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BWR OWNERS' GROUP NUREG-0578 IMPLEMENTATION: ANALYSES AND POSITIONS FOR PLANT-UNIQUE SUBMITTALS

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GENERAL ELECTRIC

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1. INTRODUCTION

This report contains the results of studies conducted by General Electric Company to assist its utility customers in complying with certain provisions of NUREG-0578 (the U. S. Nuclear Regulatory Commission's "Short-term Lessons Learned Report"), and the September 13, 1979, letter from D.G. Eisenhut (NRC) to all operating nuclear plants requiring the implementation of NUREG-0578.

The work herein was authorized by the BWR Owners' Group in its November 9, 1979, general meeting, and was funded by the Owners' Group.

None of the sections of this report are intended to serve as free-standing responses to any of the NUREG-0578 requirements; rather, they are specialized contributions which are to be used by individual utilities in preparing their own submittals.

2. REVIEW OF CONTAINMENT PER NUREG-0578 REQUIREMENT 2.1.4

This section provides a generic approach to Requirement 2.1.4, "Containment Isolation Provisions for PWR's and BWR's," of NUREG-0578. It is based on a detailed review of one BWR owner's approach, and on dicsussions with other BWR owners. Some identified problem areas which may be generic are identified, and alternative solutions are proposed. Also identified are some concerns which have been raised which do not appear to require action. These, too, are of generic interest. There may be plant-unique isolation concerns, of course, which have not been identified in this generic study. It is the responsibility of each BWR utility to make it's own final findings and commitments for action.

2.1 REVIEW OF PENETRATIONS/ISOLATION PROVISIONS

A review should be made of each containment penetration to determine the present isolation requirements and the provisions for obtaining that isolation. The following types of documents may be used to assist in forming the basis for the review: Schedule of Penetrations, Penetration Leak Rate Test Procedure, and Containment Isolation System Elementary Diagram.

2.2 DETERMINE ISOLATION VALVE CLASSIFICATIONS

The isolation valves should be classified according to valve types, as follows:

a. Motor-Operated Valves

b. Solenoid-Operated Valves

c. Air-Operated Valves with Pilot Solenoids

d. Testable Check Valves

e. Manually Operated Valves

f. Mechanical (non-testable) Check Valves

2.3 DETERMINE TYPE OF OPERATING SWITCH USED

The types of electrical switches used to control the remotely actuated isolation valves generally fall into one of the following categories. The appropriate category should be determined for each isolation valve.

a. Three position, "close-normal-open", spring return to "normal".

b. Two position, "Close-open" or "close-auto/open", maintained contact.

c. Two position, "close-open", spring return to "close".

d. Dual pushbutton, "close" and "open".

2.4 DETERMINE TYPE OF SYSTEM

Generally, the lines penetrating the primary containment fall into two categories, i.e., open-loop or closed-loop. The open-loop designs are those systems which are open to either the containment or the pressure vessel. Ex[illegible]es of these are containment ventilation lines, reactor coolant sample lin[illegible] RHR process lines. Closed-loop designs are those systems which do not [illegible]icate directly with the containment or reactor vessel, such as the neut[illegible]or TIP lines and the recirculation pump bearing cooling water lines.

2.5 DETERMINATION OF VALVES REQUIRING MODIFICATION

Generally, the types of valves requiring modification fall into o[illegible] of the following two classifications:

a. Solenoid Operated;

b. Air operated with Pilot Solenoid.

Additionally, they can be described as having two position operating switches with maintained contacts and will be part of an open-loop system.

2.6 EXAMPLES OF VALVES REQUIRING MODIFICATION

The following types of valves were found on one plant reviewed to require modification. The numbers in parentheses are the number of such valves in the plant reviewed.

a. Drywell Compressor (2)

b. Air Purge Supply Inlet (1)

c. Drywell Air Purge (1)

d. Torus Air Purge (1)

e. Drywell Vent (1)

f. Torus Vent (1)

g. Drywell Vent to Reactor Building Exhaust System (1)

h. Torus Vent to Reactor Building Exhaust System (1)

i. Drywell 2" Vent Relief (1)

j. Torus 2" Vent Relief (1)

k. Containment Ventilation (2)

l. Suppression Pool Vent Header (4)

m. Core Spray (2)

n. Drywell and Torus Makeup Inlet (1)

o. Drywell Makeup Inlet (1)

p. Torus Makeup Inlet (1)

q. Nitrogen Purge Supply Inlet (1)

r. Drywell Floor Drain (2)

s. Drywell Equipment Drain (2)

t. Vent to Emergency Gas Treatment System (1)

u. Containment Atmosphere Radiation Monitor (5)

v. Reactor Water Sample (2)

The above valves total 35 for the reviewed plant. Excluded from the above list are the following:

a. Main Steam Isolation Valves - The operating circuits for these valves should already be modified to require the valve control switches to be placed in "Close" position before the isolation logic can be reset. Check to verify that this condition exists on your plant. If it does not, the suggested modification Figure 2-1 should be implemented.

b. All Motor-Operated Valves - These valves are controlled position spring-return-to-"Normal" switches and require to open the valve after the isolation logic has been re to verify that this is true for all motor-operated valve plant.

c. Those valves on closed-loop systems as noted in 2.4 above.

d. Those valves controlled by switches which are spring loaded to remain in the "Normal" or "Close" position as detailed in 2.3 a, c, and d above.)

SUGGESTED DESIGN MODIFICATIONS

Three design modifications are suggested in these guidelines. They are discussed below.

a. The first design modification involves the Main Steam Isolation Valves (MSIV) which should be implemented if the design change has not already been implemented in your plant.

b. The second suggested modification involved the remaining solenoid/pilot-operated valves for which a modification has been found to be necessary. This modification is detailed in Figure 2-2 and involves replacing the existing two-position, maintained-contact switch with a new three-position, spring-return-to-"Normal" switch and the addition of two new relays for each valve circuit to be modified. This modification is recommended for a permanent design change. It allows the trip logic to be reset as soon as the cause of the trip clears without any additional operator action, and allows the valves to be opened individually as required following trip logic reset.

c. The third suggested modification is a more expedient temp [illegible] e-sign change. It is detailed in Figure 2-3. This change [illegible] putting "Closed" contacts from the existing maintained-two-position switches in series with the reset relay fo [illegible] Primary Containment Isolation System (PCIS) relay. This c[illegible] may result in somewhat cumbersome operation. It does, howev[illegible] achieve the desired result of preventing the reset action from [illegible]ing the isolation valves by requiring each valve-operating switch to be placed in the "Close" position before reset can be achieved. Each of the valves can then be opened individually as required following trip logic reset.

2.8 HARDWARE REQUIREMENTS

The following items of hardware may be used to implement the design changes suggested in these guidelines:

a. Three Position Spring Return Switches - These may be either GE type SBM or CR2940 switches. The part number for each switch is shown below:

GE Type SBM	234A9337 P003
GE Type 2940	145C3040 P013

b. Relay - The suggested relay for these applications is the Agastat relay. The appropriate relays for various operating voltages are shown below:

Voltage	Agastat Model	GE Part Number
120 VAC	GPIC 750	164C5258 P001
125 VDC	GPDC 750	164C5258 P002
250 VDC	GPFC 750	164C5258 P003

2.9 SAFETY CONSIDERATIONS

The designs proposed in these guidelines do not violate the IEEE-279 requirements for separation of the various divisions. The hardware suggested for use are qualified types used in similar applications on requisition plants. During implementation of these suggested designs, the BWR owner must make sure that all wiring and hardware locations meet the IEEE-279 requirements for safety systems.

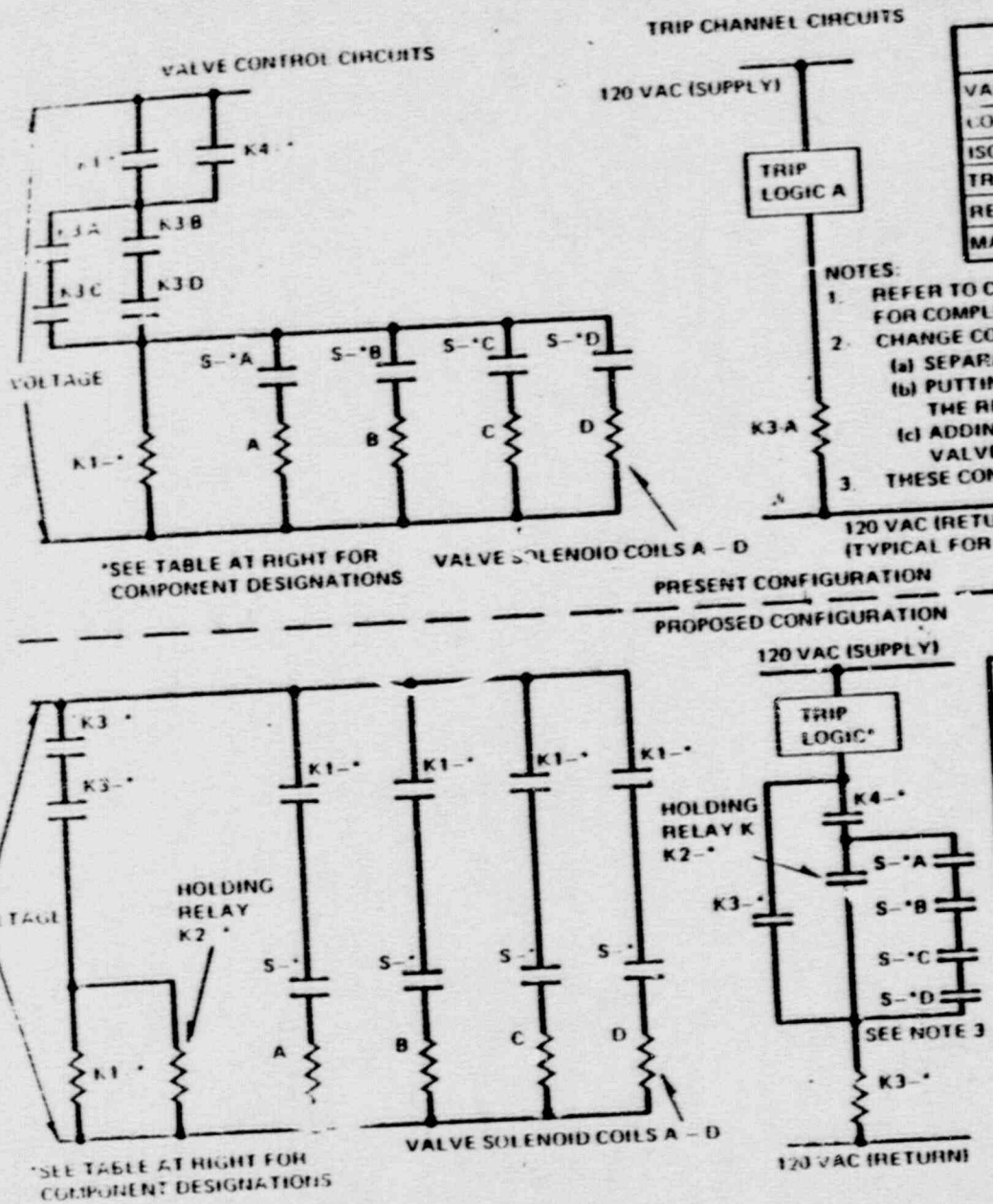
2.10 LPCI INJECTION VALVE LOGIC

It has been determined that with the RHR system in the shutdown cooling mode of operation, a low-water-level signal will automatically close the LPCI injection valves and a "seal-in" circuit will be energized to hold the valves

closed. This seal-in is in addition to the isolation logic "seal-in". A subsequent LPCI initiation signal will not open the LPCI injection valves unless the operator has manually reset both the logic and the valve "seal-in" circuits. Failure of the operator to reset both the logic and the valve circuits will result in defeating LPCI initiation capability. Since the seal-in of the valve closing circuit is required to prevent the injection valve from reopening when the suction valves close, it is suggested that operating procedures be reviewed to verify that the plant is in the proper valve lineup when coming out of the shutdown cooling mode.

2.11 OTHER CONCERNS WHICH MAY REQUIRE ACTION BY SOME PLANTS

Appendix A identifies a number of related concerns which have been reviewed, and states a General Electric position for each. Each of these concerns should be reviewed and determined if they are applicable to your plant.



PRESENT VALVE CONTROL CIRCUITS

ITEM	DESIGNATION			
	INBOARD		OUTBOARD	
VALVE SOL COIL				
COIL VOLTAGE	125 VDC	120 VAC	125 VDC	120 VAC
ISOLATION RELAY K1-*	A	B	C	D
TRIP RELAY K3-*	ABCD	ABCD	ABCD	ABCD
RESET RELAY K4-*	A	A	B	B
MANUAL CONTROL SW S-*	1	1	2	2

NOTES:
1. REFER TO CONTAINMENT ISOLATION ELEMENTARY DIAGRAM FOR COMPLETE CIRCUIT AND APPROPRIATE CIRCUIT DESIGNATIONS
2. CHANGE CONSISTS BASICALLY OF:
   (a) SEPARATING THE A&C AND B&D TRIP CHANNELS
   (b) PUTTING CONTROL SWITCH CONTACTS IN SERIES WITH THE RESET RELAY CONTACT
   (c) ADDING A HOLDING RELAY TO PREVENT HAVING TO CLOSE VALVES TO RESET DURING TESTING
3. THESE CONTACTS ARE CLOSED IN THE "CLOSE" SWITCH POSITION

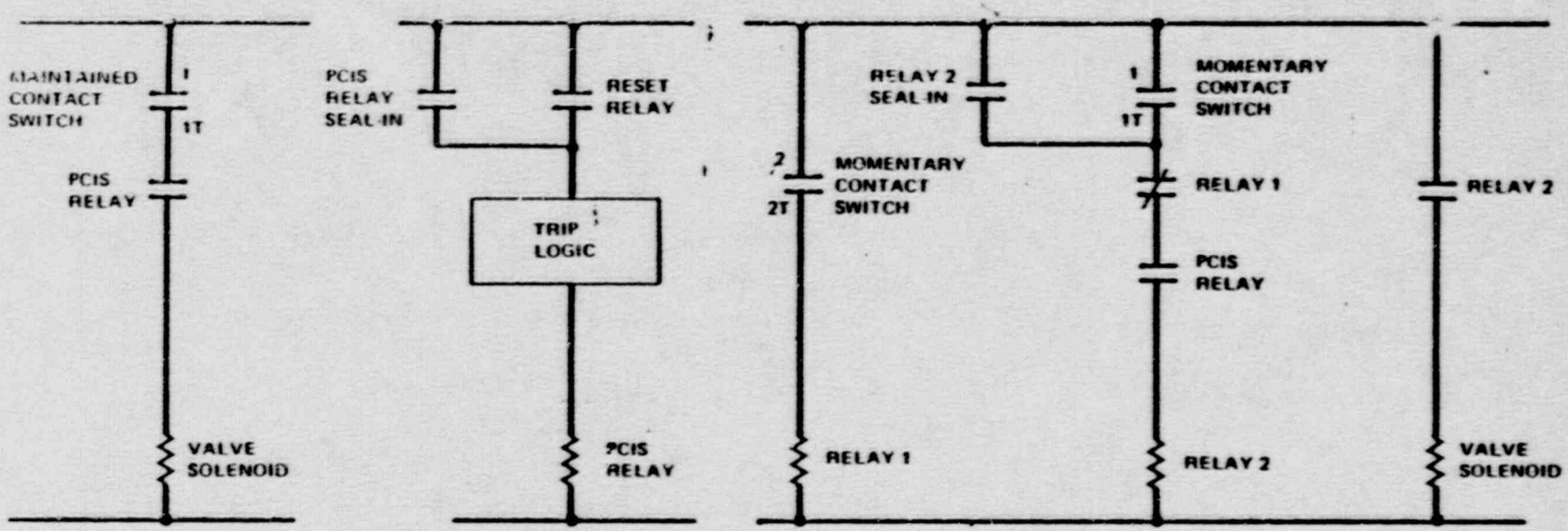
PROPOSED VALVE CONTROL CIRCUITS

ITEM	DESIGNATION			
	INBOARD		OUTBOARD	
VALVE SOL COIL				
COIL VOLTAGE	125 VDC	120 VAC	125 VDC	120 VAC
ISOLATION RELAY K1-*	A	B	C	D
HOLDING RELAY K2-*	A	B	C	D
TRIP RELAY K3-*	B, D	A, C	A, C	B, D
MANUAL CONTROL SW S-*	1	1	2	2

PROPOSED TRIP CHANNEL CIRCUITS

ITEM	DESIGNATION			
TRIP LOGIC*	A	B	C	D
TRIP RELAY K3-*	A	B	C	D
HOLDING RELAY K2-*	A	B	C	D
RESET RELAY K4-*	A	A	B	B
MANUAL CONTROL SW S-*	1	1	2	2

Figure 2-1. MSIV Logic Change



CONTACT	CLOSE	AUTO/OPEN
1 – 1T		X

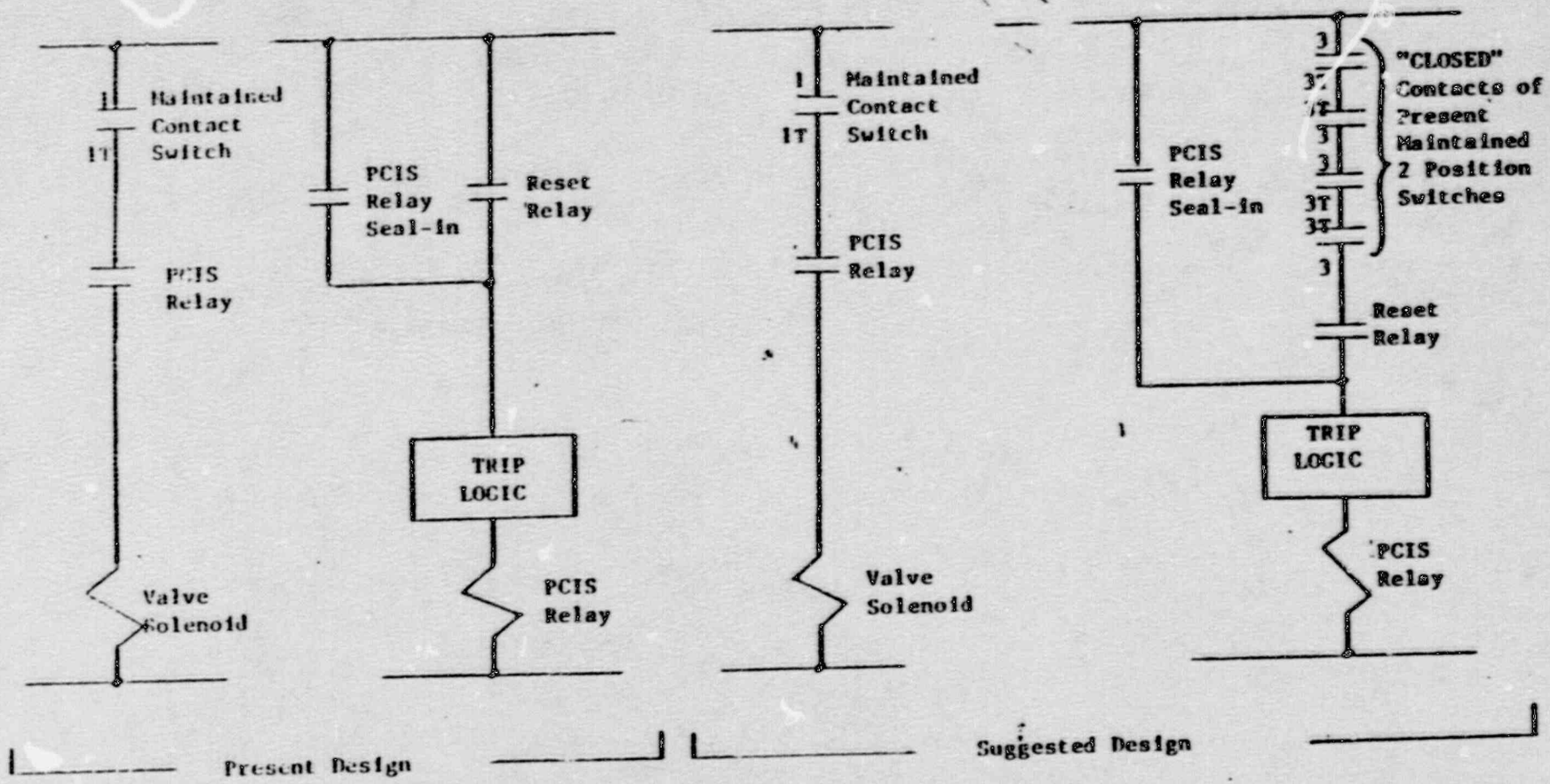
PR

CONTACTS	CLOSE	NORMAL	OPEN
1 – 1T			X
2 – 2T	X		

NOTE: BY USING OTHER SWITCH DEVELOPMENTS, ONE RELAY PER VALVE COULD BE ELIMINATED

SUGGESTED DESIGN

Figure 2-2. Recommended Design Change for Solenoid/Pilot Valves



CONTACT	CLOSE	AUTO/OPEN
1-1T		X
3-3T	X	

Figure 2-3. Temporary Design Change for Solenoid/Pilot Valves

3. DEFINITION OF "ESSENTIAL" AND "NON-ESSENTIAL" SYSTEMS PER NUREG-0578 REQUIREMENT 2.1.4

Table 3-1 provides a generic assessment of those BWR systems which can be considered "Essential" or "Non-Essential" for isolation conditions consistent with NUREG-0578, Requirement 2.1.4. As used in this assessment, those systems identified as essential are regarded as indispensable or are back-up systems in the event of a loss-of-coolant accident. The non-essential systems have been judged to be not required in loss-of-coolant accident situations. However, depending upon the circumstances, it may be highly desirable not to isolate a "non-essential" system. For this reason, and because the NUREG-0578 definition of "essential" is deliberately flexible, the specification of "essential" is very judgmental with certain systems. Systems once isolated should be capable of being quickly returned to service as the need arises.

All BWR's have similar safety system components. Table 3-1 is a composite of BWR/1-6 systems, and as such some systems may appear more than once because, depending on the plant design, a safety system may be either a primary safety system, or a sub-system of a larger safety system. Obviously, because the table is a composite, no specific plant would have all the systems identified.

Table 3-1

ESSENTIAL/NONESSENTIAL EQUIPMENT

	System	Essential	Comments
1.	Reactor Head Cooling	No	Not a safety system
2.	Standby Liquid Control	Yes	Should be available as back-up to CRD system
3.	Isolation Condenser	Yes	High pressure safety system
4.	Low Pressure Coolant Injection	Yes	Safety system
5.	High Pressure Coolant Injection	Yes	Safety system
6.	Core Spray(High-Low Pressure)	Yes	Safety system
7.	Closed Cooling Water	No	Used for normal operation only. Not required for DBA but is necessary for the recirc, cleanup system operation, and fuel pool heat exchangers.
8.	Containment Atmospheric Control	Yes	Combustible gas control function necessary to eliminate hydrogen/oxygen combustible atmosphere.
9.	Drywell/Containment Spray Cooling	Yes	Necessary to control drywell/containment pressure
10.	Automatic Depressurization System	Yes	Safety system; control of RPV pressure
11.	Standby Gas Treatment	Yes	Necessary to control emissions to environment
12.	Reactor Building Emergency Cooling	Yes	Necessary to cool safety system pumps and motors
13.	Reactor Core Isolation Cooling	Yes	Necessary for core cooldown following isolation from the turbine condenser and feedwater makeup.
14.	Reactor Building Equipment Drain	Yes/No	If drain is required, the equipment is probably out-of-service; check for independent isolation; drain should not back up and flood essential equipment.
15.	Drywell Floor Drain	No	Not necessary for core cooldown
16.	Emergency Service Water System	Yes	Necessary to remove heat following accident. Includes the ultimate heat sink.

Table 3-1

ESSENTIAL/NONESSENTIAL EQUIPMENT (continued)

System	Essential	Comments
17. Instrument Air	Yes	Regarded as essential because this system supports safety equipment. Back-up accumulators are available for the safety equipment should the system fail.
18. Service Air	No	Serves no safety or shutdown function.
19. Main Steam Line	No	Not required for shutdown.
20. Feedwater Line	No	Not required for shutdown. Portion that is Class I is essential.
21. Reactor Water Sample	No	Not required for shutdown, but would be necessary for post-accident assessment. Post-accident sample is a separate issue.
22. Control Rod Drive Cooling	Yes	No credit taken for reflood, but is desirable.
23. Reactor Water Cleanup	No	Not required during and immediately following an accident. Necessary in long-term recovery.
24. Radwaste Collection	No	Not required for shutdown.
25. Recirculation System	No	Not required for jet pump plants because core can be cooled by natural circulation. BWR/2's must ensure that a minimum number of pump suction and discharge valves are open.
26. RHR Heat Exchangers	Yes	Main heat sink during isolation.
27. RHR Shutdown Cooling	No	Not essential but desirable to use if available. Not redundant, but safety grade.
28. RHR Vessel Head Spray	No	Not safety system.
29. RHR Drywell/Suppression Pool Spray	Yes	Necessary to control pressure.
30. RHR - LPCI Function	Yes	Safety function.
31. RHR - Steam Condensing Function	No	Not required as safety equipment.
32. Waste Collector and Surge Tank	No	Not required for shutdown.

Table 3-1

ESSENTIAL/NONESSENTIAL EQUIPMENT (continued)

System	Essential	Comments
33. Drywell Cooling	No	Used only in normal operation. Desirable to keep running.
34. Demineralized Water	No	Not assumed available in ECCS analysis.
35. Condensate Water	Yes/No	Not assumed available in ECCS analysis, but is used in isolation condenser secondary.
36. Fuel Pool Cooling	No	Boiling is acceptable, but make-up is necessary. Heat exchangers cooled by RBCCW system.
37. Drywell Bleed	Yes	Pressure control vent. Back-up to hydrogen control.
38. Positive Seal System	Yes	Insures that highly radioactive fluids are confined to the reactor building.
39. Traversing In-Core Probe (TIP)	No	Not required for reactor shutdown cooling.
40. Fire Protection	Yes	Availability is essential, as the "accident" may be the result of a fire. Auxiliary makeup for isolation condenser secondary.
41. Make-up Water Treatment	No	Serves no purpose during and immediately after accident. Longer-term availability necessary.
42. Feedwater Coolant Injection	Yes	Like HPCI.
43. Separate Suppression Pool Cooling	Yes	Main heat sink during isolation.

4. SYSTEMS CONTAINING RADIOACTIVE FLUIDS PER NUREG-0578 REQUIREMENT 2.1.6a

A review of the composite BWR systems was performed to determine which systems should be regarded as containing highly radioactive fluids in the event of an accident. Tables 4-1 and 4-2 provide lists of those systems which should and should not be regarded as containing highly radioactive fluid.

All BWRs have similar safety system components. The tables contain a composite of BWR/1-6 systems, and as such some systems may appear more than once because, depending on the plant design, a safety system may be either a primary safety system, or a sub-system of a larger safety system. Obviously, because the table is a composite, no specific plant would have all the systems identified.

Table 4-1

SYSTEMS CONTAINING HIGHLY RADIOACTIVE FLUIDS

	System	Comments
1.	Isolation Condenser	Tube side only
2.	Low Pressure Coolant Injection	
3.	High Pressure Coolant Injection	
4.	Core Spray (High/Low Pressure)	
5.	Containment Atmospheric Control	
6.	Drywell/Containment Spray	
7.	Automatic Depressurization System	Piping containing primary coolant only. Does not include instrument air and accumulators.
8.	Standby Gas Treatment	
9.	Reactor Building Emergency Cooling	Assumes primary coolant leakage in equipment rooms.
10.	Reactor Core Isolation Cooling	
11.	Reactor Building Equipment Drain	
12.	Drywell Floor Drain	
13.	Reactor Water Sample	
14.	Reactor Water Cleanup	
15.	Radwaste Collection	
16.	Recirculation	
17.	RHR Heat Exhangers	Primary side
18.	RHR Shutdown Cooling	Primary side
19.	RHR Vessel Head Spray	
20.	RHR Drywell/Suppression Pool Cooling	Primary side
21.	RHR LPCI Function	
22.	RHR Steam Condensing Function	Primary side (if used during an accident).
23.	Waste Collector and Surge Tank	
24.	Fuel Pool Cooling	
25.	Drywell/Containment Bleed	Assumed used during/after the accident.
26.	Positive Seal	Only on suction-type systems.

Table 4-2

SYSTEMS NOT CONTAINING RADIOACTIVE FLUIDS

	System	Comments
1.	Reactor Head Cooling	The Reactor Head Cooling System utilizes water from the condensate storage tank and therefore should not contain radioactive fluids.
2.	Standby Liquid Control	This system injects fluid and does not circulate primary coolant.
3.	Isolation Condenser (Shell Side)	Not in contact with radioactive fluids unless tubes have failed.
4.	Closed Cooling Water	This system does not circulate primary coolant and could only become contaminated due to system leaks.
5.	Service Water	This system does not circulate primary coolant and could only become contaminated due to system leaks.
6.	Instrument Air	Would require system failure.
7.	Service Air	Would require system failure.
8.	Main Steam Line	Would require failure of isolation valves (and failure of positive seal system for those plants which have this system).
9.	Feedwater Line	Same as for Item 8.
10.	Control Rod Drive Cooling	Flows into pressure vessel. Water source is from condensate storage tank.
11.	Drywell Coolers	Have isolated on high drywell pressure for LOCA.
12.	Demineralized Water	
13.	Condensate Water	Only if isolation valve leaks. Dependent on BOP design.
14.	Fire Protection System	In-flow to containment.
15.	Make-up Water Treatment	

5. EQUIPMENT REQUIRING ACCESS FOLLOWING AN ACCIDENT PER NUREG-0578 REQUIREMENT 2.1.6B

The systems and equipment which may require access after an accident without considering equipment malfunction or any cleanup effort are:

1. Outside the reactor building

   Control room/building
   Radwaste
   Switchgear

2. Inside the reactor building or in a potentially high radiation area:

   H_2 and O_2 analyzers
   Remote shutdown panel
   Reactor water sample panel
   RPS instrument racks
   Drywell atmosphere compressors or N_2 supply
   Standby gas treatment system (filter change if necessary)
   Reactor building vent or stack radiation
   Monitor rack
   RHR/service water spool piece

This list is intended to be as generic as possible; plant-unique confirmation should be done and modification as necessary should be made.

6. RADIATION SOURCE TERM INFORMATION PER NUREG-0578 REQUIREMENT 2.1.6B

Appendix B contains the results of an analysis to provide source term information for use in implementing NUREG-0578 Requirement 2.1.6B, "Design Review of Plant Shielding of Spaces for Post-Accident Operations." This computer output is based on an assumed operating history of 1 MWt for 3 years at which time 100% of the noble gases, 50% of the halogens and 1% of the remaining fission products are released from the core.

The user should multiply this computer output by the rated reactor power level and divide by the volume of water in the suppression pool post-LOCA to determine the activity per unit volume in the suppression pool liquid. It should be emphasized that only the halogens, volatile solids, and non-volatile solids should be so treated. Since the noble gases are not assumed to be absorbed in the suppression pool, per NRC Regulatory Guide 1.7, they should not be considered in the evaluation of the suppression pool activity post-LOCA. This information will not vary appreciably with the use of extended fuel cycles.

7. BWR GENERIC SAMPLING SYSTEM CONCEPTUAL DESIGN PER NUREG-0578 REQUIREMENT 2.1.8.A

7.1 INTRODUCTION

This section presents a conceptual design for equipment additions needed to meet the Post-Accident Sampling requirements of NUREG-0578. This description was required by NUREG-0578 to be available by January 1, 1980. The design is preliminary in the sense that its details are subject to discussion and refinement for individual preferences and plant differences.

The conceptual design described was prepared specifically for the Pilgrim 1 Nuclear Power Station. Most of the concepts are, however, applicable to all operating BWRs. It will be, of course, necessary to define plant-specific locations for the equipment.

The design is intended to minimize complexity and maintenance needs. The result is that a three-step sampling process is recommended. The samples are obtained via a Post-Accident Sample Station to be located adjacent to the secondary containment building such that the sample room becomes an extension of the secondary containment. This area will be properly shielded from the high dose rates present in the secondary containment following an LOCA. The samples are then transported to a preparation area which consists of a simple wet lab with capability to prepare the samples for counting. The final step in the process employs a counting area to be located far enough away from the radiation sources for accurate counting.

General Electric suggests a joint owners review of this Post-Accident Sampling Conceptual Design and others which are in preparation by individual utilities. Such a reivew might permit more uniformity of implementation than currently exists, and also might permit joint design effort for the sample station portion of the plant modification.

7.2 DESIGN OBJECTIVES

7.2.1 Scope

To obtain representative liquid and gas samples from within the primary containment for radiological analysis in association with the possible event of a loss-of-coolant accident (LOCA). The liquid samples will be representative of liquids within the reactor pressure vessel and suppression pool areas. Th gas samples will be representative of the atmosphere within the drywell and wetwell areas.

The samples will be:

a. Collected in a sample room.

b. Sent to a wet analysis/sample preparation lab.

c. Sent to a counting lab.

The post-LOCA sampling system will be designed with personnel safety as its main feature.

7.2.2 Criteria

a. Liquid samples will be taken from two sample locations from within the reactor pressure vessel and two from the suppression pool. Gas samples will be taken from two locations in the drywell and two in the wetwell areas.

b. D a dose rates to personnel in the sample room will be kept to ap oximately 0.1 rem whole body and 0.5 rem extremities.

c. Sampling must not interfere with normal plant operations.

d. Design of the sampling system must be such that samples can be gathered at any time during normal plant operation or during possible accident and transient conditions; i.e., liquid samples taken at any pressure from 1400 psig through 0 psig, gas samples at 100 psig through -2 psig.

e. Liquid and gas sample purge flow will be returned to the torus.

f. Any sample line isolation valves must have an override on any automatic isolation signal to them. The ability to override must be available from both the control room and sample room areas.

g. Liquid sample lines shall be classified and designed to Seismic Class I up to and including the second isolation valve. Beyond the second isolation valve the system will be classified, but not limited to, Quality Group D, Non-seismic.

h. Reactor pressure or normally operating sample pumps will be used to transfer liquid samples through the sample piping. This "normal" motive force will be supplemented using canned or bellows-type pumps.

i. Liquid sample lines should be 1/2-inch schedule 80 minimum, Type-316L stainless steel with 0.020% C maximum. The lines will be butt welded with bent turns. Socketed fittings will be kept to a minimum. Tubing can be used to route the sample around the sampler panel. Tubing sizes can vary, depending on the application, to keep sample transport time to less than 10 minutes, but tubing material requirements must stay the same.

j. Gas sample lines should be 1/2-inch minimum heavy-wall tubing, stainless steel Type-316L stainless steel, with high-pressure stainless steel fittings. Tubing sizes can vary when routing sample through the sampler panel, however, material requirements for this tubing must stay the same.

k. A separate Heating, Ventilating and Air Conditioning (HVAC) Syster will be required for air treatment within the sample room. Exhaus must be treated and vented to the normal building vent system. Assuming it takes 15 minutes to obtain and prepare the samples, th HVAC system design should be able to process the sample air volume once during this time.

l. The sample room, wet analysis/sample preparation room, and countin room locations shall be outside the shielding wall of the secondar containment, or reactor building.

7.3 ANALYTICAL REQUIREMENTS

7.3.1 NUREG-0578 Requirements

Per NUREG-0578 and Harold R. Denton's letter, October 30, 1979, Section 2.1.8 "Improved Post-Accident Sampling Capability," the capability of performing analysis on liquid samples ranging from 0.1 μCi/gr. (normal operating range) 10.0 Ci/gr. (Regulatory Guide 1.3 conditions) is required.

7.3.1.1 Liquid

a. Radiological spectrum analysis

b. Dissolved gases, hydrogen, and oxygen

c. Boron

d. Chlorides

e. pH

7.3.1.2 Gas

a. Radiological spectrum analysis

b. Hydrogen

7.3.2 Interpretation

The following interpretation of the NUREG-0578 requirements is applicable to the BWR.

7.3.2.1 Liquid

a. Radiological spectrum analysis

b. Dissolved gases, hydrogen, and oxygen

c. In-line conductivity

d. An exception is taken to the measurement of boron because it is not a normal post-LOCA ingredient in a Boiling Water Reactor (BWR).

e. An exception is taken to the measurement of chlorides under LOCA conditions. Chlorides are not a normal post-accident ingredient in a BWR. The in-line conductivity measurement taken in the sample room can be used to determine the range of chloride concentrations.

f. An exception is taken to the measurement of pH under LOCA conditions. A BWR does not use chemical control. The in-line conductivity meter installed in the sample room will give an upper limit on hydrogen (H_2) ion concentration.

7.3.2.2 Gas

a. Radiological spectrum analysis

b. Dissolved gases, hydrogen, and oxygen

7.3.3 Sensitivity of Analytical Procedures

The NRC has not defined the sensitivity. The following recommendations are reasonable requirements for analytical detection limit:

a. Hydrogen (H_2) or Oxygen (O_2): 1.0% (atmospheric samples) (mole fraction).

b. Dissolved gases: >ambient temperature and 1 atmosphere solubility limit.

c. Individual nuclides: 10% of the total gamma activity.

7.4 DESIGN CONCEPT

7.4.1 Reactor Pressure Vessel (RPV) Liquid Samples.

When considering water samples taken from within the RPV, the following locations were reviewed.

7.4.1.1 Bottom Head Drain

This line enters the RPV at the bottom-most or "0" level designation. A sample tap could be connected to this piping at some accessible location within the drywell. The sample from this point would be representative of RPV water. However, its location is prone to blockage. Depending on where the sample tap could be located, considerable sample line purging would be required before a true RPV sample was attained. A suitable primary containment penetration would be required to get the sample out.

7.6.1.2 Standby Liquid Control Line/Core Delta Pressure Line

This line is a combination line serving two distinct functions. It uses one RPV penetration by utilizing a pipe-within-a-pipe principle. They are positioned inside the shroud at a location which would sample RPV water. Outside the RPV the single pipe-within-a-pipe is separated by a tee. A sample tap would be installed on either line from this tee prior to the isolation valves located within the drywell. The core delta pressure line terminates with an open-ended pipe extending slightly above the core plate. During an LOCA there is a possibility of damage to this opening, therefore making it a questionable sampling point. A suitable primary containment penetration would be required to get the sample out.

7.4.1.3 Reactor Recirculation Suction Line

A sample taken from this location would be questionable and probably not representative of the liquid within the core region due to line stagnation and its location outside the shroud. A suitable primary containment penetration would be required to get the sample out.

7.4.1.4 Reactor Recirculation Discharge Line

As with the suction line, a sample taken from any point downstream of the pump discharge isolation valve would be questionable and probably not representative of the liquid within the core region due to line stagnation and its location with respect to the core region.

7.4.1.5 Jet Pump Flow Sensing Instrument Lines

In the plant on which this study was based all twenty jet pumps are instrumented to sense flow during normal plant operation. Of the twenty jet pumps, four have two instrument lines attached. These are jet pumps Nos. 5, 10, 15 and 20. The twenty sensing lines sense incoming pressure to each diffuser, whereas the second sensing line on four of the pumps sense exit flow pressure. The sensing

lines, twelve total, for each group of ten jet pumps are gathered together a exit the RPV at approximately the 105° and 285° azimuths. They then exit through penetrations X-40A, B, C, and D in the primary containment at which there is a root valve and high flow check valve on each line. For sampling, lower sensing tap on jet pumps 5 and 15 should be considered. Samples from t location would be representative of the RPV water. These areas are also well protected from any possible internal damage.

7.4.1.6 Residual Heat Removal (RHR) System

The sample system could use the driving force from the RHR system pump discha when aligned in the shutdown cooling mode of system operation. The system ta RPV water from a point in a reactor recirculation suction line.

7.4.1.7 Conclusions (Refer to Figures 7-1 and 7-2)

The jet pump flow sensing instrumentation lines located at the lower sensing tap locations of jet pumps 5 and 15 would be the recommended choice to obtain water samples from within the RPV when the RPV is pressurized; when the RPV i depressurized, an additional sample pumping system will be needed to transpor a sample to the sample room. Therefore, the RHR system should be considered for low or depressurized RPV conditions for the motive force required to obta an RPV water sample.

Sample lines could be tied into the jet pump flow sensing instrumentation lin at a point where they penetrate the primary containment, penetrations X-40A, C, and D. The sample tap would be installed at a point between the root valv and the check valve coming from jet pumps 5 and 15 lower instrument lines. From this tap, a manual isolation valve would be installed from which the sam line could be run to the sample room. These runs of piping must be adequatel shielded and protected in areas where operations personnel may be working. The low-pressure sample taps would be installed on a discharge side of the RHR pumps, downstream of its backflow check valve. A weld-o-let could easily be installed in this section of RHR piping from which the sample line could be run to the sample room. A manual isolation valve will be required at a po near the sample tap location.

7.4.2 Suppression Pool Liquid Samples

Sample points from the following penetrations were considered.

7.4.2.1 Level Taps (X-206B and C)

Line size is 1 inch and lines are used as liquid level indicators. These lines are the lower or liquid leg lines. The location and size of these lines make them desirable for sampling suppression pool water. Crud accumulation would be minimized.

7.4.2.2 Drains (X-213A and B)

Line size is 8 inches and lines are used as flanged construction drains. To put in a sample point on either of these connections, the suppression pool would have to be drained. Their location, the bottom-most area of the suppression pool, would make any sample lines run from these points susceptible to damage and possibly contaminated with accumulated crud.

7.4.2.3 RCIC and ECCS Suction (X-220, X-221, X-222, X-229)

The X-220 line size is 6 inches and line is used as RCIC Pump Suction; X-221, line size 16 inches is used as HPCI pump suction; X-222A, B, C, and D, line size 18 inches are used as RHR pump suction; X229A and B, line size 18 inches are used as core spray pump suction. Sample points for these lines would be on any line downstream of the first isolation valve, but before the pump suction for that particular system. This location would be susceptible to pump isolation and would possibly require override capability to that isolation valve in order to obtain a sample. A second sample point choice for any of these lines would be at a location in the line from where it exits the suppression pool to the first isolation valve. These locations would be prone to crud accumulation and, considering the pipe sizes, it would be necessary to drain the suppression pool water below the line to install a sample tap.

7.4.2.4 Residual Heat Removal (RHR) System

This system could be used for obtaining a suppression pool water sample when the system is running in either suppression pool cooling or suppression pool to suppression pool test mode.

7.4.2.5 Conclusions (Refer to Figure No. 7-3)

Penetration X206B and C (level taps) would be a recommended choice for two su pression pool sample points. These two locations along with sample taps plac on the discharge side of the RHR pumps would give total sampling ability of t suppression pool water. The samples from the two instrument sample taps woul be transported to the sample room via a separate pumping system. This system would be used if the RHR system was not operating. The sample line for this system could tie into that sample line coming from the RHR pump discharge, downstream of the backflow check valve (the same sample tap location describe for the RPV sample. This line, however, should be run separately from the line used for RPV samples.) This sample line would then be run to the sample room. These runs of piping must be adequately shielded and protected in areas where operations personnel may be working.

7.4.3 Drywell and Wetwell Gas Samples

The recommendation is to utilize those O_2 analyzer lines which are not in use The two drywell samples should come from two elevations, preferably a locatic near the mid-point, reference penetration X-50A, and a location in the uppermost region, reference penetration X-29D. The wetwell locations, reference penetrations X-228C and J, would be recommended. Note that the penetration locations referred to are for location requirements only. The physical sampl points would be located outside the primary containment, beyond the isolation control valves but before the O_2 analyzer panel, C-41. The isolation control valves on the O_2 sample lines chosen to be used for the new gas sample syster

must have their operational circuitry redesigned to include an override of the isolation signal which would be controllable from both the main control room and proposed sample room. By tapping into the present O_2 analyzer sample lines prior to the analyzer panel the system would require all associated hardware to transport the gas sample to the proposed sample room. This would be a self-contained and fully controllable system. An alternate, or back-up, system could be one that utilizes the presently installed sample pumps, P-166A and B, and taking a sample off the discharge from these pumps. In either case, the samples would be returned to the torus via a newly run return line using a spare penetration such as X-288F, or by utilizing the present O_2 analyzer return line to the torus.

In either case, the gas sample lines, from the source of the sample tap to the proposed sample room, will require heat tracing to approximately 280°F for condensate prevention. This heat tracing should be turned on only after an LOCA event. These runs of tubing must be adequately shielded and protected where operations personnel may be working.

7.4.4 Proposed Sample Room Considerations (Refer to Figures 7-4 through 7-9)

7.4.4.1 Requirements (Minimum)

a. Personnel safety

b. Ease of entry and exit

c. Must have its own communications system to main control room

d. Must have a radiation monitoring system

e. Must have a separate power source or tied into the emergency diesel generating system

f. Ventilation system capable of room volume air change every 15 minutes.

g. Must be as close as possible to sample source; must be able to meet NUREG-0578 allotted sample time requirements

h. Must h[illegible] its own clean water source

i. Must have its own bottled compressed air, or nitrogen supply system

j. Must have the ability to handle and perform possible chemistry, dilutions, etc., on any samples coming into the room

k. Must have its own drain system, pumped to the suppression pool.

7.4.4.2 Location Considerations (Based on Pilgrim Site)

a. The present Health Physics office location would be acceptable. Additional shielding would be required along the Equipment Removal Hatch wall, AirLock wall, and Secondary Containment Access Lock wall. Shielding requirements need to be assessed. Other requirements such as those previously mentioned would have to be investigated to determine if this area is adequate.

b. A secondary structure built as an addition to the Health Physics office or a separate addition to the building in this same area. Shielding requirements for this area require assessment. Note: locations are shown on Drawing M-16, ground elevation, 23'-0", between N.1 and M.5 and Line 5 west.

c. A location shown on Drawing No. M-18, El. 51'-0" in the fan room side of secondary containment "J" line, between 11 and 17. This area is in close proximity to the same point locations and building ventilation systems and has ease of entry and exit by way of the turbine floor. Dose rates in this area 24 hours into an LOCA are conservatively estimated to be 1-3 Rem/h (see dose rate calculations in Figure 7-10). The fencing along the east-west line, parallel to the generator will have to be moved to a north-south

position along the alternator end of the generator, giving personnel access to the turbine building truck hatch. A spiral staircase, or other mode of access, will be required for personnel to get from the 51' elevation to the ground, elevation 23'. Some type of mechanical device could be designed which would transport the sample between these same elevations, thereby giving personnel more freedom when descending the stairs.

d. Conclusions:

The location described in c. above would be recommended for the plant on which this study was based. Locations are expected to be very plant-specific.

7.4.4.2 Sampler Requirements

a. Dissolved Gas and Large-Volume Liquid Sampler (Refer to Figure 7-6)

The dissolved gas and large-volume liquid sampler will be designed to take large-volume samples as well as measure the volume of dissolved gases in a pressurized liquid and to obtain a sample of these gases for activity and gas chromatography analysis. Large-volume liquid samples may be required for conditions less severe than a Design Basis Accident.

For the BWR it is recommended that the dissolved gas composition and concentration normally be determined by sampling and analysis of the gas phase over any liquid volume and application of Henry's Law together with measurement of the applied pressure. This type of sampling system is required if a scenario can be hypothesized that results in a gas bubble in the pressure vessel with the primary system isolated and pressurized. Analysis of the composition of the gas phase is then determined by applying Henry's Law to the dissolved gases. It may be possible with further analysis to eliminate the expansion buret and hypodermic needle. Because of the large quantities of potential gas activities it is recommended that the sealed venting system be retained for degassing the sample.

The recirculation pump serves to break down supersaturation of th dissolved gases by agitation after initial depressurization into expansion burst. It should be a magnetically coupled, sealed, centrifugal type.

A standard 14 milliliter offgas septum vial is evacuated on the atmospheric sampler and transferred to this hypodermic needle. A extended tool is required for insertion and removal of the vial.

In-line sample monitoring for conductivity and radiation will be included as part of the sampling system.

b. Small-Volume Liquid Samples (Refer to Figure 7-7)

The small-volume liquid sampler is designed to take a defined vol of sample, in this case 0.1 milliliter, over the complete range o possible system pressures. The sampler arrangement is shown in Figure 7-7. Basically, it consists of a four-way ball or plug va where the volume of the sample is defined by the bore of the valv A syringe containing a measured amount of diluent is attached to upper Luer-Lok fitting prior to sampling. The septum-type sampli bottle is also mounted on the hypodermic needles prior to samplir A purge flow is established through the sampling system and the d stream valve is throttled to maintain the pressure as desired to minimize phase separation in the sample line. A by-pass line is provided in order to increase the purge flow, and consideration should be given to the necessity of providing a sample cooler. A a time sufficient to thoroughly flush the system, the downstream valve is closed, the sample is isolated, and the sampler valve is opened and the diluent in the syringe is injected through the sar valve into the sample bottle. If it is desired to also collect t dissolved gases, the procedure can be modified to use a pre-evacu sample bottle and to keep the vent valve closed when injecting th diluent. (The vent valve is included as a precautionary method

eliminating overpressure in the event sample bottle vacuum is lost during mounting of the bottle.)

An accurate measure of the amount of diluent added can be obtained by weighing the sample before and after sampling. Handling tools should be provided for mounting and removing the sample bottle and for inserting it into a shielded sample carrier.

c. Atmospheric Sampler (Refer to Figure 7-9)

This system would not normally be used to obtain iodine and particulate samples from the drywell.

It is recommended that 47-mm-diameter glass fiber filters be used for collection of particulate activity. It is further recommended that the sample cartridges and filters be housed in a laboratory drying oven at 280°F to prevent moisture precipitation. Silver Zeolite cartridges are recommended for total iodine activity collection. It is questionable if the usual iodine chemical species characterization media can be used at this temperature.

Consideration will be given to using a critical orifice in the cartridge discharge line as an alternative to the orifice flowmeter and sample pressure measurement. Sample flow rates should be on the order of 0.1 to 0.5 cfm with a 1 to 5 psig anticipated pressure drop across the filter cartridge combination.

The gas-phase sampler is basically similar to the standard BWR offgas sampler and uses septum-type sample bottles. The hypodermic needle should be a standard Luer-lock type and an extended installation/removal tool should be provided. An extended installation/removal tool should also be provided for the gas sample bottles. Recommended sample volumes are 14 milliliter

(standard, offgas sample vial) and 100 milliliter. The counting systems should be precalibrated for these sample volumes. If the 14 milliliter sample has too much activity it is a simple matter using a 0.1 or 1.0 milliliter gas syringe to transfer a measured aliquot to another partially evacuated 14 milliliter vial. Gas syringes would be used to take fractional milliliter samples for H_2 and O_2 analyses by gas chromatography.

P_2 should be a compound gauge ranging from - 14.7 psig to the maximum containment design pressure.

SV-1 through SV-4 are actuated by a multiple, rotary selector switch. S_1 prevents operating SV-3 unless a sample bottle is mount on the hypodermic needle. S_2 defines the actual moment of sampling

A cooler and liquid trap are recommended to minimize failure of flapper valves in the bellows pumps. Consideration should be given to installing the pumps with quick disconnects in order to simplify replacement.

d. Sample Room

The sample room will house all the necessary equipment controls required to transfer a sample to this location. Preliminary information such as conductivity and radiation level will also be made available. The samples will be gathered at this location and the first dilution of those samples requiring dilution will be made in the sample room. Those equipment items which will be considered radioactively "hot" will be shielded and operated remotely via reachrods or special tools designed for specific tasks.

The motive force to transfer a water sample from the RPV will be provided by the pressure within the vessel. When pressure within the RPV is too low to move a sample to the sample room, a sample can be taken from the RHR pump discharge when aligned in the shutdown cooling mode.

The suppression pool sample will also be routed to the sample room using its own pumping system or the RHR system which is set up in the suppression pool cooling or suppression pool to suppression pool test mode.

Metal-bellows-type pumps will be used to transfer the drywell and wetwell g s samples to the sample room. Separate and redundant pumps wil be used for samples gathered in each area.

Return lines for both the liquid and gas samples will be directed back to the torus area so no excess accumulation of irradiated materials are held or stored in the sample room.

Clean water will be available to flush all liquid sample lines in the sample room, thereby again minimizing any radiation buildup in this area. The same is true for the gas sample lines. A bottled compressed air or nitrogen system will be utilized for flushing out accumulated radioactive gases. This same bottled gas system can be used to blow out a clogged liquid or gas sample line, thereby giving extra assurance of obtaining a sample.

The entire sample system should be designed such that all samples vent through a closed vent system as they are depressurized to minimize the evolution of noble gases into the sampling area atmosphere. Great care should be taken to choose valves having a high degree of assurance against stem leakage.

A "breakaway"-type torque wrench should be provided for use on reachrod-operated manual valves to reduce the possibility of seat damage due to overtightening.

Transfer valves, either manually operated by use of reachrods or motor- or air-operated, would be controlled from the sample room or control room. Work areas within the shielded protection of the sample room consisting of cubicles and fume hoods for initial sample dilution will be provided.

Regulatory Guide 1.3 LOCA assumptions result in primary containment iodine activity equivalent to approximately 5 R/h per milliliter at 1 foot. Approximately 30% of this dose rate is due to 52-minute I-134, 25% due to 6.7-hour I-135, and 25% due to 2.28-hour I-132. The balance is due to I-131 and 21-hour I-133. Depending upon fuel-leaching conditions, the I-132 concentrations may be supported by the 72-hour half-life of its Sb-132 precursor. Because of these very high dose rates, the sampling system should be designed to take liquid samples as small as 0.1 milliliter. It is estimated that dilution factors as high as 1×10^6 may be required for counting purposes, i.e., 0.1 milliliter ⟶ 25 milliliter ⟶ 0.1 milliliter ⟶ 25 milliliter ⟶ 0.1 milliliter, is a dilution factor of 6.25×10^4. Therefore, in order to minimize personnel exposure, it is recommended that the initial dilution be made in the sample room.

Shielded sample containers should be provided to transfer this sample to the wet analysis/sample preparation lab area. Surface dose rates of no more than 100 mR/h are estimated for this first dilution volume using a lead container weighing approximately 35 pounds. This is taking into consideration at least a 1-hour decay time before the first sample can be taken.

e. Wet Analysis/Sample Preparation Lab

In the plant on which this study is based there is only one area being considered for this facility, the Augmented Off-Gas (A.O.G) Building. The building is well ventilated and has facilities for wet sample analysis. For example, the room housing CP-003 and MCC-B-31 is usable and if needed, could easily be enlarged toward

the centerline of the building. Shielding requirements would need assessment. Storage areas for the samples could be provided. Auxiliary power for the analysis equipment could be provided for by the same independent power source which is located in the Guard Shack. Clean water and bottled compressed air or nitrogen systems could easily be provided.

Concept. The laboratory provided for the accident case should contain as a minimum, a fume hood with an internal 2-inch lead shield and a sample storage area. Analytical equipment should include a top-loading balance with a capacity of at least 200 grams and a sensitivity of 0.05 gram for making weight dilutions (this method results in far less operator exposure than is required when adjusting volumetric flasks to a level mark). A simple gas chromatograph should be available for atmospheric hydrogen, oxygen, and nitrogen analysis. A pH meter should be provided along with a simple conductivity meter (this combination might eliminate the need for more involved analysis by demonstrating required sample purity). A vacuum pump should be available for evacuating sample bottles and for filtering. It is recommended that all dilution stirring be done with magnetic stirrers and there should be stirring bars which do not have to be recovered from the potentially highly radioactive solutions (this will greatly minimize the contamination problems). There should be a supply of gas syringes for gas sample dilutions and for chromatographic analysis. Luer-Lok fittings, valves and hypodermic needles should be available. Micropipettes with disposable tips will also be required for sample dilution. Consideration should be given to using plastic "glassware" on a throw-away basis to minimize equipment cleaning and general contamination requirements. The laboratory should be well stocked at all times with gloves, wipes, decontamination solutions, lab coats, shoe covers, air masks, plastic bags, and absorbent floor and bench covering materials.

f. Counting Lab

In the plant on which this study was based the area presently located in the basement of the guard shack is proposed. Shielding requirements for the counting equipment will have to be assessed along with additional lab shielding for personnel protection. The guard shack has its own independent power source and ventilation systems.

Concept. The counting facilities should be located in an area which will not exceed 1 mR/h under accident conditions. The detector should be shielded by a minimum of 4 inches of lead. The detector should be contained in a volume which can be isolated and purged with bottled compressed air as it is conceivable that the ambient atmospheric noble gas activity might be high enough to swamp the detector. A gamma spectroscopy system consisting of an intrinsic type germanium detector (6% efficiency relative to a 3 x 3 inch NaI detector would be sufficient) and at least a 1000-channel multi-channel analyzer should be supplied. The analyzer should be a hardwired type and should have automatic peak search and identification capability and calibrated to at least two shelf positions, a factor of 100-500 apart in sensitivity. An intrinsic type, rather than a lithium drifted germanium detector, is specified for reliability reasons. Reliability of a liquid nitrogen source must be assured and the detector should be maintained in liquid nitrogen at all times as it takes several hours to cool down to operating temperature. A sodium iodide detector should be available as a backup. A shielded sample storage facility should be made available in the counting area (at least 2 inches of lead for shielding) and arrangements should be made for long-term storage, possibly in the wet analysis/preparation lab. It will be difficult to handle samples reading more than 1-2 mR/h since it is possible that the ambient noble gas activity may make it virtually impossible to use extended geometries.

7.4.5 Effluent Particulate and Iodine Sampling

The limiting factors associated with sampling the main stack effluent during post-LOCA conditions are those of personnel safety in getting to the present sample room location and returning to the proposed counting room. The radiation "shine" from the reactor building and the stack plume size and speed and its direction relative to the present stack sample room are the limiting factors which should be considered. The present consideration of personnel safety and radiation levels inside the present sample room could be tolerated for sample removal.

It may be necessary to consider a new sampling room location for a post-LOCA condition only. This new location would be in an area as far away as possible from the reactor building and perpendicular to the main stack and the prevailing wind directions. Safe distances can be obtained using that information available in Section 7.5. System design would be dependent upon the area chosen for the new sampling room. It can, however, be recommended at this time that sampler cartridges of Silver Zeolite be used for radioiodine instead of the routine charcoal cartridge samplers.

