ARKANSAS POWER & LIGHT COMPANY

ARKANSAS NUCLEAR ONE

EMERGENCY PREPAREDNESS EXERCISE

REX - 84

EXERCISE SCENARIO

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INDEX

EXERCISE RULES

AND

PARTICIPANT GUIDELINES

ARKANSAS NUCLEAR ONE
ARKANSAS POWER & LIGHT COMPANY
1984 EMERGENCY PREPAREDNESS EXERCISE

EXERCISE RULES AND PARTICIPANT GUIDELINES

To define the "extent of play" of the exercise players and to meet the exercise objectives, the following exercise guidelines have been established:

1. The exercise will be conducted during March 1984, and will continue without suspension until terminated. Since exercise players will not be informed of the exercise start time or initiating events, all personnel should follow their normal routines prior to the exercise.

2. The exercise will commence with postulated conditions necessitating the declaration of appropriate emergency action levels.

3. Four groups of personnel will be in attendance at the exercise and will function as described below:

   A. PARTICIPANTS are operators, chemistry personnel, maintenance personnel, etc., who have been assigned an "acting" role during the emergency exercise. These people serve to take necessary actions to mitigate, terminate, correct, and/or recover from the simulated emergency.

   B. CONTROLLERS are those predesignated AP&L or contractor personnel who serve an active role in the exercise by providing data to participants. The CONTROLLERS may also serve to prompt or initiate certain actions in order to assure continuity of the events described in the exercise scenario. CONTROLLERS are the only personnel who will provide information to the PARTICIPANTS; other inputs of information from personnel not designated as CONTROLLERS will be ignored by the participants.

      CONTROLLERS may also serve as EVALUATORS.

   C. EVALUATORS are personnel predesignated by AP&L, NRC, and FEMA to provide documentation and assessment of the exercise. They serve a passive function and will only note actions taken by PARTICIPANTS. These personnel have received specific instructions on what areas to consider in their evaluation of the exercise. EVALUATORS may ask questions or participants to clarify actions taken or procedural concerns but should not interfere with the flow of events.

   D. VISITORS are personnel who serve no evaluation, control, or participatory function in the exercise. Visitors from NRC, FEMA, state agencies, and other utilities are expected to be included as OBSERVERS. OBSERVERS shall not interfere with EVALUATORS, and particularly, PARTICIPANTS. Questions from OBSERVERS should be directed to a CONTROLLER.

Identification of personnel:

A. CONTROLLERS: Red arm band.

B. EVALUATORS: Yellow arm band. (NRC evaluators may be identified by their own identification badge, hat, etc.)

C. OBSERVERS: Green arm band.

4. Personnel will be assigned as controllers at all key functional areas to monitor and control the exercise. In addition, they will accompany radiological monitoring teams, plant health physics personnel and maintenance repair/rescue teams.

5. Message forms will be the mechanisms used to initiate, orchestrate, modify and complete the events comprising the overall scenario. The Controller will use the message forms to place the scenario events in effect and to trigger responses from the involved personnel.

6. Some exercise participants may insist that certain parts of the scenario are unrealistic. The Controllers have the authority, with the approval from the Lead Controller, to clarify any questions regarding scenario content. In some cases, it may be necessary to exercise "controller's prerogative" of countermanding participant actions to preserve the continuity and objectives of the exercise. You must, however, accept his/her word as final and proceed. Inappropriate actions can delay or speed up the entire exercise and impact other groups.

7. Note that the scenario events are hypothetical. Any portions of the scenario depicting plant system operations transients are simulated events. NO Control Room actions, or reactions involving operation of plant systems, or affecting generation capability shall be initiated. All exercise scenario messages shall be prefixed and suffixed with the words: "THIS IS A DRILL".

8. Postulated accident conditions may result in a simulated radiological release which necessitates the consideration of protective actions for the general public, and will provide the mechanism for offsite authorities to exercise their respective emergency response plans.

9. All onsite and offsite emergency response facilities may be manned to perform their prescribed functions as appropriate to the development of the exercise scenario.

10. Media centers may be manned and perform their prescribed functions.

11. The offsite Early Warning Siren System may be activated by the State.

12. Key Participant Guidelines

A. Participation by AP&L personnel directly involved in responding to an emergency shall be carried out to the fullest extent possible - including the deployment of radiological monitoring teams, emergency repair and damage control teams, and other emergency workers.

All actions are to be played out, as much as possible, in accordance with the Emergency Plan and Procedures as if it were a real emergency. Actions of participants should be identified to the Controller if not evident.

B. Respond to Controller's questions.

C. Plant/Monitoring Data: Participants should request from the Controllers any data which they feel is necessary for the performance of their function. Data will most likely be provided to any emergency teams ly a Controller after the participants have taken the required measurements.

SPDS and GERMS data will most likely be automatic; however, if system failures occur, each Controller will have the time-related plant and radiological parameters of the exercise scenario. This information will be issued upon request to the appropriate exercise participants.

D. You must play as if radiation levels actually are present, in accordance with the information you have received. This will require that you wear radiation dosimeters, anti-contamination clothing, observe good radiation protection practices, and be aware of and minimize your radiation exposure. Identify the individuals in the emergency response organization responsible for informing you of these items. Follow their instructions.

E. If you are entering normal nuclear station radiation areas, observe all rules and procedures. No one (even the controller and federal evaluators) is exempt from normal station radiological practices and procedures.

NOTE: DO NOT ENTER HIGH RADIATION AREAS IN THE PLANT WITHOUT AUTHORIZATION FROM THE CONTROLLER. FOLLOW ALARA PRINCIPLES.

F. If you are in doubt, ask your controller for clarification. The controller will not prompt or coach you. They will not provide information to players regarding scenario development or resolution of problem areas encountered. The exercise participants are expected to obtain information through their own organizations and exercise their own judgement in determining response actions and resolving problems.

13. Actual and Simulated Events: During the emergency exercise, certain events/activities will be simulated rather than utilize the actual employment of resources. Any question as to the simulation of actions should be directed to a Controller for approval.

    - Simulation - involves identification and utilization of requirements and procedures short of actual employment.
    - Actual - movement of resources and/or physical implementation for this exercise.

    Example: The actual use of fire extinguishing agents would not be performed but simulated. Teams would respond but only perform a "walk-thru" of fire fighting actions.

14. Provisions for Actual Emergency: Exercise participants, controllers/evaluators, and visitors should not take any actions which would preclude maintaining emergency readiness of the organization and community. If an actual emergency occurs during the exercise requiring a group to terminate its participation in the exercise, they should notify the Lead Controller. All messages concerning actual emergency events should be preceded with "THIS IS NOT, REPEAT, NOT AN EXERCISE MESSAGE".

15. Communications: Communications between all exercise participants shall occur in accordance with the procedures of all applicable emergency response plans. All communications, including initial telephone conversations, radio transmittals, loudspeaker announcements, etc., should begin and end with "This is a Drill".

16. Compliance With All Laws: Intentional violation of any laws is not permitted during any exercise. Exercise participants, controllers/evaluators, and observers should comply with all Federal, State and local restrictions. Specifically all local traffic laws, such as speed limits, should be observed.

17. Avoid Property Endangerment: Exercise participants, controllers/evaluators, and observers should avoid endangering property (public or private), members of the general public or the environment.

18. Minimize Public Inconvenience: It is not the intent to arouse or inconvenience the public during the conduct of an exercise. Also all communications, particularly in the public relations area, should be prefaced with "This is a Drill".

19. Closeout of Exercise

    - The Lead Controller will notify and release all controllers and participants not participating in the recovery.

- At the appropriate point in the exercise scenario, the Lead Controller will initiate termination of the exercise. The Lead Controller will notify all offsite points of contact to advise that the exercise is being terminated.

NOTE: All simulated exercise events will be initiated under the direction of the Emergency Planning Coordinator. Individuals are prohibited from creating real or simulated situations that have not been provided for in the scenario and approved by the Emergency Planning Coordinator.

INSTRUCTIONS FOR VISITORS

1. The event times and scenario are confidential and should be kept confidential during the exercise. Do not discuss them with the players.

2. Visitors should not participate in the exercise nor interfere in the actions taken by the exercise players, controllers, and evaluators.

3. Visitors must stay with their assigned escort and follow their escort's instructions.

4. Visitors must display their ANO visitor badge and other assigned means of identification (armband, etc.).

5. Within emergency response facilities, visitors must position themselves such that status boards, charts, access to equipment, etc. are not hindered/blocked. If congestion becomes a problem, visitors may be asked to leave temporarily by a controller.

6. Visitors should ask questions to their escort or a controller during the exercise, or ask questions to players only after exercise termination.

7. Visitor safety responsibilities:

   - Safety takes precedence over all other exercise requirements.
   - In cases of accidents/injury, report promptly to your escort or a controller, and assist as required.
   - Report any hazardous condition to your escort or a controller.
   - Cooperate in every respect with the plant safety program so that operations may be conducted in a way that ensures safety.
   - Follow safety rules, take no unnecessary chances, use all safeguards and safety equipment provided, and make safety a part of your responsibility.
   - In the case of fire or an actual emergency, follow the instructions of your escort or a controller.

CONTROLLER INSTRUCTIONS

AND

CRITIQUE SHEETS

INSTRUCTIONS FOR CONTROLLERS

1. Personnel are assigned as controllers or evaluators at all key functional areas to monitor and control the exercise. In addition, they will accompany radiological monitoring teams, plant health physics personnel, and maintenance repair/rescue teams.

2. The AP&L controllers will be coordinated by Lead Controller, Dennis Boyd in the TSC or ECC (ext. 3737 or 6601). He will be responsible for the overall conduct of the exercise scenario. Fred VanBuskirk will provide controller coordination and should be contacted if the Lead Controller is unavailable.

3. Message forms and simulated data will be issued to initiate, modify, and complete the events comprising the overall scenario. Selected controllers will use the message forms to place the scenario events in effect and to trigger responses from the involved emergency response organizations. Each controller will have copies of the messages controlling the portion of the scenario for which he/she is responsible.

. Controlling messages will be presented to the designated exercise participant at the time specified in the event schedule. The controller should follow up with an explanation of the message and answer questions to ensure that the participant understands the message.

Two kinds of messages will be used:

- Exercise Message

  Messages used as a primary means of implementing scenario events by hypothesizing conditions. These will be supported by simulated data where necessary.

- Contingency Exercise Message

  Messages used at the discretion of the controllers in order to maintain scenario schedule or continuity of simulated events. These are not to be issued unless absolutely necessary. The Lead Controller should be advised when a Contingency Message has been issued.

5. Controllers shall not initially provide information to the participants regarding scenario development or resolution of problem areas encountered. The participants are expected to obtain information through their own organization and exercise their own judgement in determining response actions and resolving problems. In the event of incorrect or incomplete responses, or if the participant indicates lack of knowledge of how to proceed, the controller will prompt the participant with necessary instructions and will note the deficiency on his/her critique sheets.

6. Note that the scenario events are hypothetical. Any portions of the scenario depicting plant system operational transients are simulated events. No control room actions, reactions involving operation of plant system or affecting generation capability will be initiated. If you are not clear as to what actions should be taken by the players or why, make sure you ask the Lead Controller, so that you understand the extent of the play. Controllers stationed at areas vital to maintaining generating capability should be especially aware and take extra precautions in issuing messages or giving instructions regarding the scenario events.

7. Players are not allowed to introduce items into the exercise or scenario. Some exercise participants may insist that certain parts of the scenario are unrealistic. The controllers have the authority, with approval from the Lead Controller, to clarify any questions regarding scenario content. In some cases, it may be necessary to exercise "controller's prerogative" to preserve the continuity and objectives of the exercise.

8. Controllers will only guide the actions of the players when it is obvious that unchecked actions will have a significant impact on the successful completion of the drill. Controller prompts should be kept to a minimum and avoided if at all possible.

9. Controllers and federal evaluators do not have to follow the radiation exposure control practices for the simulated radiation levels from the emergency exercise scenario. However, the players must follow the radiation protection rules. Controllers, federal evaluators, and players entering normal nuclear station radiation areas must observe all normal radiation control practices.

10. Controller safety responsibilities:

    - Safety takes precedence over all other exercise requirements.
    - In case of accidents/injury, report promptly to the Lead Controller and get medical assistance without dealy.
    - Report any hazardous condition to the Lead Controller.
    - Follow safety rules, take no unnecessary chances, use all safeguards and safety equipment provided, and make safety a part of your responsibility. Be sure to have a hard hat with you when entering the plant.
    - Know your exact duties in case of fire or an actual emergency; suspend exercise related activities.

11. The federal evaluators must not issue "surprise" messages or direct "surprise" actions at the players. They must work through the controller. This is essential for the success of the exercise.

12. Controllers will commence their assignments at assembly locations for players they are to observe , or as directed by the lead controller. Prior to commencement, all telecommunications should be tested to ensure satisfactory communications between the lead controllers and all other controllers.

13. All controllers will synchronize their watches to ensure that messages are delivered at the proper time. Times on messages are set relative to the beginning of the exercise, with delivery of the first message at "T + 0:00."

14. The emergency response exercise is tentatively scheduled for termination at 1700 hours. The Lead Controller will initiate actual termination and ensure all controllers and plyers are advised.

15. All controllers should complete their critique sheets and prepare a list of major findings. They should gather all records generated during the exercise and convey these records and their comments to Dennis Boyd.

16. All Emergency Managers/Directors/Team Leaders/evaluators and controllers should return for the critique Thursday, March 22, 1984, at 8:00 a.m. in the ECC auditorium. Only substantive comments should be expressed with suggested corrective actions, since these are followed for commitment tracking purposes. Other comments should be noted and given to Dennis Boyd.

NOTES:

Do's

1. Know the overall controller organization and how/where to contact the Lead Controller.

2. Be sure you understand the players' scenario script and the master scenario.

3. Be at your post at least 20 minutes prior to any player action commencement. Position yourself to maximize your effectiveness in issuing messages and observing the players.

4. Identify the phone (or radio for field teams) you will use to maintain communications with lead controller.

5. Identify yourself at all times to all players. Wear controller identification, as provided.

6. Identify the players (by name and function) that you will be controlling.

7. Remember that there are two clocks: a scenario time and a clock time.

8. Keep the play on schedule by checking your script.

9. Stick to the time-line as far as giving out information is concerned. Contact the Lead Controller if significant delays are encountered, so that scenario event timing can be adjusted accordingly.

10. Issue the message on time or as otherwise directed by the Lead Controller. Make sure the players understand it.

11. Allow the players reasonable flexibility to do their functions and demonstrate their skill, knowledge, and initiative.

12. If you must intervene with player actions and the player diagram with your instructions, contact the Lead Controller to resolve the conflict.

13. Respond to Player's questions, yet be mindful of answers that would prompt players to take a specific action.

14. Identify the federal evaluator(s). Make sure they are reasonably aware of all your actions and those of the players. Attempt to defray any misconceptions of player/controller actions.

15. If a real emergency occurs in your area of play, suspend your portion of the exercise and notify the lead controller immediately.

16. Make notes on the strengths and weaknesses of response actions, suggestions for improvement. Use the Evaluator's Critique Sheets.

17. Attend the post-exercise critique session to provide your comments and recommendations to the Lead Controller.

Don'ts

1. Don't leave your post at key times.

2. Don't prompt the players to take action.

3. Don't coach the players.

4. Don't criticize the player actions during the play.

5. Don't forget to call the Lead Controller to seek advice or help as necessary.

6. Do not allow federal evaluators to issue messages/instructions to participants. If they want to initiate actions, receive authorization from the Lead Controller before complying with their wishes. Players may, however, answer questions directed to them by federal evaluators.

7. Do not allow participant actions to continue if they would obviosuly impair scenario continuity.

CONTROLLERS/EVALUATORS

(C) = Controllers
(E) = Evaluators

CONTROL ROOM

Joe Simmons (C)
Charlie Zimmerman (C)

TSC

Fred VanBuskirk (C)
Tim Pugh (C)

Medical Emergency

Bill McCord (C)
Bob Jackson (E)

Fire Emergency

Greg Storey (C)
Jim Montgomery (C)

Evacuation Team/Accountability

Bob Jackson (C)

Onsite Radiation Team

Ira Mosquito (C)
Steve Gallagner (C)

Offsite Radiation Team

Jeff Garren (C)
Gary Casperson (C)
Dave Hamblen (C)
Bill McKelvy (C)

PASS

Randy Pool (C)

Dose Assessment

Al Smith (C)

ECC Command Room

Dale James (C)
Larry Parscale (E)

LRSC/Eng. Center/Media Center

Kay McElveen (E)
Peggy Patrick (E)
Pat Williams (E)

LRCC

Larry Parscale (C)

Public Inquiry Controllers

Sharyn French (C)
Jeannie Walker (C)
Drew Alexander (C)

Roaming Observers

Dennis Boyd (Lead Controller)
Dave Mardis (E)
5 - NRC (E)

OBSERVER CHECKLIST

ARKANSAS NUCLEAR ONE OBSERVER _____

LOCATION/GROUP OBSERVED: CONTROL ROOM DATE _____

DIRECTIONS: Circle the number on the rating scale that corresponds to the judgment made by the observer. The Rating Scale is defined as follows:

0 - Not Applicable
1 - Event/Criteria Missing
2 - Unsatisfactory
3 - Needs Improvement
4 - Satisfactory
5 - Exceeds Criteria

EVENT/CRITERIA	RATING SCALE 0 1 2 3 4 5	COMMENTS
I. LOCATION SPECIFIC ACTIVITIES		
A. CR operators responded quickly to personal injury incident.	0 1 2 3 4 5	
CR operators responded quickly to fire alarm.	0 1 2 3 4 5	
C. CR operators responded quickly to reactor trip.	0 1 2 3 4 5	
D. CR operators responded properly to simulated operational events.	0 1 2 3 4 5	
E. HP assistance was requested as needed.	0 1 2 3 4 5	
F. Event classifications were timely, accurate and clear.	0 1 2 3 4 5	
G. Notifications were timely and properly completed.	0 1 2 3 4 5	
H. Communication networks were operational and utilized efficiently.	0 1 2 3 4 5	
I. Communication flow was adequate to ensure that information was timely, effective, and efficient.	0 1 2 3 4 5	
J. Phone listings were available, complete and up-to-date.	0 1 2 3 4 5	
K. General status announcements were made and updated periodically throughout the drill.	0 1 2 3 4 5	
.. Proper data flow was maintained between TSC and Control Room.	0 1 2 3 4 5	
M. Logs were maintained.	0 1 2 3 4 5	

- OBSERVER CHECKLIST CONTINUED:

EVENT/CRITERIA	RATING SCALE 0 1 2 3 4 5	COMMENTS
N. SOP and emergency procedures were utilized.	0 1 2 3 4 5	
O. Drill announcements were prefaced with, "This is a Drill."	0 1 2 3 4 5	
P. Communications links were checked.	0 1 2 3 4 5	
Q. Adequate information was provided to the Control Room from support group for their assessment.	0 1 2 3 4 5	

- OBSERVER CHECKLIST CONTINUED: GENERAL OBSERVATIONS

EVENT/CRITERIA	RATING SCALE 0 1 2 3 4 5	COMMENTS
II. INITIAL & FOLLOW-UP NOTIFICATIONS		
A. Timely?	0 1 2 3 4 5	
B. Accurate/sufficient information provided?	0 1 2 3 4 5	
C. Periodic updates provided?	0 1 2 3 4 5	
D. Individuals kept informed?	0 1 2 3 4 5	
III. DUTIES/RESPONSIBILITIES & ASSIGNMENTS		
A. Is person in charge clearly identified?	0 1 2 3 4 5	
B. All personnel are aware of general duties/responsibilities?	0 1 2 3 4 5	
C. All personnel are knowledgeable of initial actions (where to go, who to contact, what to do, etc.)	0 1 2 3 4 5	
IV. PLAN/PROCEDURES		
A. Available in a timely fashion?	0 1 2 3 4 5	
B. Followed?	0 1 2 3 4 5	
C. Personnel familiar with?	0 1 2 3 4 5	
D. If deviations occurred, were they appropriate?	0 1 2 3 4 5	
E. Situations addressed adequately?	0 1 2 3 4 5	
V. COMMUNICATIONS		
A. Equipment available and working?	0 1 2 3 4 5	
B. Adequate equipment for personnel?	0 1 2 3 4 5	
C. Adequate logs kept?	0 1 2 3 4 5	
D. Problems in using equipment/ communicating messages resolved?	0 1 2 3 4 5	
VI. EQUIPMENT		
A. Adequate equipment available/ obtainable?	0 1 2 3 4 5	
B. Equipment checked/functional?	0 1 2 3 4 5	
C. Equipment used properly?	0 1 2 3 4 5	
VII. RADIOLOGICAL CONSIDERATIONS (where applicable)		
A. Contamination control measures taken?	0 1 2 3 4 5	
B. Dosimetry provided/used?	0 1 2 3 4 5	
C. Anti-C's & respiratory protection provided and used?	0 1 2 3 4 5	

OBSERVER CHECKLIST CONTINUED: GENERAL OBSERVATIONS

EVENT/CRITERIA	RATING SCALE 0 1 2 3 4 5	COMMENTS
RADIOLOGICAL CONSIDERATIONS (Continued)		
D. Health Physics coverage requested & provided?	0 1 2 3 4 5	
E. Briefings (re-entry/periodic) provided?	0 1 2 3 4 5	
F. ALARA considerations?	0 1 2 3 4 5	
G. Personnel/equipment monitored?	0 1 2 3 4 5	
H. Limit/authorization of re-entry personnel?	0 1 2 3 4 5	
I. Surveys/samples taken periodically and postings made?	0 1 2 3 4 5	
J. Personnel exposure records kept/ used?	0 1 2 3 4 5	
K. Protective actions considered?	0 1 2 3 4 5	
VIII. EMERGENCY CENTERS		
A. Emergency Centers contain only essential personnel.	0 1 2 3 4 5	
B. Crowding is controlled in the Emergency Centers.	0 1 2 3 4 5	
C. Noise is controlled in the Emergency Centers.	0 1 2 3 4 5	

COMMENTS:

GENERAL OBSERVATIONS

MISCELLANEOUS COMMENTS:

OBSERVER CHECKLIST

ARKANSAS NUCLEAR ONE OBSERVER _____

LOCATION/GROUP OBSERVED: ONSITE RADIATION TEAMS DATE _____

DIRECTIONS: Circle the number on the rating scale that corresponds to the judgment made by the observer. The Rating Scale is defined as follows:

0 - Not Applicable
1 - Event/Criteria Missing
2 - Unsatisfactory
3 - Needs Improvement
4 - Satisfactory
5 - Exceeds Criteria

EVENT/CRITERIA	RATING SCALE 0 1 2 3 4 5	COMMENTS
I. LOCATION SPECIFIC ACTIVITIES		
A. Onsite monitoring equipment was easily accessible and properly distributed.	0 1 2 3 4 5	
B. Equipment was checked for proper operability prior to its use.	0 1 2 3 4 5	
C. Standard HP practices were employed for entry into actual or potential radiation areas.	0 1 2 3 4 5	
D. Proper survey records, dosimetry, stay times, etc. were maintained during entry.	0 1 2 3 4 5	
E. Survey results were ~~report~~ reported to the appropriate personnel.	0 1 2 3 4 5	
F. Follow-up actions were taken on survey results.	0 1 2 3 4 5	
G. Pocket dosimeters were frequently checked and properly logged.	0 1 2 3 4 5	
H. The TSC and ECC's habitability was frequently monitored.	0 1 2 3 4 5	
I. Team members had adequate understanding of proper utilization of equipment (survey instruments, radios, SCBA's, etc.).	0 1 2 3 4 5	
J. The onsite radiation team leader received adequate feedback from the TSC to perform his Junction.	0 1 2 3 4 5	
K. Survey results were systematically recorded by the onsite radiation team leader.	0 1 2 3 4 5	

OBSERVER CHECKLIST

ARKANSAS NUCLEAR ONE OBSERVER _____

LOCATION/GROUP OBSERVED: OFFSITE MONITORING TEAMS DATE _____

DIRECTIONS: Circle the number on the rating scale that corresponds to the judgment made by the observer. The Rating Scale is defined as follows:

0 - Not Applicable
1 - Event/Criteria Missing
2 - Unsatisfactory
3 - Needs Improvement
4 - Satisfactory
5 - Exceeds Criteria

EVENT/CRITERIA	RATING SCALE 0 1 2 3 4 5	COMMENTS
I. LOCATION SPECIFIC ACTIVITIES		
A. Initial team briefings were held.	0 1 2 3 4 5	
B. Team assembled with field kits, vehicles and communications equipment in a timely manner.	0 1 2 3 4 5	
C. Instruments checked for proper operability and current calibration.	0 1 2 3 4 5	
D. Teams receive explicit instructions of where to go and what to sample.	0 1 2 3 4 5	
E. Procedures for conducting offsite monitoring were consulted and followed.	0 1 2 3 4 5	
F. Vehicle checked for contamination after mission completed.	0 1 2 3 4 5	
G. Sampling locations were readily located.	0 1 2 3 4 5	
H. Analysis of samples were performed outside the plume area.	0 1 2 3 4 5	
I. Samples were properly packaged, identified and labeled.	0 1 2 3 4 5	
J. Pocket dosimeters were periodically checked.	0 1 2 3 4 5	
K. Pocket dosimeter readings were logged in upon return to the ECC.	0 1 2 3 4 5	
L. Communications were maintained with the Offsite Monitoring Supervisor throughout sampling activity.	0 1 2 3 4 5	
M. Team members followed good ALARA and HP practices.	0 1 2 3 4 5	

OBSERVER CHECKLIST CONTINUED:

EVENT/CRITERIA	RATING SCALE 0 1 2 3 4 5	COMMENTS
N. Radio communications stated, "This is a Drill," or similar statement.	0 1 2 3 4 5	
O. Team members completed data sheets in the proper manner.	0 1 2 3 4 5	
P. Adequate communications existed between the field teams and the Offsite Monitoring Supervisor.	0 1 2 3 4 5	

OBSERVER CHECKLIST

ARKANSAS NUCLEAR ONE

OBSERVER _____

LOCATION/GROUP OBSERVED: MEDICAL TEAM DATE _____

DIRECTIONS: Circle the number on the rating scale that corresponds to the judgment made by the observer. The Rating Scale is defined as follows:

0 - Not Applicable
1 - Event/Criteria Missing
2 - Unsatisfactory
3 - Needs Improvement
4 - Satisfactory
5 - Exceeds Criteria

EVENT/CRITERIA	RATING SCALE 0 1 2 3 4 5	COMMENTS
I. LOCATION SPECIFIC ACTIVITIES		
A. Medical Team reaction/assembly was timely following notification.	0 1 2 3 4 5	
B. Medical team assembled with the proper first aid equipment.	0 1 2 3 4 5	
C. Accident/injury assessment made by the medical team.	0 1 2 3 4 5	
D. Team leader exerts control.	0 1 2 3 4 5	
E. Medical assistance was rendered in a timely manner.	0 1 2 3 4 5	
F. Appropriate decontamination measures were taken.	0 1 2 3 4 5	
G. Maintained communication linkage with Control Room.	0 1 2 3 4 5	
H. The HP escort reacted properly to the simulated event.	0 1 2 3 4 5	
I. The request for and notification of ambulance was in accordance to procedures.	0 1 2 3 4 5	
J. Patient was made ready for transport by the medical team.	0 1 2 3 4 5	
K. Dosimeter was left with the patient.	0 1 2 3 4 5	
L. Adequate HP's coverage was provided at the hospital.	0 1 2 3 4 5	
M. Patient's radiation doses are monitored by HP personnel.	0 1 2 3 4 5	

OBSERVER CHECKLIST CONTINUED:

EVENT/CRITERIA	RATING SCALE 0 1 2 3 4 5	COMMENTS
N. HP performed radiation survey of ambulance at hospital before vehicle was released.	0 1 2 3 4 5	
O. Accident was classified as an Unusual Event through established procedures.	0 1 2 3 4 5	
P. Consideration/measures were taken to prevent spread of contamination.	0 1 2 3 4 5	
Q. Periodic status reports are provided to the Shift Supervisor as to the injured individuals status.	0 1 2 3 4 5	

OBSERVER CHECKLIST

ARKANSAS NUCLEAR ONE OBSERVER _____

LOCATION/GROUP OBSERVED: FIRE EMERGENCY TEAM DATE _____

DIRECTIONS: Circle the number on the rating scale that corresponds to the judgment made by the observer. The Rating Scale is defined as follows:

0 - Not Applicable
1 - Event/Criteria Missing
2 - Unsatisfactory
3 - Needs Improvement
4 - Satisfactory
5 - Exceeds Criteria

EVENT/CRITERIA	RATING SCALE 0 1 2 3 4 5	COMMENTS
I. LOCATION SPECIFIC ACTIVITIES		
A. Reaction time between fire alarm and fire team activation is timely.	0 1 2 3 4 5	
B. Fire fighting personnel response time to the scene of the fire was timely.	0 1 2 3 4 5	
C. Fire team members report to scene of fire with appropriate fire fighting gear and equipment.	0 1 2 3 4 5	
D. Fire brigade leader is clearly in charge until relieved by fire team leader.	0 1 2 3 4 5	
E. Initial assessment of fire situation is adequately performed.	0 1 2 3 4 5	
F. Standard fire fighting procedures were followed.	0 1 2 3 4 5	
G. When it is apparent AP&L team cannot control the fire, offsite support is requested and obtained in a timely manner.	0 1 2 3 4 5	
H. Communications are maintained between the fire team leader and the CR (Control Room).	0 1 2 3 4 5	
I. Adequate information is provided by the fire team to the Control Room for their assessment.	0 1 2 3 4 5	
J. Smooth transition and coordination is made between plant fire team and local fire department.	0 1 2 3 4 5	

OBSERVER CHECKLIST CONTINUED:

EVENT/CRITERIA	RATING SCALE 0 1 2 3 4 5	COMMENTS
K. Arrival of local fire department to fire scene is timely.	0 1 2 3 4 5	

OBSERVER CHECKLIST

ARKANSAS NUCLEAR ONE OBSERVER _____

LOCATION/GROUP OBSERVED: EVACUATION TEAM DATE _____

DIRECTIONS: Circle the number on the rating scale that corresponds to the judgment made by the observer. The Rating Scale is defined as follows:

0 - Not Applicable
1 - Event/Criteria Missing
2 - Unsatisfactory
3 - Needs Improvement
4 - Satisfactory
5 - Exceeds Criteria

EVENT/CRITERIA	RATING SCALE 0 1 2 3 4 5	COMMENTS
I. LOCATION SPECIFIC ACTIVITIES		
A. Evacuation Team assembles and is provided information in a timely manner.	0 1 2 3 4 5	
B. Portal monitors effectively utilized to monitor plant evacuees.	0 1 2 3 4 5	
C. Adequate instructions are provided to the evacuees.	0 1 2 3 4 5	
D. Plant personnel report to their specified parking lot area.	0 1 2 3 4 5	
E. Evacuated players are provided adequate instructions from the Evacuation Team to ECC.	0 1 2 3 4 5	
F. Evacuees are provided follow-up information by Recovery Manager.	0 1 2 3 4 5	
G. Fishermen are provided adequate instructions by the Evacuation Team.	0 1 2 3 4 5	
H. HP coverage is adequate at exit points.	0 1 2 3 4 5	
I. Accountability of evacuated personnel is performed in a timely manner.	0 1 2 3 4 5	
J. Adequate information is provided by the TSC for Security to perform accountability.	0 1 2 3 4 5	
K. Evacuation messages over the PA system were clear and understandable.	0 1 2 3 4 5	

OBSERVER CHECKLIST

ARKANSAS NUCLEAR ONE OBSERVER _____

LOCATION/GROUP OBSERVED: TECHNICAL SUPPORT CENTER DATE _____

DIRECTIONS: Circle the number on the rating scale that corresponds to the judgment made by the observer. The Rating Scale is defined as follows:

0 - Not Applicable
1 - Event/Criteria Missing
2 - Unsatisfactory
3 - Needs Improvement
4 - Satisfactory
5 - Exceeds Criteria

EVENT/CRITERIA	RATING SCALE 0 1 2 3 4 5	COMMENTS
I. LOCATION SPECIFIC ACTIVITIES		
A. The TSC assumes overall command and control when activated.	0 1 2 3 4 5	
B. TSC takes responsibility for offsite dose projections.	0 1 2 3 4 5	
C. TSC takes responsibility for NRC and other notifications.	0 1 2 3 4 5	
D. Recovery Manager/Technical Analysis Superintendent/Duty Emergency Coordinator should assign someone to perform notifications.	0 1 2 3 4 5	
E. The TSC is manned in a timely manner at the Site Emergency Action Level.	0 1 2 3 4 5	
F. Dispatch liaison to TOCC (State DOH)	0 1 2 3 4 5	
G. Assess damage due to fire.	0 1 2 3 4 5	
H. Assess make-up capability to RCS	0 1 2 3 4 5	
I. Command is clearly transferred from DEC to RM.	0 1 2 3 4 5	
J. Special emphasis is given by maintenance on getting HPSI pump back in service.	0 1 2 3 4 5	
K. Offsite monitoring teams are dispatched to the field at Site Emergency.	0 1 2 3 4 5	
L. Periodic update by RM is provided to TSC.	0 1 2 3 4 5	
M. Followed up condition of injured person.	0 1 2 3 4 5	
N. RM made periodic briefings to staff.	0 1 2 3 4 5	

EVENT/CRITERIA	RATING SCALE 0 1 2 3 4 5	COMMENTS
O. Plant evacuation is coordinated between the RM & Shift Supervisor.	0 1 2 3 4 5	
P. Preparation is made to evacuate.	0 1 2 3 4 5	
Q. Accountability is made following evacuation.	0 1 2 3 4 5	
R. Consultation with TSC by CR on the broken RCS line occurs.	0 1 2 3 4 5	
S. Inplant radiological monitoring results are followed by the TSC.	0 1 2 3 4 5	
T. Evaluation of individual doses of those individuals who remain in the plant is performed.	0 1 2 3 4 5	
U. The TSC is provided with evaluating offsite dose readings.	0 1 2 3 4 5	
V. Interface/communications with TSC and ECC staffs occurs frequently.	0 1 2 3 4 5	
W. Transfer of command is made clear.	0 1 2 3 4 5	
X. Coordination between AP&L and the State is carried out by the TSC prior to ECC activation.	0 1 2 3 4 5	
AA. TSC evacuation is conducted in an effective manner.	0 1 2 3 4 5	
AB. TSC evacuation is coordinated with ECC.	0 1 2 3 4 5	
AC. Smooth transition is made from the TSC to secondary TSC.	0 1 2 3 4 5	
AD. Recovery actions are developed between TSC to ECC.	0 1 2 3 4 5	
AE. Downgrading actions are developed.	0 1 2 3 4 5	
AF. Smooth transition is made on shift change.	0 1 2 3 4 5	
AG. Briefing is made to oncoming staff.	0 1 2 3 4 5	
AH. Person in charge is clearly identified.	0 1 2 3 4 5	

OBSERVER CHECKLIST

ARKANSAS NUCLEAR ONE

OBSERVER _____

LOCATION/GROUP OBSERVED: EMERGENCY CONTROL CENTER (ECC) DATE _____

DIRECTIONS: Circle the number on the rating scale that corresponds to the judgment made by the observer. The Rating Scale is defined as follows:

0 - Not Applicable
1 - Event/Criteria Missing
2 - Unsatisfactory
3 - Needs Improvement
4 - Satisfactory
5 - Exceeds Criteria

EVENT/CRITERIA	RATING SCALE 0 1 2 3 4 5	COMMENTS
I. LOCATION SPECIFIC ACTIVITIES		
A. Maintain open communication linkage while enroute.	0 1 2 3 4 5	
B. ECC is activated in a timely manner following notification of IRD's transfer.	0 1 2 3 4 5	
C. IRD receives briefing prior to assuming command at ECC.	0 1 2 3 4 5	
D. Transfer of command is made clear to TSC and LRSC.	0 1 2 3 4 5	
E. Updated status boards are maintained.	0 1 2 3 4 5	
F. Technical Support Manager receives timely and complete information regarding radiological monitoring.	0 1 2 3 4 5	
G. Reference materials, supplies and resources are readily available and adequate.	0 1 2 3 4 5	
H. Communication flow is adequate.	0 1 2 3 4 5	
I. Definite and effective leadership is maintained in the ECC.	0 1 2 3 4 5	
J. ECC personnel were familiar with their responsibilities and carried out their duties effectively.	0 1 2 3 4 5	
K. Radiological trends of the accident were established.	0 1 2 3 4 5	
L. Protection action recommendations were timely and accurate.	0 1 2 3 4 5	
M. Data were made available in a timely manner and adequately distributed.	0 1 2 3 4 5	

OBSERVER CHECKLIST CONTINUED: EMERGENCY CONTROL CENTER (ECC)

EVENT/CRITERIA	RATING SCALE 0 1 2 3 4 5	COMMENTS
N. ECC participants were aware of their responsibilities.	0 1 2 3 4 5	
O. Communicators understood and used systems effectively.	0 1 2 3 4 5	
P. General status announcements and periodic updates were made throughout the drill.	0 1 2 3 4 5	
Q. Appropriate procedures were used and periodically reviewed.	0 1 2 3 4 5	
R. Communication and coordination activities made with the State were timely, accurate and frequent.	0 1 2 3 4 5	
S. Contacts with outside support groups were made in anticipation of their assistance.	0 1 2 3 4 5	
T. Team work was evident.	0 1 2 3 4 5	
U. Press releases were reviewed by IRD.	0 1 2 3 4 5	

OBSERVER CHECKLIST

ARKANSAS NUCLEAR ONE OBSERVER _____

LOCATION/GROUP OBSERVED: DOSE ASSESSMENT (ECC)/OFFSITE MONITORING (ECC) DATE _____

DIRECTIONS: Circle the number on the rating scale that corresponds to the judgment made by the observer. The Rating Scale is defined as follows:

0 - Not Applicable
1 - Event/Criteria Missing
2 - Unsatisfactory
3 - Needs Improvement
4 - Satisfactory
5 - Exceeds Criteria

EVENT/CRITERIA	RATING SCALE 0 1 2 3 4 5	COMMENTS
I. LOCATION SPECIFIC ACTIVITIES		
A. Initial and subsequent dose calculations were performed in a timely manner.	0 1 2 3 4 5	
B. Computerized equipment was properly utilized.	0 1 2 3 4 5	
C. Plume was defined and tracked.	0 1 2 3 4 5	
D. Teams were contacted, briefed, and dispatched expeditiously.	0 1 2 3 4 5	
E. Communications were maintained with all teams.	0 1 2 3 4 5	
F. Personnel was efficiently utilized.	0 1 2 3 4 5	
G. Dose Assessment Supervisor initiated and provided periodic updates to the Technical Support Manager.	0 1 2 3 4 5	
H. Status was maintained on team exposure levels.	0 1 2 3 4 5	
I. Offsite monitoring data were coordinated with State.	0 1 2 3 4 5	
J. Comparisons were made between projected and actual field measurements.	0 1 2 3 4 5	
K. Dose assessment offsite monitoring supervisors were provided with adequate information to perform their duties.	0 1 2 3 4 5	

OBSERVER CHECKLIST

ARKANSAS NUCLEAR ONE OBSERVER _____

LOCATION/GROUP OBSERVED: MEDIA OPERATIONS CENTER DATE _____

DIRECTIONS: Circle the number on the rating scale that corresponds to the judgment made by the observer. The Rating Scale is defined as follows:

0 - Not Applicable
1 - Event/Criteria Missing
2 - Unsatisfactory
3 - Needs Improvement
4 - Satisfactory
5 - Exceeds Criteria

EVENT/CRITERIA	RATING SCALE 0 1 2 3 4 5	COMMENTS
I. LOCATION SPECIFIC ACTIVITIES		
A. Information received was timely and accurate.	0 1 2 3 4 5	
B. News releases were coordinated with appropriate ERO personnel.	0 1 2 3 4 5	
C. Press conferences were organized, publicized, and adequate in number.	0 1 2 3 4 5	
D. Media personnel were available for public inquiries.	0 1 2 3 4 5	
E. News releases were prepared and disseminated in a frequent and timely basis.	0 1 2 3 4 5	
F. Personnel which prepared news releases were familiar with the plant and plant terminology.	0 1 2 3 4 5	
G. News releases were accurate, easily understood and timely.	0 1 2 3 4 5	
H. News releases were uniform, i.e., sequentially updating events.	0 1 2 3 4 5	
I. Technical advisors were available to the media and others.	0 1 2 3 4 5	
J. Visual aids were available and utilized.	0 1 2 3 4 5	
k. Terminology used in news releases was understandable by the general lay person.	0 1 2 3 4 5	
L. Media were provided clear instructions on building access and Media Center operations.	0 1 2 3 4 5	

- OBSERVER CHECKLIST CONTINUED: MEDIA CENTER OPERATIONS

EVENT/CRITERIA	RATING SCALE 0 1 2 3 4 5	COMMENTS
M. News releases were cleared by the IRD.	0 1 2 3 4 5	
N. The Communications Superintendent was clearly in charge of the Media Center operations.	0 1 2 3 4 5	
O. Rumors and distorted information were dealt with in a satisfactory manner.	0 1 2 3 4 5	
P. A smooth transition was made between the shift change at the Media Center.	0 1 2 3 4 5	
Q. Logs of events and communications were maintained and updated.	0 1 2 3 4 5	
R. Supplies and equipment for press releases and Media Center operations were adequate.	0 1 2 3 4 5	
S. Sufficient technical information was provided to the Utility Advisory Supervisor so that he could update the industry.	0 1 2 3 4 5	

OBSERVER CHECKLIST

ARKANSAS NUCLEAR ONE OBSERVER _____

LOCATION/GROUP OBSERVED: Little Rock Support Center & LRCC DATE _____

DIRECTIONS: Circle the number on the rating scale that corresponds to the judgment made by the observer. The Rating Scale is defined as follows:

0 - Not Applicable
1 - Event/Criteria Missing
2 - Unsatisfactory
3 - Needs Improvement
4 - Satisfactory
5 - Exceeds Criteria

EVENT/CRITERIA	RATING SCALE 0 1 2 3 4 5	COMMENTS
I. LOCATION SPECIFIC ACTIVITIES		
A. LRCC receives and transmits Unusual Event EAL in a timely manner.	0 1 2 3 4 5	
B. LRCC receives and transmits Alert EAL in a timely manner.	0 1 2 3 4 5	
C. LRSC is established in a timely manner.	0 1 2 3 4 5	
D. IRD notifies appropriate personnel of Alert event.	0 1 2 3 4 5	
E. Established communication linkage with ANO (TSC if activated).	0 1 2 3 4 5	
F. Begins preparation of initial press release.	0 1 2 3 4 5	
G. Activates LRSC with phones and 5520 Display Writer.	0 1 2 3 4 5	
H. Technical Support Manager makes an assessment to activate offsite radiological monitoring teams.	0 1 2 3 4 5	
I. Assess seriousness of situation and determine if further activation is necessary.	0 1 2 3 4 5	
J. Communication equipment is operational and consistently manned.	0 1 2 3 4 5	
K. Control and transfer is clear, orderly, and timely.	0 1 2 3 4 5	
L. LRSC contains only essential personnel.	0 1 2 3 4 5	
M. Communications and events are logged according to procedures.	0 1 2 3 4 5	

OBSERVER CHECKLIST CONTINUED:

EVENT/CRITERIA	RATING SCALE 0 1 2 3 4 5	COMMENTS
N. Transfer of command is made clear to ECC at ANO and LRSC staff.	0 1 2 3 4 5	
O. Media team transfers to ECC site following initial press release.	0 1 2 3 4 5	
P. Maintain ERO personnel tracking.	0 1 2 3 4 5	
Q. Engineering Support staff is kept informed of events and has made appropriate contacts with vendors or other outside support groups.	0 1 2 3 4 5	
R. Internal Communications Coordinator is kept up-to-date and provides AP&L staff updated information.	0 1 2 3 4 5	
S. Internal Communications Coordinator responds to outside calls following appropriate procedures.	0 1 2 3 4 5	

OBSERVER CHECKLIST

ARKANSAS NUCLEAR ONE OBSERVER _____

LOCATION/GROUP OBSERVED: NRC & OTHER STATE & LOCAL PARTICIPANTS DATE _____

DIRECTIONS: Circle the number on the rating scale that corresponds to the judgment made by the observer. The Rating Scale is defined as follows:

0 - Not Applicable
1 - Event/Criteria Missing
2 - Unsatisfactory
3 - Needs Improvement
4 - Satisfactory
5 - Exceeds Criteria

EVENT/CRITERIA	RATING SCALE 0 1 2 3 4 5	COMMENTS
I. LOCATION/RESPONSIBILITY SPECIFIC ACTIVITY OBSERVATION		
A. Resident NRC inspector reported to CR/TSO after Unusual Event EAL occurred.	0 1 2 3 4 5	
B. Determines response mode and notifies TSC/ECC.	0 1 2 3 4 5	
C. Activates Initial Response Mode in a timely manner.	0 1 2 3 4 5	
D. DSO (Director Site Operations) is clearly identifiable.	0 1 2 3 4 5	
E. Level of activation determination is made by regional administrator.	0 1 2 3 4 5	
F. NRC players are properly identified.	0 1 2 3 4 5	
G. Performs monitoring activities and coordinating procedures without unduly disturbing site team and EMR operations.	0 1 2 3 4 5	
H. Locates NRC base at the TSO.	0 1 2 3 4 5	
I. Performs radiological monitoring using NRC's model for dose assessment in accordance to EPA guidelines.	0 1 2 3 4 5	
J. NRC team stayed throughout REX '83.	0 1 2 3 4 5	
K. Activated Expanded Response Mode in a timely manner and informs ECC/ TSC.	0 1 2 3 4 5	
L. Establishes the Deactivating Mode & informs ECC/TSC.	0 1 2 3 4 5	

OBSERVER CHECKLIST CONTINUED: NRC & OTHER STATE & LOCAL PARTICIPANTS

EVENT/CRITERIA	RATING SCALE 0 1 2 3 4 5	COMMENTS
M. Establish and maintain open channel with regional NRC office.	0 1 2 3 4 5	
N. DSO used authority to waive interfering procedures.	0 1 2 3 4 5	
O. Provide advice to ECC personnel.	0 1 2 3 4 5	
P. Provided support in locating and/or obtaining expertise and/or special equipment.	0 1 2 3 4 5	
Q. Cooperated with other State, Local and Federal Agencies.	0 1 2 3 4 5	
R. Performed required technical activities for the purpose of recommending protection actions.	0 1 2 3 4 5	
S. Delegated site responsibilities to appropriate licensee personnel.	0 1 2 3 4 5	
T. Coordinated offsite non-technical matters with FEMA.	0 1 2 3 4 5	
U. Coordinated offsite monitoring with DOE.	0 1 2 3 4 5	
NRC limited role to monitoring and/or advisement.	0 1 2 3 4 5	
W. Ensured public media received non-distored information.	0 1 2 3 4 5	

I. OBJECTIVES

SCENARIO OBJECTIVES

ANO 1984 Emergency Preparedness Exercise

AP&L Exercise Objectives - Actions to be tested

1. Classifying and upgrading the emergency through the General Emergency EAL.
2. Notification of plant emergency response personnel.
3. Notification of appropriate Federal, State and local support groups.
4. Notification of corporate personnel assigned to the Emergency Response Organization.
5. Notification of appropriate vendor and consultant support groups.
6. Notification of elected public officials.
7. Formation of the initial AP&L corporate response in Little Rock.
8. Establishment of communications between LRSC, ECC, TSC, NRC, and State and local emergency response officials.
9. Preparation of an initial news release from Little Rock.
10. Activation of the Technical Support Center.
11. Activation of the Operational Support Center.
12. Activation of the Emergency Control Center.
13. Transfer of key members of the ERO from Little Rock to Russellville.
14. Activation of Little Rock laboratory personnel and transfer to Russellville.
15. Demonstrate effective use of communication equipment during transfer of ERO personnel from Little Rock to ANO.
16. Activation of the Emergency Radiation Team.
17. Radiation monitoring of plant areas by the Emergency Radiation Team.
18. Activation of the Emergency Fire Team. Demonstration of communications between the fire team and the Control Room.
19. Emergency Fire Team response to a simulated fire.
20. Activation of the Emergency Evacuation Team.
21. Evacuation of the plant and/or Exclusion Area.

22. Personnel accountability following plant/exclusion area evacuation.

23. Formation of an Emergency Recovery Team.

24. Activation of the Emergency Medical Team.

25. Emergency Medical Team response to a simulated injured individual.

26. Transportation of a simulated injured individual to St. Mary's Hospital.

27. Coordination between AP&L and St. Mary's Hospital staff for the handling of a simulated injured individual.

28. Transfer of responsibilities from the Initial Response Organization to the Emergency Response Organization.

29. Offsite radiological monitoring by ANO Emergency Radiation Team.

30. Coordination of offsite radiological monitoring data with State personnel.

31. Coordination between Licensee and State field teams and dose assessment personnel.

32. Use of Offsite Dose Projection procedures. Display Dose Projections in the TSC and ECC.

33. Coordination between AP&L and the State on Protective Action Recommendations.

34. Utilization of appropriate Emergency Operating Procedures.

35. Utilize GERMS and SPDS (that portion that is functional and can be used to contribute to the exercise).

36. Maintaining continuity while evacuating and relocating TSC and OSC personnel to ECC.

37. Effective radiation/contamination monitoring of ECC.

38. Demonstrate the adequacy of emergency equipment and supplies.

39. Coordination between the Control Room, Technical Support Center, and the Emergency Control Center throughout exercise.

40. Coordination with State and local officials at the TOCC, ECC, and the four county Emergency Operations Centers as requested.

41. Activation of the Media Center.

42. Production and delivery of information in joint AP&L, State, and federal (if in attendance) news conference from the ECC Media Center.

43. Control of access to the Exclusion Area (both land and water) and the establishment of road blocks.

44. Security of the Emergency Control Center.

45. Utilization of appropriate Emergency Plan Implementing and Contingency Plan Procedures.

46. Ability of Emergency Response Organization to maintain continuity of command and control throughout the exercise.

47. Demonstrate problem solving capabilities of the Emergency Response Organization.

48. Coordination with State and federal (if in attendance) agencies to downgrade the emergency.

49. Initial recovery and re-entry actions.

50. Utilize PASS facility to analyze the primary system (RCS).

51. Demonstrate the onsite personnel notification system (PA System).

II. NARRATIVE SCENARIO SUMMARY

ARKANSAS POWER AND LIGHT COMPANY
ARKANSAS NUCLEAR ONE
1984 EMERGENCY PREPAREDNESS EXERCISE

NARRATIVE SUMMARY OF EXERCISE SCENARIO

The exercise scenario is based on a series of events resulting in a Steam Generator Tube Rupture through which much of the Reactor Coolant System (RCS) inventory is blown down into the Reactor Auxiliary Building ultimately resulting in a significant offsite release of radioactivity. The exercise is planned to test AP&L's state of emergency preparedness of Arkansas Nuclear One and State and local response organizations.

The exercise will begin at approximately 0830 hours on Wednesday, March 21, 1984 with the following initial conditions:

1. Unit 1 is at 100% power and full load. The unit has been on-line for 200 days.

2. "A" Make-Up Pump has been out-of-service for three days due to bad bearings. . . waiting on parts.

3. A small (~0.05 gpm) tube leak in "A" Once Through Steam Generator (OTSG) has existed for the past two weeks.

4. "A" Decay Heat Pump is inoperative having incurred major mechanical damage due to bearing failure during a Surveillance Test at 0500 hours.

5. Unit 2 is at 100% power and full load. The unit has been on-line for 46 days.

The initiating event for the exercise will occur at approximately 0845 with the injury and contamination of an individual, requiring offsite medical assistance and transport to an offsite medical facility. These conditions will require the declaration of a Notification of Unusual Event.

Due to excessive operations activities on the previous shift (midnight shift), the Quarterly Surveillance Test on "C" Make-Up Pump was delayed until 0930.

NOTE: "B" Make-Up Pump is aligned to the A-3 bus and is in a "standby" mode during the test.

At approximately 1000 hours a fire occurs in the A-4 switchgear room. The fire will be of such magnitude that the following groups will be requested to respond:

1. Fire Brigade

2. Emergency Fire Team

3. Russellville Fire Department

The delayed surveillance test on "C" Make-up Pump ensures that when the fire occurs in the A-4 Switchgear Room the A-3 bus is not faulted through the "B" Make-up Pump cable. The fire will last for approximately 45 minutes completely destroying the A-4 Bus. The A-4 Bus will be unavailable for the remainder of the exercise.

Simultaneously with the loss of the A-4 Bus the Reactor will trip at approximately 1005 hours. The operator response to the Reactor Trip will include the attempted start of "B" Make-Up Pump. The "B" Make-Up Pump will have an electrical fault in the cable (as a result of the fire in A-4) which runs between the pump and the A-4 switchgear. As a result of the operator action, the A-3 switchgear will be locked out by protective relays. This will result in the A-3 Bus being temporarily unavailable. Regardless of A-3 availability, "B" Make-Up Pump is unavailable until the electrical fault is repaired, therefore Operations personnel have no make-up capability to the RCS.

