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MSIV LEAKAGE CONTROL SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.1.4 Two independent MSIV leakage control systems (LCS) shall be OPERABLE.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3.

ACTION:

With one MSIV leakage control system inoperable, restore the inoperable system to OPERABLE status within 30 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.4 Each MSIV leakage control system shall be demonstrated OPERABLE:

a. At least once per 31 days by:

1. Starting the blower(s) from the control room and operating the blower(s) for at least 15 minutes,

2. Energizing the heaters and verifying a current of 8.28 amperes ± 10% per phase for each heater.

b. During each COLD SHUTDOWN in accordance with Specification 4.0.5.

c. At least once per 18 months* by:

1. Performance of a functional test which includes simulated actuation of the system throughout its operating sequence, and verifying that each automatic valve actuates to its correct position and the blower starts.

2. Verifying that the blower develops at least the below required vacuum at the rated capacity:

a) Inboard valves, 15" H_2O at 100 scfm.

b) Outboard valves, 60" H_2O at 200 scfm.

d. By verifying the flow, pressure and, temperature operating instrumentation to be OPERABLE by performance of a:

1. CHANNEL FUNCTIONAL TEST at least once per 31 days, and
2. CHANNEL CALIBRATION at least once per 18 months.

*The specified 18 month interval may be waived for Cycle 1 provided the surveillance is performed during Refuel 1.

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3/4.6.3 PRIMARY CONTAINMENT ISOLATION VALVES

LIMITING CONDITION FOR OPERATION

3.6.3 Each primary containment isolation valve and reactor instrumentation line excess flow check valve shall be OPERABLE**.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3.

ACTION:

a. With one or more of the primary containment isolation valves, except the reactor instrumentation line excess flow check valves, inoperable:

1. Maintain at least one isolation valve OPERABLE in each affected penetration that is open and within 4 hours either;

a) Restore the inoperable valve(s) to OPERABLE status, or

b) Isolate each affected penetration by use of at least one deactivated automatic valve secured in the isolated position, or

c) Isolate each affected penetration by use of at least one closed manual valve or blind flange.*

2. Otherwise, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

b. With one or more of the reactor instrumentation line excess flow check valves inoperable:

1. Operation may continue and the provisions of Specification 3.0.3 are not applicable provided that within 4 hours either:

a) The inoperable valve is returned to OPERABLE status, or

b) The instrument line is isolated and the associated instrument is declared inoperable.

2. Otherwise, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

*Isolation valves closed to satify these requirements may be reopened on an intermittent basis under administrative control.
**Locked or sealed closed valves may be opened on an intermittent basis under administrative control.

SURVEILLANCE REQUIREMENTS

4.6.3.1 Each primary containment isolation valve shall be demonstrated OPERABLE prior to returning the valve to service after maintenance, repair or replacement work is performed on the valve or its associated actuator, control or power circuit by cycling the valve through at least one complete cycle of full travel and verifying the specified isolation time.

4.6.3.2 Each primary containment automatic isolation valve shall be demonstrated OPERABLE during COLD SHUTDOWN or REFUELING at least once per 18 months by verifying that on a containment isolation test signal each automatic isolation valve actuates to its isolation position.

4.6.3.3 The isolation time of each primary containment power operated or automatic isolation valve shall be determined to be within its limit when tested pursuant to Specification 4.0.5.

4.6.3.4 Each reactor instrumentation line excess flow check valve shall be demonstrated OPERABLE at least once per 18 months by verifying that the valve checks flow.

4.6.3.5 Each traversing in-core probe system explosive isolation valve shall be demonstrated OPERABLE:

a. At least once per 31 days by verifying the continuity of the explosive charge.

b. At least once per 18 months by removing the explosive squib from at least one explosive valve such that the explosive squib in each explosive valve will be tested at least once per 90 months, and initiating the explosive squib. The replacement charge for the exploded squib shall be from the same manufactured batch as the one fired or from another batch which has been certified by having at least one of that batch successfully fired. No explosive squib shall remain in use beyond the expiration of its shelf-life and operating-life.

4.6.3.6 At least once per 18 months: for any one main steam line

a. Verify leakage rate through all four main steam lines through the isolation valves is ≤ 100 scfh when tested at ≥ 25.0 psig.* not to exceed 400 scfh for all four main steam lines

b. Verify combined leakage rate of ≤ 1 gpm times the total number of primary containment isolation valves through hydrostatically tested lines that penetrate the primary containment is not exceeded when these isolation valves are tested at 1.1 P_a, ≥ 43.6 psig.*

* Results shall be excluded from the combined leakage for all penetrations and seals subject to Type B and C tests.

TABLE 3.8.3.3-1 (Continued)

MOTOR OPERATED VALVES THERMAL OVERLOAD PROTECTION

Deleted

	VALVE NUMBER	BYPASS DEVICE (Continuous)(Accident Conditions)	SYSTEM(S) AFFECTED
l.	1E32 - F001A	Accident Conditions	MSIV-LCS
	1E32 - F002A	Accident Conditions	
	1E32 - F003A	Accident Conditions	
	1E32 - F001E	Accident Conditions	
	1E32 - F002E	Accident Conditions	
	1E32 - F003E	Accident Conditions	
	1E32 - F001J	Accident Conditions	
	1E32 - F002J	Accident Conditions	
	1E32 - F003J	Accident Conditions	
	1E32 - F001N	Accident Conditions	
	1E32 - F002N	Accident Conditions	
	1E32 - F003N	Accident Conditions	
	1E32 - F006	Accident Conditions	
	1E32 - F007	Accident Conditions	
	1E32 - F008	Accident Conditions	
	1E32 - F009	Accident Conditions	
m.	1E22 - F004	Accident Conditions	HPCS system
	1E22 - F012	Accident Conditions	
	1E22 - F015	Continuous	
	1E22 - F023	Accident Conditions	

3/4.6.1 PRIMARY CONTAINMENT

DELETED

3/4.6.1.4 MSIV LEAKAGE CONTROL SYSTEM

Calculated doses resulting from the maximum leakage allowance for the main steamline isolation valves in the postulated LOCA situations would be a small fraction of the 10 CFR 100 guidelines provided the main steam line system from the isolation valves up to and including the turbine condenser remains intact. Operating experience has indicated that degradation has occasionally occurred in the leak tightness of the MSIV's such that the specified leakage requirements have not always been maintained continuously. The requirement for the leakage control system will reduce the untreated leakage from the isolation valves when isolation of the primary system and containment is required.

3/4.6.1.5 DELETED

3/4.6.1.6 DRYWELL AND SUPPRESSION CHAMBER INTERNAL PRESSURE

The limitation on drywell and suppression chamber internal pressure ensure that the containment peak pressure of 39.6 psig does not exceed the design pressure of 45 psig during LOCA conditions or that the external pressure differential does not exceed the design maximum external pressure differential of 5 psid. The limit of 2.0 psig for initial positive primary containment pressure will limit the total pressure to 39.6 psig which is less than the design pressure and is consistent with the accident analysis.

3/4.6.1.7 DRYWELL AVERAGE AIR TEMPERATURE

The limitation on drywell average air temperature ensures that the containment peak air temperature does not exceed the design temperature of 340°F during LOCA conditions and is consistent with the accident analysis.

3/4.6.1.8 DRYWELL AND SUPPRESSION CHAMBER PURGE SYSTEM

The drywell and suppression chamber purge supply and exhaust isolation valves are required to be closed during plant operation except as required for inerting, de-inerting and pressure control. These valves have been demonstrated capable of closing during a LOCA or steam line break accident from the full open position.

PRIMARY CONTAINMENT ISOLATION VALVES (Continued)

with the control room, at the valve controls, (2) instructing this operator to close these valves in an accident situation, and (3) assuring that environmental conditions will not preclude assess to close the valves and that this action will prevent the release of radioactivity outside the primary containment.

Surveillance Requirement 4.6.3.6.a verifies leakage through all four main steam lines is ≤ 100 scfh when tested at ≥ P_t (25.0 psig). The transient and accident analyses are based on leakage at the specified leakage rate. The leakage rate for main steam lines through the isolation valves must be verified to be in accordance with the leakage test requirements of 10 CFR 50, Appendix J, as modified by approved exemptions. A Note has been added to this Surveillance Requirement requiring the results to be excluded from the total of Type B and Type C tests. This ensures that leakage rate for main steam lines through the isolation valves is properly accounted for in accordance with an approved exemption. The frequency is "at least once per 18 months" in accordance with an approved exemption.

Surveillance Requirement 4.6.3.6.b test of hydrostatically tested lines provides assurance that the assumptions of UFSAR Section 6.2 are met. The combined leakage rates must be demonstrated in accordance with the leakage rate test at a frequency of "at least once per 18 months". A Note has been added to this Surveillance Requirement requiring the results to be excluded the total of Type B and Type C tests. This is in accordance with 10 CFR 50, Appendix J, and approved exemptions.

3/4.6.4 VACUUM RELIEF

Vacuum relief breakers are provided to equalize the pressure between the suppression chamber and drywell. This system will maintain the structural integrity of the primary containment under conditions of large differential pressures.

The vacuum breakers between the suppression chamber and the drywell must not be inoperable in the open position since this would allow bypassing of the suppression pool in case of an accident. There are four valves to provide redundancy so that operation may continue for up to 72 hours with one vacuum breaker inoperable provided that the manual isolation valves on each side are in the closed position.

SUMMARY OF PROPOSED CHANGES FOR LASALLE UNIT 2

License page 9	Addition of 10 CFR Appendix J exemptions
Index pg. VII	Index page revised for 3/4.6.1.4 deletion
Index pg. XIV	Index page revised for B 3/4.6.1.4 deletion and Amendment 87 (TAC No. M90703) correction eliminating reference to a previously deleted section
Section 3.6.1.4 Page 3/4 6-7	MSIV LCS Operability LCO Deleted
Section 4.6.1.4 Page 3/4 6-7	MSIV LCS Surveillance Requirements Deleted
Page 3/4 6-8	Blank Page Deleted
Section 3.6.3 Page 3/4 6-25	*Included for Information Only
Section 4.6.3.6.a Page 3/4 6-26	MSIV Allowable Leakage Rate Increased from 100 scfh through all four main steam lines to 100 scfh per steam line (400 scfh for all four main steam lines)
Table 3.8.3.3-1 Page 3/4 8-29 and 8-30	Delete MSIV LCS motor operated valves from the Table of Motor Operated Valves Thermal Overload Protection
Bases Section 3/4.6.1.4 Pages B 3/4 6-2, B 3/4 6-2a	MSIV LCS Bases Deleted
Bases Section 3/4.6.3 Page B 3/4 6-4a	Bases Describing 4.3.6.a Modified for Increased MSIV Allowable Leakage Rate of 100 scfh per steam line (400 scfh for all four main steam lines)

the BWR Owners Group Report SLI-8211 and SLI-8218 and the recommendations of the BWR Owners Group reports. Any required modifications shall be completed on a scheduled acceptable to the NRC staff.

d. Modification of Automatic Depressurization System Logic Feasibility for Increased Diversity for Some Event Sequences (II.K.3.18, SER, SER #1, SSER #3, SSER #5)

Prior to startup after the first refueling outage, the licensee shall:

(i) Install modifications to the Automatic Depressurization system described in the licensee's letter dated July 1, 1983. The final circuit diagrams and an analysis of the bypass timer time delay shall be submitted for NRC staff review and approval prior to installation.

(ii) Incorporate into the Plant Abnormal Procedures the usuage of the inhibit switch; and

(iii) Modify the Technical Specifications to provide the bypass timer and manual inhibit switch.

Am. 87
3/16/95

D. The facility requires exemptions from certain requirements of 10 CFR Part 50, 10 CFR Part 70, and 10 CFR part 73. These include:

(a) Exemptions from certain requirements of Appendices G, H and J to 10 CFR part 50, and to 10 CFR Part 73 are described in the Safety Evaluation Report and Supplement Numbers 1, 2, 3, and 5 to the Safety Evaluation Report.

(b) An exemption was requested until completion of the first refueling from the requirements of 10 CFR 70.24.

(c) An exemption from the requirement of paragraph III.D of Appendix J to conduct the third Type A test of each ten-year service period when the plant is shutdown for the 10-year plant inservice inspections.

(d) A one-time exemption from the requirement of paragraph III.A.6(b) of Appendix J to resume a Type A test schedule of three times in ten years. Exemptions (c) and (d) are described in the Safety Evaluation accompanying Amendment No. 87 to this license. These exemptions are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest. Therefore, these exemptions are hereby granted pursuant to 10 CFR 50.12. With the granting of these exemptions the facility will operate, to the extent authorized herein, in conformity with the application, as amended, the provisions of the Act, and the rules and regulations of the Commission.

INSERT B →

INSERT B

(e) An exemption was granted to remove the Main Steam Isolation Valves (MSIVs) from the acceptance criteria for the overall integrated leak rate test (Type A), as defined in the regulations of 10CFR50, Appendix J, Paragraphs III.A.5(b)(1) and III.A.5(b)(2). Exemption (e) is described in the safety evaluation accompanying amendment No. (the no. of this proposed amendment) to this License.

(f) An exemption was granted to remove the Main Steam Isolation Valves (MSIVs) from the acceptance criteria for the combined local leak rate test (Type B and C), as defined in the regulations of 10CFR50, Appendix J, Paragraph III.C.3. Exemption (f) is described in the safety evaluation accompanying amendment No. (the no. of this proposed amendment) to this License.

These exemptions are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest. Therefore, these exemptions are hereby granted. The facility will operate, to the extent authorized herein, in conformity with the application, as amended, and the rules and regulations of the Commission (except as hereinafter exempted therefrom), and the provisions of the Act.

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MSIV LEAKAGE CONTROL SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.1.4 Two independent MSIV leakage control systems (LCS) shall be OPERABLE.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3.

ACTION:

With one MSIV leakage control system inoperable, restore the inoperable system to OPERABLE status within 30 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.4 Each MSIV leakage control system shall be demonstrated OPERABLE:

a. At least once per 31 days by:

1. Starting the blower(s) from the control room and operating the blower(s) for at least 15 minutes,

2. Energizing the heaters and verifying a current of 8.28 amperes ± 10% per phase for each heater.

b. During each COLD SHUTDOWN in accordance with Specification 4.0.5.

c. At least once per 18 months by:

1. Performance of a functional test which includes simulated actuation of the system throughout its operating sequence, and verifying that each automatic valve actuates to its correct position and the blower starts.

2. Verifying that the blower develops at least the below required vacuum at the rated capacity:

a) Inboard valves, 15" H_2O at 100 scfm.

b) Outboard valves, 60" H_2O at 200 scfm.

d. By verifying the flow, pressure and, temperature operating instrumentation to be OPERABLE by performance of a:

1. CHANNEL FUNCTIONAL TEST at least once per 31 days, and
2. CHANNEL CALIBRATION at least once per 18 months.

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3/4.6.3 PRIMARY CONTAINMENT ISOLATION VALVES

LIMITING CONDITION FOR OPERATION

3.6.3 Each primary containment isolation valve and reactor instrumentation line excess flow check valve shall be OPERABLE**.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3.

ACTION:

a. With one or more of the primary containment isolation valves, except the reactor instrumentation line excess flow check valves, inoperable:

   1. Maintain at least one isolation valve OPERABLE in each affected penetration that is open and within 4 hours either;

      a) Restore the inoperable valve(s) to OPERABLE status, or

      b) Isolate each affected penetration by use of at least one deactivated automatic valve secured in the isolated position, or

      c) Isolate each affected penetration by use of at least one closed manual valve or blind flange.*

   2. Otherwise, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

b. With one or more of the reactor instrumentation line excess flow check valves inoperable:

   1. Operation may continue and the provisions of Specification 3.0.3 are not applicable provided that within 4 hours either:

      a) The inoperable valve is returned to OPERABLE status, or

      b) The instrument line is isolated and the associated instrument is declared inoperable.

   2. Otherwise, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

*Isolation valves closed to satify these requirements may be reopened on an intermittent basis under administrative control.

**Locked or sealed closed valves may be opened on an intermittent basis under administrative control.

SURVEILLANCE REQUIREMENTS

4.6.3.1 Each primary containment isolation valve shall be demonstrated OPERABLE prior to returning the valve to service after maintenance, repair or replacement work is performed on the valve or its associated actuator, control or power circuit by cycling the valve through at least one complete cycle of full travel and verifying the specified isolation time.

4.6.3.2 Each primary containment automatic isolation valve shall be demonstrated OPERABLE during COLD SHUTDOWN or REFUELING at least once per 18 months by verifying that on a containment isolation test signal each automatic isolation valve actuates to its isolation position.

4.6.3.3 The isolation time of each primary containment power operated or automatic isolation valve shall be determined to be within its limit when tested pursuant to Specification 4.0.5.

4.6.3.4 Each reactor instrumentation line excess flow check valve shall be demonstrated OPERABLE at least once per 18 months by verifying that the valve checks flow.

4.6.3.5 Each traversing in-core probe system explosive isolation valve shall be demonstrated OPERABLE:

a. At least once per 31 days by verifying the continuity of the explosive charge.

b. At least once per 18 months by removing the explosive squib from at least one explosive valve such that the explosive squib in each explosive valve will be tested at least once per 90 months, and initiating the explosive squib. The replacement charge for the exploded squib shall be from the same manufactured batch as the one fired or from another batch which has been certified by having at least one of that batch successfully fired. No explosive squib shall remain in use beyond the expiration of its shelf-life and operating-life.

4.6.3.6 At least once per 18 months: for any one main steam line

a. Verify leakage rate through all four main steam lines through the isolation valves is ≤ 100 scfh when tested at ≥ 25.0 psig.

b. Verify combined leakage rate of ≤ 1 gpm times the total number of primary containment isolation valves through hydrostatically tested lines that penetrate the primary containment is not exceeded when these isolation valves are tested at 1.1 P_a, ≥ 43.6 psig.

not to exceed 400 scfh for all four main steam lines,

* Results shall be excluded from the combined leakage for all penetrations and seals subject to Type B and C tests.

TABLE 3.8.3.3-1 (Continued)

MOTOR OPERATED VALVES THERMAL OVERLOAD PROTECTION

	VALVE NUMBER	BYPASS DEVICE (Continuous)(Accident Conditions)	SYSTEM(S) AFFECTED
	2E12 - F099B	Accident Conditions	
	2E12 - F099A	Accident Conditions	
	2E12 - F008	Accident Conditions	
	2E12 - F009	Accident Conditions	
	2E12 - F040A	Accident Conditions	
	2E12 - F040B	Accident Conditions	
	2E12 - F049A	Accident Conditions	
	2E12 - F049B	Accident Conditions	
	2E12 - F053A	Accident Conditions	
	2E12 - F053B	Accident Conditions	
	2E12 - F006A	Continuous	
	2E12 - F023	Accident Conditions	
	2E12 - F027B	Accident Conditions	
	2E12 - F042A	Accident Conditions	
	2E12 - F042C	Accident Conditions	
	2E12 - F064C	Accident Conditions	
	2E12 - F094	Continuous	
k.	2E51 - F086	Accident Conditions	RCIC system
	2E51 - F022	Accident Conditions	
	2E51 - F068	Continuous	
	2E51 - F069	Continuous	
	2E51 - F080	Accident Conditions	
	2E51 - F046	Accident Conditions	
	2E51 - F059	Accident Conditions	
	2E51 - F063	Accident Conditions	
	2E51 - F019	Accident Conditions	
	2E51 - F031	Continuous	
	2E51 - F045	Accident Conditions	
	2E51 - F008	Accident Conditions	
	2E51 - F010	Accident Conditions	
	2E51 - F013	Accident Conditions	
	2E51 - F064	Accident Conditions	
	2E51 - F076	Accident Conditions	
Deleted			
l.	2E32 - F001A	Accident Conditions	MSIV-LCS
	2E32 - F002A	Accident Conditions	
	2E32 - F003A	Accident Conditions	
	2E32 - F001E	Accident Conditions	
	2E32 - F002E	Accident Conditions	
	2E32 - F003E	Accident Conditions	
	2E32 - F001J	Accident Conditions	
	2E32 - F002J	Accident Conditions	
	2E32 - F003J	Accident Conditions	
	2E32 - F001N	Accident Conditions	
	2E32 - F002N	Accident Conditions	

TABLE 3.8.3.3-1 (Continued)

MOTOR OPERATED VALVES THERMAL OVERLOAD PROTECTION

	VALVE NUMBER	BYPASS DEVICE (Continuous)(Accident Conditions)	SYSTEM(S) AFFECTED
	2E32 - F003N	Accident Conditions	
	2E32 - F006	Accident Conditions	
	2E32 - F007	Accident Conditions	
	2E32 - F008	Accident Conditions	
	2E32 - F009	Accident Conditions	
m.	2E22 - F004	Accident Conditions	HPCS system
	2E22 - F012	Accident Conditions	
	2E22 - F015	Continuous	
	2E22 - F023	Accident Conditions	

3/4.6.1 PRIMARY CONTAINMENT

PRIMARY CONTAINMENT INTEGRITY (Continued)

Surveillance Requirement 4.6.1.1.b maintains PRIMARY CONTAINMENT INTEGRITY by requiring compliance with the visual examinations and leakage rate test requirements of 10 CFR 50, Appendix J, as modified by approved exemptions. Failure to meet air lock leakage testing (4.6.1.3) or main steam isolation valve leakage (4.6.3.6.a) does not necessarily result in a failure of this Surveillance Requirement, 4.6.1.1.b. The impact of the failure to meet these Surveillance Requirements 4.6.1.3 and 4.6.1.1.b must be evaluated against the Type A, B, and C acceptance criteria of 10 CFR 50, Appendix J, as modified by approved exemptions. The leakage limits for main steam lines through the isolation valves and leakage test results of Surveillance Requirement 4.6.3.6.a are not included in the total sum of Type B and C tests (approved exemption). As-left leakage prior to the first startup after performing a required 10 CFR 50, Appendix J, leakage test is required to be $< 0.60\ L_a$ for combined Type B and C leakage, and $< 0.75\ L_a$ for overall Type A leakage. At all other times between required Type A tests, the acceptance criteria is based on an overall Type A leakage limit of $\leq 1.0\ L_a$. At $\leq 1.0\ L_a$ the offsite dose consequences are bounded by the assumptions of the safety analysis. The combined Type B and C leakage remains as $\leq 0.60\ L_a$ between scheduled tests, in accordance with Appendix J.

The Frequency is required by 10 CFR 50, Appendix J, as modified by approved exemptions. Thus, 4.0.2 (which allows Frequency extensions) does not apply to Surveillance Requirement 4.6.1.1.b.

3/4.6.1.2 DELETED

3/4.6.1.3 PRIMARY CONTAINMENT AIR LOCKS

The limitation on closure and leak rate for the primary containment air locks are required to meet the restrictions on PRIMARY CONTAINMENT INTEGRITY and the primary containment leakage rate given in Specification 3/4.6.1.1. The specification makes allowances for the fact that there may be long periods of time when the air locks will be in a closed and secured position during reactor operation. Only one closed door in each air lock is required to maintain the integrity of the containment.

DELETED

3/4.6.1.4 MSIV LEAKAGE CONTROL SYSTEM

Calculated doses resulting from the maximum leakage allowance for the main steamline isolation valves in the postulated LOCA situations would be a small fraction of the 10 CFR 100 guidelines provided the main steam line system from the isolation valves up to and including the turbine condenser remains intact. Operating experience has indicated that degradation has

3/4.6.1 PRIMARY CONTAINMENT

MSIV LEAKAGE CONTROL SYSTEM (Continued)

occasionally occurred in the leak tightness of the MSIV's such that the specified leakage requirements have not always been maintained continuously. The requirement for the leakage control system will reduce the untreated leakage from the isolation valves when isolation of the primary system and containment is required.

3/4.6.1.5 DELETED

3/4.6.1.6 DRYWELL AND SUPPRESSION CHAMBER INTERNAL PRESSURE

The limitation on drywell and suppression chamber internal pressure ensure that the containment peak pressure of 39.6 psig does not exceed the design pressure of 45 psig during LOCA conditions or that the external pressure differential does not exceed the design maximum external pressure differential of 5 psid. The limit of 2.0 psig for initial positive primary containment pressure will limit the total pressure to 39.6 psig which is less that the design pressure and is consistent with the accident analysis.

3/4.6.1.7 DRYWELL AVERAGE AIR TEMPERATURE

The limitation on drywell average air temperature ensures that the containment peak air temperature does not exceed the design temperature of 340°F during LOCA conditions and is consistent with the accident analysis.

3/4.6.1.8 DRYWELL AND SUPPRESSION CHAMBER PURGE SYSTEM

The drywell and suppression chamber purge supply and exhaust isolation valves are required to be closed during plant operation except as required for inerting, de-inerting and pressure control. These valves have been demonstrated capable of closing during a LOCA or steam line break accident from the full open position.

PRIMARY CONTAINMENT ISOLATION VALVES (Continued)

This specification provides assurance that the PCIVs will perform their designed safety functions to control leakage from the primary containment during accidents.

The opening of locked or sealed closed containment isolation valves on an intermittent basis under administrative control includes the following considerations: (1) stationing an operator, who is in constant communication with the control room, at the valve controls, (2) instructing this operator to close these valves in an accident situation, and (3) assuring that environmental conditions will not preclude assess to close the valves and that this action will prevent the release of radioactivity outside the primary containment.

Surveillance Requirement 4.6.3.6.a verifies leakage through all four main steam lines is ≤ 100 scfh when tested at ≥ P_t (25.0 psig). The transient and accident analyses are based on leakage at the specified leakage rate. The leakage rate for main steam lines through the isolation valves must be verified to be in accordance with the leakage test requirements of 10 CFR 50, Appendix J, as modified by approved exemptions. A Note has been added to this Surveillance Requirement requiring the results to be excluded from the total of Type B and Type C tests. This ensures that leakage rate for main steam lines through the isolation valves is properly accounted for in accordance with an approved exemption. The frequency is "at least once per 18 months" in accordance with an approved exemption.

Surveillance Requirement 4.6.3.6.b test of hydrostatically tested lines provides assurance that the assumptions of UFSAR Section 6.2 are met. The combined leakage rates must be demonstrated in accordance with the leakage rate test at a frequency of "at least once per 18 months". A Note has been added to this Surveillance Requirement requiring the results to be excluded the total of Type B and Type C tests. This is in accordance with 10 CFR 50, Appendix J, and approved exemptions.

3/4.6.4 VACUUM RELIEF

Vacuum relief breakers are provided to equalize the pressure between the suppression chamber and drywell. This system will maintain the structural integrity of the primary containment under conditions of large differential pressures.

The vacuum breakers between the suppression chamber and the drywell must not be inoperable in the open position since this would allow bypassing of the suppression pool in case of an accident. There are four valves to provide redundancy so that operation may continue for up to 72 hours with one vacuum breaker inoperable provided that the manual isolation valves on each side are in the closed position.

ATTACHMENT C

APPLICATION FOR EXEMPTION TO APPENDIX J OF 10CFR50

Pursuant to Section 50.12(a) of the Regulations of the Nuclear Regulatory Commission, ComEd, holder of Facility Operating Licenses NPF-11 and NPF-18, hereby requests specific exemptions to Appendix J of 10CFR Part 50 "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors".

Specifically, ComEd requests that leakages from the main steam isolation valves (MSIVs) be exempted from the acceptance criteria for:

(1) The overall integrated leak rate test (Type A), as defined in the regulations of 10CFR50, Appendix J, Paragraphs III.A.5(b)(1) and III.A.5(b)(2), and

(2) The combined local leak rate test (Type B and C), as defined in the regulations of 10CFR50, Appendix J, Paragraph III.C.3.

The purpose of the test acceptance criteria is to ensure that the measured leak rate from the containment volume will not exceed the designed containment leak rate assumed in the safety analysis for a postulated design basis Loss-of-Coolant Accident (LOCA).

In conjunction with this application for exemption request, ComEd is transmitting an application for a license amendment pursuant to 10CFR50.90. This license amendment involves a proposed change to the Technical Specifications, as given in Attachment B, to permit an increase in the allowable leak rate for the MSIVs from the current 100 scfh through all four main steam lines to 100 scfh per steam line (400 scfh for all four main steam lines), and to eliminate the requirements for the Leakage Control System. The safety analysis has been revised to assess the radiological effects of MSIV leakage following a postulated design basis LOCA (Attachment G). ComEd has demonstrated that the proposed change does not involve a significant hazards consideration (Attachment D).

This proposed exemption is a result of the extensive work performed by the BWR Owners' Group (BWROG) in support of the resolution of Generic Issue C-8 "MSIV Leakage and LCS Failure".

The following discussion provides a detailed justification and evaluation of the proposed exemption. The proposed exemption is found to be authorized by law, will not present an undue risk to the public health and safety, and is consistent

with the common defense and security. Furthermore, special circumstances are present that warrant the granting of this exemption.

The proposed exemption will not cause additional operational activities that may significantly affect the environment. It does not result in a significant increase in any adverse environmental impact previously evaluated in the Final Environmental Impact Statement-Operating License Stage, result in a significant change in effluents or power levels, or affect any matter not previously reviewed by the Nuclear Regulatory Commission that may have a significant adverse environmental impact.

Therefore, pursuant to 10CFR50.12(a), ComEd hereby requests an exemption for LaSalle Station Units 1 and 2 for MSIV leakages from the acceptance test criteria specified in Appendix J of 10CFR50. This will replace an exemption granted by NUREG 0519 as modified by NUREG 0519, Supplement 6 (References 1 and 2).

A. Justification

The regulation of 10CFR50, Appendix J, Paragraphs III.A.5(b)(1) and III.A.5(b)(2) requires the overall integrated leakage rate, as measured during containment pressure tests (Type A), to meet the acceptance criterion of less than or equal to 0.75 of the maximum allowable containment leak rate. Paragraph III.C.3 of the regulation requires the combined leakage rate for all penetrations and isolation valves, as measured during local leak rate tests (Type B and Type C), to meet the acceptance criterion of less than or equal to 0.60 of the maximum allowable containment leak rate. Paragraphs III.C.3(a) and III.C.3(b) define the acceptance criteria for the exclusion of containment isolation valves from the acceptance criterion for Type B and C tests.

The limitations on primary containment leakage rates ensure that the total containment leakage volume will not exceed the value assumed in the accident analyses at the peak accident pressure. As an added conservatism, the measured leak rate is further limited to less than or equal to 0.75 of the maximum allowable leak rate during the performance of the periodic tests to account for possible degradation of the containment leakage barrier between leakage tests.

The maximum containment leakage rate was included in the radiological analysis of a postulated design basis LOCA as evaluated in Section 15.6.5 of the Final Safety Analysis Report (FSAR). The radiological analysis calculated the effect of the maximum leakage rate from the containment volume in terms of control room and off-site doses, which were evaluated against the dose guidelines of 10CFR50, Appendix A (General Design Criteria 19) and 10CFR100, respectively. Leakages from the containment volume were contained in the reactor building (secondary

containment), filtered by the Standby Gas Treatment System, and released to the environment through the elevated release stack. The maximum containment leakage rate includes leakages through structures, all penetrations identified as Type B, and all containment isolation valves identified as Type C.

The safety analysis has been revised to account for the radiological effect from MSIV leakages and from those of other containment leakages following a postulated design basis LOCA. Unlike the treatment path for other containment leakages, the treatment of MSIV leakages employs the main steam drain piping and the condenser. Fission products are removed by plate-out and hold-up in the relatively large volumes of the main steam piping and condenser.

The treatment method for MSIV leakages is recommended by the BWROG in support of the resolution to Generic Issue C-8. The BWROG has evaluated the availability of main steam system piping and condenser alternate treatment pathways for processing MSIV leakage, and has determined that the probability of a near coincident LOCA and a seismic event is much smaller than for other plant safety risks. The Sargent & Lundy walkdowns (Attachments H and I) have also determined that the new leakage pathway meets the seismic performance criteria specified in the BWROG report (Reference 6).

In order to further justify the capability of the main steam piping and condenser alternate treatment pathway, the BWROG has reviewed limited earthquake experience data on the performance of non-seismically designed piping and condensers (in past earthquakes). This study concluded the possibility of a failure which could cause a loss of steam or condensate in BWR main steam piping or condensers in the event of a design basis earthquake is highly unlikely, and that such a failure would also be contrary to a large body of historical earthquake experience data, and thus unprecedented.

Leakage from the MSIVs should not be included in the Type A acceptance criterion because the treatment path for MSIV leakage is different from that of containment leakages. Potential leakage from the containment is contained in the reactor building (secondary containment), treated by the SGTS, and released via the main stack. MSIV leakage is contained, plated-out, and delayed in the main steam piping and the condenser, and released via the turbine building.

Furthermore, leakage from the MSIVs should not be included in the combined local leak rate test (Type B and Type C) acceptance criteria because a specific allowable leak rate has been allocated for the MSIVs in Surveillance Requirement 4.6.3.6.a of the Technical Specifications.

The deletion of the LCS is proposed partly in response to the safety concern identified by Generic Issue C-8 that the LCS would not function at high MSIV leakage rates since the process capability of the LCS at LaSalle is designed for MSIV leakage rates of no more than 100 scfh. MSIV leakage is treated separately from other containment leakages, therefore other exemptions previously granted in accordance with Paragraph III.C.3 of Appendix J of 10CFR50 remain applicable.

As discussed earlier, the basis for the containment leakage tests and the acceptance criteria is to ensure that the measured leak rate will not exceed the maximum leak rate assumed in the safety analysis. The safety analysis for a design basis LOCA has been revised to change the maximum MSIV leak rate, which is separate from the maximum containment leak rate. MSIV leakages will be tested as part of the local leak rate test. This test ensures that the measured MSIV leak rate will not exceed the allowable leak rate assumed in the safety analysis.

Considering the doses calculated in Attachment G, there is sufficient remaining margin to the applicable limits to allow for possible degradation of the MSIV leakage barrier between leakage tests. Thus, a safety margin exists. Furthermore, ComEd will institute into the MSIV maintenance and test program, the requirement that any MSIV exceeding the proposed limit will be repaired and re-tested to meet a leakage rate of less than or equal to 25 scfh. This will assure continuation of high quality repair and refurbishment efforts to improve the overall performance and reliability of the MSIVs.

Therefore, the proposed exemption from the acceptance criteria of 10CFR50, Appendix J will not defeat the underlying purpose of the regulation, and is consistent with the safety analysis.

B. Authorized By Law

The proposed exemption is consistent with Section 3.6.1.2 of the Standard Technical Specification (NUREG-0123). The reason for this exemption explained in section A above. A review of the Technical Specifications for BWRs indicates that such an exemption has been granted to the following plants: Fermi 2, Hatch 1 & 2, Hope Creek, Limerick 1, Shoreham, LaSalle 1 and 2, Hanford, Clinton, Grand Gulf 1, Perry, Dresden 2 and 3, Monticello, Quad Cities 1 and 2, Brunswick 1 and 2 and Nine Mile Point 2.

Therefore, the proposed exemption is authorized by law.

C. No Undue Risk to Public Health and Safety

The proposed exemption presents no undue risk to public health and safety. The revised MSIV leakage rate has been incorporated in the radiological analysis for a postulated LOCA as an addition to the designed containment leak rate. The analysis demonstrates an acceptable increase to the dose exposures previously calculated for the control room and off-site. The revised LOCA doses remain well within the guidelines of 10CFR100 for off-site doses and 10CFR50, Appendix A, (General Design Criteria 19) for the control room doses. In addition, Surveillance Requirement 4.6.3.6.a of the Technical Specification has provided for allowable MSIV leak rates, which assure that the MSIV isolation function is not compromised. Finally, potential MSIV leakage is subjected to plate-out, and hold-up in the main steam piping and condenser, thus minimizing their effect on the total dose released. As discussed in Section F of this attachment, the proposed change will not adversely affect the conclusions of the previously issued FES-OL. Therefore, the proposed exemption presents no undue risk to public health and safety.

D. Consistent with Common Defense and Security

With regard to the "common defense and security" standard, the grant of the requested exemption is consistent with the common defense and security of the United States. The Commission's Statement of Considerations in support of the exemption rule note with approval the explanation of this standard as set forth in Long Island Lighting Company (Shoreham Nuclear Power Station, Unit 1), LBP-84-45, 20 NRC 1343, 1400 (October 29, 1984). There, the term "common defense and security" refers principally to the safeguarding of special nuclear material, the absence of foreign control over the applicant, the protection of Restricted Data, and the availability of special nuclear material for defense needs. The granting of the requested exemption will not affect any of these matters and, thus, such grants are consistent with the common defense and security.

E. Special Circumstances Are Present

Special circumstances are present which warrant issuance of this requested exemption. These special circumstances are discussed in accordance with the classification contained in 10CFR50.12(a)(2):

> (ii) Application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule.

The underlying purpose of the rule is to limit releases to within the off-site and control room dose guidelines of 10CFR100 and 10CFR50, Appendix A (GDC 19), respectively. Compliance with Appendix J of 10CFR50 for Type A test acceptance criteria is not necessary to achieve the underlying purpose of the rule since MSIV leakage is not directed into the reactor primary containment. Instead, the MSIV's leakage is directed through the main steam drain piping into the condenser. Since Type A tests are intended to measure the primary containment overall integrated leak rate (ILRT), the MSIV's leakage rate should not be included in the measurement of the ILRT. Compliance with Appendix J of 10CFR50 Type C test acceptance criteria is not necessary since a specific MSIV leak rate limit is already specified in Surveillance Requirement 4.6.3.6.a of the Technical Specifications.

The safety analysis has been revised to assess the radiological consequences of MSIV leakage following a design basis LOCA. The analysis has demonstrated that the revised LOCA doses are well within the off-site and control room dose guidelines of 10CFR100 and GDC 19.

(iii) Compliance would result in undue hardship or other costs that are significantly in excess of those contemplated when the regulation was adopted, or that are significantly in excess of those incurred by others similarly situated.

Compliance with Appendix J of 10CFR50 Type A and C test acceptance criteria results in undue hardship or other costs that are significantly in excess of those contemplated when the regulation was adopted. The proposed increase in the MSIV allowable leak rate will not be possible if the MSIV leak rate results are included in the Type A and C test acceptance criteria.

Compliance requires unnecessary repair and re-testing of the MSIVs. This significantly impacts the maintenance work load during plant outages and contributes to outage extensions. The frequent MSIVs disassembly and refurbishing, which is required to meet the low leakage limits, contributes to repeated failures.

Examples of these maintenance induced defects include machining-induced seat cracking, machining of guide ribs, excessive pilot valve seat machining, and mechanical defects induced by assembly and disassembly. By not having to disassemble the valves and refurbish them for minor leakage, LaSalle avoids introducing one of the root causes of recurring leakage. Industrial experience suggests that, by attempting to correct non-existing or minimal defects in the valves, it is likely that some actual defects may be introduced that lead to later leak test failures.

In addition, the frequent maintenance work results in needless dose exposures to maintenance personnel leading to additional economical burdens, and are inconsistent with As Low As Reasonably Achievable (ALARA) principles.

(iv) The exemption would result in benefit to the public health and safety that compensates for any decrease in safety that may result from the grant of the exemption.

ComEd has transmitted to the NRC an application for a license amendment which involves proposed changes to the Technical Specifications to increase the allowable MSIVs leak rate from 100 through all four main steam lines to 100 scfh per steam line (400 scfh for all four main steam lines), and to delete the requirements for the LCS. For the MSIV leak rate limit, this application is partly based on the fact that the current limit is too restrictive and results in excessive MSIV maintenance and repair, leading to additional MSIV failures, which in turn result in higher leakage. The proposed limit will benefit the public health and safety by reducing the potential for MSIV failures, and thus keeping the MSIV leakage within the radiological analysis values.