An alternate to the above which might be considered is that air which is being discharged from the Stand-By Gas Treatment (SGTS) System. This system is close to the proposed sample room location. The sample lines can run from the SGTS system discharge to the atmospheric sampler (refer to Figure 7-9) to obtain the required effluent samples during LOCA conditions.

7.5 PILGRIM POST-LOCA ON-SITE DOSE RATES

An analysis was undertaken to estimate on-site dose rates outside the reactor building (secondary containment) after a postulated accident resulting in Regulatory Guide 1.3 releases of radioactivity to the primary containment. At t=0, it was assumed that 100% of the core inventory of noble gas and 25% of the core inventory of iodines were airborne in the primary containment. Figure 7-11 illustrates the plant model and leakage paths.

Three cases were examined in order to bound the dose rate contributions from stack releases and reactor building shine. The assumptions for each case are listed in Table 7-1.

Case 1 resulted in the largest releases of radioactivity from the stack because no credit for mixing in the secondary containment was assumed and was, therefore, used to determine the ground level dose from the plume. The whole body dose rate in mRem/h as a function of distance downwind of the stack is presented in Figure 7-12. The dose rates at distances less than 100 meters are conservative estimates, since the computer code used does not calculate doses at less than 100 meters. The corresponding inhalation doses are presented in Figure 7-13.

Case 2 was used to determine the maximum reactor building shine contribution since no leakage from the secondary containment was assumed.

Case 3 was run to determine the actual time of peak secondary containment activity in order to choose the point in time for the building shine calculation.

Figure 7-10 graphs dose rate versus distance from the reactor pressure vessel centerline. These correspond to the activity in the secondary containment from Case 2 at 24 hours post-LOCA, the time of peak activity. The building shine calculations were performed for points along traverses south of the building at elevations of 0 feet (ground) and 51 feet (elevation of the proposed auxiliary building sample station). The effects of the air-ground interface and of attenuation by the structure south of the building were not considered; consequently, the calculated dose rates should be conservative.

It should be stressed that these calculations were performed assuming a power of 1 MWt; therefore, all dose rates must be multiplied by rated thermal power to obtain full-power dose rates.

The dose rate at the sample station at the base of the stack can be estimated as follows:

Whole body dose (10m)*	= 2.7 x 1998**	= 5500 mR/h
Building Shine (200m)	= (2.0-1) x 1998	= 400 mR/h
		5900 mR/h

*closest point analyzed
**rated thermal power for Pilgrim

The inhalation dose is negligible close to the stack as can be seen from Figure 7-13.

Doses at other points on-site can be estimated in a similar manner using Figures 7-10, 7-12, and 7-13.

Table 7-1

ASSUMPTIONS FOR RADIOLOGICAL ANALYSES

	CASE		
	1	2	3
Power (MWt)	1	1	1
Drywell Leakage (%/day): L_1	0.5	0.5	0.5
Leakage from Reactor Building (%/day): L_2	100.	0.	100.
Mixing in Secondary Containment (%)	0.	100.	100.
SGTS Filter Efficiency (%)	90.	90.	90.

*Meteorology: Stability C, Windspeed 2 meters/sec

Source Term: 100% Noble Gas and 25% of Iodines in primary containment at t = 0.

*An arbitrary, reasonably average meteorological condition.

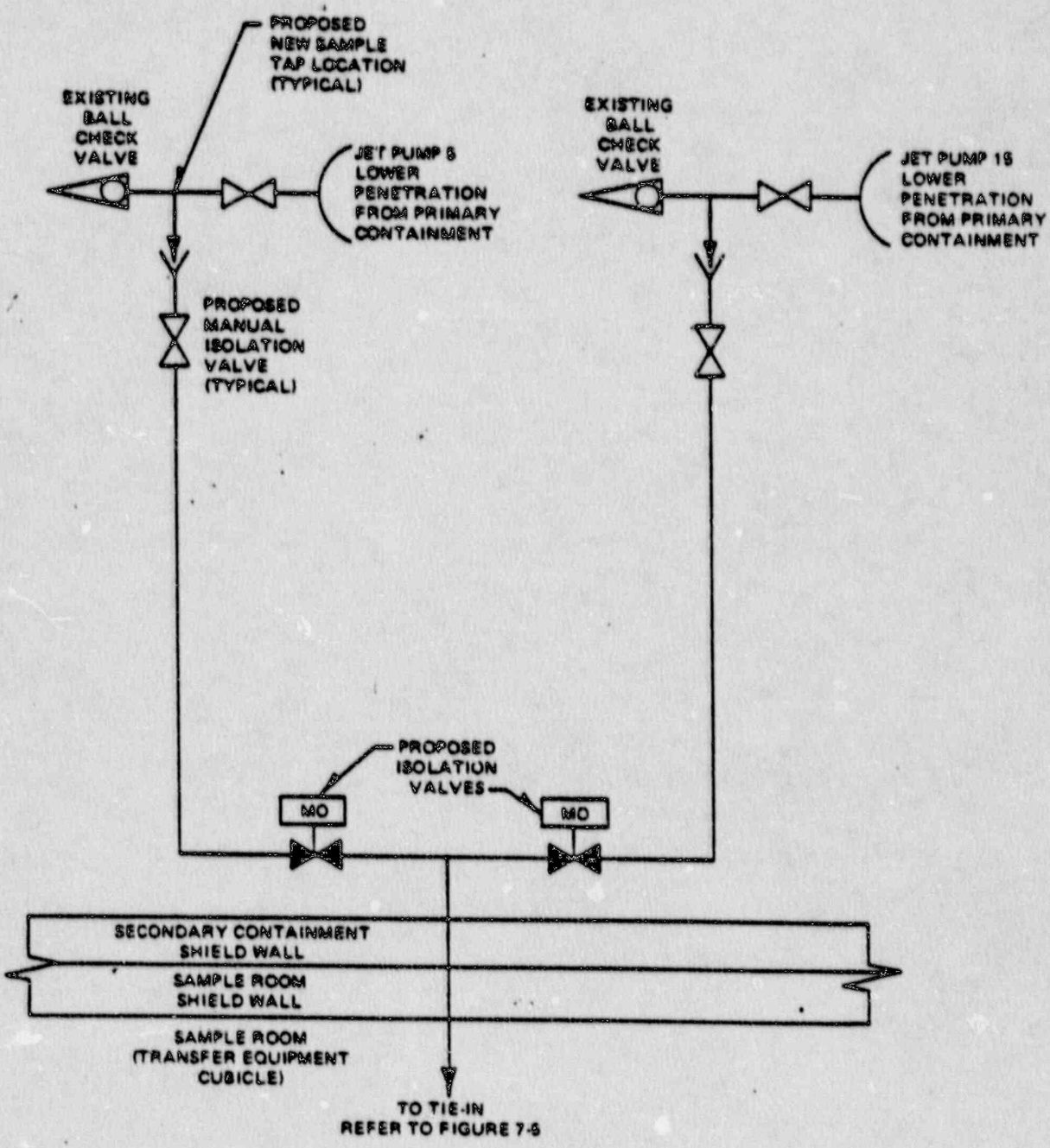


Figure 7-1. Pressurized RPV Liquid Sampler

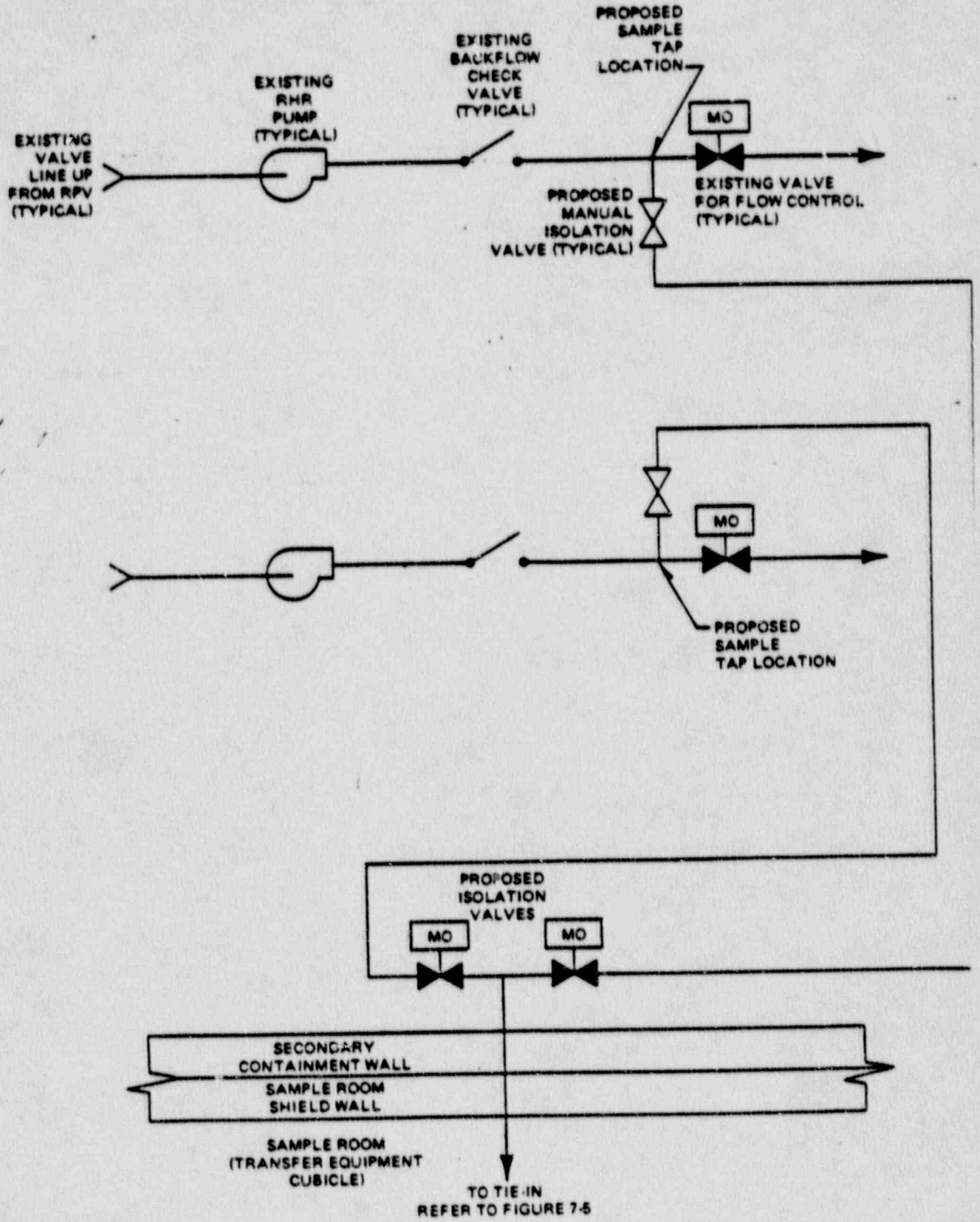


Figure 7-2. Low-Pressure or Depressurized RPV Liquid Sampler (Reactor Pressure Vessel to Reactor Pressure Vessel Moa of Operation)

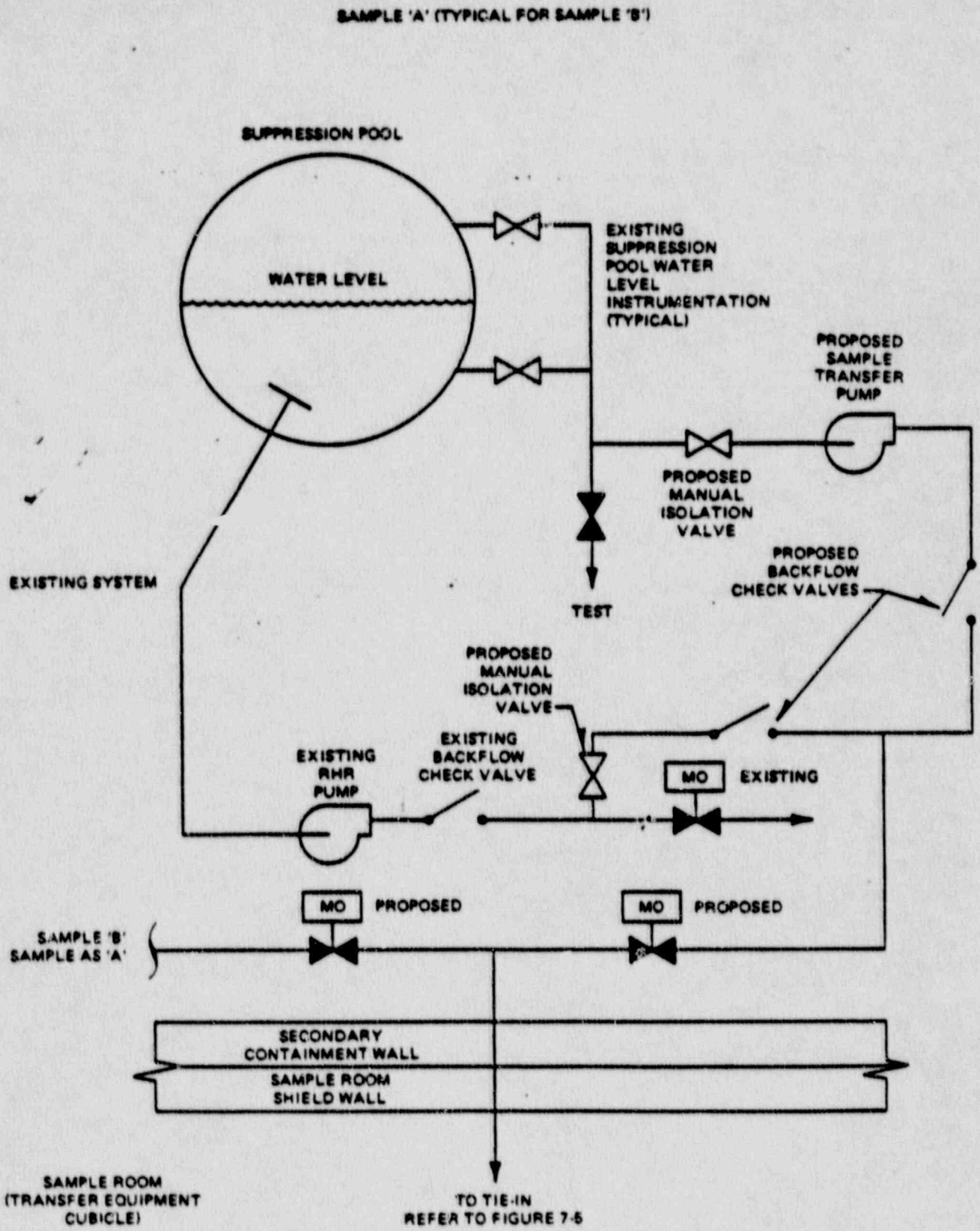


Figure 7-3. Suppression Pool Sample Line

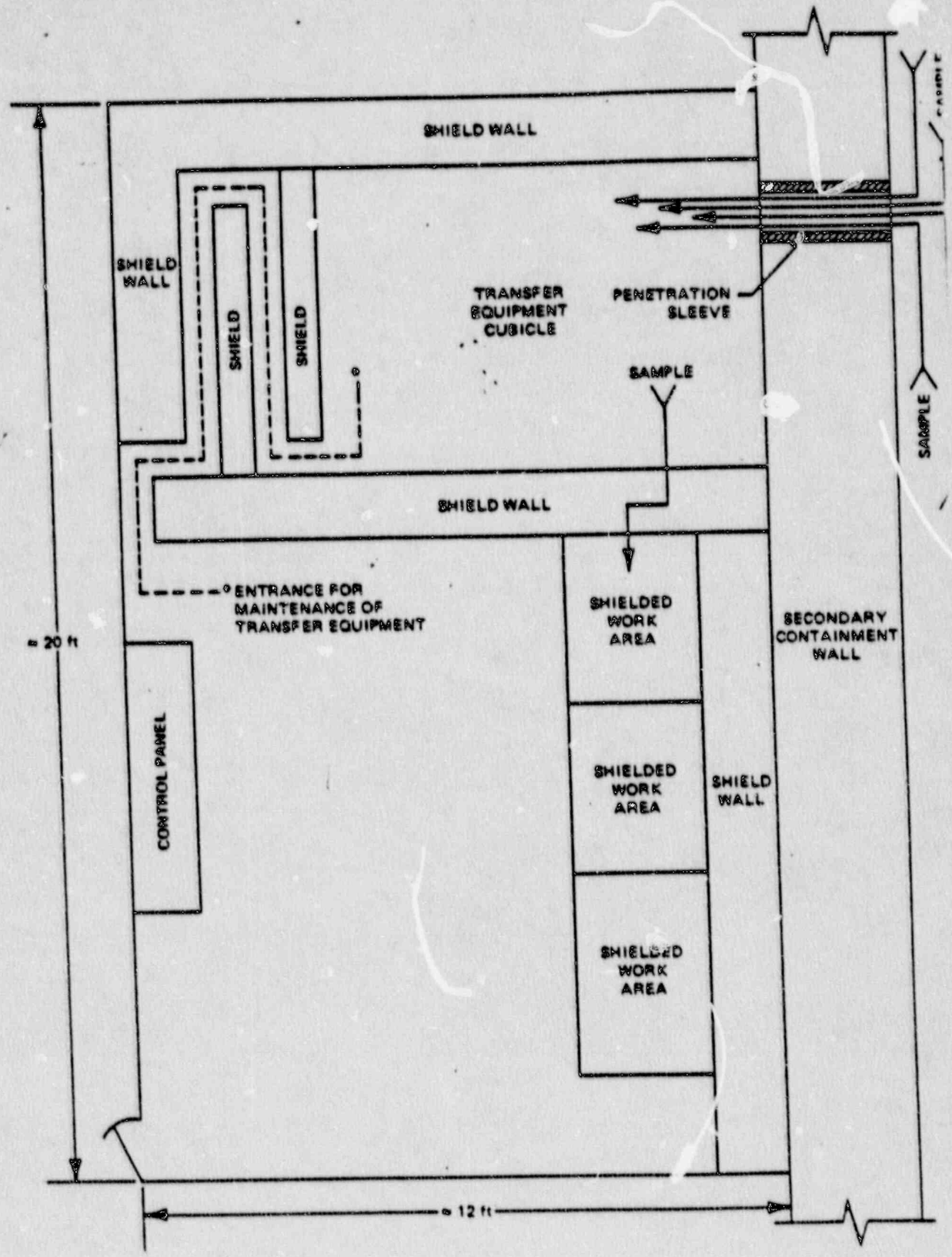
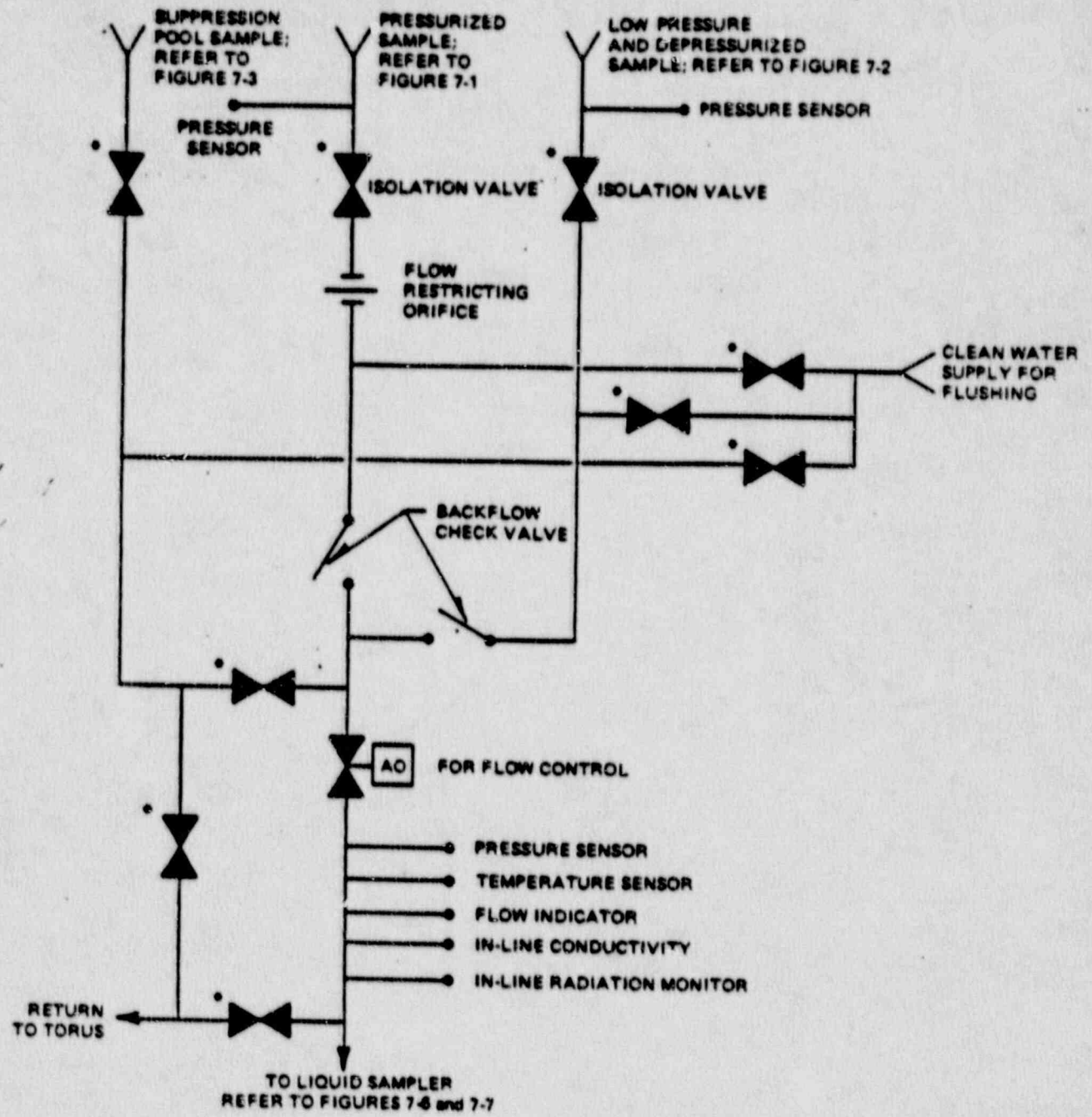


Figure 7-4. Sample Room Layout Concept



*REACHROD-OPERATED MANUAL ISOLATION VALVES

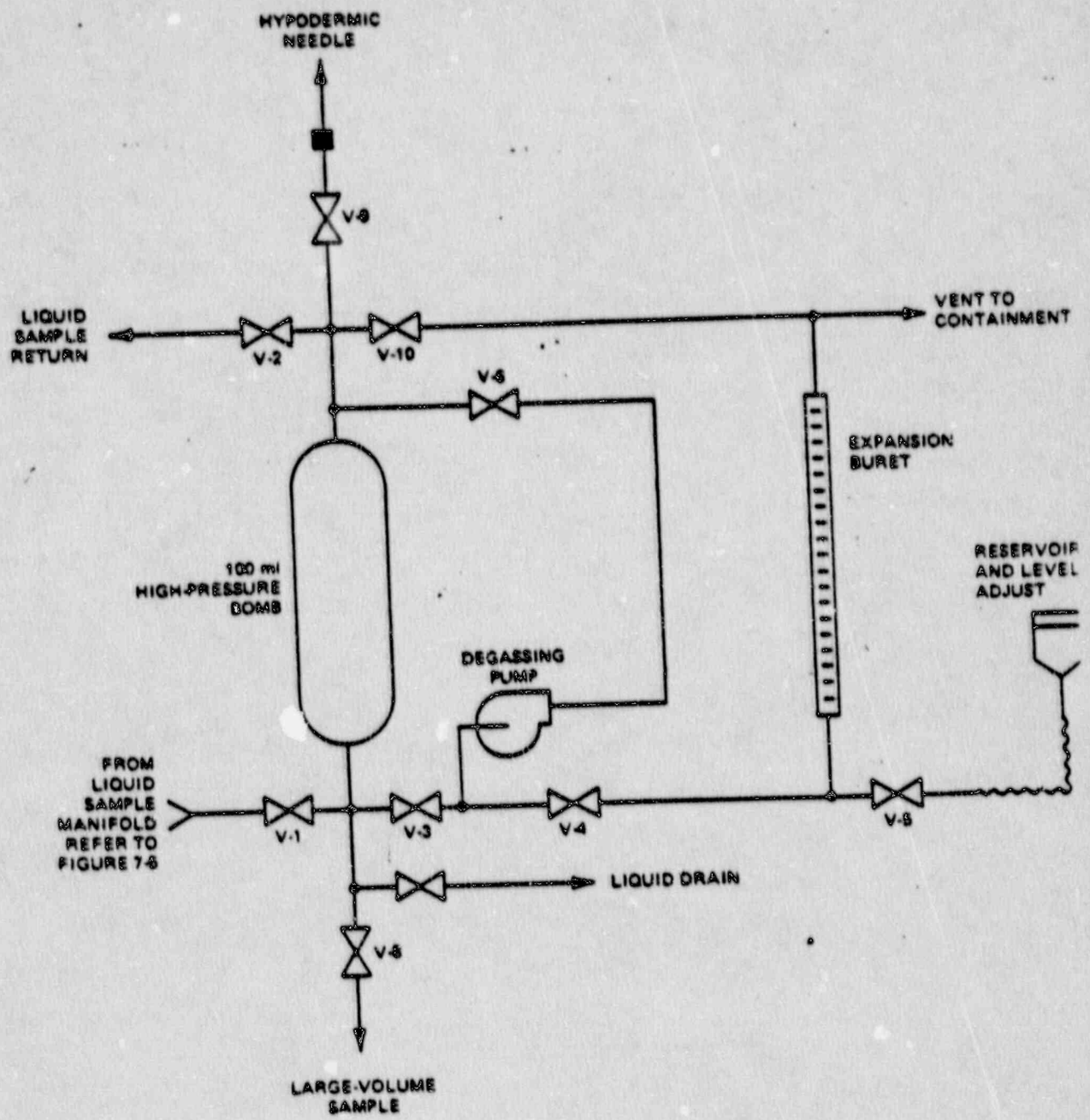
NOTES:

1. ALL ITEMS IN TRANSFER EQUIPMENT CUBICAL IN SAMPLE ROOM REFER TO FIGURE 7-4
2. CONSIDER THIS DIAGRAM AS MINIMUM REQUIREMENTS, AND CONCEPTUAL ONLY

OPERATION

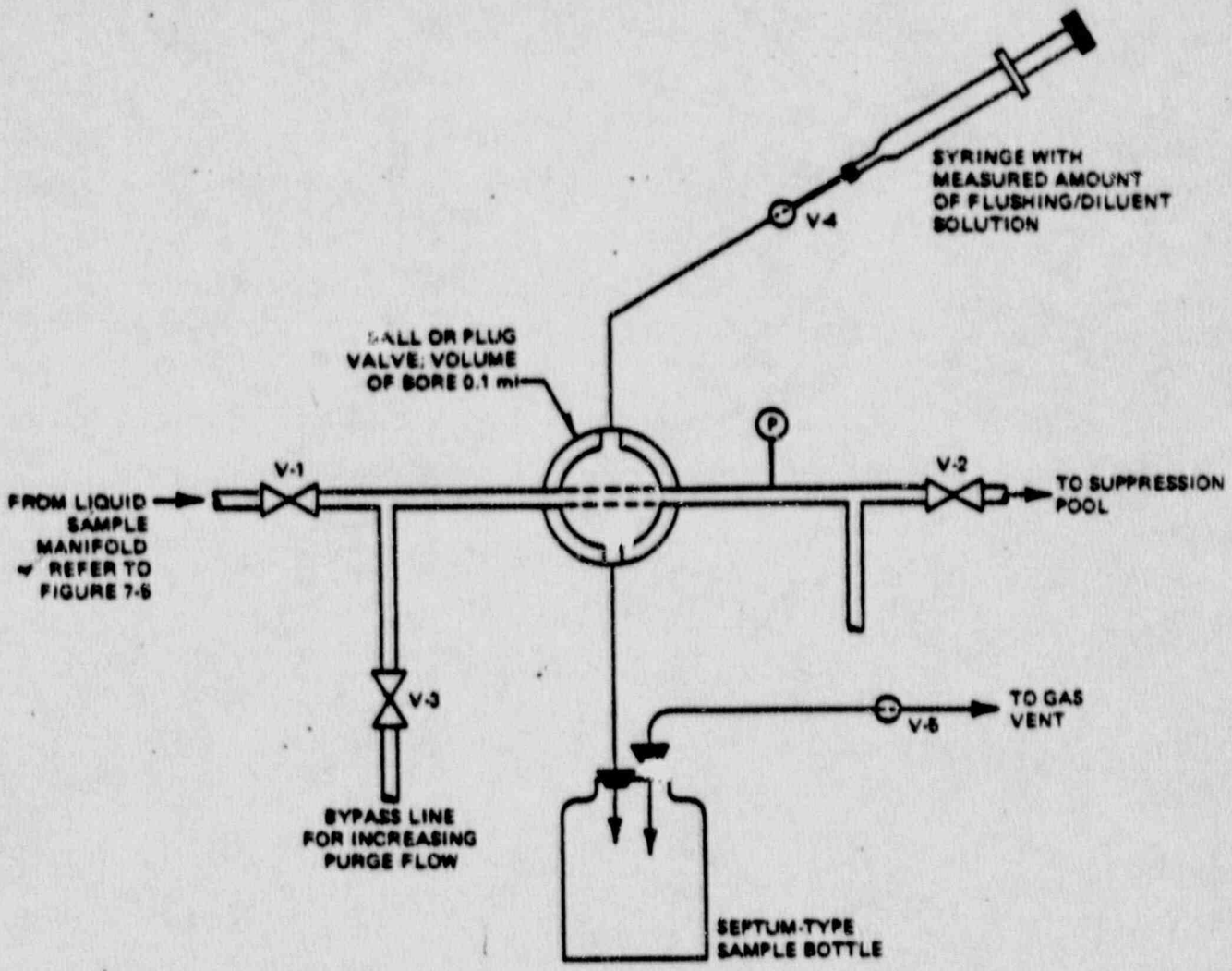
1. THE DIAGRAM IS FAIRLY SIMPLE TO FOLLOW. ALL SAMPLES COME INTO THE SAMPLE ROOM TO AN ISOLATION VALVE.
2. THE OPERATOR HAS THE OPTION AS TO WHAT SAMPLE HE NEEDS AND CAN READILY OBTAIN IT USING THE PROPER VALVE LINE UP
3. A CLEAN WATER SUPPLY IS AVAILABLE FOR FLUSHING

Figure 7-5. Proposed Low Pressure and Depressurized Sample Line Tie-In



SAMPLING AND PURGE FLOW IS THROUGH V-1 AND V-2 WITH ALL OTHER VALVES CLOSED. MOST OF THE PRESSURE DROP SHOULD BE TAKEN ACROSS V-2 IN ORDER TO RETAIN DISSOLVED GASSES. THE BOMB IS THEN ISOLATED AND EXPANDED INTO THE EXPANSION BURET THROUGH V-3 AND V-4. V-4 IS CLOSED AND V-6 AND V-3 ARE THEN OPENED AND THE PUMP RUN TO BREAK DOWN ANY GAS SUPERSATURATION. V-6 IS CLOSED AND THE SYSTEM AGAIN EXPANDED THROUGH V-4. THE RESERVOIR IS ON FLEXIBLE TUBING AND PROVIDES A MEANS OF ADJUSTING THE INITIAL EXPANSION BURET LEVEL.

Figure 7-6. Dissolved Gas and Large-Volume Liquid Sampler



SYMBOLS

- 1/16-in. STAINLESS STEEL TUBING
- LUER-LOK PLUG VALVE
- LUER-LOK FITTING
- HYPODERMIC NEEDLE

SAMPLING PROCEDURE

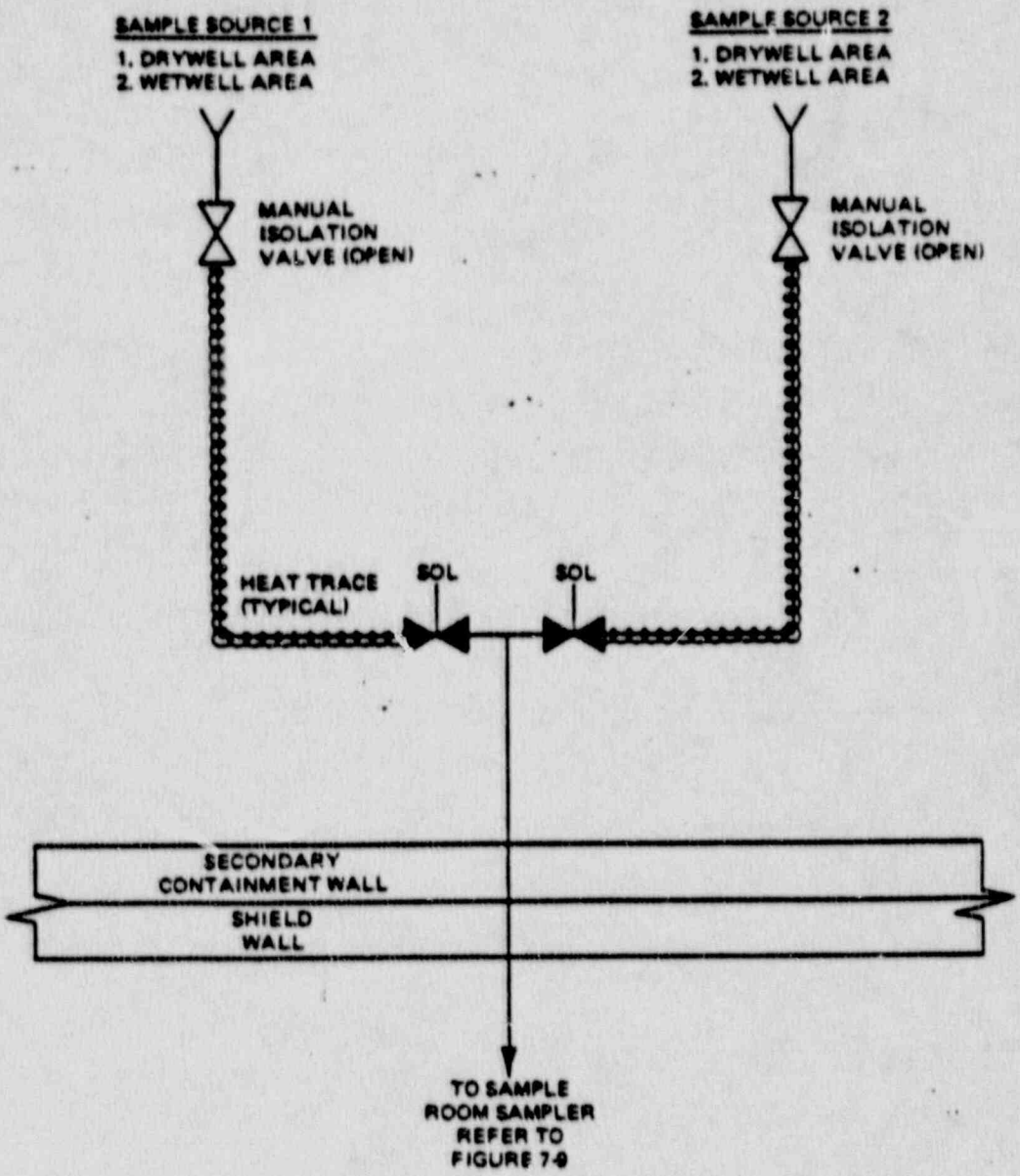
1. PREFILL SYRINGE WITH MEASURED AMOUNT OF DILUENT
2. MOUNT SYRINGE AND SAMPLE BOTTLE
3. ESTABLISH PURGE FLOW THROUGH V-1, V-2, AND V-3, THROTTLING AT V-2 TO MAINTAIN PRESSURE
4. CLOSE V-3 AND V-2, ROTATE BALL VALVE 90°
5. CLOSE V-1 AND OPEN V-5
6. OPEN V-4 AND FLUSH SAMPLE INTO SAMPLE BOTTLE

   NOTE: THE DISSOLVED GASES CAN BE INCLUDED IN SAMPLE BY CLOSING V-4 AND USING A PREVACUATED SAMPLE BOTTLE

NOTE:

IT IS REQUESTED THAT THIS SAMPLER BE HANDLED AS "PROPRIETARY INFORMATION"

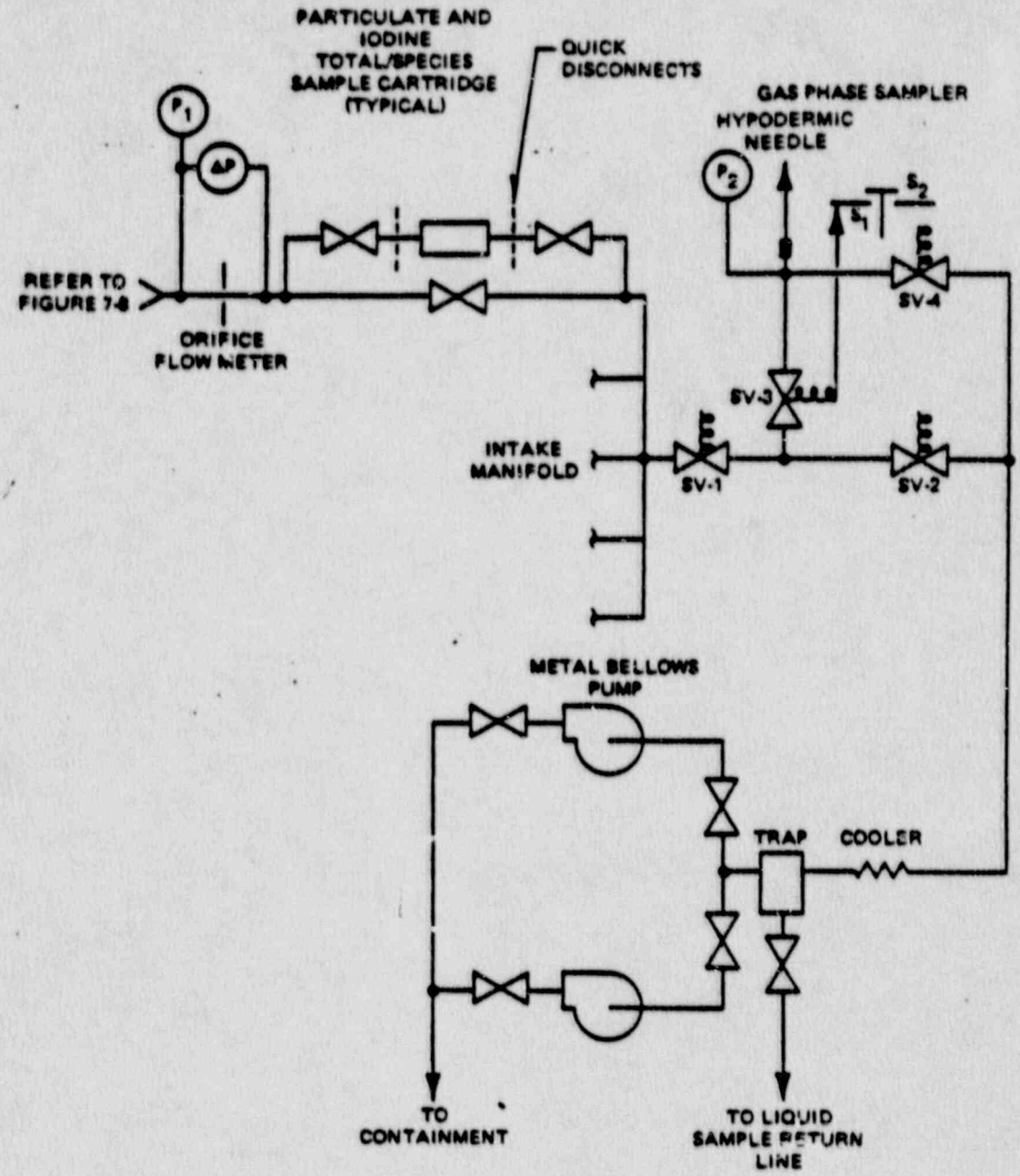
Figure 7-7. Small-Volume Liquid Sampler



NOTES:

1. THIS IS A TYPICAL SAMPLE LINE RUN FOR EACH OF THE TWO SAMPLE POINT LOCATIONS; HENCE, TWO SIMILAR SAMPLE LINE RUNS WOULD BE REQUIRED
2. IT MAY BE POSSIBLE TO RUN TWO LINES FROM EACH OF THE TWO SAMPLE AREA LOCATIONS, i.e., A DRYWELL WITH A WETWELL, IN THE SAME BUNDLE AND UNDER THE SAME HEAT TRACE, KEEPING REDUNDANCY IN MIND AT ALL TIMES
3. HEAT TRACING WILL BE USED ONLY DURING LOCA SAMPLING

Figure 7-8. Proposed Typical Gas Sample Line



	VALVE LINE UP FOR GAS SAMPLE			
	SV-1	SV-2	SV-3	SV-4
EVALUATE VIAL	C	C	C	O
SAMPLE PURGE	O	O	C	C
FILL VIAL	O	C	O	C
CLEAR LINES	O/C	O	C	C
IODINE/PARTICULATE SAMPLE	O	O	C	C

Figure 7-9. Atmospheric Sampler

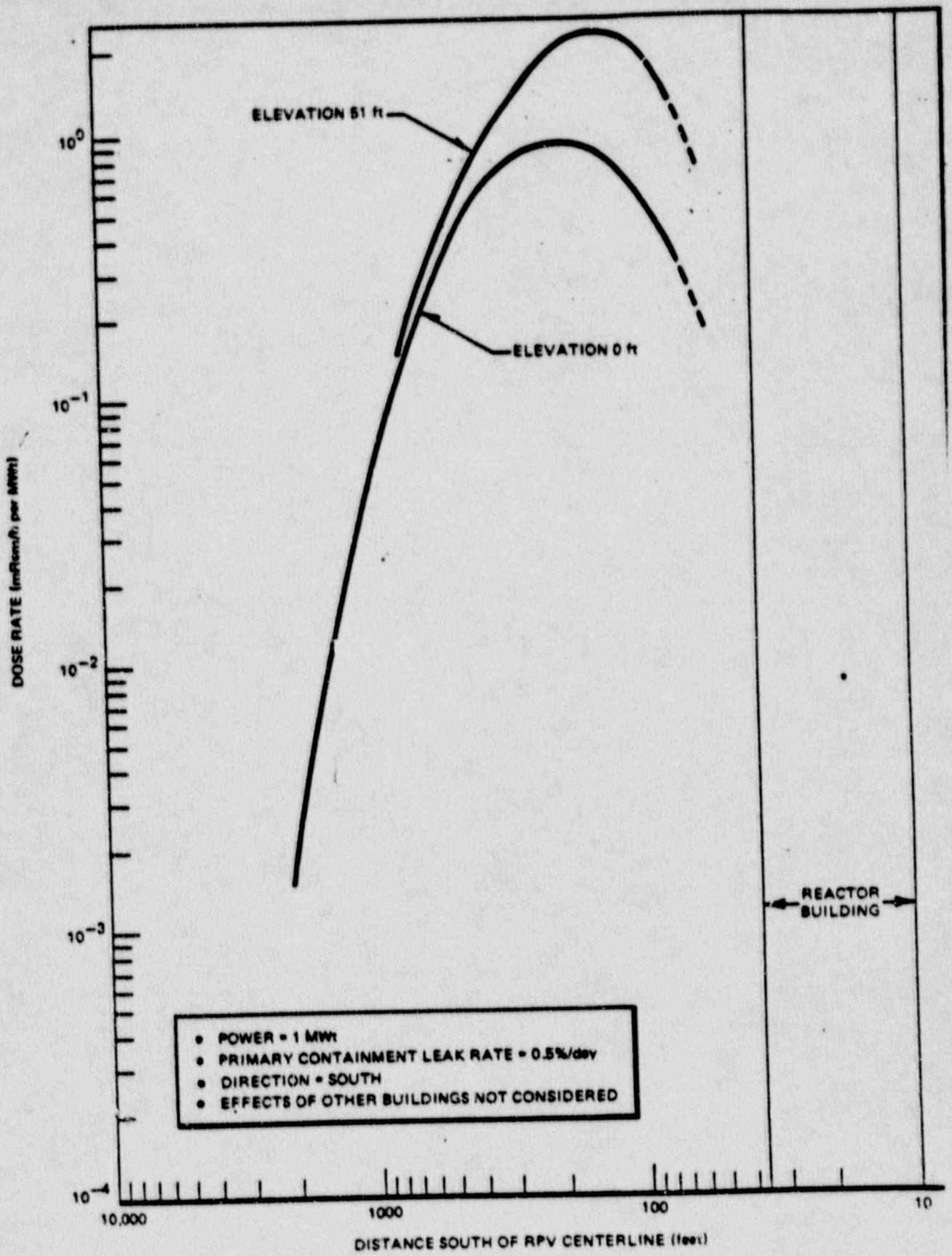
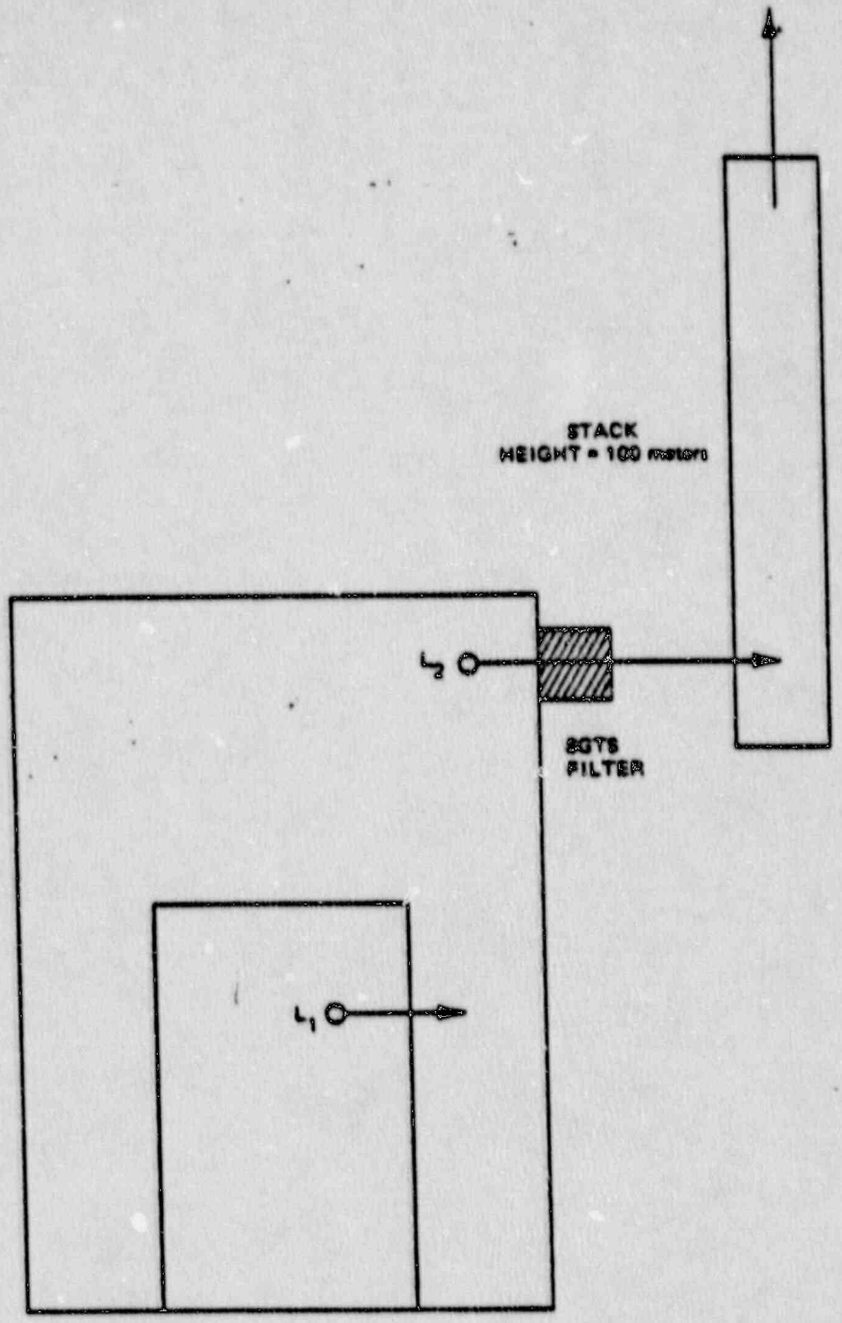


Figure 7-10. Direct Dose Rates From Fission Products in (Pilgrim) Reactor Building at 1 Day Post-LOCA



L_1 = LEAKAGE RATE FROM PRIMARY CONTAINMENT TO REACTOR BUILDING OR TO SGTS DEPENDING ON CASE EVALUATED (%/day)

L_2 = LEAKAGE RATE FROM REACTOR BUILDING TO ENVIORNMENT (%/day)

SGTS FILTER EFFICIENCY = 90% FOR IODINE

Figure 7-11. Plant Model of (Pilgrim) Radiation Transport Pathways

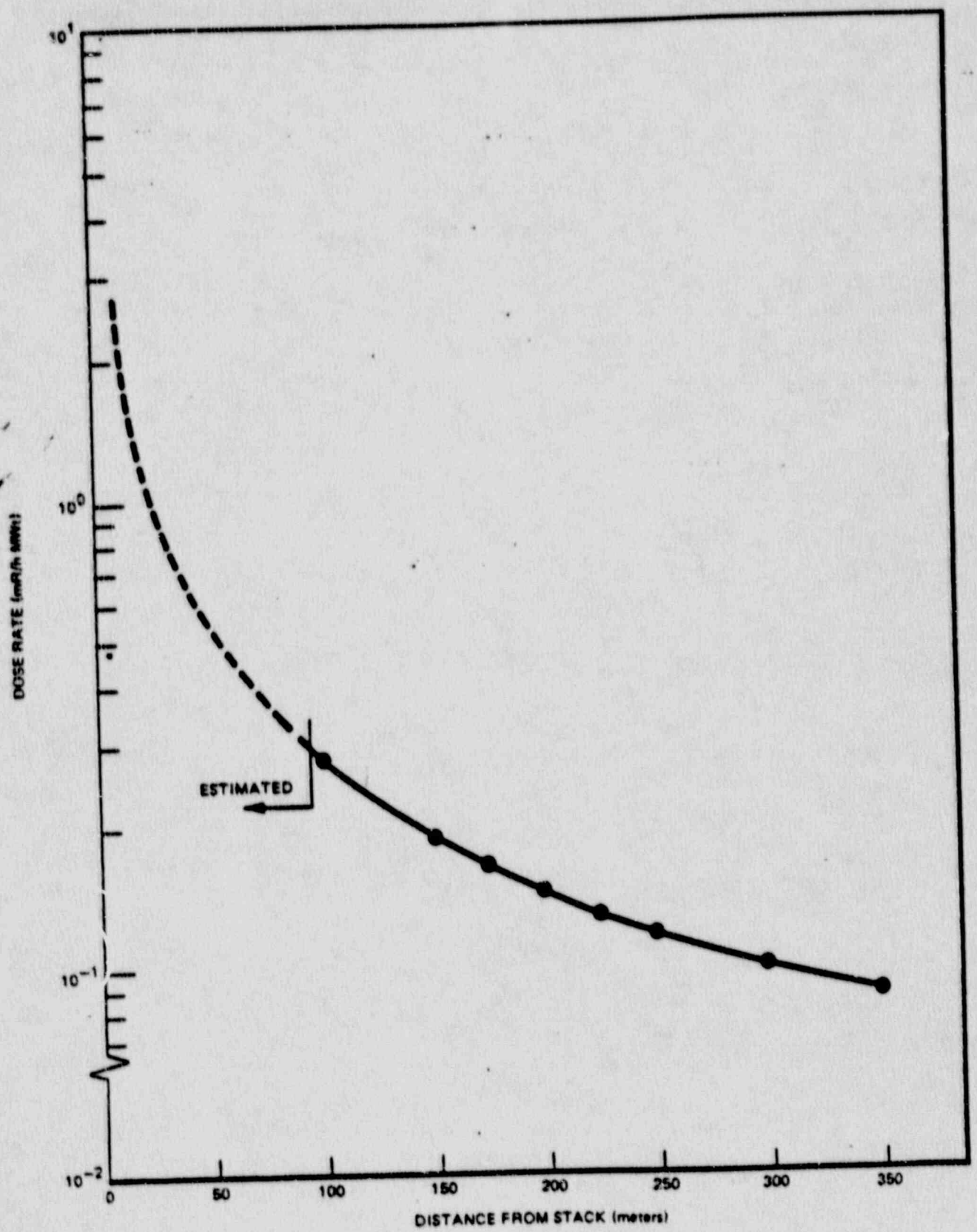


Figure 7-12. Whole Body Dose Rate Versus Ground Level Distance from Stack (Pilgrim) for Power = 1 MWt at 1 Hour Post-LOCA

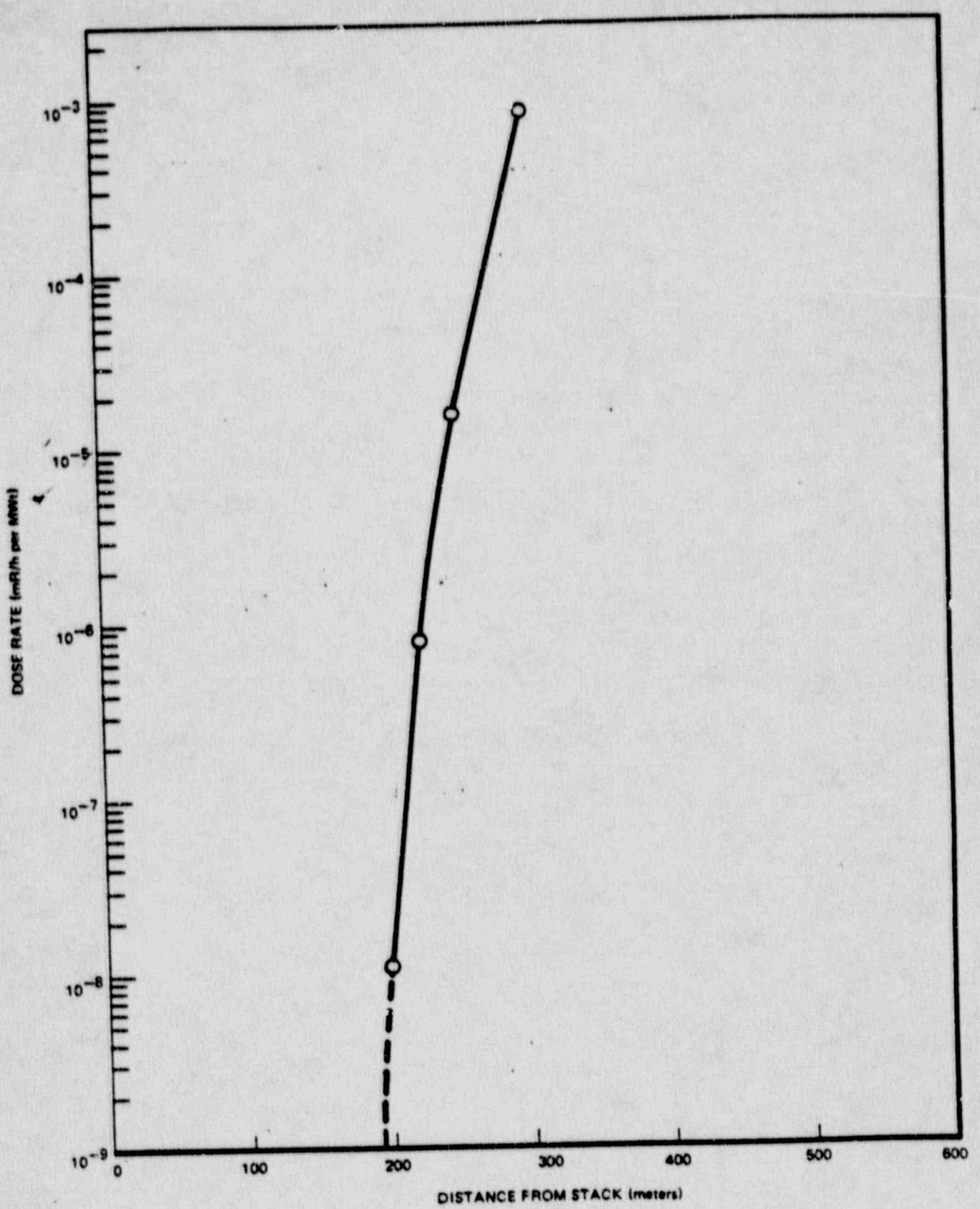


Figure 7-13. Inhalation Dose ates (Pilgrim) for Power = 1 MWt at 1 Hour Post-LOCA

8. SUPPLEMENTARY INFORMATION ON REACTOR COOLANT SYSTEM VENTING PER NUREG-0578 IMPLEMENTATION LETTER REQUIREMENT

This section addresses a number of issues in support of the adequacy of existing BWR systems to fulfill the intent of the NUREG-0578 implementation letter requirement for reactor coolant system venting.

8.1 BWR OWNERS' GROUP POSITION ISSUES

The BWR Owners' Group generic position issued October 17, 1979, (Appendix C) committed four actions for additional study in support of that position:

1. Whether it is desirable to interfere with emergency core cooling functions in order to prevent venting the reactor system;

2. Provision of plant procedures to govern the use of the relief valves for venting the reactor pressure vessel;

3. Tube-side venting of the isolation condenser, in plants so equipped;

4. The effect of noncondensibles in HPCI/RCIC turbine steam in plants so equipped.

These items are addressed in the following paragraphs.

As described in the Owners' Group position, a number of provisions for venting the reactor system are available in BWR's. Individual utilities have described their own provisions in their NUREG-0578 implementation commitment letters. The most effective of these are the safety/relief valves (S/RV). The High Pressure Coolant Injection System (HPCI) and the Reactor Core Isolation Cooling System (RCIC) also provide substantial venting via steam flow to their drive turbines.

