PP&L

PENNSYLVANIA POWER & LIGHT COMPANY

EMERGENCY OPERATIONS FACILITY

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Telephone: 717-542-2181

February 14, 1984

Mr. Bud Crocker
U.S. NRC Region I
631 Park Avenue
King of Prussia, PA 19406

Dear Bud:

Enclosed is a complete copy of the exercise scenario for the April 4, 1984 Susquehanna SES Full Scale Exercise. You will note that the Technical Data for this exercise package is presented in graph form as compared to 15 minute data sheets as it will ultimately be made available to participants. The graph format will make it much easier for you to review and evaluate the adequacy of the scenario. The final 15 minute data sheets, consisting of duplicates of the plants Unit Monitoring Console as the CR operator, TSC or EOF would obtain the data, will be developed a couple of weeks prior to the actual exercise - these data sheets not being necessary at this time for overall exercise scenario review and evaluation.

As no offsite County, State or Municipal participation is expected, we are planning to have County personnel observe our exercise play in order for them to become familiar with our operations during an emergency condition.

Any questions concerning the scenario can be referred to myself or to Laurie Whittenberger at (717) 542-2181 Exts. 3233 or 3752 respectively.

Sincerely,

Charles

Charles R. Wike, Jr.
Supervisor-Nuclear Emergency Planning

CRW:mm

IE35
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CONTENTS

SUSQUEHANNA STEAM ELECTRIC STATION
OBJECTIVES FOR 1984 NRC OBSERVED EXERCISE

1. To provide the basis for an approximately 8 hour utility-state-county-local municipality radiological emergency exercise. This exercise will include participation by Susquehanna SES, Pennsylvania Power & Light Allentown, and the Commonwealth of PA Department of Environmental Resources/Bureau of Radiation Protection.

2. To exercise the overall SSES Emergency Plan, and on a modified scale the Radiological Emergency Response Plan of the Commonwealth of Pennsylvania (DER/BRP).

3. To determine the cause of the emergency condition, terminate the condition with consideration for appropriate engineering safeguards and radiological controls, and place the plant in a safe condition.

4. To test and exercise SSES site communications associated with a plant radiological emergency. To test, via communications networks, the capability to coordinate SSES, Commonwealth, NRC and federal agency emergency response personnel.

5. To perform a limited site personnel accountability.

6. To perform timely and accurate calculations for gaseous and liquid releases.

7. To evaluate the ability to deploy and control emergency response teams both in-plant and offsite.

8. To test communications, activation, functional operation and coordination of the Operations Support Center, Technical Support Center, Emergency Operations Facility, Media Operations Center and General Office Support Facilities.

9. To test the ability of SSES personnel to adequately respond to a contaminated injury incident.

10. To test the ability of SSES personnel to demonstrate Personnel and Equipment contamination control, including appropriate decontamination procedures.

11. To test the ability of PP&L's Emergency Organization to provide timely and accurate protective action recommendations, including coordination of these recommendations with appropriate offsite authorities.

12. To test the ability of the plant to effectively use the post accident sampling station.

13. To demonstrate an effective exercise critique program.

14. To test the ability of the Berwick and Geisinger Hospitals to adequately respond to the emergency.

15. To test the ability of local ambulance companies to adequately respond to the emergency.

16. To demonstrate a limited site evacuation.

APRIL 4 EMERGENCY PLAN EXERCISE

PROPOSED TIMELINE

TIME	EVENT
0800	START EXERCISE
	ALERT - Based on liquid release greater than 10 x tech. specs.
	Activate TSC
	Perform limited accountability
0830	TSC operational
0845	SITE EMERGENCY - Based on failure to SCRAM resulting in fuel damage and degraded containment conditions. Water level remains below TAF for five minutes
	Activate EOF
	Perform limited evacuation
0900	Reactor sump leak
0915	TSC operational
0945	Contaminated Injured
1045	EOF operational
1115	Security problem
1300	Leak outside containment starts
1530	GENERAL EMERGENCY - Based on projected integrated dose
	Recommend Evacuation
1630	TERMINATE DRILL

Emergency Plan Exercise
April 4, 1984

INITIAL CONDITIONS

1. Unit 1 is at 100% power.

2. Unit 2 is in startup testing phase. Currently shutdown for drywell cooling modifications.

3. Primary Coolant Activity levels are 0.15 μCi/ml.

4. Unit 1 is in the 17th month of its first full 18 month fuel cycle.

5. Preventive Maintenance was performed on relays in panels 1C617, 1C618, 1C609, 1C611, 1C620, 1C622 and 1C623 during a recent forced outage. The relays were cleaned, relubricated and functionally tested.

6. ESW flow balancing and water hammer testing were completed during the last shift.

7. Diesel Fuel Oil shipment is scheduled for this shift.

8. Auxiliary Boiler A is out of service due to failure of its feed pump.

9. The Unit 1 Offgas Recombiner temperatures have been erratic, though the system continues to function.

10. Radwaste collection tank level gauge has been giving intermittent, faulty readings. Maintenance is currently being performed on the level gauge.

11. At 2000 hours on April 3, 1984 a decision was made to not pump the Rx building sump to Radwaste until level gauge problem is resolved.

C O N F I D E N T I A L

April 4, 1984 Emergency Plan Exercise

Re: Liquid Release Scenario

SYSTEM: Liquid Radwaste

ACTIVITY: There is to be a planned release of liquid radwaste from Tanks (A & B) and (C & D) respectively. All four tanks are full to capacity (11,000 gal each).

PROCEDURE: Plant Chemistry will collect routine samples from each of the four tanks to ensure that radioactivity levels are below the maximum permissible concentration as specified in 10CFR20 Appendix B, Table II, Column 2 before being released to the Susquehanna River.

PLAN: Chemistry results will show that tanks A & B may be released 4/4/84. (Tanks are arranged to release effluents in tandem.) However, tanks C & D will require additional decay time or dilution as activity levels are just above 10 times MPC.

ACTION: At 0800 on 4/4/84 liquid radwaste tanks C & D will be released to the River. The release will be discontinued at 0840 when operations realizes the wrong tanks were released. Chemistry will collect a water sample at blowdown lines.

LIQUID DISCHARGE DATA SHEET

Section 1: Release Data

Time of initial release into river (A) 0800

Release termination time (B) 0840

Total release time (C) 40 min.

Sample location Blowdown line

Section 2: Determination of Activity in River at Danville

Part A - Complete if sample was taken from blowdown line

	Co-58	Co-60	MN-54	
Activity of blowdown sample (L)	3E-3	1.5E-3	3E-3	µCi/ml.

Riverwater depth (from gauge at Biological Lab) 8.1 ft.

Dispersion factor to Danville (from Table 1) (M) 260

Activity in river at Danville (N) = $\frac{L}{M}$ =	1.15E-5	5.8E-6	1.15E-5	µCi/ml.

Maximum volume released (time x 200 gal/min) 8,000 gal

Part B - Complete if sample was taken from waste stream entering directly into the blowdown (include sample taken from spray pond).

Activity of sample (H) uCi/ml.

Rate of waste stream released into blowdown (I) = gal/min.

Rate of blowdown discharge (J) = gal/min.

Blowdown Dilution Factor (K) = $\frac{J}{I}$ =

Activity of blowdown (L) = $\frac{H}{K}$ = uCi/ml.

River water depth (from gauge at Biological Lab) ft.

Dispersion factor to Danville (from Table 1) (M) _____

Activity in river at Danville (N) = $\frac{L}{M}$ = _____ uCi/ml.

Part C - Complete if sample was taken from waste stream entering the spray pond before being released to blowdown line

Volume of release into spray pond (D) _____ gal.

Volume of spray pond (E) assume 25,000,000 gal.

Spray Pond Dilution Factor (F) = $\frac{E}{D}$ _____

Activity of Sample (G) _____ uCi/ml.

Activity of volume in Spray Pond (H) = $\frac{G}{F}$ _____ uCi/ml.

Rate of release into blowdown (I) _____ gal/min.

Rate of blowdown discharge (J) _____ gal/min.

Blowdown Dilution Factor (K) = $\frac{J}{I}$ = _____

Activity of blowdown (L) = $\frac{H}{K}$ = _____ uCi/ml.

River water depth (from gauge at Biological Lab) _____ ft.

Dispersion factor to Danville (from Table 1) (M) _____

Activity in river at Danville (N) = $\frac{L}{M}$ = _____ uCi/ml.

NOTE: If a sample is taken from the river below the discharge, assume the activity in the river at Danville is the same as the activity of the sample.

Section 3: Time of Arrival at Danville

Transit time to Danville (from Table 1) (P) 9 hrs.

Time of Arrival at Danville (P+A) 1700 4/4/84

Section 4: Recommendations

1. Notify Danville Water Authority of liquid release
2. Notify Pa DER/BRP of release

From Appendix B:

Nuclide	MPC (μCi/ml)
Co-58	1E-4
Co-60	5E-5
Mn-54	1E-4

Activity at Danville*:

Nuclide	Concentration (μCi/ml)
Co-58	1.15E-5
Co-60	5.8E-6
Mn-54	1.15E-5

* NOTE: Activity levels are all below MPC at Danville.

Simulated Accountability: Security personnel will be dispatched to Accountability Roster pick-up locations to obtain Prepositioned Accountability Rosters. One Plant employee will be reported missing which will necessitate the Security Controller to check the Security Data Management System and determine the individuals last known location. The Security Data Management System will reflect that the individual departed the plant just prior to the announcement directing all personnel to report to their Accountability Assembly Areas.

C O N F I D E N T I A L

April 4, 1984 Emergency Plan Exercise

Re: Detailed Technical Scenario

Time	Event
0840	Spurious Feedwater Transient

The feedwater level control system malfunctions momentarily causing a feedwater flow increase and subsequent Reactor Vessel level increase to 47 inches. The high level alarm is received in the control room but no operator action is needed as level returns to normal at 37".

0845 MSIVs Close on High Steamline Radiation

The feedwater transient caused an increase in Condensate Demin flow and foreign matter was shaken loose. The material passes through the Reactor Vessel and is activated. High radiation is sensed in the Main Steam lines and the Main Steam Isolation Valves close.

0845:01 ATWS

The Reactor fails to SCRAM on the closure of the MSIVs. The full core display, four rod display, RSCS "Full in" and OD7 all indicate that no rods have scrammed. (The SCRAM relays, C72-K14A-H, have de-energized but are stuck in the energized position. The new lubrication has liquified due to the heat generated by the constantly energized relay coils. The lubricant has fouled the relay contacts.)

The backup SCRAM valves C12-F110A&B do not open because their power supply fuses have been blown for some time.

0845:05 Fuel Damage

Reactor Pressure increases rapidly and most safety relief valves open. Reactor power increases very sharply. (Peaks at ~1500%.) Serious fuel damage occurs.

The Reactor fails to SCRAM on high pressure but the Recirculation Pump Trip (RPT) breakers open on high reactor pressure. Recirc Pumps stop and Reactor Power decreases to ~30%. The energy is being discharged to the Suppression Pool.

HPCI and RCIC initiate at level "2", "low, low level" and inject the Reactor Vessel but their flow is insufficient to stop the level decrease. Level drops below the level 1 Low, Low, Low setpoint and the RHR and Core Spray pumps start. Reactor pressure is still high so the RHR and CS pumps cannot inject into the RPV. The ADS 105 record timer has started. Water

level drops below the top of the active fuel (TAF). Cold water injected by HPCI and RCIC causes sudden pressure drops and voiding in the core. Water is expelled from the core and subsequent rewetting causes additional fuel damage. Level oscillations are reversed. Water level remains below TAF for five minutes causing additional fuel damage. HPCI and RCIC recover level to above TAF.

