1033E-05	.9312E-03	
3058	50.40	5050	50.84	RADIATION CONNECT	676.2273	.1042E-05	.7046E-03	
3059	43.24	5061	36.00	RADIATION CONNECT	150.7963	.1519E-05	.2291E-03	
3060	42.88	5062	36.00	RADIATION CONNECT	501.1326	.1517E-05	.7605E-03	
3061	36.00	5059	43.24	RADIATION CONNECT	150.7963	.1487E-05	.2243E-03	
3062	36.00	5060	42.88	RADIATION CONNECT	501.1326	.1487E-05	.7453E-03	
3063	36.00	98	36.00	SPECIFIED TEMP	12.5664			
3064	36.00	99	36.00	SPECIFIED TEMP	37.6991			
3065	36.00	100	36.00	SPECIFIED TEMP	62.8318			
3066	36.00	101	36.00	SPECIFIED TEMP	40.8407			
3067	36.00	102	36.00	SPECIFIED TEMP	160.2211			
3068	36.00	103	36.00	SPECIFIED TEMP	65.9734			
3069	36.00	104	36.00	SPECIFIED TEMP	150.7963			
3070	36.00	105	36.00	SPECIFIED TEMP	501.1326			
3071	36.00	106	36.00	SPECIFIED TEMP	777.4933			
3072	36.00	106	36.00	SPECIFIED TEMP	37.6990			
3073	36.00	112	38.38	SPECIFIED TEMP	3732.2089			
3074	36.00	112	38.38	SPECIFIED TEMP	791.6811			

3075	36.00	116	39.38	SPECIFIED TEMP	13571.6688		
3076	36.00	117	38.97	SPECIFIED TEMP	51572.3414		
3077	36.00	118	39.11	SPECIFIED TEMP	**********		
3092	57.56	5083	57.47	RADIATION CONNECT	475.0087	.6674E-06	.3170E-03
3093	65.14	5084	65.15	RADIATION CONNECT	123.1504	.6823E-06	.8402E-04
3094	67.03	5085	67.05	RADIATION CONNECT	299.0796	.6860E-06	.2052E-03
3095	68.11	5086	68.14	RADIATION CONNECT	475.0087	.6881E-06	.3269E-03
3096	57.47	5079	57.56	RADIATION CONNECT	585.2736	.5419E-06	.3172E-03
3097	65.15	5080	65.14	RADIATION CONNECT	151.7376	.5541E-06	.8408E-04
3098	67.05	5081	67.03	RADIATION CONNECT	368.5056	.5572E-06	.2053E-03
3099	68.14	5082	68.11	RADIATION CONNECT	585.2736	.5589E-06	.3271E-03
3101	70.00	238	70.00	SPECIFIED TEMP	**********		
3102	70.00	239	70.00	SPECIFIED TEMP	51572.3414		
3103	70.00	240	70.00	SPECIFIED TEMP	13571.6688		
3104	70.00	241	70.00	SPECIFIED TEMP	5287.2960		
3105	70.00	242	70.00	SPECIFIED TEMP	254.4688		
3106	70.00	272	70.00	SPECIFIED TEMP	**********		
3107	0.00	259	39.09	SPECIFIED TEMP	**********		
3001	56.28	5001	56.28	TEMP CONNECTED	12.5664		
3002	56.26	5002	56.26	TEMP CONNECTED	37.6991		
3003	56.23	5003	56.23	TEMP CONNECTED	62.8318		
3004	56.20	5004	56.20	TEMP CONNECTED	40.8407		
3005	53.84	5005	53.84	TEMP CONNECTED	297.8230		
3006	56.03	5006	56.03	TEMP CONNECTED	536.0813		
3007	36.03	3007	36.03	TEMP CONNECTED	321.0707		
3008	56.62	5008	56.62	TEMP CONNECTED	228.7079		
3009	59.23	5009	59.23	TEMP CONNECTED	703.7166		
3010	61.20	5010	61.20	TEMP CONNECTED	703.7166		
3011	63.01	5011	63.01	TEMP CONNECTED	703.7166		
3012	64.53	5012	64.53	TEMP CONNECTED	580.5662		
3013	65.85	5013	65.85	TEMP CONNECTED	703.7166		
3014	66.68	5014	66.68	TEMP CONNECTED	404.6371		
3015	67.51	5015	67.51	TEMP CONNECTED	703.7166		
3016	67.90	5016	67.90	TEMP CONNECTED	228.7079		
3017	68.28	5017	68.28	TEMP CONNECTED	703.7166		
3018	68.32	5018	68.32	TEMP CONNECTED	40.8407		
3019	68.33	5019	68.33	TEMP CONNECTED	62.8318		
3020	68.34	5020	68.34	TEMP CONNECTED	37.6991		
3021	68.34	5021	68.34	TEMP CONNECTED	12.5664		
3022	53.03	5022	53.03	TEMP CONNECTED	12.5664		
3023	53.01	5023	53.01	TEMP CONNECTED	37.6991		
3024	52.99	5024	52.99	TEMP CONNECTED	62.8318		
3025	52.96	5025	52.96	TEMP CONNECTED	40.8407		
3026	52.46	5026	52.46	TEMP CONNECTED	325.1520		
3027	53.78	5027	53.78	TEMP CONNECTED	579.8544		
3028	55.18	5028	55.18	TEMP CONNECTED	395.6016		
3029	56.40	5029	56.40	TEMP CONNECTED	281.7984		

3030	59.17	5030	59.17	TEMP CONNECTED	867.0720
3031	61.19	5031	61.19	TEMP CONNECTED	867.0720
3032	63.02	5032	63.02	TEMP CONNECTED	867.0720
3033	54.55	5033	64.55	TEMP CONNECTED	715.3344
3034	65.84	5034	65.84	TEMP CONNECTED	867.0720
3035	66.73	5035	66.73	TEMP CONNECTED	498.5664
3036	67.50	5036	67.50	TEMP CONNECTED	867.0720
3037	67.98	5037	67.98	TEMP CONNECTED	281.7984
3038	68.29	5038	68.29	TEMP CONNECTED	253.3476
3039	68.63	5039	68.63	TEMP CONNECTED	40.8407
3040	68.64	5040	68.64	TEMP CONNECTED	62.8318
3041	68.64	5041	68.64	TEMP CONNECTED	37.6991
3042	68.64	5042	68.64	TEMP CONNECTED	12.5664
3043	45.13	5043	45.13	TEMP CONNECTED	12.5664
3044	45.13	5044	45.13	TEMP CONNECTED	37.6991
3045	45.11	5045	45.11	TEMP CONNECTED	62.8318
3046	45.10	5046	45.10	TEMP CONNECTED	40.8407
3047	45.08	5047	45.08	TEMP CONNECTED	160.2211
3048	45.63	5048	45.63	TEMP CONNECTED	376.9908
3049	47.68	5049	47.68	TEMP CONNECTED	879.6452
3050	50.84	5050	50.84	TEMP CONNECTED	816.8134
3051	36.00	5051	36.00	TEMP CONNECTED	12.5664
3052	36.00	5052	36.00	TEMP CONNECTED	37.6991
3053	36.00	5053	36.00	TEMP CONNECTED	62.8318
3054	36.00	5054	36.00	TEMP CONNECTED	40.8407
3055	36.00	5055	36.00	TEMP CONNECTED	160.2211
3056	45.44	5056	45.44	TEMP CONNECTED	595.7241
3057	47.38	5057	47.38	TEMP CONNECTED	901.6364
3058	50.40	5058	50.40	TEMP CONNECTED	676.2273
3059	43.24	5059	43.24	TEMP CONNECTED	150.7963
3060	42.88	5060	42.88	TEMP CONNECTED	501.1326
3061	36.00	5061	36.00	TEMP CONNECTED	150.7963
3062	36.00	5062	36.00	TEMP CONNECTED	501.1326
3092	57.56	5079	57.56	TEMP CONNECTED	475.0087
3093	65.14	5080	65.14	TEMP CONNECTED	123.1504
3094	67.03	5081	67.03	TEMP CONNECTED	299.0796
3095	68.11	5082	68.11	TEMP CONNECTED	475.0087
3096	57.47	5083	57.47	TEMP CONNECTED	585.2736
3097	65.15	5084	65.15	TEMP CONNECTED	151.7376
3098	67.05	5085	67.05	TEMP CONNECTED	368.5056
3099	68.14	5086	68.14	TEMP CONNECTED	585.2736

PRINTOUT TIMES
1728000.004147200.006825600.009417600.00***
****

CALCULATED SPREAD BETWEEN INTERNAL NODES = 221

Drywell 5 Predictions - February 1, 1979

RNAL TEMPERATURES AT .173E+07 SECONDS

NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP
1	421.77	2	502.61	3	522.47	4	528.38	5	530.87
6	531.98	7	531.94	8	530.19	9	525.35	10	486.88
11	379.22	12	446.17	13	468.25	14	474.86	15	477.66
16	478.92	17	478.88	18	476.90	19	471.69	20	433.51
21	263.94	22	317.77	23	341.92	24	350.17	25	353.99
26	355.71	27	355.68	28	352.98	29	346.41	30	312.15
31	95.22	32	94.83	33	94.54	34	94.39	35	93.83
36	158.17	37	188.04	38	222.46	39	232.34	40	237.42
41	239.70	42	239.69	43	236.96	44	227.67	45	208.24
46	145.95	47	145.89	48	146.63	49	148.43	50	149.85
51	83.55	52	93.68	53	79.61	54	79.64	55	79.69
56	79.77	57	78.04	58	77.59	59	78.57	60	90.23
61	111.70	62	127.25	63	152.88	64	163.33	65	169.05
66	171.72	67	171.84	68	168.79	69	160.42	70	143.71
71	120.83	72	84.86	73	81.72	74	82.23	75	82.73
76	83.17	77	83.41	78	53.96	79	60.60	80	71.61
81	53.99	82	60.61	83	71.57	84	54.05	85	60.62
86	71.48	87	54.15	88	60.62	89	71.34	90	54.28
91	60.64	92	71.19	93	52.16	94	52.18	95	52.20
96	52.23	97	52.26	98	42.00	99	42.00	100	42.00
101	42.00	102	42.00	103	42.00	104	42.00	105	42.00
106	42.00	107	55.47	108	55.52	109	60.55	110	70.12
111	44.71	112	44.41	113	52.64	114	51.06	115	48.99
116	44.61	117	43.14	118	42.96	122	54.56	123	59.97
124	69.60	125	77.27	126	87.03	127	104.04	128	122.57
129	140.20	130	149.97	131	155.50	132	158.16	133	158.32
134	155.01	135	147.75	136	130.19	137	114.69	138	83.56
139	81.15	140	58.48	141	67.06	142	73.59	143	81.47
144	93.19	145	107.36	146	121.68	147	130.24	148	135.40
149	138.00	150	138.29	151	135.62	152	129.37	153	116.53
154	106.04	155	81.03	156	73.53	157	74.10	158	74.52
159	70.69	160	70.78	161	68.63	162	68.65	163	56.72
164	64.24	165	70.13	166	76.67	167	85.48	168	96.57
169	108.45	170	115.88	171	120.69	172	123.21	173	123.67
174	121.53	175	116.32	176	106.72	177	99.09	178	79.54
179	72.37	180	70.61	181	68.61	182	53.98	183	59.68
184	64.30	185	68.87	186	74.49	187	81.56	188	90.10
189	95.49	190	99.73	191	102.10	192	102.90	193	101.64
194	98.22	195	92.93	196	88.61	197	77.00	198	70.56
199	68.58	200	67.94	201	67.95	202	51.40	203	57.77
204	62.31	205	71.76	206	75.97	207	80.02	208	79.03
209	76.01	210	72.47	211	69.57	212	68.46	213	67.94
214	47.65	215	51.13	216	53.62	217	59.14	218	62.13
219	66.28	220	67.14	221	68.05	222	68.45	223	68.46
224	68.26	225	67.92	226	46.17	227	49.31	228	52.41
229	56.59	230	60.64	231	63.69	232	65.78	233	66.53
234	67.57	235	68.18	236	68.20	237	67.92	238	70.00
239	70.00	240	70.00	241	70.00	242	70.00	243	204.23
244	239.80	245	234.94	246	194.14	247	135.86	248	171.87
249	167.28	250	137.65	251	65.76	252	78.18	254	78.04
255	55.60	256	63.95	258	67.79	259	42.93	260	46.09
261	49.20	262	52.28	263	56.45	264	60.51	265	63.58
266	65.70	267	66.47	268	67.53	269	68.16	270	68.21
271	67.92	272	70.00						