Analyses of inventory-threatening events with very severe degradations of system performance have been conducted. These were submitted to the NRC

Bulletins and Orders Task Force on November 30, 1979. The fundamental conclusion of those studies relative to this dicussion was that if only one ECC system is injecting into the reactor, adequate core cooling will be provided (and the production of large quantities of hydrogen will be avoided).

The Small-Break Accident (SBA) guidelines emphasize the use of HPCI/RCIC as a first line of defense for inventory-threatening events which do not quickly depressurize the reactor. If these systems succeed in maintaining inventory, it is desirable to leave them in operation until a decision to proceed to cold shutdown is made. Thus the reactor will be vented via HPCI/RCIC turbine steam being discharged to the suppression pool. Termination of this mode of operattion (venting) would also terminate inventory makeup, and would require reactor depressurization via the S/RV's, which of course is another means of venting. Termination of HPCI/RCIC is undesirable once a safe, stable condition has been achieved, until a decision is made to proceed to cold shutdown. Therefore, terminating HPCI/RCIC is not an acceptable way to terminate venting.

If the HPCI/RCIC are unable to maintain inventory, the SBA guidelines call for use of the ADS or manual S/RV actuation to depressurize the reactor so that the low-pressure systems (condensate, LPCI, LPCS) can inject. The Emergency Procedure Guidelines currently in preparation contain the same instructions. Thus, the reactor would be vented via the S/RV's to the suppression pool for such an event. Failure to depressurize could lead to inadequate core cooling, as could repressurization above the shutoff heads of the low-pressure systems. Therefore, termination of this mode of venting is also an undesirable action, and it is not recommended.

If HPCI/RCIC and safety/relief valves are operable, they should therefore be devoted to their normal core cooling functions and be allowed to vent the reactor; it is more desirable to establish and maintain core cooling than to avoid venting. If the HPCI/RCIC and safety/relief valves are not operable (a very degraded and extremely unlikely case), another means of venting the reactor must be used. It is emphasized, however, that such venting is in the interest of establishing core cooling and therefore should not be avoided.

It is thus concluded that there is no reason to interfere with ECCS operation to avoid venting. It is further concluded that the Emergency Procedure Guidelines, by correctly specifying operator actions for HPCI, RCIC, and S/RV operation, also correctly specify operator actions to vent the reactor.

In plants equipped with isolation condensers, tube-side venting is possible to purge noncondensibles from the high point of the system. Should there be a large production of noncondensible gases in the reactor system, it may be deemed desirable to vent the tube side of the isolation condenser to ensure its effectiveness. Per the analyses of degraded cooling referred to above, this circumstance could arise only if no coolant injection had occurred for an extended period of time; and there would be a need to vent the isolation condenser only if it were the only available means to depressurize the reactor system. The need to do so is therefore quite unlikely, but if necessary it could be done. In plants whose tube-side venting is directly to the primary containment, the process would be straightforward. In plants whose tube-side venting is to the main condenser, such venting would be conceptually similar to reopening a main steam isolation valve to depressurize the reactor; both are possible, but should only be used if all other approaches have failed. This is because the presence of a large amount of hydrogen implies the release of fission products from the fuel which should not be transported to the main condenser.

The effect of noncondensibles in the HPCI/RCIC turbine steam must be considered for three cases:

1. Continuous evolution of noncondensibles due to radiolysis;

2. Quasi-continuous evolution of noncondensibles due to core heatup;

3. The presence of a quantity of noncondensibles in the reactor at the time of HPCI/RCIC startup.

Case 1 is a normal operating mode for HPCI and RCIC and is of no concern.

For Case 2, the core must be uncovered. However, relying again on the degraded cooling analyses, core uncovery will be prevented (or cladding heatup into the rapid oxidation range will be prevented) if only one ECC system is operating. For a small pipe break or a loss of feedwater, which would allow the reactor to remain at pressure, the HPCI and/or RCIC pumps would maintain inventory and there would be no substantial hydrogen production. If HPCI/RCIC could not maintain inventory, the reactor would be automatically or manually depressurized via safety/relief valves (or via the break, for larger breaks). Depressurization causes the HPCI and RCIC to be shut off, so the presence of noncondensibles would be no longer an issue.

The performance of HPCI and RCIC under Case 3 is of concern only if there has been a very substantial production of hydrogen due to core uncovery and there is a need to start the HPCI or RCIC. This is an unlikely and intolerable circumstance, because it could arise only if the core were allowed to remain uncovered for a long period with the reactor at high pressure. Automatic depressurization system operation and very explicit instructions in current operating procedures and the operator guidelines are intended to preclude this; if the level has fallen with the reactor at high pressure, it would be depressurized either automatically or manually to permit low pressure injection independent of HPCI/RCIC performance state. Nevertheless, the subject of HPCI operability and performance with a large volume of noncondensibles in the steam supply has been studied. The results of the study are presented in Appendix D.

8.2 REQUIREMENTS OF PWR VENT SYSTEMS

The October 30, 1979, letter of H. R. Denton (NRC) to all operating nuclear power plants contains a clarification stating that the BWR venting systems (both reactor and isolation condenser) should meet the same requirements as the PWR venting systems. The following presents generic BWR capabilities for reactor venting via safety/relief valves by comparison with the PWR requirements in the October 30 clarification letter.*

*Each utility must adapt this discussion plant-specifically. Isolation condensers should also be similarly addressed.

- The reactor vessel head can be vented near the top via the S/RV's.*

- The size of the vents is said in the clarification to be "not a critical issue." In the BWR the size of the S/RV's is, of course, determined by normal operation and safety considerations, and their capacity is substantial.

- The S/RV's are not smaller than the definition of a small LOCA; however, they discharge to the suppression pool. Inadvertent actuation is a design-basis event and a demonstrated controllable transient. A block valve is not desirable, as discussed in Appendix A.

- An indication of valve position is provided in the control room. This indication is being upgraded in accordance with NUREG-0578 Requirement 2.1.3A.

- Each valve is remotely operable from the control room.

- Each valve is seismically qualified.

- The S/RV's are safety grade per the requirements accepted when the plant was licensed.

- Block valves are not required, so block valve qualifications are not applicable.

- Inadvertent actuation is of course undesirable, but since the S/RV's serve an important protective function, no steps such as removal of power during normal operation should be taken to prevent inadvertent actuation.

- The S/RV's vent to the containment suppression pool, where discharged steam is condensed without causing a rapid containment pressure/temperature transient.

*Big Rock Point and Dresden I should mention steam drum.

- As stated above, inadvertent actuation is a design-basis event. Temperature sensors in the S/RV discharge lines detect leakage.

- No new 10CFR50.46 conformance calculations are required, since systems in the plant's original design and covered by the original design bases are used.

9. INFORMATION REQUIRED IN TECHNICAL SUPPORT CENTER

The Owners' Group authorization for NUREG-0578 support included a study of the information to be provided in the on-site Technical Support Center. Because of the evolving nature of nuclear power plant control room instrumentation and data processing needs, in response to USNRC positions which have been developing since the issuance of NUREG-0578, the Technical Support Center work has been incorporated into a larger study of control room functional requirements sponsored by the Owners' Group. Formal reporting of the requirements awaits completion of the larger study.

APPENDIX A

CONCERNS RELATED TO PRIMARY CONTAINMENT ISOLATION LOGIC

1. Concern

RWCU suction and return line isolation valves are currently provided with only one containment isolation signal in addition to the process isolation signals.

Response

RWCU system intentionally remains active to keep cleansing the vessel during the situation where high drywell pressure exists because the drywell coolers are not operating or a small break LOCA occurs. The small break LOCA could also re[illegible] in a high drywell pressure condition without reaching a low reactor ves[illegible] level condition. It is desirable to keep the RWCU operating under these conditions.

2. Concern

HPCI and RCIC steam exhaust line drain isolation valves are presently closed only upon trip of their respective turbines which respond to process signals, not containment isolation signals.

Response

These systems are used to mitigate the consequences of a LOCA and thus it would not be prudent for these valves to close upon sensing a LOCA condition. This is also true of other valves in the HPCI and RCIC systems. The lines connecting the barometric condenser to the Radwaste System could be provided with diverse and separated isolation signals, however.

3. Concern

LPCI and core spray test valves are not provided with automatic isolation.

Response

Since these 1-inch valves are normally closed, fail-closed valves, and are only operated to equalize pressures to permit testing the check valves, no other isolation is considered necessary. In addition, the valves are only opened by an operator holding a momentary pushbutton switch in the open position.

4. Concern

Reactor Building (RB) Cooling Water/Drywell (DW) Chilled Water valves are not isolated.

Response

These valves are in closed systems which are not open to either the reactor or the drywell. In the event of an LOCA, failure of the RB Cooling System piping or DW Chilled Water System piping would have to occur to allow any communication between the reactor or the drywell and the area outside the containment. Therefore, no automatic isolation is required.

5. Concern

The TIP drive line isolation valves are not provided with direct, automatic isolation signals.

Response

Since the TIP lines are considered instrument lines, the normal provisions of 10CFR50 Criterion 56 are not applicable. The TIP's are normally withdrawn and the ball valves closed. Should an event occur while the TIP is inserted into the core, and should the TIP fail to retract, the shear valve can be manually operated to provide the necessary containment isolation.

6. Concern

The CRD insert and withdraw lines are not designed to isolate after an LOCA.

Response

The CRD insert and withdraw lines are not part of the reactor coolant pressure boundary since they do not directly communicate with the reactor coolant. The classification of these lines is quality group B and they are therefore designed in accordance with ASME Section III - Code Class 2. The basis to which the CRD insert and withdraw lines are designed is commensurate with the safety importance of maintaining pressure integrity of these lines.

In the design of the CRD system, it has been accepted practice to minimize the number of valves for isolation purposes as this introduces possible failure mechanisms into the shutdown (scram) function. The control rod drive insert and withdraw lines can be isolated by the solenoid valves outside the primary containment. These lines are small, and terminate in a system that is designed to prevent leakage. Solenoid valves normally are closed but open on rod movement and during reactor scram. In addition, a ball check valve located in the control rod drive flange housing automatically seals the insert line in the event of a break. Primary containment overpressurization will not result from a line break in the primary containment since these lines contain small volumes at low energy levels.

7. Concern

The butterfly valves of the reactor building to torus vacuum breaker are not treated as safeguard equipment.

Response

These valves perform the dual safety function of containment isolation and torus vacuum relief. They should be separated in order to maintain the intended redundant features.

8. Concern

The isolation valves in the vacuum breaker lines which connect to the HPCI and RCIC turbine exhaust lines are not provided with diverse isolation signals.

Response

These valves presently isolate only on high drywell pressure besides the process signals. The normal diverse isolation signal is low water level; however, these valves are required to be open when the HPCI and RCIC systems are in use which would be the case for low reactor vessel water level.

9. Concern

Isolation of the standby liquid control system injection line is provided by only two simple check valves.

Response

Check valves are used for isolation in this instance so that standby liquid control injection will be possible even if the reactor is isolated because of an accident. Check valves are considered an adequate isolation means and no other isolation is required besides the check valves and the normally closed explosive valves upstream of the check valves. It is recognized that the check valve isolation scheme used on older plants does not meet the present criteria specified in 10CFR50, criterion 55. It is, however, felt that the inboard and outboard check valves along with the protection supplied by the normally closed explosive valves, provide adequate containment isolation.

10. Concern

Instrument lines connected to the primary containment are isolated only by manual, local shutoff valves.

Response

Automatic isolation of the instrument lines would, in effect, shut down all plant instrumentation at a time when it would be most needed. In addition, these lines are small which limits the communication to the reactor building. In order to comply with 10CFR50 criterion 56, these lines could be fixed with one remote manually operated isolation valve per line.

11. Concern

No automatic provision exists for opening the RHR pump suppression pool suction valves if they are closed for shutdown cooling.

Response

These valves are manually controlled with keylock switches. The valves are normally locked open, ready for LPCI operation, and are only closed when required for shutdown cooling. This is an intentional, deliberate action and is only performed when the reactor is shut down, depressurized and cooled down. The LPCI system is not needed under these conditions. Therefore General Electric feels that no action is required for this situation, and that adequate safeguards exist to ensure that the valves are in proper LPCI alignment when needed.

12. Concern

In SIL 131, dated 3/31/75, it was recommended to delete the high drywell pressure isolation signal for the RHR shutdown cooling suction and return line isolation valves.

Response

So as not to defeat the diversity of isolation signals which now exists, it might be advisable to retain the diverse isolation signals and utilize a keylocked "override" switch if it is desired to place the RHR system in shutdown cooling while a high drywell pressure condition exists.

APPENDIX B

RADIATION SOURCE TERM INFORMATION PER NUREG-0578 REQUIREMENT 2.1.6B

Contents (see also Section 6)

THE ISOTOPES ARE FRACTIONATED AT SHUTDOWN BY THE FOLLOWING PERCENTS

ZN 72	1.00	GA 72	1.00	GE 72	1.00	ZN 73	1.00	GA 73	1.00	GE 73	1.00	GA 74	1.00	GE 74	1.00	GA 75	1.00						
GE• 75	1.00	GE 75	1.00	AS 75	1.00	GA 76	1.00	GE 76	1.00	AS 76	1.00	SE 76	1.00	GA 77	1.00	GE• 77	1.00						
GE 77	1.00	AS 77	1.00	SE• 77	1.00	SE 77	1.00	GE 78	1.00	AS 78	1.00	SE 78	1.00	AS 79	1.00	SE• 79	1.00						
SE 79	1.00	BR 79	50.00	AS 80	1.00	SE 80	1.00	BR• 80	50.00	BR 80	50.00	KR 80	100.00	AS 81	1.00	SE• 81	1.00						
SE 81	1.00	BR 81	50.00	KR 81	100.00	SE 82	1.00	BR• 82	50.00	BR 82	50.00	KR 82	100.00	SE• 83	1.00	SE 83	1.00						
BR 83	50.00	KR• 83	100.00	KR 83	100.00	SE 84	1.00	BR• 84	50.00	BR 84	50.00	KR 84	100.00	AS 85	1.00	SE 85	1.00						
BR 85	50.00	KR• 85	100.00	KR 85	100.00	RB 85	1.00	KR 86	100.00	RB• 86	1.00	RB 86	1.00	SR 86	1.00	SE 87	1.00						
BR 87	50.00	KR 87	100.00	RB 87	1.00	BR 88	50.00	KR 88	100.00	RB 88	1.00	SR 88	1.00	BR 89	50.00	KR 89	100.00						
RB 89	1.00	SR 89	1.00	Y• 89	1.00	Y 89	1.00	BR 90	50.00	KR 90	100.00	RB 90	1.00	SR 90	1.00	Y 90	1.00						
ZR 90	1.00	KR 91	100.00	RB 91	1.00	SR 91	1.00	Y• 91	1.00	Y 91	1.00	ZR 91	1.00	KR 92	100.00	RB 92	1.00						
SR 92	1.00	Y 92	1.00	ZR 92	1.00	KR 93	100.00	RB 93	1.00	SR 93	1.00	Y 93	1.00	ZR 93	1.00	RB• 93	1.00						
RB 93	1.00	KR 94	100.00	RB 94	1.00	SR 94	1.00	Y 94	1.00	ZR 94	1.00	RB• 94	1.00	RB 94	1.00	RB 94	1.00						
KR 95	100.00	RB 95	1.00	SR 95	1.00	Y 95	1.00	ZR 95	1.00	RB• 95	1.00	RB 95	1.00	RB 95	1.00	Y 95	1.00						
ZR 96	1.00	RB 96	1.00	RB 96	1.00	KR 97	100.00	RB 97	1.00	SR 97	1.00	Y 97	1.00	ZR 97	1.00	RB• 97	1.00						
RB 97	1.00	RB 97	1.00	ZR 98	1.00	RB• 98	1.00	RB 98	1.00	RB 98	1.00	TC 98	1.00	RU 98	1.00	ZR 98	1.00						
RB 99	1.00	RB 99	1.00	TC• 99	1.00	TC 99	1.00	RU 99	1.00	RB 100	1.00	RB 100	1.00	TC 100	1.00	RU 100	1.00						
RB 101	1.00	RB 101	1.00	TC 101	1.00	RU 101	1.00	RB 102	1.00	TC 102	1.00	RU 102	1.00	RB 103	1.00	TC 103	1.00						
RU 103	1.00	RH• 103	1.00	RH 103	1.00	RB 104	1.00	TC 104	1.00	RU 104	1.00	RH• 104	1.00	RH 104	1.00	PD 104	1.00						
RB 105	1.00	TC 105	1.00	RU 105	1.00	RH• 105	1.00	RH 105	1.00	PD 105	1.00	TC 106	1.00	RU 106	1.00	RH• 106	1.00						
RH 106	1.00	PD 106	1.00	TC 107	1.00	RU 107	1.00	RH 107	1.00	PD 107	1.00	AG 107	1.00	TC 108	1.00	RU 108	1.00						
RH 108	1.00	PD 108	1.00	AG 108	1.00	CD 108	1.00	RH 109	1.00	PD• 109	1.00	PD 109	1.00	AG• 109	1.00	AG 109	1.00						
CD 109	1.00	RH 110	1.00	PD 110	1.00	AG• 110	1.00	AG 110	1.00	CD 110	1.00	RH 111	1.00	PD• 111	1.00	PD 111	1.00						
AG• 111	1.00	AG 111	1.00	CD• 111	1.00	CD 111	1.00	PD 112	1.00	AG 112	1.00	CD 112	1.00	PD 113	1.00	AG• 113	1.00						
CD• 113	1.00	CD 113	1.00	PD 114	1.00	AG 114	1.00	CD 114	1.00	IN 114	1.00	SN 114	1.00	PD 116	1.00	AG• 116	1.00						
AG 115	1.00	CD• 115	1.00	CD 115	1.00	IN• 115	1.00	IN 115	1.00	SN 115	1.00	PD 116	1.00	AG 116	1.00	CD 116	1.00						
IN• 116	1.00	IN 116	1.00	SN 116	1.00	PD 117	1.00	AG 117	1.00	CD• 117	1.00	CD 117	1.00	IN• 117	1.00	IN 117	1.00						
SN• 117	1.00	SN 117	1.00	AG 118	1.00	CD 118	1.00	IN 118	1.00	SN 118	1.00	CD 119	1.00	IN• 119	1.00	IN 119	1.00						
SN• 119	1.00	SN 119	1.00	CD 120	1.00	IN 120	1.00	SN 120	1.00	CD 121	1.00	IN• 121	1.00	IN 121	1.00	SN• 121	1.00						
SN 121	1.00	SB 121	1.00	SN 122	1.00	SB• 122	1.00	SB 122	1.00	TE 122	1.00	IN 123	1.00	SN• 123	1.00	SN 123	1.00						
SB 123	1.00	SN 124	1.00	SB• 124	1.00	SB 124	1.00	TE 124	1.00	SN• 125	1.00	SN 125	1.00	SB 125	1.00	TE• 125	1.00						
TE 125	1.00	SN 126	1.00	SB• 126	1.00	SB 126	1.00	TE 126	1.00	SN 127	1.00	SB 127	1.00	TE• 127	1.00	TE 127	1.00						
I 127	50.00	SN 128	1.00	SB• 128	1.00	SB 128	1.00	TE 128	1.00	I 128	50.00	XE 128	100.00	SN 129	1.00	SB 129	1.00						
TE• 129	1.00	TE 129	1.00	I 129	50.00	XE 129	100.00	SN 130	1.00	SB 130	1.00	TE 130	1.00	I 130	50.00	XE 130	100.00						
SN 131	1.00	SB 131	1.00	TE• 131	1.00	TE 131	1.00	I 131	50.00	XE• 131	100.00	XE 131	100.00	SN 132	1.00	SB 132	1.00						
TE 132	1.00	I 132	50.00	XE 132	100.00	SN 133	1.00	SB 133	1.00	TE• 133	1.00	TE 133	1.00	I 133	50.00	XE• 133	100.00						
XE 133	100.00	CS 133	1.00	SB 134	1.00	TE 134	1.00	I 134	50.00	XE 134	100.00	CS• 134	1.00	CS 134	1.00	BA 134	1.00						
SB 135	1.00	TE 135	1.00	I 135	50.00	XE• 135	100.00	XE 135	100.00	CS 135	1.00	BA• 135	1.00	BA 135	1.00	I 136	50.00						
XE 136	100.00	CS 136	1.00	BA 136	1.00	I 137	50.00	XE 137	100.00	CS 137	1.00	BA• 137	1.00	BA 137	1.00	I 139	50.00						
XE 138	100.00	CS 138	1.00	BA 138	1.00	I 139	50.00	XE 139	100.00	CS 139	1.00	BA 139	1.00	LA 139	1.00	XE 140	100.00						
CS 140	1.00	BA 140	1.00	LA 140	1.00	CE 140	1.00	XE 141	100.00	CS 141	1.00	BA 141	1.00	LA 141	1.00	CE 141	1.00						
PR 141	1.00	XE 142	100.00	CS 142	1.00	BA 142	1.00	LA 142	1.00	CE 142	1.00	PR 142	1.00	ND 142	1.00	XE 143	100.00						
CS 143	1.00	BA 143	1.00	LA 143	1.00	CE 143	1.00	PR 143	1.00	ND 143	1.00	XE 144	100.00	CS 144	1.00	BA 144	1.00						
LA 144	1.00	CE 144	1.00	PR 144	1.00	ND 144	1.00	CE 145	1.00	PR 145	1.00	ND 145	1.00	CE 146	1.00	PR 146	1.00						
ND 146	1.00	CE 147	1.00	PR 147	1.00	ND 147	1.00	PM 147	1.00	SM 147	1.00	CE 148	1.00	PR 148	1.00	ND 148	1.00						
PM• 148	1.00	PM 148	1.00	SM 148	1.00	ND 149	1.00	PM 149	1.00	SM 149	1.00	ND 150	1.00	PR 150	1.00	SM 150	1.00						
ND 151	1.00	PM 151	1.00	SM 151	1.00	EU 151	1.00	PM 152	1.00	SM 152	1.00	SM 153	1.00	EU 153	1.00	PM 154	1.00						
SM 154	1.00	EU 154	1.00	GD 154	1.00	SM 155	1.00	EU 155	1.00	GD 155	1.00	EU [illegible]	[illegible]	GD 156	1.00	EU 157	1.00						
GD 157	1.00	EU 158	1.00	GD 158	1.00	EU 159	1.00	GD 159	1.00	TB 159	1.00	[illegible] 160	[illegible]	GD 160	1.00	TB 160	1.00						
DY 160	1.00	GD 161	1.00	TB 161	1.00	DY 161	1.00	GD 162	1.00	TB 162	1.00	DY 162	1.00	TB 163	[illegible]								
TB 164	1.00	DY 164	1.00	DY• 165	1.00	DY 165	1.00	HO 165	1.00	DY 166	1.00	HO• 166	[illegible]										
U 239	1.00	NP239	1.00																				

ND 146																				
PM*148					148	1.00	ND 149	1.00	PM 149	1.00	SM 149	1.00	ND 150	1.00	PM 150	1.00	SM 150	1.00		
ND 151	1.00	PM 151	1.00	SM 151	1.00	EU 151	1.00	PM 152	1.00	SM 152	1.00	SM 153	1.00	EU 153	1.00	PM 154	1.00			
SM 154	1	EU 154	1.00	GD 154	1.00	SM 155	1.00	EU 155	00	GD 155	1.00	EU 156	1.00	GD 156	1.00	EU 157	1.00			
GD 157	1	EU 158	1.00	GD 158	1.00	EU 159	1.00	GD 159	00	TB 159	1.00	EU 160	1.00	GD 160	1.00	TB 1[illegible]	1.00			
DY 160	1.00	GD 161	1.00	TB 161	1.00	DY 161	1.00	GD 162	..00	TB 162	1.00	DY 162	1.00	TB 163	1.00	DY 1[illegible]	.00			
TB 164	1.00	DY 164	1.00	DY*165	1.00	DY 165	1.00	HO 165	1.00	DY 166	1.00	HO*166	1.00	HO 166	1.00	ER 166	1.00			
U 239	1.00	NP239	1.00																	

DECAY POINTS - SECONDS

6.000E 01	1.200E 02	3.000E 02	6.000E 02	1.800E 03	3.600E 03	7.200E 03	1.800E 04	2.880E 04

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 30 ZN

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	8.0 HR.
ZN 72	1.048E-03	1.048E-03	1.047E-03	1.047E-03	1.045E-03	1.040E-03	1.032E-03	1.017E-03	9.727E-04	9.302E-04
ZN 73	1.774E-02	1.254E-02	8.871E-03	3.137E-03	5.546E-04	5.419E-07	1.655E-11	1.545E-20	0.	0.
TOTAL	1.879E-02	1.359E-02	9.918E-03	4.183E-03	1.600E-03	1.041E-03	1.032E-03	1.017E-03	9.727E-04	9.302E-04

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

ZN 72	1.555E-11	1.555E-11	1.554E-11	1.553E-11	1.551E-11	1.544E-11	1.532E-11	1.509E-11	1.443E-11	1.380E-11
ZN 73	1.887E-13	1.334E-13	9.435E-14	3.336E-14	5.898E-15	5.764E-18	1.761E-22	1.643E-31	0.	0.
TOTAL	1.574E-11	1.568E-11	1.564E-11	1.557E-11	1.552E-11	1.544E-11	1.532E-11	1.509E-11	1.443E-11	1.380E-11

BWRS 230 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 91 GA

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	8.0 HR.
GA 72	1.048E-03	1.048E-03	1.048E-03	1.048E-03	1.048E-03	1.048E-03	1.048E-03	1.047E-03	1.039E-03	1.027E-03
GA 73	1.774E-02	1.773E-02	1.772E-02	1.763E-02	1.743E-02	1.662E-02	1.548E-02	1.338E-02	8.676E-03	8.927E-03
GA 74	4.864E-02	4.1[illegible]E-02	3.847E-02	2.956E-02	1.906E-02	3.297E-03	2.371E-04	1.226E-06	1.607E-13	2.348E-20
GA 75	1.133E-01	7.067E-02	5.462E-02	1.826E-02	2.047E-03	1.994E-06	3.507E-11	1.080E-20	0.	0.
GA 76	2.650E-01	7.222E-02	1.960E-02	3.880E-04	5.977E-07	3.039E-10	3.489E-38	0.	0.	0.
GA 77	5.258E-01	4.550E-02	3.930E-03	2.553E-06	1.739E-11	6.883E-33	0.	0.	0.	0.
TOTAL	9.888E-01	2.572E-01	1.333E-01	6.602E-02	4.050E-02	2.097E-02	1.673E-02	1.443E-02	9.717E-03	8.854E-03

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

GA 72	4.718E-12	4.718E-12	4.718E-12	4.718E-12	4.718E-12	4.714E-12	4.713E-12	4.709E-12	4.870E-12	4.821E-12
GA 73	2.717E-11	2.716E-11	2.713E-11	2.700E-11	2.670E-11	2.545E-11	2.368E-11	2.080E-11	1.329E-11	8.817E-12
GA 74	1.926E-12	1.764E-12	1.516E-12	1.242E-12	8.009E-13	1.385E-13	9.961E-18	5.152E-17	7.120E-24	9.863E-31
GA 75	1.143E-12	7.946E-13	5.516E-13	1.844E-13	2.077E-14	2.014E-17	3.543E-22	1.090E-31	0.	0.
GA 76	7.513E-13	2.047E-13	5.576E-14	1.120E-16	1.694E-18	8.612E-30	0.	0.	0.	0.
GA 77	7.920E-13	6.054E-14	5.932E-16	9.849E-18	1.068E-23	0.	0.	0.	0.	0.
TOTAL	9.650E-11	3.470E-11	3.400E-11	3.314E-11	3.228E-11	3.030E-11	2.840E-11	2.820E-11	1.797E-11	1.324E-11

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 32 GE

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	8.0 HR.
GE 72	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
GE 73	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
GE 74	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
GE* 75	[illegible]83E-03	4.062E-03	3.196E-03	1.220E-03	2.031E-04	1.377E-07	2.423E-12	7.501E-22	0.	0.
GE 75	1.134E-01	1.132E-01	1.128E-01	1.108E-01	1.065E-01	8.960E-02	6.909E-02	4.108E-02	8.634E-03	1.818E-03
GE 76	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
GE* 77	4.628E-01	2.942E-01	1.431E-01	1.434E-02	3.046E-04	6.196E-11	5.684E-21	0.	0.	0.
GE 77	3.296E-01	3.294E-01	3.291E-01	3.282E-01	3.265E-01	3.199E-01	3.102E-01	2.918E-01	2.427E-01	2.019E-01
GE 78	2.050E 00	2.034E 00	2.018E 00	1.971E 00	1.895E 00	1.618E 00	1.278E 00	7.966E-01	1.930E-01	4.974E-02
TOTAL	2.960E 00	2.775E 00	2.606E 00	2.425E 00	2.328E 00	2.028E 00	1.657E 00	1.129E 00	4.443E-01	2.505E-01

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

GE 72	6.721E-09	6.721E-09	6.721E-09	6.721E-09	6.721E-09	6.721E-09	6.721E-09	6.721E-09	6.722E-09	6.723E-09
GE 73	8.246E-08	8.246E-08	8.246E-08	8.246E-08	8.246E-08	8.246E-08	8.246E-08	8.246E-08	8.247E-08	8.248E-08
GE 74	2.323E-07	2.323E-07	2.323E-07	2.323E-07	2.323E-07	2.323E-07	2.323E-07	2.323E-07	2.323E-07	2.323E-07
GE* 75	1.941E-14	1.728E-14	1.359E-14	5.188E-15	8.637E-16	5.858E-19	1.031E-23	3.190E-33	0.	0.
GE 75	4.823E-11	4.817E-11	4.800E-11	4.714E-11	4.529E-11	3.811E-11	2.939E-11	1.747E-11	3.673E-12	7.720E-13
GE 76	1.628E-06	1.628E-06	1.628E-06	1.628E-06	1.628E-06	1.628E-06	1.628E-06	1.628E-06	1.628E-06	1.628E-06
GE* 77	2.214E-12	1.408E-12	6.846E-13	6.862E-14	1.457E-15	2.964E-22	2.720E-32	0.	0.	0.
GE 77	1.189E-09	1.188E-09	1.187E-09	1.183E-09	1.177E-09	1.153E-09	1.119E-09	1.052E-09	8.753E-10	7.282E-10
GE 78	9.592E-10	9.517E-10	9.442E-10	9.221E-10	8.865E-10	7.573E-10	5.979E-10	3.727E-10	9.029E-11	2.187E-11
TOTAL	1.952E-06	1.952E-06	1.952E-06	1.952E-06	1.952E-06	1.952E-06	1.951E-06	1.951E-06	1.951E-06	1.950E-06

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 33 AS

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	8.0 HR.
AS 75	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
AS 76	1.021E-03	1.920E-03	1.919E-03	1.917E-03	1.913E-03	1.787E-03	1.774E-03	1.728E-03	1.597E-03	1.470E-03
AS 77	6.016E-01	6.015E-01	6.015E-01	6.012E-01	6.007E-01	5.785E-01	5.753E-01	5.667E-01	5.477E-01	5.205E-01
AS 78	2.050E 00	2.050E 00	2.050E 00	2.048E 00	2.044E 00	2.002E 00	1.985E 00	1.957E 00	1.911E-01	2.311E-01
AS 79	2.851E 00	2.639E 00	2.444E 00	1.940E 00	1.320E 00	2.823E-01	2.806E-02	2.762E-04	2.638E-10	2.513E-16
AS 80	5.160E 00	3.210E-01	2.011E-02	4.208E-06	4.677E-12	0.	0.	0.	0.	0.
AS 81	1.466E 01	4.055E 00	1.102E 00	2.235E-02	3.356E-05	1.707E-10	1.337E-33	0.	0.	0.
AS 85	2.059E 01	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	4.617E 01	9.749E 00	6.302E 00	4.693E 00	4.0 5E 00	2.965E 00	2.590E 00	2.228E 00	1.910E 00	0.581E-01

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

AS 75	6.269E-07	6.269E-07	6.269E-07	6.269E-07	6.269E-07	6.269E-07	6.269E-07	6.269E-07	6.269E-07	6.269E-07
AS 76	1.534E-11	1.533E-11	1.532E-11	1.530E-11	1.527E-11	1.514E-11	1.494E-11	1.455E-11	1.345E-11	1.243E-11
AS 77	8.439E-09	8.439E-09	8.439E-09	8.435E-09	8.428E-09	8.402E-09	8.362E-09	8.280E-09	8.020E-09	7.749E-09
AS 78	9.810E-10	9.810E-10	9.809E-10	9.803E-10	9.782E-10	9.580E-10	9.021E-10	7.454E-10	3.164E-10	1.103E-10
AS 79	1.364E-10	1.263E-10	1.170E-10	9.282E-11	6.316E-11	1.334E-11	1.343E-12	1.322E-14	1.291E-20	1.203E-26
AS 80	8.846E-12	4.278E-13	2.673E-14	5.524E-18	6.217E-24	0.	0.	0.	0.	0.
AS 81	4.218E-11	1.149E-11	3.132E-12	6.335E-14	9.514E-17	4.835E-26	0.	0.	0.	0.
AS 85	7.828E-13	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	6.365E-07	6.365E-07	6.364E-07	6.364E-07	6.364E-07	6.363E-07	6.362E-07	6.360E-07	6.353E-07	6.346E-07

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 34 SE

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	8.0 HR.
SE 76	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SE* 77	1.165E-02	1.159E-02	1.159E-02	1.158E-02	1.157E-02	1.154E-02	1.148E-02	1.137E-02	1.101E-02	1.083E-02
SE 77	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SE 78	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SE* 79	2.853E 00	2.835E 00	2.786E 00	2.527E 00	1.961E 00	4.885E-01	4.946E-02	4.874E-04	4.649E-10	4.434E-16
SE 79	1.139E-04	1.139E-04	1.139E-04	1.139E-04	1.139E-04	1.139E-04	1.139E-04	1.139E-04	1.139E-04	1.139E-04
SE 80	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SE* 81	5.961E-01	5.949E-01	5.888E-01	5.681E-01	5.346E-01	4.192E-01	2.910E-01	1.403E-01	1.572E-02	1.781E-03
SE 81	1.308E 01	1.483E 01	1.438E 01	1.290E 01	1.074E 01	5.221E 00	1.877E 00	3.491E-01	2.311E-02	2.573E-03
SE 82	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SE* 83	1.810E 01	8.263E 00	4.522E 00	7.414E-01	3.641E-02	2.118E-07	2.971E-15	5.847E-31	0.	0.
SE 83	1.475E 01	1.431E 01	1.389E 01	1.269E 01	1.091E 01	5.972E 00	2.418E 00	3.963E-01	1.745E-03	7.686E-06
SE 84	4.582E 01	3.637E 01	2.886E 01	1.443E 01	4.544E 00	4.470E-02	4.361E-05	4.150E-11	3.577E-29	0.
SE 85	5.412E 01	1.870E 01	6.435E 00	2.622E-01	1.263E-03	6.852E-13	8.638E-27	0.	0.	0.
SE 87	6.900E 01	2.689E-01	1.048E-03	6.206E-11	5.583E-23	0.	0.	0.	0.	0.
TOTAL	2.173E 02	9.619E 01	7.147E 01	4.413E 01	2.874E 01	1.216E 01	4.647E 00	8.977E-01	5.170E-02	1.609E-02

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

SE 76	4.699E-09	4.699E-09	4.699E-09	4.699E-09	4.699E-09	4.699E-09	4.699E-09	4.699E-09	4.700E-09	4.701E-09
SE* 77	1.795E-14	1.787E-14	1.786E-14	1.785E-14	1.784E-14	1.778E-14	1.770E-14	1.752E-14	1.697E-14	1.639E-14
SE 77	4.022E-06	4.022E-06	4.022E-06	4.022E-06	4.022E-06	4.022E-06	4.022E-06	4.023E-06	4.023E-06	4.023E-06
SE 78	1.144E-05	1.144E-05	1.144E-05	1.144E-05	1.144E-05	1.144E-05	1.144E-05	1.144E-05	1.144E-05	1.144E-05
SE* 79	5.917E-11	5.879E-11	5.778E-11	5.241E-11	4.066E-11	1.013E-11	1.026E-12	1.011E-14	9.640E-21	9.195E-27
SE 79	2.070E-05	2.070E-05	2.070E-05	2.070E-05	2.070E-05	2.070E-05	2.070E-05	2.070E-05	2.070E-05	2.070E-05
SE 80	3.601E-05	3.601E-05	3.601E-05	3.601E-05	3.601E-05	3.601E-05	3.601E-05	3.601E-05	3.601E-05	3.601E-05
SE* 81	1.813E-10	1.803E-10	1.785E-10	1.722E-10	1.620E-10	1.270E-10	8.820E-11	4.252E-11	4.763E-12	5.336E-13
SE 81	1.443E-09	1.420E-09	1.376E-09	1.235E-09	1.028E-09	4.998E-10	1.797E-10	3.341E-11	2.212E-12	2.463E-13
SE 82	1.002E-04	1.002E-04	1.002E-04	1.002E-04	1.002E-04	1.002E-04	1.002E-04	1.002E-04	1.002E-04	1.002E-04
SE* 83	9.232E-11	5.053E-11	2.786E-11	4.534E-12	2.227E-13	1.295E-18	1.817E-26	0.	0.	0.
SE 83	1.804E-09	1.750E-09	1.698E-09	1.552E-09	1.335E-09	7.304E-10	2.957E-10	4.847E-11	2.134E-13	9.399E-16
SE 84	7.308E-10	5.800E-10	4.604E-10	2.302E-10	7.248E-11	7.130E-13	6.955E-16	6.619E-22	0.	0.
SE 85	1.870E-10	6.461E-11	2.223E-11	9.058E-13	4.370E-15	2.367E-24	2.985E-38	0.	0.	0.
SE 87	4.585E-11	1.787E-13	6.965E-16	4.124E-23	3.709E-35	0.	0.	0.	0.	0.
TOTAL	1.724E-04	1.724E-04	1.724E-04	1.724E-04	1.724E-04	1.724E-04	1.724E-04	1.724E-04	1.724E-04	1.724E-04

BWR8 238 RO 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 38 BR

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	7.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	8.0 HR.	8.0 HR.
BR 79	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
BR* 80	1.200E-02	1.197E-02	1.184E-02	1.185E-02	1.169E-02	1.111E-02	1.020E-02	8.017E-03	6.855E-03	3.406E-03
BR 80	1.210E-02	1.209E-02	1.209E-02	1.206E-02	1.201E-02	1.166E-02	1.093E-02	9.425E-03	8.942E-03	3.743E-03
BR 81	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
BR* 82	1.093E 01	9.793E 00	9.705E 00	9.190E 00	3.507E 00	3.614E-01	1.195E-02	1.306E-05	1.713E-14	2.241E-23
BR 82	1.937E 01	1.937E 01	1.936E 01	1.935E 01	1.933E 01	1.921E 01	1.903E 01	1.866E 01	1.759E 01	1.668E 01
BR 83	1.499E 03	1.491E 03	1.484E 03	1.463E 03	1.429E 03	1.298E 03	1.124E 03	9.426E 02	3.543E 02	1.490E 02
BR* 84	2.125E 02	1.893E 02	1.687E 02	1.192E 02	6.692E 01	6.637E 00	2.073E-01	2.022E-04	1.870E-13	1.743E-22
BR 84	2.342E 03	2.293E 03	2.245E 03	2.105E 03	1.889E 03	1.225E 03	6.398E 02	1.744E 02	3.933E 00	7.186E-02
BR 85	3.247E 03	2.584E 03	2.053E 03	1.027E 03	3.235E 02	3.183E 00	3.103E-03	2.353E-09	2.547E-27	0.
BR 87	5.468E 03	2.572E 03	1.207E 03	1.248E 02	2.844E 00	7.660E-07	1.071E-18	0.	0.	0.
BR 88	6.491E 03	4.819E 02	3.577E 01	1.464E-02	3.301E-08	6.835E-31	0.	0.	0.	0.
BR 89	5.676E 03	8.487E-01	6.304E-05	4.791E-17	0.	0.	0.	0.	0.	0.
BR 90	5.575E 03	2.835E-08	1.442E-19	0.	0.	0.	0.	0.	0.	0.
TOTAL	3.054E 04	9.641E 03	7.222E 03	4.865E 03	3.735E 03	2.553E 03	1.783E 03	1.036E 03	3.714E 02	1.656E 02

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

BR 79	1.763E-08	1.763E-08	1.763E-08	1.763E-08	1.763E-08	1.763E-08	1.763E-08	1.763E-08	1.763E-08	1.763E-08
BR* 80	1.723E-11	1.718E-11	1.714E-11	1.701E-11	1.679E-11	1.595E-11	1.477E-11	1.266E-11	7.973E-12	5.024E-12
BR 80	1.132E-12	1.131E-12	1.131E-12	1.129E-12	1.124E-12	1.091E-12	1.023E-12	8.820E-13	5.560E-13	3.503E-13
BR 81	4.368E-03	4.368E-03	4.368E-03	4.368E-03	4.368E-03	4.368E-03	4.368E-03	4.368E-03	4.368E-03	4.368E-03
BR* 82	3.544E-10	3.163E-10	2.824E-10	2.008E-10	1.138E-10	1.172E-11	3.677E-13	4.241E-16	5.553E-25	7.270E-34
BR 82	2.188E-07	2.188E-07	2.187E-07	2.186E-07	2.183E-07	2.170E-07	2.149E-07	2.107E-07	1.987E-07	1.874E-07
BR 83	1.148E-08	1.142E-08	1.137E-08	1.121E-08	1.094E-08	9.943E-07	8.810E-07	6.452E-07	2.713E-07	1.141E-07
BR* 84	6.779E-09	6.039E-09	5.380E-09	3.804E-09	2.135E-09	2.117E-10	6.813E-12	6.451E-15	8.900E-24	8.581E-33
BR 84	3.985E-07	3.902E-07	3.819E-07	3.581E-07	3.215E-07	2.085E-07	1.089E-07	2.967E-08	6.011E-10	1.218E-11
BR 85	5.179E-08	4.122E-08	3.275E-08	1.639E-08	5.181E-09	5.076E-11	4.952E-14	4.713E-20	4.062E-38	0.
BR 87	2.665E-08	1.253E-08	5.883E-09	6.063E-10	1.386E-11	3.733E-18	5.219E-28	0.	0.	0.
BR 88	9.200E-09	6.830E-10	5.070E-11	2.075E-14	4.678E-20	0.	0.	0.	0.	0.
BR 89	2.263E-09	2.188E-13	2.115E-17	1.910E-29	0.	0.	0.	0.	0.	0.
BR 90	7.902E-10	4.018E-21	2.043E-32	0.	0.	0.	0.	0.	0.	0.
TOTAL	4.370E-03	4.370E-03	4.370E-03	4.370E-03	4.370E-03	4.370E-03	4.369E-03	4.369E-03	4.369E-03	4.368E-03

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 36 KR

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	8.0 HR.
KR 80	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
KR 81	1.535E-08	1.535E-08	1.535E-08	1.535E-08	1.535E-08	1.535E-08	1.535E-08	1.535E-08	1.535E-08	1.535E-08
KR 82	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
KR* 83	2.998E 03	2.988E 03	2.979E 03	2.951E 03	2.905E 03	2.725E 03	2.467E 03	2.001E 03	1.004E 03	4.767E 02
KR 83	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
KR 84	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
KR* 85	6.498E 03	6.488E 03	6.477E 03	6.438E 03	6.382E 03	6.040E 03	5.583E 03	4.769E 03	2.973E 03	1.883E 03
KR 85	2.999E 02	2.999E 02	2.999E 02	2.999E 02	2.999E 02	2.999E 02	2.999E 02	2.999E 02	3.000E 02	3.000E 02
KR 86	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
KR 87	1.155E 04	1.148E 04	1.140E 04	1.110E 04	1.061E 04	8.838E 03	6.723E 03	3.889E 03	7.530E 02	1.458E 02
KR 88	1.690E 04	1.684E 04	1.677E 04	1.656E 04	1.622E 04	1.494E 04	1.320E 04	1.031E 04	4.905E 03	2.335E 03
KR 89	1.993E 04	1.615E 04	1.301E 04	6.792E 03	2.299E 03	3.020E 01	4.545E-02	1.030E-07	1.1[illegible]E-24	0.
KR 90	2.042E 04	5.869E 03	1.664E 03	3.789E 01	6.932E-02	7.767E-13	2.913E-29	0.	0.	0.
KR 91	1.315E 04	2.052E 02	3.201E 00	1.216E-03	1.124E-14	0.	0.	0.	0.	0.
KR 92	6.589E 03	6.254E-03	5.936E-09	6.076E-27	0.	0.	0.	0.	0.	0.
KR 93	1.632E 03	1.509E-06	1.395E-15	0.	0.	0.	0.	0.	0.	0.
KR 94	1.146E 03	9.798E-16	0.	0.	0.	0.	0.	0.	0.	0.
KR 95	2.400E 01	0.	0.	0.	0.	0.	0.	0.	0.	0.
KR 97	1.435E-01	1.227E-19	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.011E 05	6.033E 04	5.259E 04	4.418E 04	3.870E 04	3.287E 04	2.627E 04	2.126E 04	9.935E 03	5.108E 03

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

KR 80	2.637E-07	2.637E-07	2.637E-07	2.637E-07	2.637E-07	2.637E-07	2.637E-07	2.637E-07	2.637E-07	2.637E-07
KR 81	9.012E-09	9.012E-09	9.012E-09	9.012E-09	9.012E-09	9.012E-09	9.012E-09	9.012E-09	9.012E-09	9.012E-09
KR 82	1.210E-04	1.210E-04	1.210E-04	1.210E-04	1.210E-04	1.210E-04	1.210E-04	1.210E-04	1.210E-04	1.211E-04
KR* 83	1.779E-06	1.774E-06	1.768E-06	1.752E-06	1.724E-06	1.617E-06	1.464E-06	1.187E-06	5.981E-07	2.823E-07
KR 83	1.459E-02	1.459E-02	1.459E-02	1.459E-02	1.459E-02	1.459E-02	1.459E-02	1.459E-02	1.459E-02	1.459E-02
KR 84	4.196E-02	4.196E-02	4.196E-02	4.196E-02	4.196E-02	4.196E-02	4.196E-02	4.196E-02	4.196E-02	4.[illegible]E-02
KR* 85	9.120E-06	9.107E-06	9.092E-06	9.037E-06	8.930E-06	8.478E-06	7.836E-06	6.693E-06	4.172E-06	2.6[illegible]E-06
KR 85	9.019E-03	9.019E-03	9.019E-03	9.019E-03	9.019E-03	9.019E-03	9.019E-03	9.019E-03	9.020E-03	9.020E-03
KR 86	6.780E-02	6.780E-02	6.780E-02	6.780E-02	6.780E-02	6.780E-02	6.780E-02	6.780E-02	6.780E-02	6.780E-02
KR 87	4.6[illegible]E-06	4.64CE-06	4.605E-06	4.486E-06	4.286E-06	3.571E-06	2.716E-06	1.571E-06	3.043E-07	5.891E-08
KR 88	[illegible]E-05	1.505E-05	1.498E-05	1.480E-05	1.450E-05	1.335E-05	1.180E-05	9.210E-06	4.383E-06	2.086E-06
KR 89	3.390E-07	2.749E-07	2.213E-07	1.156E-07	3.912E-08	5.138E-10	7.733E-13	1.752E-18	2.038E-35	0.
KR 90	5.971E-08	1.716E-08	4.864E-09	1.108E-10	2.026E-13	2.271E-24	0.	0.	0.	0.
KR 91	1.165E-08	1.818E-10	2.836E-12	1.077E-17	9.962E-27	0.	0.	0.	0.	0.
KR 92	1.751E-09	1.662E-15	1.578E-21	0.	0.	0.	0.	0.	0.	0.

KR	E-32	0.	0.	0.						
KR										
TOTAL	1.335E 01	1.335E-01	1.335E-01	1.335E-01	1.335E-01	1.335E-01	1.335E-01	1.335E-01	1.335E 01	1.335E

BWR8 238 RG 1.7 PER ATL-5193 — ACTIVITY AFTER SHUTDOWN - CURIES — 1095.0 MWD IN 1095.0 DAYS. — AT. NO. 37 RB

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	8.0 HR.
RB 85	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
RB* 86	2.890E-02	1.360E-02	6.878E-03	8.890E-04	2.937E-05	3.502E-11	4.558E-20	0.	0.	0.
RB 86	2.459E-01	2.459E-01	2.459E-01	2.459E-01	2.458E-01	2.457E-01	2.455E-01	2.451E-01	2.440E-01	2.429E-01
RB 87	6.749E-09	6.750E-09	6.750E-09	6.751E-09	6.752E-09	6.758E-09	6.764E-09	6.773E-09	6.793E-09	6.784E-09
RB 88	1.707E 02	8.085E 02	1.419E 03	3.100E 03	5.451E 03	1.088E 04	1.295E 04	1.135E 04	5.486E 03	2.811E 03
RB 89	2.184E 02	1.022E 03	1.631E 03	2.648E 03	2.940E 03	1.406E 03	3.538E 02	2.213E 01	5.418E-03	1.326E-06
RB 90	2.720E 02	1.953E 03	2.151E 03	1.471E 03	6.595E 02	2.624E 01	2.083E-01	1.313E-05	3.286E-18	8.223E-31
RB 91	2.750E 02	1.437E 03	7.131E 02	7.991E 01	2.078E 00	9.510E-07	2.944E-16	0.	0.	0.
RB 92	2.708E 02	1.113E 00	8.822E-05	4.237E-17	0.	0.	0.	0.	0.	0.
RB 93	2.493E 02	9.406E-01	8.145E-04	5.289E-13	2.576E-28	0.	0.	0.	0.	0.
RB 94	1.566E 02	1.689E-04	3.437E-11	2.892E-31	0.	0.	0.	0.	0.	0.
RB 95	7.247E 01	0.	0.	0.	0.	0.	0.	0.	0.	0.
RB 97	2.536E-02	1.575E-10	1.469E-19	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.686E 03	5.223E 03	5.914E 03	7.300E 03	9.053E 03	1.232E 04	1.331E 04	1.137E 04	5.486E 03	2.811E 03

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

RB 85	3.851E-04	3.851E-04	3.851E-04	3.852E-04	3.853E-04	3.856E-04	3.862E-04	3.871E-04	3.893E-04	3.908E-04
RB* 86	1.454E-13	7.352E-14	3.717E-14	4.804E-15	1.588E-16	1.893E-22	2.463E-31	0.	0.	0.
RB 86	3.521E-08	3.521E-08	3.521E-08	3.520E-08	3.520E-08	3.518E-08	3.515E-08	3.510E-08	3.494E-08	3.478E-08
RB 87	8.868E-04	8.869E-04	8.869E-04	8.871E-04	8.873E-04	8.880E-04	8.888E-04	8.900E-04	8.912E-04	8.915E-04
RB 88	1.616E-08	7.652E-08	1.343E-07	2.934E-07	5.159E-07	1.030E-06	1.226E-06	1.074E-06	5.192E-07	2.471E-07
RB 89	1.743E-08	8.151E-08	1.301E-07	2.113E-07	2.346E-07	1.122E-07	2.823E-08	1.766E-09	4.323E-13	1.058E-16
RB 90	6.218E-09	4.466E-08	4.918E-08	3.364E-08	1.508E-08	6.001E-10	4.764E-12	3.002E-16	7.513E-29	0.
RB 91	1.389E-09	7.258E-09	3.601E-09	4.036E-10	1.050E-11	4.803E-18	1.486E-27	0.	0.	0.
RB 92	1.056E-10	4.340E-13	3.439E-17	1.652E-29	0.	0.	0.	0.	0.	0.
RB 93	1.303E-10	4.916E-13	4.257E-16	2.765E-25	0.	0.	0.	0.	0.	0.
RB 94	3.747E-11	4.042E-17	8.221E-24	0.	0.	0.	0.	0.	0.	0.
RB 95	2.311E-12	0.	0.	0.	0.	0.	0.	0.	0.	0.
RB 97	4.495E-15	2.792E-23	2.605E-32	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.272E-03	1.272E-03	1.272E-03	1.273E-03	1.273E-03	1.275E-03	1.276E-03	1.278E-03	1.281E-03	1.283E-03

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 38 SR

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	8.0 HR.
SR 86	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SR 88	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SR 89	2.248E 02	2.248E 02	2.249E 02	2.249E 02	2.250E 02	2.254E 02	2.256E 02	2.255E 02	2.251E 02	2.247E 02
SR 90	2.464E 01	2.464E 01	2.464E 01	2.464E 01	2.464E 01	2.464E 01	2.464E 01	2.464E 01	2.464E 01	2.464E 01
SR 91	2.866E 02	2.881E 02	2.889E 02	2.890E 02	2.874E 02	2.806E 02	2.708E 02	2.521E 02	2.034E 02	1.642E 02
SR 92	3.111E 02	3.120E 02	3.106E 02	3.067E 02	3.002E 02	2.756E 02	2.424E 02	1.875E 02	8.679E 01	4.018E 01
SR 93	3.720E 02	3.511E 02	3.230E 02	2.514E 02	1.656E 02	3.116E 01	2.545E 00	1.697E-02	5.028E-09	1.490E-16
SR 94	3.578E 02	2.223E 02	1.304E 02	2.632E 01	1.829E 00	4.262E-05	4.794E-12	6.065E-26	0.	0.
SR 95	3.314E 02	6.712E 01	1.355E 01	1.114E-01	3.734E-05	4.707E-19	0.	0.	0.	0.
SR 97	3.817E 01	3.662E-05	3.490E-11	3.020E-29	0.	0.	0.	0.	0.	0.
TOTAL	1.947E 03	1.490E 03	1.316E 03	1.123E 03	1.005E 03	8.374E 02	7.659E 02	6.897E 02	5.400E 02	4.538E 02

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

SR 86	7.531E-07	7.531E-07	7.531E-07	7.531E-07	7.532E-07	7.532E-07	7.532E-07	7.533E-07	7.534E-07	7.536E-07
SR 88	1.279E-03	1.279E-03	1.279E-03	1.280E-03	1.280E-03	1.280E-03	1.282E-03	1.284E-03	1.290E-03	1.292E-03
SR 89	8.712E-05	8.712E-05	8.712E-05	8.714E-05	8.719E-05	8.734E-05	8.740E-05	8.737E-05	8.723E-05	8.708E-05
SR 90	1.983E-03	1.983E-03	1.983E-03	1.983E-03	1.983E-03	1.983E-03	1.983E-03	1.983E-03	1.983E-03	1.983E-03
SR 91	8.870E-07	8.916E-07	8.943E-07	8.943E-07	8.894E-07	8.685E-07	8.380E-07	7.802E-07	6.297E-07	5.082E-07
SR 92	2.680E-07	2.687E-07	2.676E-07	2.642E-07	2.586E-07	2.374E-07	2.088E-07	1.615E-07	7.477E-08	3.461E-08
SR 93	1.642E-08	1.550E-08	1.425E-08	1.110E-08	7.308E-09	1.375E-09	1.123E-10	7.488E-13	2.219E-19	6.577E-26
SR 94	2.473E-09	1.536E-09	9.011E-10	1.819E-10	1.264E-11	2.945E-16	3.313E-23	4.191E-37	0.	0.
SR 95	7.633E-10	1.546E-10	3.120E-11	2.566E-13	8.600E-17	1.084E-30	0.	0.	0.	0.
SR 97	1.015E-11	9.737E-18	9.279E-24	0.	0.	0.	0.	0.	0.	0.
TOTAL	3.352E-03	3.352E-03	3.352E-03	3.352E-03	3.352E-03	3.353E-03	3.354E-03	3.357E-03	3.362E-03	3.364E-03

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 39 Y

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	8.0 HR.
Y* 89	2.248E-02	2.248E-02	2.248E-02	2.249E-02	2.250E-02	2.254E-02	2.256E-02	2.255E-02	2.251E-02	2.247E-02
Y 89	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
Y 90	2.591E 01	2.590E 01	2.590E 01	2.590E 01	2.590E 01	2.590E 01	2.589E 01	2.588E 01	2.584E 01	2.580E 01
Y* 91	1.821E 02	1.819E 02	1.816E 02	1.813E 02	1.806E 02	1.774E 02	1.723E 02	1.616E 02	1.312E 02	1.060E 02
Y 91	3.077E 02	3.077E 02	3.077E 02	3.077E 02	3.077E 02	3.077E 02	3.077E 02	3.077E 02	3.076E 02	3.074E 02
Y 92	3.262E 02	3.262E 02	3.261E 02	3.260E 02	3.256E 02	3.232E 02	3.171E 02	2.985E 02	2.217E 02	1.490E 02
Y 93	3.811E 02	3.810E 02	3.810E 02	3.807E 02	3.797E 02	3.729E 02	3.607E 02	3.368E 02	2.742E 02	2.232E 02
Y 94	3.931E 02	3.916E 02	3.841E 02	3.525E 02	2.978E 02	1.489E 02	6.261E 01	6.567E 00	1.278E-02	2.486E-05
Y 95	4.542E 02	4.356E 02	4.099E 02	3.367E 02	2.420E 02	6.461E 01	8.910E 00	1.695E-01	1.166E-06	8.025E-12
Y 96	4.204E 02	3.110E 02	2.[illegible]01E 02	9.315E 01	2.064E 01	4.974E-02	5.885E-06	8.237E-14	0.	0.
Y 97	3.434E 02	3.718E-01	3.623E-04	3.350E-13	2.940E-28	0.	0.	0.	0.	0.
TOTAL	2.836E 03	2.361E 03	2.247E 03	2.004E 03	1.780E 03	1.421E 03	1.246E 03	1.137E 03	9.605E 02	8.113E 02