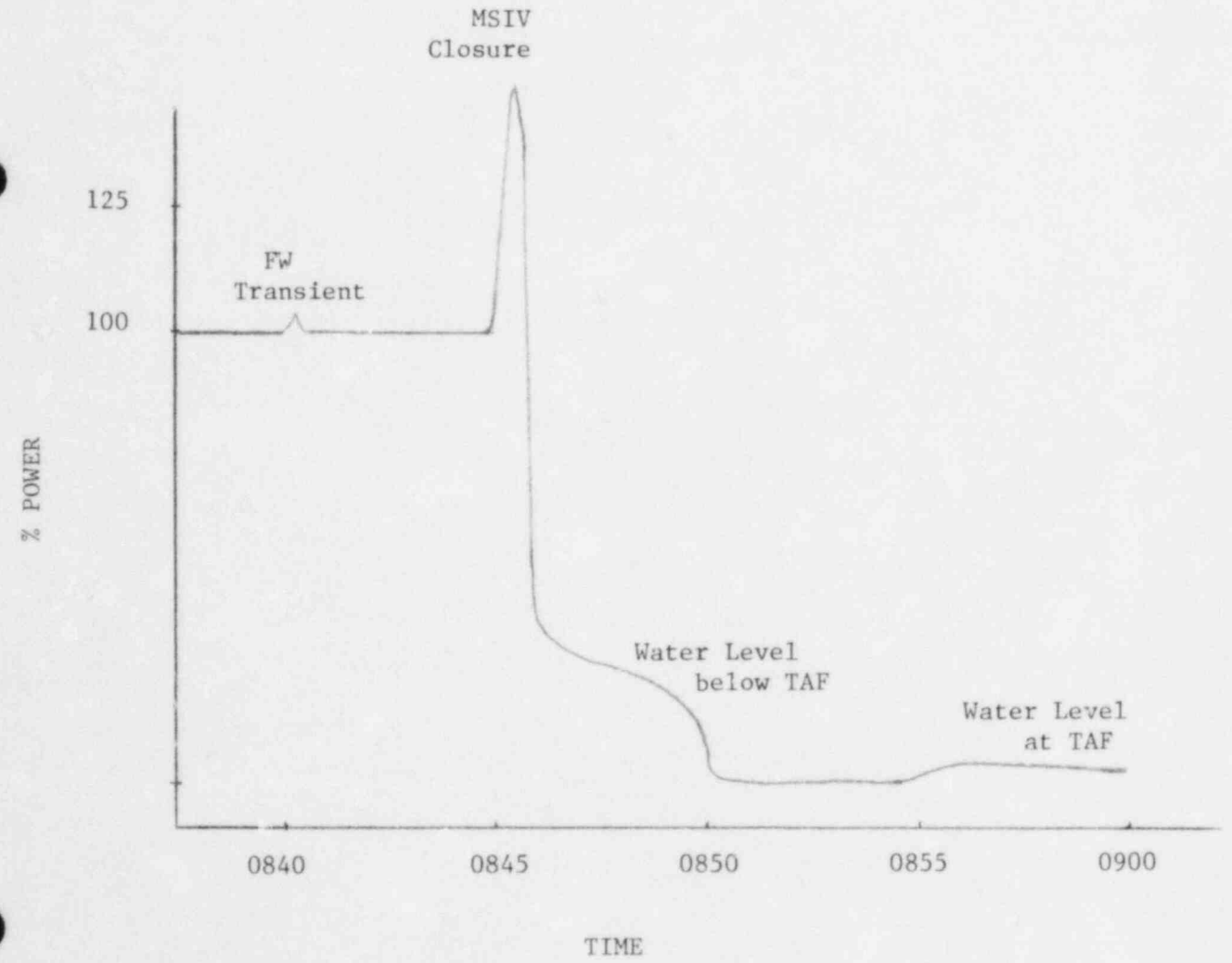
0849:00 Reactor SCRAM

Fifteen minutes after the MSIV closure the Reactor SCRAMS. The operators should attempt to open the RPS power supplies, 1Y201A,B, per EO-00-014, Step 4.1.2. If operator action does not occur before fifteen minutes, the Reactor will SCRAM. The K14 relays will fall open sequentially as they cool and each of the 4 rod groups will SCRAM.

The ADS timer does not time out. (The fuel was uncovered for 5 minutes.) HPCI restores vessel level. Conditions stabilize, level round, pressure high, high radiation in the Suppression Pool and High drywell pressure. The operator has ground the RPS power supplies 1Y201 A,B.

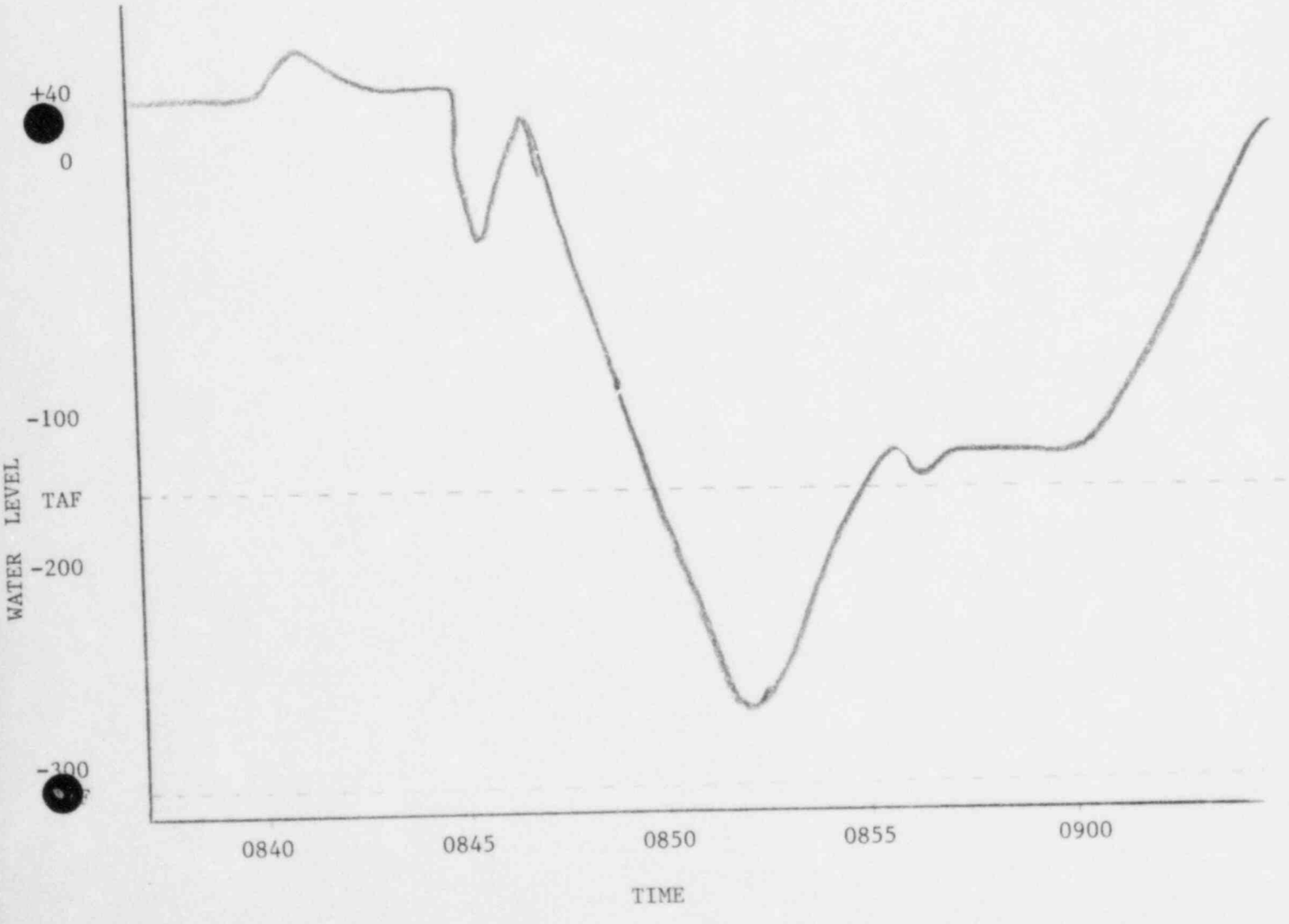
REACTOR POWER

0800-0840	ss @ 100%
0840	Slight power increase during Feedwater transient
0845-0900	(MSIV isolation without SCRAM) - Power initially spikes off scale with void collapse and pressure spike
	After ATWS Recirc runback - Power reduces to 30%
	Power drops slowly at first as level drops, then drops suddenly when water level reaches TAF to ~8%.
	RCIC & HPCI recover water level to TAF, power increases to equilibrium level at ~10%.
0900	Reactor SCRAMS - power drops immediately to zero and remains there for remainder of Exercise



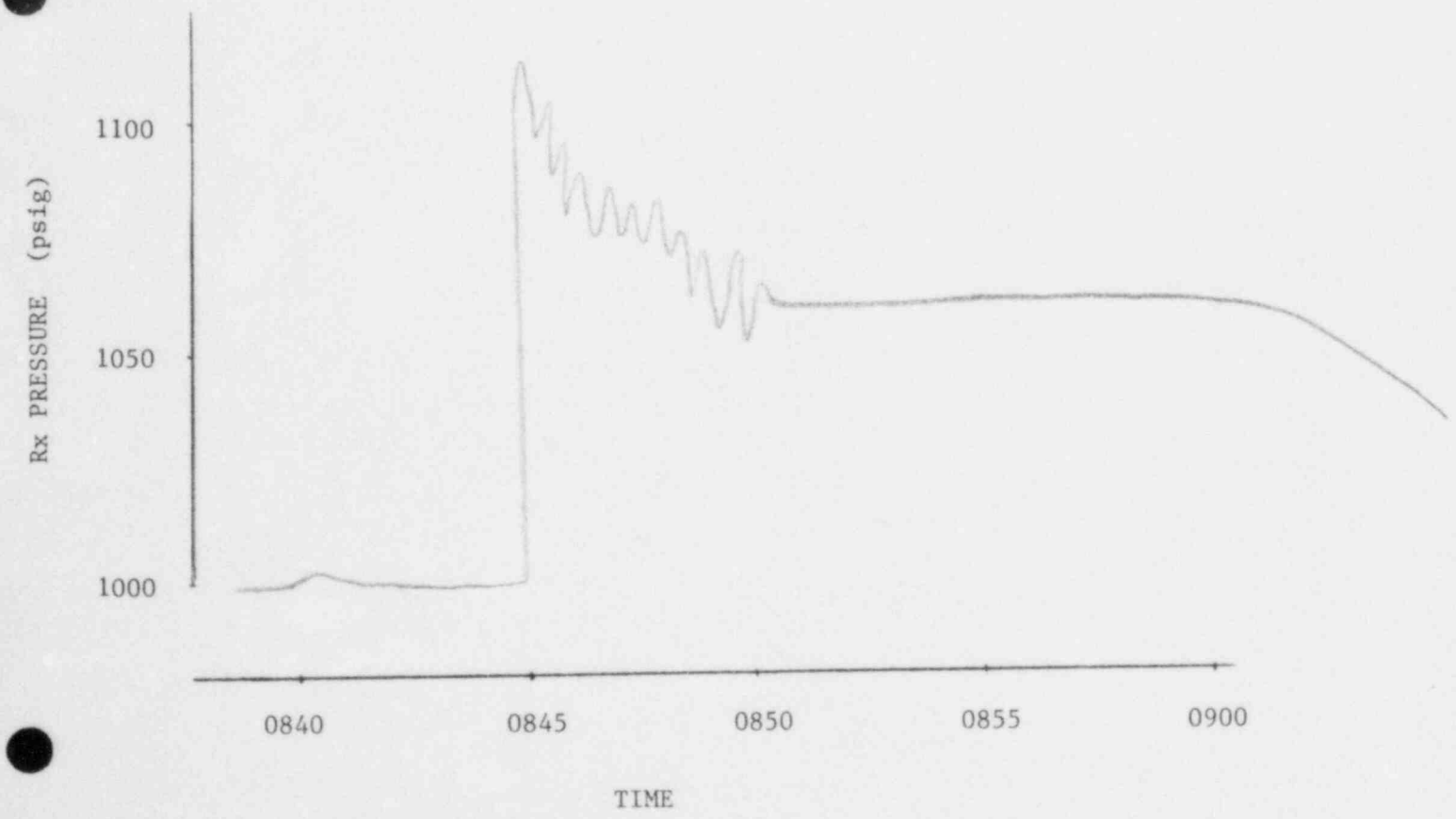
REACTOR WATER LEVEL

0800-0840	ss @ +35"
0840	FW level control failure, level increases to +47 and returns to ss @ +37"
0845-0900	(MSIV Closure) Voids collapse with pressure spike get level spike down, Level returns but drops quickly as relief valves open. RCIC and HPCI start at -38
	RCIC & HPCI can't keep up, water level continues to drop to TAF and then below. RCIC & HPCI start to recover and level steadies out at just above TAF.
	Steam flow = Combined HPCI and RCIC flow
0900	After SCRAM operator returns level to normal range with RCIC and level remains at +35 for remainder of Exercise