The next significant event occurs at approximately 1010 hours when "A" OTSG main feedwater line develops an unisolatable rupture in the Upper South Piping Penetration Room. This will result in the loss of all inventory in "A" OTSG via blowdown into the Reactor Auxiliary Building. The blowdown results in excessive cooldown of the RCS causing the following:

- large tube-to-shell ΔT in "A" OTSG causing massive tube ruptures to occur
- loss of RCS pressurizer level
- saturation of RCS

Due to the preceeding events the following conditions will exist:

- an uncontrollable loss of RCS inventory into the Reactor Auxiliary Building
- the eventual uncovering of fuel assemblies with resultant fuel damage
- the release of fission products to the atmosphere via plant ventilation systems

A General Emergency will be declared due to the loss of two out of three fission product barriers with a potential loss of the third. This situation will continue until cooling is re-established to the core by either repairing the electrical fault on "B" Make-Up Pump or providing an alternate power supply to the "B" Decay Heat Pump (the RCS must be depressurized to utilize this method).

The RCS inventory will continue to be lost until the RCS is depressurized, the "A" RCS loop is drained via the main feedwater line break and Decay Heat Cooling is established to the core. The General Emergency condition will continue until a fission product barrier is re-established on the ruptured main feedwater line. Some release of radioactivity to the atmosphere will continue until levels decay and/or adequate decontamination procedures have been completed. The Emergency Action Level can be de-escalated after re-establishment of a fission product barrier and after consideration of other EAL criteria, i.e., release rates, etc.

Once the leakage of RCS has been actively stopped (~1530 hours), time constraints make it necessary to go to an accelerated time table. All exercise participants will be informed that it is 24 hours later and will be given the following information:

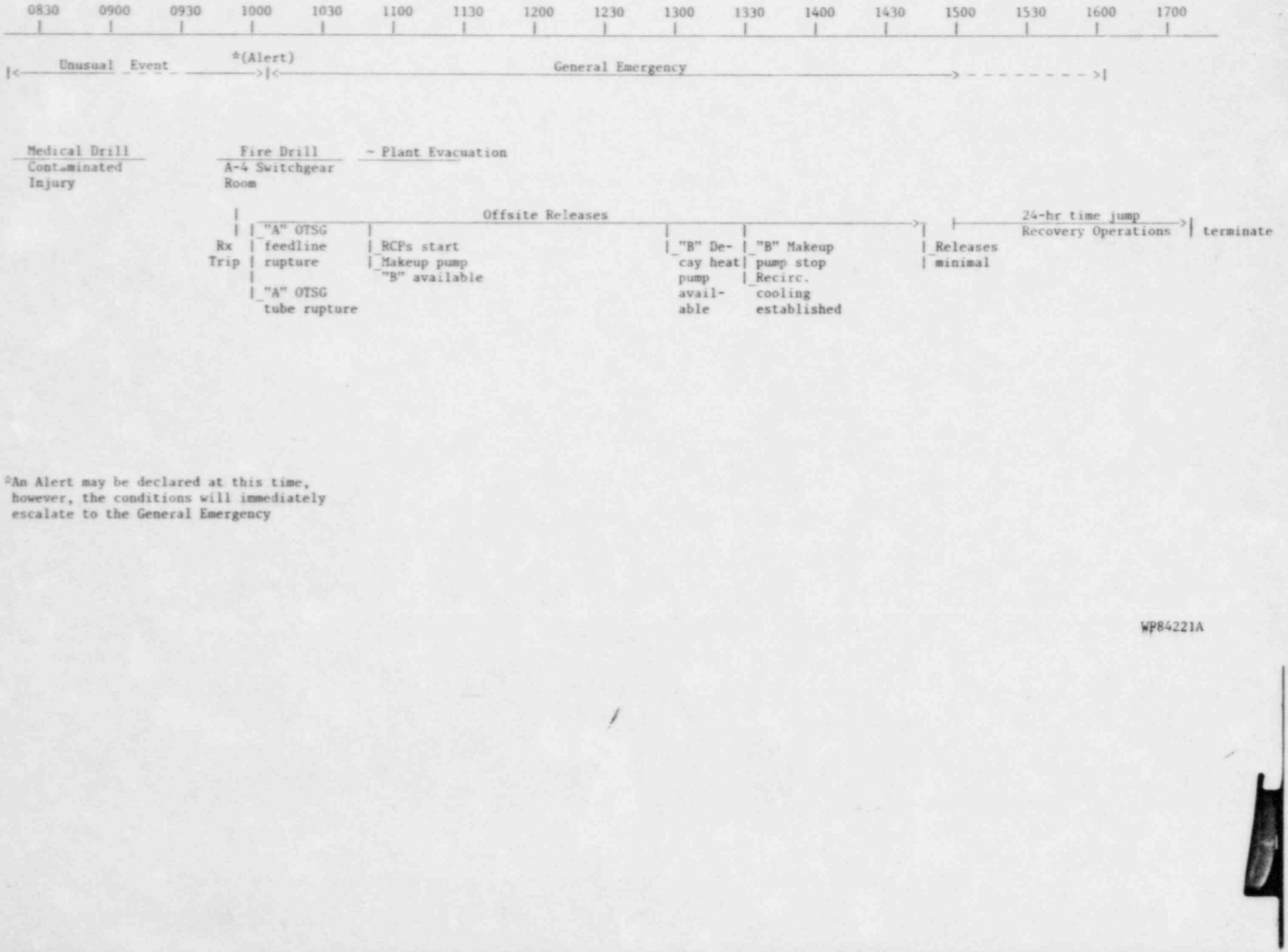
- The radiation levels in the Reactor Auxiliary Building have been reduced to acceptable levels such that an entry could be made.

- All protective action recommendations initially issued are still in effect.

At this time, the radiation levels in the Reactor Auxiliary Building will allow corrective actions (such as an entry into the Reactor Auxiliary Building in order to weld a cap on the Main Feedwater Line) to be taken and considerations for downgrading and recovery will occur.

The exercise will officially be terminated at approximately 1700 hours.

SCENARIO TIMELINE



*An Alert may be declared at this time, however, the conditions will immediately escalate to the General Emergency

WP84221A

III. DETAILED SCENARIO

REX-84
DETAILED DESCRIPTION OF EVENTS

ANO-1 is operating at 100% power and full load. It has been on line for the past 200 days and a small (~0.05 gpm) tube leak has developed in "A" Once Through Steam Generator (OTSG) within the past two weeks. ANO-2 is at 100% power and full load. It has been on line for 46 days.

Current weather conditions are partly cloudy with southeasterly winds around 10 mph.

The temperature is in the upper 50's. There are no abnormal conditions occurring on or offsite.

COMPONENTS TAGGED OUT OF SERVICE
FOR MARCH 21, 1984

Component	Reason Tagged Out
"A" Makeup Pump	Has been out-of-service for 3 days due to bad bearings... waiting on parts.
Electric Fire Pump	Out of service for Breaker repair... should be restored to service by 1400
"D" Circulating Water Pump	Out of service for inspection and repair... out for two weeks.
"A" Decay Heat Pump	Inoperative having incurred major mechanical damage due to bearing failure during a surveillance test at 0500 hours.
Chlorine System	Out of service for maintenance for one week.

Non-Tech Spec Problem Areas

Small steam leak above E1A Feedwater Heater

Packing leak on "A" Heater Drain Pump

Air-Side Hydrogen Seal Oil Pump out of service

Gland Seal Supply secured to "B" Moisture Separator Reheater Safety Valves

DETAILED DESCRIPTION OF EVENTS

DATE: March 21, 1984

TIME	EVENT	ANTICIPATED RESPONSE
0830 hrs. (T+00:00)	The exercise is initiated with a medical emergency. A plant worker is monitoring the transfer of primary spent resin into a shipping cask. The cask is sitting on a flat-bed trailer in the Train Bay and the worker is located on a ladder which is leaning against the cask. While checking the level in the cask, some resin/water mixture splashes on the worker resulting in his loss of balance and fall from the ladder onto the Train Bay floor. The controller will issue message #1 explaining the extent of the injuries to the HP providing job coverage. Additional information concerning the extent of the victims injuries and vital signs will be provided in medical messages # 2, 3, 4, and 5 from the controller to exercise players.	Per procedure 1903.23 "Personnel Emergency" the HP providing the job coverage should administer whatever immediate first aid he deems necessary. He should then notify either units Shift Operations Supervisor (SOS), remain with the victim, and await arrival of the Emergency Medical Team. Per procedure 1903.23, the SOS, once notified, should direct appropriate medical assistance to the injured individual. The Emergency Medical Team should respond to the injured individual and administer appropriate first aid as outlined in procedure 1903.23. Medical Team Members unfamiliar with the scene of the accident should request an escort or directions to the scene per procedure 1903.42 "Duties of the Emergency Medical Team". Arrangements should then be made to transport the injured individual to St. Mary's Hospital where he will be treated at a contamination patient (message #6).
0845 hrs. (T+00:15)	Declaration of Notification of Unusual Event	A Notification of Unusual Event should be declared by the SOS and appropriate notifications made per procedure 1903.10 "Emergency action Level Response".

DETAILED DESCRIPTION OF EVENTS

DATE: March 21, 1984

TIME	EVENT	ANTICIPATED RESPONSE
0935 hrs. (T+01:05)	WCO is sent into the Reactor Auxiliary Building (Message #7 and 8)	
0950 hrs. (T+01:20)	An electrical fault in the green 4.16 KV switchgear A-4 causes overheating of some electrical cables and results in a fire in the A-4 switchgear room. The blue Fire Protection Panel C-463 audibly alarms and concurrently, a loss of indication and control of the major portion of the safety related green division occurs.	When the operator hears the fire alarm on K-12 (Exercise Message #9) should immediately go investigate the cause. He will determine the red alarm LED for "North ES Switchgear Room is lit. (See message #10). Per procedure 1203.09 "Fire Protection System Annunciator Corrective Action" the operator should either dispatch an operator to the North ES Switchgear Room to check for evidence of fire/smoke (Message #11) or if presence of smoke/fire is confirmed go ahead and announce over the PA System that there is a fire in the North ES Switchgear Room and call for the Fire Brigade and Fire Team to fight the fire. The Fire Brigade and Fire Team should respond to the scene of the fire and take the appropriate action to extinguish the fire per procedure 1903.22 "Fire or Explosion" and 1903.41 "Duties of the Emergency Fire Team".
0952 hrs. (T+01:22)		The Fire Brigade Leader should report his assessment of the fire to the control room and request offsite fire support should it be necessary. (Contingency Message #1). Additional information concerning the fire is contained message # 12.

DATE: March 21, 1984

TIME	EVENT	ANTICIPATED RESPONSE
	The major impact of the fire will be the loss of the two remaining High Pressure Injection (HPI) Pumps (B&C) and "B" Low Pressure Injection Pump. HPI pump A is out of service as mentioned in the initial conditions (more data to be provided later). The critical control room parameters contained in Appendix B are for illustration only. The actual plant parameter data is programmed into the SPDS and will read out in "live-time". Parameters requested by players but not available from SPDS will be generated by the control room controllers.	The responsibility for command of the emergency response should be assumed by the Duty Emergency Coordinator (DEC). He should take action to assess the damage caused by the fire. The DEC should realize that either another EAL declaration needs to be made to offsite agencies per procedure 1903.10 "Emergency Action Level Response" (Fire in a vital area not under control within 10 minutes) or an update should be provided for the the Unusual Event that was declared previously.
0955 hrs. (T+01:25)	Reactor Trip due to A-4 bus being de-energized as a result of the fire.	The SOS should either direct that the A-4 bus be de-energized to aid fighting the fire or the fire will cause an electrical fault which will de-energize the bus and cause the reactor trip. (Message #13 and 14) The operators should respond per procedure 1202.01 "Reactor Trip"
0957 hrs. (T+01:27)	Bus A-3 will be lost due to bus lockout on electrical fault. This occurs when the operator tries to start the "B" Makeup pump on the A-3 bus (Message # 15 and 16)	The operator should attempt to start the "B" Makeup Pump in accordance with the followup actions of procedure 1202.01 "Reactor Trip" If the operator fails to do this by 0957 he will be instructed to do so by Contingency Message # 2.

DATE: March 21, 1984

TIME	EVENT	ANTICIPATED RESPONSE
		The SOS should know the reason for A-3 bus lockout and order the bus lockout reset and then instruct for A-3 to be re-energized. If the SOS does not take this action by 1000 hours he will be instructed to do so by Contingency Message #3.
1005 hrs. (T+01:35)	A-3 bus re-energized.	The SOS should instruct the Electrical Maintenance Department to de-terminate the A-4 cable to the "B" makeup pump motor. If this is not done by 1008 the SOS will be instructed to do so by Contingency Message # 4.
1010 hrs. (T+01:40)	"A" OTSG Main Feedwater Line develops an unisolable rupture in the Upper South Piping Penetration Room. (The rupture occurs downstream of CV-2680). When "A" OTSG blows down into the Reactor Auxiliary Building a large tube-to-shell ΔT occurs in the "A" OTSG resulting in massive tube failures (Messages #17 and 18).	These two essentially simultaneous events will cause the operator difficulty in using procedure 1202.01 "Emergency Operating Procedures". However, the operators should stop all RCP's when margin-to-saturation is lost, proper verification of SLIBC actuation should occur, and the "B" OTSG should be brought slowly to the 95% level by operate range indication with the Emergency Feedwater System. If these actions are not performed, the operators will be instructed to accomplish them per Contingency Messages # 5 and 6.
1010 - 1036 hrs. (T+01:40)		The operators must be prevented from opening the ERV, starting reactor coolant pumps, or depressurizing the "B" OTSG. Contingency Messages #7, 8, and 9 are available for this purpose.

DATE: March 21, 1984

TIME	EVENT	ANTICIPATED RESPONSE
		Per procedure 1903.10 "Emergency Action Level Response a General Emergency EAL should be declared due due to a loss of 2 out of 3 fission product barriers with a potential loss of the third. Appropriate notifications shoul: be made per procedure 1903.10 "Emergency Action Level Response." A protective action recommendation to shelter within a two mile radius of the plant and five miles downwind should be made to the State of Arkansas. If not already accomplished as a result of the significance of the fire in the A-4 switchgear room, the Duty Emergency Coordinator (DEC) will activate the TSC and OSC staffs and prepare to assume full command and control of the emergency. Actions should immediately begin to determine whether or not conditions warrant a plant evacuation. In plant and offsite radiation teams should immediately be dispatched.
1025 hrs. (T+01:55)	Fire in the A-4 Switchgear Room is out.	Fire Team Leader should give assessment of damage to the SOS (message # 19) An assessment of damage and repair time estimates are available upon request from the Electrical Maintenance Superintendent (messages #20 and 21).

DATE: March 21, 1984

TIME	EVENT	ANTICIPATED RESPONSE
~1030 hrs. (T+02:00)	The Little Rock Control Center is notified of General Emergency.	The Little Rock Control Center (LRCC) when notified of the General Emergency should notify the Little Rock Corporate Official (LRCO) per Contingency Plan Procedure #3. The LRCO should in turn notify the Incident Response Director (IRD) [If the first individual contacted is not the IRD]. Once notified the IRD should contact ANO for further details and instruct that the ECC be fully activated. One of the initial steps by the Corporate portion of the Emergency Response Organization might be to prepare and issue a news release from the Corporate Office. The IRD should maintain radio contact with the TSC staff while he is enroute to the ECC. Upon his arrival he should have a good understanding of the situation and thus expedite his ability to assume overall command and control of the emergency.
1036 hrs. (T+02:06)	A RCP in "B" Loop is bumped.	The operators should take these actions in accordance with the "Inadequate Core Cooling" tab of procedure 1202.01. Contingency Message 10 is available to ensure this action is accomplished.

DATE: March 21, 1984

TIME	EVENT	ANTICIPATED RESPONSE
1041 hrs. (T+02:11)	One RCP is started in each loop.	Contingency Messae #11.
1042 hrs. (T+02:12)	The repairs to "B" Makeup Pump are completed.	"B" makeup pump should be started in order to put BWST water into the core. (Message #22 and Contingency Message #12).
1041 hrs. (T+02:12)	Turbine Building radiation levels reach plant evacuation criteria (ref. Appendix C) see message #23.	Whenever it is determined that radiation levels have reached or exceeded the limits specified in procedure 1903.30 "Plant Evacuation" a plant evacuation should be declared by the SOS. An announcement should be made over the PA system and the plant evacuation alarm should be sounded. The Emergency Evacuation Team should assist security in the evacuation of plant personnel. Accountability of personnel should be conducted following the plant evacuation. The TSC and OSC staffs do not evacuate hence increased monitoring of these areas should be done following the evacuation and should continue as long as TSC/OSC's are manned. The integrated doses of the individuals in these centers should be tracked.
1042 hrs. (T+02:12)	Offsite Monitoring Activities/Dose Assessment	Assessment of the leak outside of containment and its impact offsite should be conducted by the TSC dose assessment team and the offsite Radiation Team. Further protective action recommendations should be made utilizing procedure

DATE: March 21, 1984

TIME	EVENT	ANTICIPATED RESPONSE
		1904.07 "Protective Action Recommendations". The Gaseous Effluent Radiation Monitoring System (GERMS) will be utilized for dose assessment. "Canned" meteorology (actual data from past history files) will be utilized. Should the GERM system fail then release rate data and meteorological data will be provided from Appendix D and Appendix E. The dose assessment personnel will use procedures 1904.01 "Offsite Dose Projections - Germs Computer Graphics Method" or in the event that backup procedures are required, 1904.02 "Offsite Dose Projections - Pocket Computer Method".
1100 hrs. (T+02:30)	Various News Media/Public inquiries to be made to management personnel and switchboard operators. These Media and Public Inquiry messages are listed in Appendix G.	News Media inquiries to the plant should be referred to the Little Rock Media Center until the ECC Media Center is fully staffed.
1100 - 1300 (T+02:30)	On-going actions to power "B" Decay Heat Pump from the A-3 bus.	Operations, Electrical Maintenance and Engineering should be working together in order to restore "B" Decay Heat Pump to service. During this time, pressurizer level will ramp up slowly, OTSG level will ramp very slowly, the leak rate into the Reactor Auxiliary Building will be nearly constant and the offsite radiological releases will continue.

DATE: March 21, 1984

TIME	EVENT	ANTICIPATED RESPONSE
~1200 hrs. (T+03:30)	The ECC and Media Center should be operational.	The responsibility for issuing protective action recommendations should be turned over to the IRD once the ECC is fully operational. The ECC staff should also assume the responsibility for Dose Assessment and Offsite Notifications from the TSC staff.
1230 hrs. (T+04:00)	B-6 bus repaired, and available to be cross-fed from B-5 (Message #24).	Operators should energize B-6 from B-5.
1300 hrs. (T+04:30)	"B" Decay Heat Pump becomes operable from A-3 bus (Contingency Message #13).	A recovery team should enter the Reactor Auxiliary Building in order to line up "B" Decay Heat Suction to the RCS. The radiation levels in this part of the Reactor Auxiliary Building are such that an entry is feasible (see Appendix C).
	ECC evacuation may be considered based on plume direction (Contingency Message #14).	The recovery team should follow the guidelines in procedure 1903.33 "Recovery and Re-entry" and 1903.44 "Duties of the Emergency Recovery Team" (Message # 25). Consideration should be given for the Administration of Potassium Iodide to recovery team members per procedure 1903.34 "Administration of Potassium Iodide."
~1325 hrs. (T+04:55)	"B" Decay heat pump lineup complete. (Message #26).	

DATE: March 21, 1984

TIME	EVENT	ANTICIPATED RESPONSE
~1330 hrs. (T+05:00)	"B" Decay Heat Pump is started to recirculate the RCS. The leak in the Main Feedwater Line should stop.	The "B" makeup pump should be stopped and the RCS be allowed to drain down which will stop the main feedwater leak. From this point, the RCS level will drop, OTSG level will stabilize at the height of the break and the leak will stop when the RCS level is below the Main Feedwater Line Break elevation. The releases to the public will continue but decrease in magnitude until the break is capped and the primary coolant system boundary is re-established. Offsite Monitoring Field Team data should be coordinated between the Utility Field Teams and the State Field Teams.
1500 hrs. (T+06:30)	Time Break occurs in the scenario. All players will be informed that there is a time break in the scenario. They will be told to assume that it is exactly 24 hours later and will be given a new set of conditions (Message #27).	Actions should be taken to develop a general recovery action plan. The information in message 27 plus current plant conditions should be used to evaluate relaxation of protective action recommendations to the State.
1600 hrs. (T+07:30)	Downgrade only after the Main Feedwater Line is capped.	Discussions on downgrading the emergency should occur (Message #28).
1700 hrs.	Terminate exercise.	Message #29.

IV. EXERCISE MESSAGES AND CONTINGENCY MESSAGES

MESSAGES

Controlling messages will be presented to the designated exercise participant at the time specified in the event schedule. The controller should follow up with an explanation of the message and answer questions to ensure that the participant understands the message.

Two kinds of messages will be used:

- Exercise Message

  Messages used as a primary means of implementing scenario events by hypothesizing conditions. These will be supported by simulated data where necessary.

- Contingency Exercise Message

  Messages used at the discretion of the controllers in order to maintain the scenario schedule or continuity of simulated events. These messages will be on yellow paper for identification and are not to be issued unless absolutely necessary. The Lead Controller should be advised when a Contingency Message has been issued.

The use of the Safety Parameter Display System (SPDS) may possibly necessitate the use of a larger than normal number of Contingency Messages. The accident scenario and subsequent sequence of events have been programmed on to magnetic tape to allow the use of SPDS and will therefore respond independently of operator actions. Every possible effort will be made by the Control Room Controllers to ensure that Contingency Messages are not issued unless absolutely necessary. The SPDS system is unable to function as a simulator (i.e., react to operator actions), therefore, certain contingency messages may be necessary in order to keep the scenario on schedule. A "pause" feature has been programmed into the SPDS scenario tape enabling the Controller to halt the action (all data will then straight-line) until the command is given to continue the program. There may be other possible modes of recovery, however, if a Contingency Message must be issued in order to keep the scenario on schedule then the actions/decisions of the players will be noted on the Controller/Evaluator Observation Forms and the personnel will be instructed to follow the directions in the Contingency Message.

The primary factor in the decision to use SPDS was the greater degree realism that it introduces into the Exercise. Players will be able to react more readily to the trends and data plots made available through this system. Additionally, the data will be available simultaneously in all three emergency centers; the Control Room, Technical Support Center and the Emergency Control Center.

EXERCISE MESSAGE NO. 1

TO: Health Physics Tech

FROM: Medical Drill Controller

LOCATION: Train Bay

TIME: 0830 hours (T + 00:00)

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

You are an HP Tech providing health physics coverage for a worker transferring Unit 1 primary spent resin into resin cask in the Train Bay.

The worker has just been splashed with the resin/water mixture and has fallen from the resin cask. He is unconscious and bleeding from the head.

EXERCISE MESSAGE NO. 2

TO: Health Physics Tech

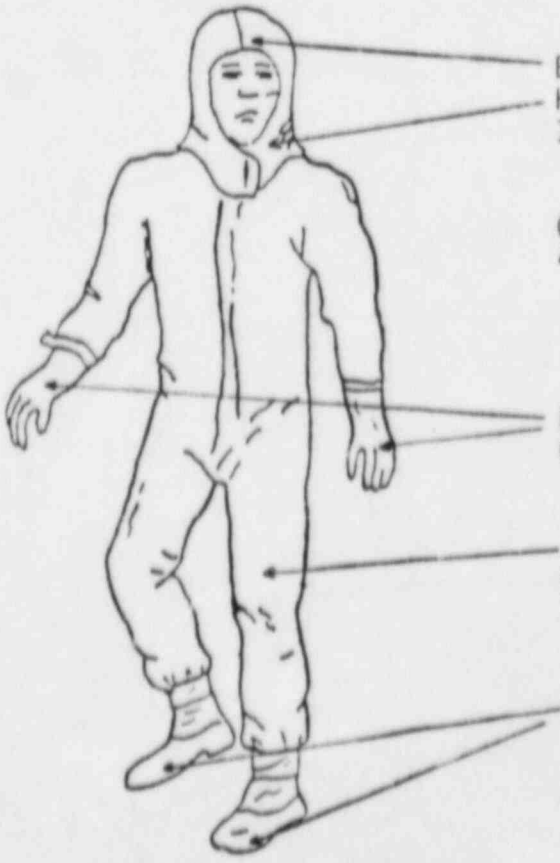
FROM: Medical Drill Controller

LOCATION: Train Bay

TIME: 0830 hours (T + 00:00)

MESSAGE: Initial survey measurements of injured person before any decon actions.

****
* THIS IS A DRILL *
* Do not initiate actions affecting normal plant conditions. *
****



Bleeding laceration to forehead.
Head & neck contamination
12,000 cpm or 2.5 mR/hr

General upper body contamination
45,000 cpm or 6 mR/hr

Hands contamination
Offscale (cpm); 10 mR/hr on contact

Suspected broken leg
General lower body contamination
30,000 cpm or 5 mR/hr

Feet contamination
20,000 cpm or 4 mR/hr

REX-84
EXERCISE MESSAGE NO. 3

TO: Medical Team Leader

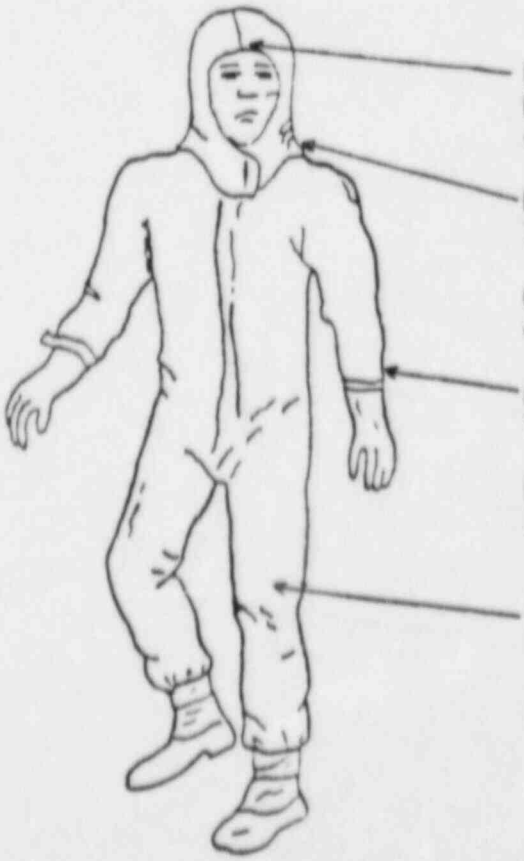
FROM: Medical Drill Controller

LOCATION: Train Bay

TIME: Upon medical team examination of injured person

MESSAGE:

****
* *
* THIS IS A DRILL *
* *
* Do not initiate actions affecting normal *
* plant conditions. *
* *
****



Laceration to fore head, bleeding, swollen

Head/neck 12,000 cpm

General upper body 45,000 cpm

Arm & wrist Swollen

Hands, offscale (cpm) 10 mR/hr contact

Suspected broken leg

Feet, 20,000 cpm

Vital Signs
Blood Pressure: 110/65

Pulse: 116

Respirations: 16/min

General Condition: Skin cold and clammy, bilateral pupils normal, semi-conscious

Injuries: Compound fracture of left leg with bleeding; left leg and foot swollen; left arm and wrist swollen, possible fracture; possible concussion from fall

REX-84
EXERCISE MESSAGE NO. 4

TO: Medical Team Leader

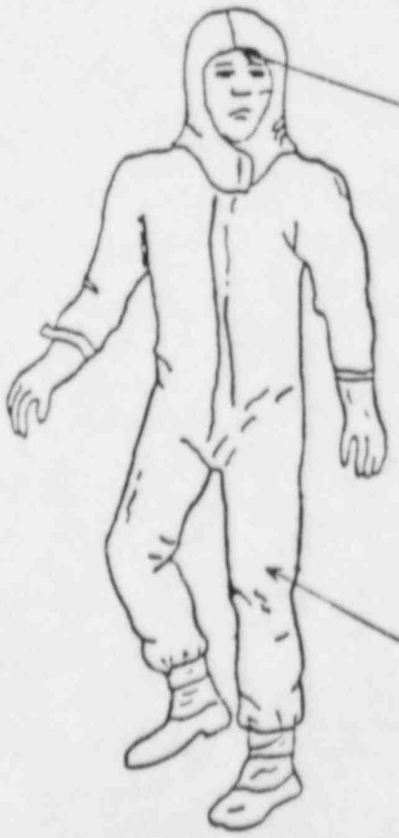
FROM: Medical Drill Controller

LOCATION: As appropriate

TIME: Upon removal of patient's protective clothing

MESSAGE:

****
* THIS IS A DRILL *
* Do not initiate actions affecting normal plant conditions. *
****



Head & Neck
2,000 cpm

Wound
150-200 cpm

General Upper Body
10,000 cpm
or 2 mR/hr

Hands
4 mR/hr or
20,000 cpm on
contact

General Lower Body
4,000 cpm

Compound Fracture
100-150 cpm

Feet
2,000 cpm

Vital Signs
Blood Pressure: 112/68

Pulse: 110

Respirations: 18/min and labored

General Condition: Pallor of the skin, cold/clammy; semiconscious; pupils normal

Injuries: Compound fracture of left leg evident; severely swollen left arm and wrist evident; minor laceration on forehead evident

For PC's removed

REX-84
EXERCISE MESSAGE NO. 5

TO: Medical Team Leader/Ambulance Attendant

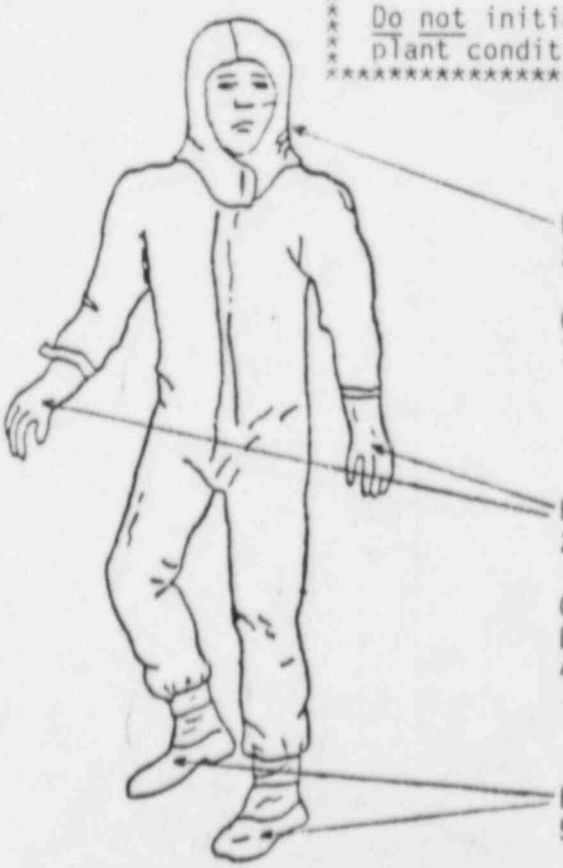
FROM: Medical Drill Controller

LOCATION: Ambulance

TIME: Upon transfer to ambulance, and/or in transit to hospital, and/or arrival at hospital

MESSAGE:

****
* THIS IS A DRILL *
* Do not initiate actions affecting normal plant conditions. *
****



Head & neck
20 cpm

General Upper Body
100 cpm

Hands
2,000 cpm

General Lower Body
40 cpm

Feet
5 cpm

(Contamination levels after removal of PC's and after decontamination efforts)

Vital Signs
Blood Pressure: 116/72

Pulse: 105

Respirations: 20/min

General Condition:
Becoming more alert; complaining of headache, left leg and arm pain; pallor of skin, cool but not as clammy

Injuries: Same

EXERCISE MESSAGE NO. 6

TO: ANO Medical Drill Controller

LOCATION: St. Mary's Emergency Room

TIME: At appropriate time

MESSAGE: The controller will give the following information to hospital staff when appropriate:

1. After emergency room staff have performed decontamination of the patient, radiation measurements of the patient now show no detectable activity.

2. After emergency room staff have examined and performed initial medical care, and when the emergency room physician decides to transfer the patient to surgery, the medical drill will be TERMINATED.

3. Announce that there will be no other simulated injured persons from ANO during the exercise today. The medical portion of the ANO exercise is finished.

REX-84
EXERCISE MESSAGE NO. 7

TO: Shift Operations Supervisor

FROM: Control Room Controller

LOCATION: Unit One Control Room

TIME: 0935 hours (T + 01:05)

MESSAGE:

****
* *
* THIS IS A DRILL *
* *
* Do not initiate actions affecting normal *
* plant conditions. *
* *
****

Instruct your Waste Control Operator to line up and pump the Dirty Waste Tanks to the Clean Waste Receiving Tanks. Also instruct him to bypass all filters.

EXERCISE MESSAGE NO. 8

TO: Waste Control Operator

FROM: Control Room Controller

LOCATION: Unit One Control Room

TIME: 0935 hours (T + 01:05)

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

Leave the Unit One Control Room and simulate lining up the Dirty Waste Drain Tanks to pump water to the Clean Waste Receiving Tanks.

NOTE: Due to ALARA considerations, it is not necessary to actually make an entrance to the Reactor Auxiliary Building.

At 1005, the simulated line-up will be completed and you will have started the Dirty Waste Drain Pumps. You hear the Main Steam Safeties lift (as a result of a Reactor Trip) and you immediately go to the Control Room to offer assistance.

Do not discuss/reveal this command message to any plant personnel and do not return to the Control Room prior to 1000 hours.

TO: Unit One Operator

FROM: Control Room Controller

LOCATION: C-463

TIME: 0950 hours (T + 01:20)

MESSAGE:

THIS IS A DRILL

Do not initiate actions affecting normal plant conditions.

The "Fire" alarm on K-12 (A-2) comes in.

EXERCISE MESSAGE NO. 10

TO: Unit One Operator

FROM: Control Room Controller

LOCATION: Unit One Control Room, Panel C-463

TIME: 0950 hours (T + 01:20) when panel checked.

MESSAGE:

****
* THIS IS A DRILL *
* Do not initiate actions affecting normal *
* plant conditions. *
****

Red alarm LED for "North ES Switchgear Room" is lit.

EXERCISE MESSAGE NO. 11

TO: Unit One Operator

FROM: Fire Drill Controller

LOCATION: Upon Arrival of Unit One Operator at the Scene of the Fire (A-4 Switchgear Room)

TIME: 0952 hours (T + 01:22)

MESSAGE:

****
* THIS IS A DRILL *
* Do not initiate actions affecting normal plant conditions. *
****

Upon opening the door to the A-4 Switchgear Room, the operator is driven back by smoke and is forced to immediately close the door. The smoke is too dense for any visual observation of equipment.

TO: Fire Brigade Leader/Fire Team Leader

FROM: Fire Drill Controller

LOCATION: Scene of the Fire (A-4 Switchgear Room)

TIME: When initial entry into room and attempts made to extinguish fire

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

A-4 switchgear engulfed in heavy smoke and giving off a lot of heat. All attempts to extinguish fire at this time fail. Fire continues to burn heavily.

CONTINGENCY MESSAGE NO. 1

TO: Fire Brigade Leader/Fire Team Leader

FROM: Fire Drill Controller

LOCATION: Scene of the Fire (Outside A-4 Switchgear Room)

TIME: As Appropriate (~0952 hrs.)

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

Fire out of control. Contact the Control Room and request assistance from the Russellville Fire Department.

EXERCISE MESSAGE NO. 13

TO: Unit One Operators

FROM: Control Room Controller

LOCATION: Unit One Control Room

TIME: 0955 hours (T + 01:25)

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

In addition to numerous annunciator alarms you observe the following:

1. Audible indication of main steam safeties lifting.
2. 61 control rods on P.I. panel have green lights.

TO: Control Room Operators

FROM: Control Room Controller

LOCATION: Control Room

TIME: 0955 hours (T + 01:25)

MESSAGE:

****
* THIS IS A DRILL *
* Do not initiate actions affecting normal plant conditions. *
****

The following annunciators are in alarm:

K01

- Diesel Gen. 1DG 2 Trip
- Diesel Gen. 1DG 2 Not Avail.
- Diesel Gen. 1DG 2 ACB Fail Autoclose
- 480 V MCC B55 -B56 Undervoltage
- 480 V ES Bus Undervoltage
- Load Center Trans. Bkr Trip
- DC Bus 1D2 Charger trouble
- Inverter 1Y22 Trouble
- Inverter 1Y24 Trouble
- Computer Inverter Trouble
- Inst. AC Panel Y2 Undervoltage

K02

- 500 KV Bkr 5114 Trip
- 500 KV Bkr 5118 Trip
- 6.9 KV Bus Feed Bkr Trip
- 6.9 KV Bus Auto Transfer
- 4.16 KV Bus Feed Bkr. Trip
- 4.16 KV Bus Auto Transfer
- 4.16 KV Bus 1A4 Lockout Relay Trip

K04

- Generator Lockout Trip

K05

- Turbine Trip
- EH System Control Power Off

K07

- Feedwater Reactor Limited
- Unit Master in Tracking
- Mn FW Pump 1P1A Turbine 1K2A Trip

K08

- RCP 1P32 Seal Water Flow Lo
- RCP's Total Seal Flow Lo

K09

- RCS Pressure Hi/Low

K10

- Service Water Pump Trip
- Reactor Trip
- CRD System Power Off
- React. Prot. System Trouble
- CRD Motor Power Off
- HPI Pump Trip

TO: Unit One Operator

FROM: Control Room Controller

LOCATION: Unit One Control Room

TIME: 0957 hours (T + 01:27)

MESSAGE:

****
* *
* THIS IS A DRILL *
* *
* Do not initiate actions affecting normal *
* plant conditions. *
* *
****

Simultaneously, with starting "B" Make-up Pump a loss of indication and control of the major portions of the safety related "green" division system has just occurred.

TO: Control Room Operators

FROM: Control Room Controller

LOCATION: Control Room

TIME: 0957 hours (T + 01:27)

MESSAGE:

****
THIS IS A DRILL

Do not initiate actions affecting normal plant conditions.
****

The following ADDITIONAL annunciators are in alarm:

K01

- Diesel Gen. 1DG 1 Trip
- Diesel Gen. 1DG 1 Not Avail.
- Diesel Gen. 1DG 1 ACB Fail Autoclose
- Inst. AC Panel Y1 Undervoltage
- Inverter 1Y11 Trouble
- Inverter 1Y13 Trouble

K02

- 4.16 KV Bus 1A3 Lockout Relay Trip

K07

- Steam Gen. 1E 24A Lo Level Limit
- Steam Gen. 1E 24B Lo Level Limit

CONTINGENCY MESSAGE NO. 2

TO: Unit One Operators

FROM: Control Room Control

LOCATION: Unit One Control Room

TIME: 0957 hours (T+0 1:27)

MESSAGE:

****
* THIS IS A DRILL *
* Do not initiate actions affecting normal *
* plant conditions. *
****

Attempt to start the "B" Make-Up Pump from the A-3 power supply.

CONTINGENCY MESSAGE NO. 3

TO: Shift Supervisor

FROM: Control Room Controller

LOCATION: Unit One Control Room

TIME: 1000 hours (T + 1:30)

MESSAGE:

****
* THIS IS A DRILL *
* Do not initiate actions affecting normal plant conditions. *
****

Direct operators to reset lockout of A-3 Bus and to re-energize A-3 Bus.

CONTINGENCY MESSAGE NO. 4

TO: Unit One Shift Supervisor

FROM: Control Room Controller

LOCATION: Unit One Control Room

TIME: 1008 hours (I + 01:38)

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

Request immediate support to restore the "B" Make-Up Pump from the A-3 Bus.

EXERCISE MESSAGE NO. 17

TO: Control Room Operators

FROM: Control Room Controller

LOCATION: Control Room

TIME: 1010 hours (T + 01:40)

MESSAGE:

****
* THIS IS A DRILL *
* Do not initiate actions affecting normal plant conditions. *
****

The following ADDITIONAL annunciators are in alarm:

K01

- Steam Gen. 1E 24A Level Lo
- Main Steam Press Hi Lo

K09

- Pressurizer Level Lo Lo
- Low Margin To Sat. Temp. Channel A/B
- RC Press. Lo Lo

K10

- "SLBIC" Trouble
- Ch 1 HP Injection Flow Hi Lo
- Ch 2 HP Injection Flow Hi Lo
- Pri Makeup Pump 1P36B ES Failure
- LP Injection Flow Loop B Hi Lo
- Pri Makeup Pump 1P36C ES Failure
- Lo Press Injection Ch 4
- Hi Press Injection Ch. 2

K11

- LP Injection Flow Loop A Hi Lo
- Lo Pressure Injection Ch 3
- Hi Pressure Injection Ch 1
- Pri Makeup Pump 1P36A ES Failure

K12

- EFW Pump P7A Disch. Press. Hi Lo
- EFW System Actuation

TO: S.A.A.

FROM: Control Room Controller

LOCATION: Unit One Control Room

TIME: 1010 hours (T + 01:40)

MESSAGE:

THIS IS A DRILL

Do not initiate actions affecting normal plant conditions.

A phone call reports "load roaring noise and steam filling the 335' level of the reactor auxiliary building." Caller was very excited and did not give his name.

CONTINGENCY MESSAGE NO. 5

TO: Unit One Operators

FROM: Control Room Controller

LOCATION: Control Room

TIME: 1011 hours (T + 01:41)

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

Stop all RCP's when margin-to-saturation is lost.

CONTINGENCY MESSAGE NO. 6

TO: Unit One Operators

FROM: Control Room Controller

LOCATION: Unit One Control Room

TIME: 1012 hours (T + 01:42)

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

Feed the "B" OTSG to 95% on the operate range level indication using the EFW system. (A-4 is deenergized at this time).

CONTINGENCY MESSAGE NO. 7

TO: Unit One Operators

FROM: Control Room Controller

LOCATION: Unit One Control Room

TIME: 1010 - 1036 hours (T + 01:40)

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

Do NOT open the ERV until a make-up pump is operable.

CONTINGENCY MESSAGE NO. 8

TO: Unit One Operators

FROM: Control Room Controller

LOCATION: Unit One Control Room

TIME: 1010 - 1036 hours (T + 01:40)

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

Do not start any RCP's unless the criteria of 1202.01, Inadequate Core Cooling Tab are met.

CONTINGENCY MESSAGE NO. 9

TO: Unit One Operators

FROM: Control Room Controller

LOCATION: Unit One Control Room

TIME: 1010 - 1036 hours (T + 01:40)

MESSAGE:

****
THIS IS A DRILL

Do not initiate actions affecting normal plant conditions.
****

Do NOT depressurize the "B" OTSG.

EXERCISE MESSAGE NO. 19

TO: Fire Brigade Leader/Fire Team Leader

FROM: Controller

LOCATION: Scene of the Fire (Outside A-4 Switchgear Room)

TIME: ~1025 hours (T + 01:55)

MESSAGE:

****
THIS IS A DRILL

Do not initiate actions affecting normal plant conditions.
****

Attempts to extinquish fire are successful.

Damage assessment indicates A-4, and inverters are completely destroyed. B-6 has minor superficial damage.

MCC-55 and 56 untouched.

EXERCISE MESSAGE NO. 20

TO: Electrical Maintenance Superintendent

FROM: TSC Controller (By telephone if necessary)

LOCATION: Electrical Maintenance Superintendent's Office

TIME: As appropriate (~1045 hours)

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

Report from electricians is that A-4 bus is not recoverable. However, B-6 bus could be checked out (to verify that no grounds exist) within 2-4 hours.

EXERCISE MESSAGE NO. 21

TO: Electrical Maintenance Superintendent

FROM: TSC Controller (By telephone, if necessary)

LOCATION: Electrical Maintenance Superintendent's Office

TIME: As appropriate (~1045 hours)

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

Report from electricians is that, the work required to power the "B" decay heat pump from the "A" Decay Heat Pump breaker will take about 3 to 4 hours to complete.

CONTINGENCY MESSAGE NO. 10

TO: Unit One Operators

FROM: Control Room Controller

LOCATION: Unit One Control Room

TIME: 1036 hours (T + 02:06)

MESSAGE:

THIS IS A DRILL

Do not initiate actions affecting normal plant conditions.

Bump one RCP in the "B" loop.

CONTINGENCY MESSAGE NO. 11

TO: Unit One Operators

FROM: Control Room Controller

LOCATION: Unit One Control Room

TIME: 1041 hours (T + 02:11)

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

Start one RCP in each loop.

EXERCISE MESSAGE NO. 22

TO: Unit One Operators

FROM: Electrical Maintenance

LOCATION: Unit One Control Room

TIME: 1042 hours (T + 02:12)

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

Efforts to restore the "B" Make-up Pump from the A-3 bus is complete. "B" Make-up Pump is now operable.

CONTINGENCY MESSAGE NO. 12

TO: Unit One Operators

FROM: Control Room Controller

LOCATION: Unit One Control Room

TIME: 1042 hours (T + 02:12)

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

Open the ERV and start the "B" Make-Up Pump.

EXERCISE MESSAGE NO. 23

TO: Unit One Operators

FROM: Control Room Controller

LOCATION: Unit One Control Room

TIME: When decision is made to declare a Plant Evacuation

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

If a Plant Evacuation is necessary do not simulate any actions.

All plant personnel using the Main Guard House should evacuate to the South Parking Lot. All plant personnel using the Secondary Guard House should evacuate to the West Parking Lot. Do not evacuate to the ECC.

TO: Electrical Maintenance Superintendent

FROM: TSC Controller (By telephone if necessary)

LOCATION: Electrical Maintenance Superintendent's Office

TIME: 1230 hours (T + 04:00)

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

B6 repairs complete.

CONTINGENCY MESSAGE NO. 13

TO: Electrical Maintenance Superintendent

FROM: TSC Controller (By telephone if necessary)

LOCATION: Electrical Maintenance Superintendent's Office

TIME: 1300 hours (T + 04:30)

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

"B" Decay Heat Pump may now be powered from the A-3 Bus.

CONTINGENCY MESSAGE NO. 14

TO: Incident Response Director

FROM: ECC Controller

LOCATION: ECC

TIME: As Deemed Necessary

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

If a decision has been made to evacuate the ECC (or any portion of it), simulate actions only. Make ECC staff and press aware of what actions would occur during an ECC evacuation.

Since ECC evacuation was not an objective of this year's exercise, maintain ECC operations for the duration of this exercise at the Training Center.

TO: Recovery Team Leader

FROM: Onsite Radiation Team Controller

LOCATION: Recovery Team Assembly Area

TIME: When recovery team is formed (~1300 hours)

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

DO NOT simulate the re-entry. Enter the Reactor Auxiliary Building, but due to ALARA considerations DO NOT make an entry into the "B" Decay Heat Vault. Terminate the re-entry at the door to the "B" Decay Heat Vault.

EXERCISE MESSAGE NO. 26

TO: Re-entry Team

FROM: Onsite Radiation Team Controller

LOCATION: At the door to the "B" Decay Heat Vault

TIME: ~1325 hours (T + 04:55)

MESSAGE:

THIS IS A DRILL

Do not initiate actions affecting normal plant conditions.

Lineup for "B" decay heat pump suction is complete.

EXERCISE MESSAGE NO. 27

TO: Shift OPS Supv./Recovery Manager/IRD

FROM: Lead Controller

LOCATION: Control Room/TSC/ECC

TIME: ~1500 hours (T + 06:30)

MESSAGE:

****
* *
* THIS IS A DRILL *
* *
* Do not initiate actions affecting normal *
* plant conditions. *
* *
****

For approximately the next 1½ hours carry out actions to downgrade (if appropriate) and to demonstrate recovery and re-entry capabilities. Assume:

1. It is now 24-hours later. (~1500 March 22, 1984)
2. The radiation levels in the Reactor Auxiliary Building have been reduced to acceptable levels such that an entry could be made.
3. All protective action recommendations initially issued are still in effect.

PLANT CONDITIONS:

- Plant is stable
- "B" decay heat system is in operation
- RCS loops are drained down to the level of the RCPs
- RCS temp. is 80°F
- RCS pressure is Ø psig
- "A" OTSG pressure is Ø
- "A" OTSG level is 240"

TO: Offsite Monitoring Supervisor

FROM: ECC Controller

LOCATION: ECC

TIME: 1600 hours (T + 07:50)

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

All field monitoring results now indicate background levels.

EXERCISE MESSAGE NO. 29

TO: Initial Response Director/Recovery Manager

FROM: Lead Controller

LOCATION: ECC/TSC

TIME: 1700 hours (T +09:30)

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

The exercise is now terminated. Announce over PA systems to advise all personnel.