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

Y* 89	3.187E-14	3.187E-14	3.187E-14	3.188E-14	3.189E-14	3.195E-14	3.197E-14	3.196E-14	3.191E-14	3.185E-14
Y 89	1.582E-03	1.582E-03	1.582E-03	1.582E-03	1.582E-03	1.582E-03	1.582E-03	1.582E-03	1.582E-03	1.582E-03
Y 90	5.324E-07	5.324E-07	5.324E-07	5.324E-07	5.324E-07	5.323E-07	5.321E-07	5.319E-07	5.311E-07	5.303E-07
Y* 91	4.842E-08	4.837E-08	4.833E-08	4.821E-08	4.801E-08	4.716E-08	4.581E-08	4.297E-08	3.489E-08	2.817E-08
Y 91	1.390E-04	1.390E-04	1.390E-04	1.390E-04	1.390E-04	1.390E-04	1.390E-04	1.390E-04	1.390E-04	1.389E-04
Y 92	3.675E-07	3.674E-07	3.674E-07	3.672E-07	3.668E-07	3.640E-07	3.572E-07	3.363E-07	2.497E-07	1.678E-07
Y 93	1.228E-06	1.228E-06	1.228E-06	1.227E-06	1.224E-06	1.202E-06	1.163E-06	1.086E-06	8.836E-07	7.192E-07
Y 94	4.199E-08	4.162E-08	4.082E-08	3.746E-08	3.165E-08	1.582E-08	6.591E-09	6.980E-10	1.358E-12	2.642E-15
Y 95	2.535E-08	2.432E-08	2.288E-08	1.879E-08	1.351E-08	3.606E-09	4.973E-10	9.459E-12	6.500E-17	4.479E-22
Y 96	5.141E-09	3.803E-09	2.814E-09	1.139E-09	2.524E-10	6.082E-13	7.196E-17	1.007E-24	0.	0.
Y 97	1.825E-10	1.976E-13	1.926E-16	1.781E-25	0.	0.	0.	0.	0.	0.
TOTAL	1.723E-03	1.723E-03	1.723E-03	1.723E-03	1.723E-03	1.723E-03	1.723E-03	1.723E-03	1.723E-03	1.723E-03

QWRG 230 RG 1.7 PER ATL-3100 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 40 ZR

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	6.0 HR.	8.0 HR.
ZR 90	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
ZR 91	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
ZR 92	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
ZR 93	9.667E-04	9.667E-04	9.667E-04	9.667E-04	9.667E-04	9.667E-04	9.667E-04	9.668E-04	9.668E-04	9.668E-04
ZR 94	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
ZR 95	4.658E 02	4.655E 02	4.655E 02	4.655E 02	4.655E 02	4.655E 02	4.654E 02	4.652E 02	4.645E 02	4.638E 02
ZR 96	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
ZR 97	4.618E 02	4.613E 02	4.610E 02	4.600E 02	4.584E 02	4.522E 02	4.430E 02	4.281E 02	3.786E 02	3.316E 02
ZR 98	4.579E 02	2.290E 02	1.145E 02	1.431E 01	4.470E-01	4.260E-07	3.983E-16	0.	0.	0.
ZR 99	3.808E 02	1.936E-09	9.645E-21	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.766E 03	1.156E 03	1.041E 03	9.398E 02	9.244E 02	9.175E 02	9.083E 02	8.902E 02	8.401E 02	7.878E 02

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

ZR 90	8.301E-05	8.301E-05	8.301E-05	8.301E-05	8.301E-05	8.301E-05	8.302E-05	8.302E-05	8.304E-05	8.305E-05
ZR 91	2.033E-03	2.033E-03	2.033E-03	2.033E-03	2.033E-03	2.033E-03	2.033E-03	2.033E-03	2.033E-03	2.033E-03
ZR 92	2.298E-03	2.298E-03	2.298E-03	2.298E-03	2.298E-03	2.298E-03	2.298E-03	2.298E-03	2.299E-03	2.298E-03
ZR 93	2.567E-03	2.567E-03	2.567E-03	2.567E-03	2.567E-03	2.567E-03	2.567E-03	2.567E-03	2.567E-03	2.568E-03
ZR 94	2.737E-03	2.737E-03	2.737E-03	2.737E-03	2.737E-03	2.737E-03	2.737E-03	2.737E-03	2.737E-03	2.737E-03
ZR 95	2.317E-04	2.317E-04	2.317E-04	2.317E-04	2.317E-04	2.317E-04	2.316E-04	2.315E-04	2.312E-04	2.309E-04
ZR 96	2.815E-03	2.815E-03	2.815E-03	2.815E-03	2.815E-03	2.815E-03	2.815E-03	2.815E-03	2.815E-03	2.815E-03
ZR 97	2.474E-06	2.473E-06	2.471E-06	2.468E-06	2.458E-06	2.424E-06	2.375E-06	2.279E-06	2.013E-06	1.779E-06
ZR 98	2.435E-09	1.217E-09	6.087E-10	7.608E-11	2.377E-12	2.265E-16	2.107E-27	0.	0.	0.
ZR 99	5.397E-11	2.744E-22	1.395E-32	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.277E-02	1.277E-02	1.277E-02	1.277E-02	1.277E-02	1.277E-02	1.277E-02	1.277E-02	1.277E-02	1.277E-02

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 41 NB

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	8.0 HR.
NB* 93	7.029E-05	7.029E-05	7.029E-05	7.029E-05	7.029E-05	7.030E-05	7.030E-05	7.030E-05	7.032E-05	7.033E-05
NB 93	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
NB* 94	1.872E-07	1.877E-07	1.503E-07	1.080E-07	6.231E-08	6.901E-09	2.544E-10	3.456E-13	8.665E-22	2.173E-30
NB 94	6.349E-12	6.349E-12	6.349E-12	6.349E-12	6.349E-12	6.349E-12	6.349E-12	6.349E-12	6.349E-12	6.349E-12
NB* 95	9.313E 00	9.313E 00	9.313E 00	9.313E 00	9.313E 00	9.313E 00	9.313E 00	9.313E 00	9.313E 00	9.312E 00
NB 95	4.718E 02	4.718E 02	4.718E 02	4.718E 02	4.718E 02	4.718E 02	4.718E 02	4.718E 02	4.718E 02	4.718E 02
NB 96	8.039E-01	8.035E-01	8.031E-01	8.018E-01	7.998E-01	7.910E-01	7.800E-01	7.568E-01	6.914E-01	6.318E-01
NB* 97	4.564E 02	4.493E 02	4.458E 02	4.423E 02	4.405E 02	4.345E 02	4.256E 02	4.084E 02	3.[illegible]09E 02	3.189E 02
NB 97	4.875E 02	4.873E 02	4.871E 02	4.864E 02	4.851E 02	4.799E 02	4.717E 02	4.547E 02	4.0[illegible]9E 02	3.572E 02
NB* 98	4.772E 02	4.197E 02	3.239E 02	1.096E 02	1.283E 01	1.333E-03	1.278E-09	1.173E-21	0.	0.
NB 98	1.362E 01	1.344E 01	1.326E 01	1.273E 01	1.190E 01	9.094E 00	6.073E 00	2.708E 00	2.401E-01	2.129E-02
NB 99	4.893E 02	3.697E 02	2.769E 02	1.164E 02	2.745E 01	8.492E-02	1.461E-05	4.325E-13	0.	0.
NB 100	5.472E 02	4.343E 02	3.447E 02	1.723E 02	5.427E 01	5.338E-01	5.208E-04	4.956E-10	4.27[illegible]E-28	0.
NB 101	3.917E 02	1.958E 02	9.792E 01	1.224E 01	3.824E-01	3.644E-07	3.390E-16	0.	0.	0.
TOTAL	3.348E 03	2.852E 03	2.472E 03	1.834E 03	1.514E 03	1.406E 03	1.385E 03	1.348E 03	1.247E 03	1.168E 03

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

NB* 93	2.672E-09	2.672E-09	2.67[illegible]-09	2.672E-09	2.672E-09	2.672E-09	2.672E-09	2.672E-09	2.673E-09	2.673E-09
NB 93	2.897E-10	2.897E-10	2.897E-10	2.897E-10	2.897E-10	2.897E-10	2.897E-10	2.897E-10	2.898E-10	2.899E-10
NB* 94	6.273E-18	5.619E-18	5.034E-18	3.619E-18	2.088E-18	2.312E-19	8.522E-21	1.158E-23	2.903E-32	0.
NB 94	3.549E-13	3.549E-13	3.549E-13	3.549E-13	3.549E-13	3.549E-13	3.549E-13	3.549E-13	3.549E-13	3.549E-13
NB* 95	2.674E-07	2.674E-07	2.674E-07	2.674E-07	2.674E-07	2.674E-07	2.674E-07	2.674E-07	2.674E-07	2.674E-07
NB 95	1.265E-04	1.265E-04	1.265E-04	1.265E-04	1.265E-04	1.265E-04	1.265E-04	1.265E-04	1.265E-04	1.264E-04
NB 96	5.899E-09	5.896E-09	5.893E-09	5.884E-09	5.869E-09	5.811E-09	5.724E-09	5.554E-09	5.074E-09	4.635E-09
NB* 97	2.224E-09	2.189E-09	2.172E-09	2.155E-09	2.147E-09	2.117E-09	2.074E-09	1.990E-09	1.759E-09	1.554E-09
NB 97	1.840E-07	1.840E-07	1.839E-07	1.836E-07	1.831E-07	1.812E-07	1.781E-07	1.717E-07	1.52[illegible]E-07	1.349E-07
NB* 98	3.808E-09	3.348E-09	2.584E-09	8.747E-10	1.024E-10	1.063E-14	1.019E-20	9.357E-33	0.	0.
NB 98	3.729E-09	3.679E-09	3.630E-09	3.486E-09	3.259E-09	2.490E-09	1.663E-09	7.415E-10	6.574E-11	5.629E-12
NB 99	6.242E-09	4.716E-09	3.533E-09	1.485E-09	3.502E-10	1.083E-12	1.654E-16	5.517E-24	0.	0.
NB 100	8.728E-09	6.927E-09	5.498E-09	2.749E-09	8.656E-10	8.515E-12	8.306E-18	7.905E-21	6.814E-39	0.
NB 101	2.083E-09	1.041E-09	5.207E-10	6.508E-11	2.033E-12	1.938E-18	1.803E-27	0.	0.	0.
TOTAL	1.269E-04	1.269E-04	1.269E-04	1.269E-04	1.269E-04	1.269E-04	1.269E-04	1.269E-04	1.269E-04	1.269E-04

BWR8 238 RG 1.7 PER ATL-8193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 42 MO

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	8.5 HR.
MO 94	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
MO 95	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
MO 96	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
MO 97	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
MO 98	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
MO 99	5.049E 02	5.049E 02	5.049E 02	5.047E 02	5.043E 02	5.028E 02	4.999E 02	4.947E 02	4.794E 02	4.648E 02
MO 100	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
MO 101	4.718E 02	4.630E 02	4.480E 02	3.939E 02	3.114E 02	1.205E 02	2.901E 01	1.881E 00	3.271E-04	6.388E-08
MO 102	4.442E 02	4.171E 02	3.916E 02	3.242E 02	2.366E 02	5.707E 01	1.013E 01	2.308E-01	2.734E-08	3.239E-11
MO 103	3.679E 02	1.881E 02	9.613E 01	1.284E 01	4.481E-01	6.648E-07	1.201E-15	0.	0.	0.
MO 104	2.080E 02	1.755E 02	1.070E 02	2.422E 01	2.038E 00	1.020E-04	3.613E-11	4.334E-24	0.	0.
MO 105	1.726E 02	6.101E 01	2.156E 01	9.519E-01	5.249E-03	4.854E-12	1.365E-25	0.	0.	0.
TOTAL	2.249E 03	1.610E 03	1.569E 03	1.281E 03	1.038E 03	6.901E 02	5.391E 02	4.986E 02	4.794E 02	4.648E 02

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

MO 94	3.358E-18	3.358E-18	3.358E-18	3.358E-18	3.358E-18	3.358E-18	3.358E-18	3.358E-18	3.358E-18	3.358E-18
MO 95	2.459E-03	2.459E-03	2.459E-03	2.459E-03	2.459E-03	2.459E-03	2.459E-03	2.459E-03	2.460E-03	2.460E-03
MO 96	6.257E-05	6.257E-05	6.257E-05	6.257E-05	6.257E-05	6.257E-05	6.257E-05	6.257E-05	6.257E-05	6.257E-05
MO 97	2.901E-03	2.901E-03	2.901E-03	2.901E-03	2.901E-03	2.901E-03	2.901E-03	2.901E-03	2.901E-03	2.901E-03
MO 98	2.878E-03	2.878E-03	2.878E-03	2.878E-03	2.878E-03	2.878E-03	2.878E-03	2.878E-03	2.878E-03	2.878E-03
MO 99	1.063E-05	1.063E-05	1.063E-05	1.083E-05	1.082E-05	1.059E-05	1.053E-05	1.042E-05	1.009E-05	9.781E-06
MO 100	3.289E-03	3.289E-03	3.289E-03	3.289E-03	3.289E-03	3.289E-03	3.289E-03	3.289E-03	3.289E-03	3.289E-03
MO 101	3.663E-05	3.595E-05	3.479E-05	3.059E-05	2.418E-05	9.356E-09	2.252E-09	1.305E-10	2.540E-14	4.642E-18
MO 102	2.898E-05	2.440E-05	2.291E-05	1.895E-05	1.384E-05	3.923E-09	5.923E-10	1.350E-11	1.599E-16	1.934E-21
MO 103	2.021E-09	1.033E-09	5.280E-10	7.052E-11	2.481E-12	3.651E-18	6.598E-27	0.	0.	0.
MO 104	2.144E-09	1.307E-09	7.964E-10	1.803E-10	1.517E-11	7.594E-18	2.690E-22	3.375E-35	0.	0.
MO 105	3.117E-10	2.162E-10	7.841E-11	9.373E-12	1.880E-14	1.720E-21	4.837E-37	0.	0.	0.
TOTAL	1.160E-02	1.160E-02	1.160E-02	1.160E-02	1.160E-02	1.160E-02	1.160E-02	1.160E-02	1.160E-02	1.160E-02

BWR6 238 G 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 43 TC

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	8.0 HR.
TC 98	1.161E-11	1.161E-11	1.161E-11	1.161E-11	1.161E-11	1.161E-11	1.161E-11	1.161E-11	1.161E-11	1.161E-11
TC* 99	4.443E 02	4.443E 02	4.443E 02	4.443E 02	4.443E 02	4.443E 02	4.441E 02	4.434E 02	4.389E 02	4.319E 02
TC 99	4.741E-03	4.741E-03	4.741E-03	4.741E-03	4.741E-03	4.741E-03	4.741E-03	4.742E-03	4.742E-03	4.743E-03
TC 100	4.067E 01	3.520E 00	3.046E-01	1.974E-04	9.585E-10	5.324E-31	0.	0.	0.	0.
TC 101	4.747E 02	4.746E 02	4.745E 02	4.738E 02	4.708E 02	4.452E 02	3.925E 02	2.939E 02	1.206E 02	4.948E 01
TC 102	4.588E 02	4.205E 02	3.948E 02	3.268E 02	1.385E 02	6.762E 01	1.021E 01	2.327E-01	2.756E-06	3.265E-11
TC 103	4.102E 02	3.230E 02	2.145E 02	4.309E 0	1.953E 00	3.414E-06	6.208E-15	0.	0.	0.
TC 104	3.926E 02	3.864E 02	3.770E 02	3.418E 02	2.835E 02	1.313E 02	4.136E 01	4.104E 00	4.008E-03	3.914E-06
TC 105	3.298E 02	3.112E 02	2.885E 02	2.239E 02	1.452E 02	2.567E 01	1.907E 00	1.053E-02	1.773E-09	2.985E-16
TC 106	2.269E 02	7.371E 01	2.394E 01	8.209E-01	2.970E-03	5.087E-13	1.141E-27	0.	0.	0.
TC 107	1.373E 02	3.269E 01	7.787E 00	1.052E-01	8.066E-05	2.785E-17	0.	0.	0.	0.
TC 108	7.386E 01	1.152E 00	1.798E-02	6.830E-08	6.316E-17	0.	0.	0.	0.	0.
TOTAL	2.989E 03	2.471E 03	2.226E 03	1.855E 03	1.584E 03	1.114E 03	8.900E 02	7.416E 02	5.596E 02	4.814E 02

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

TC 98	4.867E-11	4.867E-11	4.867E-11	4.867E-11	4.867E-11	4.867E-11	4.867E-11	4.867E-11	4.867E-11	4.867E-11
TC* 99	8.520E-07	8.520E-07	8.520E-07	8.520E-07	8.519E-07	8.519E-07	8.515E-07	8.502E-07	8.416E-07	8.281E-07
TC 99	2.836E-03	2.836E-03	2.836E-03	2.836E-03	2.836E-03	2.836E-03	2.836E-03	2.836E-03	2.836E-03	2.837E-03
TC 100	6.126E-11	5.302E-12	4.588E-13	2.974E-16	1.444E-21	0.	0.	0.	0.	0.
TC 101	3.534E-07	3.533E-07	3.533E-07	3.527E-07	3.505E-07	3.314E-07	2.922E-07	2.188E-07	8.980E-08	3.683E-06
TC 102	2.154E-10	1.974E-10	1.854E-10	1.534E-10	1.120E-10	3.175E-11	4.793E-12	1.093E-13	1.294E-18	1.533E-23
TC 103	1.817E-09	1.431E-09	9.500E-10	1.909E-10	8.650E-12	1.512E-17	2.750E-26	0.	0.	0.
TC 104	3.758E-08	3.698E-08	3.608E-08	3.272E-08	2.713E-08	1.257E-08	3.959E-09	3.928E-10	3.836E-13	3.747E-16
TC 105	1.403E-08	1.324E-08	1.227E-08	9.524E-09	6.178E-09	1.092E-09	8.114E-11	4.480E-13	7.542E-20	1.270E-26
TC 106	7.438E-10	2.416E-10	7.849E-11	2.691E-12	9.735E-15	1.668E-24	3.739E-39	0.	0.	0.
TC 107	3.526E-10	8.399E-11	2.001E-11	2.703E-13	2.072E-16	7.156E-29	0.	0.	0.	0.
TC 108	5.544E-11	1.021E-12	1.593E-14	6.051E-20	5.596E-29	0.	0.	0.	0.	0.
TOTAL	2.837E-03	2.837E-03	2.837E-03	2.837E-03	2.837E-03	2.837E-03	2.837E-03	2.837E-03	2.837E-03	2.838E-03

QURG 235 RG 1.7 PER ATL-8193 ACTIVITY AFTER SHUTDOWN - CURIES 1093.0 MWD IN 1093.0 DAYS. AT. NO. 44 RU

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	8.0 HR.
RU 98	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
RU 99	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
RU 100	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
RU 101	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
RU 102	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
RU 103	4.081E 02	4.081E 02	4.081E 02	4.081E 02	4.086E 02	4.079E 02	4.079E 02	4.075E 02	4.066E 02	4.087E 02
RU 104	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
RU 105	3.526E 02	3.526E 02	3.524E 02	3.517E 02	3.495E 02	3.352E 02	3.106E 02	2.687E 02	1.662E 02	1.096E 02
RU 106	1.907E 02	1.907E 02	1.907E 02	1.907E 02	1.907E 02	1.907E 02	1.907E 02	1.907E 02	1.906E 02	1.906E 02
RU 107	2.040E 02	1.839E 02	1.565E 02	9.719E 01	4.258E 01	1.568E 00	1.109E-02	5.535E-07	5.907E-20	0.
RU 108	1.467E 02	1.292E 02	1.099E 02	6.922E 01	3.204E 01	1.474E 00	1.445E-02	1.396E-08	1.253E-18	1.198E-30
TOTAL	1.302E 03	1.263E 03	1.220E 03	1.117E 03	1.023E 03	9.368E 02	9.091E 02	8.639E 02	7.[illegible] 02	7.002E 02

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

RU 98	4.010E-17	4.010E-17	4.010E-17	4.010E-17	4.010E-17	4.010E-17	4.011E-17	4.011E-17	4.012E-17	4.012E-17
RU 99	1.378E-08	1.378E-08	1.378E-08	1.378E-08	1.378E-08	1.378E-08	1.379E-08	1.379E-08	1.379E-08	1.379E-08
RU 100	1.190E-04	1.190E-04	1.190E-04	1.190E-04	1.190E-04	1.190E-04	1.190E-04	1.190E-04	1.190E-04	1.190E-04
RU 101	2.632E-03	2.632E-03	2.632E-03	2.632E-03	2.632E-03	2.632E-03	2.632E-03	2.632E-03	2.632E-03	2.632E-03
RU 102	2.439E-03	2.439E-03	2.439E-03	2.439E-03	2.439E-03	2.439E-03	2.439E-03	2.439E-03	2.439E-03	2.439E-03
RU 103	1.237E-04	1.237E-04	1.237E-04	1.237E-04	1.237E-04	1.237E-04	1.237E-04	1.236E-04	1.233E-04	1.230E-04
RU 104	1.773E-03	1.773E-03	1.773E-03	1.773E-03	1.773E-03	1.774E-03	1.774E-03	1.774E-03	1.774E-03	1.774E-03
RU 105	4.985E-07	4.983E-07	4.982E-07	4.971E-07	4.940E-07	4.736E-07	4.391E-07	3.796E-07	2.349E-07	1.489E-07
RU 106	5.359E-04	5.359E-04	5.359E-04	5.359E-04	5.359E-04	5.359E-04	5.359E-04	5.359E-04	5.357E-04	5.356E-04
RU 107	4.556E-09	4.106E-09	3.539E-09	2.170E-09	9.508E-10	3.502E-11	2.475E-13	1.237E-17	1.542E-30	0.
RU 108	3.510E-09	3.066E-09	2.629E-09	1.658E-09	7.664E-10	3.517E-11	3.496E-13	3.[illegible]E-17	3.011E-29	0.
TOTAL	7.624E-03	7.624E-03	7.624E-03	7.624E-03	7.624E-03	7.624E-03	7.624E-03	7.623E-03	7.623E-03	7.623E-03

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 48 RH

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	9.0 HR.
RH*103	3.999E 02	3.999E 02	3.999E 02	3.999E 02	3.999E 02	3.999E 02	3.998E 02	3.996E 02	3.988E 02	3.980E 02
RH 103	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
RH*104	1.069E 01	9.128E 00	7.797E 00	4.860E 00	2.211E 00	9.[illegible]E-02	8.378E-04	6.569E-08	3.168E-20	1.828E-32
RH 104	1.505E 02	6.203E 01	2.828E 01	6.748E 00	2.632E 00	1.1[illegible]E-01	9.950E-04	7.802E-08	3.780E-20	1.812E-32
RH*105	7.405E 01	7.405E 01	7.403E 01	7.391E 01	7.350E 01	7.057E 01	6.542E 01	5.595E 01	3.499E 01	2.189E 01
RH 105	3.049E 02	3.049E 02	3.049E 02	3.049E 02	3.050E 02	3.053E 02	3.054E 02	3.051E 02	2.999E 02	2.905E 02
RH*106	3.394E 01	3.376E 01	3.358E 01	3.305E 01	3.218E 01	2.892E 01	2.464E 01	1.790E 01	6.852E 00	2.623E 00
RH 106	2.043E 02	1.941E 02	1.916E 02	1.907E 02	1.907E 02	1.907E 02	1.907E 02	1.907E 02	1.906E 02	1.906E 02
RH 107	2.101E 02	2.096E 02	2.084E 02	2.009E 02	1.812E 02	1.015E 02	3.958E 01	5.978E 00	2.061E-02	7.102E-05
RH 108	1.588E 02	1.365E 02	1.172E 02	7.387E 01	3.419E 01	1.569E 00	1.542E-02	1.490E-06	1.343E-14	1.211E-30
RH 109	7.324E 01	7.240E 01	7.157E 01	6.913E 01	6.525E 01	5.179E 01	3.662E 01	1.831E 01	[illegible].289E 00	2.882E-01
RH 110	4.576E 01	1.114E-02	2.712E-06	3.913E-17	0.	0.	0.	0.	0.	0.
RH 111	1.495E 01	1.279E-17	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.681E 03	1.496E 03	1.437E 03	1.350E 03	1.287E 03	1.150E 03	1.062E 03	9.935E 02	9.335E 02	9.030E 02

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

RH*103	1.212E-07	1.212E-07	1.212E-07	1.212E-07	1.212E-07	1.212E-07	1.212E-07	1.211E-07	1.209E-07	1.208E-07
RH 103	1.502E-03	1.502E-03	1.502E-03	1.502E-03	1.502E-03	1.502E-03	1.502E-03	1.502E-03	1.503E-03	1.503E-03
RH*104	2.500E-10	2.135E-10	1.824E-10	1.137E-10	5.171E-11	2.213E-12	1.960E-14	1.537E-18	7.406E-31	0.
RH 104	5.602E-10	2.309E-10	1.053E-10	2.512E-11	9.799E-12	4.183E-13	3.704E-15	2.904E-19	1.400E-31	0.
RH*105	2.953E-10	2.952E-10	2.952E-10	2.947E-10	2.930E-10	2.814E-10	2.608E-10	2.231E-10	1.395E-10	8.728E-11
RH 105	3.502E-06	3.502E-06	3.502E-06	3.503E-06	3.503E-06	3.506E-06	3.508E-06	3.504E-06	3.444E-06	3.336E-06
RH*106	2.345E-08	2.333E-08	2.321E-08	2.284E-08	2.224E-08	1.999E-08	1.703E-08	1.237E-08	4.735E-09	1.813E-09
RH 106	5.430E-10	5.150E-10	5.091E-10	5.069E-10	5.069E-10	5.069E-10	5.068E-10	5.068E-10	5.067E-10	5.066E-10
RH 107	2.458E-08	2.453E-08	2.439E-08	2.351E-08	2.120E-08	1.187E-08	4.630E-09	6.995E-10	2.411E-12	8.310E-15
RH 108	2.392E-10	2.055E-10	1.766E-10	1.113E-10	5.150E-11	2.363E-12	2.323E-14	2.244E-18	2.023E-30	0.
RH 109	2.337E-08	2.310E-08	2.284E-08	2.206E-08	2.082E-08	1.653E-08	1.169E-08	5.843E-09	7.305E-10	9.133E-11
RH 110	2.027E-11	4.935E-15	1.201E-18	1.733E-29	0.	0.	0.	0.	0.	0.
RH 111	1.325E-12	1.139E-30	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.506E-03	1.506E-03	1.506E-03	1.506E-03	1.506E-03	1.506E-03	1.506E-03	1.506E-03	1.506E-03	1.506E-03

BWRG 238 RG 1.7 PER ATL-8193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 46 PD

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	30.0 MIN.	2.0 HR.	5.0 HR.	8.0 HR.
PD 104	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
PD 105	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
PD 106	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
PD 107	4.056E-05	4.056E-05	4.056E-05	4.056E-05	4.056E-05	4.056E-05	4.056E-05	4.056E-05	4.056E-05	4.056E-05
PD 108	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
PD*109	7.720E-02	6.662E-02	5.748E-02	3.693E-02	1.787E-02	9.252E-04	1.109E-05	1.593E-09	4.718E-21	1.996E-32
PD 109	7.775E 01	7.775E 01	7.774E 01	7.772E 01	7.768E 01	7.735E 01	7.650E 01	7.399E 01	6.480E 01	5.842E 01
PD 110	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
PD*111	2.144E-01	2.139E-01	2.135E-01	2.121E-01	2.099E-01	2.013E-01	1.890E-01	1.686E-01	1.142E-01	7.823E-02
PD 111	1.554E 01	1.507E 01	1.461E 01	1.330E 01	1.139E 01	6.137E 00	2.474E 00	4.847E-01	9.295E-02	6.287E-02
PD 112	6.280E 00	6.276E 00	6.273E 00	6.263E 00	6.245E 00	6.177E 00	6.076E 00	5.879E 00	5.32[illegible] 00	4.823E 00
PD 113	4.874E 00	2.049E 00	1.736E 00	3.931E-01	3.307E-02	1.656E-06	5.864E-13	7.358E-26	0.	0.
PD 114	3.538E 00	2.651E 00	1.986E 00	8.351E-01	1.971E-01	6.119E-04	1.058E-07	3.165E-15	0.	0.
PD 115	2.338E 00	8.884E-01	3.376E-01	1.853E-02	1.468E-04	5.794E-13	1.436E-25	0.	0.	0.
PD 116	2.619E 00	6.544E-01	1.635E-01	2.551E-03	2.486E-06	2.239E-18	0.	0.	0.	0.
PD 117	1.451E 00	3.532E-04	8.599E-08	1.241E-18	0.	0.	0.	0.	0.	0.
TOTAL	1.145E 02	1.064E 02	1.031E 02	9.879E 01	9.577E 01	8.986E 01	8.523E 01	8.052E 01	7.003E 01	6.039E 01

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

PD 104	4.180E-04	4.180E-04	4.180E-04	4.180E-04	4.180E-04	4.180E-04	4.180E-04	4.180E-04	4.180E-04	4.180E-04
PD 105	1.242E-03	1.242E-03	1.242E-03	1.242E-03	1.242E-03	1.242E-03	1.242E-03	1.242E-03	1.242E-03	1.242E-03
PD 106	7.253E-04	7.253E-04	7.253E-04	7.253E-04	7.253E-04	7.253E-04	7.253E-04	7.254E-04	7.255E-04	7.256E-04
PD 107	7.935E-04	7.935E-04	7.935E-04	7.935E-04	7.935E-04	7.935E-04	7.935E-04	7.935E-04	7.935E-04	7.935E-04
PD 108	5.758E-04	5.758E-04	5.758E-04	5.758E-04	5.758E-04	5.758E-04	5.758E-04	5.758E-04	5.758E-04	5.758E-04
PD*109	1.930E-12	1.665E-12	1.437E-12	9.231E-13	4.416E-13	2.312E-14	2.771E-16	3.980E-20	1.179E-31	0.
PD 109	3.349E-07	3.349E-07	3.348E-07	3.348E-07	3.346E-07	3.332E-07	3.295E-07	3.187E-07	2.778E-07	2.387E-07
PD 110	1.684E-04	1.684E-04	1.684E-04	1.684E-04	1.684E-04	1.684E-04	1.684E-04	1.684E-04	1.684E-04	1.684E-04
PD*111	3.762E-10	3.754E-10	3.747E-10	3.723E-10	3.684E-10	3.533E-10	3.317E-10	2.924E-10	2.004E-10	1.373E-10
PD 111	1.816E-09	1.763E-09	1.709E-09	1.557E-09	1.333E-09	7.181E-10	2.895E-[illegible]	5.671E-11	1.088E-11	7.356E-12
PD 112	4.208E-08	4.206E-08	4.203E-08	4.197E-08	4.185E-08	4.139E-08	4.071E-08	3.939E-08	3.568E-08	3.232E-08
PD 113	3.479E-11	2.121E-11	1.293E-11	2.927E-12	2.462E-13	1.232E-17	4.366E-24	5.478E-37	0.	0.
PD 114	4.516E-11	3.384E-11	2.535E-11	1.066E-11	2.516E-12	7.811E-15	1.351E-18	4.041E-26	0.	0.
PD 115	8.906E-12	3.384E-12	1.286E-12	7.058E-14	5.594E-16	2.207E-24	5.471E-37	0.	0.	0.
PD 116	6.561E-12	1.739E-12	4.346E-13	6.781E-15	6.607E-18	5.952E-30	0.	0.	0.	0.
PD 117	6.428E-13	1.565E-16	3.809E-20	5.496E-31	0.	0.	0.	0.	0.	0.
TOTAL	3.923E-03	3.923E-03	3.923E-03	3.923E-03	3.923E-03	3.923E-03	3.923E-03	3.923E-03	3.924E-03	3.924E-03

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS AT. NO. 47 AG

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	8.0 HR.
AG 107	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
AG 108	2.008E-06	1.504E-06	1.127E-06	4.735E-07	1.117E-07	3.455E-10	5.944E-14	1.759E-21	0.	0.
AG*109	7.775E 01	7.775E 01	7.775E 01	7.773E 01	7.769E 01	7.737E 01	7.653E 01	7.403E 01	6.455E 01	5.547E 01
AG 109	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
AG*110	[illegible]6E-01	2.716E-01	2.716E-01	2.716E-01	2.716E-01	2.716E-01	2.716E-01	2.716E-01	2.715E-01	2.714E-01
AG 110	[illegible]E 01	2.608E 00	4.476E-01	7.872E-03	5.433E-03	5.432E-03	5.432E-03	5.431E-03	5.429E-03	5.428E-03
AG*111	[illegible] 01	1.543E 01	1.516E 01	1.403E 01	1.205E 01	6.493E 00	2.613E 00	5.060E-01	9.337E-02	6.310E-02
AG 111	1.555E 01	1.555E 01	1.555E 01	1.555E 01	1.555E 01	1.554E 01	1.552E 01	1.546E 01	1.529E 01	1.511E 01
AG 112	6.279E 00	6.279E 00	6.279E 00	6.279E 00	6.279E 00	6.274E 00	6.259E 00	6.203E 00	5.899E 00	5.490E 00
AG*113	4.734E 00	4.236E 00	3.340E 00	1.194E 00	1.447E-01	1.075E-05	4.060E-12	5.150E-25	0.	0.
AG 114	3.659E 00	2.736E 00	2.050E 00	8.620E-01	2.035E-01	6.316E-04	1.092E-07	3.267E-15	0.	0.
AG*115	6.811E-01	3.973E-01	1.683E-01	9.683E-03	7.687E-05	3.033E-13	7.518E-28	0.	0.	0.
AG 115	1.925E 00	1.896E 00	1.845E 00	1.671E 00	1.405E 00	7,026E-01	2.484E-01	3.106E-02	6.070E-05	1.186E-07
AG 116	2.667E 00	2.353E 00	1.867E 00	8.296E-01	2.075E-01	8.105E-04	1.978E-07	1.178E-14	0.	0.
AG 117	1.617E 00	9.243E-01	4.922E-01	7.431E-02	3.181E-03	1.068E-08	6.576E-17	2.491E-33	0.	0.
AG 118	2.208E 00	8.610E-04	3.356E-07	1.989E-17	1.791E-34	0.	0.	0.	0.	0.
TOTAL	1.470E 02	1.303E 02	1.252E 02	1.185E 02	1.138E 02	1.067E 02	1.014E 02	9.651E 01	8.611E 01	7.641E 01

CONCENTRATION - SHUTDOWN - GRAM ATOMS

AG 107	8.875E-11	8.875E-11	8.875E-11	8.875E-	875E-11	8.875E-11	8.876E-11	8.877E-11	8.879E-11	8.882E-11
AG 108	2.562E-17	1.919E-17	1.437E-17	6.041E-18	425E-18	4.407E-21	7.582E-25	2.245E-32	0.	0.
AG*109	2.755E-10	2.755E-10	2.755E-10	2.755E-10	2.753E-10	2.742E-10	2.712E-10	2.624E-10	2.287E-10	1.966E-10
AG 109	2.463E-04	2.463E-04	2.463E-04	2.463E-04	2.463E-04	2.463E-04	2.463E-04	2.463E-04	2.464E-04	2.464E-04
AG*110	5.408E-07	5.408E-07	5.408E-07	5.408E-07	5.408E-07	5.407E-07	5.407E-07	5.406E-07	5.405E-07	5.403E-07
AG 110	3.013E-11	5.333E-12	9.518E-13	1.674E-14	1.155E-14	1.155E-14	1.155E-14	1.155E-14	1.155E-14	1.154E-14
AG*111	1.019E-10	1.011E-10	9.942E-11	9.198E-11	7.902E-11	4.257E-11	1.713E-11	3.318E-12	6.121E-13	4.137E-13
AG 111	8.930E-07	8.930E-07	8.930E-07	8.930E-07	8.929E-07	8.924E-07	8.912E-07	8.881E-07	8.780E-07	8.880E-07
AG 112	6.409E-09	6.409E-09	6.409E-09	6.409E-09	6.409E-09	6.404E-09	6.388E-09	6.332E-09	6.021E-09	5.604E-09
AG*113	3.021E-11	2.703E-11	2.131E-11	7.618E-12	9.235E-13	6.862E-17	2.603E-23	3.266E-36	0.	0.
AG 114	1.459E-12	1.091E-12	8.173E-13	3.437E-13	8.113E-14	2.518E-16	4.356E-20	1.303E-27	0.	0.
AG*115	1.207E-12	7.039E-13	2.982E-13	1.716E-14	1.362E-16	5.374E-25	1.332E-37	0.	0.	0.
AG 115	2.047E-10	2.016E-10	1.962E-10	1.777E-10	1.495E-10	7.473E-11	2.642E-11	3.304E-12	6.456E-15	1.262E-17
AG 116	3.545E-11	3.128E-11	2.481E-11	1.103E-11	2.759E-12	1.077E-14	2.629E-18	1.566E-25	0.	0.
AG 117	9.457E-12	5.406E-12	2.879E-12	4.346E-13	1.861E-14	6.249E-20	3.846E-28	0.	0.	0.
AG 118	1.037E-12	4.043E-16	1.576E-19	9.338E-30	0.	0.	0.	0.	0.	0.
TOTAL	2.477E-04	2.477E-04	2.477E-04	2.477E-04	2.477E-04	2.477E-04	2.477E-04	2.477E-04	2.478E-04	2.478E-04

BWRS 238 RG 1.7 PER ATL-5193 — ACTIVITY AFTER SHUTDOWN - CURIES — 1095.0 MWD IN 1095.0 DAYS. — AT. NO. 48 CD

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	4.0 HR.	8.0 HR.
CD 108	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CD 109	5.763E-09	5.763E-09	5.763E-09	5.763E-09	5.763E-09	5.762E-09	5.762E-09	5.762E-09	5.761E-09	5.760E-09
CD 110	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CD*111	2.095E-03	2.085E-03	2.036E-03	1.952E-03	1.819E-03	1.370E-03	8.965E-04	3.837E-04	3.009E-05	2.389E-06
CD 111	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CD 112	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CD*113	2.706E-05	2.706E-05	2.706E-05	2.706E-05	2.706E-05	2.706E-05	2.706E-05	2.706E-05	2.706E-05	2.706E-05
CD 113	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CD 114	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CD*115	1.712E-01	1.712E-01	1.712E-01	1.712E-01	1.712E-01	1.711E-01	1.711E-01	1.710E-01	1.707E-01	1.703E-01
CD 115	2.441E 00	2.441E 00	2.441E 00	2.441E 00	2.440E 00	2.433E 00	2.420E 00	2.390E 00	2.299E 00	2.211E 00
CD 116	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CD*117	8.145E-01	8.139E-01	8.123E-01	8.082E-01	7.918E-01	7.398E-01	6.681E-01	5.449E-01	2.957E-01	1.604E-01
CD 117	8.202E-01	8.193E-01	8.170E-01	8.068E-01	7.879E-01	7.156E-01	6.194E-01	4.640E-01	1.951E-01	8.203E-02
CD 118	2.450E 00	2.420E 00	2.386E 00	2.287E 00	2.130E 00	1.606E 00	1.050E 00	4.495E-01	3.524E-02	2.762E-03
CD 119	2.450E 00	2.278E 00	2.118E 00	1.701E 00	1.181E 00	2.745E-01	3.075E-02	3.860E-04	7.634E-10	1.510E-15
CD 120	2.487E 00	1.243E 00	6.216E-01	7.770E-02	2.428E-03	2.313E-09	2.152E-18	0.	0.	0.
CD 121	2.668E 00	1.087E-01	4.429E-03	2.996E-07	3.364E-14	0.	0.	0.	0.	0.
TOTAL	1.430E 01	1.030E 01	9.373E 00	8.291E 00	7.506E 00	5.941E 00	4.981E 00	4.020E 00	2.996E 00	2.627E 00

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

CD 108	3.278E-12	3.278E-12	3.278E-12	3.278E-12	3.278E-12	3.278E-12	3.278E-12	3.278E-12	3.278E-12	3.278E-12
CD 109	2.094E-14	2.094E-14	2.094E-14	2.094E-14	2.094E-14	2.094E-14	2.094E-14	2.094E-14	2.093E-14	2.093E-14
CD 110	3.267E-05	3.267E-05	3.267E-05	3.267E-05	3.267E-05	3.267E-05	3.267E-05	3.267E-05	3.267E-05	3.267E-05
CD*111	5.459E-13	5.382E-13	5.308E-13	5.086E-13	4.739E-13	3.571E-13	2.336E-13	9.998E-14	7.838E-15	6.144E-16
CD 111	5.901E-05	5.901E-05	5.901E-05	5.901E-05	5.901E-05	5.901E-05	5.901E-05	5.902E-05	5.903E-05	5.904E-05
CD 112	2.448E-05	2.448E-05	2.448E-05	2.448E-05	2.448E-05	2.448E-05	2.448E-05	2.448E-05	2.449E-05	2.449E-05
CD*113	1.059E-09	1.059E-09	1.059E-09	1.059E-09	1.059E-09	1.059E-09	1.059E-09	1.059E-09	1.059E-09	1.059E-09
CD 113	2.026E-12	2.026E-12	2.026E-12	2.026E-12	2.027E-12	2.029E-12	2.032E-12	2.038E-12	2.056E-12	2.074E-12
CD 114	1.577E-05	1.577E-05	1.577E-05	1.577E-05	1.577E-05	1.577E-05	1.577E-05	1.577E-05	1.577E-05	1.577E-05
CD*115	5.636E-08	5.636E-08	5.636E-08	5.636E-08	5.636E-08	5.635E-08	5.634E-08	5.630E-08	5.619E-08	5.608E-08
CD 115	4.167E-08	4.167E-08	4.167E-08	4.166E-08	4.164E-08	4.153E-08	4.131E-08	4.079E-08	3.924E-08	3.775E-08
CD 116	1.294E-05	1.294E-05	1.294E-05	1.294E-05	1.294E-05	1.294E-05	1.294E-05	1.294E-05	1.294E-05	1.294E-05
CD*117	8.837E-10	8.831E-10	8.814E-10	8.736E-10	8.591E-10	8.027E-10	7.249E-10	5.913E-10	3.208E-10	1.741E-10
CD 117	6.280E-10	6.273E-10	6.256E-10	6.178E-10	6.033E-10	5.480E-10	4.743E-10	3.553E-10	1.494E-10	6.281E-11
CD 118	6.385E-10	6.305E-10	6.217E-10	5.958E-10	5.552E-10	4.184E-10	2.737E-10	1.171E-10	9.182E-12	7.198E-13
CD 119	1.238E-10	1.151E-10	1.070E-10	8.594E-11	5.967E-11	1.387E-11	1.554E-12	1.950E-14	3.856E-20	7.627E-26
CD 120	1.322E-11	6.811E-12	3.305E-12	4.131E-13	1.291E-14	1.230E-20	1.144E-28	0.	0.	0.
CD 121	3.073E-12	1.252E-13	5.101E-15	3.450E-19	3.874E-26	0.	0.	0.	0.	0.
	1.450E-04	1.450E-04	1.450E-04	1.450E-04	1.450E-04	1.450E-04	1.450E-04	1.450E-04	1.450E-04	1.450E-04

BWR8 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 49 IN

ISOTOPE	SHUTDOWN	30.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	8.0 HR.
IN 114	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
IN*115	2.441E 00	2.441E 00	2.441E 00	2.441E 00	2.441E 00	2.441E 00	2.440E 00	2.438E 00	2.400E 00	2.348E 00
IN 115	4.717E-15	4.717E-15	4.717E-15	4.717E-15	4.717E-15	4.717E-15	4.717E-15	4.717E-15	4.716E-15	4.719E-15
IN*116	8.075E-01	4.933E-09	3.014E-17	0.	0.	0.	0.	0.	0.	0.
IN 116	1.038E 00	1.025E 00	1.012E 00	9.739E-01	9.133E-01	7.065E-01	4.807E-01	2.223E-01	2.208E-02	2.191E-03
IN*117	8.201E-01	8.201E-01	8.201E-01	8.200E-01	8.193E-01	8.115E-01	7.874E-01	7.108E-01	4.315E-01	2.208E-01
IN 117	1.200E 00	1.200E 00	1.200E 00	1.200E 00	1.198E 00	1.185E 00	1.144E 00	1.022E 00	6.220E-01	3.422E-01
IN 118	2.450E 00	2.424E 00	2.390E 00	2.290E 00	2.134E 00	1.608E 00	1.052E 00	4.503E-01	3.530E-02	2.767E-03
IN*119	2.266E 00	2.260E 00	2.250E 00	2.191E 00	2.030E 00	1.214E 00	4.384E-01	4.617E-02	4.547E-05	4.441E-08
IN 119	3.583E-01	3.557E-01	3.490E-01	3.168E-01	2.551E-01	1.018E-01	2.853E-02	2.860E-03	2.574E-06	2.514E-09
IN 120	2.571E 00	2.054E 00	1.338E 00	2.449E-01	9.439E-03	9.890E-09	9.213E-18	0.	0.	0.
IN*121	1.460E 00	1.243E 00	9.9[illegible]3E-01	5.100E-01	1.668E-01	1.906E-03	2.330E-06	3.480E-12	1.160E-29	0.
IN 121	1.394E 00	5.618E-01	1.4[illegible]1E-0[illegible]	2.352E-03	2.292E-06	2.065E-18	0.	0.	0.	0.
IN 123	8.426E 00	2.023E [illegible]	[illegible].370E-01	1.988E-02	6.150E-05	5.631E-15	4.934E-30	0.	0.	0.
TOTAL	2.323E 01	1.64[illegible]E 01	1.358E 01	1.101E 01	9.968E 00	8.070E 00	6.371E 00	4.890E 00	3.511E 00	2.919E 00

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

IN 114	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
IN*115	3.505E-09	3.505E-09	3.505E-09	3.505E-09	3.505E-09	3.505E-09	3.503E-09	3.496E-09	3.446E-09	3.367E-09
IN 115	7.910E-06	7.910E-06	7.910E-06	7.910E-06	7.910E-06	7.910E-06	7.910E-06	7.911E-06	7.912E-06	7.914E-06
IN*116	1.574E-13	9.614E-22	5.874E-30	0.	0.	0.	0.	0.	0.	0.
IN 116	2.980E-10	2.944E-10	2.90[illegible]E-10	2.796E-10	2.623E-10	2.029E-10	1.380E-10	6.390E-11	6.340E-12	6.291E-13
IN*117	5.050E-10	5.050E-10	5.050E-10	5.049E-10	5.045E-10	4.998E-10	4.849E-10	4.377E-10	2.657E-10	1.398E-10
IN 117	2.807E-10	2.807E-10	2.807E-10	2.806E-10	2.804E-10	2.771E-10	2.676E-10	2.392E-10	1.455E-10	6.005E-11
IN 118	1.085E-12	1.074E-12	1.059E-12	1.015E-12	9.453E-13	7.124E-13	4.661E-13	1.995E-13	1.564E-14	1.226E-15
IN*119	2.169E-10	2.164E-10	2.153E-10	2.097E-10	1.943E-10	1.162E-10	4.196E-11	4.419E-12	4.352E-15	4.251E-18
IN 119	4.000E-12	3.971E-12	3.897E-12	3.537E-12	2.848E-12	1.137E-12	3.185E-13	2.970E-14	2.874E-17	2.808E-20
IN 120	1.048E-11	8.372E-12	5.454E-12	9.980E-13	3.847E-14	4.031E-20	3.755E-29	0.	0.	0.
IN*121	2.406E-11	2.050E-11	1.644E-11	8.409E-12	2.749E-12	3.143E-14	3.841E-17	5.738E-23	0.	0.
IN 121	3.706E-12	1.493E-12	3.962E-13	6.252E-15	6.091E-18	5.488E-30	0.	0.	0.	0.
IN 123	2.050E-11	8.453E-12	2.032E-12	6.340E-14	1.961E-16	1.796E-28	0.	0.	0.	0.
TOTAL	7.914E-06	7.914E-06	7.914E-06	7.914E-06	7.914E-06	7.914E-06	7.915E-06	7.915E-06	7.916E-06	7.917E-06

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 50 SN

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	8.0 HR.
SN 114	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SN 115	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SN 116	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SN*117	1.054E-05	1.054E-05	1.054E-05	1.054E-05	1.054E-05	1.053E-05	1.052E-05	1.050E-05	1.047E-05	1.037E-05
SN 117	0	0.	0.	0.	0.	0.	0.	0.	0.	0.
SN 118	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SN*119	1.544E-02	1.544E-02	1.544E-02	1.544E-02	1.544E-02	1.544E-02	1.544E-02	1.544E-02	1.543E-02	1.543E-02
SN 119	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SN 120	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SN*121	3.635E-04	3.635E-04	3.635E-04	3.635E-04	3.635E-04	3.635E-04	3.635E-04	3.635E-04	3.636E-04	3.635E-04
SN 121	2.854E 00	2.854E 00	2.853E 00	2.850E 00	2.845E 00	2.821E 00	2.785E 00	2.715E 00	2.613E 00	2.327E 00
SN 122	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SN*123	6.510E 00	6.458E 00	6.366E 00	6.052E 00	5.550E 00	3.925E 00	2.334E 00	8.252E-01	3.649E-02	1.613E-03
SN 123	4.794E-01	4.794E-01	4.794E-01	4.794E-01	4.794E-01	4.794E-01	4.793E-01	4.792E-01	4.789E-01	4.786E-01
SN 124	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SN*125	1.618E-01	1.505E-01	1.401E-01	1.130E-01	7.908E-02	1.894E-02	2.220E-03	3.060E-05	7.910E-11	2.061E-16
SN 125	4.400E 00	4.400E 00	4.400E 00	4.399E 00	4.398E 00	4.393E 00	4.387E 00	4.374E 00	4.334E 00	4.296E 00
SN 126	1.472E-04	1.472E-04	1.472E-04	1.472E-04	1.472E-04	1.472E-04	1.472E-04	1.472E-04	1.472E-04	1.472E-04
SN 127	2.620E 01	2.606E 01	2.591E 01	2.549E 01	2.480E 01	2.222E 01	1.884E 01	1.354E 01	5.031E 00	1.869E 00
SN 128	4.330E 01	4.282E 01	4.234E 01	4.095E 01	3.872E 01	3.096E 01	2.214E 01	1.132E 01	1.514E 00	2.07[illegible]E-01
SN 129	6.516E 01	5.941E 01	5.416E 01	4.105E 01	2.586E 01	4.072E 00	2.544E-01	9.936E-04	5.917E-11	3.[illegible]24E-16
SN 130	9.280E 01	7.107E 01	5.444E 01	2.446E 01	6.447E 00	3.112E-02	1.044E-06	1.174E-12	0.	0.
SN 131	7.897E 01	4.633E 01	2.718E 01	5.490E 00	3.817E-01	8.915E-06	1.006E-12	1.282E-26	0.	0.
SN 132	3.829E 01	1.914E 01	9.572E 00	1.196E 00	3.738E-02	3.562E-08	3.314E-17	0.	0.	0.
SN 133	7.007E 00	3.289E 00	1.544E 00	1.596E-01	3.63[illegible]E-03	9.796E-10	1.369E-19	0.	0.	0.
TOTAL	3.661E 02	2.825E 02	2.294E 02	1.527E 02	1.096E 02	6.893E 01	5.123E 01	3.327E 01	1.392E 01	9.190E 00

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

SN 114	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SN 115	5.282E-07	5.282E-07	5.282E-07	5.282E-07	5.282E-07	5.282E-07	5.282E-07	5.283E-07	5.284E-07	5.284E-07
SN 116	2.827E-06	2.827E-06	2.827E-06	2.827E-06	2.827E-06	2.827E-06	2.827E-06	2.828E-06	2.828E-06	2.828E-06
SN*117	1.130E-12	1.130E-12	1.130E-12	1.130E-12	1.130E-12	1.129E-12	1.128E-12	1.126E-12	1.119E-12	1.112E-12
SN 117	7.930E-06	7.930E-06	7.930E-06	7.930E-06	7.930E-06	7.930E-06	7.930E-06	7.931E 06	7.931E-06	7.932E-06
SN 118	1.144E-05	1.144E-05	1.144E-05	1.144E-05	1.144E-05	1.144E-05	1.144E-05	1.144E-05	1.144E-05	1.144E-05
SN*119	2.956E-08	2.956E-08	2.956E-08	2.956E-08	2.956E-08	2.956E-08	2.956E-08	2.956E-08	2.955E-08	2.954E-08
SN 119	1.163E-05	1.163E-05	1.163E-05	1.163E-05	1.163E-05	1.163E-05	1.163E-05	1.163E-05	1.163E-05	1.163E-05
SN 120	1.188E-05	1.188E-05	1.188E-05	1.188E-05	1.188E-05	1.188E-05	1.188E-05	1.188E-05	1.188E-05	1.188E-05
SN*121	7.620E-07	7.620E-07	7.620E-07	7.620E-07	7.620E-07	7.620E-07	7.620E-07	7.620E-07	7.620E-07	7.620E-07
SN 121	2.459E-08	2.458E-08	2.458E-08	2.456E-08	2.451E-08	2.430E-08	2.399E-08	2.338E-08	2.165E-08	2.005E-08
SN 122	1.433E-05	1.433E-05	1.433E-05	1.433E-05	1.433E-05	1.433E-05	1.433E-05	1.433E-05	1.433E-05	1.433E-05
SN*123	1.385E-09	1.374E-09	1.354E-09	1.287E-09	1.181E-09	8.348E-10	4.964E-10	1.755E-10	7.760E-12	3.430E-13
SN 123	4.736E-07	4.736E-07	4.736E-07	4.736E-07	4.736E-07	4.735E-07	4.735E-07	4.734E-07	4.730E-07	4.727E-07
SN 124	2.016E-05	2.016E-05	2.016E-05	2.016E-05	2.016E-05	2.016E-05	2.016E-05	2.016E-05	2.016E-05	2.016E-05
SN*125	8.335E-12	7.760E-12	7.225E-12	5.831E-12	4.079E-12	9.770E-13	1.145E-13	1.573E-15	4.080E-21	1.058E-26
SN 125	3.241E-07	3.241E-07	3.241E-07	3.240E-07	3.240E-07	3.236E-07	3.232E-07	3.222E-07	3.193E-07	3.164E-07
SN 126	4.115E-05	4.115E-05	4.115E-05	4.115E-05	4.115E-05	4.115E-05	4.115E-05	4.115E-05	4.115E-05	4.115E-05
SN 127	1.756E-08	1.746E-08	1.736E-08	1.708E-08	1.662E-08	1.489E-08	1.262E-08	9.074E-09	3.371E-09	1.253E-09
SN 128	1.428E-08	1.412E-08	1.396E-08	1.350E-08	1.277E-08	1.021E-08	7.301E-09	3.733E-09	4.931E-10	6.673E-11
SN 129	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

SN 1[illegible]	[illegible]	11	7.523E-12	7.779E-13	1.772E-14	4.774E-21	0.874E-31	0.	0.	0.
TOTAL	[illegible]	[illegible]-04	1.235E-04	1.235E-04	1.235E-04	1.235E-04	1.235E-04	1.235E-04	1.235E-04	1.235E-04

BWR6 238 R9 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 51 SB

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	8.0 HR.
SB 121	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SB*122	7.980E-04	6.748E-04	5.721E-04	3.487E-04	1.528E-04	9.626E-06	3.977E-08	1.987E-12	2.479E-25	0.
SB 122	4.945E-02	4.944E-02	4.943E-02	4.941E-02	4.936E-02	4.919E-02	4.893E-02	4.841E-02	4.680E-02	4.540E-02
SB 123	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SB*124	2.660E 00	1.701E 00	1.087E 00	2.841E-01	3.034E-02	3.949E-06	5.862E-12	1.292E-23	0.	0.
SB 124	2.958E 00	2.958E 00	2.958E 00	2.958E 00	2.957E 00	2.957E 00	2.956E 00	2.955E 00	2.951E 00	2.948E 00
SB 125	2.527E 00	2.527E 00	2.527E 00	2.527E 00	2.527E 00	2.527E 00	2.528E 00	2.528E 00	2.528E 00	2.528E 00
SB*126	6.284E-01	6.059E-01	5.842E-01	5.236E-01	4.363E-01	2.104E-01	7.049E-02	8.023E-03	1.583E-04	1.472E-04
SB 126	8.598E-01	8.598E-01	8.598E-01	8.598E-01	8.597E-01	8.593E-01	8.584E-01	8.565E-01	8.506E-01	8.447E-01
SB 127	3.103E 01	3.103E 01	3.103E 01	3.103E 01	3.102E 01	3.100E 01	3.096E 01	3.085E 01	3.036E 01	2.977E 01
SB*128	4.479E 01	4.459E 01	4.437E 01	4.362E 01	4.214E 01	3.515E 01	2.552E 01	1.309E 01	1.751E 00	2.341E-01
SB 128	1.299E 00	1.299E 00	1.299E 00	1.299E 00	1.298E 00	1.291E 00	1.272E 00	1.214E 00	9.925E-01	7.917E-01
SB 129	8.255E 01	8.249E 01	8.242E 01	8.214E 01	8.148E 01	7.783E 01	7.191E 01	6.121E 01	3.775E 01	2.328E 01
SB 130	1.929E 02	1.908E 02	1.884E 02	1.802E 02	1.653E 02	1.139E 02	6.495E 01	2.110E 01	7.238E-01	2.483E-02
SB 131	2.459E 02	2.408E 02	2.352E 02	2.175E 02	1.696E 02	1.089E 02	4.741E 01	8.981E 00	6.107E-02	4.152E-04
SB 132	2.675E 02	2.194E 02	1.782E 02	9.286E 01	3.053E 01	3.492E-01	4.268E-04	6.375E-10	2.125E-27	0.
SB 133	1.905E 02	1.405E 02	1.154E 02	5.369E 01	1.489E 01	8.775E-02	3.967E-05	8.110E-12	8.927E-32	0.
SB 134	8.809E 01	1.552E 00	3.538E-02	4.191E-07	2.580E-15	0.	0.	0.	0.	0.
SB 135	3.668E 01	1.131E-08	3.491E-18	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.171E 03	9.692E 02	8.844E 02	7.098E 02	5.631E 02	3.752E 02	2.485E 02	1.429E 02	7.802E 01	6.046E 01