For the LCS, the proposed changes involve a replacement of the existing LCS with the more reliable and effective main steam piping and condenser method for MSIV leakage treatment. The effectiveness of the proposed method even for leakage rates greater than the proposed increased allowable limits, ensures off-site dose limits to the public are not exceeded. Overall, the proposed treatment method can handle MSIV leakage over an expanded operating range, and will thereby resolve the safety concern that the LCS will not function at MSIV leakage rates higher than the LCS capacity. Thus, a margin of safety exists. Furthermore, it is clearly a safety improvement to replace a system with known limitations with the alternate main steam piping and condenser treatment pathway, which has been shown to have excellent reliability.

The exemption from Appendix J requirements for MSIV leakage rates is required so that LaSalle can operate with the proposed Technical Specification value of 100 scfh per steam line (400 scfh for all four main steam lines). This benefit will compensate for any decrease in safety that may result from the granting of the exemption.

Thus, special circumstances exist warranting the grant of the exemption.

F. Environmental Impact

The proposed exemption has been analyzed and determined not to cause additional construction or operational activities which may significantly affect the environment. It does not result in a significant increase in any adverse environmental impact previously evaluated in the Final Environmental Impact Statement-Operating License Stage, result in a significant change in effluents or power levels, or affect any matter not previously reviewed by the Nuclear Regulatory Commission which may have a significant adverse environmental impact.

The proposed exemption does not alter the land use for the plant, any water uses or impacts on water quality, air or ambient air quality. The proposed action does not affect the ecology of the site and vicinity and does not affect the noise emitted by the station. Therefore, the proposed exemption does not affect the analysis of environmental impacts described in the environmental report.

ATTACHMENT D

EVALUATION OF SIGNIFICANT HAZARDS CONSIDERATION

Commonwealth Edison has evaluated this proposed amendment and determined that it involves no significant hazards considerations. According to 10 CFR 50.92 (c), a proposed amendment to an operating license involves no significant hazards considerations if operation of the facility in accordance with the proposed amendment would not:

1. Involve a significant increase in the probability or consequences of an accident previously evaluated; or

2. Create the possibility of a new or different kind of accident from any accident previously evaluated; or

3. Involve a significant reduction in a margin of safety.

The proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated because:

The proposed changes involve eliminating the requirement for the Main Steam Isolation Valve Leakage Control System (MSIV LCS). This system is manually initiated following a design basis Loss of Coolant Accident (LOCA). Since operation of the LCS is initiated after the accident has already begun, elimination of that system will not affect the probability of a LOCA. The LCS only interfaces with the main steamlines, with the exception of one MSIV LCS power supply which supplies power to the Reactor Protection System Scram Discharge Volume high level scram. This power supply will remain in place after the MSIV LCS is isolated from the main steamlines. Therefore, since the only significant system interface is with the main steamlines, and the system does not impact the reliability of any plant equipment, elimination of that system will not cause an increase in the likelihood that any accident might occur.

The proposed change to increase the allowable MSIV leakage limit from 100 scfh through all four main steam lines to 100 scfh per main steam line (400 scfh total) will not increase the probability of an accident. MSIV operability will not be degraded with the allowed increased leakage.

The consequences of a LOCA are not significantly increased and do not exceed the previously accepted licensing criteria for this accident. General Electric has calculated the revised LOCA doses, which have been added to the previous LOCA doses. These resulting values are well below the acceptance criteria of 10CFR 100 and 10CFR 50, Appendix A.

The proposed changes do not create the possibility of a new or different kind of accident from any accident previously evaluated because:

The proposed changes require the use of the main steam piping and condenser to process MSIV leakage. The analyses presented provide assurance that this additional function does not compromise the reliability of those systems. They will therefore continue to function as intended and not be subject to an increased failure rate or a failure of a different kind than previously considered.

In addition, MSIV functionality will not be adversely impacted as a result of the increased leakage limit. The MSIVs are not being modified in any way and will continue to provide their intended isolation function.

The MSIV LCS will be cut and capped, which will completely isolate it from other plant systems. Future degradation of its associated piping would not impact any other system or create a failure not previously analyzed. However, piping seismic Class II over I criteria must be maintained for the abandoned MSIV LCS piping until it is removed from the plant.

The proposed changes do not involve a significant reduction in a margin of safety because:

The proposed change has been evaluated with respect to dose limits contained in 10CFR100 and 10CFR50, Appendix A. The revised dose calculations verify that the use of the main steam lines and the condenser for leakage control, in place of the MSIV LCS, and with an allowable total leakage of 400 scfh, maintains adequate margins to the criteria listed above.

Even though there is a reduction in the margin to safety, the new doses remain well within the criteria of 10CFR100 and 10CFR50, Appendix A. This reduction in margin is not significant when compared to the increased reliability and capability of the main steam lines and condenser as a method of treating MSIV leakage. The new leakage pathway is consistent with the philosophy of protection by multiple barriers for limiting fission product release to the environment. In addition, the new method is passive and does not require any new logic control or interlocks. The new pathway is also capable of handling a larger amount of leakage than the MSIV LCS, which was previously subject to concerns that it

would not function at leakage rates higher than its design capacity, or at reactor pressures greater than 35 psig.

The revised calculated LOCA doses remain well within the regulatory limits for MSIV leakage rates of 400 scfh for all four main steam lines (100 scfh per steam line), and the margin to safety is not significantly reduced as a result of the proposed changes.

CONCLUSION

Guidance has been provided in "Final Procedures and Standards on No Significant Hazards Considerations," Final Rule, 51 FR 7744, for the application of standards to license change requests for determination of the existence of significant hazards considerations. This document provides examples of amendments which are and are not considered likely to involve significant hazards considerations. These proposed amendments most closely fit the example of a change which may either result in some increase to the probability or consequences of a previously analyzed accident or may reduce in some way a safety margin, but where the results of the change are clearly within all acceptable criteria with respect to the system or component specified in the Standard Review Plan, section 15.6.5, Radiological Consequences of a Design Basis Loss-of Coolant Accident Including Containment Leakage Contribution.

This proposed amendment does not involve a significant relaxation of the criteria used to establish safety limits, a significant relaxation of the bases for the limiting safety system settings or a significant relaxation of the bases for the limiting conditions for operations. Therefore, based on the guidance provided in the Federal Register and the criteria established in 10 CFR 50.92 (c), the proposed change does not constitute a significant hazards consideration.

ATTACHMENT E

ENVIRONMENTAL ASSESSMENT STATEMENT APPLICABILITY REVIEW

Commonwealth Edison has evaluated the proposed amendment against the criteria for identification of licensing and regulatory actions requiring environmental assessment in accordance with 10 CFR 51.21. It has been determined that the proposed changes meet the criteria for a categorical exclusion as provided under 10 CFR 51.22 (c)(9). This conclusion has been determined because the changes requested do not pose significant hazards consideration or do not involve a significant increase in the amounts, and no significant changes in the types, of any effluents that may be released offsite. Additionally, this request does not involve a significant increase in individual or cumulative occupational radiation exposure.

ATTACHMENT F

INPUT ASSUMPTIONS FOR

GE DOSE CALCULATIONS

FOR

LASALLE UNITS 1 AND 2

PARAMETER		VALUE
MegaWatts thermal (MWt)		3458
Maximum Allowable Containment Leak Rate, L_a, (%/day)		0.635
Main Steam Lines - Reactor to MSIVs (4 lines)	Inside Diameter (inches)	23.86
	Length (feet)	208
	Insulation Thickness (inches)	3
Main Steam Lines - MSIVs to High Pressure Turbine (4 lines)	Inside Diameter (inches)	24.09
	Length (feet)	226
	Insulation Thickness (inches)	3
Drain Lines - MSIVs to Condenser (4 lines)	Equivalent Inside Diameter (inches)	1.94
	Length (feet)	353
	Insulation Thickness (inches)	2.5
Condenser + Low Pressure Turbine Volume (above drain line inlet, ft^3		246,350
Meteorology (LPZ - χ/Q)	0 hours	5.10×10^{-4}
	2 hours	1.10×10^{-5}
	8 hours	6.70×10^{-6}
	1 days	2.60×10^{-6}
	4 days	6.50×10^{-7}

PARAMETER		VALUE
Control Room Parameters	Free Volume (ft^3)	117,454
	Habitable Volume (ft^3)	117454
	Vent Filter Intake (ft^3/sec)	75.28
	Vent Unfiltered Intake (ft^3/sec)	0.833
	Recirculation Rate (ft^3/sec)	437.9
	Filter Efficiency for Iodine Removal (%)	90.4 Intake
		73.5 Recirc
Meteorology (Control Room χ/Qs)	0 hours	2.65×10^{-4}
	8 hours	1.56×10^{-4}
	1 days	9.94×10^{-5}
	4 days	4.37×10^{-5}
MSIV Leakage Dose Results	scfh/ line	100
	Total scfh Maximum	400
Control Room (30 days)	Whole Body (5 rem limit)	0.06
	Iodine (30 rem limit)	3.19
	Skin (Beta) (30 rem limit)	0.81
Off-Site (30 days)	Whole Body (25 rem limit)	0.03
	Iodine (300 rem limit)	8.33
Exclusion Area Boundary (2 hour)	Whole Body	0.0016
	Iodine	0.024

ATTACHMENT G

GE DOSE CALCULATIONS

FOR

LASALLE UNITS 1 AND 2

GE Nuclear Energy

OG95-433-09
June 28, 1995

General Electric Company
175 Curtner Avenue, San Jose, CA 95125

Gerald Swihart
Commonwealth Edison
LaSalle Nuclear Generating Station
2601 North 21st Road
Marseilles, IL 61341

SUBJECT: ***LaSalle 1-2 Dose Calculations in Accordance with the BWROG Radiological Dose Methodology***

Attachments:
(1) "Base case" LaSalle MSIV leakage dose calculation summary (off-site and control room radiological doses)
(2) Summary comparison of MSIV radiological dose results for "base case" and six other alternate control room scenarios
(3) Diagram of LaSalle control room with "base case" parameters (provided by Commonwealth Edison on April 6, 1995)
(4) BWROG control room model and "base case" example calculation for conversion of LaSalle control room parameters into BWROG model input
(5) Control room parameters for "base case" and six other configurations (LaSalle parameters and BWROG code inputs)
(6) Basis for ground level turbine building release atmospheric dispersion factors (off-site and exclusion area boundary)
(7) LaSalle exclusion area boundary radiological dose calculation
(8) BWROG "MSIV Leak" computer input data and resulting radiological dose output

The subject calculations have been revised and verified. These radiological dose calculations are based on MSIV leakage of 100 scfh per steam line (400 scfh total), and results confirm low radiological dose assessments due to the MSIV leakage source for the control room, exclusion area boundary, and low population zone. These dose assessments will need to be added to the radiological doses from the other release sources to assure that the total integrated 30 day dose meets 10CFR100 and GDC-19 requirements. We have evaluated the minor geometrical differences between the alternate treatment pathways at the two LaSalle units, and have concluded that the differences are insignificant with respect to the effect on radiological dose calculations. Therefore, the attached calculations are applicable to either LaSalle plant. The following bases were employed in these calculations:

1. Murphy-Camphe meteorological dose reduction factors were applied to the control room χ/Q values. Note that the code incorporates the occupancy factor in the input stream and, therefore, the occupancy factors are not included in the χ/Q values. The resulting control room atmospheric dispersion factors are as follows:

Time	Sec/M^3
0 - 8 hours	2.65 E-04
8 - 24 hours	1.56 E-04
1 - 4 days	9.94 E-05
4 - 30 days	4.37 E-05

These factors were provided by Commonwealth Edison and have been verified by GE to be appropriate.

2. The LPZ χ/Q values were revised from earlier values provided by Commonwealth Edison to be consistent with those provided to GE for analyses of the control rod drop accident (see Attachment 6):

Time	Sec/M^3
0 - 2 hours (EAB)	5.10 E-04
0 - 8 hours	1.10 E-05
8 - 24 hours	6.70 E-06
1 - 4 days	2.60 - E-06
4 - 30 days	6.50 E-07

3. LaSalle "base case" control room parameters are as shown in Attachment 3. The effect on radiological dose with respect to changes in the LaSalle control room parameters are summarized in Attachment 2. These results show that the associated control room dose assessment is not significantly affected by significant changes in the makeup filter flow rate, the leakage between the makeup and control room supply air filter, and unfiltered intake. Note that radiological dose contributions from the high pressure turbine pathway do not significantly contribute to these results.

If you have any questions regarding these verified calculations or any other MSIV Leakage Closure Committee issues, please call the undersigned.

Very truly yours,

TA Green
Senior Technical Project Manager
BWR Owners' Group Projects
Tel: (408) 925-1308
Fax: (408) 925-2476
Mail Code 182

cc: SJ Stark, GE

Attachment 2
Summary Comparison
MSIV Control Room 30 Day Doses

Contributor	Whole Body (Rem)	Thyroid (Rem)	Beta (Rem)
1A - Base Case			
Elemental Iodine	3.20E-7	1.22E-2	2.47E-6
Noble Gases	6.26E-2	0	8.05E-1
Organic Iodine	2.75E-5	1.81	1.96E-4
Resuspended Iodine	1.65E-5	1.37	1.08E-4
TOTAL	6.26E-2	3.19	8.05E-1
2A			
Elemental Iodine	3.45E-7	1.31E-2	2.67E-6
Noble Gases	6.28E-2	0	8.08E-1
Organic Iodine	2.98E-5	1.96	2.11E-4
Resuspended Iodine	1.79E-5	1.48	1.17E-4
TOTAL	6.28E-2	3.45	8.08E-1
3A			
Elemental Iodine	3.47E-7	1.32E-2	2.68E-6
Noble Gases	6.26E-2	0	8.05E-1
Organic Iodine	2.99E-5	1.96	2.12E-4
Resuspended Iodine	1.80E-5	1.49	1.17E-4
TOTAL	6.26E-2	3.46	8.05E-1
4A			
Elemental Iodine	3.84E-7	1.46E-2	2.97E-6
Noble Gases	6.26E-2	0	8.05E-1
Organic Iodine	3.31E-5	2.18	2.35E-4
Resuspended Iodine	1.99E-5	1.65	1.30E-4
TOTAL	6.26E-2	3.84	8.05E-1
5A			
Elemental Iodine	4.59E-7	1.74E-2	3.54E-6
Noble Gases	6.26E-2	0	8.06E-1
Organic Iodine	3.96E-5	2.60	2.81E-4
Resuspended Iodine	2.38E-5	1.97	1.56E-4
TOTAL	6.26E-2	4.59	8.06E-1

MSIV Control Room 30 Day Doses (cont'd)

Contributor	Whole Body (Rem)	Thyroid (Rem)	Beta (Rem)
6A			
Elemental Iodine	3.90E-7	1.48E-2	3.01E-6
Noble Gases	6.26E-2	0	8.06E-1
Organic Iodine	3.36E-5	2.21	2.39E-4
Resuspended Iodine	2.02E-5	1.67	1.32E-4
TOTAL	6.26E-2	3.89	8.06E-1
7A			
Elemental Iodine	4.66E-7	1.77E-2	3.60E-6
Noble Gases	6.27E-2	0	8.07E-1
Organic Iodine	4.01E-5	2.64	2.85E-4
Resuspended Iodine	2.41E-5	2.00	1.58E-4
TOTAL	6.27E-2	4.66	8.07E-1

Attachment 1

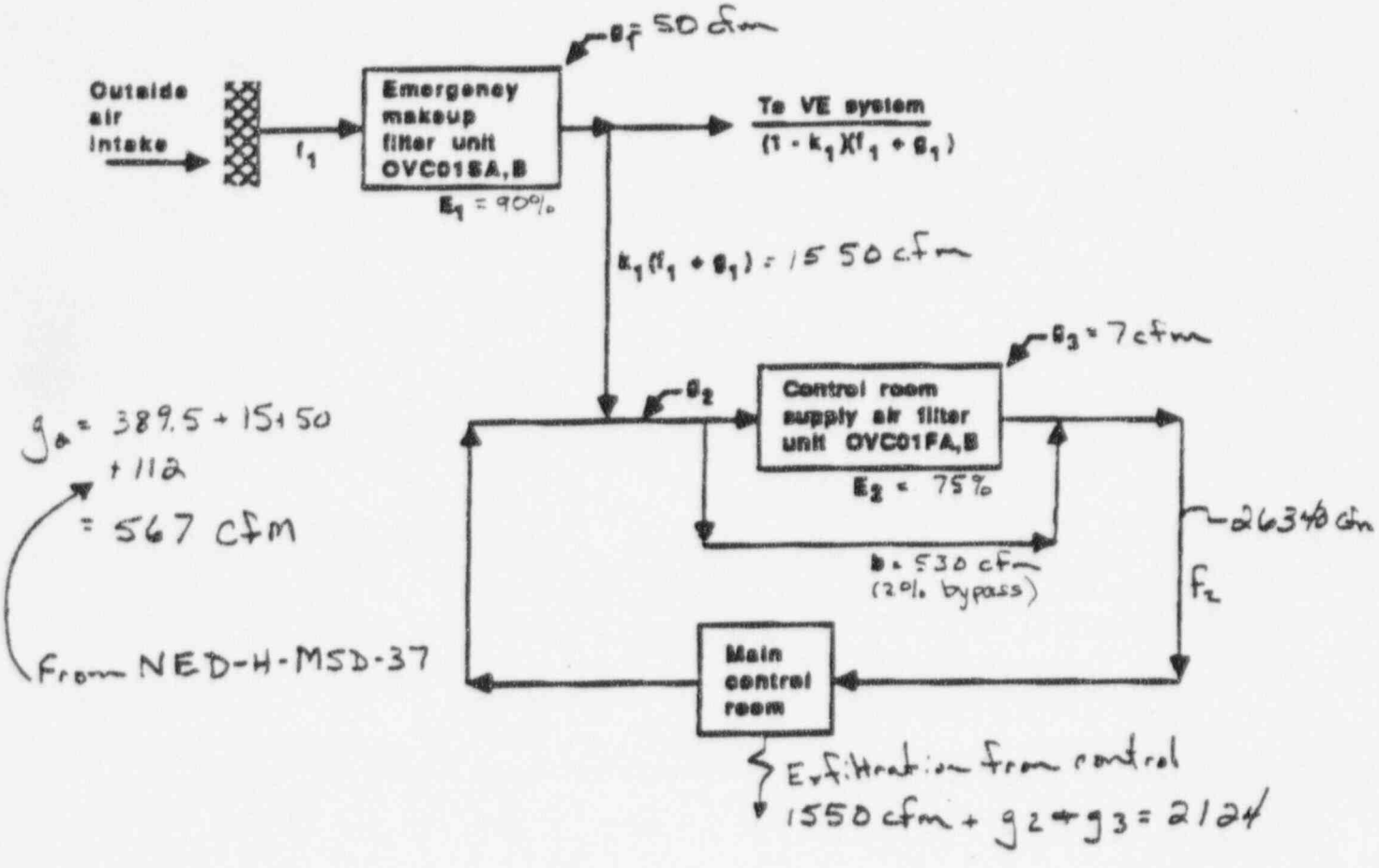
LA SALLE "BASE CASE" DOSE CALCULATION SUMMARY

Contribution of MSIV Leakage to Offsite and Control Room Radiological Doses

MSIV Leakage at 100 scfh per line	*Control Room* Whole Body (5)	Thyroid (30)	BETA (30-75)	*Off-Site (LPZ)* Whole Body (25)	Thyroid (300)
Noble Gas (DL)	0.06	0.00	0.81	0.03	0.00
Inorganic I (DL)	0.00	0.01	0.00	0.00	0.03
Organic I (DL)	0.00	1.81	0.00	0.00	4.77
Noble Gas (HPT)	0.00	0.00	0.00	0.00	0.00
Inorganic I (HPT)	0.00	0.00	0.00	0.00	0.00
Organic I (HPT)	0.00	0.00	0.00	0.00	0.00
Organic I via Re-suspension/ Conversion (DL)	0.00	1.37	0.00	0.00	3.53
Total	0.06	3.19	0.81	0.03	8.33
		EAB Doses are:		0.0016	0.024

I - Iodine, DL - Drain Line Path, HPT - High-Pressure Turbine Path

TA Green
6-27-95


g_f = 50 cfm
Outside air intake
f_1
Emergency makeup filter unit OVC01SA,B
E_1 = 90%
To VE system
$(1 - k_1)(f_1 + g_1)$
$k_1(f_1 + g_1)$ = 1550 cfm
g_3 = 7 cfm
g_2
Control room supply air filter unit OVC01FA,B
E_2 = 75%
g_a = 389.5 + 1550 + 112 = 567 cfm
From NED-H-MSD-37
b = 530 cfm (2% bypass)
26348 cfm
f_2
Main control room
Infiltration from control
1550 cfm + g_2 + g_3 = 2124

f_1 ..... makeup airflow rate into the makeup air filter (cfm)

g_1 ..... infiltration air flow rate into the makeup air filter (cfm)

E_1 ..... filter efficiency of the makeup air filter for iodine (this is a decimal fraction, NOT percent)

k_1 ..... fraction of the airflow from the makeup air filter that is directed to the control room (this is a decimal fraction, NOT percent);

$k_1(g_1+f_1)$ ..... air flow rate from the makeup air filter to the control room recirculation loop upstream of the control room supply filter (cfm)

(g_1+f_1) ..... infiltration plus makeup air flow rates upstream of branch to control room recirculation loop (cfm);

g_2 ..... infiltration rate into the control room recirculation loop between the control room return and the control room supply filter (cfm)

b ..... air flow rate which bypasses the control room supply filter (cfm);

E_2 ..... filter efficiency of the control room supply air filter for iodine (this is a decimal fraction, NOT percent)

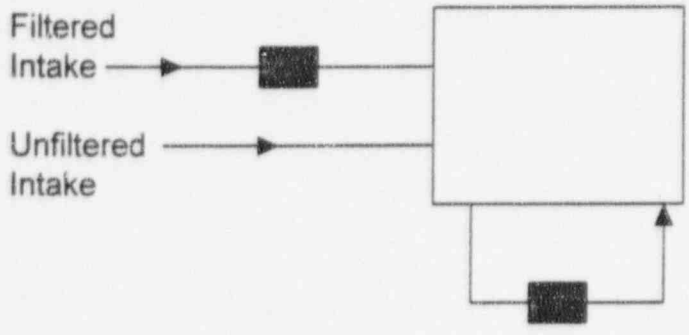
g_3 ..... infiltration rate into the control room supply air filter (cfm);

f_2 ..... ~~return~~ supply air flow rate ~~from~~ to the control room, ~~to the control room supply filter~~ (cfm);

Attachment 4

CONVERSION OF LA SALLE CONTROL ROOM PARAMETERS INTO BWROG MODEL INPUT VALUES

BWROG Simple Model



LaSalle Base Case Conversion

Filtered intake:

(1) f1 (1500 cfm) treated in series by makeup filter and control room supply air filter

(2) g1 + g2 (617 cfm) treated by control room supply air filter only

Total flow = 2117 cfm = 0.999 m^3/sec.

Filter efficiency:
Makeup filter transmittance = (0.10) (1500 cfm) = 150 cfm
Supply air filter transmittance (including bypass) =
(0.98) (0.25) [150 + 617] + (0.02) [150 + 617] = 203.26 cfm

$$\text{Overall efficiency} = \frac{2117 - 203.26}{2117} = 0.904 = 90.4\%$$

Unfiltered intake: g3 = 7 cfm = 0.0033 m^3/sec

Recirculation: Flow = 26340 cfm = 12.43 m^3/sec (constant)
Filter Efficiency : (0.75) [1-0.02] = 0.735 = 73.5%

LASALLE MSIV LEAKAGE CONTROL ROOM PARAMETERS

Case #	f_1 (cfm)	g_2+g_1 (cfm)	g_3 (cfm)	b (cfm)	Filter intake (cfm)	Intake eff (%)	Unfil intake (cfm)	Recir (cfm)	Recirc eff (%)	Filter intake m^3/sec	Intake eff (%)	Unfil intake m^3/sec	Recir m^3/sec	Recirc eff (%)
1A	1500	617	7	526.66	2117	90.399%	7	26340	73.5%	0.999	90.40%	0.0033	12.43	73.5%
2A	2550	617	7	526.66	3167	92.704%	7	26340	73.5%	1.495	92.70%	0.0033	12.43	73.5%
3A	1500	617	25	526.3	2117	90.399%	25	26340	73.5%	0.999	90.40%	0.0118	12.43	73.5%
4A	1500	617	50	525.8	2117	90.399%	50	26340	73.5%	0.999	90.40%	0.0236	12.43	73.5%
5A	1500	617	100	524.8	2117	90.399%	100	26340	73.5%	0.999	90.40%	0.0472	12.43	73.5%
6A	1500	800	7	526.66	2300	89.054%	7	26340	73.5%	1.085	89.05%	0.0033	12.43	73.5%
7A	1500	1000	7	526.66	2500	87.810%	7	26340	73.5%	1.180	87.81%	0.0033	12.43	73.5%

Parameter Recirc is the same meaning as total flow to control room.

Total flow to Control Room = Filtered Intake + Unfiltered Intake + thru recir filter = 26340 cfm (Constant), or 12.4 m3/sec

Bypass is always 2% of total thru = 2% of (Recirc + Filter Intake), or 2% (26340 - Unfilter Intake)

Attachment 5

SARGENT & LUNDY ENGINEERS	EXTERNAL DESIGN INFORMATION TRANSMITTAL	DIT-LS-EXT-0041
		Page 1 of 2

Attachment 6

July 02,1993
Project No. 9066-52
(DIT-LS-EXT-0041)
WIN No. 1889

Commonwealth Edison Company
LaSalle Station - Units 1&2

EAB and LPZ Boundary Accident X/Q Values Due to a Ground Level Release
Modification No. : N/A
System Code: N/A

Mr. D. Berkman
SEC Mod Design Supervisor
Commonwealth Edison Company
LaSalle Nuclear Station
RR #1 Box 220, 2601N 21st Rd
Marseilles, Il 61341

Dear Mr. Berkman:

Enclosed are the accident atmospheric dispersion (X/Q) factors calculated for the Exclusion Area Boundary (EAB) and the Low Population Zone (LPZ) boundary. The X/Q values were determined in accordance with Regulatory Guide 1.145 methodology and represent a ground level release via the Turbine Building.

If you have any questions, please feel free to contact me at (312)269-3117.

Yours very truly,

Anthony G. Klazura

Anthony G. Klazura
Principal Engineer

AGK
Copies:

J. W. Gieseker	J. L. Engleman
E. Seckinger	C. H. Furlow
CECo Chron	V. K. Gilautra
R. A. Parson	L. V. Jacques
N. Weber	W. J. Johnson
G. P. Lahti	M. Kaiseruddin
	ATD File

SARGENT & LUNDY ENGINEERS

EXTERNAL DESIGN INFORMATION TRANSMITTAL

DIT-LS-EXT-0041

STATUS OF INFORMATION:

X APPROVED
___ PRELIMINARY
___ REFERENCE/INFORMATION ONLY (not for design purposes)

X SAFETY RELATED
___ NON-SAFETY RELATED
___ REGULATORY RELATED

IDENTIFICATION OF THE SPECIFIC DESIGN INFORMATION TRANSMITTED AND PURPOSE OF ISSUE (List any supporting documents attached to DIT by its title, revision and/or issue date, and total number of pages for each supporting document.)

The following accident atmospheric dispersion (X/Q) factors were calculated for the LaSalle Station Exclusion Area Boundary (EAB) and Low Population Zone (LPZ) boundary due to a ground level release via the Turbine Building. The EAB was modeled as an irregularly shaped boundary. The distance between the release point and the EAB was defined as the distance from the closest point on the Turbine Building to the EAB within a 45 degree sector centered on the compass direction of interest. The LPZ boundary was modeled as a uniform boundary at a distance of 6400 meters from the release point. X/Q values were calculated following Regulatory Guide 1.145 methodology for a ground level release. Directionally dependent atmospheric dispersion factors were calculated based on 1982 through 1987 historical site meteorology for a release height of 33 feet above grade.

LaSalle Station Accident (X/Q)s : Ground Level Release

Boundary Type	Time Post Accident	(X/Q) Values (sec/m^3) (Based on RG 1.145 Methodology)
EAB	(0-2) Hr	5.1E-04
LPZ	(0-8) Hr	1.0E-05
LPZ	(8-24) Hr	6.7E-06
LPZ	(1-4) Days	2.6E-06
LPZ	(4-30) Days	6.5E-07

SOURCE OF INFORMATION

Calc. No. ATD-0282 Rev 1 Report No. N/A

Other N/A

A. G. Klazura Preparer	ATD Division	Anthony A. Klazura Preparer's Signature	07/02/93 Date
W. J. Johnson Reviewer	ATD Division	William J. Johnson Reviewer's Signature	07/02/93 Date

Attachment 7

LA SALLE EXCLUSION AREA BOUNDARY (EAB)
RADIOLOGICAL DOSE CALCULATION
(100 scfh per steam line)

LPZ X/Q (0-2 hours) = 1.10 E-05
EAB X/Q (0-2 hours) = 5.10 E-04 Ratio = 46.36

2 hour LPZ results multiplied by 46.36 to obtain EAB dose

	LPZ				*EAB*		
	WB	Thyroid	Beta		WB	Thyroid	Beta
OSEL1A	9.19 E-08	2.40 E-05	2.27 E-08		4.26 E-06	1.11 E-03	1.05 E-06
OSEL1B	0	0	0		0	0	0
OSNG1A	3.15 E-05	0	1.20 E-05		1.46 E-03	0	5.56 E-04
OSNG1B	0	0	0		0	0	0
OSOR1A	1.88 E-06	4.92 E-04	4.65 E-07		8.72 E-05	2.28 E-02	2.16 E-05
OSOR1B	0	0	0		0	0	0
RESUSP.*	0	0	0		0	0	0
Totals	3.3 E-05	5.2 E-04	1.3 E-05		1.6 E-03	2.4 E-02	5.8 E-04

*initial release occurs after 7200 seconds

MSIV Leakage Program Version 1.2a execution on 6-26-1995 at 15:50:59.23
LASALLE UNIT 1 MSIV OFF SITE I2 VIA DRAIN LINES LEAK RATE @ 400 SCFH Total

Input file= osella.lsl

CONTROL
power = 3.458E+03
mode = Offsite Evaluation

ISOTOPE

I-131	9.977E-07	2.631E+04	.357	1.05	2.960E-02	1.080E+06
I-132	8.426E-05	3.845E+04	.776	2.95	8.130E-02	6.440E+03
I-133	9.257E-06	5.502E+04	.589	1.08	7.640E-02	1.800E+05
I-134	2.196E-04	6.056E+04	.917	2.94	.117	1.070E+03
I-135	2.924E-05	5.195E+04	1.13	1.29	9.370E-02	3.130E+04

RELEASE

I-131	cmp 1 at	0:00:00.00	inst	24.0	drbl	.000	ff 1 dfctr 1
I-132	cmp 1 at	0:00:00.00	inst	24.0	drbl	.000	ff 1 dfctr 1
I-133	cmp 1 at	0:00:00.00	inst	24.0	drbl	.000	ff 1 dfctr 1
I-134	cmp 1 at	0:00:00.00	inst	24.0	drbl	.000	ff 1 dfctr 1
I-135	cmp 1 at	0:00:00.00	inst	24.0	drbl	.000	ff 1 dfctr 1

PLANT

comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	.998

Pipe compartment # 3

inside radius	2.46	outside radius	3.02
insul thickness	6.35	pipe length	353.
number of lines	4.00	inital temp	550.
mass/unit length	5.04	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

comp 4 at 0:00:00.00

leak rate	3.51	leak filtr	99.8
purge rate	.000	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	100.
volume	6.976E+03		

comp 5 at 0:00:00.00

leak rate	.000	leak filtr	.000
purge rate	1.000E+06	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	68.0
volume	2.917E+05		

METEOROLOGY

0:00:00.00	Chiqu= 1.100E-05	brthr= 3.470E-04	occup= 1.
0:02:00.00	Chiqu= 1.100E-05	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 6.700E-06	brthr= 1.750E-04	occup= 1.
1:00:00.00	Chiqu= 2.600E-06	brthr= 2.320E-04	occup= 1.
4:00:00.00	Chiqu= 6.500E-07	brthr= 2.320E-04	occup= 1.

OUTPUT TIMES
0:02:00.00
0:04:00.00
1:00:00.00
30:00:00.00

0:02:00.00	Whole Body	Thyroid	Beta
I-131	4.332E-09	1.732E-05	1.368E-09
I-132	2.394E-08	9.346E-08	3.400E-09
I-133	1.465E-08	5.755E-06	7.040E-09
I-134	2.073E-08	1.142E-08	3.599E-09
I-135	2.824E-08	8.418E-07	7.262E-09
total =	9.190E-08	2.403E-05	2.267E-08

0:04:00.00	Whole Body	Thyroid	Beta
I-131	4.760E-08	1.903E-04	1.503E-08
I-132	1.730E-07	6.754E-07	2.457E-08
I-133	1.542E-07	6.056E-05	7.407E-08
I-134	8.316E-08	4.581E-08	1.444E-08
I-135	2.681E-07	7.989E-06	6.892E-08
total =	7.260E-07	2.596E-04	1.970E-07

1:00:00.00	Whole Body	Thyroid	Beta
I-131	2.972E-06	6.704E-03	9.386E-07
I-132	9.183E-07	2.989E-06	1.305E-07
I-133	6.676E-06	1.530E-03	3.207E-06
I-134	1.379E-07	7.497E-08	2.393E-08
I-135	5.386E-06	1.035E-04	1.385E-06
total =	1.609E-05	8.341E-03	5.685E-06

30:00:00.00	Whole Body	Thyroid	Beta
I-131	1.180E-05	3.030E-02	3.726E-06
I-132	9.203E-07	2.994E-06	1.307E-07
I-133	1.108E-05	2.686E-03	5.322E-06
I-134	1.379E-07	7.497E-08	2.393E-08
I-135	5.965E-06	1.151E-04	1.534E-06
total =	2.990E-05	3.311E-02	1.074E-05

MSIV Leakage Program Version 1.2a execution on 6-26-1995 at 15:51:00.99
LASALLE UNIT 1 MSIV OFF SITE I2 VIA TURBINE LEAK RATE @ 400 SCFH Total

Input file= osel1b.ls1
CONTROL
power = 3.458E+03
mode = Offsite Evaluation
tbvol = 16.1
tbarea = 409.

ISOTOPE

I-131	9.977E-07	2.631E+04	.357	1.05	2.960E-02	1.080E+06
I-132	8.426E-05	3.845E+04	.776	2.95	8.130E-02	6.440E+03
I-133	9.257E-06	5.502E+04	.589	1.08	7.640E-02	1.800E+05
I-134	2.196E-04	6.056E+04	.917	2.94	.117	1.070E+03
I-135	2.924E-05	5.195E+04	1.13	1.29	9.370E-02	3.130E+04

RELEASE

I-131	cmp 1 at	0:00:00.00	inst	24.0	drbl .000	ff 1 dfctr 1
I-132	cmp 1 at	0:00:00.00	inst	24.0	drbl .000	ff 1 dfctr 1
I-133	cmp 1 at	0:00:00.00	inst	24.0	drbl .000	ff 1 dfctr 1
I-134	cmp 1 at	0:00:00.00	inst	24.0	drbl .000	ff 1 dfctr 1
I-135	cmp 1 at	0:00:00.00	inst	24.0	drbl .000	ff 1 dfctr 1

PLANT
comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	2.430E-03

Pipe compartment # 3

inside radius	30.6	outside radius	33.0
insul thickness	7.62	pipe length	226.
number of lines	4.00	inital temp	550.
mass/unit length	260.	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

Turbine compartment # 4
split factor 1.00
comp 5 at 0:00:00.00

leak rate	.000	leak filtr	.000
purge rate	1.000E+06	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	68.0
volume	2.917E+05		

METEOROLOGY

0:00:00.00	Chiqu= 1.100E-05	brthr= 3.470E-04	occup= 1.
0:02:00.00	Chiqu= 1.100E-05	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 6.700E-06	brthr= 1.750E-04	occup= 1.
1:00:00.00	Chiqu= 2.600E-06	brthr= 2.320E-04	occup= 1.
4:00:00.00	Chiqu= 6.500E-07	brthr= 2.320E-04	occup= 1.