V. APPENDICES

A P P E N D I X A

DISABLED COMPONENTS

- Service Water P4C
- Service Water P4B
- RB Spray P35B
- Decay Heat P34B
- MU Pump P36C
- MU Pump P36B

B-6 480 VOLT LOAD CENTER

- RB Cooler VSFM-1C
- Control Room Chiller VCH-2B
- CRD 480 Supply
- Switchyard Supply
- RB Cooler VSFM-1D

DISABLED MCC-55 AND 56 COMPONENTS

- VUC-13B Evap. Blower
- VUC-13A Evap. Blower
- VE1B Cond. Unit
- VE1A Cond. Unit
- Spent Fuel Pool Circ. Pump PM-40B
- RC Pump Seals Inlet Iso. Valve CV-1206
- Comp. Inverter Y-26
- Emer. FW Pumps Crossover Valve CV-2814
- CV-3809, SW to E-39B and VUC-7B
- Boric Acid Pump PM-39A
- ES Switchgear Rm. Unit Cooler VUCM-2A
- CV-2420 "B" Core Flood Vent Valve
- ES Switchgear Room Unit Cooler VUCM-2C
- CV-2419 "B" Core Flood Discharge Valve
- Boric Acid Pump PM-39B
- Primary Makeup Iso. Valve CV-1234
- "A" Core Flood Vent Valve
- Instrument Air Dryer, M-1
- Battery Charger, D05
- Turb. Gen. Bearing Lift Pump, PM-76
- Turb. Gen. Emerg. Bearing Oil Pump PM-20
- RCP Backup Back Stop Lube Pump PM-82A
- RCP Backup Back Stop Lube Pump PM-82B
- RCP Backup Back Stop Lube Pump PM-82C
- RCP Backup Back Stop Lube Pump PM-82D

DISABLED MCC-55 AND 56 COMPONENTS

- Turbine Generator Turning Gear, KM-6
- Control Room Air Emergency Filter Fan VSFM-9
- RB Elevator, MM-6
- Control Room Air Emergency Cooler VUCM-9
- Computer Inverter Transfer Switch Y-25
- Computer Inverter Y-25
- Auxiliary Building Lighting Panel 1PC
- Lighting Transformer XL-7
- Primary Makeup Pump Aux. LO Pump PM-64B
- Primary Makeup Pump Rm. Cooler VUCM-7B
- DH Removal Iso. Valve CV-1404
- Service Water Pumps, Discharge to ACW Loop CV-3643
- CRD Cooling Water Iso. Valve CV-2235
- CV-2415 "A" Core Flood Discharge Valve
- Prz. Heater RUB-14
- Control Room Emergency Standby Air Filter Fan 2VSF-9

MOTOR CONTROL CENTER B61

- RCP Seal Return Iso. Valve CV-1274
- Makeup Letdown Cooler Iso. CV-1221
- DH Loop B to RCS Iso. CV-1400
- RB Sump Iso. CV-1415
- BWST Outlet Block CV-1408
- RB Sump Iso. CV-1406
- RB Spray Loop B Discharge Iso. CV-2400
- MS "B" Atmos. Dump Iso. Valve, CV-2619
- CFT, T2B, Bleed Valve, CV-2418
- Emergency Feedwater Pump P-7A Condensate Supply, CV-2802
- Piping Heat Tracing
- Emer. FW Pump P-7A SW Valve, CV-2806
- SW Loop II Supply to ICW Coolers CV-3811
- Decay Heat Cooler E-35A SW Supply CV-3821
- SW Pumps Disch. to SW Loop II CV-3641
- Emer. FW Pumps SW Valves CV-3851
- Letdown Coolers ICW Return Iso. CV-2215
- CRD/RCP ICW Return Iso. CV-2221
- NAOH Tank Disch. Valve CV-1617
- Primary MU Pump Recirc. Valve CV-1300
- DG2 Soak Back Pump P-106B3
- VCH-4A Compressor
- RB SW Cooling Coil Inlet Iso. Valve CV-3813
- Instrument Air Compressor CM-2B

MOTOR CONTROL CENTER B61

- Diesel Generator #2 Air Compressor CM-4B2
- Diesel Generator #2 Air Compressor CM-4B1
- Diesel Generator #2 Oil Circ. Pump PM-106B2
- Diesel Generator Fuel Transfer Pump PM-16B
- Primary Makeup Pump Auxiliary Lube Oil Pump PM-64C
- Diesel Generator #2 Water Heater
- Inverter Y22
- Diesel Generator Room Exh. 123 Fan VEFM-24C
- Diesel Generator Room Exh. Fan VEFM-24D
- Steam Generator E-24B FW Iso. Valve CV-2630
- Relay Room Unit Cooler VUCM-4B
- Decay Heat Removal Unit Cooler VUCM-1C
- Decay Heat Removal Unit Cooler VUCM-1D
- Emergency FW Auto. Recirc. CV-2816
- "B" Battery Room Cooler VUC-14A
- North Elec. Penet. Room Cooler VUC-14B
- Steam Gen. E-24B, EFW Valve CV-2620
- ERV Block Valve, CV-1000
- Battery Charger D04
- Instrument AC Transformer X6B
- Pzr. Proportional Htr's RUB-38 and RUB-39
- Inverter Y24
- Battery Room Exh. Fan VEFM-34
- HP Injection Loop B Iso. Valve CV-1227
- HP Injection Loop B Iso. Valve CV-1228

MOTOR CONTROL CENTER B62

- RB Backdraft Damp CV-7472
- DH Room Cooler, VUC-1D, SW Inlet CV-3800
- CV-3810, SW to E-39C & VUC-7C
- Stack Rad. Monitor RE-7400
- Steam Gen. E24A Sampling Iso. CV-1820
- RB Bypass Damper SV-7412
- Service Water System Crossover Valve CV-3640
- Service Water System Crossover Valve CV-3642
- D.G. Jacket Cooler E28B SW Supp. CV-3807
- DH Room Cooler, VUC-1C, SW Inlet CV-3802
- Primary MU Pump Rm. Unit Cooler VUCM-7C
- Decay Heat System Rad. Monitor RE-3810
- Service Water System Radiation Monitor RE-3815
- Emergency Feedwater Pump Turbine Steam Supp. CV-2617
- Sluice Gate SG 6
- Rx. Bldg. Fire Water Iso. Valve CV-5611
- Steam Generator E24B Sampling Iso. CV-1826
- Switch Gear Room Cooler VUC-2D
- Sluice Gate SG-7
- RB Bypass Damper SV-7413
- Sluice Gate SG-2
- OTSG, E-24A, Main FW Block Valve, CV-2625
- OTSG, E-24B, Low Load Block Valve, CV-2674
- Decay Heat Return Iso. Valve CV-1410

MOTOR CONTROL CENTER B63

- Standby HØ Purge Heater VEH-6B
- Penetration Room Exhaust Fan VEF-38B
- CV-2133, Penetration Room Filter Discharge
- CV-2126, Penetration Room Filter Discharge
- HØ Purge Supply Fan VSFM-30B
- HØ Purge Exh. Fan VEF-37B
- CV-7445, HØ Purge Supply Iso.
- CV-7444, HØ Purge Supply Iso.
- CV-7449, HØ Purge Supply Iso.
- CV-7452, VEF-37B Suction
- CV-7448, HØ Purge Exh. Iso.
- Emergency FW Pump Turbine Steam Supply CV-2666
- CV-7455, R.B. Air Part. Monitor Exh.
- Sluice Gate SG-4
- OTSG E24A Emer. FW Bypass, CV-2627
- Unit 2 Side of Cold Sample Room MCC-B-64

Y02 120V VITAL AC

- PA and Plant Intercom System GAI
- Paging and Pax Telephone System
- Main Trans. ØC and Spare Gas Monitor
- Signal Converter Power "C23"
- Pressurizer Heaters Control "C04"
- Signal Converter Power Supplies "C27"
- MU Filter Condensate Water Valve "C04"
- ICW Pump Valves "C30"
- ICW Pump Auxiliary Control "C09"
- Sodium Analyzer Panel "C302"
- Main FWP Trip Control "C02"
- Sodium Analyzer Panel "C302"
- Main FWP Trip Control "C02"
- Control Power in "C26"
- Condenser Steam Dump Valves "C02"
- Air Particulate Monitor "C360"
- Main FW Pump P1A and P1B Suction and Discharge Control Circuit "C03" and "TB440"

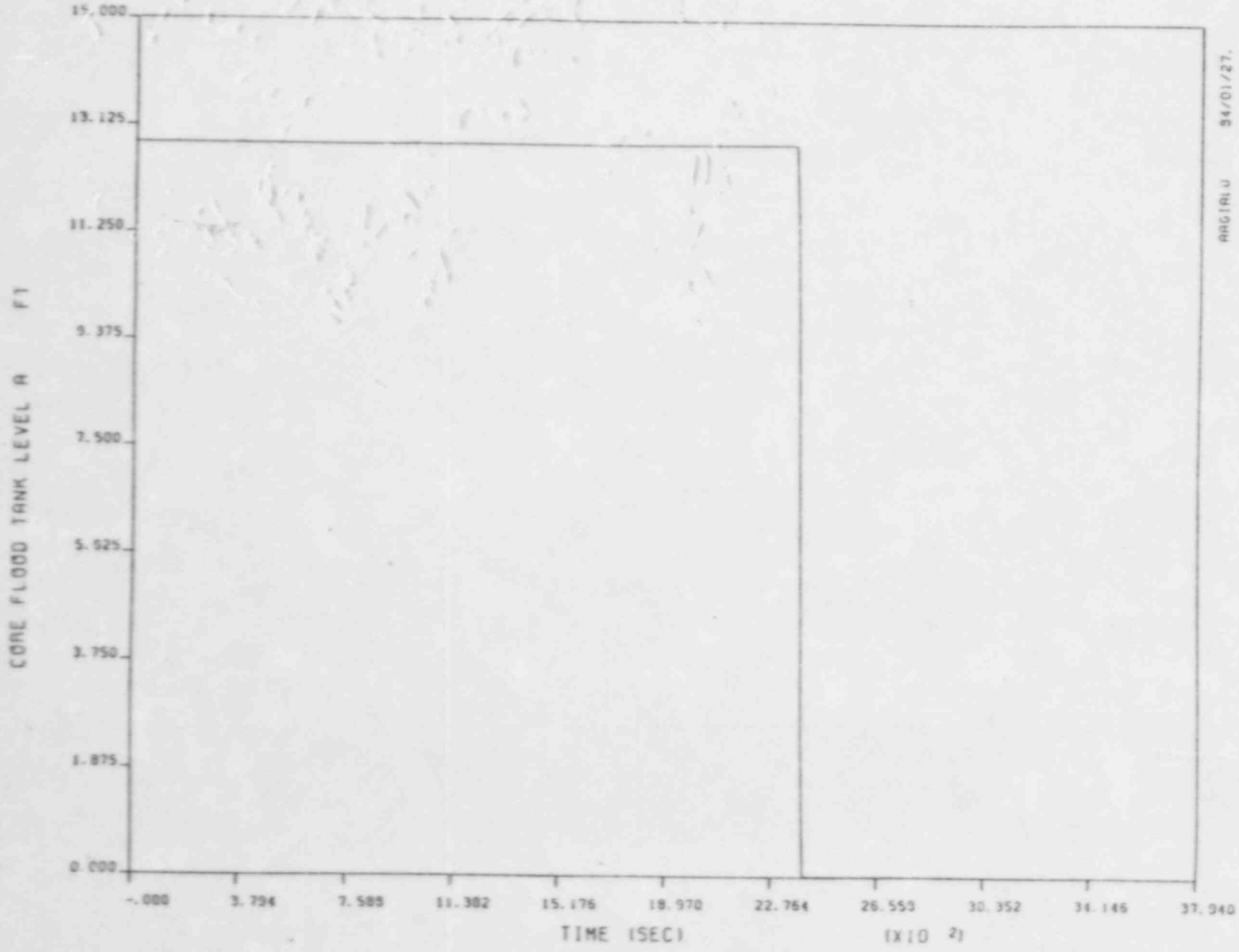
Y02 120V VITAL AC

- Evacuation Warning System "C25
- Emergency Feedwater Supply Auto Transfer "C12"
- Evacuation Warning System "C25"
- RCP, P-32C & D Speed Control Panels "C158" and "C159"
- Radwaste Annunciator "C-112"
- ICW Makeup SV's "C-30" and "T40A" Auxiliary Relays
- Radwaste Panel Annunciator "C-113"
- Main and FW Turbine Auxiliary Devices "C-21"
- Radwaste Panel Annunciator "C-115
- Dampers for D.G. Exh. Fans VEF-24C and D
- ICS Fan Bus "C-46"
- SV-3805, "C-19"
- Non-Nuclear Instr. Back-up Supply "C-47"
- To Solor Trans. Bypass Switch XY-234 (To ICS Y Bus)
- C-499 RB SW Flow and C-502 DH Check Valve Pressure
- Mini Computer
- Control Room and Relay Room Emergency Control Air Isolation Valves "C-141"
- Mini Computer
- T/C Signal Converter "T08A"
- Rad. Monitoring Panel "C-24" and "C-25"

A P P E N D I X B

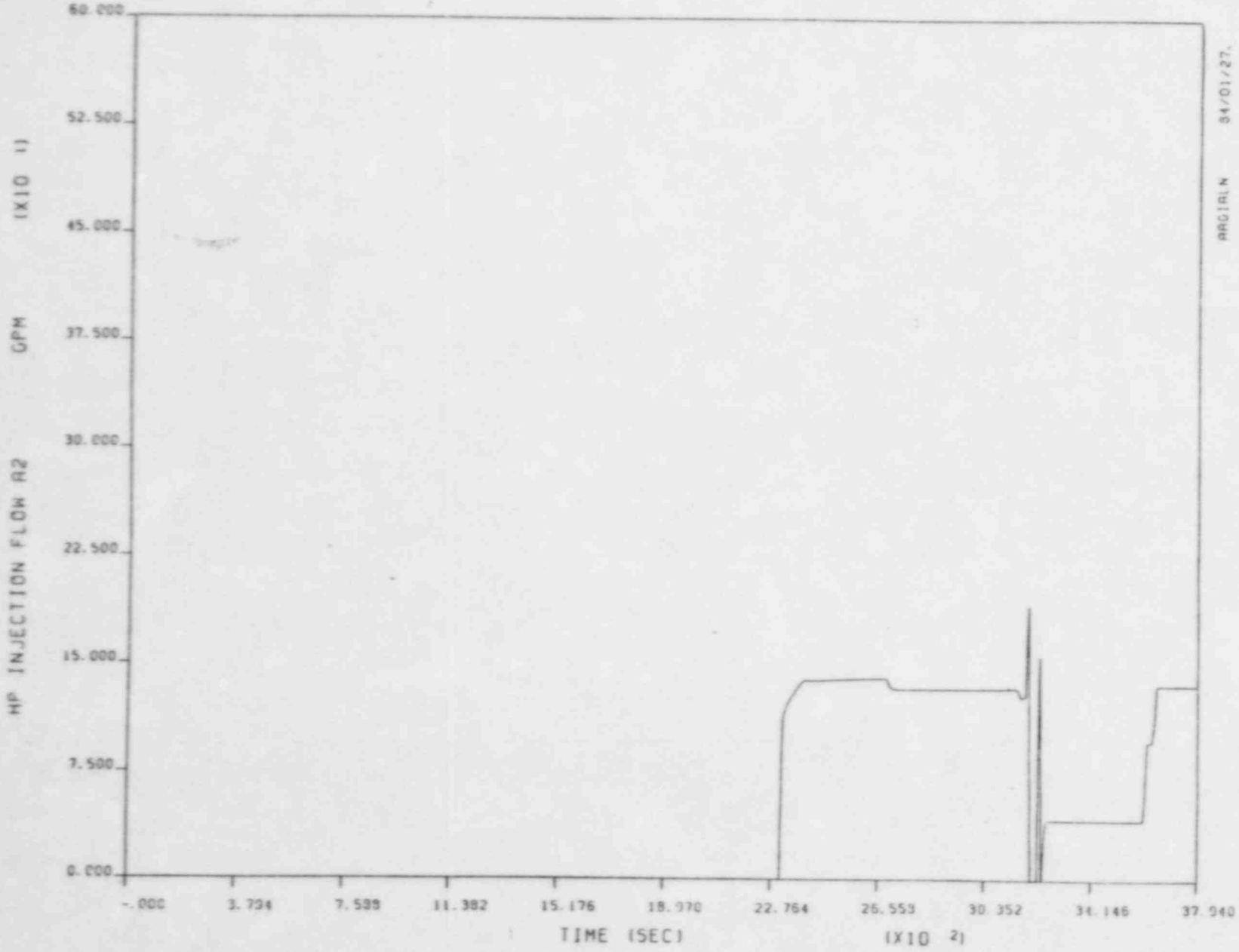
PLANT PARAMETER DATA

The following data is information for key plant parameters obtained from a simulator run of the ANO scenario. This data was utilized to develop ANO Unit 1 scenario plant parameters to obtain near realistic time frames and close coordination of transient events. SPDS data has been developed from this information for actual display and player utilization for the exercise.



PLOT NUMBER -

TUBE LEAK - 128 LB/SEC WITH ICC



PLOT NUMBER - 1

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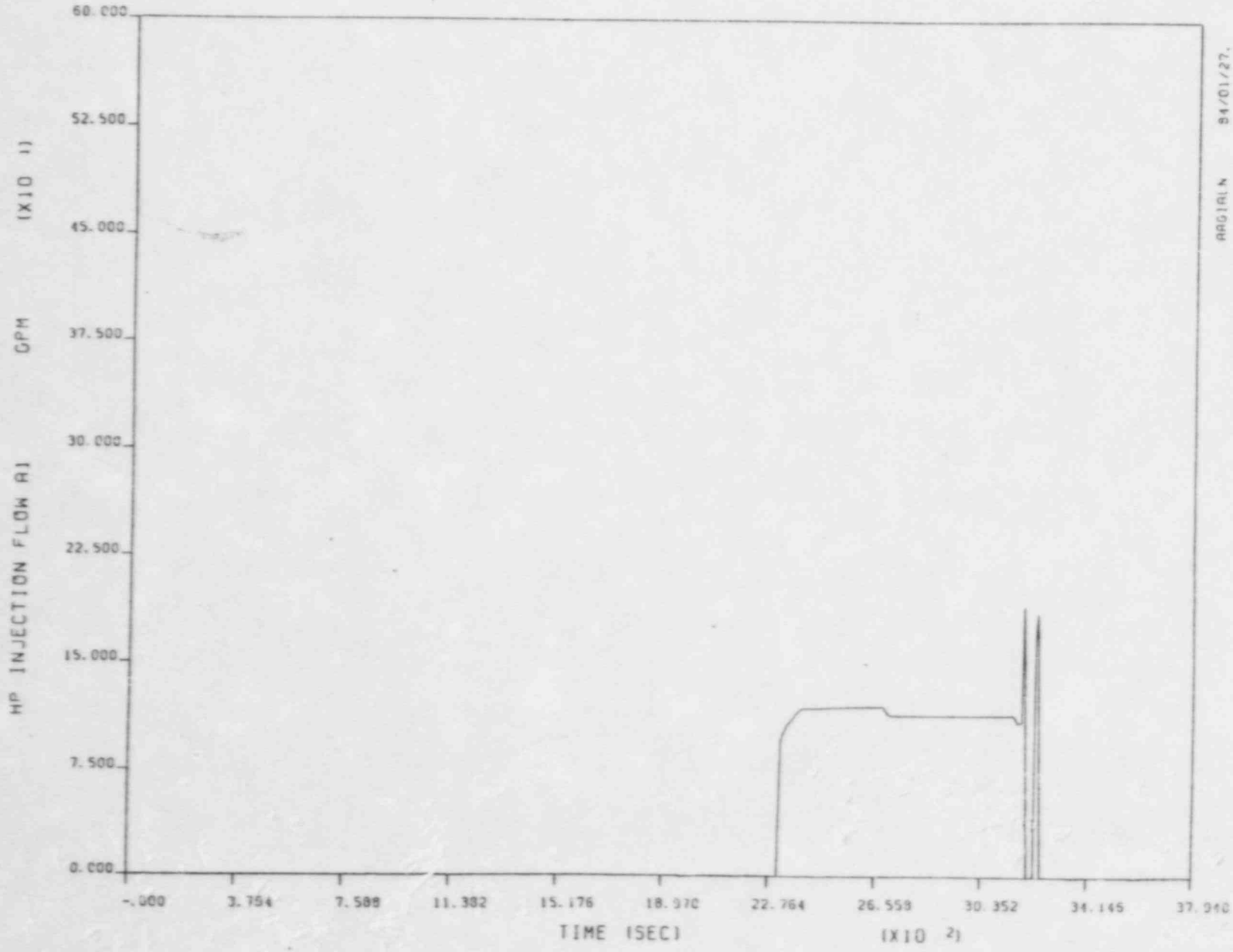

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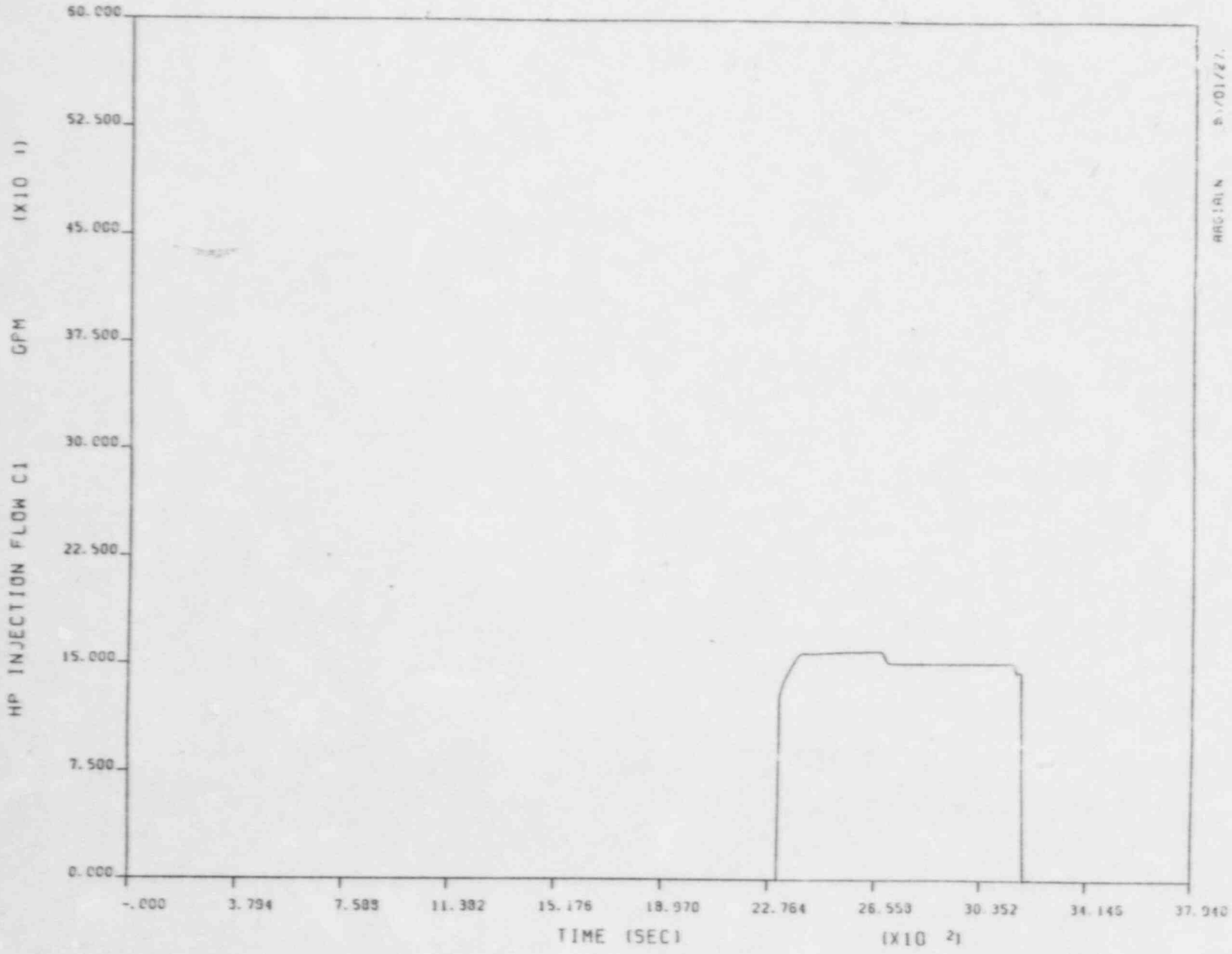

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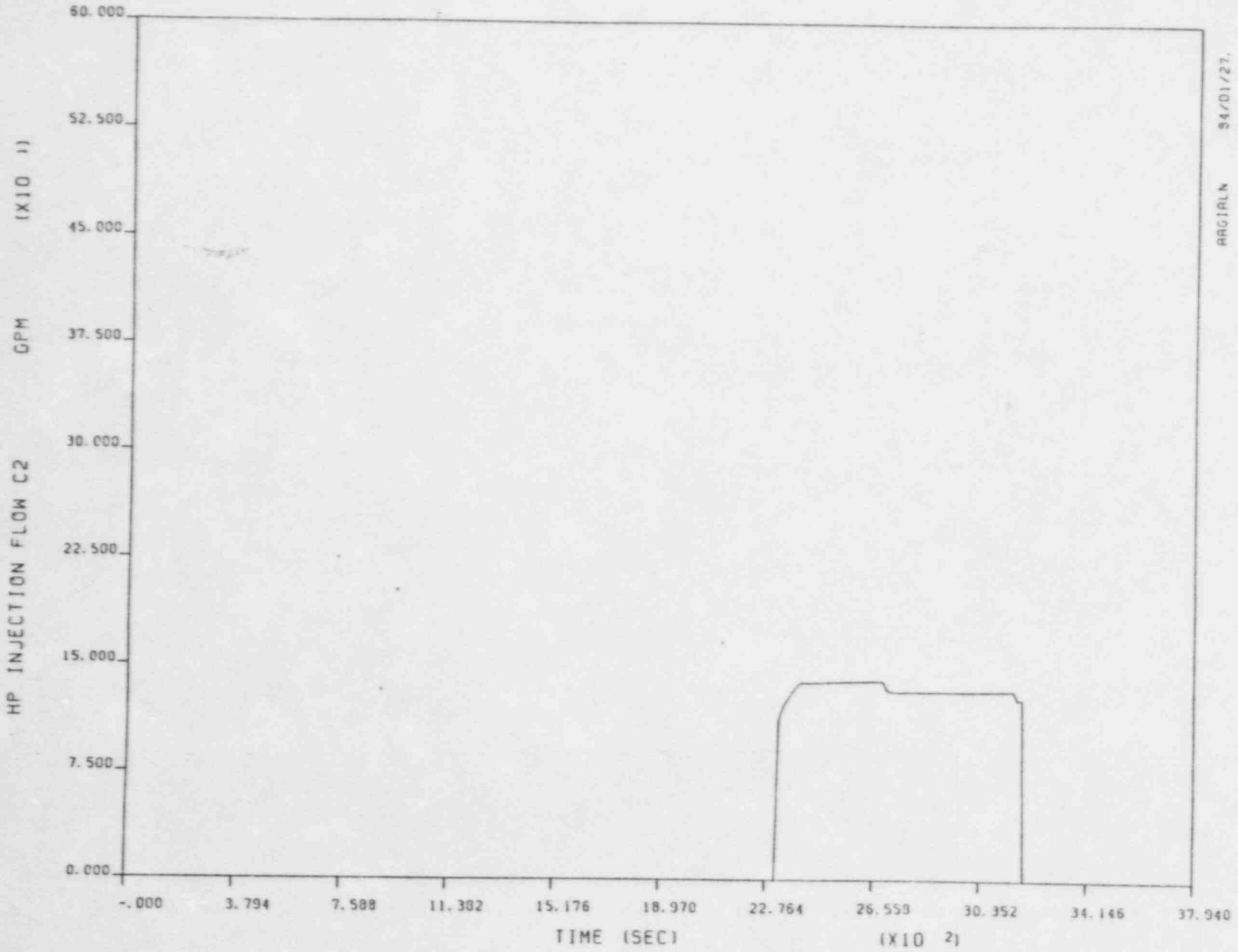

PLOT NUMBER - 1E

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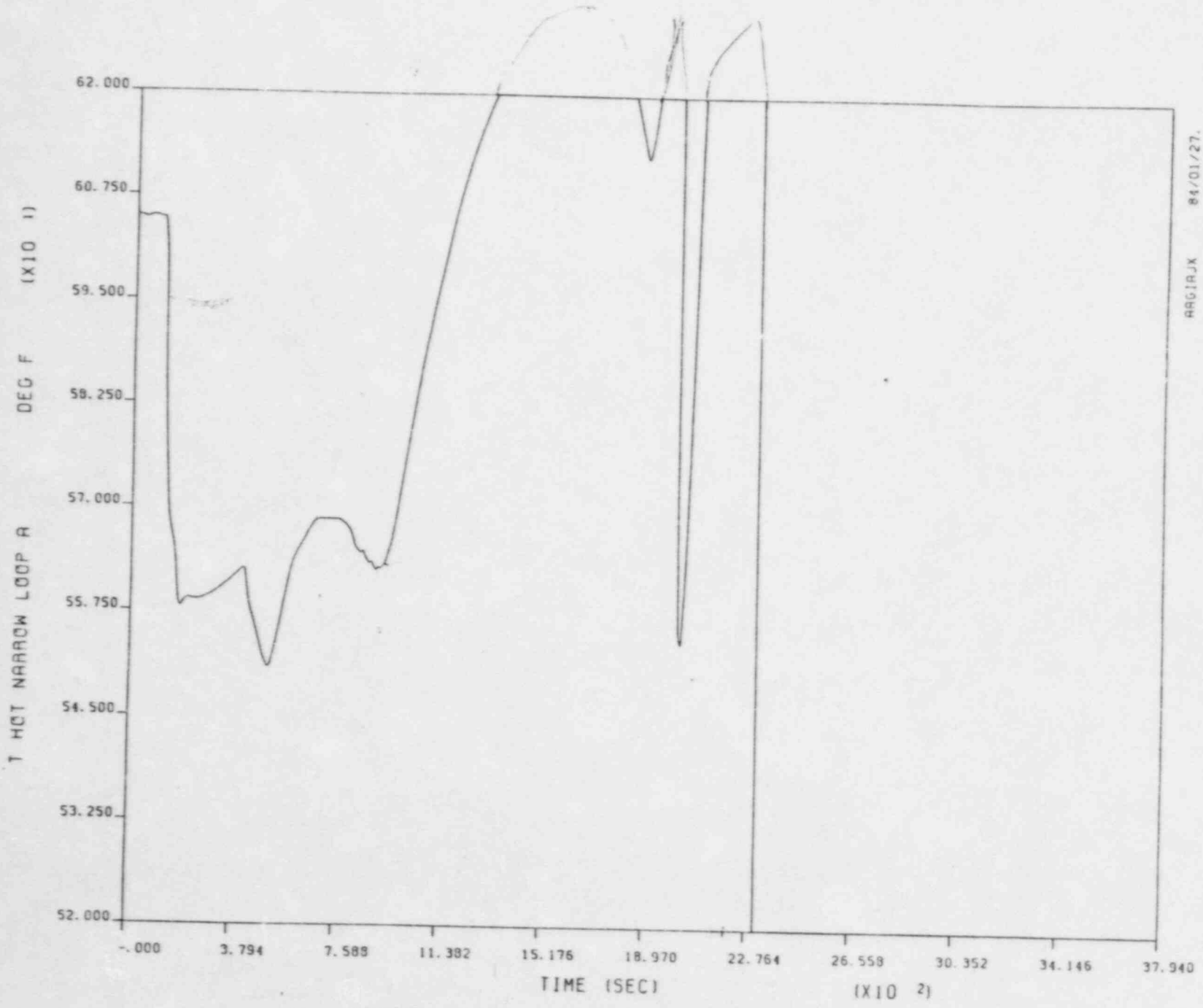

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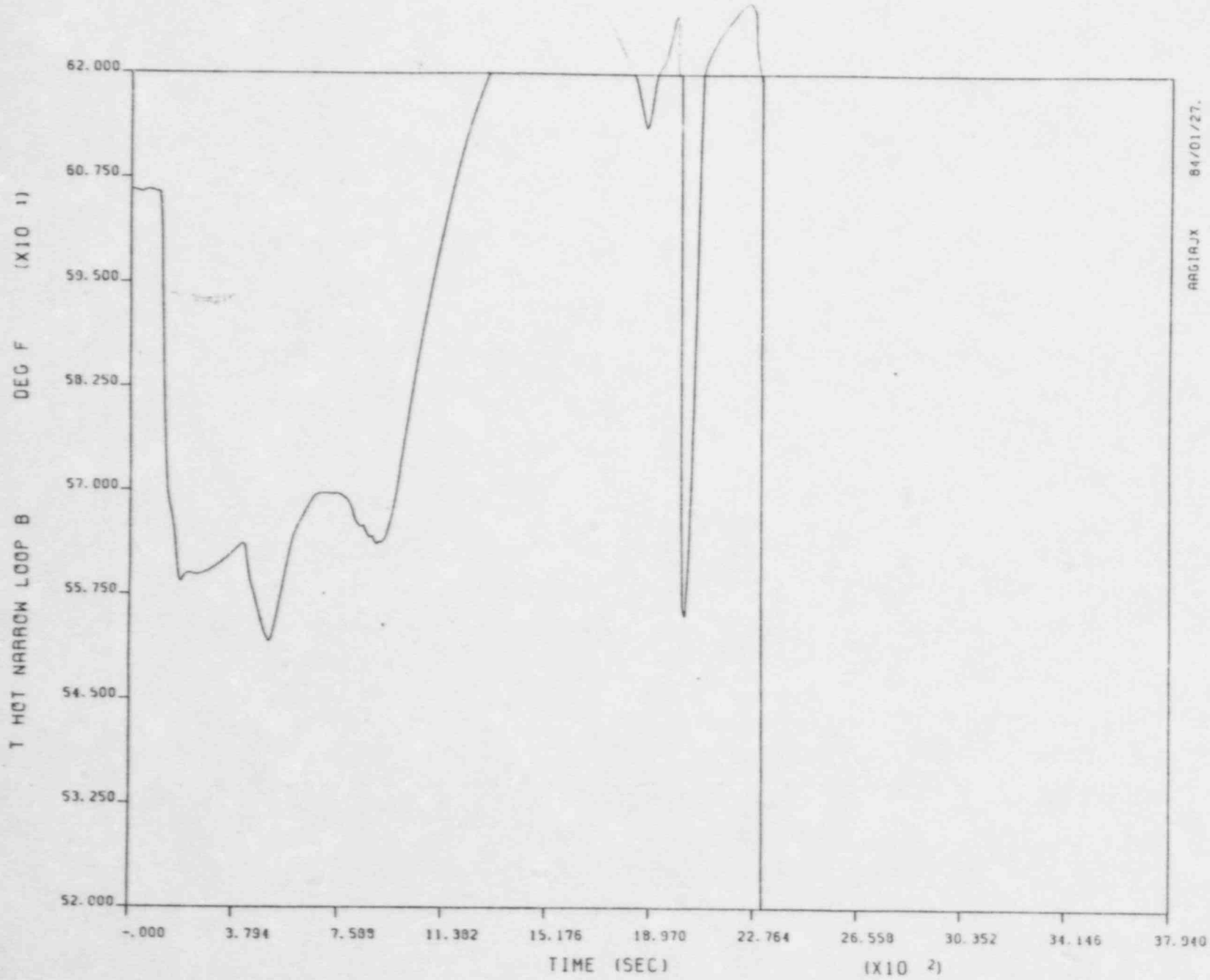

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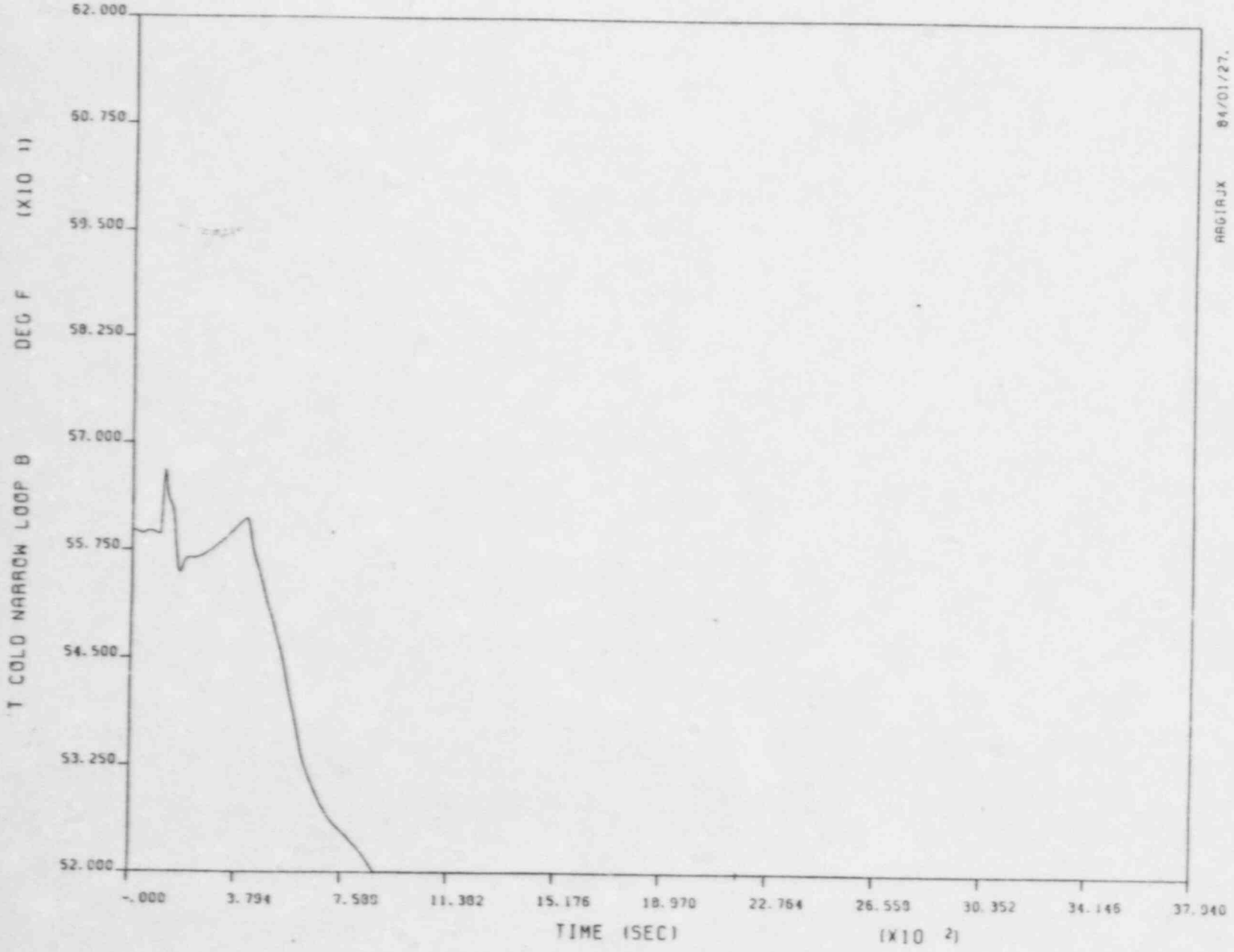

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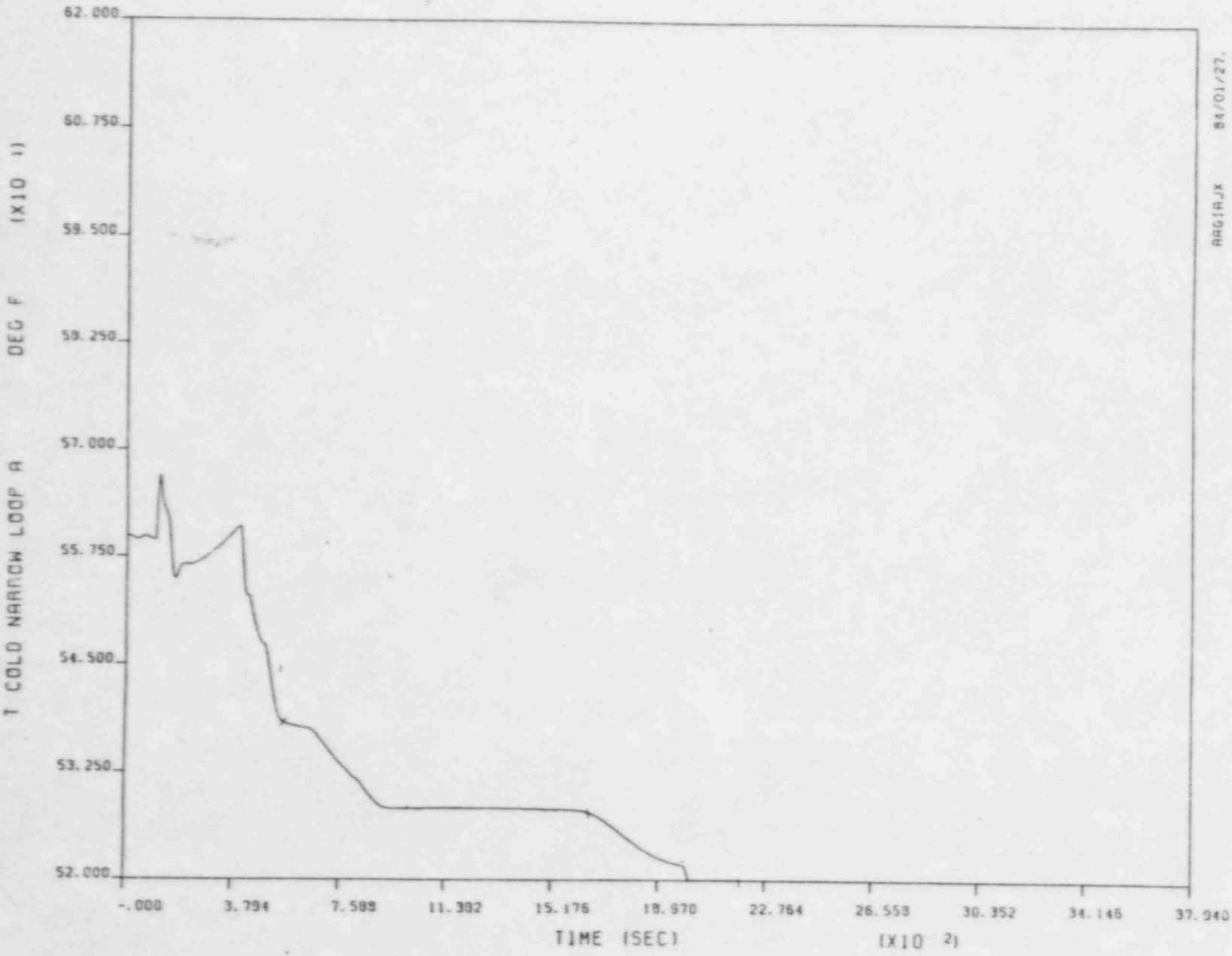

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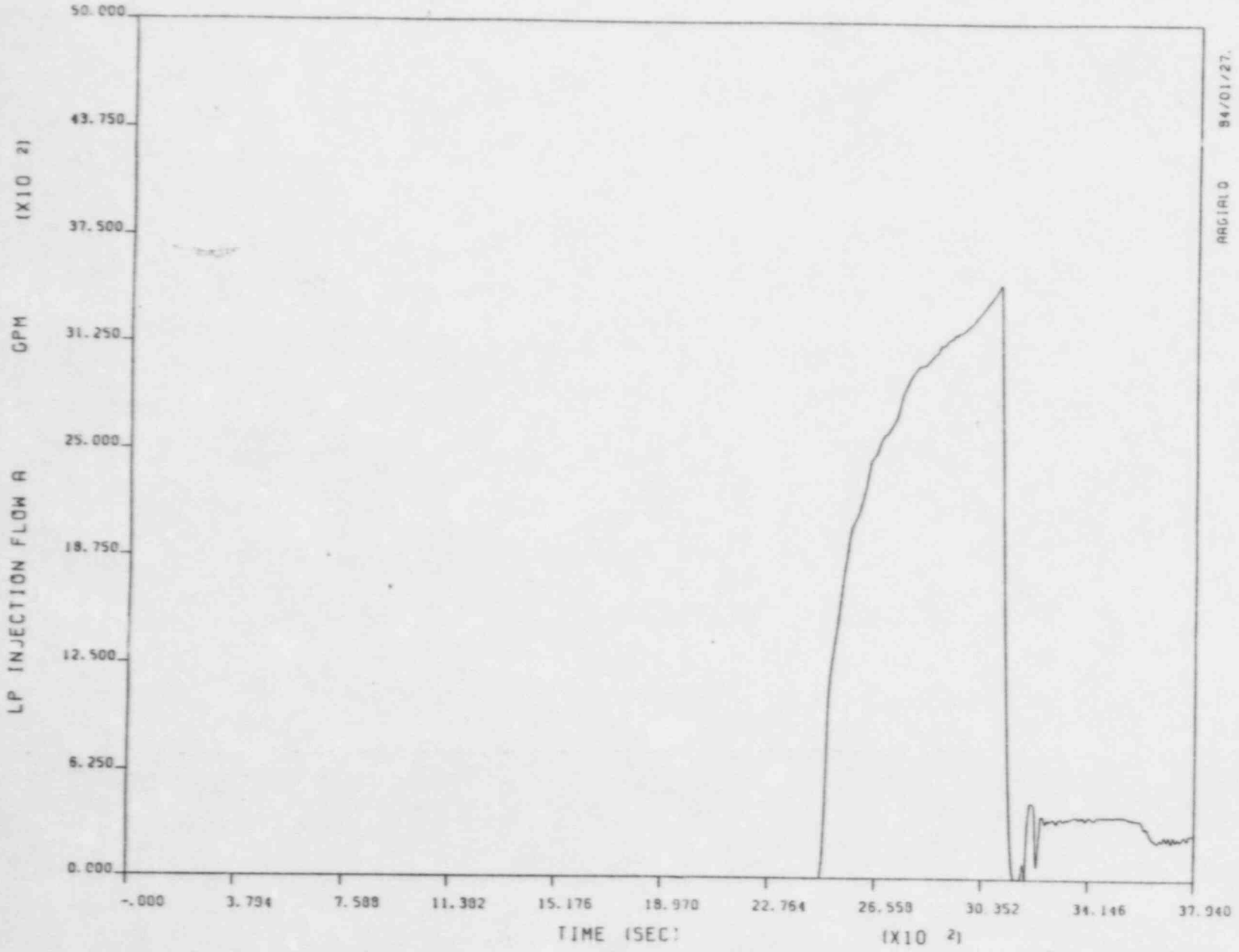

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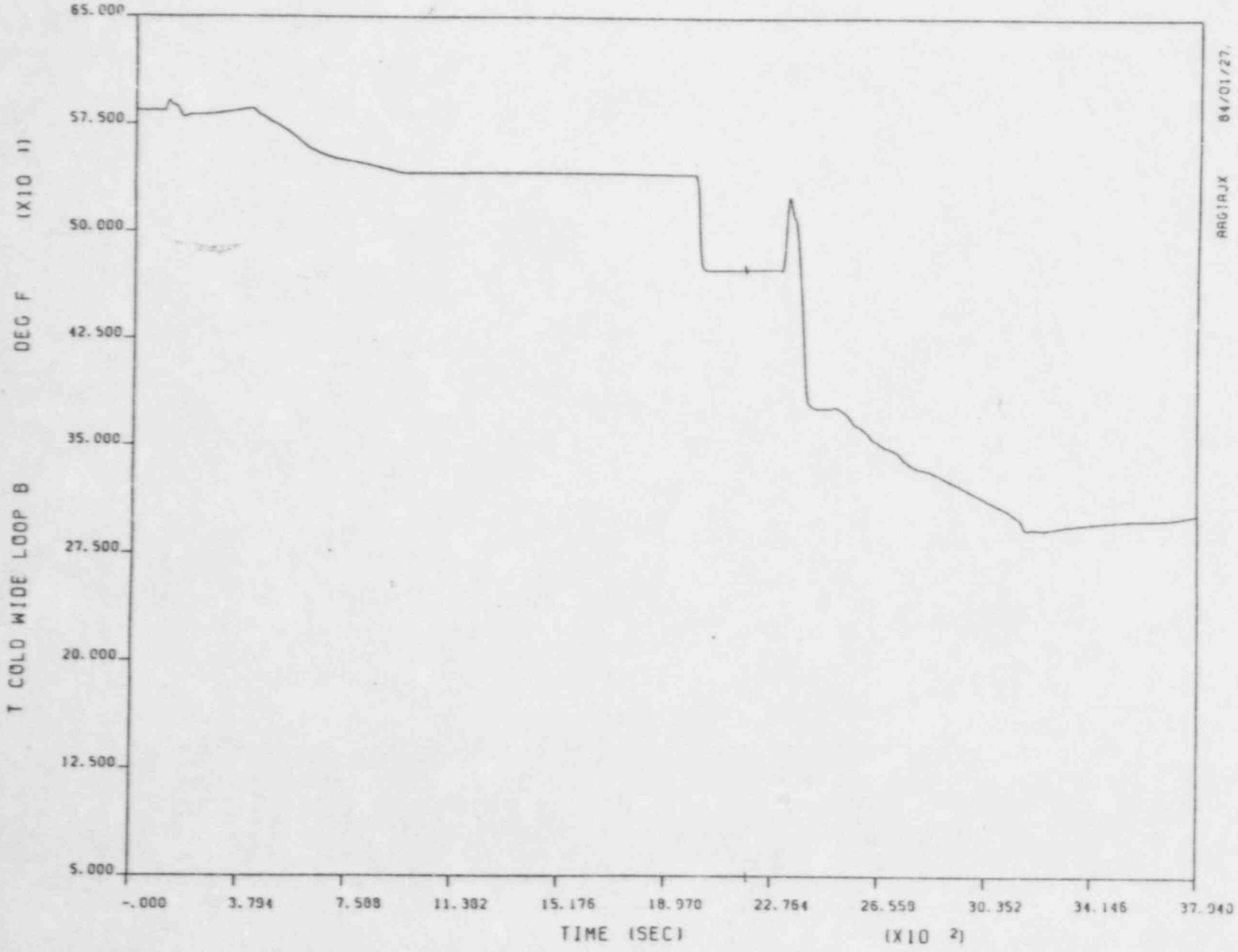

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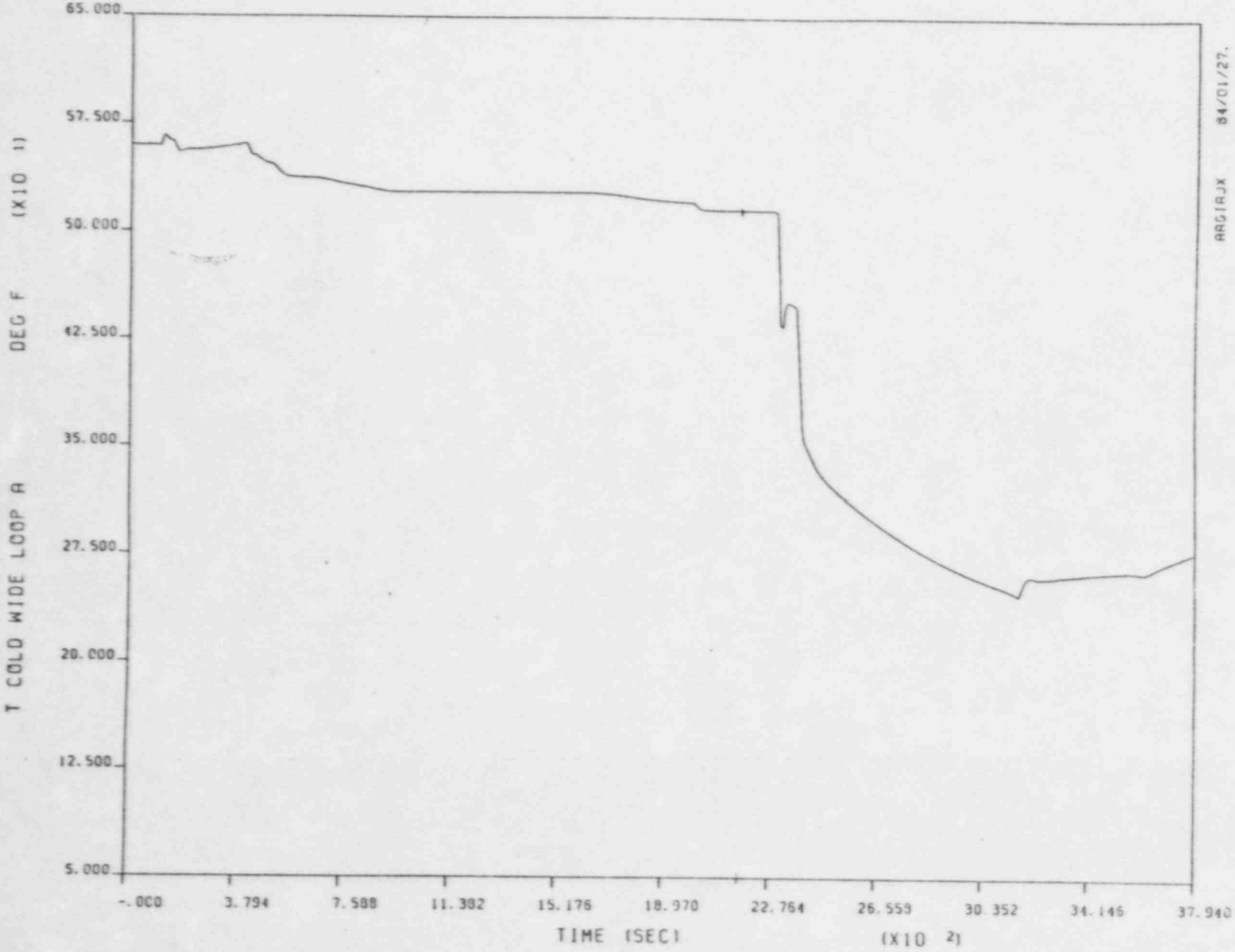

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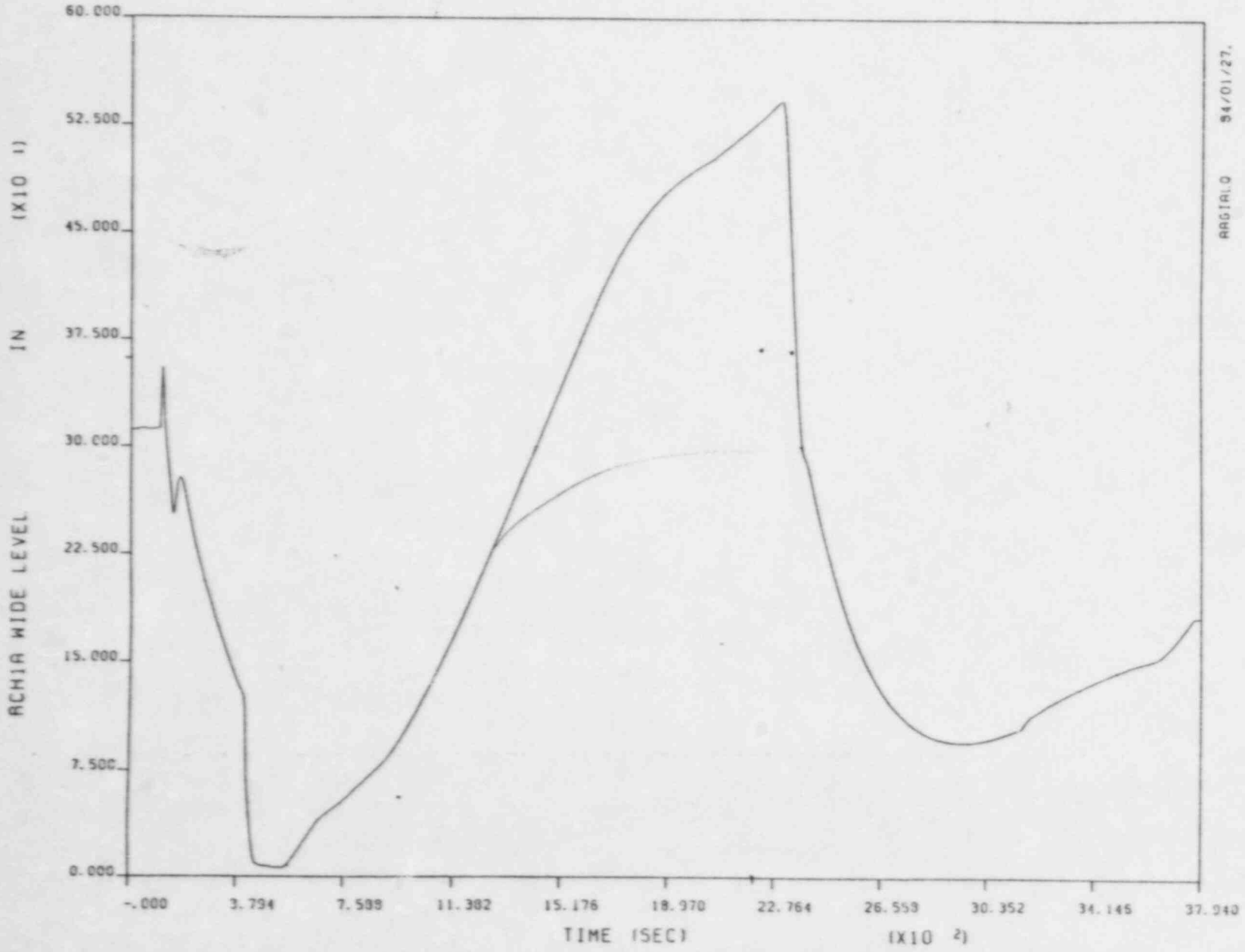

