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Neutron Exposure Parameters for the Metallurgical Test Specimens in the Fifth Heavy-Section Steel Technology Irradiation Series Capsules

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Prepared for the
U.S. Nuclear Regulatory Commission
Office of Nuclear Regulatory Research
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FOREWORD

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94. J. H. Giovanola and R. W. Klopp, *Viscoplastic Stress-Strain Characterization of A533B Class 1 Steel*, NUREG/CR-5066 (ORNL/Sub/87-SA193/1), SIR International Menlo Park, CA (to be published).

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ABSTRACT

The Heavy-Section Steel Technology (HSST) Program, supported by the U.S. Nuclear Regulatory Commission, has completed the Series 5 (HSST5) irradiation experiments. Twelve capsules which contain metallurgical test specimens have been irradiated at the Oak Ridge Research Reactor located at the Oak Ridge National Laboratory. These capsules have been disassembled, internal dosimeters have been analyzed, and exposure parameters are presented for each irradiation test specimen. This report describes the computational methodology for the least-squares adjustment of the dosimetry data with neutronics calculations, and it presents exposure parameters at each test specimen location for the fluence rate greater than 1.0 MeV, fluence rate greater than 0.1 MeV, and displacements per atom. The specific activity of each dosimeter at the end of irradiation is listed in the Appendix.

1. INTRODUCTION

A variety of experiments and analyses for assessing the effects of neutron irradiation on metallurgical test specimens has been conducted by the U.S. Nuclear Regulatory Commission (NRC) and results from these investigations should provide information which will lead to an improved understanding of the processes of neutron damage to pressure vessels and to other structural materials. Thus, the lifetime of many nuclear reactors may be extended through knowledge gained from these experiments, and confidence in the accuracy of information relative to the integrity of reactor pressure vessels and of related components should be enhanced.

Most nuclear power reactors have irradiation test specimens placed near the pressure vessel or thermal shield so that changes in metallurgical properties can be monitored as neutron exposure accumulates in components of interest. However, there is a number of reactors (~20) which do not have irradiation test specimens placed in their pressure vessels. Thus, an improved understanding of irradiation damage (by neutrons) to various materials of different compositions and heat treatments will be of significant value for evaluating operational safety criteria for those reactors and for extending their lifetimes.

This report transmits dosimetry and neutron exposure parameters obtained from experiments performed at the Oak Ridge Research Reactor (ORR). Fluence rates for these experiments are accelerated relative to power reactors, but other conditions, such as fluence rate spectra, temperature, and total exposure closely approximate those expected in power reactors.

The irradiation experiments, and exposure parameter estimates, described herein are designated as the Heavy-Section Steel Technology Series 5 irradiation experiment (HSST5). The HSST5 experiment is being conducted to determine the temperature shift and shape change of the fracture toughness, K_{Ic}, curve as a consequence of neutron irradiation. Twelve capsules were irradiated in these experiments. Capsules 1 through 4 and Capsules 9 through 12 contained 101.6-mm-thick (4-in.-thick) compact specimens (4TCS) and Charpy V-notch specimens, Capsules 7 and 8 contained 2TCS specimens, and Capsules 5 and 6 contained Charpy V-notch, tensile, drop-weight, and 1TCS specimens. All of the capsules utilized the same irradiation facility at the ORR, but the number and size of irradiation test specimens varied among the twelve capsules. A general illustration of this facility is provided by Figs. 1, 2, and 3. More details on the original facility, designed and built for a previous irradiation experiment, are provided by Ref. 1. Minor modifications to the facility are incorporated for the HSST5 and HSST6 irradiations. In particular, a thermal shield addition (see Fig. 1) is incorporated as well as minor modifications in the position of the capsule-support structure. Note that the irradiation facility is placed adjacent to the ORR core in the pool and that the capsules are exposed through the aluminum window in the pressure vessel. The structure which positions the irradiation capsules is fixed relative to the reactor core, but it provides a mechanism to move and position the irradiation

capsules. This permits the capsules to be inserted into or removed from a location which results in significant neutron exposure.

Temperatures in the irradiation capsules are maintained by a combination of electrical heaters and cover gas. Details of the data acquisition and control system are given by Miller and Hobbs[2] and a brief description is provided by Figs. 4 and 5. The automated control system maintained the irradiation test specimens near a temperature of 288°C, which is typical of those in pressure vessels of operating power reactors. It is assumed that performing the irradiation experiment at a temperature characteristic of power reactors will be useful in correlating damage observed in the accelerated experiments with that expected in power reactors. In particular, annealing effects associated with the accelerated research reactor irradiation experiment should be comparable to those associated with power reactors.

Each of the irradiation capsules is irradiated to a prescribed exposure which is measured by the megawatt-days of reactor operation for which the irradiation capsule is placed in the inserted position of the facility. In order to accurately determine the spatial distribution of this exposure, a variety of dosimeters is placed inside the capsule among the irradiation test specimens.

Data associated with the reactor operation (irradiation history) and dosimetry are utilized in conjunction with neutronics calculations and geometry data in order to determine exposure parameters at appropriate locations for each irradiation test specimen. The selection of dosimeter materials, size, and location is of paramount importance for obtaining a three-dimensional distribution of exposure throughout the capsule. Applicable details relative to the dosimetry are included in the Appendix. A general description of the overall computational procedure for exposure parameters is included in the Methodology Section. The Results Section contains illustrations of each irradiation test specimen location and lists exposure parameters for each specimen.

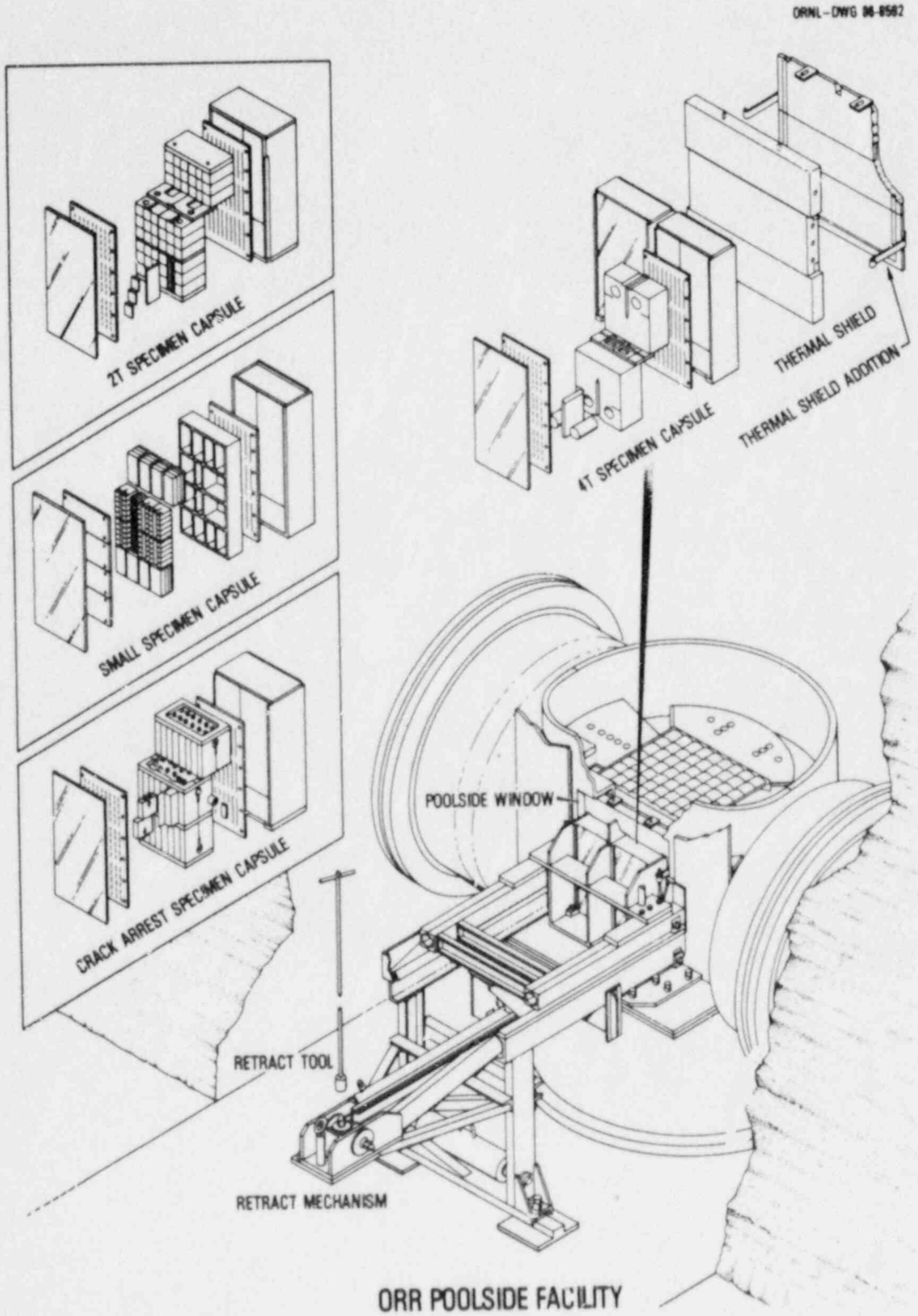

Fig. 1. Illustration of the Poolside Facility and the Oak Ridge Research Reactor Pressure Tank.

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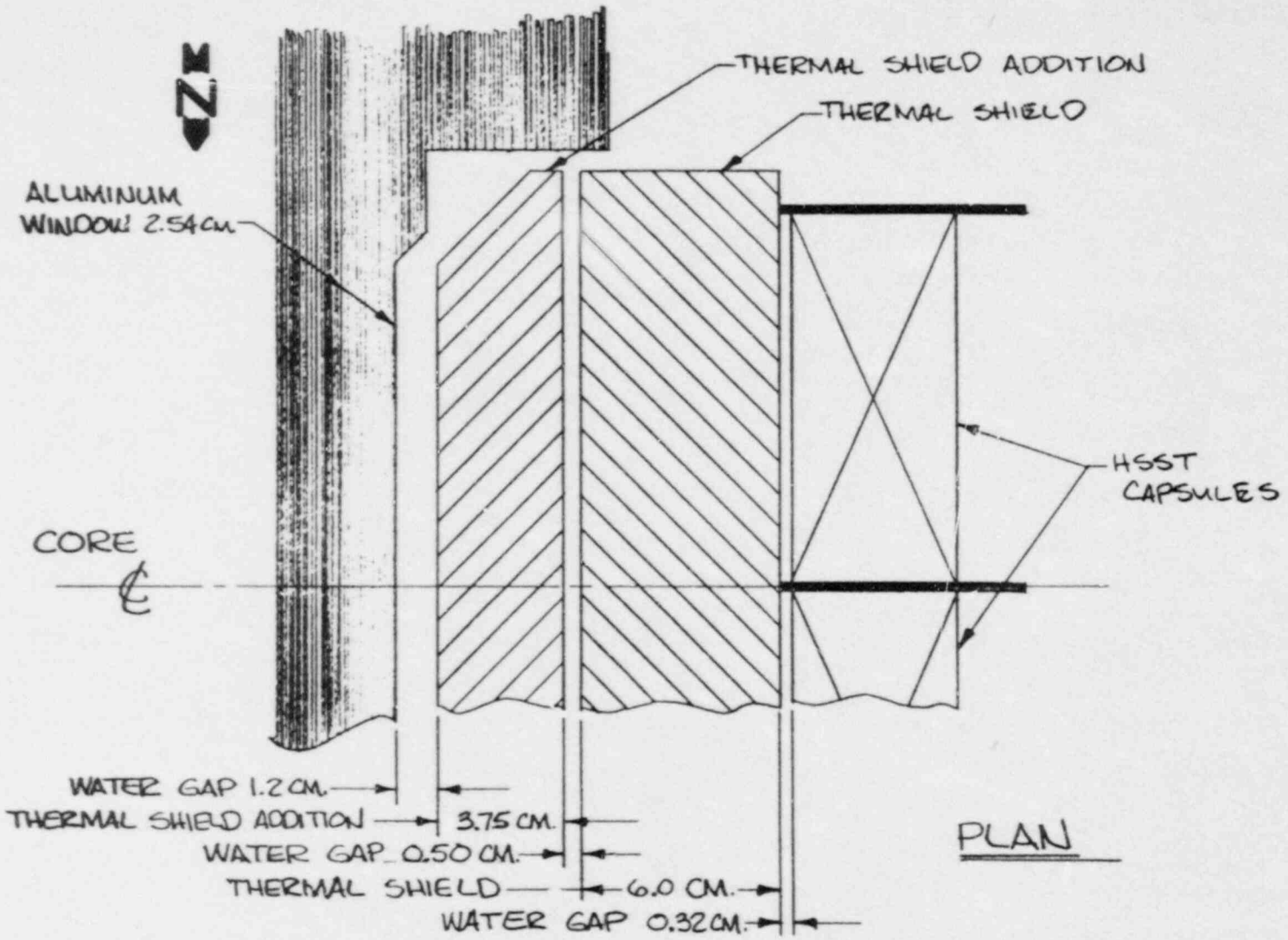

Fig. 2. Plan view schematic of the major HSST5 irradiation experiment components relative to the aluminum window of the ORR core.

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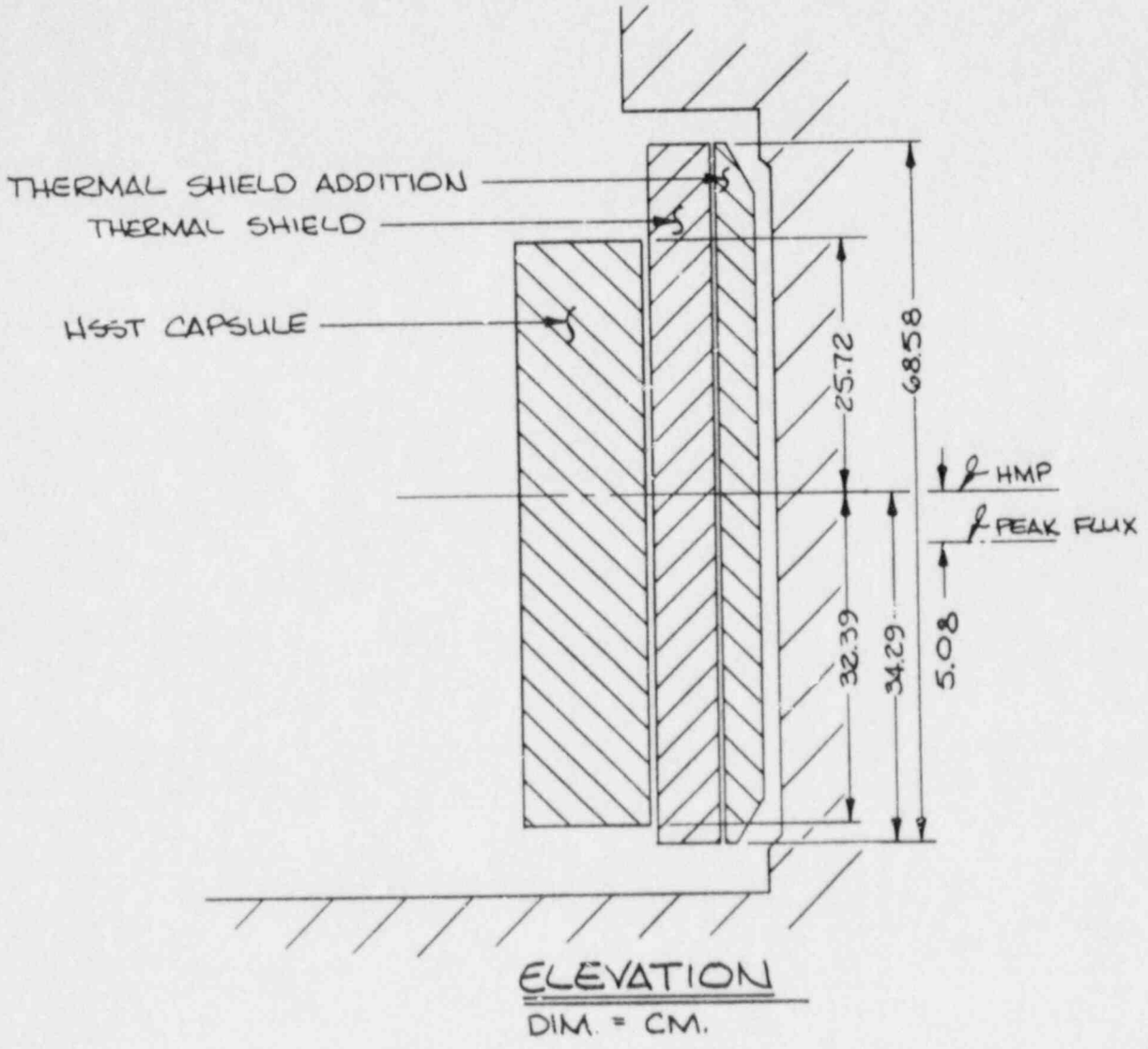

Fig. 3. Elevation view schematic of the major HSST5 irradiation experiment components relative to the aluminum window of the ORR core.

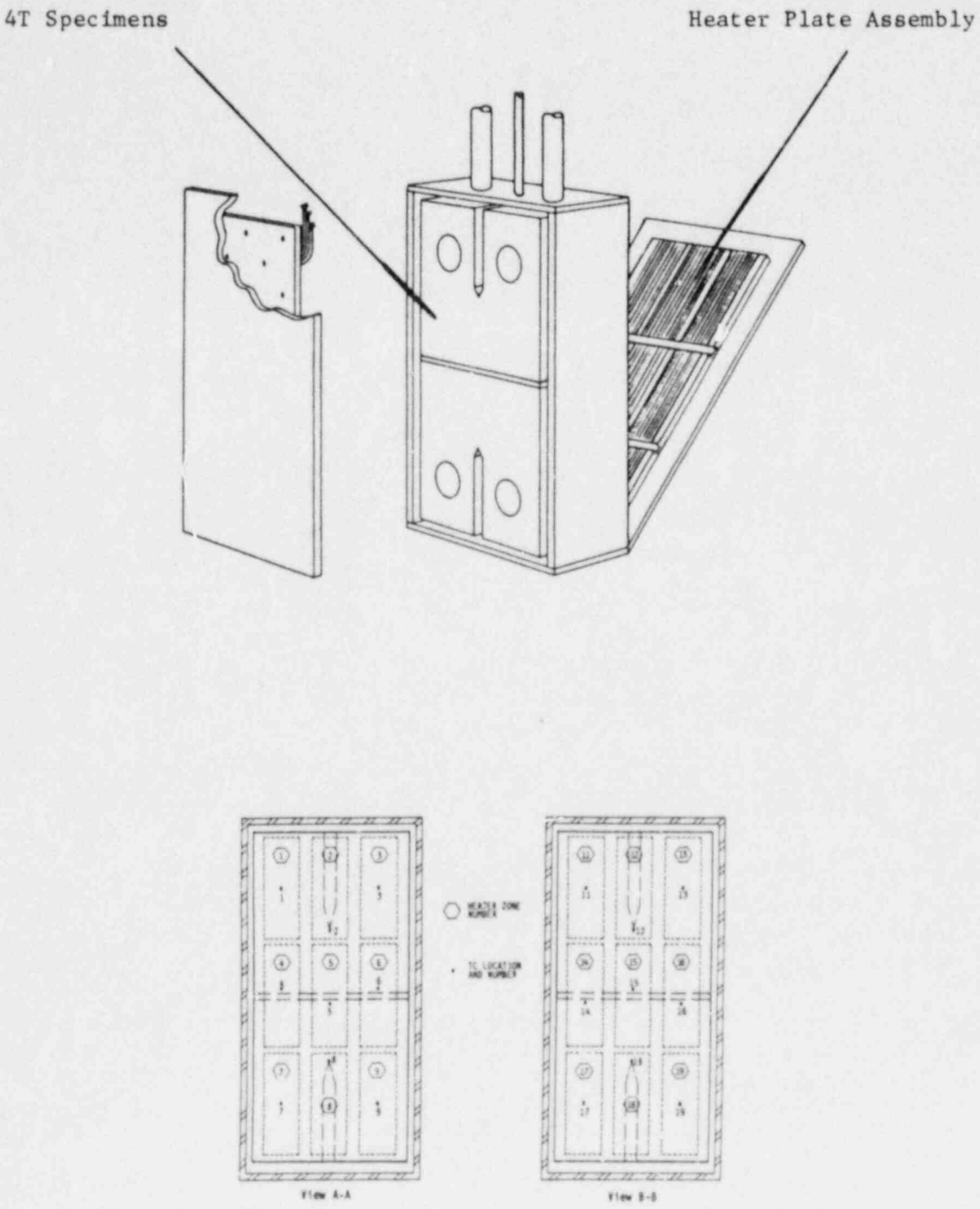

Fig. 4. General features of the K_{1C}-HSST irradiation capsule.

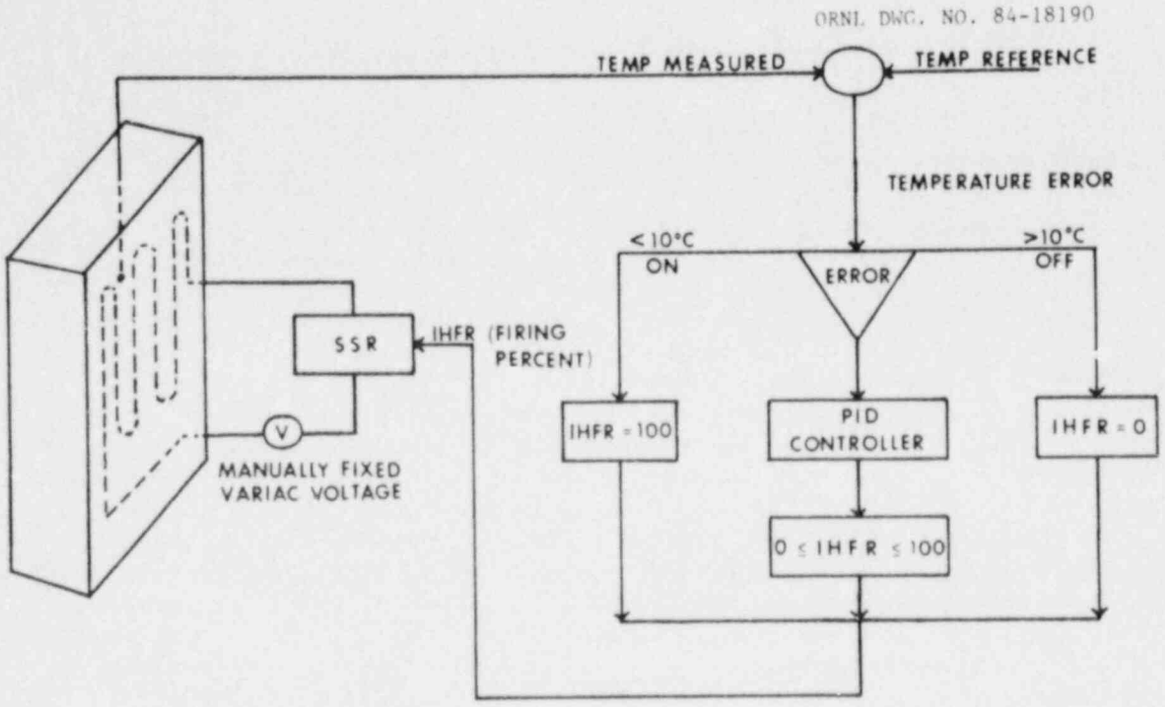

Fig. 5. Basic heater control algorithm.

2. METHODOLOGY FOR DATA ANALYSIS

The computational process for analyzing the dosimetry data involves a significant amount of data handling and reformatting as illustrated by Table 1. The first three steps obtain coordinates for each dosimeter location for input to a program which reads fluence rate spectra for each coordinate location. These three-dimensional fluence rate spectra are obtained from synthesized two-dimensional and one-dimensional transport theory calculations (Maerker[3]) based on a typical ORR core loading and on a generic irradiation capsule with essentially the same dimensions, location, and neutronically equivalent composition as the HSST5 capsules. Steps 5 through 10 prepare input data for a computer program (CALACT) which obtains saturated activities and total fluences based on multiple irradiation positions, irradiation history, dosimetry data, and fluence rate spectra. The next computational step (computer ACT program) prepares the dosimeter activity file for the least-squares adjustment code.

The least-squares adjustment computer program (LSL-M2), along with ancillary programs CALACT and FLXPRO, is written and documented by Stallmann.[4] Theory of the adjustment methdology is also documented by Stallmann.[5] Results from the least-squares adjustment are determined by the choice damage functions. The ones chosen for results reported herein are neutron fluence greater than 1.0 MeV, neutron fluence greater than 0.1 MeV, and displacements per atom. After these results are obtained for each dosimeter location, they are fitted to an appropriate three-dimensional function. Different functions are used for capsules which were rotated in position or translated.

Note that Capsules 1, 2, 3, 4, 9, 10, 11, and 12 were rotated in place and that Capsules 5, 6, 7, and 8 were translated. One of the consequences of this difference is that the rotated and translated capsules need to be fitted with different functions.

The function used to fit the rotated capsules is given by

$$P(X,Y,Z) = A \cdot F_{XY}(X,Y) \cdot F_Z(Z)$$

where

$$F_{XY}(X,Y) = [(\exp(-\lambda\tilde{Y}) \cos (B_X(X-X_0)) + \exp(\lambda\tilde{Y}) \cos(B_X(X^*-X_0))]/2$$

$$F_Z(Z) = \cos(B_Z(Z-Z_0)$$

$$\tilde{Y} = Y-Y_0$$

$X^* = -X -29.528$ if $X < 0$, and

$X^* = -X +29.528$ if $X > 0$.

The function used to fit the translated capsules is given by

$$P(X,Y,Z) \approx A \cdot F_X(X) \cdot F_Y(Y) \cdot F_Z(Z)$$

where

$$F_X(X) = [\cos(B_X(X-X_0)) + \cos(B_X(X*-X_0))]/2,$$

$$F_Y(Y) = \exp(-\lambda\tilde{Y}), \text{ and}$$

$$F_Z(Z) = \cos(B_Z(Z-Z_0)).$$

The irradiation capsules are rotated (or translated) at the midpoint of irradiation in order to tailor the fluence distribution. Thus, the total fluence at each location is a superposition of two fluences which differ both in magnitude and energy spectrum. The superposition of two fluences also affects the curve fitting procedure. Consequently, the spatial fluence distribution cannot be described as a product of three separate functions, one for each space direction. This complicates matters; but, the critical specimen locations are affected least and dosimeters are placed close to these locations.

After the three-dimensional fits to the dosimetry data are obtained, coordinates for each irradiation test specimen are input to these functions to calculate the exposure parameters for each test specimen.

An overall general illustration of the methodology is given by Fig. 6.

Table 1. General procedures for processing dosimetry data from the HSST5 irradiation series

1. Edit (MTL) files which document dosimeter locations, type and activity in order to extract coordinates for each dosimeter location. Only one location is associated with the Fission Radiometric Dosimeter Sets (FRDSs). Multiple location identifications are utilized for dosimeter wires.

2. Generate coordinates of all the positions or locations associated with the irradiation of each capsule.

3. Transfer coordinate locations to a mainframe computer so that results from previous neutronics calculations may be accessed.

4. Extract 56-group fluxes at each dosimeter location for each capsule.

5. Download the 56-group fluxes for off-line data processing and the subsequent least-squares adjustment of calculated fluence rates and dosimetry data.

6. Run FLXPRO to collapse 56-group fluxes to 20-group fluxes (one run for each capsule).

7. Create power-history file from the reactor operations log for input to activity and irradiation history calculations.

8. Run ACT to generate irradiation time.

9. Edit MTL files for input to an ancillary program which reformats the dosimetry data files for subsequent data processing.

10. Generate count files and edit output for saturated activity calculations.

11. Run CALACT on each capsule to calculate saturated activities and total fluences for each capsule to account for the original and rotated irradiation positions.

12. Edit output files from CALACT to include proper title cards and scaling factor.

13. Run ACT to calculate activity file for LSL-M2.

14. Edit input files to assure that fission foils will be included with each group of dosimeters processed by LSL-M2. Also, enter "END" statements on three of the input files to set apart groups of dosimeters for each LSL-M2 run for each capsule.

Table 1. Continued

15.	Run LSL-M2 for each group of dosimeters for each capsule. Edit output from each run and concatenate each output into a single file. Also, edit the input files to LSL-M2 to process new groups of dosimeters.
16.	Edit the damage functions (exposure parameters) file from LSL-M2 (both capsules, all dosimeters) for input to a three-dimensional fitting program. Also edit MTL file character identifications to specify coordinate locations for each original location of each dosimeter.
17.	Run a three-dimensional fitting program to obtain parameters of the three-dimensional function to fit each damage function.
18.	Generate input which specifies the coordinates for each irradiation specimen for each capsule.
19.	Run a program which evaluates the applicable three-dimensional function to calculate exposure values for each irradiation specimen location.

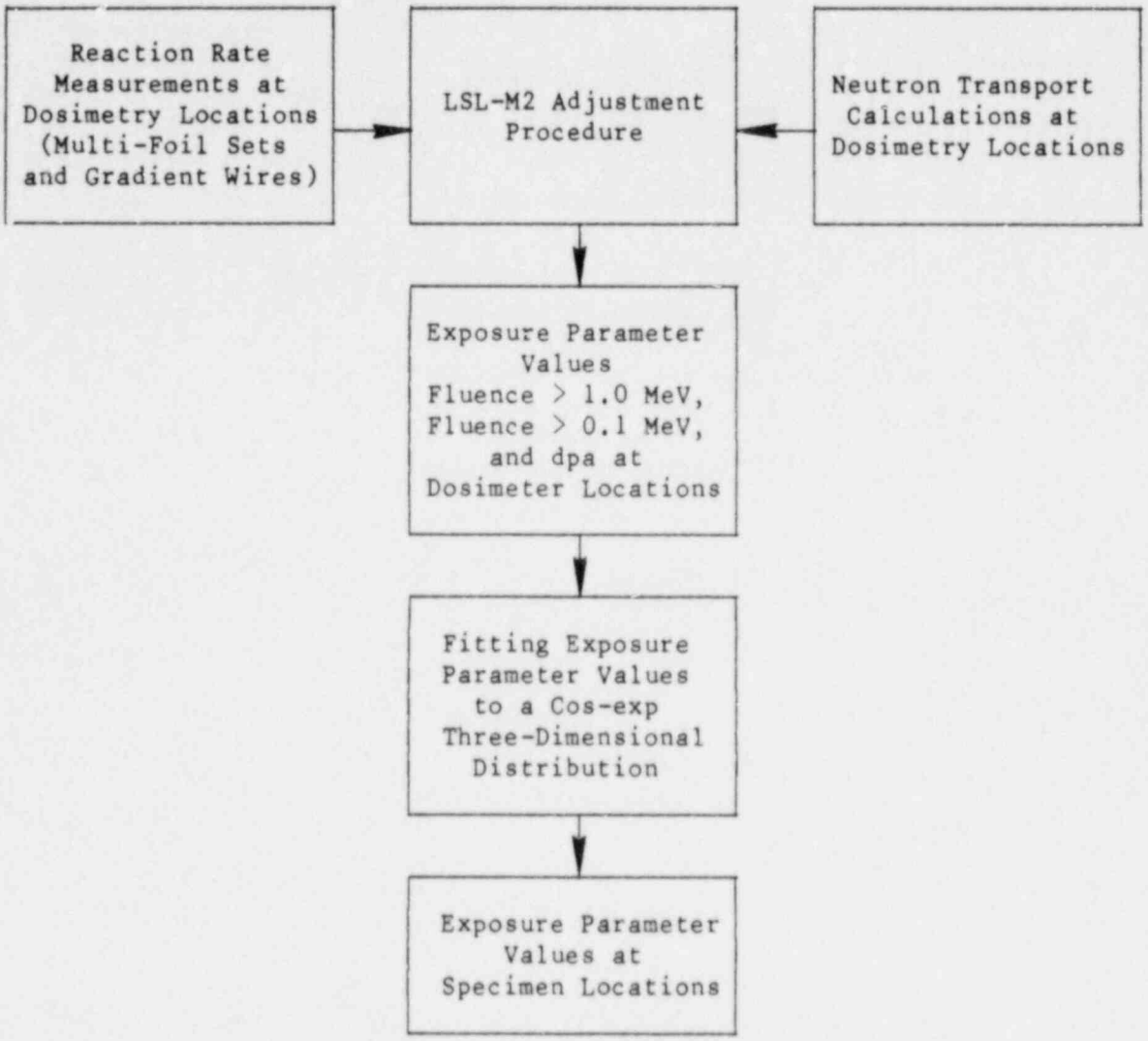

Fig. 6. Methodology for the determination of damage parameter values and uncertainties.

The essential information required in these calculations consists of the following:

1. fluence rate spectra at each dosimeter location,

2. measured activities of each dosimeter,

3. location of each dosimeter,

4. activation cross sections for each dosimeter material, and

5. response function for each exposure parameter.

The neutron transport calculations for the Simulator Experiment[6,7] are used to obtain the fluence rate spectra. Investigations by Maerker and Worley[7] have shown that changes in the core configurations primarily affect the absolute value (and possibly the spatial distribution) of the fluences, but they alter very little the energy dependency of the spectrum. For this reason, all adjustments are performed as relative adjustments; that is, the absolute fluences can be changed freely, subject only to the dosimetry measurements which are used for normalization. The number of energy groups are reduced from 56 to 20 to reduce the amount of calculation. All groups between 0.1 MeV and 0.1 eV are combined into one group. This energy region is covered only by the $^{59}Co(n,\gamma)\ ^{60}Co$ sensor, but it is relatively unimportant for radiation damage.

The type of dosimetry utilized is the same as cited in Ref. 8. It consists of fission/radiometric dosimetry sets (FRDSs) and gradient wires (GWs). The FRDS contain ^{238}U and ^{237}Np encapsulated in gadolinium and the $^{63}Cu(n,\alpha)^{60}Co$, $^{46}Ti(n,p)^{46}Sc$, $^{58}Ni(n,p)^{58}Co$, $^{54}Fe(n,p)^{54}Mn$, and $^{59}Co(n,\gamma)^{60}Co$ radiometric sensors. The GWs are iron wires sheathed in stainless steel. A generous amount of both types of dosimeters is placed in each capsule to obtain reliable cosine-exponential fits.

Metallurgical specimen location data[9] were provided by the Engineering Technology Division. This division of the Oak Ridge National Laboratory (ORNL) had the responsibility for the mechanical and thermal designs of the capsule as well as the fabrication and installation. Note that specimen locations are relative to the back of the thermal shield as shown in Fig. 7.

Cross-section data are obtained from ENDF/B-V data files.[10] Response functions for fluence rate greater than 0.1 MeV and 1.0 MeV sum the fluence spectra over the applicable energy range, and the displacements per atom (dpa) response function is obtained from Ref. 11.

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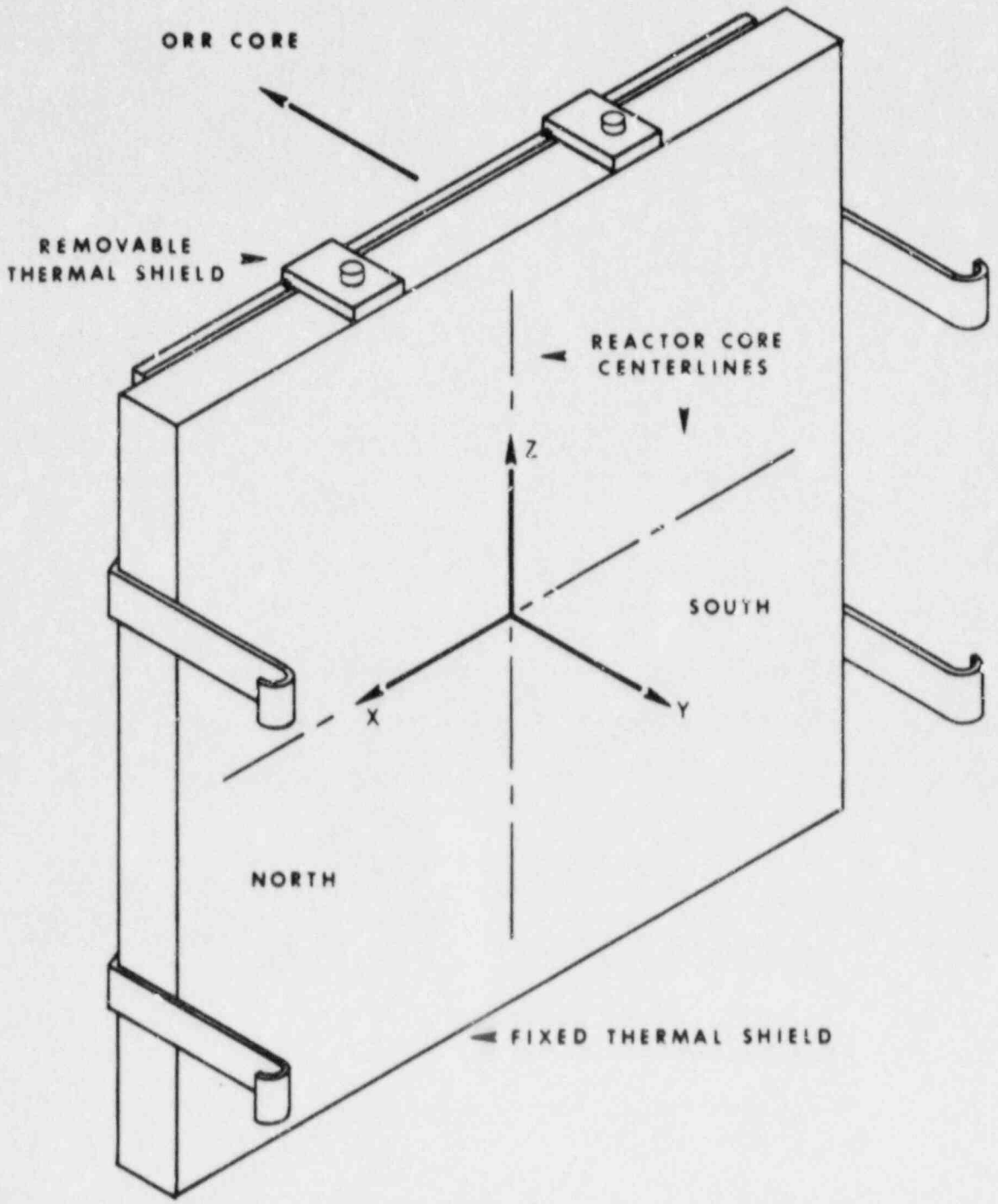

Fig. 7. Coordinate system used for specifying the location of irradiated metallurgical specimens.

3. RESULTS

Information presented herein consists of the following:

1. parameters of the three-dimensional functions for each exposure parameter,

2. listings of exposure parameters at each irradiation test specimen location, and

3. illustrations of the location of each irradiation test specimen.

If exposures are of interest at locations other than those listed, they may be readily calculated from values listed in Tables 2 through 7 and Eqs. (1) and (2). The coordinates listed for each irradiation specimen location in Tables 8 through 19 are consistent with the coordinate system shown in Fig. 7 with the origin at the back of the thermal shield. Figures 8 through 19 should be useful for identifying the irradiation specimen location within a particular capsule.

Uncertainties are not accurately propagated through all of the computational sequences, and there may be biases which are not recognized. However, uncertainties obtained from the least-squares adjustment process take into account estimates of uncertainty in neutronics calculations and measured activities. Uncertainties in the least-squares adjustments to obtain exposure data are approximately 5% (1σ). Uncertainties which should be associated with the exposures listed for each irradiation specimen location involve those which result from the model selection for the three-dimensional (3-D) fit and the accuracy of the irradiation specimen locations. Deviations of the calculated exposure parameters from the model at these locations are approximately 3% (1σ). Thus, an uncertainty of approximately 7% (1σ) for the exposure values listed is considered to be a good estimate.

Table 2. Neutron exposure parameters for 3-D fits of the neutron fluence and displacements per atom (dpa) for HSST5 Capsules 1 and 2

Parameter	Neutron exposure parameters		
	$\phi(E > 1.0)$ $(n \cdot cm^2)$	$\phi(E > 0.1)$ $(n \cdot cm^2)$	dpa
A	2.35×10^{19}	1.68×10^{20}	5.60×10^{-2}
λ (cm^{-1})	0.12	0.044	0.067
B_X (cm^{-1})	0.044	0.054	0.051
B_Z (cm^{-1})	0.042	0.044	0.043
X_0 (cm)	1.03	0.671	0.50
Y_0 (cm)*	6.85	6.85	6.85
Z_0 (cm)	-2.17	-1.85	-2.10

*The coordinate system used to fit the 3-D functions is relative to the aluminum window (Y_0 = 18.3, X_0, and Z_0 are unchanged). The value for Y_0 listed is relative to the back of the thermal shield (which is consistent with the coordinate system used by Engineering Technology).