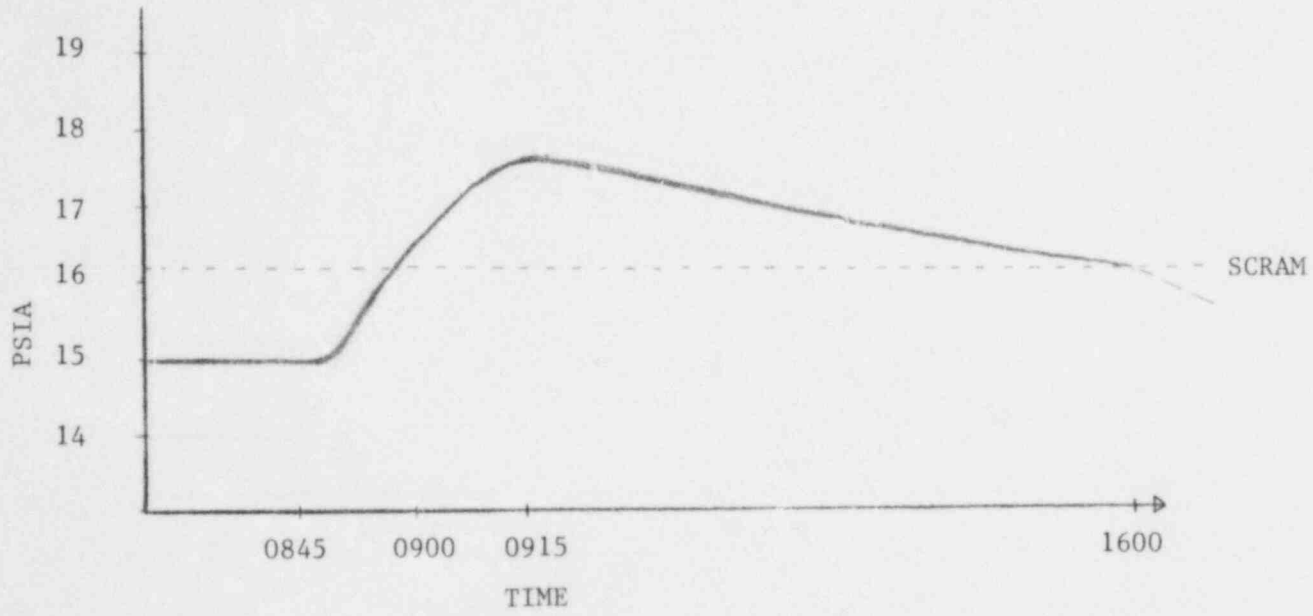
REACTOR PRESSURE

0800-0840	ss @ 1000 psig
0840	FW Transient slight pressure increase during power increase
0845-0900	(MSIV Isolation) Pressure spikes to 1110, All relief valves except K&M open.
	After ATWS recirc runback, all but six relief valves close. ABCDE & H cycle open, average pressure at 1090.
	When water level drops below TAF, only B&E relief valves cycle - Pressure rapidly cycles between 1050 and 1080 - Operator opens B&E to stop cycling - Pressure steady at 1060
0900	After SCRAM cooldown is at 100°/hr., pressure decreases at corresponding rate for remainder of exercise



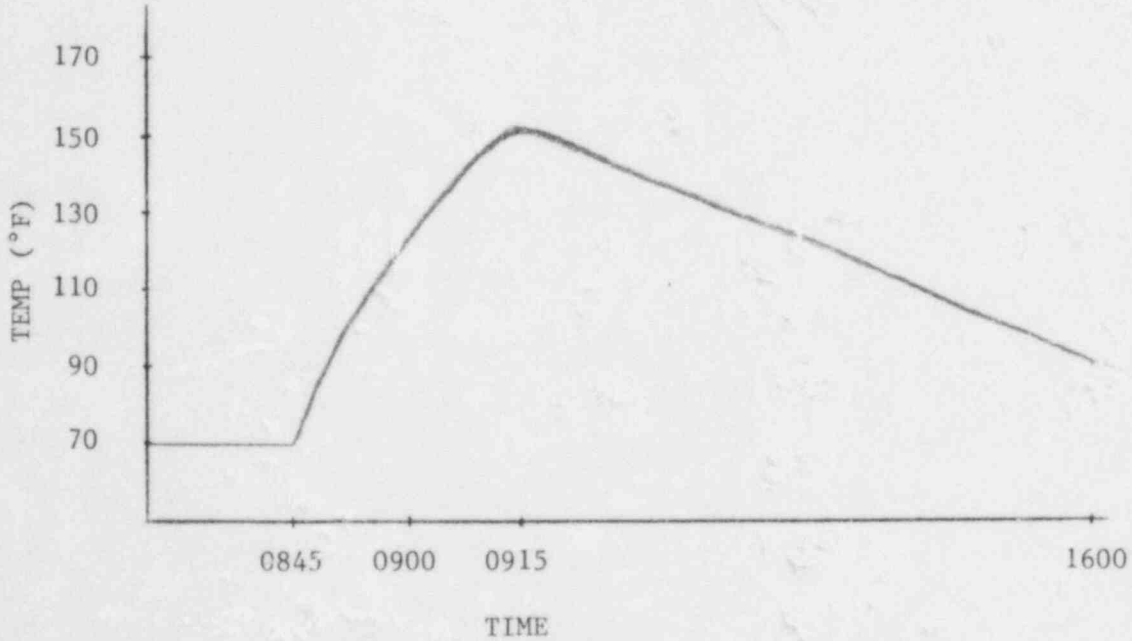
DRYWELL PRESSURE

0800-0845 ss @ 15 psia
After relief valves start to open, pressure increases steadily and peaks at 18.5 psia at 0915. Pressure slowly decays to SCRAM setpoint level (1.5 psig/16.2 psia).



SUPPRESSION POOL TEMPERATURE

After relief valves start to open temperature increases steadily and peaks at 150°F @ 30 minutes (0915). Operator starts suppression pool cooling at 0900. Temperature slowly decreases to 90°F by 1600.



Simulated Evacuation: Two Security evaluators will role play groups evacuating the plant area through the designated exit portal. They will evaluate Security actions during the preparation phase to expedite personnel departures; update Security control on evacuation progress and insure that entry credentials are collected.

CONFIDENTIAL

April 4, 1984 Exercise Scenario
Reactor Sump Leak

Recent evidence indicates that radwaste collection tank instrumentation has been giving faulty level indication. The level gauge currently reads 90% capacity on the last available collection tank. It is believed that the tank may be only 50% full. Maintenance is currently being performed on the level gauge instrumentation in the radwaste mixing tank room.

The Reactor building sump on elevation '645 is filled to capacity (2708 gal.) and has been allowed to back up through the floor drain valve pits on elevation '645. Water comng from the CRD SCRAM discharge drain has been emptying from the valve pits at a rate of one gallon per minute.

At 0900 hours, valves XV 1F011B and1F011A fail to seat properly allowing leakage of Reactor water to the Reactor buiding sump. The activity of the Reactor water is just over 2000 μCi/cc and is backing up through the floor drain valve pits resulting in elevated airborne activity levels. The activity is recirced through the Reactor building via the ventillation system resulting in average building dose rates of about 5 mR/hr.

Contaminated/Injured Patient Drill
Berwick Hospital/Geisinger Medical Center

Time: Approximately 0945 (one victim will call into Control Room)

General Location: Radwaste Building Elevation '646
WASTE MIXING TANK ROOM

Prestaging: Health Physics Tech and Operator for Search and Rescue Team will be sent from Technical Support Center.

Team will notify Shift Supervisor who in turn will have a prompt response to accident. Ambulance from Hunlock Creek and ~~Bond Hill Lily~~ SHICKSHINNY Lake will transport injured individuals. Both individuals will go to Berwick Hospital. Victim with serious injury will then be Life Flighted to Geisinger. (Life Flight can not land at Susquehanna; closest location for landing is Berwick.)

Background: 2 Maintenance personnel working on scaffolding 5.5 meters above floor. One of the pins falls out of scaffold. Both workers fall. One victim ends up under material with lacerations on forehead and a compressed cervical vertebrae on the spinal cord. Second victim will end up on top of scaffold material with lacerations to forehead and a broken right hip. 2nd victim can call the Control Room via radio. Both victims will remain conscious.

Medical: Victim 1 should be a suspected neck injury. Initial Primary survey of the patient shows:

Arms: No feeling or reaction to pain or movement
Trunk: No feeling or reaction to pain or movement
Legs: No feeling or reaction to pain or movement
Paralysis in legs and arms.

Initial vital signs:

Pulse: 68
Respirations: 14 shallow and irregular
Blood pressure: 90/70
Skin Temp: cool
Skin color: pale
Pupils: slow but equal to react

If treated properly pulse will rise to 72; respirations will become regular and about 19; blood pressure will increase to 120/80. If treatment is not appropriate vital signs will remain about the same as initial.

A cervical collar (or equivalent) should be applied. The patient should be immobilized and transported out of the area. (Transportation is optional.) Must be transferred from Berwick Hospital to Geisinger Medical Center.

Victim 2 should be a suspected right hip injury. Initial primary survey of this patient shows right foot and leg rotated out. Secondary survey shows tenderness in right hip area.

Initial vital signs:

Pulse: 160 faint
Respirations: 25 deep and irregular
Blood pressure: 70/40
Skin Temp: cold
Skin color: extremely pale
Pupils: widely dilated
Victim is somewhat unresponsive when first aiders arrive.

If treated properly pulse will return to about 80; respirations will become strong and return to 20; blood pressure will become 128/95. If treatment is not appropriate, victim will continue to deteriorate until death (~30 minutes).

A traction splint should be applied and victim treated for shock.

RADIOLOGICAL INFORMATION

1. General area readings are 1 Rem/hr at scene of accident, 300 mR/hr at egress point.

2. Contamination levels are 150K cpm to 200 mRad smearable throughout area.

3. Both victims have been working in this area for 1 hr. 45 min. prior to accident.

"VICTIM #1"

INSTRUMENTS

	E140-N Beta & Gamma	RO-2 Beta & Gamma (open window)	RO-2 Gamma
Protective Clothing (Outer)			
Front	150,000 cpm	20 mRad/hr	10 mR/hr
Back	(Saturated)	150 mRad/hr	75 mR/hr
NOTE: If outer PC's are removed the inner contamination levels are:			
Front	20,000 cpm	3 mRad/hr	1 mR/hr
Back	5,000 cpm	1 mRad/hr	.5 mR/hr
Initial prior to decon			
Face	50,000 cpm	7 mRad/hr	3 mR/hr
Hair (Front)	10,000 cpm	2 mRad/hr	1 mR/hr
Nasal Smear	10,000 cpm	2 mRad/hr	1 mR/hr
Mouth Smear	10,000 cpm	2 mRad/hr	1 mR/hr
Neck Area	10,000 cpm	2 mRad/hr	1 mR/hr
Body (Chest)	2,000 cpm	<1 mRad/hr	<1 mR/hr

1st Decon

Face	5,000 cpm	
Hair (Front)	1,000 cpm	
Nasal Smear	5,000 cpm	(If irrigated or nose can be blown)
Mouth Smear	5,000 cpm	(If rinsed)
Neck Area	5,000 cpm	
Body (Chest)	1,200 cpm	(If properly protected while deconing face & neck)

2nd Decon

Face	500 cpm
Hair (Front)	100 cpm
Nasal	2,500 cpm
Mouth	2,500 cpm
Neck	500 cpm
Body (Chest)	100 cpm

	E140-N Beta & Gamma
3rd Decon	
Face	<100 cpm
Hair (Front)	<100 cpm
Nasal	1,000 cpm
Mouth	1,000 cpm
Neck	<100 cpm
Body (Chest)	<100 cpm
4th Decon (if necessary)	
Nasal	200 cpm
Mouth	200 cpm

"VICTIM 2"