Drywell 5 Predictions - March 1, 1979

NAL TEMPERATURES AT .415E+07 SECONDS

NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP
1	419.04	2	498.00	3	517.82	4	523.77	5	526.36
6	527.48	7	527.36	8	525.39	9	520.33	10	482.16
11	377.58	12	442.88	13	464.85	14	471.50	15	474.41
16	475.68	17	475.54	18	473.33	19	467.86	20	430.03
21	265.78	22	318.24	23	342.22	24	350.55	25	354.49
26	356.21	27	356.04	28	353.05	29	346.17	30	312.12
31	102.09	32	101.73	33	101.45	34	101.32	35	100.82
36	163.47	37	192.63	38	226.68	39	236.70	40	241.90
41	244.16	42	243.95	43	240.92	44	231.23	45	211.78
46	150.82	47	150.66	48	151.31	49	152.98	50	154.30
51	90.94	52	100.68	53	87.13	54	87.17	55	87.22
56	87.31	57	85.67	58	85.24	59	86.24	60	97.96
61	119.28	62	134.71	63	160.33	64	170.95	65	176.78
66	179.41	67	179.30	68	175.86	69	167.00	70	149.95
71	126.90	72	90.46	73	87.09	74	87.60	75	88.07
76	88.50	77	88.73	78	61.57	79	68.33	80	79.28
81	61.62	82	68.34	83	79.24	84	61.70	85	68.37
86	79.16	87	61.82	88	68.39	89	79.04	90	61.99
91	68.43	92	78.90	93	59.76	94	59.78	95	59.81
96	59.85	97	59.90	98	50.40	99	50.40	100	50.40
101	50.40	102	50.40	103	50.40	104	50.40	105	50.40
106	50.40	107	63.41	108	63.49	109	68.50	110	77.96
111	53.07	112	52.76	113	60.75	114	59.26	115	57.26
116	52.80	117	50.82	118	50.02	122	62.57	123	67.95
124	77.48	125	85.09	126	94.92	127	111.87	128	130.32
129	148.06	130	158.01	131	163.65	132	166.25	133	166.17
134	162.45	135	154.70	136	136.70	137	120.95	138	89.11
139	86.53	140	66.54	141	75.08	142	81.64	143	89.59
144	101.35	145	115.56	146	130.05	147	138.81	148	144.08
149	146.61	150	146.65	151	143.56	152	136.78	153	123.40
154	112.54	155	86.46	156	77.11	157	77.80	158	78.29
159	73.45	160	73.56	161	69.70	162	69.73	163	64.86
164	72.37	165	78.32	166	84.91	167	93.81	168	105.00
169	117.09	170	124.71	171	129.62	172	132.07	173	132.24
174	129.71	175	123.93	176	113.75	177	105.67	178	84.88
179	75.62	180	73.34	181	69.65	182	62.17	183	67.90
184	72.58	185	77.21	186	82.94	187	90.13	188	98.92
189	104.47	190	108.78	191	111.06	192	111.54	193	109.91
194	105.87	195	99.99	196	95.15	197	82.10	198	73.23
199	69.57	200	68.25	201	68.26	202	59.23	203	65.54
204	70.13	205	79.78	206	83.99	207	87.32	208	85.81
209	81.59	210	76.69	211	71.70	212	69.25	213	68.21
214	53.65	215	56.26	216	58.26	217	62.93	218	65.60
219	69.22	220	69.78	221	70.11	222	69.94	223	69.16
224	68.53	225	68.10	226	50.68	227	52.01	228	53.61
229	56.21	230	59.27	231	61.96	232	64.10	233	64.99
234	66.28	235	67.40	236	67.89	237	67.98	238	70.00
239	70.00	240	70.00	241	70.00	242	70.00	243	208.48
244	244.19	245	238.77	246	197.85	247	143.23	248	179.47
249	174.22	250	143.81	251	73.62	252	86.04	254	84.28
255	59.91	256	67.22	258	70.15	259	49.93	260	50.40
261	51.61	262	53.10	263	55.59	264	58.59	265	61.30
266	63.53	267	64.50	268	65.90	269	67.20	270	67.82
271	67.97	272	70.00						

TAP-A OUTPUT (Cont'd)

Drywell 5 Predictions - April 1, 1979

NAL TEMPERATURES AT .683E+07 SECONDS

NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP
1	415.93	2	492.43	3	511.57	4	517.97	5	520.40
6	521.35	7	521.10	8	519.00	9	513.14	10	475.19
11	375.30	12	438.35	13	459.40	14	466.58	15	469.30
16	470.37	17	470.09	18	467.74	19	461.35	20	423.81
21	266.33	22	316.76	23	339.70	24	348.21	25	351.85
26	353.30	27	352.93	28	34[illegible].78	29	342.20	30	308.42
31	107.94	32	107.59	33	10[illegible].33	34	107.19	35	106.73
36	167.01	37	195.00	38	227.56	39	236.[illegible]	40	241.76
41	243.67	42	243.19	43	239.98	44	230.[illegible]	45	211.09
46	151.61	47	151.41	48	152.01	49	153.59	50	154.84
51	97.29	52	106.59	53	93.67	54	93.70	55	93.75
56	93.83	57	92.26	58	91.85	59	92.80	60	103.93
61	124.37	62	139.14	63	163.47	64	173.40	65	178.70
66	180.90	67	180.46	68	176.82	69	167.90	70	151.07
71	128.43	72	92.59	73	89.24	74	89.74	75	90.21
76	90.62	77	90.84	78	69.54	79	75.86	80	86.19
81	69.58	82	75.88	83	86.16	84	69.66	85	75.90
86	86.08	87	69.78	88	75.92	89	85.96	90	69.95
91	75.96	92	85.83	93	67.84	94	67.87	95	67.90
96	67.93	97	67.98	98	59.70	99	59.70	100	59.70
101	59.70	102	59.70	103	59.70	104	59.70	105	59.70
106	59.70	107	71.29	108	71.36	109	76.02	110	84.93
111	61.97	112	61.68	113	68.84	114	67.47	115	65.61
116	61.52	117	59.50	118	58.34	122	70.51	123	75.50
124	84.45	125	91.64	126	100.96	127	117.17	128	134.77
129	151.55	130	160.84	131	165.95	132	168.11	133	167.72
134	163.77	135	155.95	136	138.16	137	122.65	138	91.25
139	88.68	140	74.14	141	82.11	142	88.26	143	95.75
144	106.92	145	120.40	146	134.05	147	142.18	148	146.92
149	149.02	150	148.72	151	145.41	152	138.51	153	125.22
154	114.46	155	88.61	156	78.87	157	79.60	158	80.10
159	75.02	160	75.13	161	70.63	162	70.67	163	72.53
164	79.48	165	85.01	166	91.18	167	99.56	168	110.11
169	121.42	170	128.46	171	132.85	172	134.86	173	134.69
174	131.92	175	125.99	176	115.81	177	107.76	178	87.04
179	77.30	180	74.89	181	70.56	182	69.92	183	75.12
184	79.39	185	83.65	186	88.94	187	95.59	188	103.66
189	108.73	190	112.51	191	114.36	192	114.46	193	112.61
194	108.35	195	102.36	196	97.45	197	84.24	198	74.76
199	70.45	200	68.45	201	68.66	202	66.76	203	72.18
204	76.18	205	84.60	206	88.14	207	90.42	208	88.61
209	83.94	210	78.69	211	73.06	212	70.03	213	68.56
214	60.82	215	62.48	216	63.85	217	67.22	218	69.17
219	71.70	220	71.92	221	71.76	222	71.21	223	69.95
224	68.97	225	68.32	226	57.08	227	56.96	228	57.28
229	58.35	230	60.09	231	61.93	232	63.60	233	64.38
234	65.52	235	66.77	236	67.51	237	67.90	238	70.00
239	70.00	240	70.00	241	70.00	242	70.00	243	210.20
244	243.60	245	237.80	246	197.45	247	147.26	248	180.86
249	175.15	250	145.03	251	79.23	252	89.75	254	86.83
255	65.03	256	70.33	258	72.02	259	58.15	260	56.52
261	56.13	262	56.21	263	57.02	264	58.61	265	60.44
266	62.24	267	63.14	268	64.49	269	66.11	270	67.17
271	67.79	272	70.00						

TAP-A OUTPUT (Cont'd)