OUTPUT TIMES
0:02:00.00

0:04:00.00
1:00:00.00
30:00:00.00

0:02:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

0:04:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

1:00:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

30:00:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

MSIV Leakage Program Version 1.2a execution on 6-26-1995 at 15:51:02.31
LASALLE UNIT 1 MSIV OFF SITE NG VIA DRAIN LINES LEAK RATE @ 400 SCFH Total

Input file= osng1a.ls1
CONTROL
power = 3.458E+03
mode = Offsite Evaluation

ISOTOPE

KR-83M	1.036E-04	3.137E+03	9.100E-03	.320	3.160E-06	.000
KR-85	2.039E-09	302.	.514	4.400E-03	3.380E-02	.000
KR-85M	4.389E-05	6.734E+03	.162	.958	6.840E-02	.000
KR-87	1.519E-04	1.292E+04	.917	.933	.226	.000
KR-88	6.889E-05	1.830E+04	1.36	1.47	5.350E-02	.000
KR-89	3.639E-03	2.276E+04	1.13	1.96	.195	.000
XE-131M	6.694E-07	158.	3.240E-02	.673	1.360E-02	.000
XE-133	1.522E-06	5.528E+04	5.370E-02	.845	1.100E-02	.000
XE-133M	3.556E-06	2.305E+03	9.400E-02	.253	2.750E-02	.000
XE-135	2.103E-05	7.149E+03	.248	.994	5.130E-02	.000
XE-135M	7.361E-04	1.042E+04	.461	.955	1.820E-02	.000
XE-137	3.028E-03	4.852E+04	.423	.453	.310	.000
XE-138	8.140E-04	4.610E+04	.773	1.21	.116	.000

RELEASE

KR-83M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
KR-85	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
KR-85M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
KR-87	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
KR-88	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
KR-89	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-131M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-133	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-133M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-135	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-135M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-137	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-138	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0

PLANT
comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	.998

Pipe compartment # 3

inside radius	2.46	outside radius	3.02
insul thickness	6.35	pipe length	353.
number of lines	4.00	inital temp	550.
mass/unit length	5.04	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

comp 4 at 0:00:00.00

leak rate	3.51	leak filtr	.000
purge rate	.000	purge filtr	.000
recirc rate	.000	recirc filtr	.000

```
              pressure        1.00      temperature   100.
              volume         6.976E+03
     comp  5  at  0:00:00.00
              leak   rate     .000      leak   filtr  .000
              purge  rate   1.000E+06   purge  filtr  .000
              recirc rate     .000      recirc filtr  .000
              pressure        1.00      temperature   68.0
              volume         2.917E+05

 METEOROLOGY
        0:00:00.00  Chiqu= 1.100E-05  brthr= 3.470E-04  occup= 1.
        0:02:00.00  Chiqu= 1.100E-05  brthr= 3.470E-04  occup= 1.
        0:08:00.00  Chiqu= 6.700E-06  brthr= 1.750E-04  occup= 1.
        1:00:00.00  Chiqu= 2.600E-06  brthr= 2.320E-04  occup= 1.
        4:00:00.00  Chiqu= 6.500E-07  brthr= 2.320E-04  occup= 1.

 OUTPUT TIMES
        0:02:00.00
        0:04:00.00
        1:00:00.00
       30:00:00.00
```

0:02:00.00	Whole Body	Thyroid	Beta
KR-83M	4.560E-09	0.000E+00	1.979E-11
KR-85	6.174E-10	0.000E+00	3.691E-08
KR-85M	7.342E-07	0.000E+00	1.294E-06
KR-87	4.199E-06	0.000E+00	4.436E-06
KR-88	2.226E-05	0.000E+00	2.383E-06
KR-89	5.913E-11	0.000E+00	2.082E-11
XE-131M	3.111E-09	0.000E+00	7.762E-09
XE-133	2.251E-06	0.000E+00	2.183E-06
XE-133M	4.862E-08	0.000E+00	2.249E-07
XE-135	1.413E-06	0.000E+00	1.176E-06
XE-135M	8.278E-08	0.000E+00	1.369E-08
XE-137	5.570E-11	0.000E+00	3.604E-10
XE-138	5.391E-07	0.000E+00	2.674E-07
total =	3.154E-05	0.000E+00	1.202E-05

0:04:00.00	Whole Body	Thyroid	Beta
KR-83M	3.024E-08	0.000E+00	1.313E-10
KR-85	6.864E-09	0.000E+00	4.103E-07
KR-85M	6.509E-06	0.000E+00	1.147E-05
KR-87	2.238E-05	0.000E+00	2.365E-05
KR-88	1.743E-04	0.000E+00	1.866E-05
KR-89	5.913E-11	0.000E+00	2.082E-11
XE-131M	3.447E-08	0.000E+00	8.599E-08
XE-133	2.483E-05	0.000E+00	2.407E-05
XE-133M	5.305E-07	0.000E+00	2.454E-06
XE-135	1.407E-05	0.000E+00	1.171E-05
XE-135M	1.061E-07	0.000E+00	1.755E-08
XE-137	5.570E-11	0.000E+00	3.604E-10
XE-138	6.490E-07	0.000E+00	3.220E-07
total =	2.435E-04	0.000E+00	9.286E-05

1:00:00.00	Whole Body	Thyroid	Beta
KR-83M	1.246E-07	0.000E+00	5.409E-10
KR-85	5.329E-07	0.000E+00	3.186E-05
KR-85M	9.025E-05	0.000E+00	1.591E-04
KR-87	5.600E-05	0.000E+00	5.917E-05
KR-88	1.287E-03	0.000E+00	1.377E-04
KR-89	5.913E-11	0.000E+00	2.082E-11
XE-131M	2.591E-06	0.000E+00	6.465E-06

XE-133	1.792E-03	0.000E+00	1.738E-03
XE-133M	3.477E-05	0.000E+00	1.608E-04
XE-135	4.318E-04	0.000E+00	3.594E-04
XE-135M	1.065E-07	0.000E+00	1.762E-08
XE-137	5.570E-11	0.000E+00	3.604E-10
XE-138	6.501E-07	0.000E+00	3.225E-07
total =	3.695E-03	0.000E+00	2.652E-03

30:00:00.00	Whole Body	Thyroid	Beta
KR-83M	1.247E-07	0.000E+00	5.414E-10
KR-85	4.198E-05	0.000E+00	2.510E-03
KR-85M	9.574E-05	0.000E+00	1.688E-04
KR-87	5.600E-05	0.000E+00	5.917E-05
KR-88	1.300E-03	0.000E+00	1.391E-04
KR-89	5.913E-11	0.000E+00	2.082E-11
XE-131M	8.716E-05	0.000E+00	2.175E-04
XE-133	2.834E-02	0.000E+00	2.748E-02
XE-133M	2.259E-04	0.000E+00	1.045E-03
XE-135	6.033E-04	0.000E+00	5.022E-04
XE-135M	1.065E-07	0.000E+00	1.762E-08
XE-137	5.570E-11	0.000E+00	3.604E-10
XE-138	6.501E-07	0.000E+00	3.225E-07
total =	3.075E-02	0.000E+00	3.212E-02

MSIV Leakage Program Version 1.2a execution on 6-26-1995 at 15:51:05.77
AASALLE UNIT 1 MSIV OFF SITE NG VIA TURBINE LEAK RATE @ 400 SCFH Total

Input file= osng1b.ls1

CONTROL

power =	3.458E+03
mode =	Offsite Evaluation
tbvol =	16.1
tbarea =	409.

ISOTOPE

KR-83M	1.036E-04	3.137E+03	9.100E-03	.320	3.160E-06	.000
KR-85	2.039E-09	302.	.514	4.400E-03	3.380E-02	.000
KR-85M	4.389E-05	6.734E+03	.162	.958	6.840E-02	.000
KR-87	1.519E-04	1.292E+04	.917	.933	.226	.000
KR-88	6.889E-05	1.830E+04	1.36	1.47	5.350E-02	.000
KR-89	3.639E-03	2.276E+04	1.13	1.96	.195	.000
XE-131M	6.694E-07	158.	3.240E-02	.673	1.360E-02	.000
XE-133	1.522E-06	5.528E+04	5.370E-02	.845	1.100E-02	.000
XE-133M	3.556E-06	2.305E+03	9.400E-02	.253	2.750E-02	.000
XE-135	2.103E-05	7.149E+03	.248	.994	5.130E-02	.000
XE-135M	7.361E-04	1.042E+04	.461	.955	1.820E-02	.000
XE-137	3.028E-03	4.852E+04	.423	.453	.310	.000
XE-138	8.140E-04	4.610E+04	.773	1.21	.116	.000

RELEASE

KR-83M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
KR-85	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
KR-85M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
KR-87	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
KR-88	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
KR-89	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-131M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-133	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-133M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-135	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-135M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-137	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-138	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0

PLANT

comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	2.430E-03

Pipe compartment # 3

inside radius	30.6	outside radius	33.0
insul thickness	7.62	pipe length	226.
number of lines	4.00	inital temp	550.
mass/unit length	260.	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

Turbine compartment # 4

split factor 1.00

comp 5 at 0:00:00.00

leak rate	.000	leak filtr	.000
purge rate	1.000E+06	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	68.0
volume	2.917E+05		

METEOROLOGY

0:00:00.00	Chiqu= 1.100E-05	brthr= 3.470E-04	occup= 1.
0:02:00.00	Chiqu= 1.100E-05	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 6.700E-06	brthr= 1.750E-04	occup= 1.
1:00:00.00	Chiqu= 2.600E-06	brthr= 2.320E-04	occup= 1.
4:00:00.00	Chiqu= 6.500E-07	brthr= 2.320E-04	occup= 1.

OUTPUT TIMES

0:02:00.00
0:04:00.00
1:00:00.00
30:00:00.00

0:02:00.00	Whole Body	Thyroid	Beta
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	0.000E+00	0.000E+00	0.000E+00
KR-85M	0.000E+00	0.000E+00	0.000E+00
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	0.000E+00	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	0.000E+00	0.000E+00	0.000E+00
XE-133	0.000E+00	0.000E+00	0.000E+00
XE-133M	0.000E+00	0.000E+00	0.000E+00
XE-135	0.000E+00	0.000E+00	0.000E+00
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

0:04:00.00	Whole Body	Thyroid	Beta
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	0.000E+00	0.000E+00	0.000E+00
KR-85M	0.000E+00	0.000E+00	0.000E+00
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	0.000E+00	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	0.000E+00	0.000E+00	0.000E+00
XE-133	0.000E+00	0.000E+00	0.000E+00
XE-133M	0.000E+00	0.000E+00	0.000E+00
XE-135	0.000E+00	0.000E+00	0.000E+00
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

1:00:00.00	Whole Body	Thyroid	Beta
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	0.000E+00	0.000E+00	0.000E+00
KR-85M	0.000E+00	0.000E+00	0.000E+00
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	0.000E+00	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	0.000E+00	0.000E+00	0.000E+00
XE-133	0.000E+00	0.000E+00	0.000E+00
XE-133M	0.000E+00	0.000E+00	0.000E+00

XE-135	0.000E+00	0.000E+00	0.000E+00
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

30:00:00.00	Whole Body	Thyroid	Beta
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	6.969E-10	0.000E+00	4.166E-08
KR-85M	7.976E-34	0.000E+00	1.406E-33
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	1.401E-45	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	7.438E-10	0.000E+00	1.856E-09
XE-133	7.624E-08	0.000E+00	7.392E-08
XE-133M	1.831E-11	0.000E+00	8.468E-11
XE-135	4.176E-21	0.000E+00	3.476E-21
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	7.769E-08	0.000E+00	1.175E-07

MSIV Leakage Program Version 1.2a execution on 6-26-1995 at 15:51:08.24
LASALLE UNIT 1 MSIV OFF SITE ORGI VIA DRAIN LINES LEAK RATE @ 400 SCFH Total

Input file= osor1a.ls1
CONTROL
power = 3.458E+03
mode = Offsite Evaluation

ISOTOPE

I-131	9.977E-07	2.631E+04	.357	1.05	2.960E-02	1.080E+06
I-132	8.426E-05	3.845E+04	.776	2.95	8.130E-02	6.440E+03
I-133	9.257E-06	5.502E+04	.589	1.08	7.640E-02	1.800E+05
I-134	2.196E-04	6.056E+04	.917	2.94	.117	1.070E+03
I-135	2.924E-05	5.195E+04	1.13	1.29	9.370E-02	3.130E+04

RELEASE

I-131	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-132	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-133	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-134	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-135	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0

PLANT

comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	.998

Pipe compartment # 3

inside radius	2.46	outside radius	3.02
insul thickness	6.35	pipe length	353.
number of lines	4.00	inital temp	550.
mass/unit length	5.04	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

comp 4 at 0:00:00.00

leak rate	3.51	leak filtr	.000
purge rate	.000	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	100.
volume	6.976E+03		

comp 5 at 0:00:00.00

leak rate	.000	leak filtr	.000
purge rate	1.000E+06	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	68.0
volume	2.917E+05		

METEOROLOGY

0:00:00.00	Chiqu= 1.100E-05	brthr= 3.470E-04	occup= 1.
0:02:00.00	Chiqu= 1.100E-05	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 6.700E-06	brthr= 1.750E-04	occup= 1.
1:00:00.00	Chiqu= 2.600E-06	brthr= 2.320E-04	occup= 1.
4:00:00.00	Chiqu= 6.500E-07	brthr= 2.320E-04	occup= 1.

OUTPUT TIMES
0:02:00.00
0:04:00.00
1:00:00.00
30:00:00.00

0:02:00.00	Whole Body	Thyroid	Beta
I-131	8.879E-08	3.551E-04	2.804E-08
I-132	4.906E-07	1.916E-06	6.969E-08
I-133	3.003E-07	1.180E-04	1.443E-07
I-134	4.249E-07	2.341E-07	7.376E-08
I-135	5.789E-07	1.725E-05	1.488E-07
total =	1.884E-06	4.924E-04	4.646E-07

0:04:00.00	Whole Body	Thyroid	Beta
I-131	9.818E-07	3.926E-03	3.101E-07
I-132	3.566E-06	1.392E-05	5.065E-07
I-133	3.180E-06	1.249E-03	1.528E-06
I-134	1.712E-06	9.431E-07	2.972E-07
I-135	5.528E-06	1.648E-04	1.421E-06
total =	1.497E-05	5.355E-03	4.063E-06

1:00:00.00	Whole Body	Thyroid	Beta
I-131	7.266E-05	1.614E-01	2.295E-05
I-132	1.967E-05	6.337E-05	2.794E-06
I-133	1.605E-04	3.615E-02	7.710E-05
I-134	2.857E-06	1.553E-06	4.960E-07
I-135	1.243E-04	2.340E-03	3.195E-05
total =	3.799E-04	2.000E-01	1.353E-04

30:00:00.00	Whole Body	Thyroid	Beta
I-131	1.754E-03	4.658E+00	5.541E-04
I-132	1.973E-05	6.354E-05	2.803E-06
I-133	4.266E-04	1.060E-01	2.049E-04
I-134	2.857E-06	1.553E-06	4.960E-07
I-135	1.478E-04	2.809E-03	3.799E-05
total =	2.351E-03	4.767E+00	8.003E-04

```
 MSIV Leakage Program Version 1.2a execution on  6-26-1995 at 15:51:09.94
LASALLE UNIT 1 MSIV  OFF SITE ORGI VIA TURBINE LEAK RATE @ 400  SCFH Total


Input  file= osor1b.ls1
CONTROL
    power =  3.458E+03
    mode  = Offsite Evaluation
    tbvol =   16.1
    tbarea =   409.

ISOTOPE
    I-131    9.977E-07 2.631E+04  .357      1.05     2.960E-02 1.080E+06
    I-132    8.426E-05 3.845E+04  .776      2.95     8.130E-02 6.440E+03
    I-133    9.257E-06 5.502E+04  .589      1.08     7.640E-02 1.800E+05
    I-134    2.196E-04 6.056E+04  .917      2.94       .117    1.070E+03
    I-135    2.924E-05 5.195E+04  1.13      1.29     9.370E-02 3.130E+04

RELEASE
    I-131   cmp 1 at  0:00:00.00 inst  1.00     drbl  .000     ff 1 dfctr 0
    I-132   cmp 1 at  0:00:00.00 inst  1.00     drbl  .000     ff 1 dfctr 0
    I-133   cmp 1 at  0:00:00.00 inst  1.00     drbl  .000     ff 1 dfctr 0
    I-134   cmp 1 at  0:00:00.00 inst  1.00     drbl  .000     ff 1 dfctr 0
    I-135   cmp 1 at  0:00:00.00 inst  1.00     drbl  .000     ff 1 dfctr 0

PLANT
    comp  1  at  0:00:00.00
             leak   rate   1.08     leak   filtr  .000
             purge  rate   .635     purge  filtr  100.
             recirc rate   .000     recirc filtr  .000
             pressure      2.83     temperature   225.
             volume      1.157E+04
    Pipe compartment # 2
             inside radius     30.3     outside radius  33.0
             insul thickness   7.62     pipe length     208.
             number of lines   4.00     inital temp     550.
             mass/unit length  287.     heat capacity   .117
             insul conducty   2.250E-02 split factor   2.430E-03
    Pipe compartment # 3
             inside radius     30.6     outside radius  33.0
             insul thickness   7.62     pipe length     226.
             number of lines   4.00     inital temp     550.
             mass/unit length  260.     heat capacity   .117
             insul conducty   2.250E-02 split factor    1.00
    Turbine compartment # 4
             split factor      1.00
    comp  5  at  0:00:00.00
             leak   rate   .000     leak   filtr  .000
             purge  rate  1.000E+06 purge  filtr  .000
             recirc rate   .000     recirc filtr  .000
             pressure      1.00     temperature   68.0
             volume      2.917E+05

METEOROLOGY
      0:00:00.00  Chiqu= 1.100E-05  brthr= 3.470E-04  occup= 1.
      0:02:00.00  Chiqu= 1.100E-05  brthr= 3.470E-04  occup= 1.
      0:08:00.00  Chiqu= 6.700E-06  brthr= 1.750E-04  occup= 1.
      1:00:00.00  Chiqu= 2.600E-06  brthr= 2.320E-04  occup= 1.
      4:00:00.00  Chiqu= 6.500E-07  brthr= 2.320E-04  occup= 1.

OUTPUT TIMES
      0:02:00.00
```

0:04:00.00
1:00:00.00
30:00:00.00

0:02:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

0:04:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

1:00:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

30:00:00.00	Whole Body	Thyroid	Beta
I-131	9.960E-09	2.663E-05	3.146E-09
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	2.885E-15	7.575E-13	1.386E-15
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	1.466E-25	2.921E-24	3.769E-26
total =	9.960E-09	2.663E-05	3.146E-09

MSIV Leakage Program Version 1.2a execution on 6-26-1995 at 15:51:11.21
LASALLE UNIT 1 MSIV OFF SITE RESUSP VIA DRAIN LINES LEAK RATE @ 400 SCFH Total

Input file= osrs1a.ls1
CONTROL
power = 3.458E+03
mode = Offsite Evaluation

ISOTOPE
I-131 9.977E-07 2.631E+04 .357 1.05 2.960E-02 1.080E+06

RELEASE
I-131 cmp 1 at 0:00:00.00 inst .000 drbl 1.147E-04 ff 1 dfctr 0
I-131 cmp 1 at 0:02:00.00 inst .000 drbl 7.682E-04 ff 1 dfctr 0
I-131 cmp 1 at 0:08:00.00 inst .000 drbl 4.797E-03 ff 1 dfctr 0
I-131 cmp 1 at 0:21:00.00 inst .000 drbl 1.146E-02 ff 1 dfctr 0
I-131 cmp 1 at 1:00:00.00 inst .000 drbl 2.209E-02 ff 1 dfctr 0
I-131 cmp 1 at 1:16:00.00 inst .000 drbl 3.411E-02 ff 1 dfctr 0
I-131 cmp 1 at 2:00:00.00 inst .000 drbl 4.345E-02 ff 1 dfctr 0
I-131 cmp 1 at 2:16:00.00 inst .000 drbl 5.632E-02 ff 1 dfctr 0
I-131 cmp 1 at 4:00:00.00 inst .000 drbl 6.410E-02 ff 1 dfctr 0
I-131 cmp 1 at 6:00:00.00 inst .000 drbl 6.104E-02 ff 1 dfctr 0
I-131 cmp 1 at 8:00:00.00 inst .000 drbl 5.223E-02 ff 1 dfctr 0
I-131 cmp 1 at 11:00:00.00 inst .000 drbl 3.985E-02 ff 1 dfctr 0
I-131 cmp 1 at 15:00:00.00 inst .000 drbl 2.337E-02 ff 1 dfctr 0
I-131 cmp 1 at 23:00:00.00 inst .000 drbl 1.098E-02 ff 1 dfctr 0

PLANT
comp 1 at 0:00:00.00
leak rate 3.51 leak filtr .000
purge rate .000 purge filtr .000
recirc rate .000 recirc filtr .000
pressure 1.00 temperature 100.
volume 6.976E+03
comp 2 at 0:00:00.00
leak rate .000 leak filtr .000
purge rate 1.000E+06 purge filtr .000
recirc rate .000 recirc filtr .000
pressure 1.00 temperature 68.0
volume 2.917E+05

METEOROLOGY
0:00:00.00 Chiqu= 1.100E-05 brthr= 3.470E-04 occup= 1.
0:02:00.00 Chiqu= 1.100E-05 brthr= 3.470E-04 occup= 1.
0:08:00.00 Chiqu= 6.700E-06 brthr= 1.750E-04 occup= 1.
1:00:00.00 Chiqu= 2.600E-06 brthr= 2.320E-04 occup= 1.
4:00:00.00 Chiqu= 6.500E-07 brthr= 2.320E-04 occup= 1.

OUTPUT TIMES
0:02:00.00
0:04:00.00
1:00:00.00
30:00:00.00

0:02:00.00	Whole Body	Thyroid	Beta
I-131	1.236E-09	4.943E-06	3.904E-10

0:04:00.00	Whole Body	Thyroid	Beta
I-131	1.198E-08	4.789E-05	3.783E-09

1:00:00.00 Whole Body Thyroid Beta

I-131	2.395E-06	4.995E-03	7.566E-07

30:00:00.00	Whole Body	Thyroid	Beta
I-131	1.320E-03	3.528E+00	4.169E-04

Date	Time	Size	Attr.	Page	File
06-26-95	15:51	4707	a	1	c:\lasalle\rv6_95\osel1a.ot1
06-26-95	15:51	4518	a	3	c:\lasalle\rv6_95\osel1b.ot1
06-26-95	15:51	7691	a	5	c:\lasalle\rv6_95\osng1a.ot1
06-26-95	15:51	7502	a	8	c:\lasalle\rv6_95\osng1b.ot1
06-26-95	15:51	4707	a	11	c:\lasalle\rv6_95\osor1a.ot1
06-26-95	15:51	4518	a	13	c:\lasalle\rv6_95\osor1b.ot1
06-26-95	15:51	2973	a	15	c:\lasalle\rv6_95\osrs1a.ot1

Date	Time	Size	Attr.	Page	File
06-24-95	09:17	4921	a	1	c:\lasalle\rv6_95\crel1a.ot1
06-24-95	09:17	4921	a	3	c:\lasalle\rv6_95\crel1a.ot2
06-24-95	09:18	4921	a	5	c:\lasalle\rv6_95\crel1a.ot3
06-24-95	09:18	4921	a	7	c:\lasalle\rv6_95\crel1a.ot4
06-24-95	09:18	4921	a	9	c:\lasalle\rv6_95\crel1a.ot5
06-24-95	09:19	4921	a	11	c:\lasalle\rv6_95\crel1a.ot6
06-24-95	09:19	4921	a	13	c:\lasalle\rv6_95\crel1a.ot7
06-24-95	09:17	4732	a	15	c:\lasalle\rv6_95\crel1b.ot1
06-24-95	09:17	4732	a	17	c:\lasalle\rv6_95\crel1b.ot2
06-24-95	09:18	4732	a	19	c:\lasalle\rv6_95\crel1b.ot3
06-24-95	09:18	4732	a	21	c:\lasalle\rv6_95\crel1b.ot4
06-24-95	09:18	4732	a	23	c:\lasalle\rv6_95\crel1b.ot5
06-24-95	09:19	4732	a	25	c:\lasalle\rv6_95\crel1b.ot6
06-24-95	09:19	4732	a	27	c:\lasalle\rv6_95\crel1b.ot7
06-24-95	09:17	7905	a	29	c:\lasalle\rv6_95\crng1a.ot1
06-24-95	09:18	7905	a	32	c:\lasalle\rv6_95\crng1a.ot2
06-24-95	09:18	7905	a	35	c:\lasalle\rv6_95\crng1a.ot3
06-24-95	09:18	7905	a	38	c:\lasalle\rv6_95\crng1a.ot4
06-24-95	09:18	7905	a	41	c:\lasalle\rv6_95\crng1a.ot5
06-24-95	09:19	7905	a	44	c:\lasalle\rv6_95\crng1a.ot6
06-24-95	09:19	7905	a	47	c:\lasalle\rv6_95\crng1a.ot7
06-24-95	09:17	7716	a	50	c:\lasalle\rv6_95\crng1b.ot1
06-24-95	09:18	7716	a	53	c:\lasalle\rv6_95\crng1b.ot2
06-24-95	09:18	7716	a	56	c:\lasalle\rv6_95\crng1b.ot3
06-24-95	09:18	7716	a	59	c:\lasalle\rv6_95\crng1b.ot4
06-24-95	09:18	7716	a	62	c:\lasalle\rv6_95\crng1b.ot5
06-24-95	09:19	7716	a	65	c:\lasalle\rv6_95\crng1b.ot6
06-24-95	09:19	7716	a	68	c:\lasalle\rv6_95\crng1b.ot7
06-24-95	09:17	4921	a	71	c:\lasalle\rv6_95\cror1a.ot1
06-24-95	09:18	4921	a	73	c:\lasalle\rv6_95\cror1a.ot2
06-24-95	09:18	4921	a	75	c:\lasalle\rv6_95\cror1a.ot3
06-24-95	09:18	4921	a	77	c:\lasalle\rv6_95\cror1a.ot4
06-24-95	09:18	4921	a	79	c:\lasalle\rv6_95\cror1a.ot5
06-24-95	09:19	4921	a	81	c:\lasalle\rv6_95\cror1a.ot6
06-24-95	09:19	4921	a	83	c:\lasalle\rv6_95\cror1a.ot7
06-24-95	09:17	4732	a	85	c:\lasalle\rv6_95\cror1b.ot1
06-24-95	09:18	4732	a	87	c:\lasalle\rv6_95\cror1b.ot2
06-24-95	09:18	4732	a	89	c:\lasalle\rv6_95\cror1b.ot3
06-24-95	09:18	4732	a	91	c:\lasalle\rv6_95\cror1b.ot4
06-24-95	09:18	4732	a	93	c:\lasalle\rv6_95\cror1b.ot5
06-24-95	09:19	4732	a	95	c:\lasalle\rv6_95\cror1b.ot6
06-24-95	09:19	4732	a	97	c:\lasalle\rv6_95\cror1b.ot7
06-24-95	09:17	3187	a	99	c:\lasalle\rv6_95\crrs1a.ot1
06-24-95	09:18	3187	a	101	c:\lasalle\rv6_95\crrs1a.ot2
06-24-95	09:18	3187	a	103	c:\lasalle\rv6_95\crrs1a.ot3
06-24-95	09:18	3187	a	105	c:\lasalle\rv6_95\crrs1a.ot4
06-24-95	09:18	3187	a	107	c:\lasalle\rv6_95\crrs1a.ot5
06-24-95	09:19	3187	a	109	c:\lasalle\rv6_95\crrs1a.ot6
06-24-95	09:19	3187	a	111	c:\lasalle\rv6_95\crrs1a.ot7

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:17:37.86
LASALLE UNIT 1 MSIV CNTRL RM I2 VIA DRAIN LINES LEAK RATE @ 400 SCFH Total

Input file= crel1a.lc1
CONTROL
power = 3.458E+03
mode = Control Room

ISOTOPE

I-131	9.977E-07	2.631E+04	.357	1.05	2.960E-02	1.080E+06
I-132	8.426E-05	3.845E+04	.776	2.95	8.130E-02	6.440E+03
I-133	9.257E-06	5.502E+04	.589	1.08	7.640E-02	1.800E+05
I-134	2.196E-04	6.056E+04	.917	2.94	.117	1.070E+03
I-135	2.924E-05	5.195E+04	1.13	1.29	9.370E-02	3.130E+04

RELEASE

I-131	cmp 1 at	0:00:00.00	inst	24.0	drbl	.000	ff 1 dfctr 1
I-132	cmp 1 at	0:00:00.00	inst	24.0	drbl	.000	ff 1 dfctr 1
I-133	cmp 1 at	0:00:00.00	inst	24.0	drbl	.000	ff 1 dfctr 1
I-134	cmp 1 at	0:00:00.00	inst	24.0	drbl	.000	ff 1 dfctr 1
I-135	cmp 1 at	0:00:00.00	inst	24.0	drbl	.000	ff 1 dfctr 1

PLANT

comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	.998

Pipe compartment # 3

inside radius	2.46	outside radius	3.02
insul thickness	6.35	pipe length	353.
number of lines	4.00	inital temp	550.
mass/unit length	5.04	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

comp 4 at 0:00:00.00

leak rate	3.51	leak filtr	99.8
purge rate	.000	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	100.
volume	6.976E+03		

comp 5 at 0:00:00.00

leak rate	.000	leak filtr	.000
purge rate	1.000E+06	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	68.0
volume	2.917E+05		

METEOROLOGY

0:00:00.00	Chiqu= 2.650E-04	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 1.560E-04	brthr= 3.470E-04	occup= 1.
1:00:00.00	Chiqu= 9.940E-05	brthr= 3.470E-04	occup= .6
4:00:00.00	Chiqu= 4.370E-05	brthr= 3.470E-04	occup= .4

OUTPUT TIMES

0:02:00.00
0:04:00.00
1:00:00.00
30:00:00.00

CONTROL ROOM
0:00:00.00

Vent filt intake	.999	Intake Filt Eff	90.4
Recirc Rate	12.4	Recirc Filt Eff	73.5
Vent Unfilt Intk	3.300E-03	Cont Room Volum	3.326E+03
CR Gamma Volum	3.326E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	4.157E-11	3.443E-06	2.720E-10
I-132	2.137E-10	1.846E-08	6.716E-10
I-133	1.365E-10	1.143E-06	1.398E-09
I-134	1.775E-10	2.229E-09	7.025E-10
I-135	2.347E-10	1.670E-07	1.441E-09
total =	8.040E-10	4.774E-06	4.485E-09

0:04:00.00	Whole Body	Thyroid	Beta
I-131	5.049E-10	4.182E-05	3.303E-09
I-132	1.704E-09	1.472E-07	5.355E-09
I-133	1.588E-09	1.330E-05	1.626E-08
I-134	7.802E-10	9.800E-09	3.088E-09
I-135	2.461E-09	1.751E-06	1.510E-08
total =	7.038E-09	5.702E-05	4.311E-08

1:00:00.00	Whole Body	Thyroid	Beta
I-131	3.263E-08	2.702E-03	2.134E-07
I-132	9.424E-09	8.141E-07	2.962E-08
I-133	7.122E-08	5.963E-04	7.294E-07
I-134	1.330E-09	1.670E-08	5.263E-09
I-135	5.134E-08	3.652E-05	3.151E-07
total =	1.659E-07	3.336E-03	1.293E-06

30:00:00.00	Whole Body	Thyroid	Beta
I-131	1.343E-07	1.113E-02	8.787E-07
I-132	9.445E-09	8.158E-07	2.968E-08
I-133	1.179E-07	9.870E-04	1.207E-06
I-134	1.330E-09	1.670E-08	5.263E-09
I-135	5.681E-08	4.042E-05	3.487E-07
total =	3.198E-07	1.215E-02	2.470E-06

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:17:54.06
LASALLE UNIT 1 MSIV CNTRL RM I2 VIA DRAIN LINES LEAK RATE @ 400 SCFH Total

Input file= crella.lc2

CONTROL
power = 3.458E+03
mode = Control Room

ISOTOPE

I-131	9.977E-07	2.631E+04	.357	1.05	2.960E-02	1.080E+06
I-132	8.426E-05	3.845E+04	.776	2.95	8.130E-02	6.440E+03
I-133	9.257E-06	5.502E+04	.589	1.08	7.640E-02	1.800E+05
I-134	2.196E-04	6.056E+04	.917	2.94	.117	1.070E+03
I-135	2.924E-05	5.195E+04	1.13	1.29	9.370E-02	3.130E+04

RELEASE

I-131	cmp 1 at	0:00:00.00	inst	24.0	drbl	.000	ff 1 dfctr 1
I-132	cmp 1 at	0:00:00.00	inst	24.0	drbl	.000	ff 1 dfctr 1
I-133	cmp 1 at	0:00:00.00	inst	24.0	drbl	.000	ff 1 dfctr 1
I-134	cmp 1 at	0:00:00.00	inst	24.0	drbl	.000	ff 1 dfctr 1
I-135	cmp 1 at	0:00:00.00	inst	24.0	drbl	.000	ff 1 dfctr 1

PLANT

comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	.998

Pipe compartment # 3

inside radius	2.46	outside radius	3.02
insul thickness	6.35	pipe length	353.
number of lines	4.00	inital temp	550.
mass/unit length	5.04	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

comp 4 at 0:00:00.00

leak rate	3.51	leak filtr	99.8
purge rate	.000	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	100.
volume	6.976E+03		

comp 5 at 0:00:00.00

leak rate	.000	leak filtr	.000
purge rate	1.000E+06	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	68.0
volume	2.917E+05		

METEOROLOGY

0:00:00.00	Chiqu= 2.650E-04	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 1.560E-04	brthr= 3.470E-04	occup= 1.
1:00:00.00	Chiqu= 9.940E-05	brthr= 3.470E-04	occup= .6
4:00:00.00	Chiqu= 4.370E-05	brthr= 3.470E-04	occup= .4

OUTPUT TIMES

0:02:00.00
0:04:00.00
1:00:00.00
30:00:00.00

CONTROL ROOM
0:00:00.00

Vent filt intake	1.50	Intake Filt Eff	92.7
Recirc Rate	12.4	Recirc Filt Eff	73.5
Vent Unfilt Intk	3.300E-03	Cont Room Volum	3.326E+03
CR Gamma Volum	3.326E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	4.522E-11	3.746E-06	2.958E-10
I-132	2.325E-10	2.009E-08	7.307E-10
I-133	1.485E-10	1.244E-06	1.521E-09
I-134	1.932E-10	2.426E-09	7.646E-10
I-135	2.553E-10	1.816E-07	1.567E-09
total =	8.748E-10	5.193E-06	4.880E-09

0:04:00.00	Whole Body	Thyroid	Beta
I-131	5.467E-10	4.528E-05	3.577E-09
I-132	1.846E-09	1.595E-07	5.801E-09
I-133	1.719E-09	1.440E-05	1.761E-08
I-134	8.459E-10	1.063E-08	3.348E-09
I-135	2.665E-09	1.896E-06	1.636E-08
total =	7.623E-09	6.175E-05	4.670E-08

1:00:00.00	Whole Body	Thyroid	Beta
I-131	3.523E-08	2.918E-03	2.305E-07
I-132	1.018E-08	8.798E-07	3.201E-08
I-133	7.690E-08	6.439E-04	7.876E-07
I-134	1.440E-09	1.808E-08	5.699E-09
I-135	5.544E-08	3.944E-05	3.403E-07
total =	1.792E-07	3.602E-03	1.396E-06

30:00:00.00	Whole Body	Thyroid	Beta
I-131	1.450E-07	1.201E-02	9.485E-07
I-132	1.021E-08	8.817E-07	3.208E-08
I-133	1.272E-07	1.066E-03	1.303E-06
I-134	1.440E-09	1.808E-08	5.699E-09
I-135	6.135E-08	4.365E-05	3.766E-07
total =	3.452E-07	1.312E-02	2.666E-06

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:18:10.48
LASALLE UNIT 1 MSIV CNTRL RM I2 VIA DRAIN LINES LEAK RATE @ 400 SCFH Total

Input file= crel1a.lc3
CONTROL
power = 3.458E+03
mode = Control Room

ISOTOPE

I-131	9.977E-07	2.631E+04	.357	1.05	2.960E-02	1.080E+06
I-132	8.426E-05	3.845E+04	.776	2.95	8.130E-02	6.440E+03
I-133	9.257E-06	5.502E+04	.589	1.08	7.640E-02	1.800E+05
I-134	2.196E-04	6.056E+04	.917	2.94	.117	1.070E+03
I-135	2.924E-05	5.195E+04	1.13	1.29	9.370E-02	3.130E+04

RELEASE

I-131	cmp 1 at	0:00:00.00	inst	24.0	drbl	.000	ff 1 dfctr 1
I-132	cmp 1 at	0:00:00.00	inst	24.0	drbl	.000	ff 1 dfctr 1
I-133	cmp 1 at	0:00:00.00	inst	24.0	drbl	.000	ff 1 dfctr 1
I-134	cmp 1 at	0:00:00.00	inst	24.0	drbl	.000	ff 1 dfctr 1
I-135	cmp 1 at	0:00:00.00	inst	24.0	drbl	.000	ff 1 dfctr 1

PLANT

comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	.998

Pipe compartment # 3

inside radius	2.46	outside radius	3.02
insul thickness	6.35	pipe length	353.
number of lines	4.00	inital temp	550.
mass/unit length	5.04	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

comp 4 at 0:00:00.00

leak rate	3.51	leak filtr	99.8
purge rate	.000	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	100.
volume	6.976E+03		

comp 5 at 0:00:00.00

leak rate	.000	leak filtr	.000
purge rate	1.000E+06	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	68.0
volume	2.917E+05		

METEOROLOGY

0:00:00.00	Chiqu= 2.650E-04	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 1.560E-04	brthr= 3.470E-04	occup= 1.
1:00:00.00	Chiqu= 9.940E-05	brthr= 3.470E-04	occup= .6
4:00:00.00	Chiqu= 4.370E-05	brthr= 3.470E-04	occup= .4

OUTPUT TIMES

0:02:00.00
0:04:00.00
1:00:00.00
30:00:00.00

CONTROL ROOM
0:00:00.00

Vent filt intake	.999	Intake Filt Eff	90.4
Recirc Rate	12.4	Recirc Filt Eff	73.5
Vent Unfilt Intk	1.180E-02	Cont Room Volum	3.326E+03
CR Gamma Volum	3.326E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	4.506E-11	3.732E-06	2.948E-10
I-132	2.316E-10	2.001E-08	7.279E-10
I-133	1.480E-10	1.239E-06	1.516E-09
I-134	1.923E-10	2.416E-09	7.613E-10
I-135	2.544E-10	1.810E-07	1.561E-09
total =	8.714E-10	5.175E-06	4.861E-09

0:04:00.00	Whole Body	Thyroid	Beta
I-131	5.471E-10	4.532E-05	3.579E-09
I-132	1.847E-09	1.595E-07	5.804E-09
I-133	1.721E-09	1.441E-05	1.762E-08
I-134	8.456E-10	1.062E-08	3.347E-09
I-135	2.667E-09	1.897E-06	1.637E-08
total =	7.627E-09	6.179E-05	4.672E-08

1:00:00.00	Whole Body	Thyroid	Beta
I-131	3.536E-08	2.929E-03	2.313E-07
I-132	1.021E-08	8.822E-07	3.210E-08
I-133	7.718E-08	6.463E-04	7.905E-07
I-134	1.441E-09	1.810E-08	5.704E-09
I-135	5.563E-08	3.958E-05	3.415E-07
total =	1.798E-07	3.615E-03	1.401E-06

30:00:00.00	Whole Body	Thyroid	Beta
I-131	1.456E-07	1.206E-02	9.522E-07
I-132	1.024E-08	8.841E-07	3.217E-08
I-133	1.277E-07	1.070E-03	1.308E-06
I-134	1.441E-09	1.810E-08	5.704E-09
I-135	6.157E-08	4.381E-05	3.779E-07
total =	3.465E-07	1.317E-02	2.676E-06

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:18:26.74
LASALLE UNIT 1 MSIV CNTRL RM I2 VIA DRAIN LINES LEAK RATE @ 400 SCFH Total

Input file= crel1a.lc4
CONTROL
power = 3.458E+03
mode = Control Room

ISOTOPE

I-131	9.977E-07	2.631E+04	.357	1.05	2.960E-02	1.080E+06
I-132	8.426E-05	3.845E+04	.776	2.95	8.130E-02	6.440E+03
I-133	9.257E-06	5.502E+04	.589	1.08	7.640E-02	1.800E+05
I-134	2.196E-04	6.056E+04	.917	2.94	.117	1.070E+03
I-135	2.924E-05	5.195E+04	1.13	1.29	9.370E-02	3.130E+04

RELEASE

I-131	cmp 1 at	0:00:00.00	inst	24.0	drbl	.000	ff 1 dfctr 1
I-132	cmp 1 at	0:00:00.00	inst	24.0	drbl	.000	ff 1 dfctr 1
I-133	cmp 1 at	0:00:00.00	inst	24.0	drbl	.000	ff 1 dfctr 1
I-134	cmp 1 at	0:00:00.00	inst	24.0	drbl	.000	ff 1 dfctr 1
I-135	cmp 1 at	0:00:00.00	inst	24.0	drbl	.000	ff 1 dfctr 1

PLANT

comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	.998

Pipe compartment # 3

inside radius	2.46	outside radius	3.02
insul thickness	6.35	pipe length	353.
number of lines	4.00	inital temp	550.
mass/unit length	5.04	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

comp 4 at 0:00:00.00

leak rate	3.51	leak filtr	99.8
purge rate	.000	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	100.
volume	6.976E+03		

comp 5 at 0:00:00.00

leak rate	.000	leak filtr	.000
purge rate	1.000E+06	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	68.0
volume	2.917E+05		

METEOROLOGY

0:00:00.00	Chiqu= 2.650E-04	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 1.560E-04	brthr= 3.470E-04	occup= 1.
1:00:00.00	Chiqu= 9.940E-05	brthr= 3.470E-04	occup= .6
4:00:00.00	Chiqu= 4.370E-05	brthr= 3.470E-04	occup= .4