INSTRUMENTS

	E140-N Beta & Gamma	RO-2 Beta & Gamma (open window)	RO-2 Gamma
Protective Clothing (Outer)			
Front	150,000 cpm	20 mRad/hr	2 mR/hr
Back			
Note: If outer PC's are removed the inner contamination levels are:			
Front	20,000 cpm	3 mRad/hr	1 mR/hr
Back	5,000 cpm	1 mRad/hr	.5 mR/hr
Initial prior to decon			
Face	30,000 cpm	4 mRad/hr	2 mR/hr
Hair (Front)	5,000 cpm	1 mRad/hr	.5 mR/hr
Nasal Smear	10,000 cpm	2 mRad/hr	1 mR/hr
Mouth Smear	10,000 cpm	2 mRad/hr	1 mR/hr
Neck Area	10,000 cpm	2 mRad/hr	1 mR/hr
Chest	2,000 cpm	<1 mRad/hr	<1 mR/hr
1st Decon			
Face	3,000 cpm		
Hair (Front)	500 cpm		
Nasal Smear	5,000 cpm	(If irrigated or nose can be blown)	
Mouth Smear	5,000 cpm	(If rinsed)	
Neck Area	500 cpm		
Chest	200 cpm	(If properly protected while doconing face & neck)	

E140-N
Beta & Gamma

2nd Decon

Face	300 cpm
Hair (Front	<100 cpm
Nasal	2,500 cpm
Mouth	2,500 cpm
Neck	<100 cpm
Chest	<100 cpm

3rd Decon

Face	<100 cpm
Hair (Front	<100 cpm
Nasal	1,000 cpm
Mouth	1,000 cpm
Neck	<100 cpm
Chest	<100 cpm

4th Decon (if necessary)

Nasal	200 cpm
Mouth	200 cpm

CIVIL DISTURBANCE (SECURITY)

SCENARIO: (1115 Hrs) Two/three individuals demonstrating against nuclear power lay across the entry doors to the North Gatehouse and prevent plant employees from entering and proceeding to their work location. The demonstrators refuse to move or cooperate with the responding Security Force necessitating State Police assistance.

1300 Leak Outside of Containment

A SCRAM Discharge Volume drain valve, C12-F011A, fails. (The Bonnet is blown off of the valve body.) Reactor water is lost via the CRD, through the SCRAM outlet valves and then through the SCRAM discharge volume. Coolant is discharged into the RHR piping area, I202, at elevation '704. This discharge is eventually ventilated by the Reactor Building HVAC system and discharged offsite.

1300 Control of the Leak Outside Containment

Appropriate Area Radiation Monitors sound to help direct In-plant teams to the source of the leak. Coolant and steam are being discharged at ~200 gallons per minute. RCIC maintains level.

The C12-F011A valve cannot be capped because of the high radiation fields. The only means of terminating the release is to reset the RPS SCRAM thereby closing the 185 SCRAM Outlet valves that are allowing coolant to leak out of C12-F011A. This can only be done after RPS power is restored and the Drywell Pressure SCRAM is cleared or bypassed. It will be difficult to cool the drywell quickly enough to reduce pressure. It may be possible to electrically bypass the SCRAM. One of these methods will be successful sometime after the General Emergency has been declared.

REACTOR COOLANT DATA

1. Incident happens at 8:40 a.m.

2. The Reactor water mixed with the suppression pool at a rate of a complete turnover of Reactor water every 20 minutes.

3. The Halogens all remain in the water.

4. The Nobles all go to gas.

5. The Gas Volume is the wet well and dry well combined - assumed equilibrium is instantaneous.

6. 10% Clad failure.

REACTOR WATER DATA

μCi/cc

	840	850	900	910
IODINE-131	5.4 E2	3.9 E2	2.9 E2	2.2 E2
IODINE-132	6.2 E2	4.3 E2	3 E2	2.1 E2
IODINE-133	1.2 E3	8.6 E2	6.3 E2	4.7 E2
IODINE-134	7.1 E2	4.6 E2	2.9 E2	1.9 E2
IODINE-135	1 E3	7.2 E2	5.2 E2	3.8 E2
CESIUM-137	1.9 E2	1.4 E2	1 E2	7.6 E1

	920	930	940	950
IODINE-131	1.7 E2	1.3 E2	1 E2	8.4 E1
IODINE-132	1.6 E2	1.2 E2	8.7 E1	6.8 E1
IODINE-133	3.5 E2	2.7 E2	2.2 E2	1.8 E2
IODINE-134	1.3 E2	8.8 E1	6.2 E1	4.4 E1
IODINE-135	2.9 E2	2.2 E2	1.7 E2	1.4 E2
CESIUM-137	5.8 E1	4.5 E1	3.6 E1	3 E1

	1000	1010	1020	1030
IODINE-131	7.1 E1	6.2 E1	5.6 E1	5.1 E1
IODINE-132	5.5 E1	4.6 E1	3.9 E1	3.4 E1
IODINE-133	1.5 E2	1.3 E2	1.2 E2	1.1 E2
IODINE-134	3.3 E1	2.5 E1	2 E1	1.6 E1
IODINE-135	1.2 E2	9.9 E1	8.7 E1	7.9 E1
CESIUM-137	2.5 E1	2.2 E1	2 E1	1.8 E1

	1040	1050	1100	1110
IODINE-131	4.8 E1	4.6 E1	4.4 E1	4.3 E1
IODINE-132	3 E1	2.7 E1	2.5 E1	2.3 E1
IODINE-133	9.9 E1	9.4 E1	9 E1	8.7 E1
IODINE-134	1.3 E1	1.1 E1	9.2 E0	7.9 E0
IODINE-135	7.3 E1	6.8 E1	6.4 E1	6.2 E1
CESIUM-137	1.7 E1	1.6 E1	1.6 E1	1.5 E1

	1120	1130	1140	1150
IODINE-131	4.2 E1	4.1 E1	4.1 E1	4.1 E1
IODINE-132	2.2 E1	2 E1	1.9 E1	1.8 E1
IODINE-133	8.5 E1	8.3 E1	8.2 E1	8.1 E1
IODINE-134	6.8 E0	5.8 E0	5.1 E0	4.4 E0
IODINE-135	5.9 E1	5.8 E1	5.6 E1	5.5 E1
CESIUM-137	1.5 E1	1.5 E1	1.4 E1	1.4 E1

	1200	1210	1220	1230
IODINE-131	4 E1	4 E1	4 E1	4 E1
IODINE-132	1.7 E1	1.6 E1	1.5 E1	1.5 E1
IODINE-133	8 E1	7.9 E1	7.9 E1	7.8 E1
IODINE-134	3.8 E0	3.4 E0	2.9 E0	2.6 E0
IODINE-135	5.4 E1	5.2 E1	5.1 E1	5 E1
CESIUM-137	1.4 E1	1.4 E1	1.4 E1	1.4 E1

	1240	1250	1300	1310
IODINE-131	4 E1	4 E1	4 E1	4 E1
IODINE-132	1.4 E1	1.3 E1	1.2 E1	1.2 E1

IODINE-133	7.8 E1	7.7 E1	7.7 E1	7.6 E1
IODINE-134	2.2 E0	2 E0	1.7 E0	1.5 E0
IODINE-135	4.9 E1	4.9 E1	4.8 E1	4.7 E1
CESIUM-137	1.4 E1	1.4 E1	1.4 E1	1.4 E1

	1320	1330	1340	1350
IODINE-131	4 E1	4 E1	4 E1	4 E1
IODINE-132	1.1 E1	1.1 E1	1 E1	9.6 E0
IODINE-133	7.6 E1	7.5 E1	7.5 E1	7.5 E1
IODINE-134	1.3 E0	1.2 E0	1 E0	8.9 E-1
IODINE-135	4.6 E1	4.5 E1	4.4 E1	4.4 E1
CESIUM-137	1.4 E1	1.4 E1	1.4 E1	1.4 E1

	1400	1410	1420	1430
IODINE-131	4 E1	4 E1	4 E1	4 E1
IODINE-132	9.2 E0	8.7 E0	8.3 E0	7.9 E0
IODINE-133	7.4 E1	7.4 E1	7.3 E1	7.3 E1
IODINE-134	7.8 E-1	6.8 E-1	6 E-1	5.2 E-1
IODINE-135	4.3 E1	4.2 E1	4.1 E1	4.1 E1
CESIUM-137	1.4 E1	1.4 E1	1.4 E1	1.4 E1

	1440	1450	1500	1510
IODINE-131	4 E1	3.9 E1	3.9 E1	3.9 E1
IODINE-132	7.5 E0	7.1 E0	6.8 E0	6.4 E0
IODINE-133	7.3 E1	7.2 E1	7.2 E1	7.1 E1
IODINE-134	4.6 E-1	4 E-1	3.5 E-1	3.1 E-1
IODINE-135	4 E1	3.9 E1	3.9 E1	3.8 E1
CESIUM-137	1.4 E1	1.4 E1	1.4 E1	1.4 E1

	1520	1530	1540	1550
IODINE-131	3.9 E1	3.9 E1	3.9 E1	3.9 E1
IODINE-132	6.1 E0	5.8 E0	5.5 E0	5.2 E0
IODINE-133	7.1 E1	7.1 E1	7 E1	7 E1
IODINE-134	2.7 E-1	2.4 E-1	2.1 E-1	1.8 E-1
IODINE-135	3.7 E1	3.7 E1	3.6 E1	3.5 E1
CESIUM-137	1.4 E1	1.4 E1	1.4 E1	1.4 E1

	1600	1610	1620	1630
IODINE-131	3.9 E1	3.9 E1	3.9 E1	3.9 E1
IODINE-132	5 E0	4.7 E0	4.5 E0	4.3 E0
IODINE-133	6.9 E1	6.9 E1	6.9 E1	6.8 E1
IODINE-134	1.6 E-1	1.4 E-1	1.2 E-1	1.1 E-1
IODINE-135	3.5 E1	3.4 E1	3.4 E1	3.3 E1
CESIUM-137	1.4 E1	1.4 E1	1.4 E1	1.4 E1

SUPPRESSION POOL DATA

μCi/cc

	840	850	900	910
IODINE-131	0 E0	1.2 E1	2 E1	2.6 E1
IODINE-132	0 E0	1.3 E1	2.1 E1	2.6 E1
IODINE-133	0 E0	2.6 E1	4.4 E1	5.6 E1
IODINE-134	0 E0	1.4 E1	2 E1	2.3 E1
IODINE-135	0 E0	2.2 E1	3.6 E1	4.6 E1
CESIUM-137	0 E0	4.1 E0	7.1 E0	9.1 E0

	920	930	940	950
IODINE-131	3 E1	3.3 E1	3.5 E1	3.7 E1
IODINE-132	2.8 E1	3 E1	3 E1	3 E1
IODINE-133	6.5 E1	7.1 E1	7.5 E1	7.8 E1
IODINE-134	2.4 E1	2.3 E1	2.1 E1	1.9 E1
IODINE-135	5.2 E1	5.7 E1	5.9 E1	6.1 E1
CESIUM-137	1.1 E1	1.2 E1	1.2 E1	1.3 E1

	1000	1010	1020	1030
IODINE-131	3.8 E1	3.8 E1	3.9 E1	3.9 E1
IODINE-132	2.9 E1	2.8 E1	2.7 E1	2.6 E1
IODINE-133	7.9 E1	8 E1	8.1 E1	8.1 E1
IODINE-134	1.7 E1	1.6 E1	1.4 E1	1.2 E1
IODINE-135	6.1 E1	6.1 E1	6.1 E1	6.1 E1
CESIUM-137	1.3 E1	1.4 E1	1.4 E1	1.4 E1

	1040	1050	1100	1110
IODINE-131	3.9 E1	4 E1	4 E1	4 E1
IODINE-132	2.5 E1	2.4 E1	2.3 E1	2.2 E1
IODINE-133	8.1 E1	8.1 E1	8.1 E1	8.1 E1
IODINE-134	1.1 E1	9.5 E0	8.3 E0	7.3 E0
IODINE-135	6 E1	5.9 E1	5.8 E1	5.7 E1
CESIUM-137	1.4 E1	1.4 E1	1.4 E1	1.4 E1