Drywell 5 Predictions - May 1, 1979

:NAL TEMPERATURES AT .942E+07 SECONDS

NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP
1	412.90	2	487.08	3	505.59	4	512.36	5	514.60
6	515.35	7	514.94	8	512.66	9	505.49	10	468.06
11	373.07	12	434.02	13	454.22	14	461.86	15	464.33
16	465.18	17	464.72	18	462.18	19	454.27	20	417.36
21	266.85	22	315.41	23	337.37	24	346.00	25	349.31
26	350.45	27	349.85	28	346.46	29	337.71	30	304.39
31	113.51	32	113.18	33	112.92	34	112.80	35	112.36
36	170.41	37	197.34	38	228.53	39	237.38	40	241.68
41	243.21	42	242.38	43	238.93	44	229.04	45	210.03
46	151.79	47	151.53	48	152.08	49	153.55	50	154.74
51	103.31	52	112.22	53	99.87	54	99.89	55	99.94
56	100.01	57	98.51	58	98.11	59	99.01	60	109.62
61	129.28	62	143.46	63	166.64	64	175.89	65	180.63
66	182.36	67	181.53	68	177.60	69	168.49	70	151.68
71	129.28	72	93.72	73	90.34	74	90.83	75	91.29
76	91.68	77	91.90	78	77.20	79	83.03	80	92.74
81	77.24	82	83.05	83	92.71	84	77.31	85	83.06
86	92.63	87	77.43	88	83.09	89	92.51	90	77.58
91	83.12	92	92.39	93	75.64	94	75.67	95	75.70
96	75.74	97	75.78	98	68.70	99	68.70	100	68.70
101	68.70	102	68.70	103	68.70	104	68.70	105	68.70
106	68.70	107	78.78	108	78.85	109	83.15	110	91.52
111	70.52	112	70.23	113	76.52	114	75.25	115	73.50
116	69.87	117	67.92	118	66.60	122	78.07	123	82.65
124	91.05	125	97.85	126	106.71	127	122.28	128	139.15
129	155.08	130	163.71	131	168.25	132	169.93	133	169.15
134	164.90	135	156.89	136	139.07	137	123.66	138	92.39
139	89.79	140	81.33	141	88.73	142	94.48	143	101.55
144	112.21	145	125.05	146	137.91	147	145.42	148	149.60
149	151.21	150	150.52	151	146.91	152	139.80	153	126.40
154	115.63	155	89.75	156	79.75	157	80.50	158	81.01
159	75.84	160	75.96	161	71.20	162	71.25	163	79.74
164	86.11	165	91.22	166	96.98	167	104.87	168	114.81
169	125.35	170	131.79	171	135.60	172	137.14	173	136.56
174	133.50	175	127.35	176	117.05	177	108.96	178	88.15
179	78.16	180	75.70	181	71.13	182	77.16	183	81.78
184	85.61	185	89.46	186	94.28	187	100.36	188	107.66
189	112.19	190	115.38	191	116.74	192	116.41	193	114.30
194	109.79	195	103.67	196	98.70	197	85.33	198	75.57
199	71.00	200	68.96	201	68.98	202	73.81	203	78.23
204	81.58	205	88.60	206	91.37	207	92.53	208	90.40
209	85.31	210	79.78	211	73.82	212	70.53	213	68.84
214	67.79	215	68.53	216	69.29	217	71.33	218	72.52
219	73.90	220	73.75	221	73.05	222	72.13	223	70.49
224	69.28	225	68.50	226	63.90	227	62.65	228	61.95
229	61.72	230	62.25	231	63.15	232	64.15	233	64.69
234	65.48	235	66.51	236	67.25	237	67.76	238	70.00
239	70.00	240	70.00	241	70.00	242	70.00	243	211.93
244	243.00	245	236.68	246	196.58	247	151.24	248	182.18
249	175.87	250	145.69	251	84.12	252	92.50	254	88.37
255	69.99	256	73.20	258	73.54	259	66.33	260	63.10
261	61.46	262	60.41	263	59.81	264	60.07	265	60.92
266	62.05	267	62.74	268	63.77	269	65.31	270	66.52
271	67.44	272	70.00						

Drywell 5 Predictions - June 1, 1979

AL TEMPERATURES AT .121E+08 SECONDS

NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP
1	410.11	2	482.15	3	500.20	4	507.03	5	509.18
6	509.73	7	509.12	8	506.25	9	498.25	10	461.13
11	371.19	12	430.25	13	449.81	14	457.47	15	459.88
16	460.50	17	459.82	18	456.60	19	447.78	20	411.26
21	267.93	22	314.85	23	336.07	24	344.57	25	347.67
26	348.49	27	347.60	28	343.58	29	334.05	30	300.91
31	119.49	32	119.17	33	118.93	34	118.81	35	118.41
36	174.49	37	200.51	38	230.64	39	239.04	40	242.93
41	244.05	42	242.83	43	239.05	44	228.79	45	209.71
46	152.50	47	152.15	48	152.62	49	153.98	50	155.10
51	109.76	52	118.28	53	106.48	54	106.51	55	106.55
56	106.62	57	105.19	58	104.81	59	105.68	60	115.91
61	135.05	62	148.82	63	171.22	64	179.94	65	184.17
66	185.41	67	184.14	68	179.80	69	170.29	70	153.19
71	130.71	72	94.92	73	91.38	74	91.85	75	92.30
76	92.69	77	92.90	78	85.19	79	90.54	80	99.69
81	85.23	82	90.56	83	99.65	84	85.29	85	90.57
86	99.58	87	85.40	88	90.59	89	99.46	90	85.54
91	90.63	92	99.35	93	83.78	94	83.80	95	83.83
96	83.87	97	83.92	98	78.00	99	78.00	100	78.00
101	78.00	102	78.00	103	78.00	104	78.00	105	78.00
106	78.00	107	86.58	108	86.65	109	90.63	110	98.53
111	79.33	112	79.06	113	84.48	114	83.28	115	81.61
116	78.50	117	76.64	118	75.26	122	85.93	123	90.14
124	98.06	125	104.54	126	113.08	127	128.26	128	144.68
129	160.04	130	168.17	131	172.20	132	173.37	133	172.16
134	167.47	135	159.08	136	140.86	137	125.26	138	93.58
139	90.84	140	88.82	141	95.73	142	101.16	143	107.92
144	118.27	145	130.71	146	143.01	147	150.02	148	153.67
149	154.78	150	153.64	151	149.63	152	142.13	153	128.30
154	117.29	155	90.84	156	80.41	157	81.19	158	81.71
159	76.43	160	76.55	161	71.61	162	71.66	163	87.21
164	93.04	165	97.80	166	103.22	167	110.74	168	120.22
169	130.14	170	136.06	171	139.33	172	140.36	173	139.33
174	135.90	175	129.38	176	118.74	177	110.46	178	89.16
179	78.78	180	76.29	181	71.53	182	84.59	183	88.63
184	92.03	185	95.49	186	99.87	187	105.41	188	111.98
189	115.98	190	118.57	191	119.44	192	118.63	193	116.23
194	111.37	195	105.04	196	99.93	197	86.23	198	76.16
199	71.40	200	69.19	201	69.21	202	81.08	203	84.46
204	87.12	205	92.71	206	94.67	207	94.64	208	92.15
209	56.58	210	80.72	211	74.43	212	70.90	213	69.04
214	75.09	215	74.92	216	75.04	217	75.77	218	76.18
219	76.34	220	75.77	221	74.48	222	73.12	223	71.03
224	69.56	225	68.62	226	71.28	227	69.04	228	67.41
229	65.99	230	65.33	231	65.26	232	65.50	233	65.71
234	66.04	235	66.63	236	67.15	237	67.61	238	70.00
239	70.00	240	70.00	241	70.00	242	70.00	243	214.61
244	243.69	245	236.68	246	196.37	247	156.37	248	185.09
249	177.99	250	147.17	251	89.15	252	95.30	254	89.83
255	75.29	256	76.36	258	75.23	259	74.92	260	70.30
261	67.57	262	65.52	263	63.61	264	62.60	265	62.42
266	62.76	267	63.13	268	63.71	269	64.88	270	65.98
271	66.99	272	70.00						

Drywell 5 Predictions - July 1, 1979

NAL TEMPERATURES AT .147E+08 SECONDS

NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP
1	407.07	2	476.81	3	494.10	4	500.62	5	503.27
6	503.62	7	502.66	8	498.59	9	490.30	10	453.84
11	368.99	12	426.00	13	444.69	14	451.87	15	454.85
16	455.24	17	454.15	18	449.60	19	440.60	20	404.70
21	268.54	22	313.64	23	333.88	24	341.82	25	345.18
26	345.66	27	346.36	28	339.26	29	329.53	30	296.82
31	125.09	32	126.78	33	124.55	34	124.44	35	124.06
36	178.00	37	202.98	38	231.76	39	239.59	40	242.99
41	243.69	42	242.11	43	238.06	44	227.58	45	208.60
46	152.61	47	152.19	48	152.60	49	153.86	50	154.91
51	115.82	52	123.94	53	112.72	54	112.75	55	112.79
56	112.84	57	111.48	58	111.13	59	111.94	60	121.66
61	140.05	62	153.26	63	174.53	64	182.59	65	186.23
66	186.98	67	185.30	68	180.64	69	170.89	70	153.76
71	131.48	72	95.91	73	92.29	74	92.75	75	93.19
76	93.57	77	93.77	78	92.95	79	97.79	80	106.29
81	92.99	82	97.80	83	106.26	84	93.05	85	97.82
86	106.19	87	93.15	88	97.84	89	106.08	90	93.28
91	97.87	92	105.97	93	91.70	94	91.72	95	91.75
96	91.78	97	91.83	98	87.00	99	87.00	100	87.00
101	87.00	102	87.00	103	87.00	104	87.00	105	87.00
106	87.00	107	94.17	108	94.24	109	97.86	110	105.19
111	87.91	112	87.65	113	92.26	114	91.15	115	89.59
116	86.89	117	85.13	118	83.71	122	93.58	123	97.38
124	104.73	125	110.82	126	118.91	127	133.48	128	149.18
129	163.71	130	171.19	131	174.65	132	175.31	133	173.69
134	168.66	135	160.04	136	141.74	137	126.19	138	94.58
139	91.79	140	96.09	141	102.43	142	107.46	143	113.81
144	123.66	145	135.48	146	147.02	147	153.40	148	156.48
149	157.09	150	155.53	151	151.18	152	143.42	153	129.44
154	118.39	155	91.82	156	81.10	157	81.89	158	82.42
159	77.05	160	77.17	161	72.00	162	72.05	163	94.51
164	99.76	165	104.10	166	109.11	167	116.16	168	125.04
169	134.20	170	139.53	171	142.21	172	142.74	173	141.27
174	137.53	175	130.74	176	119.94	177	111.59	178	90.14
179	79.44	180	76.92	181	71.92	182	91.93	183	95.39
184	98.34	185	101.40	186	105.31	187	110.29	188	116.09
189	119.56	190	121.54	191	121.91	192	120.65	193	117.97
194	112.81	195	106.32	196	101.11	197	87.19	198	76.80
199	71.78	200	69.37	201	69.39	202	88.24	203	90.67
204	92.68	205	96.90	206	98.08	207	96.89	208	94.04
209	87.98	210	81.78	211	75.10	212	71.28	213	69.20
214	82.29	215	81.29	216	80.87	217	80.35	218	80.02
219	79.01	220	78.03	221	76.13	222	74.30	223	71.70
224	69.88	225	68.72	226	78.64	227	75.53	228	73.10
229	70.63	230	68.88	231	67.90	232	67.37	233	67.23
234	67.06	235	67.08	236	67.25	237	67.52	238	70.00
239	70.00	240	70.00	241	70.00	242	70.00	243	216.49
244	243.19	245	235.61	246	195.46	247	160.48	248	186.53
249	178.77	250	147.78	251	94.22	252	98.23	254	91.44
255	80.66	256	79.73	258	77.15	259	83.33	260	77.54
261	73.87	262	70.96	263	67.92	264	65.76	265	64.60
266	64.15	267	64.17	268	64.23	269	64.87	270	65.68
271	66.57	272	70.00						