OUTPUT TIMES

0:02:00.00
0:04:00.00
1:00:00.00
30:00:00.00

CONTROL ROOM
0:00:00.00

Vent filt intake	.999	Intake Filt Eff	90.4
Recirc Rate	12.4	Recirc Filt Eff	73.5
Vent Unfilt Intk	2.360E-02	Cont Room Volum	3.326E+03
CR Gamma Volum	3.326E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	4.995E-11	4.137E-06	3.268E-10
I-132	2.568E-10	2.218E-08	8.069E-10
I-133	1.640E-10	1.374E-06	1.680E-09
I-134	2.132E-10	2.678E-09	8.440E-10
I-135	2.820E-10	2.006E-07	1.731E-09
total =	9.659E-10	5.736E-06	5.388E-09

0:04:00.00	Whole Body	Thyroid	Beta
I-131	6.064E-10	5.023E-05	3.967E-09
I-132	2.047E-09	1.768E-07	6.433E-09
I-133	1.907E-09	1.597E-05	1.953E-08
I-134	9.372E-10	1.177E-08	3.710E-09
I-135	2.956E-09	2.103E-06	1.814E-08
total =	8.453E-09	6.849E-05	5.179E-08

1:00:00.00	Whole Body	Thyroid	Beta
I-131	3.919E-08	3.246E-03	2.564E-07
I-132	1.132E-08	9.777E-07	3.557E-08
I-133	8.553E-08	7.162E-04	8.761E-07
I-134	1.597E-09	2.006E-08	6.322E-09
I-135	6.166E-08	4.387E-05	3.785E-07
total =	1.993E-07	4.007E-03	1.553E-06

30:00:00.00	Whole Body	Thyroid	Beta
I-131	1.613E-07	1.336E-02	1.055E-06
I-132	1.134E-08	9.799E-07	3.565E-08
I-133	1.416E-07	1.185E-03	1.450E-06
I-134	1.597E-09	2.006E-08	6.322E-09
I-135	6.824E-08	4.855E-05	4.188E-07
total =	3.841E-07	1.460E-02	2.966E-06

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:18:43.00
LASALLE UNIT 1 MSIV CNTRL RM I2 VIA DRAIN LINES LEAK RATE @ 400 SCFH Total

Input file= crel1a.lc5
CONTROL
power = 3.458E+03
mode = Control Room

ISOTOPE

I-131	9.977E-07	2.631E+04	.357	1.05	2.960E-02	1.080E+06
I-132	8.426E-05	3.845E+04	.776	2.95	8.130E-02	6.440E+03
I-133	9.257E-06	5.502E+04	.589	1.08	7.640E-02	1.800E+05
I-134	2.196E-04	6.056E+04	.917	2.94	.117	1.070E+03
I-135	2.924E-05	5.195E+04	1.13	1.29	9.370E-02	3.130E+04

RELEASE

I-131	cmp 1 at	0:00:00.00	inst	24.0	drbl	.000	ff 1 dfctr 1
I-132	cmp 1 at	0:00:00.00	inst	24.0	drbl	.000	ff 1 dfctr 1
I-133	cmp 1 at	0:00:00.00	inst	24.0	drbl	.000	ff 1 dfctr 1
I-134	cmp 1 at	0:00:00.00	inst	24.0	drbl	.000	ff 1 dfctr 1
I-135	cmp 1 at	0:00:00.00	inst	24.0	drbl	.000	ff 1 dfctr 1

PLANT

comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	.998

Pipe compartment # 3

inside radius	2.46	outside radius	3.02
insul thickness	6.35	pipe length	353.
number of lines	4.00	inital temp	550.
mass/unit length	5.04	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

comp 4 at 0:00:00.00

leak rate	3.51	leak filtr	99.8
purge rate	.000	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	100.
volume	6.976E+03		

comp 5 at 0:00:00.00

leak rate	.000	leak filtr	.000
purge rate	1.000E+06	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	68.0
volume	2.917E+05		

METEOROLOGY

0:00:00.00	Chiqu= 2.650E-04	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 1.560E-04	brthr= 3.470E-04	occup= 1.
1:00:00.00	Chiqu= 9.940E-05	brthr= 3.470E-04	occup= .6
4:00:00.00	Chiqu= 4.370E-05	brthr= 3.470E-04	occup= .4

OUTPUT TIMES

0:02:00.00
0:04:00.00
1:00:00.00
30:00:00.00

CONTROL ROOM
0:00:00.00

Vent filt intake	.999	Intake Filt Eff	90.4
Recirc Rate	12.4	Recirc Filt Eff	73.5
Vent Unfilt Intk	4.720E-02	Cont Room Volum	3.326E+03
CR Gamma Volum	3.326E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	5.969E-11	4.944E-06	3.905E-10
I-132	3.069E-10	2.651E-08	9.644E-10
I-133	1.961E-10	1.642E-06	2.008E-09
I-134	2.548E-10	3.201E-09	1.009E-09
I-135	3.370E-10	2.398E-07	2.068E-09
total =	1.154E-09	6.855E-06	6.440E-09

0:04:00.00	Whole Body	Thyroid	Beta
I-131	7.246E-10	6.002E-05	4.741E-09
I-132	2.446E-09	2.113E-07	7.686E-09
I-133	2.279E-09	1.908E-05	2.334E-08
I-134	1.120E-09	1.407E-08	4.433E-09
I-135	3.532E-09	2.513E-06	2.168E-08
total =	1.010E-08	8.184E-05	6.188E-08

1:00:00.00	Whole Body	Thyroid	Beta
I-131	4.682E-08	3.878E-03	3.063E-07
I-132	1.352E-08	1.168E-06	4.250E-08
I-133	1.022E-07	8.557E-04	1.047E-06
I-134	1.909E-09	2.397E-08	7.554E-09
I-135	7.366E-08	5.241E-05	4.522E-07
total =	2.381E-07	4.787E-03	1.855E-06

30:00:00.00	Whole Body	Thyroid	Beta
I-131	1.927E-07	1.596E-02	1.261E-06
I-132	1.355E-08	1.171E-06	4.259E-08
I-133	1.691E-07	1.416E-03	1.732E-06
I-134	1.909E-09	2.397E-08	7.554E-09
I-135	8.152E-08	5.800E-05	5.004E-07
total =	4.588E-07	1.744E-02	3.544E-06

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:18:59.26
LASALLE UNIT 1 MSIV CNTRL RM I2 VIA DRAIN LINES LEAK RATE @ 400 SCFH Total

Input file= crel1a.lc6
CONTROL
power = 3.458E+03
mode = Control Room

ISOTOPE

I-131	9.977E-07	2.631E+04	.357	1.05	2.960E-02	1.080E+06
I-132	8.426E-05	3.845E+04	.776	2.95	8.130E-02	6.440E+03
I-133	9.257E-06	5.502E+04	.589	1.08	7.640E-02	1.800E+05
I-134	2.196E-04	6.056E+04	.917	2.94	.117	1.070E+03
I-135	2.924E-05	5.195E+04	1.13	1.29	9.370E-02	3.130E+04

RELEASE

I-131	cmp 1 at	0:00:00.00	inst	24.0	drbl .000	ff 1 dfctr 1
I-132	cmp 1 at	0:00:00.00	inst	24.0	drbl .000	ff 1 dfctr 1
I-133	cmp 1 at	0:00:00.00	inst	24.0	drbl .000	ff 1 dfctr 1
I-134	cmp 1 at	0:00:00.00	inst	24.0	drbl .000	ff 1 dfctr 1
I-135	cmp 1 at	0:00:00.00	inst	24.0	drbl .000	ff 1 dfctr 1

PLANT

comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	.998

Pipe compartment # 3

inside radius	2.46	outside radius	3.02
insul thickness	6.35	pipe length	353.
number of lines	4.00	inital temp	550.
mass/unit length	5.04	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

comp 4 at 0:00:00.00

leak rate	3.51	leak filtr	99.8
purge rate	.000	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	100.
volume	6.976E+03		

comp 5 at 0:00:00.00

leak rate	.000	leak filtr	.000
purge rate	1.000E+06	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	68.0
volume	2.917E+05		

METEOROLOGY

0:00:00.00	Chiqu= 2.650E-04	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 1.560E-04	brthr= 3.470E-04	occup= 1.
1:00:00.00	Chiqu= 9.940E-05	brthr= 3.470E-04	occup= .6
4:00:00.00	Chiqu= 4.370E-05	brthr= 3.470E-04	occup= .4

OUTPUT TIMES

0:02:00.00
0:04:00.00
1:00:00.00
30:00:00.00

CONTROL ROOM
0:00:00.00

Vent filt intake	1.09	Intake Filt Eff	89.1
Recirc Rate	12.4	Recirc Filt Eff	73.5
Vent Unfilt Intk	3.300E-03	Cont Room Volum	3.326E+03
CR Gamma Volum	3.326E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	5.076E-11	4.204E-06	3.321E-10
I-132	2.609E-10	2.254E-08	8.200E-10
I-133	1.667E-10	1.396E-06	1.707E-09
I-134	2.167E-10	2.722E-09	8.577E-10
I-135	2.865E-10	2.039E-07	1.759E-09
total =	9.816E-10	5.829E-06	5.476E-09

0:04:00.00	Whole Body	Thyroid	Beta
I-131	6.159E-10	5.101E-05	4.029E-09
I-132	2.079E-09	1.796E-07	6.533E-09
I-133	1.937E-09	1.622E-05	1.984E-08
I-134	9.520E-10	1.196E-08	3.768E-09
I-135	3.002E-09	2.136E-06	1.843E-08
total =	8.586E-09	6.956E-05	5.260E-08

1:00:00.00	Whole Body	Thyroid	Beta
I-131	3.978E-08	3.295E-03	2.603E-07
I-132	1.149E-08	9.927E-07	3.612E-08
I-133	8.683E-08	7.271E-04	8.894E-07
I-134	1.622E-09	2.038E-08	6.421E-09
I-135	6.259E-08	4.454E-05	3.842E-07
total =	2.023E-07	4.068E-03	1.576E-06

30:00:00.00	Whole Body	Thyroid	Beta
I-131	1.638E-07	1.356E-02	1.071E-06
I-132	1.152E-08	9.949E-07	3.620E-08
I-133	1.437E-07	1.203E-03	1.472E-06
I-134	1.622E-09	2.038E-08	6.421E-09
I-135	6.927E-08	4.929E-05	4.252E-07
total =	3.899E-07	1.482E-02	3.011E-06

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:19:15.52
LASALLE UNIT 1 MSIV CNTRL RM I2 VIA DRAIN LINES LEAK RATE @ 400 SCFH Total

Input file= crel1a.lc7
CONTROL
power = 3.458E+03
mode = Control Room

ISOTOPE

I-131	9.977E-07	2.631E+04	.357	1.05	2.960E-02	1.080E+06
I-132	8.426E-05	3.845E+04	.776	2.95	3.130E-02	6.440E+03
I-133	9.257E-06	5.502E+04	.589	1.08	7.640E-02	1.800E+05
I-134	2.196E-04	6.056E+04	.917	2.94	.117	1.070E+03
I-135	2.924E-05	5.195E+04	1.13	1.29	9.370E-02	3.130E+04

RELEASE

I-131	cmp 1 at 0:00:00.00	inst 24.0	drbl .000	ff 1 dfctr 1
I-132	cmp 1 at 0:00:00.00	inst 24.0	drbl .000	ff 1 dfctr 1
I-133	cmp 1 at 0:00:00.00	inst 24.0	drbl .000	ff 1 dfctr 1
I-134	cmp 1 at 0:00:00.00	inst 24.0	drbl .000	ff 1 dfctr 1
I-135	cmp 1 at 0:00:00.00	inst 24.0	drbl .000	ff 1 dfctr 1

PLANT

comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	.998

Pipe compartment # 3

inside radius	2.46	outside radius	3.02
insul thickness	6.35	pipe length	353.
number of lines	4.00	inital temp	550.
mass/unit length	5.04	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

comp 4 at 0:00:00.00

leak rate	3.51	leak filtr	99.8
purge rate	.000	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	100.
volume	6.976E+03		

comp 5 at 0:00:00.00

leak rate	.000	leak filtr	.000
purge rate	1.000E+06	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	68.0
volume	2.917E+05		

METEOROLOGY

0:00:00.00	Chiqu= 2.650E-04	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 1.560E-04	brthr= 3.470E-04	occup= 1.
1:00:00.00	Chiqu= 9.940E-05	brthr= 3.470E-04	occup= .6
4:00:00.00	Chiqu= 4.370E-05	brthr= 3.470E-04	occup= .4

OUTPUT TIMES

0:02:00.00
0:04:00.00
1:00:00.00
30:00:00.00

CONTROL ROOM
0:00:00.00

Vent filt intake	1.18	Intake Filt Eff	87.8
Recirc Rate	12.4	Recirc Filt Eff	73.5
Vent Unfilt Intk	3.300E-03	Cont Room Volum	3.326E+03
CR Gamma Volum	3.326E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	6.069E-11	5.027E-06	3.971E-10
I-132	3.120E-10	2.695E-08	9.806E-10
I-133	1.993E-10	1.669E-06	2.042E-09
I-134	2.592E-10	3.255E-09	1.026E-09
I-135	3.426E-10	2.438E-07	2.103E-09
total =	1.174E-09	6.970E-06	6.548E-09

0:04:00.00	Whole Body	Thyroid	Beta
I-131	7.358E-10	6.095E-05	4.814E-09
I-132	2.484E-09	2.146E-07	7.806E-09
I-133	2.314E-09	1.938E-05	2.370E-08
I-134	1.138E-09	1.429E-08	4.503E-09
I-135	3.587E-09	2.552E-06	2.201E-08
total =	1.026E-08	8.310E-05	6.284E-08

1:00:00.00	Whole Body	Thyroid	Beta
I-131	4.750E-08	3.934E-03	3.107E-07
I-132	1.372E-08	1.186E-06	4.313E-08
I-133	1.037E-07	8.682E-04	1.062E-06
I-134	1.938E-09	2.434E-08	7.671E-09
I-135	7.474E-08	5.318E-05	4.588E-07
total =	2.416E-07	4.857E-03	1.882E-06

30:00:00.00	Whole Body	Thyroid	Beta
I-131	1.955E-07	1.619E-02	1.279E-06
I-132	1.375E-08	1.188E-06	4.323E-08
I-133	1.716E-07	1.437E-03	1.757E-06
I-134	1.938E-09	2.434E-08	7.671E-09
I-135	8.272E-08	5.885E-05	5.077E-07
total =	4.655E-07	1.769E-02	3.595E-06

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:17:40.17
LASALLE UNIT 1 MSIV CNTRL RM I2 VIA TUBINE LEAK RATE @ 400 SCFH Total

Input file= crel1b.lc1

CONTROL
power = 3.458E+03
mode = Control Room
tbvol = 16.1
tbarea = 409.

ISOTOPE

I-131	9.977E-07	2.631E+04	.357	1.05	2.960E-02	1.080E+06
I-132	8.426E-05	3.845E+04	.776	2.95	8.130E-02	6.440E+03
I-133	9.257E-06	5.502E+04	.589	1.08	7.640E-02	1.800E+05
I-134	2.196E-04	6.056E+04	.917	2.94	.117	1.070E+03
I-135	2.924E-05	5.195E+04	1.13	1.29	9.370E-02	3.130E+04

RELEASE

I-131	cmp 1 at	0:00:00.00	inst	24.0	drbl .000	ff 1 dfctr 1
I-132	cmp 1 at	0:00:00.00	inst	24.0	drbl .000	ff 1 dfctr 1
I-133	cmp 1 at	0:00:00.00	inst	24.0	drbl .000	ff 1 dfctr 1
I-134	cmp 1 at	0:00:00.00	inst	24.0	drbl .000	ff 1 dfctr 1
I-135	cmp 1 at	0:00:00.00	inst	24.0	drbl .000	ff 1 dfctr 1

PLANT

comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	2.430E-03

Pipe compartment # 3

inside radius	30.6	outside radius	33.0
insul thickness	7.62	pipe length	226.
number of lines	4.00	inital temp	550.
mass/unit length	260.	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

Turbine compartment # 4
split factor 1.00

comp 5 at 0:00:00.00

leak rate	.000	leak filtr	.000
purge rate	1.000E+06	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	68.0
volume	2.917E+05		

METEOROLOGY

0:00:00.00	Chiqu= 2.650E-04	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 1.560E-04	brthr= 3.470E-04	occup= 1.
1:00:00.00	Chiqu= 9.940E-05	brthr= 3.470E-04	occup= .6
4:00:00.00	Chiqu= 4.370E-05	brthr= 3.470E-04	occup= .4

OUTPUT TIMES
0:02:00.00
0:04:00.00

1:00:00.00
30:00:00.00

CONTROL ROOM
0:00:00.00

Vent filt intake	.999	Intake Filt Eff	90.4
Recirc Rate	12.4	Recirc Filt Eff	73.5
Vent Unfilt Intk	3.300E-03	Cont Room Volum	3.326E+03
CR Gamma Volum	3.326E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

0:04:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

1:00:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

30:00:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:17:56.37
LASALLE UNIT 1 MSIV CNTRL RM I2 VIA TUBINE LEAK RATE @ 400 SCFH Total

Input file= crel1b.1c2
CONTROL
power = 3.458E+03
mode = Control Room
tbvol = 16.1
tbarea = 409.

ISOTOPE

I-131	9.977E-07	2.631E+04	.357	1.05	2.960E-02	1.080E+06
I-132	8.426E-05	3.845E+04	.776	2.95	8.130E-02	6.440E+03
I-133	9.257E-06	5.502E+04	.589	1.08	7.640E-02	1.800E+05
I-134	2.196E-04	6.056E+04	.917	2.94	.117	1.070E+03
I-135	2.924E-05	5.195E+04	1.13	1.29	9.370E-02	3.130E+04

RELEASE

I-131	cmp 1 at	0:00:00.00	inst	24.0	drbl .000	ff 1 dfctr 1
I-132	cmp 1 at	0:00:00.00	inst	24.0	drbl .000	ff 1 dfctr 1
I-133	cmp 1 at	0:00:00.00	inst	24.0	drbl .000	ff 1 dfctr 1
I-134	cmp 1 at	0:00:00.00	inst	24.0	drbl .000	ff 1 dfctr 1
I-135	cmp 1 at	0:00:00.00	inst	24.0	drbl .000	ff 1 dfctr 1

PLANT
comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	2.430E-03

Pipe compartment # 3

inside radius	30.6	outside radius	33.0
insul thickness	7.62	pipe length	226.
number of lines	4.00	inital temp	550.
mass/unit length	260.	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

Turbine compartment # 4
split factor 1.00
comp 5 at 0:00:00.00

leak rate	.000	leak filtr	.000
purge rate	1.000E+06	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	68.0
volume	2.917E+05		

METEOROLOGY

0:00:00.00	Chiqu= 2.650E-04	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 1.560E-04	brthr= 3.470E-04	occup= 1.
1:00:00.00	Chiqu= 9.940E-05	brthr= 3.470E-04	occup= .6
4:00:00.00	Chiqu= 4.370E-05	brthr= 3.470E-04	occup= .4

OUTPUT TIMES
0:02:00.00
0:04:00.00

1:00:00.00
30:00:00.00

CONTROL ROOM
0:00:00.00

Vent filt intake	1.50	Intake Filt Eff	92.7
Recirc Rate	12.4	Recirc Filt Eff	73.5
Vent Unfilt Intk	3.300E-03	Cont Room Volum	3.326E+03
CR Gamma Volum	3.326E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

0:04:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

1:00:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

30:00:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:18:12.79
LASALLE UNIT 1 MSIV CNTRL RM I2 VIA TUBINE LEAK RATE @ 400 SCFH Total

Input file= crel1b.lc3
CONTROL
power = 3.458E+03
mode = Control Room
tbvol = 16.1
tbarea = 409.

ISOTOPE

I-131	9.977E-07	2.631E+04	.357	1.05	2.960E-02	1.080E+06
I-132	8.426E-05	3.845E+04	.776	2.95	8.130E-02	6.440E+03
I-133	9.257E-06	5.502E+04	.589	1.08	7.640E-02	1.800E+05
I-134	2.196E-04	6.056E+04	.917	2.94	.117	1.070E+03
I-135	2.924E-05	5.195E+04	1.13	1.29	9.370E-02	3.130E+04

RELEASE

I-131	cmp 1 at	0:00:00.00	inst	24.0	drbl .000	ff 1 dfctr 1
I-132	cmp 1 at	0:00:00.00	inst	24.0	drbl .000	ff 1 dfctr 1
I-133	cmp 1 at	0:00:00.00	inst	24.0	drbl .000	ff 1 dfctr 1
I-134	cmp 1 at	0:00:00.00	inst	24.0	drbl .000	ff 1 dfctr 1
I-135	cmp 1 at	0:00:00.00	inst	24.0	drbl .000	ff 1 dfctr 1

PLANT
comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	2.430E-03

Pipe compartment # 3

inside radius	30.6	outside radius	33.0
insul thickness	7.62	pipe length	226.
number of lines	4.00	inital temp	550.
mass/unit length	260.	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

Turbine compartment # 4
split factor 1.00
comp 5 at 0:00:00.00

leak rate	.000	leak filtr	.000
purge rate	1.000E+06	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	68.0
volume	2.917E+05		

METEOROLOGY

0:00:00.00	Chiqu= 2.650E-04	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 1.560E-04	brthr= 3.470E-04	occup= 1.
1:00:00.00	Chiqu= 9.940E-05	brthr= 3.470E-04	occup= .6
4:00:00.00	Chiqu= 4.370E-05	brthr= 3.470E-04	occup= .4

OUTPUT TIMES
0:02:00.00
0:04:00.00

1:00:00.00
30:00:00.00

CONTROL ROOM
0:00:00.00

Vent filt intake	.999	Intake Filt Eff	90.4
Recirc Rate	12.4	Recirc Filt Eff	73.5
Vent Unfilt Intk	1.180E-02	Cont Room Volum	3.326E+03
CR Gamma Volum	3.326E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

0:04:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

1:00:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

30:00:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

```
 MSIV Leakage Program Version 1.2a execution on  6-24-1995 at 09:18:28.99
LASALLE UNIT 1 MSIV  CNTRL RM I2 VIA TUBINE LEAK RATE @ 400  SCFH Total


Input  file= crel1b.lc4
CONTROL
    power =  3.458E+03
    mode  = Control Room
    tbvol =   16.1
    tbarea =   409.

ISOTOPE
    I-131    9.977E-07 2.631E+04  .357      1.05     2.960E-02 1.080E+06
    I-132    8.426E-05 3.845E+04  .776      2.95     8.130E-02 6.440E+03
    I-133    9.257E-06 5.502E+04  .589      1.08     7.640E-02 1.800E+05
    I-134    2.196E-04 6.056E+04  .917      2.94       .117    1.070E+03
    I-135    2.924E-05 5.195E+04  1.13      1.29     9.370E-02 3.130E+04

RELEASE
    I-131   cmp 1 at  0:00:00.00 inst  24.0     drbl  .000     ff 1 dfctr 1
    I-132   cmp 1 at  0:00:00.00 inst  24.0     drbl  .000     ff 1 dfctr 1
    I-133   cmp 1 at  0:00:00.00 inst  24.0     drbl  .000     ff 1 dfctr 1
    I-134   cmp 1 at  0:00:00.00 inst  24.0     drbl  .000     ff 1 dfctr 1
    I-135   cmp 1 at  0:00:00.00 inst  24.0     drbl  .000     ff 1 dfctr 1

PLANT
    comp  1  at  0:00:00.00
             leak   rate   1.08     leak   filtr  .000
             purge  rate   .635     purge  filtr  100.
             recirc rate   .000     recirc filtr  .000
             pressure      2.83     temperature   225.
             volume       1.157E+04
    Pipe compartment # 2
             inside radius     30.3     outside radius  33.0
             insul thickness   7.62     pipe length     208.
             number of lines   4.00     inital temp     550.
             mass/unit length  287.     heat capacity   .117
             insul conducty   2.250E-02 split factor   2.430E-03
    Pipe compartment # 3
             inside radius     30.6     outside radius  33.0
             insul thickness   7.62     pipe length     226.
             number of lines   4.00     inital temp     550.
             mass/unit length  260.     heat capacity   .117
             insul conducty   2.250E-02 split factor    1.00
    Turbine compartment # 4
             split factor      1.00
    comp  5  at  0:00:00.00
             leak   rate   .000     leak   filtr  .000
             purge  rate  1.000E+06 purge  filtr  .000
             recirc rate   .000     recirc filtr  .000
             pressure      1.00     temperature   68.0
             volume       2.917E+05

METEOROLOGY
      0:00:00.00  Chiqu= 2.650E-04  brthr= 3.470E-04  occup= 1.
      0:08:00.00  Chiqu= 1.560E-04  brthr= 3.470E-04  occup= 1.
      1:00:00.00  Chiqu= 9.940E-05  brthr= 3.470E-04  occup= .6
      4:00:00.00  Chiqu= 4.370E-05  brthr= 3.470E-04  occup= .4

OUTPUT TIMES
      0:02:00.00
      0:04:00.00
```

1:00:00.00
30:00:00.00

CONTROL ROOM
0:00:00.00

Vent filt intake	.999	Intake Filt Eff	90.4
Recirc Rate	12.4	Recirc Filt Eff	73.5
Vent Unfilt Intk	2.360E-02	Cont Room Volum	3.326E+03
CR Gamma Volum	3.326E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

0:04:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

1:00:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

30:00:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

```
 MSIV Leakage Program Version 1.2a execution on  6-24-1995 at 09:18:45.25
LASALLE UNIT 1 MSIV  CNTRL RM I2 VIA TUBINE LEAK RATE @ 400  SCFH Total


Input  file= crel1b.lc5
CONTROL
    power =  3.458E+03
    mode  = Control Room
    tbvol =   16.1
    tbarea =   409.

ISOTOPE
    I-131    9.977E-07 2.631E+04  .357      1.05     2.960E-02 1.080E+06
    I-132    8.426E-05 3.845E+04  .776      2.95     8.130E-02 6.440E+03
    I-133    9.257E-06 5.502E+04  .589      1.08     7.640E-02 1.800E+05
    I-134    2.196E-04 6.056E+04  .917      2.94      .117     1.070E+03
    I-135    2.924E-05 5.195E+04  1.13      1.29     9.370E-02 3.130E+04

RELEASE
    I-131   cmp 1 at  0:00:00.00 inst  24.0     drbl  .000     ff 1 dfctr 1
    I-132   cmp 1 at  0:00:00.00 inst  24.0     drbl  .000     ff 1 dfctr 1
    I-133   cmp 1 at  0:00:00.00 inst  24.0     drbl  .000     ff 1 dfctr 1
    I-134   cmp 1 at  0:00:00.00 inst  24.0     drbl  .000     ff 1 dfctr 1
    I-135   cmp 1 at  0:00:00.00 inst  24.0     drbl  .000     ff 1 dfctr 1

PLANT
    comp  1  at  0:00:00.00
             leak   rate   1.08     leak   filtr  .000
             purge  rate   .635     purge  filtr  100.
             recirc rate   .000     recirc filtr  .000
             pressure      2.83     temperature   225.
             volume       1.157E+04
    Pipe compartment # 2
             inside radius     30.3     outside radius  33.0
             insul thickness   7.62     pipe length     208.
             number of lines   4.00     inital temp     550.
             mass/unit length  287.     heat capacity   .117
             insul conducty    2.250E-02 split factor   2.430E-03
    Pipe compartment # 3
             inside radius     30.6     outside radius  33.0
             insul thickness   7.62     pipe length     226.
             number of lines   4.00     inital temp     550.
             mass/unit length  260.     heat capacity   .117
             insul conducty    2.250E-02 split factor    1.00
    Turbine compartment # 4
             split factor      1.00
    comp  5  at  0:00:00.00
             leak   rate   .000     leak   filtr  .000
             purge  rate   1.000E+06 purge  filtr  .000
             recirc rate   .000     recirc filtr  .000
             pressure      1.00     temperature   68.0
             volume       2.917E+05

METEOROLOGY
      0:00:00.00  Chiqu= 2.650E-04  brthr= 3.470E-04  occup= 1.
      0:08:00.00  Chiqu= 1.560E-04  brthr= 3.470E-04  occup= 1.
      1:00:00.00  Chiqu= 9.940E-05  brthr= 3.470E-04  occup= .6
      4:00:00.00  Chiqu= 4.370E-05  brthr= 3.470E-04  occup= .4

OUTPUT TIMES
      0:02:00.00
      0:04:00.00
```

1:00:00.00
30:00:00.00

CONTROL ROOM
0:00:00.00

Vent filt intake	.999	Intake Filt Eff	90.4
Recirc Rate	12.4	Recirc Filt Eff	73.5
Vent Unfilt Intk	4.720E-02	Cont Room Volum	3.326E+03
CR Gamma Volum	3.326E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

0:04:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

1:00:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

30:00:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:19:01.51
LASALLE UNIT 1 MSIV CNTRL RM I2 VIA TUBINE LEAK RATE @ 400 SCFH Total

Input file= crel1b.lc6
CONTROL
power = 3.458E+03
mode = Control Room
tbvol = 16.1
tbarea = 409.

ISOTOPE

I-131	9.977E-07	2.631E+04	.357	1.05	2.960E-02	1.080E+06
I-132	8.426E-05	3.845E+04	.776	2.95	8.130E-02	6.440E+03
I-133	9.257E-06	5.502E+04	.589	1.08	7.640E-02	1.800E+05
I-134	2.196E-04	6.056E+04	.917	2.94	.117	1.070E+03
I-135	2.924E-05	5.195E+04	1.13	1.29	9.370E-02	3.130E+04

RELEASE

I-131	cmp 1 at	0:00:00.00	inst	24.0	drbl .000	ff 1 dfctr 1
I-132	cmp 1 at	0:00:00.00	inst	24.0	drbl .000	ff 1 dfctr 1
I-133	cmp 1 at	0:00:00.00	inst	24.0	drbl .000	ff 1 dfctr 1
I-134	cmp 1 at	0:00:00.00	inst	24.0	drbl .000	ff 1 dfctr 1
I-135	cmp 1 at	0:00:00.00	inst	24.0	drbl .000	ff 1 dfctr 1

PLANT
comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	2.430E-03

Pipe compartment # 3

inside radius	30.6	outside radius	33.0
insul thickness	7.62	pipe length	226.
number of lines	4.00	inital temp	550.
mass/unit length	260.	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

Turbine compartment # 4
split factor 1.00
comp 5 at 0:00:00.00

leak rate	.000	leak filtr	.000
purge rate	1.000E+06	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	68.0
volume	2.917E+05		

METEOROLOGY

0:00:00.00	Chiqu= 2.650E-04	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 1.560E-04	brthr= 3.470E-04	occup= 1.
1:00:00.00	Chiqu= 9.940E-05	brthr= 3.470E-04	occup= .6
4:00:00.00	Chiqu= 4.370E-05	brthr= 3.470E-04	occup= .4

OUTPUT TIMES
0:02:00.00
0:04:00.00

1:00:00.00
30:00:00.00

CONTROL ROOM
0:00:00.00

Vent filt intake	1.09	Intake Filt Eff	89.1
Recirc Rate	12.4	Recirc Filt Eff	73.5
Vent Unfilt Intk	3.300E-03	Cont Room Volum	3.326E+03
CR Gamma Volum	3.326E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

0:04:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

1:00:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

30:00:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

```
 MSIV Leakage Program Version 1.2a execution on  6-24-1995 at 09:19:17.77
LASALLE UNIT 1 MSIV  CNTRL RM I2 VIA TUBINE LEAK RATE @ 400  SCFH Total


Input  file= crel1b.1c7
CONTROL
    power =  3.458E+03
    mode  = Control Room
    tbvol =   16.1
    tbarea =   409.

ISOTOPE
    I-131    9.977E-07 2.631E+04  .357      1.05     2.960E-02 1.080E+06
    I-132    8.426E-05 3.845E+04  .776      2.95     8.130E-02 6.440E+03
    I-133    9.257E-06 5.502E+04  .589      1.08     7.640E-02 1.800E+05
    I-134    2.196E-04 6.056E+04  .917      2.94       .117    1.070E+03
    I-135    2.924E-05 5.195E+04  1.13      1.29     9.370E-02 3.130E+04

RELEASE
    I-131   cmp 1 at  0:00:00.00 inst  24.0     drbl  .000     ff 1 dfctr 1
    I-132   cmp 1 at  0:00:00.00 inst  24.0     drbl  .000     ff 1 dfctr 1
    I-133   cmp 1 at  0:00:00.00 inst  24.0     drbl  .000     ff 1 dfctr 1
    I-134   cmp 1 at  0:00:00.00 inst  24.0     drbl  .000     ff 1 dfctr 1
    I-135   cmp 1 at  0:00:00.00 inst  24.0     drbl  .000     ff 1 dfctr 1

PLANT
    comp  1  at  0:00:00.00
             leak   rate   1.08     leak   filtr  .000
             purge  rate   .635     purge  filtr  100.
             recirc rate   .000     recirc filtr  .000
             pressure      2.83     temperature   225.
             volume      1.157E+04
    Pipe compartment # 2
             inside radius     30.3     outside radius  33.0
             insul thickness   7.62     pipe length     208.
             number of lines   4.00     inital temp     550.
             mass/unit length  287.     heat capacity   .117
             insul conducty   2.250E-02 split factor   2.430E-03
    Pipe compartment # 3
             inside radius     30.6     outside radius  33.0
             insul thickness   7.62     pipe length     226.
             number of lines   4.00     inital temp     550.
             mass/unit length  260.     heat capacity   .117
             insul conducty   2.250E-02 split factor    1.00
    Turbine compartment # 4
             split factor      1.00
    comp  5  at  0:00:00.00
             leak   rate   .000     leak   filtr  .000
             purge  rate  1.000E+06 purge  filtr  .000
             recirc rate   .000     recirc filtr  .000
             pressure      1.00     temperature   68.0
             volume      2.917E+05

METEOROLOGY
      0:00:00.00  Chiqu= 2.650E-04  brthr= 3.470E-04  occup= 1.
      0:08:00.00  Chiqu= 1.560E-04  brthr= 3.470E-04  occup= 1.
      1:00:00.00  Chiqu= 9.940E-05  brthr= 3.470E-04  occup= .6
      4:00:00.00  Chiqu= 4.370E-05  brthr= 3.470E-04  occup= .4

OUTPUT TIMES
      0:02:00.00
      0:04:00.00
```

1:00:00.00
30:00:00.00

CONTROL ROOM
0:00:00.00

Vent filt intake	1.18	Intake Filt Eff	87.8
Recirc Rate	12.4	Recirc Filt Eff	73.5
Vent Unfilt Intk	3.300E-03	Cont Room Volum	3.326E+03
CR Gamma Volum	3.326E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

0:04:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

1:00:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

30:00:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:17:41.76
LASALLE UNIT 1 MSIV CNTRL RM NG VIA DRAIN LINES LEAK RATE @ 400 SCFH Total

Input file= crng1a.lc1
CONTROL
power = 3.458E+03
mode = Control Room

ISOTOPE

KR-83M	1.036E-04	3.137E+03	9.100E-03	.320	3.160E-06	.000
KR-85	2.039E-09	302.	.514	4.400E-03	3.380E-02	.000
KR-85M	4.389E-05	6.734E+03	.162	.958	6.840E-02	.000
KR-87	1.519E-04	1.292E+04	.917	.933	.226	.000
KR-88	6.889E-05	1.830E+04	1.36	1.47	5.350E-02	.000
KR-89	3.639E-03	2.276E+04	1.13	1.96	.195	.000
XE-131M	6.694E-07	158.	3.240E-02	.673	1.360E-02	.000
XE-133	1.522E-06	5.528E+04	5.370E-02	.845	1.100E-02	.000
XE-133M	3.556E-06	2.305E+03	9.400E-02	.253	2.750E-02	.000
XE-135	2.103E-05	7.149E+03	.248	.994	5.130E-02	.000
XE-135M	7.361E-04	1.042E+04	.461	.955	1.820E-02	.000
XE-137	3.028E-03	4.852E+04	.423	.453	.310	.000
XE-138	8.140E-04	4.610E+04	.773	1.21	.116	.000

RELEASE

KR-83M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
KR-85	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
KR-85M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
KR-87	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
KR-88	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
KR-89	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-131M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-133	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-133M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-135	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-135M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-137	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-138	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0

PLANT
comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	.998

Pipe compartment # 3

inside radius	2.46	outside radius	3.02
insul thickness	6.35	pipe length	353.
number of lines	4.00	inital temp	550.
mass/unit length	5.04	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

comp 4 at 0:00:00.00

leak rate	3.51	leak filtr	.000
purge rate	.000	purge filtr	.000
recirc rate	.000	recirc filtr	.000

```
            pressure      1.00     temperature   100.
            volume       6.976E+03
    comp  5 at  0:00:00.00
            leak   rate   .000     leak   filtr  .000
            purge  rate  1.000E+06 purge  filtr  .000
            recirc rate   .000     recirc filtr  .000
            pressure      1.00     temperature   68.0
            volume       2.917E+05

METEOROLOGY
      0:00:00.00  Chiqu= 2.650E-04  brthr= 3.470E-04  occup= 1.
      0:08:00.00  Chiqu= 1.560E-04  brthr= 3.470E-04  occup= 1.
      1:00:00.00  Chiqu= 9.940E-05  brthr= 3.470E-04  occup= .6
      4:00:00.00  Chiqu= 4.370E-05  brthr= 3.470E-04  occup= .4

OUTPUT TIMES
      0:02:00.00
      0:04:00.00
      1:00:00.00
     30:00:00.00

CONTROL ROOM
      0:00:00.00
            Vent filt intake  .999     Intake Filt Eff  .000
            Recirc Rate      12.4      Recirc Filt Eff  .000
            Vent Unfilt Intk 3.300E-03 Cont Room Volum 3.326E+03
            CR Gamma Volum   3.326E+03



 0:02:00.00      Whole Body    Thyroid      Beta
   KR-83M        3.333E-08    0.000E+00    1.430E-10
   KR-85         2.172E-10    0.000E+00    2.734E-07
   KR-85M        2.606E-07    0.000E+00    9.489E-06
   KR-87         1.313E-06    0.000E+00    3.163E-05
   KR-88         6.480E-06    0.000E+00    1.737E-05
   KR-89         4.563E-12    0.000E+00    3.836E-11
   XE-131M       4.662E-09    0.000E+00    5.749E-08
   XE-133        1.405E-06    0.000E+00    1.616E-05
   XE-133M       1.852E-08    0.000E+00    1.664E-06
   XE-135        5.031E-07    0.000E+00    8.668E-06
   XE-135M       2.283E-08    0.000E+00    7.891E-08
   XE-137        5.834E-12    0.000E+00    7.859E-10
   XE-138        1.356E-07    0.000E+00    1.488E-06
   total =       1.018E-05    0.000E+00    8.688E-05

 0:04:00.00      Whole Body    Thyroid      Beta
   KR-83M        3.731E-07    0.000E+00    1.601E-09
   KR-85         4.190E-09    0.000E+00    5.275E-06
   KR-85M        3.968E-06    0.000E+00    1.445E-04
   KR-87         1.161E-05    0.000E+00    2.798E-04
   KR-88         8.658E-05    0.000E+00    2.320E-04
   KR-89         4.563E-12    0.000E+00    3.836E-11
   XE-131M       8.963E-08    0.000E+00    1.105E-06
   XE-133        2.687E-05    0.000E+00    3.093E-04
   XE-133M       3.504E-07    0.000E+00    3.149E-05
   XE-135        8.658E-06    0.000E+00    1.492E-04
   XE-135M       3.534E-08    0.000E+00    1.222E-07
   XE-137        5.835E-12    0.000E+00    7.860E-10
   XE-138        1.906E-07    0.000E+00    2.090E-06
```

total =	1.387E-04	0.000E+00	1.155E-03

1:00:00.00	Whole Body	Thyroid	Beta
KR-83M	2.240E-06	0.000E+00	9.610E-09
KR-85	5.432E-07	0.000E+00	6.839E-04
KR-85M	8.843E-05	0.000E+00	3.220E-03
KR-87	3.920E-05	0.000E+00	9.444E-04
KR-88	9.879E-04	0.000E+00	2.647E-03
KR-89	4.563E-12	0.000E+00	3.836E-11
XE-131M	1.125E-05	0.000E+00	1.387E-04
XE-133	3.237E-03	0.000E+00	3.725E-02
XE-133M	3.829E-05	0.000E+00	3.442E-03
XE-135	4.381E-04	0.000E+00	7.547E-03
XE-135M	3.566E-08	0.000E+00	1.233E-07
XE-137	5.835E-12	0.000E+00	7.860E-10
XE-138	1.914E-07	0.000E+00	2.099E-06
total =	4.843E-03	0.000E+00	5.588E-02