Table 3. Neutron exposure parameters for 3-D fits of the neutron fluence and displacements per atom (dpa) for HSST5 Capsules 3 and 4

Parameter	Neutron exposure parameters		
	$\phi(E > 1.0)$ $(n \cdot cm^2)$	$\phi(E > 0.1)$ $(n \cdot cm^2)$	dpa
A	2.28×10^{19}	1.63×10^{20}	5.60×10^{-2}
λ (cm^{-1})	0.12	0.054	0.071
B_X (cm^{-1})	0.046	0.056	0.049
B_Z (cm^{-1})	0.042	0.044	0.043
X_0 (cm)	0.59	0.43	0.82
Y_0 (cm)*	6.85	6.85	6.85
Z_0 (cm)	-2.35	-2.08	-1.87

*The coordinate system used to fit the 3-D functions is relative to the aluminum window (Y_0 = 18.3, X_0, and Z_0 are unchanged). The value for Y_0 listed is relative to the back of the thermal shield (which is consistent with the coordinate system used by Engineering Technology).

Table 4. Neutron exposure parameters for 3-D fits of the neutron fluence and displacements per atom (dpa) for HSST5 Capsules 5 and 6

Parameter	Neutron exposure parameters		
	$\phi(E > 1.0)$ $(n \cdot cm^2)$	$\phi(E > 0.1)$ $(n \cdot cm^2)$	dpa
A	1.60×10^{19}	9.99×10^{19}	3.76×10^{-2}
λ (cm^{-1})	0.142	0.087	0.107
B_X (cm^{-1})	0.039	0.043	0.042
B_Z (cm^{-1})	0.040	0.042	0.041
X_O (cm)	-1.05	-0.91	-0.93
Y_O (cm)*	6.05	6.05	6.05
Z_O (cm)	-2.18	-1.88	-1.96

*The coordinate system used to fit the 3-D functions is relative to the aluminum window (Y_O = 17.5, X_O, and Z_O are unchanged). The value for Y_O listed is relative to the back of the thermal shield (which is consistent with the coordinate system used by Engineering Technology).

Table 5. Neutron exposure parameters for 3-D fits of the neutron fluence and displacements per atom (dpa) for HSST5 Capsules 7 and 8

Parameter	Neutron exposure parameters		
	$\phi(E > 1.0)$ $(n \cdot cm^2)$	$\phi(E > 0.1)$ $(n \cdot cm^2)$	dpa
A	2.61×10^{19}	1.58×10^{20}	6.03×10^{-2}
λ (cm^{-1})	0.146	0.095	0.113
B_X (cm^{-1})	0.043	0.047	0.046
B_Z (cm^{-1})	0.043	0.044	0.043
X_O (cm)	0.033	0.098	0.073
Y_O (cm)*	6.05	6.05	6.05
Z_O (cm)	-3.23	-2.78	-2.95

*The coordinate system used to fit the 3-D functions is relative to the aluminum window (Y_O = 17.5, X_O, and Z_O are unchanged). The value for Y_O listed is relative to the back of the thermal shield (which is consistent with the coordinate system used by Engineering Technology).

Table 6. Neutron exposure parameters for 3-D fits of the neutron fluence and displacements per atom (dpa) for HSST5 Capsules 9 and 10

Parameter	Neutron exposure parameters		
	$\phi(E > 1.0)$ $(n \cdot cm^2)$	$\phi(E > 0.1)$ $(n \cdot cm^2)$	dpa
A	2.09×10^{19}	1.41×10^{20}	5.09×10^{-2}
λ (cm^{-1})	0.129	0.057	0.083
B_X (cm^{-1})	0.045	0.052	0.048
B_Z (cm^{-1})	0.041	0.043	0.042
X_0 (cm)	0.064	0.073	0.059
Y_0 (cm)*	6.85	6.85	6.85
Z_0 (cm)	-2.64	-2.29	-2.36

*The coordinate system used to fit the 3-D functions is relative to the aluminum window (Y_0 = 17.5, X_0, and Z_0 are unchanged). The value for Y_0 listed is relative to the back of the thermal shield (which is consistent with the coordinate system used by Engineering Technology).

Table 7. Neutron exposure parameters for 3-D fits of the neutron fluence and displacements per atom (dpa) for HSST5 Capsules 11 and 12

Parameter	Neutron exposure parameters		
	$\phi(E > 1.0)$ $(n \cdot cm^2)$	$\phi(E > 0.1)$ $(n \cdot cm^2)$	dpa
A	2.17×10^{19}	1.44×10^{20}	5.24×10^{-2}
λ (cm^{-1})	0.126	0.052	0.079
B_X (cm^{-1})	0.042	0.054	0.046
B_Z (cm^{-1})	0.043	0.045	0.044
X_0 (cm)	0.93	0.68	0.82
Y_0 (cm)*	6.85	6.8	6.85
Z_0 (cm)	-3.09	-22	-2.81

*The coordinate system used to fit the 3-D functions is relative to the aluminum window (Y_0 = 17.5, X_0, and Z_0 are unchanged). The value for Y_0 listed is relative to the back of the thermal shield (which is consistent with the coordinate system used by Engineering Technology).

Table 8. Coordinates and exposure values for irradiation specimens in Capsule 1 of the HSST5 irradiation series

Specimen ID	Coordinates			Exposure values		
	X (cm)	Y (cm)	Z (cm)	ϕ(E>1 MeV) ($n \cdot cm^2$)	ϕ(E>.1 MeV) ($n \cdot cm^2$)	dpa
73W11	14.92	2.71	6.83	0.189E+20	0.107E+21	0.403E-01
73W11	14.92	4.78	6.83	0.173E+20	0.105E+21	0.390E-01
73W11	14.92	6.84	6.83	0.168E+20	0.105E+21	0.387E-01
73W11	14.92	8.91	6.83	0.174E+20	0.106E+21	0.391E-01
73W11	14.92	10.97	6.83	0.190E+20	0.107E+21	0.404E-01
73W12	14.92	2.71	-14.45	0.177E+20	0.978E+20	0.372E-01
73W12	14.92	4.78	-14.45	0.163E+20	0.967E+20	0.360E-01
73W12	14.92	6.84	-14.45	0.158E+20	0.963E+20	0.357E-01
73W12	14.92	8.91	-14.45	0.163E+20	0.968E+20	0.361E-01
73W12	14.92	10.97	-14.45	0.178E+20	0.981E+20	0.373E-01
73W549	18.19	3.36	-3.31	0.185E+20	0.109E+21	0.404E-01
73W552	18.19	4.36	-3.31	0.180E+20	0.109E+21	0.403E-01
73W553	18.19	5.36	-3.31	0.178E+20	0.110E+21	0.403E-01
73W559	18.19	8.32	-3.31	0.185E+20	0.113E+21	0.417E-01
73W560	18.19	9.32	-3.31	0.193E+20	0.114E+21	0.426E-01
73W561	18.19	10.32	-3.31	0.204E+20	0.116E+21	0.437E-01
73W546	11.65	3.36	-3.31	0.204E+20	0.116E+21	0.437E-01
73W547	11.65	4.36	-3.31	0.193E+20	0.114E+21	0.426E-01
73W548	11.65	5.36	-3.31	0.186E+20	0.113E+21	0.418E-01
73W554	11.65	8.32	-3.31	0.178E+20	0.110E+21	0.405E-01
73W555	11.65	9.32	-3.31	0.181E+20	0.110E+21	0.405E-01
73W558	11.65	10.32	-3.31	0.186E+20	0.109E+21	0.407E-01

Table 9. Coordinates and exposure values for irradiation specimens in Capsule 2 of the HSST5 irradiation series

Specimen ID	Coordinates			Exposure values		
	X (cm)	Y (cm)	Z (cm)	ϕ(E>1 MeV) ($n \cdot cm^2$)	ϕ(E>.1 MeV) ($n \cdot cm^2$)	dpa
73W15	-14.92	2.71	6.83	0.203E+20	0.115E+21	0.432E-01
73W15	-14.92	4.78	6.83	0.186E+20	0.114E+21	0.419E-01
73W15	-14.92	6.84	6.83	0.180E+20	0.113E+21	0.415E-01
73W15	-14.92	8.91	6.83	0.186E+20	0.114E+21	0.420E-01
73W15	-14.92	10.97	6.83	0.203E+20	0.115E+21	0.433E-01
73W16	-14.92	2.71	-14.45	0.190E+20	0.105E+21	0.399E-01
73W16	-14.92	4.78	-14.45	0.174E+20	0.104E+21	0.387E-01
73W16	-14.92	6.84	-14.45	0.169E+20	0.104E+21	0.383E-01
73W16	-14.92	8.91	-14.45	0.174E+20	0.104E+21	0.387E-01
73W16	-14.92	10.97	-14.45	0.190E+20	0.106E+21	0.400E-01
73W567	-11.65	3.36	-3.31	0.217E+20	0.124E+21	0.466E-01
73W570	-11.65	4.36	-3.31	0.206E+20	0.123E+21	0.456E-01
73W571	-11.65	5.36	-3.31	0.198E+20	0.121E+21	0.447E-01
73W577	-11.65	8.32	-3.31	0.192E+20	0.119E+21	0.436E-01
73W578	-11.65	9.32	-3.31	0.195E+20	0.118E+21	0.436E-01
73W579	-11.65	10.32	-3.31	0.201E+20	0.118E+21	0.439E-01
73W564	-18.19	3.36	-3.31	0.200E+20	0.118E+21	0.436E-01
73W565	-18.19	4.36	-3.31	0.194E+20	0.118E+21	0.434E-01
73W566	-18.19	5.36	-3.31	0.191E+20	0.118E+21	0.434E-01
73W572	-18.19	8.32	-3.31	0.198E+20	0.121E+21	0.447E-01
73W573	-18.19	9.32	-3.31	0.206E+20	0.123E+21	0.455E-01
73W576	-18.19	10.32	-3.31	0.217E+20	0.124E+21	0.466E-01

Table 10. Coordinates and exposure values for irradiation specimens in Capsule 3 of the HSST5 irradiation series

Specimen ID	Coordinates			Exposure values		
	X (cm)	Y (cm)	Z (cm)	ϕ(E>1 MeV) ($n \cdot cm^2$)	ϕ(E>.1 MeV) ($n \cdot cm^2$)	dpa
72W11	14.92	2.71	6.83	0.182E+20	0.101E+21	0.405E-01
72W11	14.92	4.78	6.83	0.167E+20	0.999E+20	0.393E-01
72W11	14.92	6.84	6.83	0.162E+20	0.995E+20	0.390E-01
72W11	14.92	8.91	6.83	0.167E+20	0.100E+21	0.394E-01
72W11	14.92	10.97	6.83	0.182E+20	0.101E+21	0.406E-01
72W16	14.92	2.71	-14.45	0.171E+20	0.935E+20	0.314E-01
72W16	14.92	4.78	-14.45	0.157E+20	0.924E+20	0.305E-01
72W16	14.92	6.84	-14.45	0.153E+20	0.920E+20	0.303E-01
72W16	14.92	8.91	-14.45	0.158E+20	0.925E+20	0.306E-01
72W16	14.92	10.97	-14.45	0.172E+20	0.938E+20	0.316E-01
73W596	18.19	3.36	-3.31	0.178E+20	0.103E+21	0.376E-01
73W595	18.19	4.36	-3.31	0.173E+20	0.104E+21	0.376E-01
73W594	18.19	5.36	-3.31	0.171E+20	0.104E+21	0.377E-01
73W588	18.19	8.32	-3.31	0.179E+20	0.107E+21	0.390E-01
73W587	18.19	9.32	-3.31	0.187E+20	0.109E+21	0.398E-01
73W584	18.19	10.32	-3.31	0.197E+20	0.111E+21	0.408E-01
73W593	11.65	3.36	-3.31	0.197E+20	0.111E+21	0.408E-01
73W590	11.65	4.36	-3.31	0.187E+20	0.109E+21	0.399E-01
73W589	11.65	5.36	-3.31	0.179E+20	0.108E+21	0.391E-01
73W583	11.65	8.32	-3.31	0.171E+20	0.105E+21	0.378E-01
73W582	11.65	9.32	-3.31	0.174E+20	0.104E+21	0.378E-01
73W581	11.65	10.32	-3.31	0.179E+20	0.104E+21	0.379E-01

Table 11. Coordinates and exposure values for irradiation specimens in Capsule 4 of the HSST5 irradiation series

Specimen ID	Coordinates			Exposure values		
	X (cm)	Y (cm)	Z (cm)	ϕ(E>1 MeV) ($n \cdot cm^2$)	ϕ(E>.1 MeV) ($n \cdot cm^2$)	dpa
72W13	-14.92	2.71	6.83	0.190E+20	0.107E+21	0.425E-01
72W13	-14.92	4.78	6.83	0.174E+20	0.105E+21	0.413E-01
72W13	-14.92	6.84	6.83	0.169E+20	0.105E+21	0.409E-01
72W13	-14.92	8.91	6.83	0.174E+20	0.105E+21	0.414E-01
72W13	-14.92	10.97	6.83	0.190E+20	0.107E+21	0.427E-01
72W14	-14.92	2.71	-14.45	0.179E+20	0.985E+20	0.330E-01
72W14	-14.92	4.78	-14.45	0.164E+20	0.973E+20	0.321E-01
72W14	-14.92	6.84	-14.45	0.159E+20	0.970E+20	0.318E-01
72W14	-14.92	8.91	-14.45	0.164E+20	0.975E+20	0.321E-01
72W14	-14.92	10.97	-14.45	0.180E+20	0.988E+20	0.331E-01
73W614	-11.65	3.36	-3.31	0.204E+20	0.116E+21	0.427E-01
73W613	-11.65	4.36	-3.31	0.194E+20	0.115E+21	0.417E-01
73W612	-11.65	5.36	-3.31	0.186E+20	0.113E+21	0.410E-01
73W606	-11.65	8.32	-3.31	0.179E+20	0.111E+21	0.398E-01
73W605	-11.65	9.32	-3.31	0.182E+20	0.110E+21	0.398E-01
73W603	-18.19	10.32	-3.31	0.205E+20	0.116E+21	0.427E-01
73W611	-18.19	3.36	-3.31	0.186E+20	0.109E+21	0.397E-01
73W608	-18.19	4.36	-3.31	0.181E+20	0.110E+21	0.395E-01
73W607	-18.19	5.36	-3.31	0.179E+20	0.110E+21	0.396E-01
73W602	-18.19	8.32	-3.31	0.186E+20	0.113E+21	0.409E-01
73W601	-18.19	9.32	-3.31	0.194E+20	0.115E+21	0.417E-01
73W599	-18.19	10.32	-3.31	0.205E+20	0.116E+21	0.427E-01

Table 12. Coordinates and exposure values for irradiation specimens in Capsule 5 of the HSST5 irradiation series

Specimen ID	Coordinates			Exposure values		
	X (cm)	Y (cm)	Z (cm)	ϕ(E>1 MeV) ($n \cdot cm^2$)	ϕ(E>.1 MeV) ($n \cdot cm^2$)	dpa
73W150	23.18	4.30	9.17	0.148E+20	0.794E+20	0.315E-01
73W160	23.18	4.30	6.63	0.155E+20	0.832E+20	0.329E-01
73W128	23.18	4.30	4.09	0.160E+20	0.860E+20	0.340E-01
73W166	23.18	4.30	1.55	0.163E+20	0.879E+20	0.347E-01
73W126	23.18	4.30	-0.99	0.165E+20	0.888E+20	0.351E-01
73W148	23.18	4.30	-4.17	0.164E+20	0.884E+20	0.349E-01
73W155	23.18	4.30	-6.71	0.162E+20	0.870E+20	0.344E-01
73W134	23.18	4.30	-9.25	0.158E+20	0.846E+20	0.335E-01
73W158	23.18	4.30	-11.79	0.153E+20	0.812E+20	0.323E-01
73W130	23.18	4.30	-14.33	0.146E+20	0.770E+20	0.307E-01
73W164	17.07	4.30	9.17	0.154E+20	0.836E+20	0.331E-01
73W142	17.07	4.30	6.63	0.161E+20	0.876E+20	0.346E-01
73W163	17.07	4.30	4.09	0.166E+20	0.906E+20	0.357E-01
73W131	17.07	4.30	1.55	0.170E+20	0.925E+20	0.365E-01
73W162	17.07	4.30	-0.99	0.172E+20	0.934E+20	0.368E-01
73W156	17.07	4.30	-4.17	0.171E+20	0.931E+20	0.367E-01
73W138	17.07	4.30	-6.71	0.169E+20	0.916E+20	0.361E-01
73W170	17.07	4.30	-9.25	0.165E+20	0.891E+20	0.352E-01
73W146	17.07	4.30	-11.79	0.159E+20	0.855E+20	0.339E-01
73W168	17.07	4.30	-14.33	0.152E+20	0.810E+20	0.322E-01
73W139	6.67	4.30	9.17	0.145E+20	0.776E+20	0.308E-01
73W132	6.67	4.30	6.63	0.151E+20	0.812E+20	0.322E-01
73W144	6.67	4.30	4.09	0.156E+20	0.840E+20	0.332E-01
73W152	6.67	4.30	1.55	0.159E+20	0.858E+20	0.339E-01
73W124	6.67	4.30	-0.99	0.161E+20	0.867E+20	0.343E-01
73W147	6.67	4.30	-4.17	0.161E+20	0.863E+20	0.341E-01
73W171	6.67	4.30	-6.71	0.159E+20	0.850E+20	0.336E-01
73W140	6.67	4.30	-9.25	0.155E+20	0.826E+20	0.328E-01
73W154	6.67	4.30	-11.79	0.149E+20	0.793E+20	0.315E-01
73W136	6.67	4.30	-14.33	0.143E+20	0.751E+20	0.300E-01
73W211	23.50	2.28	17.42	0.155E+20	0.726E+20	0.304E-01
73W227	23.50	5.45	17.42	0.989E+19	0.551E+20	0.216E-01
73W213	23.50	2.28	-22.59	0.150E+20	0.680E+20	0.288E-01
73W214*	23.50	5.45	-22.59	0.956E+19	0.516E+20	0.205E-01
73W206	17.78	2.28	17.42	0.162E+20	0.766E+20	0.320E-01
73W208	17.78	5.45	17.42	0.103E+20	0.582E+20	0.228E-01
73W205	17.78	2.28	-22.59	0.157E+20	0.717E+20	0.303E-01
73W209	17.78	5.45	-22.59	0.998E+19	0.544E+20	0.216E-01

*A question exists regarding the ID number of this specimen; according to the drawings, it could be 73W64B.

Table 12. Continued

Specimen ID	Coordinates			Exposure values		
	X (cm)	Y (cm)	Z (cm)	ϕ(E>1 MeV) ($n \cdot cm^2$)	ϕ(E>.1 MeV) ($n \cdot cm^2$)	dpa
73W201	12.07	2.28	17.42	0.161E+20	0.760E+20	0.317E-01
73W207	12.07	5.45	17.42	0.102E+20	0.577E+20	0.226E-01
73W202	12.07	2.28	-22.59	0.155E+20	0.712E+20	0.300E-01
73W215	12.07	5.45	-22.59	0.990E+19	0.540E+20	0.214E-01
73W228	6.35	2.28	17.42	0.151E+20	0.708E+20	0.297E-01
73W226	6.35	5.45	17.42	0.965E+19	0.538E+20	0.211E-01
73W210	6.35	2.28	-22.59	0.146E+20	0.663E+20	0.281E-01
73W224	6.35	5.45	-22.59	0.933E+19	0.503E+20	0.200E-01
73W275T	13.35	4.50	9.66	0.148E+20	0.810E+20	0.319E-01
73W324	13.35	4.50	8.66	0.151E+20	0.828E+20	0.326E-01
73W377	13.35	4.50	7.66	0.154E+20	0.843E+20	0.332E-01
73W338	13.35	4.50	6.66	0.156E+20	0.858E+20	0.337E-01
73W271T	13.35	4.50	5.66	0.158E+20	0.870E+20	0.342E-01
73W412	13.35	4.50	4.66	0.160E+20	0.882E+20	0.346E-01
73W302	13.35	4.50	3.66	0.162E+20	0.891E+20	0.350E-01
73W312	13.35	4.50	2.66	0.163E+20	0.899E+20	0.353E-01
73W410	13.35	4.50	1.66	0.165E+20	0.906E+20	0.355E-01
73W308	13.35	4.50	0.66	0.165E+20	0.911E+20	0.357E-01
73W267T	13.35	4.50	-0.34	0.166E+20	0.914E+20	0.359E-01
73W346	13.35	4.50	-1.34	0.166E+20	0.916E+20	0.359E-01
73W358	13.35	4.50	-3.70	0.166E+20	0.913E+20	0.359E-01
73W314	13.35	4.50	-4.70	0.166E+20	0.909E+20	0.357E-01
73W253T	13.35	4.50	-5.70	0.165E+20	0.904E+20	0.355E-01
73W336	13.35	4.50	-6.70	0.164E+20	0.897E+20	0.353E-01
73W334	13.35	4.50	-7.70	0.162E+20	0.889E+20	0.350E-01
73W379	13.35	4.50	-8.70	0.161E+20	0.879E+20	0.346E-01
73W255T	13.35	4.50	-9.70	0.159E+20	0.867E+20	0.342E-01
73W406	13.35	4.50	-10.70	0.157E+20	0.854E+20	0.337E-01
73W326	13.35	4.50	-11.70	0.155E+20	0.839E+20	0.331E-01
73W366	13.35	4.50	-12.70	0.152E+20	0.823E+20	0.325E-01
73W396	13.35	4.50	-13.70	0.149E+20	0.805E+20	0.319E-01
73W344	13.35	4.50	-14.70	0.146E+20	0.786E+20	0.312E-01
73W356	12.35	4.50	9.66	0.147E+20	0.806E+20	0.318E-01
73W348	12.35	4.50	8.66	0.150E+20	0.823E+20	0.324E-01
73W251T	12.35	4.50	7.66	0.153E+20	0.839E+20	0.330E-01
73W322	12.35	4.50	6.66	0.155E+20	0.853E+20	0.336E-01
73W402	12.35	4.50	5.66	0.158E+20	0.866E+20	0.340E-01
73W408	12.35	4.50	4.66	0.160E+20	0.877E+20	0.345E-01
73W257T	12.35	4.50	3.66	0.161E+20	0.887E+20	0.348E-01
73W362	12.35	4.50	2.66	0.163E+20	0.895E+20	0.351E-01
73W360	12.35	4.50	1.66	0.164E+20	0.901E+20	0.354E-01
73W306	12.35	4.50	0.66	0.165E+20	0.906E+20	0.356E-01

Table 12. Continued

Specimen ID	Coordinates			Exposure values		
	X (cm)	Y (cm)	Z (cm)	ϕ(E>1 MeV) ($n \cdot cm^2$)	ϕ(E>.1 MeV) ($n \cdot cm^2$)	dpa
73W398	12.35	4.50	-0.34	0.165E+20	0.909E+20	0.357E-01
73W316	12.35	4.50	-1.34	0.166E+20	0.911E+20	0.358E-01
73W271T	12.35	4.50	-3.70	0.165E+20	0.908E+20	0.357E-01
73W420	12.35	4.50	-4.70	0.165E+20	0.905E+20	0.355E-01
73W318	12.35	4.50	-5.70	0.164E+20	0.899E+20	0.353E-01
73W304	12.35	4.50	-6.70	0.163E+20	0.892E+20	0.351E-01
73W261T	12.35	4.50	-7.70	0.162E+20	0.884E+20	0.348E-01
73W372	12.35	4.50	-8.70	0.160E+20	0.874E+20	0.344E-01
73W368	12.35	4.50	-9.70	0.158E+20	0.862E+20	0.340E-01
73W404	12.35	4.50	-10.70	0.156E+20	0.849E+20	0.335E-01
73W259T	12.35	4.50	-11.70	0.154E+20	0.835E+20	0.330E-01
73W342	12.35	4.50	-12.70	0.151E+20	0.819E+20	0.324E-01
73W352	12.35	4.50	-13.70	0.148E+20	0.801E+20	0.317E-01
73W320	12.35	4.50	-14.70	0.145E+20	0.782E+20	0.310E-01
73W364	10.35	4.50	9.66	0.145E+20	0.793E+20	0.313E-01
73W400	10.35	4.50	8.66	0.148E+20	0.810E+20	0.319E-01
73W382	10.35	4.50	7.66	0.151E+20	0.825E+20	0.325E-01
73W300	10.35	4.50	6.66	0.153E+20	0.839E+20	0.330E-01
73W279T	10.35	4.50	5.66	0.155E+20	0.852E+20	0.335E-01
73W340	10.35	4.50	4.66	0.157E+20	0.863E+20	0.339E-01
73W418	10.35	4.50	3.66	0.159E+20	0.872E+20	0.343E-01
73W414	10.35	4.50	2.66	0.160E+20	0.880E+20	0.346E-01
73W281T	10.35	4.50	1.66	0.162E+20	0.887E+20	0.348E-01
73W350	10.35	4.50	0.66	0.162E+20	0.891E+20	0.350E-01
73W265T	10.35	4.50	-0.34	0.163E+20	0.895E+20	0.351E-01
73W273	10.35	4.50	-1.34	0.163E+20	0.896E+20	0.352E-01
73W283	10.35	4.50	-3.70	0.163E+20	0.894E+20	0.351E-01
73W332	10.35	4.50	-4.70	0.163E+20	0.890E+20	0.350E-01
73W263T	10.35	4.50	-5.70	0.162E+20	0.885E+20	0.348E-01
73W310	10.35	4.50	-6.70	0.161E+20	0.878E+20	0.346E-01
73W422	10.35	4.50	-7.70	0.159E+20	0.870E+20	0.342E-01
73W354	10.35	4.50	-8.70	0.158E+20	0.860E+20	0.339E-01
73W273T	10.35	4.50	-9.70	0.156E+20	0.849E+20	0.335E-01
73W375	10.35	4.50	-10.70	0.154E+20	0.836E+20	0.330E-01
73W416	10.35	4.50	-11.70	0.152E+20	0.821E+20	0.324E-01
73W424	10.35	4.50	-12.70	0.149E+20	0.805E+20	0.319E-01
73W269T	10.35	4.50	-13.70	0.146E+20	0.788E+20	0.312E-01
73W380	10.35	4.50	-14.70	0.143E+20	0.770E+20	0.305E-01

Table 13. Coordinates and exposure values for irradiation specimens in Capsule 6 of the HSST5 irradiation series

Specimen ID	Coordinates			Exposure values		
	X (cm)	Y (cm)	Z (cm)	ϕ(E>1 MeV) ($n \cdot cm^2$)	ϕ(E>.1 MeV) ($n \cdot cm^2$)	dpa
72W221	-6.35	2.28	17.42	0.156E+20	0.730E+20	0.305E-01
72W200	-6.35	5.45	17.42	0.9[illegible]2E+19	0.554E+20	0.217E-01
72W214	-6.35	2.28	-22.59	0.151E+20	0.683E+20	0.289E-01
72W211	-6.35	5.45	-22.59	0.960E+19	0.518E+20	0.206E-01
72W206	-12.07	2.28	17.42	0.162E+20	0.767E+20	0.320E-01
72W215	-12.07	5.45	17.42	0.103E+20	0.582E+20	0.228E-01
72W204	-12.07	2.28	-22.59	0.157E+20	0.718E+20	0.303E-01
72W216	-12.07	5.45	-22.59	0.999E+19	0.545E+20	0.216E-01
72W213	-17.78	2.28	17.42	0.160E+20	0.758E+20	0.317E-01
72W201	-17.78	5.45	17.42	0.102E+20	0.576E+20	0.225E-01
72W212	-17.78	2.28	-22.59	0.155E+20	0.710E+20	0.300E-01
72W202	-17.78	5.45	-22.59	0.988E+19	0.539E+20	0.213E-01
72W223	-23.50	2.28	17.42	0.151E+20	0.704E+20	0.295E-01
72W220	-23.50	5.45	17.42	0.960E+19	0.534E+20	0.210E-01
72W208	-23.50	2.28	-22.59	0.146E+20	0.659E+20	0.279E-01
72W209	-23.50	5.45	-22.59	0.929E+19	0.500E+20	0.199E-01
72W116	-6.67	4.30	9.17	0.149E+20	0.798E+20	0.316E-01
72W141	-6.67	4.30	6.63	0.155E+20	0.836E+20	0.331E-01
72W104	-6.67	4.30	4.09	0.160E+20	0.864E+20	0.342E-01
72W119	-6.67	4.30	1.55	0.164E+20	0.883E+20	0.349E-01
72W130	-6.67	4.30	-0.99	0.165E+20	0.892E+20	0.352E-01
72W152	-6.67	4.30	-4.17	0.165E+20	0.888E+20	0.351E-01
72W123	-6.67	4.30	-6.71	0.163E+20	0.874E+20	0.346E-01
72W106	-6.67	4.30	-9.25	0.159E+20	0.850E+20	0.337E-01
72W137	-6.67	4.30	-11.79	0.154E+20	0.816E+20	0.324E-01
72W124	-6.67	4.30	-14.33	0.146E+20	0.773E+20	0.308E-01
72W125	-12.78	4.30	9.17	0.155E+20	0.837E+20	0.331E-01
72W120	-12.78	4.30	6.63	0.161E+20	0.877E+20	0.346E-01
72W115	-12.78	4.30	4.09	0.167E+20	0.906E+20	0.357E-01
72W118	-12.78	4.30	1.55	0.170E+20	0.926E+20	0.365E-01
72W110	-12.78	4.30	-0.99	0.172E+20	0.935E+20	0.368E-01
72W134	-12.78	4.30	-4.17	0.171E+20	0.931E+20	0.367E-01
72W108	-12.78	4.30	-6.71	0.169E+20	0.916E+20	0.362E-01
72W132	-12.78	4.30	-9.25	0.165E+20	0.891E+20	0.352E-01
72W107	-12.78	4.30	-11.79	0.159E+20	0.856E+20	0.339E-01
72W150	-12.78	4.30	-14.33	0.152E+20	0.811E+20	0.322E-01

Table 13. Continued

Specimen ID	Coordinates			Exposure values		
	X (cm)	Y (cm)	Z (cm)	ϕ(E>1 MeV) ($n \cdot cm^2$)	ϕ(E>.1 MeV) ($n \cdot cm^2$)	dpa
72W122	-23.18	4.30	9.17	0.144E+20	0.771E+20	0.306E-01
72W139	-23.18	4.30	6.63	0.151E+20	0.808E+20	0.320E-01
72W100	-23.18	4.30	4.09	0.155E+20	0.835E+20	0.331E-01
72W149	-23.18	4.30	1.55	0.159E+20	0.853E+20	0.337E-01
72W102	-23.18	4.30	-0.99	0.160E+20	0.862E+20	0.341E-01
72W129	-23.18	4.30	-4.17	0.160E+20	0.858E+20	0.340E-01
72W136	-23.18	4.30	-6.71	0.158E+20	0.845E+20	0.335E-01
72W114	-23.18	4.30	-9.25	0.154E+20	0.821E+20	0.326E-01
72W146	-23.18	4.30	-11.79	0.149E+20	0.789E+20	0.314E-01
72W112	-23.18	4.30	-14.33	0.142E+20	0.747E+20	0.298E-01
72W266T	-16.45	4.50	9.66	0.148E+20	0.809E+20	0.319E-01
72W337	-16.45	4.50	8.66	0.151E+20	0.827E+20	0.326E-01
72W386	-16.45	4.50	7.66	0.154E+20	0.842E+20	0.331E-01
72W415	-16.45	4.50	6.66	0.156E+20	0.857E+20	0.337E-01
72W273T	-16.45	4.50	5.66	0.158E+20	0.869E+20	0.342E-01
72W407	-16.45	4.50	4.66	0.160E+20	0.880E+20	0.346E-01
72W308	-16.45	4.50	3.66	0.162E+20	0.890E+20	0.350E-01
72W425	-16.45	4.50	2.66	0.163E+20	0.898E+20	0.353E-01
72W326	-16.45	4.50	1.66	0.164E+20	0.905E+20	0.355E-01
72W322	-16.45	4.50	0.66	0.165E+20	0.910E+20	0.357E-01
72W264T	-16.45	4.50	-0.34	0.166E+20	0.913E+20	0.358E-01
72W423	-16.45	4.50	-1.34	0.166E+20	0.915E+20	0.359E-01
72W384	-16.45	4.50	-3.70	0.166E+20	0.912E+20	0.358E-01
72W356	-16.45	4.50	-4.70	0.165E+20	0.908E+20	0.357E-01
72W262T	-16.45	4.50	-5.70	0.165E+20	0.903E+20	0.355E-01
72W328	-16.45	4.50	-6.70	0.164E+20	0.896E+20	0.352E-01
72W364	-16.45	4.50	-7.70	0.162E+20	0.888E+20	0.349E-01
72W374	-16.45	4.50	-8.70	0.161E+20	0.877E+20	0.345E-01
72W258T	-16.45	4.50	-9.70	0.159E+20	0.866E+20	0.341E-01
72W349	-16.45	4.50	-10.70	0.157E+20	0.853E+20	0.336E-01
72W398	-16.45	4.50	-11.70	0.154E+20	0.838E+20	0.331E-01
72W400	-16.45	4.50	-12.70	0.152E+20	0.822E+20	0.325E-01
72W419	-16.45	4.50	-13.70	0.149E+20	0.804E+20	0.318E-01
72W358	-16.45	4.50	-14.70	0.146E+20	0.785E+20	0.311E-01
72W352	-17.45	4.50	9.66	0.147E+20	0.805E+20	0.317E-01
72W382	-17.45	4.50	8.66	0.150E+20	0.822E+20	0.324E-01
72W275T	-17.45	4.50	7.66	0.153E+20	0.837E+20	0.330E-01
72W411	-17.45	4.50	6.66	0.155E+20	0.852E+20	0.335E-01
72W335	-17.45	4.50	5.66	0.157E+20	0.864E+20	0.340E-01

Table 13. Continued

Specimen ID	Coordinates X (cm)	Y (cm)	Z (cm)	Exposure values ϕ(E>1 MeV) (n·cm^2)	ϕ(E>.1 MeV) (n·cm^2)	dpa
72W347	-17.45	4.50	4.66	0.159E+20	0.875E+20	0.344E-01
72W268T	-17.45	4.50	3.66	0.161E+20	0.885E+20	0.348E-01
72W324	-17.45	4.50	2.66	0.162E+20	0.893E+20	0.351E-01
72W354	-17.45	4.50	1.66	0.164E+20	0.899E+20	0.353E-01
72W427	-17.45	4.50	0.66	0.164E+20	0.904E+20	0.355E-01
72W413	-17.45	4.50	-0.34	0.165E+20	0.908E+20	0.356E-01
72W433	-17.45	4.50	-1.34	0.165E+20	0.909E+20	0.357E-01
72W279T	-17.45	4.50	-3.70	0.165E+20	0.907E+20	0.356E-01
72W362	-17.45	4.50	-4.70	0.165E+20	0.903E+20	0.355E-01
72W370	-17.45	4.50	-5.70	0.164E+20	0.898E+20	0.353E-01
72W320	-17.45	4.50	-6.70	0.163E+20	0.891E+20	0.350E-01
72W256T	-17.45	4.50	-7.70	0.161E+20	0.882E+20	0.347E-01
72W396	-17.45	4.50	-8.70	0.160E+20	0.872E+20	0.343E-01
72W392	-17.45	4.50	-9.70	0.158E+20	0.861E+20	0.339E-01
72W345	-17.45	4.50	-10.70	0.156E+20	0.848E+20	0.334E-01
72W277T	-17.45	4.50	-11.70	0.154E+20	0.833E+20	0.329E-01
72W372	-17.45	4.50	-12.70	0.151E+20	0.817E+20	0.323E-01
72W429	-17.45	4.50	-13.70	0.148E+20	0.800E+20	0.316E-01
72W394	-17.45	4.50	-14.70	0.145E+20	0.781E+20	0.309E-01
72W342	-19.45	4.50	9.66	0.145E+20	0.791E+20	0.312E-01
72W388	-19.45	4.50	8.66	0.148E+20	0.808E+20	0.318E-01
72W376	-19.45	4.50	7.66	0.151E+20	0.823E+20	0.324E-01
72W306	-19.45	4.50	6.66	0.153E+20	0.837E+20	0.329E-01
72W270T	-19.45	4.50	5.66	0.155E+20	0.850E+20	0.334E-01
72W300	-19.45	4.50	4.56	0.157E+20	0.860E+20	0.338E-01
72W417	-19.45	4.50	3.66	0.159E+20	0.870E+20	0.342E-01
72W380	-19.45	4.50	2.66	0.160E+20	0.878E+20	0.345E-01
72W281T	-19.45	4.50	1.66	0.161E+20	0.884E+20	0.347E-01
72W431	-19.45	4.50	0.56	0.162E+20	0.889E+20	0.349E-01
72W252T	-19.45	4.50	-0.34	0.163E+20	0.892E+20	0.350E-01
72W409	-19.45	4.50	-1.34	0.163E+20	0.894E+20	0.351E-01
72W304	-19.45	4.50	-3.70	0.163E+20	0.891E+20	0.350E-01
72W302	-19.45	4.50	-4.70	0.162E+20	0.888E+20	0.349E-01
72W254T	-19.45	4.50	-5.70	0.161E+20	0.882E+20	0.347E-01
72W421	-19.45	4.50	-6.70	0.160E+20	0.876E+20	0.345E-01
72W405	-19.45	4.50	-7.70	0.159E+20	0.867E+20	0.342E-01
72W378	-19.45	4.50	-8.70	0.158E+20	0.858E+20	0.338E-01
72W283T	-19.45	4.50	-9.70	0.156E+20	0.846E+20	0.334E-01
72W360	-19.45	4.50	-10.70	0.154E+20	0.833E+20	0.329E-01
72W390	-19.45	4.50	-11.70	0.151E+20	0.819E+20	0.324E-01
72W339	-19.45	4.50	-12.70	0.149E+20	0.803E+20	0.318E-01
72W250T	-19.45	4.50	-13.70	0.146E+20	0.786E+20	0.311E-01
72W340	-19.45	4.50	-14.70	0.143E+20	0.767E+20	0.304E-01

Table 14. Coordinates and exposure values for irradiation specimens in Capsule 7 of the HSST5 irradiation series

Specimen ID	Coordinates			Exposure values		
	X (cm)	Y (cm)	Z (cm)	ϕ(E>1 MeV) ($n \cdot cm^2$)	ϕ(E>.1 MeV) ($n \cdot cm^2$)	dpa
73W53	21.02	6.84	17.72	0.112E+20	0.675E+20	0.258E-01
73W76	21.02	6.84	12.64	0.140E+20	0.844E+20	0.322E-01
73W55	21.02	6.84	7.56	0.161E+20	0.972E+20	0.371E-01
73W74	21.02	6.84	1.48	0.177E+20	0.106E+21	0.405E-01
73W75	21.02	6.84	-3.60	0.180E+20	0.108E+21	0.413E-01
73W56	21.02	6.84	-8.68	0.176E+20	0.104E+21	0.400E-01
73W52	21.02	6.84	-14.76	0.159E+20	0.936E+20	0.360E-01
73W51	21.02	6.84	-19.84	0.136E+20	0.794E+20	0.307E-01
73W58	21.02	6.84	-24.92	0.107E+20	0.613E+20	0.239E-01
73W50	8.83	6.84	17.72	0.113E+20	0.680E+20	0.259E-01
73W78	8.83	6.84	12.64	0.141E+20	0.850E+20	0.324E-01
73W57	8.83	6.84	7.56	0.162E+20	0.979E+20	0.373E-01
73W77	8.83	6.84	1.48	0.178E+20	0.107E+21	0.408E-01
73W62	8.83	6.84	-3.60	0.181E+20	0.109E+21	0.415E-01
73W60	8.83	6.84	-8.68	0.176E+20	0.105E+21	0.403E-01
73W63	8.83	6.84	-14.76	0.159E+20	0.943E+20	0.362E-01
73W65	8.83	6.84	-19.84	0.137E+20	0.800E+20	0.309E-01
73W79	8.83	6.84	-24.92	0.108E+20	0.617E+20	0.241E-01
73W413	22.52	7.22	4.52	0.158E+20	0.966E+20	0.366E-01
73W417	21.52	7.22	4.52	0.160E+20	0.982E+20	0.372E-01
73W421	20.52	7.22	4.52	0.162E+20	0.996E+20	0.377E-01
73W423	9.33	7.22	4.52	0.163E+20	0.100E+21	0.379E-01
73W427	8.33	7.22	4.52	0.161E+20	0.990E+20	0.375E-01
73W429	7.33	7.22	4.52	0.159E+20	0.975E+20	0.369E-01
73W365	22.52	7.22	-11.72	0.156E+20	0.941E+20	0.359E-01
73W381	21.52	7.22	-11.72	0.158E+20	0.957E+20	0.365E-01
73W401	20.52	7.22	-11.72	0.160E+20	0.970E+20	0.370E-01
73W403	9.33	7.22	-11.72	0.161E+20	0.977E+20	0.372E-01
73W407	8.33	7.22	-11.72	0.159E+20	0.964E+20	0.367E-01
73W409	7.33	7.22	-11.72	0.157E+20	0.949E+20	0.362E-01

Table 15. Coordinates and exposure values for irradiation specimens in Capsule 8 of the HSST5 irradiation series