TAP-A OUTPUT (Cont'd)

Drywell 5 Predictions - August 1, 1979

NAL TEMPERATURES AT .174E+08 SECONDS

NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP
1	405.07	2	472.90	3	489.62	4	495.82	5	498.30
6	498.49	7	496.97	8	492.57	9	484.10	10	448.09
11	367.78	12	423.09	13	441.15	14	447.95	15	450.68
16	450.89	17	449.21	18	444.35	19	435.16	20	399.66
21	269.83	22	313.42	23	332.95	24	340.47	25	343.49
26	343.71	27	341.86	28	336.42	29	326.46	30	296.00
31	130.71	32	130.40	33	130.18	34	130.06	35	129.69
36	181.74	37	205.86	38	233.65	39	241.06	40	244.05
41	244.37	42	242.43	43	238.08	44	227.32	45	208.35
46	153.30	47	152.81	48	153.16	49	154.34	50	155.33
51	121.49	52	129.57	53	118.45	54	118.46	55	118.48
56	118.52	57	117.13	58	116.75	59	117.56	60	127.07
61	144.99	62	157.85	63	178.40	64	185.98	65	189.16
66	189.46	67	187.37	68	182.37	69	172.31	70	155.03
71	132.79	72	97.22	73	93.48	74	93.93	75	94.35
76	94.72	77	94.92	78	97.72	79	103.14	80	111.96
81	97.74	82	103.13	83	111.92	84	97.78	85	103.12
86	111.83	87	97.84	88	103.10	89	111.69	90	97.93
91	103.08	92	111.54	93	96.20	94	96.20	95	96.21
96	96.22	97	96.23	98	88.60	99	88.60	100	88.60
101	88.60	102	88.60	103	88.60	104	88.60	105	88.60
106	88.60	107	98.77	108	98.78	109	102.90	110	110.65
111	90.64	112	90.35	113	96.29	114	95.01	115	93.25
116	90.07	117	88.30	118	86.97	122	97.94	123	102.39
124	110.17	125	116.36	126	124.32	127	138.57	128	153.88
129	167.90	130	174.92	131	177.91	132	178.10	133	176.09
134	170.69	135	161.77	136	143.25	137	127.65	138	95.89
139	93.01	140	100.93	141	107.72	142	112.82	143	119.13
144	128.80	145	140.34	146	151.43	147	157.38	148	159.98
149	160.13	150	158.16	151	153.45	152	145.39	153	131.14
154	119.96	155	93.09	156	81.97	157	82.78	158	83.32
159	77.83	160	77.95	161	72.49	162	72.54	163	99.18
164	104.86	165	109.29	166	114.29	167	121.20	168	129.82
169	138.54	170	143.44	171	145.64	172	145.71	173	143.83
174	139.76	175	132.66	176	121.62	177	113.15	178	91.38
179	80.28	180	77.71	181	72.41	182	96.38	183	100.24
184	103.30	185	106.38	186	110.18	187	114.94	188	120.31
189	123.39	190	124.87	191	124.79	192	123.09	193	120.13
194	114.66	195	107.96	196	102.63	197	88.40	198	77.61
199	72.27	200	69.58	201	69.61	202	92.94	203	95.66
204	97.59	205	101.17	206	101.73	207	99.48	208	96.26
209	89.68	210	83.10	211	75.95	212	71.77	213	69.40
214	87.24	215	86.56	216	86.10	217	85.05	218	84.13
219	82.05	220	80.65	221	78.11	222	75.79	223	72.59
224	70.35	225	68.88	226	83.53	227	80.83	228	78.41
229	75.47	230	72.90	231	71.05	232	69.76	233	69.25
234	68.53	235	67.89	236	67.60	237	67.54	238	70.00
239	70.00	240	70.00	241	70.00	242	70.00	243	218.91
244	243.73	245	235.54	246	195.33	247	164.85	248	188.88
249	180.42	250	149.06	251	98.95	252	101.45	254	93.37
255	85.74	256	83.43	258	79.42	259	86.57	260	82.34
261	79.04	262	76.09	263	72.53	264	69.48	265	67.42
266	66.17	267	65.80	268	65.30	269	65.28	270	65.64
271	66.25	272	70.00						

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TAP-A OUTPUT (Cont'd)

Drywell 5 Predictions - September 1, 1979

RNAL TEMPERATURES AT .200E+08 SECONDS

NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP
1	400.74	2	666.80	3	483.34	4	489.57	5	492.05
6	492.20	7	490.60	8	486.10	9	477.60	10	442.18
11	363.96	12	417.75	13	435.61	14	442.45	15	445.18
16	445.34	17	443.59	18	438.62	19	429.38	20	394.45
21	268.04	22	310.43	23	329.77	24	337.33	25	340.36
26	340.53	27	338.59	28	333.04	29	323.02	30	290.98
31	133.13	32	132.83	33	132.60	34	132.48	35	132.06
36	182.33	37	205.80	38	233.24	39	240.71	40	243.72
41	243.99	42	241.96	43	237.51	44	226.67	45	207.85
46	153.88	47	153.34	48	153.64	49	154.73	50	155.67
51	123.24	52	131.93	53	120.03	54	120.03	55	120.03
56	120.04	57	118.50	58	118.07	59	118.90	60	128.62
61	146.34	62	159.09	63	179.61	64	187.25	65	190.44
66	190.69	67	188.51	68	183.40	69	173.26	70	156.01
71	133.97	72	98.64	73	94.83	74	95.27	75	95.67
76	96.03	77	96.23	78	96.08	79	102.76	80	112.91
81	96.09	82	102.74	83	112.85	84	96.12	85	102.71
86	112.73	87	96.18	88	102.66	89	112.55	90	96.25
91	102.61	92	112.36	93	94.13	94	94.13	95	94.12
96	94.12	97	94.11	98	83.24	99	83.24	100	83.24
101	83.24	102	83.24	103	83.23	104	83.24	105	83.24
106	83.24	107	97.25	108	97.21	109	102.30	110	111.27
111	86.45	112	86.12	113	94.04	114	92.48	115	90.38
116	86.40	117	84.55	118	83.33	122	96.13	123	101.72
124	110.76	125	117.55	126	125.76	127	140.00	128	155.30
129	169.41	130	176.51	131	179.51	132	179.65	133	177.56
134	172.03	135	163.02	136	144.50	137	128.98	138	97.32
139	94.38	140	100.03	141	108.04	142	113.68	143	120.36
144	130.23	145	141.94	146	153.22	147	159.27	148	161.90
149	161.99	150	159.93	151	155.11	152	146.94	153	132.63
154	121.43	155	94.51	156	83.05	157	83.88	158	84.43
159	78.82	160	78.93	161	73.14	162	73.19	163	98.02
164	104.87	165	109.87	166	115.30	167	122.50	168	131.40
169	140.38	170	145.39	171	147.63	172	147.66	173	145.68
174	141.50	175	134.29	176	123.17	177	114.66	178	92.79
179	81.33	180	78.71	181	73.06	182	94.93	183	99.85
184	103.54	185	107.09	186	111.30	187	116.46	188	122.20
189	125.41	190	126.94	191	126.83	192	125.03	193	121.99
194	116.38	195	109.61	196	104.21	197	89.82	198	78.63
199	72.92	200	69.89	201	69.91	202	91.94	203	96.13
204	98.80	205	103.39	206	104.10	207	101.72	208	98.34
209	91.47	210	84.62	211	77.01	212	72.42	213	69.69
214	86.54	215	87.27	216	87.56	217	87.62	218	86.89
219	84.70	220	83.10	221	80.17	222	77.48	223	73.71
224	71.00	225	69.15	226	82.54	227	81.38	228	80.09
229	78.10	230	75.85	231	73.87	232	72.19	233	71.41
234	70.27	235	68.99	236	68.18	237	67.71	238	70.00
239	70.00	240	70.00	241	70.00	242	70.00	243	218.57
244	243.32	245	234.94	246	195.02	247	166.02	248	190.08
249	181.43	250	150.09	251	100.59	252	103.82	254	95.30
255	87.66	256	86.22	258	81.69	259	82.91	260	81.28
261	79.49	262	77.64	263	74.99	264	72.23	265	69.99
266	68.32	267	67.67	268	66.74	269	66.05	270	65.89
271	66.10	272	70.00						