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

SB 121	1.260E-05	1.260E-05	1.260E-05	1.260E-05	1.260E-05	1.261E-05	1.261E-05	1.261E-05	1.261E-05	1.261E-05
SB*122	1.777E-14	1.507E-14	1.278E-14	7.786E-15	3.411E-15	1.256E-16	3.879E-19	4.436E-23	5.532E-36	0.
SB 122	1.022E-09	1.022E-09	1.022E-09	1.022E-09	1.021E-09	1.017E-09	1.012E-09	1.001E-09	9.692E-10	9.386E-10
SB 123	2.773E-05	2.773E-05	2.773E-05	2.773E-05	2.773E-05	2.773E-05	2.773E-05	2.773E-05	2.773E-05	2.773E-05
SB*124	2.192E-11	1.401E-11	8.958E-12	2.341E-12	2.500E-13	3.253E-17	4.830E-23	1.064E-34	0.	0.
SB 124	1.363E-06	1.363E-06	1.363E-06	1.363E-06	1.363E-06	1.363E-06	1.363E-06	1.362E-06	1.360E-06	1.358E-06
SB 125	1.907E-05	1.907E-05	1.907E-05	1.907E-05	1.907E-05	1.907E-05	1.907E-05	1.907E-05	1.907E-05	1.906E-05
SB*126	6.347E-11	6.120E-11	5.900E-11	5.289E-11	4.407E-11	2.125E-11	7.120E-12	8.103E-13	1.599E-14	1.487E-14
SB 126	8.230E-08	8.230E-08	8.230E-08	8.229E-08	8.229E-08	8.225E-08	8.217E-08	8.198E-08	8.142E-08	8.085E-08
SB 127	9.266E-07	9.266E-07	9.266E-07	9.265E-07	9.264E-07	9.259E-07	9.247E-07	9.214E-07	9.068E-07	8.890E-07
SB*128	2.382E-09	2.371E-09	2.359E-09	2.319E-09	2.241E-09	1.869E-09	1.357E-09	6.962E-10	9.309E-11	1.2[illegible]5E-11
SB 128	3.730E-09	3.730E-09	3.730E-09	3.729E-09	3.727E-09	3.709E-09	3.654E-09	3.486E-09	2.850E-09	2.27[illegible]E-09
SB 129	1.133E-07	1.132E-07	1.131E-07	1.127E-07	1.118E-07	1.068E-07	9.868E-08	8.400E-08	5.180E-08	3.19[illegible]E-08
SB 130	3.795E-08	3.754E-08	3.707E-08	3.544E-08	3.251E-08	2.242E-08	1.278E-08	4.151E-09	1.424E-10	4.884E-12
SB 131	3.269E-08	3.202E-08	3.127E-08	2.892E-08	2.52[illegible]E-08	1.448E-08	6.302E-09	1.194E-09	8.117E-12	5.519E-14
SB 132	4.410E-09	3.617E-09	2.937E-09	1.531E-09	5.033E-10	5.757E-12	7.036E-15	1.051E-20	3.503E-38	0.
SB 133	2.735E-09	2.131E-09	1.656E-09	7.708E-10	2.138E-10	1.260E-12	5.696E-16	1.164E-22	0.	0.
SB 134	6.637E-11	1.513E-12	3.449E-14	4.085E-19	2.514E-27	0.	0.	0.	0.	0.
SB 135	6.173E-12	1.904E-21	5.875E-31	0.	0.	0.	0.	0.	0.	0.
TOTAL	6.198E-05	6.198E-05	6.197E-05	6.197E-05	6.196E-05	6.193E-05	6.190E-05	6.187E-05	6.182E-05	6.178E-05

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 52 TE

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	10 HR.
TE 122	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
TE 124	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
TE*125	5.189E-01	5.189E-01	5.189E-01	5.189E-01	5.189E-01	5.189E-01	5.189E-01	5.189E-01	5.189E-01	5.190E-01
TE 125	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
TE 126	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
TE*127	4.699E 00	4.699E 00	4.699E 00	4.699E 00	4.699E 00	4.699E 00	4.699E 00	4.699E 00	4.699E 00	4.699E 00
TE 127	3.072E 01	3.072E 01	3.072E 01	3.072E 01	3.072E 01	3.072E 01	3.072E 01	3.071E 01	3.065E 01	3.060E 01
TE 128	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
TE*129	1.298E 01	1.298E 01	1.298E 01	1.298E 01	1.298E 01	1.298E 01	1.298E 01	1.298E 01	1.298E 01	1.294E 01
TE 129	7.850E 01	7.850E 01	7.849E 01	7.849E 01	7.846E 01	7.801E 01	7.640E 01	7.093E 01	5.072E 01	3.507E 01
TE 130	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
TE*131	6.223E 01	6.221E 01	6.219E 01	6.214E 01	6.205E 01	6.165E 01	6.100E 01	5.964E 01	5.565E 01	5.193E 01
TE 131	2.405E 02	2.342E 02	2.280E 02	2.107E 02	1.848E 02	1.109E 02	5.451E 01	1.910E 01	1.021E 01	9.479E 00
TE 132	4.181E 02	4.160E 02	4.160E 02	4.159E 02	4.156E 02	4.144E 02	4.126E 02	4.089E 02	3.992E 02	3.877E 02
TE*133	2.998E 02	2.974E 02	2.946E 02	2.849E 02	2.673E 02	2.030E 02	1.339E 02	5.830E 01	4.807E 00	3.984E-01
TE 133	1.776E 02	1.726E 02	1.673E 02	1.507E 02	1.247E 02	6.110E 01	2.802E 01	1.025E 01	6.311E-01	6.853E-02
TE 134	4.733E 02	4.658E 02	4.582E 02	4.361E 02	4.015E 02	2.886E 02	1.759E 02	6.533E 01	3.348E 00	1.715E-01
TE 135	2.264E 02	5.453E 01	1.299E 01	1.755E-01	1.345E-04	4.646E-17	0.	0.	0.	0.
TOTAL	2.023E 03	1.830E 03	1.767E 03	1.688E 03	1.583E 03	1.267E 03	9.913E 02	7.414E 02	5.729E 02	5.336E 02

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

TE 122	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
TE 124	1.187E-05	1.187E-05	1.187E-05	1.187E-05	1.187E-05	1.187E-05	1.187E-05	1.187E-05	1.187E-05	1.187E-05
TE*125	2.305E-07	2.305E-07	2.305E-07	2.305E-07	2.305E-07	2.305E-07	2.305E-07	2.305E-07	2.305E-07	2.305E-07
TE 125	6.580E-06	6.580E-06	6.580E-06	6.580E-06	6.581E-06	6.581E-06	6.581E-06	6.582E-06	6.583E-06	6.585E-06
TE 126	3.032E-06	3.032E-06	3.032E-06	3.033E-06	3.033E-06	3.033E-06	3.033E-06	3.033E-06	3.033E-06	3.034E-06
TE*127	3.922E-06	3.922E-06	3.922E-06	3.922E-06	3.922E-06	3.922E-06	3.922E-06	3.922E-06	3.922E-06	3.922E-06
TE 127	9.215E-08	9.215E-08	9.215E-08	9.215E-08	9.215E-08	9.215E-06	9.214E-08	9.212E-08	9.192E-08	9.149E-08
TE 128	2.489E-04	2.489E-04	2.489E-04	2.489E-04	2.489E-04	2.463E-04	2.489E-04	2.489E-04	2.489E-04	2.489E-04
TE*129	3.380E-08	3.380E-08	3.380E-08	3.380E-08	3.380E-08	3.380E-08	3.379E-08	3.379E-08	3.375E-08	3.369E-08
TE 129	2.880E-08	2.880E-08	2.880E-08	2.879E-08	2.878E-08	2.862E-08	2.803E-08	2.602E-08	1.861E-08	1.287E-08
TE 130	1.160E-03	1.160E-03	1.160E-03	1.160E-03	1.160E-03	1.160E-03	1.160E-03	1.160E-03	1.160E-03	1.160E-03
TE*131	5.956E-07	5.955E-07	5.953E-07	5.948E-07	5.939E-07	5.900E-07	5.838E-07	5.708E-07	5.327E-07	4.970E-07
TE 131	3.197E-08	3.113E-08	3.031E-08	2.800E-08	2.457E-08	1.474E-08	7.246E-09	2.539E-09	1.358E-09	1.280E-09
TE 132	1.035E-05	1.035E-05	1.035E-05	1.035E-05	1.034E-05	1.031E-05	1.027E-05	1.018E-05	9.909E-06	9.640E-06
TE*133	7.971E-08	7.906E-08	7.831E-08	7.575E-08	7.106E-08	5.398E-08	3.561E-08	1.550E-08	1.278E-09	1.054E-10
TE 133	1.171E-08	1.138E-08	1.103E-08	9.938E-09	8.224E-09	4.029E-09	1.847E-09	6.758E-10	5.480E-11	4.519E-12
TE 134	1.057E-07	1.040E-07	1.023E-07	9.737E-08	8.966E-08	6.445E-08	3.928E-08	1.459E-08	7.475E-10	3.830E-11
TE 135	5.818E-10	1.401E-10	3.337E-11	4.509E-13	3.456E-16	1.194E-28	0.	0.	0.	0.
TOTAL	1.449E-03	1.449E-03	1.449E-03	1.449E-03	1.449E-03	1.449E-03	1.449E-03	1.449E-03	1.449E-03	1.449E-03

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 FWD IN 1095.0 DAYS. AT. NO. 93 I

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	8.0 HR
I 127	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
I 128	2.787E 01	2.711E 01	2.637E 01	2.426E 01	2.112E 01	1.213E 01	5.292E 00	1.000E 00	6.801E-03	4.624E-0[illegible]
I 129	5.122E-04	5.122E-04	5.122E-04	5.122E-04	5.122E-04	5.122E-04	5.122E-04	5.122E-04	5.122E-04	5.122E-04
I 130	4.323E 02	4.319E 02	4.315E 02	4.303E 02	4.283E 02	4.204E 02	4.088E 02	3.866E 02	3.269E 02	2.764E 02
I 131	1.469E 04	1.469E 04	1.469E 04	1.468E 04	1.468E 04	1.466E 04	1.463E 04	1.458E 04	1.443E 04	1.427E 04
I 132	2.080E 04	2.070E 04	2.060E 04	2.029E 04	1.980E 04	1.793E 04	1.546E 04	1.151E 04	4.866E 03	2.189E 03
I 133	2.404E 04	2.402E 04	2.401E 04	2.397E 04	2.391E 04	2.365E 04	2.327E 04	2.251E 04	2.039E 04	1.847E 04
I 134	3.109E 04	3.068E 04	3.028E 04	2.911E 04	2.726E 04	2.096E 04	1.413E 04	6.406E 03	5.923E 02	5.432E 01
I 135	2.461E 04	2.457E 04	2.453E 04	2.441E 04	2.421E 04	2.344E 04	2.233E 04	2.026E 04	1.514E 04	1.131E 04
I 136	1.205E 04	9.563E 03	9.095E 03	7.826E 03	6.091E 03	2.236E 03	4.973E 02	2.460E 01	2.977E-03	3.602E-07
I 137	1.264E 04	2.070E 03	3.392E 02	1.491E 00	1.761E-04	3.418E-20	0.	0.	0.	0.
I 138	9.545E 03	2.032E 01	4.668E-02	5.658E-10	3.619E-23	0.	0.	0.	0.	0.
I 139	9.651E 03	8.925E-06	8.253E-15	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.569E 05	1.268E 05	1.240E 05	1.207E 05	1.164E 05	1.033E 05	9.072E 04	7.569E 04	5.574E 04	4.657E 04

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

I 127	6.565E-03	6.565E-03	6.565E-03	6.565E-03	6.565E-03	6.565E-03	6.565E-03	6.565E-03	6.565E-03	6.565E-03
I 128	3.705E-09	3.603E-09	3.505E-09	3.225E-09	2.808E-09	1.612E-09	7.018E-10	1.330E-10	9.040E-13	6.147E-15
I 129	2.290E-02	2.290E-02	2.290E-02	2.290E-02	2.290E-02	2.290E-02	2.290E-02	2.290E-02	2.290E-02	2.290E-02
I 130	1.710E-06	1.709E-06	1.707E-06	1.702E-06	1.694E-06	1.663E-06	1.617E-06	1.529E-06	1.293E-06	1.094E-06
I 131	9.053E-04	9.053E-04	9.052E-04	9.051E-04	9.048E-04	9.037E-04	9.021E-04	8.989E-04	8.893E-04	8.798E-04
I 132	1.513E-05	1.506E-05	1.498E-05	1.476E-05	1.440E-05	1.304E-05	1.125E-05	8.376E-06	3.540E-06	1.593E-06
I 133	1.811E-04	1.810E-04	1.809E-04	1.806E-04	1.802E-04	1.585E-04	1.539E-04	1.508E-04	1.366E-04	1.238E-04
I 134	8.596E-06	8.484E-06	8.373E-06	8.050E-06	7.538E-06	5.796E-06	3.906E-06	1.771E-06	1.638E-07	1.502E-08
I 135	5.600E-05	5.591E-05	5.581E-05	5.554E-05	5.510E-05	5.334E-05	5.081E-05	4.611E-05	3.445E-05	2.574E-05
I 136	7.395E-07	7.034E-07	6.690E-07	5.756E-07	4.481E-07	1.645E-07	3.658E-08	1.809E-09	2.189E-13	2.650E-17
I 137	2.575E-08	4.218E-09	6.911E-10	3.039E-12	3.587E-16	6.965E-32	0.	0.	0.	0.
I 138	5.366E-09	1.233E-11	2.831E-14	3.432E-22	2.196E-35	0.	0.	0.	0.	0.
I 139	1.710E-09	1.581E-18	1.462E-27	0.	0.	0.	0.	0.	0.	0.
TOTAL	3.062E-02	3.062E-02	3.062E-02	3.061E-02	3.061E-02	3.060E-02	3.059E-02	3.058E-02	3.053E-02	3.050E-02

BWR6 238 RG 1.7 PER ATL-8193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 114 XE

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	8.0 HR.
XE 128	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
XE 129	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
XE 130	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
XE*131	1.760E 02	1.760E 02	1.760E 02	1.760E 02	1.760E 02	1.759E 02	1.758E 02	1.756E 02	1.750E 02	1.741E 02
XE 131	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
XE 132	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
XE*133	1.954E 03	1.954E 03	1.953E 03	1.952E 03	1.951E 03	1.945E 03	1.937E 03	1.919E 03	1.867E 03	1.815E 03
XE 133	5.648E 04	5.648E 04	5.647E 04	5.646E 04	5.645E 04	5.639E 04	5.631E 04	5.613E 04	5.559E 04	5.502E 04
XE 134	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
XE*135	1.698E 04	1.653E 04	1.610E 04	1.491E 04	1.325E 04	9.226E 03	6.957E 03	5.726E 03	4.241E 03	3.168E 03
XE 135	9.781E 03	9.812E 03	9.843E 03	9.931E 03	1.007E 04	1.052E 04	1.104E 04	1.182E 04	1.300E 04	1.374E 04
XE 136	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
XE 137	4.705E 04	4.015E 04	3.361E 04	1.947E 04	7.821E 03	2.037E 02	8.562E-01	1.513E-05	8.34[illegible]E-20	0.
XE 138	4.433E 04	4.226E 04	4.022E 04	3.467E 04	2.707E 04	1.005E 04	2.277E 03	1.167E 02	1.[illegible]E-02	7.120E-08
XE 139	3.951E 04	1.450E 04	5.258E 03	2.505E 02	1.569E 00	2.413E-09	1.455E-22	0.	0.	0.
XE 140	1.937E 04	9.292E 02	4.459E 01	4.926E-03	1.253E-09	0.	0.	0.	0.	0.
XE 141	5.901E 03	3.001E-08	1.526E-19	0.	0.	0.	0.	0.	0.	0.
XE 142	1.321E 03	1.148E-12	9.974E-28	0.	0.	0.	0.	0.	0.	0.
XE 143	1.945E 02	2.971E-17	0.	0.	0.	0.	0.	0.	0.	0.
XE 144	2.100E 01	1.857E-01	1.842E-03	1.134E-09	6.127E-20	0.	0.	0.	0.	0.
TOTAL	2.431E 05	1.828E 05	1.637E 05	1.378E 05	1.168E 05	8.852E 04	7.869E 04	7.588E 04	7.487E 04	7.322E 04

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

XE 128	1.404E-04	1.404E-04	1.404E-04	1.404E-04	1.404E-04	1.404E-04	1.404E-04	1.404E-04	1.4[illegible]-04	1.404E-04
XE 129	7.934E-07	7.934E-07	7.934E-07	7.934E-07	7.934E-07	7.934E-07	7.934E-07	7.934E-07	7.93[illegible]-07	7.934E-07
XE 130	2.573E-03	2.573E-03	2.573E-03	2.573E-03	2.573E-03	2.573E-03	2.573E-03	2.573E-03	2.573[illegible]-03	2.573E-03
XE*131	1.604E-05	1.604E-05	1.604E-05	1.604E-05	1.604E-05	1.603E-05	1.602E-05	1.600E-05	1.5[illegible]4E-05	1.588E-05
XE 131	1.370E-01	1.370E-01	1.370E-01	1.370E-01	1.370E-01	1.370E-01	1.370E-01	1.370E-01	1.[illegible]71E-01	1.371E-01
XE 132	2.482E-01	2.482E-01	2.482E-01	2.482E-01	2.482E-01	2.482E-01	2.482E-01	2.482E-01	2.48[illegible]-01	2.482E-01
XE*133	3.441E-05	3.441E-05	3.440E-05	3.439E-05	3.436E-05	3.426E-05	3.411E-05	3.380E-05	3.269E-05	3.197E-05
XE 133	2.279E-03	2.279E-03	2.279E-03	2.279E-03	2.278E-03	2.276E-03	2.272E-03	2.265E-03	2.243E-03	2.220E-03
XE 134	3.697E-01	3.697E-01	3.697E-01	3.697E-01	3.697E-01	3.697E-01	3.697E-01	3.697E-01	3.697E-01	3.697E-01
XE*135	1.408E-06	1.371E-06	1.335E-06	1.237E-06	1.099E-06	7.651E-07	5.769E-07	4.748E-07	3.517E-07	2.628E-07
XE 135	2.872E-05	2.881E-05	2.890E-05	2.916E-05	2.956E-05	3.089E-05	3.241E-05	3.469E-05	3.816E-05	3.827E-05
XE 136	5.968E-01	5.968E-01	5.968E-01	5.968E-01	5.968E-01	5.968E-01	5.968E-01	5.968E-01	5.968E-01	5.968E-01
XE 137	9.507E-07	8.114E-07	6.792E-07	3.934E-07	1.581E-07	4.116E-09	1.730E-11	3.057E-16	1.685E-30	0.
XE 138	3.300E-06	3.146E-06	2.994E-06	2.581E-06	2.015E-06	7.485E-07	1.695E-07	8.689E-09	1.171E-12	1.578E-18
XE 139	1.435E-07	5.269E-08	1.910E-08	9.101E-10	5.699E-12	8.764E-21	5.285E-34	0.	0.	0.
XE 140	2.350E-08	1.128E-09	5.412E-1[illegible]	5.[illegible]79E-15	1.521E-21	0.	0.	0.	0.	0.
XE 141	8.365E-10	4.253E-21	2.163E-32	0.	0.	0.	0.	0.	0.	0.
XE 142	1.404E-10	1.220E-25	0.	0.	0.	0.	0.	0.	0.	0.
XE 143	1.655E-11	2.528E-30	0.	0.	0.	0.	0.	0.	0.	0.
XE 144	1.637E-11	1.447E-13	1.280E-15	8.84[illegible]E-22	4.778E-32	0.	0.	0.	0.	0.
TOTAL	1.357E 00	1.357E 00	1.357E 00	1.357E 00	1.357E 00	1.357E 00	1.357E 00	1.357E 00	1.357E 00	1.357E 00

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 99 C8

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	8.0 HR.
CS 133	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CS*134	5.155E 00	5.135E 00	5.114E 00	5.054E 00	4.954E 00	4.574E 00	4.059E 00	3.196E 00	1.580E 00	7.614E-01
CS 134	1.946E 01	1.946E 01	1.946E 01	1.946E 01	1.946E 01	1.946E 01	1.946E 01	1.945E 01	1.945E 01	1.945E 01
CS 135	6.626E-05	6.626E-05	6.627E-05	6.628E-05	6.630E-05	6.639E-05	6.653E-05	6.684E-05	6.783E-05	6.886E-05
CS 136	8.965E 00	8.965E 00	8.965E 00	8.964E 00	8.962E 00	8.955E 00	8.945E 00	8.926E 00	8.866E 00	8.807E 00
CS 137	3.573E 01	3.573E 01	3.573E 01	3.574E 01	3.574E 01	3.574E 01	3.574E 01	3.574E 01	3.574E 01	3.574E 01
CS 138	5.186E 02	1.428E 03	2.276E 03	4.469E 03	7.140E 03	1.044E 04	7.778E 03	2.529E 03	5.435E 01	1.128E 00
CS 139	4.975E 02	2.310E 03	2.810E 03	2.552E 03	1.751E 03	3.752E 02	3.722E 01	3.664E-01	3.495E-07	3.334E-13
CS 140	4.252E 02	2.703E 03	1.544E 03	2.281E 02	9.298E 00	2.567E-05	1.177E-13	2.476E-30	0.	0.
CS 141	3.216E 02	1.313E 02	2.320E 01	1.280E-01	2.204E-05	1.939E-20	0.	0.	0.	0.
CS 142	1.636E 02	2.235E-05	3.114E-13	0.	0.	0.	0.	0.	0.	0.
CS 143	6.366E 01	1.809E-09	9.198E-21	0.	0.	0.	0.	0.	0.	0.
CS 144	1.680E 01	2.095E-01	1.852E-03	1.280E-09	6.913E-20	0.	0.	0.	0.	0.
TOTAL	2.074E 03	6.641E 03	6.722E 03	7.319E 03	8.969E 03	1.089E 04	7.884E 03	2.597E 03	1.200E 02	6.589E 01

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

CS 133	3.067E-03	3.067E-03	3.067E-03	3.068E-03	3.069E-03	3.073E-03	3.079E-03	3.092E-03	3.129E-03	3.168E-03
CS*134	4.769E-09	4.750E-09	4.731E-09	4.675E-09	4.582E-09	4.231E-09	3.755E-09	2.956E-09	1.443E-09	7.043E-10
CS 134	1.142E-04	1.142E-04	1.142E-04	1.142E-04	1.142E-04	1.142E-04	1.142E-04	1.142E-04	1.142E-04	1.142E-04
CS 135	5.556E-04	5.556E-04	5.556E-04	5.557E-04	5.559E-04	5.567E-04	5.579E-04	5.604E-04	5.687E-04	5.774E-04
CS 136	8.925E-07	8.924E-07	8.924E-07	8.923E-07	8.921E-07	8.915E-07	8.905E-07	8.885E-07	8.826E-07	8.767E-07
CS 137	3.015E-03	3.015E-03	3.015E-03	3.015E-03	3.016E-03	3.016E-03	3.016E-03	3.016E-03	3.016E-03	3.016E-03
CS 138	8.845E-08	2.445E-07	3.896E-07	7.[illegible]1E-07	1.222E-06	1.788E-06	1.332E-06	4.330E-07	9.306E-09	1.932E-10
CS 139	2.381E-08	1.106E-07	1.345E-07	1.222E-07	8.378E-08	1.796E-08	1.782E-09	1.754E-11	1.673E-17	1.595E-23
CS 140	2.449E-09	1.556E-08	8.892E-09	1.314E-09	5.355E-11	1.478E-16	6.780E-25	0.	0.	0.
CS 141	6.838E-10	2.792E-10	4.933E-11	2.721E-15	4.687E-17	4.124E-32	0.	0.	0.	0.
CS 142	3.333E-11	4.553E-18	6.344E-26	0.	0.	0.	0.	0.	0.	0.
CS 143	9.023E-12	2.564E-22	1.304E-33	0.	0.	0.	0.	0.	0.	0.
CS 144	1.488E-12	1.856E-14	1.641E-16	1.134E-22	6.124E-29	0.	0.	0.	0.	0.
TOTAL	6.752E-03	6.753E-03	6.754E-03	6.755E-03	6.757E-03	6.762E-03	6.769E-03	6.783E-03	6.820E-03	6.874E-03

BWRS 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 56 BA

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	8.0 HR.
BA 134	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
BA*135	4.272E-03	4.270E-03	4.268E-03	4.263E-03	4.255E-03	4.221E-03	4.171E-03	4.072E-03	3.791E-03	3.529E-03
BA 135	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
BA 136	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
BA*137	3.341E 01	3.341E 01	3.341E 01	3.341E 01	3.341E 01	3.342E 01	3.342E 01	3.342E 01	3.342E 01	3.342E 01
BA 137	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
BA 138	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
BA 139	4.983E 02	5.073E 02	5.248E 02	5.801E 02	6.434E 02	6.790E 02	5.595E 02	3.417E 02	7.601E 01	1.691E 01
BA 140	4.727E 02	4.728E 02	4.729E 02	4.729E 02	4.728E 02	4.725E 02	4.719E 02	4.709E 02	4.677E 02	4.645E 02
BA 141	4.850E 02	4.793E 02	4.636E 02	4.1[illegible]4E 02	3.410E 02	1.579E 02	4.973E 01	4.934E 00	4.819E-03	4.706E-06
BA 142	3.924E 02	3.712E 02	3.485E 02	2.88[illegible]E 02	2.105E 02	5.969E 01	9.012E 00	2.054E-01	2.433E-06	2.882E-11
BA 143	2.936E 02	1.007E 01	3.140E-01	9.020E-06	2.806E-13	0.	0.	0.	0.	0.
BA 144	1.790E 02	7.020E 00	2.318E-01	7.17[illegible]E-06	2.117E-13	0.	0.	0.	0.	0.
TOTAL	2.354E 03	1.881E 03	1.844E 03	1.7[illegible]8E 03	1.701E 03	1.402E 03	1.124E 03	8.511E 02	5.771E 02	5.149E 02

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

BA 134	4.198E-05	4.198E-05	4.198E-05	4.198E-05	4.198E-05	4.199E-05	4.199E-05	4.199E-05	4.200E-05	4.202E-05
BA*135	3.952E-11	3.950E-11	3.948E-11	3.944E-11	3.936E-11	3.905E-11	3.858E-11	3.767E-11	3.506E-11	3.284E-11
BA 135	1.742E-07	1.742E-07	1.742E-07	1.742E-07	1.742E-07	1.742E-07	1.742E-07	1.742E-07	1.742E-07	1.742E-07
BA 136	3.043E-05	3.043E-05	3.043E-05	3.043E-05	3.043E-05	3.043E-05	3.043E-05	3.043E-05	3.044E-05	3.044E-05
BA*137	4.528E-10	4.528E-10	4.528E-10	4.528E-10	4.529E-10	4.529E-10	4.529E-10	4.529E-10	4.529E-10	4.529E-10
BA 137	1.039E-04	1.039E-04	1.039E-04	1.039E-04	1.039E-04	1.039E-04	1.039E-04	1.039E-04	1.039E-04	1.039E-04
BA 138	3.114E-03	3.114E-03	3.114E-03	3.114E-03	3.114E-03	3.115E-03	3.116E-03	3.117E-03	3.117E-03	3.117E-03
BA 139	2.199E-07	2.239E-07	2.316E-07	2.560E-07	2.840E-07	2.997E-07	2.470E-07	1.508E-07	3.355E-08	7.462E-09
BA 140	4.633E-05	4.634E-05	4.635E-05	4.635E-05	4.634E-05	4.631E-05	4.626E-05	4.615E-05	4.584E-05	4.553E-05
BA 141	4.642E-08	4.588E-08	4.437E-08	3.957E-08	3.264E-08	1.511E-08	4.760E-09	4.723E-10	4.612E-13	4.504E-16
BA 142	2.295E-08	2.171E-08	2.038E-08	1.687E-08	1.231E-08	3.491E-09	5.271E-10	1.201E-11	1.423E-16	1.686E-21
BA 143	3.121E-10	1.070E-11	3.337E-13	1.012E-17	2.983E-25	0.	0.	0.	0.	0.
BA 144	1.903E-10	7.461E-12	2.463E-13	7.629E-18	2.250E-25	0.	0.	0.	0.	0.
TOTAL	3.337E-03	3.337E-03	3.337E-03	3.337E-03	3.337E-03	3.338E-03	3.339E-03	3.340E-03	3.340E-03	3.340E-03

BWR6 238 RG 1.7 PL. ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 57 LA

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	8.0 HR.
LA 139	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
LA 140	5.016E 02	5.016E 02	5.018E 02	5.018E 02	5.018E 02	5.013E 02	5.011E 02	5.006E 02	4.990E 02	4.973E 02
LA 141	4.940E 02	4.940E 02	4.939E 02	4.935E 02	4.917E 02	4.77[illegible]E 02	4.444E 02	3.751E 02	2.203E 02	1.293E 02
LA 142	4.340E 02	4.337E 02	4.331E 02	4.305E 02	4.237E 02	3.809E 02	3.091E 02	1.[illegible]74E 02	5.087E 01	1.310E 01
LA 143	4.066E 02	3.905E 02	3.706E 02	3.174E 02	2.448E 02	8.668E 01	1.826E 01	8.105E-01	7.087E-03	8.197E-09
LA 144	3.238E 02	1.445E 02	5.337E 01	2.547E 00	1.595E-02	2.453E-11	1.480E-24	0.	0.	0.
TOTAL	2.160E 03	1.964E 03	1.853E 03	1.745E 03	1.662E 03	1.446E 03	1.273E 03	1.074E 03	7.702E 02	6.397E 02

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

LA 139	2.950E-03	2.950E-03	2.950E-03	2.950E-03	2.950E-03	2.950E 03	2.950E-03	2.950E-03	2.950E-03	2.950E-03
LA 140	6.433E-06	6.433E-06	6.433E-06	6.432E-06	6.432E-06	6.430E-06	6.427E-06	6.420E-06	6.400E-06	6.379E-06
LA 141	6.147E-07	6.147E-07	3.146E-07	6.140E-07	6.119E-07	5.936E-07	5.530E-07	4.667E-07	2.742E-07	1.609E-07
LA 142	2.123E-07	2.121E-07	2.119E-07	2.106E-07	2.073E-07	1.863E-07	1.512E-07	9.657E-08	2.486E-08	6.410E-09
LA 143	2.887E-08	2.772E-08	2.633E-08	2.253E-08	1.738E-08	6.154E-08	1.297E-09	5.755E-11	5.032E-15	4.400E-19
LA 144	1.176E-09	5.249E-10	1.939E-10	9.254E-12	5.795E-14	8.9[illegible]E-23	5.375E-36	0.	0.	0.
TOTAL	2.957E-03	2.957E-03	2.957E-03	2.957E-03	2.957E-03	2.957E-03	2.937E-03	2.957E-03	2.957E-03	2.957E-03

BWR6 238 RC . 7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 58 CE

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	8.0 HR.
CE 140	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CE 141	4.932E 02	4.932E 02	4.932E 02	4.932E 02	4.932E 02	4.932E 02	4.932E 02	4.931E 02	4.926E 02	4.917E 02
CE 142	1.915E-13	1.915E-13	1.915E-13	1.915E-13	1.915E-13	1.915E-13	1.915E-13	1.915E-13	1.915E-13	1.918E-13
CE 143	4.163E 02	4.163E 02	4.163E 02	4.163E 02	4.160E 02	4.142E 02	4.104E 02	4.022E 02	3.781E 02	3.555E 02
CE 144	3.515E 02	3.515E 02	3.515E 02	3.515E 02	3.515E 02	3.515E 02	3.515E 02	3.515E 02	3.514E 02	3.513E 02
CE 145	2.710E 02	2.151E 02	1.707E 02	8.535E 01	2.688E 01	2.644E-01	2.579E-04	2.455E-10	2.116E-28	0.
CE 146	2.079E 02	1.979E 02	1.883E 02	1.623E 02	1.267E 02	4.708E 01	1.066E 01	5.465E-01	7.364E-05	9.924E-09
CE 147	1.351E 02	7.196E 01	3.831E 01	5.783E 00	2.475E-01	8.297E-07	5.094E-15	1.920E-31	0.	0.
CE 148	8.489E 01	3.154E 01	1.172E 01	6.006E-01	4.250E-03	1.065E-11	1.336E-24	0.	0.	0.
TOTAL	1.960E 03	1.778E 03	1.670E 03	1.515E 03	1.415E 03	1.306E 03	1.266E 03	1.247E 03	1.222E 03	1.198E 03

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

CE 140	2.918E-03	2.918E-03	2.918E-03	2.918E-03	2.918E-03	2.918E-03	2.918E-03	2.918E-03	2.919E-03	2.919E-03
CE 141	1.224E-04	1.224E-04	1.224E-04	1.224E-04	1.224E-04	1.224E-04	1.224E-04	1.223E-04	1.222E-04	1.220E-04
CE 142	2.676E-03	2.676E-03	2.676E-03	2.676E-03	2.676E-03	2.676E-03	2.676E-03	2.676E-03	2.676E-03	2.676E-03
CE 143	4.476E-06	4.476E-06	4.476E-06	4.475E-06	4.473E-06	4.453E-06	4.412E-06	4.324E-06	4.065E-06	3.822E-06
CE 144	7.645E-04	7.645E-04	7.645E-04	7.645E-04	7.645E-04	7.645E-04	7.644E-04	7.644E-04	7.641E-04	7.639E-04
CE 145	4.323E-09	3.431E-09	2.723E-09	1.361E-09	4.287E-10	4.217E-12	4.114E-15	3.915E-21	3.375E-39	0.
CE 146	1.548E-08	1.473E-08	1.402E-08	1.208E-08	9.433E-09	3.504E-09	7.935E-10	4.068E-11	5.482E-15	7.388E-19
CE 147	7.903E-10	4.208E-10	2.240E-10	3.382E-11	1.447E-12	4.852E-18	2.979E-28	0.	0.	0.
CE 148	3.160E-10	1.174E-10	4.361E-11	2.236E-12	1.582E-14	3.965E-23	4.975E-36	0.	0.	0.
TOTAL	6.486E-03	6.486E-03	6.486E-03	6.486E-03	6.486E-03	6.486E-03	6.486E-03	6.486E-03	6.485E-03	6.485E-03

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 69 PR

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	8.0 HR.
PR 141	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
PR 142	2.112E 01	2.110E 01	2.109E 01	2.105E 01	2.099E 01	2.074E 01	2.037E 01	1.984E 01	1.763E 01	1.582E 01
PR 143	4.146E 02	4.146E 02	4.146E 02	4.146E 02	4.146E 02	4.146E 02	4.146E 02	4.146E 02	4.144E 02	4.141E 02
PR 144	3.540E 02	3.539E 02	3.538E 02	3.536E 02	3.532E 02	3.523E 02	3.518E 02	3.515E 02	3.514E 02	3.513E 02
PR 145	2.745E 02	2.744E 02	2.743E 02	2.734E 02	2.713E 02	2.612E 02	2.465E 02	2.195E 02	1.551E 02	1.096E 02
PR 146	2.186E 02	2.182E 02	2.175E 02	2.139E 02	2.044E 02	1.484E 02	7.520E 01	1.517E 01	8.802E-02	4.874E-04
PR 147	1.646E 02	1.627E 02	1.596E 02	1.478E 02	1.282E 02	7.194E 01	3.025E 01	5.350E 00	2.959E-02	1.636E-04
PR 148	1.350E 02	1.108E 02	8.403E 01	3.162E 01	5.645E 00	5.519E-03	1.686E-07	1.573E-18	0.	0.
TOTAL	1.582E 03	1.556E 03	1.525E 03	1.456E 03	1.398E 03	1.269E 03	1.139E 03	1.026E 03	9.386E 02	8.907E 02

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

PR 141	2.725E-03	2.725E-03	2.725E-03	2.725E-03	2.725E-03	2.725E-03	2.725E-03	2.725E-03	2.726E-03	2.726E-03
PR 142	1.293E-07	1.293E-07	1.292E-07	1.290E-07	1.286E-07	1.270E-07	1.248E-07	1.203E-07	1.080E-07	9.690E-08
PR 143	4.317E-05	4.317E-05	4.317E-05	4.317E-05	4.317E-05	4.317E-05	4.317E-05	4.317E-05	4.316E-05	4.312E-05
PR 144	3.256E-08	3.255E-08	3.254E-08	3.252E-08	3.248E-08	3.240E-08	3.235E-08	3.233E-08	3.231E-08	3.231E-08
PR 145	5.238E-07	5.237E-07	5.234E-07	5.217E-07	5.176E-07	4.984E-07	4.704E-07	4.189E-07	2.959E-07	2.090E-07
PR 146	2.791E-08	2.785E-08	2.776E-08	2.731E-08	2.610E-08	1.894E-08	9.599E-09	1.936E-09	1.124E-11	6.225E-14
PR 147	2.101E-08	2.077E-08	2.038E-08	1.887E-08	1.636E-08	9.183E-09	3.862E-09	6.829E-10	3.777E-12	2.089E-14
PR 148	1.435E-09	1.178E-09	8.938E-10	3.363E-10	6.004E-11	5.870E-14	1.793E-18	1.673E-27	0.	0.
TOTAL	2.769E-03	2.769E-03	2.769E-03	2.769E-03	2.769E-03	2.769E-03	2.769E-03	2.769E-03	2.769E-03	2.769E-03

BWR6 238 R9 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 60 ND

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	8.0 HR.
ND 142	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
ND 143	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
ND 144	3.879E-13	3.879E-13	3.879E-13	3.879E-13	3.879E-13	3.879E-13	3.879E-13	3.879E-13	3.879E-13	3.880E-13
ND 145	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
ND 146	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
ND 147	1.679E 02	1.679E 02	1.679E 02	1.679E 02	1.679E 02	1.679E 02	1.677E 02	1.673E 02	1.660E 02	1.647E 02
ND 148	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
ND 149	1.056E 02	1.048E 02	1.041E 02	1.021E 02	9.870E 01	8.629E 01	7.055E 01	4.715E 01	1.407E 01	4.202E 00
ND 150	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
ND 151	5.212E 01	4.929E 01	4.661E 01	3.941E 01	2.990E 01	9.744E 00	1.821E 00	6.385E-02	2.717E-08	1.150E-10
TOTAL	3.256E 02	3.221E 02	3.187E 02	3.094E 02	2.964E 02	2.639E 02	2.401E 02	2.145E 02	1.801E 02	1.689E 02

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

ND 142	5.836E-05	5.836E-05	5.836E-05	5.836E-05	5.836E-05	5.836E-05	5.837E-05	5.837E-05	5.838E-05	5.839E-05
ND 143	1.462E-03	1.462E-03	1.462E-03	1.462E-03	1.462E-03	1.462E-03	1.462E-03	1.462E-03	1.462E-03	1.463E-03
ND 144	2.602E-03	2.602E-03	2.602E-03	2.602E-03	2.602E-03	2.602E-03	2.602E-03	2.602E-03	2.602E-03	2.602E-03
ND 145	1.578E-03	1.578E-03	1.578E-03	1.578E-03	1.578E-03	1.578E-03	1.578E-03	1.578E-03	1.578E-03	1.579E-03
ND 146	1.488E-03	1.488E-03	1.488E-03	1.489E-03	1.488E-03	1.488E-03	1.488E-03	1.488E-03	1.488E-03	1.488E-03
ND 147	1.427E-05	1.427E-05	1.427E-05	1.427E-05	1.427E-05	1.427E-05	1.425E-05	1.422E-05	1.411E-05	1.400E-05
ND 148	8.148E-04	8.148E-04	8.148E-04	8.148E-04	8.148E-04	8.148E-04	8.148E-04	8.148E-04	8.148E-04	8.148E-04
ND 149	5.793E-08	5.754E-08	5.716E-08	5.602E-08	5.417E-08	4.736E-08	3.872E-08	2.587E-08	7.724E-09	2.306E-09
ND 150	3.852E-04	3.852E-04	3.852E-04	3.852E-04	3.852E-04	3.852E-04	3.852E-04	3.852E-04	3.852E-04	3.852E-04
ND 151	3.437E-09	3.250E-09	3.073E-09	2.599E-09	1.965E-09	6.425E-10	1.201E-10	4.197E-12	1.791E-18	7.645E-21
TOTAL	8.403E-03	8.403E-03	8.403E-03	8.403E-03	8.403E-03	8.403E-03	8.403E-03	8.403E-03	8.404E-03	8.404E-03

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 61 PM

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	8.0 HR.
PM 147	6.686E 01	6.686E 01	6.686E 01	6.686E 01	6.686E 01	6.686E 01	6.686E 01	6.687E 01	6.687E 01	6.688E 01
PM*148	4.807E 00	4.807E 00	4.807E 00	4.807E 00	4.807E 00	4.805E 00	4.804E 00	4.801E 00	4.791E 00	4.781E 00
PM 148	3.630E 01	3.630E 01	3.629E 01	3.629E 01	3.627E 01	3.620E 01	3.611E 01	3.592E 01	3.535E 01	3.479E 01
PM 149	1.374E 02	1.374E 02	1.374E 02	1.374E 02	1.373E 02	1.371E 02	1.368E 02	1.357E 02	1.316E 02	1.268E 02
PM 150	1.725E-01	1.718E-01	1.710E-01	1.688E-01	1.653E-01	1.517E-01	1.334E-01	1.032E-01	4.779E-02	2.212E-02
PM 151	5.658E 01	5.657E 01	5.657E 01	5.655E 01	5.651E 01	5.619E 01	5.556E 01	5.421E 01	5.03[illegible]E 01	4.673E 01
PM 152	3.959E 01	3.527E 01	3.142E 01	2.221E 01	1.247E 01	1.236E 00	3.862E-02	3.767E-05	3.498E-14	3.247E-23
PM 154	1.413E 01	1.071E 01	8.114E 00	3.531E 00	8.828E-01	3.447E-03	8.413E-07	5.010E-14	0.	0.
TOTAL	3.558E 02	3.481E 02	3.416E 02	3.278E 02	3.153E 02	3.026E 02	[illegible]003E 02	2.976E 02	2.890E 02	2.800E 02

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

PM 147	4.902E-04	4.902E-04	4.902E-04	4.902E-04	4.902E-04	4.902E-04	4.902E-04	4.902E-04	4.903E-04	4.903E-04
PM*148	1.546E-06	1.546E-06	1.546E-06	1.546E-06	1.546E-06	1.545E-06	1.545E-06	1.544E-06	1.541E-06	1.538E-06
PM 148	1.501E-06	1.501E-06	1.501E-06	1.500E-06	1.500E-06	1.497E-06	1.493E-06	1.485E-06	1.462E-06	1.439E-06
PM 149	2.324E-06	2.324E-06	2.324E-06	2.324E-06	2.323E-06	2.320E-06	2.313E-06	2.296E-06	2.225E-06	2.145E-06
PM 150	1.486E-10	1.480E-10	1.473E-10	1.454E-10	1.424E-10	1.307E-10	1.150E-10	8.892E-11	4.117E-11	1.906E-11
PM 151	5.056E-07	5.056E-07	5.055E-07	5.054E-07	5.050E-07	5.021E-07	4.965E-07	4.[illegible]E-07	[illegible]E-07	4.176E-07
PM 152	1.263E-09	1.125E-09	1.002E-09	7.087E-10	3.977E-10	3.944E-11	1.232E-12	1.202E-18	1.116E 24	1.036E-33
PM 154	1.878E-10	1.423E-10	1.079E-10	4.694E-11	1.174E-11	4.583E-14	1.[illegible]18E-17	8.660E-25	0.	0.
TOTAL	4.960E-04	4.960E-04	4.960E-04	4.960E-04	4.960E-04	4.960E-04	4.96[illegible]E-04	4.960E-04	4.959E-04	4.959E-04

BWR8 230 RO 1.7 PER ATL-9193 ACTIVITY AFTER SHUTDOWN - CURIES 1093.0 MWD IN 1003.0 DAYS. AT. WD. 62 SM

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	8.0 HR.
SM 147	7.141E-10	7.141E-10	7.141E-10	7.141E-10	7.141E-10	7.141E-10	7.141E-10	7.142E-10	7.143E-10	7.144E-10
SM 148	3.158E-13	3.158E-13	3.158E-13	3.158E-13	3.158E-13	3.158E-13	3.158E-13	3.158E-13	3.159E-13	3.160E-13
SM 149	1.831E-15	1.831E-15	1.831E-15	1.832E-15	1.833E-15	1.836E-15	1.842E-15	1.853E-15	1.884E-15	1.815E-15
SM 150	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SM 151	3.809E-02	3.810E-02	3.810E-02	3.810E-02	3.810E-02	3.812E-02	3.814E-02	3.818E-02	3.833E-02	3.846E-02
SM 152	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SM 153	8.141E 01	8.139E 01	8.137E 01	8.131E 01	8.121E 01	8.081E 01	8.022E 01	[illegible] 01	7.682E 01	7.238E 01
SM 154	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SM 155	1.487E 01	1.443E 01	1.400E 01	1.279E 01	1.106E 01	6.021E 00	2.438E 00	3.986E-01	1.780E-03	7.748E-08
TOTAL	9.632E 01	9.586E 01	9.541E 01	9.414E 01	9.225E 01	8.687E 01	8.270E 01	7.940E 01	7.566E 01	7.230E 01

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

SM 147	2.155E-04	2.155E-04	2.155E-04	2.155E-04	2.155E-04	2.155E-04	2.156E-04	2.156E-04	2.156E-04	2.157E-04
SM 148	1.765E-04	1.765E-04	1.765E-04	1.765E-04	1.765E-04	1.765E-04	1.765E-04	1.766E-04	1.768E-04	1.768E-04
SM 149	5.117E-06	5.118E-06	5.118E-06	5.120E-06	5.122E-06	5.133E-06	5.148E-06	5.178E-06	5.267E-06	5.352E-06
SM 150	5.759E-04	5.759E-04	5.759E-04	5.759E-04	5.759E-04	5.759E-04	5.759E-04	5.759E-04	5.759E-04	5.759E-04
SM 151	9.582E-08	9.583E-08	9.583E-08	9.583E-08	9.584E-08	9.586E-08	9.593E-08	9.607E-08	9.642E-08	9.674E-08
SM 152	4.129E-04	4.129E-04	4.129E-04	4.129E-04	4.129E-04	4.129E-04	4.129E-04	4.129E-04	4.129E-04	4.129E-04
SM 153	1.221E-06	1.220E-06	1.220E-06	1.219E-06	1.218E-06	1.212E-06	1.203E-06	1.183E-06	1.134E-06	1.088E-06
SM 154	7.136E-05	7.136E-05	7.136E-05	7.136E-05	7.136E-05	7.136E-05	7.136E-05	7.136E-05	7.136E-05	7.136E-05
SM 155	1.819E-09	1.769E-09	1.712E-09	1.584E-09	1.349E-09	7.383E-10	2.981E-10	4.888E-11	2.182E-13	8.479E-16
TOTAL	1.460E-03	1.460E-03	1.460E-03	1.460E-03	1.460E-03	1.460E-03	1.460E-03	1.460E-03	1.460E-03	1.460E-03

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 63 EU

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	8.0 HR.
EU 151	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
EU 153	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
EU 154	6.897E-01	6.997E-01	6.997E-01	6.996E-01	6.996E-01	6.996E-01	6.996E-01	6.996E-01	6.996E-01	6.996E-01
EU 155	1.695E 01	1.695E 01	1.695E 01	1.695E 01	1.695E 01	1.695E 01	1.695E 01	1.695E 01	1.695E 01	1.695E 01
EU 156	5.714E 00	5.714E 00	5.714E 00	5.713E 00	3.712E 00	5.708E 00	5.703E 00	5.692E 00	5.660E 00	5.628E 00
EU 157	4.629E 00	4.625E 00	4.622E 00	4.611E 00	4.593E 00	4.524E 00	4.422E 00	4.225E 00	3.685E 00	3.214E 00
EU 158	2.445E 00	2.409E 00	2.373E 00	2.268E 00	2.103E 00	1.556E 00	9.901E-01	4.008E-01	2.660E-02	1.785E-03
EU 159	9.921E-01	9.546E-01	9.186E-01	8.183E-01	6.750E-01	3.125E-01	9.843E-02	9.766E-03	9.538E-06	9.315E-09
EU 160	3.263E-01	2.473E-01	1.874E-01	8.157E-02	2.039E-02	7.963E-05	1.943E-08	1.157E-15	0.	0.
TOTAL	3.176E 01	3.160E 01	3.146E 01	3.114E 01	3.075E 01	2.975E 01	2.886E 01	2.798E 01	2.702E 01	2.649E 01

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

EU 151	6.643E-09	6.643E-09	6.643E-09	6.643E-09	6.644E-09	6.647E-09	6.651E-09	6.660E-09	6.685E-09	6.710E-09
EU 153	1.829E-04	1.829E-04	1.829E-04	1.830E-04	1.830E-04	1.830E-04	1.830E-04	1.830E-04	1.830E-04	1.831E-04
EU 154	3.129E-05	3.129E-05	3.129E-05	3.129E-05	3.129E-05	3.129E-05	3.129E-05	3.129E-05	3.129E-05	3.129E-05
EU 155	8.575E-05	8.575E-05	8.575E-05	8.575E-05	8.575E-05	8.574E-05	8.574E-05	8.574E-05	8.573E-05	8.572E-05
EU 156	6.650E-07	6.650E-07	6.650E-07	6.649E-07	6.648E-07	6.644E-07	6.638E-07	6.625E-07	6.588E-07	6.550E-07
EU 157	2.245E-08	2.243E-08	2.241E-08	2.236E-08	2.228E-08	2.194E-08	2.144E-08	2.049E-08	1.787E-08	1.558E-08
EU 158	5.981E-10	5.892E-10	5.803E-10	5.547E-10	5.144E-10	3.806E-10	2.421E-10	9.803E-11	6.506E-12	4.317E-13
EU 159	9.498E-11	9.137E-11	8.792E-11	7.833E-11	6.461E-11	2.991E-11	9.421E-12	9.347E-13	9.129E-16	8.915E-19
EU 160	4.337E-12	3.287E-12	2.491E-12	1.084E-12	2.711E-13	1.058E-15	2.583E-19	1.538E-28	0.	0.
TOTAL	3.007E-04	3.007E-04	3.007E-04	3.007E-04	3.007E-04	3.007E-04	3.007E-04	3.007E-04	3.007E-04	3.008E-04

BWR6 238 RG 1.7 PER ATL-5193

ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 64 GD

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	8.0 HR.
GD 154	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
GD 155	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
GD 156	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
GD 157	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
GD 158	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
GD 159	1.356E 00	1.356E 00	1.355E 00	1.354E 00	1.352E 00	1.341E 00	1.319E 00	1.271E 00	1.132E 00	1.009E 00
GD 160	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
GD 161	2.024E-01	1.678E-01	1.392E-01	7.932E-02	3.104E-02	7.329E-04	2.654E-08	3.479E-11	7.842E-28	0.
GD 162	1.269E-01	1.187E-01	1.111E-01	9.095E-02	6.517E-02	1.718E-02	2.327E-03	4.266E-05	2.629E-10	1.620E-15
TOTAL	1.685E 00	1.642E 00	1.606E 00	1.525E 00	1.449E 00	1.359E 00	1.322E 00	1.271E 00	1.132E 00	1.009E 00

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

GD 154	1.459E-06	1.459E-06	1.459E-06	1.459E-06	1.459E-06	1.459E-06	1.459E-06	1.460E-06	1.460E-06	1.461E-06
GD 155	4.484E-07	4.484E-07	4.485E-07	4.487E-07	4.490E-07	4.502E-07	4.521E-07	4.558E-07	4.671E-07	4.793E-07
GD 156	5.682E-05	5.682E-05	5.682E-05	5.682E-05	5.682E-05	5.682E-05	5.682E-05	5.682E-05	5.683E-05	5.683E-05
GD 157	3.060E-06	3.062E-06	3.063E-06	3.066E-06	3.077E-06	3.110E-06	3.180E-06	3.256E-06	3.516E-06	3.746E-06
GD 158	2.834E-05	2.834E-05	2.834E-05	2.834E-05	2.834E-05	2.834E-05	2.834E-05	2.834E-05	2.834E-05	2.834E-05
GD 159	7.787E-09	7.785E-09	7.784E-09	7.779E-09	7.767E-09	7.703E-09	7.576E-09	7.298E-09	6.503E-09	5.793E-09
GD 160	2.137E-06	2.137E-06	2.137E-06	2.137E-06	2.137E-06	2.137E-06	2.137E-06	2.137E-06	2.137E-06	2.137E-06
GD 161	3.982E-12	3.301E-12	2.737E-12	1.560E-12	6.114E-13	1.442E-14	5.221E-17	6.845E-22	1.543E-36	0.
GD 162	7.019E-12	6.566E-12	6.143E-12	5.029E-12	3.604E-12	9.503E-13	1.287E-13	2.359E-15	1.454E-20	8.989E-28
TOTAL	8.924E-05	8.924E-05	8.924E-05	8.924E-05	8.924E-05	8.925E-05	8.925E-05	8.925E-05	8.927E-05	8.929E-05

BWR6 23% RG 1.7 PER ATL-8183 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 65 TB

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	8.0 HR.
TB 159	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
TB 160	1.237E-01	1.237E-01	1.237E-01	1.237E-01	1.237E-01	1.237E-01	1.237E-01	1.236E-01	1.235E-01	1.233E-01
TB 161	2.606E-01	2.606E-01	2.606E-01	2.605E-01	2.604E-01	2.601E-01	2.596E-01	2.585E-01	2.552E-01	2.521E-01
TB 162	1.450E-01	1.449E-01	1.448E-01	1.441E-01	1.423E-01	1.317E-01	1.136E-01	8.301E-02	3.226E-02	1.253E-02
TB 163	6.043E-02	6.032E-02	6.021E-02	5.989E-02	5.936E-02	5.729E-02	5.431E-02	4.892E-02	3.545E-02	2.674E-02
TB 164	7.852E-03	7.848E-03	7.844E-03	7.832E-03	7.813E-03	7.734E-03	7.619E-03	7.393E-03	6.754E-03	6.170E-03
TOTAL	5.976E-01	5.973E-01	5.971E-01	5.960E-01	5.937E-01	5.805E-01	5.587E-01	5.213E-01	4.532E-01	4.198E-01

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

TB 159	4.683E-06	4.683E-06	4.683E-06	4.683E-06	4.683E-06	4.683E-06	4.684E-06	4.684E-06	4.685E-06	4.685E-06
TB 160	6.820E-08	6.820E-08	6.820E-08	6.820E-08	6.820E-08	6.819E-08	6.817E-08	6.815E-08	6.806E-08	6.798E-08
TB 161	1.377E-08	1.377E-08	1.377E-08	1.376E-08	1.376E-08	1.374E-08	1.371E-08	1.366E-08	1.349E-08	1.332E-08
TB 162	1.018E-10	1.017E-10	1.016E-10	1.011E-10	9.991E-11	9.244E-11	7.970E-11	5.826E-11	2.264E-11	8.790E-12
TB 163	1.253E-10	1.251E-10	1.249E-10	1.242E-10	1.231E-10	1.188E-10	1.126E-10	1.012E-10	7.351E-11	5.338E-11
TB 164	5.762E-11	5.759E-11	5.756E-11	5.747E-11	5.733E-11	5.676E-11	5.591E-11	5.425E-11	4.[illegible]E-11	4.527E-11
TOTAL	4.766E-06	4.766E-06	4.766E-06	4.766E-06	4.766E-06	4.766E-06	4.766E-06	4.766E-06	4.[illegible]E-06	4.767E-06

BWR6 238 RG 1.7 PER ATL-5193

ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 68 DY

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	9.0 HR.
DY 160	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DY 161	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DY 162	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DY 163	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DY 164	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DY*165	3.006E-02	1.731E-02	9.972E-03	1.905E-03	1.207E-04	1.947E-09	1.281E-18	5.289E-31	0.	0.
DY 165	3.488E-02	3.488E-02	3.487E-02	3.485E-02	3.482E-02	3.467E-02	3.446E-02	3.403E-02	3.279E-02	3.188E-02
DY 166	1.870E-03	1.870E-03	1.869E-03	1.869E-03	1.867E-03	1.862E-03	1.854E-03	1.839E-03	1.792E-03	1.747E-03
TOTAL	6.681E-02	5.406E-02	4.671E-02	3.863E-02	3.681E-02	3.654E-02	3.631E-02	3.587E-02	3.458E-02	3.333E-02

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

DY 160	2.703E-07	2.703E-07	2.703E-07	2.703E-07	2.703E-07	2.704E-07	2.704E-07	2.704E-07	2.705E-07	2.706E-07
DY 161	4.671E-07	4.671E-07	4.671E-07	4.671E-07	4.671E-07	4.671E-07	4.671E-07	4.672E-07	4.674E-07	4.676E-07
DY 162	8.225E-07	8.225E-07	[illegible]25E-07	8.225E-07	8.225E-07	8.225E-07	8.226E-07	8.226E-07	8.226E-07	8.226E-07
DY 163	3.303E-07	3.303E-07	3.[illegible]03E-07	3.303E-07	3.303E-07	3.303E-07	3.304E-07	3.304E-07	3.304E-07	3.304E-07
DY 164	1.717E-08	1.717E-08	1.717E-08	1.717E-08	1.717E-08	1.717E-08	1.717E-08	1.718E-08	1.718E-08	1.718E-08
DY*165	2.008E-13	1.157E-13	6.661E-14	1.273E-14	8.065E-16	1.301E-20	8.423E-29	0.	0.	0.
DY 165	6.196E-10	6.1[illegible]E-10	6.195E-10	6.192E-10	6.186E-10	6.160E-10	6.122E-10	6.046E-10	5.824E-10	5.611E-10
DY 166	4.883E-11	4.[illegible]82E-11	4.881E-11	4.879E-11	4.876E-11	4.862E-11	4.842E-11	4.801E-11	4.680E-11	4.563E-11
TOTAL	1.908E-06	1.908E-06	1.908E-06	1.908E-06	1.908E-06	1.908E-06	1.908E-06	1.908E-06	1.909E-06	1.909E-06

BWR8 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 FWD IN 1095.0 DAYS. AT. NO. 67 HO

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	8.0 HR.
HO 165	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
HO*166	4.449E-06	4.449E-06	4.449E-06	4.449E-06	4.449E-06	4.449E-06	4.449E-06	4.449E-06	4.449E-06	4.449E-06
HO 166	5.344E-03	5.342E-03	5.341E-03	5.336E-03	5.329E-03	5.300E-03	5.256E-03	5.170E-03	4.922E-03	4.690E-03
TOTAL	5.348E-03	5.347E-03	5.345E-03	5.341E-03	5.334E-03	5.304E-03	5.260E-03	5.174E-03	4.927E-03	4.694E-03