	1120	1130	1140	1150
IODINE-131	4 E1	4 E1	4 E1	4 E1
IODINE-132	2.1 E1	2 E1	1.9 E1	1.8 E1
IODINE-133	8.1 E1	8 E1	8 E1	8 E1
IODINE-134	6.4 E0	5.6 E0	4.9 E0	4.3 E0
IODINE-135	5.7 E1	5.6 E1	5.5 E1	5.4 E1
CESIUM-137	1.4 E1	1.4 E1	1.4 E1	1.4 E1

	1200	1210	1220	1230
IODINE-131	4 E1	4 E1	4 E1	4 E1
IODINE-132	1.7 E1	1.6 E1	1.5 E1	1.4 E1
IODINE-133	7.9 E1	7.9 E1	7.8 E1	7.8 E1
IODINE-134	3.8 E0	3.3 E0	2.9 E0	2.6 E0
IODINE-135	5.3 E1	5.2 E1	5.1 E1	5 E1
CESIUM-137	1.4 E1	1.4 E1	1.4 E1	1.4 E1

	1240	1250	1300	1310
IODINE-131	4 E1	4 E1	4 E1	4 E1
IODINE-132	1.4 E1	1.3 E1	1.2 E1	1.2 E1

IODINE-133	7.7 E1	7.7 E1	7.7 E1	7.6 E1
IODINE-134	2.2 E0	2 E0	1.7 E0	1.5 E0
IODINE-135	4.9 E1	4.8 E1	4.8 E1	4.7 E1
CESIUM-137	1.4 E1	1.4 E1	1.4 E1	1.4 E1

	1320	1330	1340	1350
IODINE-131	4 E1	4 E1	4 E1	4 E1
IODINE-132	1.1 E1	1.1 E1	1 E1	9.6 E0
IODINE-133	7.6 E1	7.5 E1	7.5 E1	7.5 E1
IODINE-134	1.3 E0	1.2 E0	1 E0	8.9 E-1
IODINE-135	4.6 E1	4.5 E1	4.4 E1	4.4 E1
CESIUM-137	1.4 E1	1.4 E1	1.4 E1	1.4 E1

	1400	1410	1420	1430
IODINE-131	4 E1	4 E1	4 E1	4 E1
IODINE-132	9.2 E0	8.7 E0	8.3 E0	7.9 E0
IODINE-133	7.4 E1	7.4 E1	7.3 E1	7.3 E1
IODINE-134	7.8 E-1	6.8 E-1	6 E-1	5.2 E-1
IODINE-135	4.3 E1	4.2 E1	4.1 E1	4.1 E1
CESIUM-137	1.4 E1	1.4 E1	1.4 E1	1.4 E1

	1440	1450	1500	1510
IODINE-131	4 E1	3.9 E1	3.9 E1	3.9 E1
IODINE-132	7.5 E0	7.1 E0	6.8 E0	6.4 E0
IODINE-133	7.3 E1	7.2 E1	7.2 E1	7.1 E1
IODINE-134	4.6 E-1	4 E-1	3.5 E-1	3.1 E-1
IODINE-135	4 E1	3.9 E1	3.9 E1	3.8 E1
CESIUM-137	1.4 E1	1.4 E1	1.4 E1	1.4 E1

	1520	1530	1540	1550
IODINE-131	3.9 E1	3.9 E1	3.9 E1	3.9 E1
IODINE-132	6.1 E0	5.8 E0	5.5 E0	5.2 E0
IODINE-133	7.1 E1	7.1 E1	7 E1	7 E1
IODINE-134	2.7 E-1	2.4 E-1	2.1 E-1	1.8 E-1
IODINE-135	3.7 E1	3.7 E1	3.6 E1	3.5 E1
CESIUM-137	1.4 E1	1.4 E1	1.4 E1	1.4 E1

	1600	1610	1620	1630
IODINE-131	3.9 E1	3.9 E1	3.9 E1	3.9 E1
IODINE-132	5 E0	4.7 E0	4.5 E0	4.3 E0
IODINE-133	6.9 E1	6.9 E1	6.9 E1	6.8 E1
IODINE-134	1.6 E-1	1.4 E-1	1.2 E-1	1.1 E-1
IODINE-135	3.5 E1	3.4 E1	3.4 E1	3.3 E1
CESIUM-137	1.4 E1	1.4 E1	1.4 E1	1.4 E1

GAS SAMPLE DATA

μCi/cc

	840	850	900	910
KRYPTON-83M	2.4 E0	2.3 E0	2.1 E0	2 E0
KRYPTON-85M	9.2 E0	9 E0	8.8 E0	8.6 E0
KRYPTON-85	3.3 E-1	3.2 E-1	3.2 E-1	3.2 E-1
KRYPTON-87	1.2 E1	1.1 E1	9.8 E0	8.9 E0
KRYPTON-88	2.1 E1	2 E1	1.9 E1	1.9 E1
KRYPTON-89	1.3 E0	1.4 E-1	1.6 E-2	1.9 E-3
XENON-131M	2.3 E-1	2.3 E-1	2.3 E-1	2.3 E-1
XENON-133M	1.1 E0	1.1 E0	1.1 E0	1.1 E0
XENON-133	4.6 E1	4.6 E1	4.6 E1	4.6 E1
XENON-135M	2.1 E0	1.4 E0	8.6 E-1	5.4 E-1
XENON-135	4.1 E1	4.1 E1	4 E1	4 E1
XENON-137	2 E0	3.2 E-1	5.2 E-2	8.5 E-3
XENON-138	8.3 E0	5.1 E0	3.1 E0	1.9 E0

	920	930	940	950
KRYPTON-83M	1.9 E0	1.8 E0	1.7 E0	1.6 E0
KRYPTON-85M	8.3 E0	8.1 E0	7.9 E0	7.7 E0
KRYPTON-85	3.2 E-1	3.2 E-1	3.2 E-1	3.2 E-1
KRYPTON-87	9.2 E0	7.4 E0	6.8 E0	6.2 E0
KRYPTON-88	1.8 E1	1.7 E1	1.6 E1	1.6 E1
KRYPTON-89	2.1 E-4	2.4 E-5	2.8 E-6	3.2 E-7
XENON-131M	2.3 E-1	2.3 E-1	2.3 E-1	2.3 E-1
XENON-133M	1.1 E0	1.1 E0	1.1 E0	1.1 E0
XENON-133	4.6 E1	4.6 E1	4.6 E1	4.6 E1

XENON-135	3.9 E1	3.9 E1	3.8 E1	3.8 E1
XENON-137	1.4 E-3	2.2 E-4	3.6 E-5	5.9 E-6
XENON-138	1.2 E0	7.1 E-1	4.3 E-1	2.7 E-1

	1000	1010	1020	1030
KRYPTON-83M	1.5 E0	1.4 E0	1.3 E0	1.2 E0
KRYPTON-85M	7.5 E0	7.3 E0	7.1 E0	7 E0
KRYPTON-85	3.2 E-1	3.2 E-1	3.2 E-1	3.2 E-1
KRYPTON-87	5.7 E0	5.2 E0	4.7 E0	4.3 E0
KRYPTON-88	1.5 E1	1.5 E1	1.4 E1	1.3 E1
KRYPTON-89	3.6 E-8	4.1 E-9	4.7 E-10	5.4 E-11
XENON-131M	2.3 E-1	2.3 E-1	2.3 E-1	2.3 E-1
XENON-133M	1.1 E0	1.1 E0	1.1 E0	1.1 E0
XENON-133	4.6 E1	4.6 E1	4.6 E1	4.6 E1
XENON-135M	5.6 E-2	3.5 E-2	2.2 E-2	1.4 E-2
XENON-135	3.7 E1	3.7 E1	3.6 E1	3.6 E1
XENON-137	9.5 E-7	1.5 E-7	2.5 E-8	4 E-9
XENON-138	1.6 E-1	10 E-2	6.1 E-2	3.7 E-2.

	1040	1050	1100	1110
KRYPTON-83M	1.1 E0	1.1 E0	10 E-1	9.4 E-1
KRYPTON-85M	6.8 E0	6.6 E0	6.4 E0	6.3 E0
KRYPTON-85	3.2 E-1	3.2 E-1	3.2 E-1	3.2 E-1
KRYPTON-87	3.9 E0	3.6 E0	3.3 E0	3 E0
KRYPTON-88	1.3 E1	1.2 E1	1.2 E1	1.1 E1
KRYPTON-89	6.2 E-12	7 E-13	8 E-14	9.2 E-15
XENON-131M	2.3 E-1	2.3 E-1	2.3 E-1	2.3 E-1
XENON-133M	1.1 E0	1.1 E0	1.1 E0	1.1 E0
XENON-133	4.6 E1	4.6 E1	4.6 E1	4.6 E1

XENON-135	3.5 E1	3.5 E1	3.5 E1	3.4 E1
XENON-137	6.5 E-10	1.1 E-10	1.7 E-11	2.8 E-12
XENON-138	2.3 E-2	1.4 E-2	8.5 E-3	5.2 E-3

	1120	1130	1140	1150
KRYPTON-83M	8.8 E-1	8.3 E-1	7.8 E-1	7.3 E-1
KRYPTON-85M	6.1 E0	6 E0	5.8 E0	5.7 E0
KRYPTON-85	3.2 E-1	3.2 E-1	3.2 E-1	3.2 E-1
KRYPTON-87	2.7 E0	2.5 E0	2.3 E0	2.1 E0
KRYPTON-88	1.1 E1	1.1 E1	1 E1	9.7 E0
KRYPTON-89	1 E-15	1.2 E-16	1.4 E-17	1.6 E-18
XENON-131M	2.3 E-1	2.3 E-1	2.3 E-1	2.3 E-1
XENON-133M	1.1 E0	1.1 E0	1.1 E0	1.1 E0
XENON-133	4.6 E1	4.6 E1	4.6 E1	4.6 E1
XENON-135M	1.4 E-3	9.2 E-4	5.8 E-4	3.7 E-4
XENON-135	3.4 E1	3.3 E1	3.3 E1	3.2 E1
XENON-137	4.5 E-13	7.3 E-14	1.2 E-14	1.9 E-15
XENON-138	3.2 E-3	2 E-3	1.2 E-3	7.3 E-4

	1200	1210	1220	1230
KRYPTON-83M	6.8 E-1	6.4 E-1	6 E-1	5.7 E-1
KRYPTON-85M	5.5 E0	5.4 E0	5.2 E0	5.1 E0
KRYPTON-85	3.2 E-1	3.2 E-1	3.2 E-1	3.2 E-1
KRYPTON-87	1.9 E0	1.7 E0	1.6 E0	1.4 E0
KRYPTON-88	9.3 E0	8.9 E0	8.6 E0	8.2 E0
KRYPTON-89	1.8 E-19	2 E-20	2.3 E-21	2.6 E-22
XENON-131M	2.3 E-1	2.3 E-1	2.3 E-1	2.3 E-1
XENON-133M	1.1 E0	1.1 E0	1.1 E0	1.1 E0
XENON-133	4.6 E1	4.6 E1	4.6 E1	4.5 E1

XENON-135	3.2 E1	3.2 E1	3.1 E1	3.1 E1
XENON-137	3.1 E-16	5 E-17	8.1 E-18	1.3 E-18
XENON-138	4.5 E-4	2.7 E-4	1.7 E-4	1 E-4

	1240	1250	1300	1310
KRYPTON-83M	5.3 E-1	5 E-1	4.7 E-1	4.4 E-1
KRYPTON-85M	5 E0	4.8 E0	4.7 E0	4.6 E0
KRYPTON-85	3.2 E-1	3.2 E-1	3.2 E-1	3.2 E-1
KRYPTON-87	1.3 E0	1.2 E0	1.1 E0	1 E0
KRYPTON-88	7.9 E0	7.6 E0	7.3 E0	7 E0
KRYPTON-89	3 E-23	3.4 E-24	3.9 E-25	4.5 E-26
XENON-131M	2.3 E-1	2.3 E-1	2.3 E-1	2.3 E-1
XENON-133M	1.1 E0	1.1 E0	1.1 E0	1.1 E0
XENON-133	4.5 E1	4.5 E1	4.5 E1	4.5 E1
XENON-135M	3.8 E-5	2.4 E-5	1.5 E-5	9.6 E-6
XENON-135	3 E1	3 E1	3 E1	2.9 E1
XENON-137	2.1 E-19	3.5 E-20	5.6 E-21	9.1 E-22
XENON-138	6.3 E-5	3.9 E-5	2.4 E-5	1.4 E-5