Specimen ID	Coordinates			Exposure values		
	X (cm)	Y (cm)	Z (cm)	ϕ(E>1 MeV) ($n \cdot cm^2$)	ϕ(E>.1 MeV) ($n \cdot cm^2$)	dpa
72W57	-8.83	6.84	17.72	0.112E+20	0.678E+20	0.259E-01
72W58	-8.83	6.84	12.64	0.141E+20	0.848E+20	0.323E-01
72W61	-8.83	6.84	7.56	0.162E+20	0.977E+20	0.372E-01
72W59	-8.83	6.84	1.48	0.177E+20	0.107E+21	0.407E-01
72W55	-8.83	6.84	-3.60	0.181E+20	0.108E+21	0.415E-01
72W65	-8.83	6.84	-8.68	0.176E+20	0.105E+21	0.402E-01
72W60	-8.83	6.84	-14.76	0.159E+20	0.940E+20	0.361E-01
72W56	-8.83	6.84	-19.84	0.137E+20	0.798E+20	0.308E-01
72W63	-8.83	6.84	-24.92	0.108E+20	0.616E+20	0.240E-01
72W67	-21.02	6.84	17.72	0.112E+20	0.677E+20	0.258E-01
72W71	-21.02	6.84	12.64	0.140E+20	0.847E+20	0.323E-01
72W77	-21.02	6.84	7.56	0.161E+20	0.975E+20	0.371E-01
72W70	-21.02	6.84	1.48	0.177E+20	0.106E+21	0.406E-01
72W74	-21.02	6.84	-3.60	0.181E+20	0.108E+21	0.414E-01
72W51	-21.02	6.84	-8.68	0.176E+20	0.105E+21	0.401E-01
72W78	-21.02	6.84	-14.76	0.159E+20	0.939E+20	0.361E-01
72W64	-21.02	6.84	-19.84	0.136E+20	0.796E+20	0.308E-01
72W52	-21.02	6.84	-24.92	0.108E+20	0.615E+20	0.240E-01
73W345	-7.33	7.22	4.52	0.159E+20	0.972E+20	0.368E-01
73W349	-8.33	7.22	4.52	0.161E+20	0.987E+20	0.374E-01
73W419	-9.33	7.22	4.52	0.163E+20	0.100E+21	0.379E-01
73W355	-20.52	7.22	4.52	0.162E+20	0.999E+20	0.378E-01
73W357	-21.52	7.22	4.52	0.160E+20	0.985E+20	0.373E-01
73W353	-22.52	7.22	4.52	0.158E+20	0.969E+20	0.367E-01
73W374	-7.33	7.22	-11.72	0.157E+20	0.946E+20	0.361E-01
73W426	-8.33	7.22	-11.72	0.159E+20	0.961E+20	0.366E-01
73W411	-9.33	7.22	-11.72	0.161E+20	0.974E+20	0.371E-01
73W369	-20.52	7.22	-11.72	0.160E+20	0.973E+20	0.370E-01
73W341	-21.52	7.22	-11.72	0.159E+20	0.959E+20	0.365E-01
73W431	-22.52	7.22	-11.72	0.156E+20	0.944E+20	0.360E-01

Table 16. Coordinates and exposure values for irradiation specimens in Capsule 9 of the HSST5 irradiation series

Specimen ID	Coordinates			Exposure values		
	X (cm)	Y (cm)	Z (cm)	ϕ(E>1 MeV) ($n \cdot cm^2$)	ϕ(E>.1 MeV) ($n \cdot cm^2$)	dpa
73W440	11.65	3.36	-3.31	0.188E+20	0.104E+21	0.410E-01
73W439	11.65	4.36	-3.31	0.178E+20	0.103E+21	0.398E-01
73W436	11.65	5.36	-3.31	0.170E+20	0.101E+21	0.388E-01
73W435	11.65	8.32	-3.31	0.163E+20	0.983E+20	0.376E-01
73W434	11.65	9.32	-3.31	0.166E+20	0.980E+20	0.377E-01
73W432	11.65	10.32	-3.31	0.172E+20	0.981E+20	0.381E-01
73W18	14.92	2.71	6.83	0.175E+20	0.954E+20	0.376E-01
73W18	14.92	4.78	6.83	0.158E+20	0.936E+20	0.361E-01
73W18	14.92	6.84	6.83	0.153E+20	0.930E+20	0.356E-01
73W18	14.92	8.91	6.83	0.158E+20	0.937E+20	0.361E-01
73W18	14.92	10.97	6.83	0.175E+20	0.957E+20	0.378E-01
73W19	14.92	2.71	-14.45	0.167E+20	0.894E+20	0.355E-01
73W19	14.92	4.78	-14.45	0.151E+20	0.876E+20	0.340E-01
73W19	14.92	6.84	-14.45	0.146E+20	0.871E+20	0.335E-01
73W19	14.92	8.91	-14.45	0.151E+20	0.878E+20	0.341E-01
73W19	14.92	10.97	-14.45	0.168E+20	0.897E+20	0.356E-01
73W457	18.19	3.36	-3.31	0.171E+20	0.975E+20	0.378E-01
73W455	18.19	4.36	-3.31	0.165E+20	0.975E+20	0.375E-01
73W453	18.19	5.36	-3.31	0.162E+20	0.979E+20	0.374E-01
73W451	18.19	8.32	-3.31	0.170E+20	0.101E+21	0.388E-01
73W450	18.19	9.32	-3.31	0.178E+20	0.102E+21	0.398E-01
73W442	18.19	10.32	-3.31	0.189E+20	0.104E+21	0.410E-01

Table 17. Coordinates and exposure values for irradiation specimens in Capsule 10 of the HSST5 irradiation series

Specimen ID	Coordinates			Exposure values		
	X (cm)	Y (cm)	Z (cm)	ϕ(E>1 MeV) ($n \cdot cm^2$)	ϕ(E>.1 MeV) ($n \cdot cm^2$)	dpa
73W479	-11.65	3.36	-3.31	0.189E+20	0.105E+21	0.412E-01
73W477	-11.65	4.36	-3.31	0.178E+20	0.103E+21	0.400E-01
73W475	-11.65	5.36	-3.31	0.171E+20	0.102E+21	0.390E-01
73W473	-11.65	8.32	-3.31	0.164E+20	0.991E+20	0.378E-01
73W471	-11.65	9.32	-3.31	0.167E+20	0.988E+20	0.379E-01
73W469	-11.65	10.32	-3.31	0.173E+20	0.988E+20	0.383E-01
73W21	-14.92	2.71	6.83	0.175E+20	0.961E+20	0.378E-01
73W21	-14.92	4.78	6.83	0.159E+20	0.943E+20	0.362E-01
73W21	-14.92	6.84	6.83	0.153E+20	0.937E+20	0.357E-01
73W21	-14.92	8.91	6.83	0.159E+20	0.944E+20	0.363E-01
73W21	-14.92	10.97	6.83	0.176E+20	0.965E+20	0.379E-01
73W22	-14.92	2.71	-14.45	0.168E+20	0.900E+20	0.357E-01
73W22	-14.92	4.78	-14.45	0.152E+20	0.883E+20	0.342E-01
73W22	-14.92	6.84	-14.45	0.147E+20	0.878E+20	0.337E-01
73W22	-14.92	8.91	-14.45	0.152E+20	0.884E+20	0.342E-01
73W22	-14.92	10.97	-14.45	0.168E+20	0.904E+20	0.358E-01
73W467	-18.19	3.36	-3.31	0.172E+20	0.983E+20	0.380E-01
73W466	-18.19	4.36	-3.31	0.166E+20	0.983E+20	0.377E-01
73W464	-18.19	5.36	-3.31	0.163E+20	0.986E+20	0.376E-01
73W462	-18.19	8.32	-3.31	0.170E+20	0.102E+21	0.390E-01
73W460	-18.19	9.32	-3.31	0.178E+20	0.103E+21	0.400E-01
73W459	-18.19	10.32	-3.31	0.189E+20	0.105E+21	0.412E-01

Table 18. Coordinates and exposure values for irradiation specimens in Capsule 11 of the HSST5 irradiation series

Specimen ID	Coordinates			Exposure values		
	X (cm)	Y (cm)	Z (cm)	ϕ(E>1 MeV) ($n \cdot cm^2$)	ϕ(E>.1 MeV) ($n \cdot cm^2$)	dpa
73W485	11.65	3.36	-3.31	0.194E+20	0.107E+21	0.421E-01
73W484	11.65	4.36	-3.31	0.184E+20	0.106E+21	0.409E-01
73W483	11.65	5.36	-3.31	0.176E+20	0.104E+21	0.401E-01
73W482	11.65	8.32	-3.31	0.169E+20	0.102E+21	0.389E-01
73W481	11.65	9.32	-3.31	0.172E+20	0.102E+21	0.390E-01
73W480	11.65	10.32	-3.31	0.178E+20	0.102E+21	0.393E-01
72W19	14.92	2.71	6.83	0.177E+20	0.966E+20	0.380E-01
72W19	14.92	4.78	6.83	0.161E+20	0.951E+20	0.366E-01
72W19	14.92	6.84	6.83	0.156E+20	0.946E+20	0.361E-01
72W19	14.92	8.91	6.83	0.161E+20	0.952E+20	0.367E-01
72W19	14.92	10.97	6.83	0.178E+20	0.969E+20	0.382E-01
72W20	14.92	2.71	-14.45	0.172E+20	0.918E+20	0.364E-01
72W20	14.92	4.78	-14.45	0.156E+20	0.904E+20	0.350E-01
72W20	14.92	6.84	-14.45	0.151E+20	0.899E+20	0.346E-01
72W20	14.92	8.91	-14.45	0.157E+20	0.905E+20	0.351E-01
72W20	14.92	10.97	-14.45	0.173E+20	0.921E+20	0.365E-01
73W501	18.19	3.36	-3.31	0.177E+20	0.101E+21	0.391E-01
73W494	18.19	4.36	-3.31	0.171E+20	0.101E+21	0.388E-01
73W493	18.19	5.36	-3.31	0.169E+20	0.102E+21	0.388E-01
73W492	18.19	8.32	-3.31	0.176E+20	0.104E+21	0.400E-01
73W491	18.19	9.32	-3.31	0.184E+20	0.106E+21	0.409E-01
73W486	18.19	10.32	-3.31	0.195E+20	0.107E+21	0.421E-01

Table 19. Coordinates and exposure values for irradiation specimens in Capsule 12 of the HSST5 irradiation series

Specimen ID	Coordinates			Exposure values		
	X (cm)	Y (cm)	Z (cm)	ϕ(E>1 MeV) ($n \cdot cm^2$)	ϕ(E>.1 MeV) ($n \cdot cm^2$)	dpa
73W515	-11.65	3.36	-3.31	0.204E+20	0.113E+21	0.445E-01
73W514	-11.65	4.36	-3.31	0.194E+20	0.112E+21	0.433E-01
73W513	-11.65	5.36	-3.31	0.186E+20	0.111E+21	0.424E-01
73W511	-11.65	8.32	-3.31	0.180E+20	0.108E+21	0.414E-01
73W510	-11.65	9.32	-3.31	0.183E+20	0.108E+21	0.415E-01
73W509	-11.65	10.32	-3.31	0.190E+20	0.108E+21	0.420E-01
72W25	-14.92	2.71	6.83	0.188E+20	0.103E+21	0.404E-01
72W25	-14.92	4.78	6.83	0.170E+20	0.101E+21	0.388E-01
72W25	-14.92	6.84	6.83	0.165E+20	0.100E+21	0.384E-01
72W25	-14.92	8.91	6.83	0.171E+20	0.101E+21	0.389E-01
72W25	-14.92	10.97	6.83	0.188E+20	0.103E+21	0.405E-01
72W26	-14.92	2.71	-14.45	0.182E+20	0.975E+20	0.386E-01
72W26	-14.92	4.78	-14.45	0.165E+20	0.960E+20	0.372E-01
72W26	-14.92	6.84	-14.45	0.160E+20	0.955E+20	0.367E-01
72W26	-14.92	8.91	-14.45	0.166E+20	0.961E+20	0.372E-01
72W26	-14.92	10.97	-14.45	0.183E+20	0.978E+20	0.388E-01
73W508	-18.19	3.36	-3.31	0.189E+20	0.108E+21	0.418E-01
73W507	-18.19	4.36	-3.31	0.183E+20	0.108E+21	0.414E-01
73W505	-18.19	5.36	-3.31	0.179E+20	0.108E+21	0.412E-01
73W504	-18.19	8.32	-3.31	0.186E+20	0.110E+21	0.424E-01
73W504	-18.19	9.32	-3.31	0.194E+20	0.112E+21	0.433E-01
73W502	-18.19	10.32	-3.31	0.205E+20	0.113E+21	0.445E-01

ORNL DWG. NO. 87-18475

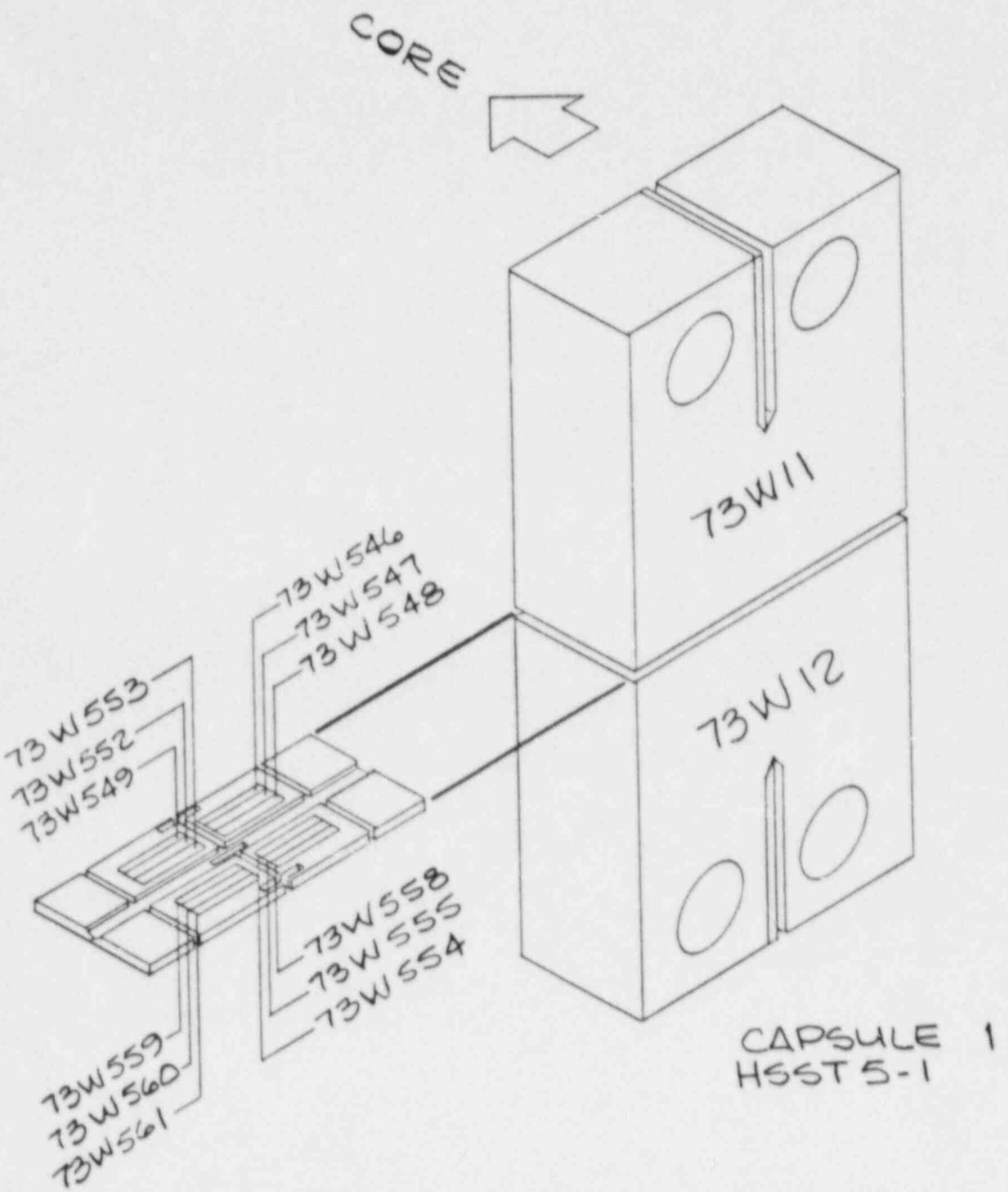

Fig. 8. Identification of test specimen locations for Capsule 1 of the HSST5 irradiation series.

ORNL DWG. NO. 87-18476

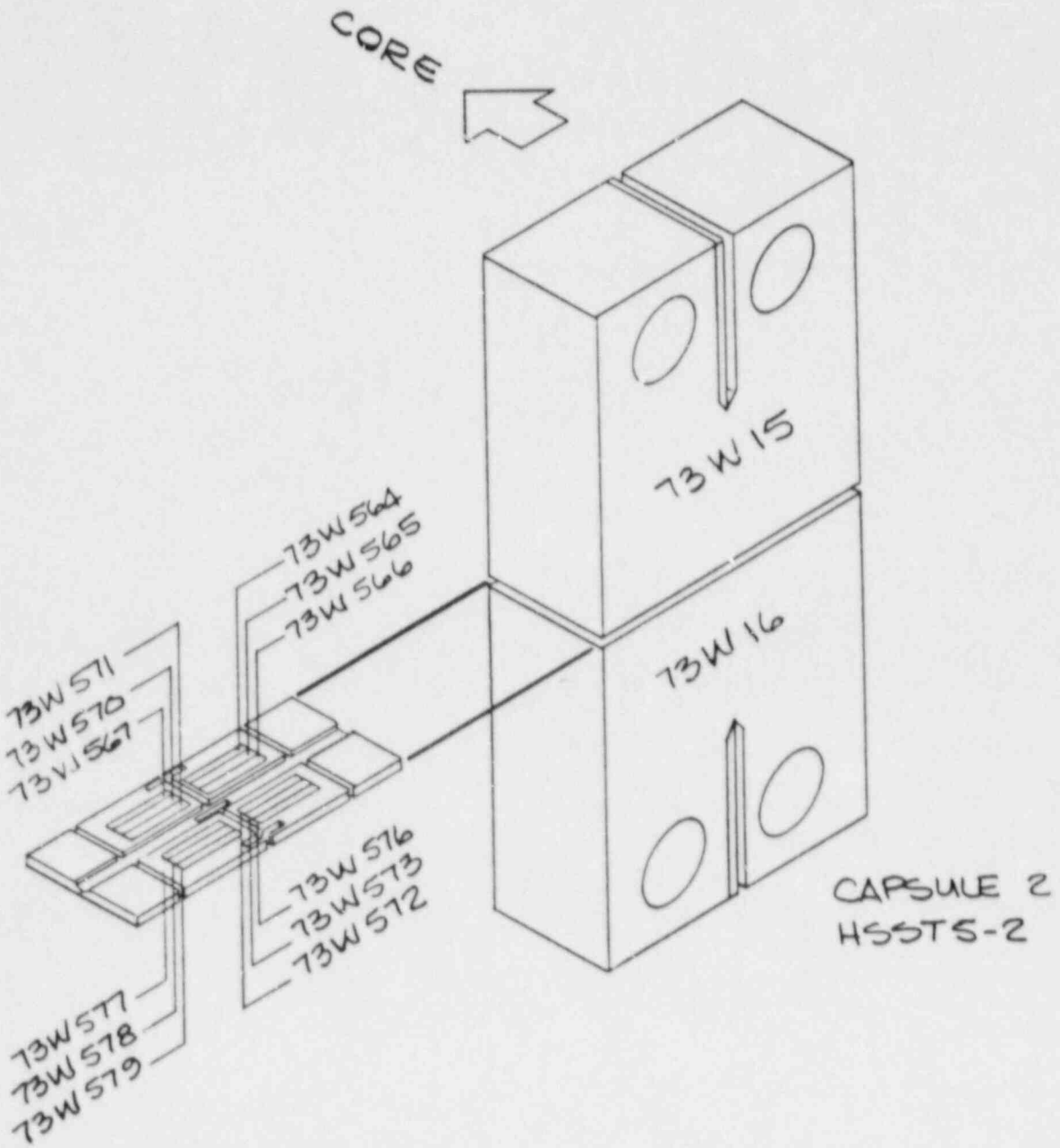

Fig. 9. Identification of test specimen locations for Capsule 2 of the HSST5 irradiation series.

ORNL DWG. NO. 87-18477

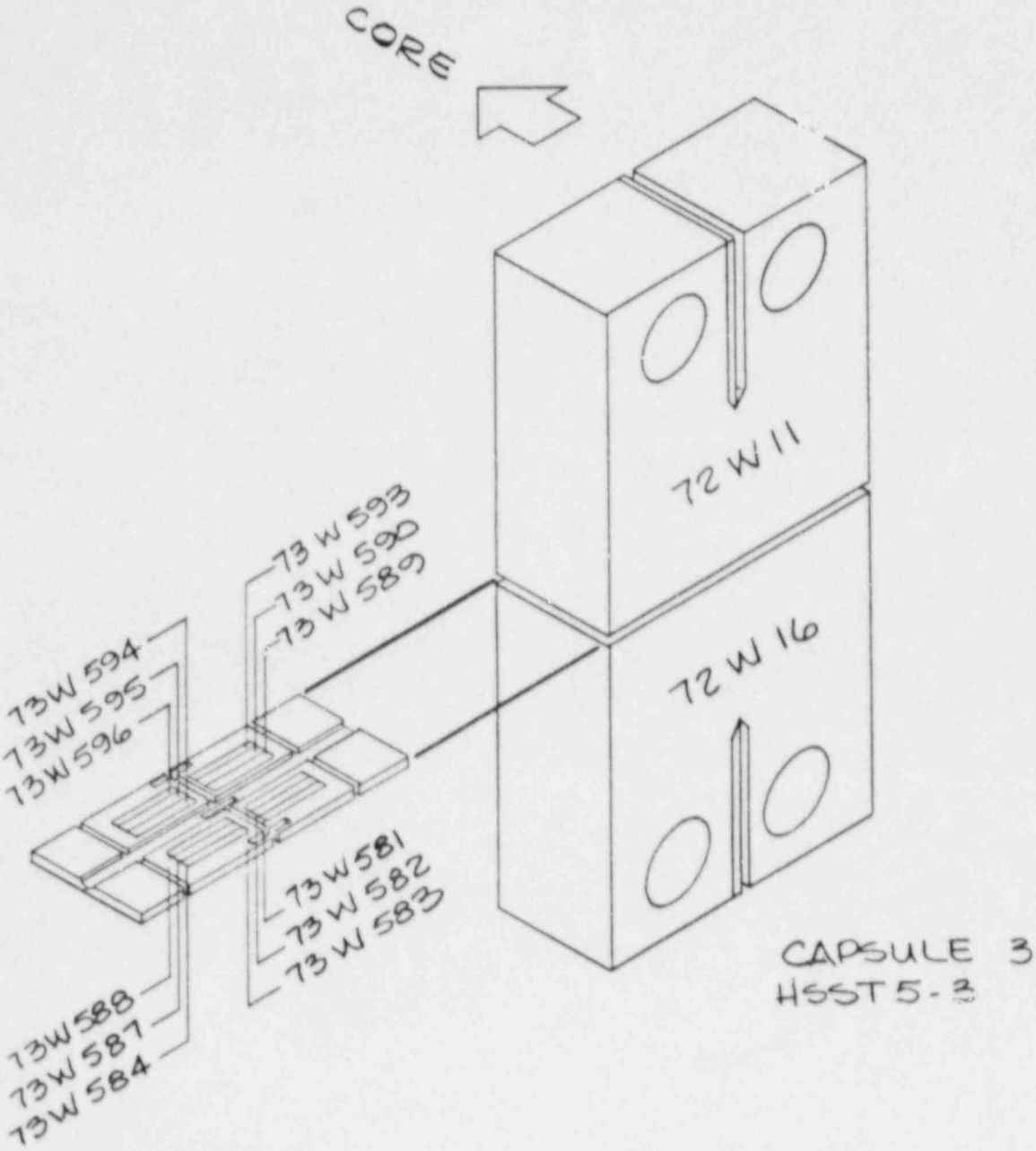

Fig. 10. Identification of test specimen locations for Capsule 3 of the HSST5 irradiation series.

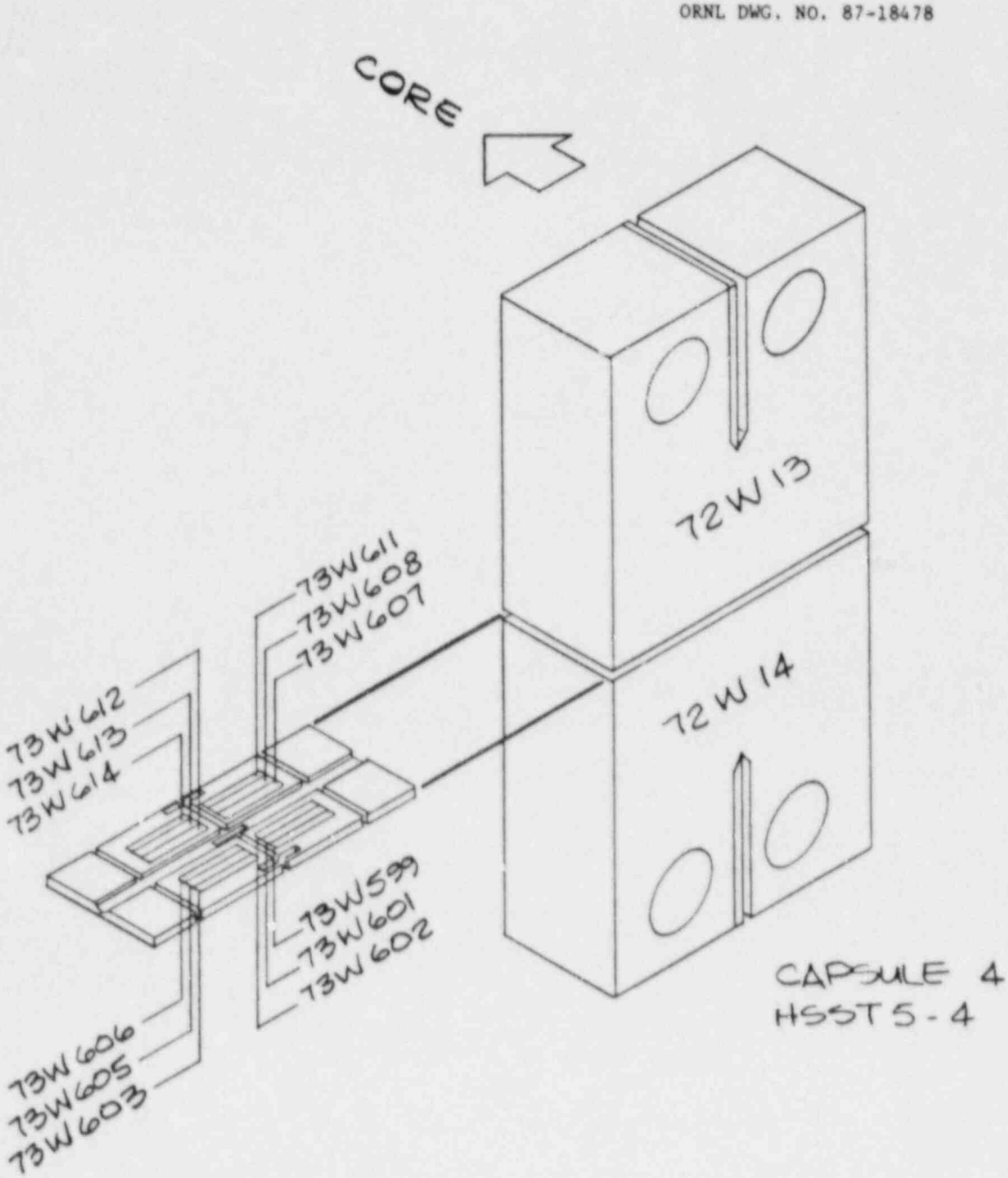

Fig. 11. Identification of test specimen locations for Capsule 4 of the HSST5 irradiation series.

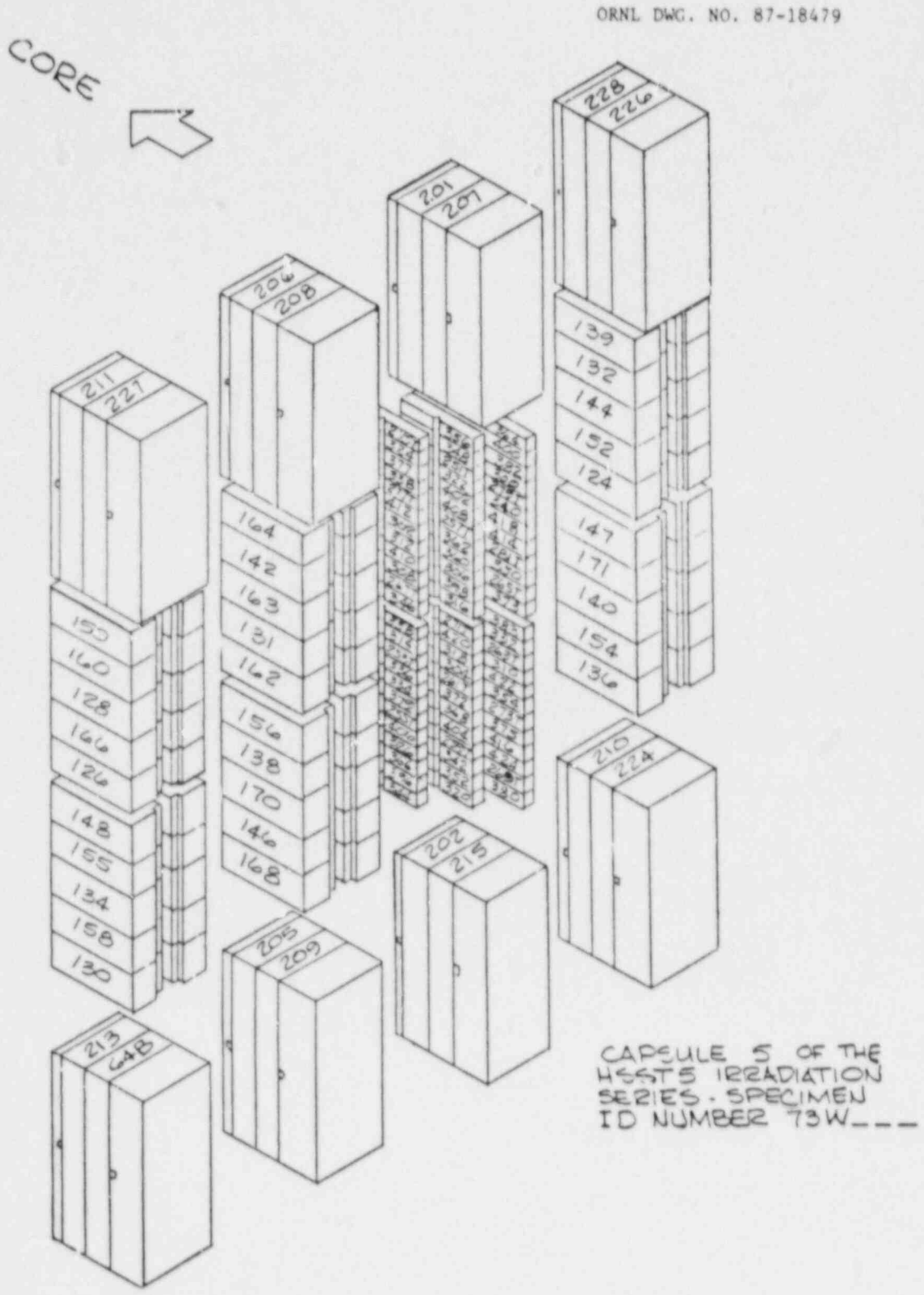

Fig. 12. Identification of test specimen locations for Capsule 5 of the HSST5 irradiation series.

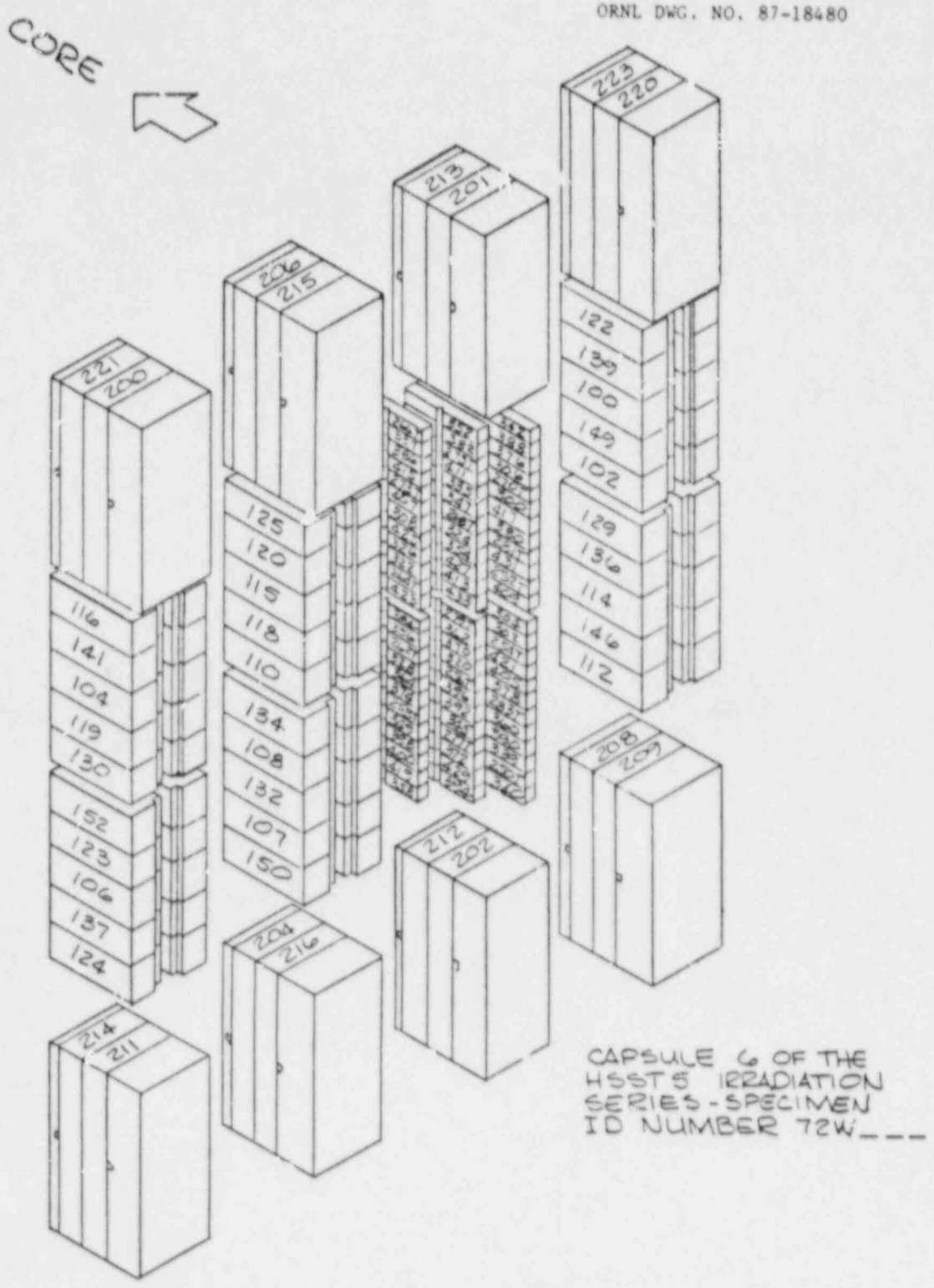

Fig. 13. Identification of test specimen locations for Capsule 6 of the HSST5 irradiation series.

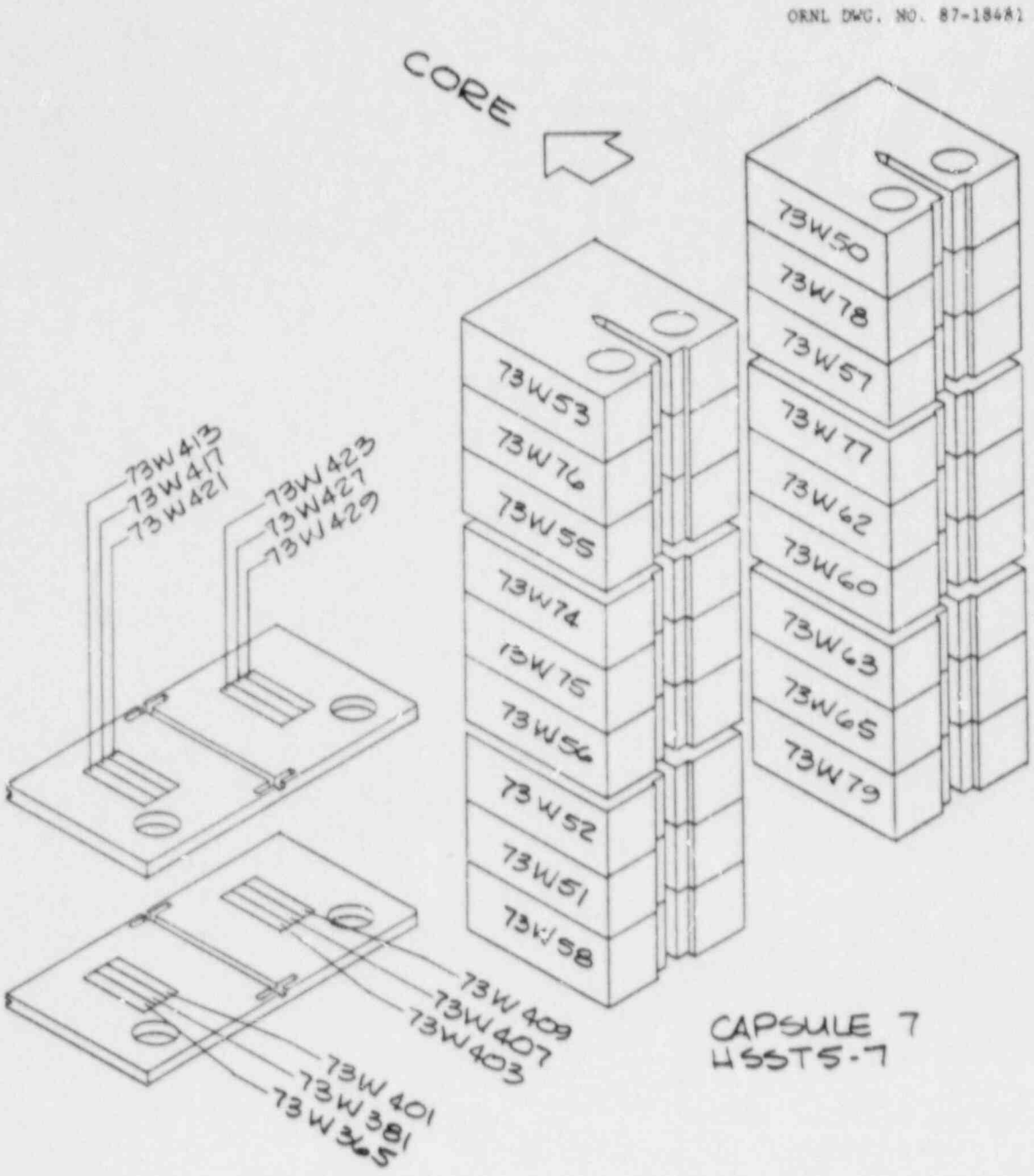

Fig. 14. Identification of test specimen locations for Capsule 7 of the HSST5 irradiation series.

ORNL DWG. NO. 87-18482

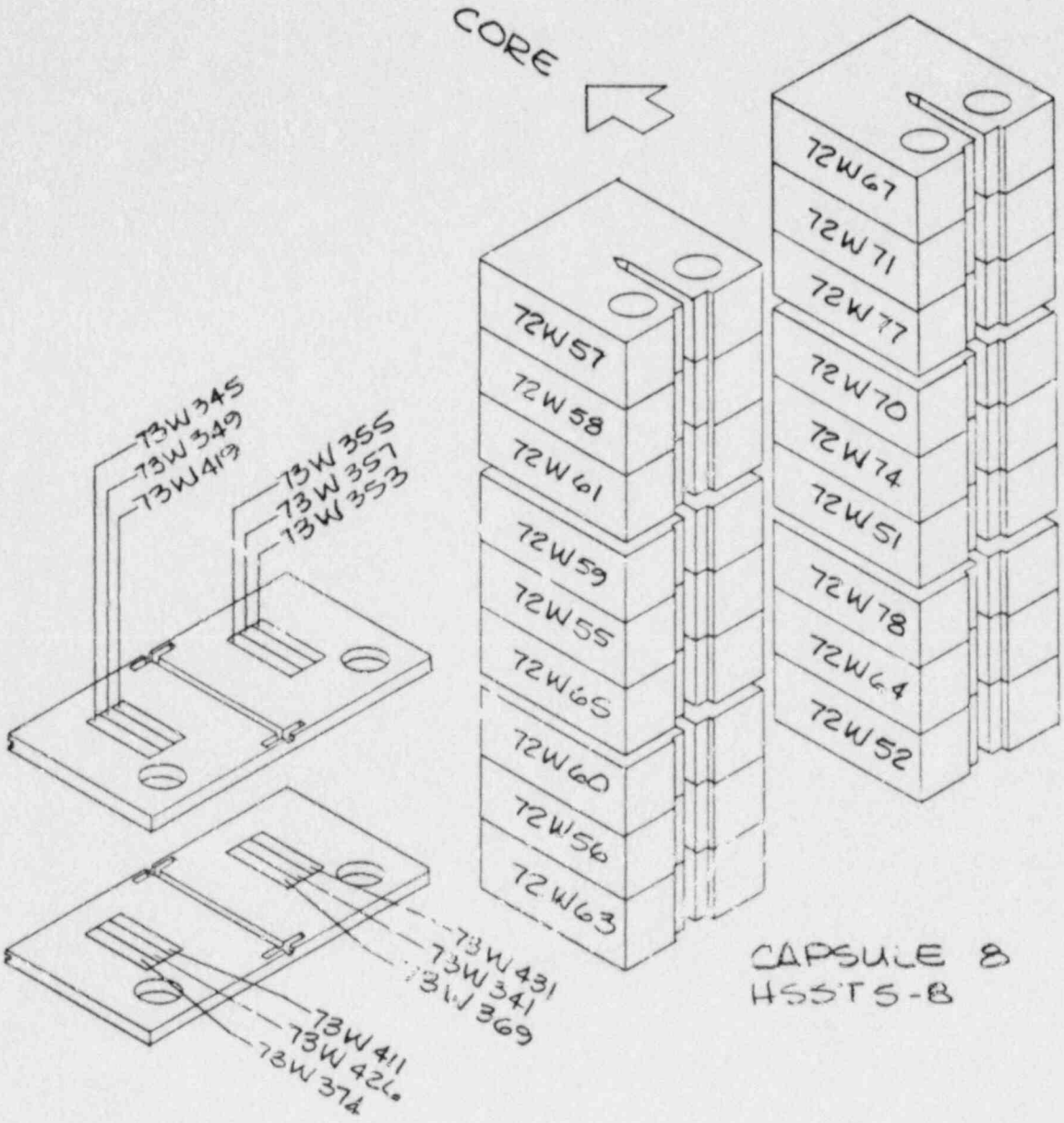

Fig. 15. Identification of test specimen locations for Capsule 8 of the HSST5 irradiation series.