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

HO 165	8.440E-08	8.440E-08	8.441E-08	8.441E-08	8.441E-08	8.441E-08	8.441E-08	8.442E-08	8.444E-08	8.446E-08
HO*166	1.492E-08	1.492E-08	1.492E-08	1.492E-08	1.492E-08	1.492E-08	1.492E-08	1.492E-08	1.492E-08	1.492E-08
HO 166	4.624E-11	4.623E-11	4.621E-11	4.618E-11	4.611E-11	4.586E-11	4.548E-11	4.473E-11	4.259E-11	4.058E-11
TOTAL	9.937E-08	9.937E-08	9.937E-08	9.937E-08	9.937E-08	9.938E-08	9.938E-08	9.939E-08	9.941E-08	9.943E-08

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 68 ER

ISOTOPE	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	8.0 HR.
ER 168	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

ER 168	1.082E-08	1.082E-08	1.082E-08	1.082E-08	1.082E-08	1.082E-08	1.082E-08	1.082E-08	1.082E-08	1.083E-08
TOTAL	1.082E-08	1.082E-08	1.082E-08	1.082E-08	1.082E-08	1.082E-08	1.082E-08	1.082E-08	1.082E-08	1.083E-08

BWR6 238 RG 1.7 PER ATL-6193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. SUMMARY

ELEMENT	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	8.0 HR.
30 ZN	1.879E-02	1.359E-02	9.918E-03	4.183E-03	1.600E-03	1.041E-03	1.032E-03	1.017E-03	9.727E-04	9.302E-04
31 GA	9.688E-01	2.572E-01	1.355E-01	6.692E-02	4.050E-02	2.097E-02	1.675E-02	1.443E-02	9.717E-03	8.954E-03
32 GE	2.960E 00	2.775E 00	2.606E 00	2.425E 00	2.328E 00	2.028E 00	1.657E 00	1.129E 00	4.443E-01	2.505E-01
33 AS	4.617E 01	9.749E 00	6.302E 00	4.693E 00	4.046E 00	2.965E 00	2.590E 00	2.228E 00	1.310E 00	8.581E-01
34 SE	2.173E 02	9.619E 01	7.147E 01	4.413E 01	2.874E 01	1.216E 01	4.647E 00	8.977E-01	5.170E-02	1.809E-02
35 BR	3.054E 04	9.641E 03	7.222E 03	4.865E 03	3.735E 03	2.553E 03	1.783E 03	1.036E 03	3.754E 02	1.856E 02
36 KR	1.011E 05	8.033E 04	5.259E 04	4.418E 04	3.870E 04	3.287E 04	2.827E 04	2.126E 04	9.935E 03	5.109E 03
37 RB	1.686E 03	5.223E 03	5.914E 03	7.300E 03	9.053E 03	1.232E 04	1.331E 04	1.137E 04	5.486E 03	2.811E 03
38 SR	1.947E 03	1.490E 03	1.316E 03	1.123E 03	1.005E 03	8.374E 02	7.659E 02	6.897E 02	5.400E 02	4.538E 02
39 Y	2.836E 03	2.361E 03	2.247E 03	2.004E 03	1.780E 03	1.421E 03	1.245E 03	1.137E 03	9.605E 02	8.113E 02
40 ZR	1.766E 03	1.156E 03	1.041E 03	9.398E 02	9.244E 02	9.176E 02	9.083E 02	8.902E 02	8.401E 02	7.958E 02
41 NB	3.345E 03	2.852E 03	2.472E 03	1.834E 03	1.514E 03	1.406E 03	1.385E 03	1.348E 03	1.247E 03	1.158E 03
42 MO	2.249E 03	1.810E 03	1.569E 03	1.261E 03	1.055E 03	6.901E 02	5.391E 02	4.966E 02	4.794E 02	4.645E 02
43 TC	2.989E 03	2.471E 03	2.226E 03	1.855E 03	1.584E 03	1.114E 03	8.900E 02	7.416E 02	5.596E 02	4.814E 02
44 RU	1.302E 03	1.263E 03	1.220E 03	1.117E 03	1.023E 03	9.368E 02	9.091E 02	8.639E 02	7.634E 02	7.002E 02
45 RH	1.681E 03	1.496E 03	1.437E 03	1.358E 03	1.287E 03	1.150E 03	1.062E 03	9.935E 02	9.335E 02	9.038E 02
46 PD	1.145E 02	1.064E 02	1.031E 02	9.879E 01	9.577E 01	8.986E 01	8.523E 01	8.052E 01	7.003E 01	6.039E 01
47 AG	1.470E 02	1.303E 02	1.252E 02	1.185E 02	1.138E 02	1.067E 02	1.014E 02	9.651E 01	8.611E 01	7.841E 01
48 CD	1.430E 01	1.030E 01	9.373E 00	8.291E 00	7.506E 00	5.941E 00	4.961E 00	4.020E 00	2.996E 00	2.627E 00
49 IN	2.323E 01	1.641E 01	1.358E 01	1.101E 01	9.968E 00	6.070E 00	6.371E 00	4.890E 00	3.511E 00	2.919E 00
50 SN	3.661E 02	2.825E 02	2.294E 02	1.527E 02	1.096E 02	6.893E 01	5.123E 01	3.327E 01	1.392E 01	9.190E 00
51 SB	1.171E 03	9.692E 02	8.844E 02	7.096E 02	5.631E 02	3.752E 02	2.485E 02	1.429E 02	7.802E 01	6.046E 01
52 TE	2.023E 03	1.830E 03	1.767E 03	1.688E 03	1.583E 03	1.267E 03	9.913E 02	7.414E 02	5.726E 02	5.336E 02
53 I	1.569E 05	1.268E 05	1.240E 05	1.207E 05	1.184E 05	1.033E 05	9.072E 04	7.569E 04	5.574E 04	4.657E 04
54 XE	2.431E 05	1.828E 05	1.637E 05	1.378E 05	1.168E 05	8.652E 04	7.069E 04	7.588E 04	7.487E 04	7.322E 04
55 CS	2.074E 03	6.641E 03	6.722E 03	7.319E 03	8.969E 03	1.089E 04	7.884E 03	2.597E 03	1.200E 02	6.589E 01
56 BA	2.354E 03	1.881E 03	1.844E 03	1.788E 03	1.701E 03	1.402E 03	1.124E 03	8.511E 02	5.771E 02	5.149E 02
57 LA	2.160E 03	1.964E 03	1.853E 03	1.745E 03	1.662E 03	1.446E 03	1.273E 03	1.074E 03	7.702E 02	6.397E 02
58 CE	1.960E 03	1.778E 03	1.670E 03	1.515E 03	1.415E 03	1.306E 03	1.266E 03	1.247E 03	1.222E 03	1.198E 03
59 PR	1.582E 03	1.556E 03	1.525E 03	1.456E 03	1.398E 03	1.269E 03	1.139E 03	1.026E 03	9.386E 02	8.907E 02
60 ND	3.256E 02	3.221E 02	3.187E 02	3.094E 02	2.964E 02	2.639E 02	2.401E 02	2.145E 02	1.801E 02	1.688E 02
61 PM	3.558E 02	3.481E 02	3.416E 02	3.278E 02	3.153E 02	3.026E 02	3.003E 02	2.976E 02	2.890E 02	2.800E 02
62 SM	9.632E 01	9.586E 01	9.541E 01	9.414E 01	9.225E 01	8.687E 01	8.270E 01	7.948E 01	7.566E 01	7.239E 01
63 EU	3.176E 01	3.160E 01	3.146E 01	3.114E 01	3.075E 01	2.975E 01	2.886E 01	2.798E 01	2.702E 01	2.649E 01
64 GD	1.685E 00	1.642E 00	1.606E 00	1.525E 00	1.449E 00	1.359E 00	1.322E 00	1.271E 00	1.132E 00	1.009E 00
65 TB	5.976E-01	5.973E-01	5.971E-01	5.960E-01	5.937E-01	5.805E-01	5.587E-01	5.213E-01	4.532E-01	4.198E-01
66 DY	6.681E-02	5.406E-02	4.671E-02	3.863E-02	3.681E-02	3.654E-02	3.631E-02	3.587E-02	3.458E-02	3.333E-02
67 HO	5.348E-03	5.347E-03	5.345E-03	5.341E-03	5.334E-03	5.304E-03	5.260E-03	5.174E-03	4.927E-03	4.694E-03
68 ER	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	5.665E 05	4.177E 05	3.845E 05	3.438E 05	3.132E 05	2.670E 05	2.353E 05	2.009E 05	1.578E 05	1.380E 05

BWRG 238 RG 1.7 PER ATL-8190 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD [illegible] 095.0 DAYS. SUMMARY

LEMENT	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 [illegible]	[illegible] HR.	5.0 HR.	8.0 HR.
OBLE GAS	3.442E 05	2.431E 05	2.163E 05	1.820E 05	1.595E 05	1.214E 05	1.[illegible]	[illegible] 04	0.481E 04	7.833E 04
ALOGENS	1.874E 05	1.364E 05	1.312E 05	1.256E 05	1.201E 05	1.059E 05	9.[illegible]	[illegible] 4	5.612E 04	4.874E 04
OL. SOL.	5.487E 03	1.038E 04	1.693E 04	1.833E 04	2.128E 04	2.655E 04	2.[illegible]	[illegible] 04	6.730E 03	9.737E 03
.R.F.P.	2.540E 04	2.162E 04	2.012E 04	1.789E 04	1.637E 04	1.417E 04	1.[illegible]	[illegible]70E 04	1.010E 04	9.249E 03

1095.0 MWD IN 1095.0 DAYS SUMMARY

BWR8 238 RG 1.7 PER ATL-5193

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

ELEMENT	SHUTDOWN	60.0 SEC.	2.0 MIN.	5.0 MIN.	10.0 MIN.	30.0 MIN.	60.0 MIN.	2.0 HR.	5.0 HR.	8.0 HR.
30 ZN	1.574E-11	1.568E-11	1.564E-11	1.557E-11	1.552E-11	1.544E-11	1.532E-11	1.509E-11	1.443E-11	1.360E-11
31 GA	3.650E-11	3.470E-11	3.408E-11	3.314E-11	3.225E-11	3.030E-11	2.840E-11	2.520E-11	1.797E-11	1.324E-11
32 GE	1.952E-06	1.952E-06	1.952E-06	1.952E-06	1.952E-06	1.952E-06	1.951E-06	1.951E-06	1.951E-06	1.950E-06
33 AS	6.365E-07	6.365E-07	6.364E-07	6.364E-07	6.364E-07	6.363E-07	6.362E-07	6.360E-07	6.353E-07	6.348E-07
34 SE	1.724E-04	1.724E-04	1.724E-04	1.724E-04	1.724E-04	1.724E-04	1.724E-04	1.724E-04	1.724E-04	1.724E-04
35 BR	4.370E-03	4.370E-03	4.370E-03	4.370E-03	4.370E-03	4.370E-03	4.369E-03	4.369E-03	4.369E-03	4.368E-03
36 KR	1.335E-01	1.335E-01	1.335E-01	1.335E-01	1.335E-01	1.335E-01	1.335E-01	1.335E-01	1.335E-01	1.335E-01
37 RB	1.272E-03	1.272E-03	1.272E-03	1.273E-03	1.273E-03	1.275E-03	1.276E-03	1.278E-03	1.281E-03	1.283E-03
38 SR	3.352E-03	3.352E-03	3.352E-03	3.352E-03	3.352E-03	3.353E-03	3.354E-03	3.357E-03	3.362E-03	3.364E-03
39 Y	1.723E-03	1.723E-03	1.723E-03	1.723E-03	1.723E-03	1.723E-03	1.723E-03	1.723E-03	1.723E-03	1.723E-03
40 ZR	1.277E-02	1.277E-02	1.277E-02	1.277E-02	1.277E-02	1.277E-02	1.277E-02	1.277E-02	1.277E-02	1.277E-02
41 NB	1.269E-04	1.269E-04	1.269E-04	1.269E-04	1.269E-04	1.269E-04	1.269E-04	1.269E-04	1.269E-04	1.269E-04
42 MO	1.160E-02	1.160E-02	1.160E-02	1.160E-02	1.160E-02	1.160E-02	1.160E-02	1.160E-02	1.160E-02	1.160E-02
43 TC	2.837E-03	2.837E-03	2.837E-03	2.837E-03	2.837E-03	2.837E-03	2.837E-03	2.837E-03	2.837E-03	2.838E-03
44 RU	7.624E-03	7.624E-03	7.624E-03	7.624E-03	7.624E-03	7.624E-03	7.624E-03	7.623E-03	7.623E-03	7.623E-03
45 RH	1.506E-03	1.506E-03	1.506E-03	1.506E-03	1.506E-03	1.506E-03	1.506E-03	1.506E-03	1.506E-03	1.506E-03
46 PD	3.923E-03	3.923E-03	3.923E-03	3.923E-03	3.923E-03	3.923E-03	3.923E-03	3.923E-03	3.924E-03	3.924E-03
47 AG	2.477E-04	2.477E-04	2.477E-04	2.477E-04	2.477E-04	2.477E-04	2.477E-04	2.477E-04	2.478E-04	2.478E-04
48 CD	1.450E-04	1.450E-04	1.450E-04	1.450E-04	1.450E-04	1.450E-04	1.450E-04	1.450E-04	1.450E-04	1.450E-04
49 IN	7.914E-06	7.914E-06	7.914E-06	7.914E-06	7.914E-06	7.914E-06	7.915E-06	7.915E-06	7.918E-06	7.917E-06
50 SN	1.235E-04	1.235E-04	1.235E-04	1.235E-04	1.235E-04	1.235E-04	1.235E-04	1.235E-04	1.235E-04	1.236E-04
51 SB	6.198E-05	6.198E-05	6.197E-05	6.197E-05	6.196E-05	6.193E-05	6.190E-05	6.187E-05	6.182E-05	6.178E-05
52 TE	1.449E-03	1.449E-03	1.449E-03	1.449E-03	1.449E-03	1.449E-03	1.449E-03	1.449E-03	1.448E-03	1.448E-03
53 I	3.062E-02	3.062E-02	3.062E-02	3.061E-02	3.061E-02	3.060E-02	3.059E-02	3.056E-02	3.053E-02	3.050E-02
54 XE	1.357E 00	1.357E 00	1.357E 00	1.357E 00	1.357E 00	1.357E 00	1.357E 00	1.357E 00	1.357E 00	1.357E 00
55 CS	6.752E-03	6.753E-03	6.754E-03	6.755E-03	6.757E-03	6.762E-03	6.769E-03	6.783E-03	6.828E-03	6.874E-03
56 BA	3.337E-03	3.337E-03	3.337E-03	3.337E-03	3.337E-03	3.338E-03	3.339E-03	3.340E-03	3.340E-03	3.340E-03
57 LA	2.957E-03	2.957E-03	2.957E-03	2.957E-03	2.957E-03	2.957E-03	2.957E-03	2.957E-03	2.957E-03	2.957E-03
58 CE	6.486E-03	6.486E-03	6.486E-03	6.486E-03	6.486E-03	6.486E-03	6.486E-03	6.486E-03	6.485E-03	6.485E-03
59 PR	2.769E-03	2.769E-03	2.769E-03	2.769E-03	2.769E-03	2.769E-03	2.769E-03	2.769E-03	2.769E-03	2.769E-03
60 ND	8.403E-03	8.403E-03	8.403E-03	8.403E-03	8.403E-03	8.403E-03	8.403E-03	8.403E-03	8.404E-03	8.404E-03
61 PM	4.960E-04	4.960E-04	4.960E-04	4.960E-04	4.960E-04	4.960E-04	4.960E-04	4.960E-04	4.959E-04	4.959E-04
62 SM	1.468E-03	1.468E-03	1.468E-03	1.468E-03	1.468E-03	1.468E-03	1.468E-03	1.468E-03	1.468E-03	1.468E-03
63 EU	3.007E-04	3.007E-04	3.007E-04	3.007E-04	3.007E-04	3.007E-04	3.007E-04	3.007E-04	3.007E-04	3.008E-04
64 GD	8.924E-05	8.924E-05	8.924E-05	8.924E-05	8.924E-05	8.925E-05	8.925E-05	8.925E-05	8.927E-05	8.929E-05
65 TB	4.766E-06	4.766E-06	4.766E-06	4.766E-06	4.766E-06	4.766E-06	4.766E-06	4.766E-06	4.766E-06	4.767E-06
66 DY	1.908E-06	1.908E-06	1.908E-06	1.908E-06	1.908E-06	1.908E-06	1.908E-06	1.908E-06	1.909E-06	1.909E-06
67 HO	9.937E-08	9.937E-08	9.937E-08	9.937E-08	9.937E-08	9.938E-08	9.938E-08	9.939E-08	9.941E-08	9.943E-08
68 ER	1.082E-08	1.082E-08	1.082E-08	1.082E-08	1.082E-08	1.082E-08	1.082E-08	1.082E-08	1.082E-08	1.083E-08
TOTAL	1.607E 00	1.607E 00	1.607E 00	1.607E 00	1.607E 00	1.607E 00	1.607E 00	1.607E 00	1.607E 00	1.607E 00
POISON	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2

TOTAL BARNS/TOTAL FISSIONS - EXCLUDING XE 135, SM 149, AND SM 151

BWRG 238 RG 1.7 PER ATL-E193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 FWD IN 1095.0 DAYS. AT. NO. 30 ZN

UPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.0 DAYS
ZN 72	1.048E-03	8.763E-04	7.320E-04	3.584E-04	1.793E-04	2.931E-03	2.293E-08	5.019E-13	3.072E-19	0.
ZN 73	1.774E-02	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.879E-02	8.763E-04	7.320E-04	3.584E-04	1.793E-04	2.931E-03	2.293E-08	5.019E-13	3.072E-19	0.

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

ZN 72	1.558E-11	1.300E-11	1.088E-11	5.319E-12	2.601E-12	4.350E-13	3.403E-18	7.449E-21	4.559E-27	0.
ZN 73	1.887E-13	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.574E-11	1.300E-11	1.088E-11	5.319E-12	2.601E-12	4.350E-13	3.403E-18	7.449E-21	4.559E-27	0.

B.[illegible] 238 RG 1.7 PER ATL-5193

1095.0 MWD IN 1095.0 DAYS. AT. NO. 31 GA

TIVITY AFTER SHUTDOWN - CURIES

ISOTOPE	SHUTDOWN	12.0 HR.	[illegible] DAYS	[illegible].0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.0 DAYS
GA 72	1.048E-03	1.005E-03	[illegible]6E-04	5.011E-04	2.503E-04	4.206E-05	3.291E-08	7.203E-13	4.409E-19	0.
GA 73	1.774E-02	3.158E-03	5.363E-04	5.452E-07	5.325E-10	1.587E-17	0.	0.	0.	0.
GA 74	4.584E-02	1.680E-29	0.	0.	0.	0.	0.	0.	0.	0.
GA 75	1.133E-01	0.	0.	0.	0.	0.	0.	0.	0.	0.
GA 76	2.650E-01	0.	0.	0.	0.	0.	0.	0.	0.	0.
GA 77	5.258E-01	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	9.686E-01	4.163E-03	1.470E-03	5.016E-04	2.503E-04	4.206E-05	3.291E-08	7.203E-13	4.409E-19	0.

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

GA 72	4.718E-12	4.521E-12	4.101E-12	2.254E-12	1.125E-12	1.892E-13	1.481E-19	3.240E-21	1.983E-27	0.
GA 73	2.717E-11	4.836E-12	8.550E-13	8.350E-16	8.155E-19	2.431E-26	0.	0.	0.	0.
GA 74	1.926E-12	0.	0.	0.	0.	0.	0.	0.	0.	0.
GA 75	1.145E-12	0.	0.	0.	0.	0.	0.	0.	0.	0.
GA 76	7.513E-13	0.	0.	0.	0.	0.	0.	0.	0.	0.
GA 77	[illegible]920E-13	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	3.650E-11	9.357E-12	4.956E-12	2.255E-12	1.126E-12	1.892E-13	1.481E-19	3.240E-21	1.983E-27	0.

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 32 GE

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	3.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.6 DAYS
GE 72	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
GE 73	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
GE 74	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
GE* 75	4.563E-03	0.	0.	0.	0.	0.	0.	0.	0.	0.
GE 75	1.134E-01	2.268E-04	4.428E-07	6.429E-18	9.334E-29	0.	0.	0.	0.	0.
GE 76	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
GE* 77	4.628E-01	0.	0.	0.	0.	0.	0.	0.	0.	0.
GE 77	3.296E-01	1.580E-01	7.569E-02	3.986E-03	2.099E-04	1.336E-07	2.191E-20	0.	0.	0.
GE 78	2.050E 00	7.059E-03	2.431E-05	3.418E-15	4.806E-25	0.	0.	0.	0.	0.
TOTAL	2.960E 00	1.653E-01	7.572E-02	3.986E-03	2.099E-04	1.336E-07	2.191E-20	0.	0.	0.

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

GE 72	6.721E-09	6.724E-09	6.726E-09	6.734E-09	6.737E-09	6.741E-09	6.741E-09	6.741E-09	6.741E-09	6.741E-09
GE 73	8.246E-08	8.248E-08	8.248E-08	8.248E-08	8.248E-08	8.248E-08	8.248E-08	8.248E-08	8.248E-08	8.248E-08
GE 74	2.323E-07	2.323E-07	2.323E-07	2.323E-07	2.323E-07	2.323E-07	2.323E-07	2.323E-07	2.323E-07	2.323E-07
GE* 75	1.941E-14	0.	0.	0.	0.	0.	0.	0.	0.	0.
GE 75	4.823E-11	9.648E-14	1.883E-16	2.735E-27	3.970E-38	0.	0.	0.	0.	0.
GE 76	1.628E-06	1.628E-06	1.628E-06	1.628E-06	1.628E-06	1.628E-06	1.628E-06	1.628E-06	1.628E-06	1.628E-06
GE* 77	2.214E-12	0.	0.	0.	0.	0.	0.	0.	0.	0.
GE 77	1.189E-09	5.698E-10	2.729E-10	1.437E-11	7.569E-13	4.817E-16	7.899E-29	0.	0.	0.
GE 78	9.592E-10	3.303E-12	1.137E-14	1.599E-24	2.249E-34	0.	0.	0.	0.	0.
TOTAL	1.952E-06	1.950E-06	1.950E-06	1.950E-06	1.950E-06	1.950E-06	1.950E-06	1.950E-06	1.950E-06	1.950E-06

SWR8 238 PO 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 33 AS

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.0 DAYS
AS 75	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
AS 76	1.021E-03	1.329E-03	9.696E-04	2.750E-04	7.798E-05	3.339E-06	1.123E-11	6.928E-20	7.030E-31	0.
AS 77	8.816E-01	5.947E-01	5.013E-01	2.242E-01	9.575E-02	1.124E-02	2.125E-06	5.528E-12	1.377E-19	0.
AS 78	2.050E 00	4.972E-02	3.379E-04	1.773E-13	5.515E-23	0.	0.	0.	0.	0.
AS 79	2.851E 00	2.359E-24	0.	0.	0.	0.	0.	0.	0.	0.
AS 80	5.150E 00	0.	0.	0.	0.	0.	0.	0.	0.	0.
AS 81	1.488E 01	0.	0.	0.	0.	0.	0.	0.	0.	0.
AS 85	2.055E 01	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	4.617E 01	6.457E-01	5.026E-01	2.245E-01	9.583E-02	1.124E-02	2.126E-06	5.528E-12	1.377E-19	0.

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

AS 75	6.269E-07	6.269E-07	6.269E-07	6.269E-07	6.269E-07	6.269E-07	6.269E-07	6.269E-07	6.269E-07	6.269E-07
AS 76	1.534E-11	1.110E-11	8.167E-12	2.316E-12	6.568E-13	2.813E-14	9.461E-20	5.836E-28	6.602E-39	0.
AS 77	8.439E-09	7.363E-09	6.206E-09	2.777E-09	1.186E-09	1.392E-10	2.632E-14	6.844E-20	2.448E-27	0.
AS 78	9.810E-10	2.380E-11	1.617E-13	8.485E-23	2.640E-32	0.	0.	0.	0.	0.
AS 79	1.364E-10	1.129E-34	0.	0.	0.	0.	0.	0.	0.	0.
AS 80	6.846E-12	0.	0.	0.	0.	0.	0.	0.	0.	0.
AS 81	4.218E-11	0.	0.	0.	0.	0.	0.	0.	0.	0.
AS 85	7.828E-13	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	6.365E-07	6.343E-07	6.332E-07	6.297E-07	6.281E-07	6.271E-07	6.269E-07	6.269E-07	6.269E-07	6.269E-07

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 34 SE

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	2.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.0 DAYS
SE 76	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SE* 77	1.165E-02	1.01[illegible]E-02	8.522E-03	3.813E-03	1.628E-03	1.911E-04	3.614E-08	9.398E-14	3.381E-21	0.
SE 77	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SE 78	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SE* 79	2.853E 00	4.163E-24	0.	0.	0.	0.	0.	0.	0.	0.
SE 79	1.139E-04	1.139E-04	1.139E-04	1.139E-04	1.139E-04	1.139E-04	1.139E-04	1.139E-04	1.139E-04	1.139E-04
SE 80	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SE* 81	5.981E-01	9.508E-05	1.497E-08	9.210E-[illegible]	0.	0.	0.	0.	0.	0.
SE 81	1.508E 01	1.390E-04	2.188E-08	1.34[illegible]E-[illegible]	0.	0.	0.	0.	0.	0.
SE 82	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SE* 83	1.510E 01	0.	0.	0.	0.	0.	0.	[illegible]	0.	0.
SE 83	1.475E 01	5.547E-09	2.086E-18	0.	0.	0.	0.	[illegible]	0.	0.
SE 84	4.562E 01	0.	0.	0.	0.	0.	0.	[illegible]	0.	0.
SE 85	5.412E 01	0.	0.	0.	0.	0.	0.	[illegible]	0.	0.
SE 87	6.900E 01	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	2.173E 02	1.046E-02	8.636E-03	3.926E-03	1.742E-03	3.050E-04	1.140E-04	1.139E-04	1.139E-04	1.139E-04

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

SE 76	4.699E-09	4.703E-09	4.706E-09	4.712E-09	4.713E-09	4.714E-09	4.714E-09	4.714E-09	4.714E-09	4.714E-09
SE* 77	1.795E-14	1.558E-14	1.314E-14	5.877E-15	2.509E-15	2.945E-16	5.570E-20	1.449E-25	5.181E-33	0.
SE 77	4.022E-08	4.024E-08	4.025E-08	4.029E-08	4.031E-08	4.032E-08	4.032E-08	4.032E-08	4.032E-08	4.032E-08
SE 78	1.144E-05	1.144E-05	1.144E-05	1.144E-05	1.144E-05	1.144E-05	1.144E-05	1.144E-05	1.144E-05	1.144E-05
SE* 79	5.917E-11	8.633E-35	0.	0.	0.	0.	0.	0.	0.	0.
SE 79	2.070E-05	2.070E-05	2.070E-05	2.070E-05	2.070E-05	2.070E-05	2.070E-05	2.070E-05	2.070E-05	2.070E-05
SE 80	3.601E-05	3.601E-05	3.601E-05	3.601E-05	3.601E-05	3.601E-05	3.601E-05	3.601E-05	3.601E-05	3.601E-05
SE* 81	1.813E-10	2.882E-14	4.538E-18	2.7[illegible]E-33	0.	0.	0.	0.	0.	0.
SE 81	1.443E-09	1.330E-14	2.095E-18	1.288E-[illegible]	0.	0.	0.	0.	0.	0.
SE 82	1.002E-04	1.002E-04	1.002E-04	1.002E-04	1.002E-04	1.002E-04	1.002E-04	1.0[illegible]-04	1.002E-04	1.002E-04
SE* 83	9.232E-11	0.	0.	0.	0.	0.	0.	0.	0.	0.
SE 83	1.804E-09	6.784E-19	2.551E-28	0.	0.	0.	0.	0.	0.	0.
SE 84	7.308E-10	0.	0.	0.	0.	0.	0.	0.	0.	0.
SE 85	1.870E-10	0.	0.	0.	0.	0.	0.	0.	0.	0.
SE 87	4.585E-11	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.724E-04	1.724E-04	1.724E-04	1.724E-04	1.724E-04	1.724E-04	1.724E-04	1.724E-04	1.724E-04	1.724E-04

BWR8 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 35 BR

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.0 DAYS
BR 79	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
BR* 80	1.200E-02	1.890E-03	2.976E-04	1.831E-07	1.127E-10	1.058E-18	0.	0.	0.	0.
BR 80	1.210E-02	2.021E-03	3.184E-04	1.959E-07	1.205E-10	1.131E-18	0.	0.	0.	0.
BR 81	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
BR* 82	1.093E 01	0.	0.	0.	0.	0.	0.	0.	0.	0.
BR 82	1.937E 01	1.834E 01	1.213E 01	4.738E 00	1.851E 00	1.766E-01	1.463E-05	1.103E-11	7.873E-20	0.
BR 83	1.499E 03	4.692E 01	1.466E 00	1.399E-06	1.334E-12	1.185E-27	0.	0.	0.	0.
BR* 84	2.125E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
BR 84	2.342E 03	3.931E-04	6.652E-11	0.	0.	0.	0.	0.	0.	0.
BR 85	3.247E 03	0.	0.	0.	0.	0.	0.	0.	0.	0.
BR 87	5.468E 03	0.	0.	0.	0.	0.	0.	0.	0.	0.
BR 88	6.491E 03	0.	0.	0.	0.	0.	0.	0.	0.	0.
BR 89	5.676E 03	0.	0.	0.	0.	0.	0.	0.	0.	0.
BR 90	5.575E 03	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	3.054E 04	6.227E 01	1.359E 01	4.738E 00	1.851E 00	1.766E-01	1.463E-05	1.103E-11	7.873E-20	0.

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

BR 79	1.763E-08	1.763E-08	1.763E-08	1.763E-08	1.763E-08	1.764E-08	1.765E-08	1.767E-08	1.769E-08	1.785E-08
BR* 80	1.723E-11	2.713E-12	4.273E-13	2.629E-16	1.617E-19	1.519E-27	0.	0.	0.	0.
BR 80	1.132E-12	1.891E-13	2.979E-14	1.833E-17	1.120E-20	1.059E-28	0.	0.	0.	0.
BR 81	4.368E-03	4.368E-03	4.368E-03	4.368E-03	4.368E-03	4.368E-03	4.368E-03	4.368E-03	4.368E-03	4.368E-03
BR* 82	3.544E-10	0.	0.	0.	0.	0.	0.	0.	0.	0.
BR 82	2.188E-07	1.733E-07	1.370E-07	5.351E-08	2.091E-08	1.995E-09	1.653E-13	1.246E-19	8.553E-28	0.
BR 83	1.148E-06	3.593E-08	1.123E-09	1.071E-15	1.022E-21	9.076E-37	0.	0.	0.	0.
BR* 84	6.779E-09	0.	0.	0.	0.	0.	0.	0.	0.	0.
BR 84	3.985E-07	6.723E-14	1.132E-20	0.	0.	0.	0.	0.	0.	0.
BR 85	5.179E-08	0.	0.	0.	0.	0.	0.	0.	0.	0.
BR 87	2.665E-08	0.	0.	0.	0.	0.	0.	0.	0.	0.
BR 88	9.200E-09	0.	0.	0.	0.	0.	0.	0.	0.	0.
BR 89	2.263E-09	0.	0.	0.	0.	0.	0.	0.	0.	0.
BR 90	7.902E-10	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	4.370E-03	4.368E-03	4.368E-03	4.368E-03	4.368E-03	4.368E-03	4.368E-03	4.368E-03	4.368E-03	4.368E-03

BWR8 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 36 KR

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.6 DAYS
KR 80	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
KR 81	1.535E-08	1.535E-08	1.535E-08	1.535E-08	1.535E-08	1.535E-08	1.535E-08	1.535E-08	1.535E-08	1.535E-08
KR 82	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
KR* 83	2 98E 03	1.666E 02	6.039E 00	6.211E-06	5.932E-12	5.2[illegible]E-27	0.	0.	0.	0.
KR 83	0	0.	0.	0.	0.	0.	0.	0.	0.	0.
KR 84	0	0.	0.	0.	0.	0.	0.	0.	0.	0.
KR* 85	6.498E 03	9.866E 02	1.489E 02	7.735E-02	4.017E-05	2.470E-13	0.	0.	0.	0.
KR 85	2.999E 02	3.000E 02	2.999E 02	2.998E 02	2.997E 02	2.995E 02	2.984E 02	2.968E 02	2.947E 02	2.613E 02
KR 86	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
KR 87	1.155E 04	1.633E 01	2.295E-02	8.947E-14	3.489E-25	0.	0.	0.	0.	0.
KR 88	1.690E 04	8.676E 02	4.452E 01	3.087E-04	2.141E-09	2.711E-22	0.	0.	0.	0.
KR 89	1.993E 04	0.	0.	0.	0.	0.	0.	0.	0.	0.
KR 90	2.042E 04	0.	0.	0.	0.	0.	0.	0.	0.	0.
KR 91	1.315E 04	0.	0.	0.	0.	0.	0.	0.	0.	0.
KR 92	6.589E 03	0.	0.	0.	0.	0.	0.	0.	0.	0.
KR 93	1.632E 03	0.	0.	0.	0.	0.	0.	0.	0.	0.
KR 94	1.146E 03	0.	0.	0.	0.	0.	0.	0.	0.	0.
KR 95	2.400E 01	0.	0.	0.	0.	0.	0.	0.	0.	0.
KR 97	1.435E-01	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.011E 05	2.337E 03	4.995E 02	2.999E 02	2.997E 02	2.995E 02	2.984E 02	2.968E 02	2.947E 02	2.613E 02

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

KR 80	2.637E-07	2.637E-07	2.637E-07	2.637E-07	2.637E-07	2.637E-07	2.637E-07	2.637E-07	2.637E-07	2.637E-07
KR 81	9.012E-09	9.012E-09	9.012E-09	9.012E-09	9.012E-09	9.012E-09	9.012E-09	9.012E-09	9.012E-09	9.012E-09
KR 82	1.210E-04	1.211E-04	1.211E-04	1.212E-04	1.212E-04	1.212E-04	1.212E-04	1.212E-04	1.212E-04	1.212E-04
KR* 83	1.779E-06	9.887E-09	3.584E-09	3.686E-15	3.521E-21	3.128E-36	0.	0.	0.	0.
KR 83	1.459E-02	1.459E-02	1.459E-02	1.459E-02	1.459E-02	1.459E-02	1.459E-02	1.459E-02	1.459E-02	1.459E-02
KR 84	4.196E-02	4.196E-02	4.196E-02	4.196E-02	4.196E-02	4.196E-02	4.196E-02	4.196E-02	4.196E-02	4.196E-02
KR* 85	9.120E-06	1.385E-06	2.090E-07	1.086E-10	5.639E-14	3.466E-22	0.	0.	0.	0.
KR 85	9.019E-03	9.020E-03	9.019E-03	9.016E-03	9.013E-03	9.005E-03	8.973E-03	8.926E-03	8.863E-03	8.489E-03
KR 87	6.780E-02	6.780E-02	6.780E-02	6.780E-02	6.780E-02	6.780E-02	6.780E-02	6.780E-02	6.780E-02	6.780E-02
KR 88	4.669E-06	6.598E-09	9.272E-12	3.815E-23	1.410E-34	0.	0.	0.	0.	0.
KR 89	1.510E-05	7.753E-07	3.978E-08	2.759E-13	1.913E-18	2.423E-31	0.	0.	0.	0.
KR 90	3.390E-07	0.	0.	0.	0.	0.	0.	0.	0.	0.
KR 91	5.971E-08	0.	0.	0.	0.	0.	0.	0.	0.	0.
KR 92	1.165E-08	0.	0.	0.	0.	0.	0.	0.	0.	0.
KR 93	1.751E-09	0.	0.	0.	0.	0.	0.	0.	0.	0.
KR 94	2.891E-10	0.	0.	0.	0.	0.	0.	0.	0.	0.
KR 95	1.015E-10	0.	0.	0.	0.	0.	0.	0.	0.	0.
KR 97	2.126E-13	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.272E-14	0.	0.	0.	0.	0.	0.	0.	0.	0.
	1.335E-01	1.335E-01	1.335E-01	1.335E-01	1.335E-01	1.335E-01	1.334E-01	1.334E-01	1.333E-01	1.329E-01

BWR6 238 RG 1.7 PER ATL-6193

ACTIVITY AFTER SHUTDOWN - CURIES

1095.0 MWD IN 1095.0 DAYS. AT. NO. 37 RB

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	8.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.0 DAYS
RB 85	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
RB* 86	2.690E-02	0.	0.	0.	0.	0.	0.	0.	0.	0.
RB 86	2.459E-01	2.414E-01	2.369E-01	2.200E-01	2.043E-01	1.697E-01	8.087E-02	2.660E-02	8.039E-03	3.328E-07
RB 87	6.749E-09	6.785E-09	6.785E-09	6.785E-09	6.785E-09	6.785E-09	6.785E-09	6.785E-09	6.785E-09	6.785E-09
RB 88	1.707E 02	9.704E 02	4.979E 01	3.453E-04	2.394E-09	3.032E-22	0.	0.	0.	0.
RB 89	2.184E 02	2.031E-11	7.297E-26	0.	0.	0.	0.	0.	0.	0.
RB 90	2.720E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
RB 91	2.750E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
RB 92	2.708E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
RB 93	2.493E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
RB 94	1.566E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
RB 95	7.247E 01	0.	0.	0.	0.	0.	0.	0.	0.	0.
RB 97	2.536E-02	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.686E 03	9.706E 02	5.003E 01	2.204E-01	2.043E-01	1.697[illegible]	8.087E-02	2.660E-02	8.039E-03	3.393E-07

CONCENTRATION AFTER SHUTDOWN - [illegible]

RB 85	3.851E-04	3.920E-04	3.937E-04	3.971E-04	4.003E-04	4.6[illegible]	4.399E-04	4.873E-04	5.501E 04	9.545E-04
RB* 86	1.454E-13	0.	0.	0.	0.	0.	0.	0.	0.	0.
RB 86	3.521E-08	3.456E-08	3.393E-08	3.150E-04	2.926E-08	2.430E-08	1.158E-08	3.809E-09	8.847E-10	4.78[illegible]-14
RB 87	8.868E-04	8.915E-04	8.915E-04	8.915E-04	8.915E-04	8.915E-04	8.915E-04	8.915E-04	8.915E-04	8.9[illegible]5E-04
RB 88	1.616E-08	9.184E-08	4.713E-09	3.288E-14	2.266E-19	2.870E-32	0.	0.	0.	0.
RB 89	1.743E-08	1.621E-21	5.822E-36	0.	0.	0.	0.	0.	0.	0.
RB 90	6.218E-09	0.	0.	0.	0.	0.	0.	0.	0.	0.
RB 91	1.389E-09	0.	0.	0.	0.	0.	0.	0.	0.	0.
RB 92	1.056E-10	0.	0.	0.	0.	0.	0.	0.	0.	0.
RB 93	1.303E-10	0.	0.	0.	0.	0.	0.	0.	0.	0.
RB 94	3.747E-11	0.	0.	0.	0.	0.	0.	0.	0.	0.
RB 95	2.311E-12	0.	0.	0.	0.	0.	0.	0.	0.	0.
RB 97	4.495E-15	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.272E-03	1.284E-03	1.285E-03	1.289E-03	1.292E-03	1.300E-03	1.331E-03	1.379E-03	1.442E-03	1.849E-03

BWR6 238 RG 1.7 FER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 38 SR

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.0 DAYS
SR 86	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SR 88	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SR 89	2.248E 02	2.242E 02	2.227E 02	2.187E 02	2.108E 02	1.969E 02	1.497E 02	9.924E 01	5.738E 01	1.830E 00
SR 90	2.464E 01	2.464E 01	2.464E 01	2.464E 01	2.464E 01	2.463E 01	2.460E 01	2.455E 01	2.448E 01	2.406E 01
SR 91	2.366E 02	1.234E 02	5.234E 01	1.696E 00	5.494E-02	1.038E-05	1.322E-20	0.	0.	0.
SR 92	3.11[illegible]E 02	1.439E 01	6.609E-01	2.941E-06	1.309E-11	5.470E-25	0.	0.	0.	0.
SR 93	3.720E 02	2.944E-24	0.	0.	0.	0.	0.	0.	0.	0.
SR 94	3.578E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
SR 95	3.314E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
SR 97	3.8[illegible]7E 01	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.947E 03	3.866E 02	3.003E 02	2.430E 02	2.355E 02	2.[illegible]5E 02	1.743E 02	1.238E 02	8.186E 01	2.859E 01

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

SR 86	7.531E-07	7.538E-07	7.544E-07	7.568E-07	7.591E-07	7.640E-07	7.768E-07	7.845E-07	7.875E-07	7.884E-07
SR 88	1.279E-03	1.294E-03	1.295E-03	1.295E-03	1.295E-03	1.295E-03	1.295E-03	1.295E-03	1.295E-03	1.295E-03
SR 89	8.712E-05	8.688E-05	8.628E-05	8.395E-05	8.168E-05	7.628E-05	5.800E-05	3.845E-05	2.223E-05	5.928E-07
SR 90	1.983E-03	1.983E-03	1.983E-03	1.983E-03	1.983E-03	1.982E-03	1.979E-03	1.975E-03	1.970E-03	1.936E-03
SR 91	8.870E-07	3.819E-07	1.620E-07	5.249E-09	1.700E-10	3.212E-14	4.031E-29	0.	0.	0.
SR 92	2.680E-07	1.240E-08	5.694E-10	2.534E-15	1.128E-20	4.712E-34	0.	0.	0.	0.
SR 93	1.642E-08	1.300E-34	0.	0.	0.	0.	0.	0.	0.	0.
SR 94	2.473E-09	0.	0.	0.	0.	0.	0.	0.	0.	0.
SR 95	7.633E-10	0.	0.	0.	0.	0.	0.	0.	0.	0.
SR 97	1.015E-11	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	3.352E-03	3.365E-03	3.365E-03	3.362E-03	3.360E-03	3.354E-03	3.333E-03	3.309E-03	3.288E-03	3.232E-03

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 39 Y

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.0 DAYS
Y* 89	2.248E-02	2.242E-02	2.227E-02	2.167E-02	2.108E-02	1.979E-02	1.497E-02	9.924E-03	[illegible]38E-03	1.530E-04
Y 89	0.	0.	0.	0.	0.	0.	0.	0.	[illegible]	0.
Y 90	2.591E 01	2.575E 01	2.562E 01	2.522E 01	2.499E 01	2.473E 01	2.460E 01	2.455E 01	[illegible]449E 01	2.406E 01
Y* 91	1.821E 02	7.963E 01	3.378E 01	1.095E 00	3.546E-02	6.699E-06	8.532E-21	0.	0.	0.
Y 91	3.077E 02	3.071E 02	3.058E 02	2.991E 02	2.921E 02	2.755E 02	2.178E 02	1.531E 02	9.569E 01	4.278E 00
Y 92	3.262E 02	8.070E 01	9.937E 00	9.665E-04	7.878E-08	4.619E-18	0.	0.	0.	0.
Y 93	3.611E 02	1.696E 02	7.444E 01	2.763E 00	1.026E-01	2.723E-05	1.352E-19	0.	0.	0.
Y 94	3.951E 02	8.036E-09	8.647E-20	0.	0.	0.	0.	0.	0.	0.
Y 95	4.542E 02	1.050E-18	0.	0.	0.	0.	0.	0.	0.	0.
Y 96	4.204E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
Y 97	3.434E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	2.836E 03	6.628E 02	4.496E 02	3.282E 02	3.173E 02	3.002E 02	2.424E 02	1.777E 02	[illegible].202E 02	2.834E 01

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

Y* 89	3.187E-14	3.178E-14	3.156E-14	3.071E-14	2.988E-14	2.790E-14	2.122E-14	1.407E-14	8.133E-15	2.169E-16
Y 89	1.582E-03	1.582E-03	1.583E-03	1.585E-03	1.588E-03	1.593E-03	1.611E-03	1.631E-03	1.647E-03	1.869E-03
Y 90	5.324E-07	5.293E-07	5.265E-07	5.184E-07	5.135E-07	5.082E-07	5.056E-07	5.046E-07	5.033E-07	4.946E-07
Y* 91	4.842E-08	2.117E-08	8.982E-09	2.910E-10	9.427E-12	1.781E-15	2.268E-30	0.	0.	0.
Y 91	1.390E-04	1.387E-04	1.382E-04	1.351E-04	1.320E-04	1.245E-04	9.839E-05	6.917E-05	4.323E-05	1.931E-06
Y 92	3.675E-07	9.090E-08	1.119E-08	1.089E-12	8.873E-17	5.203E-27	0.	0.	0.	0.
Y 93	1.228E-06	5.466E-07	2.399E-07	8.906E-09	3.306E-10	8.776E-14	4.358E-28	0.	0.	0.
Y 94	4.199E-08	6.416E-19	9.191E-30	0.	0.	0.	0.	0.	0.	0.
Y 95	2.535E-08	5.862E-29	0.	0.	0.	0.	0.	0.	0.	0.
Y 96	5.141E-09	0.	0.	0.	0.	0.	0.	0.	0.	0.
Y 97	1.825E-10	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.723E-03	1.722E-03	1.722E-03	1.721E-03	1.720E-03	1.718E-03	1.710E-03	1.700E-03	1.691E-03	1.671E-03

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 40 ZR

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.0 DAYS
ZR 90	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
ZR 91	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
ZR 92	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
ZR 93	9.667E-04	9.670E-04	9.671E-04	9.672E-04	9.672E-04	9.672E-04	9.672E-04	9.672E-04	9.672E-04	9.672E-04
ZR 94	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
ZR 95	4.655E 02	4.631E 02	4.606E 02	4.509E 02	4.414E 02	4.185E 02	3.381E 02	2.455E 02	1.603E 02	9.540E 00
ZR 96	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
ZR 97	4.616E 02	2.814E 02	1.715E 02	2.368E 01	3.269E 00	2.315E-02	5.621E-11	7.339E-24	0.	0.
ZR 98	4.579E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
ZR 99	3.808E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.766E 03	7.445E 02	6.321E 02	4.746E 02	4.447E 02	4.185E 02	3.381E 02	2.455E 02	1.603E 02	9.541E 00

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

ZR 90	8.301E-05	8.308E-05	8.315E-05	8.342E-05	8.368E-05	8.434E-05	8.696E-05	9.087E-05	9.608E-05	1.302E-04
ZR 91	2.033E-03	2.033E-03	2.034E-03	2.037E-03	2.041E-03	2.048E-03	2.074E-03	2.103E-03	2.129E-03	2.171E-03
ZR 92	2.298E-03	2.299E-03	2.299E-03	2.299E-03	2.299E-03	2.299E-03	2.299E-03	2.299E-03	2.299E-03	2.299E-03
ZR 93	2.567E-03	2.568E-03	2.568E-03	2.568E-03	2.568E-03	2.568E-03	2.568E-03	2.568E-03	2.568E-03	2.568E-03
ZR 94	2.737E-03	2.737E-03	2.737E-03	2.737E-03	2.737E-03	2.737E-03	2.737E-03	2.737E-03	2.737E-03	2.737E-03
ZR 95	2.317E-04	2.305E-04	2.293E-04	2.244E-04	2.197E-04	2.083E-04	1.683E-04	1.222E-04	7.977E-05	4.748E-06
ZR 96	2.815E-03	2.815E-03	2.815E-03	2.815E-03	2.815E-03	2.815E-03	2.815E-03	2.815E-03	2.815E-03	2.815E-03
ZR 97	2.474E-06	1.508E-06	9.195E-07	1.269E-07	1.752E-08	1.241E-10	3.120E-19	3.935E-32	0.	0.
ZR 98	2.435E-09	0.	0.	0.	0.	0.	0.	0.	0.	0.
ZR 99	5.397E-11	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.277E-02	1.277E-02	1.277E-02	1.276E-02	1.276E-02	1.276E-02	1.275E-02	1.274E-02	1.[illegible]E-02	1.273E-02

BWR8 238 8G 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 41 NB

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.0 DAYS
NB* 93	7.029E-05	7.035E-05	7.041E-05	7.065E-05	7.089E-05	7.148E-05	7.334E-05	7.737E-05	8.206E-05	1.124E-04
NB 93	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
NB* 94	1.872E-07	0.	0.	0.	0.	0.	0.	0.	0.	0.
NB 94	6.349E-12	6.349E-12	6.349E-12	6.349E-12	6.349E-12	6.349E-12	6.349E-12	6.349E-12	6.349E-12	6.349E-12
NB* 95	9.313E 00	9.311E 00	9.305E 00	9.244E 00	9.143E 00	8.792E 00	7.174E 00	5.211E 00	3.402E 00	2.025E-01
NB 95	4.718E 02	4.718E 02	4.717E 02	4.711E 02	4.701E 02	4.653E 02	4.363E 02	3.686E 02	2.734E 02	2.030E 01
NB 96	8.039E-01	5.599E-01	3.900E-01	9.179E-02	2.160E-02	5.807E-04	3.030E-10	1.142E-19	3.109E-32	0.
NB* 97	4.564E 02	2.704E 02	1.648E 02	2.275E 01	3.141E 00	2.224E-02	5.593E-11	7.052E-24	0.	0.
NB 97	4.875E 02	2.029E 02	1.847E 02	2.549E 01	3.519E 00	2.497E-02	6.267E-11	7.902E-24	0.	0.
NB* 98	4.772E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
NB 98	1.362E 01	8.416E-04	5.202E-08	7.589E-25	0.	0.	0.	0.	0.	0.
NB 99	4.893E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
NB 100	5.472E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
NB 101	3.917E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	3.345E 03	1.055E 03	8.308E 02	5.286E 02	4.859E 02	4.752E 02	4.435E 02	3.738E 02	2.768E 02	2.050E 01

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

NB* 93	2.872E-09	2.874E-09	2.876E-09	2.885E-09	2.894E-09	2.717E-09	2.807E-09	2.941E-09	3.119E-09	4.273E-09
NB 93	2.897E-10	2.900E-10	2.903E-10	2.916E-10	2.928E-10	2.960E-10	3.089E-10	3.286E-10	3.558E-10	5.604E-10
NB* 94	6.273E-18	0.	0.	0.	0.	0.	0.	0.	0.	0.
NB 94	3.549E-13	3.549E-13	3.549E-13	3.549E-13	3.549E-13	3.549E-13	3.549E-13	3.549E-13	3.549E-13	3.549E-13
NB* 95	2.674E-07	2.674E-07	2.672E-07	2.654E-07	2.625E-07	2.525E-07	2.060E-07	1.496E-07	9.760E-08	5.814E-09
NB 95	1.265E-04	1.264E-04	1.264E-04	1.262E-04	1.260E-04	1.250E-04	1.169E-04	9.879E-05	7.320E-05	5.441E-06
NB 96	5.899E-09	4.109E-09	2.862E-09	6.736E-10	1.585E-10	4.261E-12	2.223E-19	8.379E-28	0.	0.
NB* 97	2.224E-09	1.318E-09	8.031E-10	1.109E-10	1.531E-11	1.084E-13	2.725E-22	3.437E-35	0.	0.
NB 97	1.840E-07	1.144E-07	6.971E-08	9.624E-09	1.329E-09	9.409E-12	2.366E-20	2.983E-33	0.	0.
NB* 98	3.808E-09	0.	0.	0.	0.	0.	0.	0.	0.	0.
NB 98	3.729E-09	2.305E-13	1.424E-17	2.078E-34	0.	0.	0.	0.	0.	0.
NB 99	6.242E-09	0.	0.	0.	0.	0.	0.	0.	0.	0.
NB 100	6.728E-09	0.	0.	0.	0.	0.	0.	0.	0.	0.
NB 101	2.083E-09	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.269E-	1.268E-04	1.268E-04	1.265E-04	1.263E-04	1.252E-04	1.172E-04	9.895E-05	7.338E-05	5.451E-06

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. KG. 42 MO

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.0 DAYS
MO 94	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
MO 95	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
MO 96	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
MO 97	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
MO 98	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
MO 99	5.049E 02	4.454E 02	3.927E 02	2.372E 02	1.433E 02	4.063E 01	2.628E-01	1.367E-04	5.71[illegible]E-09	0.
MO 100	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
MO 101	4.718E 02	7.177E-13	1.029E-27	0.	0.	0.	0.	0.	0.	0.
MO 102	4.442E 02	8.745E-18	0.	0.	0.	0.	0.	0.	0.	0.
MO 103	3.679E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
MO 104	2.880E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
MO 105	1.726E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	2.249E 03	4.454E 02	3.927E 02	2.372E 02	1.433E 02	4.063E 01	2.628E-01	1.367E-04	5.715E-09	0.