30:00:00.00	Whole Body	Thyroid	Beta
KR-83M	2.243E-06	0.000E+00	9.621E-09
KR-85	5.269E-05	0.000E+00	6.633E-02
KR-85M	9.464E-05	0.000E+00	3.446E-03
KR-87	3.920E-05	0.000E+00	9.444E-04
KR-88	1.000E-03	0.000E+00	2.681E-03
KR-89	4.563E-12	0.000E+00	3.836E-11
XE-131M	4.575E-04	0.000E+00	5.641E-03
XE-133	6.002E-02	0.000E+00	6.907E-01
XE-133M	2.749E-04	0.000E+00	2.471E-02
XE-135	6.273E-04	0.000E+00	1.081E-02
XE-135M	3.566E-08	0.000E+00	1.233E-07
XE-137	5.835E-12	0.000E+00	7.860E-10
XE-138	1.914E-07	0.000E+00	2.099E-06
total =	6.257E-02	0.000E+00	8.053E-01

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:17:57.96
LASALLE UNIT 1 MSIV CNTRL RM NG VIA DRAIN LINES LEAK RATE @ 400 SCFH Total

Input file= crng1a.lc2
CONTROL
power = 3.458E+03
mode = Control Room

ISOTOPE

KR-83M	1.036E-04	3.137E+03	9.100E-03	.320	3.160E-06	.000
KR-85	2.039E-09	302.	.514	4.400E-03	3.380E-02	.000
KR-85M	4.389E-05	6.734E+03	.162	.958	6.840E-02	.000
KR-87	1.519E-04	1.292E+04	.917	.933	.226	.000
KR-88	6.889E-05	1.830E+04	1.36	1.47	5.350E-02	.000
KR-89	3.639E-03	2.276E+04	1.13	1.96	.195	.000
XE-131M	6.694E-07	158.	3.240E-02	.673	1.360E-02	.000
XE-133	1.522E-06	5.528E+04	5.370E-02	.845	1.100E-02	.000
XE-133M	3.556E-06	2.305E+03	9.400E-02	.253	2.750E-02	.000
XE-135	2.103E-05	7.149E+03	.248	.994	5.130E-02	.000
XE-135M	7.361E-04	1.042E+04	.461	.955	1.820E-02	.000
XE-137	3.028E-03	4.852E+04	.423	.453	.310	.000
XE-138	8.140E-04	4.610E+04	.773	1.21	.116	.000

RELEASE

KR-83M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
KR-85	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
KR-85M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
KR-87	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
KR-88	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
KR-89	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
XE-131M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
XE-133	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
XE-133M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
XE-135	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
XE-135M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
XE-137	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
XE-138	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0

PLANT
comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	.998

Pipe compartment # 3

inside radius	2.46	outside radius	3.02
insul thickness	6.35	pipe length	353.
number of lines	4.00	inital temp	550.
mass/unit length	5.04	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

comp 4 at 0:00:00.00

leak rate	3.51	leak filtr	.000
purge rate	.000	purge filtr	.000
recirc rate	.000	recirc filtr	.000

```
            pressure      1.00     temperature   100.
            volume       6.976E+03
    comp  5 at  0:00:00.00
            leak   rate   .000     leak   filtr  .000
            purge  rate  1.000E+06 purge  filtr  .000
            recirc rate   .000     recirc filtr  .000
            pressure      1.00     temperature   68.0
            volume       2.917E+05

METEOROLOGY
      0:00:00.00  Chiqu= 2.650E-04  brthr= 3.470E-04  occup= 1.
      0:08:00.00  Chiqu= 1.560E-04  brthr= 3.470E-04  occup= 1.
      1:00:00.00  Chiqu= 9.940E-05  brthr= 3.470E-04  occup= .6
      4:00:00.00  Chiqu= 4.370E-05  brthr= 3.470E-04  occup= .4

OUTPUT TIMES
      0:02:00.00
      0:04:00.00
      1:00:00.00
     30:00:00.00

CONTROL ROOM
      0:00:00.00
            Vent filt intake  1.50     Intake Filt Eff   .000
            Recirc Rate       12.4     Recirc Filt Eff   .000
            Vent Unfilt Intk 3.300E-03 Cont Room Volum 3.326E+03
            CR Gamma Volum   3.326E+03
```

0:02:00.00	Whole Body	Thyroid	Beta
KR-83M	4.404E-08	0.000E+00	1.889E-10
KR-85	2.863E-10	0.000E+00	3.604E-07
KR-85M	3.439E-07	0.000E+00	1.252E-05
KR-87	1.737E-06	0.000E+00	4.185E-05
KR-88	8.557E-06	0.000E+00	2.293E-05
KR-89	6.573E-12	0.000E+00	5.526E-11
XE-131M	6.147E-09	0.000E+00	7.579E-08
XE-133	1.852E-06	0.000E+00	2.131E-05
XE-133M	2.441E-08	0.000E+00	2.195E-06
XE-135	6.637E-07	0.000E+00	1.143E-05
XE-135M	3.074E-08	0.000E+00	1.063E-07
XE-137	8.348E-12	0.000E+00	1.124E-09
XE-138	1.832E-07	0.000E+00	2.009E-06
total =	1.344E-05	0.000E+00	1.148E-04

0:04:00.00	Whole Body	Thyroid	Beta
KR-83M	4.512E-07	0.000E+00	1.936E-09
KR-85	5.022E-09	0.000E+00	6.323E-06
KR-85M	4.773E-06	0.000E+00	1.738E-04
KR-87	1.411E-05	0.000E+00	3.400E-04
KR-88	1.044E-04	0.000E+00	2.797E-04
KR-89	6.573E-12	0.000E+00	5.526E-11
XE-131M	1.074E-07	0.000E+00	1.325E-06
XE-133	3.222E-05	0.000E+00	3.708E-04
XE-133M	4.201E-07	0.000E+00	3.776E-05
XE-135	1.040E-05	0.000E+00	1.791E-04
XE-135M	4.625E-08	0.000E+00	1.599E-07
XE-137	8.348E-12	0.000E+00	1.125E-09
XE-138	2.514E-07	0.000E+00	2.758E-06

total =	1.672E-04	0.000E+00	1.392E-03

1:00:00.00	Whole Body	Thyroid	Beta
KR-83M	2.448E-06	0.000E+00	1.050E-08
KR-85	5.586E-07	0.000E+00	7.032E-04
KR-85M	9.281E-05	0.000E+00	3.380E-03
KR-87	4.409E-05	0.000E+00	1.062E-03
KR-88	1.054E-03	0.000E+00	2.825E-03
KR-89	6.573E-12	0.000E+00	5.526E-11
XE-131M	1.157E-05	0.000E+00	1.427E-04
XE-133	3.330E-03	0.000E+00	3.833E-02
XE-133M	3.942E-05	0.000E+00	3.543E-03
XE-135	4.541E-04	0.000E+00	7.822E-03
XE-135M	4.661E-08	0.000E+00	1.611E-07
XE-137	8.348E-12	0.000E+00	1.125E-09
XE-138	2.524E-07	0.000E+00	2.768E-06
total =	5.030E-03	0.000E+00	5.781E-02

30:00:00.00	Whole Body	Thyroid	Beta
KR-83M	2.450E-06	0.000E+00	1.051E-08
KR-85	5.274E-05	0.000E+00	6.639E-02
KR-85M	9.899E-05	0.000E+00	3.605E-03
KR-87	4.409E-05	0.000E+00	1.062E-03
KR-88	1.067E-03	0.000E+00	2.858E-03
KR-89	6.573E-12	0.000E+00	5.526E-11
XE-131M	4.583E-04	0.000E+00	5.650E-03
XE-133	6.019E-02	0.000E+00	6.927E-01
XE-133M	2.766E-04	0.000E+00	2.486E-02
XE-135	6.437E-04	0.000E+00	1.109E-02
XE-135M	4.661E-08	0.000E+00	1.611E-07
XE-137	8.348E-12	0.000E+00	1.125E-09
XE-138	2.524E-07	0.000E+00	2.768E-06
total =	6.283E-02	0.000E+00	8.082E-01

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:18:14.38
LASALLE UNIT 1 MSIV CNTRL RM NG VIA DRAIN LINES LEAK RATE @ 400 SCFH Total

Input file= crngla.lc3
CONTROL
power = 3.458E+03
mode = Control Room

ISOTOPE

KR-83M	1.036E-04	3.137E+03	9.100E-03	.320	3.160E-06	.000
KR-85	2.039E-09	302.	.514	4.400E-03	3.380E-02	.000
KR-85M	4.389E-05	6.734E+03	.162	.958	6.840E-02	.000
KR-87	1.519E-04	1.292E+04	.917	.933	.226	.000
KR-88	6.889E-05	1.830E+04	1.36	1.47	5.350E-02	.000
KR-89	3.639E-03	2.276E+04	1.13	1.96	.195	.000
XE-131M	6.694E-07	158.	3.240E-02	.673	1.360E-02	.000
XE-133	1.522E-06	5.528E+04	5.370E-02	.845	1.100E-02	.000
XE-133M	3.556E-06	2.305E+03	9.400E-02	.253	2.750E-02	.000
XE-135	2.103E-05	7.149E+03	.248	.994	5.130E-02	.000
XE-135M	7.361E-04	1.042E+04	.461	.955	1.820E-02	.000
XE-137	3.028E-03	4.852E+04	.423	.453	.310	.000
XE-138	8.140E-04	4.610E+04	.773	1.21	.116	.000

RELEASE

KR-83M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
KR-85	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
KR-85M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
KR-87	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
KR-88	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
KR-89	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
XE-131M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
XE-133	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
XE-133M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
XE-135	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
XE-135M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
XE-137	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
XE-138	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0

PLANT
comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	.998

Pipe compartment # 3

inside radius	2.46	outside radius	3.02
insul thickness	6.35	pipe length	353.
number of lines	4.00	inital temp	550.
mass/unit length	5.04	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

comp 4 at 0:00:00.00

leak rate	3.51	leak filtr	.000
purge rate	.000	purge filtr	.000
recirc rate	.000	recirc filtr	.000

```
            pressure      1.00     temperature   100.
            volume      6.976E+03
    comp  5 at  0:00:00.00
            leak   rate   .000     leak   filtr  .000
            purge  rate  1.000E+06 purge  filtr  .000
            recirc rate   .000     recirc filtr  .000
            pressure      1.00     temperature   68.0
            volume      2.917E+05

METEOROLOGY
      0:00:00.00  Chiqu= 2.650E-04  brthr= 3.470E-04  occup= 1.
      0:08:00.00  Chiqu= 1.560E-04  brthr= 3.470E-04  occup= 1.
      1:00:00.00  Chiqu= 9.940E-05  brthr= 3.470E-04  occup= .6
      4:00:00.00  Chiqu= 4.370E-05  brthr= 3.470E-04  occup= .4

OUTPUT TIMES
      0:02:00.00
      0:04:00.00
      1:00:00.00
     30:00:00.00

CONTROL ROOM
      0:00:00.00
            Vent filt intake  .999     Intake Filt Eff  .000
            Recirc Rate       12.4     Recirc Filt Eff  .000
            Vent Unfilt Intk 1.180E-02 Cont Room Volum 3.326E+03
            CR Gamma Volum   3.326E+03
```

0:02:00.00	Whole Body	Thyroid	Beta
KR-83M	3.354E-08	0.000E+00	1.439E-10
KR-85	2.185E-10	0.000E+00	2.751E-07
KR-85M	2.622E-07	0.000E+00	9.548E-06
KR-87	1.321E-06	0.000E+00	3.183E-05
KR-88	6.521E-06	0.000E+00	1.747E-05
KR-89	4.599E-12	0.000E+00	3.866E-11
XE-131M	4.691E-09	0.000E+00	5.784E-08
XE-133	1.413E-06	0.000E+00	1.626E-05
XE-133M	1.863E-08	0.000E+00	1.675E-06
XE-135	5.063E-07	0.000E+00	8.721E-06
XE-135M	2.298E-08	0.000E+00	7.943E-08
XE-137	5.879E-12	0.000E+00	7.920E-10
XE-138	1.366E-07	0.000E+00	1.498E-06
total =	1.024E-05	0.000E+00	8.743E-05

0:04:00.00	Whole Body	Thyroid	Beta
KR-83M	3.748E-07	0.000E+00	1.608E-09
KR-85	4.208E-09	0.000E+00	5.297E-06
KR-85M	3.986E-06	0.000E+00	1.451E-04
KR-87	1.167E-05	0.000E+00	2.811E-04
KR-88	8.696E-05	0.000E+00	2.330E-04
KR-89	4.599E-12	0.000E+00	3.867E-11
XE-131M	9.001E-08	0.000E+00	1.110E-06
XE-133	2.699E-05	0.000E+00	3.106E-04
XE-133M	3.519E-07	0.000E+00	3.163E-05
XE-135	8.696E-06	0.000E+00	1.498E-04
XE-135M	3.556E-08	0.000E+00	1.229E-07
XE-137	5.880E-12	0.000E+00	7.920E-10
XE-138	1.918E-07	0.000E+00	2.103E-06

total =	1.393E-04	0.000E+00	1.160E-03

1:00:00.00	Whole Body	Thyroid	Beta
KR-83M	2.245E-06	0.000E+00	9.630E-09
KR-85	5.436E-07	0.000E+00	6.844E-04
KR-85M	8.854E-05	0.000E+00	3.224E-03
KR-87	3.931E-05	0.000E+00	9.471E-04
KR-88	9.895E-04	0.000E+00	2.652E-03
KR-89	4.599E-12	0.000E+00	3.867E-11
XE-131M	1.126E-05	0.000E+00	1.388E-04
XE-133	3.239E-03	0.000E+00	3.728E-02
XE-133M	3.832E-05	0.000E+00	3.445E-03
XE-135	4.385E-04	0.000E+00	7.554E-03
XE-135M	3.588E-08	0.000E+00	1.240E-07
XE-137	5.880E-12	0.000E+00	7.920E-10
XE-138	1.926E-07	0.000E+00	2.112E-06
total =	4.848E-03	0.000E+00	5.593E-02

30:00:00.00	Whole Body	Thyroid	Beta
KR-83M	2.248E-06	0.000E+00	9.641E-09
KR-85	5.269E-05	0.000E+00	6.633E-02
KR-85M	9.474E-05	0.000E+00	3.450E-03
KR-87	3.931E-05	0.000E+00	9.471E-04
KR-88	1.002E-03	0.000E+00	2.685E-03
KR-89	4.599E-12	0.000E+00	3.867E-11
XE-131M	4.576E-04	0.000E+00	5.642E-03
XE-133	6.002E-02	0.000E+00	6.908E-01
XE-133M	2.749E-04	0.000E+00	2.471E-02
XE-135	6.277E-04	0.000E+00	1.081E-02
XE-135M	3.588E-08	0.000E+00	1.240E-07
XE-137	5.880E-12	0.000E+00	7.920E-10
XE-138	1.926E-07	0.000E+00	2.112E-06
total =	6.257E-02	0.000E+00	8.053E-01

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:18:30.64
LASALLE UNIT 1 MSIV CNTRL RM NG VIA DRAIN LINES LEAK RATE @ 400 SCFH Total

Input file= crngla.lc4
CONTROL
power = 3.458E+03
mode = Control Room

ISOTOPE

KR-83M	1.036E-04	3.137E+03	9.100E-03	.320	3.160E-06	.000
KR-85	2.039E-09	302.	.514	4.400E-03	3.380E-02	.000
KR-85M	4.389E-05	6.734E+03	.162	.958	6.840E-02	.000
KR-87	1.519E-04	1.292E+04	.917	.933	.226	.000
KR-88	6.889E-05	1.830E+04	1.36	1.47	5.350E-02	.000
KR-89	3.639E-03	2.276E+04	1.13	1.96	.195	.000
XE-131M	6.694E-07	158.	3.240E-02	.673	1.360E-02	.000
XE-133	1.522E-06	5.528E+04	5.370E-02	.845	1.100E-02	.000
XE-133M	3.556E-06	2.305E+03	9.400E-02	.253	2.750E-02	.000
XE-135	2.103E-05	7.149E+03	.248	.994	5.130E-02	.000
XE-135M	7.361E-04	1.042E+04	.461	.955	1.820E-02	.000
XE-137	3.028E-03	4.852E+04	.423	.453	.310	.000
XE-138	8.140E-04	4.610E+04	.773	1.21	.116	.000

RELEASE

KR-83M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
KR-85	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
KR-85M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
KR-87	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
KR-88	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
KR-89	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-131M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-133	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-133M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-135	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-135M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-137	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-138	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0

PLANT
comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	.998

Pipe compartment # 3

inside radius	2.46	outside radius	3.02
insul thickness	6.35	pipe length	353.
number of lines	4.00	inital temp	550.
mass/unit length	5.04	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

comp 4 at 0:00:00.00

leak rate	3.51	leak filtr	.000
purge rate	.000	purge filtr	.000
recirc rate	.000	recirc filtr	.000

```
            pressure      1.00     temperature   100.
            volume       6.976E+03
    comp  5 at  0:00:00.00
            leak   rate   .000     leak   filtr  .000
            purge  rate  1.000E+06 purge  filtr  .000
            recirc rate   .000     recirc filtr  .000
            pressure      1.00     temperature   68.0
            volume       2.917E+05

METEOROLOGY
      0:00:00.00  Chiqu= 2.650E-04  brthr= 3.470E-04  occup= 1.
      0:08:00.00  Chiqu= 1.560E-04  brthr= 3.470E-04  occup= 1.
      1:00:00.00  Chiqu= 9.940E-05  brthr= 3.470E-04  occup= .6
      4:00:00.00  Chiqu= 4.370E-05  brthr= 3.470E-04  occup= .4

OUTPUT TIMES
      0:02:00.00
      0:04:00.00
      1:00:00.00
     30:00:00.00

CONTROL ROOM
      0:00:00.00
            Vent filt intake  .999     Intake Filt Eff  .000
            Recirc Rate      12.4      Recirc Filt Eff  .000
            Vent Unfilt Intk 2.360E-02 Cont Room Volum 3.326E+03
            CR Gamma Volum   3.326E+03
```

0:02:00.00	Whole Body	Thyroid	Beta
KR-83M	3.382E-08	0.000E+00	1.451E-10
KR-85	2.204E-10	0.000E+00	2.774E-07
KR-85M	2.644E-07	0.000E+00	9.630E-06
KR-87	1.333E-06	0.000E+00	3.211E-05
KR-88	6.576E-06	0.000E+00	1.762E-05
KR-89	4.648E-12	0.000E+00	3.908E-11
XE-131M	4.731E-09	0.000E+00	5.834E-08
XE-133	1.425E-06	0.000E+00	1.640E-05
XE-133M	1.879E-08	0.000E+00	1.689E-06
XE-135	5.106E-07	0.000E+00	8.796E-06
XE-135M	2.319E-08	0.000E+00	8.015E-08
XE-137	5.942E-12	0.000E+00	8.004E-10
XE-138	1.378E-07	0.000E+00	1.511E-06
total =	1.033E-05	0.000E+00	8.817E-05

0:04:00.00	Whole Body	Thyroid	Beta
KR-83M	3.771E-07	0.000E+00	1.618E-09
KR-85	4.233E-09	0.000E+00	5.328E-06
KR-85M	4.009E-06	0.000E+00	1.460E-04
KR-87	1.174E-05	0.000E+00	2.829E-04
KR-88	8.749E-05	0.000E+00	2.344E-04
KR-89	4.648E-12	0.000E+00	3.908E-11
XE-131M	9.054E-08	0.000E+00	1.116E-06
XE-133	2.715E-05	0.000E+00	3.124E-04
XE-133M	3.539E-07	0.000E+00	3.182E-05
XE-135	8.747E-06	0.000E+00	1.507E-04
XE-135M	3.585E-08	0.000E+00	1.239E-07
XE-137	5.942E-12	0.000E+00	8.004E-10
XE-138	1.934E-07	0.000E+00	2.121E-06

total =	1.402E-04	0.000E+00	1.167E-03

1:00:00.00	Whole Body	Thyroid	Beta
KR-83M	2.252E-06	0.000E+00	9.659E-09
KR-85	5.442E-07	0.000E+00	6.850E-04
KR-85M	8.868E-05	0.000E+00	3.229E-03
KR-87	3.946E-05	0.000E+00	9.507E-04
KR-88	9.917E-04	0.000E+00	2.657E-03
KR-89	4.648E-12	0.000E+00	3.908E-11
XE-131M	1.127E-05	0.000E+00	1.389E-04
XE-133	3.242E-03	0.000E+00	3.732E-02
XE-133M	3.836E-05	0.000E+00	3.448E-03
XE-135	4.390E-04	0.000E+00	7.563E-03
XE-135M	3.617E-08	0.000E+00	1.250E-07
XE-137	5.942E-12	0.000E+00	8.004E-10
XE-138	1.942E-07	0.000E+00	2.130E-06
total =	4.854E-03	0.000E+00	5.599E-02

30:00:00.00	Whole Body	Thyroid	Beta
KR-83M	2.254E-06	0.000E+00	9.670E-09
KR-85	5.269E-05	0.000E+00	6.633E-02
KR-85M	9.489E-05	0.000E+00	3.456E-03
KR-87	3.946E-05	0.000E+00	9.507E-04
KR-88	1.004E-03	0.000E+00	2.691E-03
KR-89	4.648E-12	0.000E+00	3.908E-11
XE-131M	4.576E-04	0.000E+00	5.642E-03
XE-133	6.003E-02	0.000E+00	6.908E-01
XE-133M	2.750E-04	0.000E+00	2.472E-02
XE-135	6.283E-04	0.000E+00	1.082E-02
XE-135M	3.617E-08	0.000E+00	1.250E-07
XE-137	5.942E-12	0.000E+00	8.004E-10
XE-138	1.942E-07	0.000E+00	2.130E-06
total =	6.258E-02	0.000E+00	8.054E-01

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:18:46.90
LASALLE UNIT 1 MSIV CNTRL RM NG VIA DRAIN LINES LEAK RATE @ 400 SCFH Total

Input file= crng1a.lc5
CONTROL
power = 3.458E+03
mode = Control Room

ISOTOPE

KR-83M	1.036E-04	3.137E+03	9.100E-03	.320	3.160E-06	.000
KR-85	2.039E-09	302.	.514	4.400E-03	3.380E-02	.000
KR-85M	4.389E-05	6.734E+03	.162	.958	6.840E-02	.000
KR-87	1.519E-04	1.292E+04	.917	.933	.226	.000
KR-88	6.889E-05	1.830E+04	1.36	1.47	5.350E-02	.000
KR-89	3.639E-03	2.276E+04	1.13	1.96	.195	.000
XE-131M	6.694E-07	158.	3.240E-02	.673	1.360E-02	.000
XE-133	1.522E-06	5.528E+04	5.370E-02	.845	1.100E-02	.000
XE-133M	3.556E-06	2.305E+03	9.400E-02	.253	2.750E-02	.000
XE-135	2.103E-05	7.149E+03	.248	.994	5.130E-02	.000
XE-135M	7.361E-04	1.042E+04	.461	.955	1.820E-02	.000
XE-137	3.028E-03	4.852E+04	.423	.453	.310	.000
XE-138	8.140E-04	4.610E+04	.773	1.21	.116	.000

RELEASE

KR-83M	cmp	1	at	0:00:00.00	inst	100.	drbl	.000	ff	1 dfctr 0
KR-85	cmp	1	at	0:00:00.00	inst	100.	drbl	.000	ff	1 dfctr 0
KR-85M	cmp	1	at	0:00:00.00	inst	100.	drbl	.000	ff	1 dfctr 0
KR-87	cmp	1	at	0:00:00.00	inst	100.	drbl	.000	ff	1 dfctr 0
KR-88	cmp	1	at	0:00:00.00	inst	100.	drbl	.000	ff	1 dfctr 0
KR-89	cmp	1	at	0:00:00.00	inst	100.	drbl	.000	ff	1 dfctr 0
XE-131M	cmp	1	at	0:00:00.00	inst	100.	drbl	.000	ff	1 dfctr 0
XE-133	cmp	1	at	0:00:00.00	inst	100.	drbl	.000	ff	1 dfctr 0
XE-133M	cmp	1	at	0:00:00.00	inst	100.	drbl	.000	ff	1 dfctr 0
XE-135	cmp	1	at	0:00:00.00	inst	100.	drbl	.000	ff	1 dfctr 0
XE-135M	cmp	1	at	0:00:00.00	inst	100.	drbl	.000	ff	1 dfctr 0
XE-137	cmp	1	at	0:00:00.00	inst	100.	drbl	.000	ff	1 dfctr 0
XE-138	cmp	1	at	0:00:00.00	inst	100.	drbl	.000	ff	1 dfctr 0

PLANT
comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	.998

Pipe compartment # 3

inside radius	2.46	outside radius	3.02
insul thickness	6.35	pipe length	353.
number of lines	4.00	inital temp	550.
mass/unit length	5.04	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

comp 4 at 0:00:00.00

leak rate	3.51	leak filtr	.000
purge rate	.000	purge filtr	.000
recirc rate	.000	recirc filtr	.000

```
            pressure      1.00     temperature   100.
            volume       6.976E+03
    comp  5 at  0:00:00.00
            leak   rate   .000     leak   filtr  .000
            purge  rate  1.000E+06 purge  filtr  .000
            recirc rate   .000     recirc filtr  .000
            pressure      1.00     temperature   68.0
            volume       2.917E+05

METEOROLOGY
      0:00:00.00  Chiqu= 2.650E-04  brthr= 3.470E-04  occup= 1.
      0:08:00.00  Chiqu= 1.560E-04  brthr= 3.470E-04  occup= 1.
      1:00:00.00  Chiqu= 9.940E-05  brthr= 3.470E-04  occup= .6
      4:00:00.00  Chiqu= 4.370E-05  brthr= 3.470E-04  occup= .4

OUTPUT TIMES
      0:02:00.00
      0:04:00.00
      1:00:00.00
     30:00:00.00

CONTROL ROOM
      0:00:00.00
            Vent filt intake  .999     Intake Filt Eff  .000
            Recirc Rate      12.4      Recirc Filt Eff  .000
            Vent Unfilt Intk 4.720E-02 Cont Room Volum 3.326E+03
            CR Gamma Volum   3.326E+03
```

0:02:00.00	Whole Body	Thyroid	Beta
KR-83M	3.439E-08	0.000E+00	1.475E-10
KR-85	2.241E-10	0.000E+00	2.821E-07
KR-85M	2.689E-07	0.000E+00	9.791E-06
KR-87	1.355E-06	0.000E+00	3.265E-05
KR-88	6.687E-06	0.000E+00	1.792E-05
KR-89	4.747E-12	0.000E+00	3.991E-11
XE-131M	4.810E-09	0.000E+00	5.931E-08
XE-133	1.449E-06	0.000E+00	1.668E-05
XE-133M	1.910E-08	0.000E+00	1.717E-06
XE-135	5.191E-07	0.000E+00	8.943E-06
XE-135M	2.360E-08	0.000E+00	8.158E-08
XE-137	6.066E-12	0.000E+00	8.171E-10
XE-138	1.403E-07	0.000E+00	1.538E-06
total =	1.050E-05	0.000E+00	8.966E-05

0:04:00.00	Whole Body	Thyroid	Beta
KR-83M	3.816E-07	0.000E+00	1.637E-09
KR-85	4.281E-09	0.000E+00	5.390E-06
KR-85M	4.056E-06	0.000E+00	1.477E-04
KR-87	1.188E-05	0.000E+00	2.863E-04
KR-88	8.852E-05	0.000E+00	2.372E-04
KR-89	4.747E-12	0.000E+00	3.991E-11
XE-131M	9.158E-08	0.000E+00	1.129E-06
XE-133	2.746E-05	0.000E+00	3.160E-04
XE-133M	3.580E-07	0.000E+00	3.218E-05
XE-135	8.848E-06	0.000E+00	1.524E-04
XE-135M	3.643E-08	0.000E+00	1.259E-07
XE-137	6.066E-12	0.000E+00	8.171E-10
XE-138	1.966E-07	0.000E+00	2.156E-06

total =	1.418E-04	0.000E+00	1.181E-03

1:00:00.00	Whole Body	Thyroid	Beta
KR-83M	2.265E-06	0.000E+00	9.714E-09
KR-85	5.452E-07	0.000E+00	6.863E-04
KR-85M	8.896E-05	0.000E+00	3.240E-03
KR-87	3.976E-05	0.000E+00	9.579E-04
KR-88	9.959E-04	0.000E+00	2.669E-03
KR-89	4.747E-12	0.000E+00	3.991E-11
XE-131M	1.129E-05	0.000E+00	1.392E-04
XE-133	3.249E-03	0.000E+00	3.739E-02
XE-133M	3.843E-05	0.000E+00	3.455E-03
XE-135	4.401E-04	0.000E+00	7.581E-03
XE-135M	3.676E-08	0.000E+00	1.271E-07
XE-137	6.066E-12	0.000E+00	8.171E-10
XE-138	1.975E-07	0.000E+00	2.166E-06
total =	4.866E-03	0.000E+00	5.612E-02

30:00:00.00	Whole Body	Thyroid	Beta
KR-83M	2.267E-06	0.000E+00	9.725E-09
KR-85	5.270E-05	0.000E+00	6.634E-02
KR-85M	9.517E-05	0.000E+00	3.466E-03
KR-87	3.976E-05	0.000E+00	9.579E-04
KR-88	1.008E-03	0.000E+00	2.702E-03
KR-89	4.747E-12	0.000E+00	3.991E-11
XE-131M	4.576E-04	0.000E+00	5.642E-03
XE-133	6.004E-02	0.000E+00	6.910E-01
XE-133M	2.751E-04	0.000E+00	2.473E-02
XE-135	6.294E-04	0.000E+00	1.084E-02
XE-135M	3.676E-08	0.000E+00	1.271E-07
XE-137	6.066E-12	0.000E+00	8.171E-10
XE-138	1.975E-07	0.000E+00	2.166E-06
total =	6.260E-02	0.000E+00	8.056E-01

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:19:03.16
LASALLE UNIT 1 MSIV CNTRL RM NG VIA DRAIN LINES LEAK RATE @ 400 SCFH Total

Input file= crng1a.lc6
CONTROL
power = 3.458E+03
mode = Control Room

ISOTOPE

KR-83M	1.036E-04	3.137E+03	9.100E-03	.320	3.160E-06	.000
KR-85	2.039E-09	302.	.514	4.400E-03	3.380E-02	.000
KR-85M	4.389E-05	6.734E+03	.162	.958	6.840E-02	.000
KR-87	1.519E-04	1.292E+04	.917	.933	.226	.000
KR-88	6.889E-05	1.830E+04	1.36	1.47	5.350E-02	.000
KR-89	3.639E-03	2.276E+04	1.13	1.95	.195	.000
XE-131M	6.694E-07	158.	3.240E-02	.673	1.360E-02	.000
XE-133	1.522E-06	5.528E+04	5.370E-02	.845	1.100E-02	.000
XE-133M	3.556E-06	2.305E+03	9.400E-02	.253	2.750E-02	.000
XE-135	2.103E-05	7.149E+03	.248	.994	5.130E-02	.000
XE-135M	7.361E-04	1.042E+04	.461	.955	1.820E-02	.000
XE-137	3.028E-03	4.852E+04	.423	.453	.310	.000
XE-138	8.140E-04	4.610E+04	.773	1.21	.116	.000

RELEASE

KR-83M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
KR-85	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
KR-85M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
KR-87	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
KR-88	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
KR-89	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-131M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-133	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-133M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-135	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-135M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-137	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-138	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0

PLANT
comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	.998

Pipe compartment # 3

inside radius	2.46	outside radius	3.02
insul thickness	6.35	pipe length	353.
number of lines	4.00	inital temp	550.
mass/unit length	5.04	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

comp 4 at 0:00:00.00

leak rate	3.51	leak filtr	.000
purge rate	.000	purge filtr	.000
recirc rate	.000	recirc filtr	.000

```
            pressure      1.00     temperature   100.
            volume       6.976E+03
    comp  5 at  0:00:00.00
            leak   rate   .000     leak   filtr  .000
            purge  rate  1.000E+06 purge  filtr  .000
            recirc rate    .000     recirc filtr  .000
            pressure      1.00     temperature   68.0
            volume       2.917E+05

METEOROLOGY
      0:00:00.00  Chiqu= 2.650E-04  brthr= 3.470E-04  occup= 1.
      0:08:00.00  Chiqu= 1.560E-04  brthr= 3.470E-04  occup= 1.
      1:00:00.00  Chiqu= 9.940E-05  brthr= 3.470E-04  occup= .6
      4:00:00.00  Chiqu= 4.370E-05  brthr= 3.470E-04  occup= .4

OUTPUT TIMES
      0:02:00.00
      0:04:00.00
      1:00:00.00
     30:00:00.00

CONTROL ROOM
      0:00:00.00
            Vent filt intake  1.09     Intake Filt Eff  .000
            Recirc Rate       12.4     Recirc Filt Eff  .000
            Vent Unfilt Intk 3.300E-03 Cont Room Volum 3.326E+03
            CR Gamma Volum   3.326E+03
```

0:02:00.00	Whole Body	Thyroid	Beta
KR-83M	3.539E-08	0.000E+00	1.518E-10
KR-85	2.305E-10	0.000E+00	2.902E-07
KR-85M	2.766E-07	0.000E+00	1.007E-05
KR-87	1.395E-06	0.000E+00	3.360E-05
KR-88	6.880E-06	0.000E+00	1.844E-05
KR-89	4.922E-12	0.000E+00	4.138E-11
XE-131M	4.949E-09	0.000E+00	6.102E-08
XE-133	1.491E-06	0.000E+00	1.716E-05
XE-133M	1.965E-08	0.000E+00	1.767E-06
XE-135	5.341E-07	0.000E+00	9.201E-06
XE-135M	2.432E-08	0.000E+00	8.408E-08
XE-137	6.286E-12	0.000E+00	8.468E-10
XE-138	1.446E-07	0.000E+00	1.586E-06
total =	1.081E-05	0.000E+00	9.226E-05

0:04:00.00	Whole Body	Thyroid	Beta
KR-83M	3.894E-07	0.000E+00	1.670E-09
KR-85	4.365E-09	0.000E+00	5.495E-06
KR-85M	4.137E-06	0.000E+00	1.506E-04
KR-87	1.213E-05	0.000E+00	2.923E-04
KR-88	9.030E-05	0.000E+00	2.420E-04
KR-89	4.922E-12	0.000E+00	4.139E-11
XE-131M	9.337E-08	0.000E+00	1.151E-06
XE-133	2.800E-05	0.000E+00	3.222E-04
XE-133M	3.650E-07	0.000E+00	3.281E-05
XE-135	9.023E-06	0.000E+00	1.554E-04
XE-135M	3.745E-08	0.000E+00	1.295E-07
XE-137	6.286E-12	0.000E+00	8.468E-10
XE-138	2.023E-07	0.000E+00	2.218E-06

total =	1.447E-04	0.000E+00	1.204E-03

1:00:00.00	Whole Body	Thyroid	Beta
KR-83M	2.286E-06	0.000E+00	9.808E-09
KR-85	5.469E-07	0.000E+00	6.884E-04
KR-85M	8.944E-05	0.000E+00	3.257E-03
KR-87	4.026E-05	0.000E+00	9.701E-04
KR-88	1.003E-03	0.000E+00	2.688E-03
KR-89	4.922E-12	0.000E+00	4.139E-11
XE-131M	1.133E-05	0.000E+00	1.396E-04
XE-133	3.259E-03	0.000E+00	3.751E-02
XE-133M	3.856E-05	0.000E+00	3.466E-03
XE-135	4.418E-04	0.000E+00	7.612E-03
XE-135M	3.778E-08	0.000E+00	1.306E-07
XE-137	6.286E-12	0.000E+00	8.468E-10
XE-138	2.031E-07	0.000E+00	2.228E-06
total =	4.886E-03	0.000E+00	5.633E-02

30:00:00.00	Whole Body	Thyroid	Beta
KR-83M	2.289E-06	0.000E+00	9.819E-09
KR-85	5.270E-05	0.000E+00	6.634E-02
KR-85M	9.564E-05	0.000E+00	3.483E-03
KR-87	4.027E-05	0.000E+00	9.701E-04
KR-88	1.015E-03	0.000E+00	2.721E-03
KR-89	4.922E-12	0.000E+00	4.139E-11
XE-131M	4.577E-04	0.000E+00	5.643E-03
XE-133	6.006E-02	0.000E+00	6.912E-01
XE-133M	2.753E-04	0.000E+00	2.475E-02
XE-135	6.312E-04	0.000E+00	1.087E-02
XE-135M	3.778E-08	0.000E+00	1.306E-07
XE-137	6.286E-12	0.000E+00	8.468E-10
XE-138	2.031E-07	0.000E+00	2.228E-06
total =	6.263E-02	0.000E+00	8.060E-01

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:19:19.42
LASALLE UNIT 1 MSIV CNTRL RM NG VIA DRAIN LINES LEAK RATE @ 400 SCFH Total

Input file= crng1a.1c7
CONTROL
power = 3.458E+03
mode = Control Room

ISOTOPE

KR-83M	1.036E-04	3.137E+03	9.100E-03	.320	3.160E-06	.000
KR-85	2.039E-09	302.	.514	4.400E-03	3.380E-02	.000
KR-85M	4.389E-05	6.734E+03	.162	.958	6.840E-02	.000
KR-87	1.519E-04	1.292E+04	.917	.933	.226	.000
KR-88	6.889E-05	1.830E+04	1.36	1.47	5.350E-02	.000
KR-89	3.639E-03	2.276E+04	1.13	1.96	.195	.000
XE-131M	6.694E-07	158.	3.240E-02	.673	1.360E-02	.000
XE-133	1.522E-06	5.528E+04	5.370E-02	.845	1.100E-02	.000
XE-133M	3.556E-06	2.305E+03	9.400E-02	.253	2.750E-02	.000
XE-135	2.103E-05	7.149E+03	.248	.994	5.130E-02	.000
XE-135M	7.361E-04	1.042E+04	.461	.955	1.820E-02	.000
XE-137	3.028E-03	4.852E+04	.423	.453	.310	.000
XE-138	8.140E-04	4.610E+04	.773	1.21	.116	.000