Drywell 5 Predictions - October 1, 1979

INAL TEMPERATURES AT .226E+08 SECONDS

NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP
1	395.55	2	460.56	3	477.33	4	483.89	5	486.64
6	486.99	7	485.51	8	481.07	9	472.62	10	437.68
11	358.98	12	411.95	13	430.08	14	437.30	15	440.33
16	440.71	17	439.09	18	434.19	19	425.00	20	390.54
21	264.37	22	306.29	23	325.98	24	333.97	25	337.34
26	337.76	27	335.97	28	330.50	29	320.53	30	288.85
31	132.21	32	131.92	33	131.69	34	131.56	35	131.12
36	180.56	37	203.84	38	231.66	39	239.55	40	242.91
41	243.42	42	241.55	43	237.18	44	226.39	45	207.71
46	154.59	47	154.00	48	154.26	49	155.29	50	156.19
51	121.78	52	130.98	53	118.39	54	118.38	55	118.37
56	118.37	57	116.72	58	116.25	59	117.12	60	127.23
61	145.12	62	158.04	63	179.13	64	187.25	65	190.83
66	191.36	67	189.37	68	184.36	69	174.28	70	157.09
71	135.17	72	99.98	73	96.09	74	96.51	75	96.91
76	97.26	77	97.46	78	91.85	79	99.45	80	110.71
81	91.86	82	99.42	83	110.64	84	91.89	85	99.38
86	110.50	87	91.95	88	99.33	89	110.30	90	92.03
91	99.26	92	110.08	93	89.62	94	89.61	95	89.61
96	89.61	97	89.59	98	76.74	99	76.74	100	76.74
101	76.74	102	76.74	103	76.73	104	76.74	105	76.74
106	76.74	107	93.15	108	93.10	109	98.92	110	108.89
111	80.58	112	80.22	113	89.45	114	87.66	115	85.31
116	80.86	117	78.95	118	77.81	122	91.86	123	98.29
124	108.36	125	115.72	126	124.32	127	138.86	128	154.52
129	169.19	130	176.77	131	180.16	132	180.60	133	178.68
134	173.26	135	164.30	136	145.79	137	130.29	138	98.66
139	95.65	140	96.42	141	105.44	142	111.62	143	118.76
144	129.05	145	141.23	146	153.12	147	159.65	148	162.67
149	163.06	150	161.19	151	156.47	152	148.34	153	134.02
154	122.79	155	95.80	156	84.09	157	84.93	158	85.49
159	79.82	160	79.92	161	73.88	162	73.93	163	94.19
164	102.03	165	107.58	166	113.48	167	121.13	168	130.54
169	140.14	170	145.60	171	148.23	172	148.54	173	146.78
174	142.71	175	135.56	176	124.47	177	115.95	178	94.05
179	82.35	180	79.71	181	73.81	182	90.86	183	96.66
184	100.93	185	104.96	186	109.66	187	115.34	188	121.75
189	125.34	190	127.28	191	127.45	192	125.88	193	122.97
194	117.46	195	110.75	196	105.38	197	91.02	198	79.64
199	73.67	200	70.30	201	70.33	202	88.27	203	93.77
204	97.21	205	103.21	206	104.48	207	102.74	208	99.49
209	92.72	210	85.90	211	78.07	212	73.17	213	70.11
214	83.13	215	85.13	216	86.20	217	87.74	218	87.63
219	86.08	220	84.58	221	81.69	222	78.93	223	74.84
224	71.77	225	69.55	226	78.90	227	79.11	228	78.98
229	78.28	230	76.97	231	75.45	232	73.89	233	73.06
234	71.82	235	70.15	236	68.92	237	68.05	238	70.00
239	70.00	240	70.00	241	70.00	242	70.00	243	216.62
244	242.82	245	234.62	246	195.02	247	165.05	248	190.81
249	182.40	250	151.20	251	99.54	252	104.52	254	96.54
255	86.86	256	87.28	258	83.23	259	77.37	260	77.59
261	77.14	262	76.43	263	75.05	264	73.20	265	71.41
266	69.83	267	69.11	268	68.05	269	66.95	270	66.36
271	66.16	272	70.00						

TAP-A OUTPUT (Cont'd)

Drywell 5 Predictions - November 1, 1979

RNAL TEMPERATURES AT .253E+08 SECONDS

NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP
1	388.19	2	452.20	3	469.33	4	476.35	5	479.51
6	480.21	7	478.99	8	474.77	9	466.52	10	432.29
11	351.61	12	403.81	13	422.40	14	430.13	15	433.62
16	434.39	17	433.05	18	428.39	19	419.44	20	385.68
21	257.96	22	299.57	23	319.84	24	328.43	25	332.32
26	333.18	27	331.70	28	326.50	29	316.78	30	285.70
31	128.48	32	128.19	33	127.96	34	127.83	35	127.34
36	176.06	37	199.29	38	227.78	39	236.28	40	240.15
41	241.09	42	239.55	43	235.42	44	224.91	45	206.55
46	154.49	47	153.89	48	154.13	49	155.10	50	155.96
51	117.19	52	127.19	53	113.54	54	113.51	55	113.48
56	113.45	57	111.60	58	111.06	59	112.00	60	122.72
61	140.92	62	154.12	63	176.06	64	184.87	65	189.03
66	190.05	67	188.44	68	183.73	69	173.95	70	157.07
71	135.51	72	100.85	73	96.97	74	97.39	75	97.79
76	98.13	77	98.31	78	82.29	79	91.76	80	104.97
81	82.28	82	91.71	83	104.87	84	82.28	85	91.63
86	104.70	87	82.32	88	91.53	89	104.44	90	82.35
91	91.40	92	104.16	93	79.41	94	79.39	95	79.36
96	79.33	97	79.26	98	59.68	99	59.68	100	59.68
101	59.68	102	59.67	103	59.67	104	59.67	105	59.67
106	59.67	107	83.54	108	83.41	109	90.81	110	102.68
111	65.93	112	65.49	113	78.51	114	76.14	115	73.16
116	67.28	117	6[illegible].22	118	64.28	122	81.74	123	90.07
124	102.11	125	110.48	126	119.73	127	134.72	128	150.90
129	166.37	130	174.64	131	178.63	132	179.56	133	178.02
134	172.92	135	164.23	136	146.03	137	130.75	138	99.55
139	96.54	140	87.82	141	98.85	142	106.01	143	113.93
144	124.86	145	137.75	146	150.52	147	157.73	148	161.35
149	162.23	150	160.75	151	156.34	152	148.48	153	134.41
154	123.33	155	96.70	156	84.99	157	85.83	158	86.39
159	80.74	160	80.85	161	74.70	162	74.75	163	85.17
164	95.05	165	101.65	166	108.41	167	116.80	168	127.00
169	137.54	170	143.66	171	146.89	172	147.71	173	146.34
174	142.58	175	135.71	176	124.86	177	116.48	178	94.92
179	83.25	180	80.64	181	74.62	182	81.37	183	89.12
184	94.57	185	99.53	186	105.09	187	111.68	188	119.14
189	123.33	190	125.91	191	126.58	192	125.45	193	122.81
194	117.61	195	111.13	196	105.90	197	91.87	198	80.58
199	74.49	200	70.86	201	70.89	202	79.69	203	87.90
204	92.76	205	101.06	206	103.24	207	102.64	208	99.71
209	93.37	210	86.81	211	79.04	212	74.00	213	70.67
214	75.03	215	79.56	216	82.01	217	85.89	218	86.71
219	86.31	220	85.09	221	82.55	222	79.98	223	75.86
224	72.60	225	70.10	226	70.30	227	73.26	228	75.16
229	76.44	230	76.54	231	75.86	232	74.77	233	74.05
234	72.96	235	71.20	236	69.74	237	68.54	238	70.00
239	70.00	240	70.00	241	70.00	242	70.00	243	212.16
244	240.61	245	232.94	246	194.09	247	161.28	248	189.62
249	181.84	250	151.28	251	96.00	252	103.79	254	97.01
255	83.58	256	86.88	258	83.97	259	63.82	260	68.94
261	71.22	262	72.54	263	73.12	264	72.66	265	71.[illegible]9
266	70.56	267	69.94	268	69.02	269	67.80	270	66.95
271	66.41	272	70.00						

TAP-A OUTPUT (Cont'd)

Drywell 5 Predictions - December 1, 1979

NAL TEMPERATURES AT .279E+08 SECONDS

NODE	TEMP	NODE	TEMP	NODE.	TEMP	NODE	TEMP	NODE	TEMP
1	375.84	2	439.59	3	457.46	4	465.32	5	469.24
6	470.61	7	469.89	8	466.10	9	458.24	10	424.99
11	338.94	12	391.20	13	410.67	14	419.36	15	423.70
16	425.21	17	424.42	18	420.23	19	411.70	20	378.92
21	246.73	22	288.29	23	309.67	24	319.36	25	324.22
26	325.91	27	325.05	28	320.38	29	311.11	30	280.90
31	120.17	32	119.88	33	119.65	34	119.50	35	118.96
36	167.13	37	190.51	38	220.32	39	229.93	40	234.77
41	236.51	42	235.63	43	231.97	44	221.97	45	204.11
46	153.42	47	152.82	48	153.03	49	153.95	50	154.76
51	107.69	52	118.79	53	103.63	54	103.60	55	103.56
56	103.52	57	101.43	58	100.81	59	101.84	60	113.40
61	132.13	62	145.82	63	169.25	64	179.28	65	184.53
66	186.46	67	185.60	68	181.47	69	172.26	70	155.89
71	13..89	72	101.04	73	97.21	74	97.63	75	98.01
76	98.35	77	98.53	78	67.66	79	78.67	80	93.98
81	67.64	82	78.61	83	93.86	84	67.64	85	78.51
86	93.66	87	67.66	88	78.39	89	93.37	90	67.69
91	78.23	92	93.04	93	64.35	94	64.32	95	64.28
96	64.25	97	64.18	98	39.68	99	39.68	100	39.68
101	39.68	102	39.68	103	39.67	104	39.67	105	39.67
106	39.67	107	68.90	108	68.75	109	77.50	110	91.31
111	47.32	112	46.80	113	62.87	114	59.90	115	56.30
116	49.35	117	47.14	118	46.34	122	66.76	123	76.67
124	90.71	125	100.21	126	110.31	127	126.00	128	143.04
129	159.86	130	169.35	131	174.44	132	176.32	133	175.50
134	171.02	135	162.83	136	145.17	137	130.25	138	99.76
139	96.78	140	74.05	141	87.11	142	95.38	143	104.27
144	116.09	145	130.04	146	144.25	147	152.66	148	157.39
149	159.21	150	158.49	151	154.67	152	147.34	153	133.72
154	122.91	155	96.92	156	85.44	157	86.28	158	86.83
159	81.33	160	81.43	161	75.39	162	75.44	163	70.98
164	82.88	165	90.65	166	98.45	167	107.84	168	119.21
169	131.36	170	138.54	171	142.89	172	144.64	173	144.06
174	140.87	175	134.55	176	124.15	177	116.03	178	95.11
179	83.74	180	81.22	181	75.32	182	66.70	183	76.36
184	83.11	185	89.14	186	95.84	187	103.70	188	112.84
189	118.05	190	121.81	191	123.42	192	123.12	193	121.01
194	116.41	195	110.36	196	105.39	197	92.02	198	81.15
199	75.19	200	71.47	201	71.50	202	65.87	203	77.01
204	83.65	205	95.37	206	99.17	207	100.74	208	98.45
209	92.98	210	87.01	211	79.64	212	74.70	213	71.27
214	61.62	215	68.93	216	73.13	217	80.48	218	82.95
219	84.73	220	84.13	221	82.39	222	80.33	223	76.53
224	73.32	225	70.70	226	56.35	227	62.25	228	66.71
229	70.97	230	73.52	231	74.47	232	74.40	233	74.03
234	73.41	235	71.92	236	70.46	237	69.11	238	70.00
239	70.00	240	70.00	241	70.00	242	70.00	243	203.66
244	236.29	245	229.64	246	191.96	247	153.26	248	186.28
249	179.71	250	150.26	251	88.17	252	100.68	254	96.26
255	75.98	256	84.09	258	83.50	259	45.87	260	54.94
261	60.16	262	64.02	263	67.57	264	69.56	265	70.20
266	70.09	267	69.80	268	69.33	269	68.35	270	67.49
271	66.78	272	70.00						

TAP-A OUTPUT (Cont'd)