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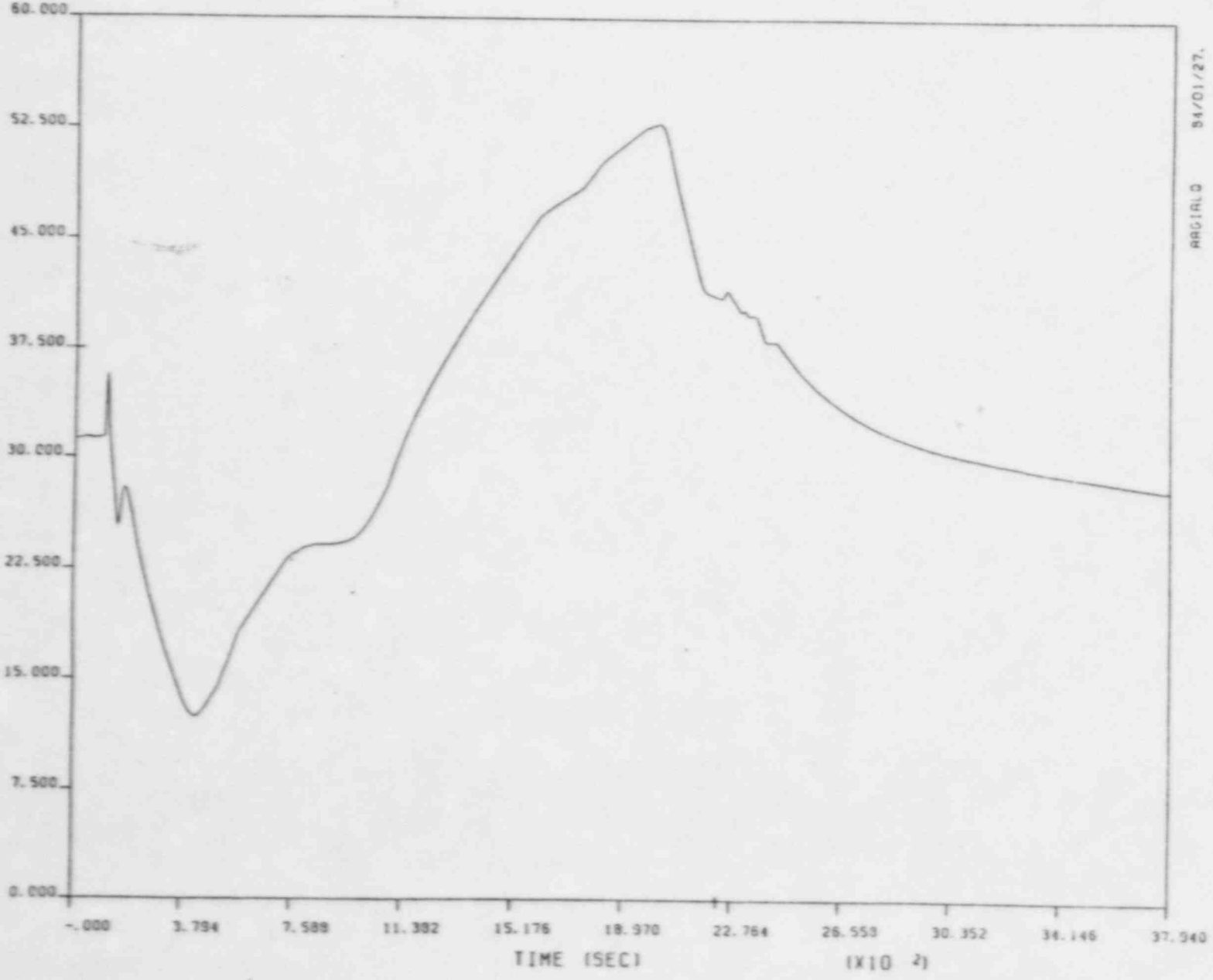

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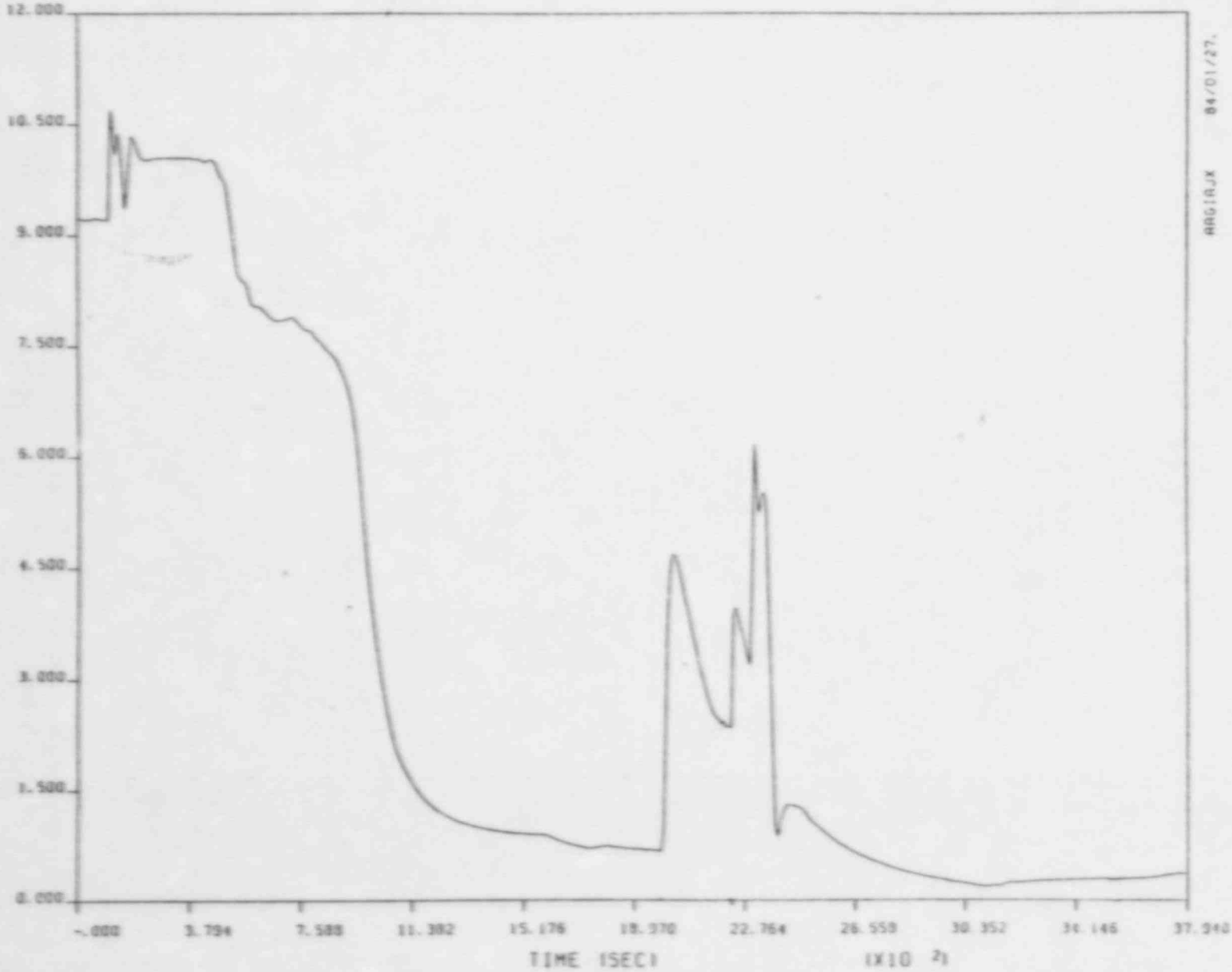

PLOT NUMBER - 1

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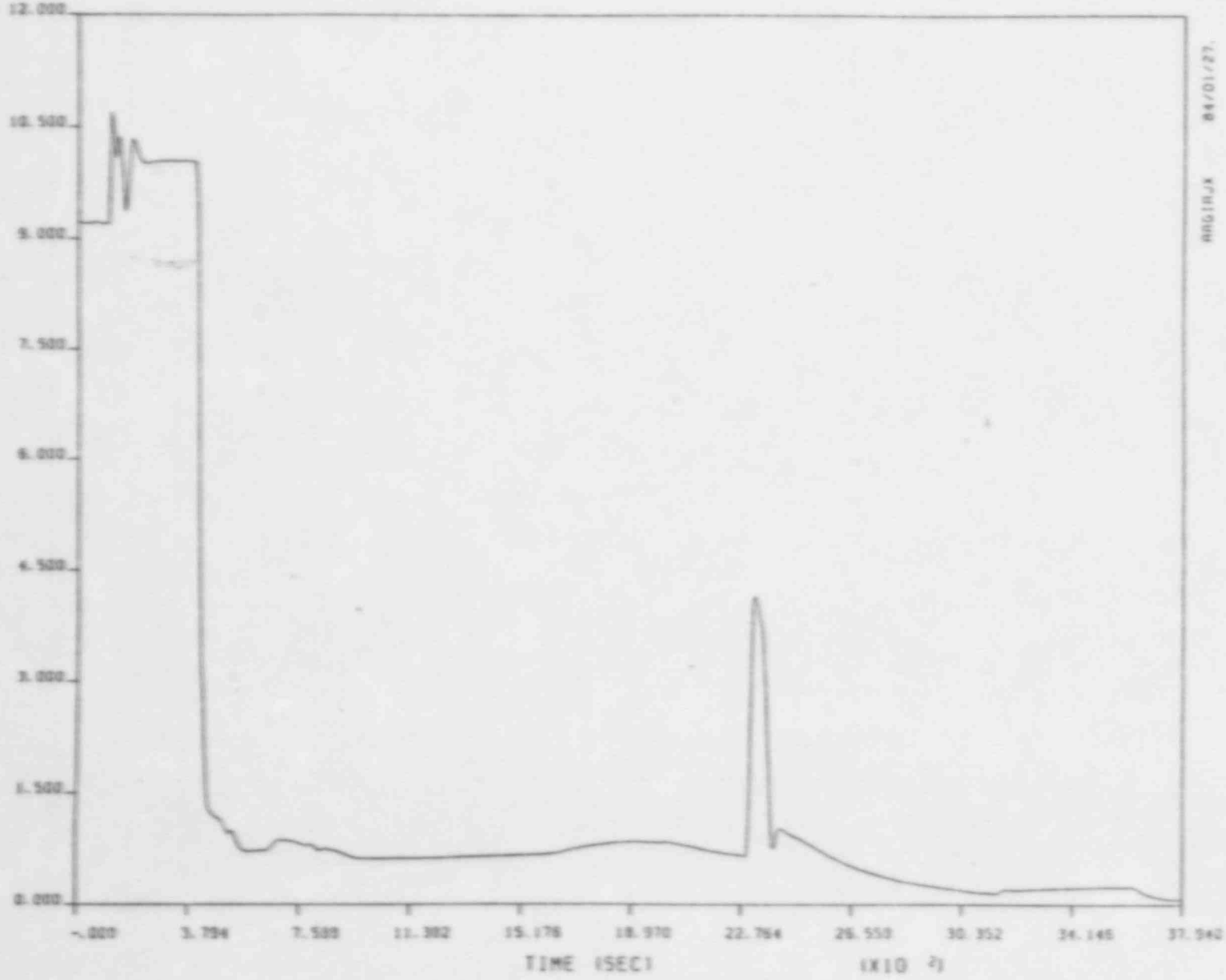

PLOT NUMBER - 11

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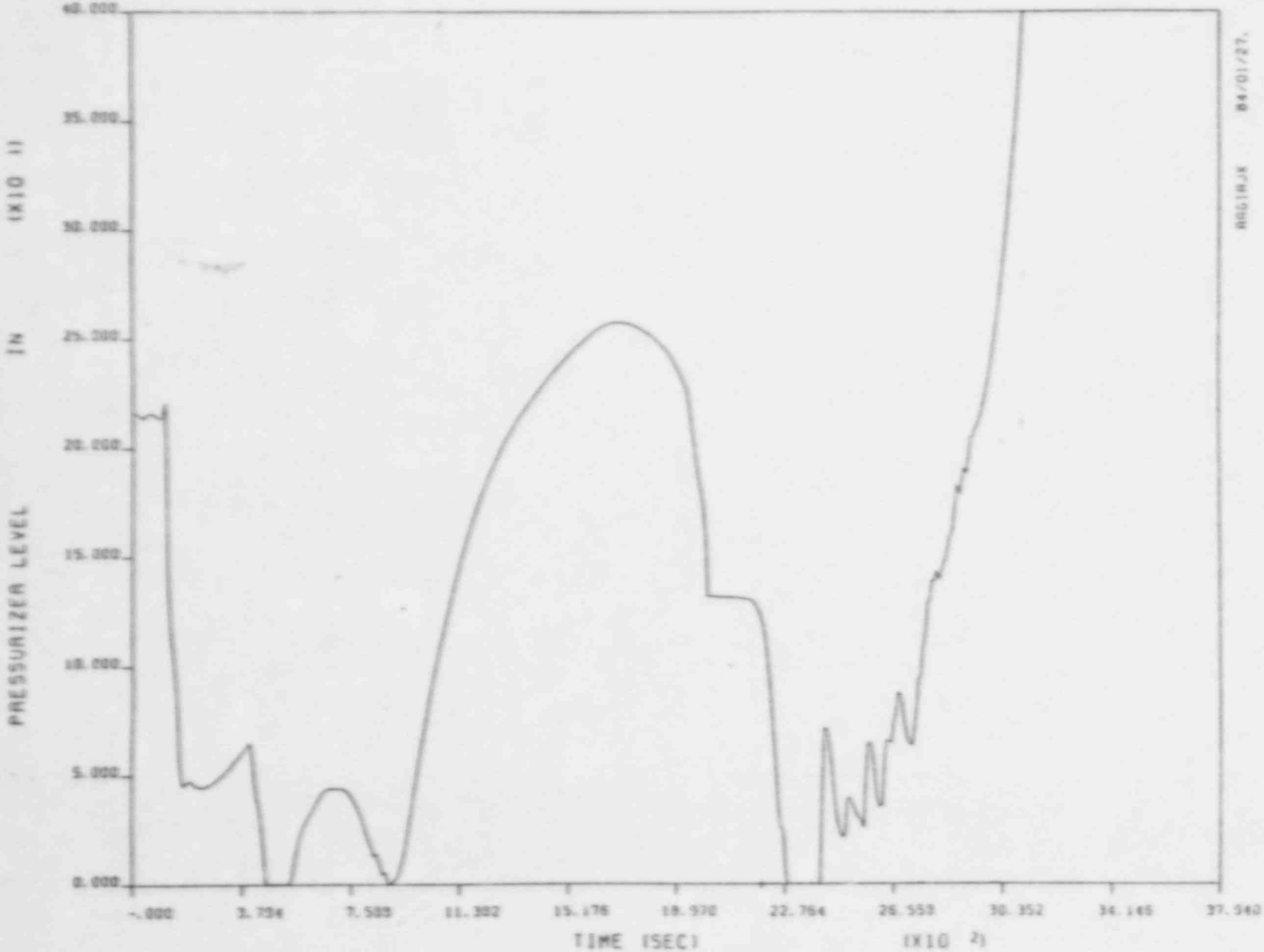

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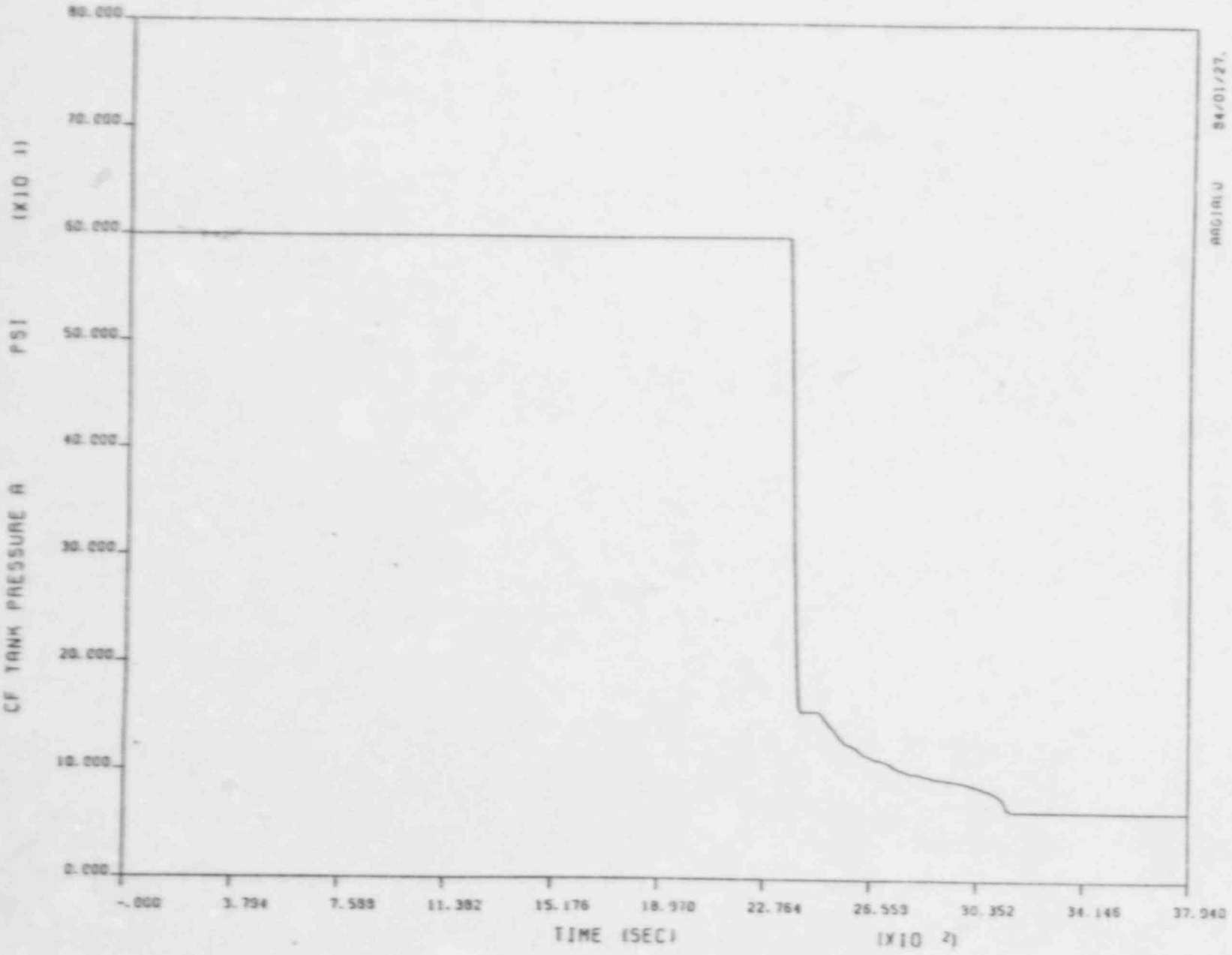

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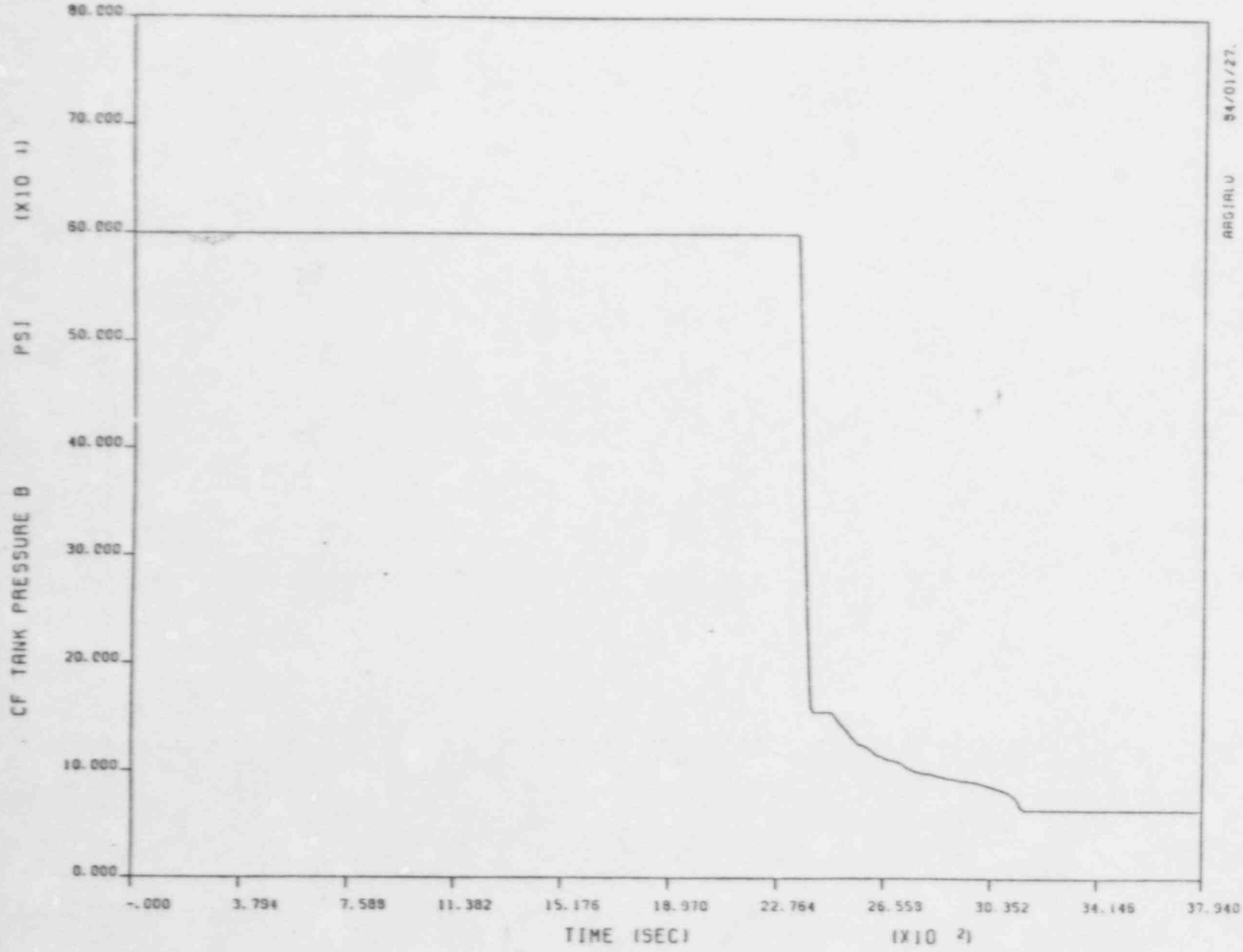

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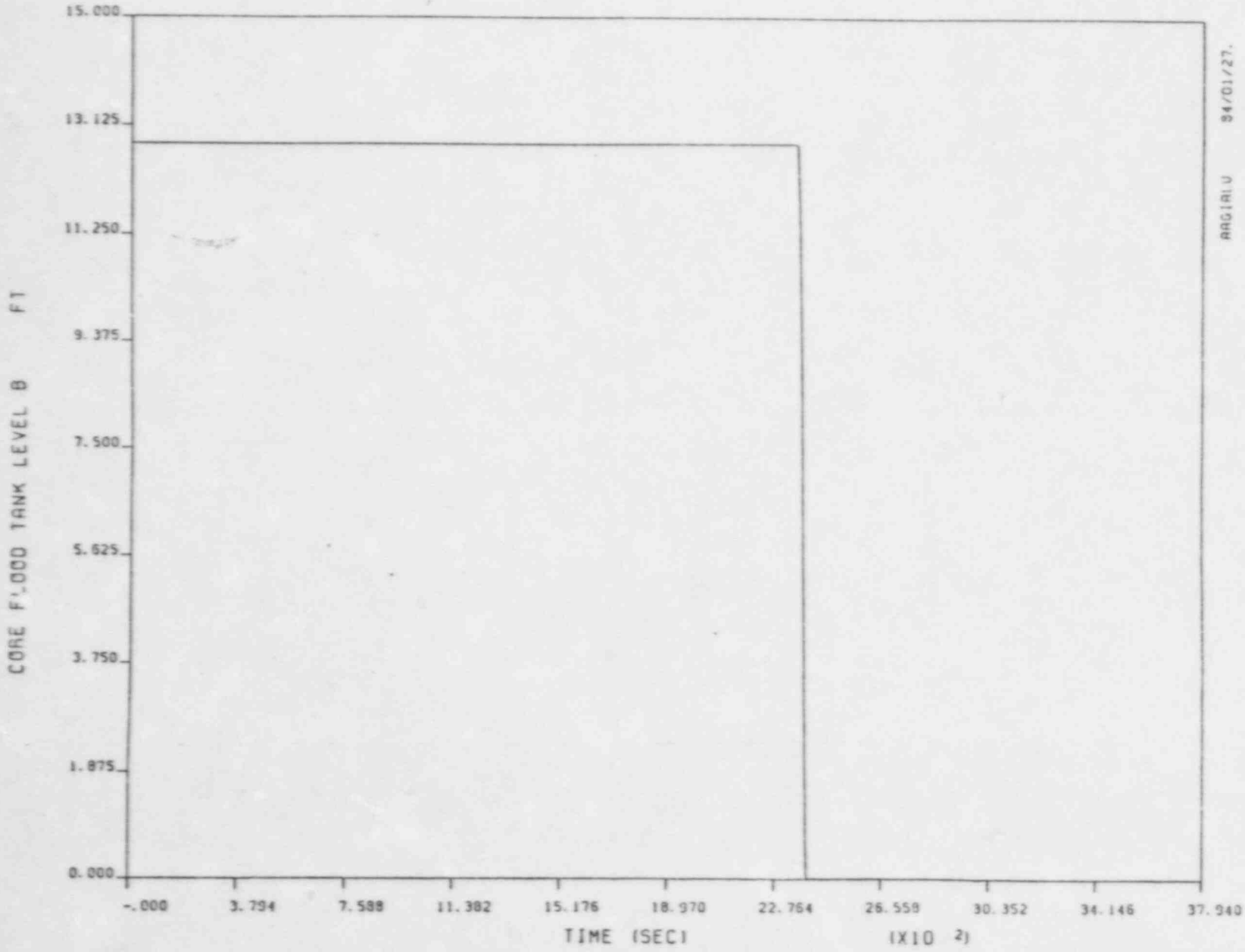

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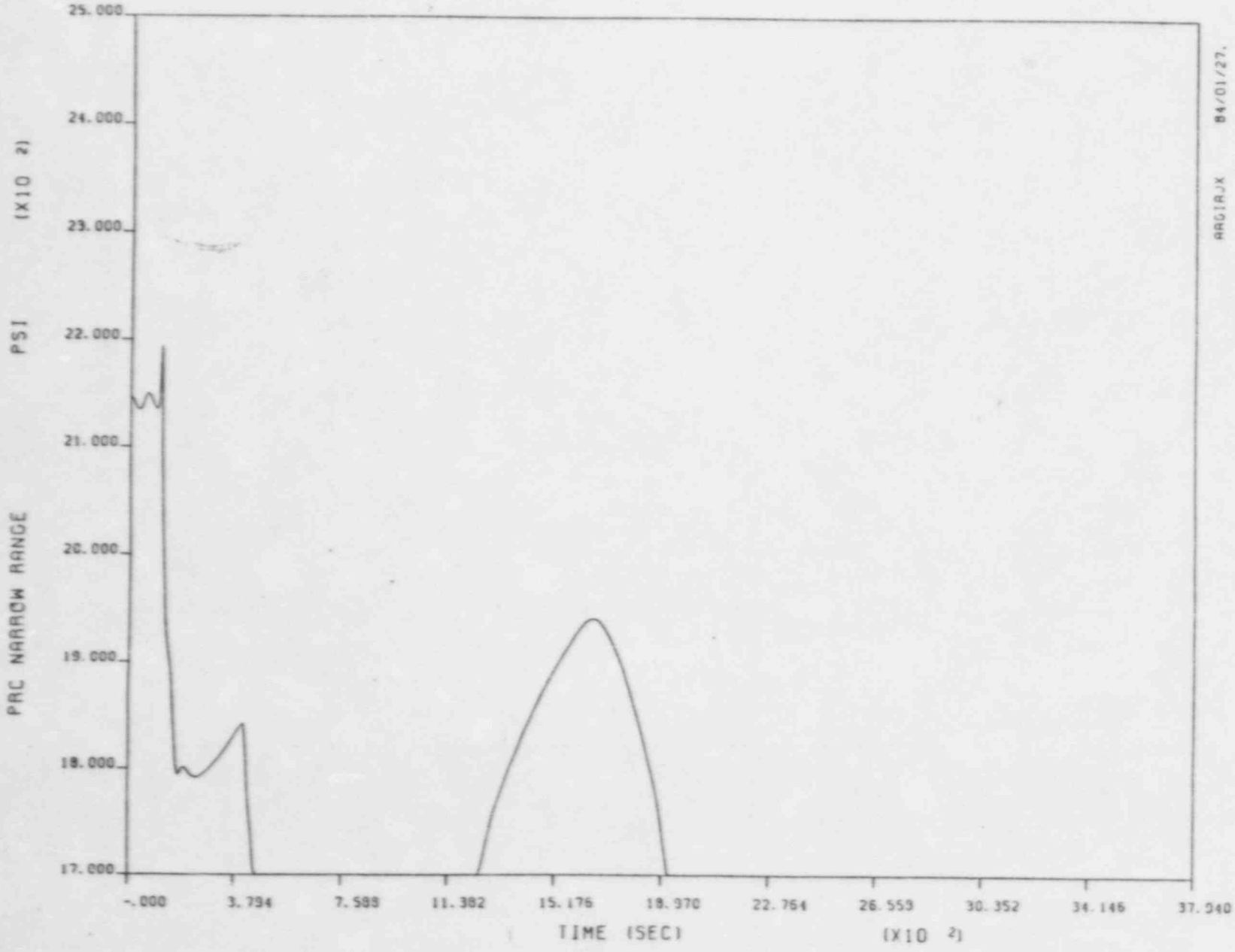
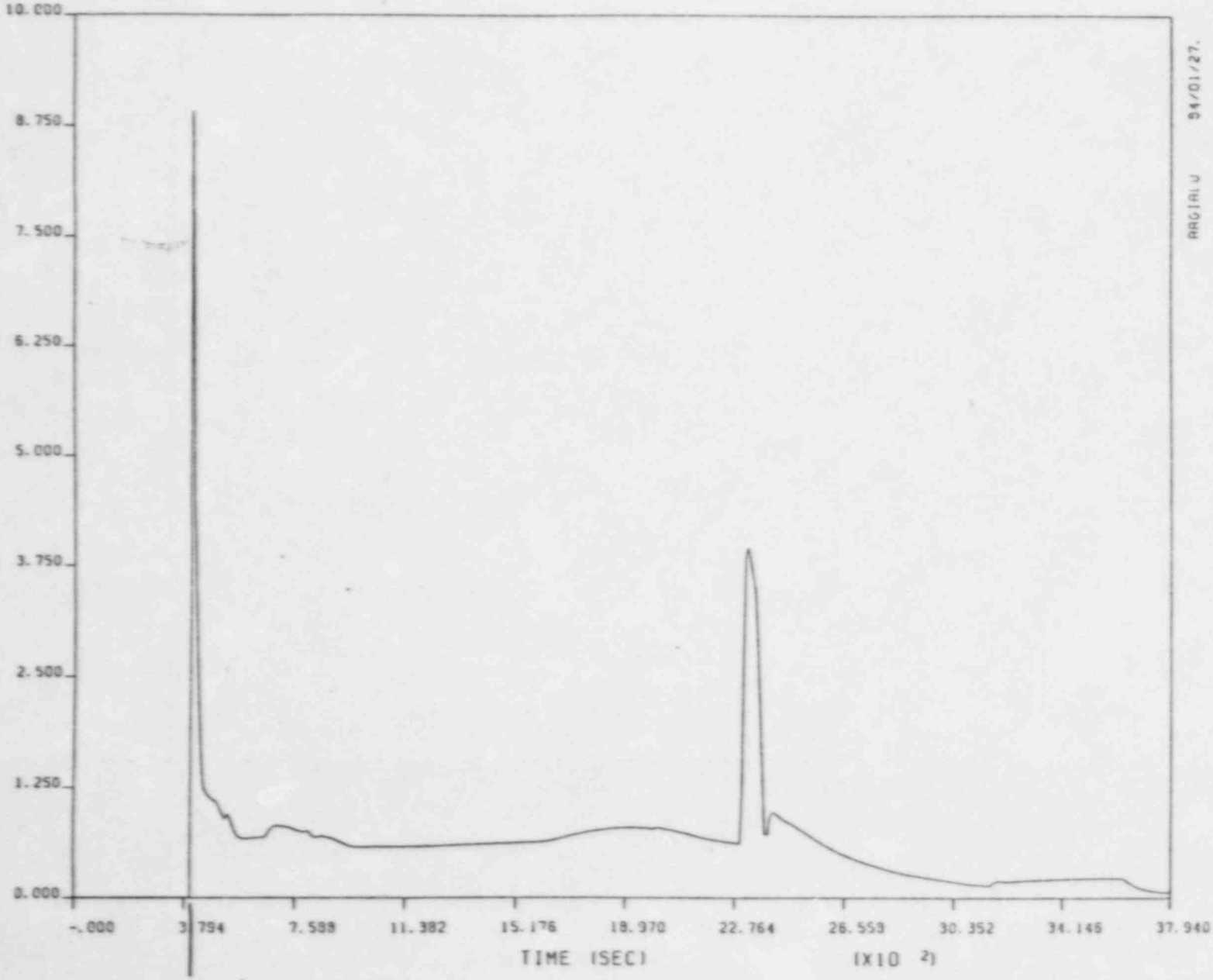
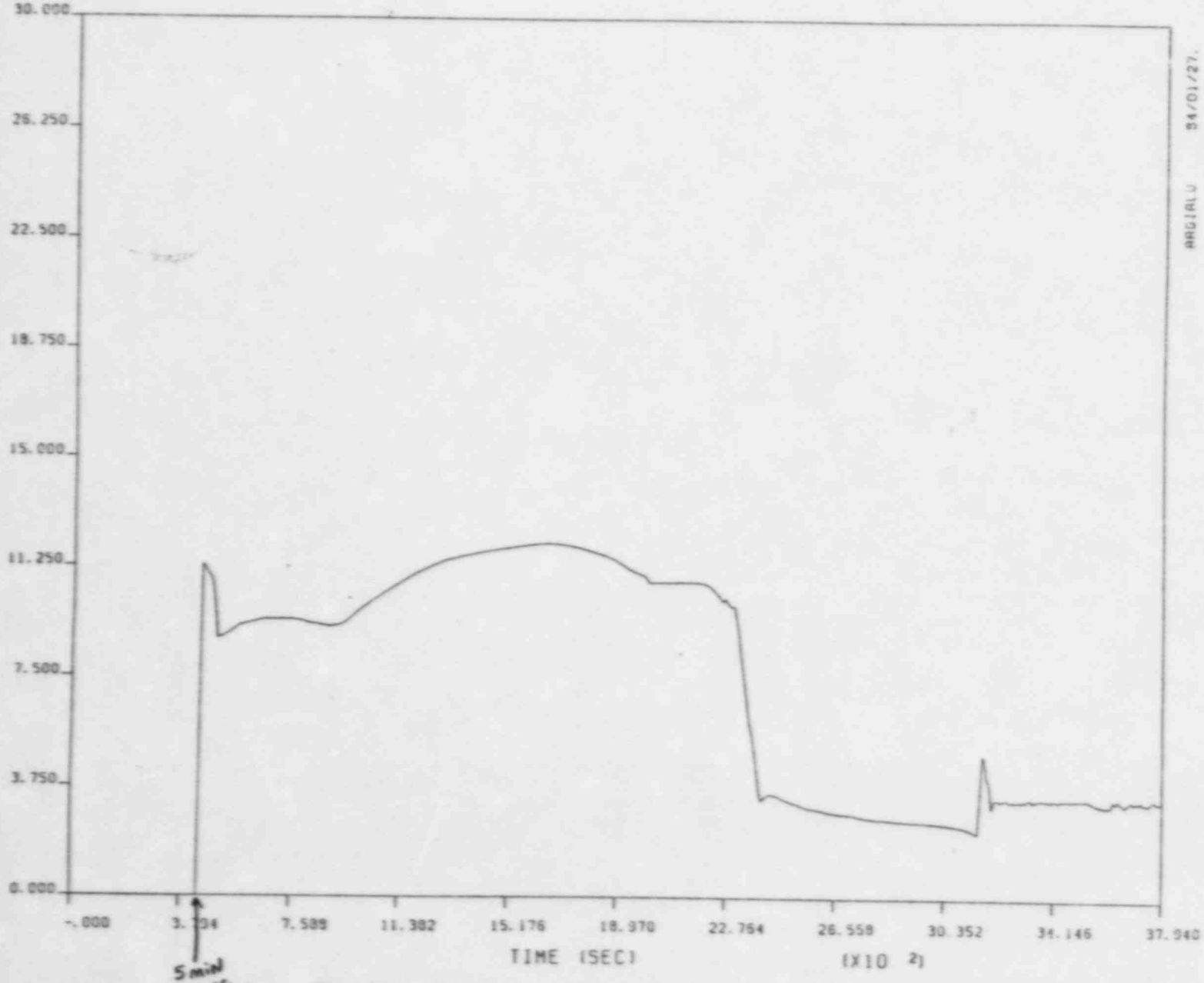


TUBE LEAK - 128 LB/SEC WITH ICC



PLOT NUMBER - 1

TUBE LEAK - 128 LB/SEC WITH ICC



PLOT NUMBER - 1E

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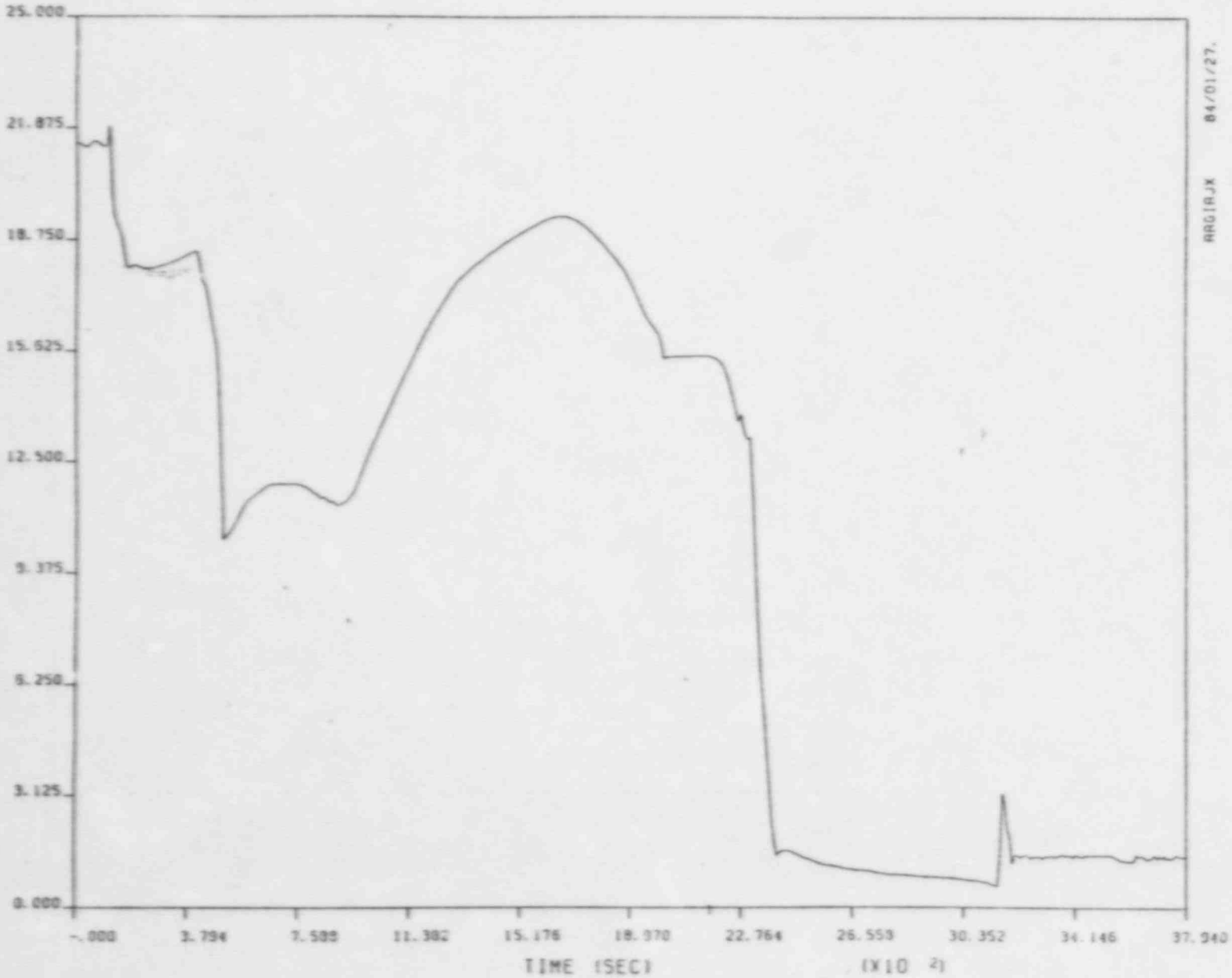

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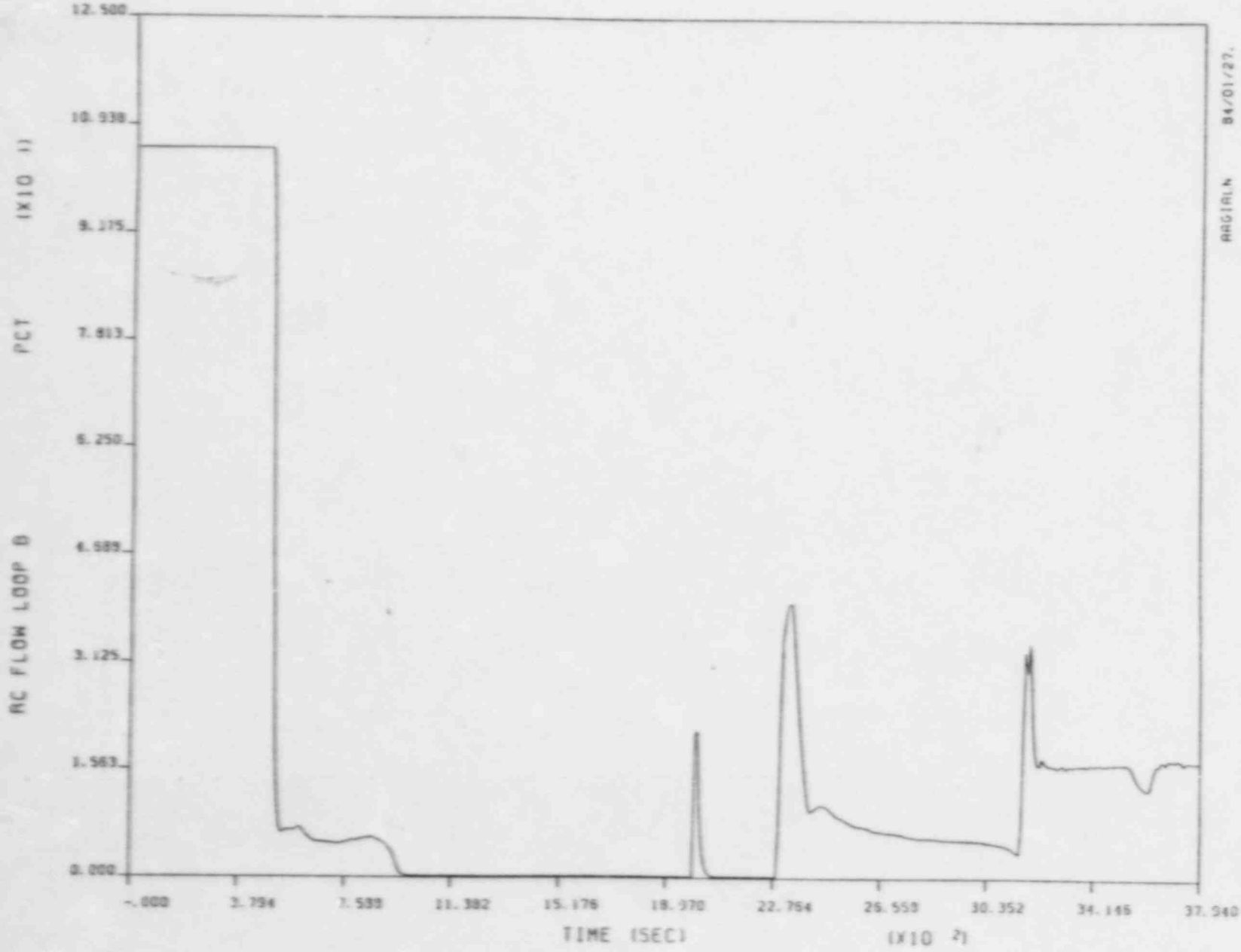

PLOT NUMBER -

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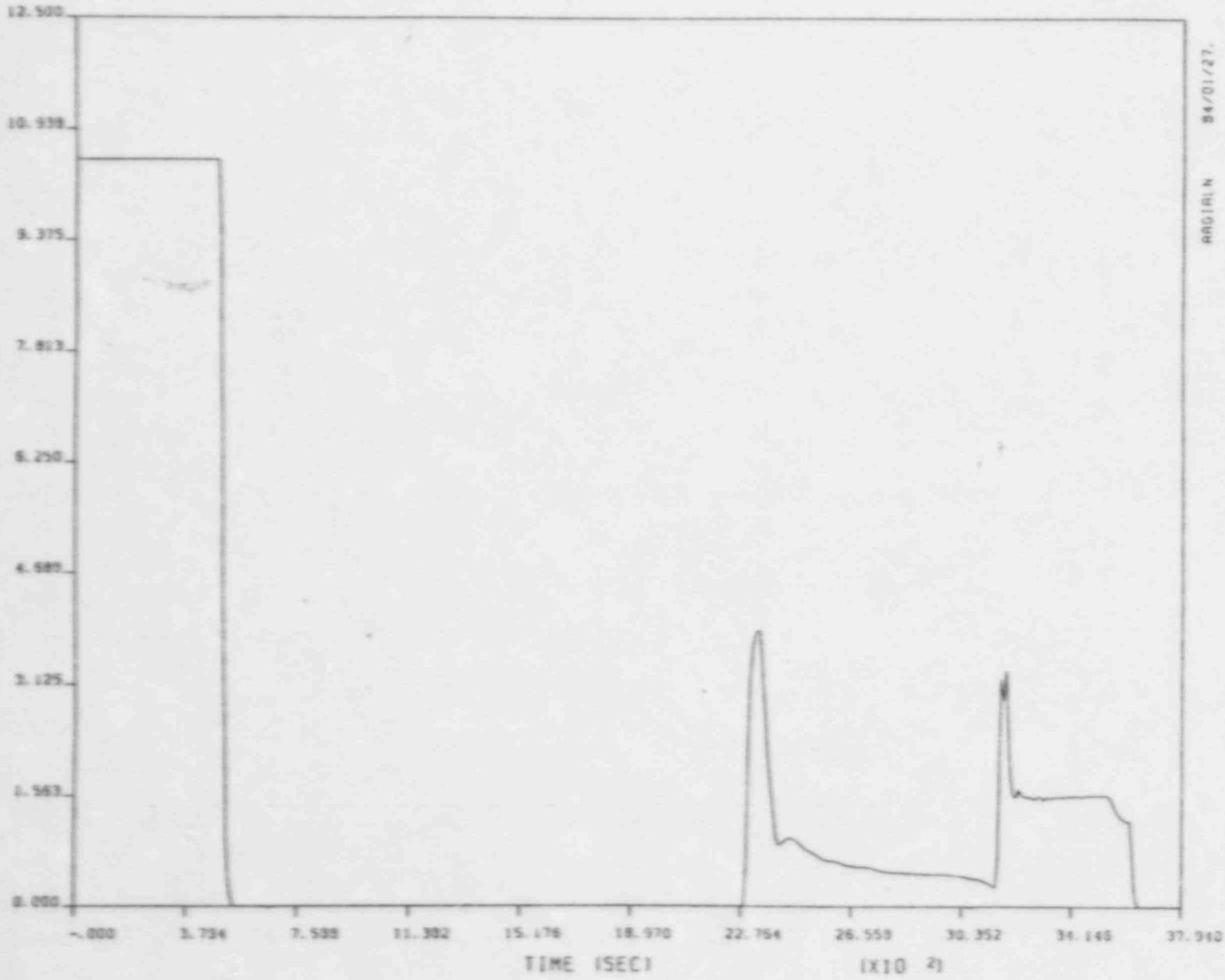

PLOT NUMBER - 4

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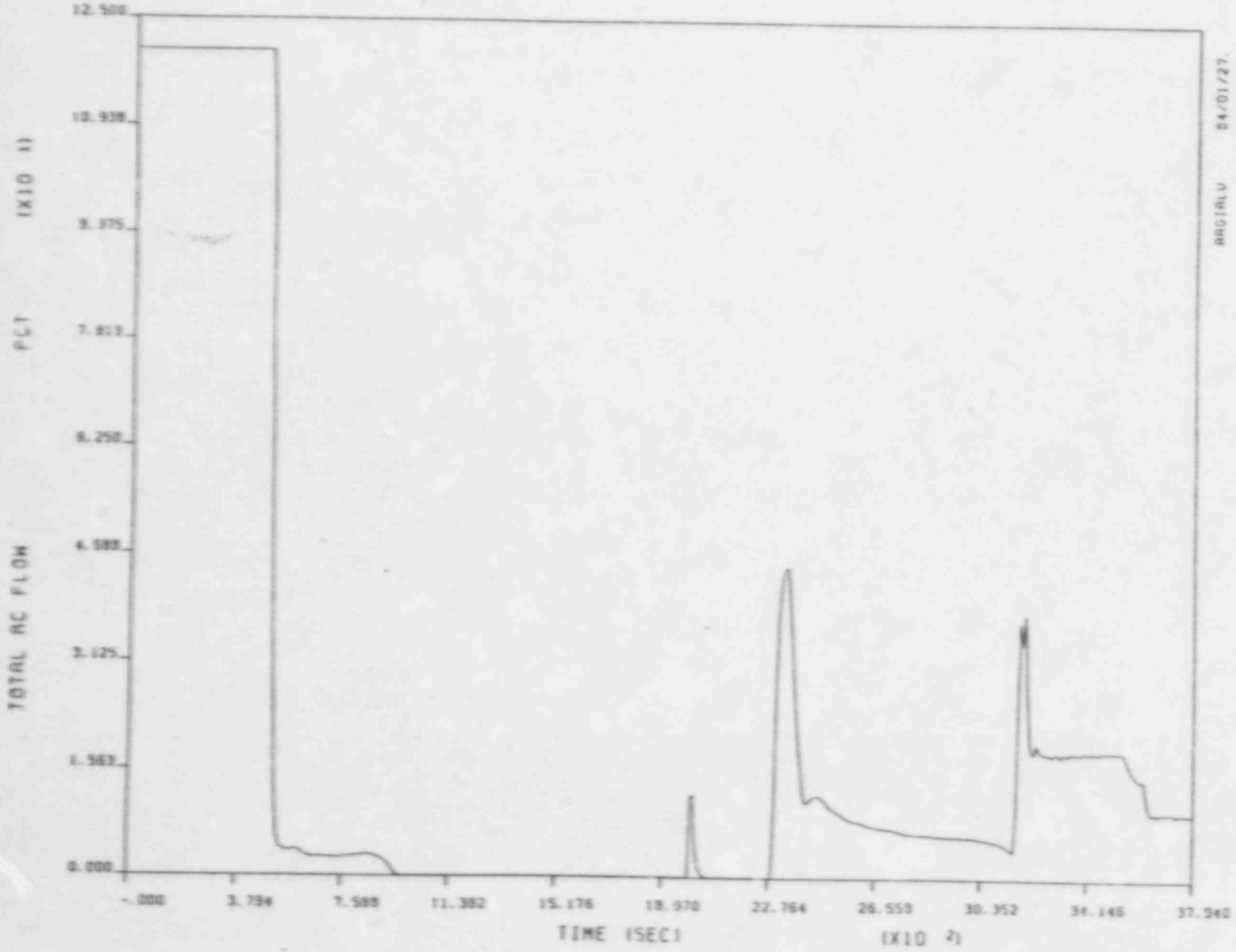