ORNL DWG. NO. 87-18483

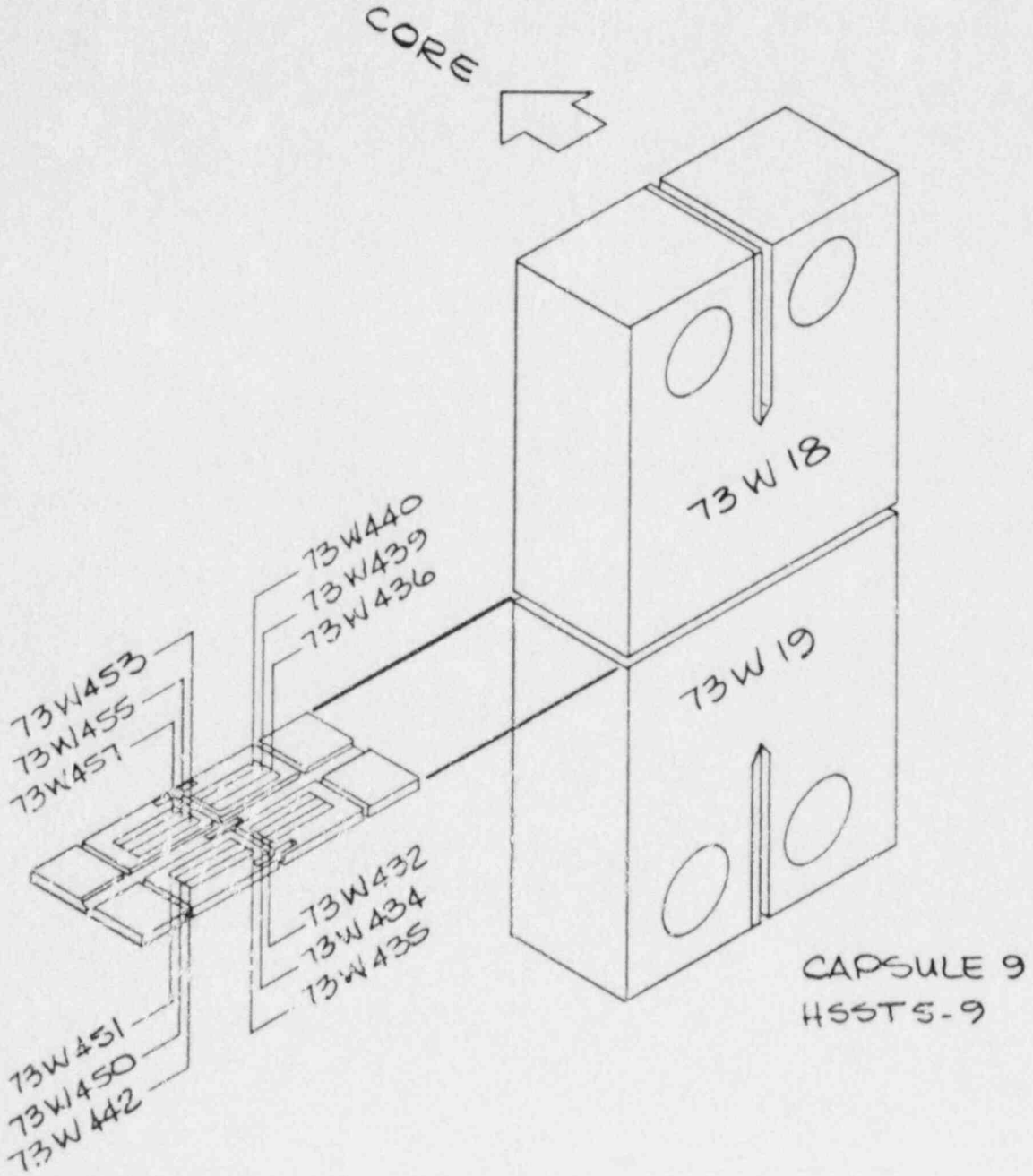

Fig. 16. Identification of test specimen locations for Capsule 9 of the HSST5 irradiation series.

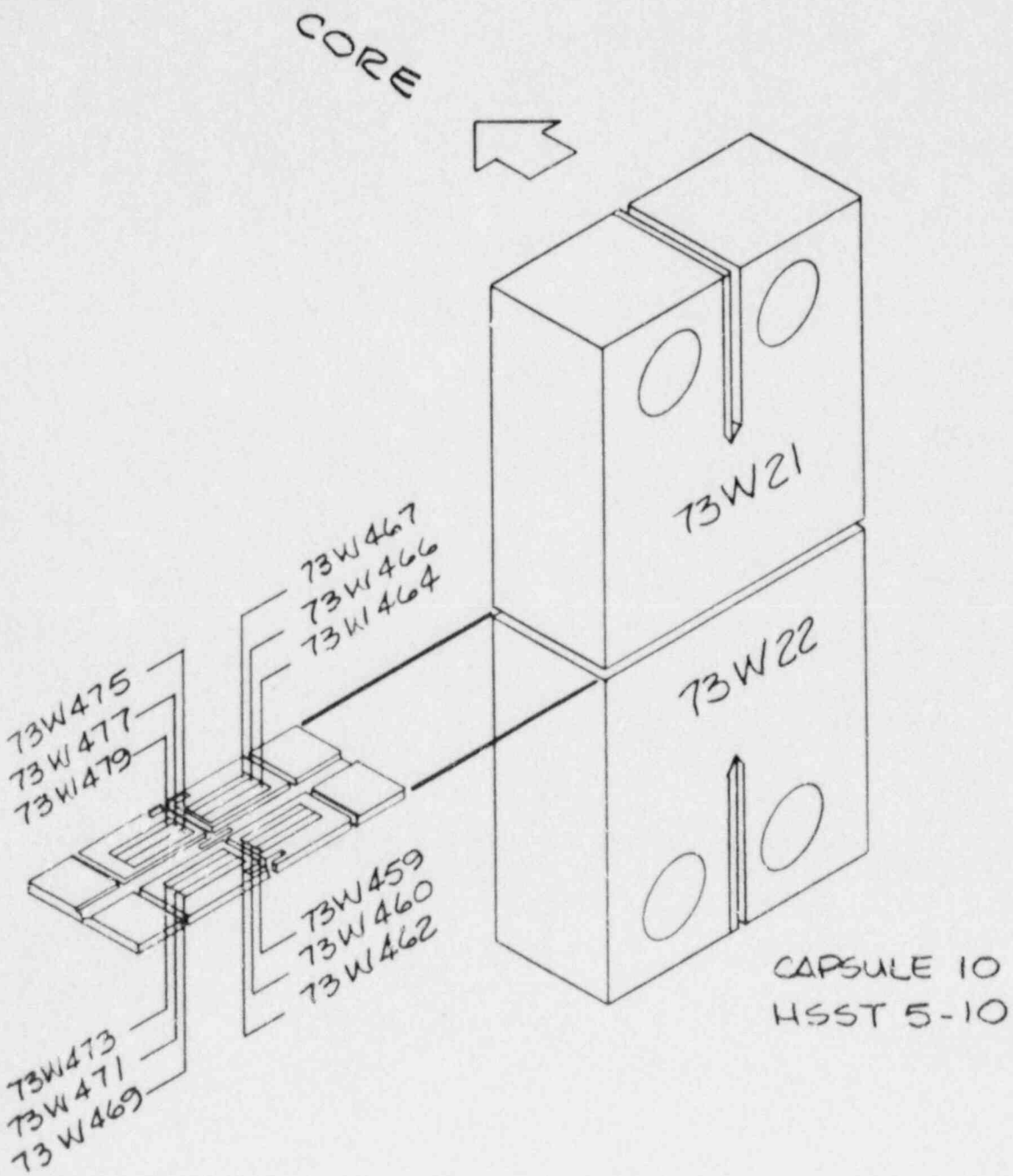

Fig. 17. Identification of test specimen locations for Capsule 10 of the HSST5 irradiation series.

ORNL DWG. NO. 87-18485

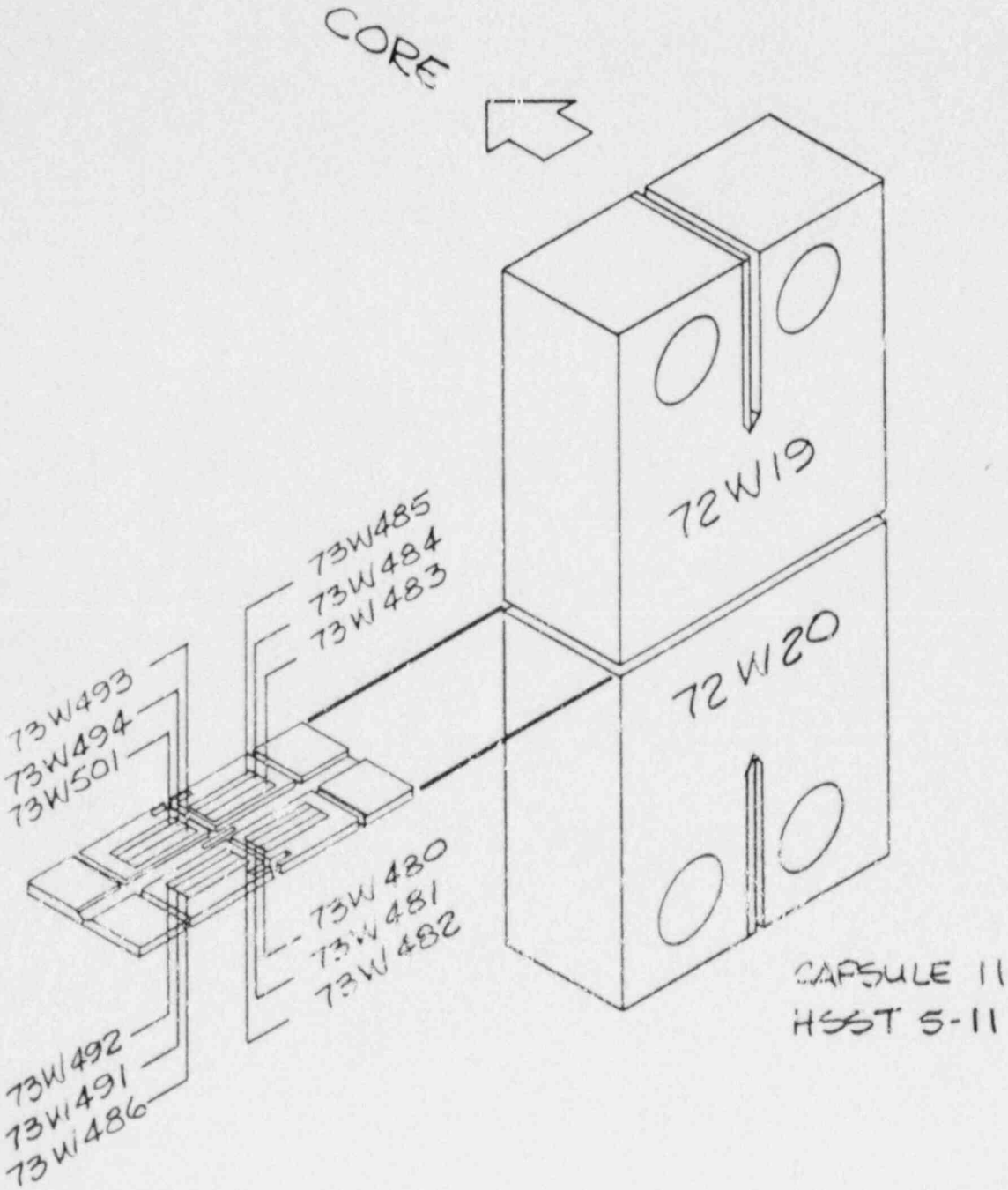

Fig. 18. Identification of test specimen locations for Capsule 11 of the HSST5 irradiation series.

ORNL DWG. NO. 87-18486

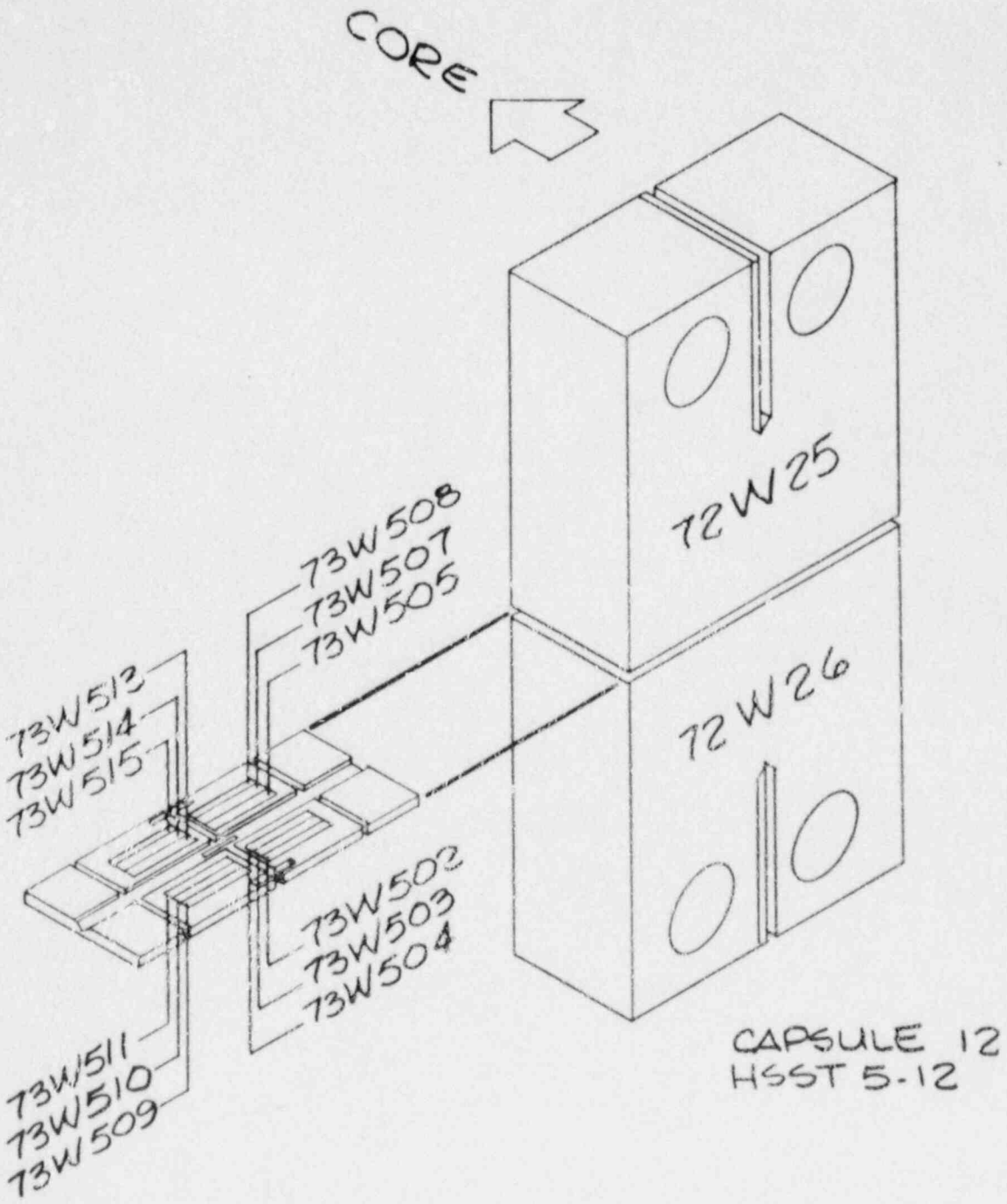

Fig. 19. Identification of test specimen locations for Capsule 12 of the HSST5 irradiation series.

4. CONCLUSIONS

Exposure parameters listed should be useful for correlating metallurgical properties obtained from listing of irradiation test specimens with exposure parameters. It is suggested that an uncertainty of 7% (1σ) should be associated with these values.

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APPENDIX

The data included in this Appendix should be sufficient for another organization to recalculate the exposure parameters if fluence rate spectra are available or if neutronics calculations are performed. In particular, the data included herein are (1) irradiation history data for each capsule, (2) coordinates of each dosimeter relative to the system shown in Fig. A.1, and (3) specific activities of each dosimeter at the time of removal. Several illustrations and photographs which depict the location and installation techniques of gradient wires (GWs) and of fission radiometric dosimeter sets (FRDSs) are also included.

The irradiation histories of the HSST5 capsules are listed in Table A.1. It is evident from this table that capsule-to-capsule variations in the calendar times associated with the irradiation history are significant (as was anticipated). Thus, dosimetry which could be analyzed in advance of capsule disassembly was provided just behind the thermal shield in order to assure that proper exposures were achieved. This dosimetry consisted of Fe and Co-Al GWs located in vertical tube locations MT1, MT2, and MT3 as shown in Fig. A.1. The wires were sectioned, counted, and analyzed to determine the saturation activities of ^{54}Mn and ^{60}Co and, finally, the data were fitted to cosine curves in the Z direction. For the Fe GWs, the peak values in the three locations were also fitted to a cosine curve in the X direction. A summary of these cosine fits is given in Table A.2.

Several groups were involved in the overall effort associated with the HSST5 irradiation experiments; consequently, different reference coordinate systems were used for reporting data. The locations of dosimeters are based on the coordinate system shown in Fig. A.1 (with the origin at the surface of the aluminum window) rather than the one shown in Fig. 7 with the origin at the back of the thermal shield. Figures A.2 and A.3 illustrate the general locations of the GWs and FRDSs for the capsules which were rotated in place. Figures A.4 and A.5 provide the same information for those which were translated. Photographs of typical installations are given in Figs. A.6 through A.8.

Specific activities at the end of irradiation (EOI) for the rotated capsules (1, 2, 3, 4, 9, 10, 11, and 12) are listed in Tables A.2 through A.9, and those for the translated capsules (5, 6, 7, and 8) are listed in Tables A.10 through A.14. Note that the GWs are installed as continuous wires and are segmented after they are removed. Thus, the numbers following the GW1 (for example, Table A.2) designations specify a particular segment of GW1. The corresponding coordinate marks its centroid. Note that the extentions on the FRDSs (N2-ext, for example) designate the particular reaction. Also, note that the locations of these materials in the FRDSs are slightly different.

The data included herein, in conjunction with neutronics calculations, should be adequate for evaluating alternative methodologies or for verifying that the reported exposure parameters are correct.

Table A.1. Irradiation history for HSST5 series metallurgical capsules

HSST capsules	Insertion date and time		Retraction date and time		Duration (s)	Average reactor power (MW)
5-1 and	11-May-84	9:56	22-May-84	4:00	929,040	29.99
5-2	22-May-84	17:56	11-Jun-84	4:00	1,677,840	29.73
			Capsules rotated in place 180°			
	15-Jun-84	14:49	16-Jun-84	1:40	39,060	29.94
	18-Jun-84	8:27	20-Jun-84	17:43	206,160	29.95
	21-Jun-84	8:59	2-Jul-84	4:00	932,460	29.60
	2-Jul-84	16:43	11-Jul-84	22:25	798,120	29.72
	12-Jul-84	13:30	15-Jul-84	16:18	269,280	29.85
	16-Jul-84	9:38	17-Jul-84	16:57	112,740	29.86
	18-Jul-84	12:50	21-Jul-84	10:00	249,000	30.03
5-3 and	16-Aug-84	16:30	1-Sep-84	16:25	1,382,100	29.92
5-4	7-Sep-84	8:44	20-Sep-84	19:33	1,162,140	30.07
	21-Sep-84	9:22	22-Sep-84	0:17	53,700	30.13
			Capsules rotated in place 180°			
	1-Oct-84	9:13	18-Oct-84	5:20	1,454,820	29.97
	18-Oct-84	13:41	21-Oct-84	16:00	267,540	30.10
	2-Nov-84	13:38	12-Nov-84	15:30	870,720	30.10
5-5 and	7-Dec-84	9:18	13-Dec-84	9:44	519,960	29.98
5-6	14-Dec-84	8:58	19-Dec-84	4:00	414,120	30.04
	20-Dec-84	8:42	20-Dec-84	12:38	14,160	29.65
	21-Dec-84	15:21	25-Dec-84	12:23	334,920	29.94
	2-Jan-85	8:27	8-Jan-85	22:37	569,400	30.09
			Capsules translated north and south			
	10-Jan-85	10:45	20-Jan-85	16:00	882,900	30.01
	7-Feb-85	9:47	18-Feb-85	14:06	965,940	30.05

Table A.1. Continued

HSST capsules	Insertion date and time		Retraction date and time		Duration (s)	Average reactor power (MW)
5-7 and 5-8	5-Mar-85	12:44	14-Mar-85	4:00	746,160	29.99
	15-Mar-85	11:20	3-Apr-85	4:00	1,615,200	30.05
	4-Apr-85	10:09	5-Apr-85	19:03	118,980	30.12
	9-Apr-85	8:12	15-Apr-85	15:40	545,280	29.93
	Capsules translated north and south					
	17-Apr-85	8:25	21-Apr-85	13:15	363,000	29.95
	22-Apr-85	12:57	30-Apr-85	24:00	730,980	29.89
	6-May-85	8:34	16-May-85	4:00	847,560	30.07
	17-May-85	8:19	29-May-85	23:30	1,091,460	29.98
5-9 and 5-10	3-Jun-85	12:49	7-Jun-85	23:26	383,820	30.02
	10-Jun-85	8:20	10-Jun-85	13:51	19,860	30.35
	11-Jun-85	12:54	26-Jun-85	4:00	1,263,960	29.93
	30-Jun-85	8:24	7-Jul-85	15:40	630,960	29.69
	8-Jul-85	12:57	11-Jul-85	4:00	226,980	29.99
	Capsules rotated in place 180°					
	13-Jul-85	6:50	23-Jul-85	5:00	857,400	29.82
	23-Jul-85	8:29	24-Jul-85	15:30	111,660	29.93
	26-Jul-85	8:15	30-Jul-85	4:50	333,300	29.91
	30-Jul-85	9:04	7-Aug-85	24:00	744,960	29.78
	26-Aug-85	9:15	2-Sep-85	12:37	616,920	29.80
5-11 and 5-12	9-Sep-85	8:18	10-Sep-85	8:45	88,020	29.97
	10-Sep-85	14:14	19-Sep-85	4:00	740,760	30.04
	23-Sep-85	8:22	3-Oct-85	3:00	844,680	30.00
	4-Oct-85	8:19	14-Oct-85	4:52	851,580	29.85
	14-Oct-85	8:34	15-Oct-85	5:16	74,520	29.89
	Capsules rotated in place 180°					
	18-Oct-85	8:51	3-Nov-85	16:00	1,408,140	30.01
	29-Nov-85	8:24	13-Dec-85	0:14	1,180,200	29.75

Table A.2. Summary of cosine fits from thermal shield back locations for HSST5 irradiations

$A \cos B_X(X-X_0) \cos B_Z(Z-Z_0)$

Capsule	Location/wire	Total irradiation time (s)	A (Bq/atom @ 30 MW)	B_X (cm^{-1})	X_0 (cm)	B_Z (cm^{-1})	Z_0 (cm)
HSST5-1 & 2	MT1/Fe		1.70-13			4.20-2	-2.33
Cycle 1	MT2/Fe	929,040	5.02-13	4.18-2	0.50	4.24-2	-3.41
	MT3/Fe		1.50-13			4.03-2	-1.89
	MT2/Co-Al		3.43-10			3.90-2	-1.90
HSST5-1 & 2	MT1/Fe		1.53-13			3.95-2	-0.55
Cycle 2	MT2/Fe	1,677,840	4.90-13	4.20-2	-0.08	4.07-2	-1.79
	MT3/Fe		1.56-13			3.95-2	-3.53
	MT2/Co-Al		3.39-10			3.66-2	0.39
HSST5-1 & 2	MT1/Fe		1.56-13			3.93-2	-1.28
Cycles 3-9	MT2/Fe	2,606,820	5.04-13	4.12-2	-0.69	4.09-2	-1.33
	MT3/Fe		1.83-13			3.98-2	-3.22
	MT2/Co-Al		3.65-10			4.16-2	-2.88
HSST5-3 & 4	MT1/Fe		1.50-13			3.73-2	-2.51
Cycles 1-3	MT2/Fe	2,597,940	4.84-13	4.19-2	-0.16	4.26-2	-4.36
	MT3/Fe		1.56-13			3.98-2	-5.39
	MT2/Co-Al		3.49-10			3.83-2	-1.83
HSST5-3 & 4	MT1/Fe		1.54-13			4.26-2	-2.87
Cycles 4-6	MT2/Fe	2,593,080	4.77-13	4.12-2	-0.32	4.16-2	-2.38
	MT3/Fe		1.66-13			3.91-2	-1.45
	MT2/Co-Al		3.47-10			3.98-2	-1.70
HSST5-5 & 6	MT1/Fe		1.52-13			3.99-2	-2.77
Cycles 1-5	MT2/Fe	1,852,560	4.75-13	4.16-2	-0.11	4.13-2	-3.41
	MT3/Fe		1.56-13			3.99-2	-2.58
	MT2/Co-Al		3.19-10			3.56-2	-1.64

Table A.2. Continued

Capsule	Location/wire	Total irradiation time (s)	A (Bq/atom @ 30 MW)	B_X (cm^{-1})	X_0 (cm)	B_Z (cm^{-1})	Z_0 (cm)
HSST5-5 & 6	MT1/Fe		1.39-13			3.97-2	-6.00
Cycles 6-7	MT2/Fe	1,848,840	4.62-13	4.17-2	-0.52	4.13-2	-7.01
	MT3/Fe		1.58-13			3.97-2	-5.88
	MT2/Co-Al		3.11-10			3.66-2	-3.76
HSST5-7 & 8	MT1/Fe		1.37-13			3.95-2	-5.40
Cycles 1-4	MT2/Fe	3,025,620	4.66-13	4.21-2	-0.46	4.26-2	-4.65
	MT3/Fe		1.54-13			4.08-2	-4.73
	MT2/Co-Al		2.99-10			3.68-2	-2.41
HSST5-7 & 8	MT1/Fe		1.43-13			4.05-2	-4.65
Cycles 5-8	MT2/Fe	3,033,000	4.74-13	4.20-2	-0.32	4.20-2	-4.36
	MT3/Fe		1.55-13			4.15-2	-5.38
	MT2/Co-Al		3.00-10			3.83-2	-2.47
HSST5-9 & 10	MT1/Fe		1.43-13			4.14-2	-4.81
Cycles 1-5	MT2/Fe	2,525,580	4.74-13	4.19-2	-0.37	4.05-2	-5.52
	MT3/Fe		1.57-13			4.04-2	-5.01
	MT2/Co-Al		3.06-10			3.51-2	-3.52
HSST5-9 & 10	MT1/Fe		1.46-13			4.00-2	-2.86
Cycles 6-10	MT2/Fe	2,664,240	4.79-13	4.21-2	-0.18	4.24-2	-3.34
	MT3/Fe		1.53-13			4.10-2	-1.80
	MT2/Co-Al		3.49-10			3.90-2	-3.10
HSST5-11 & 12	MT1/Fe		1.44-13			4.09-2	-3.06
Cycles 1-5	MT2/Fe	2,599,560	4.80-13	4.21-2	-0.26	4.26-2	-4.76
	MT3/Fe		1.54-13			3.99-2	-2.56
	MT2/Co-Al		3.05-10			3.81-2	-2.67
HSST5-11 & 12	MT1/Fe		1.43-13			4.15-2	-2.96
Cycles 6-8	MT2/Fe	2,588,340	4.80-13	4.21-2	-0.37	4.15-2	-3.94
	MT3/Fe		1.57-13			4.07-2	-3.28
	MT2/Co-Al		3.40-10			3.93-2	-3.47

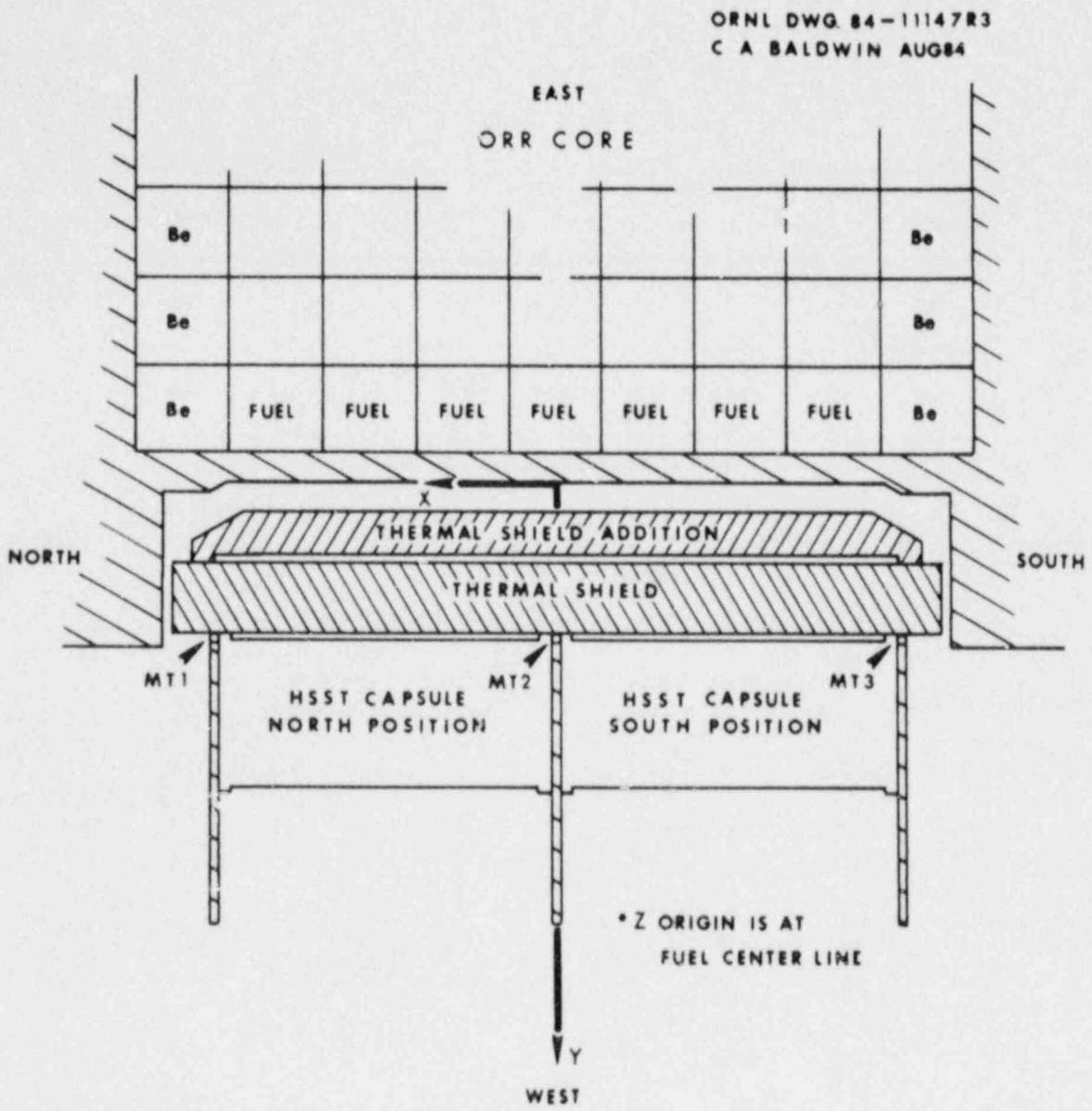

Fig. A.1. Coordinate system used for specifying the location of neutron fluence dosimeters.

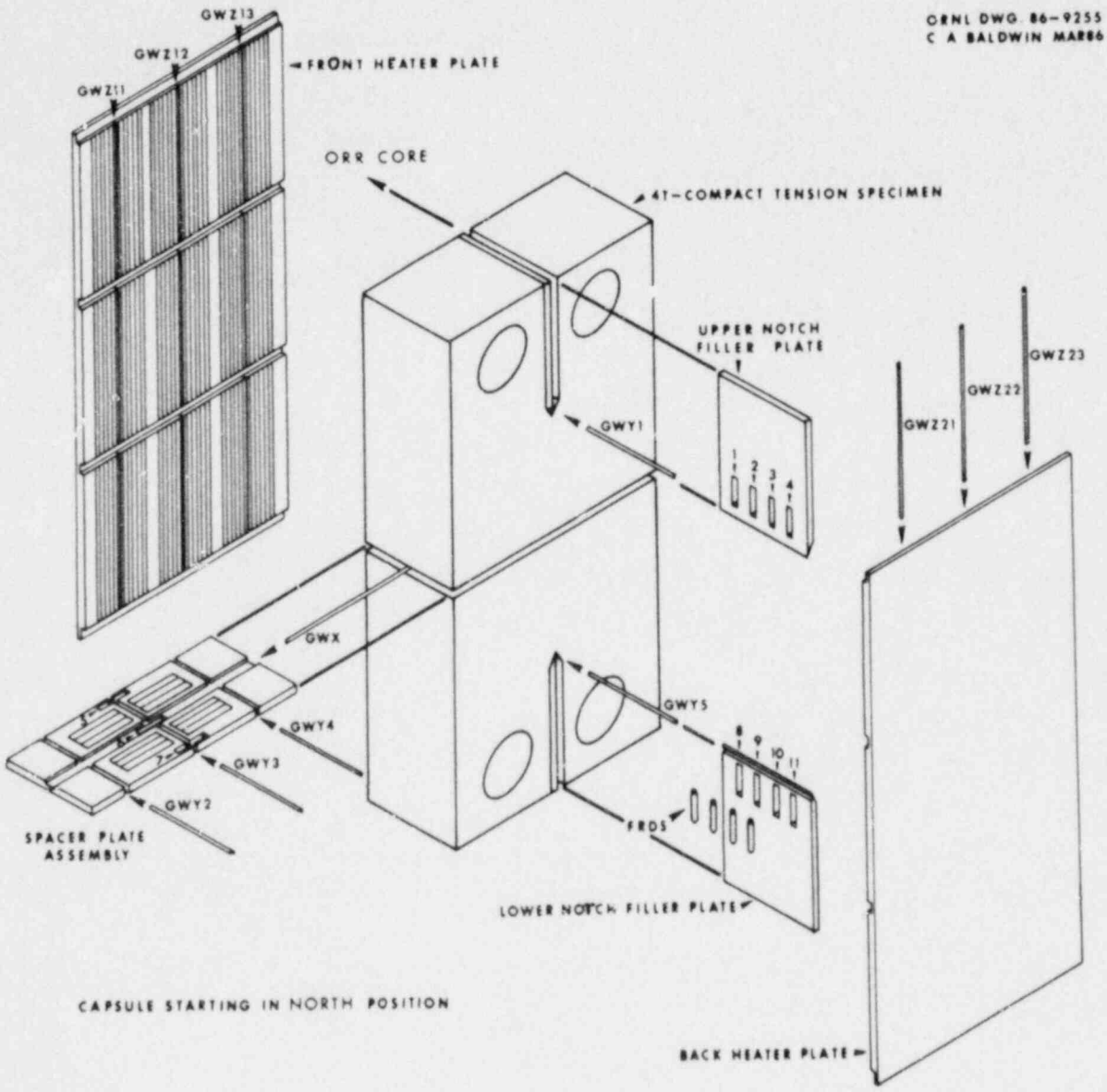

Fig. A.2. Location of dosimeters in the HSST5-1, HSST5-3, HSST5-9, and HSST5-11 metallurgical capsules.

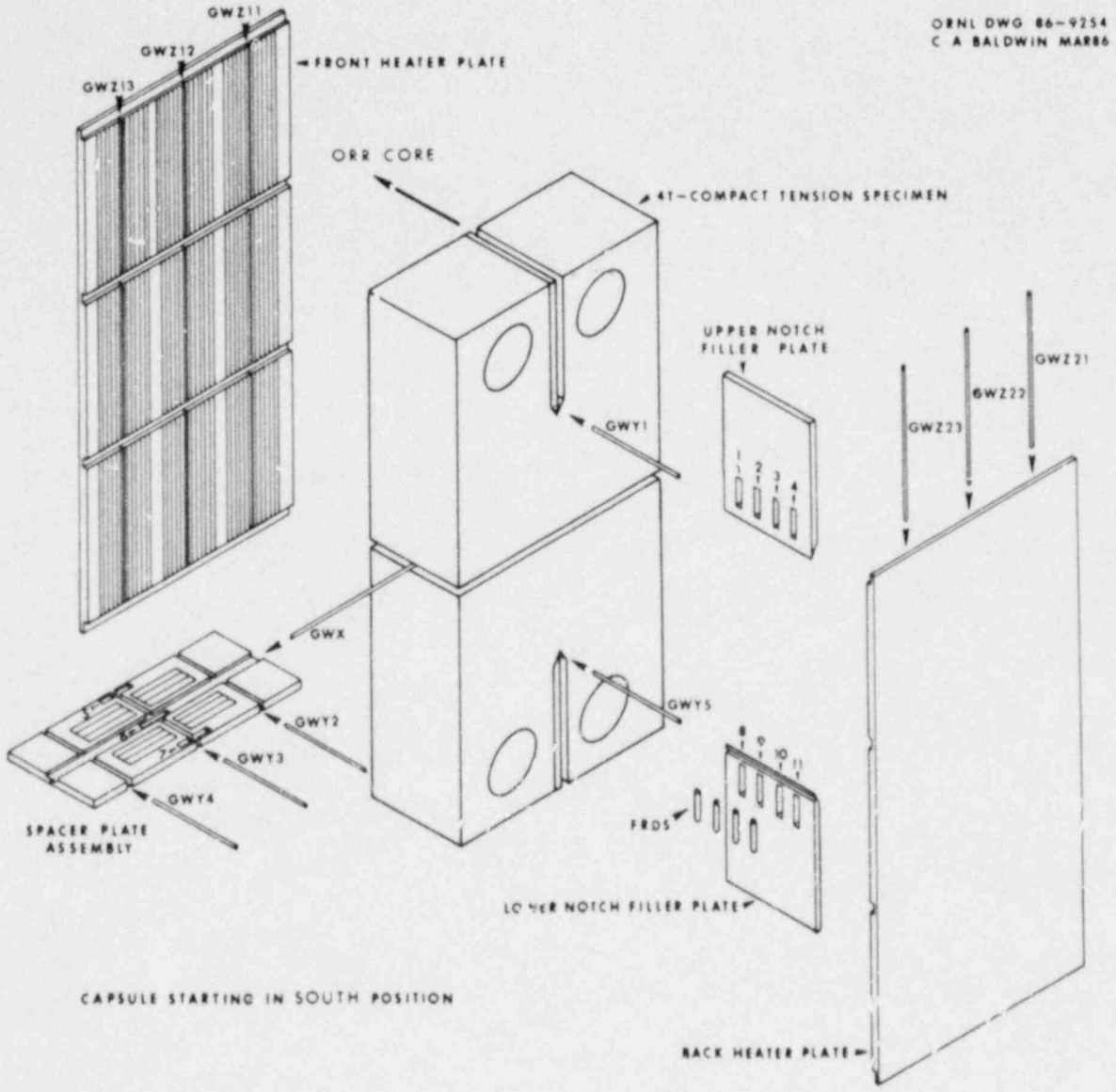

Fig. A.3. Location of dosimeters in the HSST5-2, HSST5-4, HSST5-10, and HSST5-12 metallurgical capsules.