	1320	1330	1340	1350
KRYPTON-83M	4.1 E-1	3.9 E-1	3.6 E-1	3.4 E-1
KRYPTON-85M	4.5 E0	4.4 E0	4.3 E0	4.2 E0
KRYPTON-85	3.2 E-1	3.2 E-1	3.2 E-1	3.2 E-1
KRYPTON-87	9.1 E-1	8.3 E-1	7.6 E-1	7 E-1
KRYPTON-88	6.7 E0	6.5 E0	6.2 E0	6 E0
KRYPTON-89	5.1 E-27	5.9 E-28	6.7 E-29	7.6 E-30
XENON-131M	2.3 E-1	2.3 E-1	2.3 E-1	2.3 E-1
XENON-133M	1 E0	1 E0	1 E0	1 E0
XENON-133	4.5 E1	4.5 E1	4.5 E1	4.5 E1

XENON-135	2.9 E1	2.9 E1	2.8 E1	2.8 E1
XENON-137	1.5 E-22	2.4 E-23	3.9 E-24	6.3 E-25
XENON-138	8.8 E-6	5.4 E-6	3.3 E-6	2 E-6

	1400	1410	1420	1430
KRYPTON-83M	3.2 E-1	3 E-1	2.8 E-1	2.7 E-1
KRYPTON-85M	4 E0	3.9 E0	3.8 E0	3.7 E0
KRYPTON-85	3.2 E-1	3.2 E-1	3.2 E-1	3.2 E-1
KRYPTON-87	6.3 E-1	5.8 E-1	5.3 E-1	4.8 E-1
KRYPTON-88	5.7 E0	5.5 E0	5.3 E0	5.1 E0
KRYPTON-89	8.7 E-31	10 E-32	1.1 E-32	1.3 E-33
XENON-131M	2.3 E-1	2.3 E-1	2.3 E-1	2.3 E-1
XENON-133M	1 E0	1 E0	1 E0	1 E0
XENON-133	4.5 E1	4.5 E1	4.5 E1	4.5 E1
XENON-135M	9.8 E-7	6.2 E-7	3.9 E-7	2.5 E-7
XENON-135	2.7 E1	2.7 E1	2.7 E1	2.6 E1
XENON-137	1 E-25	1.6 E-26	2.7 E-27	4.3 E-28
XENON-138	1.2 E-6	7.6 E-7	4.6 E-7	2.8 E-7

	1440	1450	1500	1510
KRYPTON-83M	2.5 E-1	2.3 E-1	2.2 E-1	2.1 E-1
KRYPTON-85M	3.6 E0	3.6 E0	3.5 E0	3.4 E0
KRYPTON-85	3.2 E-1	3.2 E-1	3.2 E-1	3.2 E-1
KRYPTON-87	4.4 E-1	4 E-1	3.7 E-1	3.4 E-1
KRYPTON-88	4.9 E0	4.7 E0	4.5 E0	4.3 E0
KRYPTON-89	1.5 E-34	1.7 E-35	1.9 E-36	2.2 E-37
XENON-131M	2.3 E-1	2.3 E-1	2.3 E-1	2.3 E-1
XENON-133M	1 E0	1 E0	1 E0	1 E0
XENON-133	4.5 E1	4.5 E1	4.5 E1	4.5 E1

XENON-135	2.6 E1	2.6 E1	2.5 E1	2.5 E1
XENON-137	7 E-29	1.1 E-29	1.8 E-30	3 E-31
XENON-138	1.7 E-7	1.1 E-7	6.5 E-8	4 E-8

	1520	1530	1540	1550
KRYPTON-83M	1.9 E-1	1.8 E-1	1.7 E-1	1.6 E-1
KRYPTON-85M	3.3 E0	3.2 E0	3.1 E0	3 E0
KRYPTON-85	3.2 E-1	3.2 E-1	3.2 E-1	3.2 E-1
KRYPTON-87	3.1 E-1	2.8 E-1	2.5 E-1	2.3 E-1
KRYPTON-88	4.2 E0	4 E0	3.8 E0	3.7 E0
KRYPTON-89	2.5 E-38	0 E0	0 E0	0 E0
XENON-131M	2.3 E-1	2.3 E-1	2.3 E-1	2.3 E-1
XENON-133M	1 E0	1 E0	1 E0	1 E0
XENON-133	4.5 E1	4.5 E1	4.5 E1	4.5 E1
XENON-135M	2.6 E-8	1.6 E-8	1 E-8	6.5 E-9
XENON-135	2.5 E1	2.5 E1	2.4 E1	2.4 E1
XENON-137	4.8 E-32	7.8 E-33	1.3 E-33	2.1 E-34
XENON-138	2.4 E-8	1.5 E-8	9.1 E-9	5.6 E-9

	1600	1610	1620	1630
KRYPTON-83M	1.5 E-1	1.4 E-1	1.3 E-1	1.2 E-1
KRYPTON-85M	3 E0	2.9 E0	2.8 E0	2.7 E0
KRYPTON-85	3.2 E-1	3.2 E-1	3.2 E-1	3.2 E-1
KRYPTON-87	2.1 E-1	1.9 E-1	1.8 E-1	1.6 E-1
KRYPTON-88	3.5 E0	3.4 E0	3.3 E0	3.1 E0
KRYPTON-89	0 E0	0 E0	0 E0	0 E0
XENON-131M	2.3 E-1	2.3 E-1	2.3 E-1	2.3 E-1
XENON-133M	1 E0	1 E0	1 E0	1 E0
XENON-133	4.5 E1	4.5 E1	4.5 E1	4.4 E1

XENON-135M	4.1 E-9	2.6 E-9	1.7 E-9	1.1 E-9
XENON-135	2.4 E1	2.3 E1	2.3 E1	2.3 E1
XENON-137	3.3 E-35	5.4 E-36	8.7 E-37	1.4 E-37
XENON-138	3.4 E-9	2.1 E-9	1.3 E-9	7.9 E-10

]

PLANT DATA

First leak starts at 0900 in Sump Room and lasts 120 minutes.

Second leak starts at 1300 in CRD Room and lasts 210 minutes.

TYPE OF ACCIDENT	RELEASE WITH FUEL DAMAGE
TIME REACTOR SHUTDOWN AT	840
TIME RELEASE STARTS	900
DURATION OF RELEASE	120 MINUTES
VOLUME OF COMPARTMENT A	3.5 E8 CC
VENTILATION RATE OF COMP. A	5.7 E7 CC/MINUTE
VOLUME OF COMPARTMENT B	10 E10 CC
VENTILATION RATE OF COMP. B	2.8 E8 CC/MINUTE
IODINE-131 SOURCE RELEASE	8 E2 UCI/MINUTE
NOBLE GAS SOURCE RELEASE	1.6 E3 UCI/MINUTE

1st release

Rate of leak: 1 gallon per minute

↳ Conc of this water is

40 u Ci/cc of I-131

.4 u Ci/u of Nobles.

↳ Assume .5% of Iodine goes airborne

100% of Nobles go airbo

TYPE OF ACCIDENT	RELEASE WITH FUEL DAMAGE
THE REACTOR SHUTDOWN AT	840
TIME RELEASE STARTS	1300
DURATION OF RELEASE	210 MINUTES
VOLUME OF COMPARTMENT A	2.8 E9 CC
VENTILATION RATE OF COMP. A	5.7 E8 CC/MINUTE
VOLUME OF COMPARTMENT B	10 E10 CC
VENTILATION RATE OF COMP. B	2.8 E8 CC/MINUTE
IODINE-131 SOURCE RELEASE	1.3 E8 UCI/MINUTE
NOBLE GAS SOURCE RELEASE	5.2 E7 UCI/MINUTE

2nd Release

Rate: 330 GPM (210 minutes)

Conc: 100 uCi/cc of I-131

40 uCi/cc of Nobles

Release: 100% Iodine

100% Noble

CRD

CONCENTRATION IN BUILDING

TIME	IODINE-131 UCI/CC	NOBLES UCI/CC	WHOLE BODY MREM/HR
900	0 E0	0 E0	0 E0
910	4 E-8	8 E-8	3.7 E-1
920	1.1 E-7	2.2 E-7	9.6 E-1
930	1.8 E-7	3.7 E-7	1.5 E0
940	2.6 E-7	5.1 E-7	2.1 E0
950	3.3 E-7	6.5 E-7	2.5 E0
1000	4 E-7	7.9 E-7	2.9 E0
1010	4.6 E-7	9.2 E-7	3.3 E0
1020	5.3 E-7	1.1 E-6	3.6 E0
1030	5.9 E-7	1.2 E-6	3.9 E0
1040	6.5 E-7	1.3 E-6	4.2 E0
1050	7.2 E-7	1.4 E-6	4.5 E0
1100	7.7 E-7	1.5 E-6	4.7 E0
1110	8 E-7	1.6 E-6	4.7 E0
1120	7.9 E-7	1.6 E-6	4.5 E0
1130	7.8 E-7	1.6 E-6	4.4 E0
1140	7.7 E-7	1.5 E-6	4.2 E0
1150	7.6 E-7	1.5 E-6	4 E0
1200	7.5 E-7	1.5 E-6	3.9 E0
1210	7.4 E-7	1.5 E-6	3.8 E0
1220	7.4 E-7	1.5 E-6	3.6 E0
1230	7.3 E-7	1.5 E-6	3.5 E0
1240	7.2 E-7	1.4 E-6	3.4 E0
1250	7.1 E-7	1.4 E-6	3.3 E0
1300	7 E-7	1.4 E-6	3.2 E0
1310	2 E-1	7.9 E-2	7.8 E5
1320	2.0 E-1	9 E-2	8.6 E5
1330	2.0 E-1	9.1 E-2	8.6 E5
1340	2.0 E-1	9.1 E-2	8.4 E5
1350	2.0 E-1	9.1 E-2	8.3 E5
1400	2.0 E-1	9.1 E-2	8.1 E5
1410	2.0 E-1	9.1 E-2	8 E5
1420	2.0 E-1	9.1 E-2	7.8 E5
1430	2.0 E-1	9.1 E-2	7.7 E5
1440	2.0 E-1	9.1 E-2	7.6 E5
1450	2.0 E-1	9.1 E-2	7.5 E5
1500	2.0 E-1	9.1 E-2	7.3 E5
1510	2.0 E-1	9.1 E-2	7.2 E5
1520	2.0 E-1	9.1 E-2	7.1 E5
1530	2.0 E-1	9.1 E-2	7 E5
1540	2.0 E-1	9.1 E-2	6.9 E5
1550	2.0 E-1	9.1 E-2	6.8 E5
1600	2.0 E-1	9.1 E-2	6.7 E5
1610	2.0 E-1	9.1 E-2	6.6 E5
1620	2.0 E-1	9.1 E-2	6.5 E5
1630	2.0 E-1	9.1 E-2	6.4 E5
1640	2 E-1	8.1 E-2	5.6 E5
1650	2 E-1	8 E-2	5.5 E5
1700	2 E-1	8 E-2	5.4 E5
1710	2 E-1	7.9 E-2	5.2 E5
1720	1.9 E-1	7.8 E-2	5.1 E5
1730	1.9 E-1	7.7 E-2	5 E5