PLOT NUMBER -

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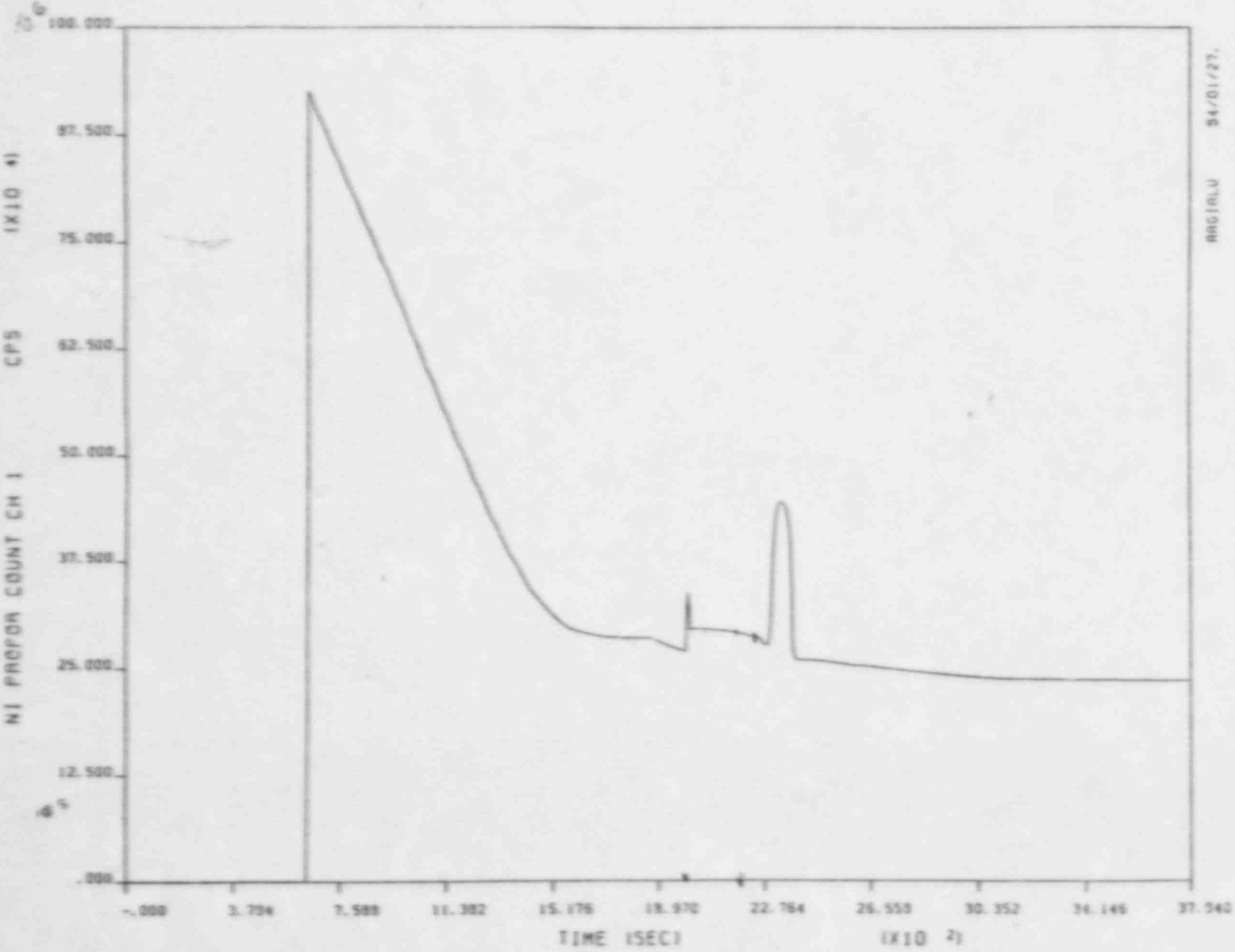

PLOT NUMBER -

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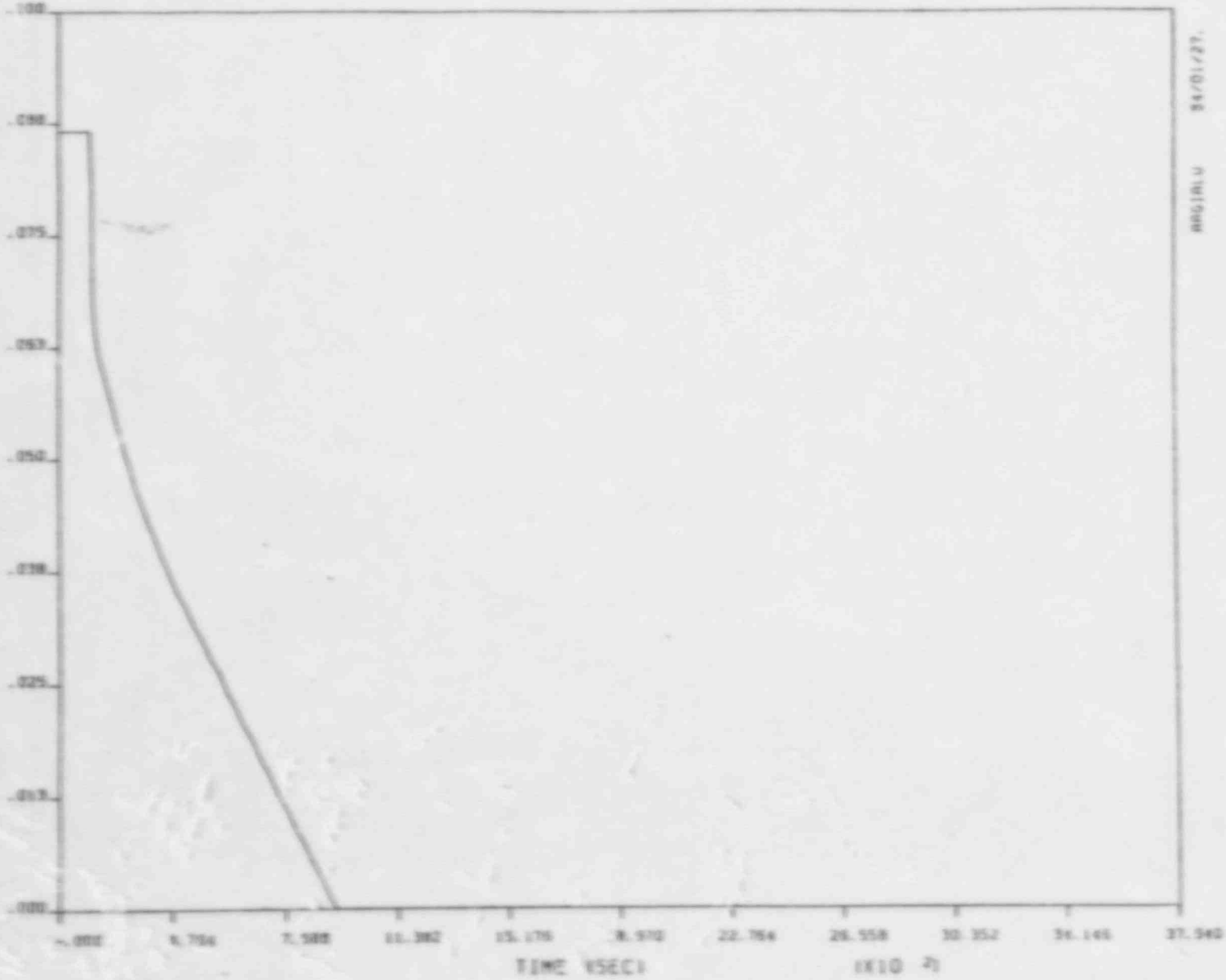

PLOT NUMBER -

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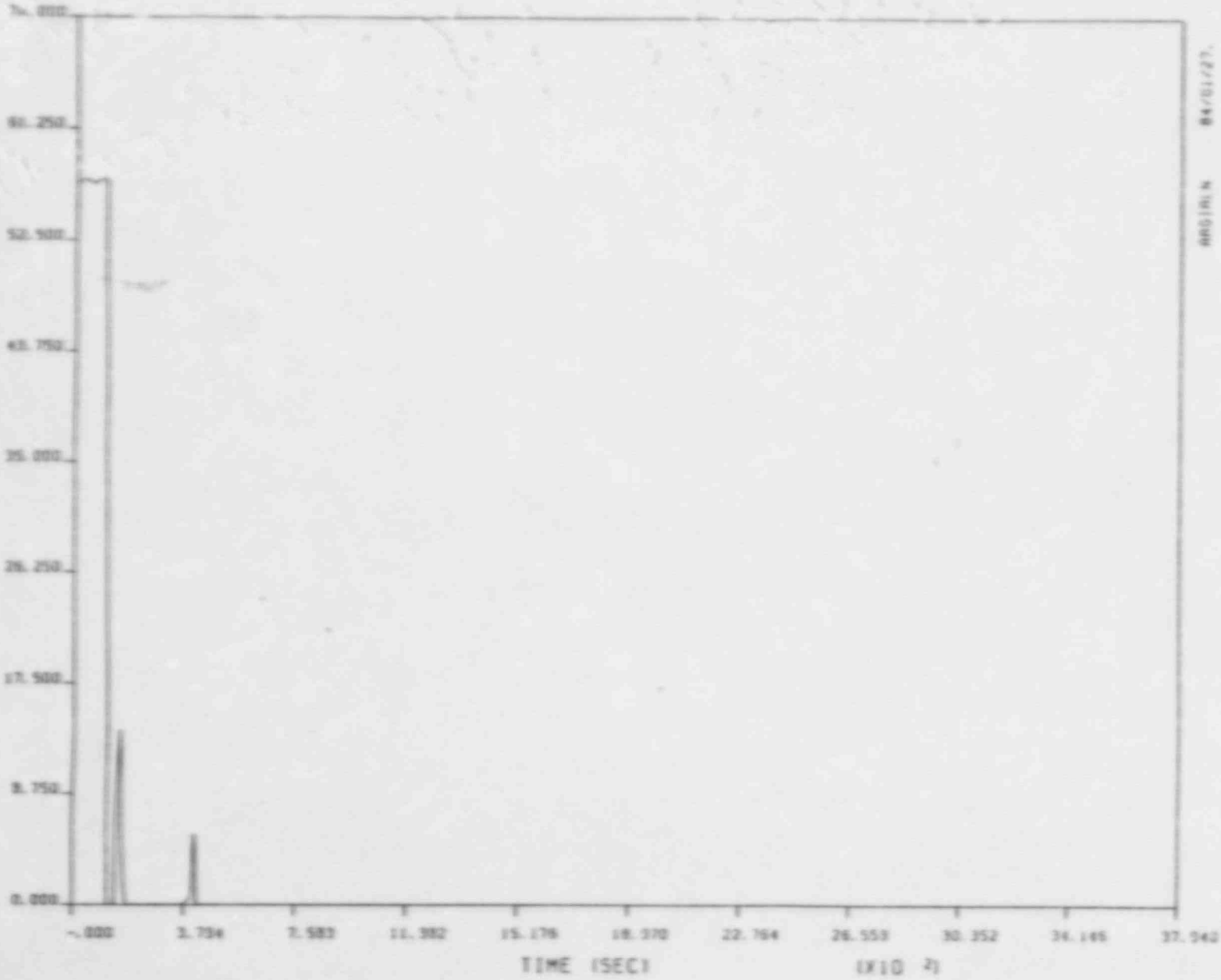

PLOT NUMBER -

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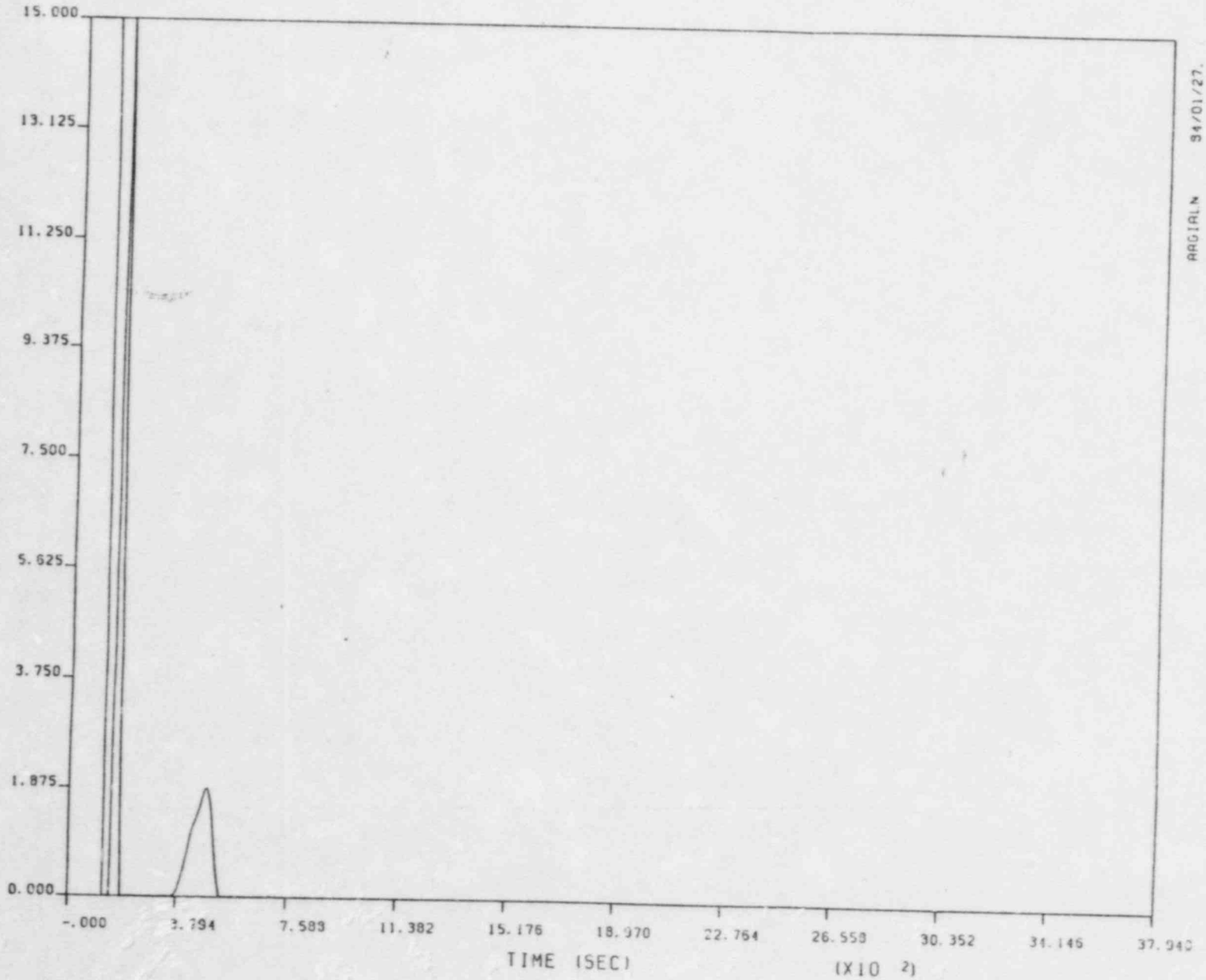

PLOT NUMBER -

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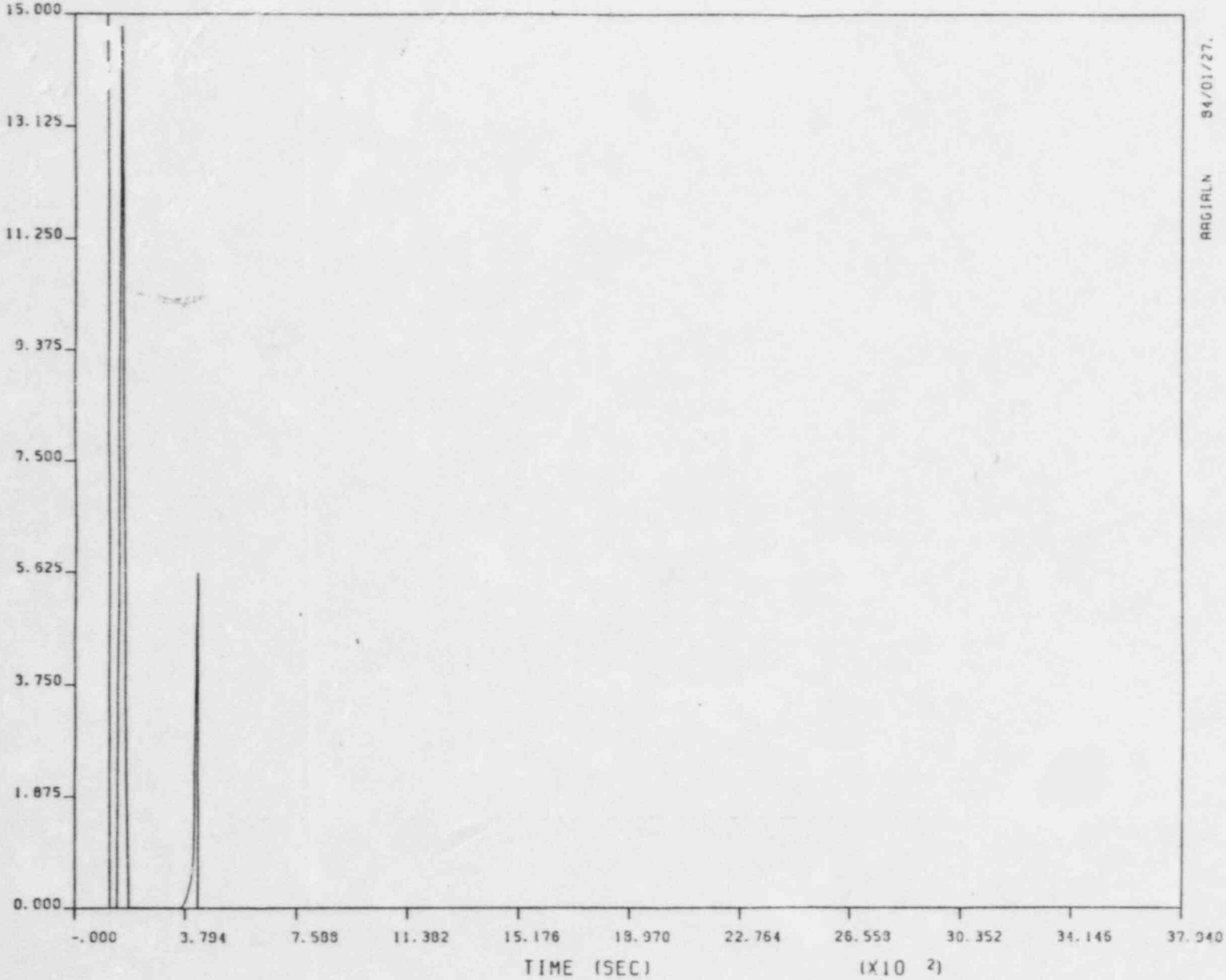

PLOT NUMBER - 8

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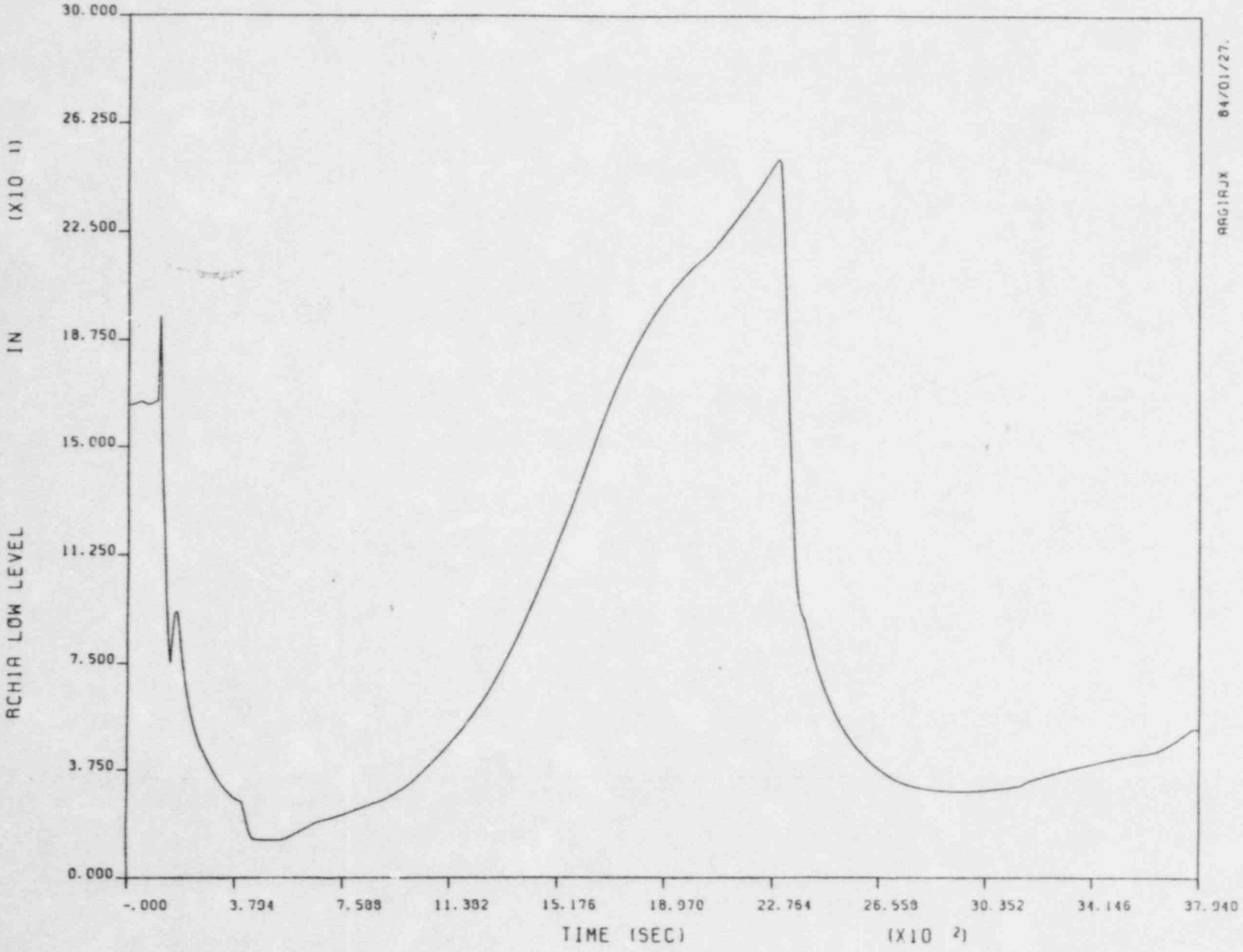
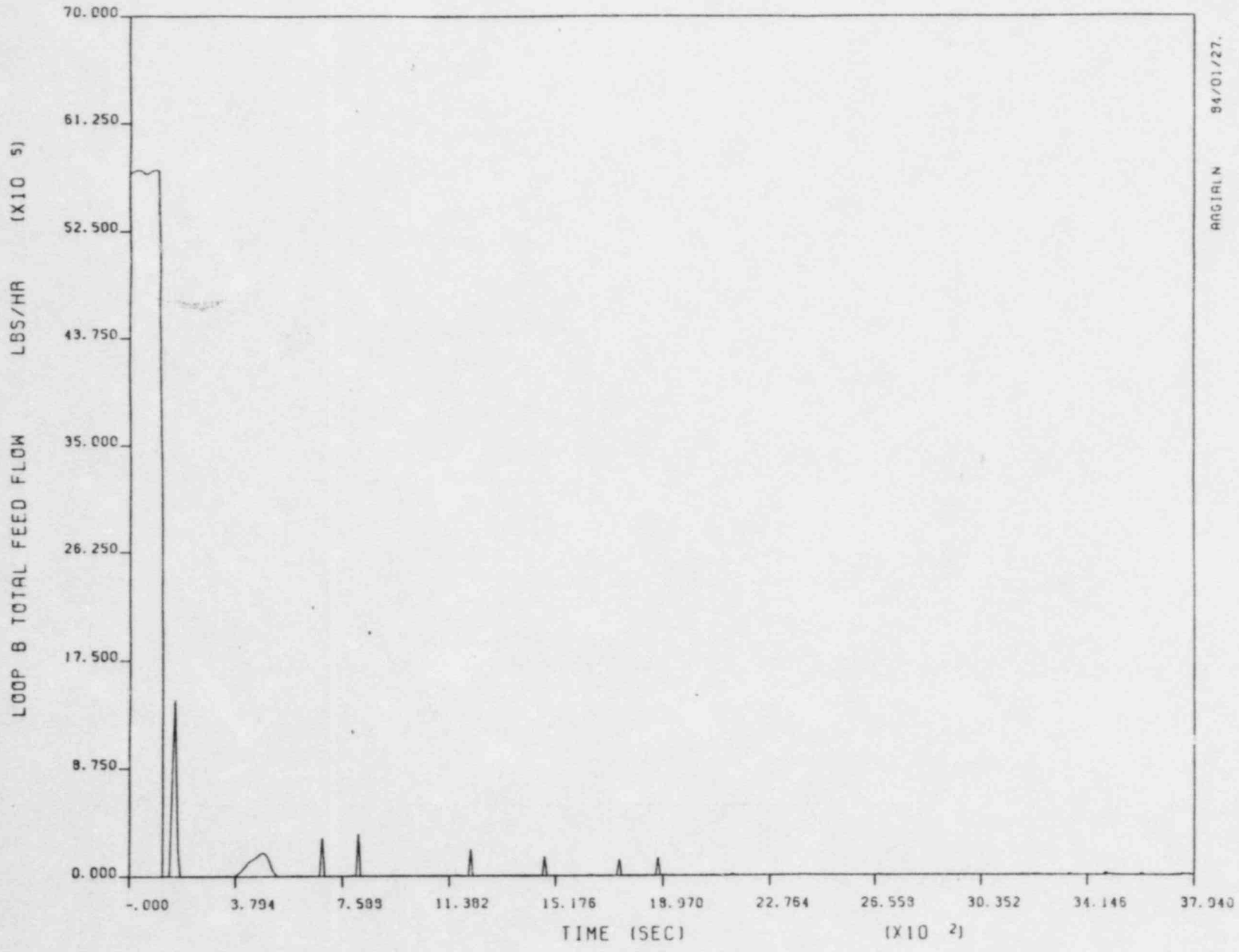


PLOT NUMBER - 2(

TUBE LEAK - 128 LB/SEC WITH ICC



PLOT NUMBER -

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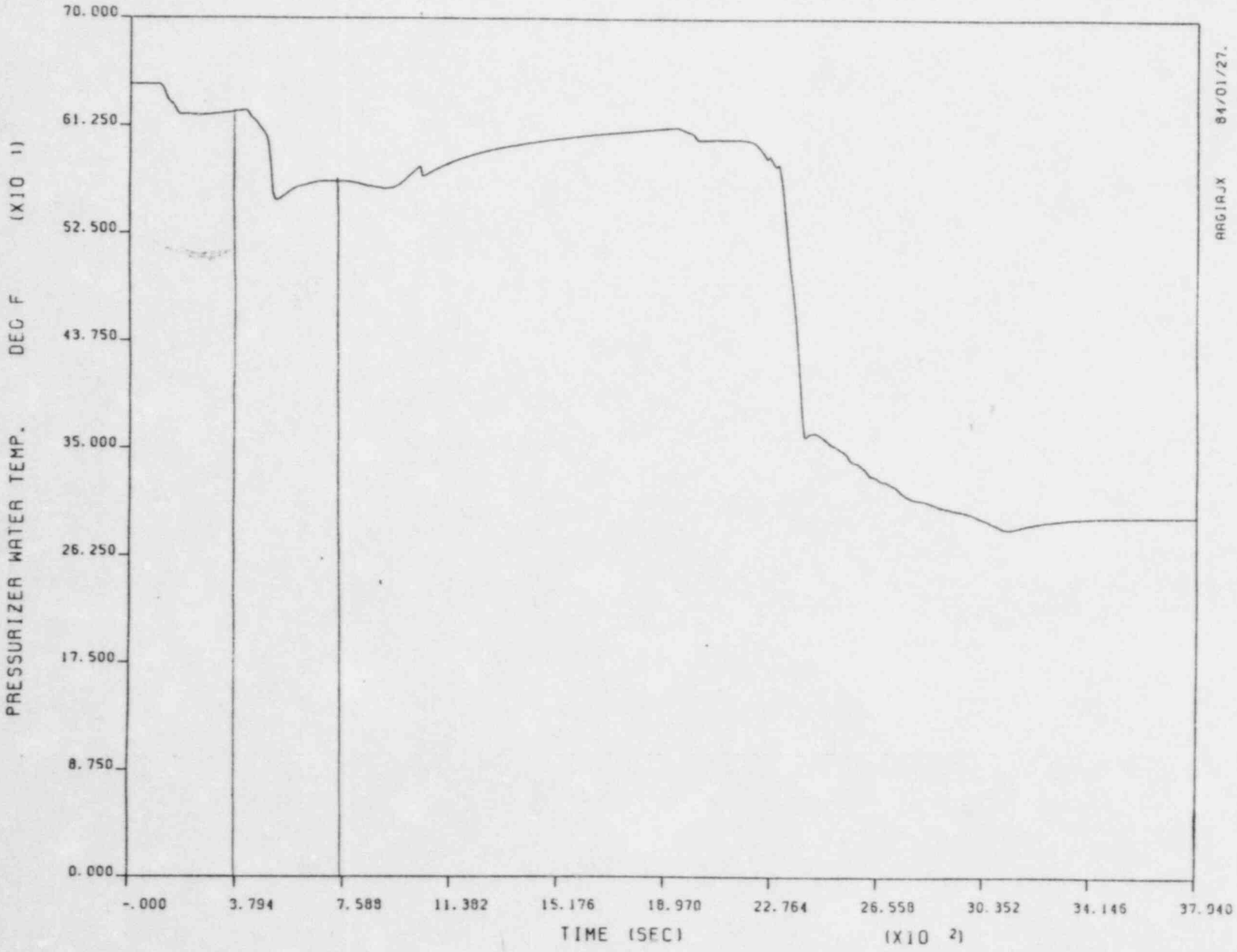

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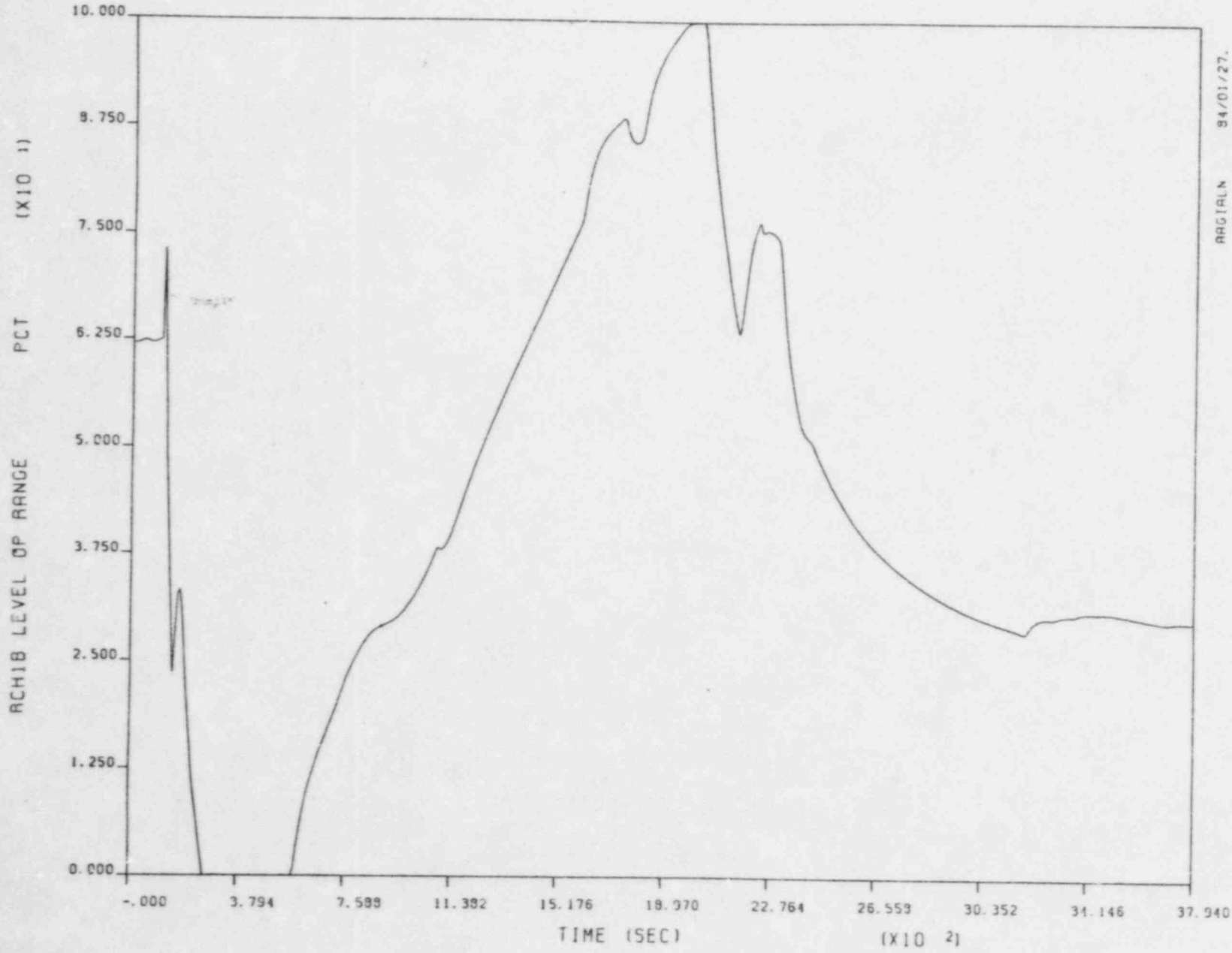

PLOT NUMBER -

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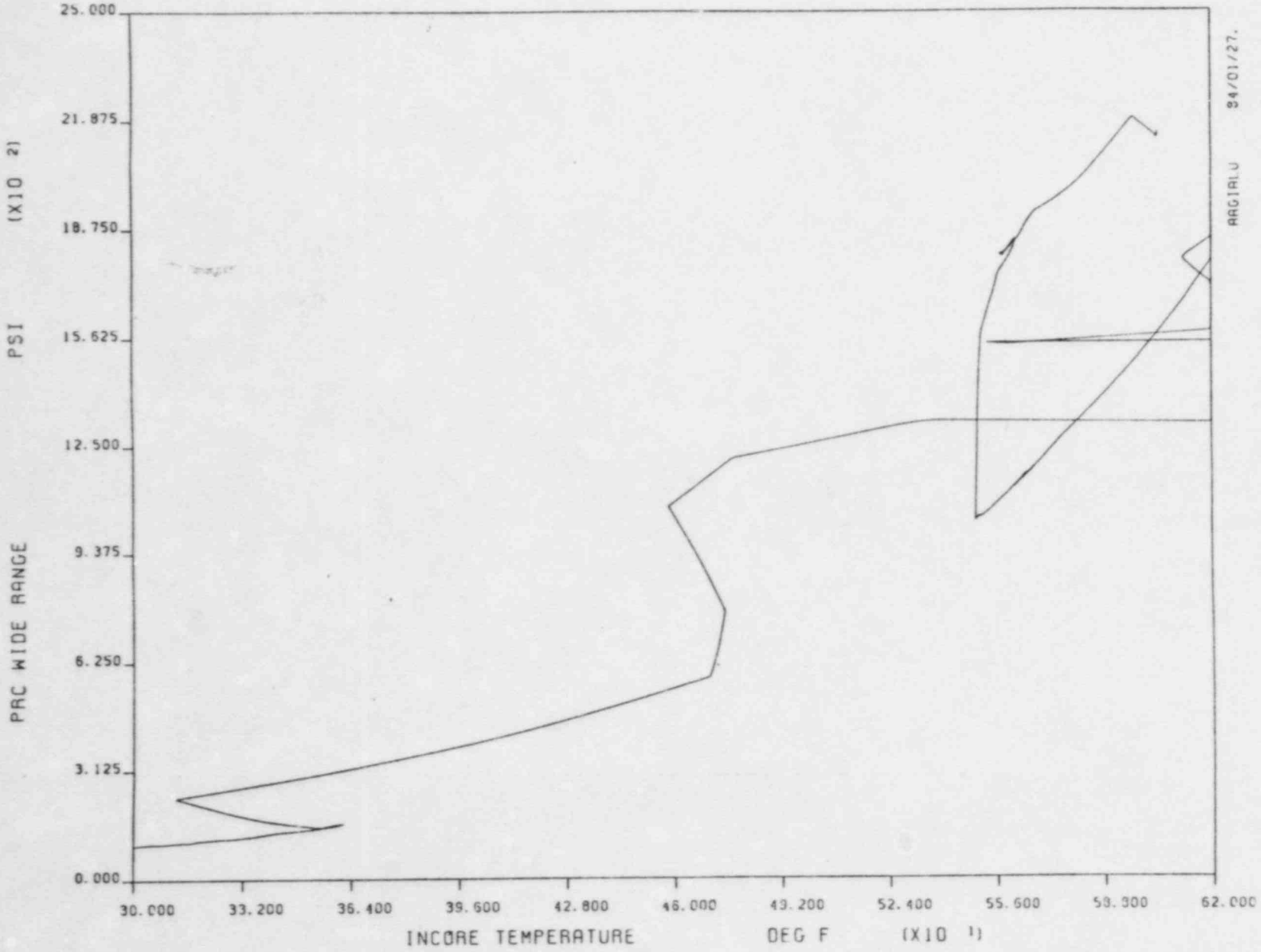
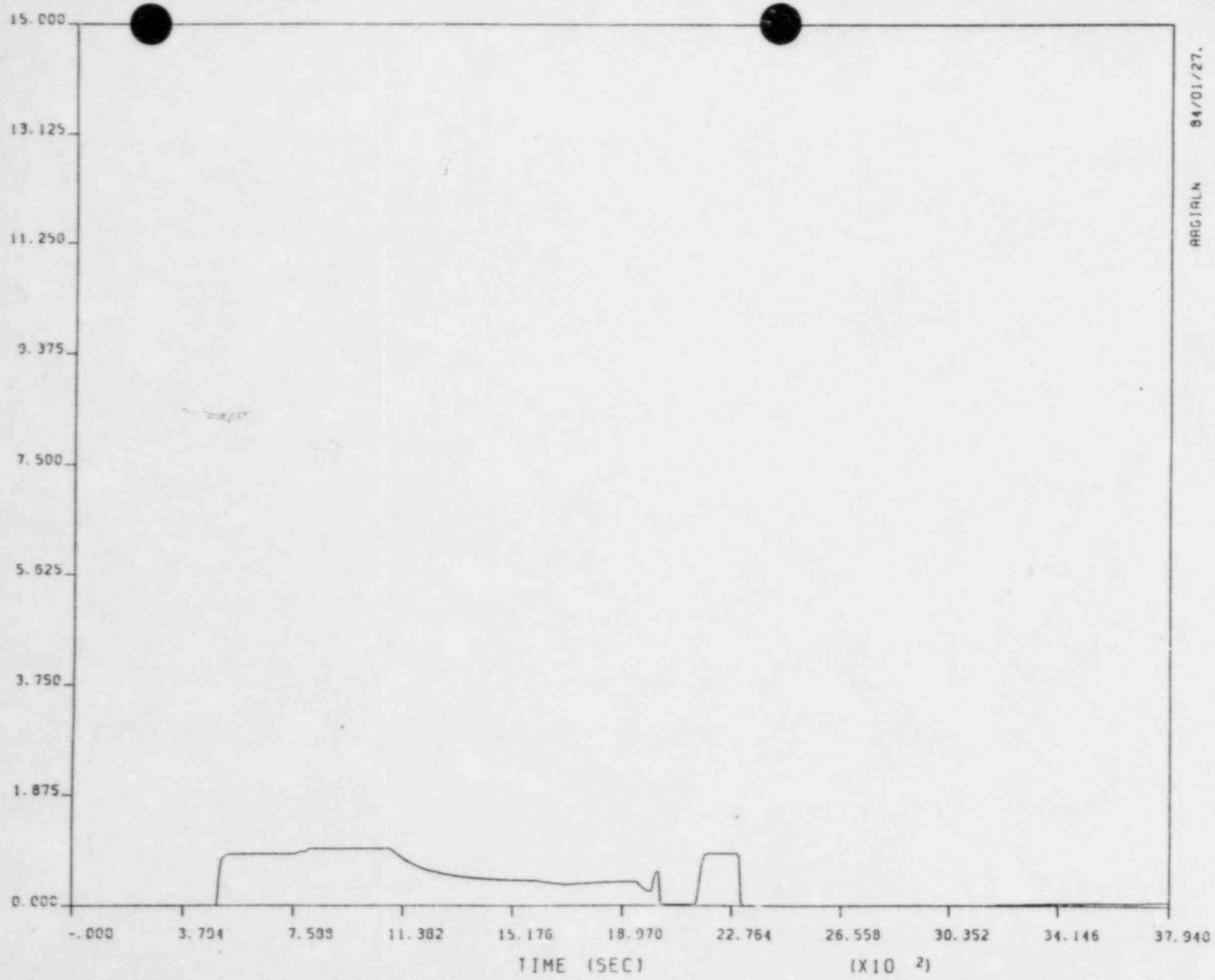


PLOT NUMBER - 1

TUBE LEAK - 128 LB/SEC WITH ICC



PLOT NUMBER - 20

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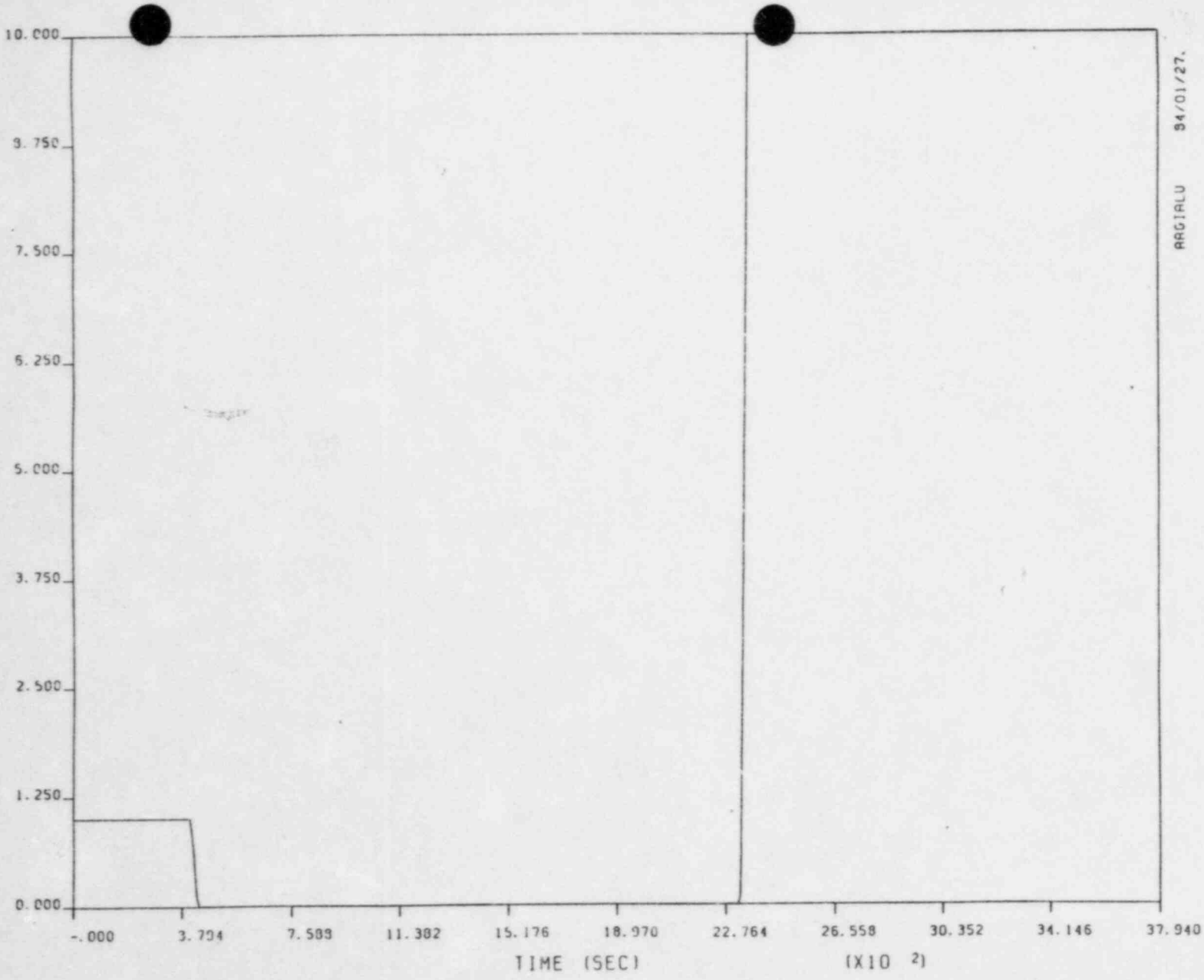

PLOT NUMBER - 5

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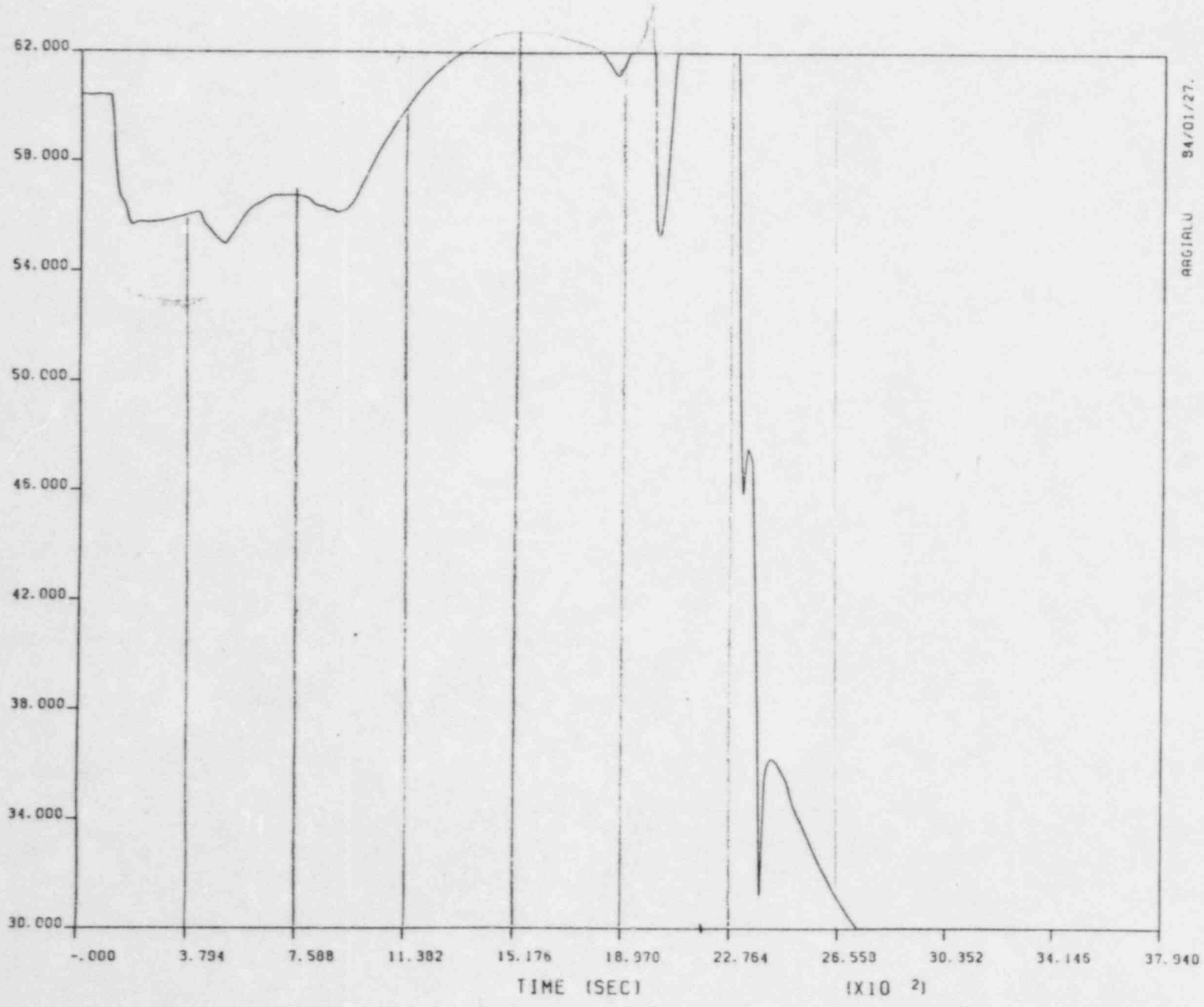
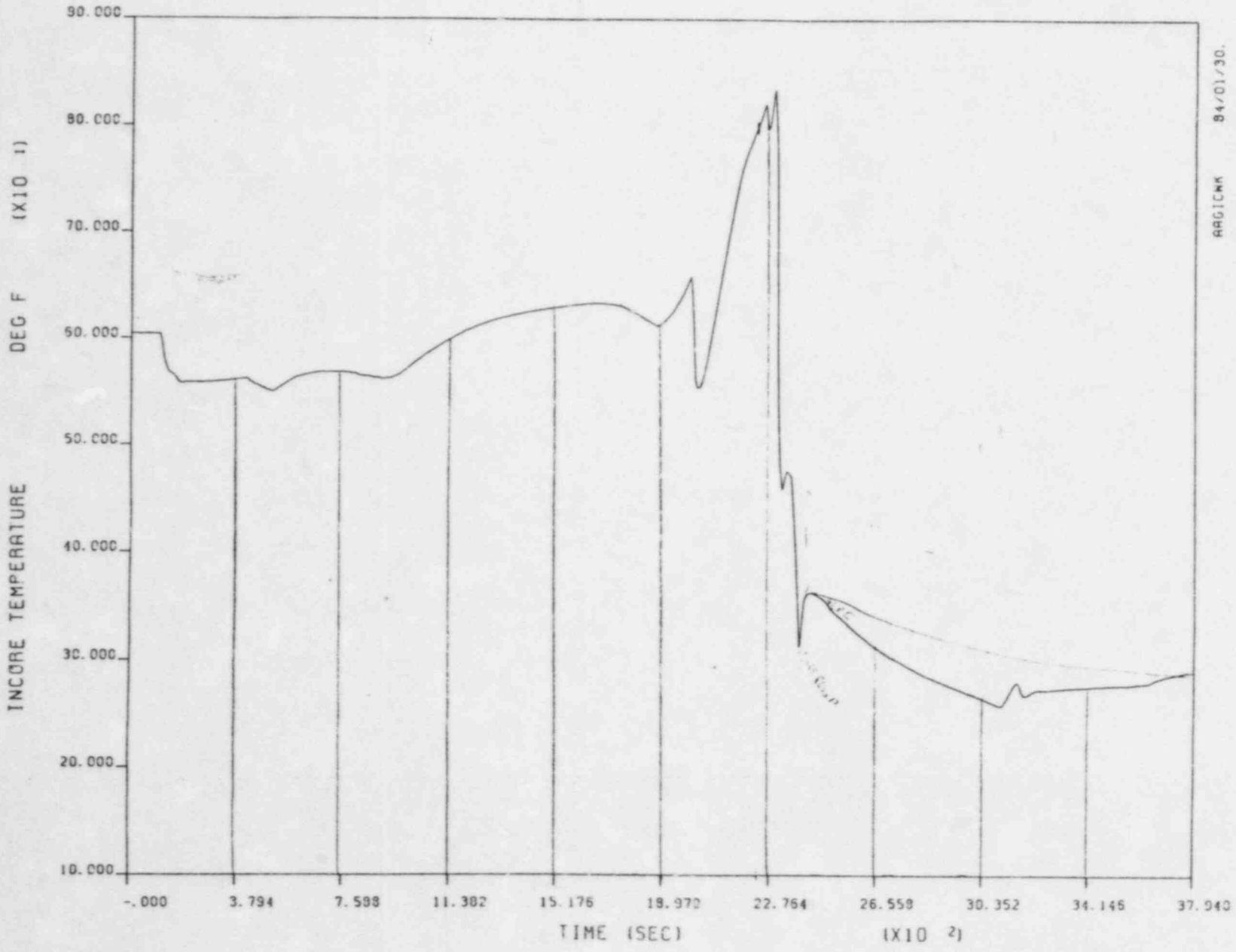


PLOT NUMBER - 3

TUBE LEAK - 128 LB/SEC WITH ICC



PLOT NUMBER -

TUBE LEAK - 128 LB/SEC WITH ICC

A P P E N D I X C

IN-PLANT RADIOLOGICAL DATA

IN-PLANT AREA RADIATION DATA

Controller Notes:

1. All data is assumed to be net data after accounting for background.

2. Areas for which data is not given or available during a time period shall be assumed to have radiation levels equal to actual, measured values at that time.