Table A.3. Activities for dosimeters in the HSST5-1 (north) metallurgical capsule

Monitor ID	Reaction	Coordinates			Activity Bq/mg @ EOI
		X (cm)	Y (cm)	Z (cm)	
GWY1-1	FE54 (N,P) MN54	14.764	13.859	8.174	9.18E+03
GWY1-2	FE54 (N,P) MN54	14.764	15.129	8.174	1.08E+04
GWY1-3	FE54 (N,P) MN54	14.764	16.399	8.174	9.62E+03
GWY1-4	FE54 (N,P) MN54	14.764	17.669	8.174	9.25E+03
GWY1-5	FE54 (N,P) MN54	14.764	18.939	8.174	9.13E+03
GWY1-6	FE54 (N,P) MN54	14.764	20.209	8.174	9.86E+03
GWY1-7	FE54 (N,P) MN54	14.764	21.479	8.174	1.09E+04
GWY1-8	FE54 (N,P) MN54	14.764	22.749	8.174	1.29E+04
GWY2-1	FE54 (N,P) MN54	22.468	13.859	-4.382	1.05E+04
GWY2-2	FE54 (N,P) MN54	22.468	15.129	-4.382	9.43E+03
GWY2-3	FE54 (N,P) MN54	22.468	16.399	-4.382	8.90E+03
GWY2-4	FE54 (N,P) MN54	22.468	17.669	-4.382	9.14E+03
GWY2-5	FE54 (N,P) MN54	22.468	18.939	-4.382	9.79E+03
GWY2-6	FE54 (N,P) MN54	22.468	20.209	-4.382	1.07E+04
GWY2-7	FE54 (N,P) MN54	22.468	21.479	-4.382	1.23E+04
GWY2-8	FE54 (N,P) MN54	22.468	22.749	-4.382	1.49E+04
GWY3-1	FE54 (N,P) MN54	14.764	13.859	-4.382	1.18E+04
GWY3-2	FE54 (N,P) MN54	14.764	15.129	-4.382	1.03E+04
GWY3-3	FE54 (N,P) MN54	14.764	16.399	-4.382	9.66E+03
GWY3-4	FE54 (N,P) MN54	14.764	17.669	-4.382	9.69E+03
GWY3-5	FE54 (N,P) MN54	14.764	18.939	-4.382	9.93E+03
GWY3-6	FE54 (N,P) MN54	14.764	20.209	-4.382	1.07E+04
GWY3-7	FE54 (N,P) MN54	14.764	21.479	-4.382	1.27E+04
GWY4-1	FE54 (N,P) MN54	7.060	13.859	-4.382	1.42E+04
GWY4-2	FE54 (N,P) MN54	7.060	15.129	-4.382	1.18E+04
GWY4-3	FE54 (N,P) MN54	7.060	16.399	-4.382	1.04E+04
GWY4-4	FE54 (N,P) MN54	7.060	17.669	-4.382	9.45E+03
GWY4-5	FE54 (N,P) MN54	7.060	18.939	-4.382	8.83E+03
GWY4-6	FE54 (N,P) MN54	7.060	20.209	-4.382	8.71E+03
GWY4-7	FE54 (N,P) MN54	7.060	21.479	-4.382	9.30E+03
GWY4-8	FE54 (N,P) MN54	7.060	22.749	-4.382	1.05E+04
GWY5-1	FE54 (N,P) MN54	14.764	13.859	-16.111	1.13E+04
GWY5-2	FE54 (N,P) MN54	14.764	15.129	-16.111	9.81E+03
GWY5-3	FE54 (N,P) MN54	14.764	16.399	-16.111	8.90E+03
GWY5-4	FE54 (N,P) MN54	14.764	17.669	-16.111	8.43E+03
GWY5-5	FE54 (N,P) MN54	14.764	18.939	-16.111	8.41E+03
GWY5-6	FE54 (N,P) MN54	14.764	20.209	-16.111	9.04E+03
GWY5-7	FE54 (N,P) MN54	14.764	21.479	-16.111	1.01E+04
GWY5-8	FE54 (N,P) MN54	14.764	22.749	-16.111	9.04E+03

Table A.3. Continued

Monitor ID	Reaction	Coordinates X (cm)	Y (cm)	Z (cm)	Activity Bq/mg @ EOI
GWX-1	FE54 (N,P) MN54	24.924	18.304	-3.556	9.94E+03
GWX-2	FE54 (N,P) MN54	22.384	18.304	-3.556	9.82E+03
GWX-3	FE54 (N,P) MN54	19.844	18.304	-3.556	9.71E+03
GWX-4	FE54 (N,P) MN54	17.304	18.304	-3.556	9.87E+03
GWX-5	FE54 (N,P) MN54	14.764	18.304	-3.556	9.84E+03
GWX-6	FE54 (N,P) MN54	12.224	18.304	-3.556	9.86E+03
GWX-7	FE54 (N,P) MN54	9.684	18.304	-3.556	9.55E+03
GWX-8	FE54 (N,P) MN54	7.144	18.304	-3.556	9.59E+03
GWX-9	FE54 (N,P) MN54	4.604	18.304	-3.556	1.01E+04
GWZ11-02	FE54 (N,P) MN54	22.533	13.160	16.794	8.29E+03
GWZ11-05	FE54 (N,P) MN54	22.533	13.160	9.174	1.02E+04
GWZ11-08	FE54 (N,P) MN54	22.533	13.160	-0.155	1.08E+04
GWZ11-11	FE54 (N,P) MN54	22.533	13.160	-7.775	1.10E+04
GWZ11-14	FE54 (N,P) MN54	22.533	13.160	-17.104	9.10E+03
GWZ11-17	FE54 (N,P) MN54	22.533	13.160	-24.724	6.86E+03
GWZ12-02	FE54 (N,P) MN54	15.018	13.160	16.794	1.04E+04
GWZ12-05	FE54 (N,P) MN54	15.018	13.160	9.174	1.28E+04
GWZ12-08	FE54 (N,P) MN54	15.018	13.160	-0.155	1.39E+04
GWZ12-11	FE54 (N,P) MN54	15.018	13.160	-7.775	1.40E+04
GWZ12-14	FE54 (N,P) MN54	15.018	13.160	-17.104	1.18E+04
GWZ12-17	FE54 (N,P) MN54	15.018	13.160	-24.724	8.65E+03
GWZ13-02	FE54 (N,P) MN54	6.995	13.160	16.794	1.15E+04
GWZ13-05	FE54 (N,P) MN54	6.995	13.160	9.174	1.44E+04
GWZ13-08	FE54 (N,P) MN54	6.995	13.160	-0.155	1.58E+04
GWZ13-11	FE54 (N,P) MN54	6.995	13.160	-7.775	1.58E+04
GWZ13-14	FE54 (N,P) MN54	6.995	13.160	-17.104	1.35E+04
GWZ13-17	FE54 (N,P) MN54	6.995	13.160	-24.724	1.01E+04
GWZ21-02	FE54 (N,P) MN54	22.533	23.448	16.794	6.57E+03
GWZ21-05	FE54 (N,P) MN54	22.533	23.448	9.174	1.53E+04
GWZ21-08	FE54 (N,P) MN54	22.533	23.448	-0.155	1.69E+04
GWZ21-11	FE54 (N,P) MN54	22.533	23.448	-7.775	1.70E+04
GWZ21-14	FE54 (N,P) MN54	22.533	23.448	-17.104	1.33E+04
GWZ21-17	FE54 (N,P) MN54	22.533	23.448	-24.724	1.05E+04
GWZ22-02	FE54 (N,P) MN54	14.510	23.448	16.794	1.09E+04
GWZ22-05	FE54 (N,P) MN54	14.510	23.448	9.174	1.32E+04
GWZ22-08	FE54 (N,P) MN54	14.510	23.448	-0.155	1.47E+04
GWZ22-11	FE54 (N,P) MN54	14.510	23.448	-7.775	1.43E+04
GWZ22-14	FE54 (N,P) MN54	14.510	23.448	-17.104	1.23E+04
GWZ22-17	FE54 (N,P) MN54	14.510	23.448	-24.724	8.84E+03

Table A.3. Continued

Monitor ID	Reaction	Coordinates X (cm)	Coordinates Y (cm)	Coordinates Z (cm)	Activity Bq/mg @ EOI
GWZ23-02	FE54 (N,P) MN54	6.995	23.448	16.794	8.59E+03
GWZ23-05	FE54 (N,P) MN54	6.995	23.448	9.174	1.02E+04
GWZ23-08	FE54 (N,P) MN54	6.995	23.448	-0.155	1.14E+04
GWZ23-11	FE54 (N,P) MN54	6.995	23.448	-7.775	1.09E+04
GWZ23-14	FE54 (N,P) MN54	6.995	23.448	-17.104	9.56E+03
GWZ23-17	FE54 (N,P) MN54	6.995	23.448	-24.724	6.98E+03
N2-FET	FE54 (N,P) MN54	14.764	17.273	11.074	8.53E+03
N2-NIT	NI58 (N,P) CO58	14.764	17.273	10.973	3.95E+05
N2-TIT	TI46 (N,P) SC46	14.764	17.273	10.871	5.02E+03
N2-NP	NP237(N,F) ZR95	14.764	17.273	10.566	6.36E+05
N2-NP	NP237(N,F) RU103	14.764	17.273	10.566	8.34E+05
N2-CU	CU63 (N,A) CO60	14.764	17.273	10.274	9.30E+01
N2-U	U238 (N,F) ZR95	14.764	17.273	9.728	4.76E+04
N2-U	U238 (N,F) RU103	14.764	17.273	9.728	8.21E+04
N2-TIB	TI46 (N,P) SC46	14.764	17.273	9.677	5.12E+03
N2-NIB	NI58 (N,P) CO58	14.764	17.273	9.575	4.16E+05
N2-FEB	FE54 (N,P) MN54	14.764	17.273	9.474	8.71E+03
N2-COB	CO59 (N,G) CO60	14.764	17.273	9.372	1.51E+04
N4-FET	FE54 (N,P) MN54	14.764	21.398	11.074	9.93E+03
N4-NIT	NI58 (N,P) CO58	14.764	21.398	10.973	5.30E+05
N4-TIT	TI46 (N,P) SC46	14.764	21.398	10.871	6.38E+03
N4-NP	NP237(N,F) ZR95	14.764	21.398	10.566	7.38E+05
N4-NP	NP237(N,F) RU103	14.764	21.398	10.566	1.09E+06
N4-CU	CU63 (N,A) CO60	14.764	21.398	10.274	1.05E+02
N4-U	U238 (N,F) ZR95	14.764	21.398	9.728	5.86E+04
N4-U	U238 (N,F) RU103	14.764	21.398	9.728	1.09E+05
N4-TIB	TI46 (N,P) SC46	14.764	21.398	9.677	6.96E+03
N4-NIB	NI58 (N,P) CO58	14.764	21.398	9.575	6.31E+05
N4-FEB	FE54 (N,P) MN54	14.764	21.398	9.474	1.02E+04
N4-COB	CO59 (N,G) CO60	14.764	21.398	9.372	1.64E+04
N6-FET	FE54 (N,P) MN54	15.221	18.304	-3.969	9.55E+03
N6-NIT	NI58 (N,P) CO58	15.120	18.304	-3.969	5.18E+05
N6-TIT	TI46 (N,P) SC46	15.018	18.304	-3.969	5.78E+03
N6-NP	NP237(N,F) ZR95	14.713	18.304	-3.969	6.99E+05
N6-NP	NP237(N,F) RU103	14.713	18.304	-3.969	1.01E+06
N6-CU	CU63 (N,A) CO60	14.421	18.304	-3.969	1.10E+02
N6-U	U238 (N,F) ZR95	13.875	18.304	-3.969	5.41E+04
N6-U	U238 (N,F) RU103	13.875	18.304	-3.969	9.47E+04
N6-TIB	TI46 (N,P) SC46	13.824	18.304	-3.969	5.66E+03
N6-NIB	NI58 (N,P) CO58	13.722	18.304	-3.969	5.48E+05
N6-FEB	FE54 (N,P) MN54	13.621	18.304	-3.969	9.45E+03
N6-COB	CO59 (N,G) CO60	13.519	18.304	-3.969	1.67E+04

Table A.3. Continued

Monitor ID	Reaction	Coordinates X (cm)	Y (cm)	Z (cm)	Activity Bq/mg @ EOI
N8-NB	NB93 (N,N')NB93	14.764	15.210	-19.063	2.45E+04
N8-FET	FE54 (N,P) MN54	14.764	15.210	-19.012	8.64E+03
N8-NIT	NI58 (N,P) CO58	14.764	15.210	-18.911	4.52E+05
N8-TIT	TI46 (N,P) SC46	14.764	15.210	-18.809	5.06E+03
N8-NP	NP237(N,F) ZR95	14.764	15.210	-18.504	5.21E+05
N8-NP	NP237(N,F) RU103	14.764	15.210	-18.504	6.91E+05
N8-CU	CU63 (N,A) CO60	14.764	15.210	-18.212	9.63E+01
N8-U	U238 (N,F) ZR95	14.764	15.210	-17.666	4.37E+04
N8-U	U238 (N,F) RU103	14.764	15.210	-17.666	7.15E+04
N8-TIB	TI46 (N,P) SC46	14.764	15.210	-17.615	5.20E+03
N8-NIB	NI58 (N,P) CO58	14.764	15.210	-17.513	4.67E+05
N8-FEB	FE54 (N,P) MN54	14.764	15.210	-17.412	9.07E+03
N8-COB	CO59 (N,G) CO60	14.764	15.210	-17.310	1.42E+04
N9-NB	NB93 (N,N')NB93	14.764	17.273	-19.063	2.20E+04
N9-FET	FE54 (N,P) MN54	14.764	17.273	-19.012	7.64E+03
N9-NIT	NI58 (N,P) CO58	14.764	17.273	-18.911	4.35E+05
N9-TIT	TI46 (N,P) SC46	14.764	17.273	-18.809	4.58E+03
N9-NP	NP237(N,F) ZR95	14.764	17.273	-18.504	5.53E+05
N9-NP	NP237(N,F) RU103	14.764	17.273	-18.504	7.67E+05
N9-CU	CU63 (N,A) CO60	14.764	17.273	-18.212	8.30E+01
N9-U	U238 (N,F) ZR95	14.764	17.273	-17.666	4.17E+04
N9-U	U238 (N,F) RU103	14.764	17.273	-17.666	7.32E+04
N9-TIB	TI46 (N,P) SC46	14.764	17.273	-17.615	4.73E+03
N9-NIB	NI58 (N,P) CO58	14.764	17.273	-17.513	4.37E+05
N9-FEB	FE54 (N,P) MN54	14.764	17.273	-17.412	8.00E+03
N9-COB	CO59 (N,G) CO60	14.764	17.273	-17.310	1.32E+04
N10-NB	NB93 (N,N')NB93	14.764	19.335	-19.063	2.14E+04
N10-FET	FE54 (N,P) MN54	14.764	19.335	-19.012	7.65E+03
N10-NIT	NI58 (N,P) CO58	14.764	19.335	-18.911	4.43E+05
N10-TIT	TI46 (N,P) SC46	14.764	19.335	-18.809	4.78E+03
N10-NP	NP237(N,F) ZR95	14.764	19.335	-18.504	5.52E+05
N10-NP	NP237(N,F) RU103	14.764	19.335	-18.504	7.78E+05
N10-CU	CU63 (N,A) CO60	14.764	19.335	-18.212	9.28E+01
N10-U	U238 (N,F) ZR95	14.764	19.335	-17.666	4.37E+04
N10-U	U238 (N,F) RU103	14.764	19.335	-17.666	7.70E+04
N10-TIB	TI46 (N,P) SC46	14.764	19.335	-17.615	5.04E+03
N10-NIB	NI58 (N,P) CO58	14.764	19.335	-17.513	4.74E+05
N10-FEB	FE54 (N,P) MN54	14.764	19.335	-17.412	8.10E+03
N10-COB	CO59 (N,G) CO60	14.764	19.335	-17.310	1.33E+04

Table A.3. Continued

Monitor ID	Reaction	Coordinates			Activity Bq/mg @ EOI
		X (cm)	Y (cm)	Z (cm)	
N11-NB	NB93 (N,N')NB93	14.764	21.398	-19.063	2.44E+04
N11-FET	FE54 (N,P) MN54	14.764	21.398	-19.012	8.94E+03
N11-NIT	NI58 (N,P) CO58	14.764	21.398	-18.911	5.31E+05
N11-TIT	TI46 (N,P) SC46	14.764	21.398	-18.809	5.94E+03
N11-NP	NP237(N,F) ZR95	14.764	21.398	-18.504	5.96E+05
N11-NP	NP237(N,F) RU103	14.764	21.398	-18.504	8.73E+05
N11-CU	CU63 (N,A) CO60	14.764	21.398	-18.212	9.58E+01
N11-U	U238 (N,F) ZR95	14.764	21.398	-17.666	5.26E+04
N11-U	U238 (N,F) RU103	14.764	21.398	-17.666	1.00E+05
N11-TIB	TI46 (N,P) SC46	14.764	21.398	-17.615	6.06E+03
N11-NIB	NI58 (N,P) CO58	14.764	21.398	-17.513	5.72E+05
N11-FEB	FE54 (N,P) MN54	14.764	21.398	-17.412	9.40E+03
N11-COB	CO59 (N,G) CO60	14.764	21.398	-17.310	1.47E+04

Table A.4. Activities for dosimeters in the HSST5-2 (south) metallurgical capsule

Monitor ID	Reaction	Coordinates			Activity Bq/mg @ EOI
		X (cm)	Y (cm)	Z (cm)	
GWY1-1	FE54 (N,P) MN54	-14.764	13.859	8.174	1.21E+04
GWY1-2	FE54 (N,P) MN54	-14.764	15.129	8.174	1.09E+04
GWY1-3	FE54 (N,P) MN54	-14.764	16.399	8.174	9.67E+03
GWY1-4	FE54 (N,P) MN54	-14.764	17.669	8.174	9.57E+03
GWY1-5	FE54 (N,P) MN54	-14.764	18.939	8.174	9.52E+03
GWY1-6	FE54 (N,P) MN54	-14.764	20.209	8.174	1.05E+04
GWY1-7	FE54 (N,P) MN54	-14.764	21.479	8.174	1.15E+04
GWY1-8	FE54 (N,P) MN54	-14.764	22.749	8.174	1.40E+04
GWY3-1	FE54 (N,P) MN54	-14.764	13.859	-4.382	1.32E+04
GWY3-2	FE54 (N,P) MN54	-14.764	15.129	-4.382	1.19E+04
GWY3-3	FE54 (N,P) MN54	-14.764	16.399	-4.382	1.05E+04
GWY3-4	FE54 (N,P) MN54	-14.764	17.669	-4.382	1.04E+04
GWY3-5	FE54 (N,P) MN54	-14.764	18.939	-4.382	1.04E+04
GWY3-6	FE54 (N,P) MN54	-14.764	20.209	-4.382	1.15E+04
GWY3-7	FE54 (N,P) MN54	-14.764	21.479	-4.382	1.29E+04
GWY3-8	FE54 (N,P) MN54	-14.764	22.749	-4.382	1.55E+04
GWY4-1	FE54 (N,P) MN54	-7.060	13.859	-4.382	1.47E+04
GWY4-2	FE54 (N,P) MN54	-7.060	15.129	-4.382	1.27E+04
GWY4-3	FE54 (N,P) MN54	-7.060	16.399	-4.382	1.02E+04
GWY4-4	FE54 (N,P) MN54	-7.060	17.669	-4.382	1.02E+04
GWY4-5	FE54 (N,P) MN54	-7.060	18.939	-4.382	9.56E+03
GWY4-6	FE54 (N,P) MN54	-7.060	20.209	-4.382	9.94E+03
GWY4-7	FE54 (N,P) MN54	-7.060	21.479	-4.382	1.05E+04
GWY4-8	FE54 (N,P) MN54	-7.060	22.749	-4.382	1.21E+04
GWY5-1	FE54 (N,P) MN54	-14.764	13.859	-16.111	1.11E+04
GWY5-2	FE54 (N,P) MN54	-14.764	15.129	-16.111	9.93E+03
GWY5-3	FE54 (N,P) MN54	-14.764	16.399	-16.111	8.80E+03
GWY5-4	FE54 (N,P) MN54	-14.764	17.669	-16.111	8.71E+03
GWY5-5	FE54 (N,P) MN54	-14.764	18.939	-16.111	8.76E+03
GWY5-6	FE54 (N,P) MN54	-14.764	20.209	-16.111	9.63E+03
GWY5-7	FE54 (N,P) MN54	-14.764	21.479	-16.111	1.07E+04
GWY5-8	FE54 (N,P) MN54	-14.764	22.749	-16.111	1.29E+04
GWX-1	FE54 (N,P) MN54	-24.924	18.304	-3.556	9.92E+03
GWX-2	FE54 (N,P) MN54	-22.384	18.304	-3.556	9.84E+03
GWX-3	FE54 (N,P) MN54	-19.844	18.304	-3.556	9.72E+03
GWX-4	FE54 (N,P) MN54	-17.304	18.304	-3.556	1.01E+04
GWX-5	FE54 (N,P) MN54	-14.764	18.304	-3.556	1.01E+04
GWX-6	FE54 (N,P) MN54	-12.224	18.304	-3.556	1.02E+04
GWX-7	FE54 (N,P) MN54	-9.684	18.304	-3.556	9.61E+03
GWX-8	FE54 (N,P) MN54	-7.144	18.304	-3.556	9.71E+03
GWX-9	FE54 (N,P) MN54	-4.604	18.304	-3.556	9.83E+03

Table A.4. Continued

Monitor ID	Reaction	Coordinates X (cm)	Y (cm)	Z (cm)	Activity Bq/mg @ EOI
GWZ11-02	FE54 (N,P) MN54	-22.533	13.160	16.794	8.06E+03
GWZ11-04	FE54 (N,P) MN54	-22.533	13.160	11.714	9.35E+03
GWZ11-06	FE54 (N,P) MN54	-22.533	13.160	6.634	1.00E+04
GWZ11-13	FE54 (N,P) MN54	-22.533	13.160	-14.564	9.49E+03
GWZ11-15	FE54 (N,P) MN54	-22.533	13.160	-19.644	8.11E+03
GWZ11-17	FE54 (N,P) MN54	-22.533	13.160	-24.724	6.46E+03
GWZ12-02	FE54 (N,P) MN54	-14.501	13.160	16.794	1.01E+04
GWZ12-04	FE54 (N,P) MN54	-14.501	13.160	11.714	1.28E+04
GWZ12-06	FE54 (N,P) MN54	-14.501	13.160	6.634	1.28E+04
GWZ12-07	FE54 (N,P) MN54	-14.501	13.160	2.385	1.35E+04
GWZ12-09	FE54 (N,P) MN54	-14.501	13.160	-2.695	1.37E+04
GWZ12-11	FE54 (N,P) MN54	-14.501	13.160	-7.775	1.35E+04
GWZ21-02	FE54 (N,P) MN54	-22.533	23.448	16.794	1.32E+04
GWZ21-05	FE54 (N,P) MN54	-22.533	23.448	9.174	1.60E+04
GWZ21-08	FE54 (N,P) MN54	-22.533	23.448	-0.155	1.77E+04
GWZ21-11	FE54 (N,P) MN54	-22.533	23.448	-7.775	1.72E+04
GWZ21-14	FE54 (N,P) MN54	-22.533	23.448	-17.104	1.46E+04
GWZ21-17	FE54 (N,P) MN54	-22.533	23.448	-24.724	1.07E+04
GWZ22-02	FE54 (N,P) MN54	-15.018	23.448	16.794	1.17E+04
GWZ22-05	FE54 (N,P) MN54	-15.018	23.448	9.174	1.46E+04
GWZ22-08	FE54 (N,P) MN54	-15.018	23.448	-0.155	1.58E+04
GWZ22-11	FE54 (N,P) MN54	-15.018	23.448	-7.775	1.56E+04
GWZ22-14	FE54 (N,P) MN54	-15.018	23.448	-17.104	1.31E+04
GWZ22-17	FE54 (N,P) MN54	-15.018	23.448	-24.724	9.51E+03
GWZ23-01	FE54 (N,P) MN54	-6.995	23.448	19.334	8.35E+03
GWZ23-03	FE54 (N,P) MN54	-6.995	23.448	14.254	9.69E+03
GWZ23-06	FE54 (N,P) MN54	-6.995	23.448	6.634	1.17E+04
GWZ23-13	FE54 (N,P) MN54	-6.995	23.448	-14.564	1.11E+04
GWZ23-16	FE54 (N,P) MN54	-6.995	23.448	-22.184	8.49E+03
GWZ23-18	FE54 (N,P) MN54	-6.995	23.448	-27.264	6.69E+03
S1-FET	FE54 (N,P) MN54	-14.764	15.210	11.074	9.58E+03
S1-NIT	NI58 (N,P) CO58	-14.764	15.210	10.973	5.38E+05
S1-TIT	TI46 (N,P) SC46	-14.764	15.210	10.871	5.54E+03
S1-NP	NP237(N,F) ZR95	-14.764	15.210	10.566	6.49E+05
S1-NP	NP237(N,F) RU103	-14.764	15.210	10.566	8.25E+05
S1-CU	CU63 (N,A) CO60	-14.764	15.210	10.274	1.06E+02
S1-U	U238 (N,F) ZR95	-14.764	15.210	9.728	5.02E+04
S1-U	U238 (N,F) RU103	-14.764	15.210	9.728	8.18E+04
S1-TIB	TI46 (N,P) SC46	-14.764	15.210	9.677	5.77E+03
S1-NIB	NI58 (N,P) CO58	-14.764	15.210	9.575	5.00E+05
S1-FEB	FE54 (N,P) MN54	-14.764	15.210	9.474	9.87E+03
S1-COB	CO59 (N,G) CO60	-14.764	15.210	9.372	1.62E+04

Table A.4. Continued

Monitor ID	Reaction	Coordinates X (cm)	Y (cm)	Z (cm)	Activity Bq/mg @ EOI
S2-FET	FE54 (N,P) MN54	-14.764	17.273	11.074	8.63E+03
S2-NIT	NI58 (N,P) CO58	-14.764	17.273	10.973	5.10E+05
S2-TIT	TI46 (N,P) SC46	-14.764	17.273	10.871	5.21E+03
S2-NP	NP237(N,F) ZR95	-14.764	17.273	10.566	6.23E+05
S2-NP	NP237(N,F) RU103	-14.764	17.273	10.566	8.67E+05
S2-CU	CU63 (N,A) CO60	-14.764	17.273	10.274	9.35E+01
S2-U	U238 (N,F) ZR95	-14.764	17.273	9.728	4.78E+04
S2-U	U238 (N,F) RU103	-14.764	17.273	9.728	8.45E+04
S2-TIB	TI46 (N,P) SC46	-14.764	17.273	9.677	5.21E+03
S2-NIB	NI58 (N,P) CO58	-14.764	17.273	9.575	4.90E+05
S2-FEB	FE54 (N,P) MN54	-14.764	17.273	9.474	8.92E+03
S2-COB	CO59 (N,G) CO60	-14.764	17.273	9.372	1.48E+04
S3-FET	FE54 (N,P) MN54	-14.764	19.335	11.074	8.96E+03
S3-NIT	NI58 (N,P) CO58	-14.764	19.335	10.973	5.22E+05
S3-TIT	TI46 (N,P) SC46	-14.764	19.335	10.871	5.66E+03
S3-NP	NP237(N,F) ZR95	-14.764	19.335	10.566	6.52E+05
S3-NP	NP237(N,F) RU103	-14.764	19.335	10.566	9.46E+05
S3-CU	CU63 (N,A) CO60	-14.764	19.335	10.274	9.71E+01
S3-U	U238 (N,F) ZR95	-14.764	19.335	9.728	5.28E+04
S3-U	U238 (N,F) RU103	-14.764	19.335	9.728	9.73E+04
S3-TIB	TI46 (N,P) SC46	-14.764	19.335	9.677	5.75E+03
S3-NIB	NI58 (N,P) CO58	-14.764	19.335	9.575	5.25E+05
S3-FEB	FE54 (N,P) MN54	-14.764	19.335	9.474	9.26E+03
S3-COB	CO59 (N,G) CO60	-14.764	19.335	9.372	1.48E+04
S4-FET	FE54 (N,P) MN54	-14.764	21.398	11.074	1.06E+04
S4-NIT	NI58 (N,P) CO58	-14.764	21.398	10.973	6.40E+05
S4-TIT	TI46 (N,P) SC46	-14.764	21.398	10.871	7.08E+03
S4-NP	NP237(N,F) ZR95	-14.764	21.398	10.566	7.83E+05
S4-NP	NP237(N,F) RU103	-14.764	21.398	10.566	1.17E+06
S4-CU	CU63 (N,A) CO60	-14.764	21.398	10.274	1.05E+02
S4-U	U238 (N,F) ZR95	-14.764	21.398	9.728	5.79E+04
S4-U	U238 (N,F) RU103	-14.764	21.398	9.728	1.08E+05
S4-TIB	TI46 (N,P) SC46	-14.764	21.398	9.677	7.01E+03
S4-NIB	NI58 (N,P) CO58	-14.764	21.398	9.575	6.78E+05
S4-FEB	FE54 (N,P) MN54	-14.764	21.398	9.474	1.11E+04
S4-COB	CO59 (N,G) CO60	-14.764	21.398	9.372	1.70E+04

Table A.4. Continued

Monitor ID	Reaction	Coordinates X (cm)	Y (cm)	Z (cm)	Activity Bq/mg @ EOI
S5-FET	FE54 (N,P) MN54	-15.221	13.688	-3.969	1.27E+04
S5-NIT	NI58 (N,P) CO58	-15.120	13.688	-3.969	6.46E+05
S5-TIT	TI46 (N,P) SC46	-15.018	13.688	-3.969	7.27E+03
S5-NP	NP237(N,F) ZR95	-14.713	13.688	-3.969	7.15E+05
S5-NP	NP237(N,F) RU103	-14.713	13.688	-3.969	9.34E+05
S5-CU	CU63 (N,A) CO60	-14.421	13.688	-3.969	1.43E+02
S5-U	U238 (N,F) ZR95	-13.875	13.688	-3.969	6.12E+04
S5-U	U238 (N,F) RU103	-13.875	13.688	-3.969	9.98E+04
S5-TIB	TI46 (N,P) SC46	-13.824	13.688	-3.969	7.41E+03
S5-NIB	NI58 (N,P) CO58	-13.722	13.688	-3.969	6.50E+05
S5-FEB	FE54 (N,P) MN54	-13.621	13.688	-3.969	1.32E+04
S5-COB	CO59 (N,G) CO60	-13.519	13.688	-3.969	2.05E+04
S7-FET	FE54 (N,P) MN54	-15.221	22.920	-3.969	1.50E+04
S7-NIT	NI58 (N,P) CO58	-15.120	22.920	-3.969	9.15E+05
S7-TIT	TI46 (N,P) SC46	-15.018	22.920	-3.969	1.01E+04
S7-NP	NP237(N,F) ZR95	-14.713	22.920	-3.969	9.24E+05
S7-NP	NP237(N,F) RU103	-14.713	22.920	-3.969	1.39E+06
S7-CU	CU63 (N,A) CO60	-14.421	22.920	-3.969	1.53E+02
S7-U	U238 (N,F) ZR95	-13.875	22.920	-3.969	8.31E+04
S7-U	U238 (N,F) RU103	-13.875	22.920	-3.969	1.63E+05
S7-TIB	TI46 (N,P) SC46	-13.824	22.920	-3.969	9.85E+03
S7-NIB	NI58 (N,P) CO58	-13.722	22.920	-3.969	9.01E+05
S7-FEB	FE54 (N,P) MN54	-13.621	22.920	-3.969	1.44E+04
S7-COB	CO59 (N,G) CO60	-13.519	22.920	-3.969	2.06E+04
S8-FET	FE54 (N,P) MN54	-14.764	15.210	-19.012	8.41E+03
S8-NIT	NI58 (N,P) CO58	-14.764	15.210	-18.911	4.43E+05
S8-TIT	TI46 (N,P) SC46	-14.764	15.210	-18.809	4.93E+03
S8-NP	NP237(N,F) ZR95	-14.764	15.210	-18.504	5.68E+05
S8-NP	NP237(N,F) RU103	-14.764	15.210	-18.504	7.35E+05
S8-CU	CU63 (N,A) CO60	-14.764	15.210	-18.212	9.60E+01
S8-U	U238 (N,F) ZR95	-14.764	15.210	-17.666	4.43E+04
S8-U	U238 (N,F) RU103	-14.764	15.210	-17.666	7.51E+04
S8-TIB	TI46 (N,P) SC46	-14.764	15.210	-17.615	5.08E+03
S8-NIB	NI58 (N,P) CO58	-14.764	15.210	-17.513	4.60E+05
S8-FEB	FE54 (N,P) MN54	-14.764	15.210	-17.412	8.89E+03
S8-COB	CO59 (N,G) CO60	-14.764	15.210	-17.310	1.37E+04

Table A.4. Continued

Monitor ID	Reaction	Coordinates X (cm)	Coordinates Y (cm)	Coordinates Z (cm)	Activity Bq/mg @ EOI
S10-FET	FE54 (N,P) MN54	-14.764	19.335	-19.012	7.64E+03
S10-NIT	NI58 (N,P) CO58	-14.764	19.335	-18.911	4.77E+05
S10-TIT	TI46 (N,P) SC46	-14.764	19.335	-18.809	4.98E+03
S10-NP	NP237(N,F) ZR95	-14.764	19.335	-18.504	5.81E+05
S10-NP	NP237(N,F) RU103	-14.764	19.335	-18.504	8.22E+05
S10-CU	CU63 (N,A) CO60	-14.764	19.335	-18.212	8.60E+01
S10-U	U238 (N,F) ZR95	-14.764	19.335	-17.666	4.62E+04
S10-U	U238 (N,F) RU103	-14.764	19.335	-17.666	8.42E+04
S10-TIB	TI46 (N,P) SC46	-14.764	19.335	-17.615	5.16E+03
S10-NIB	NI58 (N,P) CO58	-14.764	19.335	-17.513	4.94E+05
S10-FEB	FE54 (N,P) MN54	-14.764	19.335	-17.412	8.23E+03
S10-COB	CO59 (N,G) CO60	-14.764	19.335	-17.310	1.42E+04

Table A.5. Activities for dosimeters in the HSST5-3 (north) metallurgical capsule

Monitor ID	Reaction	Coordinates			Activity Bq/mg @ EOI
		X (cm)	Y (cm)	Z (cm)	
GWY1-1	FE54 (N,P) MN54	14.764	13.542	8.174	1.13E+04
GWY1-3	FE54 (N,P) MN54	14.764	15.447	8.174	9.03E+03
GWY1-5	FE54 (N,P) MN54	14.764	17.352	8.174	8.21E+03
GWY1-7	FE54 (N,P) MN54	14.764	19.257	8.174	8.27E+03
GWY1-9	FE54 (N,P) MN54	14.764	21.162	8.174	8.58E+03
GWY1-11	FE54 (N,P) MN54	14.764	23.067	8.174	1.25E+04
GWY2-1	FE54 (N,P) MN54	22.468	13.542	-4.382	1.05E+04
GWY2-3	FE54 (N,P) MN54	22.468	15.447	-4.382	8.19E+03
GWY2-5	FE54 (N,P) MN54	22.468	17.352	-4.382	8.91E+03
GWY2-7	FE54 (N,P) MN54	22.468	19.257	-4.382	9.88E+03
GWY2-9	FE54 (N,P) MN54	22.468	21.162	-4.382	1.06E+04
GWY2-11	FE54 (N,P) MN54	22.468	23.067	-4.382	1.53E+04
GWY3-1	FE54 (N,P) MN54	14.764	13.542	-4.382	1.09E+04
GWY3-3	FE54 (N,P) MN54	14.764	15.447	-4.382	1.03E+04
GWY3-5	FE54 (N,P) MN54	14.764	17.352	-4.382	9.84E+03
GWY3-7	FE54 (N,P) MN54	14.764	19.257	-4.382	8.97E+03
GWY3-9	FE54 (N,P) MN54	14.764	21.162	-4.382	1.25E+04
GWY4-1	FE54 (N,P) MN54	7.060	13.542	-4.382	1.35E+04
GWY4-3	FE54 (N,P) MN54	7.060	15.447	-4.382	1.13E+04
GWY4-5	FE54 (N,P) MN54	7.060	17.352	-4.382	9.61E+03
GWY4-7	FE54 (N,P) MN54	7.060	19.257	-4.382	7.81E+03
GWY4-9	FE54 (N,P) MN54	7.060	21.162	-4.382	9.29E+03
GWY4-11	FE54 (N,P) MN54	7.060	23.067	-4.382	1.10E+04
GWY5-1	FE54 (N,P) MN54	14.764	13.542	-16.111	1.17E+04
GWY5-3	FE54 (N,P) MN54	14.764	15.447	-16.111	8.44E+03
GWY5-5	FE54 (N,P) MN54	14.764	17.352	-16.111	8.25E+03
GWY5-7	FE54 (N,P) MN54	14.764	19.257	-16.111	8.35E+03
GWY5-9	FE54 (N,P) MN54	14.764	21.162	-16.111	9.29E+03
GWY5-11	FE54 (N,P) MN54	14.764	23.067	-16.111	1.20E+04
GWX-1	FE54 (N,P) MN54	24.924	18.304	-3.556	9.24E+03
GWX-2	FE54 (N,P) MN54	22.384	18.304	-3.556	9.01E+03
GWX-3	FE54 (N,P) MN54	19.844	18.304	-3.556	8.89E+03
GWX-4	FE54 (N,P) MN54	17.304	18.304	-3.556	8.71E+03
GWX-5	FE54 (N,P) MN54	14.764	18.304	-3.556	9.28E+03
GWX-6	FE54 (N,P) MN54	12.224	18.304	-3.556	8.96E+03
GWX-7	FE54 (N,P) MN54	9.684	18.304	-3.556	8.58E+03
GWX-8	FE54 (N,P) MN54	7.144	18.304	-3.556	8.66E+03
GWX-9	FE54 (N,P) MN54	4.604	18.304	-3.556	8.83E+03

Table A.5. Continued

Monitor ID	Reaction	Coordinates X (cm)	Y (cm)	Z (cm)	Activity Bq/mg @ EOI
GWZ11-2	FE54 (N,P) MN54	22.533	13.160	16.794	6.97E+03
GWZ11-5	FE54 (N,P) MN54	22.533	13.160	9.174	9.20E+03
GWZ11-8	FE54 (N,P) MN54	22.533	13.160	-0.155	9.95E+03
GWZ11-11	FE54 (N,P) MN54	22.533	13.160	-7.775	1.03E+04
GWZ11-14	FE54 (N,P) MN54	22.533	13.160	-17.104	8.32E+03
GWZ11-17	FE54 (N,P) MN54	22.533	13.160	-24.724	6.38E+03
GWZ12-2	FE54 (N,P) MN54	15.018	13.160	16.794	9.04E+03
GWZ12-5	FE54 (N,P) MN54	15.018	13.160	9.174	1.10E+04
GWZ12-8	FE54 (N,P) MN54	15.018	13.160	-0.155	1.29E+04
GWZ12-11	FE54 (N,P) MN54	15.018	13.160	-7.775	1.27E+04
GWZ12-14	FE54 (N,P) MN54	15.018	13.160	-17.104	1.11E+04
GWZ12-17	FE54 (N,P) MN54	15.018	13.160	-24.724	7.64E+03
GWZ13-2	FE54 (N,P) MN54	6.995	13.160	16.794	1.01E+04
GWZ13-5	FE54 (N,P) MN54	6.995	13.160	9.174	1.28E+04
GWZ13-8	FE54 (N,P) MN54	6.995	13.160	-0.155	1.47E+04
GWZ13-11	FE54 (N,P) MN54	6.995	13.160	-7.775	1.46E+04
GWZ13-14	FE54 (N,P) MN54	6.995	13.160	-17.104	1.28E+04
GWZ13-17	FE54 (N,P) MN54	6.995	13.160	-24.724	9.39E+03
GWZ21-2	FE54 (N,P) MN54	22.533	23.448	16.794	1.15E+04
GWZ21-5	FE54 (N,P) MN54	22.533	23.448	9.174	1.45E+04
GWZ21-8	FE54 (N,P) MN54	22.533	23.448	-0.155	1.62E+04
GWZ21-11	FE54 (N,P) MN54	22.533	23.448	-7.775	1.58E+04
GWZ21-14	FE54 (N,P) MN54	22.533	23.448	-17.104	1.34E+04
GWZ21-17	FE54 (N,P) MN54	22.533	23.448	-24.724	9.61E+03
GWZ22-2	FE54 (N,P) MN54	14.501	23.448	16.794	9.97E+03
GWZ22-5	FE54 (N,P) MN54	14.501	23.448	9.174	1.22E+04
GWZ22-8	FE54 (N,P) MN54	14.501	23.448	-0.155	1.39E+04
GWZ22-11	FE54 (N,P) MN54	14.501	23.448	-7.775	1.32E+04
GWZ22-14	FE54 (N,P) MN54	14.501	23.448	-17.104	1.15E+04
GWZ22-17	FE54 (N,P) MN54	14.501	23.448	-24.724	7.92E+03
GWZ23-2	FE54 (N,P) MN54	6.995	23.448	16.794	7.51E+03
GWZ23-5	FE54 (N,P) MN54	6.995	23.448	9.174	9.74E+03
GWZ23-8	FE54 (N,P) MN54	6.995	23.448	-0.155	1.04E+04
GWZ23-11	FE54 (N,P) MN54	6.995	23.448	-7.775	1.06E+04
GWZ23-14	FE54 (N,P) MN54	6.995	23.448	-17.104	8.52E+03
GWZ23-17	FE54 (N,P) MN54	6.995	23.448	-24.724	6.44E+03