RELEASE

KR-83M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
KR-85	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
KR-85M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
KR-87	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
KR-88	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
KR-89	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
XE-131M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
XE-133	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
XE-133M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
XE-135	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
XE-135M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
XE-137	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
XE-138	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0

PLANT
comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	.998

Pipe compartment # 3

inside radius	2.46	outside radius	3.02
insul thickness	6.35	pipe length	353.
number of lines	4.00	inital temp	550.
mass/unit length	5.04	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

comp 4 at 0:00:00.00

leak rate	3.51	leak filtr	.000
purge rate	.000	purge filtr	.000
recirc rate	.000	recirc filtr	.000

```
            pressure      1.00     temperature   100.
            volume      6.976E+03
    comp  5 at  0:00:00.00
            leak   rate   .000     leak   filtr  .000
            purge  rate  1.000E+06 purge  filtr  .000
            recirc rate   .000     recirc filtr  .000
            pressure      1.00     temperature   68.0
            volume      2.917E+05

METEOROLOGY
      0:00:00.00  Chiqu= 2.650E-04  brthr= 3.470E-04  occup= 1.
      0:08:00.00  Chiqu= 1.560E-04  brthr= 3.470E-04  occup= 1.
      1:00:00.00  Chiqu= 9.940E-05  brthr= 3.470E-04  occup= .6
      4:00:00.00  Chiqu= 4.370E-05  brthr= 3.470E-04  occup= .4

OUTPUT TIMES
      0:02:00.00
      0:04:00.00
      1:00:00.00
     30:00:00.00

CONTROL ROOM
      0:00:00.00
            Vent filt intake  1.18     Intake Filt Eff  .000
            Recirc Rate       12.4     Recirc Filt Eff  .000
            Vent Unfilt Intk 3.300E-03 Cont Room Volum 3.326E+03
            CR Gamma Volum   3.326E+03
```

0:02:00.00	Whole Body	Thyroid	Beta
KR-83M	3.756E-08	0.000E+00	1.611E-10
KR-85	2.446E-10	0.000E+00	3.079E-07
KR-85M	2.935E-07	0.000E+00	1.069E-05
KR-87	1.481E-06	0.000E+00	3.567E-05
KR-88	7.302E-06	0.000E+00	1.957E-05
KR-89	5.314E-12	0.000E+00	4.468E-11
XE-131M	5.250E-09	0.000E+00	6.474E-08
XE-133	1.582E-06	0.000E+00	1.820E-05
XE-133M	2.085E-08	0.000E+00	1.874E-06
XE-135	5.667E-07	0.000E+00	9.762E-06
XE-135M	2.591E-08	0.000E+00	8.958E-08
XE-137	6.777E-12	0.000E+00	9.129E-10
XE-138	1.541E-07	0.000E+00	1.691E-06
total =	1.147E-05	0.000E+00	9.792E-05

0:04:00.00	Whole Body	Thyroid	Beta
KR-83M	4.058E-07	0.000E+00	1.741E-09
KR-85	4.541E-09	0.000E+00	5.717E-06
KR-85M	4.307E-06	0.000E+00	1.568E-04
KR-87	1.266E-05	0.000E+00	3.049E-04
KR-88	9.405E-05	0.000E+00	2.520E-04
KR-89	5.314E-12	0.000E+00	4.468E-11
XE-131M	9.714E-08	0.000E+00	1.198E-06
XE-133	2.913E-05	0.000E+00	3.352E-04
XE-133M	3.798E-07	0.000E+00	3.414E-05
XE-135	9.390E-06	0.000E+00	1.618E-04
XE-135M	3.967E-08	0.000E+00	1.371E-07
XE-137	6.778E-12	0.000E+00	9.130E-10
XE-138	2.146E-07	0.000E+00	2.353E-06

total =	1.507E-04	0.000E+00	1.254E-03

1:00:00.00	Whole Body	Thyroid	Beta
KR-83M	2.332E-06	0.000E+00	1.000E-08
KR-85	5.503E-07	0.000E+00	6.927E-04
KR-85M	9.041E-05	0.000E+00	3.292E-03
KR-87	4.132E-05	0.000E+00	9.954E-04
KR-88	1.018E-03	0.000E+00	2.727E-03
KR-89	5.314E-12	0.000E+00	4.468E-11
XE-131M	1.140E-05	0.000E+00	1.405E-04
XE-133	3.280E-03	0.000E+00	3.774E-02
XE-133M	3.881E-05	0.000E+00	3.488E-03
XE-135	4.454E-04	0.000E+00	7.672E-03
XE-135M	4.001E-08	0.000E+00	1.383E-07
XE-137	6.778E-12	0.000E+00	9.130E-10
XE-138	2.155E-07	0.000E+00	2.363E-06
total =	4.928E-03	0.000E+00	5.675E-02

30:00:00.00	Whole Body	Thyroid	Beta
KR-83M	2.334E-06	0.000E+00	1.001E-08
KR-85	5.271E-05	0.000E+00	6.636E-02
KR-85M	9.660E-05	0.000E+00	3.518E-03
KR-87	4.132E-05	0.000E+00	9.955E-04
KR-88	1.030E-03	0.000E+00	2.760E-03
KR-89	5.314E-12	0.000E+00	4.468E-11
XE-131M	4.579E-04	0.000E+00	5.645E-03
XE-133	6.010E-02	0.000E+00	6.916E-01
XE-133M	2.757E-04	0.000E+00	2.478E-02
XE-135	6.348E-04	0.000E+00	1.094E-02
XE-135M	4.001E-08	0.000E+00	1.383E-07
XE-137	6.778E-12	0.000E+00	9.130E-10
XE-138	2.155E-07	0.000E+00	2.363E-06
total =	6.269E-02	0.000E+00	8.066E-01

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:17:46.54
LASALLE UNIT 1 MSIV CNTRL RM NG VIA TURBINE LEAK RATE @ 400 SCFH Total

Input file= crng1b.lc1
CONTROL
power = 3.458E+03
mode = Control Room
tbvol = 16.1
tbarea = 409.

ISOTOPE

KR-83M	1.036E-04	3.137E+03	9.100E-03	.320	3.160E-06	.000
KR-85	2.039E-09	302.	.514	4.400E-03	3.380E-02	.000
KR-85M	4.389E-05	6.734E+03	.162	.958	6.840E-02	.000
KR-87	1.519E-04	1.292E+04	.917	.933	.226	.000
KR-88	6.889E-05	1.830E+04	1.36	1.47	5.350E-02	.000
KR-89	3.639E-03	2.276E+04	1.13	1.96	.195	.000
XE-131M	6.694E-07	158.	3.240E-02	.673	1.360E-02	.000
XE-133	1.522E-06	5.528E+04	5.370E-02	.845	1.100E-02	.000
XE-133M	3.556E-06	2.305E+03	9.400E-02	.253	2.750E-02	.000
XE-135	2.103E-05	7.149E+03	.248	.994	5.130E-02	.000
XE-135M	7.361E-04	1.042E+04	.461	.955	1.820E-02	.000
XE-137	3.028E-03	4.852E+04	.423	.453	.310	.000
XE-138	8.140E-04	4.610E+04	.773	1.21	.116	.000

RELEASE

KR-83M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000 ff 1 dfctr 0
KR-85	cmp 1 at	0:00:00.00	inst	100.	drbl	.000 ff 1 dfctr 0
KR-85M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000 ff 1 dfctr 0
KR-87	cmp 1 at	0:00:00.00	inst	100.	drbl	.000 ff 1 dfctr 0
KR-88	cmp 1 at	0:00:00.00	inst	100.	drbl	.000 ff 1 dfctr 0
KR-89	cmp 1 at	0:00:00.00	inst	100.	drbl	.000 ff 1 dfctr 0
XE-131M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000 ff 1 dfctr 0
XE-133	cmp 1 at	0:00:00.00	inst	100.	drbl	.000 ff 1 dfctr 0
XE-133M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000 ff 1 dfctr 0
XE-135	cmp 1 at	0:00:00.00	inst	100.	drbl	.000 ff 1 dfctr 0
XE-135M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000 ff 1 dfctr 0
XE-137	cmp 1 at	0:00:00.00	inst	100.	drbl	.000 ff 1 dfctr 0
XE-138	cmp 1 at	0:00:00.00	inst	100.	drbl	.000 ff 1 dfctr 0

PLANT
comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	2.430E-03

Pipe compartment # 3

inside radius	30.6	outside radius	33.0
insul thickness	7.62	pipe length	226.
number of lines	4.00	inital temp	550.
mass/unit length	260.	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

Turbine compartment # 4
split factor 1.00

```
    comp  5  at  0:00:00.00
             leak   rate   .000     leak   filtr  .000
             purge  rate  1.000E+06 purge  filtr  .000
             recirc rate   .000     recirc filtr  .000
             pressure      1.00     temperature   68.0
             volume       2.917E+05

METEOROLOGY
      0:00:00.00  Chiqu= 2.650E-04  brthr= 3.470E-04  occup= 1.
      0:08:00.00  Chiqu= 1.560E-04  brthr= 3.470E-04  occup= 1.
      1:00:00.00  Chiqu= 9.940E-05  brthr= 3.470E-04  occup= .6
      4:00:00.00  Chiqu= 4.370E-05  brthr= 3.470E-04  occup= .4

OUTPUT TIMES
      0:02:00.00
      0:04:00.00
      1:00:00.00
     30:00:00.00

CONTROL ROOM
      0:00:00.00
             Vent filt intake  .999     Intake Filt Eff  .000
             Recirc Rate       12.4     Recirc Filt Eff  .000
             Vent Unfilt Intk 3.300E-03 Cont Room Volum 3.326E+03
             CR Gamma Volum   3.326E+03
```

0:02:00.00	Whole Body	Thyroid	Beta
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	0.000E+00	0.000E+00	0.000E+00
KR-85M	0.000E+00	0.000E+00	0.000E+00
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	0.000E+00	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	0.000E+00	0.000E+00	0.000E+00
XE-133	0.000E+00	0.000E+00	0.000E+00
XE-133M	0.000E+00	0.000E+00	0.000E+00
XE-135	0.000E+00	0.000E+00	0.000E+00
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

0:04:00.00	Whole Body	Thyroid	Beta
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	0.000E+00	0.000E+00	0.000E+00
KR-85M	0.000E+00	0.000E+00	0.000E+00
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	0.000E+00	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	0.000E+00	0.000E+00	0.000E+00
XE-133	0.000E+00	0.000E+00	0.000E+00
XE-133M	0.000E+00	0.000E+00	0.000E+00
XE-135	0.000E+00	0.000E+00	0.000E+00
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

1:00:00.00	Whole Body	Thyroid	Beta
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	0.000E+00	0.000E+00	0.000E+00
KR-85M	0.000E+00	0.000E+00	0.000E+00
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	0.000E+00	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	0.000E+00	0.000E+00	0.000E+00
XE-133	0.000E+00	0.000E+00	0.000E+00
XE-133M	0.000E+00	0.000E+00	0.000E+00
XE-135	0.000E+00	0.000E+00	0.000E+00
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

30:00:00.00	Whole Body	Thyroid	Beta
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	8.810E-10	0.000E+00	1.109E-06
KR-85M	7.731E-34	0.000E+00	2.816E-32
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	0.000E+00	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	4.005E-09	0.000E+00	4.938E-08
XE-133	1.707E-07	0.000E+00	1.965E-06
XE-133M	2.496E-11	0.000E+00	2.244E-09
XE-135	5.071E-21	0.000E+00	8.735E-20
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	1.757E-07	0.000E+00	3.126E-06

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:18:02.80
LASALLE UNIT 1 MSIV CNTRL RM NG VIA TURBINE LEAK RATE @ 400 SCFH Total

Input file= crng1b.lc2
CONTROL
power = 3.458E+03
mode = Control Room
tbvol = 16.1
tbarea = 409.

ISOTOPE

KR-83M	1.036E-04	3.137E+03	9.100E-03	.320	3.160E-06	.000
KR-85	2.039E-09	302.	.514	4.400E-03	3.380E-02	.000
KR-85M	4.389E-05	6.734E+03	.162	.958	6.840E-02	.000
KR-87	1.519E-04	1.292E+04	.917	.933	.226	.000
KR-88	6.889E-05	1.830E+04	1.36	1.47	5.350E-02	.000
KR-89	3.639E-03	2.276E+04	1.13	1.96	195	.000
XE-131M	6.694E-07	158.	3.240E-02	.673	1.360E-02	.000
XE-133	1.522E-06	5.528E+04	5.370E-02	.845	1.100E-02	.000
XE-133M	3.556E-06	2.305E+03	9.400E-02	.253	2.750E-02	.000
XE-135	2.103E-05	7.149E+03	.248	.994	5.130E-02	.000
XE-135M	7.361E-04	1.042E+04	.461	.955	1.820E-02	.000
XE-137	3.028E-03	4.852E+04	.423	.453	.310	.000
XE-138	8.140E-04	4.610E+04	.773	1.21	.116	.000

RELEASE

KR-83M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0	
KR-85	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0	
KR-85M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0	
KR-87	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0	
KR-88	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0	
KR-89	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0	
XE-131M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0	
XE-133	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0	
XE-133M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0	
XE-135	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0	
XE-135M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0	
XE-137	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0	
XE-138	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0	

PLANT
comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	2.430E-03

Pipe compartment # 3

inside radius	30.6	outside radius	33.0
insul thickness	7.62	pipe length	226.
number of lines	4.00	inital temp	550.
mass/unit length	260.	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

Turbine compartment # 4
split factor 1.00

comp 5 at 0:00:00.00

leak rate	.000	leak filtr	.000
purge rate	1.000E+06	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	68.0
volume	2.917E+05		

METEOROLOGY

0:00:00.00	Chiqu= 2.650E-04	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 1.560E-04	brthr= 3.470E-04	occup= 1.
1:00:00.00	Chiqu= 9.940E-05	brthr= 3.470E-04	occup= .6
4:00:00.00	Chiqu= 4.370E-05	brthr= 3.470E-04	occup= .4

OUTPUT TIMES

0:02:00.00
0:04:00.00
1:00:00.00
30:00:00.00

CONTROL ROOM

0:00:00.00

Vent filt intake	1.50	Intake Filt Eff	.000
Recirc Rate	12.4	Recirc Filt Eff	.000
Vent Unfilt Intk	3.300E-03	Cont Room Volum	3.326E+03
CR Gamma Volum	3.326E+03		

0:02:00.00	Whole Body	Thyroid	Beta
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	0.000E+00	0.000E+00	0.000E+00
KR-85M	0.000E+00	0.000E+00	0.000E+00
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	0.000E+00	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	0.000E+00	0.000E+00	0.000E+00
XE-133	0.000E+00	0.000E+00	0.000E+00
XE-133M	0.000E+00	0.000E+00	0.000E+00
XE-135	0.000E+00	0.000E+00	0.000E+00
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

0:04:00.00	Whole Body	Thyroid	Beta
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	0.000E+00	0.000E+00	0.000E+00
KR-85M	0.000E+00	0.000E+00	0.000E+00
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	0.000E+00	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	0.000E+00	0.000E+00	0.000E+00
XE-133	0.000E+00	0.000E+00	0.000E+00
XE-133M	0.000E+00	0.000E+00	0.000E+00
XE-135	0.000E+00	0.000E+00	0.000E+00
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

1:00:00.00	Whole Body	Thyroid	Beta
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	0.000E+00	0.000E+00	0.000E+00
KR-85M	0.000E+00	0.000E+00	0.000E+00
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	0.000E+00	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	0.000E+00	0.000E+00	0.000E+00
XE-133	0.000E+00	0.000E+00	0.000E+00
XE-133M	0.000E+00	0.000E+00	0.000E+00
XE-135	0.000E+00	0.000E+00	0.000E+00
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

30:00:00.00	Whole Body	Thyroid	Beta
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	8.840E-10	0.000E+00	1.113E-06
KR-85M	8.072E-34	0.000E+00	2.940E-32
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	0.000E+00	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	4.019E-09	0.000E+00	4.955E-08
XE-133	.714E-07	0.000E+00	1.973E-06
XE-133M	2.508E-11	0.000E+00	2.255E-09
XE-135	5.184E-21	0.000E+00	8.930E-20
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	1.763E-07	0.000E+00	3.137E-06

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:18:19.16
LASALLE UNIT 1 MSIV CNTRL RM NG VIA TURBINE LEAK RATE @ 400 SCFH Total

Input file= crng1b.lc3

CONTROL
power = 3.458E+03
mode = Control Room
tbvol = 16.1
tbarea = 409.

ISOTOPE

KR-83M	1.036E-04	3.137E+03	9.100E-03	.320	3.160E-06	.000
KR-85	2.039E-09	302.	.514	4.400E-03	3.380E-02	.000
KR-85M	4.389E-05	6.734E+03	.162	.958	6.840E-02	.000
KR-87	1.519E-04	1.292E+04	.917	.933	.226	.000
KR-88	6.889E-05	1.830E+04	1.36	1.47	5.350E-02	.000
KR-89	3.639E-03	2.276E+04	1.13	1.96	.195	.000
XE-131M	6.694E-07	158.	3.240E-02	.673	1.360E-02	.000
XE-133	1.522E-06	5.528E+04	5.370E-02	.845	1.100E-02	.000
XE-133M	3.556E-06	2.305E+03	9.400E-02	.253	2.750E-02	.000
XE-135	2.103E-05	7.149E+03	.248	.994	5.130E-02	.000
XE-135M	7.361E-04	1.042E+04	.461	.955	1.820E-02	.000
XE-137	3.028E-03	4.852E+04	.423	.453	.310	.000
XE-138	8.140E-04	4.610E+04	.773	1.21	.116	.000

RELEASE

KR-83M	cmp	1	at	0:00:00.00	inst	100.	drbl	.000	ff	1 dfctr 0
KR-85	cmp	1	at	0:00:00.00	inst	100.	drbl	.000	ff	1 dfctr 0
KR-85M	cmp	1	at	0:00:00.00	inst	100.	drbl	.000	ff	1 dfctr 0
KR-87	cmp	1	at	0:00:00.00	inst	100.	drbl	.000	ff	1 dfctr 0
KR-88	cmp	1	at	0:00:00.00	inst	100.	drbl	.000	ff	1 dfctr 0
KR-89	cmp	1	at	0:00:00.00	inst	100.	drbl	.000	ff	1 dfctr 0
XE-131M	cmp	1	at	0:00:00.00	inst	100.	drbl	.000	ff	1 dfctr 0
XE-133	cmp	1	at	0:00:00.00	inst	100.	drbl	.000	ff	1 dfctr 0
XE-133M	cmp	1	at	0:00:00.00	inst	100.	drbl	.000	ff	1 dfctr 0
XE-135	cmp	1	at	0:00:00.00	inst	100.	drbl	.000	ff	1 dfctr 0
XE-135M	cmp	1	at	0:00:00.00	inst	100.	drbl	.000	ff	1 dfctr 0
XE-137	cmp	1	at	0:00:00.00	inst	100.	drbl	.000	ff	1 dfctr 0
XE-138	cmp	1	at	0:00:00.00	inst	100.	drbl	.000	ff	1 dfctr 0

PLANT
comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	2.430E-03

Pipe compartment # 3

inside radius	30.6	outside radius	33.0
insul thickness	7.62	pipe length	226.
number of lines	4.00	inital temp	550.
mass/unit length	260.	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

Turbine compartment # 4
split factor 1.00

```
    comp  5  at  0:00:00.00
             leak   rate   .000     leak   filtr  .000
             purge  rate  1.000E+06 purge  filtr  .000
             recirc rate   .000     recirc filtr  .000
             pressure      1.00     temperature   68.0
             volume       2.917E+05

METEOROLOGY
      0:00:00.00  Chiqu= 2.650E-04  brthr= 3.470E-04  occup= 1.
      0:08:00.00  Chiqu= 1.560E-04  brthr= 3.470E-04  occup= 1.
      1:00:00.00  Chiqu= 9.940E-05  brthr= 3.470E-04  occup= .6
      4:00:00.00  Chiqu= 4.370E-05  brthr= 3.470E-04  occup= .4

OUTPUT TIMES
      0:02:00.00
      0:04:00.00
      1:00:00.00
     30:00:00.00

CONTROL ROOM
      0:00:00.00
             Vent filt intake  .999     Intake Filt Eff  .000
             Recirc Rate       12.4     Recirc Filt Eff  .000
             Vent Unfilt Intk 1.180E-02 Cont Room Volum 3.326E+03
             CR Gamma Volum   3.326E+03
```

0:02:00.00	Whole Body	Thyroid	Beta
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	0.000E+00	0.000E+00	0.000E+00
KR-85M	0.000E+00	0.000E+00	0.000E+00
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	0.000E+00	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	0.000E+00	0.000E+00	0.000E+00
XE-133	0.000E+00	0.000E+00	0.000E+00
XE-133M	0.000E+00	0.000E+00	0.000E+00
XE-135	0.000E+00	0.000E+00	0.000E+00
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

0:04:00.00	Whole Body	Thyroid	Beta
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	0.000E+00	0.000E+00	0.000E+00
KR-85M	0.000E+00	0.000E+00	0.000E+00
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	0.000E+00	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	0.000E+00	0.000E+00	0.000E+00
XE-133	0.000E+00	0.000E+00	0.000E+00
XE-133M	0.000E+00	0.000E+00	0.000E+00
XE-135	0.000E+00	0.000E+00	0.000E+00
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

1:00:00.00	Whole Body	Thyroid	Beta
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	0.000E+00	0.000E+00	0.000E+00
KR-85M	0.000E+00	0.000E+00	0.000E+00
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	0.000E+00	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	0.000E+00	0.000E+00	0.000E+00
XE-133	0.000E+00	0.000E+00	0.000E+00
XE-133M	0.000E+00	0.000E+00	0.000E+00
XE-135	0.000E+00	0.000E+00	0.000E+00
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

30:00:00.00	Whole Body	Thyroid	Beta
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	8.811E-10	0.000E+00	1.109E-06
KR-85M	7.740E-34	0.000E+00	2.819E-32
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	0.000E+00	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	4.005E-09	0.000E+00	4.938E-08
XE-133	1.708E-07	0.000E+00	1.965E-06
XE-133M	2.496E-11	0.000E+00	2.244E-09
XE-135	5.073E-21	0.000E+00	8.738E-20
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	1.757E-07	0.000E+00	3.126E-06

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:18:35.42
LASALLE UNIT 1 MSIV CNTRL RM NG VIA TURBINE LEAK RATE @ 400 SCFH Total

Input file= crng1b.lc4
CONTROL
power = 3.458E+03
mode = Control Room
tbvol = 16.1
tbarea = 409.

ISOTOPE

KR-83M	1.036E-04	3.137E+03	9.100E-03	.320	3.160E-06	.000
KR-85	2.039E-09	302.	.514	4.400E-03	3.380E-02	.000
KR-85M	4.389E-05	6.734E+03	.162	.958	6.840E-02	.000
KR-87	1.519E-04	1.292E+04	.917	.933	.226	.000
KR-88	6.889E-05	1.830E+04	1.36	1.47	5.350E-02	.000
KR-89	3.639E-03	2.276E+04	1.13	1.96	.195	.000
XE-131M	6.694E-07	158.	3.240E-02	.673	1.360E-02	.000
XE-133	1.522E-06	5.528E+04	5.370E-02	.845	1.100E-02	.000
XE-133M	3.556E-06	2.305E+03	9.400E-02	.253	2.750E-02	.000
XE-135	2.103E-05	7.149E+03	.248	.994	5.130E-02	.000
XE-135M	7.361E-04	1.042E+04	.461	.955	1.820E-02	.000
XE-137	3.028E-03	4.852E+04	.423	.453	.310	.000
XE-138	8.140E-04	4.610E+04	.773	1.21	.116	.000

RELEASE

KR-83M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
KR-85	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
KR-85M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
KR-87	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
KR-88	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
KR-89	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-131M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-133	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-133M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-135	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-135M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-137	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-138	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0

PLANT
comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	2.430E-03

Pipe compartment # 3

inside radius	30.6	outside radius	33.0
insul thickness	7.62	pipe length	226.
number of lines	4.00	inital temp	550.
mass/unit length	260.	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

Turbine compartment # 4
split factor 1.00

```
    comp  5  at  0:00:00.00
             leak   rate    .000     leak   filtr  .000
             purge  rate  1.000E+06 purge  filtr  .000
             recirc rate    .000     recirc filtr  .000
             pressure       1.00     temperature   68.0
             volume       2.917E+05

METEOROLOGY
      0:00:00.00  Chiqu= 2.650E-04  brthr= 3.470E-04  occup= 1.
      0:08:00.00  Chiqu= 1.560E-04  brthr= 3.470E-04  occup= 1.
      1:00:00.00  Chiqu= 9.940E-05  brthr= 3.470E-04  occup= .6
      4:00:00.00  Chiqu= 4.370E-05  brthr= 3.470E-04  occup= .4

OUTPUT TIMES
      0:02:00.00
      0:04:00.00
      1:00:00.00
     30:00:00.00

CONTROL ROOM
      0:00:00.00
             Vent filt intake  .999     Intake Filt Eff  .000
             Recirc Rate       12.4     Recirc Filt Eff  .000
             Vent Unfilt Intk 2.360E-02 Cont Room Volum 3.326E+03
             CR Gamma Volum   3.326E+03
```

0:02:00.00	Whole Body	Thyroid	Beta
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	0.000E+00	0.000E+00	0.000E+00
KR-85M	0.000E+00	0.000E+00	0.000E+00
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	0.000E+00	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	0.000E+00	0.000E+00	0.000E+00
XE-133	0.000E+00	0.000E+00	0.000E+00
XE-133M	0.000E+00	0.000E+00	0.000E+00
XE-135	0.000E+00	0.000E+00	0.000E+00
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

0:04:00.00	Whole Body	Thyroid	Beta
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	0.000E+00	0.000E+00	0.000E+00
KR-85M	0.000E+00	0.000E+00	0.000E+00
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	0.000E+00	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	0.000E+00	0.000E+00	0.000E+00
XE-133	0.000E+00	0.000E+00	0.000E+00
XE-133M	0.000E+00	0.000E+00	0.000E+00
XE-135	0.000E+00	0.000E+00	0.000E+00
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

1:00:00.00	Whole Body	Thyroid	Beta
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	0.000E+00	0.000E+00	0.000E+00
KR-85M	0.000E+00	0.000E+00	0.000E+00
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	0.000E+00	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	0.000E+00	0.000E+00	0.000E+00
XE-133	0.000E+00	0.000E+00	0.000E+00
XE-133M	0.000E+00	0.000E+00	0.000E+00
XE-135	0.000E+00	0.000E+00	0.000E+00
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

30:00:00.00	Whole Body	Thyroid	Beta
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	8.812E-10	0.000E+00	1.109E-06
KR-85M	7.751E-34	0.000E+00	2.823E-32
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	0.000E+00	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	4.005E-09	0.000E+00	4.939E-08
XE-133	1.708E-07	0.000E+00	1.965E-06
XE-133M	2.497E-11	0.000E+00	2.244E-09
XE-135	5.077E-21	0.000E+00	8.747E-20
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	1.757E-07	0.000E+00	3.126E-06

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:18:51.68
LASALLE UNIT 1 MSIV CNTRL RM NG VIA TURBINE LEAK RATE @ 400 SCFH Total

Input file= crng1b.lc5

CONTROL
power = 3.458E+03
mode = Control Room
tbvol = 16.1
tbarea = 409.

ISOTOPE

KR-83M	1.036E-04	3.137E+03	9.100E-03	.320	3.160E-06	.000
KR-85	2.039E-09	302.	.514	4.400E-03	3.380E-02	.000
KR-85M	4.389E-05	6.734E+03	.162	.958	6.840E-02	.000
KR-87	1.519E-04	1.292E+04	.917	.933	.226	.000
KR-88	6.889E-05	1.830E+04	1.36	1.47	5.350E-02	.000
KR-89	3.639E-03	2.276E+04	1.13	1.96	.195	.000
XE-131M	6.694E-07	158.	3.240E-02	.673	1.360E-02	.000
XE-133	1.522E-06	5.528E+04	5.370E-02	.845	1.100E-02	.000
XE-133M	3.556E-06	2.305E+03	9.400E-02	.253	2.750E-02	.000
XE-135	2.103E-05	7.149E+03	.248	.994	5.130E-02	.000
XE-135M	7.361E-04	1.042E+04	.461	.955	1.820E-02	.000
XE-137	3.028E-03	4.852E+04	.423	.453	.310	.000
XE-138	8.140E-04	4.610E+04	.773	1.21	.116	.000

RELEASE

KR-83M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
KR-85	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
KR-85M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
KR-87	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
KR-88	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
KR-89	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
XE-131M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
XE-133	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
XE-133M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
XE-135	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
XE-135M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
XE-137	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
XE-138	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0

PLANT
comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	2.430E-03

Pipe compartment # 3

inside radius	30.6	outside radius	33.0
insul thickness	7.62	pipe length	226.
number of lines	4.00	inital temp	550.
mass/unit length	260.	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

Turbine compartment # 4
split factor 1.00

ATTACHMENT I

SARGENT & LUNDY

SEISMIC WALKDOWN REPORT

FOR

LASALLE UNIT 2

```
    comp  5  at  0:00:00.00
             leak   rate   .000     leak   filtr  .000
             purge  rate  1.000E+06 purge  filtr  .000
             recirc rate   .000     recirc filtr  .000
             pressure      1.00     temperature   68.0
             volume       2.917E+05

METEOROLOGY
      0:00:00.00  Chiqu= 2.650E-04  brthr= 3.470E-04  occup= 1.
      0:08:00.00  Chiqu= 1.560E-04  brthr= 3.470E-04  occup= 1.
      1:00:00.00  Chiqu= 9.940E-05  brthr= 3.470E-04  occup= .6
      4:00:00.00  Chiqu= 4.370E-05  brthr= 3.470E-04  occup= .4

OUTPUT TIMES
      0:02:00.00
      0:04:00.00
      1:00:00.00
     30:00:00.00

CONTROL ROOM
      0:00:00.00
             Vent filt intake  .999     Intake Filt Eff  .000
             Recirc Rate       12.4     Recirc Filt Eff  .000
             Vent Unfilt Intk 4.720E-02 Cont Room Volum 3.326E+03
             CR Gamma Volum   3.326E+03
```

0:02:00.00	Whole Body	Thyroid	Beta
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	0.000E+00	0.000E+00	0.000E+00
KR-85M	0.000E+00	0.000E+00	0.000E+00
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	0.000E+00	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	0.000E+00	0.000E+00	0.000E+00
XE-133	0.000E+00	0.000E+00	0.000E+00
XE-133M	0.000E+00	0.000E+00	0.000E+00
XE-135	0.000E+00	0.000E+00	0.000E+00
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

0:04:00.00	Whole Body	Thyroid	Beta
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	0.000E+00	0.000E+00	0.000E+00
KR-85M	0.000E+00	0.000E+00	0.000E+00
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	0.000E+00	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	0.000E+00	0.000E+00	0.000E+00
XE-133	0.000E+00	0.000E+00	0.000E+00
XE-133M	0.000E+00	0.000E+00	0.000E+00
XE-135	0.000E+00	0.000E+00	0.000E+00
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

1:00:00.00	Whole Body	Thyroid	Beta
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	0.000E+00	0.000E+00	0.000E+00
KR-85M	0.000E+00	0.000E+00	0.000E+00
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	0.000E+00	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	0.000E+00	0.000E+00	0.000E+00
XE-133	0.000E+00	0.000E+00	0.000E+00
XE-133M	0.000E+00	0.000E+00	0.000E+00
XE-135	0.000E+00	0.000E+00	0.000E+00
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

30:00:00.00	Whole Body	Thyroid	Beta
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	8.814E-10	0.000E+00	1.110E-06
KR-85M	7.773E-34	0.000E+00	2.831E-32
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	0.000E+00	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	4.006E-09	0.000E+00	4.940E-08
XE-133	1.708E-07	0.000E+00	1.966E-06
XE-133M	2.498E-11	0.000E+00	2.245E-09
XE-135	5.084E-21	0.000E+00	8.759E-20
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	1.757E-07	0.000E+00	3.127E-06

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:19:07.94
LASALLE UNIT 1 MSIV CNTRL RM NG VIA TURBINE LEAK RATE @ 400 SCFH Total

Input file= crng1b.lc6

CONTROL
power = 3.458E+03
mode = Control Room
tbvol = 16.1
tbarea = 409.

ISOTOPE

KR-83M	1.036E-04	3.137E+03	9.100E-03	.320	3.160E-06	.000
KR-85	2.039E-09	302.	.514	4.400E-03	3.380E-02	.000
KR-85M	4.389E-05	6.734E+03	.162	.958	6.840E-02	.000
KR-87	1.519E-04	1.292E+04	.917	.933	.226	.000
KR-88	6.889E-05	1.830E+04	1.36	1.47	5.350E-02	.000
KR-89	3.639E-03	2.276E+04	1.13	1.96	.195	.000
XE-131M	6.694E-07	158.	3.240E-02	.673	1.360E-02	.000
XE-133	1.522E-06	5.528E+04	5.370E-02	.845	1.100E-02	.000
XE-133M	3.556E-06	2.305E+03	9.400E-02	.253	2.750E-02	.000
XE-135	2.103E-05	7.149E+03	.248	.994	5.130E-02	.000
XE-135M	7.361E-04	1.042E+04	.461	.955	1.820E-02	.000
XE-137	3.028E-03	4.852E+04	.423	.453	.310	.000
XE-138	8.140E-04	4.610E+04	.773	1.21	.116	.000

RELEASE

KR-83M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
KR-85	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
KR-85M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
KR-87	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
KR-88	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
KR-89	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
XE-131M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
XE-133	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
XE-133M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
XE-135	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
XE-135M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
XE-137	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0
XE-138	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1 dfctr 0

PLANT
comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	2.430E-03

Pipe compartment # 3

inside radius	30.6	outside radius	33.0
insul thickness	7.62	pipe length	226.
number of lines	4.00	inital temp	550.
mass/unit length	260.	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

Turbine compartment # 4
split factor 1.00

```
    comp  5  at  0:00:00.00
             leak   rate    .000     leak   filtr  .000
             purge  rate  1.000E+06 purge  filtr  .000
             recirc rate    .000     recirc filtr  .000
             pressure      1.00      temperature   68.0
             volume       2.917E+05

METEOROLOGY
      0:00:00.00  Chiqu= 2.650E-04  brthr= 3.470E-04  occup= 1.
      0:08:00.00  Chiqu= 1.560E-04  brthr= 3.470E-04  occup= 1.
      1:00:00.00  Chiqu= 9.940E-05  brthr= 3.470E-04  occup= .6
      4:00:00.00  Chiqu= 4.370E-05  brthr= 3.470E-04  occup= .4

OUTPUT TIMES
      0:02:00.00
      0:04:00.00
      1:00:00.00
     30:00:00.00

CONTROL ROOM
      0:00:00.00
             Vent filt intake  1.09     Intake Filt Eff  .000
             Recirc Rate       12.4     Recirc Filt Eff  .000
             Vent Unfilt Intk 3.300E-03 Cont Room Volum 3.326E+03
             CR Gamma Volum   3.326E+03
```

0:02:00.00	Whole Body	Thyroid	Beta
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	0.000E+00	0.000E+00	0.000E+00
KR-85M	0.000E+00	0.000E+00	0.000E+00
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	0.000E+00	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	0.000E+00	0.000E+00	0.000E+00
XE-133	0.000E+00	0.000E+00	0.000E+00
XE-133M	0.000E+00	0.000E+00	0.000E+00
XE-135	0.000E+00	0.000E+00	0.000E+00
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

0:04:00.00	Whole Body	Thyroid	Beta
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	0.000E+00	0.000E+00	0.000E+00
KR-85M	0.000E+00	0.000E+00	0.000E+00
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	0.000E+00	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	0.000E+00	0.000E+00	0.000E+00
XE-133	0.000E+00	0.000E+00	0.000E+00
XE-133M	0.000E+00	0.000E+00	0.000E+00
XE-135	0.000E+00	0.000E+00	0.000E+00
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

1:00:00.00	Whole Body	Thyroid	Beta
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	0.000E+00	0.000E+00	0.000E+00
KR-85M	0.000E+00	0.000E+00	0.000E+00
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	0.000E+00	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	0.000E+00	0.000E+00	0.000E+00
XE-133	0.000E+00	0.000E+00	0.000E+00
XE-133M	0.000E+00	0.000E+00	0.000E+00
XE-135	0.000E+00	0.000E+00	0.000E+00
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

30:00:00.00	Whole Body	Thyroid	Beta
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	8.817E-10	0.000E+00	1.110E-06
KR-85M	7.810E-34	0.000E+00	2.844E-32
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	0.000E+00	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	4.008E-09	0.000E+00	4.942E-08
XE-133	1.709E-07	0.000E+00	1.967E-06
XE-133M	2.499E-11	0.000E+00	2.246E-09
XE-135	5.098E-21	0.000E+00	8.782E-20
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	1.758E-07	0.000E+00	3.128E-06

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:19:24.25
LASALLE UNIT 1 MSIV CNTRL RM NG VIA TURBINE LEAK RATE @ 400 SCFH Total

Input file= crng1b.1c7

CONTROL
power = 3.458E+03
mode = Control Room
tbvol = 16.1
tbarea = 409.