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

MO 94	3.358E-16	3.358E-16	3.358E-16	3.359E-16	3.360E-16	3.361E-16	3.368E-16	3.378E-16	3.392E-16	3.401E-16
MO 95	2.459E-03	2.460E-03	2.462E-03	2.467E-03	2.472E-03	2.484E-03	2.532E-03	2.596E-03	2.664E-03	2.807E-03
MO 96	6.257E-05	6.257E-05	6.257E-05	6.257E-05	6.257E-05	6.257E-05	6.257E-05	6.257E-05	6.257E-05	6.257E-05
MO 97	2.901E-03	2.902E-03	2.902E-03	2.903E-03	2.903E-03	2.903E-03	2.903E-03	2.903E-03	2.903E-03	2.903E-03
MO 98	2.878E-03	2.878E-03	2.878E-03	2.878E-03	2.878E-03	2.878E-03	2.878E-03	2.878E-03	2.878E-03	2.878E-03
MO 99	1.063E-05	8.379E-06	8.268E-06	4.995E-06	3.017E-06	8.555E-07	5.533E-09	2.878E-12	1.204E-16	0.
MO 100	3.289E-03	3.289E-03	3.289E-03	3.289E-03	3.289E-03	3.289E-03	3.289E-03	3.289E-03	3.289E-03	3.289E-03
MO 101	3.663E-08	5.573E-23	7.989E-38	0.	0.	0.	0.	0.	0.	0.
MO 102	2.598E-08	5.115E-28	0.	0.	0.	0.	0.	0.	0.	0.
MO 103	2.021E-09	0.	0.	0.	0.	0.	0.	0.	0.	0.
MO 104	2.144E-09	0.	0.	0.	0.	0.	0.	0.	0.	0.
MO 105	6.117E-10	0.	0.	0.	0.	0.	0.	0.	0	0.
TOTAL	1.160E-02	1.160E-02	1.160E-02	1.160E-02	1.161E-02	1.162E-02	1.167E-02	1.173E-02	1.190E-02	1.194E-02

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 43 TC

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.0 DAYS
TC 98	1.161E-11	1.161E-11	1.161E-11	1.161E-11	1.161E-11	1.161E-11	1.161E-11	1.161E-11	1.161E-11	1.161E-11
TC* 99	4.443E 02	4.420E 02	3.773E 02	2.296E 02	1.387E 02	3.933E 01	2.544E-01	1.920E-04	5.533E-09	0.
TC 99	4.741E-03	4.743E-03	4.745E-03	4.751E-03	4.755E-03	4.759E-03	4.760E-03	4.761E-03	4.761E-03	4.760E-03
TC 100	4.067E 01	0.	0.	0.	0.	0.	0.	0.	0.	0.
TC 101	4.747E 02	1.508E 01	4.268E-01	2.738E-07	1.757E-13	5.795E-29	0.	0.	0.	0.
TC 102	4.588E 02	8.816E-18	0.	0.	0.	0.	0.	0.	0.	0.
TC 103	4.102E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
TC 104	3.926E 02	3.793E-10	3.451E-22	0.	0.	0.	0.	0.	0.	0.
TC 105	3.298E 02	2.775E-25	0.	0.	0.	0.	0.	0.	0.	0.
TC 106	2.269E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
TC 107	1.373E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
TC 108	7.386E 01	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	2.989E 03	4.351E 02	3.776E 02	2.296E 02	1.387E 02	3.934E 01	2.591E-01	4.993E-03	4.761E-03	4.760E-03

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

TC 98	4.867E-11	4.867E-11	4.867E-11	4.867E-11	4.867E-11	4.867E-11	4.867E-11	4.867E-11	4.867E-11	4.867E-11
TC* 99	8.520E-07	8.053E-07	7.235E-07	4.403E-07	2.660E-07	7.542E-08	4.878E-10	2.537E-13	1.061E-17	0.
TC 99	2.836E-03	2.837E-03	2.838E-03	2.842E-03	2.844E-03	2.846E-03	2.847E-03	2.847E-03	2.847E-03	2.847E-03
TC 100	8.126E-11	0.	0.	0.	0.	0.	0.	0.	0.	0.
TC 101	3.534E-07	1.123E-08	3.177E-10	2.039E-16	1.308E-22	4.314E-38	0.	0.	0.	0.
TC 102	2.154E-10	4.139E-30	0.	0.	0.	0.	0.	0.	0.	0.
TC 103	1.817E-09	0.	0.	0.	0.	0.	0.	0.	0.	0.
TC 104	3.758E-08	3.630E-20	3.303E-32	0.	0.	0.	0.	0.	0.	0.
TC 105	1.403E-08	1.180E-35	0.	0.	0.	0.	0.	0.	0.	0.
TC 106	7.438E-10	0.	0.	0.	0.	0.	0.	0.	0.	0.
TC 107	3.526E-10	0.	0.	0.	0.	0.	0.	0.	0.	0.
TC 108	6.544E-11	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	2.837E-03	2.838E-03	2.839E-03	2.842E-03	2.844E-03	2.846E-03	2.847E-03	2.847E-03	2.847E-03	2.847E-03

QWRG 230 RG 1.7 PER ATL-8193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 44 RU

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.0 DAYS
RU 98	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
RU 99	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
RU 100	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
RU 101	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
RU 102	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
RU 103	4.081E 02	4.045E 02	4.010E 02	3.872E 02	3.739E 02	3.426E 02	2.414E 02	1.426E 02	7.088E 01	8.607E-01
RU 104	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
RU 105	3.526E 02	3.558E 01	8.303E 00	4.650E-03	2.551E-08	1.792E-14	0.	0.	0.	0.
RU 106	1.907E 02	1.905E 02	1.904E 02	1.896E 02	1.889E 02	1.871E 02	1.802E 02	1.703E 02	1.579E 02	9.578E 01
RU 107	2.040E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
RU 108	1.467E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.302E 03	8.806E 02	8.999E 02	8.798E 02	8.628E 02	8.297E 02	4.218E 02	3.131E 02	2.268E 02	9.648E 01

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

RU 98	4.010E-17	4.013E-17	4.016E-17	4.029E-17	4.041E-17	4.072E-17	4.193E-17	4.380E-17	4.629E-17	9.287E-17
RU 99	1.378E-08	1.380E-08	1.381E-08	1.386E-08	1.391E-08	1.404E-08	1.454E-08	1.530E-08	1.631E-08	2.3007-08
RU 100	1.190E-04	1.190E-04	1.190E-04	1.190E-04	1.190E-04	1.190E-04	1.190E-04	1.190E-04	1.190E-04	1.190E-04
RU 101	2.633E-03	2.633E-03	2.633E-03	2.633E-03	2.633E-03	2.633E-03	2.633E-03	2.633E-03	2.633E-03	2.633E-03
RU 102	2.439E-03	2.439E-03	2.439E-03	2.439E-03	2.439E-03	2.439E-03	2.439E-03	2.439E-03	2.439E-03	2.439E-03
RU 103	1.237E-04	1.227E-04	1.216E-04	1.174E-04	1.134E-04	1.039E-04	7.319E-05	4.329E-05	2.150E-05	2.094E-07
RU 104	1.773E-03	1.774E-03	1.774E-03	1.774E-03	1.774E-03	1.774E-03	1.774E-03	1.774E-03	1.774E-03	1.774E-03
RU 105	4.865E-07	7.857E-08	1.202E-08	6.594E-12	3.607E-15	2.533E-23	0.	0.	0.	0.
RU 106	5.359E-04	5.354E-04	5.349E-04	5.329E-04	5.309E-04	5.259E-04	5.064E-04	4.789E-04	4.437E-04	2.692E-04
RU 107	4.556E-09	0.	0.	0.	0.	0.	0.	0.	0.	0.
RU 108	3.510E-09	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	7.624E-03	7.622E-03	7.620E-03	7.614E-03	7.608E-03	7.594E-03	7.344E-03	7.486E-03	7.429E-03	7.233E-03

BWR8 238 RG 1.7 PER ATL-8193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 49 RH

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.0 DAYS
RH*103	3.999E 02	3.960E 02	3.934E 02	3.798E 02	3.668E 02	3.360E 02	2.358E 02	1.401E 02	8.994E 01	6.778E-01
RH 103	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
RH*104	1.069E 01	0.	0.	0.	0.	0.	0.	0.	0.	0.
RH 104	1.505E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
RH*105	7.405E 01	1.171E 01	1.791E 00	9.809E-04	5.373E-07	3.774E-15	0.	0.	0.	0.
RH 105	3.049E 02	2.746E 02	2.230E 02	8.996E 01	3.531E 01	3.503E 00	3.394E-04	3.237E-10	3.039E-18	0.
RH*106	3.394E 01	7.294E-01	1.568E-02	3.344E-09	7.134E-16	1.499E-32	0.	0.	0.	0.
RH 106	2.043E 02	1.90[illegible] 02	1.904E 02	1.896E 02	1.889E 02	1.871E 02	1.8[illegible]2E 02	1.703E 02	1.573E 02	9.879E 01
RH 107	2.101E 02	[illegible]8E-08	5.219E-18	0.	0.	0.	0.	0.	0.	0.
RH 108	1.580E 02	[illegible]	0.	0.	0.	0.	0.	0.	0.	0.
RH 109	7.32[illegible] 01	1.789E-02	4.372E-08	1.558E-20	0.	0.	0.	0.	0.	0.
RH 110	4.876E 01	0.	0.	0.	0.	0.	0.	0.	0.	0.
RH 111	1.496E 01	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.661E 03	8.744E 02	8.089E 02	6.884E 02	5.910E 02	5.267E 02	4.170E 02	3.103E 02	2.274E 02	9.847E 01

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

RH*103	1.212E-07	1.203E-07	1.192E-07	1.151E-07	1.112E-07	1.019E-07	7.176E-08	4.245E-08	2.108E-08	2.054E-10
RH 103	1.502E-03	1.503E-03	1.504E-03	1.509E-03	1.512E-03	1.522E-03	1.553E-03	1.583E-03	1.604E-03	1.626E-03
RH*104	2.500E-10	0.	0.	0.	0.	0.	0.	0.	0.	0.
RH 104	5.602E-10	0.	0.	0.	0.	0.	0.	0.	0.	0.
RH*105	2.953E-10	4.667E-11	7.140E-12	3.911E-15	2.142E-18	1.505E-26	0.	0.	0.	0.
RH 105	3.502E-08	3.154E-08	2.561E-08	1.022E-08	4.055E-07	4.023E-08	3.694E-12	3.718E-18	3.401E-28	0.
RH*106	2.345E-08	5.041E-10	1.083E-11	2.311E-18	4.930E-25	0.	0.	0.	0.	0.
RH 106	5.430E-10	5.064E-10	5.059E-10	5.040E-10	5.021E-10	4.974E-10	4.790E-10	4.526E-10	4.180E-10	2.540E-10
RH 107	2.458E-08	4.327E-18	6.107E-28	0.	0.	0.	0.	0.	0.	0.
RH 108	2.392E-10	0.	0.	0.	0.	0.	0.	0.	0.	0.
RH 109	2.337E-08	5.710E-12	1.395E-15	4.[illegible]E-30	0.	0.	0.	0.	0.	0.
RH 110	2.027E-11	0.	0.	0.	0.	0.	0.	0.	0.	0.
RH 111	1.325E-12	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.506E-03	1.506E-03	1.507E-03	1.510E-03	1.5[illegible]3E-03	1.522E-03	1.553E-03	1.583E-03	1.6[illegible]-03	1.626E-03

BWR8 238 RG 1.7 PER ATL-8193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD [illegible] 1095.0 DAYS. AT. NO. 46 PD

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	8.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.0 DAYS
PD 104	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
PD 105	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
PD 106	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
PD 107	4.056E-05	4.056E-05	4.056E-05	4.056E-05	4.056E-05	4.056E-05	4.056E-05	4.056E-05	4.056E-05	4.056E-05
PD 108	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
PD*109	7.720E-02	0.	0.	0.	0.	0.	0.	0.	0.	0.
PD 109	7.775E 01	4.515E 01	2.430E 01	2.074E 00	1.764E-01	3.721E-04	7.370E-19	8.407E-31	0.	0.
PD 110	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
PD*111	2.144E-01	4.728E-02	1.042E-02	2.460E-05	5.611E-08	1.879E-14	0.	0.	0.	0.
PD 111	1.554E 01	3.797E-02	8.372E-03	1.977E-05	4.670E-08	1.266E-14	0.	0.	0.	0.
PD 112	6.280E 00	4.226E 00	2.844E 00	5.934E-01	1.197E-01	2.281E-03	3.007E-10	1.440E-20	0.	0.
PD 113	4.674E 00	0.	0.	0.	0.	0.	0.	0.	0.	0.
PD 114	3.536E 00	0.	0.	0.	0.	0.	0.	0.	0.	0.
PD 115	2.338E 00	0.	0.	0.	0.	0.	0.	0.	0.	0.
PD 116	2.619E 00	0.	0.	0.	0.	0.	0.	0.	0.	0.
PD 117	1.451E 00	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.145E 02	4.946E 01	2.725E 01	2.857E 00	2.981E-01	2.693E-03	4.056E-05	4.056E-05	4.056E-05	4.056E-05

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

PD 104	4.180E-04	4.180E-04	4.180E-04	4.180E-04	4.180E-04	4.180E-04	4.180E-04	4.180E-04	4.180E-04	4.180E-04
PD 105	1.242E-03	1.242E-03	1.243E-03	1.245E-03	1.245E-03	1.246E-03	1.246E-03	1.246E-03	1.246E-03	1.246E-03
PD 106	7.253E-04	7.258E-04	7.283E-04	7.283E-04	7.303E-04	7.353E-04	7.548E-04	7.827E-04	8.175E-04	8.921E-04
PD 107	7.935E-04	7.935E-04	7.935E-04	7.935E-04	7.935E-04	7.935E-04	7.935E-04	7.935E-04	7.935E-04	7.935E-04
PD 108	5.758E-04	5.758E-04	5.758E-04	5.758E-04	5.758E-04	5.758E-04	5.758E-04	5.758E-04	5.758E-04	5.758E-04
PD*109	1.930E-12	0.	0.	0.	0.	0.	0.	0.	0.	0.
PD 109	3.349E-07	1.948E-07	1.050E-07	8.933E-09	7.597E-10	1.603E-12	3.175E-23	2.789E-39	0.	0.
PD 110	1.684E-04	1.684E-04	1.684E-04	1.684E-04	1.684E-04	1.684E-04	1.684E-04	1.684E-04	1.684E-04	1.684E-04
PD*111	3.762E-10	8.294E-11	1.828E-11	4.318E-14	1.020E-16	2.765E-23	0.	0.	0.	0.
PD 111	1.918E-09	4.443E-12	9.795E-13	2.313E-15	5.464E-18	1.481E-24	0.	0.	0.	0.
PD 112	4.208E-08	2.832E-08	1.906E-08	3.909E-09	8.019E-10	1.528E-11	2.015E-18	9.652E-29	0.	0.
PD 113	3.479E-11	0.	0.	0.	0.	0.	0.	0.	0.	0.
PD 114	4.516E-11	0.	0.	0.	0.	0.	0.	0.	0.	0.
PD 115	8.906E-12	0.	0.	0.	0.	0.	0.	0.	0.	0.
PD 116	8.961E-12	0.	0.	0.	0.	0.	0.	0.	0.	0.
PD 117	6.428E-13	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	3.923E-03	3.924E-03	3.925E-03	3.929E-03	3.931E-03	3.937E-03	3.956E-03	3.984E-03	4.017E-03	4.193E-03

BWR8 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 47 AG

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	30.0 DAYS	100.0 DAYS	364.0 DAYS
AG 107	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
AG 108	2.008E-08	0.	0.	0.	0.	0.	0.	0.	0.	0.
AG*109	7.775E 01	4.519E 01	2.440E 01	2.076E 00	1.765E-01	3.724E-04	7.376E-15	6.503E-31	0.	0.
AG 109	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
AG*110	2.[illegible]6E-01	2.713E-01	2.709E-01	2.695E-01	2.600E-01	2.645E-01	2.507E-01	2.315E-01	2.081E-01	1.020E-01
AG 110	1.417E 01	5.425E-03	5.418E-03	5.389E-03	5.360E-03	5.289E-03	5.015E-03	4.629E-03	4.161E-03	2.055E-03
AG*111	1.554E 01	3.812E-02	6.403E-03	1.985E-05	4.687E-08	1.271E-14	0.	0.	0.	0.
AG 111	1.555E 01	1.488E 01	1.421E 01	1.181E 01	9.821E 00	6.187E 00	9.744E-01	6.090E-02	1.511E-03	3.027E-14
AG 112	6.279E 00	4.902E 00	3.349E 00	6.882E-01	1.412E-01	2.690E-03	3.548E-10	1.699E-20	0.	0.
AG*113	4.734E 00	0.	0.	0.	0.	0.	0.	0.	0.	0.
AG 114	3.659E 00	0.	0.	0.	0.	0.	0.	0.	0.	0.
AG*115	8.811E-01	0.	0.	0.	0.	0.	0.	0.	0.	0.
AG 115	1.925E 00	2.898E-11	4.227E-22	0.	0.	0.	0.	0.	0.	0.
AG 116	2.667E 00	0.	0.	0.	0.	0.	0.	0.	0.	0.
AG 117	1.617E 00	0.	0.	0.	0.	0.	0.	0.	0.	0.
AG 118	2.208E 00	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.470E 02	6.529E 01	4.225E 01	1.485E 01	1.041E 01	6.460E 00	1.230E 00	2.970E-01	2.137E-01	1.048E-01

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

AG 107	8.875E-11	8.888E-11	8.896E-11	8.939E-11	8.982E-11	9.090E-11	9.521E-11	1.017E-10	1.103E-10	1.072E-10
AG 108	2.562E-17	0.	0.	0.	0.	0.	0.	0.	0.	0.
AG*109	2.755E-10	1.601E-10	8.648E-11	7.355E-12	6.256E-13	1.320E-15	2.614E-26	0.	0.	0.
AG 109	2.463E-04	2.464E-04	2.465E-04	2.466E-04	2.466E-04	2.466E-04	2.466E-04	2.466E-04	2.466E-04	2.498E-04
AG*110	5.408E-07	5.400E-07	5.393E-07	5.365E-07	5.336E-07	5.265E-07	4.992E-07	4.608E-07	4.142E-07	2.046E-07
AG 110	3.013E-11	1.154E-14	1.152E-14	1.146E-14	1.140E-14	1.125E-14	1.066E-14	9.844E-15	8.848E-15	4.370E-15
AG*111	1.019E-10	2.499E-13	5.509E-14	1.301E-16	3.073E-19	8.330E-26	0.	0.	0.	0.
AG 111	8.930E-07	8.548E-07	8.162E-07	6.785E-07	5.640E-07	3.553E-07	5.596E-08	3.497E-09	8.675E-11	2.083E-21
AG 112	6.409E-09	5.003E-09	3.418E-09	7.025E-10	1.441E-10	2.746E-12	3.621E-19	1.734E-29	0.	0.
AG*113	3.021E-11	0.	0.	0.	0.	0.	0.	0.	0.	0.
AG 114	1.459E-12	0.	0.	0.	0.	0.	0.	0.	0.	0.
AG*115	1.207E-12	0.	0.	0.	0.	0.	0.	0.	0.	0.
AG 115	2.047E-10	3.083E-21	4.496E-32	0.	0.	0.	0.	0.	0.	0.
AG 116	3.545E-11	0.	0.	0.	0.	0.	0.	0.	0.	0.
AG 117	9.457E-12	0.	0.	0.	0.	0.	0.	0.	0.	0.
AG 118	1.037E-12	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	2.477E-04	2.478E-04	2.479E-04	2.478E-04	2.477E-04	2.475E-04	2.472E-04	2.471E-04	2.470E-04	2.468E-04

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 48 CD

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.0 DAYS
CD 108	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CD 109	5.763E-09	5.758E-09	5.754E-09	5.737E-09	5.721E-09	5.679E-09	5.515E-09	5.279E-09	4.979E-09	3.383E-09
CD 110	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CD*111	2.095E-03	7.910E-08	2.987E-12	6.073E-30	0.	0.	0.	0.	0.	0.
CD 111	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CD 112	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CD*113	2.708E-05	2.708E-05	2.706E-05	2.705E-05	2.704E-05	2.702E-05	2.695E-05	2.684E-05	2.670E-05	2.576E-05
CD 113	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CD 114	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CD*115	1.712E-01	1.698E-01	1.685E-01	1.631E-01	1.580E-01	1.457E-01	1.056E-01	6.509E-02	3.416E-02	4.800E-04
CD 115	2.441E 00	2.100E 00	1.797E 00	9.650E-01	5.181E-01	1.094E-01	2.179E-04	1.935E-08	7.668E-14	0.
CD 116	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CD*117	8.145E-01	7.099E-02	6.151E-03	3.469E-07	1.956E-11	4.671E-22	0.	0.	0.	0.
CD 117	8.202E-01	2.584E-02	8.075E-04	7.702E-10	7.346E-16	6.527E-31	0.	0.	0.	0.
CD 118	2.450E 00	9.267E-05	3.499E-09	7.114E-27	0.	0.	0.	0.	0.	0.
CD 119	2.450E 00	3.748E-23	0.	0.	0.	0.	0.	0.	0.	0.
CD 120	2.497E 00	0.	0.	0.	0.	0.	0.	0.	0.	0.
CD 121	2.668E 00	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.430E 01	2.367E 00	1.973E 00	1.128E 00	6.761E-01	2.552E-01	1.059E-01	6.512E-02	3.419E-02	5.058E-04

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

CD 108	3.278E-12	3.278E-12	3.278E-12	3.278E-12	3.278E-12	3.278E-12	3.278E-12	3.278E-12	3.278E-12	3.278E-12
CD 109	2.094E-14	2.092E-14	2.091E-14	2.085E-14	2.079E-14	2.063E-14	2.004E-14	1.918E-14	1.809E-14	1.229E-14
CD 110	3.267E-05	3.267E-05	3.267E-05	3.268E-05	3.268E-05	3.269E-05	3.271E-05	3.275E-05	3.280E-05	3.301E-05
CD*111	5.459E-13	2.061E-17	7.783E-22	1.582E-39	0.	0.	0.	0.	0.	0.
CD 111	5.901E-05	5.905E-05	5.909E-05	5.923E-05	5.934E-05	5.955E-05	5.985E-05	5.990E-05	5.990E-05	5.990E-05
CD 112	2.448E-05	2.448E-05	2.450E-05	2.452E-05	2.453E-05	2.453E-05	2.453E-05	2.453E-05	2.453E-05	2.453E-05
CD*113	1.059E-09	1.059E-09	1.059E-09	1.058E-09	1.058E-09	1.057E-09	1.055E-09	1.050E-09	1.045E-09	1.008E-09
CD 113	2.026E-12	2.098E-12	2.169E-12	2.457E-12	2.744E-12	3.461E-12	6.325E-12	1.061E-11	1.629E-11	5.311E-11
CD 114	1.577E-05	1.577E-05	1.577E-05	1.577E-05	1.577E-05	1.577E-05	1.577E-05	1.577E-05	1.577E-05	1.577E-05
CD*115	5.636E-08	5.593E-08	5.548E-08	5.372E-08	5.201E-08	4.798E-08	3.476E-08	2.143E-08	1.125E-08	1.581E-10
CD 115	4.167E-08	3.584E-08	3.068E-08	1.647E-08	8.844E-09	1.866E-09	3.719E-12	3.303E-16	1.309E-21	0.
CD 116	1.294E-05	1.294E-05	1.294E-05	1.294E-05	1.294E-05	1.294E-05	1.294E-05	1.294E-05	1.294E-05	1.294E-05
CD*117	8.837E-10	7.702E-11	6.675E-12	3.764E-16	2.122E-20	5.068E-31	0.	0.	0.	0.
CD 117	6.280E-10	1.979E-11	6.183E-13	5.898E-19	5.625E-25	0.	0.	0.	0.	0.
CD 118	6.385E-10	2.415E-14	9.118E-19	1.854E-36	0.	0.	0.	0.	0.	0.
CD 119	1.238E-10	1.893E-33	0.	0.	0.	0.	0.	0.	0.	0.
CD 120	1.322E-11	0.	0.	0.	0.	0.	0.	0.	0.	0.
CD 121	3.073E-12	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.450E-04	1.450E-04	1.451E-04	1.452E-04	1.453E-04	1.455E-04	1.458E-04	1.459E-04	1.460E-04	1.461E-04

BWR8 238 RG 1.7 PER A/L-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 49 IN

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.0 DAYS
IN 114	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
IN*115	2.441E 00	2.255E 00	1.957E 00	1.054E 00	5.657E-01	1.195E-01	2.379E-04	2.113E-08	8.372E-14	0.
IN 115	4.717E-15	4.720E-15	4.724E-15	4.734E-15	4.739E-15	4.746E-15	4.755E-15	4.763E-15	4.769E-15	4.776E-15
IN*116	8.075E-01	0.	0.	0.	0.	0.	0.	0.	0.	0.
IN 116	1.038E 00	1.006E-04	9.750E-09	8.595E-25	0.	0.	0.	0.	0.	0.
IN*117	8.201E-01	8.623E-02	3.509E-03	3.913E-09	3.751E-15	3.333E-30	0.	0.	0.	0.
IN 117	1.200E 00	1.451E-01	1.017E-02	4.449E-07	2.494E-11	5.955E-22	0.	0.	0.	0.
IN 118	2.450E 00	9.283E-05	3.505E-09	7.126E-27	0.	0.	0.	0.	0.	0.
IN*119	2.266E 00	4.303E-12	3.915E-24	0.	0.	0.	0.	0.	0.	0.
IN 119	3.583E-01	2.436E-13	2.216E-25	0.	0.	0.	0.	0.	0.	0.
IN 120	2.571E 00	0.	0.	0.	0.	0.	0.	0.	0.	0.
IN*121	1.460E 00	0.	0.	0.	0.	0.	0.	0.	0.	0.
IN 121	1.394E 00	0.	0.	0.	0.	0.	0.	0.	0.	0.
IN 123	6.426E 00	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	2.323E 01	2.487E 00	1.970E 00	1.054E 00	5.657E-01	1.195E-01	2.379E-04	2.113E-08	8.372E-14	4.776E-15

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

IN 114	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
IN*115	3.505E-09	3.238E-09	2.809E-09	1.513E-09	8.122E-10	1.716E-10	3.415E-13	3.033E-17	1.20[illegible]E-22	0.
IN 115	7.910E-06	7.916E-06	7.922E-06	7.938E-06	7.948E-06	7.959E-06	7.974E-06	7.988E-06	[illegible]	8.009E-06
IN*116	1.574E-13	0.	0.	0.	0.	0.	0.	0.	0.	0.
IN 116	2.980E-10	2.889E-14	2.800E-18	2.468E-34	0.	0.	0.	0.	0.	0.
IN*117	5.050E-10	5.310E-11	2.161E-12	2.410E-18	2.310E-24	2.053E-39	0.	0.	0.	0.
IN 117	2.807E-10	3.395E-11	2.378E-12	1.041E-16	5.834E-21	1.393E-31	0.	0.	0.	0.
IN 118	1.085E-12	4.112E-17	1.553E-21	3.157E-39	0.	0.	0.	0.	0.	0.
IN*119	2.169E-10	4.119E-22	3.747E-34	0.	0.	0.	0.	0.	0.	0.
IN 119	4.000E-12	2.719E-24	2.474E-36	0.	0.	0.	0.	0.	0.	0.
IN 120	1.048E-11	0.	0.	0.	0.	0.	0.	0.	0.	0.
IN*121	2.406E-11	0.	0.	0.	0.	0.	0.	0.	0.	0.
IN 121	3.706E-12	0.	0.	0.	0.	0.	0.	0.	0.	0.
IN 123	2.050E-11	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	7.914E-06	7.919E-06	7.925E-06	7.940E-06	7.949E-06	7.959E-06	7.974E-06	7.988E-06	7.998E-06	8.009E-06

BWR6 238 RG 1.7 PER ATL-5193 — ACTIVITY AFTER SHUTDOWN - CURIES — 1095.0 MWD IN 1095.0 DAYS. — AT. NO. 50 SN

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.0 DAYS
SN 114	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SN 115	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SN 116	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SN*117	1.054E-05	1.029E-05	1.003E-05	9.088E-06	8.231E-06	6.426E-06	2.387E-06	5.406E-07	7.460E-08	1.827E-12
SN 117	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SN 118	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SN*119	1.544E-02	1.542E-02	1.540E-02	1.532E-02	1.523E-02	1.502E-02	1.421E-02	1.308E-02	1.170E-02	5.620E-03
SN 119	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SN 120	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SN*121	3.635E-04	3.635E-04	3.635E-04	3.635E-04	3.635E-04	3.635E-04	3.634E-04	3.634E-04	3.634E-04	3.631E-04
SN 121	2.854E 00	2.100E 00	1.543E 00	4.500E-01	1.312E-01	6.028E-03	2.693E-08	2.519E-16	4.989E-27	0.
SN 122	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SN*123	6.510E 00	2.521E-05	9.626E-11	2.048E-32	0.	0.	0.	0.	0.	0.
SN 123	4.794E-01	4.781E-01	4.769E-01	4.718E-01	4.667E-01	4.543E-01	4.081E-01	3.473E-01	2.801E-01	6.780E-02
SN 124	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SN*125	1.618E-01	7.308E-24	0.	0.	0.	0.	0.	0.	0.	0.
SN 125	4.400E 00	4.244E 00	.094E 00	3.545E 00	3.069E 00	2.141E 00	5.066E-01	5.834E-02	3.268E-03	1.718E-11
SN 126	1.472E-04	1.472E-04	1.472E-04	1.472E-04	1.472E-04	1.472E-04	1.472E-04	1.472E-04	1.472E-04	1.472E-04
SN 127	2.620E 01	4.993E-[illegible]	9.515E-03	1.255E-09	1.655E-16	0.	0.	0.	0.	0.
SN 128	4.330E 01	1.3[illegible]-02	4.422E-06	4.612E-20	0.	0.	0.	0.	0.	0.
SN 129	6.516E 01	[illegible].195E-28	0.	0.	0.	0.	0.	0.	0.	0.
SN 130	9.280E 01	0.	0.	0.	0.	0.	0.	0.	0.	0.
SN 131	7.897E 01	0.	0.	0.	0.	0.	0.	0.	0.	0.
SN 132	3.829E 01	0.	0.	0.	0.	0.	0.	0.	0.	0.
SN 133	7.007E 00	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	3.661E 02	7.351E 00	6.140E 00	4.482E 00	3.383E 00	2.617E 00	9.294E-01	4.192E-01	2.956E-01	7.373E-02

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

SN 114	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SN 115	5.282E-07	5.285E-07	5.288E-07	5.296E-07	5.300E-07	5.304E-07	5.305E-07	5.305E-07	5.306E-07	5.306E-07
SN 116	2.827E-06	2.828E-06	2.828E-06	2.828E-06	2.828E-06	2.828E-06	2.828E-06	2.828E-06	2.828E-06	2.828E-06
SN*117	1.130E-12	1.103E-12	1.076E-12	9.742E-13	8.824E-13	6.889E-13	2.559E-13	5.795E-14	7.998E-15	1.837E-20
SN 117	7.930E-06	7.932E-06	7.932E-06	7.932E-06	7.932E-06	7.932E-06	7.932E-06	7.932E-06	7.932E-06	7.932E-06
SN 118	1.144E-05	1.144E-05	1.144E-05	1.144E-05	1.144E-05	1.144E-05	1.144E-05	1.144E-05	1.144E-05	1.144E-05
SN*119	2.956E-08	2.952E-08	2.948E-08	2.932E-08	2.916E-08	2.876E-08	2.720E-08	2.503E-08	2.241E-08	1.076E-08
SN 119	1.163E-05	1.163E-05	1.163E-05	1.163E-05	1.163E-05	1.163E-05	1.163E-05	1.164E-05	1.164E-05	1.165E-05
SN 120	1.188E-05	1.188E-05	1.188E-05	1.188E-05	1.188E-05	1.188E-05	1.188E-05	1.188E-05	1.188E-05	1.188E-05
SN*121	7.620E-07	7.620E-07	7.620E-07	7.620E-07	7.620E-07	7.620E-07	7.620E-07	7.619E-07	7.618E-07	7.613E-07
SN 121	2.459E-08	1.809E-08	1.329E-08	3.877E-09	1.131E-09	5.193E-11	2.311E-16	2.170E-24	4.298E-35	0.
SN 122	1.433E-05	1.433E-05	1.433E-05	1.433E-05	1.433E-05	1.433E-05	1.433E-05	1.433E-05	1.433E-05	1.433E-05
SN*123	1.385E-09	5.362E-15	2.048E-20	0.	0.	0.	0.	0.	0.	0.
SN 123	4.736E-07	4.723E-07	4.710E-07	4.660E-07	4.610E-07	4.488E-07	4.031E-07	3.431E-07	2.767E-07	6.679E-08
SN 124	2.016E-05	2.016E-05	2.016E-05	2.016E-05	2.016E-05	2.016E-05	2.016E-05	2.016E-05	2.016E-05	2.016E-05
SN*125	8.335E-12	3.769E-34	0.	0.	0.	0.	0.	0.	0.	0.
SN 125	3.241E-07	3.127E-07	3.016E-07	2.611E-07	2.261E-07	1.577E-07	3.732E-08	4.297E-09	2.407E-10	1.285E-18
SN 126	4.115E-05	4.115E-05	4.115E-05	4.115E-05	4.115E-05	4.115E-05	4.115E-05	4.115E-05	4.115E-05	4.115E-05
SN 127	1.756E-08	3.346E-10	6.376E-12	8.408E-19	1.109E-25	0.	0.	0.	0.	0.
SN 128	1.428E-08	4.563E-12	1.458E-15	1.521E-29	0.	0.	0.	0.	0.	0.
SN 129	2.598E-09	3.268E-38	0.	0.	0.	0.	0.	0.	0.	0.
SN 130	1.283E-09	0.	0.	0.	0.	0.	0.	0.	0.	0.
SN 131	5.459E-10	0.	0.	0.	0.	0.	0.	0.	0.	0.
SN 132	[illegible]	0.	0.	0.	0.	0.	0.	0.	0.	0.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

SN 130			0.	0.	0.	0.	0.	0.	0.	0.
SN 131			0.	0.	0.	0.	0.	0.	0.	0.
SN 132	2.036E-10	0.	0.	0.	0.	0.	0.	0.	0.	0.
SN 133	1.196E-11	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	[illegible]	0.	0.	0.	0.	0.	0.	0.	0.	0.

BWR6 238 RO 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 51 SN

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.0 DAYS
SB 121	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SB*122	7.960E-04	0.	0.	0.	0.	0.	0.	0.	0.	0.
SB 122	4.945E-02	4.350E-02	3.826E-02	2.289E-02	1.370E-02	3.796E-03	2.236E-05	1.011E-08	3.508E-13	0.
SB 123	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SB*124	2.660E 00	0.	0.	0.	0.	0.	0.	0.	0.	0.
SB 124	2.958E 00	2.941E 00	2.924E 00	2.857E 00	2.792E 00	2.636E 00	2.094E 00	[illegible].482E 00	9.352E-01	4.448E-02
SB 125	2.527E 00	2.528E 00	2.529E 00	2.530E 00	2.532E 00	2.532E 00	2.512E 00	2.464E 00	2.396E 00	1.988E 00
SB*126	6.284E-01	1.472E-04	1.472E-04	1.472E-04	1.472E-04	1.472E-04	1.472E-04	1.472E-04	1.472E-04	1.472E-04
SB 126	8.598E-01	8.370E-01	8.141E-01	7.286E-01	6.522E-01	4.943E-01	1.632E-01	3.103E-02	3.507E-03	1.458E-04
SB 127	3.103E 01	2.893E 01	2.[illegible]8E 01	1.856E 01	1.301E 01	5.349E 00	1.529E-01	7.[illegible]95E-04	6.046E-07	2.287E-27
SB*128	4.[illegible]79E 01	1.600E-02	5.114E-08	5.334E-20	0.	0.	0.	0.	0.	0.
SB 128	1.299E 00	5.823E-01	2.311E-01	5.732E-03	1.422E-04	1.378E-08	1.215E-24	0.	0.	0.
SB 129	8.255E 01	1.222E 01	1.766E 00	7.715E-04	3.370E-07	1.344E-15	0.	0.	0.	0.
SB 130	1.929E 02	2.767E-04	3.830E-10	0.	0.	0.	0.	0.	0.	0.
SB 131	2.459E 02	5.948E-07	1.143E-15	0.	0.	0.	0.	0.	0.	0.
SB 132	2.675E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
SB 133	1.905E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
SB 134	8.909E 01	0.	0.	0.	0.	0.	0.	0.	0.	0.
SB 135	3.068E 01	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.171E 03	4.809E 01	3.478E 01	2.470E 01	1.900E 01	1.101E 01	4.922E 00	3.978E 00	3.335E 00	2.034E 00

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

SB 121	1.260E-05	1.261E-05	1.262E-05	1.263E-05	1.263E-05	1.26[illegible]E-05	1.263E-05	1.263E-05	1.263E-05	1.263E-05
SB*122	1.777E-14	0.	0.	0.	0.	0.	0.	0.	0.	0.
SB 122	1.022E-09	8.993E-10	7.909E-10	4.733E-10	2.833E-10	7.84[illegible]E-11	4.623E-13	2.090E-16	7.253E-21	0.
SB 123	2.773E-05	2.773E-05	2.773E-05	2.774E-05	2.774E-05	2.776E-05	2.780E-05	2.786E-05	2.79[illegible]E-05	2.814E-05
SB*124	2.192E-11	0.	0.	0.	0.	0.	0.	0.	0.	0.
SB 124	1.363E-06	1.356E-06	1.348E-06	1.317E-06	1.287E-06	1.215E-06	9.652E-07	6.933E-07	4.311E-07	2.049E-08
SB 125	1.907E-05	1.906E-05	1.908E-05	1.910E-05	1.910E-05	1.911E-05	1.896E-05	1.859E-05	1.808E-05	1.501E-05
SB*126	6.347E-11	1.487E-14	1.487E-14	1.487E-14	1.487E-14	1.487E-14	1.487E-14	1.48[illegible]E-14	1.487E-14	1.487E-14
SB 126	8.230E-08	8.011E-08	7.792E-08	6.974E-08	6.2[illegible]E-08	4.731E-08	1.562E-08	2.970E-09	3.356E-10	1.395E-11
SB 127	9.266E-07	8.639E-07	7.908E-07	5.542E-07	3.884E-07	1.597E-07	4.567E-09	2.208E-11	1.806E-14	6.829E-35
SB*128	2.382E-09	8.509E-13	2.719E-16	2.836E-30	0.	0.	0.	0.	0.	0.
SB 128	3.730E-09	1.672E-09	6.636E-10	1.646E-11	4.083E-13	3.958E-17	3.488E-33	0.	0.	0.
SB 129	1.133E-07	1.676E-08	2.423E-09	1.059E-12	4.625E-16	1.845E-24	0.	0.	0.	0.
SB 130	3.795E-08	5.443E-14	7.534E-20	0.	0.	0.	0.	0.	0.	0.
SB 131	3.259E-08	7.110E-17	1.520E-25	0.	0.	0.	0.	0.	0.	0.
SB 132	4.410E-09	0.	0.	0.	0.	0.	0.	0.	0.	0.
SB 133	2.735E-09	0.	0.	0.	0.	0.	0.	0.	0.	0.
SB 134	6.637E-11	0.	0.	0.	0.	0.	0.	0.	0.	0.
SB 135	6.173E-12	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	6.198E-05	6.174E-05	6.165E-05	6.140E-05	6.121E-05	6.091E-05	6.037E-05	5.977E-05	5.907E-05	5.880E-05

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 52 TE

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.0 DAYS
TE 122	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
TE 124	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
TE*125	5.189E-01	5.190E-01	5.191E-01	5.193E-01	5.196E-01	5.203E-01	5.224E-01	5.224E-01	5.176E-01	4.432E-01
TE 125	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
TE 126	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
TE*127	4.699E 00	4.699E 00	4.699E 00	4.684E 00	4.657E 00	4.554E 00	4.037E 00	3.337E 00	2.587E 00	4.610E-01
TE 127	3.072E 01	3.019E 01	2.977E 01	2.196E 01	1.677E 01	9.525E 00	4.162E 00	3.323E 00	2.576E 00	4.789E-01
TE 128	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
TE*129	1.298E 01	1.291E 01	1.278E 01	1.227E 01	1.178E 01	1.064E 01	7.079E 00	3.840E 00	1.699E 00	7.720E-03
TE 129	7.850E 01	2.242E 01	1.024E 01	7.868E 00	7.552E 00	6.820E 00	4.537E 00	2.461E 00	1.089E 00	4.948E-03
TE 130	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
TE*131	6.223E 01	4.734E 01	3.588E 01	1.184E 01	3.904E 00	2.440E-01	3.724E-08	2.220E-13	5.170E-23	0.
TE 131	2.405E 02	8.641E 00	6.549E 00	2.160E 00	7.127E-01	4.454E-02	6.798E-07	4.052E-14	9.437E-24	0.
TE 132	4.161E 02	3.741E 02	3.363E 02	2.195E 02	1.433E 02	4.933E 01	6.929E-01	1.153E-03	2.275E-07	7.088E-32
TE*133	2.998E 02	1.423E-02	6.577E-07	3.005E-24	0.	0.	0.	0.	0.	0.
TE 133	1.776E 02	2.460E-03	1.137E-07	5.194E-25	0.	0.	0.	0.	0.	0.
TE 134	4.733E 02	3.264E-03	2.250E-08	5.077E-29	0.	0.	0.	0.	0.	0.
TE 135	2.264E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	2.023E 03	5.009E 02	4.357E 02	2.808E 02	1.892E 02	8.168E 01	2.103E 01	1.348E 01	8.469E 00	1.416E 00

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

TE 122	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
TE 124	1.187E-05	1.187E-05	1.188E-05	1.191E-05	1.194E-05	1.201E-05	1.226E-05	1.255E-05	1.280E-05	1.321E-05
TE*125	2.305E-07	2.305E-07	2.305E-07	2.307E-07	2.308E-07	2.311E-07	2.320E-07	2.320E-07	2.299E-07	1.968E-07
TE 125	6.580E-06	6.587E-06	6.594E-06	6.621E-06	6.647E-06	6.714E-06	6.981E-06	7.377E-06	7.695E-06	1.100E-05
TE 126	3.032E-06	3.035E-06	3.037E-06	3.045E-06	3.052E-06	3.068E-06	3.099E-06	3.112E-06	3.115E-06	3.115E-06
TE*127	3.922E-06	3.922E-06	3.922E-06	3.910E-06	3.887E-06	3.801E-06	3.370E-06	2.785E-06	2.160E-06	4.016E-07
TE 127	9.215E-08	9.056E-08	8.629E-08	6.586E-08	5.031E-08	2.857E-08	1.248E-08	9.966E-09	7.726E-09	1.436E-09
TE 128	2.489E-04	2.489E-04	2.489E-04	2.489E-04	2.489E-04	2.489E-04	2.489E-04	2.489E-04	2.489E-04	2.489E-04
TE*129	3.380E-06	3.360E-06	3.328E-06	3.196E-06	3.068E-06	2.771E-06	1.843E-06	9.998E-07	4.420E-07	2.010E-09
TE 129	2.880E-08	8.226E-09	3.757E-09	2.886E-09	2.771E-09	2.502E-09	1.654E-09	9.029E-10	3.995E-10	1.815E-12
TE 130	1.160E-03	1.160E-03	1.160E-03	1.160E-03	1.160E-03	1.160E-03	1.160E-03	1.164E-03	1.160E-03	1.160E-03
TE*131	5.956E-07	4.531E-07	3.434E-07	1.133E-07	3.737E-08	2.336E-09	3.564E-14	2.125E-21	4.949E-31	0.
TE 131	3.197E-08	1.149E-09	8.706E-10	2.072E-10	9.474E-11	5.921E-12	9.036E-17	5.387E-24	1.255E-33	0.
TE 132	1.035E-05	9.311E-06	8.369E-06	5.463E-06	3.566E-06	1.228E-06	1.724E-08	2.870E-11	5.66[illegible]E-15	1.763E-39
TE*133	7.971E-08	3.783E-12	1.749E-16	7.988E-34	0.	0.	0.	0.	0.	0.
TE 133	1.171E-08	1.622E-13	7.498E-18	3.42[illegible]35	0.	0.	0.	0.	0.	0.
TE 134	1.057E-07	7.288E-13	5.023E-18	1.1[illegible]-38	0.	0.	0.	0.	0.	0.
TE 135	5.816E-10	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.449E-03	1.448E-03	1.447E-03	1.443E-03	1.441E-03	1.439E-03	1.437E-03	1.436E-03	1.435E-03	1.437E-03

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 53 1

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.0 DAYS
I 127	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
I 128	2.787E 01	5.956E-08	1.273E-18	0	0.	0.	0.	0.	0.	0.
I 129	5.122E-04	5.122E-04	5.122E-04	5.122E-04	5.122E-04	5.122E-04	5.122E-04	5.122E-04	5.122E-04	5.122E-04
I 130	4.323E 02	2.210E 02	1.130E 02	7.726E 00	5.282E-01	6.454E-04	1.438E-15	0.	0.	0.
I 131	1.469E 04	1.407E 04	1.348E 04	1.135E 04	9.556E 03	6.213E 03	1.110E 03	8.387E 01	2.678E 00	3.418E-10
I 132	2.080E 04	9.160E 02	3.602E 02	2.261E 02	1.476E 02	5.082E 01	7.137E-01	1.188E-03	2.341E-07	7.298E-32
I 133	2.404E 04	1.619E 04	1.089E 04	2.234E 03	4.581E 02	6.727E 00	1.149E-06	5.487E-17	0.	0.
I 134	3.109E 04	2.232E 00	1.523E-04	3.238E-21	0.	0.	0.	0.	0.	0.
I 135	2.461E 04	7.666E 03	2.389E 03	2.251E 01	2.122E-01	1.829E-06	1.011E-26	0.	0.	0.
I 136	1.005E 04	2.156E-12	4.623E-28	0.	0.	0.	0.	0.	0.	0.
I 137	1.264E 04	0.	0.	0.	0.	0.	0.	0.	0.	0.
I 138	8.845E 03	0.	0.	0.	0.	0.	0.	0.	0.	0.
I 139	9.651E 03	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.569E 05	3.903E 04	2.723E 04	1.384E 04	1.016E 04	6.273E 03	1.111E 03	8.387E 01	2.679E 00	5.122E-04

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

I 127	6.565E-03	6.565E-03	6.565E-03	6.565E-03	6.565E-03	6.566E-03	6.566E-03	6.567E-03	6.568E-03	6.569E-03
I 128	3.705E-09	7.918E-18	1.692E-28	0.	0.	0.	0.	0.	0.	0.
I 129	2.290E-02	2.290E-02	2.290E-02	2.290E-02	2.290E-02	2.290E-02	2.290E-02	2.291E-02	2.291E-02	2.291E-02
I 130	1.710E-06	8.745E-07	4.472E-07	3.057E-08	2.090E-09	2.553E-12	5.691E-24	0.		0.
I 131	9.053E-04	8.673E-04	8.309E-04	6.997E-04	5.890E-04	3.830E-04	6.844E-05	5.170E-08	[illegible]81E-07	2.107E-17
I 132	1.513E-05	6.663E-07	2.621E-07	1.645E-07	1.074E-07	3.697E-08	5.192E-10	8.642E-13	[illegible]06E-16	0.
I 133	1.611E-04	1.084E-04	7.298E-05	1.497E-05	3.070E-06	5.847E-08	7.697E-18	3.676E-28	0.	0.
I 134	8.596E-06	6.171E-10	4.213E-14	8.955E-31	0.	0.	0.	0.	0.	0.
I 135	5.600E-05	1.745E-05	5.436E-06	5.123E-08	4.828E-10	4.163E-15	2.301E-35	0.	0.	0.
I 136	7.395E-07	1.586E-22	3.401E-38	0.	0.	0.	0.	0.	0.	0.
I 137	2.575E-08	0.	0.	0.	0.	0.	0.	0.	0.	0.
I 138	5.366E-09	0.	0.	0.	0.	0.	0.	0.	0.	0.
I 139	1.710E-09	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	3.062E-02	3.046E-02	3.038E-02	3.018E-02	3.006E-02	2.985E-02	2.954E-02	2.948E-02	2.947E-02	2.948E-02

/R6 208 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 54 XE

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.0 DAYS
E 128	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
E 129	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
E 130	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
E*131	1.760E 02	1.735E 02	1.708E 02	1.602E 02	1.495E 02	1.234E 02	4.887E 01	9.888E 00	1.031E 00	2.189E-07
E 131	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
E 132	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
E*133	1.954E 03	1.747E 03	1.547E 03	9.017E 02	5.048E 02	1.132E 02	2.734E 01	3.239E-05	1.084E-10	0.
E 133	5.648E 04	5.423E 04	5.171E 04	4.122E 04	3.209E 04	1.679E 04	1.215E 03	2.351E 01	1.[illegible]E-01	9.[illegible]E-17
E 134	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
E*135	1.698E 04	2.148E 03	6.693E 02	6.308E 00	5.945E-02	5.126E-07	2.[illegible]3E-27	0.	0.	0.
E 135	9.781E 03	1.208E 04	7.388E 03	3.441E 02	1.062E 01	1.342E-03	2.671E-19	0.	0.	0.
E 136	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
E 137	4.705E 04	0.	0.	0.	0.	0.	0.	0.	0.	0.
E 138	4.433E 04	1.465E-11	4.830E-27	0.	0.	0.	0.	0.	0.	0.
E 139	3.951E 04	0.	0.	0.	0.	0.	0.	0.	0.	0.
E 140	1.937E 04	0.	0.	0.	0.	0.	0.	0.	0.	0.
E 141	5.901E 03	0.	0.	0.	0.	0.	0.	0.	0.	0.
E 142	1.321E 03	0.	0.	0.	0.	0.	0.	0.	0.	0.
E 143	1.945E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
E 144	2.100E 01	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	2.431E 05	7.039E 04	6.149E 04	4.263E 04	3.275E 04	1.702E 04	1.265E 03	3.339E 01	1.153E 00	2.189E-07

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

XE 128	1.404E-04	1.404E-04	1.404E-04	1.404E-04	1.404E-04	1.404E-04	1.404E-04	1.404E-04	1.404E-04	1.404E-04
XE 129	7.934E-07	7.934E-07	7.934E-07	7.934E-07	7.934E-07	7.934E-07	7.935E-07	7.936E-07	7.937E-07	7.944E-07
XE 130	2.573E-03	2.573E-03	2.574E-03	2.574E-03	2.574E-03	2.574E-03	2.574E-03	2.574E-03	2.574E-03	2.574E-03
XE*131	1.604E-05	1.581E-05	1.557E-05	1.460E-05	1.362E-05	1.124E-05	4.453E-06	9.010E-07	9.395E-08	1.987E-14
XE 131	1.370E-01	1.371E-01	1.371E-01	1.373E-01	1.374E-01	1.376E-01	1.379E-01	1.380E-01	1.380E-01	1.380E-01
XE 132	2.482E-01	2.482E-01	2.482E-01	2.482E-01	2.482E-01	2.482E-01	2.482E-01	2.482E-01	2.482E-01	2.482E-01
XE*133	3.441E-05	3.077E-05	2.725E-05	1.588E-05	8.890E-06	1.994E-06	4.816E-09	5.705E-13	3.314E-18	0.
XE 133	2.279E-03	2.189E-03	2.087E-03	1.663E-03	1.295E-03	6.773E-04	4.905E-05	9.486E-07	4.922E-09	3.793E-24
XE 134	3.697E-01	3.697E-01	3.697E-01	3.697E-01	3.697E-01	3.697E-01	3.697E-01	3.697E-01	3.697E-01	3.697E-01
XE*135	1.406E-06	1.781E-07	5.551E-08	5.231E-10	4.930E-12	4.251E-17	2.349E-37	0.	0.	0.
XE 135	2.872E-05	3.540E-05	2.169E-05	1.010E-06	3.119E-08	3.939E-12	7.842E-28	0.	0.	0.
XE 136	5.968E-01	5.968E-01	5.968E-01	5.968E-01	5.968E-01	5.968E-01	5.968E-01	5.968E-01	5.968E-01	5.968E-01
XE 137	9.507E-07	0.	0.	0.	0.	0.	0.	0.	0.	0.
XE 138	3.300E-06	1.090E-21	3.596E-37	0.	0.	0.	0.	0.	0.	0.
XE 139	1.435E-07	0.	0.	0.	0.	0.	0.	0.	0.	0.
XE 140	2.350E-08	0.	0.	0.	0.	0.	0.	0.	0.	0.
XE 141	8.365E-10	0.	0.	0.	0.	0.	0.	0.	0.	0.
XE 142	1.404E-10	0.	0.	0.	0.	0.	0.	0.	0.	0.
XE 143	1.655E-11	0.	0.	0.	0.	0.	0.	0.	0.	0.
XE 144	1.637E-11	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.357E 00	1.357E 00	1.357E 00	1.356E 00	1.356E 00	1.356E 00	1.355E 00	1.355E 00	1.355E 00	1.355E 00

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 55 CS

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.6 DAYS
CS 133	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CS*134	5.155E 00	2.926E-01	1.661E-02	1.724E-07	1.789E-12	6.206E-25	0.	0.	0.	0.
CS 134	1.946E 01	1.945E 01	1.944E 01	1.940E 01	1.937E 01	1.928E 01	1.894E 01	1.843E 01	1.777E 01	1.399E 01
CS 135	6.626E-05	7.020E-05	7.329E-05	7.640E-05	7.652E-05	7.653E-05	7.653E-05	7.653E-05	7.653E-05	7.653E-05
CS 136	8.965E 00	8.730E 00	8.500E 00	7.640E 00	6.867E 00	5.200E 00	1.811E 00	3.658E-01	4.335E-02	3.238E-08
CS 137	3.573E 01	3.574E 01	3.574E 01	3.573E 01	3.573E 01	3.572E 01	3.567E 01	3.561E 01	3.532E 01	3.493E 01
CS 138	5.166E 02	6.437E-03	1.193E-09	0.	0.	0.	0.	0.	0.	0.
CS 139	4.975E 02	3.130E-21	0.	0.	0.	0.	0.	0.	0.	0.
CS 140	4.252E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
CS 141	3.216E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
CS 142	1.636E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
CS 143	6.366E 01	0.	0.	0.	0.	0.	0.	0.	0.	0.
CS 144	1.680E 01	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	2.074E 03	6.422E 01	6.369E 01	6.278E 01	6.197E 01	6.026E 01	5.642E 01	5.440E 01	5.[illegible]E 01	4.692E 01

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

CS 133	3.067E-03	3.214E-03	3.354E-03	3.847E-03	4.235E-03	4.862E-03	5.492E-03	5.540E-03	5.541E-03	5.541E-03
CS*134	4.769E-09	2.707E-10	1.536E-11	1.594E-16	1.655E-21	5.741E-34	0.	0.	0.	0.
CS 134	1.142E-04	1.141E-04	1.141E-04	1.139E-04	1.137E-04	1.132E-04	1.111E-04	1.082E-04	1.043E-04	8.213E-08
CS 135	5.556E-04	5.886E-04	6.145E-04	6.406E-04	6.416E-04	6.417E-04	6.417E-04	6.417E-04	6.417E-04	6.417E-04
CS 136	8.925E-07	8.690E-07	8.461E-07	7.605E-07	6.836E-07	5.236E-07	1.803E-07	3.641E-08	4.315E-09	3.224E-15
CS 137	3.015E-03	3.016E-03	3.016E-03	3.015E-03	3.015E-03	3.014E-03	3.010E-03	3.005E-03	2.997E-03	2.948E-03
CS 138	8.845E-08	1.102E-12	2.046E-19	0.	0.	0.	0.	0.	0.	0.
CS 139	2.381E-08	1.498E-31	0.	0.	0.	0.	0.	0.	0.	0.
CS 140	2.449E-09	0.	0.	0.	0.	0.	0.	0.	0.	0.
CS 141	6.838E-10	0.	0.	0.	0.	0.	0.	0.	0.	0.
CS 142	3.333E-11	0.	0.	0.	0.	0.	0.	0.	0.	0.
CS 143	9.023E-12	0.	0.	0.	0.	0.	0.	0.	0.	0.
CS 144	1.488E-1[illegible]	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	6.752E-0[illegible]	6.933E-03	7.099E-03	7.618E-03	8.006E-03	8.631E-03	9.256E-03	9.295E-03	9.284E-03	9.213E-03

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 56 BA

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.0 DAYS
BA 134	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
BA*135	4.272E-03	3.206E-03	2.407E-03	7.639E-04	2.425E-04	1.976E-05	1.428E-10	4.779E-18	5.143E-26	0.
BA 135	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
BA 136	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
BA*137	3.341E 01	3.342E 01	3.342E 01	3.341E 01	3.341E 01	3.340E 01	3.335E 01	3.329E 01	3.321E 01	3.286E 01
BA 137	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
BA 138	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
BA 139	4.989E 02	2.279E 00	5.577E-03	2.001E-13	7.182E-24	0.	0.	0.	0.	0.
BA 140	4.727E 02	4.604E 02	4.481E 02	4.021E 02	3.608E 02	2.752E 02	9.318E 01	1.836E 01	2.104E 00	1.281E-08
BA 141	4.850E 02	4.560E-10	4.148E-22	0.	0.	0.	0.	0.	0.	0.
BA 142	3.924E 02	7.782E-18	0.	0.	0.	0.	0.	0.	0.	0.
BA 143	2.936E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
BA 144	1.790E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	2.354E 03	4.981E 02	4.815E 02	4.359E 02	3.942E 02	3.0[illegible]E 02	1.265E 02	5.165E 01	3.531E 01	3.286E 01

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

BA 134	4.198E-05	4.204E-05	4.209E-05	4.229E-05	4.250E-05	4.301E-05	4.504E-05	4.801E-05	5.180E-05	7.408E-05
BA*135	3.952E-11	2.966E-11	2.226E-11	7.066E-12	2.243E-12	1.273E-13	1.321E-18	4.417E-26	4.757E-34	0.
BA 135	1.742E-07	1.742E-07	1.743E-07	1.743E-07	1.743E-07	1.743E-07	1.743E-07	1.743E-07	1.743E-07	1.744E-07
BA 136	3.043E-05	3.045E-05	3.048E-05	3.056E-05	3.064E-05	3.080E-05	3.114E-05	3.128E-05	3.132E-05	3.132E-05
BA*137	4.526E-10	4.529E-10	4.529E-10	4.528E-10	4.526E-10	4.526E-10	4.521E-10	4.512E-10	4.501E-10	4.427E-10
BA 137	1.039E-04	1.040E-04	1.040E-04	1.044E-04	1.048E-04	1.058E-04	1.093E-04	1.152E-04	1.228E-04	1.722E-04
BA 138	3.114E-03	3.117E-03	3.117E-03	3.117E-03	3.117E-03	3.117E-03	3.117E-03	3.117E-03	3.117E-03	3.117E-03
BA 139	2.199E-07	1.006E-09	2.461E-12	8.833E-23	3.170E-33	0.	0.	0.	0.	0.
BA 140	4.633E-05	4.512E-05	4.392E-05	3.941E-05	3.536E-05	2.698E-05	9.133E-06	1.799E-06	2.062E-07	1.236E-19
BA 141	4.642E-08	4.365E-20	3.971E-32	0.	0.	0.	0.	0.	0.	0.
BA 142	2.295E-08	4.551E-28	0.	0.	0.	0.	0.	0.	0.	0.
BA 143	3.121E-10	0.	0.	0.	0.	0.	0.	0.	0.	0.
BA 144	1.903E-10	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	3.337E-03	3.339E-03	3.338E-03	3.334E-03	3.331E-03	3.324E-03	3.312E-03	3.314E-03	3.324E-03	3.388E-03

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 57 LA

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.6 DAYS
LA 139	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
LA 140	5.016E 02	4.950E 02	4.873E 02	4.503E 02	4.097E 02	3.160E 02	1.072E 02	2.112E 01	2.421E 00	1.461E-08
LA 141	4.940E 02	6.350E 01	7.525E 00	1.484E-03	2.928E-07	1.601E-16	0.	0.	0.	0.
LA 142	4.340E 02	2.148E 00	9.458E-03	3.557E-12	1.337E-21	0.	0.	0.	0.	0.
LA 143	4.066E 02	2.405E-14	1.406E-30	0.	0.	0.	0.	0.	0.	0.
LA 144	3.238E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	2.160E 03	5.606E 02	4.949E 02	4.503E 02	4.097E 02	3.160E 02	1.072E 02	2.112E 01	2.421E 00	1.461E-08

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

LA 139	2.950E-03	2.950E-03	2.950E-03	2.950E-03	2.950E-03	2.950E-03	2.950E-03	2.950E-03	2.950E-03	2.950E-03
LA 140	6.433E-06	6.349E-06	6.250E-06	5.775E-06	5.255E-06	4.053E-06	1.375E-06	2.709E-07	3.105E-08	1.861E-14
LA 141	6.147E-07	7.901E-08	9.364E-09	1.847E-12	3.644E-16	1.992E-25	0.	0.	0.	0.
LA 142	2.123E-07	1.051E-09	4.626E-12	1.740E-21	6.542E-31	0.	0.	0.	0.	0.
LA 143	2.887E-08	1.708E-24	0.	0.	0.	0.	0.	0.	0.	0.
LA 144	1.176E-09	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	2.957E-03	2.957E-03	2.956E-03	2.956E-03	2.955E-03	2.954E-03	2.952E-03	2.950E-03	2.950E-03	2.950E-03

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 58 CE

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.0 DAYS
CE 140	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CE 141	4.932E 02	4.903E 02	4.854E 02	4.651E 02	4.456E 02	4.004E 02	2.610E 02	1.374E 02	5.836E 01	2.033E-01
CE 142	1.915E-13	1.915E-13	1.915E-13	1.915E-13	1.915E-13	1.915E-13	1.915E-13	1.915E-13	1.915E-13	1.915E-13
CE 143	4.163E 02	3.274E 02	2.558E 02	9.530E 01	3.550E 01	3.008E 00	1.549E-04	5.727E-11	1.519E-19	0.
CE 144	3.515E 02	3.511E 02	3.507E 02	3.490E 02	3.473E 02	3.431E 02	3.267E 02	3.037E 02	2.754E 02	1.444E 02
CE 145	2.710E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
CE 146	2.079E 02	6.857E-14	2.261E-29	0.	0.	0.	0.	0.	0.	0.
CE 147	1.351E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
CE 148	8.489E 01	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.960E 03	1.169E 03	1.092E 03	9.094E 02	8.284E 02	7.465E 02	5.877E 02	4.410E 02	3.338E 02	1.446E 02