Table A.5. Continued

Monitor ID	Reaction	Coordinates X (cm)	Y (cm)	Z (cm)	Activity Bq/mg @ EOI
N1-NB	NB93 (N,N')NB93	14.764	15.210	11.175	2.35E+04
N1-COT	CO59 (N,G) CO60	14.764	15.210	11.150	1.49E+04
N1-FET	FE54 (N,P) MN54	14.764	15.210	11.074	8.75E+03
N1-NIT	NI58 (N,P) CO58	14.764	15.210	10.973	4.13E+05
N1-TIT	TI46 (N,P) SC46	14.764	15.210	10.871	4.77E+03
N1-NP	NP237(N,F) ZR95	14.764	15.210	10.566	4.97E+05
N1-NP	NP237(N,F) RU103	14.764	15.210	10.566	6.15E+05
N1-CU	CU63 (N,A) CO60	14.764	15.210	10.274	9.78E+01
N1-U	U238 (N,F) ZR95	14.764	15.210	9.728	4.09E+04
N1-U	U238 (N,F) RU103	14.764	15.210	9.728	6.43E+04
N1-TIB	TI46 (N,P) SC46	14.764	15.210	9.677	4.51E+03
N1-NIB	NI58 (N,P) CO58	14.764	15.210	9.575	4.18E+05
N1-FEB	FE54 (N,P) MN54	14.764	15.210	9.474	9.08E+03
N1-COB	CO59 (N,G) CO60	14.764	15.210	9.372	1.52E+04
N8-NB	NB93 (N,N')NB93	14.764	15.210	-19.113	2.49E+04
N8-COT	CO59 (N,G) CO60	14.764	15.210	-19.088	1.37E+04
N8-FET	FE54 (N,P) MN54	14.764	15.210	-19.012	8.47E+03
N8-NIT	NI58 (N,P) CO58	14.764	15.210	-18.911	3.79E+05
N8-TIT	TI46 (N,P) SC46	14.764	15.210	-18.809	4.49E+03
N8-NP	NP237(N,F) ZR95	14.764	15.210	-18.504	4.49E+05
N8-NP	NP237(N,F) RU103	14.764	15.210	-18.504	5.63E+05
N8-CU	CU63 (N,A) CO60	14.764	15.210	-18.212	8.65E+01
N8-U	U238 (N,F) ZR95	14.764	15.210	-17.666	3.83E+04
N8-U	U238 (N,F) RU103	14.764	15.210	-17.666	6.10E+04
N8-TIB	TI46 (N,P) SC46	14.764	15.210	-17.615	4.74E+03
N8-NIB	NI58 (N,P) CO58	14.764	15.210	-17.513	4.04E+05
N8-FEB	FE54 (N,P) MN54	14.764	15.210	-17.412	8.72E+03
N8-COB	CO59 (N,G) CO60	14.764	15.210	-17.310	1.43E+04
N11-NB	NB93 (N,N')NB93	14.764	21.398	-19.113	2.33E+04
N11-COT	CO59 (N,G) CO60	14.764	21.398	-19.088	1.34E+04
N11-FET	FE54 (N,P) MN54	14.764	21.398	-19.012	8.77E+03
N11-NIT	NI58 (N,P) CO58	14.764	21.398	-18.911	4.70E+05
N11-TIT	TI46 (N,P) SC46	14.764	21.398	-18.809	5.40E+03
N11-NP	NP237(N,F) ZR95	14.764	21.398	-18.504	5.30E+05
N11-NP	NP237(N,F) RU103	14.764	21.398	-18.504	7.55E+05
N11-CU	CU63 (N,A) CO60	14.764	21.398	-18.212	9.27E+01
N11-U	U238 (N,F) ZR95	14.764	21.398	-17.666	4.73E+04
N11-U	U238 (N,F) RU103	14.764	21.398	-17.666	8.58E+04
N11-TIB	TI46 (N,P) SC46	14.764	21.398	-17.615	5.63E+03
N11-NIB	NI58 (N,P) CO58	14.764	21.398	-17.513	4.90E+05
N11-FEB	FE54 (N,P) MN54	14.764	21.398	-17.412	9.04E+03
N11-COB	CO59 (N,G) CO60	14.764	21.398	-17.310	5.24E+03

Table A.6. Activities for dosimeters in the HSST5-4 (south) metallurgical capsule

Monitor ID	Reaction	Coordinates X (cm)	Coordinates Y (cm)	Coordinates Z (cm)	Activity Bq/mg @ EOI
GWY1-1	FE54 (N,P) MN54	-14.764	13.542	8.174	1.15E+04
GWY1-3	FE54 (N,P) MN54	-14.764	15.447	8.174	9.74E+03
GWY1-5	FE54 (N,P) MN54	-14.764	17.352	8.174	8.62E+03
GWY1-7	FE54 (N,P) MN54	-14.764	19.257	8.174	9.19E+03
GWY1-9	FE54 (N,P) MN54	-14.764	21.162	8.174	1.06E+04
GWY1-11	FE54 (N,P) MN54	-14.764	23.067	8.174	1.37E+04
GWY2-1	FE54 (N,P) MN54	-22.468	13.542	-4.382	1.07E+04
GWY2-3	FE54 (N,P) MN54	-22.468	15.447	-4.382	9.14E+03
GWY2-5	FE54 (N,P) MN54	-22.468	17.352	-4.382	9.18E+03
GWY2-7	FE54 (N,P) MN54	-22.468	19.257	-4.382	9.91E+03
GWY2-9	FE54 (N,P) MN54	-22.468	21.162	-4.382	1.27E+04
GWY2-11	FE54 (N,P) MN54	-22.468	23.067	-4.382	1.60E+04
GWY3-1	FE54 (N,P) MN54	-14.764	13.542	-4.382	1.22E+04
GWY3-3	FE54 (N,P) MN54	-14.764	15.447	-4.382	1.04E+04
GWY3-5	FE54 (N,P) MN54	-14.764	17.352	-4.382	9.64E+03
GWY3-7	FE54 (N,P) MN54	-14.764	19.257	-4.382	1.07E+04
GWY3-9	FE54 (N,P) MN54	-14.764	21.162	-4.382	1.30E+04
GWY4-1	FE54 (N,P) MN54	-7.060	13.542	-4.382	1.48E+04
GWY4-3	FE54 (N,P) MN54	-7.060	15.447	-4.382	1.17E+04
GWY4-5	FE54 (N,P) MN54	-7.060	17.352	-4.382	9.65E+03
GWY4-7	FE54 (N,P) MN54	-7.060	19.257	-4.382	9.27E+03
GWY4-9	FE54 (N,P) MN54	-7.060	21.162	-4.382	9.57E+03
GWY4-11	FE54 (N,P) MN54	-7.060	23.067	-4.382	1.16E+04
GWY5-1	FE54 (N,P) MN54	-14.764	13.542	-16.111	1.16E+04
GWY5-3	FE54 (N,P) MN54	-14.764	15.447	-16.111	9.14E+03
GWY5-5	FE54 (N,P) MN54	-14.764	17.352	-16.111	8.37E+03
GWY5-7	FE54 (N,P) MN54	-14.764	19.257	-16.111	8.36E+03
GWY5-9	FE54 (N,P) MN54	-14.764	21.162	-16.111	9.93E+03
GWY5-11	FE54 (N,P) MN54	-14.764	23.067	-16.111	1.21E+04
GWX-1	FE54 (N,P) MN54	-24.924	18.304	-3.556	9.30E+03
GWX-2	FE54 (N,P) MN54	-22.384	18.304	-3.556	9.09E+03
GWX-3	FE54 (N,P) MN54	-19.844	18.304	-3.556	9.11E+03
GWX-4	FE54 (N,P) MN54	-17.304	18.304	-3.556	9.33E+03
GWX-5	FE54 (N,P) MN54	-14.764	18.304	-3.556	9.42E+03
GWX-6	FE54 (N,P) MN54	-12.224	18.304	-3.556	9.18E+03
GWX-7	FE54 (N,P) MN54	-9.684	18.304	-3.556	8.96E+03
GWX-8	FE54 (N,P) MN54	-7.144	18.304	-3.556	8.86E+03
GWX-9	FE54 (N,P) MN54	-4.604	18.304	-3.556	9.11E+03

Table A.6. Continued

Monitor ID	Reaction	Coordinates X (cm)	Y (cm)	Z (cm)	Activity Bq/mg @ EOI
GWZ11-2	FE54 (N,P) MN54	-22.533	13.160	16.794	7.69E+03
GWZ11-5	FE54 (N,P) MN54	-22.533	13.160	9.174	9.07E+03
GWZ11-8	FE54 (N,P) MN54	-22.533	13.160	-0.155	1.02E+04
GWZ11-11	FE54 (N,P) MN54	-22.533	13.160	-7.775	9.99E+03
GWZ11-14	FE54 (N,P) MN54	-22.533	13.160	-17.104	8.55E+03
GWZ11-17	FE54 (N,P) MN54	-22.533	13.160	-24.724	6.23E+03
GWZ12-2	FE54 (N,P) MN54	-14.501	13.160	16.794	9.08E+03
GWZ12-5	FE54 (N,P) MN54	-14.501	13.160	9.174	1.14E+04
GWZ12-8	FE54 (N,P) MN54	-14.501	13.160	-0.155	1.30E+04
GWZ12-11	FE54 (N,P) MN54	-14.501	13.160	-7.775	1.20E+04
GWZ12-14	FE54 (N,P) MN54	-14.501	13.160	-17.104	1.11E+04
GWZ12-17	FE54 (N,P) MN54	-14.501	13.160	-24.724	8.01E+03
GWZ13-2	FE54 (N,P) MN54	-6.995	13.160	16.794	9.97E+03
GWZ13-5	FE54 (N,P) MN54	-6.995	13.160	9.174	1.27E+04
GWZ13-8	FE54 (N,P) MN54	-6.995	13.160	-0.155	1.46E+04
GWZ13-11	FE54 (N,P) MN54	-6.995	13.160	-7.775	1.46E+04
GWZ13-14	FE54 (N,P) MN54	-6.995	13.160	-17.104	1.27E+04
GWZ13-17	FE54 (N,P) MN54	-6.995	13.160	-24.724	9.29E+03
GWZ21-2	FE54 (N,P) MN54	-22.533	23.448	16.794	1.20E+04
GWZ21-5	FE54 (N,P) MN54	-22.533	23.448	9.174	1.48E+04
GWZ21-8	FE54 (N,P) MN54	-22.533	23.448	-0.155	1.62E+04
GWZ21-11	FE54 (N,P) MN54	-22.533	23.448	-7.775	1.56E+04
GWZ21-14	FE54 (N,P) MN54	-22.533	23.448	-17.104	1.36E+04
GWZ21-17	FE54 (N,P) MN54	-22.533	23.448	-24.724	9.92E+03
GWZ22-2	FE54 (N,P) MN54	-15.018	23.448	16.794	1.06E+04
GWZ22-5	FE54 (N,P) MN54	-15.018	23.448	9.174	1.29E+04
GWZ22-8	FE54 (N,P) MN54	-15.018	23.448	-0.155	1.44E+04
GWZ22-11	FE54 (N,P) MN54	-15.018	23.448	-7.775	1.39E+04
GWZ22-14	FE54 (N,P) MN54	-15.018	23.448	-17.104	1.18E+04
GWZ22-17	FE54 (N,P) MN54	-15.018	23.448	-24.724	8.28E+03
GWZ23-2	FE54 (N,P) MN54	-6.995	23.448	16.794	8.43E+03
GWZ23-5	FE54 (N,P) MN54	-6.995	23.448	9.174	1.01E+04
GWZ23-8	FE54 (N,P) MN54	-6.995	23.448	-0.155	1.12E+04
GWZ23-11	FE54 (N,P) MN54	-6.995	23.448	-7.775	1.08E+04
GWZ23-14	FE54 (N,P) MN54	-6.995	23.448	-17.104	9.31E+03
GWZ23-17	FE54 (N,P) MN54	-6.995	23.448	-24.724	6.64E+03

Table A.6. Continued

Monitor ID	Reaction	Coordinates X (cm)	Y (cm)	Z (cm)	Activity Bq/mg @ EOI
S1-NB	NB93 (N,N')NB93	-14.764	15.210	11.175	2.40E+04
S1-COT	CO59 (N,G) CO60	-14.764	15.210	11.150	1.50E+04
S1-FET	FE54 (N,P) MN54	-14.764	15.210	11.074	9.60E+03
S1-NIT	NI58 (N,P) CO58	-14.764	15.210	10.973	5.20E+05
S1-TIT	TI46 (N,P) SC46	-14.764	15.210	10.871	6.00E+03
S1-NP	NP237(N,F) ZR95	-14.764	15.210	10.566	6.60E+05
S1-NP	NP237(N,F) RU103	-14.764	15.210	10.566	8.80E+05
S1-CU	CU63 (N,A) CO60	-14.764	15.210	10.274	1.10E+02
S1-U	U238 (N,F) ZR95	-14.764	15.210	9.728	5.40E+04
S1-U	U238 (N,F) RU103	-14.764	15.210	9.728	9.30E+04
S1-TIB	TI46 (N,P) SC46	-14.764	15.210	9.677	6.20E+03
S1-NIB	NI58 (N,P) CO58	-14.764	15.210	9.575	5.70E+05
S1-FEB	FE54 (N,P) MN54	-14.764	15.210	9.474	1.00E+04
S1-COB	CO59 (N,G) CO60	-14.764	15.210	9.372	1.60E+04
S4-COT	CO59 (N,G) CO60	-14.764	21.398	11.150	1.50E+04
S4-FET	FE54 (N,P) MN54	-14.764	21.398	11.074	8.70E+03
S4-NIT	NI58 (N,P) CO58	-14.764	21.398	10.973	4.20E+05
S4-TIT	TI46 (N,P) SC46	-14.764	21.398	10.871	4.70E+03
S4-NP	NP237(N,F) ZR95	-14.764	21.398	10.566	5.30E+05
S4-NP	NP237(N,F) RU103	-14.764	21.398	10.566	6.10E+05
S4-CU	CU63 (N,A) CO60	-14.764	21.398	10.274	9.90E+01
S4-U	U238 (N,F) ZR95	-14.764	21.398	9.728	1.30E+04
S4-U	U238 (N,F) RU103	-14.764	21.398	9.728	2.00E+04
S4-TIB	TI46 (N,P) SC46	-14.764	21.398	9.677	4.80E+03
S4-NIB	NI58 (N,P) CO58	-14.764	21.398	9.575	4.30E+05
S4-FEB	FE54 (N,P) MN54	-14.764	21.398	9.474	.)E+03
S4-COB	CO59 (N,G) CO60	-14.764	21.398	9.372	1.50E+04
S8-NB	NB93 (N,N')NB93	-14.764	15.210	-19.113	1.70E+04
S8-COT	CO59 (N,G) CO60	-14.764	15.210	-19.088	1.30E+04
S8-FET	FE54 (N,P) MN54	-14.764	15.210	-19.012	8.10E+03
S8-NIT	NI58 (N,P) CO58	-14.764	15.210	-18.911	3.90E+05
S8-TIT	TI46 (N,P) SC46	-14.764	15.210	-18.809	4.40E+03
S8-NP	NP237(N,F) ZR95	-14.764	15.210	-18.504	4.80E+05
S8-NP	NP237(N,F) RU103	-14.764	15.210	-18.504	6.30E+05
S8-CU	CU63 (N,A) CO60	-14.764	15.210	-18.212	9.40E+01
S8-U	U238 (N,F) ZR95	-14.764	15.210	-17.666	3.80E+04
S8-U	U238 (N,F) RU103	-14.764	15.210	-17.666	5.90E+04
S8-TIB	TI46 (N,P) SC46	-14.764	15.210	-17.615	4.50E+03
S8-NIB	NI58 (N,P) CO58	-14.764	15.210	-17.513	4.20E+05
S8-FEB	FE54 (N,P) MN54	-14.764	15.210	-17.412	2.80E+04
S8-COB	CO59 (N,G) CO60	-14.764	15.210	-17.310	1.40E+04

Table A.7. Activities for dosimeters in the HSST5-9 (north) metallurgical capsule

Monitor ID	Reaction	Coordinates			Activity Bq/mg @ EOI
		X (cm)	Y (cm)	Z (cm)	
GWY1-1	FE54 (N,P) MN54	14.764	13.542	8.174	1.03E+04
GWY1-3	FE54 (N,P) MN54	14.764	15.447	8.174	8.41E+03
GWY1-5	FE54 (N,P) MN54	14.764	17.352	8.174	7.58E+03
GWY1-7	FE54 (N,P) MN54	14.764	19.257	8.174	7.82E+03
GWY1-9	FE54 (N,P) MN54	14.764	21.162	8.174	8.85E+03
GWY1-11	FE54 (N,P) MN54	14.764	23.067	8.174	1.15E+04
GWY2-1	FE54 (N,P) MN54	22.468	13.542	-4.382	9.03E+03
GWY2-3	FE54 (N,P) MN54	22.468	15.447	-4.382	7.85E+03
GWY2-5	FE54 (N,P) MN54	22.468	17.352	-4.382	7.91E+03
GWY2-7	FE54 (N,P) MN54	22.468	19.257	-4.382	8.69E+03
GWY2-9	FE54 (N,P) MN54	22.468	21.162	-4.382	1.10E+04
GWY2-11	FE54 (N,P) MN54	22.468	23.067	-4.382	1.43E+04
GWY3-1	FE54 (N,P) MN54	14.764	13.542	-4.382	1.13E+04
GWY3-3	FE54 (N,P) MN54	14.764	15.447	-4.382	9.44E+03
GWY3-5	FE54 (N,P) MN54	14.764	17.352	-4.382	8.34E+03
GWY3-7	FE54 (N,P) MN54	14.764	19.257	-4.382	8.58E+03
GWY3-9	FE54 (N,P) MN54	14.764	21.162	-4.382	9.98E+03
GWY4-1	FE54 (N,P) MN54	7.060	13.542	-4.382	1.30E+04
GWY4-3	FE54 (N,P) MN54	7.060	15.447	-4.382	1.00E+04
GWY4-5	FE54 (N,P) MN54	7.060	17.352	-4.382	8.28E+03
GWY4-7	FE54 (N,P) MN54	7.060	19.257	-4.382	7.93E+03
GWY4-9	FE54 (N,P) MN54	7.060	21.162	-4.382	8.37E+03
GWY4-11	FE54 (N,P) MN54	7.060	23.067	-4.382	9.75E+03
GWY5-1	FE54 (N,P) MN54	14.764	13.542	-16.111	1.01E+04
GWY5-3	FE54 (N,P) MN54	14.764	15.447	-16.111	8.04E+03
GWY5-5	FE54 (N,P) MN54	14.764	17.352	-16.111	7.26E+03
GWY5-7	FE54 (N,P) MN54	14.764	19.257	-16.111	7.33E+03
GWY5-9	FE54 (N,P) MN54	14.764	21.162	-16.111	8.53E+03
GWY5-11	FE54 (N,P) MN54	14.764	23.067	-16.111	1.07E+04
GWX-1	FE54 (N,P) MN54	24.924	18.304	-3.556	9.05E+03
GWX-2	FE54 (N,P) MN54	22.384	18.304	-3.556	8.92E+03
GWX-3	FE54 (N,P) MN54	19.844	18.304	-3.556	8.65E+03
GWX-4	FE54 (N,P) MN54	17.304	18.304	-3.556	9.02E+03
GWX-5	FE54 (N,P) MN54	14.764	18.304	-3.556	8.84E+03
GWX-6	FE54 (N,P) MN54	12.224	18.304	-3.556	8.91E+03
GWX-7	FE54 (N,P) MN54	9.684	18.304	-3.556	8.51E+03
GWX-8	FE54 (N,P) MN54	7.144	18.304	-3.556	8.70E+03
GWX-9	FE54 (N,P) MN54	4.604	18.304	-3.556	8.80E+03

Table A.7. Continued

Monitor ID	Reaction	Coordinates X (cm)	Y (cm)	Z (cm)	Activity Bq/mg @ EOI
GWZ11-2	FE54 (N,P) MN54	22.533	13.160	16.794	6.98E+03
GWZ11-5	FE54 (N,P) MN54	22.533	13.160	9.174	8.41E+03
GWZ11-8	FE54 (N,P) MN54	22.533	13.160	-0.155	9.77E+03
GWZ11-11	FE54 (N,P) MN54	22.533	13.160	-7.775	9.51E+03
GWZ11-14	FE54 (N,P) MN54	22.533	13.160	-17.104	8.50E+03
GWZ11-17	FE54 (N,P) MN54	22.533	13.160	-24.724	6.02E+03
GWZ12-2	FE54 (N,P) MN54	15.018	13.160	16.794	8.82E+03
GWZ12-5	FE54 (N,P) MN54	15.018	13.160	9.174	1.08E+04
GWZ12-8	FE54 (N,P) MN54	15.018	13.160	-0.155	1.26E+04
GWZ12-11	FE54 (N,P) MN54	15.018	13.160	-7.775	1.21E+04
GWZ12-14	FE54 (N,P) MN54	15.018	13.160	-17.104	1.08E+04
GWZ12-17	FE54 (N,P) MN54	15.018	13.160	-24.724	7.68E+03
GWZ13-2	FE54 (N,P) MN54	6.995	13.160	16.794	9.97E+03
GWZ13-5	FE54 (N,P) MN54	6.995	13.160	9.174	1.23E+04
GWZ13-8	FE54 (N,P) MN54	6.995	13.160	-0.155	1.46E+04
GWZ13-11	FE54 (N,P) MN54	6.995	13.160	-7.775	1.42E+04
GWZ13-14	FE54 (N,P) MN54	6.995	13.160	-17.104	1.29E+04
GWZ13-17	FE54 (N,P) MN54	6.995	13.160	-24.724	9.03E+03
GWZ21-2	FE54 (N,P) MN54	22.533	23.448	16.794	1.18E+04
GWZ21-3	FE54 (N,P) MN54	22.533	23.448	14.254	1.28E+04
GWZ21-5	FE54 (N,P) MN54	22.533	23.448	9.174	1.40E+04
GWZ21-8	FE54 (N,P) MN54	22.533	23.448	-0.155	1.50E+04
GWZ21-10	FE54 (N,P) MN54	22.533	23.448	-5.235	1.55E+04
GWZ21-11	FE54 (N,P) MN54	22.533	23.448	-7.775	1.54E+04
GWZ22-2	FE54 (N,P) MN54	14.501	23.448	16.794	9.76E+03
GWZ22-5	FE54 (N,P) MN54	14.501	23.448	9.174	1.20E+04
GWZ22-8	FE54 (N,P) MN54	14.501	23.448	-0.155	1.32E+04
GWZ22-11	FE54 (N,P) MN54	14.501	23.448	-7.775	1.31E+04
GWZ22-14	FE54 (N,P) MN54	14.501	23.448	-17.104	1.10E+04
GWZ22-17	FE54 (N,P) MN54	14.501	23.448	-24.724	8.04E+03
GWZ23-2	FE54 (N,P) MN54	6.995	23.448	16.794	7.61E+03
GWZ23-3	FE54 (N,P) MN54	6.995	23.448	14.254	8.27E+03
GWZ23-5	FE54 (N,P) MN54	6.995	23.448	9.174	9.77E+03
GWZ23-8	FE54 (N,P) MN54	6.995	23.448	-0.155	1.04E+04
GWZ23-10	FE54 (N,P) MN54	6.995	23.448	-5.235	1.08E+04
GWZ23-11	FE54 (N,P) MN54	6.995	23.448	-7.775	1.03E+04

Table A.7. Continued

Monitor ID	Reaction	Coordinates X (cm)	Coordinates Y (cm)	Coordinates Z (cm)	Activity Bq/mg @ EOI
N1-NP	NP237(N,F) ZR95	14.764	15.210	10.566	4.48E+05
N1-NP	NP237(N,F) RU103	14.764	15.210	10.566	5.55E+05
N1-CU	CU63 (N,A) CO60	14.764	15.210	10.274	8.78E+01
N1-U	U238 (N,F) ZR95	14.764	15.210	9.728	3.45E+04
N1-U	U238 (N,F) RU103	14.764	15.210	9.728	5.70E+04
N1-TIB	TI46 (N,P) SC46	14.764	15.210	9.677	4.18E+03
N1-NIB	NI58 (N,P) CO58	14.764	15.210	9.575	3.61E+05
N1-FEB	FE54 (N,P) MN54	14.764	15.210	9.474	7.81E+03
N1-COB	CO59 (N,G) CO60	14.764	15.210	9.372	1.32E+04
N8-NP	NP237(N,F) ZR95	14.764	15.210	-18.504	4.01E+05
N8-NP	NP237(N,F) RU103	14.764	15.210	-18.504	4.83E+05
N8-CU	CU63 (N,A) CO60	14.764	15.210	-18.212	8.66E+01
N8-U	U238 (N,F) ZR95	14.764	15.210	-17.666	3.38E+04
N8-U	U238 (N,F) RU103	14.764	15.210	-17.666	5.38E+04
N8-TIB	TI46 (N,P) SC46	14.764	15.210	-17.615	4.13E+03
N8-NIB	NI58 (N,P) CO58	14.764	15.210	-17.513	3.60E+05
N8-FEB	FE54 (N,P) MN54	14.764	15.210	-17.412	8.08E+03
N8-COB	CO59 (N,G) CO60	14.764	15.210	-17.310	1.30E+04
N11-NP	NP237(N,F) ZR95	14.764	21.398	-18.504	4.73E+05
N11-NP	NP237(N,F) RU103	14.764	21.398	-18.504	6.80E+05
N11-CU	CU63 (N,A) CO60	14.764	21.398	-18.212	9.10E+01
N11-U	U238 (N,F) ZR95	14.764	21.398	-17.666	4.12E+04
N11-U	U238 (N,F) RU103	14.764	21.398	-17.666	7.74E+04
N11-TIB	TI46 (N,P) SC46	14.764	21.398	-17.615	4.86E+03
N11-NIB	NI58 (N,P) CO58	14.764	21.398	-17.513	4.39E+05
N11-FEB	FE54 (N,P) MN54	14.764	21.398	-17.412	8.25E+03
N11-COB	CO59 (N,G) CO60	14.764	21.398	-17.310	1.34E+04

Table A.8. Activities for dosimeters in the HSST5-10 (south) metallurgical capsule

Monitor ID	Reaction	Coordinates			Activity Bq/mg @ EOI
		X (cm)	Y (cm)	Z (cm)	
GWY1-1	FE54 (N,P) MN54	-14.764	13.542	8.174	1.04E+04
GWY1-3	FE54 (N,P) MN54	-14.764	15.447	8.174	8.59E+03
GWY1-5	FE54 (N,P) MN54	-14.764	17.352	8.174	7.65E+03
GWY1-7	FE54 (N,P) MN54	-14.764	19.257	8.174	7.84E+03
GWY1-9	FE54 (N,P) MN54	-14.764	21.162	8.174	9.05E+03
GWY1-11	FE54 (N,P) MN54	-14.764	23.067	8.174	1.22E+04
GWY2-1	FE54 (N,P) MN54	-22.468	13.542	-4.382	9.44E+03
GWY2-3	FE54 (N,P) MN54	-22.468	15.447	-4.382	8.91E+03
GWY2-5	FE54 (N,P) MN54	-22.468	17.352	-4.382	8.76E+03
GWY2-7	FE54 (N,P) MN54	-22.468	19.257	-4.382	8.91E+03
GWY2-9	FE54 (N,P) MN54	-22.468	21.162	-4.382	1.20E+04
GWY2-11	FE54 (N,P) MN54	-22.468	23.067	-4.382	1.51E+04
GWY3-1	FE54 (N,P) MN54	-14.764	13.542	-4.382	1.26E+04
GWY3-3	FE54 (N,P) MN54	-14.764	15.447	-4.382	1.04E+04
GWY3-5	FE54 (N,P) MN54	-14.764	17.352	-4.382	8.57E+03
GWY3-7	FE54 (N,P) MN54	-14.764	19.257	-4.382	9.57E+03
GWY3-9	FE54 (N,P) MN54	-14.764	21.162	-4.382	1.12E+04
GWY4-1	FE54 (N,P) MN54	-7.060	13.542	-4.382	1.22E+04
GWY4-3	FE54 (N,P) MN54	-7.060	15.447	-4.382	1.05E+04
GWY4-5	FE54 (N,P) MN54	-7.060	17.352	-4.382	8.20E+03
GWY4-7	FE54 (N,P) MN54	-7.060	19.257	-4.382	8.57E+03
GWY4-9	FE54 (N,P) MN54	-7.060	21.162	-4.382	9.19E+03
GWY4-11	FE54 (N,P) MN54	-7.060	23.067	-4.382	9.79E+03
GWY5-1	FE54 (N,P) MN54	-14.764	13.542	-16.111	1.03E+04
GWY5-3	FE54 (N,P) MN54	-14.764	15.447	-16.111	9.16E+03
GWY5-5	FE54 (N,P) MN54	-14.764	17.352	-16.111	8.08E+03
GWY5-7	FE54 (N,P) MN54	-14.764	19.257	-16.111	7.19E+03
GWY5-9	FE54 (N,P) MN54	-14.764	21.162	-16.111	9.23E+03
GWY5-11	FE54 (N,P) MN54	-14.764	23.067	-16.111	1.12E+04
GWX-1	FE54 (N,P) MN54	-24.924	18.304	-3.556	9.23E+03
GWX-2	FE54 (N,P) MN54	-22.384	18.304	-3.556	9.03E+03
GWX-3	FE54 (N,P) MN54	-19.844	18.304	-3.556	8.28E+03
GWX-4	FE54 (N,P) MN54	-17.304	18.304	-3.556	9.21E+03
GWX-5	FE54 (N,P) MN54	-14.764	18.304	-3.556	9.21E+03
GWX-6	FE54 (N,P) MN54	-12.224	18.304	-3.556	8.11E+03
GWX-7	FE54 (N,P) MN54	-9.684	18.304	-3.556	8.80E+03
GWX-8	FE54 (N,P) MN54	-7.144	18.304	-3.556	8.79E+03
GWX-9	FE54 (N,P) MN54	-4.604	18.304	-3.556	8.25E+03

Table A.8. Continued

Monitor ID	Reaction	Coordinates X (cm)	Y (cm)	Z (cm)	Activity Bq/mg @ EOI
GWZ11-2	FE54 (N,P) MN54	-22.533	13.160	16.794	6.81E+03
GWZ11-5	FE54 (N,P) MN54	-22.533	13.160	9.174	9.14E+03
GWZ11-8	FE54 (N,P) MN54	-22.533	13.160	-0.155	1.02E+04
GWZ11-11	FE54 (N,P) MN54	-22.533	13.160	-7.775	9.31E+03
GWZ11-14	FE54 (N,P) MN54	-22.533	13.160	-17.104	8.82E+03
GWZ11-17	FE54 (N,P) MN54	-22.533	13.160	-24.724	6.25E+03
GWZ12-2	FE54 (N,P) MN54	-14.501	13.160	16.794	7.91E+03
GWZ12-5	FE54 (N,P) MN54	-14.501	13.160	9.174	1.16E+04
GWZ12-8	FE54 (N,P) MN54	-14.501	13.160	-0.155	1.29E+04
GWZ12-11	FE54 (N,P) MN54	-14.501	13.160	-7.775	1.17E+04
GWZ12-14	FE54 (N,P) MN54	-14.501	13.160	-17.104	1.15E+04
GWZ12-17	FE54 (N,P) MN54	-14.501	13.160	-24.724	8.18E+03
GWZ13-2	FE54 (N,P) MN54	-6.995	13.160	16.794	9.16E+03
GWZ13-5	FE54 (N,P) MN54	-6.995	13.160	9.174	1.28E+04
GWZ13-8	FE54 (N,P) MN54	-6.995	13.160	-0.155	1.46E+04
GWZ13-11	FE54 (N,P) MN54	-6.995	13.160	-7.775	1.33E+04
GWZ13-14	FE54 (N,P) MN54	-6.995	13.160	-17.104	1.28E+04
GWZ13-17	FE54 (N,P) MN54	-6.995	13.160	-24.724	9.21E+03
GWZ21-2	FE54 (N,P) MN54	-22.533	23.448	16.794	1.06E+04
GWZ21-5	FE54 (N,P) MN54	-22.533	23.448	9.174	1.49E+04
GWZ21-8	FE54 (N,P) MN54	-22.533	23.448	-0.155	1.62E+04
GWZ21-11	FE54 (N,P) MN54	-22.533	23.448	-7.775	1.46E+04
GWZ21-14	FE54 (N,P) MN54	-22.533	23.448	-17.104	1.40E+04
GWZ21-17	FE54 (N,P) MN54	-22.533	23.448	-24.724	1.01E+04
GWZ22-2	FE54 (N,P) MN54	-15.018	23.448	16.794	1.14E+04
GWZ22-5	FE54 (N,P) MN54	-15.018	23.448	9.174	1.03E+04
GWZ22-8	FE54 (N,P) MN54	-15.018	23.448	-0.155	1.41E+04
GWZ22-11	FE54 (N,P) MN54	-15.018	23.448	-7.775	1.26E+04
GWZ22-14	FE54 (N,P) MN54	-15.018	23.448	-17.104	1.20E+04
GWZ22-17	FE54 (N,P) MN54	-15.018	23.448	-24.724	8.40E+03
GWZ23-2	FE54 (N,P) MN54	-6.995	23.448	16.794	7.16E+03
GWZ23-5	FE54 (N,P) MN54	-6.995	23.448	9.174	9.75E+03
GWZ23-8	FE54 (N,P) MN54	-6.995	23.448	-0.155	1.06E+04
GWZ23-11	FE54 (N,P) MN54	-6.995	23.448	-7.775	9.65E+03
GWZ23-14	FE54 (N,P) MN54	-6.995	23.448	-17.104	8.84E+03
GWZ23-17	FE54 (N,P) MN54	-6.995	23.448	-24.724	6.32E+03

Table A.8. Continued

Monitor ID	Reaction	Coordinates X (cm)	Coordinates Y (cm)	Coordinates Z (cm)	Activity Bq/mg @ EOI
S1-COT	CO59 (N,G) CO60	-14.764	15.210	11.150	1.32E+04
S1-FET	FE54 (N,P) MN54	-14.764	15.210	11.074	8.77E+03
S1-NIT	NI58 (N,P) CO58	-14.764	15.210	10.973	3.98E+05
S1-TIT	TI46 (N,P) SC46	-14.764	15.210	10.871	4.09E+03
S1-NP	NP237(N,F) ZR95	-14.764	15.210	10.566	4.37E+05
S1-NP	NP237(N,F) CS137	-14.764	15.210	10.566	5.90E+03
S1-CU	CU63 (N,A) CO60	-14.764	15.210	10.274	9.70E+01
S1-U	U238 (N,F) ZR95	-14.764	15.210	9.728	3.59E+04
S1-U	U238 (N,F) CS137	-14.764	15.210	9.728	5.33E+02
S4-COT	CO59 (N,G) CO60	-14.764	21.398	11.150	1.36E+04
S4-FET	FE54 (N,P) MN54	-14.764	21.398	11.074	9.51E+03
S4-NIT	NI58 (N,P) CO58	-14.764	21.398	10.973	5.03E+05
S4-TIT	TI46 (N,P) SC46	-14.764	21.398	10.871	4.04E+03
S4-NP	NP237(N,F) ZR95	-14.764	21.398	10.566	5.28E+05
S4-NP	NP237(N,F) CS137	-14.764	21.398	10.566	5.90E+03
S4-CU	CU63 (N,A) CO60	-14.764	21.398	10.274	1.04E+02
S4-U	U238 (N,F) ZR95	-14.764	21.398	9.728	4.53E+04
S4-U	U238 (N,F) CS137	-14.764	21.398	9.728	5.53E+02
S8-COT	CO59 (N,G) CO60	-14.764	15.210	-19.088	1.21E+04
S8-FET	FE54 (N,P) MN54	-14.764	15.210	-19.012	8.30E+03
S8-NIT	NI58 (N,P) CO58	-14.764	15.210	-18.911	3.79E+05
S8-TIT	TI46 (N,P) SC46	-14.764	15.210	-18.809	5.01E+03
S8-NP	NP237(N,F) ZR95	-14.764	15.210	-18.504	4.26E+05
S8-NP	NP237(N,F) CS137	-14.764	15.210	-18.504	5.50E+03
S8-CU	CU63 (N,A) CO60	-14.764	15.210	-18.212	9.47E+01
S8-U	U238 (N,F) ZR95	-14.764	15.210	-17.666	3.47E+04
S8-U	U238 (N,F) CS137	-14.764	15.210	-17.666	5.21E+02

Table A.9. Activities for dosimeters in the HSST5-11 (north) metallurgical capsule

Monitor ID	Reaction	Coordinates			Activity Bq/mg @ EOI
		X (cm)	Y (cm)	Z (cm)	
GWY1-1	FE54 (N,P) MN54	14.764	13.542	8.174	1.04E+04
GWY1-3	FE54 (N,P) MN54	14.764	15.447	8.174	9.09E+03
GWY1-5	FE54 (N,P) MN54	14.764	17.352	8.174	7.95E+03
GWY1-7	FE54 (N,P) MN54	14.764	19.257	8.174	7.64E+03
GWY1-9	FE54 (N,P) MN54	14.764	21.162	8.174	9.46E+03
GWY1-11	FE54 (N,P) MN54	14.764	23.067	8.174	1.19E+04
GWY2-1	FE54 (N,P) MN54	22.468	13.542	-4.382	9.72E+03
GWY2-3	FE54 (N,P) MN54	22.468	15.447	-4.382	8.33E+03
GWY2-5	FE54 (N,P) MN54	22.468	17.352	-4.382	8.73E+03
GWY2-7	FE54 (N,P) MN54	22.468	19.257	-4.382	9.28E+03
GWY2-9	FE54 (N,P) MN54	22.468	21.162	-4.382	1.06E+04
GWY2-11	FE54 (N,P) MN54	22.468	23.067	-4.382	1.54E+04
GWY3-1	FE54 (N,P) MN54	14.764	13.542	-4.382	1.18E+04
GWY3-3	FE54 (N,P) MN54	14.764	15.447	-4.382	1.06E+04
GWY3-5	FE54 (N,P) MN54	14.764	17.352	-4.382	9.31E+03
GWY3-7	FE54 (N,P) MN54	14.764	19.257	-4.382	8.68E+03
GWY3-9	FE54 (N,P) MN54	14.764	21.162	-4.382	1.04E+04
GWY4-1	FE54 (N,P) MN54	7.060	13.542	-4.382	1.34E+04
GWY4-3	FE54 (N,P) MN54	7.060	15.447	-4.382	1.11E+04
GWY4-5	FE54 (N,P) MN54	7.060	17.352	-4.382	9.01E+03
GWY4-7	FE54 (N,P) MN54	7.060	19.257	-4.382	7.99E+03
GWY4-9	FE54 (N,P) MN54	7.060	21.162	-4.382	9.06E+03
GWY4-11	FE54 (N,P) MN54	7.060	23.067	-4.382	1.04E+04
GWY5-1	FE54 (N,P) MN54	14.764	13.542	-16.111	1.09E+04
GWY5-3	FE54 (N,P) MN54	14.764	15.447	-16.111	8.18E+03
GWY5-5	FE54 (N,P) MN54	14.764	17.352	-16.111	8.10E+03
GWY5-7	FE54 (N,P) MN54	14.764	19.257	-16.111	8.06E+03
GWY5-9	FE54 (N,P) MN54	14.764	21.162	-16.111	8.40E+03
GWY5-11	FE54 (N,P) MN54	14.764	23.067	-16.111	1.16E+04
GWX-1	FE54 (N,P) MN54	24.924	18.304	-3.556	9.72E+03
GWX-2	FE54 (N,P) MN54	22.384	18.304	-3.556	8.26E+03
GWX-3	FE54 (N,P) MN54	19.844	18.304	-3.556	9.09E+03
GWX-4	FE54 (N,P) MN54	17.304	18.304	-3.556	9.10E+03
GWX-5	FE54 (N,P) MN54	14.764	18.304	-3.556	8.48E+03
GWX-6	FE54 (N,P) MN54	12.224	18.304	-3.556	9.16E+03
GWX-7	FE54 (N,P) MN54	9.684	18.304	-3.556	8.78E+03
GWX-8	FE54 (N,P) MN54	7.144	18.304	-3.556	7.93E+03
GWX-9	FE54 (N,P) MN54	4.604	18.304	-3.556	9.05E+03