3. This Appendix consists of the following:

• Attachment 1	Whole body dose rates (mR/hr)
• Attachment 2	
Page 1	Airborne particulate raw data (cpm above bkg.) for the indicated sample size.
Page 2	Airborne particulate concentrations (μCi/cc) corresponding to player calculations for the given sample size and efficiency of 10%.
• Attachment 3	Airborne gaseous concentrations (μCi/cc) corresponding to anticipated player calculations for the given sample size and efficiency of 10%.
• Attachment 4	
Page 1	Airborne I-131 raw data (cpm above bkg) for the indicated sample size corresponding to anticipated player calculations for the given sample size and efficiency of 5.5%.
Page 2	Airborne I-131 concentrations (μCi/cc) corresponding to anticipated player calculations for the given sample size and efficiency of 5.5%.
• Attachment 5	Radiological data for particular hot spots and control room for the indicated times.
• Attachment 6	Area Radiation Monitor Date (by radiation zone)
• Plant H.P. survey maps	Maps indicate radiation zones corresponding to the appropriate zone/time combination for Attachments 1-5 above, which will reflect the proper radiological data parameters for that location and time.

NOTE: All areas of the Turbine Building and all areas of the Administration Building will have the same respective area radiation values per the appropriate times in Attachments 1 through 4. Emergency Control Center radiological readings for the exercise shall be actual background.

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ATTACHMENT 1
Whole Body Dose (mR/hr)
Above Actual Background

ZONE:	1	2	3	4	5	6	7	8	Turb Bldg.	Adm Bldg.
Time										
Before 1010	Bkg	Bkg	Bkg	Bkg	Bkg	Bkg	Bkg	Bkg	Bkg	Bkg
1010 to 1020	100,000	offscale	9,000	16,500	900	400	40	40	1	Bkg
1021 to 1040	400,000	offscale	offscale	66,300	3,500	1,600	160	80	2	Bkg
1041 to 1100	500,000	offscale	offscale	84,000	4,200	2,100	200	100	5	1
1101 to 1120	600,000	offscale	offscale	100,500	5,600	3,490	340	170	5	1
1121 to 1140	620,000	offscale	offscale	105,000	5,800	3,600	350	170	5	1
1141 to 1200	610,000	offscale	offscale	105,600	5,660	3,520	350	170	5	1
1201 to 1220	600,000	offscale	offscale	104,500	5,630	3,500	350	170	5	1
1221 to 1240	550,000	offsclae	offscale	103,100	5,150	2,600	260	130	5	1
1241 to 1300	500,000	offscale	offscale	101,700	4,690	2,340	230	100	5	1
1301 to 1320	480,000	offscale	offscale	100,100	4,500	1,900	190	85	5	1
1321 to 1340	400,000	offscale	offscale	99,500	3,750	1,100	110	65	5	1
1341 to 1400	350,000	offscale	offscale	98,800	3,290	700	40	35	5	1
1401 to 1420	300,000	offscale	offscale	98,200	2,820	300	20	35	5	Bkg
1421 to 1440	200,000	offscale	offscale	97,900	1,870	200	10	35	5	Bkg
1441 to 1500	100,000	offscale	9,340	97,400	930	190	5	30	Bkg	Bkg
1501 to 1520	50,000	8,300	4,670	97,100	460	185	5	30	Bkg	Bkg
1521 to 1540	25,000	4,160	2,340	96,800	230	170	5	30	Bkg	Bkg
24 hours later	500	400	90	85,200	10	5	5	Bkg	Bkg	Bkg

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Net cpm = $\frac{(\mu ci/cc)(2.2E^6)(vol)}{(D/C)}$

ATTACHMENT 2, Page 1

Airborne Particulate (cpm above bkg)

Based on sample size indicated and 10% efficiency

SAMPLE SIZE:	1E4cc	1E4cc	5E5cc	1E5cc	1E6cc	1E6cc	1E6cc	1E6cc	1E6cc	1E6cc
ZONE:	1	2	3	4	5	6	7	8	Turb Bldg.	Adm Bldg.
Time										
Before 1010	Bkg	Bkg	Bkg	Bkg	Bkg	Bkg	Bkg	Bkg	Bkg	Bkg
1010 to 1020	3,080	418	6,380	112	138	167	139	108	170	165
1021 to 1040	Offscale	Offscale	Offscale	Offscale	(924,000) Offscale	9,020	1,298	572	160	163
1041 to 1100	Offscale	Offscale	Offscale	Offscale	Offscale	14,300	1,628	792	170	168
1101 to 1120	Offscale	Offscale	Offscale	Offscale	Offscale	15,180	1,738	980	165	167
1121 to 1140	Offscale	Offscale	Offscale	Offscale	Offscale	15,620	1,804	1,145	170	170
1141 to 1200	Offscale	Offscale	Offscale	Offscale	Offscale	16,060	1,628	1,280	165	161
1201 to 1220	Offscale	Offscale	Offscale	Offscale	Offscale	16,500	1,430	1,397	160	163
1221 to 1240	Offscale	Offscale	Offscale	Offscale	Offscale	12,320	1,232	1,276	163	159
1241 to 1300	Offscale	Offscale	Offscale	Offscale	286,000	3,740	946	924	162	160
1301 to 1320	Offscale	Offscale	Offscale	352,000	195,800	1,804	704	164	160	158
1321 to 1340	Offscale	Offscale	Offscale	200,000	94,600	902	682	160	158	158
1341 to 1400	Offscale	Offscale	Offscale	110,000	21,340	770	550	162	160	160
1401 to 1420	Offscale	Offscale	Offscale	63,800	9,460	682	155	152	150	152
1421 to 1440	Offscale	374,000	Offscale	33,000	4,620	616	154	152	150	151
1441 to 1500	Offscale	178,200	(869,000) Offscale	17,160	1,826	572	148	161	155	143
1501 to 1520	(990,000) Offscale	90,200	(418,000)	7,920	1,430	506	138	152	150	137
1521 to 1540	(530,000) Offscale	46,200	176,000	2,640	814	396	130	145	139	120
24 hours later ($1E^6$cc vol)	480	240	110	121	135	115	127	147	118	136

WP84210

$\mu ci/cc = \frac{(Net\ cpm)(D/C)}{(2.2E6)(vol.in\ cc)}$

Airborne Particulate (μCi/cc)

ZONE:	1	2	3	4	5	6	7	8	Turb Bldg.	Adm Bldg.
Time										
Before 1010	Bkg	Bkg	Bkg	Bkg	Bkg	Bkg	Bkg	Bkg	Bkg	Bkg
1010 to 1020	1.4 E-6	1.9 E-7	5.8 E-8	5.1 E-9	<1 E-9	<1 E-9	<1 E-9	<1 E-9	< E-9	< E-9
1021 to 1040	9.1 E-2	8.5 E-3	3.4 E-3	3.2 E-4	4.2 E-6	4.1 E-8	5.9 E-9	2.6 E-9	< E-9	< E-9
1041 to 1100	1.3 E-1	1.4 E-2	6.3 E-3	6.8 E-4	6.7 E-6	6.5 E-8	7.4 E-9	3.6 E-9	< E-9	< E-9
1101 to 1120	1.5 E-1	1.5 E-2	6.5 E-3	6.5 E-4	6.8 E-6	6.9 E-8	7.9 E-8	4.5 E-9	< E-9	< E-9
1121 to 1140	1.3 E-1	1.4 E-2	6.2 E-3	6.1 E-4	7.1 E-6	7.1 E-8	8.2 E-9	5.2 E-9	< E-9	< E-9
1141 to 1200	1.2 E-1	1.3 E-2	6.1 E-3	5.6 E-4	7.6 E-6	7.3 E-8	7.4 E-9	5.8 E-9	< E-9	< E-9
1201 to 1220	1.0 E-1	1.1 E-2	4.3 E-3	4.5 E-4	8.5 E-6	7.5 E-8	6.5 E-9	6.3 E-9	< E-9	< E-9
1221 to 1240	6.8 E-2	6.4 E-3	6.4 E-4	6.3 E-5	5.8 E-6	5.6 E-8	5.6 E-9	5.8 E-9	< E-9	< E-9
1241 to 1300	3.5 E-2	4.4 E-3	4.3 E-4	4.6 E-5	1.3 E-6	1.7 E-8	4.3 E-9	4.2 E-9	< E-9	< E-9
1301 to 1320	1.8 E-2	1.5 E-3	1.7 E-4	1.6 E-5	8.9 E-7	8.2 E-9	3.2 E-9	<1 E-9	< E-9	< E-9
1321 to 1340	9.7 E-3	9.4 E-4	9.5 E-5	9.1 E-6	4.3 E-7	4.1 E-9	3.1 E-9	<1 E-9	< E-9	< E-9
1341 to 1400	5.2 E-3	5.1 E-4	5.1 E-5	5.0 E-6	9.7 E-8	3.5 E-9	2.5 E-9	<1 E-9	< E-9	< E-9
1401 to 1420	2.8 E-3	3.0 E-4	3.0 E-5	2.9 E-6	4.3 E-8	3.1 E-9	<1 E-9	<1 E-9	< E-9	< E-9
1421 to 1440	1.5 E-3	1.7 E-4	1.6 E-5	1.5 E-6	2.1 E-8	2.8 E-9	<1 E-9	<1 E-9	< E-9	< E-9
1441 to 1500	8.3 E-4	8.1 E-5	7.9 E-6	7.8 E-7	8.3 E-9	2.6 E-9	<1 E-9	<1 E-9	< E-9	< E-9
1501 to 1520	4.5 E-4	4.1 E-5	3.8 E-6	3.6 E-7	6.5 E-9	2.3 E-9	<1 E-9	<1 E-9	< E-9	< E-9
1521 to 1540	2.5 E-4	2.1 E-5	1.6 E-6	1.2 E-7	3.7 E-9	1.8 E-9	<1 E-9	<1 E-9	< E-9	< E-9
24 hours later	2.2 E-9	1.1 E-9	<1 E-9	<1 E-9	<1 E-9	<1 E-9	<1 E-9	<1 E-9	< E-9	< E-9

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ATTACHMENT 3

Gaseous Activity (μCi/cc)

ZONE:	1	2	3	4	5	6	7	8	Turb Bldg.	Adm Bldg.
Time										
Before 1010	Bkg	Bkg	Bkg	Bkg	Bkg	Bkg	Bkg	Bkg	Bkg	Bkg
1010 to 1020	1.9 E-5	2.3 E-3	6.7 E-4	2.84E-5	1.45E-5	8.4 E-6	5.3 E-9	1.55E-9	<1E-9	<1E-9
1021 to 1040	7.1 E+0	4.25E-3	1.24E-3	5.25E-5	2.68E-5	1.55E-5	9.8 E-9	1.57E-9	<1E-9	<1E-9
1041 to 1100	1.3 E+1	5.96E-3	1.74E-3	7.36E-5	3.75E-5	2.18E-5	1.37E-8	1.19E-9	<1E-9	<1E-9
1101 to 1120	1.9 E+1	7.34E-3	2.14E-3	9.06E-5	4.62E-5	2.68E-5	1.69E-8	1.13E-9	<1E-9	<1E-9
1121 to 1140	2.0 E+1	8.53E-3	2.46E-3	1.05E-5	5.38E-5	3.12E-5	1.97E-8	1.32E-9	<1E-9	<1E-9
1141 to 1200	2.0 E+1	9.55E-3	2.78E-3	1.18E-5	6.02E-5	3.49E-5	2.2 E-8	1.47E-9	<1E-9	<1E-9
1201 to 1220	1.9 E+1	1.04E-2	3.04E-3	1.29E-5	6.57E-5	3.81E-5	2.4 E-8	1.61E-9	<1E-9	<1E-9
1221 to 1240	1.4 E+2	1.12E-2	3.25E-3	1.38E-6	7.03E-6	4.07E-5	2.57E-8	1.72E-9	<1E-9	<1E-9
1241 to 1300	7.3 E+0	1.18E-2	3.43E-3	1.45E-6	7.42E-6	4.3 E-5	2.71E-8	1.82E-9	<1E-9	<1E-9
1301 to 1320	3.9 E+0	7 E-5	5 E-5	3 E-5	2 E-6	1 E-6	5 E-9	1.8E-9	<1E-9	<1E-9
1321 to 1340	2.8 E-0	1 E-6	8 E-7	7 E-7	6 E-7	5 E-9	5 E-9	1.5E-9	<1E-9	<1E-9
1341 to 1400	2.1 E-0	5 E-7	4.5 E-7	2 E-7	8 E-8	4 E-9	2 E-9	1.2E-9	<1E-9	<1E-9
1401 to 1420	8.1 E-1	3 E-7	1 E-7	8 E-8	5 E-8	2 E-8	2 E-9	1.2E-9	<1E-9	<1E-9
1421 to 1440	4.5 E-1	8 E-8	5 E-8	2 E-8	1 E-8	9 E-9	<1 E-9	<1 E-9	<1E-9	<1E-9
1441 to 1500	3.1 E-1	5 E-8	2 E-8	1 E-8	9 E-9	7 E-9	1 E-9	<1 E-9	<1E-9	<1E-9
1501 to 1520	2.3 E-1	2 E-8	1 E-6	9 E-9	7 E-9	1 E-9	1 E-9	<1 E-9	<1E-9	<1E-9
1521 to 1540	1.1 E-1	1 E-8	9 E-9	7 E-9	1 E-9	<1 E-9	<1 E-9	<1 E-9	<1E-9	<1E-9
24 hours later	< 1E-9	< 1E-9	< 1E-9	< 1E-9	< 1E-9	< 1E-9	< 1E-9	< 1E-9	< 1E-9	< 1E-9

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ATTACHMENT 4, Page 1

Net cpm = (μci/cc)(vol)(2.2E^6)(.055)

Airborne I-131 (cpm above bkg)

Based on sample size indicated and 10% efficiency

SAMPLE SIZE:	1E4cc	1E4cc	5E5cc	1E5cc	1E6cc	1E6cc	1E6cc	1E6cc	1E6cc	1E6cc
ZONE:	1	2	3	4	5	6	7	8	Turb Bldg.	Adm Bldg.
Time										
1010 to 1020	231,990	24	2	Bkg	Bkg	Bkg	Bkg	Bkg	Bkg	Bkg
1021 to 1040	Offscale (8.6E+6)	732,600	39,683	73,260	879	211	10	20	139	97
1041 to 1100	Offscale (1.3E8)	Offscale (1.2E7)	915,750	Offscale (1.3E-6)	15,873	4,578	15	26	160	150
1101 to 1120	Offscale (1.95E8)	Offscale	915,800	Offscale	17,094	5,800	23	43	170	170
1121 to 1140	Offscale	Offscale	Offscale (1.5E6)	Offscale	25,641	6,410	29	51	200	185
1141 to 1200	Offscale	Offscale	Offscale	Offscale	30,525	7,936	41	79	240	197
1201 to 1220	Offscale	Offscale	Offscale	Offscale	30,570	7,631	46	89	256	200
1221 to 1240	Offscale	Offscale	Offscale	Offscale	20,757	5,800	44	83	244	186
1241 to 1300	Offscale	Offscale	Offscale (1.1E6)	Offscale 1.2E-6	14,652	3,358	42	76	200	154
1301 to 1320	Offscale	Offscale	305,250	610,500	5,250	1,252	36	67	175	163
1321 to 1340	Offscale	Offscale	189,260	366,300	4,157	1,007	26	51	163	159
1341 to 1400	Offscale	Offscale (2.6E6)	122,100	231,990	2,197	518	22	43	149	143
1401 to 1420	Offscale	976,800	42,735	83,028	805	198	15	28	138	137
1421 to 1440	Offscale	488,400	27,473	56,166	525	128	13	26	100	132
1441 to 1500	Offscale	280,830	12,210	24,420	256	61	10	20	98	125
1501 to 1520	Offscale	158,730	15,263	30,525	280	58	8	15	105	109
1521 to 1540	818,000	73,260	3,663	7,326	72	18	10	12	96	111
24 hours later (1E6 cc vol)	496	278	85	93	61	59	57	67	81	65

WP84210

$$\mu ci/cc = \frac{(\text{Net cpm})(1)}{(\text{vol. in cc})(.055)(2.222E^{6})}$$

ATTACHMENT 4, Page 2

Airborne I-131 (μCi/cc)

ZONE:	1	2	3	4	5	6	7	8	Turb Bldg.	Adm Bldg.
Time										
Before 1010	Bkg	Bkg	Bkg	Bkg	Bkg	Bkg	Bkg	Bkg	Bkg	Bkg
1010 to 1020	1.9 E-5	2.0 E-7	2.0 E-9	<2 E-9	<2 E-9	<2 E-9	<2 E-9	<2 E-9	<2E-9	Bkg
1021 to 1040	7.1 E-1	6.0 E-3	6.5 E-5	6.0 E-5	7.2 E-7	6.9 E-8	<2 E-9	<2 E-9	<2E-9	<2E-9
1041 to 1100	1.1 E+1	1.0 E-1	1.5 E-3	1.1 E-3	1.3 E-5	1.5 E-6	2.4 E-9	2.1 E-9	<2E-9	<2E-9
1101 to 1120	1.6 E+1	1.5 E-1	1.5 E-3	1.1 E-3	1.4 E-5	1.9 E-6	3.7 E-9	3.5 E-9	<2E-9	<2E-9
1121 to 1140	2.0 E+1	2.0 E-1	2.5 E-3	2.0 E-3	2.1 E-5	2.1 E-6	4.8 E-9	4.2 E-9	<2E-9	<2E-9
1141 to 1200	2.0 E+1	2.0 E-1	2.5 E-3	2.3 E-3	2.5 E-5	2.6 E-6	6.7 E-9	6.5 E-9	<2E-9	<2E-9
1201 to 1220	2.0 E+1	2.1 E-1	2.5 E-3	2.3 E-3	2.5 E-5	2.5 E-6	7.5 E-9	7.3 E-9	2.1E-9	<2E-9
1221 to 1240	1.9 E+1	1.9 E-1	2.0 E-3	1.5 E-3	1.7 E-5	1.9 E-6	7.2 E-9	6.8 E-9	2.0E-9	<2E-9
1241 to 1300	1.8 E+1	1.7 E-1	1.8 E-3	1.0 E-3	1.2 E-5	1.1 E-6	6.8 E-9	6.2 E-9	<2E-9	<2E-9
1301 to 1320	5.3 E+0	5.0 E-2	5.0 E-4	5.0 E-4	4.3 E-6	4.1 E-7	5.9 E-9	5.5 E-9	<2E-9	<2E-9
1321 to 1340	2.8 E+0	3.0 E-2	3.1 E-4	3.4 E-4	3.4 E-6	3.3 E-7	4.2 E-9	4.2 E-9	<2E-9	<2E-9
1341 to 1400	2.1 E+0	2.1 E-2	2.0 E-4	1.9 E-4	1.8 E-6	1.7 E-7	3.6 E-9	3.6 E-9	<2E-9	<2E-9
1401 to 1420	8.1 E-1	8.0 E-3	7.0 E-5	6.8 E-5	6.6 E-7	6.5 E-8	2.4 E-9	2.3 E-9	<2E-9	<2E-9
1421 to 1440	4.4 E-1	4.0 E-3	4.5 E-5	4.6 E-5	4.3 E-7	4.2 E-8	2.1 E-9	2.1 E-9	<2E-9	<2E-9
1441 to 1500	2.3 E-1	2.3 E-3	2.0 E-5	2.0 E-5	2.1 E-7	2.0 E-8	<2 E-9	<2 E-9	<2E-9	<2E-9
1501 to 1520	1.3 E-1	1.3 E-3	2.5 E-5	2.5 E-5	2.3 E-7	1.9 E-8	<2 E-9	<2 E-9	<2E-9	<2E-9
1521 to 1540	6.7 E-2	6.0 E-4	6.0 E-6	6.0 E-6	5.9 E-8	5.9 E-9	<2 E-9	<2 E-9	<2E-9	<2E-9
24 hours later	4.1 D-9	2.3 E-9	<2 E-9	<2 E-9	<2 E-9	<2 E-9	<2 E-9	<2 E-9	<2 E-9	<2 E-9

ATTACHMENT 5

Radiological Data for

Hot Spots & Control Rooms

Location/Description	Time	Parameters
Aux. Bldg. Sump Pumps	After 1020	600R/hr on contact
Aux. Bldg. Sump Transfer piping is waste tanks	After 1020	600R/hr
Waste Tanks T-20A & B	After 1020	600R/hr on contact
Penetration Area Ventilation fans and ductwork	After 1020	50R/hr
Penetration Room Exhaust charcoal filters	1010-1100	50R/hr
	1100-1200	125R/hr
	1200-1300	300R/hr
	1300-1400	750R/hr
	1400-1500	1000R/hr
Control Room	1010-1540	<1 mR/hr <1E-9 μCi/cc of I-131 (35 cpm for 10^6cc sample)

ATTACHMENT 5 (continued)

Third Floor Administration Building

CAM Trend Data

(cpm above background)

Time	Particulate (cpm)	Gaseous (cpm)
Before 1010	BKG	BKG
1010 to 1020	BKG	BKG
1021 to 1040	BKG	BKG
1041 to 1100	BKG	BKG
1101 to 1120	BKG	BKG
1121 to 1140	BKG	BKG
1141 to 1200	BKG	BKG
1201 to 1220	BKG	BKG
1221 to 1240	BKG	BKG
1241 to 1300	BKG	BKG
1301 to 1320	BKG	BKG
1321 to 1340	BKG	BKG
1341 to 1400	BKG	BKG
1401 to 1420	BKG	BKG
1421 to 1440	BKG	BKG
1441 to 1500	BKG	BKG
1501 to 1520	BKG	BKG
1521 to 1540	BKG	BKG
24 hours later	BKG	BKG

ATTACHMENT 6

AREA RADIATION MONITORS

Number	Detector Location	*Zone for Corresponding Detector Data with Time
RE-8004	General Area Elev. 317'	5
RE-8011	Make-up Pump Area Elev. 335'	3
RE-8012	Elevator Elev. 335'	3
RE-8005	Sample Room Hall Elev. 354'	5
RE-8006	Radiochem Lab Elev. 354'	5
RE-8007	Stairway Vestibule Area Elev. 372'	6
RE-8013	Emer. Feed Pump Elev. 335'	2
RE-8014	CZ Pump Room Elev. 326'	5
RE-8010	Elevator Elev. 386'	7
RE-8008	Decon Room Elev. 386'	7
RE-8015	Condensate Demin. Elev. 335'	3
RE-8016	SF Filter Area Elev. 335'	3
RE-8001	Control Room Elev. 386'	10
RE-8009	Spent Fuel Pool Area Elev. 404'	8
RE-8003	Machine Shop Elev. 354' Turb. Bldg.	9

ATTACHMENT 6 (continued)

AREA RADIATION MONITORS

Number	Detector Location	*Zone for Corresponding Detector Data with Time
RE-8002	Relay Room Elev. 372'	9
RE-8017	Fuel Handling Equip. Rx Bldg.	1
RE-8018	Personnel Access Hatch Elev. 386'	4
RE-8019	Incore Inst. Rx Bldg.	1
RE-8020	Equip. Hatch Rx Bldg.	4

*Use Attachment 1 to obtain detector data.

REMARKS

H.P. MAP NO. A1-317-1 FORM 2.320A

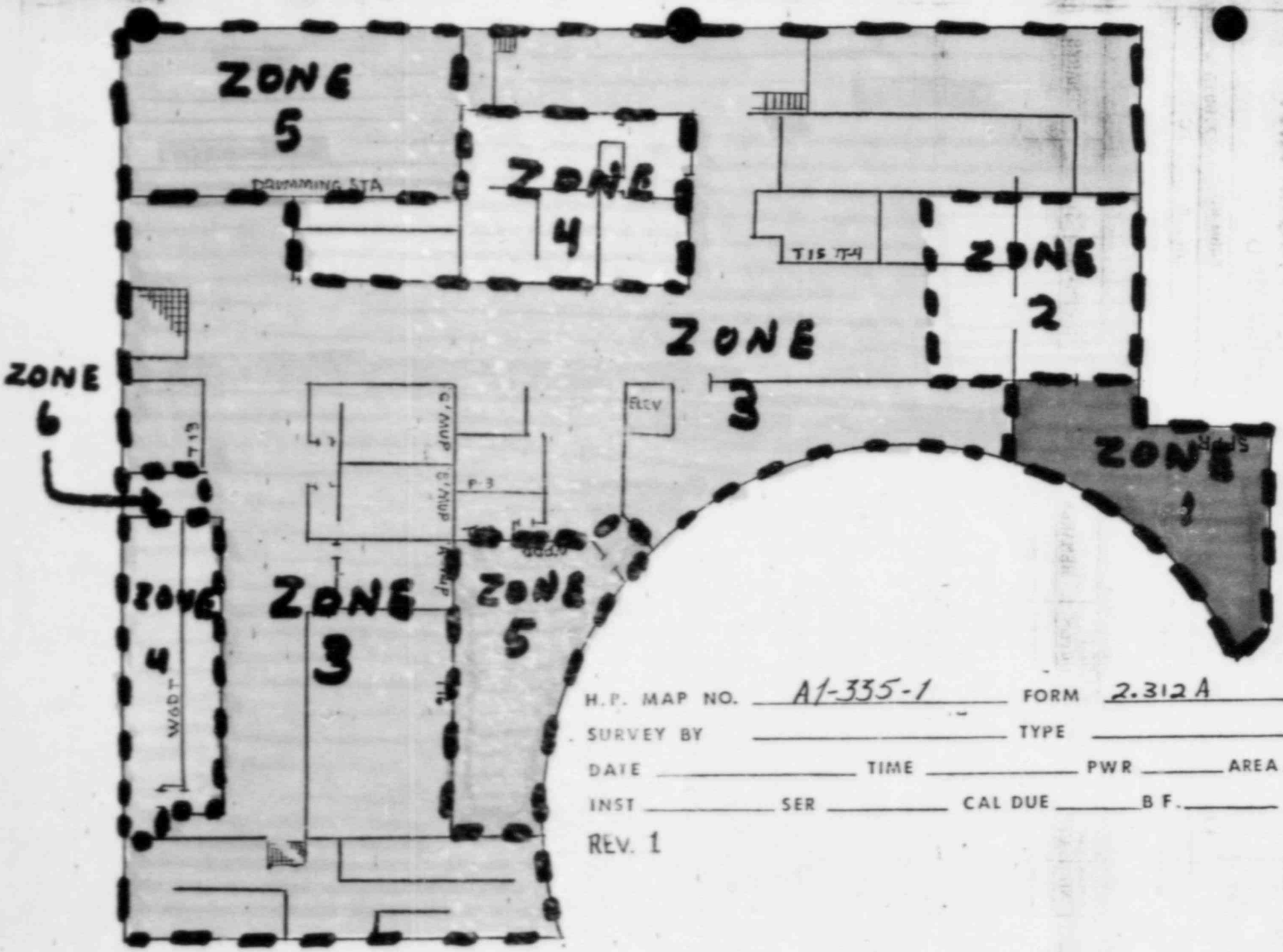
SURVEY BY _____ TYPE _____

DATE _____ TIME _____ PWR _____ AREA _____

INST _____ SER _____ CAL DUE _____ B F. _____

REV. 1

Rev 1



H.P. MAP NO. A1-335-1 FORM 2.312 A

SURVEY BY _____ TYPE _____

DATE _____ TIME _____ PWR _____ AREA _____

INST _____ SER _____ CAL DUE _____ B F. _____

REV. 1

ARKANSAS POWER & LIGHT COMPANY
Arkansas Nuclear One

TITLE: RADIOLOGICAL SURVEY FORM | FORM NO. 1622.001A | REV. # 0 | PC #

SMR NO	GROSS CPM	CPM-BG	DPM 100cm²	REMARKS	SMR NO	GROSS CPM	CPM-BG	DPM 100cm²	REMARKS

ALL AREAS SMEARED WILL BE REPORTED IN DPM/100cm²

DATE _____ TIME _____

AREA SMEARED (cm²) _____ COUNT TIME (min) _____

COUNTING INST. _____ d/c _____ BKG. _____ TYPE (alpha or beta/gamma) _____

COUNTED BY _____

LEGEND: (N) AS SHOWN [N] FLOOR [N] INSIDE (SEE REMARKS)
(RED INDICATES HIGH READINGS)

AIR ACTIVITY DATA # 1

TIME ON _____ TIME OFF _____ FLOW _____ LPM

VOL. _____ cc NET CPM _____ pt _____ crt _____

ACTIVITY _____ uc/cc [NET CPM] / [2.2 x 10⁶ x _____ x _____] [D/E] _____

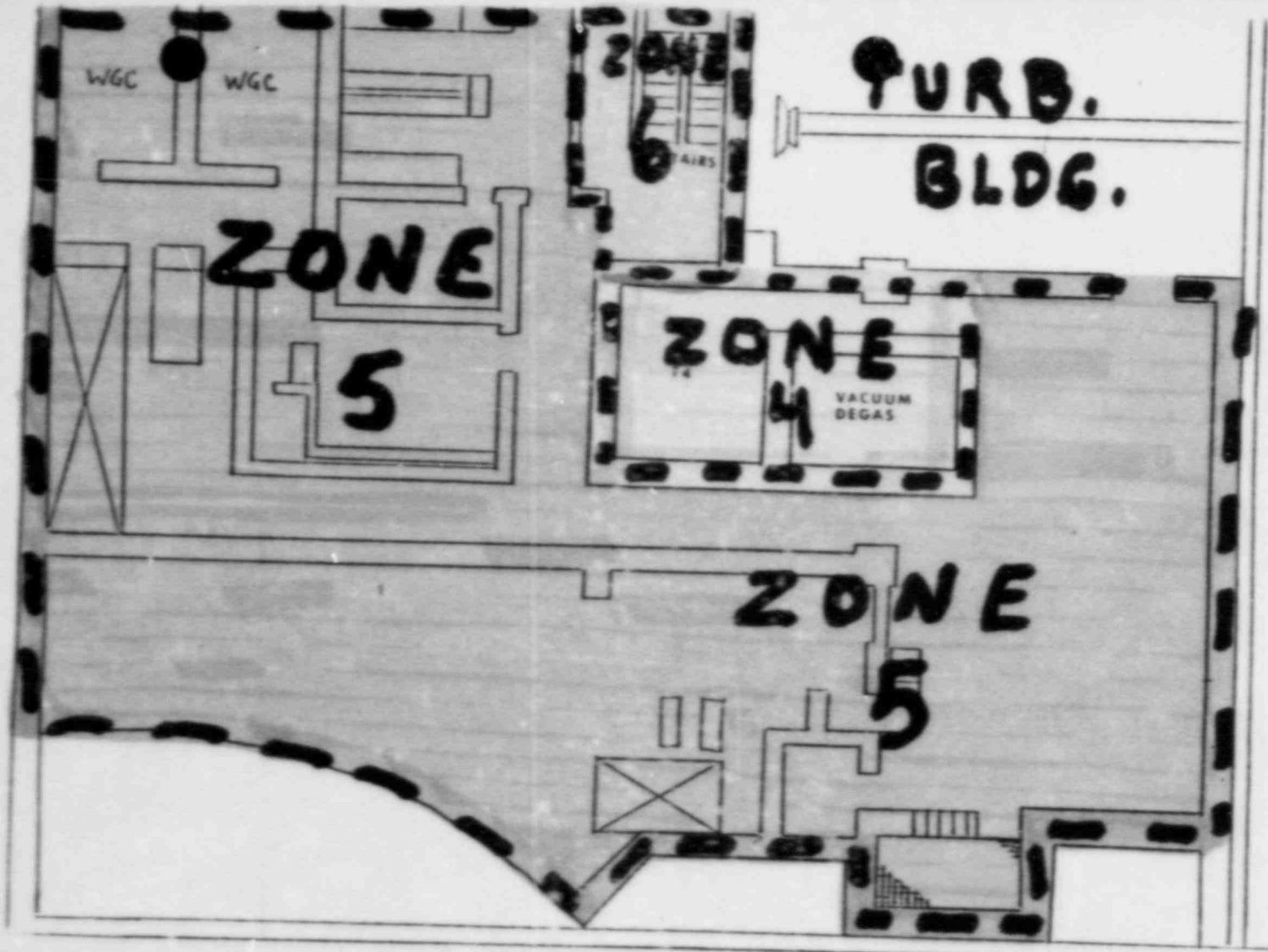
AIR ACTIVITY DATA # 2

TIME ON _____ TIME OFF _____ FLOW _____ LPM

VOL. _____ cc NET CPM _____ pt _____ crt _____

ACTIVITY _____ uc/cc [NET CPM] / [2.2 x 10⁶ x _____ x _____] [D/E] _____

PAGE _____ of _____ REVIEWED BY _____



H.P. MAP NO. A1-354-1 FORM 2307

SURVEY BY _____ TYPE _____

DATE _____ TIME _____ PWR _____ AREA _____

INST _____ SER _____ CAL DUE _____ S F _____

REV. 1

Rev 1

ARKANSAS POWER & LIGHT COMPANY
Arkansas Nuclear One

TITLE: RADIOLOGICAL SURVEY FORM | FORM NO. 1622.001A

REV. # 0 | PC #

SMR NO	GROSS CPM	CPM-BG	DPM 100cm²	REMARKS	SMR NO	GROSS CPM	CPM-BG	DPM 100cm²	REMARKS

ALL AREAS SMEARED WILL BE REPORTED IN DPM/100cm²

DATE ________ TIME ________

AREA SMEARED (cm²) ________ COUNT TIME (min) ________

COUNTING INST. ________ d/c ________ BKG. ________ TYPE (alpha or beta/gamma) ________

COUNTED BY ________

LEGEND: (N) AS SHOWN [N] FLOOR △ INSIDE (SEE REMARKS)
(RED INDICATES HIGH READINGS)

AIR ACTIVITY DATA # 1

TIME ON ____ TIME OFF ____ FLOW ____ LPM

VOL. ____ cc NET CPM pt ____ crt ____

ACTIVITY ____ uc/cc $\frac{[NET\ CPM]}{[2.2 \times 10^6]} \frac{[D/C]}{[VOL]}$

AIR ACTIVITY DATA # 2

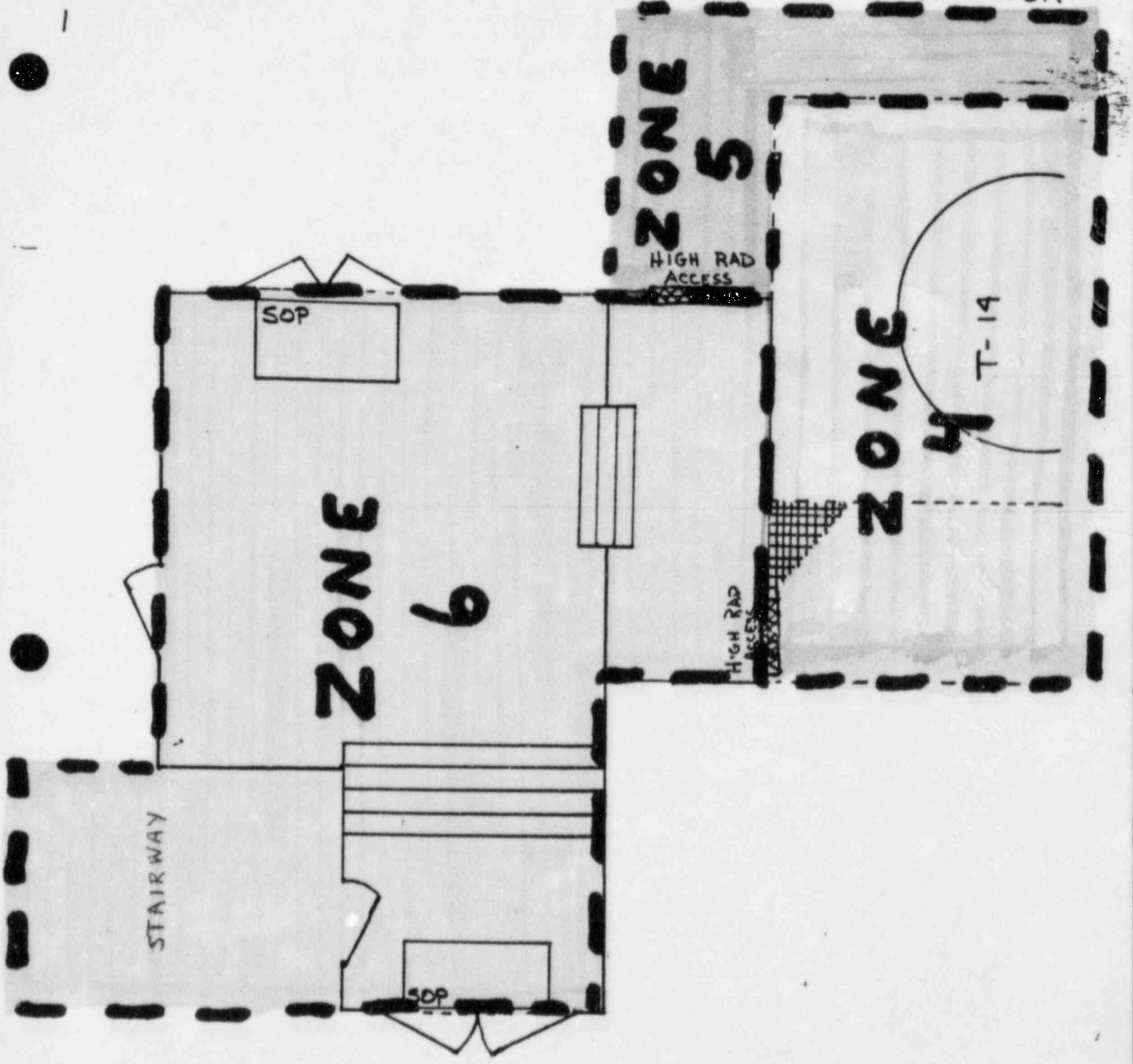
TIME ON ____ TIME OFF ____ FLOW ____ LPM

VOL. ____ cc NET CPM pt ____ crt ____

ACTIVITY ____ uc/cc $\frac{[NET\ CPM]}{[2.2 \times 10^6]} \frac{[D/C]}{[VOL]}$

PAGE ____ of ____ REV. BY ____

UNIT 1 AUX. BLDG 372 G.A & VAC. DEGASSIFER



H.P. FORM 2.306 A H.P. MAP NO. AI-372-2

SURVEY: BY: _____ TYPE: _____

DATE: _____ TIME: _____ PWR _____ AREA _____

INST. _____ SER. _____ CAL DUE _____ BF _____

ARKANSAS POWER & LIGHT COMPANY
Arkansas Nuclear One

TITLE: RADIOLOGICAL SURVEY FORM | FORM NO. 1622.001A

REV. # 0 | PC #

SMR NO	GROSS CPM	CPM-BG	DPM 100cm²	REMARKS	SMR NO	GROSS CPM	CPM-BG	DPM 100cm²	REMARKS

ALL AREAS SMEARED WILL BE REPORTED IN DPM/100cm²

DATE _____ TIME _____

AREA SMEARED (cm²) _____ COUNT TIME (min) ____

COUNTING INST. _____ d/c _____ EFF _____ (dpm or dpm/gal) _____

COUNTED BY _____

LEGEND: (N) AS SHOWN [N] FLOOR △N INSIDE (SEE REMARKS)
(RED INDICATES HIGH READINGS)

AIR ACTIVITY DATA # 1

TIME ON ____ TIME OFF _____ FLOW _____ LPM

VOL. _____ cc NET CPM pt _____ crt _____

ACTIVITY _____ uc/cc $\frac{[\text{NET CPM}]\ [\text{D/C}]}{[2.2 \times 10^6]\ [\text{VOL}]}$

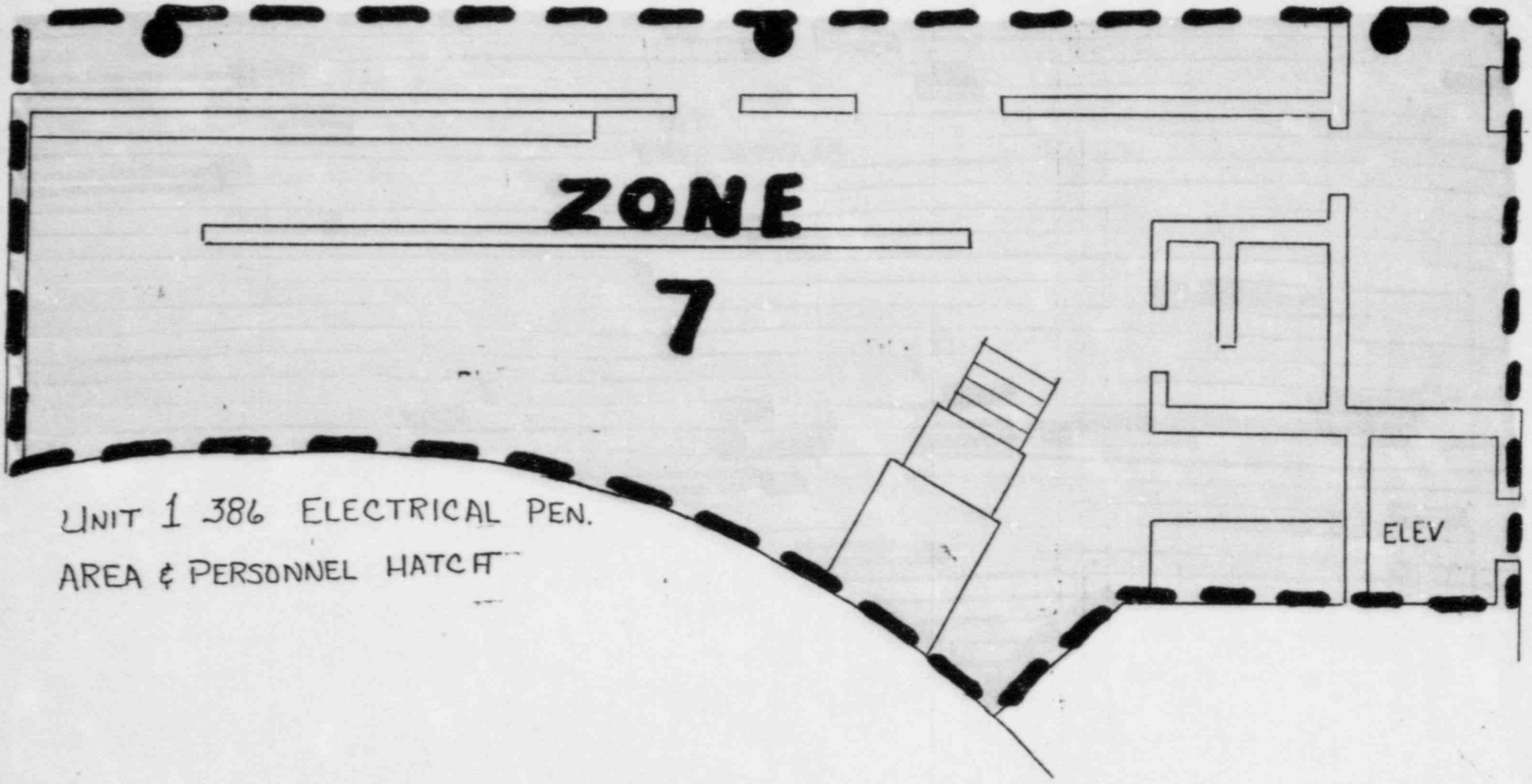
AIR ACTIVITY DATA # 2

TIME ON _____ TIME OFF _____ FLOW ____ LPM

VOL. _____ cc NET CPM pt _____ crt _____

ACTIVITY _____ uc/cc $\frac{[\text{NET CPM}]\ [\text{D/C}]}{[2.2 \times 10^6]\ [\text{VOL}]}$

PAGE _____ of _____ REV. BY _____



UNIT 1 386 ELECTRICAL PEN.
AREA & PERSONNEL HATCH

H.P. MAP NO. A1-386-5 FORM 2.305D

SURVEY BY _____ TYPE _____

DATE _____ TIME _____ PWR _____ AREA _____

INST _____ SER _____ CAL DUE _____ B F. _____

Rev 1

ARKANSAS POWER & LIGHT COMPANY
Arkansas Nuclear One

TITLE: RADIOLOGICAL SURVEY FORM | FORM NO. 1622.001A | REV. # 0 | PC #

SMR NO	GROSS CPM	CPM-BG	DPM 100cm²	REMARKS	SMR NO	GROSS CPM	CPM-BG	DPM 100cm²	REMARKS

NONE

ALL AREAS SMEARED WILL BE REPORTED IN DPM/100cm²

DATE ______ TIME ______

AREA SMEARED (cm²) ______ COUNT TIME (min) ______

COUNTING INST. ______ d/c ______ BKG. ______ TYPE (alpha or beta/gamma) ______

COUNTED BY ______

LEGEND: (N) AS SHOWN [N] FLOOR △N INSIDE (SEE REMARKS)
(RED INDICATES HIGH READINGS)

AIR ACTIVITY DATA # 1

TIME ON ______ TIME OFF ______ FLOW ______ LPM

VOL. ______ cc NET CPM pt ______ crt ______

ACTIVITY ______ uc/cc $\frac{[\text{NET CPM}]\,[\text{D/C}]}{[2.2 \times 10^6]\,[\text{VOL}]}$

AIR ACTIVITY DATA # 2

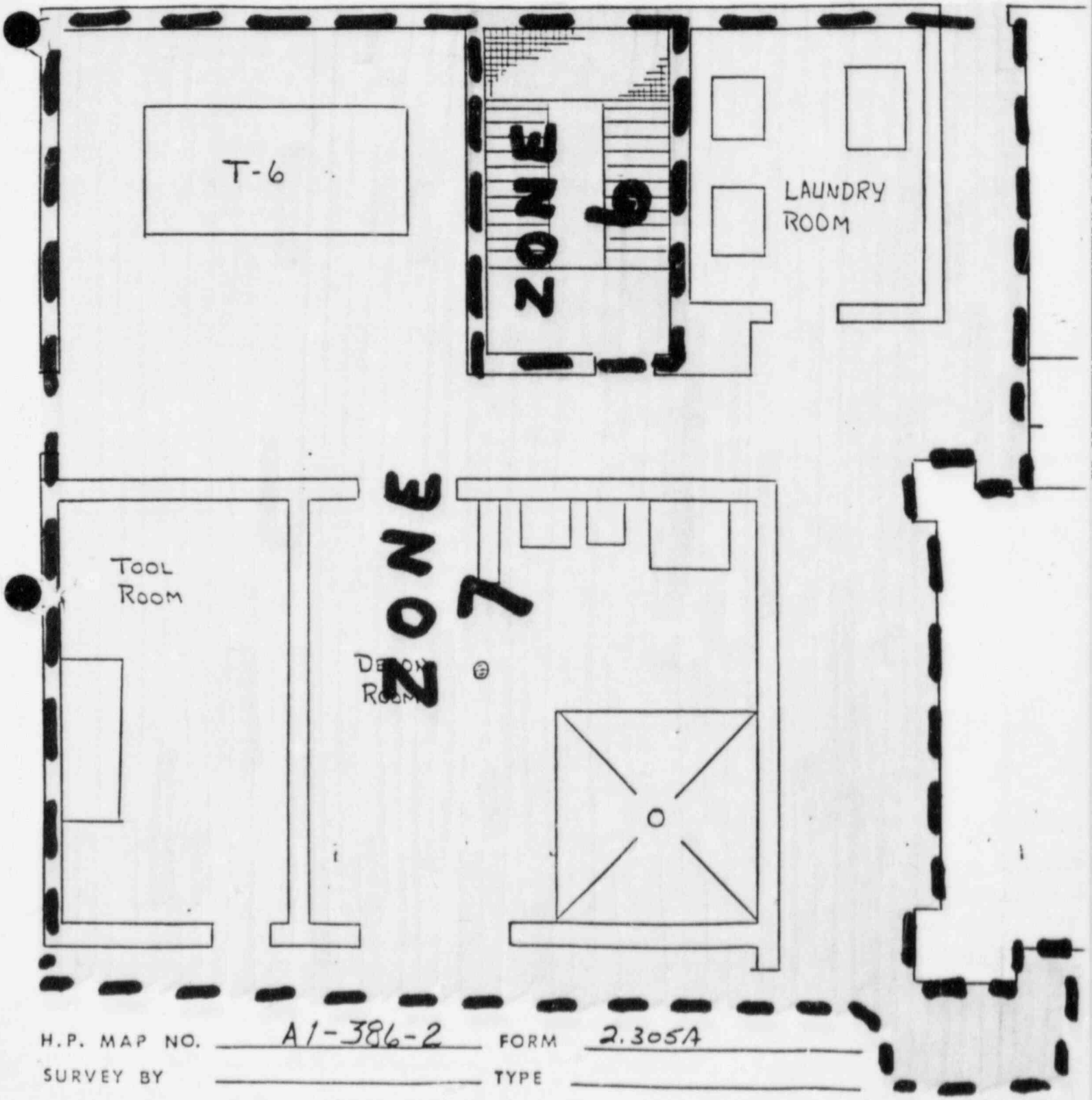
TIME ON ______ TIME OFF ______ FLOW ______ LPM

VOL. ______ cc NET CPM pt ______ crt ______

ACTIVITY ______ uc/cc $\frac{[\text{NET CPM}]\,[\text{D/C}]}{[2.2 \times 10^6]\,[\text{VOL}]}$

PAGE ______ of ______ REV. BY ______

UNIT 1 386 CONTROLLED ACCESS



H.P. MAP NO. A1-386-2 FORM 2.305A

SURVEY BY _____ TYPE _____

DATE _____ TIME _____ PWR _____ AREA _____

INST _____ SER _____ CAL DUE _____ B F. _____

Rev 1

ARKANSAS POWER & LIGHT COMPANY
Arkansas Nuclear One

TITLE: RADIOLOGICAL SURVEY FORM | FORM NO. 1622.001A
REV. # 0 PC #

SMR NO	GROSS CPM	CPM-BG	DPM 100cm²	REMARKS	SMR NO	GROSS CPM	CPM-BG	DPM 100cm²	REMARKS
				NONE					
						NONE			

ALL AREAS SMEARED WILL BE REPORTED IN DPM/100cm²

DATE______ TIME______

AREA SMEARED (cm²) ______ COUNT TIME (min)____

COUNTING INST. ______ d/c ______ BKG. ______ TYPE (alpha or beta/gamma) ______

COUNTED BY ______

LEGEND: (N) AS SHOWN [N] FLOOR △N INSIDE (SEE REMARKS)
(RED INDICATES HIGH READINGS)

AIR ACTIVITY DATA # 1

TIME ON ____ TIME OFF ____ FLOW ____ LPM

VOL. ____ cc NET CPM pt ____ crt ____

ACTIVITY ____ uc/cc $\frac{[\text{NET CPM}]\ [\text{D/C}]}{[2.2 \times 10^6]\ [\text{VOL}]}$

AIR ACTIVITY DATA # 2

TIME ON ____ TIME OFF ____ FLOW ____ LPM

VOL. ____ cc NET CPM pt ____ crt ____

ACTIVITY ____ uc/cc $\frac{[\text{NET CPM}]\ [\text{D/C}]}{[2.2 \times 10^6]}$

PAGE ____ of ____ REV. BY ______

W.P. MAP NO. A1-386-1 FORM 2.304

SURVEY by _____ TYPE _____

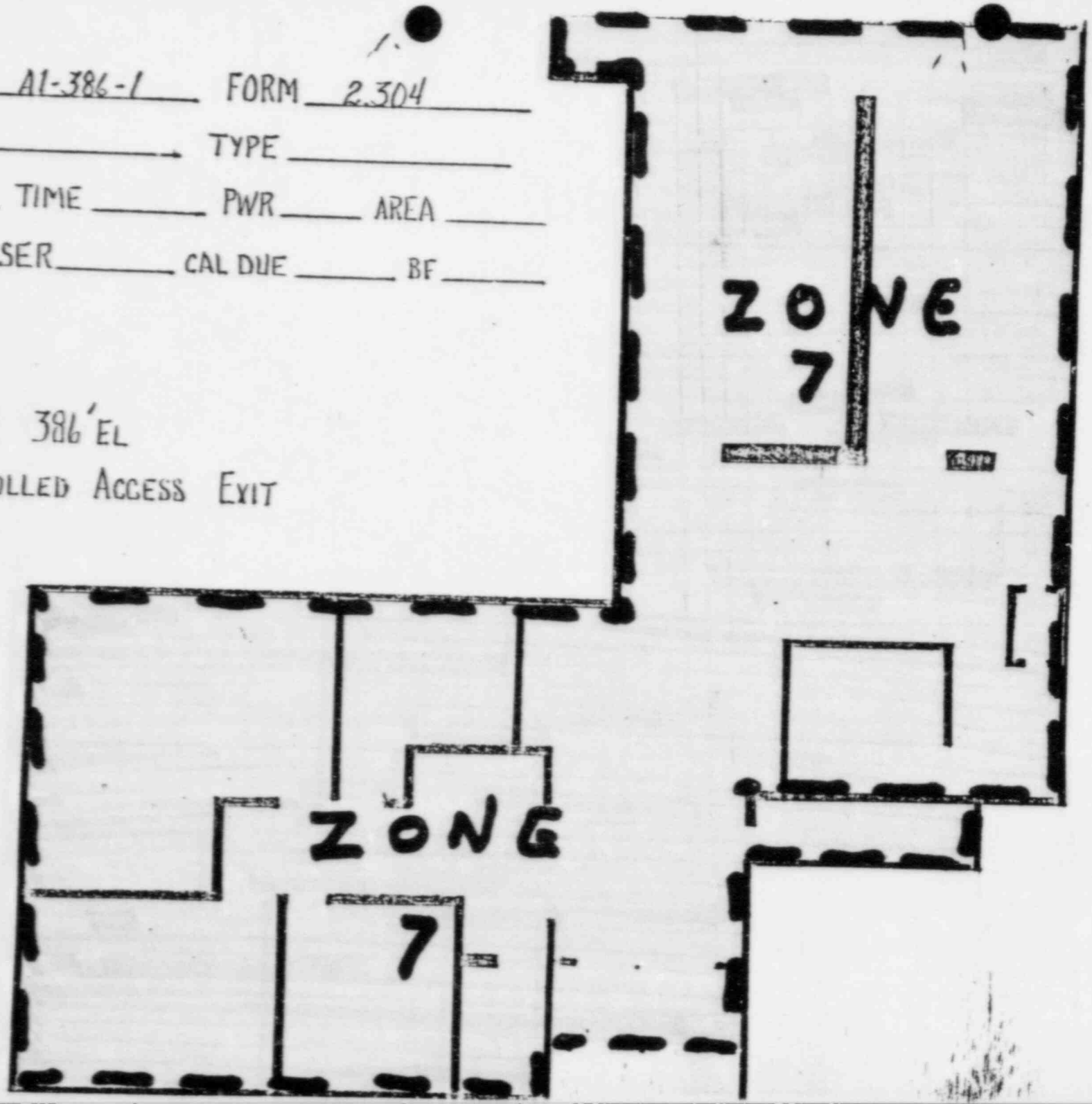
DATE _____ TIME _____ PWR _____ AREA _____