Drywell 5 Predictions - January 1, 1980

RNAL TEMPERATURES AT .306E+08 SECONDS

NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP
1	359.76	2	424.70	3	443.05	4	451.57	5	456.21
6	458.32	7	458.22	8	455.08	9	447.86	10	415.94
11	322.39	12	376.10	13	396.19	14	405.64	15	410.78
16	413.13	17	413.03	18	409.55	19	401.70	20	370.27
21	232.85	22	274.36	23	296.53	24	307.12	25	312.90
26	315.53	27	315.45	28	311.56	29	303.[illegible]	30	274.05
31	108.72	32	108.44	33	108.23	34	108.09	35	107.58
36	155.72	37	179.27	38	210.04	39	220.54	40	226.[illegible]
41	228.92	42	228.87	43	225.89	44	216.71	45	199.63
46	150.62	47	150.05	48	150.26	49	151.13	50	151.91
51	96.44	52	107.41	53	92.33	54	92.31	55	92.30
56	92.30	57	90.28	58	89.70	59	90.74	60	102.45
61	121.27	62	135.12	63	159.39	64	170.35	65	176.62
66	179.55	67	179.61	68	176.32	69	168.01	70	152.54
71	132.46	72	100.01	73	96.38	74	96.79	75	97.17
76	97.49	77	97.67	78	57.98	79	68.07	80	82.85
81	57.99	82	68.04	83	82.76	84	58.03	85	68.00
86	82.59	87	58.11	88	67.93	89	82.35	90	58.20
91	67.86	92	82.08	93	55.11	94	55.10	95	55.11
96	55.11	97	55.10	98	35.81	99	35.81	100	35.81
101	35.81	102	35.81	103	35.80	104	35.81	105	35.81
106	35.80	107	59.54	108	59.51	109	67.45	110	80.57
111	41.34	112	40.89	113	54.45	114	51.79	115	48.57
116	42.64	117	40.55	118	39.64	122	57.82	123	66.69
124	80.02	125	89.30	126	99.52	127	115.37	128	132.71
129	150.31	130	160.74	131	166.84	132	169.77	133	169.85
134	166.26	135	158.90	136	142.22	137	127.95	138	98.78
139	95.93	140	64.30	141	76.66	142	84.80	143	93.73
144	105.76	145	120.07	146	135.10	147	144.41	148	150.17
149	153.02	150	153.22	151	150.26	152	143.76	153	131.01
154	120.73	155	96.01	156	85.24	157	86.04	158	86.57
159	81.39	160	81.49	161	75.87	162	75.91	163	61.48
164	72.67	165	80.31	166	88.12	167	97.70	168	109.46
169	122.33	170	130.46	171	135.86	172	138.62	173	138.99
174	136.62	175	131.15	176	121.53	177	113.90	178	94.21
179	83.62	180	81.27	181	75.79	182	57.52	183	66.49
184	73.09	185	79.10	186	86.00	187	94.24	188	104.23
189	110.19	190	115.03	191	117.62	192	118.34	193	116.94
194	113.23	195	107.87	196	103.35	197	91.13	198	81.17
199	75.66	200	72.08	201	72.11	202	56.58	203	67.37
204	74.30	205	87.54	206	92.71	207	96.67	208	95.29
209	91.14	210	86.[illegible]	211	79.70	212	75.18	213	71.88
214	52.31	215	59.45	216	64.01	217	73.00	218	76.89
219	81.04	220	81.31	221	80.80	222	79.64	223	76.64
224	73.81	225	71.31	226	47.21	227	52.88	228	57.83
229	63.58	230	68.20	231	70.99	232	72.37	233	72.59
234	72.83	235	72.08	236	70.96	237	69.70	239	70.00
239	70.00	240	70.00	241	70.00	242	70.00	24[illegible]	192.67
244	229.01	245	223.80	246	187.92	247	142.70	248	179.66
249	174.76	250	147.17	251	79.26	252	95.18	254	93.84
255	67.37	256	78.97	258	81.38	259	39.15	260	45.78
261	50.75	262	55.09	263	60.12	264	64.18	265	66.66
266	67.98	267	68.28	268	68.65	269	68.39	270	67.84
271	67.19	272	70.00						

Drywell 5 Predictions - February 1, 1980

:NAL TEMPERATURES AT .333E+08 SECONDS

NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP
1	349.84	2	415.61	3	433.80	4	442.23	5	446.93
6	449.25	7	449.43	8	446.68	9	439.92	10	409.01
11	312.24	12	366.91	13	386.87	14	396.24	15	401.47
16	404.05	17	404.25	18	401.20	19	393.85	20	363.43
21	224.45	22	265.94	23	288.01	24	298.55	25	304.43
26	307.34	27	307.58	28	304.16	29	296.16	30	268.09
31	101.13	32	100.88	33	100.69	34	100.58	35	100.23
36	148.94	37	172.62	38	203.32	39	213.76	40	219.62
41	222.48	42	222.78	43	220.20	44	211.61	45	195.11
46	147.24	47	146.71	48	146.93	49	147.78	50	148.53
51	90.62	52	100.09	53	86.96	54	86.98	55	87.01
56	87.06	57	85.39	58	84.92	59	85.91	60	97.04
61	115.52	62	129.13	63	152.96	64	163.80	65	170.16
66	173.35	67	173.80	68	171.00	69	163.33	70	148.56
71	129.23	72	97.99	73	94.56	74	94.97	75	95.34
76	95.66	77	95.83	78	58.51	79	66.54	80	78.84
81	58.54	82	66.54	83	78.78	84	58.60	85	66.53
86	78.68	87	58.70	88	66.53	89	78.51	9[illegible]	58.83
91	66.52	92	78.33	93	56.30	94	56.32	9	56.34
96	56.36	97	56.39	98	43.50	99	43.50	100	43.50
101	43.50	102	43.50	103	43.50	104	43.50	105	43.50
106	43.50	107	60.11	108	60.14	109	66.40	110	77.23
111	46.95	112	46.60	113	56.37	114	54.35	115	51.87
116	47.46	117	45.63	118	44.61	122	58.89	123	65.80
124	76.79	125	84.84	126	94.48	127	109.93	128	126.87
129	144.10	130	154.39	131	160.59	132	163.79	133	164.24
134	161.18	135	154.41	136	138.52	137	124.80	138	96.81
139	94.10	140	63.88	141	74.01	142	81.13	143	89.32
144	100.81	145	114.60	146	129.18	147	138.34	148	144.18
149	147.29	150	147.89	151	145.42	152	139.52	153	127.46
154	117.66	155	94.11	156	84.25	157	85.00	158	85.50
159	80.74	160	80.85	161	75.91	162	75.96	163	61.60
164	70.66	165	77.24	166	84.22	167	93.17	168	104.29
169	116.63	170	126.58	171	130.03	172	133.05	173	133.82
174	131.91	175	127.04	176	118.06	177	110.87	178	92.33
179	82.74	180	80.61	181	75.84	182	58.31	183	65.37
184	70.83	185	75.96	186	82.08	187	89.57	188	98.87
189	104.61	190	109.48	191	112.30	192	113.42	193	112.42
194	109.33	195	104.51	196	100.40	197	89.26	198	80.48
199	75.71	200	72.55	201	72.58	202	56.93	203	65.26
204	70.97	205	82.62	206	87.72	207	92.36	208	91.56
209	88.43	210	84.38	211	79.04	212	75.24	213	72.35
214	52.59	215	57.60	216	61.07	217	68.57	218	72.38
219	77.16	220	77.94	221	78.35	222	77.99	223	76.04
224	73.89	225	71.77	226	48.14	227	51.56	228	54.94
229	59.53	230	64.00	231	67.36	232	69.59	233	70.32
234	71.31	235	71.54	236	71.05	237	70.15	238	70.00
239	70.00	240	70.00	241	70.00	242	70.00	243	186.08
244	222.71	245	218.27	246	183.71	247	136.60	248	173.59
249	169.58	250	143.41	251	75.23	252	90.33	254	90.60
255	63.79	256	74.59	258	78.46	259	44.13	260	46.72
261	49.44	262	52.21	263	56.07	264	59.96	265	62.99
266	65.15	267	65.94	268	67.06	269	67.75	270	67.81
271	67.50	272	70.00						

TAP-A OUTPUT (Cont'd)

Drywell 5 Predictions - March 1, 1980

NAL TEMPERATURES AT .358E+08 SECONDS

NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP
1	345.18	2	410.40	3	427.93	4	435.88	5	440.24
6	442.34	7	442.44	8	439.72	9	433.13	10	402.89
11	307.81	12	362.03	13	381.26	14	390.09	15	394.94
16	397.28	17	397.39	18	394.38	19	387.19	20	357.43
21	221.67	22	262.28	23	283.54	24	293.48	25	298.94
26	301.58	27	301.72	28	298.33	29	290.49	30	262.98
31	100.32	32	100.09	33	99.92	34	99.82	35	99.54
36	147.63	37	170.84	38	200.50	39	210.35	40	215.78
41	218.38	42	218.56	43	215.99	44	207.56	45	191.39
46	144.38	47	143.88	48	144.09	49	144.91	50	145.65
51	90.98	52	99.42	53	87.68	54	87.70	55	87.75
56	87.82	57	86.37	58	85.98	59	86.89	60	97.31
61	115.10	62	128.16	63	150.83	64	160.97	65	166.83
66	169.72	67	170.03	68	167.26	69	159.77	70	145.37
71	126.52	72	96.04	73	92.74	74	93.14	75	93.51
76	93.82	77	93.99	78	63.26	79	69.95	80	80.51
81	63.30	82	69.96	83	80.47	84	63.36	85	69.97
86	80.39	87	63.47	88	69.98	89	80.26	90	63.60
91	70.00	92	80.13	93	61.46	94	61.48	95	61.51
96	61.54	97	61.58	98	52.20	99	52.20	100	52.20
101	52.20	102	52.20	103	52.20	104	52.20	105	52.20
106	52.20	107	64.78	108	64.84	109	70.01	110	79.26
111	54.60	112	54.31	113	61.83	114	60.21	115	58.17
116	54.67	117	53.02	118	51.96	122	63.84	123	69.49
124	78.87	125	85.98	126	94.95	127	109.70	128	125.87
129	142.14	130	151.74	131	157.44	132	160.32	133	160.65
134	157.62	135	151.02	136	135.52	137	122.16	138	94.88
139	92.28	140	67.86	141	76.42	142	82.68	143	90.14
144	100.91	145	113.87	146	127.48	147	135.96	148	141.30
149	144.09	150	144.55	151	142.11	152	136.37	153	124.63
154	115.10	155	92.25	156	83.03	157	83.75	158	84.23
159	79.77	160	79.89	161	75.59	162	75.64	163	65.90
164	73.43	165	79.13	166	85.34	167	93.53	168	103.78
169	115.12	170	122.41	171	127.35	172	130.04	173	130.67
174	128.78	175	124.05	176	115.35	177	108.39	178	90.48
179	81.60	180	79.63	181	75.52	182	63.01	183	68.66
184	73.18	185	77.52	186	82.83	187	89.43	188	97.64
189	102.78	190	107.11	191	109.59	192	110.55	193	109.55
194	106.58	195	101.95	196	98.04	197	87.44	198	79.48
199	75.39	200	72.76	201	72.79	202	61.21	203	67.50
204	72.01	205	81.50	206	85.83	207	89.85	208	89.11
209	86.27	210	82.62	211	78.05	212	74.92	213	72.56
214	56.84	215	60.03	216	62.39	217	67.82	218	70.86
219	74.97	220	75.77	221	76.37	222	76.33	223	75.09
224	73.59	225	71.99	226	52.91	227	54.47	228	56.28
229	59.16	230	62.48	231	65.36	232	67.60	233	68.49
234	69.76	235	70.65	236	70.77	237	70.36	238	70.00
239	70.00	240	70.00	241	70.00	242	70.00	243	183.97
244	218.55	245	214.10	246	180.19	247	135.35	248	169.91
249	165.87	250	140.34	251	75.44	252	88.07	254	88.23
255	64.32	256	72.70	258	76.33	259	51.49	260	51.51
261	52.38	262	53.58	263	55.73	264	58.45	265	60.99
266	63.14	267	64.09	268	65.47	269	66.80	270	67.44
271	67.60	272	70.00						