Table A.9. Continued

Monitor ID	Reaction	Coordinates X (cm)	Y (cm)	Z (cm)	Activity Bq/mg @ EOI
GWZ11-2	FE54 (N,P) MN54	22.533	13.160	16.794	7.03E+03
GWZ11-5	FE54 (N,P) MN54	22.533	13.160	9.174	8.05E+03
GWZ11-8	FE54 (N,P) MN54	22.533	13.160	-0.155	1.01E+04
GWZ11-11	FE54 (N,P) MN54	22.533	13.160	-7.775	9.96E+03
GWZ11-14	FE54 (N,P) MN54	22.533	13.160	-17.104	7.80E+03
GWZ11-17	FE54 (N,P) MN54	22.533	13.160	-24.724	6.16E+03
GWZ12-2	FE54 (N,P) MN54	15.018	13.160	16.794	8.95E+03
GWZ12-5	FE54 (N,P) MN54	15.018	13.160	9.174	1.05E+04
GWZ12-8	FE54 (N,P) MN54	15.018	13.160	-0.155	1.28E+04
GWZ12-11	FE54 (N,P) MN54	15.018	13.160	-7.775	1.28E+04
GWZ12-14	FE54 (N,P) MN54	15.018	13.160	-17.104	9.90E+03
GWZ12-17	FE54 (N,P) MN54	15.018	13.160	-24.724	7.82E+03
GWZ13-2	FE54 (N,P) MN54	6.995	13.160	16.794	1.01E+04
GWZ13-5	FE54 (N,P) MN54	6.995	13.160	9.174	1.19E+04
GWZ13-8	FE54 (N,P) MN54	6.995	13.160	-0.155	1.48E+04
GWZ13-11	FE54 (N,P) MN54	6.995	13.160	-7.775	1.48E+04
GWZ13-14	FE54 (N,P) MN54	6.995	13.160	-17.104	1.18E+04
GWZ13-17	FE54 (N,P) MN54	6.995	13.160	-24.724	9.15E+03
GWZ21-2	FE54 (N,P) MN54	22.533	23.448	16.794	1.12E+04
GWZ21-5	FE54 (N,P) MN54	22.533	23.448	9.174	1.30E+04
GWZ21-8	FE54 (N,P) MN54	22.533	23.448	-0.155	1.63E+04
GWZ21-11	FE54 (N,P) MN54	22.533	23.448	-7.775	1.48E+04
GWZ21-14	FE54 (N,P) MN54	22.533	23.448	-17.104	1.40E+04
GWZ21-17	FE54 (N,P) MN54	22.533	23.448	-24.724	9.97E+03
GWZ22-2	FE54 (N,P) MN54	14.501	23.448	16.794	9.78E+03
GWZ22-5	FE54 (N,P) MN54	14.501	23.448	9.174	1.13E+04
GWZ22-8	FE54 (N,P) MN54	14.501	23.448	-0.155	1.38E+04
GWZ22-11	FE54 (N,P) MN54	14.501	23.448	-7.775	1.36E+04
GWZ22-14	FE54 (N,P) MN54	14.501	23.448	-17.104	1.10E+04
GWZ22-17	FE54 (N,P) MN54	14.501	23.448	-24.724	8.62E+03
GWZ23-2	FE54 (N,P) MN54	6.995	23.448	16.794	7.55E+03
GWZ23-5	FE54 (N,P) MN54	6.995	23.448	9.174	8.23E+03
GWZ23-14	FE54 (N,P) MN54	6.995	23.448	-17.104	7.97E+03
GWZ23-17	FE54 (N,P) MN54	6.995	23.448	-24.724	6.50E+03

Table A.9. Continued

Monitor ID	Reaction	Coordinates X (cm)	Coordinates Y (cm)	Coordinates Z (cm)	Activity Bq/mg @ EOI
N1-COT	CO59 (N,G) CO60	14.764	15.210	11.150	1.32E+04
N1-FET	FE54 (N,P) MN54	14.764	15.210	11.074	8.59E+03
N1-NIT	NI58 (N,P) CO58	14.764	15.210	10.973	3.84E+05
N1-TIT	TI46 (N,P) SC46	14.764	15.210	10.871	4.22E+03
N1-NP	NP237(N,F) ZR95	14.764	15.210	10.566	4.29E+05
N1-NP	NP237(N,F) CS137	14.764	15.210	10.566	5.74E+03
N1-CU	CU63 (N,A) CO60	14.764	15.210	10.274	9.96E+01
N1-U	U238 (N,F) ZR95	14.764	15.210	9.728	3.69E+04
N1-U	U238 (N,F) CS137	14.764	15.210	9.728	5.52E+02
N8-COT	CO59 (N,G) CO60	14.764	15.210	-19.088	1.20E+04
N8-FET	FE54 (N,P) MN54	14.764	15.210	-19.012	8.24E+03
N8-NIT	NI58 (N,P) CO58	14.764	15.210	-18.911	3.72E+05
N8-TIT	TI46 (N,P) SC46	14.764	15.210	-18.809	4.20E+03
N8-NP	NP237(N,F) ZR95	14.764	15.210	-18.504	3.86E+05
N8-NP	NP237(N,F) CS137	14.764	15.210	-18.504	5.31E+03
N8-CU	CU63 (N,A) CO60	14.764	15.210	-18.212	9.49E+01
N8-U	U238 (N,F) ZR95	14.764	15.210	-17.666	3.53E+04
N8-U	U238 (N,F) CS137	14.764	15.210	-17.666	5.18E+02
N11-COT	CO59 (N,G) CO60	14.764	21.398	-19.088	1.24E+04
N11-FET	FE54 (N,P) MN54	14.764	21.398	-19.012	8.69E+03
N11-NIT	NI58 (N,P) CO58	14.764	21.398	-18.911	4.77E+05
N11-TIT	TI46 (N,P) SC46	14.764	21.398	-18.809	4.79E+03
N11-NP	NP237(N,F) ZR95	14.764	21.398	-18.504	4.88E+05
N11-NP	NP237(N,F) CS137	14.764	21.398	-18.504	5.36E+03
N11-CU	CU63 (N,A) CO60	14.764	21.398	-18.212	9.76E+01
N11-U	U238 (N,F) ZR95	14.764	21.398	-17.666	4.61E+04
N11-U	U238 (N,F) CS137	14.764	21.398	-17.666	5.31E+02

Table A.10. Activities for dosimeters in the HSST5-12 (south) metallurgical capsule

Monitor ID	Reaction	Coordinates X (cm)	Y (cm)	Z (cm)	Activity Bq/mg @ EOI
GWY1-1	FE54 (N,P) MN54	-14.764	13.542	8.174	1.04E+04
GWY1-3	FE54 (N,P) MN54	-14.764	15.447	8.174	9.26E+03
GWY1-5	FE54 (N,P) MN54	-14.764	17.352	8.174	8.32E+03
GWY1-7	FE54 (N,P) MN54	-14.764	19.257	8.174	8.25E+03
GWY1-9	FE54 (N,P) MN54	-14.764	21.162	8.174	1.09E+04
GWY2-3	FE54 (N,P) MN54	-22.468	15.447	-4.382	9.30E+03
GWY2-5	FE54 (N,P) MN54	-22.468	17.352	-4.382	9.17E+03
GWY2-7	FE54 (N,P) MN54	-22.468	19.257	-4.382	9.38E+03
GWY2-9	FE54 (N,P) MN54	-22.468	21.162	-4.382	1.23E+04
GWY2-11	FE54 (N,P) MN54	-22.468	23.067	-4.382	1.68E+04
GWY3-1	FE54 (N,P) MN54	-14.764	13.542	-4.382	1.30E+04
GWY3-3	FE54 (N,P) MN54	-14.764	15.447	-4.382	1.02E+04
GWY3-5	FE54 (N,P) MN54	-14.764	17.352	-4.382	9.94E+03
GWY3-7	FE54 (N,P) MN54	-14.764	19.257	-4.382	9.69E+03
GWY3-9	FE54 (N,P) MN54	-14.764	21.162	-4.382	1.07E+04
GWY4-1	FE54 (N,P) MN54	-7.060	13.542	-4.382	1.43E+04
GWY4-3	FE54 (N,P) MN54	-7.060	15.447	-4.382	1.04E+04
GWY4-5	FE54 (N,P) MN54	-7.060	17.352	-4.382	9.58E+03
GWY4-7	FE54 (N,P) MN54	-7.060	19.257	-4.382	8.81E+03
GWY4-9	FE54 (N,P) MN54	-7.060	21.162	-4.382	9.09E+03
GWY4-11	FE54 (N,P) MN54	-7.060	23.067	-4.382	1.17E+04
GWY5-1	FE54 (N,P) MN54	-14.764	13.542	-16.111	1.06E+04
GWY5-3	FE54 (N,P) MN54	-14.764	15.447	-16.111	9.30E+03
GWY5-5	FE54 (N,P) MN54	-14.764	17.352	-16.111	8.01E+03
GWY5-7	FE54 (N,P) MN54	-14.764	19.257	-16.111	8.14E+03
GWY5-9	FE54 (N,P) MN54	-14.764	21.162	-16.111	1.03E+04
GWX-1	FE54 (N,P) MN54	-24.924	18.304	-3.556	9.66E+03
GWX-2	FE54 (N,P) MN54	-22.384	18.304	-3.556	8.39E+03
GWX-3	FE54 (N,P) MN54	-19.844	18.304	-3.556	9.25E+03
GWX-4	FE54 (N,P) MN54	-17.304	18.304	-3.556	9.26E+03
GWX-5	FE54 (N,P) MN54	-14.764	18.304	-3.556	8.42E+03
GWX-6	FE54 (N,P) MN54	-12.224	18.304	-3.556	9.62E+03
GWX-7	FE54 (N,P) MN54	-9.684	18.304	-3.556	9.39E+03
GWX-8	FE54 (N,P) MN54	-7.144	18.304	-3.556	8.40E+03
GWX-9	FE54 (N,P) MN54	-4.604	18.304	-3.556	9.63E+03

Table A.10. Continued

Monitor ID	Reaction	Coordinates X (cm)	Y (cm)	Z (cm)	Activity Bq/mg @ EOI
GWZ11-2	FE54 (N,P) MN54	-22.533	13.160	16.794	7.11E+03
GWZ11-5	FE54 (N,P) MN54	-22.533	13.160	9.174	8.25E+03
GWZ11-8	FE54 (N,P) MN54	-22.533	13.160	-0.155	1.04E+04
GWZ11-11	FE54 (N,P) MN54	-22.533	13.160	-7.775	1.04E+04
GWZ11-14	FE54 (N,P) MN54	-22.533	13.160	-17.104	8.24E+03
GWZ11-17	FE54 (N,P) MN54	-22.533	13.160	-24.724	6.65E+03
GWZ12-2	FE54 (N,P) MN54	-14.501	13.160	16.794	9.16E+03
GWZ12-5	FE54 (N,P) MN54	-14.501	13.160	9.174	1.07E+04
GWZ12-8	FE54 (N,P) MN54	-14.501	13.160	-0.155	1.34E+04
GWZ12-11	FE54 (N,P) MN54	-14.501	13.160	-7.775	1.32E+04
GWZ12-14	FE54 (N,P) MN54	-14.501	13.160	-17.104	1.05E+04
GWZ12-17	FE54 (N,P) MN54	-14.501	13.160	-24.724	8.62E+03
GWZ13-2	FE54 (N,P) MN54	-6.995	13.160	16.794	9.98E+03
GWZ13-5	FE54 (N,P) MN54	-6.995	13.160	9.174	1.18E+04
GWZ13-8	FE54 (N,P) MN54	-6.995	13.160	-0.155	1.51E+04
GWZ13-11	FE54 (N,P) MN54	-6.995	13.160	-7.775	1.49E+04
GWZ13-14	FE54 (N,P) MN54	-6.995	13.160	-17.104	1.20E+04
GWZ13-17	FE54 (N,P) MN54	-6.995	13.160	-24.724	9.39E+03
GWZ21-2	FE54 (N,P) MN54	-22.533	23.448	16.794	1.14E+04
GWZ21-5	FE54 (N,P) MN54	-22.533	23.448	9.174	1.36E+04
GWZ21-8	FE54 (N,P) MN54	-22.533	23.448	-0.155	1.68E+04
GWZ21-11	FE54 (N,P) MN54	-22.533	23.448	-7.775	1.68E+04
GWZ21-14	FE54 (N,P) MN54	-22.533	23.448	-17.104	1.34E+04
GWZ21-17	FE54 (N,P) MN54	-22.533	23.448	-24.724	1.08E+04
GWZ22-2	FE54 (N,P) MN54	-15.018	23.448	16.794	1.03E+04
GWZ22-5	FE54 (N,P) MN54	-15.018	23.448	9.174	1.19E+04
GWZ22-8	FE54 (N,P) MN54	-15.018	23.448	-0.155	1.48E+04
GWZ22-11	FE54 (N,P) MN54	-15.018	23.448	-7.775	1.48E+04
GWZ22-14	FE54 (N,P) MN54	-15.018	23.448	-17.104	1.16E+04
GWZ22-17	FE54 (N,P) MN54	-15.018	23.448	-24.724	9.20E+03
GWZ23-2	FE54 (N,P) MN54	-6.995	23.448	16.794	7.94E+03
GWZ23-5	FE54 (N,P) MN54	-6.995	23.448	9.174	9.20E+03
GWZ23-8	FE54 (N,P) MN54	-6.995	23.448	-0.155	1.13E+04
GWZ23-11	FE54 (N,P) MN54	-6.995	23.448	-7.775	1.11E+04
GWZ23-14	FE54 (N,P) MN54	-6.995	23.448	-17.104	8.83E+03
GWZ23-17	FE54 (N,P) MN54	-6.995	23.448	-24.724	7.01E+03

Table A.10. Continued

Monitor ID	Reaction	Coordinates X (cm)	Coordinates Y (cm)	Coordinates Z (cm)	Activity Bq/mg @ EOI
S1-COT	CO59 (N,G) CO60	-14.764	15.210	11.150	1.44E+04
S1-FET	FE54 (N,P) MN54	-14.764	15.210	11.074	8.16E+03
S1-NIT	NI58 (N,P) CO58	-14.764	15.210	10.973	4.02E+05
S1-TIT	TI46 (N,P) SC46	-14.764	15.210	10.871	4.10E+03
S1-NP	NP237(N,F) ZR95	-14.764	15.210	10.566	4.52E+05
S1-NP	NP237(N,F) CS137	-14.764	15.210	10.566	6.04E+03
S1-CU	CU63 (N,A) CO60	-14.764	15.210	10.274	9.22E+01
S1-U	U238 (N,F) ZR95	-14.764	15.210	9.728	3.94E+04
S1-U	U238 (N,F) CS137	-14.764	15.210	9.728	5.68E+02
S4-COT	CO59 (N,G) CO60	-14.764	21.398	11.150	1.42E+04
S4-FET	FE54 (N,P) MN54	-14.764	21.398	11.074	9.79E+03
S4-NIT	NI58 (N,P) CO58	-14.764	21.398	10.973	4.88E+05
S4-TIT	TI46 (N,P) SC46	-14.764	21.398	10.871	5.85E+03
S4-NP	NP237(N,F) ZR95	-14.764	21.398	10.566	5.53E+05
S4-NP	NP237(N,F) CS137	-14.764	21.398	10.566	6.10E+03
S4-CU	CU63 (N,A) CO60	-14.764	21.398	10.274	1.04E+02
S4-U	U238 (N,F) ZR95	-14.764	21.398	9.728	4.71E+04
S4-U	U238 (N,F) CS137	-14.764	21.398	9.728	5.47E+02
S8-COT	CO59 (N,G) CO60	-14.764	15.210	-19.088	1.30E+04
S8-FET	FE54 (N,P) MN54	-14.764	15.210	-19.012	8.73E+03
S8-NIT	NI58 (N,P) CO58	-14.764	15.210	-18.911	3.80E+05
S8-TIT	TI46 (N,P) SC46	-14.764	15.210	-18.809	4.34E+03
S8-NP	NP237(N,F) ZR95	-14.764	15.210	-18.504	4.11E+05
S8-NP	NP237(N,F) CS137	-14.764	15.210	-18.504	5.67E+03
S8-CU	CU63 (N,A) CO60	-14.764	15.210	-18.212	9.71E+01
S8-U	U238 (N,F) ZR95	-14.764	15.210	-17.666	3.67E+04
S8-U	U238 (N,F) CS137	-14.764	15.210	-17.666	5.36E+02

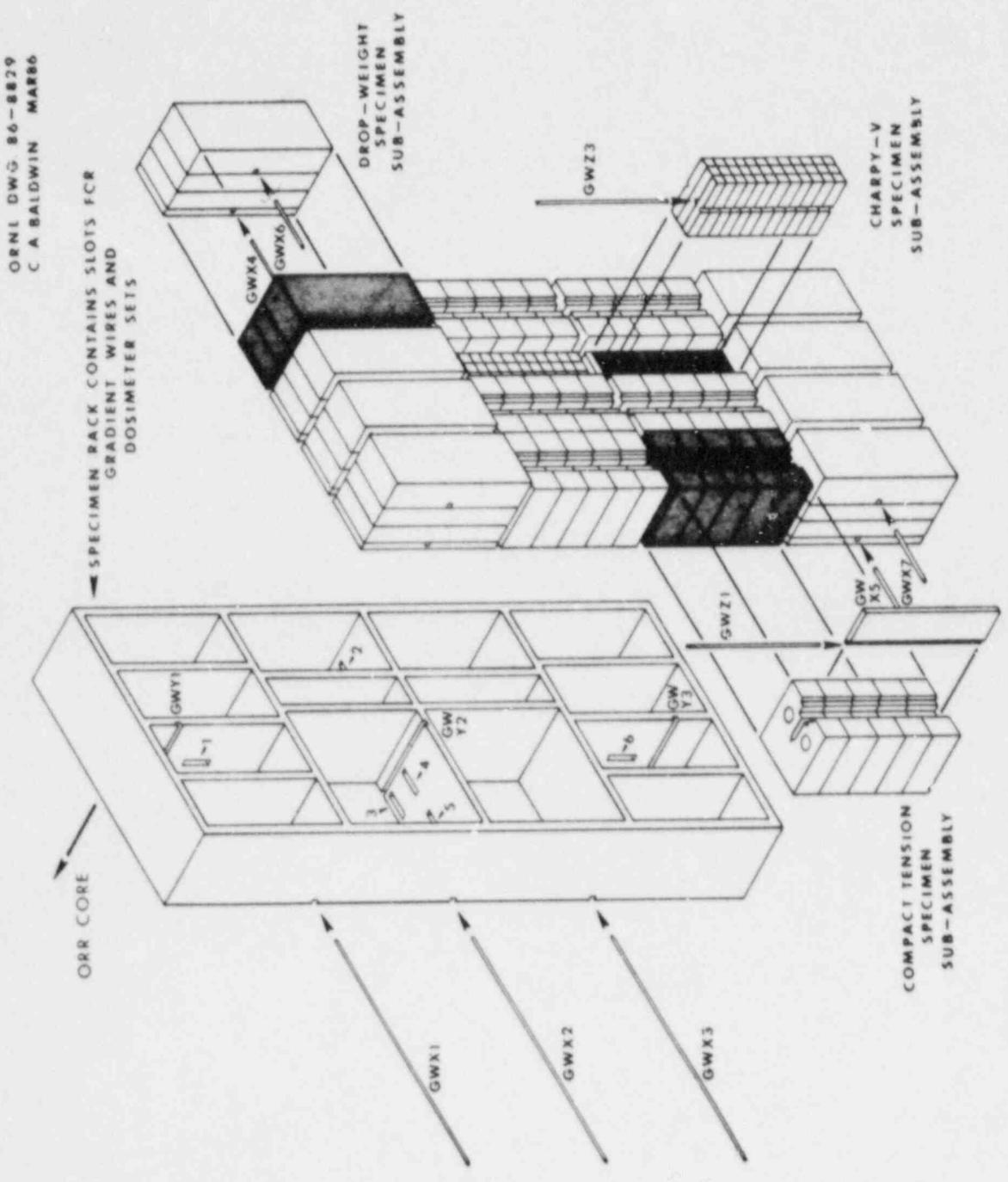

Fig. A.4. Location of dosimeters in the HSST5-5 and HSST5-6 metallurgical capsules.

Table A.11. Activities for dosimeters in the HSST5-5 (north start) metallurgical capsule

Monitor ID	Reaction	Coordinates			Activity Bq/mg @ EOI
		X (cm)	Y (cm)	Z (cm)	
GWX1-1	FE54 (N,P) MN54	4.604	13.285	10.816	1.27E+04
GWX1-3	FE54 (N,P) MN54	9.684	13.285	10.816	1.31E+04
GWX1-5	FE54 (N,P) MN54	14.764	13.285	10.816	1.38E+04
GWX1-7	FE54 (N,P) MN54	19.844	13.285	10.816	1.30E+04
GWX1-9	FE54 (N,P) MN54	24.924	13.285	10.816	1.24E+04
GWX2-1	FE54 (N,P) MN54	4.604	13.285	-2.580	1.44E+04
GWX2-3	FE54 (N,P) MN54	9.684	13.285	-2.580	1.50E+04
GWX2-5	FE54 (N,P) MN54	14.764	13.285	-2.580	1.61E+04
GWX2-7	FE54 (N,P) MN54	19.844	13.285	-2.580	1.56E+04
GWX2-9	FE54 (N,P) MN54	24.924	13.285	-2.580	1.40E+04
GWX3-1	FE54 (N,P) MN54	4.604	13.285	-15.976	1.22E+04
GWX3-3	FE54 (N,P) MN54	9.684	13.285	-15.976	1.29E+04
GWX3-5	FE54 (N,P) MN54	14.764	13.285	-15.976	1.30E+04
GWX3-7	FE54 (N,P) MN54	19.844	13.285	-15.976	1.34E+04
GWX3-9	FE54 (N,P) MN54	24.924	13.285	-15.976	1.25E+04
GWX4-1	FE54 (N,P) MN54	6.031	13.647	17.513	1.06E+04
GWX4-2	FE54 (N,P) MN54	11.853	13.647	17.513	1.08E+04
GWX4-3	FE54 (N,P) MN54	17.675	13.647	17.513	1.12E+04
GWX4-4	FE54 (N,P) MN54	23.497	13.647	17.513	9.83E+03
GWX5-1	FE54 (N,P) MN54	6.031	13.647	-22.675	1.01E+04
GWX5-2	FE54 (N,P) MN54	11.853	13.647	-22.675	1.02E+04
GWX5-3	FE54 (N,P) MN54	17.675	13.647	-22.675	1.00E+04
GWX5-4	FE54 (N,P) MN54	23.497	13.647	-22.675	9.93E+03
GWX6-2	FE54 (N,P) MN54	11.853	17.183	17.513	5.10E+03
GWX6-3	FE54 (N,P) MN54	17.675	17.183	17.513	5.24E+03
GWX6-4	FE54 (N,P) MN54	23.497	17.183	17.513	4.72E+03
GWX7-1	FE54 (N,P) MN54	6.031	17.183	-22.675	4.81E+03
GWX7-2	FE54 (N,P) MN54	11.853	17.183	-22.675	4.81E+03
GWX7-3	FE54 (N,P) MN54	17.675	17.183	-22.675	5.13E+03
GWX7-4	FE54 (N,P) MN54	23.497	17.183	-22.675	4.77E+03
GWY1-1	FE54 (N,P) MN54	15.002	13.525	20.636	9.07E+03
GWY1-3	FE54 (N,P) MN54	15.002	14.795	20.636	6.88E+03
GWY1-5	FE54 (N,P) MN54	15.002	16.065	20.636	5.70E+03
GWY1-7	FE54 (N,P) MN54	15.002	17.335	20.636	4.35E+03
GWY1-9	FE54 (N,P) MN54	15.002	18.605	20.636	3.59E+03
GWY1-11	FE54 (N,P) MN54	15.002	19.875	20.636	2.63E+03

Table A.11. Continued

Monitor ID	Reaction	Coordinates X (cm)	Y (cm)	Z (cm)	Activity Bq/mg @ EOI
GWY2-1	FE54 (N,P) MN54	15.319	13.525	-2.337	1.51E+04
GWY2-2	FE54 (N,P) MN54	15.319	14.160	-2.337	1.31E+04
GWY2-3	FE54 (N,P) MN54	15.319	14.795	-2.337	1.24E+04
GWY2-4	FE54 (N,P) MN54	15.319	15.430	-2.337	1.04E+04
GWY2-5	FE54 (N,P) MN54	15.319	16.065	-2.337	9.13E+03
GWY2-6	FE54 (N,P) MN54	15.319	16.700	-2.337	7.87E+03
GWY2-7	FE54 (N,P) MN54	15.319	17.335	-2.337	6.99E+03
GWY2-8	FE54 (N,P) MN54	15.319	17.970	-2.337	6.21E+03
GWY2-9	FE54 (N,P) MN54	15.319	18.605	-2.337	6.05E+03
GWY2-10	FE54 (N,P) MN54	15.319	19.240	-2.337	5.30E+03
GWY2-11	FE54 (N,P) MN54	15.319	19.875	-2.337	4.63E+03
GWY2-12	FE54 (N,P) MN54	15.319	20.510	-2.337	4.58E+03
GWY3-1	FE54 (N,P) MN54	15.002	13.525	-25.797	8.54E+03
GWY3-3	FE54 (N,P) MN54	15.002	14.795	-25.797	6.70E+03
GWY3-5	FE54 (N,P) MN54	15.002	16.065	-25.797	5.74E+03
GWY3-7	FE54 (N,P) MN54	15.002	17.335	-25.797	4.25E+03
GWY3-9	FE54 (N,P) MN54	15.002	18.605	-25.797	3.42E+03
GWY3-11	FE54 (N,P) MN54	15.002	19.875	-25.797	2.87E+03
GWZ1-1	FE54 (N,P) MN54	23.030	16.460	9.223	7.03E+03
GWZ1-3	FE54 (N,P) MN54	23.030	16.460	4.143	7.48E+03
GWZ1-5	FE54 (N,P) MN54	23.030	16.460	-0.937	8.40E+03
GWZ1-6	FE54 (N,P) MN54	23.030	16.460	-4.173	8.07E+03
GWZ1-8	FE54 (N,P) MN54	23.030	16.460	-9.253	7.54E+03
GWZ1-10	FE54 (N,P) MN54	23.030	16.460	-14.333	7.23E+03
GWZ2-1	FE54 (N,P) MN54	16.925	16.460	9.223	7.39E+03
GWZ2-3	FE54 (N,P) MN54	16.925	16.460	4.143	7.90E+03
GWZ2-5	FE54 (N,P) MN54	16.925	16.460	-0.937	8.61E+03
GWZ2-6	FE54 (N,P) MN54	16.925	16.460	-4.173	8.41E+03
GWZ2-8	FE54 (N,P) MN54	16.925	16.460	-9.253	7.98E+03
GWZ2-10	FE54 (N,P) MN54	16.925	16.460	-14.333	7.86E+03
GWZ3-1	FE54 (N,P) MN54	12.245	15.949	9.223	8.64E+03
GWZ3-3	FE54 (N,P) MN54	12.245	15.949	4.143	9.18E+03
GWZ3-5	FE54 (N,P) MN54	12.245	15.949	-0.937	9.92E+03
GWZ3-6	FE54 (N,P) MN54	12.245	15.949	-4.173	9.73E+03
GWZ3-8	FE54 (N,P) MN54	12.245	15.949	-9.253	9.12E+03
GWZ3-10	FE54 (N,P) MN54	12.245	15.949	-14.333	8.67E+03
GWZ4-1	FE54 (N,P) MN54	6.498	16.460	9.223	7.23E+03
GWZ4-3	FE54 (N,P) MN54	6.498	16.460	4.143	7.55E+03
GWZ4-5	FE54 (N,P) MN54	6.498	16.460	-0.937	8.37E+03
GWZ4-6	FE54 (N,P) MN54	6.498	16.460	-4.173	8.02E+03
GWZ4-8	FE54 (N,P) MN54	6.498	16.460	-9.253	7.60E+03
GWZ4-10	FE54 (N,P) MN54	6.498	16.460	-14.333	7.37E+03

Table A.11. Continued

Monitor ID	Reaction	Coordinates X (cm)	Y (cm)	Z (cm)	Activity Bq/mg @ EOI
N1-NP	NP237(N,F) ZR95	14.764	15.314	17.480	4.15E+05
N1-NP	NP237(N,F) RU103	14.764	15.314	17.480	5.43E+05
N1-CU	CU63 (N,A) CO60	14.764	15.314	17.188	8.10E+01
N1-U	U238 (N,F) ZR95	14.764	15.314	16.642	3.57E+04
N1-U	U238 (N,F) RU103	14.764	15.314	16.642	6.24E+04
N1-TIB	TI46 (N,P) SC46	14.764	15.314	16.591	4.74E+03
N1-NIB	NI58 (N,P) CO58	14.764	15.314	16.489	4.25E+05
N1-FEB	FE54 (N,P) MN54	14.764	15.314	16.388	7.71E+03
N1-COB	CO59 (N,G) CO60	14.764	15.314	16.286	1.09E+04
N2-NP	NP237(N,F) ZR95	8.913	15.746	-2.580	5.02E+05
N2-NP	NP237(N,F) RU103	8.913	15.746	-2.580	6.78E+05
N2-CU	CU63 (N,A) CO60	8.621	15.746	-2.580	1.01E+02
N2-U	U238 (N,F) ZR95	8.075	15.746	-2.580	4.30E+04
N2-U	U238 (N,F) RU103	8.075	15.746	-2.580	7.27E+04
N2-TIB	TI46 (N,P) SC46	8.024	15.746	-2.580	4.75E+03
N2-NIB	NI58 (N,P) CO58	7.922	15.746	-2.580	4.91E+05
N2-FEB	FE54 (N,P) MN54	7.821	15.746	-2.580	9.48E+03
N2-COB	CO59 (N,G) CO60	7.719	15.746	-2.580	1.28E+04
N3-NP	NP237(N,F) ZR95	16.864	13.670	-2.580	7.42E+05
N3-NP	NP237(N,F) RU103	16.864	13.670	-2.580	1.01E+06
N3-CU	CU63 (N,A) CO60	16.572	13.670	-2.580	1.50E+02
N3-U	U238 (N,F) ZR95	16.026	13.670	-2.580	6.84E+04
N3-U	U238 (N,F) RU103	16.026	13.670	-2.580	1.33E+05
N3-TIB	TI46 (N,P) SC46	15.975	13.670	-2.580	9.98E+03
N3-NIB	NI58 (N,P) CO58	15.873	13.670	-2.580	7.84E+05
N3-FEB	FE54 (N,P) MN54	15.771	13.670	-2.580	1.44E+04
N3-COB	CO59 (N,G) CO60	15.669	13.670	-2.580	1.84E+04
N4-NP	NP237(N,F) ZR95	16.864	15.746	-2.580	5.50E+05
N4-NP	NP237(N,F) RU103	16.864	15.746	-2.580	7.73E+05
N4-CU	CU63 (N,A) CO60	16.572	15.746	-2.580	1.08E+02
N4-U	U238 (N,F) ZR95	16.026	15.746	-2.580	4.85E+04
N4-U	U238 (N,F) RU103	16.026	15.746	-2.580	8.94E+04
N4-TIB	TI46 (N,P) SC46	15.975	15.746	-2.580	5.50E+03
N4-NIB	NI58 (N,P) CO58	15.873	15.746	-2.580	5.38E+05
N4-FEB	FE54 (N,P) MN54	15.771	15.746	-2.580	9.97E+03
N4-COB	CO59 (N,G) CO60	15.669	15.746	-2.580	1.36E+04

Table A.11. Continued

Monitor ID	Reaction	Coordinates X (cm)	Y (cm)	Z (cm)	Activity Bq/mg @ EOI
N5-NP	NP237(N,F) ZR95	25.459	15.746	-2.580	5.43E+05
N5-NP	NP237(N,F) RU103	25.459	15.746	-2.580	7.95E+05
N5-CU	CU63 (N,A) CO60	25.167	15.746	-2.580	9.52E+01
N5-U	U238 (N,F) ZR95	24.621	15.746	-2.580	4.76E+04
N5-U	U238 (N,F) RU103	24.621	15.746	-2.580	8.54E+04
N5-TIB	TI46 (N,P) SC46	24.570	15.746	-2.580	5.91E+03
N5-NIB	NI58 (N,P) CO58	24.468	15.746	-2.580	5.39E+05
N5-FEB	FE54 (N,P) MN54	24.367	15.746	-2.580	9.61E+03
N5-COB	CO59 (N,G) CO60	24.265	15.746	-2.580	1.24E+04
N6-NP	NP237(N,F) ZR95	14.764	15.314	-22.743	3.92E+05
N6-NP	NP237(N,F) RU103	14.764	15.314	-22.743	5.66E+05
N6-CU	CU63 (N,A) CO60	14.764	15.314	-23.035	8.00E+01
N6-U	U238 (N,F) ZR95	14.764	15.314	-23.581	3.04E+04
N6-U	U238 (N,F) RU103	14.764	15.314	-23.581	5.10E+04
N6-TIB	TI46 (N,P) SC46	14.764	15.314	-23.632	4.42E+03
N6-NIB	NI58 (N,P) CO58	14.764	15.314	-23.734	3.86E+05
N6-FEB	FE54 (N,P) MN54	14.764	15.314	-23.835	7.10E+03
N6-COB	CO59 (N,G) CO60	14.764	15.314	-23.937	8.97E+03

Table A.12. Activities for dosimeters in the HSST5-6 (south start) metallurgical capsule

Monitor ID	Reaction	Coordinates X (cm)	Y (cm)	Z (cm)	Activity Bq/mg @ EOI
GWX1-1	FE54 (N,P) MN54	-4.604	13.285	10.816	1.29E+04
GWX1-3	FE54 (N,P) MN54	-9.684	13.285	10.816	1.35E+04
GWX1-5	FE54 (N,P) MN54	-14.764	13.285	10.816	1.33E+04
GWX1-7	FE54 (N,P) MN54	-19.844	13.285	10.816	1.33E+04
GWX1-9	FE54 (N,P) MN54	-24.924	13.285	10.816	1.24E+04
GWX2-1	FE54 (N,P) MN54	-4.604	13.285	-2.580	1.42E+04
GWX2-2	FE54 (N,P) MN54	-7.144	13.285	-2.580	1.44E+04
GWX2-3	FE54 (N,P) MN54	-9.684	13.285	-2.580	1.56E+04
GWX2-4	FE54 (N,P) MN54	-12.224	13.285	-2.580	1.57E+04
GWX2-5	FE54 (N,P) MN54	-14.764	13.285	-2.580	1.54E+04
GWX2-6	FE54 (N,P) MN54	-17.304	13.285	-2.580	1.62E+04
GWX2-7	FE54 (N,P) MN54	-19.844	13.285	-2.580	1.60E+04
GWX2-8	FE54 (N,P) MN54	-22.384	13.285	-2.580	1.56E+04
GWX2-9	FE54 (N,P) MN54	-24.924	13.285	-2.580	1.53E+04
GWX3-1	FE54 (N,P) MN54	-4.604	13.285	-15.976	1.22E+04
GWX3-3	FE54 (N,P) MN54	-9.684	13.285	-15.976	1.33E+04
GWX3-5	FE54 (N,P) MN54	-14.764	13.285	-15.976	1.24E+04
GWX3-7	FE54 (N,P) MN54	-19.844	13.285	-15.976	1.39E+04
GWX3-9	FE54 (N,P) MN54	-24.924	13.285	-15.976	1.34E+04
GWX4-1	FE54 (N,P) MN54	-6.031	13.647	17.513	1.01E+04
GWX4-2	FE54 (N,P) MN54	-11.853	13.647	17.513	9.37E+03
GWX4-3	FE54 (N,P) MN54	-17.675	13.647	17.513	1.08E+04
GWX4-4	FE54 (N,P) MN54	-23.497	13.647	17.513	1.01E+04
GWX5-1	FE54 (N,P) MN54	-6.031	13.647	-22.675	9.39E+03
GWX5-2	FE54 (N,P) MN54	-11.853	13.647	-22.675	9.25E+03
GWX5-3	FE54 (N,P) MN54	-17.675	13.647	-22.675	1.06E+04
GWX5-4	FE54 (N,P) MN54	-23.497	13.647	-22.675	1.02E+04
GWX6-1	FE54 (N,P) MN54	-6.031	17.183	17.513	5.19E+03
GWX6-2	FE54 (N,P) MN54	-11.853	17.183	17.513	4.84E+03
GWX6-3	FE54 (N,P) MN54	-17.675	17.183	17.513	5.42E+03
GWX6-4	FE54 (N,P) MN54	-23.497	17.183	17.513	5.16E+03
GWX7-1	FE54 (N,P) MN54	-6.031	17.183	-22.675	4.91E+03
GWX7-2	FE54 (N,P) MN54	-11.853	17.183	-22.675	4.65E+03
GWX7-3	FE54 (N,P) MN54	-17.675	17.183	-22.675	5.30E+03
GWX7-4	FE54 (N,P) MN54	-23.497	17.183	-22.675	5.23E+03

Table A.12. Continued

Monitor ID	Reaction	Coordinates X (cm)	Y (cm)	Z (cm)	Activity Bq/mg @ EOI
GWY2-1	FE54 (N,P) MN54	-14.209	13.525	-2.337	1.32E+04
GWY2-2	FE54 (N,P) MN54	-14.209	14.160	-2.337	1.42E+04
GWY2-3	FE54 (N,P) MN54	-14.209	14.795	-2.337	1.26E+04
GWY2-4	FE54 (N,P) MN54	-14.209	15.430	-2.337	1.07E+04
GWY2-5	FE54 (N,P) MN54	-14.209	16.065	-2.337	8.21E+03
GWY2-6	FE54 (N,P) MN54	-14.209	16.700	-2.337	8.74E+03
GWY2-7	FE54 (N,P) MN54	-14.209	17.335	-2.337	7.74E+03
GWY2-8	FE54 (N,P) MN54	-14.209	17.970	-2.337	6.59E+03
GWY2-9	FE54 (N,P) MN54	-14.209	18.605	-2.337	5.22E+03
GWY2-10	FE54 (N,P) MN54	-14.209	19.240	-2.337	5.67E+03
GWY2-11	FE54 (N,P) MN54	-14.209	19.875	-2.337	5.19E+03
GWY2-12	FE54 (N,P) MN54	-14.209	20.510	-2.337	4.64E+03
GWZ1-6	FE54 (N,P) MN54	-6.498	16.460	-4.173	8.14E+03
GWZ1-7	FE54 (N,P) MN54	-6.498	16.460	-6.713	7.24E+03
GWZ1-8	FE54 (N,P) MN54	-6.498	16.460	-9.253	7.96E+03
GWZ1-9	FE54 (N,P) MN54	-6.498	16.460	-11.793	7.72E+03
GWZ1-10	FE54 (N,P) MN54	-6.498	16.460	-14.333	7.22E+03
GWZ2-1	FE54 (N,P) MN54	-12.603	16.460	9.223	7.57E+03
GWZ2-2	FE54 (N,P) MN54	-12.603	16.460	6.683	7.29E+03
GWZ2-3	FE54 (N,P) MN54	-12.603	16.460	4.143	8.34E+03
GWZ2-4	FE54 (N,P) MN54	-12.603	16.460	1.603	8.38E+03
GWZ2-5	FE54 (N,P) MN54	-12.603	16.460	-0.937	8.40E+03
GWZ2-6	FE54 (N,P) MN54	-12.603	16.460	-4.173	7.86E+03
GWZ2-7	FE54 (N,P) MN54	-12.603	16.460	-6.713	8.51E+03
GWZ2-8	FE54 (N,P) MN54	-12.603	16.460	-9.253	8.34E+03
GWZ2-9	FE54 (N,P) MN54	-12.603	16.460	-11.793	7.96E+03
GWZ2-10	FE54 (N,P) MN54	-12.603	16.460	-14.333	7.59E+03
GWZ3-1	FE54 (N,P) MN54	-17.283	15.949	9.223	8.74E+03
GWZ3-2	FE54 (N,P) MN54	-17.283	15.949	6.683	8.54E+03
GWZ3-3	FE54 (N,P) MN54	-17.283	15.949	4.143	9.74E+03
GWZ3-4	FE54 (N,P) MN54	-17.283	15.949	1.603	9.44E+03
GWZ3-5	FE54 (N,P) MN54	-17.283	15.949	-0.937	9.66E+03
GWZ3-6	FE54 (N,P) MN54	-17.283	15.949	-4.173	9.11E+03
GWZ3-7	FE54 (N,P) MN54	-17.283	15.949	-6.713	1.01E+04
GWZ3-8	FE54 (N,P) MN54	-17.283	15.949	-9.253	9.73E+03
GWZ3-9	FE54 (N,P) MN54	-17.283	15.949	-11.793	9.49E+03
GWZ3-10	FE54 (N,P) MN54	-17.283	15.949	-14.333	8.05E+03