ISOTOPE

KR-83M	1.036E-04	3.137E+03	9.100E-03	.320	3.160E-06	.000
KR-85	2.039E-09	302.	.514	4.400E-03	3.380E-02	.000
KR-85M	4.389E-05	6.734E+03	.162	.958	6.840E-02	.000
KR-87	1.519E-04	1.292E+04	.917	.933	.226	.000
KR-88	6.889E-05	1.830E+04	1.36	1.47	5.350E-02	.000
KR-89	3.639E-03	2.276E+04	1.13	1.96	.195	.000
XE-131M	6.694E-07	158.	3.240E-02	.673	1.360E-02	.000
XE-133	1.522E-06	5.528E+04	5.370E-02	.845	1.100E-02	.000
XE-133M	3.556E-06	2.305E+03	9.400E-02	.253	2.750E-02	.000
XE-135	2.103E-05	7.149E+03	.248	.994	5.130E-02	.000
XE-135M	7.361E-04	1.042E+04	.461	.955	1.820E-02	.000
XE-137	3.028E-03	4.852E+04	.423	.453	.310	.000
XE-138	8.140E-04	4.610E+04	.773	1.21	.116	.000

RELEASE

KR-83M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
KR-85	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
KR-85M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
KR-87	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
KR-88	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
KR-89	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-131M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-133	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-133M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-135	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-135M	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-137	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0
XE-138	cmp 1 at	0:00:00.00	inst	100.	drbl	.000	ff 1	dfctr 0

PLANT
comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	2.430E-03

Pipe compartment # 3

inside radius	30.6	outside radius	33.0
insul thickness	7.62	pipe length	226.
number of lines	4.00	inital temp	550.
mass/unit length	260.	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

Turbine compartment # 4
split factor 1.00

```
    comp  5  at  0:00:00.00
             leak   rate    .000     leak   filtr  .000
             purge  rate  1.000E+06 purge  filtr  .000
             recirc rate    .000     recirc filtr  .000
             pressure       1.00     temperature   68.0
             volume       2.917E+05

METEOROLOGY
      0:00:00.00  Chiqu= 2.650E-04  brthr= 3.470E-04  occup= 1.
      0:08:00.00  Chiqu= 1.560E-04  brthr= 3.470E-04  occup= 1.
      1:00:00.00  Chiqu= 9.940E-05  brthr= 3.470E-04  occup= .6
      4:00:00.00  Chiqu= 4.370E-05  brthr= 3.470E-04  occup= .4

OUTPUT TIMES
      0:02:00.00
      0:04:00.00
      1:00:00.00
     30:00:00.00

CONTROL ROOM
      0:00:00.00
             Vent filt intake  1.18     Intake Filt Eff  .000
             Recirc Rate       12.4     Recirc Filt Eff  .000
             Vent Unfilt Intk 3.300E-03 Cont Room Volum 3.326E+03
             CR Gamma Volum   3.326E+03



 0:02:00.00     Whole Body    Thyroid      Beta
   KR-83M       0.000E+00   0.000E+00   0.000E+00
   KR-85        0.000E+00   0.000E+00   0.000E+00
   KR-85M       0.000E+00   0.000E+00   0.000E+00
   KR-87        0.000E+00   0.000E+00   0.000E+00
   KR-88        0.000E+00   0.000E+00   0.000E+00
   KR-89        0.000E+00   0.000E+00   0.000E+00
   XE-131M      0.000E+00   0.000E+00   0.000E+00
   XE-133       0.000E+00   0.000E+00   0.000E+00
   XE-133M      0.000E+00   0.000E+00   0.000E+00
   XE-135       0.000E+00   0.000E+00   0.000E+00
   XE-135M      0.000E+00   0.000E+00   0.000E+00
   XE-137       0.000E+00   0.000E+00   0.000E+00
   XE-138       0.000E+00   0.000E+00   0.000E+00
   total =      0.000E+00   0.000E+00   0.000E+00

 0:04:00.00     Whole Body    Thyroid      Beta
   KR-83M       0.000E+00   0.000E+00   0.000E+00
   KR-85        0.000E+00   0.000E+00   0.000E+00
   KR-85M       0.000E+00   0.000E+00   0.000E+00
   KR-87        0.000E+00   0.000E+00   0.000E+00
   KR-88        0.000E+00   0.000E+00   0.000E+00
   KR-89        0.000E+00   0.000E+00   0.000E+00
   XE-131M      0.000E+00   0.000E+00   0.000E+00
   XE-133       0.000E+00   0.000E+00   0.000E+00
   XE-133M      0.000E+00   0.000E+00   0.000E+00
   XE-135       0.000E+00   0.000E+00   0.000E+00
   XE-135M      0.000E+00   0.000E+00   0.000E+00
   XE-137       0.000E+00   0.000E+00   0.000E+00
   XE-138       0.000E+00   0.000E+00   0.000E+00
   total =      0.000E+00   0.000E+00   0.000E+00
```

1:00:00.00	Whole Body	Thyroid	Beta
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	0.000E+00	0.000E+00	0.000E+00
KR-85M	0.000E+00	0.000E+00	0.000E+00
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	0.000E+00	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	0.000E+00	0.000E+00	0.000E+00
XE-133	0.000E+00	0.000E+00	0.000E+00
XE-133M	0.000E+00	0.000E+00	0.000E+00
XE-135	0.000E+00	0.000E+00	0.000E+00
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

30:00:00.00	Whole Body	Thyroid	Beta
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	8.824E-10	0.000E+00	1.111E-06
KR-85M	7.886E-34	0.000E+00	2.872E-32
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	0.000E+00	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	4.011E-09	0.000E+00	4.946E-08
XE-133	1.710E-07	0.000E+00	1.968E-06
XE-133M	2.502E-11	0.000E+00	2.249E-09
XE-135	5.124E-21	0.000E+00	8.827E-20
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	1.760E-07	0.000E+00	3.131E-06

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:17:49.78
LASALLE UNIT 1 MSIV CNTRL RM ORGI VIA DRAIN LINES LEAK RATE @ 400 SCFH Total

Input file= crorla.lc1
CONTROL
power = 3.458E+03
mode = Control Room

ISOTOPE

I-131	9.977E-07	2.631E+04	.357	1.05	2.960E-02	1.080E+06
I-132	8.426E-05	3.845E+04	.776	2.95	8.130E-02	6.440E+03
I-133	9.257E-06	5.502E+04	.589	1.08	7.640E-02	1.800E+05
I-134	2.196E-04	6.056E+04	.917	2.94	.117	1.070E+03
I-135	2.924E-05	5.195E+04	1.13	1.29	9.370E-02	3.130E+04

RELEASE

I-131	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-132	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-133	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-134	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-135	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0

PLANT

comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	.998

Pipe compartment # 3

inside radius	2.46	outside radius	3.02
insul thickness	6.35	pipe length	353.
number of lines	4.00	inital temp	550.
mass/unit length	5.04	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

comp 4 at 0:00:00.00

leak rate	3.51	leak filtr	.000
purge rate	.000	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	100.
volume	6.976E+03		

comp 5 at 0:00:00.00

leak rate	.000	leak filtr	.000
purge rate	1.000E+06	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	68.0
volume	2.917E+05		

METEOROLOGY

0:00:00.00	Chiqu= 2.650E-04	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 1.560E-04	brthr= 3.470E-04	occup= 1.
1:00:00.00	Chiqu= 9.940E-05	brthr= 3.470E-04	occup= .6
4:00:00.00	Chiqu= 4.370E-05	brthr= 3.470E-04	occup= .4

OUTPUT TIMES

0:02:00.00
0:04:00.00
1:00:00.00
30:00:00.00

CONTROL ROOM
0:00:00.00

Vent filt intake	.999	Intake Filt Eff	90.4
Recirc Rate	12.4	Recirc Filt Eff	73.5
Vent Unfilt Intk	3.300E-03	Cont Room Volum	3.326E+03
CR Gamma Volum	3.326E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	8.512E-10	7.050E-05	5.568E-09
I-132	4.376E-09	3.780E-07	1.375E-08
I-133	2.795E-09	2.341E-05	2.863E-08
I-134	3.633E-09	4.564E-08	1.438E-08
I-135	4.805E-09	3.479E-06	2.949E-08
total =	1.646E-08	9.775E-05	9.183E-08

0:04:00.00	Whole Body	Thyroid	Beta
I-131	1.040E-08	8.615E-04	6.804E-08
I-132	3.508E-08	3.030E-06	1.103E-07
I-133	3.271E-08	2.739E-04	3.350E-07
I-134	1.604E-08	2.015E-07	6.351E-08
I-135	5.068E-08	3.606E-05	3.111E-07
total =	1.449E-07	1.175E-03	8.879E-07

1:00:00.00	Whole Body	Thyroid	Beta
I-131	7.954E-07	6.588E-02	5.204E-06
I-132	2.015E-07	1.741E-05	6.332E-07
I-133	1.707E-06	1.430E-02	1.749E-05
I-134	2.753E-08	3.458E-07	1.090E-07
I-135	1.181E-06	8.405E-04	7.251E-06
total =	3.913E-06	8.104E-02	3.068E-05

30:00:00.00	Whole Body	Thyroid	Beta
I-131	2.137E-05	1.770E+00	1.398E-04
I-132	2.022E-07	1.746E-05	6.354E-07
I-133	4.536E-06	3.798E-02	4.646E-05
I-134	2.753E-08	3.458E-07	1.090E-07
I-135	1.403E-06	9.979E-04	8.609E-06
total =	2.754E-05	1.809E+00	1.956E-04

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:18:05.98
LASALLE UNIT 1 MSIV CNTRL RM ORGI VIA DRAIN LINES LEAK RATE @ 400 SCFH Total

Input file= crorla.lc2
CONTROL
power = 3.458E+03
mode = Control Room

ISOTOPE

I-131	9.977E-07	2.631E+04	.357	1.05	2.960E-02	1.080E+06
I-132	8.426E-05	3.845E+04	.776	2.95	8.130E-02	6.440E+03
I-133	9.257E-06	5.502E+04	.589	1.08	7.640E-02	1.800E+05
I-134	2.196E-04	6.056E+04	.917	2.94	.117	1.070E+03
I-135	2.924E-05	5.195E+04	1.13	1.29	9.370E-02	3.130E+04

RELEASE

I-131	cmp 1 at	0:00:00.00	inst	1.00	drbl	.000	ff 1 dfctr 0
I-132	cmp 1 at	0:00:00.00	inst	1.00	drbl	.000	ff 1 dfctr 0
I-133	cmp 1 at	0:00:00.00	inst	1.00	drbl	.000	ff 1 dfctr 0
I-134	cmp 1 at	0:00:00.00	inst	1.00	drbl	.000	ff 1 dfctr 0
I-135	cmp 1 at	0:00:00.00	inst	1.00	drbl	.000	ff 1 dfctr 0

PLANT

comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	.998

Pipe compartment # 3

inside radius	2.46	outside radius	3.02
insul thickness	6.35	pipe length	353.
number of lines	4.00	inital temp	550.
mass/unit length	5.04	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

comp 4 at 0:00:00.00

leak rate	3.51	leak filtr	.000
purge rate	.000	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	100.
volume	6.976E+03		

comp 5 at 0:00:00.00

leak rate	.000	leak filtr	.000
purge rate	1.000E+06	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	68.0
volume	2.917E+05		

METEOROLOGY

0:00:00.00	Chiqu= 2.650E-04	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 1.560E-04	brthr= 3.470E-04	occup= 1.
1:00:00.00	Chiqu= 9.940E-05	brthr= 3.470E-04	occup= .6
4:00:00.00	Chiqu= 4.370E-05	brthr= 3.470E-04	occup= .4

OUTPUT TIMES

0:02:00.00
0:04:00.00
1:00:00.00
30:00:00.00

CONTROL ROOM
0:00:00.00

Vent Filt intake	1.50	Intake Filt Eff	92.7
Recirc Rate	12.4	Recirc Filt Eff	73.5
Vent Unfilt Intk	3.300E-03	Cont Room Volum	3.326E+03
CR Gamma Volum	3.326E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	9.268E-10	7.676E-05	6.063E-09
I-132	4.765E-09	4.116E-07	1.498E-08
I-133	3.044E-09	2.549E-05	3.118E-08
I-134	3.959E-09	4.973E-08	1.567E-08
I-135	5.232E-09	3.723E-06	3.212E-08
total =	1.793E-08	1.064E-04	1.000E-07

0:04:00.00	Whole Body	Thyroid	Beta
I-131	1.127E-08	9.339E-04	7.376E-08
I-132	3.804E-08	3.286E-06	1.196E-07
I-133	3.546E-08	2.969E-04	3.632E-07
I-134	1.741E-08	2.187E-07	6.892E-08
I-135	5.495E-08	3.909E-05	3.373E-07
total =	1.571E-07	1.273E-03	9.627E-07

1:00:00.00	Whole Body	Thyroid	Beta
I-131	8.597E-07	7.121E-02	5.624E-06
I-132	2.180E-07	1.883E-05	6.850E-07
I-133	1.845E-06	1.545E-02	1.890E-05
I-134	2.984E-08	3.748E-07	1.181E-07
I-135	1.277E-06	9.086E-04	7.839E-06
total =	4.230E-06	8.759E-02	3.317E-05

30:00:00.00	Whole Body	Thyroid	Beta
I-131	2.309E-05	1.913E+00	1.511E-04
I-132	2.187E-07	1.889E-05	6.873E-07
I-133	4.902E-06	4.105E-02	5.021E-05
I-134	2.984E-08	3.748E-07	1.181E-07
I-135	1.516E-06	1.079E-03	9.306E-06
total =	2.976E-05	1.955E+00	2.114E-04

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:18:22.40
LASALLE UNIT 1 MSIV CNTRL RM ORGI VIA DRAIN LINES LEAK RATE @ 400 SCFH Total

Input file= crorla.lc3
CONTROL
power = 3.458E+03
mode = Control Room

ISOTOPE

I-131	9.977E-07	2.631E+04	.357	1.05	2.960E-02	1.080E+06
I-132	8.426E-05	3.845E+04	.776	2.95	8.130E-02	6.440E+03
I-133	9.257E-06	5.502E+04	.589	1.08	7.640E-02	1.800E+05
I-134	2.196E-04	6.056E+04	.917	2.94	.117	1.070E+03
I-135	2.924E-05	5.195E+04	1.13	1.29	9.370E-02	3.130E+04

RELEASE

I-131	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-132	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-133	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-134	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-135	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0

PLANT

comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	.998

Pipe compartment # 3

inside radius	2.46	outside radius	3.02
insul thickness	6.35	pipe length	353.
number of lines	4.00	inital temp	550.
mass/unit length	5.04	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

comp 4 at 0:00:00.00

leak rate	3.51	leak filtr	.000
purge rate	.000	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	100.
volume	6.976E+03		

comp 5 at 0:00:00.00

leak rate	.000	leak filtr	.000
purge rate	1.000E+06	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	68.0
volume	2.917E+05		

METEOROLOGY

0:00:00.00	Chiqu= 2.650E-04	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 1.560E-04	brthr= 3.470E-04	occup= 1.
1:00:00.00	Chiqu= 9.940E-05	brthr= 3.470E-04	occup= .6
4:00:00.00	Chiqu= 4.370E-05	brthr= 3.470E-04	occup= .4

OUTPUT TIMES

0:02:00.00
0:04:00.00
1:00:00.00
30:00:00.00

CONTROL ROOM
0:00:00.00

Vent filt intake	.999	Intake Filt Eff	90.4
Recirc Rate	12.4	Recirc Filt Eff	73.5
Vent Unfilt Intk	1.180E-02	Cont Room Volum	3.326E+03
CR Gamma Volum	3.326E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	9.234E-10	7.649E-05	6.041E-09
I-132	4.747E-09	4.101E-07	1.492E-08
I-133	3.033E-09	2.540E-05	3.106E-08
I-134	3.942E-09	4.952E-08	1.560E-08
I-135	5.213E-09	3.709E-06	3.200E-08
total =	1.786E-08	1.061E-04	9.962E-08

0:04:00.00	Whole Body	Thyroid	Beta
I-131	1.128E-08	9.346E-04	7.382E-08
I-132	3.806E-08	3.288E-06	1.196E-07
I-133	3.548E-08	2.971E-04	3.634E-07
I-134	1.741E-08	2.186E-07	6.890E-08
I-135	5.498E-08	3.912E-05	3.375E-07
total =	1.572E-07	1.274E-03	9.632E-07

1:00:00.00	Whole Body	Thyroid	Beta
I-131	8.629E-07	7.147E-02	5.645E-06
I-132	2.186E-07	1.888E-05	6.869E-07
I-133	1.852E-06	1.551E-02	1.897E-05
I-134	2.987E-08	3.751E-07	1.182E-07
I-135	1.281E-06	9.118E-04	7.866E-06
total =	4.245E-06	8.791E-02	3.328E-05

30:00:00.00	Whole Body	Thyroid	Beta
I-131	2.319E-05	1.920E+00	1.517E-04
I-132	2.193E-07	1.894E-05	6.892E-07
I-133	4.921E-06	4.120E-02	5.040E-05
I-134	2.987E-08	3.751E-07	1.182E-07
I-135	1.522E-06	1.083E-03	9.339E-06
total =	2.988E-05	1.963E+00	2.122E-04

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:18:38.66
LASALLE UNIT 1 MSIV CNTRL RM ORGI VIA DRAIN LINES LEAK RATE @ 400 SCFH Total

Input file= crorla.lc4
CONTROL
power = 3.458E+03
mode = Control Room

ISOTOPE

I-131	9.977E-07	2.631E+04	.357	1.05	2.960E-02	1.080E+06
I-132	8.426E-05	3.845E+04	.776	2.95	8.130E-02	6.440E+03
I-133	9.257E-06	5.502E+04	.589	1.08	7.640E-02	1.800E+05
I-134	2.196E-04	6.056E+04	.917	2.94	.117	1.070E+03
I-135	2.924E-05	5.195E+04	1.13	1.29	9.370E-02	3.130E+04

RELEASE

I-131	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-132	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-133	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-134	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-135	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0

PLANT

comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	.998

Pipe compartment # 3

inside radius	2.46	outside radius	3.02
insul thickness	6.35	pipe length	353.
number of lines	4.00	inital temp	550.
mass/unit length	5.04	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

comp 4 at 0:00:00.00

leak rate	3.51	leak filtr	.000
purge rate	.000	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	100.
volume	6.976E+03		

comp 5 at 0:00:00.00

leak rate	.000	leak filtr	.000
purge rate	1.000E+06	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	68.0
volume	2.917E+05		

METEOROLOGY

0:00:00.00	Chiqu= 2.650E-04	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 1.560E-04	brthr= 3.470E-04	occup= 1.
1:00:00.00	Chiqu= 9.940E-05	brthr= 3.470E-04	occup= .6
4:00:00.00	Chiqu= 4.370E-05	brthr= 3.470E-04	occup= .4

OUTPUT TIMES

0:02:00.00
0:04:00.00
1:00:00.00
30:00:00.00

CONTROL ROOM
0:00:00.00

Vent filt intake	.999	Intake Filt Eff	90.4
Recirc Rate	12.4	Recirc Filt Eff	73.5
Vent Unfilt Intk	2.360E-02	Cont Room Volum	3.326E+03
CR Gamma Volum	3.326E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	1.024E-09	8.478E-05	6.697E-09
I-132	5.262E-09	4.546E-07	1.654E-08
I-133	3.362E-09	2.815E-05	3.443E-08
I-134	4.370E-09	5.489E-08	1.730E-08
I-135	5.779E-09	4.111E-06	3.547E-08
total =	1.980E-08	1.176E-04	1.104E-07

0:04:00.00	Whole Body	Thyroid	Beta
I-131	1.251E-08	1.036E-03	8.181E-08
I-132	4.218E-08	3.644E-06	1.326E-07
I-133	3.933E-08	3.293E-04	4.028E-07
I-134	1.929E-08	2.423E-07	7.636E-08
I-135	6.094E-08	4.336E-05	3.741E-07
total =	1.743E-07	1.412E-03	1.068E-06

1:00:00.00	Whole Body	Thyroid	Beta
I-131	9.563E-07	7.921E-02	6.256E-06
I-132	2.423E-07	2.093E-05	7.613E-07
I-133	2.053E-06	1.719E-02	2.102E-05
I-134	3.310E-08	4.158E-07	1.310E-07
I-135	1.420E-06	1.011E-03	8.718E-06
total =	4.704E-06	9.743E-02	3.689E-05

30:00:00.00	Whole Body	Thyroid	Beta
I-131	2.570E-05	2.128E+00	1.681E-04
I-132	2.431E-07	2.100E-05	7.639E-07
I-133	5.453E-06	4.566E-02	5.586E-05
I-134	3.310E-08	4.158E-07	1.310E-07
I-135	1.686E-06	1.200E-03	1.035E-05
total =	3.311E-05	2.175E+00	2.352E-04

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:18:54.86
LASALLE UNIT 1 MSIV CNTRL RM ORGI VIA DRAIN LINES LEAK RATE @ 400 SCFH Total

Input file= crorla.lc5
CONTROL
power = 3.458E+03
mode = Control Room

ISOTOPE

I-131	9.977E-07	2.631E+04	.357	1.05	2.960E-02	1.080E+06
I-132	8.426E-05	3.845E+04	.776	2.95	8.130E-02	6.440E+03
I-133	9.257E-06	5.502E+04	.589	1.08	7.640E-02	1.800E+05
I-134	2.196E-04	6.056E+04	.917	2.94	.117	1.070E+03
I-135	2.924E-05	5.195E+04	1.13	1.29	9.370E-02	3.130E+04

RELEASE

I-131	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-132	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-133	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-134	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-135	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0

PLANT

comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	.998

Pipe compartment # 3

inside radius	2.46	outside radius	3.02
insul thickness	6.35	pipe length	353.
number of lines	4.00	inital temp	550.
mass/unit length	5.04	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

comp 4 at 0:00:00.00

leak rate	3.51	leak filtr	.000
purge rate	.000	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	100.
volume	6.976E+03		

comp 5 at 0:00:00.00

leak rate	.000	leak filtr	.000
purge rate	1.000E+06	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	68.0
volume	2.917E+05		

METEOROLOGY

0:00:00.00	Chiqu= 2.650E-04	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 1.560E-04	brthr= 3.470E-04	occup= 1.
1:00:00.00	Chiqu= 9.940E-05	brthr= 3.470E-04	occup= .6
4:00:00.00	Chiqu= 4.370E-05	brthr= 3.470E-04	occup= .4

OUTPUT TIMES

0:02:00.00
0:04:00.00
1:00:00.00
30:00:00.00

CONTROL ROOM
0:00:00.00

Vent filt intake	.999	Intake Filt Eff	90.4
Recirc Rate	12.4	Recirc Filt Eff	73.5
Vent Unfilt Intk	4.720E-02	Cont Room Volum	3.326E+03
CR Gamma Volum	3.326E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	1.223E-09	1.013E-04	8.003E-09
I-132	6.289E-09	5.433E-07	1.976E-08
I-133	4.018E-09	3.365E-05	4.115E-08
I-134	5.223E-09	6.560E-08	2.067E-08
I-135	6.906E-09	4.914E-06	4.239E-08
total =	2.366E-08	1.405E-04	1.320E-07

0:04:00.00	Whole Body	Thyroid	Beta
I-131	1.494E-08	1.238E-03	9.776E-08
I-132	5.041E-08	4.354E-06	1.584E-07
I-133	4.699E-08	3.935E-04	4.813E-07
I-134	2.305E-08	2.896E-07	9.125E-08
I-135	7.282E-08	5.181E-05	4.470E-07
total =	2.082E-07	1.688E-03	1.276E-06

1:00:00.00	Whole Body	Thyroid	Beta
I-131	1.143E-06	9.463E-02	7.474E-06
I-132	2.894E-07	2.500E-05	9.096E-07
I-133	2.452E-06	2.053E-02	2.512E-05
I-134	3.955E-08	4.968E-07	1.566E-07
I-135	1.697E-06	1.207E-03	1.042E-05
total =	5.621E-06	1.164E-01	4.407E-05

30:00:00.00	Whole Body	Thyroid	Beta
I-131	3.070E-05	2.543E+00	2.008E-04
I-132	2.904E-07	2.509E-05	9.127E-07
I-133	6.515E-06	5.456E-02	6.673E-05
I-134	3.955E-08	4.968E-07	1.566E-07
I-135	2.015E-06	1.433E-03	1.237E-05
total =	3.956E-05	2.599E+00	2.810E-04

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:19:11.18
LASALLE UNIT 1 MSIV CNTRL RM ORGI VIA DRAIN LINES LEAK RATE @ 400 SCFH Total

Input file= crorla.lc6
CONTROL
power = 3.458E+03
mode = Control Room

ISOTOPE

I-131	9.977E-07	2.631E+04	.357	1.05	2.960E-02	1.080E+06
I-132	8.426E-05	3.845E+04	.776	2.95	8.130E-02	6.440E+03
I-133	9.257E-06	5.502E+04	.589	1.08	7.640E-02	1.800E+05
I-134	2.196E-04	6.056E+04	.917	2.94	.117	1.070E+03
I-135	2.924E-05	5.195E+04	1.13	1.29	9.370E-02	3.130E+04

RELEASE

I-131	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-132	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-133	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-134	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-135	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0

PLANT

comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	.998

Pipe compartment # 3

inside radius	2.46	outside radius	3.02
insul thickness	6.35	pipe length	353.
number of lines	4.00	inital temp	550.
mass/unit length	5.04	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

comp 4 at 0:00:00.00

leak rate	3.51	leak filtr	.000
purge rate	.000	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	100.
volume	6.976E+03		

comp 5 at 0:00:00.00

leak rate	.000	leak filtr	.000
purge rate	1.000E+06	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	68.0
volume	2.917E+05		

METEOROLOGY

0:00:00.00	Chiqu= 2.650E-04	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 1.560E-04	brthr= 3.470E-04	occup= 1.
1:00:00.00	Chiqu= 9.940E-05	brthr= 3.470E-04	occup= .6
4:00:00.00	Chiqu= 4.370E-05	brthr= 3.470E-04	occup= .4

OUTPUT TIMES

0:02:00.00
0:04:00.00
1:00:00.00
30:00:00.00

CONTROL ROOM
0:00:00.00

Vent filt intake	1.09	Intake Filt Eff	89.1
Recirc Rate	12.4	Recirc Filt Eff	73.5
Vent Unfilt Intk	3.300E-03	Cont Room Volum	3.326E+03
CR Gamma Volum	3.326E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	1.041E-09	8.623E-05	6.811E-09
I-132	5.352E-09	4.623E-07	1.682E-08
I-133	3.419E-09	2.863E-05	3.502E-08
I-134	4.445E-09	5.583E-08	1.759E-08
I-135	5.877E-09	4.182E-06	3.608E-08
total =	2.013E-08	1.196E-04	1.123E-07

0:04:00.00	Whole Body	Thyroid	Beta
I-131	1.271E-08	1.053E-03	8.316E-08
I-132	4.288E-08	3.704E-06	1.348E-07
I-133	3.997E-08	3.347E-04	4.094E-07
I-134	1.961E-08	2.464E-07	7.763E-08
I-135	6.194E-08	4.407E-05	3.802E-07
total =	1.771E-07	1.436E-03	1.085E-06

1:00:00.00	Whole Body	Thyroid	Beta
I-131	9.716E-07	8.048E-02	6.356E-06
I-132	2.462E-07	2.126E-05	7.736E-07
I-133	2.085E-06	1.746E-02	2.136E-05
I-134	3.365E-08	4.226E-07	1.332E-07
I-135	1.443E-06	1.027E-03	8.858E-06
total =	4.780E-06	9.899E-02	3.748E-05

30:00:00.00	Whole Body	Thyroid	Beta
I-131	2.611E-05	2.162E+00	1.708E-04
I-132	2.470E-07	2.134E-05	7.762E-07
I-133	5.541E-06	4.639E-02	5.675E-05
I-134	3.365E-08	4.226E-07	1.332E-07
I-135	1.713E-06	1.219E-03	1.052E-05
total =	3.364E-05	2.210E+00	2.390E-04

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:19:27.44
LASALLE UNIT 1 MSIV CNTRL RM ORGI VIA DRAIN LINES LEAK RATE @ 400 SCFH Total

Input file= crorla.lc7
CONTROL
power = 3.458E+03
mode = Control Room

ISOTOPE

I-131	9.977E-07	2.631E+04	.357	1.05	2.960E-02	1.080E+06
I-132	8.426E-05	3.845E+04	.776	2.95	8.130E-02	6.440E+03
I-133	9.257E-06	5.502E+04	.589	1.08	7.640E-02	1.800E+05
I-134	2.196E-04	6.056E+04	.917	2.94	.117	1.070E+03
I-135	2.924E-05	5.195E+04	1.13	1.29	9.370E-02	3.130E+04

RELEASE

I-131	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-132	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-133	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-134	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-135	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0

PLANT
comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	.998

Pipe compartment # 3

inside radius	2.46	outside radius	3.02
insul thickness	6.35	pipe length	353.
number of lines	4.00	inital temp	550.
mass/unit length	5.04	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

comp 4 at 0:00:00.00

leak rate	3.51	leak filtr	.000
purge rate	.000	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	100.
volume	6.976E+03		

comp 5 at 0:00:00.00

leak rate	.000	leak filtr	.000
purge rate	1.000E+06	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	68.0
volume	2.917E+05		

METEOROLOGY

0:00:00.00	Chiqu= 2.650E-04	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 1.560E-04	brthr= 3.470E-04	occup= 1.
1:00:00.00	Chiqu= 9.940E-05	brthr= 3.470E-04	occup= .6
4:00:00.00	Chiqu= 4.370E-05	brthr= 3.470E-04	occup= .4

OUTPUT TIMES

0:02:00.00
0:04:00.00
1:00:00.00
30:00:00.00

CONTROL ROOM
0:00:00.00

Vent filt intake	1.18	Intake Filt Eff	87.8
Recirc Rate	12.4	Recirc Filt Eff	73.5
Vent Unfilt Intk	3.300E-03	Cont Room Volum	3.326E+03
CR Gamma Volum	3.326E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	1.244E-09	1.030E-04	8.137E-09
I-132	6.395E-09	5.524E-07	2.010E-08
I-133	4.085E-09	3.421E-05	4.184E-08
I-134	5.311E-09	6.671E-08	2.102E-08
I-135	7.022E-09	4.996E-06	4.310E-08
total =	2.406E-08	1.428E-04	1.342E-07

0:04:00.00	Whole Body	Thyroid	Beta
I-131	1.517E-08	1.257E-03	9.927E-08
I-132	5.119E-08	4.422E-06	1.609E-07
I-133	4.772E-08	3.996E-04	4.888E-07
I-134	2.342E-08	2.942E-07	9.269E-08
I-135	7.395E-08	5.261E-05	4.539E-07
total =	2.114E-07	1.714E-03	1.295E-06

1:00:00.00	Whole Body	Thyroid	Beta
I-131	1.159E-06	9.601E-02	7.583E-06
I-132	2.937E-07	2.537E-05	9.231E-07
I-133	2.488E-06	2.083E-02	2.548E-05
I-134	4.016E-08	5.045E-07	1.590E-07
I-135	1.722E-06	1.225E-03	1.057E-05
total =	5.703E-06	1.181E-01	4.472E-05

30:00:00.00	Whole Body	Thyroid	Beta
I-131	3.114E-05	2.580E+00	2.037E-04
I-132	2.947E-07	2.546E-05	9.262E-07
I-133	6.610E-06	5.535E-02	6.770E-05
I-134	4.016E-08	5.045E-07	1.590E-07
I-135	2.044E-06	1.454E-03	1.255E-05
total =	4.013E-05	2.636E+00	2.851E-04

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:17:52.03
LASALLE UNIT 1 MSIV CNTRL RM ORGI VIA TURBINE LEAK RATE @ 400 SCFH Total

Input file= crorlb.lc1
CONTROL
power = 3.458E+03
mode = Control Room
tbvol = 16.1
tbarea = 409.

ISOTOPE

I-131	9.977E-07	2.631E+04	.357	1.05	2.960E-02	1.080E+06
I-132	8.426E-05	3.845E+04	.776	2.95	8.130E-02	6.440E+03
I-133	9.257E-06	5.502E+04	.589	1.08	7.640E-02	1.800E+05
I-134	2.196E-04	6.056E+04	.917	2.94	.117	1.070E+03
I-135	2.924E-05	5.195E+04	1.13	1.29	9.370E-02	3.130E+04

RELEASE

I-131	cmp 1 at	0:00:00.00	inst	1.00	drbl	.000	ff 1	dfctr 0
I-132	cmp 1 at	0:00:00.00	inst	1.00	drbl	.000	ff 1	dfctr 0
I-133	cmp 1 at	0:00:00.00	inst	1.00	drbl	.000	ff 1	dfctr 0
I-134	cmp 1 at	0:00:00.00	inst	1.00	drbl	.000	ff 1	dfctr 0
I-135	cmp 1 at	0:00:00.00	inst	1.00	drbl	.000	ff 1	dfctr 0

PLANT

comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	2.430E-03

Pipe compartment # 3

inside radius	30.6	outside radius	33.0
insul thickness	7.62	pipe length	226.
number of lines	4.00	inital temp	550.
mass/unit length	260.	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

Turbine compartment # 4
split factor 1.00

comp 5 at 0:00:00.00

leak rate	.000	leak filtr	.000
purge rate	1.000E+06	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	68.0
volume	2.917E+05		

METEOROLOGY

0:00:00.00	Chiqu= 2.650E-04	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 1.560E-04	brthr= 3.470E-04	occup= 1.
1:00:00.00	Chiqu= 9.940E-05	brthr= 3.470E-04	occup= .6
4:00:00.00	Chiqu= 4.370E-05	brthr= 3.470E-04	occup= .4

OUTPUT TIMES
0:02:00.00
0:04:00.00

1:00:00.00
30:00:00.00

CONTROL ROOM
0:00:00.00

Vent filt intake	.999	Intake Filt Eff	90.4
Recirc Rate	12.4	Recirc Filt Eff	73.5
Vent Unfilt Intk	3.300E-03	Cont Room Volum	3.326E+03
CR Gamma Volum	3.326E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

0:04:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

1:00:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

30:00:00.00	Whole Body	Thyroid	Beta
I-131	1.264E-10	1.047E-05	8.270E-10
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	3.550E-17	2.973E-13	3.636E-16
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	3.652E-28	2.598E-25	2.241E-27
total =	1.264E-10	1.047E-05	8.270E-10

```
 MSIV Leakage Program Version 1.2a execution on  6-24-1995 at 09:18:08.40
LASALLE UNIT 1 MSIV  CNTRL RM ORGI VIA TURBINE LEAK RATE @ 400  SCFH Total


Input  file= crorlb.lc2
CONTROL
    power =  3.458E+03
    mode  = Control Room
    tbvol =   16.1
    tbarea =   409.

ISOTOPE
    I-131    9.977E-07 2.631E+04  .357      1.05     2.960E-02 1.080E+06
    I-132    8.426E-05 3.845E+04  .776      2.95     8.130E-02 6.440E+03
    I-133    9.257E-06 5.502E+04  .589      1.08     7.640E-02 1.800E+05
    I-134    2.196E-04 6.056E+04  .917      2.94      .117     1.070E+03
    I-135    2.924E-05 5.195E+04  1.13      1.29     9.370E-02 3.130E+04

RELEASE
    I-131   cmp 1 at  0:00:00.00 inst  1.00     drbl  .000     ff 1 dfctr 0
    I-132   cmp 1 at  0:00:00.00 inst  1.00     drbl  .000     ff 1 dfctr 0
    I-133   cmp 1 at  0:00:00.00 inst  1.00     drbl  .000     ff 1 dfctr 0
    I-134   cmp 1 at  0:00:00.00 inst  1.00     drbl  .000     ff 1 dfctr 0
    I-135   cmp 1 at  0:00:00.00 inst  1.00     drbl  .000     ff 1 dfctr 0

PLANT
    comp  1  at  0:00:00.00
             leak   rate   1.08     leak   filtr  .000
             purge  rate   .635     purge  filtr  100.
             recirc rate   .000     recirc filtr  .000
             pressure      2.83     temperature   225.
             volume       1.157E+(4
    Pipe compartment # 2
             inside radius     30.3     outside radius  33.0
             insul thickness   7.62     pipe length     208.
             number of lines   4.00     inital temp     550.
             mass/unit length  287.     heat capacity   .117
             insul conducty   2.250E-02 split factor   2.430E-03
    Pipe compartment # 3
             inside radius     30.6     outside radius  33.0
             insul thickness   7.62     pipe length     226.
             number of lines   4.00     inital temp     550.
             mass/unit length  260.     heat capacity   .117
             insul conducty   2.250E-02 split factor    1.00
    Turbine compartment # 4
             split factor      1.00
    comp  5  at  0:00:00.00
             leak   rate   .000     leak   filtr  .000
             purge  rate  1.000E+06 purge  filtr  .000
             recirc rate   .000     recirc filtr  .000
             pressure      1.00     temperature   68.0
             volume       2.917E+05

METEOROLOGY
      0:00:00.00  Chiqu= 2.650E-04  brthr= 3.470E-04  occup= 1.
      0:08:00.00  Chiqu= 1.560E-04  brthr= 3.470E-04  occup= 1.
      1:00:00.00  Chiqu= 9.940E-05  brthr= 3.470E-04  occup= .6
      4:00:00.00  Chiqu= 4.370E-05  brthr= 3.470E-04  occup= .4

OUTPUT TIMES
      0:02:00.00
      0:04:00.00
```

1:00:00.00
30:00:00.00

CONTROL ROOM
0:00:00.00

Vent filt intake	1.50	Intake Filt Eff	92.7
Recirc Rate	12.4	Recirc Filt Eff	73.5
Vent Unfilt Intk	3.300E-03	Cont Room Volum	3.326E+03
CR Gamma Volum	3.326E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

0:04:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

1:00:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

30:00:00.00	Whole Body	Thyroid	Beta
I-131	1.366E-10	1.131E-05	8.936E-10
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	3.836E-17	3.212E-13	3.929E-16
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	3.947E-28	2.808E-25	2.423E-27
total =	1.366E-10	1.131E-05	8.936E-10

```
 MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:18:24.66
LASALLE UNIT 1 MSIV  CNTRL RM ORGI VIA TURBINE LEAK RATE @ 400  SCFH Total


Input  file= crorlb.lc3
CONTROL
    power =  3.458E+03
    mode  = Control Room
    tbvol =   16.1
    tbarea =   409.

ISOTOPE
    I-131    9.977E-07 2.631E+04  .357      1.05     2.960E-02 1.080E+06
    I-132    8.426E-05 3.845E+04  .776      2.95     8.130E-02 6.440E+03
    I-133    9.257E-06 5.502E+04  .589      1.08     7.640E-02 1.800E+05
    I-134    2.196E-04 6.056E+04  .917      2.94      .117     1.070E+03
    I-135    2.924E-05 5.195E+04  1.13      1.29     9.370E-02 3.130E+04

RELEASE
    I-131   cmp 1 at  0:00:00.00 inst  1.00     drbl  .000     ff 1 dfctr 0
    I-132   cmp 1 at  0:00:00.00 inst  1.00     drbl  .000     ff 1 dfctr 0
    I-133   cmp 1 at  0:00:00.00 inst  1.00     drbl  .000     ff 1 dfctr 0
    I-134   cmp 1 at  0:00:00.00 inst  1.00     drbl  .000     ff 1 dfctr 0
    I-135   cmp 1 at  0:00:00.00 inst  1.00     drbl  .000     ff 1 dfctr 0

PLANT
    comp  1  at  0:00:00.00
             leak   rate   1.08     leak   filtr  .000
             purge  rate   .635     purge  filtr  100.
             recirc rate   .000     recirc filtr  .000
             pressure      2.83     temperature   225.
             volume       1.157E+04
    Pipe compartment # 2
             inside radius     30.3     outside radius  33.0
             insul thickness   7.62     pipe length     208.
             number of lines   4.00     inital temp     550.
             mass/unit length  287.     heat capacity   .117
             insul conducty   2.250E-02 split factor   2.430E-03
    Pipe compartment # 3
             inside radius     30.6     outside radius  33.0
             insul thickness   7.62     pipe length     225.
             number of lines   4.00     inital temp     550.
             mass/unit length  260.     heat capacity   .117
             insul conducty   2.250E-02 split factor    1.00
    Turbine compartment # 4
             split factor      1.00
    comp  5  at  0:00:00.00
             leak   rate   .000     leak   filtr  .000
             purge  rate  1.000E+06 purge  filtr  .000
             recirc rate   .000     recirc filtr  .000
             pressure      1.00     temperature   68.0
             volume       2.917E+05

METEOROLOGY
      0:00:00.00  Chiqu= 2.650E-04  brthr= 3.470E-04  occup= 1.
      0:08:00.00  Chiqu= 1.560E-04  brthr= 3.470E-04  occup= 1.
      1:00:00.00  Chiqu= 9.940E-05  brthr= 3.470E-04  occup= .6
      4:00:00.00  Chiqu= 4.370E-05  brthr= 3.470E-04  occup= .4

OUTPUT TIMES
      0:02:00.00
      0:04:00.00
```

1:00:00.00
30:00:00.00

CONTROL ROOM
0:00:00.00

Vent filt intake	999	Intake Filt Eff	90.4
Recirc Rate	12.4	Recirc Filt Eff	73.5
Vent Unfilt Intk	1.180E-02	Cont Room Volum	3.326E+03
CR Gamma Volum	3.326E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

0:04:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

1:00:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

30:00:00.00	Whole Body	Thyroid	Beta
I-131	1.371E-10	1.136E-05	8.971E-10
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	3.851E-17	3.225E-13	3.944E-16
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	3.961E-28	2.818E-25	2.431E-27
total =	1.371E-10	1.136E-05	8.971E-10

```
 MSIV Leakage Program Version 1.2a execution on  6-24-1995 at 09:18:40.91
LASALLE UNIT 1 MSIV  CNTRL RM ORGI VIA TURBINE LEAK RATE @ 400  SCFH Total


Input  file= crorlb.lc4
CONTROL
    power =  3.458E+03
    mode  = Control Room
    tbvol =   16.1
    tbarea =   409.

ISOTOPE
    I-131    9.977E-07 2.631E+04  .357      1.05     2.960E-02 1.080E+06
    I-132    8.426E-05 3.845E+04  .776      2.95     8.130E-02 6.440E+03
    I-133    9.257E-06 5.502E+04  .589      1.08     7.640E-02 1.800E+05
    I-134    2.196E-04 6.056E+04  .917      2.94      .117     1.070E+03
    I-135    2.924E-05 5.195E+04  1.13      1.29     9.370E-02 3.130E+04

RELEASE
    I-131   cmp 1 at  0:00:00.00 inst  1.00     drbl  .000     ff 1 dfctr 0
    I-132   cmp 1 at  0:00:00.00 inst  1.00     drbl  .000     ff 1 dfctr 0
    I-133   cmp 1 at  0:00:00.00 inst  1.00     drbl  .000     ff 1 dfctr 0
    I-134   cmp 1 at  0:00:00.00 inst  1.00     drbl  .000     ff 1 dfctr 0
    I-135   cmp 1 at  0:00:00.00 inst  1.00     drbl  .000     ff 1 dfctr 0

PLANT
    comp  1  at  0:00:00.00
             leak   rate   1.08     leak   filtr  .000
             purge  rate   .635     purge  filtr  100.
             recirc rate   .000     recirc filtr  .000
             pressure      2.83     temperature   225.
             volume       1.157E+04
    Pipe compartment # 2
             inside radius     30.3     outside radius  33.0
             insul thickness   7.62     pipe length     208.
             number of lines   4.00     inital temp     550.
             mass/unit length  287.     heat capacity   .117
             insul conducty   2.250E-02 split factor   2.430E-03
    Pipe compartment # 3
             inside radius     30.6     outside radius  33.0
             insul thickness   7.62     pipe length     226.
             number of lines   4.00     inital temp     550.
             mass/unit length  260.     heat capacity   .117
             insul conducty   2.250E-02 split factor    1.00
    Turbine compartment # 4
             split factor      1.00
    comp  5  at  0:00:00.00
             leak   rate   .000     leak   filtr  .000
             purge  rate  1.000E+06 purge  filtr  .000
             recirc rate   .000     recirc filtr  .000
             pressure      1.00     temperature   68.0
             volume       2.917E+05

METEOROLOGY
      0:00:00.00  Chiqu= 2.650E-04  brthr= 3.470E-04  occup= 1.
      0:08:00.00  Chiqu= 1.560E-04  brthr= 3.470E-04  occup= 1.
      1:00:00.00  Chiqu= 9.940E-05  brthr= 3.470E-04  occup= .6
      4:00:00.00  Chiqu= 4.370E-05  brthr= 3.470E-04  occup= .4

OUTPUT TIMES
      0:02:00.00
      0:04:00.00
```

1:00:00.00
30:00:00.00

CONTROL ROOM
0:00:00.00

Vent filt intake	.999	Intake Filt Eff	90.4
Recirc Rate	12.4	Recirc Filt Eff	73.5
Vent Unfilt Intk	2.360E-02	Cont Room Volum	3.326E+03
CR Gamma Volum	3.326E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

0:04:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

1:00:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

30:00:00.00	Whole Body	Thyroid	Beta
I-131	1.520E-10	1.259E-05	9.943E-10
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	4.268E-17	3.574E-13	4.371E-16
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	4.390E-28	3.123E-25	2.695E-27
total =	1.520E-10	1.259E-05	9.943E-10

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:18:57.17
LASALLE UNIT 1 MSIV CNTRL RM ORGI VIA TURBINE LEAK RATE @ 400 SCFH Total

Input file= crorlb.lc5
CONTROL
power = 3.458E+03
mode = Control Room
tbvol = 16.1
tbarea = 409.