INST _____ SER _____ CAL DUE _____ BF _____

REV 2 8/16

UNIT 1 386' EL

CONTROLLED ACCESS EXIT



ARKANSAS POWER & LIGHT COMPANY
Arkansas Nuclear One

TITLE: RADIOLOGICAL SURVEY FORM | FORM NO. 1622.001

REV. # 0 PC #

SMR NO	GROSS CPM	CPM-BG	DPM 100cm²	REMARKS	SMR NO	GROSS CPM	CPM-BG	DPM 100cm²	REMARKS

ALL AREAS SMEARED WILL BE REPORTED IN DPM/100cm²

DATE ______ TIME ______

AREA SMEARED (cm²) ______ COUNT TIME (min) ____

COUNTING INST. ______ d/c ______ BKG. ______ TYPE (alpha or beta/gamma) ______

COUNTED BY ______

LEGEND: (N) AS SHOWN [N] FLOOR △N INSIDE (SEE REMARKS)
(RED INDICATES HIGH READINGS)

AIR ACTIVITY DATA # 1

TIME ON ____ TIME OFF ______ FLOW ______ LPM

VOL. ______ cc NET CPM pt ______ crt ______

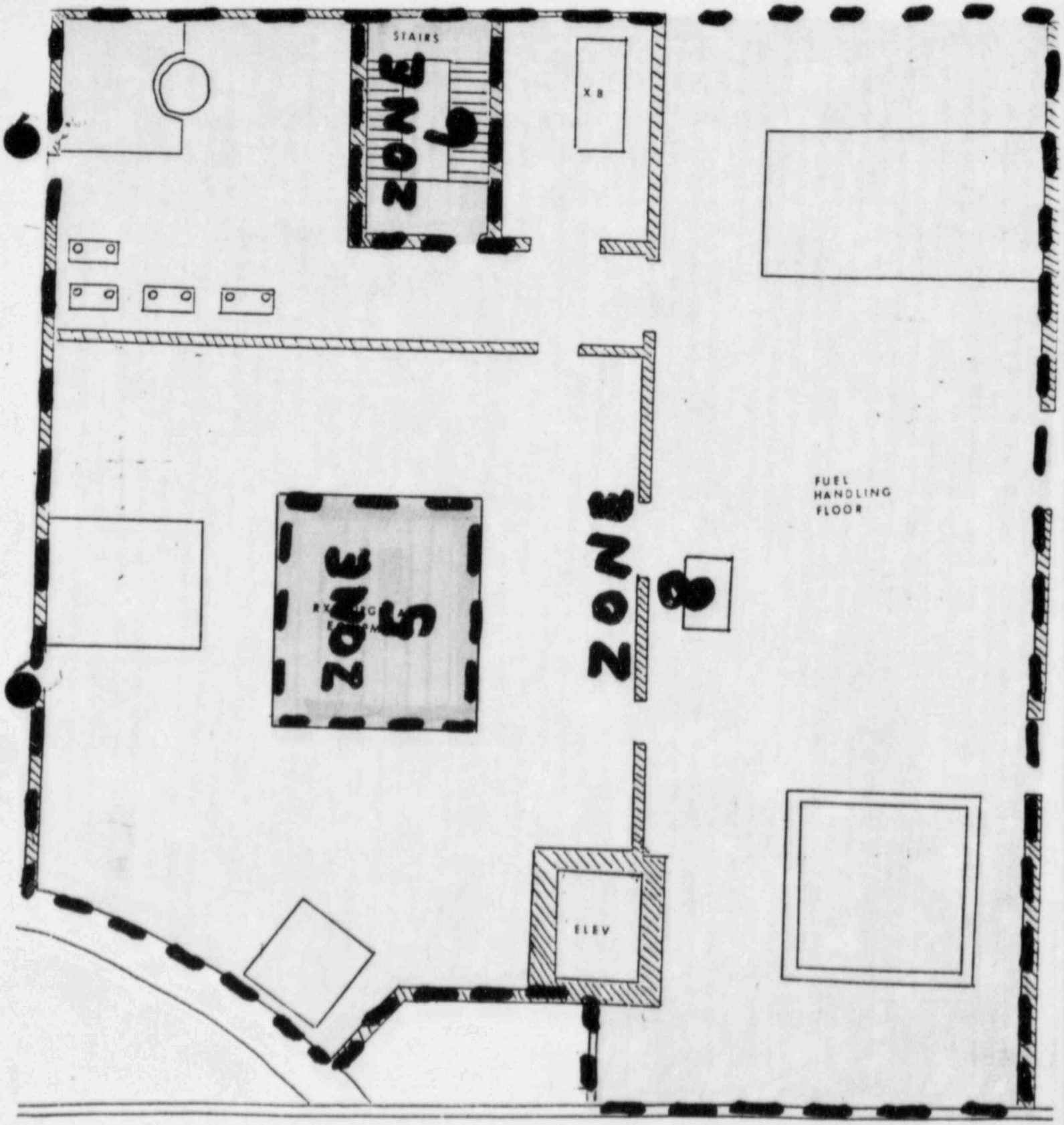
ACTIVITY ______ uc/cc $\frac{[\text{NET CPM}]\ [\text{D/C}]}{[2.2 \times 10^6]\ [\text{VOL}]}$

AIR ACTIVITY DATA # 2

TIME ON ______ TIME OFF ______ FLOW ____ LPM

VOL. ______ cc NET CPM pt ______ crt ______

ACTIVITY ______ uc/cc $\frac{[\text{NET CPM}]\ [\text{D/C}]}{[2.2 \times 10^6]\ [\text{VOL}]}$



H.P. MAP NO. A1-404-1 FORM 2.300 A

SURVEY BY _____ TYPE _____

DATE _____ TIME _____ PWR _____ AREA _____

INST _____ SER _____ CAL DUE _____ B F _____

REV. 1

REVISION 1

ARKANSAS POWER & LIGHT COMPANY
Arkansas Nuclear One

TITLE: RADIOLOGICAL SURVEY FORM | FORM NO. 1622.001A | REV. # 0 | PC #

SMR NO	GROSS CPM	CPM-BG	DPM 100cm²	REMARKS	SMR NO	GROSS CPM	CPM-BG	DPM 100cm²	REMARKS

NONE NONE NONE

ALL AREAS SMEARED WILL BE REPORTED IN DPM/100cm²

DATE _____ TIME _____

AREA SMEARED (cm²) _____ COUNT TIME (min) _____

COUNTING INST. _____ d/c _____ BKG. _____ TYPE (alpha or beta/gamma) _____

COUNTED BY _____

LEGEND: (N) AS SHOWN [N] FLOOR △N INSIDE (SEE REMARKS)
(RED INDICATES HIGH READINGS)

AIR ACTIVITY DATA # 1

TIME ON _____ TIME OFF _____ FLOW _____ LPM

VOL. _____ cc NET CPM pt _____ crt _____

ACTIVITY _____ uc/cc $\frac{[\text{NET CPM}]\ [\text{D/C}]}{[2.2 \times 10^6]\ [\text{VOL}]}$

AIR ACTIVITY DATA # 2

TIME ON _____ TIME OFF _____ FLOW _____ LPM

VOL. _____ cc NET CPM pt _____ crt _____

ACTIVITY _____ uc/cc $\frac{[\text{NET CPM}]\ [\text{D}}{[2.2 \times 10^6]\ [\text{VOL}}$

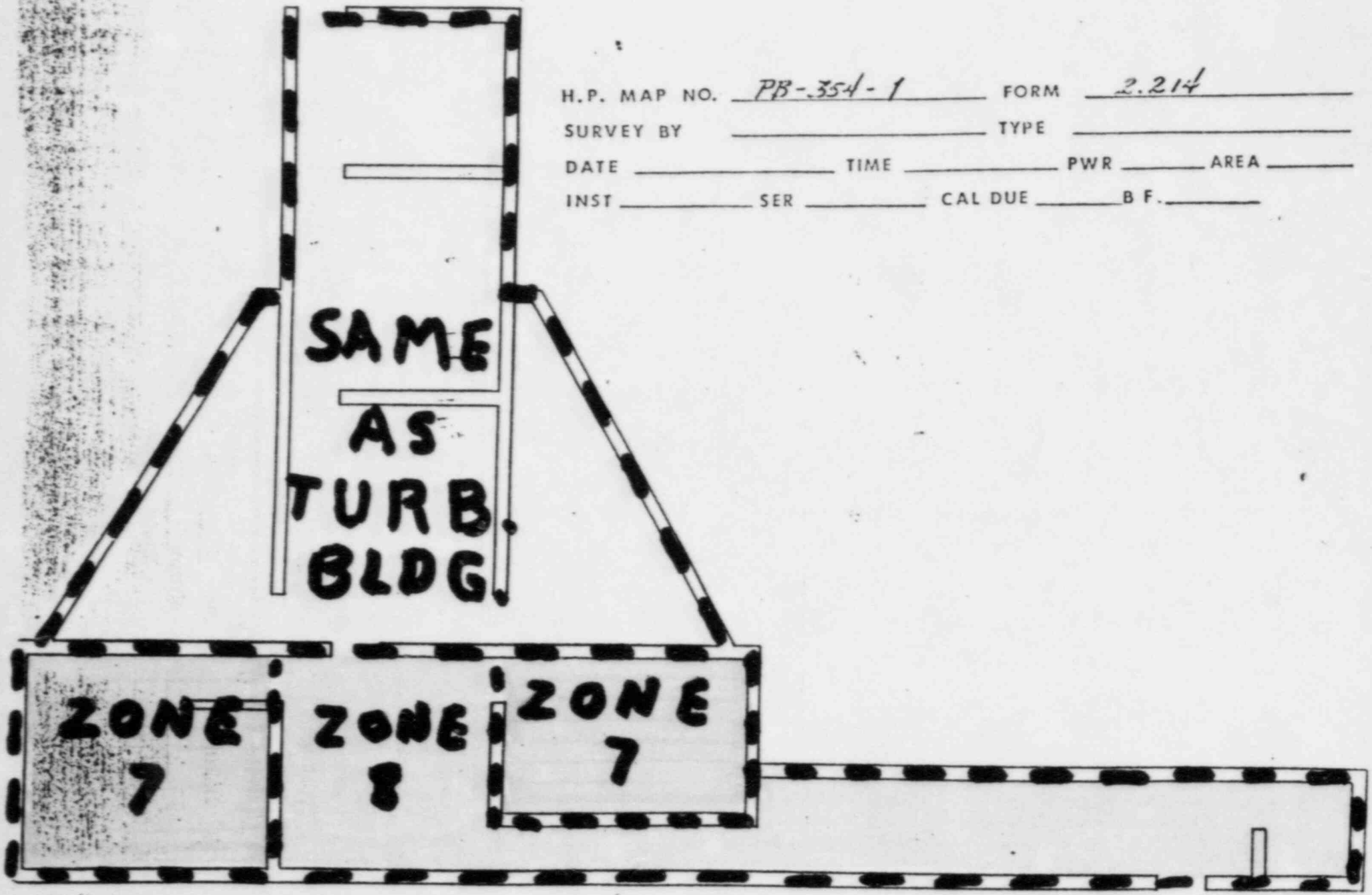
PAGE _____ of _____ REV. BY _____

H.P. MAP NO. PB-354-1 FORM 2.214

SURVEY BY _____ TYPE _____

DATE _____ TIME _____ PWR _____ AREA _____

INST _____ SER _____ CAL DUE _____ B F. _____



A P P E N D I X D

POST-ACCIDENT SAMPLING DATA

AND

RADIOLOGICAL RELEASE PARAMETERS

Senerio 1984 Gas Gap Release:72% Fuel Overheat Release:7.5%

Time (minutes from trip) 1

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 0.00E+00 I131DE (Ci/sec) 0.00E+00

RCS activity (uci/ml)
Xe131m 4.20E-03 Xe133m 4.80E-02 Xe133 2.90E+00 Xe135 7.49E-01
Kr85m 1.36E-01 Kr85 3.00E-03 Kr87 1.35E-01 Kr88 1.64E-01
I131 3.00E-02 I132 1.15E-01 I133 8.92E-02 I134 1.54E-01 I135 1.12E-01
Rb88 2.89E-01 Cs134 1.55E-02 Cs137 3.90E-02 Cs138 2.25E-01
RCS energy*activity factor (Ci*MeV/ml) 1.99E-06

Airborne activity in leak area (uci/ml)
Xe131m 0.00E+00 Xe133m 0.00E+00 Xe133 0.00E+00 Xe135 0.00E+00
Kr85m 0.00E+00 Kr85 0.00E+00 Kr87 0.00E+00 Kr88 0.00E+00
I131 0.00E+00 I132 0.00E+00 I133 0.00E+00 I134 0.00E+00 I135 0.00E+00
Rb88 0.00E+00 Cs134 0.00E+00 Cs137 0.00E+00 Cs138 0.00E+00
Leak area airborne energy*activity factor (Ci*MeV/ml) 0.00E+00
Leak area liquid energy*activity factor (Ci*MeV) 0.00E+00

Time (minutes from trip) 2

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 0.00E+00 I131DE (Ci/sec) 0.00E+00

RCS activity (uci/ml)
Xe131m 4.20E-03 Xe133m 4.80E-02 Xe133 2.90E+00 Xe135 7.48E-01
Kr85m 1.35E-01 Kr85 3.00E-03 Kr87 1.34E-01 Kr88 1.64E-01
I131 3.00E-02 I132 1.15E-01 I133 8.91E-02 I134 1.52E-01 I135 1.12E-01
Rb88 2.78E-01 Cs134 1.55E-02 Cs137 3.90E-02 Cs138 2.21E-01
RCS energy*activity factor (Ci*MeV/ml) 1.94E-06

Airborne activity in leak area (uci/ml)
Xe131m 0.00E+00 Xe133m 0.00E+00 Xe133 0.00E+00 Xe135 0.00E+00
Kr85m 0.00E+00 Kr85 0.00E+00 Kr87 0.00E+00 Kr88 0.00E+00
I131 0.00E+00 I132 0.00E+00 I133 0.00E+00 I134 0.00E+00 I135 0.00E+00
Rb88 0.00E+00 Cs134 0.00E+00 Cs137 0.00E+00 Cs138 0.00E+00
Leak area airborne energy*activity factor (Ci*MeV/ml) 0.00E+00
Leak area liquid energy*activity factor (Ci*MeV) 0.00E+00

Time (minutes from trip) 3

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 0.00E+00 I131DE (Ci/sec) 0.00E+00

RCS activity (uci/ml)
Xe131m 4.20E-03 Xe133m 4.80E-02 Xe133 2.90E+00 Xe135 7.48E-01
Kr85m 1.35E-01 Kr85 3.00E-03 Kr87 1.32E-01 Kr88 1.63E-01
I131 3.00E-02 I132 1.14E-01 I133 8.91E-02 I134 1.50E-01 I135 1.11E-01
Rb88 2.67E-01 Cs134 1.55E-02 Cs137 3.90E-02 Cs138 3.14E-01
RCS energy*activity factor (Ci*MeV/ml) 1.90E-06

Airborne activity in leak area (uci/ml)
Xe131m 0.00E+00 Xe133m 0.00E+00 Xe133 0.00E+00 Xe135 0.00E+00
Kr85m 0.00E+00 Kr85 0.00E+00 Kr87 0.00E+00 Kr88 0.00E+00
I131 0.00E+00 I132 0.00E+00 I133 0.00E+00 I134 0.00E+00 I135 0.00E+00
Rb88 0.00E+00 Cs134 0.00E+00 Cs137 0.00E+00 Cs138 0.00E+00
Leak area airborne energy*activity factor (Ci*MeV/ml) 0.00E+00
Leak area liquid energy*activity factor (Ci*MeV) 0.00E+00

```
Time (minutes from trip)   4

Gaseous Effluent Release Rates
Xe133eq (Ci/sec):  0.00E+00  I131DE (Ci/sec) 0.00E+00'

RCS  activity  (uci/ml)
Xe131m 4.20E-03 Xe133m 4.80E-02 Xe133 2.90E+00 Xe135 7.47E-01
Kr85m 1.35E-01  Kr85 3.00E-03   Kr87 1.31E-01   Kr88 1.62E-01
I131 3.00E-02   I132 1.14E-01   I133 8.90E-02   I134 1.48E-01 I135 1.11E-01
Rb88 2.57E-01  Cs134 1.55E-02  Cs137 3.90E-02  Cs138 2.12E-01
RCS energy*activity factor (Ci*MeV/ml) 1.84E-04

Airborne activity in leak area (uci/ml)
Xe131m 0.00E+00 Xe133m 0.00E+00 Xe133 0.00E+00 Xe135 0.00E+00
Kr85m 0.00E+00  Kr85 0.00E+00   Kr87 0.00E+00   Kr88 0.00E+00
I131 0.00E+00   I132 0.00E+00   I133 0.00E+00   I134 0.00E+00 I135 0.00E+00
Rb88 0.00E+00  Cs134 0.00E+00  Cs137 0.00E+00  Cs138 0.00E+00
Leak area airborne energy*activity factor (Ci*MeV/ml) 0.00E+00
Leak area      liquid energy*activity factor (Ci*MeV) 0.00E+00


Time (minutes from trip)   5

Gaseous Effluent Release Rates
Xe133eq (Ci/sec):  0.00E+00  I131DE (Ci/sec) 0.00E+00'

RCS  activity  (uci/ml)
Xe131m 4.20E-03 Xe133m 4.80E-02 Xe133 2.90E+00 Xe135 7.46E-01
Kr85m 1.34E-01  Kr85 3.00E-03   Kr87 1.30E-01   Kr88 1.62E-01
I131 3.00E-02   I132 1.13E-01   I133 8.90E-02   I134 1.44E-01 I135 1.11E-01
Rb88 2.47E-01  Cs134 1.55E-02  Cs137 3.90E-02  Cs138 2.07E-01
RCS energy*activity factor (Ci*MeV/ml) 1.83E-04

Airborne activity in leak area (uci/ml)
Xe131m 0.00E+00 Xe133m 0.00E+00 Xe133 0.00E+00 Xe135 0.00E+00
Kr85m 0.00E+00  Kr85 0.00E+00   Kr87 0.00E+00   Kr88 0.00E+00
I131 0.00E+00   I132 0.00E+00   I133 0.00E+00   I134 0.00E+00 I135 0.00E+00
Rb88 0.00E+00  Cs134 0.00E+00  Cs137 0.00E+00  Cs138 0.00E+00
Leak area airborne energy*activity factor (Ci*MeV/ml) 0.00E+00
Leak area      liquid energy*activity factor (Ci*MeV) 0.00E+00


Time (minutes from trip)   4

Gaseous Effluent Release Rates
Xe133eq (Ci/sec):  0.00E+00  I131DE (Ci/sec) 0.00E+00'

RCS  activity  (uci/ml)
Xe131m 4.20E-03 Xe133m 4.79E-02 Xe133 2.90E+00 Xe135 7.45E-01
Kr85m 1.34E-01  Kr85 3.00E-03   Kr87 1.29E-01   Kr88 1.61E-01
I131 3.00E-02   I132 1.13E-01   I133 8.89E-02   I134 1.44E-01 I135 1.11E-01
Rb88 2.37E-01  Cs134 1.55E-02  Cs137 3.90E-02  Cs138 2.03E-01
RCS energy*activity factor (Ci*MeV/ml) 1.79E-04

Airborne activity in leak area (uci/ml)
Xe131m 0.00E+00 Xe133m 0.00E+00 Xe133 0.00E+00 Xe135 0.00E+00
Kr85m 0.00E+00  Kr85 0.00E+00   Kr87 0.00E+00   Kr88 0.00E+00
I131 0.00E+00   I132 0.00E+00   I133 0.00E+00   I134 0.00E+00 I135 0.00E+00
Rb88 0.00E+00  Cs134 0.00E+00  Cs137 0.00E+00  Cs138 0.00E+00
Leak area airborne energy*activity factor (Ci*MeV/ml) 0.00E+00
Leak area      liquid energy*activity factor (Ci*MeV) 0.00E+00
```

Time (minutes from trip) 7

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 0.00E+00 I131DE (Ci/sec) 0.00E+00'

RCS activity (uci/ml)
Xe131m 4.20E-03 Xe133m 4.79E-02 Xe133 2.90E+00 Xe135 7.45E-01
Kr85m 1.34E-01 Kr85 3.00E-03 Kr87 1.28E-01 Kr88 1.60E-01
I131 3.00E-02 I132 1.12E-01 I133 8.89E-02 I134 1.42E-01 I135 1.11E-01
Rb88 1.28E-01 Cs134 1.55E-02 Cs137 3.90E-02 Cs138 1.99E-01
RCS energy*activity factor (Ci*MeV/ml) 1.75E-06

Airborne activity in leak area (uci/ml)
Xe131m 0.00E+00 Xe133m 0.00E+00 Xe133 0.00E+00 Xe135 0.00E+0
Kr85m 0.00E+00 Kr85 0.00E+00 Kr87 0.00E+00 Kr88 0.00E+00
I131 0.00E+00 I132 0.00E+00 I133 0.00E+00 I134 0.00E+00 I135 0.00E+00
Rb88 0.00E+00 Cs134 0.00E+00 Cs137 0.00E+00 Cs138 0.00E+00
Leak area airborne energy*activity factor (Ci*MeV/ml) 0.00E+00
Leak area liquid energy*activity factor (Ci*MeV) 0.00E+00

Time (minutes from trip) 8

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.43E-05 I131DE (Ci/sec) 9.14E-10'

RCS activity (uci/ml)
Xe131m 4.20E-03 Xe133m 4.79E-02 Xe133 2.90E+00 Xe135 7.44E-01
Kr85m 1.33E-01 Kr85 3.00E-03 Kr87 1.24E-01 Kr88 1.60E-01
I131 3.00E-02 I132 1.11E-01 I133 8.88E-02 I134 1.40E-01 I135 1.10E-01
Rb88 1.10E-01 Cs134 1.55E-02 Cs137 3.90E-02 Cs138 1.95E-01
RCS energy*activity factor (Ci*MeV/ml) 1.72E-06

Airborne activity in leak area (uci/ml)
Xe131m 3.98E-07 Xe133m 4.54E-06 Xe133 2.74E-04 Xe135 7.05E-05
Kr85m 1.24E-05 Kr85 2.84E-07 Kr87 1.20E-05 Kr88 1.51E-05
I131 2.84E-08 I132 1.05E-07 I133 8.41E-08 I134 1.33E-07 I135 1.05E-07
Rb88 1.08E-08 Cs134 1.47E-09 Cs137 3.69E-09 Cs138 1.84E-08
Leak area airborne energy*activity factor (Ci*MeV/ml) 1.14E-11
Leak area liquid energy*activity factor (Ci*MeV) 2.89E-01

Time (minutes from trip) 9

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 3.49E-05 I131DE (Ci/sec) 2.22E-09'

RCS activity (uci/ml)
Xe131m 4.20E-03 Xe133m 4.79E-02 Xe133 2.90E+00 Xe135 7.43E-01
Kr85m 1.33E-01 Kr85 3.00E-03 Kr87 1.25E-01 Kr88 1.59E-01
I131 3.00E-02 I132 1.11E-01 I133 8.87E-02 I134 1.39E-01 I135 1.10E-01
Rb88 1.11E-01 Cs134 1.55E-02 Cs137 3.90E-02 Cs138 1.91E-01
RCS energy*activity factor (Ci*MeV/ml) 1.48E-06

Airborne activity in leak area (uci/ml)
Xe131m 9.72E-07 Xe133m 1.11E-05 Xe133 6.71E-04 Xe135 1.72E-04
Kr85m 3.08E-05 Kr85 6.95E-07 Kr87 2.90E-05 Kr88 3.68E-05
I131 6.94E-08 I132 2.57E-07 I133 2.04E-07 I134 3.31E-07 I135 2.55E-07
Rb88 4.89E-08 Cs134 3.59E-09 Cs137 9.03E-09 Cs138 4.41E-08
Leak area airborne energy*activity factor (Ci*MeV/ml) 2.77E-11
Leak area liquid energy*activity factor (Ci*MeV) 6.93E-01

Time (minutes from trip) 10

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 5.82E-05 I131DE (Ci/sec) 3.70E-09*

RCS activity (uci/ml)
Xe131m 4.20E-03 Xe133m 4.79E-02 Xe133 2.90E+00 Xe135 7.42E-01
Kr85m 1.32E-01 Kr85 3.00E-03 Kr87 1.24E-01 Kr88 1.58E-01
I131 3.00E-02 I132 1.10E-01 I133 8.87E-02 I134 1.37E-01 I135 1.10E-01
Rb88 2.03E-01 Cs134 1.55E-02 Cs137 3.90E-02 Cs138 1.87E-01
RCS energy*activity factor (Ci*MeV/ml) 1.65E-06

Airborne activity in leak area (uci/ml)
Xe131m 1.63E-06 Xe133m 1.86E-05 Xe133 1.12E-03 Xe135 2.88E-04
Kr85m 5.13E-05 Kr85 1.16E-06 Kr87 4.81E-05 Kr88 6.13E-05
I131 1.16E-07 I132 4.27E-07 I133 3.44E-07 I134 5.30E-07 I135 4.26E-07
Rb88 7.87E-08 Cs134 6.00E-09 Cs137 1.51E-08 Cs138 7.24E-08
Leak area airborne energy*activity factor (Ci*MeV/ml) 4.63E-11
Leak area liquid energy*activity factor (Ci*MeV) 1.13E+00

Time (minutes from trip) 11

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 9.14E-05 I131DE (Ci/sec) 5.79E-09*

RCS activity (uci/ml)
Xe131m 4.20E-03 Xe133m 4.79E-02 Xe133 2.90E+00 Xe135 7.41E-01
Kr85m 1.32E-01 Kr85 3.00E-03 Kr87 1.23E-01 Kr88 1.58E-01
I131 3.00E-02 I132 1.10E-01 I133 8.86E-02 I134 1.35E-01 I135 1.10E-01
Rb88 1.95E-01 Cs134 1.55E-02 Cs137 3.90E-02 Cs138 1.83E-01
RCS energy*activity factor (Ci*MeV/ml) 1.62E-06

Airborne activity in leak area (uci/ml)
Xe131m 2.55E-06 Xe133m 2.92E-05 Xe133 1.76E-03 Xe135 4.51E-04
Kr85m 8.05E-05 Kr85 1.83E-06 Kr87 7.49E-05 Kr88 9.60E-05
I131 1.82E-07 I132 6.68E-07 I133 5.40E-07 I134 8.22E-07 I135 6.69E-07
Rb88 1.19E-07 Cs134 9.43E-09 Cs137 2.37E-08 Cs138 1.11E-07
Leak area airborne energy*activity factor (Ci*MeV/ml) 7.24E-11
Leak area liquid energy*activity factor (Ci*MeV) 1.75E+00

Time (minutes from trip) 12

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.38E-04 I131DE (Ci/sec) 8.72E-09*

RCS activity (uci/ml)
Xe131m 4.19E-03 Xe133m 4.79E-02 Xe133 2.90E+00 Xe135 7.40E-01
Kr85m 1.32E-01 Kr85 3.00E-03 Kr87 1.22E-01 Kr88 1.57E-01
I131 3.00E-02 I132 1.09E-01 I133 8.85E-02 I134 1.33E-01 I135 1.10E-01
Rb88 1.88E-01 Cs134 1.55E-02 Cs137 3.90E-02 Cs138 1.79E-01
RCS energy*activity factor (Ci*MeV/ml) 1.59E-06

Airborne activity in leak area (uci/ml)
Xe131m 3.86E-06 Xe133m 4.41E-05 Xe133 2.67E-03 Xe135 6.82E-04
Kr85m 1.21E-04 Kr85 2.74E-06 Kr87 1.12E-04 Kr88 1.45E-04
I131 2.76E-07 I132 1.00E-06 I133 8.16E-07 I134 1.23E-06 I135 1.01E-06
Rb88 1.73E-07 Cs134 1.43E-08 Cs137 3.59E-08 Cs138 1.65E-07
Leak area airborne energy*activity factor (Ci*MeV/ml) 1.10E-10
Leak area liquid energy*activity factor (Ci*MeV) 2.59E+00

Time (minutes from trip) 13

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.93E-04 I131DE (Ci/sec) 1.22E-08

RCS activity (uci/ml)
Xe131m 4.19E-03 Xe133m 4.78E-02 Xe133 2.89E+00 Xe135 7.40E-01
Kr85m 1.31E-01 Kr85 3.00E-03 Kr87 1.21E-01 Kr88 1.56E-01
I131 2.99E-02 I132 1.09E-01 I133 8.85E-02 I134 1.31E-01 I135 1.09E-01
Rb88 1.81E-01 Cs134 1.55E-02 Cs137 3.90E-02 Cs138 1.75E-01
RCS energy*activity factor (Ci*MeV/ml) 1.56E-06

Airborne activity in leak area (uci/ml)
Xe131m 5.41E-06 Xe133m 6.17E-05 Xe133 3.73E-03 Xe135 9.54E-04
Kr85m 1.70E-04 Kr85 3.87E-06 Kr87 1.56E-04 Kr88 2.02E-04
I131 3.86E-07 I132 1.40E-06 I133 1.14E-06 I134 1.70E-06 I135 1.41E-06
Rb88 2.33E-07 Cs134 2.00E-08 Cs137 5.03E-08 Cs138 2.26E-07
Leak area airborne energy*activity factor (Ci*MeV/ml) 1.53E-10
Leak area liquid energy*activity factor (Ci*MeV) 3.55E+00

Time (minutes from trip) 14

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 2.52E-04 I131DE (Ci/sec) 1.58E-08

RCS activity (uci/ml)
Xe131m 4.19E-03 Xe133m 4.78E-02 Xe133 2.89E+00 Xe135 7.39E-01
Kr85m 1.31E-01 Kr85 3.00E-03 Kr87 1.20E-01 Kr88 1.56E-01
I131 2.99E-02 I132 1.08E-01 I133 8.84E-02 I134 1.30E-01 I135 1.09E-01
Rb88 1.74E-01 Cs134 1.55E-02 Cs137 3.90E-02 Cs138 1.72E-01
RCS energy*activity factor (Ci*MeV/ml) 1.53E-06

Airborne activity in leak area (uci/ml)
Xe131m 7.07E-06 Xe133m 8.07E-05 Xe133 4.88E-03 Xe135 1.25E-03
Kr85m 2.21E-04 Kr85 5.05E-06 Kr87 2.02E-04 Kr88 2.62E-04
I131 5.05E-07 I132 1.82E-06 I133 1.49E-06 I134 2.19E-06 I135 1.84E-06
Rb88 2.93E-07 Cs134 2.61E-08 Cs137 6.57E-08 Cs138 2.90E-07
Leak area airborne energy*activity factor (Ci*MeV/ml) 2.00E-10
Leak area liquid energy*activity factor (Ci*MeV) 4.55E+00

Time (minutes from trip) 15

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 3.09E-04 I131DE (Ci/sec) 1.93E-08

RCS activity (uci/ml)
Xe131m 4.19E-03 Xe133m 4.78E-02 Xe133 2.89E+00 Xe135 7.38E-01
Kr85m 1.31E-01 Kr85 3.00E-03 Kr87 1.18E-01 Kr88 1.55E-01
I131 2.99E-02 I132 1.07E-01 I133 8.83E-02 I134 1.28E-01 I135 1.09E-01
Rb88 1.67E-01 Cs134 1.55E-02 Cs137 3.89E-02 Cs138 1.68E-01
RCS energy*activity factor (Ci*MeV/ml) 1.50E-06

Airborne activity in leak area (uci/ml)
Xe131m 8.68E-06 Xe133m 9.90E-05 Xe133 5.99E-03 Xe135 1.53E-03
Kr85m 2.71E-04 Kr85 6.20E-06 Kr87 2.45E-04 Kr88 3.21E-04
I131 6.20E-07 I132 2.22E-06 I133 1.83E-06 I134 2.65E-06 I135 2.26E-06
Rb88 3.46E-07 Cs134 3.20E-08 Cs137 8.06E-08 Cs138 3.48E-07
Leak area airborne energy*activity factor (Ci*MeV/ml) 2.45E-10
Leak area liquid energy*activity factor (Ci*MeV) 5.47E+00

Time (minutes from trip) 16

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 3.62E-04 I131DE (Ci/sec) 2.26E-08

RCS activity (uci/ml)
Xe131m 4.19E-03 Xe133m 4.78E-02 Xe133 2.89E+00 Xe135 7.37E-01
Kr85m 1.30E-01 Kr85 3.00E-03 Kr87 1.17E-01 Kr88 1.54E-01
I131 2.99E-02 I132 1.07E-01 I133 8.83E-02 I134 1.26E-01 I135 1.09E-01
Rb88 1.61E-01 Cs134 1.55E-02 Cs137 3.89E-02 Cs138 1.65E-01
RCS energy*activity factor (Ci*MeV/ml) 1.47E-06

Airborne activity in leak area (uci/ml)
Xe131m 1.02E-05 Xe133m 1.16E-04 Xe133 7.02E-03 Xe135 1.79E-03
Kr85m 3.16E-04 Kr85 7.27E-06 Kr87 2.85E-04 Kr88 3.74E-04
I131 7.27E-07 I132 2.59E-06 I133 2.14E-06 I134 3.07E-06 I135 2.64E-06
Rb88 3.90E-07 Cs134 3.76E-08 Cs137 9.45E-08 Cs138 4.00E-07
Leak area airborne energy*activity factor (Ci*MeV/ml) 2.86E-10
Leak area liquid energy*activity factor (Ci*MeV) 6.29E+00

Time (minutes from trip) 17

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 4.14E-04 I131DE (Ci/sec) 2.58E-08

RCS activity (uci/ml)
Xe131m 4.19E-03 Xe133m 4.78E-02 Xe133 2.89E+00 Xe135 7.36E-01
Kr85m 1.30E-01 Kr85 2.99E-03 Kr87 1.16E-01 Kr88 1.54E-01
I131 2.99E-02 I132 1.06E-01 I133 8.82E-02 I134 1.25E-01 I135 1.09E-01
Rb88 1.54E-01 Cs134 1.55E-02 Cs137 3.89E-02 Cs138 1.61E-01
RCS energy*activity factor (Ci*MeV/ml) 1.45E-06

Airborne activity in leak area (uci/ml)
Xe131m 1.17E-05 Xe133m 1.33E-04 Xe133 8.05E-03 Xe135 2.05E-03
Kr85m 3.62E-04 Kr85 8.34E-06 Kr87 3.24E-04 Kr88 4.28E-04
I131 8.33E-07 I132 2.96E-06 I133 2.46E-06 I134 3.47E-06 I135 3.02E-06
Rb88 4.30E-07 Cs134 4.31E-08 Cs137 1.08E-07 Cs138 4.49E-07
Leak area airborne energy*activity factor (Ci*MeV/ml) 3.28E-10
Leak area liquid energy*activity factor (Ci*MeV) 7.07E+00

Time (minutes from trip) 18

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 4.72E-04 I131DE (Ci/sec) 2.93E-08

RCS activity (uci/ml)
Xe131m 4.19E-03 Xe133m 4.77E-02 Xe133 2.89E+00 Xe135 7.35E-01
Kr85m 1.30E-01 Kr85 2.99E-03 Kr87 1.15E-01 Kr88 1.53E-01
I131 2.99E-02 I132 1.06E-01 I133 8.82E-02 I134 1.23E-01 I135 1.08E-01
Rb88 1.49E-01 Cs134 1.55E-02 Cs137 3.89E-02 Cs138 1.58E-01
RCS energy*activity factor (Ci*MeV/ml) 1.42E-06

Airborne activity in leak area (uci/ml)
Xe131m 1.33E-05 Xe133m 1.52E-04 Xe133 9.18E-03 Xe135 2.34E-03
Kr85m 4.12E-04 Kr85 9.51E-06 Kr87 3.66E-04 Kr88 4.86E-04
I131 9.50E-07 I132 3.36E-06 I133 2.80E-06 I134 3.91E-06 I135 3.44E-06
Rb88 4.72E-07 Cs134 4.92E-08 Cs137 1.24E-07 Cs138 5.02E-07
Leak area airborne energy*activity factor (Ci*MeV/ml) 3.73E-10
Leak area liquid energy*activity factor (Ci*MeV) 7.91E+00

Time (minutes from trip) 19

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 5.39E-04 I131DE (Ci/sec) 3.33E-08

RCS activity (uci/ml)
Xe131m 4.19E-03 Xe133m 4.77E-02 Xe133 2.89E+00 Xe135 7.34E-01
Kr85m 1.29E-01 Kr85 2.99E-03 Kr87 1.14E-01 Kr88 1.52E-01
I131 2.99E-02 I132 1.05E-01 I133 8.81E-02 I134 1.21E-01 I135 1.08E-01
Rb88 1.43E-01 Cs134 1.55E-02 Cs137 3.89E-02 Cs138 1.55E-01
RCS energy*activity factor (Ci*MeV/ml) 1.40E-06

Airborne activity in leak area (uci/ml)
Xe131m 1.52E-05 Xe133m 1.74E-04 Xe133 1.05E-02 Xe135 2.67E-03
Kr85m 4.70E-04 Kr85 1.09E-05 Kr87 4.15E-04 Kr88 5.54E-04
I131 1.09E-06 I132 3.82E-06 I133 3.20E-06 I134 4.42E-06 I135 3.93E-06
Rb88 5.19E-07 Cs134 5.62E-08 Cs137 1.42E-07 Cs138 5.63E-07
Leak area airborne energy*activity factor (Ci*MeV/ml) 4.26E-10
Leak area liquid energy*activity factor (Ci*MeV) 8.88E+00

Time (minutes from trip) 20

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 6.13E-04 I131DE (Ci/sec) 3.77E-08

RCS activity (uci/ml)
Xe131m 4.19E-03 Xe133m 4.77E-02 Xe133 2.89E+00 Xe135 7.33E-01
Kr85m 1.29E-01 Kr85 2.99E-03 Kr87 1.13E-01 Kr88 1.52E-01
I131 2.99E-02 I132 1.05E-01 I133 8.80E-02 I134 1.20E-0. I135 1.08E-01
Rb88 1.37E-01 Cs134 1.55E-02 Cs137 3.89E-02 Cs138 1.52E-01
RCS energy*activity factor (Ci*MeV/ml) 1.37E-06

Airborne activity in leak area (uci/ml)
Xe131m 1.73E-05 Xe133m 1.97E-04 Xe133 1.19E-02 Xe135 3.03E-03
Kr85m 5.33E-04 Kr85 1.24E-05 Kr87 4.67E-04 Kr88 6.27E-04
I131 1.24E-06 I132 4.32E-06 I133 3.64E-06 I134 4.95E-06 I135 4.46E-06
Rb88 5.68E-07 Cs134 6.39E-08 Cs137 1.61E-07 Cs138 6.27E-07
Leak area airborne energy*activity factor (Ci*MeV/ml) 4.84E-10
Leak area liquid energy*activity factor (Ci*MeV) 9.91E+00

Time (minutes from trip) 21

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 6.95E-04 I131DE (Ci/sec) 4.26E-08

RCS activity (uci/ml)
Xe131m 4.19E-03 Xe133m 4.77E-02 Xe133 2.89E+00 Xe135 7.33E-01
Kr85m 1.29E-01 Kr85 2.99E-03 Kr87 1.12E-01 Kr88 1.51E-01
I131 2.99E-02 I132 1.04E-01 I133 8.80E-02 I134 1.18E-01 I135 1.08E-01
Rb88 1.32E-01 Cs134 1.55E-02 Cs137 3.89E-02 Cs138 1.48E-01
RCS energy*activity factor (Ci*MeV/ml) 1.35E-06

Airborne activity in leak area (uci/ml)
Xe131m 1.97E-05 Xe133m 2.24E-04 Xe133 1.34E-02 Xe135 3.44E-03
Kr85m 6.04E-04 Kr85 1.40E-05 Kr87 5.26E-04 Kr88 7.09E-04
I131 1.40E-06 I132 4.89E-06 I133 4.13E-06 I134 5.55E-06 I135 5.06E-06
Rb88 6.20E-07 Cs134 7.26E-08 Cs137 1.83E-07 Cs138 6.97E-07
Leak area airborne energy*activity factor (Ci*MeV/ml) 5.48E-10
Leak area liquid energy*activity factor (Ci*MeV) 1.10E+01

Time (minutes from trip) 22

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 7.82E-04 I131DE (Ci/sec) 4.79E-08

RCS activity (uci/ml)
Xe131m 4.19E-03 Xe133m 4.77E-02 Xe133 2.89E+00 Xe135 7.32E-01
Kr85m 1.28E-01 Kr85 2.99E-03 Kr87 1.11E-01 Kr88 1.50E-01
I131 2.99E-02 I132 1.04E-01 I133 8.79E-02 I134 1.17E-01 I135 1.08E-01
Rb88 1.27E-01 Cs134 1.55E-02 Cs137 3.89E-02 Cs138 1.45E-01
RCS energy*activity factor (Ci*MeV/ml) 1.32E-06

Airborne activity in leak area (uci/ml)
Xe131m 2.22E-05 Xe133m 2.52E-04 Xe133 1.53E-02 Xe135 3.87E-03
Kr85m 6.79E-04 Kr85 1.58E-05 Kr87 5.88E-04 Kr88 7.96E-04
I131 1.58E-06 I132 5.48E-06 I133 4.65E-06 I134 6.18E-06 I135 5.70E-06
Rb88 6.73E-07 Cs134 8.19E-08 Cs137 2.06E-07 Cs138 7.70E-07
Leak area airborne energy*activity factor (Ci*MeV/ml) 6.17E-10
Leak area liquid energy*activity factor (Ci*MeV) 1.22E+01

Time (minutes from trip) 23

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 8.80E-04 I131DE (Ci/sec) 5.36E-08

RCS activity (uci/ml)
Xe131m 4.18E-03 Xe133m 4.77E-02 Xe133 2.89E+00 Xe135 7.31E-01
Kr85m 1.28E-01 Kr85 2.99E-03 Kr87 1.10E-01 Kr88 1.50E-01
I131 2.99E-02 I132 1.03E-01 I133 8.78E-02 I134 1.15E-01 I135 1.07E-01
Rb88 1.22E-01 Cs134 1.55E-02 Cs137 3.89E-02 Cs138 1.42E-01
RCS energy*activity factor (Ci*MeV/ml) 1.30E-06

Airborne activity in leak area (uci/ml)
Xe131m 2.50E-05 Xe133m 2.84E-04 Xe133 1.72E-02 Xe135 4.36E-03
Kr85m 7.62E-04 Kr85 1.78E-05 Kr87 6.56E-04 Kr88 8.92E-04
I131 1.78E-06 I132 6.14E-06 I133 5.24E-06 I134 6.87E-06 I135 6.40E-06
Rb88 7.28E-07 Cs134 9.22E-08 Cs137 2.32E-07 Cs138 8.48E-07
Leak area airborne energy*activity factor (Ci*MeV/ml) 6.93E-10
Leak area liquid energy*activity factor (Ci*MeV) 1.35E+01

Time (minutes from trip) 24

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 9.83E-04 I131DE (Ci/sec) 5.97E-08

RCS activity (uci/ml)
Xe131m 4.18E-03 Xe133m 4.76E-02 Xe133 2.89E+00 Xe135 7.30E-01
Kr85m 1.27E-01 Kr85 2.99E-03 Kr87 1.09E-01 Kr88 1.49E-01
I131 2.99E-02 I132 1.02E-01 I133 8.76E-02 I134 1.14E-01 I135 1.07E-01
Rb88 1.17E-01 Cs134 1.55E-02 Cs137 3.89E-02 Cs138 1.39E-01
RCS energy*activity factor (Ci*MeV/ml) 1.28E-06

Airborne activity in leak area (uci/ml)
Xe131m 2.79E-05 Xe133m 3.18E-04 Xe133 1.93E-02 Xe135 4.87E-03
Kr85m 8.50E-04 Kr85 2.00E-05 Kr87 7.27E-04 Kr88 9.94E-04
I131 1.99E-06 I132 6.83E-06 I133 5.85E-06 I134 7.58E-06 I135 7.15E-06
Rb88 7.84E-07 Cs134 1.03E-07 Cs137 2.59E-07 Cs138 9.30E-07
Leak area airborne energy*activity factor (Ci*MeV/ml) 7.74E-10
Leak area liquid energy*activity factor (Ci*MeV) 1.48E+01

Time (minutes from trip) 25

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.10E-03 I131DE (Ci/sec) 6.64E-08

RCS activity (uci/ml)
Xe131m 4.18E-03 Xe133m 4.76E-02 Xe133 2.89E+00 Xe135 7.29E-01
Kr85m 1.27E-01 Kr85 2.99E-03 Kr87 1.08E-01 Kr88 1.48E-01
I131 2.99E-02 I132 1.02E-01 I133 8.77E-02 I134 1.12E-01 I135 1.07E-01
Rb88 1.13E-01 Cs134 1.54E-02 Cs137 3.89E-02 Cs138 1.36E-01
RCS energy*activity factor (Ci*MeV/ml) 1.26E-06

Airborne activity in leak area (uci/ml)
Xe131m 3.12E-05 Xe133m 3.55E-04 Xe133 2.15E-02 Xe135 5.43E-03
Kr85m 9.47E-04 Kr85 2.23E-05 Kr87 8.04E-04 Kr88 1.11E-03
I131 2.22E-06 I132 7.59E-06 I133 6.53E-06 I134 8.35E-06 I135 7.97E-06
Rb88 8.41E-07 Cs134 1.15E-07 Cs137 2.90E-07 Cs138 1.02E-06
Leak area airborne energy*activity factor (Ci*MeV/ml) 9.42E-10
Leak area liquid energy*activity factor (Ci*MeV) 1.63E+01

Time (minutes from trip) 26

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.22E-03 I131DE (Ci/sec) 7.33E-08

RCS activity (uci/ml)
Xe131m 4.18E-03 Xe133m 4.76E-02 Xe133 2.88E+00 Xe135 7.28E-01
Kr85m 1.27E-01 Kr85 2.99E-03 Kr87 1.07E-01 Kr88 1.48E-01
I131 2.98E-02 I132 1.01E-01 I133 8.76E-02 I134 1.11E-01 I135 1.07E-01
Rb88 1.09E-01 Cs134 1.54E-02 Cs137 3.89E-02 Cs138 1.34E-01
RCS energy*activity factor (Ci*MeV/ml) 1.24E-06

Airborne activity in leak area (uci/ml)
Xe131m 3.46E-05 Xe133m 3.94E-04 Xe133 2.38E-02 Xe135 6.02E-03
Kr85m 1.05E-03 Kr85 2.47E-05 Kr87 8.84E-04 Kr88 1.22E-03
I131 2.47E-06 I132 8.38E-06 I133 7.15E-06 I134 9.15E-06 I135 8.83E-06
Rb88 8.98E-07 Cs134 1.28E-07 Cs137 3.21E-07 Cs138 1.10E-06
Leak area airborne energy*activity factor (Ci*MeV/ml) 9.55E-10
Leak area liquid energy*activity factor (Ci*MeV) 1.77E+01

Time (minutes from trip) 27

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.34E-03 I131DE (Ci/sec) 8.07E-08

RCS activity (uci/ml)
Xe131m 4.18E-03 Xe133m 4.76E-02 Xe133 2.87E+00 Xe135 7.27E-01
Kr85m 1.26E-01 Kr85 2.99E-03 Kr87 1.06E-01 Kr88 1.47E-01
I131 2.98E-02 I132 1.01E-01 I133 8.76E-02 I134 1.09E-01 I135 1.07E-01
Rb88 1.04E-01 Cs134 1.54E-02 Cs137 3.89E-02 Cs138 1.31E-01
RCS energy*activity factor (Ci*MeV/ml) 1.22E-06

Airborne activity in leak area (uci/ml)
Xe131m 3.82E-05 Xe133m 4.35E-04 Xe133 2.64E-02 Xe135 6.65E-03
Kr85m 1.16E-03 Kr85 2.73E-05 Kr87 9.69E-04 Kr88 1.34E-03
I131 2.73E-06 I132 9.22E-06 I133 8.01E-06 I134 9.98E-06 I135 9.74E-06
Rb88 9.55E-07 Cs134 1.41E-07 Cs137 3.55E-07 Cs138 1.20E-06
Leak area airborne energy*activity factor (Ci*MeV/ml) 1.05E-09
Leak area liquid energy*activity factor (Ci*MeV) 1.93E+01

Time (minutes from trip) 18

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.48E-03 I131DE (Ci/sec) 8.89E-08'

RCS activity (uci/ml)
Xe131m 4.18E-03 Xe133m 4.74E-02 Xe133 1.81E+00 Xe135 7.16E-01
Kr85m 1.24E-01 Kr85 2.99E-03 Kr87 1.05E-01 Kr88 1.44E-01
I131 2.98E-02 I132 1.00E-01 I133 8.75E-02 I134 1.08E-01 I135 1.04E-01
Rb88 1.00E-01 Cs134 1.54E-02 Cs137 3.88E-03 Cs138 1.28E-01
RCS energy*activity factor (Ci*MeV/ml) 1.30E-04

Airborne activity in leak area (uci/ml)
Xe131m 4.33E-05 Xe133m 4.81E-04 Xe133 3.91E-02 Xe135 7.35E-03
Kr85m 1.30E-03 Kr85 3.01E-05 Kr87 1.06E-03 Kr88 1.48E-03
I131 3.02E-04 I132 1.01E-05 I133 8.85E-04 I134 1.09E-05 I135 1.08E-05
Rb88 1.03E-04 Cs134 1.56E-07 Cs137 3.93E-07 Cs138 1.30E-04
Leak area airborne energy*activity factor (Ci*MeV/ml) 1.16E-07
Leak area liquid energy*activity factor (Ci*MeV) 2.09E+01

Time (minutes from trip) 19

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.45E-03 I131DE (Ci/sec) 9.84E-08'

RCS activity (uci/ml)
Xe131m 4.18E-03 Xe133m 4.75E-03 Xe133 3.68E+00 Xe135 7.25E-01
Kr85m 1.24E-01 Kr85 2.99E-03 Kr87 1.04E-01 Kr88 1.44E-01
I131 2.98E-02 I132 9.98E-02 I133 8.74E-02 I134 1.04E-01 I135 1.04E-01
Rb88 9.44E-02 Cs134 1.54E-02 Cs137 3.88E-03 Cs138 1.25E-01
RCS energy*activity factor (Ci*MeV/ml) 1.18E-04

Airborne activity in leak area (uci/ml)
Xe131m 4.70E-05 Xe133m 5.35E-04 Xe133 3.24E-02 Xe135 6.14E-03
Kr85m 1.41E-03 Kr85 3.34E-05 Kr87 1.17E-03 Kr88 1.64E-03
I131 3.34E-04 I132 1.12E-05 I133 9.84E-04 I134 1.20E-05 I135 1.19E-05
Rb88 1.07E-04 Cs134 1.74E-07 Cs137 4.37E-07 Cs138 1.41E-04
Leak area airborne energy*activity factor (Ci*MeV/ml) 1.29E-07
Leak area liquid energy*activity factor (Ci*MeV) 3.29E+01

Time (minutes from trip) 30

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.83E-03 I131DE (Ci/sec) 1.09E-07'

RCS activity (uci/ml)
Xe131m 4.18E-03 Xe133m 4.75E-03 Xe133 3.88E+00 Xe135 7.25E-01
Kr85m 1.25E-01 Kr85 2.99E-03 Kr87 1.03E-01 Kr88 1.45E-01
I131 2.98E-02 I132 9.92E-02 I133 8.74E-02 I134 1.05E-01 I135 1.04E-01
Rb88 9.39E-02 Cs134 1.54E-02 Cs137 3.88E-03 Cs138 1.33E-01
RCS energy*activity factor (Ci*MeV/ml) 1.16E-04