Table A.12. Continued

Monitor ID	Reaction	Coordinates X (cm)	Y (cm)	Z (cm)	Activity Bq/mg @ EOI
GWZ4-1	FE54 (N,P) MN54	-23.030	16.460	9.223	7.36E+03
GWZ4-2	FE54 (N,P) MN54	-23.030	16.460	6.683	7.08E+03
GWZ4-3	FE54 (N,P) MN54	-23.030	16.460	4.143	8.12E+03
GWZ4-4	FE54 (N,P) MN54	-23.030	16.460	1.603	8.17E+03
GWZ4-5	FE54 (N,P) MN54	-23.030	16.460	-0.937	8.36E+03
GWZ4-6	FE54 (N,P) MN54	-23.030	16.460	-4.173	7.63E+03
GWZ4-7	FE54 (N,P) MN54	-23.030	16.460	-6.713	8.43E+03
GWZ4-8	FE54 (N,P) MN54	-23.030	16.460	-9.253	8.30E+03
GWZ4-9	FE54 (N,P) MN54	-23.030	16.460	-11.793	7.96E+03
GWZ4-10	FE54 (N,P) MN54	-23.030	16.460	-14.333	6.81E+03
S1-NP	NP237(N,F) ZR95	-14.764	15.314	17.480	4.24E+05
S1-NP	NP237(N,F) RU103	-14.764	15.314	17.480	5.97E+05
S1-CU	CU63 (N,A) CO60	-14.764	15.314	17.188	8.69E+01
S1-U	U238 (N,F) ZR95	-14.764	15.314	16.642	3.80E+04
S1-U	U238 (N,F) RU103	-14.764	15.314	16.642	6.67E+04
S1-TIB	TI46 (N,P) SC46	-14.764	15.314	16.591	4.80E+03
S1-NIB	NI58 (N,P) CO58	-14.764	15.314	16.489	4.18E+05
S1-FEB	FE54 (N,P) MN54	-14.764	15.314	16.388	7.12E+03
S1-COB	CO59 (N,G) CO60	-14.764	15.314	16.286	1.10E+04
S2-NP	NP237(N,F) ZR95	-20.615	15.746	-2.580	5.49E+05
S2-NP	NP237(N,F) RU103	-20.615	15.746	-2.580	8.14E+05
S2-CU	CU63 (N,A) CO60	-20.907	15.746	-2.580	1.04E+02
S2-U	U238 (N,F) ZR95	-21.453	15.746	-2.580	4.94E+04
S2-U	U238 (N,F) RU103	-21.453	15.746	-2.580	9.06E+04
S2-TIB	TI46 (N,P) SC46	-21.504	15.746	-2.580	6.02E+03
S2-NIB	NI58 (N,P) CO58	-21.606	15.746	-2.580	5.32E+05
S2-FEB	FE54 (N,P) MN54	-21.707	15.746	-2.580	8.87E+03
S2-COB	CO59 (N,G) CO60	-21.809	15.746	-2.580	1.25E+04
S3-NP	NP237(N,F) ZR95	-12.664	13.670	-2.580	7.20E+05
S3-NP	NP237(N,F) RU103	-12.664	13.670	-2.580	9.96E+05
S3-CU	CU63 (N,A) CO60	-12.956	13.670	-2.580	1.58E+02
S3-U	U238 (N,F) ZR95	-13.502	13.670	-2.580	6.92E+04
S3-U	U238 (N,F) RU103	-13.502	13.670	-2.580	1.17E+05
S3-TIB	TI46 (N,P) SC46	-13.553	13.670	-2.580	8.94E+03
S3-NIB	NI58 (N,P) CO58	-13.655	13.670	-2.580	7.76E+05
S3-FEB	FE54 (N,P) MN54	-13.757	13.670	-2.580	1.42E+04
S3-COB	CO59 (N,G) CO60	-13.859	13.670	-2.580	1.80E+04

Table A.12. Continued

Monitor ID	Reaction	Coordinates X (cm)	Y (cm)	Z (cm)	Activity Bq/mg @ EOI
S4-NP	NP237(N,F) ZR95	-12.664	15.746	-2.580	5.53E+05
S4-NP	NP237(N,F) RU103	-12.664	15.746	-2.580	7.71E+05
S4-CU	CU63 (N,A) CO60	-12.956	15.746	-2.580	1.10E+02
S4-U	U238 (N,F) ZR95	-13.502	15.746	-2.580	4.88E+04
S4-U	U238 (N,F) RU103	-13.502	15.746	-2.580	8.31E+04
S4-TIB	TI46 (N,P) SC46	-13.553	15.746	-2.580	5.96E+03
S4-NIB	NI58 (N,P) CO58	-13.655	15.746	-2.580	5.38E+05
S4-FEB	FE54 (N,P) MN54	-13.757	15.746	-2.580	9.84E+03
S4-COB	CO59 (N,G) CO60	-13.859	15.746	-2.580	1.34E+04
S5-NP	NP237(N,F) ZR95	-4.069	15.746	-2.580	5.00E+05
S5-NP	NP237(N,F) RU103	-4.069	15.746	-2.580	6.56E+05
S5-CU	CU63 (N,A) CO60	-4.361	15.746	-2.580	1.06E+02
S5-U	U238 (N,F) ZR95	-4.907	15.746	-2.580	4.45E+04
S5-U	U238 (N,F) RU103	-4.907	15.746	-2.580	7.40E+04
S5-TIB	TI46 (N,P) SC46	-4.958	15.746	-2.580	5.46E+03
S5-NIB	NI58 (N,P) CO58	-5.060	15.746	-2.580	4.88E+05
S5-FEB	FE54 (N,P) MN54	-5.161	15.746	-2.580	9.28E+03
S5-COB	CO59 (N,G) CO60	-5.263	15.746	-2.580	1.28E+04
S6-NP	NP237(N,F) ZR95	-14.764	15.314	-22.743	3.95E+05
S6-NP	NP237(N,F) RU103	-14.764	15.314	-22.743	5.57E+05
S6-CU	CU63 (N,A) CO60	-14.764	15.314	-23.035	8.24E+01
S6-U	U238 (N,F) ZR95	-14.764	15.314	-23.581	3.33E+04
S6-U	U238 (N,F) RU103	-14.764	15.314	-23.581	6.19E+04
S6-TIB	TI46 (N,P) SC46	-14.764	15.314	-23.632	4.12E+03
S6-NIB	NI58 (N,P) CO58	-14.764	15.314	-23.734	3.80E+05
S6-FEB	FE54 (N,P) MN54	-14.764	15.314	-23.835	6.77E+03
S6-COB	CO59 (N,G) CO60	-14.764	15.314	-23.937	8.90E+03

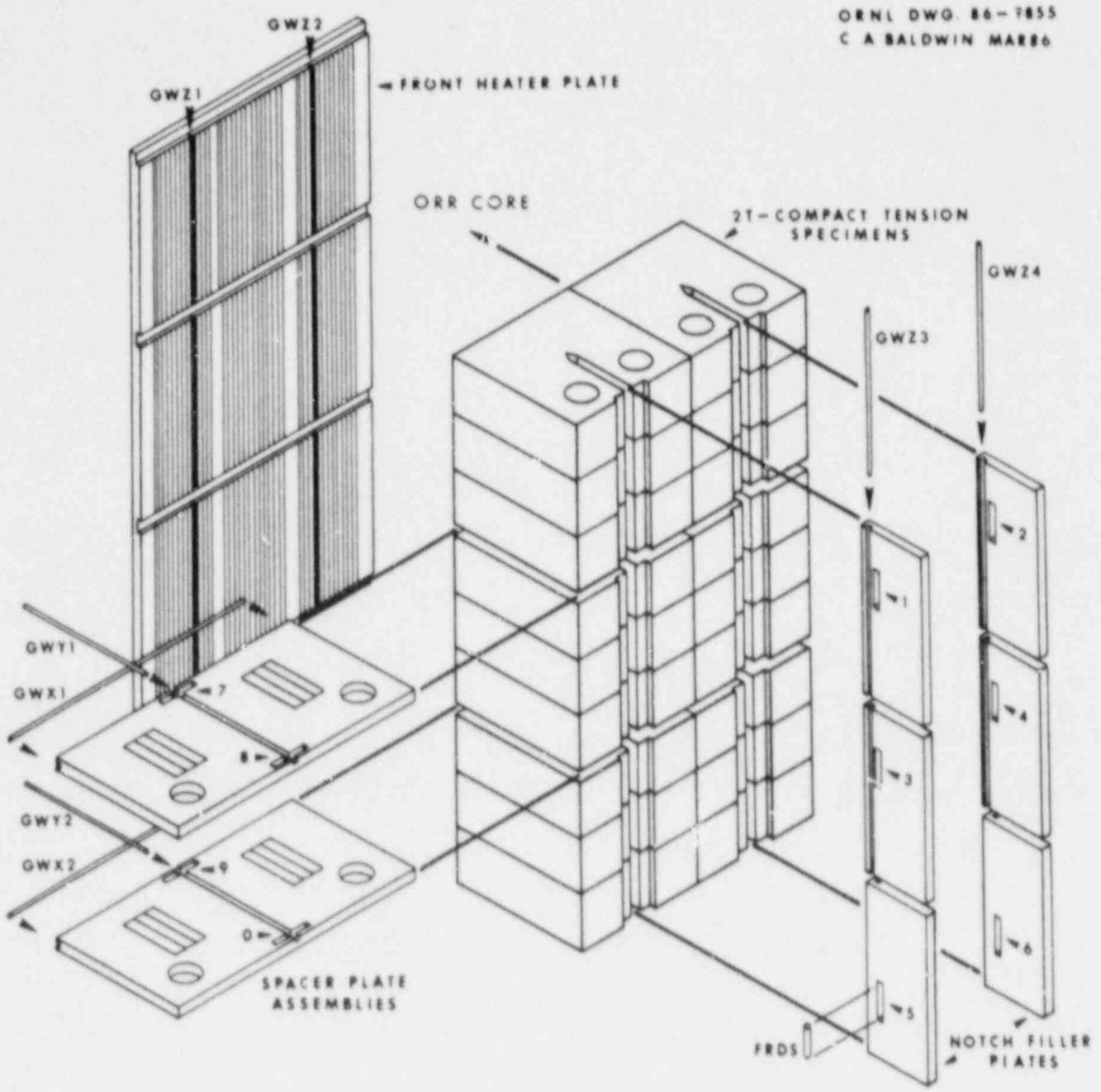

Fig. A.5. Location of dosimeters in the HSST5-7 and HSST5-8 metallurgical capsules.

Table A.13. Activities for Dosimeters in the HSST5-7 (north start) metallurgical capsule

Monitor ID	Reaction	Coordinates X (cm)	Coordinates Y (cm)	Coordinates Z (cm)	Activity Bq/mg @ EOI
GWX1-1	FE54 (N,P) MN54	24.924	13.266	4.517	2.24E+04
GWX1-3	FE54 (N,P) MN54	19.844	13.266	4.517	2.47E+04
GWX1-5	FE54 (N,P) MN54	14.764	13.266	4.517	2.50E+04
GWX1-7	FE54 (N,P) MN54	9.684	13.266	4.517	2.41E+04
GWX1-9	FE54 (N,P) MN54	4.604	13.266	4.517	2.31E+04
GWX2-1	FE54 (N,P) MN54	24.924	13.266	-11.724	2.39E+04
GWX2-3	FE54 (N,P) MN54	19.844	13.266	-11.724	2.55E+04
GWX2-5	FE54 (N,P) MN54	14.764	13.266	-11.724	2.57E+04
GWX2-7	FE54 (N,P) MN54	9.684	13.266	-11.724	2.54E+04
GWX2-9	FE54 (N,P) MN54	4.604	13.266	-11.724	2.32E+04
GWY1-1	FE54 (N,P) MN54	14.764	13.844	4.960	2.23E+04
GWY1-3	FE54 (N,P) MN54	14.764	16.384	4.960	1.42E+04
GWY1-5	FE54 (N,P) MN54	14.764	18.924	4.960	8.43E+03
GWY1-7	FE54 (N,P) MN54	14.764	21.464	4.960	5.07E+03
GWY1-9	FE54 (N,P) MN54	14.764	24.004	4.960	3.22E+03
GWY2-1	FE54 (N,P) MN54	14.764	13.844	-11.280	2.26E+04
GWY2-3	FE54 (N,P) MN54	14.764	16.384	-11.280	1.45E+04
GWY2-5	FE54 (N,P) MN54	14.764	18.924	-11.280	8.56E+03
GWY2-7	FE54 (N,P) MN54	14.764	21.464	-11.280	5.15E+03
GWY2-9	FE54 (N,P) MN54	14.764	24.004	-11.280	3.29E+03
GWZ1-2	FE54 (N,P) MN54	20.621	13.145	17.193	1.76E+04
GWZ1-5	FE54 (N,P) MN54	20.621	13.145	9.573	2.18E+04
GWZ1-8	FE54 (N,P) MN54	20.621	13.145	0.289	2.60E+04
GWZ1-11	FE54 (N,P) MN54	20.621	13.145	-7.332	2.60E+04
GWZ1-14	FE54 (N,P) MN54	20.621	13.145	-16.700	2.21E+04
GWZ1-17	FE54 (N,P) MN54	20.621	13.145	-24.320	1.71E+04
GWZ2-2	FE54 (N,P) MN54	8.907	13.145	17.193	1.74E+04
GWZ2-5	FE54 (N,P) MN54	8.907	13.145	9.573	2.16E+04
GWZ2-8	FE54 (N,P) MN54	8.907	13.145	0.289	2.56E+04
GWZ2-11	FE54 (N,P) MN54	8.907	13.145	-7.332	2.56E+04
GWZ2-14	FE54 (N,P) MN54	8.907	13.145	-16.700	2.16E+04
GWZ2-17	FE54 (N,P) MN54	8.907	13.145	-24.320	1.65E+04

Table A.13. Continued

Monitor ID	Reaction	Coordinates X (cm)	Y (cm)	Z (cm)	Activity Bq/mg @ EOI
GWZ3-2	FE54 (N,P) MN54	21.079	19.771	17.718	4.82E+03
GWZ3-4	FE54 (N,P) MN54	21.079	19.771	12.638	5.63E+03
GWZ3-6	FE54 (N,P) MN54	21.079	19.771	7.558	6.58E+03
GWZ3-9	FE54 (N,P) MN54	21.079	19.771	1.477	7.18E+03
GWZ3-11	FE54 (N,P) MN54	21.079	19.771	-3.603	7.09E+03
GWZ3-16	FE54 (N,P) MN54	20.641	19.771	-14.764	6.71E+03
GWZ3-18	FE54 (N,P) MN54	20.641	19.771	-19.844	5.76E+03
GWZ3-20	FE54 (N,P) MN54	20.641	19.771	-24.924	4.62E+03
GWZ4-2	FE54 (N,P) MN54	8.887	19.771	17.718	4.78E+03
GWZ4-4	FE54 (N,P) MN54	8.887	19.771	12.638	5.70E+03
GWZ4-6	FE54 (N,P) MN54	8.887	19.771	7.558	6.58E+03
GWZ4-9	FE54 (N,P) MN54	8.887	19.771	1.477	7.06E+03
GWZ4-11	FE54 (N,P) MN54	8.887	19.771	-3.603	7.14E+03
GWZ4-13	FE54 (N,P) MN54	8.887	19.771	-8.683	7.15E+03
GWZ4-16	FE54 (N,P) MN54	8.449	19.771	-14.764	6.55E+03
GWZ4-18	FE54 (N,P) MN54	8.449	19.771	-19.844	5.66E+03
GWZ4-20	FE54 (N,P) MN54	8.449	19.771	-24.924	4.49E+03
N1-COT	CO59 (N,G) CO60	20.860	20.235	14.619	9.77E+03
N1-FET	FE54 (N,P) MN54	20.860	20.235	14.721	5.19E+03
N1-NIT	NI58 (N,P) CO58	20.860	20.235	14.822	2.89E+05
N1-TIT	TI46 (N,P) SC46	20.860	20.235	14.924	2.75E+03
N1-NP	NP237(N,F) ZR95	20.860	20.235	15.229	4.36E+05
N1-NP	NP237(N,F) RU103	20.860	20.235	15.229	6.06E+05
N1-CU	CU63 (N,A) CO60	20.860	20.235	15.521	5.45E+01
N1-U	U238 (N,F) ZR95	20.860	20.235	16.067	2.89E+04
N1-U	U238 (N,F) RU103	20.860	20.235	16.067	5.70E+04
N2-COT	CO59 (N,G) CO60	8.668	20.235	14.619	9.78E+03
N2-FET	FE54 (N,P) MN54	8.668	20.235	14.721	5.10E+03
N2-NIT	NI58 (N,P) CO58	8.668	20.235	14.822	2.64E+05
N2-NP	NP237(N,F) ZR95	8.668	20.235	15.229	3.93E+05
N2-NP	NP237(N,F) RU103	8.668	20.235	15.229	5.25E+05
N2-CU	CU63 (N,A) CO60	8.668	20.235	15.521	5.46E+01
N2-U	U238 (N,F) ZR95	8.668	20.235	16.067	2.75E+04
N2-U	U238 (N,F) RU103	8.668	20.235	16.067	4.62E+04

Table A.13. Continued

Monitor ID	Reaction	Coordinates X (cm)	Y (cm)	Z (cm)	Activity Bq/mg @ EOI
N3-COT	CO59 (N,G) CO60	20.860	20.235	-0.504	1.36E+04
N3-FET	FE54 (N,P) MN54	20.860	20.235	-0.606	6.57E+03
N3-NIT	NI58 (N,P) CO58	20.860	20.235	-0.707	3.78E+05
N3-TIT	TI46 (N,P) SC46	20.860	20.235	-0.809	3.59E+03
N3-NP	NP237(N,F) ZR95	20.860	20.235	-1.114	5.93E+05
N3-NP	NP237(N,F) RU103	20.860	20.235	-1.114	8.71E+05
N3-CU	CU63 (N,A) CO60	20.860	20.235	-1.406	7.34E+01
N3-U	U238 (N,F) ZR95	20.860	20.235	-1.952	4.11E+04
N3-U	U238 (N,F) RU103	20.860	20.235	-1.952	7.15E+04
N4-COT	CO59 (N,G) CO60	8.668	20.235	-0.504	1.36E+04
N4-TIT	TI46 (N,P) SC46	8.668	20.235	-0.809	3.84E+03
N4-NP	NP237(N,F) ZR95	8.668	20.235	-1.114	5.41E+05
N4-NP	NP237(N,F) RU103	8.668	20.235	-1.114	7.36E+05
N4-CU	CU63 (N,A) CO60	8.668	20.235	-1.406	7.27E+01
N4-U	U238 (N,F) ZR95	8.668	20.235	-1.952	3.73E+04
N4-U	U238 (N,F) RU103	8.668	20.235	-1.952	6.47E+04
N5-COT	CO59 (N,G) CO60	20.860	20.235	-21.825	9.11E+03
N5-FET	FE54 (N,P) MN54	20.860	20.235	-21.927	4.95E+03
N5-NIT	NI58 (N,P) CO58	20.860	20.235	-22.028	2.86E+05
N5-TIT	TI46 (N,P) SC46	20.860	20.235	-22.130	2.92E+03
N5-NP	NP237(N,F) ZR95	20.860	20.235	-22.435	3.96E+05
N5-NP	NP237(N,F) RU103	20.860	20.235	-22.435	5.50E+05
N5-CU	CU63 (N,A) CO60	20.860	20.235	-22.727	5.16E+01
N5-U	U238 (N,F) ZR95	20.860	20.235	-23.273	2.65E+04
N5-U	U238 (N,F) RU103	20.860	20.235	-23.273	5.05E+04
N6-COT	CO59 (N,G) CO60	8.668	20.235	-21.825	9.02E+03
N6-FET	FE54 (N,P) MN54	8.668	20.235	-21.927	4.87E+03
N6-NIT	NI58 (N,P) CO58	8.668	20.235	-22.028	2.51E+05
N6-TIT	TI46 (N,P) SC46	8.668	20.235	-22.130	2.44E+03
N6-NP	NP237(N,F) ZR95	8.668	20.235	-22.435	3.53E+05
N6-NP	NP237(N,F) RU103	8.668	20.235	-22.435	4.95E+05
N6-CU	CU63 (N,A) CO60	8.668	20.235	-22.727	5.26E+01
N6-U	U238 (N,F) ZR95	8.668	20.235	-23.273	2.37E+04
N6-U	U238 (N,F) RU103	8.668	20.235	-23.273	3.76E+04

Table A.14. Activities for dosimeters in the HSST5-8 (south start) metallurgical capsule

Monitor ID	Reaction	Coordinates			Activity Bq/mg @ EOI
		X (cm)	Y (cm)	Z (cm)	
CWX1-1	FE54 (N,P) MN54	-4.604	13.266	4.517	2.18E+04
GWX1-3	FE54 (N,P) MN54	-9.684	13.266	4.517	2.43E+04
GWX1-5	FE54 (N,P) MN54	-14.764	13.266	4.517	2.46E+04
GWX1-7	FE54 (N,P) MN54	-19.844	13.266	4.517	2.48E+04
GWX1-9	FE54 (N,P) MN54	-24.924	13.266	4.517	2.31E+04
GWX2-1	FE54 (N,P) MN54	-4.604	13.266	-11.724	2.42E+04
GWX2-3	FE54 (N,P) MN54	-9.684	13.266	-11.724	2.51E+04
GWX2-5	FE54 (N,P) MN54	-14.764	13.266	-11.724	2.58E+04
GWX2-7	FE54 (N,P) MN54	-19.844	13.266	-11.724	2.44E+04
GWX2-9	FE54 (N,P) MN54	-24.924	13.266	-11.724	2.28E+04
GWY1-1	FE54 (N,P) MN54	-14.764	13.844	4.960	2.31E+04
GWY1-3	FE54 (N,P) MN54	-14.764	16.384	4.960	1.42E+04
GWY1-5	FE54 (N,P) MN54	-14.764	18.924	4.960	8.24E+03
GWY1-7	FE54 (N,P) MN54	-14.764	21.464	4.960	5.21E+03
GWY1-9	FE54 (N,P) MN54	-14.764	24.004	4.960	3.06E+03
GWY2-1	FE54 (N,P) MN54	-14.764	13.844	-11.280	2.35E+04
GWY2-3	FE54 (N,P) MN54	-14.764	16.384	-11.280	1.43E+04
GWY2-5	FE54 (N,P) MN54	-14.764	18.924	-11.280	8.84E+03
GWY2-7	FE54 (N,P) MN54	-14.764	21.464	-11.280	5.16E+03
GWZ1-2	FE54 (N,P) MN54	-8.907	13.145	17.193	1.74E+04
GWZ1-5	FE54 (N,P) MN54	-8.907	13.145	9.573	2.15E+04
GWZ1-8	FE54 (N,P) MN54	-8.907	13.145	0.289	2.54E+04
GWZ1-11	FE54 (N,P) MN54	-8.907	13.145	-7.332	2.50E+04
GWZ1-14	FE54 (N,P) MN54	-8.907	13.145	-16.700	2.17E+04
GWZ1-17	FE54 (N,P) MN54	-8.907	13.145	-24.320	1.56E+04
GWZ2-8	FE54 (N,P) MN54	-20.621	13.145	0.289	2.60E+04
GWZ2-10	FE54 (N,P) MN54	-20.621	13.145	-4.792	2.58E+04
GWZ2-11	FE54 (N,P) MN54	-20.621	13.145	-7.332	2.62E+04
GWZ2-14	FE54 (N,P) MN54	-20.621	13.145	-16.700	2.21E+04
GWZ2-16	FE54 (N,P) MN54	-20.621	13.145	-21.780	1.91E+04
GWZ2-17	FE54 (N,P) MN54	-20.621	13.145	-24.320	1.62E+04

Table A.14. Continued

Monitor ID	Reaction	Coordinates X (cm)	Coordinates Y (cm)	Coordinates Z (cm)	Activity Bq/mg @ EOI
GWZ3-2	FE54 (N,P) MN54	-8.449	19.771	17.718	4.84E+03
GWZ3-4	FE54 (N,P) MN54	-8.449	19.771	12.638	5.68E+03
GWZ3-6	FE54 (N,P) MN54	-8.449	19.771	7.558	6.51E+03
GWZ3-9	FE54 (N,P) MN54	-8.887	19.771	1.477	6.84E+03
GWZ3-11	FE54 (N,P) MN54	-8.887	19.771	-3.603	7.20E+03
GWZ3-13	FE54 (N,P) MN54	-8.887	19.771	-8.683	7.01E+03
GWZ3-16	FE54 (N,P) MN54	-8.887	19.771	-14.764	6.31E+03
GWZ3-18	FE54 (N,P) MN54	-8.887	19.771	-19.844	5.45E+03
GWZ3-20	FE54 (N,P) MN54	-8.887	19.771	-24.924	4.49E+03
GWZ4-2	FE54 (N,P) MN54	-20.641	19.771	17.718	4.87E+03
GWZ4-4	FE54 (N,P) MN54	-20.641	19.771	12.638	5.92E+03
GWZ4-6	FE54 (N,P) MN54	-20.641	19.771	7.558	6.70E+03
GWZ4-9	FE54 (N,P) MN54	-21.079	19.771	1.477	7.24E+03
GWZ4-11	FE54 (N,P) MN54	-21.079	19.771	-3.603	7.44E+03
GWZ4-13	FE54 (N,P) MN54	-21.079	19.771	-8.683	7.17E+03
GWZ4-16	FE54 (N,P) MN54	-21.079	19.771	-14.764	6.76E+03
GWZ4-18	FE54 (N,P) MN54	-21.079	19.771	-19.844	5.58E+03
GWZ4-20	FE54 (N,P) MN54	-21.079	19.771	-24.924	4.70E+03
S1-COT	CO59 (N,G) CO60	-8.668	20.235	14.619	9.90E+03
S1-FET	FE54 (N,P) MN54	-8.668	20.235	14.721	4.99E+03
S1-NIT	NI58 (N,P) CO58	-8.668	20.235	14.822	2.68E+05
S1-TIT	TI46 (N,P) SC46	-8.668	20.235	14.924	2.84E+03
S1-NP	NP237(N,F) ZR95	-8.668	20.235	15.229	3.79E+05
S1-NP	NP237(N,F) RU103	-8.668	20.235	15.229	5.10E+05
S1-CU	CU63 (N,A) CO60	-8.668	20.235	15.521	5.52E+01
S1-U	U238 (N,F) ZR95	-8.668	20.235	16.067	2.58E+04
S1-U	U238 (N,F) RU103	-8.668	20.235	16.067	4.50E+04
S2-COT	CO59 (N,G) CO60	-20.860	20.235	14.619	1.00E+04
S2-FET	FE54 (N,P) MN54	-20.860	20.235	14.721	5.15E+03
S2-NIT	NI58 (N,P) CO58	-20.860	20.235	14.822	2.89E+05
S2-TIT	TI46 (N,P) SC46	-20.860	20.235	14.924	3.04E+03
S2-NP	NP237(N,F) ZR95	-20.860	20.235	15.229	4.27E+05
S2-NP	NP237(N,F) RU103	-20.860	20.235	15.229	6.21E+05
S2-CU	CU63 (N,A) CO60	-20.860	20.235	15.521	5.50E+01
S2-U	U238 (N,F) ZR95	-20.860	20.235	16.067	2.92E+04
S2-U	U238 (N,F) RU103	-20.860	20.235	16.067	5.24E+04

Table A.14. Continued

Monitor ID	Reaction	Coordinates X (cm)	Y (cm)	Z (cm)	Activity Bq/mg @ EOI
S3-COT	CO59 (N,G) CO60	-8.668	20.235	-5.584	1.35E+04
S3-FET	FE54 (N,P) MN54	-8.668	20.235	-5.686	6.72E+03
S3-NIT	NI58 (N,P) CO58	-8.668	20.235	-5.787	3.51E+05
S3-TIT	TI46 (N,P) SC46	-8.668	20.235	-5.889	3.68E+03
S3-NP	NP237(N,F) ZR95	-8.668	20.235	-6.194	5.26E+05
S3-NP	NP237(N,F) RU103	-8.668	20.235	-6.194	7.21E+05
S3-CU	CU63 (N,A) CO60	-8.668	20.235	-6.486	7.28E+01
S3-U	U238 (N,F) ZR95	-8.668	20.235	-7.032	3.65E+04
S3-U	U238 (N,F) RU103	-8.668	20.235	-7.032	6.14E+04
S4-COT	CO59 (N,G) CO60	-20.860	20.235	-5.584	1.38E+04
S4-FET	FE54 (N,P) MN54	-20.860	20.235	-5.686	6.87E+03
S4-NIT	NI58 (N,P) CO58	-20.860	20.235	-5.787	3.97E+05
S4-TIT	TI46 (N,P) SC46	-20.860	20.235	-5.889	4.16E+03
S4-NP	NP237(N,F) ZR95	-20.860	20.235	-6.194	5.85E+05
S4-NP	NP237(N,F) RU103	-20.860	20.235	-6.194	8.30E+05
S4-CU	CU63 (N,A) CO60	-20.860	20.235	-6.486	7.36E+01
S4-U	U238 (N,F) ZR95	-20.860	20.235	-7.032	4.02E+04
S4-U	U238 (N,F) RU103	-20.860	20.235	-7.032	7.35E+04
S5-COT	CO59 (N,G) CO60	-8.668	20.235	-21.825	8.92E+03
S5-FET	FE54 (N,P) MN54	-8.668	20.235	-21.927	4.84E+03
S5-NIT	NI58 (N,P) CO58	-8.668	20.235	-22.028	2.42E+05
S5-NP	NP237(N,F) ZR95	-8.668	20.235	-22.435	3.47E+05
S5-NP	NP237(N,F) RU103	-8.668	20.235	-22.435	4.86E+05
S5-CU	CU63 (N,A) CO60	-8.668	20.235	-22.727	5.18E+01
S5-U	U238 (N,F) RU103	-8.668	20.235	-23.273	3.88E+04
S6-COT	CO59 (N,G) CO60	-20.860	20.235	-21.825	9.08E+03
S6-FET	FE54 (N,P) MN54	-20.860	20.235	-21.927	5.01E+03
S6-NIT	NI58 (N,P) CO58	-20.860	20.235	-22.028	2.74E+05
S6-TIT	TI46 (N,P) SC46	-20.860	20.235	-22.130	2.69E+03
S6-NP	NP237(N,F) ZR95	-20.860	20.235	-22.435	3.94E+05
S6-NP	NP237(N,F) RU103	-20.860	20.235	-22.435	5.61E+05
S6-CU	CU63 (N,A) CO60	-20.860	20.235	-22.727	5.24E+01
S6-U	U238 (N,F) ZR95	-20.860	20.235	-23.273	2.67E+04
S6-U	U238 (N,F) RU103	-20.860	20.235	-23.273	4.68E+04

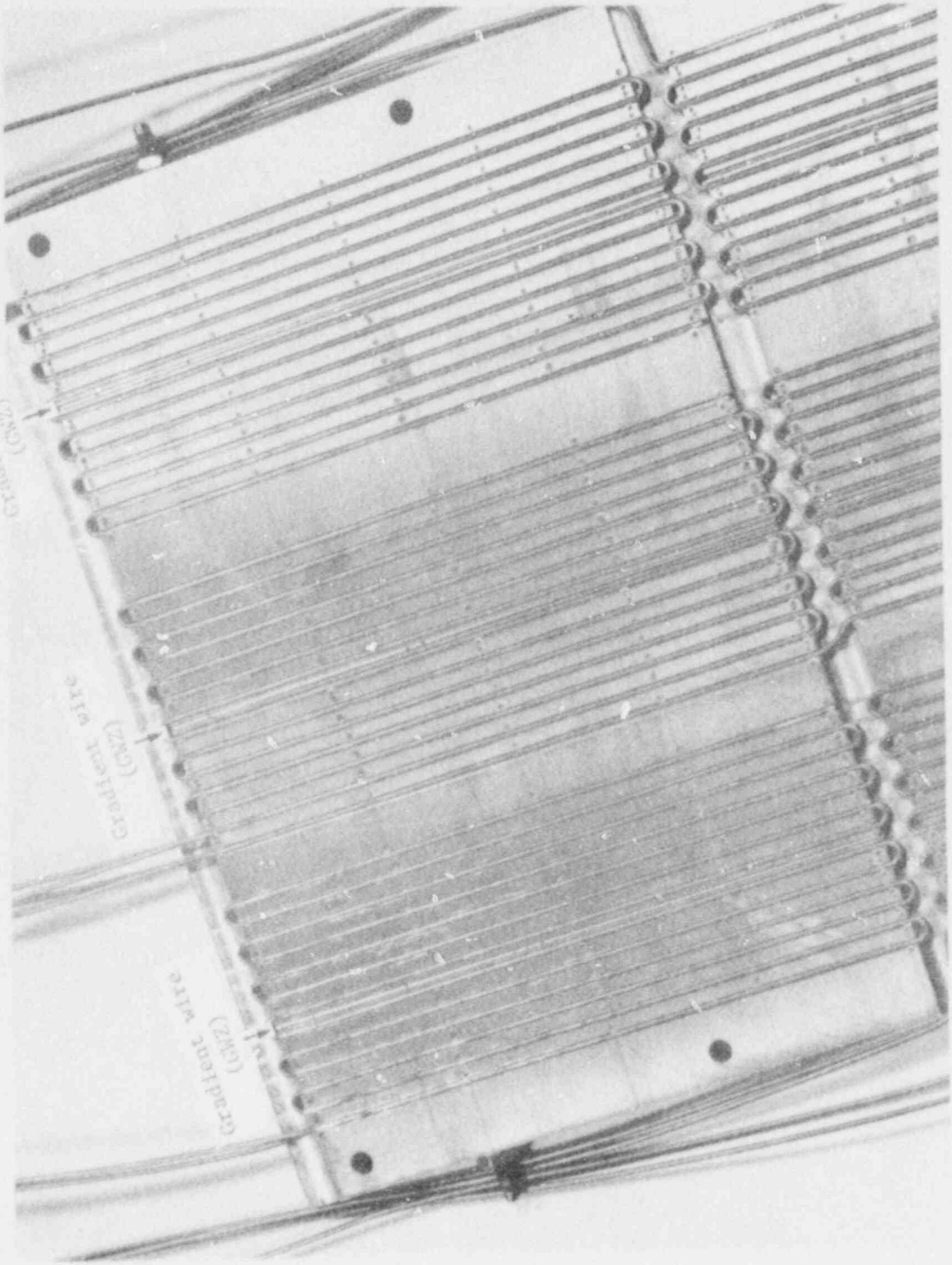

Fig. A.6. Axial gradient wires GWZ in the heater plate.

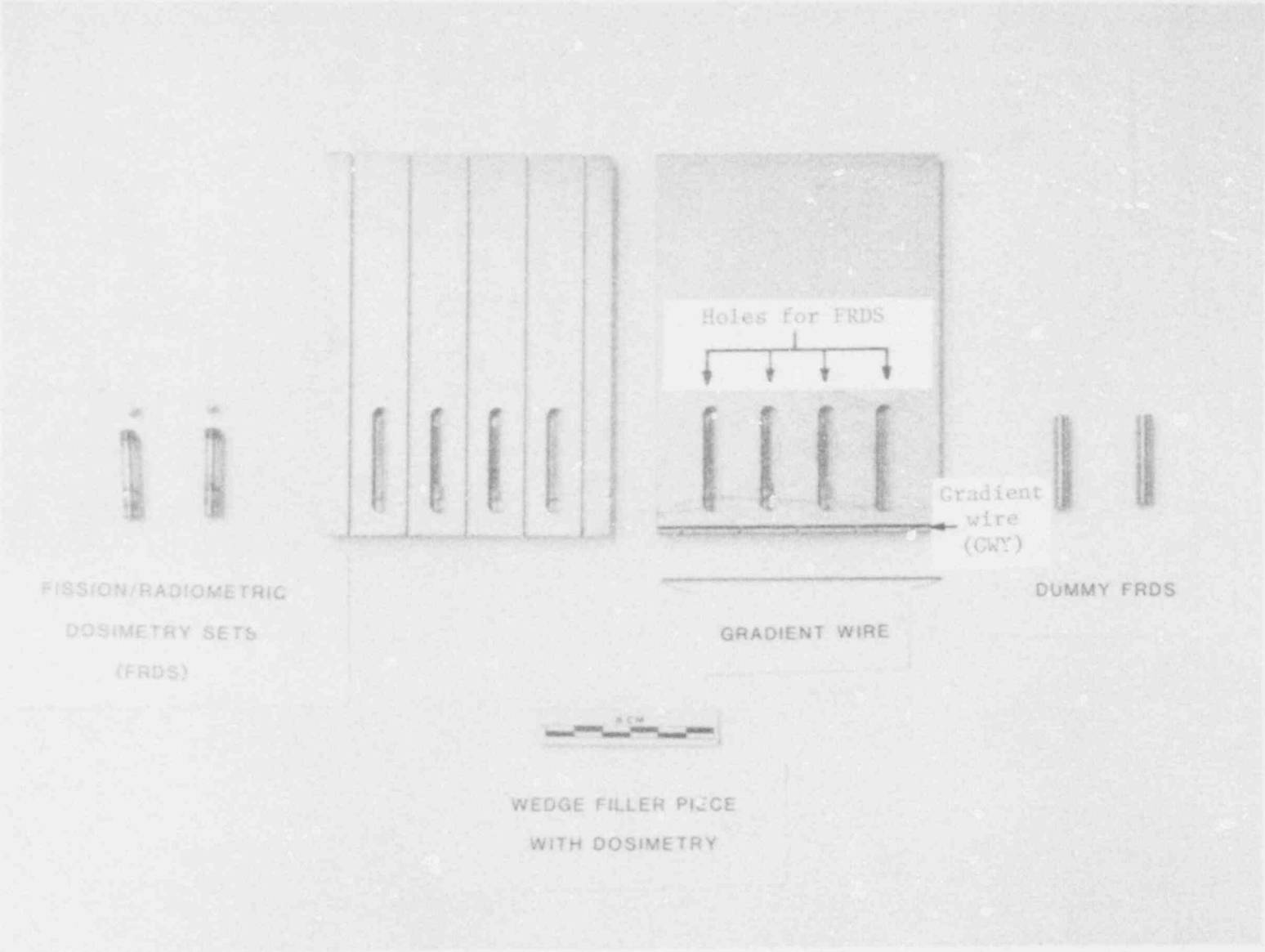

Fig. A.7. Positioning of FRDS and GWY in the wedge filler plate.

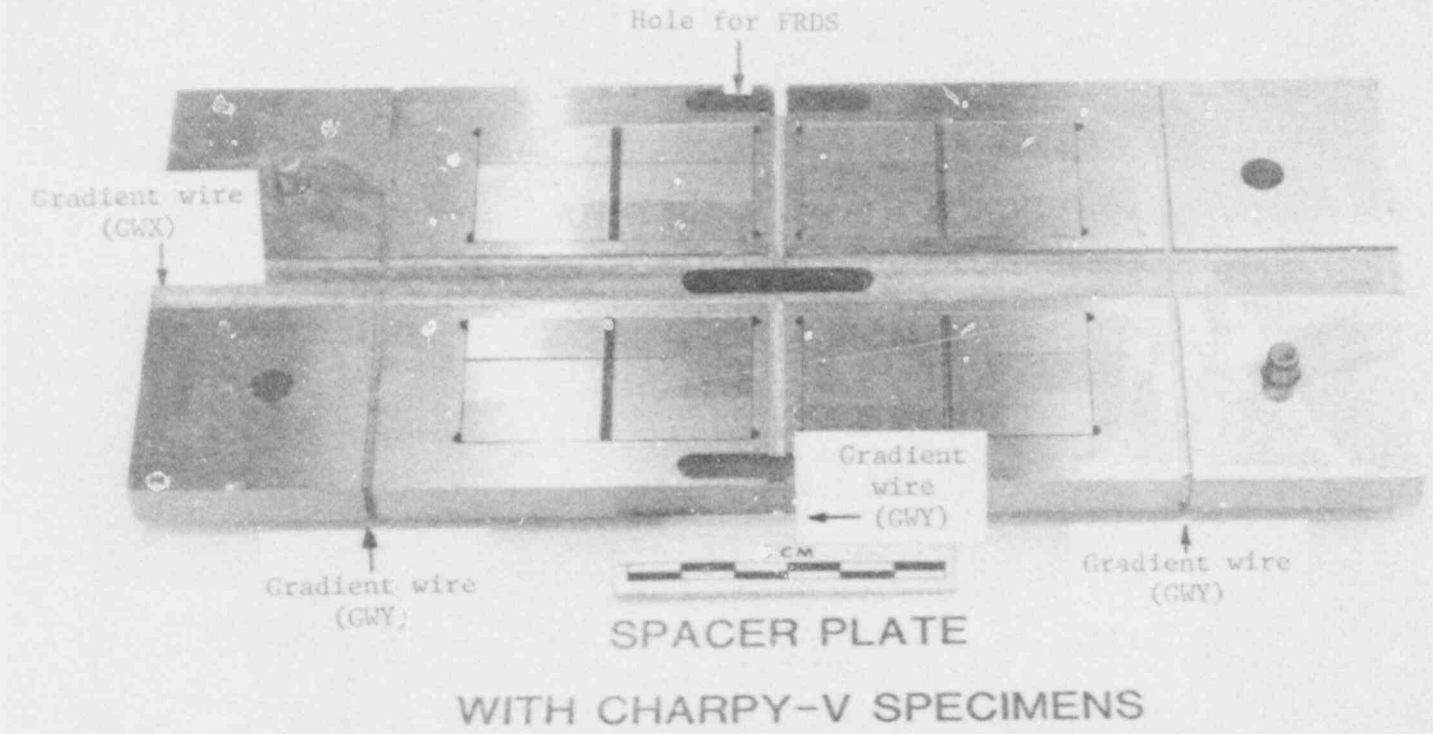

Fig. A.8. Positioning of FRDS and gradient wires in the spacer plate.

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13 ABSTRACT (200 words or less)

The Heavy-Section Steel Technology (HSST) Program, supported by the U.S. Nuclear Regulatory Commission, has completed the Series 5 (HSST5) irradiation experiments. Twelve capsules which contain metallurgical test specimens have been irradiated at the Oak Ridge Research Reactor located at the Oak Ridge National Laboratory. These capsules have been disassembled, internal dosimeters have been analyzed, and exposure parameters are presented for each irradiation test specimen. This report describes the computational methodology for the least-squares adjustment of the dosimetry data with neutronics calculations, and it presents exposure parameters at each test specimen location for the fluence rate greater than 1.0 MeV, fluence rate greater than 0.1 MeV, and displacements per atom. The specific activity of each dosimeter at the end of irradiation is listed in the Appendix.

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