ISOTOPE

I-131	9.977E-07	2.631E+04	.357	1.05	2.960E-02	1.080E+06
I-132	8.426E-05	3.845E+04	.776	2.95	8.130E-02	6.440E+03
I-133	9.257E-06	5.502E+04	.589	1.08	7.640E-02	1.800E+05
I-134	2.196E-04	6.056E+04	.917	2.94	.117	1.070E+03
I-135	2.924E-05	5.195E+04	1.13	1.29	9.370E-02	3.130E+04

RELEASE

I-131	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-132	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-133	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-134	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-135	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0

PLANT
comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	2.430E-03

Pipe compartment # 3

inside radius	30.6	outside radius	33.0
insul thickness	7.62	pipe length	226.
number of lines	4.00	inital temp	550.
mass/unit length	260.	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

Turbine compartment # 4
split factor 1.00
comp 5 at 0:00:00.00

leak rate	.000	leak filtr	.000
purge rate	1.000E+06	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	68.0
volume	2.917E+05		

METEOROLOGY

0:00:00.00	Chiqu= 2.650E-04	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 1.560E-04	brthr= 3.470E-04	occup= 1.
1:00:00.00	Chiqu= 9.940E-05	brthr= 3.470E-04	occup= .6
4:00:00.00	Chiqu= 4.370E-05	brthr= 3.470E-04	occup= .4

OUTPUT TIMES
0:02:00.00
0:04:00.00

1:00:00.00
30:00:00.00

CONTROL ROOM
0:00:00.00

Vent filt intake	.999	Intake Filt Eff	90.4
Recirc Rate	12.4	Recirc Filt Eff	73.5
Vent Unfilt Intk	4.720E-02	Cont Room Volum	3.326E+03
CR Gamma Volum	3.326E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

0:04:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

1:00:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

30:00:00.00	Whole Body	Thyroid	Beta
I-131	1.816E-10	1.504E-05	1.188E-09
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	5.099E-17	4.269E-13	5.222E-16
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	5.245E-28	3.732E-25	3.219E-27
total =	1.816E-10	1.504E-05	1.188E-09

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:19:13.43
LASALLE UNIT 1 MSIV CNTRL RM ORGI VIA TURBINE LEAK RATE @ 400 SCFH Total

Input file= cror1b.lc6
CONTROL
power = 3.458E+03
mode = Control Room
tbvol = 16.1
tbarea = 409.

ISOTOPE

I-131	9.977E-07	2.631E+04	.357	1.05	2.960E-02	1.080E+06
I-132	8.426E-05	3.845E+04	.776	2.95	8.130E-02	6.440E+03
I-133	9.257E-06	5.502E+04	.589	1.08	7.640E-02	1.800E+05
I-134	2.196E-04	6.056E+04	.917	2.94	.117	1.070E+03
I-135	2.924E-05	5.195E+04	1.13	1.29	9.370E-02	3.130E+04

RELEASE

I-131	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-132	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-133	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-134	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0
I-135	cmp 1 at	0:00:00.00	inst	1.00	drbl .000	ff 1 dfctr 0

PLANT
comp 1 at 0:00:00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	2.430E-03

Pipe compartment # 3

inside radius	30.6	outside radius	33.0
insul thickness	7.62	pipe length	226.
number of lines	4.00	inital temp	550.
mass/unit length	260.	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

Turbine compartment # 4
split factor 1.00
comp 5 at 0:00:00.00

leak rate	.000	leak filtr	.000
purge rate	1.000E+06	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	68.0
volume	2.917E+05		

METEOROLOGY

0:00:00.00	Chiqu= 2.650E-04	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 1.560E-04	brthr= 3.470E-04	occup= 1.
1:00:00.00	Chiqu= 9.940E-05	brthr= 3.470E-04	occup= .6
4:00:00.00	Chiqu= 4.370E-05	brthr= 3.470E-04	occup= .4

OUTPUT TIMES
0:02:00.00
0:04:00.00

1:00:00.00
30:00:00.00

CONTROL ROOM
0:00:00.00

Vent filt intake	1.09	Intake Filt Eff	89.1
Recirc Rate	12.4	Recirc Filt Eff	73.5
Vent Unfilt Intk	3.300E-03	Cont Room Volum	3.326E+03
CR Gamma Volum	3.326E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

0:04:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

1:00:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

30:00:00.00	Whole Body	Thyroid	Beta
I-131	1.544E-10	1.279E-05	1.010E-09
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	4.336E-17	3.631E-13	4.441E-16
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	4.460E-28	3.173E-25	2.738E-27
total =	1.544E-10	1.279E-05	1.010E-09

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:19:29.69
LASALLE UNIT 1 MSIV CNTRL RM ORGI VIA TURBINE LEAK RATE @ 400 SCFH Total

Input file= crorlb.lc7
CONTROL
power = 3.458E+03
mode = Control Room
tbvol = 16.1
tbarea = 409.

ISOTOPE

I-131	9.977E-07	2.631E+04	.357	1.05	2.960E-02	1.080E+06
I-132	8.426E-05	3.845E+04	.776	2.95	8.130E-02	6.440E+03
I-133	9.257E-06	5.502E+04	.589	1.08	7.640E-02	1.800E+05
I-134	2.196E-04	6.056E+04	.917	2.94	.117	1.070E+03
I-135	2.924E-05	5.195E+04	1.13	1.29	9.370E-02	3.130E+04

RELEASE

I-131	cmp 1 at	0:00:00.00	inst	1.00	drbl	.000	ff 1	dfctr 0
I-132	cmp 1 at	0:00:00.00	inst	1.00	drbl	.000	ff 1	dfctr 0
I-133	cmp 1 at	0:00:00.00	inst	1.00	drbl	.000	ff 1	dfctr 0
I-134	cmp 1 at	0:00:00.00	inst	1.00	drbl	.000	ff 1	dfctr 0
I-135	cmp 1 at	0:00:00.00	inst	1.00	drbl	.000	ff 1	dfctr 0

PLANT
comp 1 at 0:00.00.00

leak rate	1.08	leak filtr	.000
purge rate	.635	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	2.83	temperature	225.
volume	1.157E+04		

Pipe compartment # 2

inside radius	30.3	outside radius	33.0
insul thickness	7.62	pipe length	208.
number of lines	4.00	inital temp	550.
mass/unit length	287.	heat capacity	.117
insul conducty	2.250E-02	split factor	2.430E-03

Pipe compartment # 3

inside radius	30.6	outside radius	33.0
insul thickness	7.62	pipe length	226.
number of lines	4.00	inital temp	550.
mass/unit length	260.	heat capacity	.117
insul conducty	2.250E-02	split factor	1.00

Turbine compartment # 4
split factor 1.00
comp 5 at 0:00:00.00

leak rate	.000	leak filtr	.000
purge rate	1.000E+06	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	68.0
volume	2.917E+05		

METEOROLOGY

0:00:00.00	Chiqu= 2.650E-04	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 1.560E-04	brthr= 3.470E-04	occup= 1.
1:00:00.00	Chiqu= 9.940E-05	brthr= 3.470E-04	occup= .6
4:00:00.00	Chiqu= 4.370E-05	brthr= 3.470E-04	occup= .4

OUTPUT TIMES
0:02:00.00
0:04:00.00

1:00:00.00
30:00:00.00

CONTROL ROOM
0:00:00.00

Vent filt intake	1.18	Intake Filt Eff	87.8
Recirc Rate	12.4	Recirc Filt Eff	73.5
Vent Unfilt Intk	3.300E-03	Cont Room Volum	3.326E+03
CR Gamma Volum	3.326E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

0:04:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

1:00:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

30:00:00.00	Whole Body	Thyroid	Beta
I-131	1.842E-10	1.526E-05	1.205E-09
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	5.173E-17	4.331E-13	5.298E-16
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	5.322E-28	3.786E-25	3.266E-27
total =	1.842E-10	1.526E-05	1.205E-09

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:17:53.62
LASALLE UNIT 1 MSIV CNTRL RM RESUSP VIA DRAIN LINES LEAK RATE @ 400 SCFH Total

Input file= crrs1a.lc1
CONTROL
power = 3.458E+03
mode = Control Room

ISOTOPE
I-131 9.977E-07 2.631E+04 .357 1.05 2.960E-02 1.080E+06

RELEASE
I-131 cmp 1 at 0:00:00.00 inst .000 drbl 1.147E-04 ff 1 dfctr 0
I-131 cmp 1 at 0:02:00.00 inst .000 drbl 7.682E-04 ff 1 dfctr 0
I-131 cmp 1 at 0:08:00.00 inst .000 drbl 4.797E-03 ff 1 dfctr 0
I-131 cmp 1 at 0:21:00.00 inst .000 drbl 1.146E-02 ff 1 dfctr 0
I-131 cmp 1 at 1:00:00.00 inst .000 drbl 2.209E-02 ff 1 dfctr 0
I-131 cmp 1 at 1:16:00.00 inst .000 drbl 3.411E-02 ff 1 dfctr 0
I-131 cmp 1 at 2:00:00.00 inst .000 drbl 4.345E-02 ff 1 dfctr 0
I-131 cmp 1 at 2:16:00.00 inst .000 drbl 5.632E-02 ff 1 dfctr 0
I-131 cmp 1 at 4:00:00.00 inst .000 drbl 6.410E-02 ff 1 dfctr 0
I-131 cmp 1 at 6:00:00.00 inst .000 drbl 6.104E-02 ff 1 dfctr 0
I-131 cmp 1 at 8:00:00.00 inst .000 drbl 5.223E-02 ff 1 dfctr 0
I-131 cmp 1 at 11:00:00.00 inst .000 drbl 3.985E-02 ff 1 dfctr 0
I-131 cmp 1 at 15:00:00.00 inst .000 drbl 2.337E-02 ff 1 dfctr 0
I-131 cmp 1 at 23:00:00.00 inst .000 drbl 1.098E-02 ff 1 dfctr 0

PLANT
comp 1 at 0:00:00.00
leak rate 3.51 leak filtr .000
purge rate .000 purge filtr .000
recirc rate .000 recirc filtr .000
pressure 1.00 temperature 100.
volume 6.976E+03
comp 2 at 0:00:00.00
leak rate .000 leak filtr .000
purge rate 1.000E+06 purge filtr .000
recirc rate .000 recirc filtr .000
pressure 1.00 temperature 68.0
volume 2.917E+05

METEOROLOGY
0:00:00.00 Chiqu= 2.650E-04 brthr= 3.470E-04 occup= 1.
0:08:00.00 Chiqu= 1.560E-04 brthr= 3.470E-04 occup= 1.
1:00:00.00 Chiqu= 9.940E-05 brthr= 3.470E-04 occup= .6
4:00:00.00 Chiqu= 4.370E-05 brthr= 3.470E-04 occup= .4

OUTPUT TIMES
0:02:00.00
0:04:00.00
1:00:00.00
30:00:00.00

CONTROL ROOM
0:00:00.00
Vent filt intake .999 Intake Filt Eff 90.4
Recirc Rate 12.4 Recirc Filt Eff 73.5
Vent Unfilt Intk 3.300E-03 Cont Room Volum 3.326E+03
CR Gamma Volum 3.326E+03

0:02:00.00	Whole Body	Thyroid	Beta
I-131	1.284E-11	1.064E-06	8.402E-11
0:04:00.00	Whole Body	Thyroid	Beta
I-131	1.268E-10	1.050E-05	8.296E-10
1:00:00.00	Whole Body	Thyroid	Beta
I-131	2.605E-08	2.158E-03	1.704E-07
30:00:00.00	Whole Body	Thyroid	Beta
I-131	1.654E-05	1.370E+00	1.082E-04

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:18:10.05
LASALLE UNIT 1 MSIV CNTRL RM RESUSP VIA DRAIN LINES LEAK RATE @ 400 SCFH Total

Input file= crrs1a.lc2
CONTROL
power = 3.458E+03
mode = Control Room

ISOTOPE
I-131 9.977E-07 2.631E+04 .357 1.05 2.960E-02 1.080E+06

RELEASE
I-131 cmp 1 at 0:00:00.00 inst .000 drbl 1.147E-04 ff 1 dfctr 0
I-131 cmp 1 at 0:02:00.00 inst .000 drbl 7.682E-04 ff 1 dfctr 0
I-131 cmp 1 at 0:08:00.00 inst .000 drbl 4.797E-03 ff 1 dfctr 0
I-131 cmp 1 at 0:21:00.00 inst .000 drbl 1.146E-02 ff 1 dfctr 0
I-131 cmp 1 at 1:00:00.00 inst .000 drbl 2.209E-02 ff 1 dfctr 0
I-131 cmp 1 at 1:16:00.00 inst .000 drbl 3.411E-02 ff 1 dfctr 0
I-131 cmp 1 at 2:00:00.00 inst .000 drbl 4.345E-02 ff 1 dfctr 0
I-131 cmp 1 at 2:16:00.00 inst .000 drbl 5.632E-02 ff 1 dfctr 0
I-131 cmp 1 at 4:00:00.00 inst .000 drbl 6.410E-02 ff 1 dfctr 0
I-131 cmp 1 at 6:00:00.00 inst .000 drbl 6.104E-02 ff 1 dfctr 0
I-131 cmp 1 at 8:00:00.00 inst .000 drbl 5.223E-02 ff 1 dfctr 0
I-131 cmp 1 at 11:00:00.00 inst .000 drbl 3.985E-02 ff 1 dfctr 0
I-131 cmp 1 at 15:00:00.00 inst .000 drbl 2.337E-02 ff 1 dfctr 0
I-131 cmp 1 at 23:00:00.00 inst .000 drbl 1.098E-02 ff 1 dfctr 0

PLANT
comp 1 at 0:00:00.00
leak rate 3.51 leak filtr .000
purge rate .000 purge filtr .000
recirc rate .000 recirc filtr .000
pressure 1.00 temperature 100.
volume 6.976E+03
comp 2 at 0:00:00.00
leak rate .000 leak filtr .000
purge rate 1.000E+06 purge filtr .000
recirc rate .000 recirc filtr .000
pressure 1.00 temperature 68.0
volume 2.917E+05

METEOROLOGY
0:00:00.00 Chiqu= 2.650E-04 brthr= 3.470E-04 occup= 1.
0:08:00.00 Chiqu= 1.560E-04 brthr= 3.470E-04 occup= 1.
1:00:00.00 Chiqu= 9.940E-05 brthr= 3.470E-04 occup= .6
4:00:00.00 Chiqu= 4.370E-05 brthr= 3.470E-04 occup= .4

OUTPUT TIMES
0:02:00.00
0:04:00.00
1:00:00.00
30:00:00.00

CONTROL ROOM
0:00:00.00
Vent filt intake 1.50 Intake Filt Eff 92.7
Recirc Rate 12.4 Recirc Filt Eff 73.5
Vent Unfilt Intk 3.300E-03 Cont Room Volum 3.326E+03
CR Gamma Volum 3.326E+03

0:02:00.00	Whole Body	Thyroid	Beta
I-131	1.393E-11	1.154E-06	9.116E-11
0:04:00.00	Whole Body	Thyroid	Beta
I-131	1.375E-10	1.139E-05	8.994E-10
1:00:00.00	Whole Body	Thyroid	Beta
I-131	2.817E-08	2.333E-03	1.843E-07
30:00:00.00	Whole Body	Thyroid	Beta
I-131	1.788E-05	1.481E+00	1.169E-04

MSIV Leakage Program Version 1.2a execution on 6-24-1995 at 09:18:26.25
LASALLE UNIT 1 MSIV CNTRL RM RESUSP VIA DRAIN LINES LEAK RATE @ 400 SCFH Total

Input file= crrs1a.lc3
CONTROL
power = 3.458E+03
mode = Control Room

ISOTOPE
I-131 9.977E-07 2.631E+04 .357 1.05 2.960E-02 1.080E+06

RELEASE
I-131 cmp 1 at 0:00:00.00 inst .000 drbl 1.147E-04 ff 1 dfctr 0
I-131 cmp 1 at 0:02:00.00 inst .000 drbl 7.682E-04 ff 1 dfctr 0
I-131 cmp 1 at 0:08:00.00 inst .000 drbl 4.797E-03 ff 1 dfctr 0
I-131 cmp 1 at 0:21:00.00 inst .000 drbl 1.146E-02 ff 1 dfctr 0
I-131 cmp 1 at 1:00:00.00 inst .000 drbl 2.209E-02 ff 1 dfctr 0
I-131 cmp 1 at 1:16:00.00 inst .000 drbl 3.411E-02 ff 1 dfctr 0
I-131 cmp 1 at 2:00:00.00 inst .000 drbl 4.345E-02 ff 1 dfctr 0
I-131 cmp 1 at 2:16:00.00 inst .000 drbl 5.632E-02 ff 1 dfctr 0
I-131 cmp 1 at 4:00:00.00 inst .000 drbl 6.410E-02 ff 1 dfctr 0
I-131 cmp 1 at 6:00:00.00 inst .000 drbl 6.104E-02 ff 1 dfctr 0
I-131 cmp 1 at 8:00:00.00 inst .000 drbl 5.223E-02 ff 1 dfctr 0
I-131 cmp 1 at 11:00:00.00 inst .000 drbl 3.985E-02 ff 1 dfctr 0
I-131 cmp 1 at 15:00:00.00 inst .000 drbl 2.337E-02 ff 1 dfctr 0
I-131 cmp 1 at 23:00:00.00 inst .000 drbl 1.098E-02 ff 1 dfctr 0

PLANT
comp 1 at 0:00:00.00
leak rate 3.51 leak filtr .000
purge rate .000 purge filtr .000
recirc rate .000 recirc filtr .000
pressure 1.00 temperature 100.
volume 6.976E+03
comp 2 at 0:00:00.00
leak rate .000 leak filtr .000
purge rate 1.000E+06 purge filtr .000
recirc rate .000 recirc filtr .000
pressure 1.00 temperature 68.0
volume 2.917E+05

METEOROLOGY
0:00:00.00 Chiqu= 2.650E-04 brthr= 3.470E-04 occup= 1.
0:08:00.00 Chiqu= 1.560E-04 brthr= 3.470E-04 occup= 1.
1:00:00.00 Chiqu= 9.940E-05 brthr= 3.470E-04 occup= .6
4:00:00.00 Chiqu= 4.370E-05 brthr= 3.470E-04 occup= .4

OUTPUT TIMES
0:02:00.00
0:04:00.00
1:00:00.00
30:00:00.00

CONTROL ROOM
0:00:00.00
Vent filt intake .999 Intake Filt Eff 90.4
Recirc Rate 12.4 Recirc Filt Eff 73.5
Vent Unfilt Intk 1.180E-02 Cont Room Volum 3.326E+03
CR Gamma Volum 3.326E+03

0:02:00.00	Whole Body	Thyroid	Beta
I-131	1.393E-11	1.154E-06	9.115E-11
0:04:00.00	Whole Body	Thyroid	Beta
I-131	1.376E-10	1.139E-05	9.000E-10
1:00:00.00	Whole Body	Thyroid	Beta
I-131	2.826E-08	2.341E-03	1.849E-07
30:00:00.00	Whole Body	Thyroid	Beta
I-131	1.795E-05	1.486E+00	1.174E-04

```
 MSIV Leakage Program Version 1.2a execution on  6-24-1995 at 09:18:42.51
LASALLE UNIT 1 MSIV  CNTRL RM RESUSP VIA DRAIN LINES LEAK RATE @ 400  SCFH Total


Input  file= crrs1a.lc4
CONTROL
    power =  3.458E+03
    mode  = Control Room

ISOTOPE
    I-131    9.977E-07 2.631E+04  .357      1.05     2.960E-02 1.080E+06

RELEASE
    I-131   cmp 1 at  0:00:00.00 inst  .000     drbl 1.147E-04 ff 1 dfctr 0
    I-131   cmp 1 at  0:02:00.00 inst  .000     drbl 7.682E-04 ff 1 dfctr 0
    I-131   cmp 1 at  0:08:00.00 inst  .000     drbl 4.797E-03 ff 1 dfctr 0
    I-131   cmp 1 at  0:21:00.00 inst  .000     drbl 1.146E-02 ff 1 dfctr 0
    I-131   cmp 1 at  1:00:00.00 inst  .000     drbl 2.209E-02 ff 1 dfctr 0
    I-131   cmp 1 at  1:16:00.00 inst  .000     drbl 3.411E-02 ff 1 dfctr 0
    I-131   cmp 1 at  2:00:00.00 inst  .000     drbl 4.345E-02 ff 1 dfctr 0
    I-131   cmp 1 at  2:16:00.00 inst  .000     drbl 5.632E-02 ff 1 dfctr 0
    I-131   cmp 1 at  4:00:00.00 inst  .000     drbl 6.410E-02 ff 1 dfctr 0
    I-131   cmp 1 at  6:00:00.00 inst  .000     drbl 6.104E-02 ff 1 dfctr 0
    I-131   cmp 1 at  8:00:00.00 inst  .000     drbl 5.223E-02 ff 1 dfctr 0
    I-131   cmp 1 at 11:00:00.00 inst  .000     drbl 3.985E-02 ff 1 dfctr 0
    I-131   cmp 1 at 15:00:00.00 inst  .000     drbl 2.337E-02 ff 1 dfctr 0
    I-131   cmp 1 at 23:00:00.00 inst  .000     drbl 1.098E-02 ff 1 dfctr 0

PLANT
    comp  1  at  0:00:00.00
             leak   rate   3.51     leak   filtr  .000
             purge  rate   .000     purge  filtr  .000
             recirc rate   .000     recirc filtr  .000
             pressure      1.00     temperature   100.
             volume       6.976E+03
    comp  2  at  0:00:00.00
             leak   rate   .000     leak   filtr  .000
             purge  rate  1.000E+06 purge  filtr  .000
             recirc rate   .000     recirc filtr  .000
             pressure      1.00     temperature   68.0
             volume       2.917E+05

METEOROLOGY
      0:00:00.00  Chiqu= 2.650E-04  brthr= 3.470E-04  occup= 1.
      0:08:00.00  Chiqu= 1.560E-04  brthr= 3.470E-04  occup= 1.
      1:00:00.00  Chiqu= 9.940E-05  brthr= 3.470E-04  occup= .6
      4:00:00.00  Chiqu= 4.370E-05  brthr= 3.470E-04  occup= .4

OUTPUT TIMES
      0:02:00.00
      0:04:00.00
      1:00:00.00
     30:00:00.00

CONTROL ROOM
      0:00:00.00
            Vent filt intake  .999     Intake Filt Eff  90.4
            Recirc Rate      12.4      Recirc Filt Eff  73.5
            Vent Unfilt Intk 2.360E-02 Cont Room Volum 3.326E+03
            CR Gamma Volum   3.326E+03
```

0:02:00.00	Whole Body	Thyroid	Beta
I-131	1.544E-11	1.279E-06	1.010E-10
0:04:00.00	Whole Body	Thyroid	Beta
I-131	1.525E-10	1.263E-05	9.975E-10
1:00:00.00	Whole Body	Thyroid	Beta
I-131	3.132E-08	2.594E-03	2.049E-07
30:00:00.00	Whole Body	Thyroid	Beta
I-131	1.989E-05	1.647E+00	1.301E-04

```
 MSIV Leakage Program Version 1.2a execution on  6-24-1995 at 09:18:58.76
LASALLE UNIT 1 MSIV  CNTRL RM RESUSP VIA DRAIN LINES LEAK RATE @ 400  SCFH Total


Input  file= crrs1a.lc5
CONTROL
    power =  3.458E+03
    mode  = Control Room

ISOTOPE
    I-131    9.977E-07 2.631E+04  .357      1.05     2.960E-02 1.080E+06

RELEASE
    I-131   cmp 1 at  0:00:00.00 inst  .000     drbl 1.147E-04 ff 1 dfctr 0
    I-131   cmp 1 at  0:02:00.00 inst  .000     drbl 7.682E-04 ff 1 dfctr 0
    I-131   cmp 1 at  0:08:00.00 inst  .000     drbl 4.797E-03 ff 1 dfctr 0
    I-131   cmp 1 at  0:21:00.00 inst  .000     drbl 1.146E-02 ff 1 dfctr 0
    I-131   cmp 1 at  1:00:00.00 inst  .000     drbl 2.209E-02 ff 1 dfctr 0
    I-131   cmp 1 at  1:16:00.00 inst  .000     drbl 3.411E-02 ff 1 dfctr 0
    I-131   cmp 1 at  2:00:00.00 inst  .000     drbl 4.345E-02 ff 1 dfctr 0
    I-131   cmp 1 at  2:16:00.00 inst  .000     drbl 5.632E-02 ff 1 dfctr 0
    I-131   cmp 1 at  4:00:00.00 inst  .000     drbl 6.410E-02 ff 1 dfctr 0
    I-131   cmp 1 at  6:00:00.00 inst  .000     drbl 6.104E-02 ff 1 dfctr 0
    I-131   cmp 1 at  8:00:00.00 inst  .000     drbl 5.223E-02 ff 1 dfctr 0
    I-131   cmp 1 at 11:00:00.00 inst  .000     drbl 3.985E-02 ff 1 dfctr 0
    I-131   cmp 1 at 15:00:00.00 inst  .000     drbl 2.337E-02 ff 1 dfctr 0
    I-131   cmp 1 at 23:00:00.00 inst  .000     drbl 1.098E-02 ff 1 dfctr 0

PLANT
    comp  1  at  0:00:00.00
             leak   rate   3.51     leak   filtr  .000
             purge  rate   .000     purge  filtr  .000
             recirc rate   .000     recirc filtr  .000
             pressure      1.00     temperature   100.
             volume       6.976E+03
    comp  2  at  0:00:00.00
             leak   rate   .000     leak   filtr  .000
             purge  rate  1.000E+06 purge  filtr  .000
             recirc rate   .000     recirc filtr  .000
             pressure      1.00     temperature   68.0
             volume       2.917E+05

METEOROLOGY
      0:00:00.00  Chiqu= 2.650E-04  brthr= 3.470E-04  occup= 1.
      0:08:00.00  Chiqu= 1.560E-04  brthr= 3.470E-04  occup= 1.
      1:00:00.00  Chiqu= 9.940E-05  brthr= 3.470E-04  occup= .6
      4:00:00.00  Chiqu= 4.370E-05  brthr= 3.470E-04  occup= .4

OUTPUT TIMES
      0:02:00.00
      0:04:00.00
      1:00:00.00
     30:00:00.00

CONTROL ROOM
      0:00:00.00
             Vent filt intake  .999     Intake Filt Eff  90.4
             Recirc Rate      12.4      Recirc Filt Eff  73.5
             Vent Unfilt Intk 4.72CE-02 Cont Room Volum 3.326E+03
             CR Gamma Volum   3.326E+03
```

0:02:00.00	Whole Body	Thyroid	Beta
I-131	1.845E-11	1.528E-06	1.207E-10
0:04:00.00	Whole Body	Thyroid	Beta
I-131	1.822E-10	1.509E-05	1.192E-09
1:00:00.00	Whole Body	Thyroid	Beta
I-131	3.742E-08	3.100E-03	2.448E-07
30:00:00.00	Whole Body	Thyroid	Beta
I-131	2.376E-05	1.968E+00	1.555E-04

```
 MSIV Leakage Program Version 1.2a execution on  6-24-1995 at 09:19:15.02
LASALLE UNIT 1 MSIV  CNTRL RM RESUSP VIA DRAIN LINES LEAK RATE @ 400  SCFH Total


Input  file= crrs1a.1c6
CONTROL
    power =  3.458E+03
    mode  = Control Room

ISOTOPE
    I-131    9.977E-07 2.631E+04  .357      1.05     2.960E-02 1.080E+06

RELEASE
    I-131   cmp 1 at  0:00:00.00 inst  .000     drbl 1.147E-04 ff 1 dfctr 0
    I-131   cmp 1 at  0:02:00.00 inst  .000     drbl 7.682E-04 ff 1 dfctr 0
    I-131   cmp 1 at  0:08:00.00 inst  .000     drbl 4.797E-03 ff 1 dfctr 0
    I-131   cmp 1 at  0:21:00.00 inst  .000     drbl 1.146E-02 ff 1 dfctr 0
    I-131   cmp 1 at  1:00:00.00 inst  .000     drbl 2.209E-02 ff 1 dfctr 0
    I-131   cmp 1 at  1:16:00.00 inst  .000     drbl 3.411E-02 ff 1 dfctr 0
    I-131   cmp 1 at  2:00:00.00 inst  .000     drbl 4.345E-02 ff 1 dfctr 0
    I-131   cmp 1 at  2:16:00.00 inst  .000     drbl 5.632E-02 ff 1 dfctr 0
    I-131   cmp 1 at  4:00:00.00 inst  .000     drbl 6.410E-02 ff 1 dfctr 0
    I-131   cmp 1 at  6:00:00.00 inst  .000     drbl 6.104E-02 ff 1 dfctr 0
    I-131   cmp 1 at  8:00:00.00 inst  .000     drbl 5.223E-02 ff 1 dfctr 0
    I-131   cmp 1 at 11:00:00.00 inst  .000     drbl 3.985E-02 ff 1 dfctr 0
    I-131   cmp 1 at 15:00:00.00 inst  .000     drbl 2.337E-02 ff 1 dfctr 0
    I-131   cmp 1 at 23:00:00.00 inst  .000     drbl 1.098E-02 ff 1 dfctr 0

PLANT
    comp  1  at  0:00:00.00
             leak   rate   3.51     leak   filtr  .000
             purge  rate   .000     purge  filtr  .000
             recirc rate   .000     recirc filtr  .000
             pressure      1.00     temperature   100.
             volume       6.976E+03
    comp  2  at  0:00:00.00
             leak   rate   .000     leak   filtr  .000
             purge  rate  1.000E+06 purge  filtr  .000
             recirc rate   .000     recirc filtr  .000
             pressure      1.00     temperature   68.0
             volume       2.917E+05

METEOROLOGY
      0:00:00.00  Chiqu= 2.650E-04  brthr= 3.470E-04  occup= 1.
      0:08:00.00  Chiqu= 1.560E-04  brthr= 3.470E-04  occup= 1.
      1:00:00.00  Chiqu= 9.940E-05  brthr= 3.470E-04  occup= .6
      4:00:00.00  Chiqu= 4.370E-05  brthr= 3.470E-04  occup= .4

OUTPUT TIMES
      0:02:00.00
      0:04:00.00
      1:00:00.00
     30:00:00.00

CONTROL ROOM
      0:00:00.00
             Vent filt intake  1.09     Intake Filt Eff  89.1
             Recirc Rate       12.4     Recirc Filt Eff  73.5
             Vent Unfilt Intk 3.300E-03 Cont Room Volum 3.326E+03
             CR Gamma Volum   3.326E+03
```

0:02:00.00	Whole Body	Thyroid	Beta
I-131	1.569E-11	1.299E-06	1.026E-10
0:04:00.00	Whole Body	Thyroid	Beta
I-131	1.549E-10	1.283E-05	1.013E-09
1:00:00.00	Whole Body	Thyroid	Beta
I-131	3.180E-08	2.634E-03	2.080E-07
30:00:00.00	Whole Body	Thyroid	Beta
I-131	2.019E-05	1.672E+00	1.321E-04

```
 MSIV Leakage Program Version 1.2a execution on  6-24-1995 at 09:19:31.34
LASALLE UNIT 1 MSIV  CNTRL RM RESUSP VIA DRAIN LINES LEAK RATE @ 400  SCFH Total


Input  file= crrs1a.1c7
CONTROL
    power =  3.458E+03
    mode  = Control Room

ISOTOPE
    I-131    9.977E-07 2.631E+04  .357      1.05     2.960E-02 1.080E+06

RELEASE
    I-131   cmp 1 at  0:00:00.00 inst  .000     drbl 1.147E-04 ff 1 dfctr 0
    I-131   cmp 1 at  0:02:00.00 inst  .000     drbl 7.682E-04 ff 1 dfctr 0
    I-131   cmp 1 at  0:08:00.00 inst  .000     drbl 4.797E-03 ff 1 dfctr 0
    I-131   cmp 1 at  0:21:00.00 inst  .000     drbl 1.146E-02 ff 1 dfctr 0
    I-131   cmp 1 at  1:00:00.00 inst  .000     drbl 2.209E-02 ff 1 dfctr 0
    I-131   cmp 1 at  1:16:00.00 inst  .000     drbl 3.411E-02 ff 1 dfctr 0
    I-131   cmp 1 at  2:00:00.00 inst  .000     drbl 4.345E-02 ff 1 dfctr 0
    I-131   cmp 1 at  2:16:00.00 inst  .000     drbl 5.632E-02 ff 1 dfctr 0
    I-131   cmp 1 at  4:00:00.00 inst  .000     drbl 6.410E-02 ff 1 dfctr 0
    I-131   cmp 1 at  6:00:00.00 inst  .000     drbl 6.104E-02 ff 1 dfctr 0
    I-131   cmp 1 at  8:00:00.00 inst  .000     drbl 5.223E-02 ff 1 dfctr 0
    I-131   cmp 1 at 11:00:00.00 inst  .000     drbl 3.985E-02 ff 1 dfctr 0
    I-131   cmp 1 at 15:00:00.00 inst  .000     drbl 2.337E-02 ff 1 dfctr 0
    I-131   cmp 1 at 23:00:00.00 inst  .000     drbl 1.098E-02 ff 1 dfctr 0

PLANT
    comp  1  at  0:00:00.00
             leak   rate   3.51     leak   filtr  .000
             purge  rate   .000     purge  filtr  .000
             recirc rate   .000     recirc filtr  .000
             pressure      1.00     temperature   100.
             volume       6.976E+03
    comp  2  at  0:00:00.00
             leak   rate   .000     leak   filtr  .000
             purge  rate  1.000E+06 purge  filtr  .000
             recirc rate   .000     recirc filtr  .000
             pressure      1.00     temperature   68.0
             volume       2.917E+05

METEOROLOGY
      0:00:00.00  Chiqu= 2.650E-04  brthr= 3.470E-04  occup= 1.
      0:08:00.00  Chiqu= 1.560E-04  brthr= 3.470E-04  occup= 1.
      1:00:00.00  Chiqu= 9.940E-05  brthr= 3.470E-04  occup= .6
      4:00:00.00  Chiqu= 4.370E-05  brthr= 3.470E-04  occup= .4

OUTPUT TIMES
      0:02:00.00
      0:04:00.00
      1:00:00.00
     30:00:00.00

CONTROL ROOM
      0:00:00.00
             Vent filt intake  1.18     Intake Filt Eff  87.8
             Recirc Rate       12.4     Recirc Filt Eff  73.5
             Vent Unfilt Intk 3.300E-03 Cont Room Volum 3.326E+03
             CR Gamma Volum   3.326E+03
```

0:02:00.00	Whole Body	Thyroid	Beta
I-131	1.874E-11	1.552E-06	1.226E-10
0:04:00.00	Whole Body	Thyroid	Beta
I-131	1.850E-10	1.532E-05	1.210E-09
1:00:00.00	Whole Body	Thyroid	Beta
I-131	3.797E-08	3.145E-03	2.484E-07
30:00:00.00	Whole Body	Thyroid	Beta
I-131	2.411E-05	1.997E+00	1.577E-04