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

CE 140	2.918E-03	2.919E-03	2.921E-03	2.926E-03	2.930E-03	2.940E-03	2.960E-03	2.969E-03	2.971E-03	2.971E-03
CE 141	1.224E-04	1.216E-04	1.204E-04	1.154E-04	1.106E-04	9.934E-05	6.476E-05	3.408E-05	1.449E-05	5.043E-08
CE 142	2.676E-03	2.676E-03	2.676E-03	2.676E-03	2.676E-03	2.676E-03	2.676E-03	2.676E-03	2.676E-03	2.676E-03
CE 143	4.476E-06	3.520E-06	2.750E-06	1.025E-06	3.817E-07	3.234E-08	1.665E-12	6.157E-19	1.633E-27	0.
CE 144	7.645E-04	7.636E-04	7.626E-04	7.589E-04	7.552E-04	7.461E-04	7.105E-04	6.604E-04	5.989E-04	3.140E-04
CE 145	4.323E-09	0.	0.	0.	0.	0.	0.	0.	0.	0.
CE 146	1.548E-08	5.105E-24	1.684E-39	0.	0.	0.	0.	0.	0.	0.
CE 147	7.903E-10	0.	0.	0.	0.	0.	0.	0.	0.	0.
CE 148	3.160E-10	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	6.486E-03	6.485E-03	6.483E-03	6.477E-03	6.473E-03	6.462E-03	6.412E-03	6.340E-03	6.260E-03	5.981E-03

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 59 PR

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.0 DAYS
PR 141	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
PR 142	2.112E 01	1.369E 01	8.878E 00	1.569E 00	2.774E-01	3.646E-03	1.089E-10	1.915E-13	1.915E-13	1.915E-13
PR 143	4.146E 02	4.135E 02	4.104E 02	3.862E 02	3.546E 02	2.777E 02	1.003E 02	2.174E 01	2.831E 00	3.941E-08
PR 144	3.540E 02	3.511E 02	3.507E 02	3.490E 02	3.473E 02	3.431E 02	3.267E 02	3.037E 02	2.754E 02	1.444E 02
PR 145	2.745E 02	6.889E 01	1.715E 01	6.580E-02	2.525E-04	2.304E-10	0.	0.	0.	0.
PR 146	2.186E 02	4.766E-07	4.459E-16	0.	0.	0.	0.	0.	0.	0.
PR 147	1.646E 02	1.600E-07	1.497E-16	0.	0.	0.	0.	0.	0.	0.
PR 148	1.350E 02	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.582E 03	8.472E 02	7.871E 02	7.369E 02	7.022E 02	6.208E 02	4.271E 02	3.254E 02	2.783E 02	1.444E 02

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

PR 141	2.725E-03	2.726E-03	2.728E-03	2.733E-03	2.738E-03	2.749E-03	2.783E-03	2.814E-03	2.834E-03	2.848E-03
PR 142	1.293E-07	8.387E-08	5.438E-08	9.614E-09	1.700E-09	2.233E-11	6.668E-19	1.173E-21	1.173E-21	1.173E-21
PR 143	4.317E-05	4.306E-05	4.274E-05	4.022E-05	3.693E-05	2.892E-05	1.045E-05	2.264E-06	2.948E-07	4.104E-13
PR 144	3.256E-08	3.229E-08	3.225E-08	3.210E-08	3.194E-08	3.155E-08	3.005E-08	2.793E-08	2.533E-08	1.328E-08
PR 145	5.238E-07	1.315E-07	3.272E-08	1.256E-10	4.819E-13	4.396E-19	0.	0.	0.	0.
PR 146	2.791E-08	6.084E-17	5.691E-26	0.	0.	0.	0.	0.	0.	0.
PR 147	2.101E-08	2.043E-17	1.911E-26	0.	0.	0.	0.	0.	0.	0.
PR 148	1.435E-09	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	2.769E-03	2.770E-03	2.771E-03	2.773E-03	2.775E-03	2.778E-03	2.794E-03	2.816E-03	2.834E-03	2.848E-03

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 60 ND

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.6 DAYS
ND 142	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
ND 143	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
ND 144	3.879E-13	3.880E-13	3.881E-13	3.887E-13	3.893E-13	3.906E-13	3.959E-13	4.034E-13	4.126E-13	4.550E-13
ND 145	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
ND 146	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
ND 147	1.679E 02	1.630E 02	1.580E 02	1.395E 02	1.231E 02	9.007E 01	2.583E 01	3.968E 00	3.265E-01	2.180E-08
ND 148	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
ND 149	1.056E 02	8.383E-01	6.657E-03	2.848E-11	1.053E-19	0.	0.	0.	0.	0.
ND 150	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
ND 151	5.212E 01	1.729E-16	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	3.256E 02	1.639E 02	1.580E 02	1.395E 02	1.231E 02	9.007E 01	2.583E 01	3.968E 00	3.265E-01	2.180E-08

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

ND 142	5.836E-05	5.841E-05	5.844E-05	5.848E-05	5.849E-05	5.849E-05	5.849E-05	5.849E-05	5.849E-05	5.849E-05
ND 143	1.462E-03	1.463E-03	1.464E-03	1.468E-03	1.472E-03	1.481E-03	1.499E-03	1.507E-03	1.509E-03	1.509E-03
ND 144	2.602E-03	2.603E-03	2.604E-03	2.607E-03	2.611E-03	2.620E-03	2.656E-03	2.706E-03	2.767E-03	3.052E-03
ND 145	1.578E-03	1.579E-03	1.579E-03	1.579E-03	1.579E-03	1.579E-03	1.579E-03	1.579E-03	1.579E-03	1.579E-03
ND 146	1.488E-03	1.488E-03	1.488E-03	1.488E-03	1.488E-03	1.488E-03	1.488E-03	1.488E-03	1.488E-03	1.488E-03
ND 147	1.427E-05	1.386E-05	1.343E-05	1.185E-05	1.046E-05	7.656E-06	2.196E-06	3.373E-07	2.775E-08	1.853E-15
ND 148	8.148E-04	8.148E-04	8.148E-04	8.148E-04	8.148E-04	8.148E-04	8.148E-04	8.148E-04	8.148E-04	8.148E-04
ND 149	5.793E-08	4.600E-10	3.653E-12	1.453E-20	5.781E-29	0.	0.	0.	0.	0.
ND 150	3.852E-04	3.852E-04	3.852E-04	3.852E-04	3.852E-04	3.852E-04	3.852E-04	3.852E-04	3.852E-04	3.852E-04
ND 151	3.437E-09	1.140E-26	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	8.403E-03	8.405E-03	8.407E-03	8.413E-03	8.419E-03	8.434E-03	8.483E-03	8.539E-03	8.602E-03	8.887E-03

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 61 PM

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.0 DAYS
PM 147	6.686E 01	6.690E 01	6.693E 01	6.705E 01	6.714E 01	6.728E 01	6.705E 01	6.586E 01	6.402E 01	5.288E 01
PM*148	4.807E 00	4.768E 00	4.728E 00	4.575E 00	4.426E 00	4.076E 00	2.930E 00	1.786E 00	9.229E-01	1.172E-02
PM 148	3.630E 01	3.406E 01	3.196E 01	2.479E 01	1.924E 01	1.025E 01	9.666E-01	1.392E-01	6.364E-02	9.067E-04
PM 149	1.374E 02	1.205E 02	1.030E 02	5.499E 01	2.936E 01	6.114E 00	1.151E-02	9.391E-07	3.325E-12	0.
PM 150	1.725E-01	7.923E-03	3.639E-04	1.620E-09	7.208E-15	3.012E-28	0.	0.	0.	0.
PM 151	5.658E 01	4.233E 01	3.145E 01	9.589E 00	2.923E 00	1.500E-01	1.240E-08	1.900E-14	9.134E-25	0.
PM 152	3.959E 01	0.	0.	0.	0.	0.	0.	0.	0.	0.
PM 154	1.413E 01	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	3.558E 02	2.685E 02	2.381E 02	1.610E 02	1.231E 02	8.787E 01	7.096E 01	6.778E 01	6.501E 01	5.288E 01

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

PM 147	4.902E-04	4.904E-04	4.907E-04	4.915E-04	4.922E-04	4.932E-04	4.916E-04	4.829E-04	4.693E-04	3.878E-04
PM*148	1.546E-06	1.533E-06	1.521E-06	1.471E-06	1.424E-06	1.311E-06	9.423E-07	5.743E-07	2.968E-07	3.768E-09
PM 148	1.501E-06	1.408E-06	1.322E-06	1.025E-06	7.955E-07	4.237E-07	3.997E-08	5.757E-09	2.631E-09	3.336E-11
PM 149	2.324E-06	2.038E-06	1.742E-06	9.301E-07	4.966E-07	1.034E-07	1.946E-10	1.588E-14	5.624E-20	0.
PM 150	1.486E-10	6.825E-12	3.135E-13	1.395E-18	6.209E-24	2.595E-37	0.	0.	0.	0.
PM 151	5.056E-07	3.782E-07	2.811E-07	8.568E-08	2.612E-08	1.340E-09	9.295E-15	1.697E-22	8.162E-33	0.
PM 152	1.263E-09	0.	0.	0.	0.	0.	0.	0.	0.	0.
PM 154	1.878E-10	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	4.960E-04	4.958E-04	4.955E-04	4.950E-04	4.950E-04	4.951E-04	4.925E-04	4.834E-04	4.696E-04	3.878E-04

BWR8 238 RG 1.7 PER ATL-8103 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 62 SM

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	150.0 DAYS	364.0 DAYS
SM 147	7.141E-10	7.148E-10	7.152E-10	7.176E-10	7.199E-10	7.259E-10	7.495E-10	7.846E-10	8.303E-10	1.101E-09
SM 148	3.158E-13	3.160E-13	3.162E-13	3.168E-13	3.173E-13	3.182E-13	3.195E-13	3.202E-13	3.207E-13	3.213E-13
SM 149	1.831E-15	1.954E-15	2.060E-15	2.351E-15	2.506E-15	2.646E-15	2.683E-15	2.693E-15	2.683E-15	2.663E-15
SM 150	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SM 151	3.809E-02	3.881E-02	3.900E-02	3.977E-02	4.001E-02	4.010E-02	4.009E-02	4.007E-02	4.003E-02	3.981E-02
SM 152	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SM 153	8.141E 01	8.021E 01	5.714E 01	2.815E 01	1.387E 01	2.362E 00	1.988E-03	4.859E-08	3.439E-14	0.
SM 154	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SM 155	1.487E 01	8.693E-09	2.103E-18	0.	0.	0.	0.	0.	0.	0.
TOTAL	9.632E 01	8.824E 01	5.718E 01	2.819E 01	1.381E 01	2.402E 00	4.208E-02	4.007E-02	4.003E-02	3.981E-02

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

SM 147	2.155E-04	2.157E-04	2.159E-04	2.166E-04	2.173E-04	2.191E-04	2.262E-04	2.368E-04	2.506E-04	3.324E-04
SM 148	1.765E-04	1.766E-04	1.767E-04	1.771E-04	1.774E-04	1.778E-04	1.786E-04	1.790E-04	1.793E-04	1.796E-04
SM 149	8.117E-06	8.462E-06	8.758E-06	8.570E-06	7.693E-06	7.396E-06	7.499E-06	7.500E-06	7.500E-06	7.500E-06
SM 150	5.759E-04	5.759E-04	5.759E-04	5.759E-04	5.759E-04	5.759E-04	5.759E-04	5.759E-04	5.759E-04	5.759E-04
SM 151	9.582E-06	9.713E-06	9.810E-06	1.001E-05	1.006E-05	1.009E-05	1.008E-05	1.008E-05	1.007E-05	1.001E-05
SM 152	4.129E-04	4.129E-04	4.129E-04	4.129E-04	4.129E-04	4.129E-04	4.129E-04	4.129E-04	4.129E-04	4.129E-04
SM 153	1.221E-06	1.023E-06	8.567E-07	4.220E-07	2.079E-07	3.341E-08	2.981E-11	7.279E-18	5.157E-22	0.
SM 154	7.136E-05	7.136E-05	7.136E-05	7.136E-05	7.136E-05	7.136E-05	7.136E-05	7.136E-05	7.136E-05	7.136E-05
SM 155	1.819E-09	6.839E-19	2.572E-28	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.468E-03	1.469E-03	1.469E-03	1.471E-03	1.472E-03	1.479E-03	1.483E-03	1.484E-03	1.508E-03	1.580E-03

BWR8 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 63 EU

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.6 DAYS
EU 151	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
EU 153	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
EU 154	6.997E-01	6.996E-01	6.996E-01	6.994E-01	6.992E-01	6.988E-01	6.972E-01	6.947E-01	6.914E-01	6.700E-01
EU 155	1.695E 01	1.694E 01	1.693E 01	1.690E 01	1.686E 01	1.677E 01	1.643E 01	1.592E 01	1.526E 01	1.15[illegible] 01
EU 156	5.714E 00	5.585E 00	5.459E 00	4.983E 00	4.549E 00	3.622E 00	1.455E 00	3.704E-01	5.977E-02	3.440E-07
EU 157	4.629E 00	2.678E 00	1.549E 00	1.736E-01	1.944E-02	8.168E-03	2.544E-14	1.398E-28	0.	0.
EU 158	2.445E 00	4.742E-05	9.196E-10	1.300E-28	0.	0.	0.	0.	0.	0.
EU 159	9.921E-01	9.026E-13	8.211E-25	0.	0.	0.	0.	0.	0.	0.
EU 160	3.263E-01	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	3.176E 01	2.591E 01	2.464E 01	2.275E 01	2.213E 01	2.109E 01	1.658E 01	1.698E 01	1.601E 01	1.223E 01

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

EU 151	6.643E-09	6.745E-09	6.848E-09	7.266E-09	7.690E-09	8.754E-09	1.301E-08	1.939E-08	2.792E-08	8.398E-08
EU 153	1.829E-04	1.831E-04	1.833E-04	1.837E-04	1.840E-04	1.841E-04	1.842E-04	1.842E-04	1.842E-04	1.842E-04
EU 154	3.129E-05	3.129E-05	3.128E-05	3.128E-05	3.127E-05	3.125E-05	3.118E-05	3.107E-05	3.092E-05	2.996E-05
EU 155	8.575E-05	8.570E-05	8.566E-05	8.548E-05	8.530E-05	8.485E-05	8.309E-05	8.052E-05	7.721E-05	5.849E-05
EU 156	6.650E-07	6.501E-07	6.354E-07	5.800E-07	5.295E-07	4.215E-07	1.693E-07	4.311E-08	6.957E-09	4.004E-14
EU 157	2.245E-08	1.299E-08	7.513E-09	8.417E-10	9.429E-11	3.961E-13	1.234E-22	6.781E-37	0.	0.
EU 158	5.981E-10	1.160E-14	2.249E-19	3.180E-38	0.	0.	0.	0.	0.	0.
EU 159	9.496E-11	8.639E-23	7.859E-35	0.	0.	0.	0.	0.	0.	0.
EU 160	4.337E-12	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	3.007E-04	3.008E-04	3.009E-04	3.011E-04	3.011E-04	3.007E-04	2.986E-04	2.958E-04	2.923E-04	2.727E-04

DWRG 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. WG. 64 00

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	8.0 DAYS	10.0 DAYS	30.0 DAYS	50.0 DAYS	100.0 DAYS	364.0 DAYS
GD 154	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
GD 155	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
GD 156	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
GD 157	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
GD 158	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
GD 159	1.356E 00	8.646E-01	5.440E-01	8.580E-02	1.351E-02	1.330E-04	1.249E-12	1.136E-24	0.	0.
GD 160	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
GD 161	2.024E-01	0.	0.	0.	0.	0.	0.	0.	0.	0.
GD 162	1.269E-01	1.030E-22	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.685E 00	8.64RE-01	5.440E-01	8.580E-02	1.351E-02	1.330E-04	1.249E-12	1.136E-24	0.	0.

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

GD 154	1.459E-06	1.461E-06	1.463E-06	1.470E-06	1.478E-06	1.496E-06	1.570E-06	1.691E-06	1.820E-06	2.784E-06
GD 155	4.484E-07	4.933E-07	5.393E-07	7.178E-07	8.970E-07	1.343E-06	3.105E-06	4.880E-06	8.990E-06	2.771E-05
GD 156	5.682E-05	5.684E-05	5.685E-05	5.691E-05	5.696E-05	5.707E-05	5.732E-05	5.744E-05	5.748E-05	5.748E-05
GD 157	3.060E-08	4.006E-08	4.553E-08	5.220E-08	5.293E-08	5.304E-08	5.304E-08	5.304E-08	5.304E-08	5.304E-08
GD 158	2.834E-05	2.834E-05	2.834E-05	2.834E-05	2.834E-05	2.834E-05	2.834E-05	2.834E-05	2.834E-05	2.834E-05
GD 159	7.787E-09	4.966E-09	3.129E-09	4.927E-10	7.760E-11	7.639E-13	7.172E-21	6.525E-33	0.	0.
GD 160	2.137E-06	2.137E-06	2.137E-06	2.137E-06	2.137E-06	2.137E-06	2.137E-06	2.137E-06	2.137E-06	2.137E-06
GD 161	3.982E-12	0.	0.	0.	0.	0.	0.	0.	0.	0.
GD 162	7.019E-12	1.012E-32	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	8.924E-05	8.931E-05	8.930E-05	8.982E-05	8.988E-05	9.043E-05	9.252E-05	9.533E-05	9.883E-05	1.160E-04

QWR8 238 RG 1.7 PER ATL-8103 ACTIVITY AFTER SHUTDOWN - CURIES 1005.0 MWD IN 1006.0 DAYS. AT. NO. 65 TB

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	8.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.0 DAYS
TB 159	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
TB 160	1.237E-01	1.231E-01	1.225E-01	1.202E-01	1.179E-01	1.123E-01	9.267E-02	6.943E-02	4.724E-02	3.005E-03
TB 161	2.606E-01	2.479E-01	2.357E-01	1.928E-01	1.577E-01	9.545E-02	1.280E-02	6.267E-04	1.131E-06	3.235E-17
TB 162	1.450E-01	3.554E-03	8.103E-05	2.189E-11	5.915E-19	2.245E-34	0.	0.	0.	0.
TB 163	6.043E-02	1.680E-02	4.673E-03	2.795E-05	1.672E-07	4.624E-13	2.708E-35	0.	0.	0.
TB 164	7.852E-03	5.469E-03	3.809E-03	8.966E-07	2.110E-04	5.672E-06	2.959E-12	1.115E-21	3.037E-34	0.
TOTAL	5.976E-01	9.968E-01	3.568E-01	3.139E-01	2.758E-01	2.078E-01	1.055E-01	7.003E-02	4.723E-02	3.008E-03

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

TB 159	4.883E-06	4.886E-06	4.888E-06	4.891E-06	4.891E-06	4.891E-06	4.891E-06	4.891E-06	4.891E-06	4.891E-06
TB 160	6.820E-06	6.787E-06	6.755E-06	6.626E-06	6.499E-06	6.194E-06	5.109E-06	3.828E-06	2.604E-06	2.030E-06
TB 161	1.377E-06	1.310E-06	1.245E-06	1.019E-06	8.334E-09	5.043E-09	6.763E-10	3.322E-11	5.974E-13	1.711E-24
TB 162	1.018E-10	2.495E-12	5.687E-14	1.537E-20	4.152E-27	0.	0.	0.	0.	0.
TB 163	1.253E-10	3.484E-11	9.690E-12	5.795E-14	3.466E-16	9.588E-22	0.	0.	0.	0.
TB 164	5.782E-11	4.013E-11	2.795E-11	6.579E-12	1.548E-12	4.162E-14	2.172E-20	8.185E-30	0.	0.
TOTAL	4.766E-06	4.767E-06	4.768E-06	4.787E-06	4.764E-06	4.758E-06	4.743E-06	4.730E-06	4.717E-06	4.695E-06

BWR8 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 66 DY

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.0 DAYS
DY 160	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DY 161	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DY 162	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DY 163	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DY 164	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DY*165	3.006E-02	0.	0.	0.	0.	0.	0.	0.	0.	0.
DY 165	3.488E-02	3.005E-02	2.588E-02	1.424E-02	7.833E-03	1.759E-03	4.468E-06	5.722E-10	3.693E-15	0.
DY 166	1.870E-03	1.689E-03	1.526E-03	1.016E-03	6.768E-04	2.449E-04	4.203E-06	9.445E-09	2.780E-12	1.223E-35
TOTAL	6.681E-02	3.174E-02	2.741E-02	1.525E-02	8.510E-03	2.004E-03	8.671E-06	1.002E-08	2.704E-12	1.223E-35

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

DY 160	2.703E-07	2.707E-07	2.710E-07	2.723E-07	2.735E-07	2.766E-07	2.874E-07	3.003E-07	3.125E-07	3.388E-07
DY 161	4.671E-07	4.677E-07	4.684E-07	4.707E-07	4.725E-07	4.758E-07	4.802E-07	4.808E-07	4.808E-07	4.808E-07
DY 162	8.225E-07	8.226E-07	8.226E-07	8.226E-07	8.226E-07	8.226E-07	8.226E-07	8.226E-07	8.226E-07	8.226E-07
DY 163	3.303E-07	3.304E-07	3.305E-07	3.305E-07	3.305E-07	3.305E-07	3.305E-07	3.305E-07	3.305E-07	3.305E-07
DY 164	1.717E-08	1.719E-08	1.720E-08	1.722E-08	1.723E-08	1.723E-08	1.723E-08	1.723E-08	1.723E-08	1.723E-08
DY*165	2.008E-13	0.	0.	0.	0.	0.	0.	0.	0.	0.
DY 165	6.196E-10	5.338E-10	4.598E-10	2.529E-10	1.392E-10	3.124E-11	7.938E-14	1.016E-17	6.561E-23	0.
DY 166	4.883E-11	4.411E-11	3.985E-11	2.654E-11	1.767E-11	6.396E-12	1.097E-13	2.466E-16	7.259E-20	0.
TOTAL	1.908E-06	1.909E-06	1.910E-06	1.914E-06	1.917E-06	1.923E-06	1.938E-06	1.951E-06	1.964E-06	1.988E-06

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 67 HO

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.6 DAYS
HO 165	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
HO*166	4.449E-06	4.449E-06	4.449E-06	4.449E-06	4.449E-06	4.449E-06	4.449E-06	4.449E-06	4.448E-06	4.447E-06
HO 166	5.344E-03	4.401E-03	3.662E-03	1.924E-03	1.131E-03	3.719E-04	6.285E-06	1.413E-08	4.158E-12	1.828E-35
TOTAL	5.348E-03	4.405E-03	3.666E-03	1.929E-03	1.135E-03	3.763E-04	1.073E-05	4.463E-06	4.448E-06	4.447E-06

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

HO 165	8.440E-08	8.449E-08	8.456E-08	8.477E-08	8.489E-08	8.499E-08	8.502E-08	8.502E-08	8.502E-08	8.502E-08
HO*166	1.492E-08	1.492E-08	1.492E-08	1.492E-08	1.492E-08	1.492E-08	1.492E-08	1.492E-08	1.492E-08	1.491E-08
HO 166	4.624E-11	3.808E-11	3.168E-11	1.665E-11	9.785E-12	3.218E-12	5.439E-14	1.222E-16	3.598E-20	0.
TOTAL	9.937E-08	9.945E-08	9.952E-08	9.971E-08	9.982E-08	9.992E-08	9.995E-08	9.995E-08	9.994E-08	9.994E-08

BWR6 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. AT. NO. 68 ER

ISOTOPE	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.0 DAYS
ER 166	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

ER 166	1.082E-08	1.083E-08	1.084E-08	1.087E-08	1.089E-08	1.090E-08	1.091E-08	1.091E-08	1.091E-08	1.092E-08
TOTAL	1.082E-08	1.083E-08	1.084E-08	1.087E-08	1.089E-08	1.090E-08	1.091E-08	1.091E-08	1.091E-08	1.092E-08

BWR8 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. SUMMARY

ELEMENT	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.0 DAYS
30 ZN	1.879E-02	8.763E-04	7.328E-04	3.584E-04	1.753E-04	2.931E-05	2.293E-08	5.019E-13	3.072E-19	0.
31 GA	9.688E-01	4.163E-03	1.470E-03	5.016E-04	2.503E-04	4.206E-05	3.291E-08	7.203E-13	4.409E-19	0.
32 GE	2.960E 00	1.653E-01	7.572E-02	3.986E-03	2.099E-04	1.336E-07	2.191E-20	0.	0.	0.
33 AS	4.617E 01	6.457E-01	5.026E-01	2.245E-01	9.583E-02	1.124E-02	2.125E-06	5.520E-12	1.977E-19	0.
34 SE	2.173E 02	1.046E-02	8.636E-03	3.926E-03	1.742E-03	3.050E-04	1.140E-04	1.139E-04	1.139E-04	1.139E-04
35 BR	3.054E 04	6.227E 01	1.359E 01	4.738E 00	1.851E 00	1.766E-01	1.463E-06	1.103E-11	7.573E-20	0.
36 KR	1.011E 05	2.337E 03	4.995E 02	2.999E 02	2.997E 02	2.995E 02	2.984E 02	2.966E 02	2.947E 02	2.815E 02
37 RB	1.686E 03	9.706E 02	5.003E 01	2.204E-01	2.043E-01	1.697E-01	8.087E-02	2.660E-02	6.039E-03	3.393E-07
38 SR	1.947E 03	3.866E 02	3.003E 02	2.430E 02	2.355E 02	2.215E 02	1.743E 02	1.238E 02	8.186E 01	2.559E 01
39 Y	2.836E 03	6.628E 02	4.496E 02	3.282E 02	3.173E 02	3.002E 02	2.424E 02	1.777E 02	1.202E 02	2.834E 01
40 ZR	1.766E 03	7.445E 02	6.321E 02	4.746E 02	4.447E 02	4.185E 02	3.391E 02	2.485E 02	1.603E 02	9.541E 00
41 NB	3.345E 03	1.055E 03	8.308E 02	5.286E 02	4.859E 02	4.752E 02	4.435E 02	3.738E 02	2.768E 02	2.050E 01
42 MO	2.249E 03	4.454E 02	3.927E 02	2.372E 02	1.433E 02	4.063E 01	2.628E-01	1.367E-04	5.715E-09	0.
43 TC	2.989E 03	4.351E 02	3.778E 02	2.296E 02	1.387E 02	3.934E 01	2.591E-01	4.893E-03	4.761E-03	4.760E-03
44 RU	1.302E 03	6.508E 02	5.999E 02	5.769E 02	5.628E 02	5.297E 02	4.218E 02	3.131E 02	2.288E 02	9.648E 01
45 RH	1.681E 03	8.744E 02	8.085E 02	6.584E 02	5.910E 02	5.267E 02	4.170E 02	3.103E 02	2.274E 02	9.647E 01
46 PD	1.145E 02	4.946E 01	2.725E 01	2.657E 00	2.961E-01	2.693E-03	4.056E-06	4.056E-05	4.056E-05	4.056E-06
47 AG	1.470E 02	6.529E 01	4.225E 01	1.485E 01	1.041E 01	6.460E 00	1.230E 00	2.970E-01	2.137E-01	1.048E-01
48 CD	1.430E 01	2.367E 00	1.973E 00	1.128E 00	6.781E-01	2.552E-01	1.058E-01	6.512E-02	3.419E-02	5.056E-04
49 IN	2.323E 01	2.487E 00	1.970E 00	1.054E 00	5.657E-01	1.195E-01	2.379E-04	2.113E-08	8.649E-14	4.776E-15
50 SN	3.661E 02	7.351E 00	6.140E 00	4.482E 00	3.683E 00	2.617E 00	9.294E-01	4.192E-01	2.956E-01	7.373E-02
51 SB	1.171E 03	4.809E 01	3.478E 01	2.470E 01	1.900E 01	1.101E 01	4.922E 00	3.978E 00	3.335E 00	2.034E 00
52 TE	2.023E 03	5.009E 02	4.357E 02	2.808E 02	1.892E 02	8.168E 01	2.103E 01	1.348E 01	8.469E 00	1.416E 00
53 I	1.569E 05	3.906E 04	2.723E 04	1.384E 04	1.016E 04	6.273E 03	1.111E 03	8.387E 01	2.679E 00	5.122E-04
54 XE	2.431E 05	7.039E 04	6.149E 04	4.263E 04	3.278E 04	1.702E 04	1.265E 03	3.339E 01	1.163E 00	2.159E-07
55 CS	2.074E 03	6.422E 01	6.369E 01	6.278E 01	6.197E 01	6.026E 01	5.642E 01	5.440E 01	5.333E 01	4.892E 01
56 BA	2.354E 03	4.961E 02	4.815E 02	4.355E 02	3.942E 02	3.086E 02	1.265E 02	5.165E 01	3.531E 01	3.286E 01
57 LA	2.160E 03	5.606E 02	4.949E 02	4.503E 02	4.097E 02	3.160E 02	1.072E 02	2.112E 01	2.421E 00	1.451E-08
58 CE	1.960E 03	1.169E 03	1.092E 03	9.094E 02	8.284E 02	7.465E 02	5.877E 02	4.410E 02	3.338E 02	1.448E 02
59 PR	1.582E 03	8.472E 02	7.871E 02	7.369E 02	7.022E 02	6.208E 02	4.271E 02	3.254E 02	2.783E 02	1.444E 02
60 ND	3.256E 02	1.639E 02	1.580E 02	1.395E 02	1.231E 02	9.007E 01	2.583E 01	3.968E 00	3.265E-01	2.180E-08
61 PM	3.558E 02	2.685E 02	2.381E 02	1.810E 02	1.231E 02	8.787E 01	7.096E 01	6.778E 01	6.501E 01	5.288E 01
62 SM	9.632E 01	6.824E 01	5.718E 01	2.819E 01	1.391E 01	2.402E 00	4.208E-02	4.007E-02	4.003E-02	3.981E-02
63 EU	3.176E 01	2.591E 01	2.464E 01	2.275E 01	2.213E 01	2.109E 01	1.858E 01	1.698E 01	1.601E 01	1.223E 01
64 GD	1.685E 00	8.648E-01	5.448E-01	8.580E-02	1.351E-02	1.330E-04	1.249E-12	1.136E-24	0.	0.
65 TB	5.976E-01	3.968E-01	3.668E-01	3.139E-01	2.758E-01	2.078E-01	1.055E-01	7.005E-02	4.728E-02	3.878E-03
66 DY	6.681E-02	3.174E-02	2.741E-02	1.825E-02	8.510E-03	2.004E-03	8.671E-06	1.002E-08	2.784E-12	1.223E-38
67 HO	5.348E-03	4.405E-03	3.668E-03	1.929E-03	1.135E-03	3.763E-04	1.073E-05	4.463E-06	4.448E-06	4.447E-06
68 ER	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	5.665E 05	1.224E 05	9.763E 04	6.333E 04	4.904E 04	2.850E 04	6.150E 03	2.959E 03	2.191E 03	9.978E 02

BWR8 238 RG 1.7 PER ATL-5193 ACTIVITY AFTER SHUTDOWN - CURIES 1095.0 MWD IN 1095.0 DAYS. SUMMARY

ELEMENT	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.0 DAYS
NOBLE GAS	3.442E 05	7.272E 04	6.199E 04	4.293E 04	3.305E 04	1.732E 04	1.563E 03	3.302E 02	2.959E 02	2.813E 02
HALOGENS	1.874E 05	3.912E 04	2.725E 04	1.385E 04	1.016E 04	6.273E 03	1.111E 03	8.387E 01	2.679E 00	5.122E-04
VOL. SOL.	9.467E 03	2.030E 03	9.774E 02	6.059E 02	4.137E 02	1.938E 02	8.272E 01	7.189E 01	6.514E 01	5.237E 01
A.R.F.P.	2.540E 04	8.537E 03	7.413E 03	5.947E 03	5.409E 03	4.714E 03	3.403E 03	2.473E 03	1.827E 03	6.639E 02

BWR6 238 RG 1.7 PER ATL-5193 — 1095.0 MWD IN 1095.0 DAYS — SUMMARY

CONCENTRATION AFTER SHUTDOWN - GRAM ATOMS

ELEMENT	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.0 DAYS
30 ZN	1.574E-11	1.300E-11	1.088E-11	5.318E-12	2.601E-12	4.350E-13	3.403E-16	7.448E-21	4.559E-27	0.
31 GA	3.650E-11	9.357E-12	4.956E-12	2.255E-12	1.126E-12	1.892E-13	1.481E-16	3.240E-21	1.983E-27	0.
32 GE	1.952E-06	1.950E-06	1.950E-06	1.950E-06	1.950E-06	1.950E-06	1.950E-06	1.950E-06	1.950E-06	1.950E-06
33 AS	6.365E-07	6.343E-07	6.332E-07	6.297E-07	6.281E-07	6.271E-07	6.269E-07	6.269E-07	6.269E-07	6.269E-07
34 SE	1.724E-04	1.724E-04	1.724E-04	1.724E-04	1.724E-04	1.724E-04	1.724E-04	1.724E-04	1.724E-04	1.724E-04
35 BR	4.370E-03	4.368E-03	4.368E-03	4.368E-03	4.368E-03	4.368E-03	4.368E-03	4.368E-03	4.368E-03	4.368E-03
36 KR	1.335E-01	1.335E-01	1.335E-01	1.335E-01	1.335E-01	1.335E-01	1.334E-01	1.334E-01	1.333E-01	1.329E-01
37 RB	1.272E-03	1.284E-03	1.285E-03	1.289E-03	1.292E-03	1.300E-03	1.331E-03	1.379E-03	1.442E-03	1.846E-03
38 SR	3.352E-03	3.365E-03	3.365E-03	3.362E-03	3.360E-03	3.354E-03	3.333E-03	3.309E-03	3.288E-03	3.232E-03
39 Y	1.723E-03	1.722E-03	1.722E-03	1.721E-03	1.720E-03	1.718E-03	1.710E-03	1.700E-03	1.691E-03	1.671E-03
40 ZR	1.277E-02	1.277E-02	1.277E-02	1.276E-02	1.276E-02	1.276E-02	1.275E-02	1.274E-02	1.272E-02	1.273E-02
41 NB	1.269E-04	1.268E-04	1.268E-04	1.265E-04	1.263E-04	1.252E-04	1.172E-04	9.895E-05	7.338E-05	6.461E-05
42 MO	1.160E-02	1.160E-02	1.160E-02	1.160E-02	1.161E-02	1.162E-02	1.167E-02	1.173E-02	1.180E-02	1.194E-02
43 TC	2.837E-03	2.838E-03	2.839E-03	2.842E-03	2.844E-03	2.846E-03	2.847E-03	2.847E-03	2.847E-03	2.847E-03
44 RU	7.624E-03	7.622E-03	7.620E-03	7.614E-03	7.608E-03	7.594E-03	7.544E-03	7.486E-03	7.429E-03	7.233E-03
45 RH	1.506E-03	1.506E-03	1.507E-03	1.510E-03	1.513E-03	1.522E-03	1.553E-03	1.583E-03	1.604E-03	1.626E-03
46 PD	3.923E-03	3.924E-03	3.925E-03	3.929E-03	3.931E-03	3.937E-03	3.956E-03	3.984E-03	4.019E-03	4.193E-03
47 AG	2.477E-04	2.478E-04	2.479E-04	2.478E-04	2.477E-04	2.475E-04	2.472E-04	2.471E-04	2.470E-04	2.468E-04
48 CD	1.450E-04	1.450E-04	1.451E-04	1.452E-04	1.453E-04	1.455E-04	1.458E-04	1.459E-04	1.460E-04	1.461E-04
49 IN	7.914E-06	7.919E-06	7.925E-06	7.940E-06	7.949E-06	7.959E-06	7.974E-06	7.988E-06	7.998E-06	8.009E-06
50 SN	1.235E-04	1.235E-04	1.235E-04	1.234E-04	1.234E-04	1.233E-04	1.231E-04	1.230E-04	1.229E-04	1.227E-04
51 SB	6.198E-05	6.174E-05	6.165E-05	6.140E-05	6.121E-05	6.091E-05	6.037E-05	5.977E-05	5.907E-05	5.580E-05
52 TE	1.449E-03	1.448E-03	1.447E-03	1.443E-03	1.441E-03	1.439E-03	1.437E-03	1.436E-03	1.435E-03	1.437E-03
53 I	3.062E-02	3.046E-02	3.038E-02	3.018E-02	3.006E-02	2.985E-02	2.954E-02	2.948E-02	2.947E-02	2.949E-02
54 XE	1.357E 00	1.357E 00	1.357E 00	1.356E 00	1.356E 00	1.356E 00	1.355E 00	1.355E 00	1.355E 00	1.355E 00
55 CS	6.752E-03	6.933E-03	7.099E-03	7.618E-03	8.006E-03	8.631E-03	9.256E-03	9.295E-03	9.284E-03	9.213E-03
56 BA	3.337E-03	3.339E-03	3.338E-03	3.334E-03	3.331E-03	3.324E-03	3.312E-03	3.314E-03	3.324E-03	3.395E-03
57 LA	2.957E-03	2.957E-03	2.956E-03	2.956E-03	2.955E-03	2.954E-03	2.952E-03	2.950E-03	2.950E-03	2.950E-03
58 CE	6.486E-03	6.485E-03	6.483E-03	6.477E-03	6.473E-03	6.462E-03	6.412E-03	6.340E-03	6.260E-03	5.961E-03
59 PR	2.769E-03	2.770E-03	2.771E-03	2.773E-03	2.775E-03	2.773E-03	2.794E-03	2.816E-03	2.834E-03	2.848E-03
60 ND	8.403E-03	8.405E-03	8.407E-03	8.413E-03	8.419E-03	8.434E-03	8.483E-03	8.539E-03	8.602E-03	8.887E-03
61 PM	4.960E-04	4.958E-04	4.955E-04	4.950E-04	4.950E-04	4.951E-04	4.925E-04	4.834E-04	4.696E-04	3.870E-04
62 SM	1.468E-03	1.469E-03	1.469E-03	1.471E-03	1.472E-03	1.475E-03	1.483E-03	1.494E-03	1.508E-03	1.590E-03
63 EU	3.007E-04	3.008E-04	3.009E-04	3.011E-04	3.011E-04	3.007E-04	2.986E-04	2.958E-04	2.923E-04	2.727E-04
64 GD	8.924E-05	8.931E-05	8.938E-05	8.962E-05	8.986E-05	9.043E-05	9.252E-05	9.533E-05	9.883E-05	1.185E-04
65 TB	4.766E-06	4.767E-06	4.768E-06	4.767E-06	4.764E-06	4.758E-06	4.743E-06	4.7[illegible]	4.717E-06	4.693E-06
66 DY	1.908E-06	1.909E-06	1.910E-06	1.914E-06	1.917E-06	1.923E-06	1.938E-06	1.95[illegible]-06	1.964E-06	1.988E-06
67 HO	9.937E-08	9.945E-08	9.952E-08	9.971E-08	9.982E-08	9.992E-08	9.995E-08	9.993E-08	9.994E-08	9.994E-08
68 ER	1.082E-08	1.083E-08	1.084E-08	1.087E-08	1.089E-08	1.090E-08	1.091E-08	1.091E-08	1.091E-08	1.092E-08
TOTAL	1.607E 00	1.607E 00	1.607E 00	1.607E 00	1.607E 00	1.607E 00	1.607E 00	1.607E 00	1.607E 00	1.607E 00
POISON	4.2	4.2	4.2	4.1	4.1	4.1	4.1	4.2	4.2	4.4

TOTAL BARNS/TOTAL FISSIONS - EXCLUDING XE 135, SM 149, AND SM 151

BWR8 230 RC 1.7 PER ATL-5193

1095.0 MWD IN 1095.0 DAYS SUMMARY

CONCENTRATION AFTER SHUTDOWN - GRAMS

ELEMENT	SHUTDOWN	12.0 HR.	1.0 DAYS	3.0 DAYS	5.0 DAYS	10.0 DAYS	30.0 DAYS	60.0 DAYS	100.0 DAYS	364.0 DAYS
30 ZN	1.133E-09	9.364E-10	7.830E-10	3.829E-10	1.873E-10	3.132E-11	2.457E-14	5.363E-19	3.283E-28	0.
31 GA	2.669E-09	6.785E-10	3.577E-10	1.624E-10	8.106E-11	1.362E-11	1.06[illegible]E-14	2.333E-19	1.428E-28	0.
32 GE	1.476E-04	1.475E-04	1.475E-04	1.474E-04	1.474E-04	1.474E-04	1.47[illegible]E-04	1.474E-04	1.474E-04	1.474E-04
33 AS	4.776E-05	4.739E-05	4.750E-05	4.723E-05	4.711E-05	4.703E-05	4.702E-05	4.702E-05	4.702E-05	4.702E-05
34 SE	1.394E-02	1.394E-02	1.394E-02	1.394E-02	1.394E-02	1.394E-02	1.394E-02	1.394E-02	1.394E-02	1.394E-02
35 BR	3.540E-01	3.538E-01	3.538E-01	3.538E-01	3.538E-01	3.538E-01	3.538E-01	3.538E-01	3.538E-01	3.538E-01
36 KR	1.135E 01	1.134E 01	1.134E 01	1.134E 01	1.134E 01	1.134E 01	1.134E 01	1.134E 01	1.133E 01	1.130E 01
37 RB	1.099E-01	1.109E-01	1.110E-01	1.113E-01	1.116E-01	1.123E-01	1.150E-01	1.190E-01	1.243E-01	1.887E-01
38 SR	2.990E-01	3.002E-01	3.002E-01	2.999E-01	2.997E-01	2.992E-01	2.973E-01	2.952E-01	2.933E-01	2.883E-01
39 Y	1.536E-01	1.536E-01	1.535E-01	1.534E-01	1.534E-01	1.531E-01	1.524E-01	1.515E-01	1.505E-01	1.487E-01
40 ZR	1.192E 00	1.192E 00	1.192E 00	1.192E 00	1.192E 00	1.192E 00	1.190E 00	1.189E 00	1.188E 00	1.188E 00
41 NB	1.206E-02	1.205E-02	1.204E-02	1.202E-02	1.199E-02	1.190E-02	1.113E-02	9.400E-03	6.971E-03	5.170E-04
42 MO	1.133E 00	1.133E 00	1.133E 00	1.133E 00	1.134E 00	1.135E 00	1.139E 00	1.148E 00	1.162E 00	1.185E 00
43 TC	2.809E-01	2.810E-01	2.811E-01	2.814E-01	2.816E-01	2.818E-01	2.819E-01	2.819E-01	2.819E-01	2.815E-01
44 RU	7.806E-01	7.804E-01	7.802E-01	7.796E-01	7.789E-01	7.774E-01	7.722E-01	7.662E-01	7.602E-01	7.366E-01
45 RH	1.551E-01	1.552E-01	1.552E-01	1.555E-01	1.558E-01	1.568E-01	1.599E-01	1.630E-01	1.653E-01	1.875E-01
46 PD	4.164E-01	4.165E-01	4.166E-01	4.170E-01	4.173E-01	4.178E-01	4.199E-01	4.229E-01	4.265E-01	4.490E-01
47 AG	2.700E-02	2.702E-02	2.702E-02	2.702E-02	2.700E-02	2.690E-02	2.694E-02	2.693E-02	2.693E-02	2.691E-02
48 CD	1.820E-02	1.820E-02	1.821E-02	1.822E-02	1.823E-02	1.826E-02	1.829E-02	1.830E-02	1.830E-02	1.833E-02
49 IN	9.102E-04	9.107E-04	9.113E-04	9.131E-04	9.141E-04	9.153E-04	9.170E-04	9.183E-04	9.187E-04	9.210E-04
50 SN	1.511E-02	1.510E-02	1.510E-02	1.510E-02	1.509E-02	1.508E-02	1.506E-02	1.505E-02	1.504E-02	1.501E-02
51 SB	7.643E-03	7.612E-03	7.601E-03	7.569E-03	7.545E-03	7.507E-03	7.440E-03	7.365E-03	7.277E-03	6.998E-03
52 TE	1.878E-01	1.876E-01	1.874E-01	1.870E-01	1.867E-01	1.864E-01	1.861E-01	1.860E-01	1.860E-01	1.861E-01
53 I	3.939E 00	3.919E 00	3.908E 00	3.892E 00	3.886E 00	3.839E 00	3.790E 00	3.790E 00	3.789E 00	3.788E 00
54 XE	1.821E 02	1.821E 02	1.821E 02	1.820E 02	1.820E 02	1.819E 02	1.819E 02	1.818E 02	1.819E 02	1.818E 02
55 CS	9.114E-01	9.355E-01	9.576E-01	1.027E 00	1.078E 00	1.161E 00	1.244E 00	1.250E 00	1.248E 00	1.238E 00
56 BA	4.603E-01	4.605E-01	4.604E-01	4.599E-01	4.594E-01	4.584E-01	4.569E-01	4.570E-01	4.583E-01	4.600E-01
57 LA	4.110E-01	4.110E-01	4.110E-01	4.109E-01	4.108E-01	4.106E-01	4.103E-01	4.101E-01	4.101E-01	4.101E-01
58 CE	9.165E-01	9.164E-01	9.161E-01	9.153E-01	9.147E-01	9.131E-01	9.059E-01	8.956E-01	8.842E-01	8.412E-01
59 PR	3.905E-01	3.906E-01	3.907E-01	3.911E-01	3.913E-01	3.917E-01	3.940E-01	3.971E-01	3.996E-01	4.016E-01
60 ND	1.219E 00	1.219E 00	1.219E 00	1.220E 00	1.221E 00	1.223E 00	1.230E 00	1.238E 00	1.247E 00	1.288E 00
61 PM	7.293E-02	7.289E-02	7.285E-02	7.278E-02	7.276E-02	7.270E-02	7.240E-02	7.106E-02	6.904E-02	5.987E-02
62 SM	2.203E-01	2.204E-01	2.205E-01	2.207E-01	2.209E-01	2.213E-01	2.223E-01	2.241E-01	2.261E-01	2.382E-01
63 EU	4.621E-02	4.623E-02	4.624E-02	4.627E-02	4.627E-02	4.620E-02	4.589E-02	4.545E-02	4.491E-02	4.187E-02
64 GD	1.398E-02	1.399E-02	1.400E-02	1.404E-02	1.408E-02	1.417E-02	1.449E-02	1.493E-02	1.547E-02	1.682E-02
65 TB	7.578E-04	7.581E-04	7.582E-04	7.581E-04	7.576E-04	7.568E-04	7.542E-04	7.520E-04	7.501E-04	7.482E-04
66 DY	3.085E-04	3.087E-04	3.088E-04	3.093E-04	3.098E-04	3.108E-04	3.133E-04	3.154E-04	3.174E-04	3.212E-04
67 HO	1.841E-05	1.842E-05	1.844E-05	1.847E-05	1.848E-05	1.850E-05	1.851E-05	1.851E-05	1.851E-05	1.850E-05
68 ER	1.796E-06	1.798E-06	1.800E-06	1.804E-06	1.807E-06	1.810E-06	1.812E-06	1.812E-06	1.812E-06	1.813E-06
TOTAL	2.072E 02	2.072E 02	2.072E 02	2.072E 02	2.072E 02	2.072E 02	2.072E 02	2.072E 02	2.072E 02	2.072E 02

NEDO-21782

APPENDIX C

BWR OWNERS' GROUP POSITION ON HIGH-POINT VENTS

NUREG-0578 Implementation Letter Requirement Relative to Remotely Operated Operated High-Point Vents

Each applicant and licensee shall install reactor coolant system and reactor vessel head high-point vents remotely operated from the control room. Since these vents form a part of the reactor coolant pressure boundary, the design of the vents shall conform to the requirements of Appendix A to 10CFR50 General Design Criteria. In particular, these vents shall be safety grade, and shall satisfy the single-failure criterion and the requirements of IEEE-279 in order to ensure a low probability of inadvertent actuation.

Each applicant and licensee shall provide the following information concerning the design and operation of these high-point vents:

1. A description of the construction, location, size, and power supply for the vents along with results of analyses of loss-of-coolant accidents initiated by a break in the vent pipe. The results of the analyses should be demonstrated to be acceptable in accordance with the acceptance criteria of 10CFR50.46.

2. Analyses demonstrating that the direct venting of noncondensible gases with perhaps high hydrogen concentrations does not result in violation of combustible gas concentration limits in the containment as described in 10CFR50.44, Regulatory Guide 1.7 (Rev. 1), and Review Plan Section 6.2.5.

3. Procedural guidelines for the operators' use of the vents. The information available to the operator for initiating or terminating vent usage shall be discussed.

Discussion

Domestic BWR's are provided with a number of power-operated safety-grade relief valves which can be manually operated from the control room to vent the reactor pressure vessel. The point of connection of the vent lines from the vessel to these valves is such that accumulation of gases above that point in the vessel will not affect natural accumulation of gases of the reactor core.

These power-operated relief valves satisfy the intent of the NRC position. Information regarding the design, qualification, power source, etc., of these valves has been provided in the individual plant Safety Analysis Reports.

The Owners' position is that the requirement of single-failure criteria for prevention of inadvertent actuation of these valves, and the requirement (stated in the October 11 topical meeting) that power be removed during normal operation, are not applicable to BWR's. These valves serve an important function fn mitigating the effects of transients and in many plants provide ASME code overpressure protection. Therefore, the addition of a second "block" valve to the vent lines could result in a less safe design and in some cases a violation of the code. Also, inadvertent opening of a relief valve in a BWR is a design basis event and is a controllable transient (this is discussed under Item 2.1.2).

In addition to the power-operated relief valves, operating BWR's include various other means of high-point venting. Information on which plants are equipped with which features has been provided in individual plant Safety Analysis Reports, and may be summarized by individual licensees in their NUREG-0578 implementation letters. Among these are:

1. Normally closed reactor vessel head vent valves, operable from the control room, which discharge to the drywell;

2. Normally open reactor head vent line, which discharges to a main steam line;

3. Main steam-driven Reactor Core Isolation Cooling (RCIC) System turbines, operable from the control room, which exhaust to the suppression pool;

4. Main steam-driven High Pressure Coolant Injection (HPCI) System turbines, operable from the control room, which exhaust to the suppression pool;

5. Isolation condenser primary side vent valves, operable from the control room, which discharge to the containment or a main steam line.

Although the power-operated relief valves fully satisfy the intent of the requirement, these other means also provide protection against the accumulation of noncondensibles in the reactor pressure vessel.

In the October 11, 1979, topical meeting on this subject, three procedural questions were raised:

1. Where to vent to (suppression pool vs. containment);

2. When to vent;

3. When not to vent.

Under most circumstances, there would be no choice as to where to vent to or when to vent, since the relief valves (as part of the Automatic Depressurization System), HPCI, and RCIC will function automatically in their designed modes to ensure adequate core cooling, and these will provide continuous venting to the suppression pool. The current assessment is that it would not be desirable to interfere with emergency core cooling functions in order to prevent venting, but the matter will be studied further.

The result of a break in the safety/relief valve discharge line, or any of the other systems enumerated above, would be the same as a small steam line

break. A complete steam line break is part of the plants' design basis, and smaller-size breaks have been shown to be of lesser severity. A number of reactor system blowdowns due to stuck-open relief valves (also equivalent to a small steam line break) have confirmed this in practice (see Owners' Group position on Requirement 2.1.2). Thus no new analyses to show conformance with 10CFR50.46 are required.

Because the relief valves, HPCI, and RCIC will vent the reactor continuously, and because containment hydrogen calculations in normal safety analysis calculations assume continuous venting, no special analyses are required to demonstrate "that the direct venting of noncondensible gases with perhaps high hydrogen concentrations does not result in violation of combustible gas concentration limits in containment."

BWR Owners' Group Implementation Criteria

1. The Owners' Group believes that adequate reactor coolant system venting is provided by the existing plant design.

2. Plant procedures will be provided to govern the operator's use of the relief valves for venting the reactor pressure vessel.

3. No new 10CFR50.46 conformance calculations or containment combustible gas concentration calculations are required, since systems in the plant's original design and covered by the original design bases are used;

4. In response to a request from the October 11, 1979, topical meeting, the use of isolation condenser tube-side vents will be considered;

5. In response to a request from the October 11, 1979, topical meeting, the effect of noncondensibles in HPCI/RCIC turbine steam will be addressed.

APPENDIX D

HPCI TURBINE PERFORMANCE WITH HYDROGEN IN SUPPLY STEAM

This appendix presents the results of an investigation of the effect on HPCI turbine thermodynamic performance of various volume concentrations of hydrogen gas mixed with dry steam. It is concluded that there is no degradation in thermodynamic performance of the turbine with a mixture of steam and hydrogen.

The available energy of hydrogen is significantly greater than that of saturated steam at equal pressure (i.e., 1:2.5 at 1000 psig for 100% steam/0% H_2: 30% steam/70% H_2). The specific volume of hydrogen is also significantly greater than steam at equal pressure (i.e., 1:3 at 1000 psig for 100% steam/0% H_2: 30% steam/70% H_2). Consequently, for a fixed mass flow the volumetric flow would increase with increasing concentrations of hydrogen. The net result of this effect is increased pressure drop in the turbine inlet and exhaust steam lines due to higher flow velocities. The following tabulation summarizes this point:

	100% Steam/0% H_2 1000 psig, 4000 bhp	30% Steam/70% H_2 1000 psig, 4000 bhp
Inlet Velocity (10 In. Inlet)	43 ft/sec	150 ft/sec
Exhaust Velocity (18 In. Exhaust)	205 ft/sec	535 ft/sec

Figure D-1 shows the minimum performance capability of a typical HPCI turbine. The 'Mixture Flow' line represents a 100% steam/0% hydrogen mixture. This line shifts upwards (rotates counterclockwise) with increasing hydrogen concentration.

The higher steam line velocities identified might be a problem under long-term operation. However, since hydrogen gas would exist in the steam for only a short time, the high velocities are not considered to be detrimental.

The ability of the turbines to start with hydrogen in the supply steam has also bee considered. With the increase in available energy due to hydrogen gas concentration (on the order of 2.5 to 1 with 70% H_2), it is probable that

the existing governor system, with its present calibration, would not be capable of controlling the acceleration transient of the HPCI turbine. The turbine would probably trip due to mechanical overspeed. However, it should be noted that the mechanical overspeed trip device is capable of automatic reset. Therefore, although not satisfying the system startup time criterion of 25 seconds, the turbine (and system) is capable of restarting and ultimately delivering design flow rate, even with high concentrations of hydrogen gas.

Hydrogen and steam will vent from the turbine during operation because the gland seal system will not function as designed due to high concentration of non-condensible hydrogen gas. This would not preclude turbine operation, but should be considered if the system were ever operated in this mode, due to the obvious hazards of fire and radiation in the reactor building.

NOTE: MIXTURE OF STEAM AND HYDROGEN RANGING FROM 20% TO 70% HYDROGEN. ASSUMED HYDROGEN GAS VALUES: $K = 1.4$, $C_p = 3.435$

REFERENCE INLET TEMPERATURE = TEMPERATURE OF DRY AND SATURATED STEAM

EXHAUST PRESSURE = 50 psig

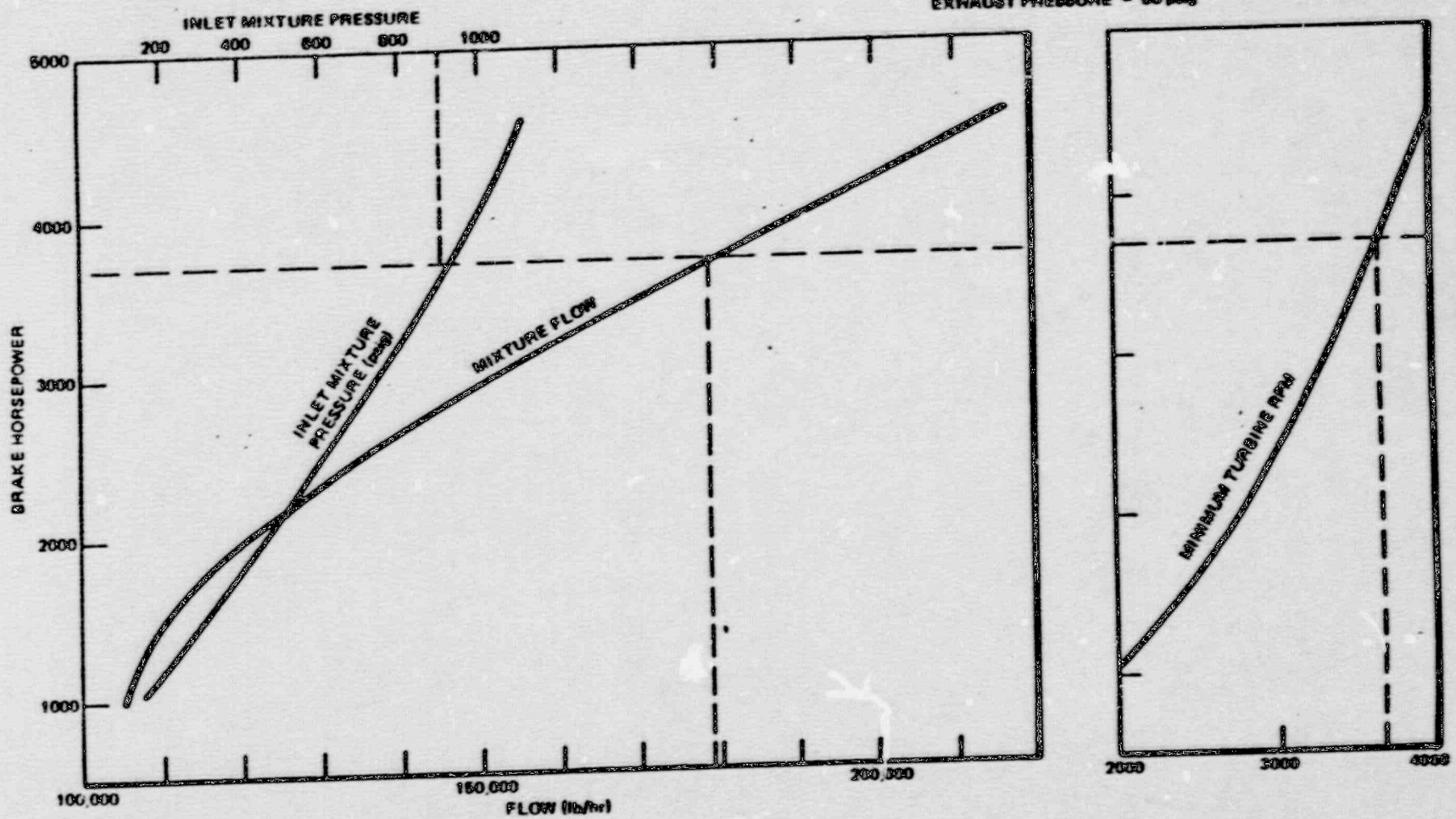


Figure D-1. HPCI Turbine Performance Curve