Sump Room

CONCENTRATION IN BUILDING

TIME	IODINE-131 UCI/CC	NOBLES UCI/CC	WHOLE BODY MREM/HR
900	0 E0	0 E0	0 E0
910	1.1 E-5	2.3 E-5	1 E2
920	1.3 E-5	2.7 E-5	1.2 E2
930	1.4 E-5	2.8 E-5	1.2 E2
940	1.4 E-5	2.8 E-5	1.1 E2
950	1.4 E-5	2.8 E-5	1.1 E2
1000	1.4 E-5	2.8 E-5	1 E2
1010	1.4 E-5	2.9 E-5	1 E2
1020	1.4 E-5	2.8 E-5	9.7 E1
1030	1.4 E-5	2.8 E-5	9.3 E1
1040	1.4 E-5	2.8 E-5	9 E1
1050	1.4 E-5	2.8 E-5	8.8 E1
1100	1.4 E-5	2.8 E-5	8.5 E1
1110	2.8 E-6	5.5 E-6	1.6 E1
1120	7.9 E-7	1.6 E-6	4.5 E0
1130	7.8 E-7	1.6 E-6	4.4 E0
1140	7.7 E-7	1.5 E-6	4.2 E0
1150	7.6 E-7	1.5 E-6	4 E0
1200	7.5 E-7	1.5 E-6	3.9 E0
1210	7.4 E-7	1.5 E-6	3.8 E0
1220	7.4 E-7	1.5 E-6	3.6 E0
1230	7.3 E-7	1.5 E-6	3.5 E0
1240	7.2 E-7	1.4 E-6	3.4 E0
1250	7.1 E-7	1.4 E-6	3.3 E0
1300	7 E-7	1.4 E-6	3.2 E0
1310	7.3 E-3	2.9 E-3	2.9 E4
1320	1.9 E-2	7.7 E-3	7.4 E4
1330	3.1 E-2	1.3 E-2	1.2 E5
1340	4.3 E-2	1.7 E-2	1.6 E5
1350	5.5 E-2	2.2 E-2	2 E5
1400	6.6 E-2	2.6 E-2	2.3 E5
1410	7.7 E-2	3.1 E-2	2.7 E5
1420	8.7 E-2	3.5 E-2	3 E5
1430	9.8 E-2	3.9 E-2	3.3 E5
1440	1.1 E-1	4.3 E-2	3.6 E5
1450	1.2 E-1	4.7 E-2	3.9 E5
1500	1.3 E-1	5.1 E-2	4.1 E5
1510	1.4 E-1	5.5 E-2	4.3 E5
1520	1.5 E-1	5.8 E-2	4.5 E5
1530	1.5 E-1	6.2 E-2	4.7 E5
1540	1.6 E-1	6.5 E-2	4.9 E5
1550	1.7 E-1	6.8 E-2	5.1 E5
1600	1.8 E-1	7.2 E-2	5.2 E5
1610	1.9 E-1	7.5 E-2	5.4 E5
1620	1.9 E-1	7.8 E-2	5.5 E5
1630	2 E-1	8.1 E-2	5.7 E5
1640	2 E-1	8.1 E-2	5.6 E5
1650	2 E-1	8 E-2	5.5 E5
1700	2 E-1	8 E-2	5.4 E5
1710	2 E-1	7.9 E-2	5.2 E5
1720	1.9 E-1	7.8 E-2	5.1 E5
1730	1.9 E-1	7.7 E-2	5 E5

MAIN

CONCENTRATION IN BUILDING

TIME	IODINE-131 UCI/CC	NOBLES UCI/CC	WHOLE BODY MREM/HR
900	0 E0	0 E0	0 E0
910	4 E-8	8 E-8	3.7 E-1
920	1.1 E-7	2.2 E-7	9.6 E-1
930	1.8 E-7	3.7 E-7	1.5 E0
940	2.6 E-7	5.1 E-7	2.1 E0
950	3.3 E-7	6.5 E-7	2.5 E0
1000	4 E-7	7.9 E-7	2.9 E0
1010	4.6 E-7	9.3 E-7	3.3 E0
1020	5.3 E-7	1.1 E-6	3.6 E0
1030	5.9 E-7	1.2 E-6	3.9 E0
1040	6.5 E-7	1.3 E-6	4.2 E0
1050	7.2 E-7	1.4 E-6	4.5 E0
1100	7.7 E-7	1.5 E-6	4.7 E0
1110	8 E-7	1.6 E-6	4.7 E0
1120	7.9 E-7	1.6 E-6	4.5 E0
1130	7.8 E-7	1.6 E-6	4.4 E0
1140	7.7 E-7	1.5 E-6	4.2 E0
1150	7.6 E-7	1.5 E-6	4 E0
1200	7.5 E-7	1.5 E-6	3.9 E0
1210	7.4 E-7	1.5 E-6	3.8 E0
1220	7.4 E-7	1.5 E-6	3.6 E0
1230	7.3 E-7	1.5 E-6	3.5 E0
1240	7.2 E-7	1.4 E-6	3.4 E0
1250	7.1 E-7	1.4 E-6	3.3 E0
1300	7 E-7	1.4 E-6	3.2 E0
1310	7.3 E-3	2.9 E-3	2.9 E4
1320	1.9 E-2	7.7 E-3	7.4 E4
1330	3.1 E-2	1.3 E-2	1.2 E5
1340	4.3 E-2	1.7 E-2	1.6 E5
1350	5.5 E-2	2.2 E-2	2 E5
1400	6.6 E-2	2.6 E-2	2.3 E5
1410	7.7 E-2	3.1 E-2	2.7 E5
1420	8.7 E-2	3.5 E-2	3 E5
1430	9.8 E-2	3.9 E-2	3.3 E5
1440	1.1 E-1	4.3 E-2	3.6 E5
1450	1.2 E-1	4.7 E-2	3.8 E5
1500	1.3 E-1	5.1 E-2	4.1 E5
1510	1.4 E-1	5.5 E-2	4.3 E5
1520	1.5 E-1	5.8 E-2	4.5 E5
1530	1.5 E-1	6.2 E-2	4.7 E5
1540	1.6 E-1	6.5 E-2	4.9 E5
1550	1.7 E-1	6.8 E-2	5.1 E5
1600	1.8 E-1	7.2 E-2	5.3 E5
1610	1.9 E-1	7.5 E-2	5.4 E5
1620	1.9 E-1	7.8 E-2	5.5 E5
1630	2 E-1	8.1 E-2	5.7 E5
1640	2 E-1	8.1 E-2	5.6 E5
1650	2 E-1	8 E-2	5.5 E5
1700	2 E-1	8 E-2	5.4 E5
1710	2 E-1	7.9 E-2	5.2 E5
1720	1.9 E-1	7.8 E-2	5.1 E5
1730	1.9 E-1	7.7 E-2	5 E5

OFFSITE DATA

Weather

A. 0840 to 1515
D stability
3 mph wind from the Northeast

B. 1515 (Enter stable high front)
G stability
1 mph wind from the North

Actual Sping Data

RELEASE DATA

TIME	IODINE UCI/MIN	NOBLES UCI/MIN
900	0 E0	0 E0
910	1.1 E-2	2.2 E1
920	3.1 E-2	6.1 E1
930	5.1 E-2	10 E1
940	7.2 E-2	1.4 E2
950	9.2 E-2	1.8 E2
1000	1.1 E-1	2.2 E2
1010	1.3 E-1	2.6 E2
1020	1.5 E-1	3 E2
1030	1.7 E-1	3.3 E2
1040	1.8 E-1	3.7 E2
1050	2 E-1	4 E2
1100	2.2 E-1	4.3 E2
1110	2.2 E-1	4.5 E2
1120	2.2 E-1	4.4 E2
1130	2.2 E-1	4.4 E2
1140	2.2 E-1	4.3 E2
1150	2.1 E-1	4.3 E2
1200	2.1 E-1	4.2 E2
1210	2.1 E-1	4.2 E2
1220	2.1 E-1	4.1 E2
1230	2 E-1	4.1 E2
1240	2 E-1	4 E2
1250	2 E-1	4 E2
1300	2 E-1	3.9 E2
1310	2.1 E3	8.2 E5
1320	5.4 E3	2.1 E6
1330	8.8 E3	3.5 E6
1340	1.2 E4	4.8 E6
1350	1.5 E4	6.1 E6
1400	1.8 E4	7.4 E6
1410	2.2 E4	8.6 E6
1420	2.4 E4	9.8 E6
1430	2.7 E4	1.1 E7
1440	3 E4	1.2 E7
1450	3.3 E4	1.3 E7
1500	3.6 E4	1.4 E7
1510	3.8 E4	1.5 E7
1520	4.1 E4	1.6 E7
1530	4.3 E4	1.7 E7
1540	4.6 E4	1.8 E7
1550	4.8 E4	1.9 E7
1600	5 E4	2 E7
1610	5.2 E4	2.1 E7
1620	5.4 E4	2.2 E7
1630	5.6 E4	2.3 E7
1640	5.7 E4	2.3 E7
1650	5.6 E4	2.3 E7
1700	5.6 E4	2.2 E7
1710	5.5 E4	2.2 E7
1720	5.4 E4	2.2 E7
1730	5.4 E4	2.1 E7

2nd accident →

Wind Change →

TYPE OF ACCIDENT	RELEASE WITH FUEL DAMAGE
THE REACTOR SHUTDOWN AT	840
THE AFFECTED SECTOR	SW
WIND FROM SECTOR	NE
WIND FROM DIRECTION	45 DEGREES
WIND SPEED	3 MPH
STABILITY CLASS	D
PRECIPITATION RATE	0 INCHES/HR

For each Centerline value the first number is the mRem/hr at that distance of the

The second number is the net counts from the Ludlum ~~ARA~~ count assuming a ~~5 minute~~ 20 Cu. ft. air sample ~~of~~. 5 min count - background

It is therefore a Count/5 min value to be used for calculation of I-131.

Multiplication values to be used for off-center of a D-stability

CENTER MILES	0.1 MILES	0.25 MILES	0.5 MILES	1.0 MILES
.33	8.6 E-4	7.2 E-20	0 E0	0 E0
.429	1.2 E-2	1.2 E-12	0 E0	0 E0
1	3.9 E-1	2.6 E-3	4.6 E-11	0 E0
1.5	6.3 E-1	5.7 E-2	1.1 E-5	1.3 E-20
2	7.6 E-1	1.8 E-1	1.1 E-3	1.5 E-12
2.5	8.3 E-1	3.2 E-1	1.1 E-2	1.3 E-8
3	8.8 E-1	4.4 E-1	3.8 E-2	2.1 E-6
3.5	9.1 E-1	5.4 E-1	8.4 E-2	5 E-5
4	9.3 E-1	6.1 E-1	1.4 E-1	4.2 E-4
4.5	9.4 E-1	6.7 E-1	2.1 E-1	1.8 E-3
5	9.5 E-1	7.2 E-1	2.7 E-1	5.5 E-3
6	9.6 E-1	7.9 E-1	3.9 E-1	2.4 E-2
7	9.7 E-1	8.4 E-1	4.9 E-1	5.9 E-2
9	9.8 E-1	8.7 E-1	5.7 E-1	1.1 E-1
9	9.8 E-1	8.9 E-1	6.4 E-1	1.7 E-1
10	9.9 E-1	9.1 E-1	6.9 E-1	2.3 E-1

DISTANCE	TIME			
(MILES)	900	910	920	930
.33	0	0	0	0
	0	0	0	0
.429	0	0	0	0
	0	0	0	0
1	0	0	0	0
	0	0	0	0
1.5	0	0	0	0
	0	0	0	0
2	0	0	0	0
	0	0	0	0
2.5	0	0	0	0
	0	0	0	0
3	0	0	0	0
	0	0	0	0
3.5	0	0	0	0
	0	0	0	0
4	0	0	0	0
	0	0	0	0
4.5	0	0	0	0
	0	0	0	0
5	0	0	0	0
	0	0	0	0
6	0	0	0	0
	0	0	0	0
7	0	0	0	0
	0	0	0	0
8	0	0	0	0
	0	0	0	0
9	0	0	0	0
	0	0	0	0
10	0	0	0	0
	0	0	0	0

DISTANCE	TIME			
(MILES)	940	950	1000	1010
.33	0	0	0	0
	0	0	0	0
.429	0	0	0	0
	0	0	0	0
1	0	0	0	0
	0	0	0	0
1.5	0	0	0	0
	0	0	0	0
2	0	0	0	0
	0	0	0	0
2.5	0	0	0	0
	0	0	0	0
3	0	0	0	0
	0	0	0	0
3.5	0	0	0	0
	0	0	0	0
4	0	0	0	0
	0	0	0	0
4.5	0	0	0	0
	0	0	0	0
5	0	0	0	0
	0	0	0	0
6	0	0	0	0
	0	0	0	0
7	0	0	0	0
	0	0	0	0
8	0	0	0	0
	0	0	0	0
9	0	0	0	0
	0	0	0	0
10	0	0	0	0
	0	0	0	0