TAP-A OUTPUT (Cont'd)

Drywell 5 Predictions - April 1, 1980

ɁNAL TEMPERATURES AT .384E+08 SECONDS

NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP
1	340.79	2	405.22	3	421.97	4	429.32	5	433.20
6	434.91	7	434.75	8	431.87	9	425.25	10	395.61
11	304.41	12	357.58	13	375.92	14	384.10	15	388.42
16	390.32	17	390.14	18	386.94	19	379.71	20	350.51
21	220.64	22	259.91	23	280.15	24	289.35	25	294.21
26	296.35	27	296.16	28	292.55	29	284.64	30	257.55
31	102.60	32	102.39	33	102.22	34	102.14	35	101.92
36	148.64	37	171.08	38	199.39	39	208.49	40	213.33
41	215.45	42	215.28	43	212.51	44	203.99	45	187.99
46	141.92	47	141.40	48	141.59	49	142.35	50	143.06
51	94.17	52	101.81	53	91.17	54	91.20	55	91.25
56	91.32	57	90.03	58	89.69	59	90.54	60	100.26
61	117.25	62	129.69	63	151.04	64	160.33	65	165.50
66	167.84	67	167.76	68	164.75	69	157.16	70	142.89
71	124.35	72	94.35	73	91.08	74	91.47	75	91.83
76	92.16	77	92.31	78	69.92	79	75.55	80	84.76
81	69.95	82	75.57	83	84.73	84	70.01	85	75.58
86	84.67	87	70.11	88	75.60	89	84.56	90	70.23
91	75.63	92	84.46	93	68.43	94	68.45	95	68.47
96	68.51	97	68.55	98	61.50	99	61.50	100	61.50
101	61.50	102	61.50	103	61.50	104	61.50	105	61.50
106	61.50	107	71.23	108	71.29	109	75.65	110	83.71
111	63.12	112	62.86	113	68.78	114	67.41	115	65.66
116	62.83	117	61.32	118	60.23	122	70.46	123	75.19
124	83.35	125	89.72	126	98.03	127	112.05	128	127.37
129	142.59	130	151.36	131	156.36	132	158.68	133	158.63
134	155.35	135	148.65	136	133.27	137	120.10	138	93.22
139	90.63	140	73.73	141	81.08	142	86.63	143	93.42
144	103.50	145	115.62	146	128.19	147	135.87	148	140.50
149	142.74	150	142.80	151	140.11	152	134.26	153	122.58
154	113.16	155	90.60	156	81.74	157	82.44	158	82.90
159	78.66	160	78.78	161	75.00	162	75.05	163	71.96
164	78.29	165	83.25	166	88.77	167	96.25	168	105.66
169	115.94	170	122.45	171	126.68	172	128.81	173	129.03
174	126.90	175	122.06	176	113.37	177	106.50	178	88.84
179	80.37	180	78.52	181	74.93	182	69.25	183	73.80
184	77.52	185	81.19	186	85.76	187	91.50	188	98.59
189	103.04	190	106.62	191	108.55	192	109.06	193	107.85
194	104.73	195	100.10	196	96.23	197	85.81	198	78.35
199	74.80	200	72.72	201	72.75	202	67.08	203	71.67
204	75.10	205	82.48	206	85.83	207	88.65	208	87.68
209	84.70	210	81.09	211	76.96	212	74.34	213	72.53
214	62.08	215	64.37	216	65.76	217	69.21	218	71.29
219	74.18	220	74.72	221	75.08	222	74.98	223	74.07
224	73.04	225	71.95	226	59.17	227	59.20	228	59.66
229	60.91	230	62.82	231	64.80	232	66.56	233	67.37
234	68.55	235	69.71	236	70.25	237	70.32	238	70.00
239	70.00	240	70.00	241	70.00	242	70.00	243	183.72
244	215.49	245	210.57	246	176.96	247	136.53	248	167.90
249	163.33	250	137.93	251	77.75	252	87.50	254	86.66
255	66.96	256	72.58	258	75.08	259	59.78	260	57.81
261	57.16	262	57.00	263	57.52	264	58.84	265	60.46
266	62.11	267	62.97	268	64.24	269	65.81	270	66.85
271	67.48	272	70.00						

TAP-A OUTPUT (Cont'd)

Drywell 5 Predictions - May 1, 1980

NAL TEMPERATURES AT .410E+08 SECONDS

NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP
1	337.74	2	400.96	3	416.88	4	423.65	5	427.04
6	428.33	7	427.87	8	424.77	9	418.07	10	388.85
11	302.33	12	354.15	13	371.55	14	379.06	15	382.84
16	384.27	17	383.76	18	380.32	19	372.99	20	344.20
21	220.84	22	25[illegible].64	23	277.80	24	286.24	25	290.49
26	292.10	27	291.54	28	287.65	29	279.61	30	252.88
31	106.32	32	106.12	33	105.96	34	105.89	35	105.69
36	150.81	37	172.38	38	199.25	39	207.61	40	211.83
41	213.45	42	212.87	43	209.85	44	201.17	45	185.30
46	140.12	47	139.58	48	139.74	49	140.45	50	141.12
51	98.54	52	105.59	53	95.77	54	95.80	55	95.85
56	95.92	57	94.74	58	94.44	59	95.22	60	104.28
61	120.46	62	132.27	63	152.29	64	160.74	65	165.20
66	166.97	67	166.45	68	163.13	69	155.38	70	141.17
71	122.89	72	93.26	73	89.99	74	90.37	75	90.72
76	91.02	77	91.18	78	76.93	79	81.76	80	89.93
81	76.97	82	81.78	83	89.91	84	77.02	85	81.79
86	89.85	87	77.11	88	81.82	89	89.76	90	77.23
91	81.85	92	89.67	93	75.68	94	75.71	95	75.73
96	75.76	97	75.81	98	70.50	99	70.50	100	70.50
101	70.50	102	70.50	103	70.50	104	70.50	105	70.50
106	70.50	107	78.07	108	78.14	109	81.87	110	89.01
111	71.53	112	71.30	113	76.01	114	74.83	115	73.28
116	70.94	117	69.54	118	68.44	122	77.44	123	81.46
124	88.67	125	94.43	126	102.14	127	115.42	128	129.90
129	144.07	130	152.02	131	156.31	132	158.04	133	157.56
134	153.96	135	147.10	136	131.77	137	118.74	138	92.15
139	89.57	140	80.11	141	86.51	142	91.47	143	97.68
144	107.09	145	118.40	146	129.97	147	136.86	148	140.79
149	142.44	150	142.05	151	139.05	152	133.01	153	121.30
154	111.95	155	89.56	156	80.81	157	81.49	158	81.95
159	77.80	160	77.92	161	74.40	162	74.44	163	78.45
164	83.85	165	88.20	166	93.14	167	99.98	168	108.60
169	117.89	170	123.65	171	127.17	172	128.72	173	128.47
174	126.05	175	120.99	176	112.24	177	105.39	178	87.81
179	79.47	180	77.66	181	74.33	182	75.91	183	79.57
184	82.64	185	85.74	186	89.68	187	94.67	188	100.77
189	104.57	190	107.41	191	108.77	192	108.79	193	107.30
194	103.93	195	99.18	196	95.29	197	84.82	198	77.50
199	74.21	200	72.48	201	72.51	202	73.40	203	76.63
204	79.17	205	84.74	206	87.15	207	88.68	208	87.38
209	84.02	210	80.23	211	76.15	212	73.76	213	72.29
214	68.99	215	69.48	216	70.07	217	71.85	218	73.03
219	74.63	220	74.78	221	74.67	222	74.29	223	73.33
224	72.48	225	71.72	226	65.81	227	64.63	228	63.98
229	63.85	230	64.47	231	65.47	232	66.56	233	67.14
234	68.00	235	69.05	236	69.73	237	70.09	238	70.00
239	70.00	240	70.00	241	70.00	242	70.00	243	184.48
244	213.33	245	207.85	246	174.42	247	138.75	248	166.88
249	161.67	250	136.28	251	81.16	252	88.25	254	86.11
255	70.67	256	73.76	258	74.85	259	67.99	260	64.48
261	62.63	262	61.38	263	60.52	264	60.53	265	61.17
266	62.14	267	62.76	268	63.69	269	65.14	270	66.29
271	67.19	272	70.00						

TAP-A OUTPUT (Cont'd)

Drywell 5 Predictions - June 1, 1980

IAL TEMPERATURES AT .437E+08 SECONDS

NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP
1	337.10	2	398.84	3	414.01	4	420.22	5	423.14
6	424.00	7	423.21	8	419.85	9	412.98	10	383.27
11	302.46	12	352.85	13	369.39	14	376.28	15	379.51
16	380.47	17	379.60	18	375.86	19	368.34	20	339.15
21	222.74	22	259.25	23	277.40	24	285.13	25	288.77
26	289.83	27	288.87	28	284.64	29	276.39	30	249.82
31	111.13	32	110.93	33	110.78	34	110.71	35	110.53
36	154.25	37	175.03	38	200.59	39	208.22	40	211.84
41	212.94	42	211.94	43	208.61	44	199.67	45	183.82
46	139.26	47	138.69	48	138.83	49	139.50	50	140.13
51	103.88	52	110.44	53	101.31	54	101.34	55	101.39
56	101.46	57	100.38	58	10[illegible].10	59	100.82	60	109.30
61	124.79	62	136.05	63	154.88	64	162.53	65	166.31
66	167.49	67	166.49	68	162.82	69	154.80	70	140.52
71	122.33	72	92.83	73	89.51	74	89.87	75	90.21
76	90.50	77	90.66	78	84.58	79	88.69	80	95.97
81	84.61	82	88.71	83	95.95	84	84.66	85	88.73
86	95.90	87	84.74	88	86.75	89	95.82	90	84.85
91	88.78	92	95.74	93	83.54	94	83.56	95	83.59
96	83.62	97	83.66	98	79.80	99	79.80	100	79.80
101	79.80	102	79.80	103	79.80	104	79.80	105	79.80
106	79.80	107	85.54	108	85.61	109	88.80	110	95.15
111	80.32	112	80.10	113	83.81	114	82.77	115	81.39
116	79.47	117	78.16	118	77.04	122	85.02	123	88.42
124	94.81	125	100.05	126	107.24	127	119.88	128	133.61
129	146.84	130	154.01	131	157.62	132	158.74	133	157.80
134	153.82	135	146.71	136	131.27	137	118.27	138	91.72
139	89.11	140	87.17	141	92.74	142	97.19	143	102.87
144	111.70	145	122.30	146	132.96	147	139.10	148	142.34
149	143.40	150	142.53	151	139.16	152	132.84	153	120.99
154	111.60	155	89.13	156	80.28	157	80.96	158	81.41
159	77.27	160	77.38	161	73.89	162	73.94	163	85.61
164	90.18	165	93.99	166	98.41	167	104.68	168	112.60
169	120.98	170	128.04	171	128.66	172	129.82	173	129.08
174	126.30	175	120.94	176	112.03	177	105.12	178	87.40
179	78.94	180	77.13	181	73.83	182	83.17	183	86.05
184	88.55	185	91.15	186	94.52	187	98.83	188	104.01
189	107.19	190	109.31	191	110.09	192	109.57	193	107.78
194	104.06	195	99.13	196	95.14	197	84.45	198	76.98
199	73.71	200	72.13	201	72.15	202	80.35	203	82.36
204	84.10	205	88.00	206	89.49	207	89.69	208	87.99
209	84.10	210	79.97	211	75.67	212	73.27	213	71.94
214	75.93	215	75.34	216	75.22	217	75.45	218	75.75
219	76.02	220	75.73	221	75.00	222	74.20	223	72.94
224	72.02	225	71.37	226	73.04	227	70.78	228	69.15
229	67.74	230	67.10	231	67.09	232	67.40	233	67.66
234	68.06	235	68.75	236	69.31	237	69.76	238	70.00
239	70.00	240	70.00	241	70.00	242	70.00	243	186.64
244	212.65	245	206.52	246	173.03	247	142.22	248	167.25
249	161.29	250	135.64	251	85.49	252	90.02	254	86.39
255	75.26	256	75.92	258	75.44	259	76.61	260	71.75
261	68.83	262	66.60	263	64.47	264	63.22	265	62.85
266	63.03	267	63.32	268	63.79	269	64.83	270	65.86
271	66.81	272	70.00						

Drywell 5 Predictions - July 1, 1980

RNAL TEMPERATURES AT .463E+08 SECONDS

NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP
1	337.03	2	397.18	3	411.62	4	417.30	5	419.76
6	420.21	7	419.12	8	415.50	9	408.46	10	378.36
11	303.11	12	352.01	13	367.72	14	374.01	15	376.74
16	377.24	17	376.03	18	372.00	19	364.29	20	334.81
21	225.11	22	260.31	23	277.49	24	284.53	25	287.60
26	288.15	27	286.79	28	282.24	29	273.78	30	247.37
31	116.37	32	116.18	33	116.03	34	115.97	35	115.80
36	158.08	37	178.08	38	202.33	39	209.29	40	212.33
41	212.95	42	211.53	43	207.91	44	198.73	45	182.90
46	138.95	47	138.35	48	138.46	49	139.10	50	139.69
51	109.57	52	115.71	53	107.17	54	107.20	55	107.25
56	107.31	57	106.30	58	106.04	59	106.72	60	114.65
61	129.46	62	140.18	63	157.86	64	164.77	65	167.89
66	168.53	67	167.08	68	163.06	69	154.78	70	140.44
71	122.34	72	92.96	73	89.58	74	89.93	75	90.26
76	90.55	77	90.70	78	92.24	79	95.74	80	102.24
81	92.27	82	95.75	83	102.23	84	92.32	85	95.77
86	102.18	87	92.39	88	95.79	89	102.11	90	92.48
91	95.82	92	102.04	93	91.38	94	91.40	95	91.43
96	91.46	97	91.50	98	88.80	99	88.80	100	88.80
101	88.80	102	88.80	103	88.80	104	88.80	105	88.80
106	88.80	107	93.04	108	93.11	109	95.83	110	101.50
111	88.90	112	88.70	113	91.58	114	90.66	115	89.41
116	87.82	117	86.59	118	85.45	122	92.62	123	95.47
124	101.17	125	105.95	126	112.64	127	124.66	128	137.68
129	149.99	130	156.43	131	159.40	132	159.95	133	158.57
134	154.22	135	146.86	136	131.36	137	118.37	138	91.86
139	89.21	140	94.31	141	99.17	142	103.15	143	108.37
144	116.64	145	126.56	146	136.35	147	141.80	148	144.40
149	144.89	150	143.56	151	139.84	152	133.25	153	121.25
154	111.83	155	89.28	156	80.20	157	80.89	158	81.34
159	77.13	160	77.24	161	73.60	162	73.64	163	92.83
164	96.68	165	100.02	166	103.98	167	109.73	168	116.99
169	124.54	170	128.94	171	131.13	172	131.53	173	130.31
174	127.18	175	121.53	176	112.45	177	105.46	178	87.57
179	78.85	180	77.01	181	73.54	182	90.47	183	92.68
184	94.69	185	96.85	186	99.72	187	103.43	188	107.78
189	110.42	190	111.88	191	112.11	192	111.08	193	108.98
194	104.91	195	99.77	196	95.66	197	84.66	198	76.87
199	73.42	200	71.79	201	71.81	202	87.37	203	88.34
204	89.40	205	91.83	206	92.49	207	91.42	208	89.30
209	84.84	210	80.30	211	75.60	212	72.99	213	71.59
214	82.92	215	81.42	216	80.68	217	79.56	218	79.06
219	78.07	220	77.33	221	75.96	222	74.68	223	72.94
224	71.77	225	71.04	226	80.28	227	77.10	228	74.62
229	72.09	230	70.31	231	69.34	232	68.87	233	68.78
234	68.68	235	68.84	236	69.11	237	69.44	238	70.00
239	70.00	240	70.00	241	70.00	242	70.00	243	189.20
244	212.50	245	205.73	246	172.19	247	146.04	248	168.14
249	161.46	250	135.57	251	90.26	252	92.49	254	87.37
255	80.24	256	78.71	258	76.68	259	85.03	260	79.02
261	75.20	262	72.13	263	68.88	264	66.50	265	65.16
266	64.55	267	64.48	268	64.44	269	64.94	270	65.65
271	66.47	272	70.00						

TAP-A OUTPUT (Cont'd)

Drywell 5 Predictions - August 1, 1980

RNAL TEMPERATURES AT .490E+08 SECONDS

NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP	NODE	TEMP
1	336.68	2	395.30	3	409.18	4	414.48	5	416.59
6	416.70	7	415.32	8	411.45	9	404.24	10	373.83
11	303.48	12	350.96	13	366.03	14	371.89	15	374.22
16	374.34	17	372.82	18	368.51	19	360.62	20	330.89
21	227.16	22	261.14	23	277.59	24	284.13	25	286.75
26	286.87	27	283.17	28	280.30	29	271.66	30	245.40
31	121.50	32	121.31	33	121.16	34	121.09	35	120.89
36	161.60	37	180.85	38	204.10	39	210.57	40	213.17
41	213.38	42	211.59	43	207.69	44	198.27	45	182.46
46	139.14	47	138.50	48	138.59	49	139.19	50	139.75
51	114.49	52	120.80	53	112.09	54	112.10	55	112.13
56	112.17	57	111.09	58	110.80	59	111.46	60	119.23
61	133.58	62	143.94	63	160.86	64	167.24	65	169.88
66	170.06	67	168.21	68	163.86	69	155.33	70	140.92
71	122.89	72	93.60	73	90.16	74	90.50	75	90.82
76	91.09	77	91.24	78	95.48	79	99.82	80	106.95
81	95.49	82	99.81	83	106.91	84	95.51	85	99.80
86	106.84	87	95.56	88	99.78	89	106.74	90	95.61
91	99.76	92	106.62	93	94.27	94	94.28	95	94.28
96	94.28	97	94.29	98	88.20	99	88.20	100	88.20
101	88.20	102	88.20	103	88.20	104	88.20	105	88.20
106	88.20	107	96.15	108	96.15	109	99.59	110	105.92
111	89.63	112	89.38	113	93.98	114	92.83	115	91.31
116	89.10	117	87.81	118	86.79	122	95.43	123	99.18
124	105.57	125	110.58	126	117.16	127	128.84	128	141.42
129	153.16	130	159.10	131	161.58	132	161.65	133	159.88
134	155.18	135	147.59	136	131.96	137	119.01	138	92.51
139	89.81	140	97.82	141	103.40	142	107.56	143	112.78
144	120.86	145	130.46	146	139.76	147	144.75	148	146.86
149	146.89	150	145.15	151	141.09	152	134.23	153	122.08
154	112.62	155	89.93	156	80.54	157	81.23	158	81.70
159	77.37	160	77.47	161	73.55	162	73.59	163	96.14
164	100.72	165	104.26	166	108.30	167	113.94	168	120.98
169	128.10	170	132.09	171	133.79	172	133.74	173	132.10
174	128.64	175	122.70	176	113.43	177	106.36	178	88.25
179	79.17	180	77.26	181	73.48	182	93.55	183	96.45
184	98.73	185	101.04	186	103.91	187	107.52	188	111.54
189	113.85	190	114.83	191	114.63	192	113.15	193	110.76
194	106.33	195	100.99	196	96.73	197	85.39	198	77.15
199	73.37	200	71.52	201	71.54	202	90.75	203	92.40
204	93.58	205	95.70	206	95.82	207	93.71	208	91.19
209	86.14	210	81.15	211	75.92	212	72.96	213	71.33
214	86.52	215	85.65	216	85.05	217	83.69	218	82.68
219	80.67	220	79.51	221	77.47	222	75.67	223	73.33
224	71.76	225	70.79	226	83.77	227	81.33	228	79.12
229	76.38	230	73.91	231	72.14	232	70.91	233	70.45
234	69.81	235	69.31	236	69.16	237	69.21	238	70.00
239	70.00	240	70.00	241	70.00	242	70.00	243	191.54
244	212.78	245	205.43	246	171.85	247	149.59	248	169.54
249	162.20	250	136.06	251	94.40	252	95.42	254	88.94
255	84.58	256	81.96	258	78.50	259	86.38	260	82.53
261	79.46	262	76.68	263	73.24	264	70.17	265	68.03
266	66.65	267	66.22	268	65.62	269	65.45	270	65.70
271	66.22	272	70.00						