DISTANCE	TIME			
(MILES)	1020	1030	1040	1050
.33	0	0	0	0
	0	0	0	0
.429	0	0	0	0
	0	0	0	0
1	0	0	0	0
	0	0	0	0
1.5	0	0	0	0
	0	0	0	0
2	0	0	0	0
	0	0	0	0
2.5	0	0	0	0
	0	0	0	0
3	0	0	0	0
	0	0	0	0
3.5	0	0	0	0
	0	0	0	0
4	0	0	0	0
	0	0	0	0
4.5	0	0	0	0
	0	0	0	0
5	0	0	0	0
	0	0	0	0
6	0	0	0	0
	0	0	0	0
7	0	0	0	0
	0	0	0	0
8	0	0	0	0
	0	0	0	0
9	0	0	0	0
	0	0	0	0
10	0	0	0	0
	0	0	0	0

DISTANCE	TIME			
(MILES)	1100	1110	1120	1130
.33	0	0	0	0
	0	0	0	0
.429	0	0	0	0
	0	0	0	0
1	0	0	0	0
	0	0	0	0
1.5	0	0	0	0
	0	0	0	0
2	0	0	0	0
	0	0	0	0
2.5	0	0	0	0
	0	0	0	0
3	0	0	0	0
	0	0	0	0
3.5	0	0	0	0
	0	0	0	0
4	0	0	0	0
	0	0	0	0
4.5	0	0	0	0
	0	0	0	0
5	0	0	0	0
	0	0	0	0
6	0	0	0	0
	0	0	0	0
7	0	0	0	0
	0	0	0	0
8	0	0	0	0
	0	0	0	0
9	0	0	0	0
	0	0	0	0
10	0	0	0	0
	0	0	0	0

DISTANCE	TIME			
(MILES)	1140	1150	1200	1210
.33	0	0	0	0
	0	0	0	0
.429	0	0	0	0
	0	0	0	0
1	0	0	0	0
	0	0	0	0
1.5	0	0	0	0
	0	0	0	0
2	0	0	0	0
	0	0	0	0
2.5	0	0	0	0
	0	0	0	0
3	0	0	0	0
	0	0	0	0
3.5	0	0	0	0
	0	0	0	0
4	0	0	0	0
	0	0	0	0
4.5	0	0	0	0
	0	0	0	0
5	0	0	0	0
	0	0	0	0
6	0	0	0	0
	0	0	0	0
7	0	0	0	0
	0	0	0	0
8	0	0	0	0
	0	0	0	0
9	0	0	0	0
	0	0	0	0
10	0	0	0	0
	0	0	0	0

DISTANCE (MILES)	TIME 1220	1230	1240	1250
.33	0	0	0	0
	0	0	0	0
.429	0	0	0	0
	0	0	0	0
1	0	0	0	0
	0	0	0	0
1.5	0	0	0	0
	0	0	0	0
2	0	0	0	0
	0	0	0	0
2.5	0	0	0	0
	0	0	0	0
3	0	0	0	0
	0	0	0	0
3.5	0	0	0	0
	0	0	0	0
4	0	0	0	0
	0	0	0	0
4.5	0	0	0	0
	0	0	0	0
5	0	0	0	0
	0	0	0	0
6	0	0	0	0
	0	0	0	0
7	0	0	0	0
	0	0	0	0
8	0	0	0	0
	0	0	0	0
9	0	0	0	0
	0	0	0	0
10	0	0	0	0
	0	0	0	0

DISTANCE (MILES)	1300	TIME 1310	1320	1330
.33	0	0	0	.4
	0	0	0	550.3
.429	0	0	0	.3
	0	0	0	401.1
1	0	0	0	0
	0	0	0	0
1.5	0	0	0	0
	0	0	0	0
2	0	0	0	0
	0	0	0	0
2.5	0	0	0	0
	0	0	0	0
3	0	0	0	0
	0	0	0	0
3.5	0	0	0	0
	0	0	0	0
4	0	0	0	0
	0	0	0	0
4.5	0	0	0	0
	0	0	0	0
5	0	0	0	0
	0	0	0	0
6	0	0	0	0
	0	0	0	0
7	0	0	0	0
	0	0	0	0
8	0	0	0	0
	0	0	0	0
9	0	0	0	0
	0	0	0	0
10	0	0	0	0
	0	0	0	0

DISTANCE	TIME			
(MILES)	1320	1330	1340	1350
.33	.9	2.2	3.6	4.8
	1185.3	3048	4967.1	6773.3
.429	.6	1.6	2.6	3.5
	864	2221.7	3620.6	4937.2
1	0	.2	.5	.8
	0	265.2	681.9	1111.2
1.5	0	0	.1	.3
	0	0	146.3	376.3
2	0	0	0	0
	0	0	0	95.7
2.5	0	0	0	0
	0	0	0	0
3	0	0	0	0
	0	0	0	0
3.5	0	0	0	0
	0	0	0	0
4	0	0	0	0
	0	0	0	0
4.5	0	0	0	0
	0	0	0	0
5	0	0	0	0
	0	0	0	0
6	0	0	0	0
	0	0	0	0
7	0	0	0	0
	0	0	0	0
8	0	0	0	0
	0	0	0	0
9	0	0	0	0
	0	0	0	0
10	0	0	0	0
	0	0	0	0

DISTANCE (MILES)	TIME 1400	1410	1420	1430
.33	6.1 8466.7	7.2 10160	8.3 12417.8	9.3 13546.7
.429	4.4 6171.5	5.3 7405.8	6 9051.6	6.8 9874.4
1	1 1515.3	1.3 1894.1	1.6 2272.9	1.8 2778
1.5	.4 613.2	.6 836.1	.7 1045.2	.8 1254.2
2	.2 246.1	.3 401.1	.4 546.9	.5 683.6
2.5	0 68.8	.1 177	.2 288.5	.3 393.4
3	0 0	0 52.6	0 135.3	.1 220.5
3.5	0 0	0 0	0 41.9	0 107.3
4	0 0	0 0	0 0	0 34.4
4.5	0 0	0 0	0 0	0 0
5	0 0	0 0	0 0	0 0
6	0 0	0 0	0 0	0 0
7	0 0	0 0	0 0	0 0
8	0 0	0 0	0 0	0 0
9	0 0	0 0	0 0	0 0
10	0 0	0 0	0 0	0 0

DISTANCE	TIME			
(MILES)	1440	1450	1500	1510
.33	10.3 15240	11.1 16933.3	11.9 18626.7	12.6 20320
.429	7.5 11108.7	8.1 12343	8.6 13577.3	9.2 14811.6
1	2 3030.5	2.2 3409.3	2.4 3788.1	2.6 4166.9
1.5	1 1532.9	1.1 1672.3	1.2 1881.8	1.3 2090.3
2	.5 820.4	.6 1002.7	.7 1093.6	.8 1230.5
2.5	.3 491.7	.4 590.1	.4 721.2	.5 786.8
3	.2 300.6	.2 375.8	.3 451	.3 551.2
3.5	.1 175.7	.1 239.6	.2 299.5	.2 359.4
4	0 88.6	0 144.4	.1 176.9	.1 246.1
4.5	0 29	0 74.5	0 121.4	0 165.6
5	0 0	0 24.8	0 43.8	0 104
6	0 0	0 0	0 0	0 19
7	0 0	0 0	0 0	0 0
8	0 0	0 0	0 0	0 0
9	0 0	0 0	0 0	0 0
10	0 0	0 0	0 0	0 0

TYPE OF ACCIDENT	RELEASE WITH FUEL DAMAGE
THE REACTOR SHUTDOWN AT	840
THE AFFECTED SECTOR	S
WIND FROM SECTOR	N
WIND FROM DIRECTION	0 DEGREES
WIND SPEED	1 MPH
STABILITY CLASS	G
PRECIPITATION RATE	0 INCHES/HR

Wind Change to 1

Stability Change to G

at 1515

Multiplication Values for
off-center of G Stabilizer

CENTER MILES	0.1 MILES	0.25 MILES	0.5 MILES	1.0 MILES
.25	0 E0	0 E0	0 E0	0 E0
.341	5.9 E-26	0 E0	0 E0	0 E0
1	2.4 E-4	2.6 E-23	0 E0	0 E0
1.5	1.8 E-2	1.4 E-11	0 E0	0 E0
2	9.3 E-2	3.5 E-7	1.5 E-26	0 E0
2.5	2 E-1	4.8 E-5	5.4 E-18	0 E0
3	3.2 E-1	7.8 E-4	3.8 E-13	0 E0
3.5	4.2 E-1	4.5 E-3	4 E-10	0 E0
4	5.1 E-1	1.4 E-2	4.1 E-8	2.8 E-30
4.5	5.8 E-1	3.2 E-2	1.1 E-6	1.3 E-24
5	6.3 E-1	5.8 E-2	1.2 E-5	1.8 E-20
6	7.2 E-1	1.3 E-1	2.8 E-4	6.2 E-15
7	7.8 E-1	2.1 E-1	2 E-3	1.8 E-11
8	8.2 E-1	3 E-1	7.7 E-3	3.6 E-9
9	8.5 E-1	3.7 E-1	2 E-2	1.5 E-7
10	8.8 E-1	4.4 E-1	3.9 E-2	2.3 E-6

DISTANCE (MILES)	TIME 1520	1530	1540	1550
.25	0	0	112.1	117.5
	0	0	187798.6	196959.5
.341	0	0	0	103.5
	0	0	0	175422.8
1	0	0	0	0
	0	0	0	0
1.5	0	0	0	0
	0	0	0	0
2	0	0	0	0
	0	0	0	0
2.5	0	0	0	0
	0	0	0	0
3	0	0	0	0
	0	0	0	0
3.5	0	0	0	0
	0	0	0	0
4	0	0	0	0
	0	0	0	0
4.5	0	0	0	0
	0	0	0	0
5	0	0	0	0
	0	0	0	0
6	0	0	0	0
	0	0	0	0
7	4.9	0	0	0
	16424.9	0	0	0
8	3.8	0	0	0
	13242.6	0	0	0
9	2.4	0	0	0
	9070.5	0	0	0
10	2	0	0	0
	7996.7	0	0	0

DISTANCE	TIME			
(MILES)	1600	1610	1620	1630
.25	122.9 210700.8	128 219861.7	133.1 229022.6	138 238183.6
.341	108.5 183980	113.5 196815.9	118.3 205373.1	123 213930.3
1	0 0	0 0	53.6 98477	56.3 103280.8
1.5	0 0	0 0	0 0	0 0
2	0 0	0 0	0 0	0 0
2.5	0 0	0 0	0 0	0 0
3	0 0	0 0	0 0	0 0
3.5	0 0	0 0	0 0	0 0
4	0 0	0 0	0 0	0 0
4.5	0 0	0 0	0 0	0 0
5	0 0	0 0	0 0	0 0
6	0 0	0 0	0 0	0 0
7	0 0	0 0	0 0	0 0
8	0 0	0 0	0 0	0 0
9	0 0	0 0	0 0	0 0
10	0 0	0 0	0 0	0 0

DISTANCE		TIME		
(MILES)	1640	1650	1700	1710
.25	142.8	147.4	145.7	144
	247344.5	256505.4	261085.8	256505.4
.341	127.5	132	136.8	134.7
	222487.5	231044.7	239601.9	243880.5
1	58.9	61.5	64	66.4
	110486.4	115290.2	120094	124897.7
1.5	0	35.2	37	38.8
	0	66556.5	71901.8	76917.1
2	0	0	0	0
	0	0	0	0
2.5	0	0	0	0
	0	0	0	0
3	0	0	0	0
	0	0	0	0
3.5	0	0	0	0
	0	0	0	0
4	0	0	0	0
	0	0	0	0
4.5	0	0	0	0
	0	0	0	0
5	0	0	0	0
	0	0	0	0
6	0	0	0	0
	0	0	0	0
7	0	0	0	0
	0	0	0	0
8	0	0	0	0
	0	0	0	0
9	0	0	0	0
	0	0	0	0
10	0	0	0	0
	0	0	0	0

DISTANCE		TIME		
(MILES)	1720	1730	1740	1750
.25	136.3 256505.4	134.6 251924.9	133.1 247344.5	125.7 247344.5
.341	133.1 239601.9	126 239601.9	124.5 235323.3	123.1 231044.7
1	68.8 129701.5	71.1 134505.2	70.4 136907.1	69.6 134505.2
1.5	40.5 80261.3	42.1 83605.5	43.8 86949.8	45.4 90294
2	24.9 51262.7	26.2 53763.4	27.4 57514.3	28.7 60014.9
2.5	0 0	0 0	0 0	18.6 40333.5
3	0 0	0 0	0 0	0 0