Airborne activity in leak area (uci/ml)
Xe131m 5.32E-05 Xe133m 5.94E-04 Xe133 3.40E-02 Xe135 9.05E-03
Kr85m 1.57E-03 Kr85 3.73E-05 Kr87 1.29E-03 Kr88 1.81E-03
I131 3.73E-04 I132 1.24E-05 I133 1.09E-04 I134 1.31E-05 I135 1.33E-05
Rb88 1.14E-04 Cs134 1.93E-07 Cs137 4.85E-07 Cs138 1.54E-04
Leak area airborne energy*activity factor (Ci*MeV/ml) 1.43E-07
Leak area liquid energy*activity factor (Ci*MeV) 3.50E+01

Time (minutes from trip) 31

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 8.14E-02 I131DE (Ci/sec) 4.07E-05'

RCS activity (uci/ml)
Xe131m 4.29E+01 Xe133m 2.91E+02 Xe133 1.34E+04 Xe135 7.14E+03
Kr85m 8.23E+01 Kr85 3.18E+02 Kr87 1.15E+03 Kr88 1.99E+03
I131 4.73E+03 I132 4.20E+03 I133 1.03E+04 I134 6.22E+02 I135 4.54E+03
Rb88 4.43E+03 Cs134 5.45E+02 Cs137 4.42E+02 Cs138 3.95E+03
RCS energy*activity factor (Ci*MeV/ml) 4.51E-03

Airborne activity in leak area (uci/ml)
Xe131m 3.24E-03 Xe133m 1.34E-02 Xe133 1.04E+00 Xe135 5.43E-01
Kr85m 4.30E-01 Kr85 1.57E-01 Kr87 8.49E-03 Kr88 1.50E-01
I131 5.01E-03 I132 3.14E-03 I133 7.71E-03 I134 4.45E-03 I135 4.89E-03
Rb88 5.05E-05 Cs134 4.23E-05 Cs137 3.35E-05 Cs138 2.52E-04
Leak area airborne energy*activity factor (Ci*MeV/ml) 4.84E-06
Leak area liquid energy*activity factor (Ci*MeV) 4.32E+03

Time (minutes from trip) 32

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 3.19E-01 I131DE (Ci/sec) 1.62E-04'

RCS activity (uci/ml)
Xe131m 8.58E+01 Xe133m 5.84E+02 Xe133 2.73E+04 Xe135 1.43E+04
Kr85m 1.64E+03 Kr85 6.35E+02 Kr87 2.37E+03 Kr88 3.96E+03
I131 1.35E+04 I132 8.34E+03 I133 2.07E+04 I134 1.23E+04 I135 1.31E+04
Rb88 1.27E+03 Cs134 1.13E+03 Cs137 8.84E+02 Cs138 6.57E+03
RCS energy*activity factor (Ci*MeV/ml) 8.93E-03

Airborne activity in leak area (uci/ml)
Xe131m 1.28E-02 Xe133m 8.77E-02 Xe133 4.10E+00 Xe135 2.14E+00
Kr85m 2.46E-01 Kr85 9.44E-02 Kr87 3.40E-01 Kr88 5.93E-01
I131 3.00E-02 I132 1.25E-02 I133 3.08E-02 I134 1.83E-02 I135 1.95E-02
Rb88 1.91E-04 Cs134 1.68E-04 Cs137 1.33E-04 Cs138 9.79E-04
Leak area airborne energy*activity factor (Ci*MeV/ml) 1.68E-07
Leak area liquid energy*activity factor (Ci*MeV) 1.49E+04

Time (minutes from trip) 33

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 7.81E-01 I131DE (Ci/sec) 3.99E-04'

RCS activity (uci/ml)
Xe131m 1.39E+02 Xe133m 8.77E+02 Xe133 4.09E+04 Xe135 2.15E+04
Kr85m 3.44E+03 Kr85 9.53E+02 Kr87 1.38E+03 Kr88 5.93E+03
I131 3.02E+04 I132 1.85E+04 I133 3.10E+04 I134 1.83E+04 I135 1.94E+04
Rb88 1.84E+03 Cs134 1.49E+03 Cs137 1.33E+03 Cs138 9.45E+03
RCS energy*activity factor (Ci*MeV/ml) 1.33E-01

Airborne activity in leak area (uci/ml)
Xe131m 3.15E-02 Xe133m 2.15E-01 Xe133 1.00E+01 Xe135 5.24E+00
Kr85m 6.01E-01 Kr85 1.93E-01 Kr87 8.38E-01 Kr88 1.45E+00
I131 4.93E-02 I132 3.05E-02 I133 7.58E-02 I134 4.44E-02 I135 4.78E-02
Rb88 4.50E-04 Cs134 4.14E-04 Cs137 3.25E-04 Cs138 2.31E-03
Leak area airborne energy*activity factor (Ci*MeV/ml) 4.57E-07
Leak area liquid energy*activity factor (Ci*MeV) 4.08E+04

Time (minutes from trip) 34

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.49E+00 I131DE (Ci/sec) 7.54E-04

RCS activity (uci/ml)
Xe131m 1.72E+03 Xe133m 1.17E+03 Xe133 5.45E+04 Xe135 2.64E+04
Kr85m 3.36E+03 Kr85 1.27E+03 Kr87 4.44E+03 Kr88 7.84E+03
I131 2.49E+04 I132 1.45E+04 I133 4.13E+04 I134 3.39E+04 I135 3.40E+04
Rb88 2.35E+03 Cs134 2.36E+03 Cs137 1.77E+03 Cs138 1.36E+04
RCS energy*activity factor (Ci*MeV/ml) 1.75E-01

Airborne activity in leak area (uci/ml)
Xe131m 4.00E-02 Xe133m 4.09E-01 Xe133 1.91E+01 Xe135 1.00E+01
Kr85m 1.14E+00 Kr85 4.44E-01 Kr87 1.54E+00 Kr88 2.75E+00
I131 9.40E-02 I132 5.78E-02 I133 1.44E-01 I134 8.36E-02 I135 9.09E-02
Rb88 8.24E-04 Cs134 7.69E-04 Cs137 6.18E-04 Cs138 4.40E-03
Leak area airborne energy*activity factor (Ci*MeV/ml) 1.25E-04
Leak area liquid energy*activity factor (Ci*MeV) 1.15E+05

Time (minutes from trip) 35

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 3.49E+00 I131DE (Ci/sec) 1.24E-03

RCS activity (uci/ml)
Xe131m 2.15E+03 Xe133m 1.46E+03 Xe133 6.82E+04 Xe135 3.56E+04
Kr85m 4.07E+03 Kr85 1.59E+03 Kr87 5.53E+03 Kr88 9.76E+03
I131 3.36E+04 I132 2.06E+04 I133 5.16E+04 I134 3.95E+04 I135 3.35E+04
Rb88 3.83E+03 Cs134 3.83E+03 Cs137 2.31E+03 Cs138 1.56E+04
RCS energy*activity factor (Ci*MeV/ml) 2.17E-01

Airborne activity in leak area (uci/ml)
Xe131m 1.01E-01 Xe133m 6.87E-01 Xe133 3.31E+01 Xe135 1.68E+01
Kr85m 1.91E+00 Kr85 7.46E-01 Kr87 2.60E+00 Kr88 4.60E+00
I131 1.58E-01 I132 9.66E-02 I133 2.42E-01 I134 1.39E-01 I135 1.53E-01
Rb88 1.93E-03 Cs134 1.93E-03 Cs137 1.04E-03 Cs138 7.35E-03
Leak area airborne energy*activity factor (Ci*MeV/ml) 3.09E-04
Leak area liquid energy*activity factor (Ci*MeV) 1.91E+05

Time (minutes from trip) 36

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 3.78E+00 I131DE (Ci/sec) 1.91E-03

RCS activity (uci/ml)
Xe131m 3.57E+03 Xe133m 1.75E+03 Xe133 8.19E+04 Xe135 4.30E+04
Kr85m 4.87E+03 Kr85 1.91E+03 Kr87 6.57E+03 Kr88 1.17E+04
I131 4.03E+04 I132 3.44E+04 I133 6.19E+04 I134 3.47E+04 I135 3.89E+04
Rb88 3.57E+03 Cs134 3.59E+03 Cs137 2.65E+03 Cs138 1.81E+04
RCS energy*activity factor (Ci*MeV/ml) 2.58E-01

Airborne activity in leak area (uci/ml)
Xe131m 1.53E-01 Xe133m 1.04E+00 Xe133 4.87E+01 Xe135 2.55E+01
Kr85m 2.90E+00 Kr85 1.13E+00 Kr87 3.91E+00 Kr88 6.95E+00
I131 2.40E-01 I132 1.46E-01 I133 3.67E-01 I134 2.08E-01 I135 2.31E-01
Rb88 1.94E-03 Cs134 2.01E-03 Cs137 1.57E-03 Cs138 1.08E-03
Leak area airborne energy*activity factor (Ci*MeV/ml) 3.17E-04
Leak area liquid energy*activity factor (Ci*MeV) 2.87E+05

Time (minutes from trip) 37

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 5.32E+00 I131DE (Ci/sec) 3.68E-03*

RCS activity (uci/ml)
Xe131m 1.57E+03 Xe133m 1.75E+03 Xe133 8.19E+04 Xe135 4.30E+04
Kr85m 4.84E+03 Kr85 1.91E+03 Kr87 4.51E+03 Kr88 1.16E+04
I131 4.03E+04 I132 2.44E+04 I133 4.18E+04 I134 3.45E+04 I135 3.88E+04
Rb88 3.14E+03 Cs134 3.39E+03 Cs137 2.45E+03 Cs138 1.78E+04
RCS energy*activity factor (Ci*MeV/ml) 3.56E-01

Airborne activity in leak area (uci/ml)
Xe131m 2.16E-01 Xe133m 1.47E+00 Xe133 4.84E+01 Xe135 3.40E+01
Kr85m 4.07E+00 Kr85 1.40E+00 Kr87 5.44E+00 Kr88 9.75E+00
I131 3.38E-01 I132 3.05E-01 I133 5.10E-01 I134 3.89E-01 I135 3.25E-01
Rb88 1.63E-03 Cs134 3.84E-03 Cs137 2.32E-03 Cs138 1.49E-02
Leak area airborne energy*activity factor (Ci*MeV/ml) 4.46E-04
Leak area liquid energy*activity factor (Ci*MeV) 4.01E+05

Time (minutes from trip) 38

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 9.46E+00 I131DE (Ci/sec) 4.77E-03*

RCS activity (uci/ml)
Xe131m 1.57E+03 Xe133m 1.75E+03 Xe133 8.19E+04 Xe135 4.30E+04
Kr85m 4.84E+03 Kr85 1.90E+03 Kr87 4.45E+03 Kr88 1.14E+04
I131 4.03E+04 I132 2.43E+04 I133 4.18E+04 I134 3.40E+04 I135 3.87E+04
Rb88 3.01E+03 Cs134 3.36E+03 Cs137 2.45E+03 Cs138 1.74E+04
RCS energy*activity factor (Ci*MeV/ml) 3.54E-01

Airborne activity in leak area (uci/ml)
Xe131m 3.84E-01 Xe133m 2.62E+00 Xe133 1.32E+02 Xe135 6.41E+01
Kr85m 7.35E+00 Kr85 2.84E+00 Kr87 9.63E+00 Kr88 1.73E+01
I131 6.02E-01 I132 5.43E-01 I133 9.32E-01 I134 5.08E-01 I135 5.78E-01
Rb88 4.51E-03 Cs134 5.05E-03 Cs137 3.95E-03 Cs138 3.59E-02
Leak area airborne energy*activity factor (Ci*MeV/ml) 7.93E-04
Leak area liquid energy*activity factor (Ci*MeV) 7.09E+05

Time (minutes from trip) 59

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.95E+01 I131DE (Ci/sec) 9.82E-03*

RCS activity (uci/ml)
Xe131m 3.57E+03 Xe133m 1.75E+03 Xe133 8.19E+04 Xe135 4.30E+04
Kr85m 4.83E+03 Kr85 1.90E+03 Kr87 4.39E+03 Kr88 1.15E+04
I131 4.03E+04 I132 3.42E+04 I133 4.17E+04 I134 3.36E+04 I135 3.87E+04
Rb88 3.90E+03 Cs134 3.38E+03 Cs137 3.45E+03 Cs138 1.70E+04
RCS energy*activity factor (Ci*MeV/ml) 3.53E-01

Airborne activity in leak area (uci/ml)
Xe131m 7.99E-01 Xe133m 5.41E+00 Xe133 2.53E+02 Xe135 1.33E+01
Kr85m 1.49E+01 Kr85 5.87E+00 Kr87 1.97E+01 Kr88 3.54E+01
I131 1.24E+00 I132 7.45E-01 I133 1.90E+00 I134 1.04E+00 I135 1.19E+00
Rb88 9.74E-03 Cs134 1.04E-02 Cs137 8.17E-03 Cs138 5.35E-02
Leak area airborne energy*activity factor (Ci*MeV/ml) 1.63E-05
Leak area liquid energy*activity factor (Ci*MeV) 1.45E+06

Time (minutes from trip) 40

Gaseous Effluent Release Rates
Xe133eq (Ci/sec) 2.26E+01 I131DE (Ci/sec) 1.13E-02

RCS activity (uci/ml)
Xe131m 2.57E+02 Xe133m 1.75E+03 Xe133 8.19E+04 Xe135 4.30E+04
Kr85m 4.81E+03 Kr85 1.90E+03 Kr87 6.33E+03 Kr88 1.15E+04
I131 4.03E+04 I132 2.41E+04 I133 6.17E+04 I134 3.31E+04 I135 3.84E+04
Rb88 2.79E+03 Cs134 3.38E+03 Cs137 2.65E+03 Cs138 1.67E+04
RCS energy*activity factor (Ci*MeV/ml) 2.49E-01

Airborne activity in leak area (uci/ml)
Xe131m 9.18E-01 Xe133m 6.24E+00 Xe133 2.92E+02 Xe135 1.53E+02
Kr85m 1.72E+01 Kr85 6.79E+00 Kr87 2.26E+01 Kr88 4.10E+01
I131 1.44E+00 I132 8.58E-01 I133 2.20E+00 I134 1.18E+00 I135 1.38E+00
Rb88 9.97E-03 Cs134 1.21E-02 Cs137 9.45E-03 Cs138 5.95E-02
Leak area airborne energy*activity factor (Ci*MeV/ml) 1.89E-05
Leak area liquid energy*activity factor (Ci*MeV) 1.44E+04

Time (minutes from trip) 41

Gaseous Effluent Release Rates
Xe133eq (Ci/sec) 2.52E+01 I131DE (Ci/sec) 1.26E-02

RCS activity (uci/ml)
Xe131m 2.57E+02 Xe133m 1.76E+03 Xe133 8.19E+04 Xe135 4.30E+04
Kr85m 4.81E+03 Kr85 1.90E+03 Kr87 6.38E+03 Kr88 1.14E+04
I131 4.03E+04 I132 2.37E+04 I133 6.17E+04 I134 3.27E+04 I135 3.85E+04
Rb88 2.69E+03 Cs134 3.38E+03 Cs137 2.65E+03 Cs138 1.63E+04
RCS energy*activity factor (Ci*MeV/ml) 2.47E-01

Airborne activity in leak area (uci/ml)
Xe131m 1.03E+00 Xe133m 7.00E+00 Xe133 3.27E+02 Xe135 1.71E+02
Kr85m 1.93E+01 Kr85 7.59E+00 Kr87 2.50E+01 Kr88 4.54E+01
I131 1.61E+00 I132 9.54E-01 I133 2.44E+00 I134 1.30E+00 I135 1.54E+00
Rb88 1.07E-02 Cs134 1.35E-02 Cs137 1.04E-02 Cs138 6.51E-02
Leak area airborne energy*activity factor (Ci*MeV/ml) 2.11E-05
Leak area liquid energy*activity factor (Ci*MeV) 1.84E+04

Time (minutes from trip) 42

Gaseous Effluent Release Rates
Xe133eq (Ci/sec) 2.73E+01 I131DE (Ci/sec) 1.37E-02

RCS activity (uci/ml)
Xe131m 2.57E+02 Xe133m 1.76E+03 Xe133 8.20E+04 Xe135 4.30E+04
Kr85m 4.79E+03 Kr85 1.90E+03 Kr87 6.21E+03 Kr88 1.14E+04
I131 4.03E+04 I132 2.30E+04 I133 6.16E+04 I134 3.23E+04 I135 3.85E+04
Rb88 2.58E+03 Cs134 3.38E+03 Cs137 2.65E+03 Cs138 1.60E+04
RCS energy*activity factor (Ci*MeV/ml) 2.45E-01

Airborne activity in leak area (uci/ml)
Xe131m 1.11E+00 Xe133m 7.60E+00 Xe133 3.55E+02 Xe135 1.86E+02
Kr85m 2.07E+01 Kr85 8.24E+00 Kr87 2.69E+01 Kr88 4.93E+01
I131 1.74E+00 I132 1.03E+00 I133 2.67E+00 I134 1.40E+00 I135 1.66E+00
Rb88 1.12E-02 Cs134 1.46E-02 Cs137 1.15E-02 Cs138 6.93E-02
Leak area airborne energy*activity factor (Ci*MeV/ml) 2.28E-05
Leak area liquid energy*activity factor (Ci*MeV) 1.98E+04

Time (minutes from trip) 43

Gaseous Effluent Release Rates
Xe133eq (Ci/sec) 2.90E+01 I131DE (Ci/sec) 1.44E-02

RCS activity (uci/ml)
Xe131m 2.57E+02 Xe133m 1.76E+03 Xe133 8.20E+04 Xe135 4.30E+04
Kr85m 4.78E+03 Kr85 1.90E+03 Kr87 6.16E+03 Kr88 1.13E+04
I131 4.03E+04 I132 2.37E+04 I133 6.16E+04 I134 3.19E+04 I135 3.64E+04
Rb88 2.48E+03 Cs134 3.38E+03 Cs137 3.45E+03 Cs138 1.57E+04
RCS energy*activity factor (Ci*MeV/ml) 2.43E-01

Airborne activity in leak area (uci/ml)
Xe131m 1.18E+00 Xe133m 8.06E+00 Xe133 3.77E+02 Xe135 1.98E+02
Kr85m 2.20E+01 Kr85 8.74E+00 Kr87 2.83E+01 Kr88 5.21E+01
I131 1.85E+00 I132 1.09E+00 I133 2.83E+00 I134 1.46E+00 I135 1.76E+00
Rb88 1.14E-02 Cs134 1.55E-02 Cs137 1.33E-02 Cs138 7.20E-02
Leak area airborne energy*activity factor (Ci*MeV/ml) 2.42E-05
Leak area liquid energy*activity factor (Ci*MeV) 3.09E+04

Time (minutes from trip) 44

Gaseous Effluent Release Rates
Xe133eq (Ci/sec) 3.03E+01 I131DE (Ci/sec) 1.51E-02

RCS activity (uci/ml)
Xe131m 2.57E+02 Xe133m 1.76E+03 Xe133 8.20E+04 Xe135 4.30E+04
Kr85m 4.77E+03 Kr85 1.90E+03 Kr87 6.11E+03 Kr88 1.13E+04
I131 4.03E+04 I132 2.34E+04 I133 6.15E+04 I134 3.14E+04 I135 3.83E+04
Rb88 3.39E+03 Cs134 3.38E+03 Cs137 3.45E+03 Cs138 1.53E+04
RCS energy*activity factor (Ci*MeV/ml) 2.41E-01

Airborne activity in leak area (uci/ml)
Xe131m 1.24E+00 Xe133m 8.46E+00 Xe133 3.95E+02 Xe135 2.07E+02
Kr85m 3.30E+01 Kr85 9.17E+00 Kr87 2.94E+01 Kr88 5.44E+01
I131 1.94E+00 I132 1.13E+00 I133 2.96E+00 I134 1.51E+00 I135 1.65E+00
Rb88 1.15E-02 Cs134 1.63E-02 Cs137 1.38E-02 Cs138 7.39E-02
Leak area airborne energy*activity factor (Ci*MeV/ml) 2.53E-05
Leak area liquid energy*activity factor (Ci*MeV) 3.17E+04

Time (minutes from trip) 45

Gaseous Effluent Release Rates
Xe133eq (Ci/sec) 3.13E+01 I131DE (Ci/sec) 1.55E-02

RCS activity (uci/ml)
Xe131m 2.57E+02 Xe133m 1.76E+03 Xe133 8.20E+04 Xe135 4.30E+04
Kr85m 4.76E+03 Kr85 1.90E+03 Kr87 6.05E+03 Kr88 1.13E+04
I131 4.03E+04 I132 2.34E+04 I133 6.15E+04 I134 3.10E+04 I135 3.69E+04
Rb88 3.30E+03 Cs134 3.38E+03 Cs137 3.45E+03 Cs138 1.50E+04
RCS energy*activity factor (Ci*MeV/ml) 2.39E-01

Airborne activity in leak area (uci/ml)
Xe131m 1.28E+00 Xe133m 8.73E+00 Xe133 4.08E+02 Xe135 2.14E+02
Kr85m 3.34E+01 Kr85 9.26E+00 Kr87 3.01E+01 Kr88 5.60E+01
I131 2.00E+00 I132 1.17E+00 I133 3.04E+00 I134 1.54E+00 I135 1.90E+00
Rb88 1.14E-02 Cs134 1.68E-02 Cs137 1.32E-02 Cs138 7.47E-02
Leak area airborne energy*activity factor (Ci*MeV/ml) 3.41E-05
Leak area liquid energy*activity factor (Ci*MeV) 3.33E+04

Time (minutes from trip) 44

Gaseous Effluent Release Rates
Xe133eq (Ci/sec) 3.20E+01 I131DE (Ci/sec) 1.59E-01

RCS activity (uci/ml)
Xe131m 2.57E+02 Xe133m 1.76E+03 Xe133 8.20E+04 Xe135 4.31E+04
Kr85m 4.74E+03 Kr85 1.90E+03 Kr87 5.99E+03 Kr88 1.13E+04
I131 4.03E+04 I132 2.33E+04 I133 4.15E+04 I134 3.04E+04 I135 3.82E+04
Rb88 3.31E+03 Cs134 3.38E+03 Cs137 2.15E+03 Cs138 1.47E+04
RCS energy*activity factor (Ci*MeV/ml) 2.37E-01

Airborne activity in leak area (uci/ml)
Xe131m 1.31E+00 Xe133m 8.94E+00 Xe133 4.18E+02 Xe135 2.19E+02
Kr85m 2.41E+01 Kr85 9.69E+00 Kr87 3.05E+01 Kr88 5.70E+01
I131 2.05E+00 I132 1.19E+00 I133 3.13E+00 I134 1.54E+00 I135 1.94E+00
Rb88 1.13E-02 Cs134 1.72E-02 Cs137 1.35E-02 Cs138 7.49E-02
Leak area airborne energy*activity factor (Ci*MeV/ml) 2.47E-05
Leak area liquid energy*activity factor (Ci*MeV) 2.24E+04

Time (minutes from trip) 47

Gaseous Effluent Release Rates
Xe133eq (Ci/sec) 3.27E+01 I131DE (Ci/sec) 1.62E-01

RCS activity (uci/ml)
Xe131m 2.57E+02 Xe133m 1.76E+03 Xe133 8.21E+04 Xe135 4.31E+04
Kr85m 4.73E+03 Kr85 1.90E+03 Kr87 5.94E+03 Kr88 1.12E+04
I131 4.03E+04 I132 2.32E+04 I133 4.14E+04 I134 3.02E+04 I135 3.81E+04
Rb88 3.13E+03 Cs134 3.38E+03 Cs137 2.45E+03 Cs138 1.44E+04
RCS energy*activity factor (Ci*MeV/ml) 2.35E-01

Airborne activity in leak area (uci/ml)
Xe131m 1.34E+00 Xe133m 9.15E+00 Xe133 4.27E+02 Xe135 2.24E+02
Kr85m 2.46E+01 Kr85 9.91E+00 Kr87 3.09E+01 Kr88 5.81E+01
I131 2.10E+00 I132 1.21E+00 I133 3.20E+00 I134 1.57E+00 I135 1.99E+00
Rb88 1.11E-02 Cs134 1.74E-02 Cs137 1.38E-02 Cs138 7.51E-02
Leak area airborne energy*activity factor (Ci*MeV/ml) 2.72E-05
Leak area liquid energy*activity factor (Ci*MeV) 2.29E+04

Time (minutes from trip) 48

Gaseous Effluent Release Rates
Xe133eq (Ci/sec) 3.34E+01 I131DE (Ci/sec) 1.65E-01

RCS activity (uci/ml)
Xe131m 2.57E+02 Xe133m 1.76E+03 Xe133 8.21E+04 Xe135 4.31E+04
Kr85m 4.72E+03 Kr85 1.90E+03 Kr87 5.89E+03 Kr88 1.11E+04
I131 4.03E+04 I132 2.31E+04 I133 4.14E+04 I134 2.98E+04 I135 3.81E+04
Rb88 3.04E+03 Cs134 3.38E+03 Cs137 2.45E+03 Cs138 1.41E+04
RCS energy*activity factor (Ci*MeV/ml) 2.33E-01

Airborne activity in leak area (uci/ml)
Xe131m 1.37E+00 Xe133m 9.37E+00 Xe133 4.38E+02 Xe135 2.30E+02
Kr85m 2.52E+01 Kr85 1.01E+01 Kr87 3.14E+01 Kr88 5.93E+01
I131 2.15E+00 I132 1.23E+00 I133 3.27E+00 I134 1.59E+00 I135 2.03E+00
Rb88 1.09E-02 Cs134 1.80E-02 Cs137 1.41E-02 Cs138 7.53E-02
Leak area airborne energy*activity factor (Ci*MeV/ml) 2.78E-05
Leak area liquid energy*activity factor (Ci*MeV) 2.32E+04

Time (minutes from trip) 49

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 3.42E+01 I131DE (Ci/sec) 1.69E-02

RCS activity (uci/ml)
Xe131m 2.57E+02 Xe133m 1.76E+03 Xe133 8.21E+04 Xe135 4.31E+04
Kr85m 4.71E+03 Kr85 1.90E+03 Kr87 5.83E+03 Kr88 1.11E+04
I131 4.03E+04 I132 2.30E+04 I133 6.14E+04 I134 2.94E+04 I135 3.80E+04
Rb88 1.97E+03 Cs134 3.38E+03 Cs137 2.65E+03 Cs138 1.38E+04
RCS energy*activity factor (Ci*MeV/ml) 2.32E-01

Airborne activity in leak area (uci/ml)
Xe131m 1.41E+00 Xe133m 9.60E+00 Xe133 4.48E+02 Xe135 2.35E+02
Kr85m 2.57E+01 Kr85 1.04E+01 Kr87 3.18E+01 Kr88 6.04E+01
I131 2.20E+00 I132 1.25E+00 I133 3.35E+00 I134 1.61E+00 I135 2.07E+00
Rb88 1.07E-02 Cs134 1.85E-02 Cs137 1.45E-02 Cs138 7.55E-02
Leak area airborne energy*activity factor (Ci*MeV/ml) 2.85E-05
Leak area liquid energy*activity factor (Ci*MeV) 2.36E+06

Time (minutes from trip) 50

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 3.51E+01 I131DE (Ci/sec) 1.72E-02

RCS activity (uci/ml)
Xe131m 2.57E+02 Xe133m 1.76E+03 Xe133 8.21E+04 Xe135 4.31E+04
Kr85m 4.69E+03 Kr85 1.90E+03 Kr87 5.78E+03 Kr88 1.10E+04
I131 4.03E+04 I132 2.29E+04 I133 6.13E+04 I134 2.91E+04 I135 3.79E+04
Rb88 1.89E+03 Cs134 3.38E+03 Cs137 2.65E+03 Cs138 1.35E+04
RCS energy*activity factor (Ci*MeV/ml) 2.30E-01

Airborne activity in leak area (uci/ml)
Xe131m 1.44E+00 Xe133m 9.84E+00 Xe133 4.60E+02 Xe135 2.41E+02
Kr85m 2.63E+01 Kr85 1.07E+01 Kr87 3.23E+01 Kr88 6.17E+01
I131 2.25E+00 I132 1.28E+00 I133 3.43E+00 I134 1.63E+00 I135 2.12E+00
Rb88 1.06E-02 Cs134 1.89E-02 Cs137 1.48E-02 Cs138 7.58E-02
Leak area airborne energy*activity factor (Ci*MeV/ml) 2.91E-05
Leak area liquid energy*activity factor (Ci*MeV) 2.40E+06

Time (minutes from trip) 51

Gaseous Effluent Re ase Rates
Xe133eq (Ci/sec): 3.59E+01 I131DE (Ci/sec) 1.76E-02

RCS activity (uci/ml)
Xe131m 2.57E+02 Xe133m 1.76E+03 Xe133 8.21E+04 Xe135 4.31E+04
Kr85m 4.68E+03 Kr85 1.90E+03 Kr87 5.73E+03 Kr88 1.10E+04
I131 4.03E+04 I132 2.27E+04 I133 6.13E+04 I134 2.87E+04 I135 3.79E+04
Rb88 1.82E+03 Cs134 3.38E+03 Cs137 2.65E+03 Cs138 1.33E+04
RCS energy*activity factor (Ci*MeV/ml) 2.28E-01

Airborne activity in leak area (uci/ml)
Xe131m 1.48E+00 Xe133m 1.01E+01 Xe133 4.72E+02 Xe135 2.47E+02
Kr85m 2.69E+01 Kr85 1.09E+01 Kr87 3.29E+01 Kr88 6.30E+01
I131 2.31E+00 I132 1.31E+00 I133 3.52E+00 I134 1.65E+00 I135 2.17E+00
Rb88 1.04E-02 Cs134 1.94E-02 Cs137 1.52E-02 Cs138 7.62E-02
Leak area airborne energy*activity factor (Ci*MeV/ml) 2.98E-05
Leak area liquid energy*activity factor (Ci*MeV) 2.44E+06

Time (minutes from trip) 52

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 3.68E+01 I131DE (Ci/sec) 1.80E-02*

RCS activity (uci/ml)
Xe131m 2.57E+02 Xe133m 1.76E+03 Xe133 8.22E+04 Xe135 4.31E+04
Kr85m 4.67E+03 Kr85 1.90E+03 Kr87 5.67E+03 Kr88 1.09E+04
I131 4.03E+04 I132 2.26E+04 I133 6.12E+04 I134 2.83E+04 I135 3.78E+04
Rb88 1.75E+03 Cs134 3.38E+03 Cs137 2.65E+03 Cs138 1.30E+04
RCS energy*activity factor (Ci*MeV/ml) 2.26E-01

Airborne activity in leak area (uci/ml)
Xe131m 1.52E+00 Xe133m 1.04E+01 Xe133 4.84E+02 Xe135 2.54E+02
Kr85m 2.75E+01 Kr85 1.12E+01 Kr87 3.34E+01 Kr88 6.44E+01
I131 2.37E+00 I132 1.33E+00 I133 3.61E+00 I134 1.67E+00 I135 2.23E+00
Rb88 1.03E-02 Cs134 1.99E-02 Cs137 1.56E-02 Cs138 7.65E-02
Leak area airborne energy*activity factor (Ci*MeV/ml) 3.06E-05
Leak area liquid energy*activity factor (Ci*MeV) 2.49E+06

Time (minutes from trip) 53

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 3.77E+01 I131DE (Ci/sec) 1.85E-02*

RCS activity (uci/ml)
Xe131m 2.57E+02 Xe133m 1.76E+03 Xe133 8.22E+04 Xe135 4.31E+04
Kr85m 4.66E+03 Kr85 1.90E+03 Kr87 5.62E+03 Kr88 1.09E+04
I131 4.03E+04 I132 2.25E+04 I133 6.12E+04 I134 2.79E+04 I135 3.77E+04
Rb88 1.68E+03 Cs134 3.38E+03 Cs137 2.65E+03 Cs138 1.27E+04
RCS energy*activity factor (Ci*MeV/ml) 2.24E-01

Airborne activity in leak area (uci/ml)
Xe131m 1.56E+00 Xe133m 1.06E+01 Xe133 4.97E+02 Xe135 2.61E+02
Kr85m 2.81E+01 Kr85 1.15E+01 Kr87 3.40E+01 Kr88 6.58E+01
I131 2.43E+00 I132 1.36E+00 I133 3.70E+00 I134 1.69E+00 I135 2.28E+00
Rb88 1.02E-02 Cs134 2.04E-02 Cs137 1.60E-02 Cs138 7.69E-02
Leak area airborne energy*activity factor (Ci*MeV/ml) 3.13E-05
Leak area liquid energy*activity factor (Ci*MeV) 2.53E+06

Time (minutes from trip) 54

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 3.87E+01 I131DE (Ci/sec) 1.89E-02*

RCS activity (uci/ml)
Xe131m 2.57E+02 Xe133m 1.76E+03 Xe133 8.22E+04 Xe135 4.31E+04
Kr85m 4.64E+03 Kr85 1.90E+03 Kr87 5.57E+03 Kr88 1.08E+04
I131 4.02E+04 I132 2.24E+04 I133 6.12E+04 I134 2.76E+04 I135 3.77E+04
Rb88 1.62E+03 Cs134 3.38E+03 Cs137 2.65E+03 Cs138 1.25E+04
RCS energy*activity factor (Ci*MeV/ml) 2.23E-01

Airborne activity in leak area (uci/ml)
Xe131m 1.60E+00 Xe133m 1.09E+01 Xe133 5.10E+02 Xe135 2.68E+02
Kr85m 2.88E+01 Kr85 1.18E+01 Kr87 3.46E+01 Kr88 6.72E+01
I131 2.50E+00 I132 1.39E+00 I133 3.79E+00 I134 1.71E+00 I135 2.34E+00
Rb88 1.00E-02 Cs134 2.10E-02 Cs137 1.64E-02 Cs138 7.73E-02
Leak area airborne energy*activity factor (Ci*MeV/ml) 3.21E-05
Leak area liquid energy*activity factor (Ci*MeV) 2.58E+06

Time (minutes from trip) 55

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 3.97E+01 I131DE (Ci/sec) 1.93E-02*

RCS activity (uci/ml)
Xe131m 2.57E+02 Xe133m 1.76E+03 Xe133 8.22E+04 Xe135 4.31E+04
Kr85m 4.63E+03 Kr85 1.90E+03 Kr87 5.52E+03 Kr88 1.08E+04
I131 4.02E+04 I132 2.23E+04 I133 6.11E+04 I134 2.72E+04 I135 3.76E+04
Rb88 1.56E+03 Cs134 3.38E+03 Cs137 2.65E+03 Cs138 1.22E+04
RCS energy*activity factor (Ci*MeV/ml) 2.21E-01

Airborne activity in leak area (uci/ml)
Xe131m 1.64E+00 Xe133m 1.12E+01 Xe133 5.24E+02 Xe135 2.75E+02
Kr85m 2.95E+01 Kr85 1.21E+01 Kr87 3.51E+01 Kr88 6.87E+01
I131 2.56E+00 I132 1.42E+00 I133 3.89E+00 I134 1.73E+00 I135 2.39E+00
Rb88 9.91E-03 Cs134 2.15E-02 Cs137 1.69E-02 Cs138 7.77E-02
Leak area airborne energy*activity factor (Ci*MeV/ml) 3.29E-05
Leak area liquid energy*activity factor (Ci*MeV) 2.63E+06

Time (minutes from trip) 56

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 4.07E+01 I131DE (Ci/sec) 1.98E-02*

RCS activity (uci/ml)
Xe131m 2.57E+02 Xe133m 1.76E+03 Xe133 8.23E+04 Xe135 4.31E+04
Kr85m 4.62E+03 Kr85 1.90E+03 Kr87 5.47E+03 Kr88 1.07E+04
I131 4.02E+04 I132 2.22E+04 I133 6.11E+04 I134 2.69E+04 I135 3.75E+04
Rb88 1.50E+03 Cs134 3.38E+03 Cs137 2.65E+03 Cs138 1.20E+04
RCS energy*activity factor (Ci*MeV/ml) 2.19E-01

Airborne activity in leak area (uci/ml)
Xe131m 1.68E+00 Xe133m 1.15E+01 Xe133 5.38E+02 Xe135 2.82E+02
Kr85m 3.02E+01 Kr85 1.24E+01 Kr87 3.58E+01 Kr88 7.03E+01
I131 2.63E+00 I132 1.45E+00 I133 3.99E+00 I134 1.76E+00 I135 2.45E+00
Rb88 9.79E-03 Cs134 2.21E-02 Cs137 1.73E-02 Cs138 7.82E-02
Leak area airborne energy*activity factor (Ci*MeV/ml) 3.37E-05
Leak area liquid energy*activity factor (Ci*MeV) 2.68E+06

Time (minutes from trip) 57

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 4.18E+01 I131DE (Ci/sec) 2.03E-02*

RCS activity (uci/ml)
Xe131m 2.57E+02 Xe133m 1.76E+03 Xe133 8.23E+04 Xe135 4.31E+04
Kr85m 4.61E+03 Kr85 1.90E+03 Kr87 5.42E+03 Kr88 1.07E+04
I131 4.02E+04 I132 2.20E+04 I133 6.11E+04 I134 2.65E+04 I135 3.75E+04
Rb88 1.44E+03 Cs134 3.38E+03 Cs137 2.65E+03 Cs138 1.17E+04
RCS energy*activity factor (Ci*MeV/ml) 2.18E-01

Airborne activity in leak area (uci/ml)
Xe131m 1.73E+00 Xe133m 1.18E+01 Xe133 5.52E+02 Xe135 2.90E+02
Kr85m 3.09E+01 Kr85 1.28E+01 Kr87 3.64E+01 Kr88 7.19E+01
I131 2.70E+00 I132 1.48E+00 I133 4.10E+00 I134 1.78E+00 I135 2.51E+00
Rb88 9.66E-03 Cs134 2.27E-02 Cs137 1.78E-02 Cs138 7.86E-02
Leak area airborne energy*activity factor (Ci*MeV/ml) 3.46E-05
Leak area liquid energy*activity factor (Ci*MeV) 2.73E+06

Time (minutes from trip) 58

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 4.29E+01 I131DE (Ci/sec) 2.07E-02*

RCS activity (uci/ml)
Xe131m 2.57E+02 Xe133m 1.76E+03 Xe133 8.23E+04 Xe135 4.32E+04
Kr85m 4.60E+03 Kr85 1.90E+03 Kr87 5.37E+03 Kr88 1.07E+04
I131 4.02E+04 I132 2.19E+04 I133 6.10E+04 I134 2.62E+04 I135 3.74E+04
Rb88 1.38E+03 Cs134 3.38E+03 Cs137 2.65E+03 Cs138 1.15E+04
RCS energy*activity factor (Ci*MeV/ml) 2.16E-01

Airborne activity in leak area (uci/ml)
Xe131m 1.77E+00 Xe133m 1.21E+01 Xe133 5.67E+02 Xe135 2.98E+02
Kr85m 3.17E+01 Kr85 1.31E+01 Kr87 3.70E+01 Kr88 7.35E+01
I131 2.77E+00 I132 1.51E+00 I133 4.21E+00 I134 1.80E+00 I135 2.58E+00
Rb88 9.54E-03 Cs134 2.33E-02 Cs137 1.82E-02 Cs138 7.91E-02
Leak area airborne energy*activity factor (Ci*MeV/ml) 3.54E-05
Leak area liquid energy*activity factor (Ci*MeV) 2.78E+06

Time (minutes from trip) 59

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 4.40E+01 I131DE (Ci/sec) 2.12E-02*

RCS activity (uci/ml)
Xe131m 2.57E+02 Xe133m 1.76E+03 Xe133 8.23E+04 Xe135 4.32E+04
Kr85m 4.58E+03 Kr85 1.90E+03 Kr87 5.32E+03 Kr88 1.06E+04
I131 4.02E+04 I132 2.18E+04 I133 6.10E+04 I134 2.58E+04 I135 3.73E+04
Rb88 1.33E+03 Cs134 3.38E+03 Cs137 2.65E+03 Cs138 1.12E+04
RCS energy*activity factor (Ci*MeV/ml) 2.15E-01

Airborne activity in leak area (uci/ml)
Xe131m 1.82E+00 Xe133m 1.25E+01 Xe133 5.83E+02 Xe135 3.06E+02
Kr85m 3.25E+01 Kr85 1.35E+01 Kr87 3.77E+01 Kr88 7.51E+01
I131 2.85E+00 I132 1.54E+00 I133 4.32E+00 I134 1.83E+00 I135 2.64E+00
Rb88 9.43E-03 Cs134 2.39E-02 Cs137 1.87E-02 Cs138 7.95E-02
Leak area airborne energy*activity factor (Ci*MeV/ml) 3.63E-05
Leak area liquid energy*activity factor (Ci*MeV) 2.83E+06

Time (minutes from trip) 60

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 4.51E+01 I131DE (Ci/sec) 2.17E-02*

RCS activity (uci/ml)
Xe131m 2.57E+02 Xe133m 1.76E+03 Xe133 8.23E+04 Xe135 4.32E+04
Kr85m 4.57E+03 Kr85 1.90E+03 Kr87 5.27E+03 Kr88 1.06E+04
I131 4.02E+04 I132 2.17E+04 I133 6.09E+04 I134 2.55E+04 I135 3.73E+04
Rb88 1.28E+03 Cs134 3.38E+03 Cs137 2.65E+03 Cs138 1.10E+04
RCS energy*activity factor (Ci*MeV/ml) 2.13E-01

Airborne activity in leak area (uci/ml)
Xe131m 1.87E+00 Xe133m 1.28E+01 Xe133 5.99E+02 Xe135 3.14E+02
Kr85m 3.32E+01 Kr85 1.38E+01 Kr87 3.83E+01 Kr88 7.68E+01
I131 2.92E+00 I132 1.58E+00 I133 4.43E+00 I134 1.85E+00 I135 2.71E+00
Rb88 9.31E-03 Cs134 2.46E-02 Cs137 1.92E-02 Cs138 8.00E-02
Leak area airborne energy*activity factor (Ci*MeV/ml) 3.73E-05
Leak area liquid energy*activity factor (Ci*MeV) 2.89E+06

Time (minutes from trip) 70

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 7.51E+01 I131DE (Ci/sec) 3.60E-02

RCS activity (uci/ml)
Xe131m 2.48E+02 Xe133m 1.70E+03 Xe133 7.95E+04 Xe135 4.16E+04
Kr85m 4.29E+03 Kr85 1.83E+03 Kr87 4.63E+03 Kr88 9.76E+03
I131 3.87E+04 I132 1.99E+04 I133 5.83E+04 I134 2.15E+04 I135 3.52E+04
Rb88 8.35E+02 Cs134 3.25E+03 Cs137 2.55E+03 Cs138 8.60E+03
RCS energy*activity factor (Ci*MeV/ml) 1.91E-01

Airborne activity in leak area (uci/ml)
Xe131m 2.37E+00 Xe133m 1.62E+01 Xe133 7.60E+02 Xe135 3.98E+02
Kr85m 4.10E+01 Kr85 1.75E+01 Kr87 4.43E+01 Kr88 9.33E+01
I131 3.70E+00 I132 1.90E+00 I133 5.58E+00 I134 2.06E+00 I135 3.37E+00
Rb88 7.98E-03 Cs134 3.11E-02 Cs137 2.43E-02 Cs138 8.22E-02
Leak area airborne energy*activity factor (Ci*MeV/ml) 4.65E-05
Leak area liquid energy*activity factor (Ci*MeV) 3.41E+06

Time (minutes from trip) 80

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 8.57E+01 I131DE (Ci/sec) 4.02E-02

RCS activity (uci/ml)
Xe131m 2.39E+02 Xe133m 1.64E+03 Xe133 7.68E+04 Xe135 4.01E+04
Kr85m 4.02E+03 Kr85 1.76E+03 Kr87 4.07E+03 Kr88 9.02E+03
I131 3.72E+04 I132 1.82E+04 I133 5.58E+04 I134 1.82E+04 I135 3.33E+04
Rb88 5.44E+02 Cs134 3.13E+03 Cs137 2.45E+03 Cs138 6.73E+03
RCS energy*activity factor (Ci*MeV/ml) 1.73E-01

Airborne activity in leak area (uci/ml)
Xe131m 2.72E+00 Xe133m 1.87E+01 Xe133 8.76E+02 Xe135 4.58E+02
Kr85m 4.59E+01 Kr85 2.01E+01 Kr87 4.64E+01 Kr88 1.03E+02
I131 4.25E+00 I132 2.07E+00 I133 6.37E+00 I134 2.07E+00 I135 3.81E+00
Rb88 6.21E-03 Cs134 3.57E-02 Cs137 2.80E-02 Cs138 7.68E-02
Leak area airborne energy*activity factor (Ci*MeV/ml) 5.28E-05
Leak area liquid energy*activity factor (Ci*MeV) 3.67E+06

Time (minutes from trip) 90

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 9.27E+01 I131DE (Ci/sec) 4.26E-02

RCS activity (uci/ml)
Xe131m 2.30E+02 Xe133m 1.58E+03 Xe133 7.41E+04 Xe135 3.87E+04
Kr85m 3.77E+03 Kr85 1.70E+03 Kr87 3.58E+03 Kr88 8.33E+03
I131 3.58E+04 I132 1.66E+04 I133 5.35E+04 I134 1.53E+04 I135 3.15E+04
Rb88 3.55E+02 Cs134 3.01E+03 Cs137 2.36E+03 Cs138 5.26E+03
RCS energy*activity factor (Ci*MeV/ml) 1.57E-01

Airborne activity in leak area (uci/ml)
Xe131m 2.97E+00 Xe133m 2.04E+01 Xe133 9.57E+02 Xe135 5.00E+02
Kr85m 4.88E+01 Kr85 2.19E+01 Kr87 4.62E+01 Kr88 1.08E+02
I131 4.62E+00 I132 2.15E+00 I133 6.91E+00 I134 1.98E+00 I135 4.07E+00
Rb88 4.59E-03 Cs134 3.89E-02 Cs137 3.05E-02 Cs138 6.80E-02
Leak area airborne energy*activity factor (Ci*MeV/ml) 5.68E-05
Leak area liquid energy*activity factor (Ci*MeV) 3.74E+06

Time (minutes from trip) 100

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 9.71E+01 I131DE (Ci/sec) 4.36E-02*

RCS activity (uci/ml)
Xe131m 2.21E+02 Xe133m 1.53E+03 Xe133 7.15E+04 Xe135 3.73E+04
Kr85m 3.54E+03 Kr85 1.63E+03 Kr87 3.14E+03 Kr88 7.69E+03
I131 3.44E+04 I132 1.52E+04 I133 5.12E+04 I134 1.30E+04 I135 2.98E+04
Rb88 2.31E+02 Cs134 2.90E+03 Cs137 2.27E+03 Cs138 4.12E+03
RCS energy*activity factor (Ci*MeV/ml) 1.43E-01

Airborne activity in leak area (uci/ml)
Xe131m 3.13E+00 Xe133m 2.16E+01 Xe133 1.01E+03 Xe135 5.27E+02
Kr85m 5.01E+01 Kr85 2.31E+01 Kr87 4.44E+01 Kr88 1.09E+02
I131 4.87E+00 I132 2.15E+00 I133 7.24E+00 I134 1.83E+00 I135 4.22E+00
Rb88 3.27E-03 Cs134 4.10E-02 Cs137 3.21E-02 Cs138 5.82E-02
Leak area airborne energy*activity factor (Ci*MeV/ml) 5.92E-05
Leak area liquid energy*activity factor (Ci*MeV) 3.75E+06

Time (minutes from trip) 110

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 9.94E+01 I131DE (Ci/sec) 4.38E-02*

RCS activity (uci/ml)
Xe131m 2.13E+02 Xe133m 1.47E+03 Xe133 6.91E+04 Xe135 3.59E+04
Kr85m 3.32E+03 Kr85 1.57E+03 Kr87 2.76E+03 Kr88 7.10E+03
I131 3.31E+04 I132 1.39E+04 I133 4.90E+04 I134 1.09E+04 I135 2.82E+04
Rb88 1.51E+02 Cs134 2.79E+03 Cs137 2.19E+03 Cs138 3.22E+03
RCS energy*activity factor (Ci*MeV/ml) 1.31E-01

Airborne activity in leak area (uci/ml)
Xe131m 3.23E+00 Xe133m 2.23E+01 Xe133 1.05E+03 Xe135 5.44E+02
Kr85m 5.03E+01 Kr85 2.38E+01 Kr87 4.18E+01 Kr88 1.08E+02
I131 5.01E+00 I132 2.11E+00 I133 7.41E+00 I134 1.66E+00 I135 4.27E+00
Rb88 2.28E-03 Cs134 4.23E-02 Cs137 3.31E-02 Cs138 4.87E-02
Leak area airborne energy*activity factor (Ci*MeV/ml) 6.04E-05
Leak area liquid energy*activity factor (Ci*MeV) 3.67E+06

Time (minutes from trip) 120

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.00E+02 I131DE (Ci/sec) 4.33E-02*

RCS activity (uci/ml)
Xe131m 2.05E+02 Xe133m 1.42E+03 Xe133 6.67E+04 Xe135 3.46E+04
Kr85m 3.12E+03 Kr85 1.51E+03 Kr87 2.42E+03 Kr88 6.56E+03
I131 3.19E+04 I132 1.27E+04 I133 4.69E+04 I134 9.24E+03 I135 2.67E+04
Rb88 9.84E+01 Cs134 2.69E+03 Cs137 2.10E+03 Cs138 2.52E+03
RCS energy*activity factor (Ci*MeV/ml) 1.20E-01

Airborne activity in leak area (uci/ml)
Xe131m 3.27E+00 Xe133m 2.26E+01 Xe133 1.06E+03 Xe135 5.52E+02
Kr85m 4.97E+01 Kr85 2.41E+01 Kr87 3.87E+01 Kr88 1.05E+02
I131 5.08E+00 I132 2.03E+00 I133 7.47E+00 I134 1.47E+00 I135 4.26E+00
Rb88 1.57E-03 Cs134 4.28E-02 Cs137 3.35E-02 Cs138 4.01E-02
Leak area airborne energy*activity factor (Ci*MeV/ml) 6.07E-05
Leak area liquid energy*activity factor (Ci*MeV) 3.54E+06

Time (minutes from trip) 130

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 9.99E+01 I131DE (Ci/sec) 4.23E-02*

RCS activity (uci/ml)
Xe131m 1.98E+02 Xe133m 1.37E+03 Xe133 6.44E+04 Xe135 3.33E+04
Kr85m 2.92E+03 Kr85 1.46E+03 Kr87 2.13E+03 Kr88 6.06E+03
I131 3.06E+04 I132 1.17E+04 I133 4.49E+04 I134 7.81E+03 I135 2.53E+04
Rb88 6.42E+01 Cs134 2.59E+03 Cs137 2.02E+03 Cs138 1.97E+03
RCS energy*activity factor (Ci*MeV/ml) 1.11E-01

Airborne activity in leak area (uci/ml)
Xe131m 3.28E+00 Xe133m 2.27E+01 Xe133 1.07E+03 Xe135 5.53E+02
Kr85m 4.85E+01 Kr85 2.42E+01 Kr87 3.54E+01 Kr88 1.01E+02
I131 5.09E+00 I132 1.94E+00 I133 7.45E+00 I134 1.30E+00 I135 4.19E+00
Rb88 1.07E-03 Cs134 4.29E-02 Cs137 3.36E-02 Cs138 3.27E-02
Leak area airborne energy*activity factor (Ci*MeV/ml) 6.03E-05
Leak area liquid energy*activity factor (Ci*MeV) 3.39E+06

Time (minutes from trip) 140

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 9.88E+01 I131DE (Ci/sec) 4.10E-02*

RCS activity (uci/ml)
Xe131m 1.90E+02 Xe133m 1.32E+03 Xe133 6.21E+04 Xe135 3.21E+04
Kr85m 2.74E+03 Kr85 1.40E+03 Kr87 1.87E+03 Kr88 5.60E+03
I131 2.95E+04 I132 1.07E+04 I133 4.30E+04 I134 6.59E+03 I135 2.39E+04
Rb88 4.18E+01 Cs134 2.49E+03 Cs137 1.95E+03 Cs138 1.54E+03
RCS energy*activity factor (Ci*MeV/ml) 1.02E-01

Airborne activity in leak area (uci/ml)
Xe131m 3.26E+00 Xe133m 2.26E+01 Xe133 1.06E+03 Xe135 5.50E+02
Kr85m 4.70E+01 Kr85 2.40E+01 Kr87 3.21E+01 Kr88 9.59E+01
I131 5.05E+00 I132 1.83E+00 I133 7.36E+00 I134 1.13E+00 I135 4.09E+00
Rb88 7.17E-04 Cs134 4.26E-02 Cs137 3.34E-02 Cs138 2.64E-02
Leak area airborne energy*activity factor (Ci*MeV/ml) 5.94E-05
Leak area liquid energy*activity factor (Ci*MeV) 3.24E+06

Time (minutes from trip) 150

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 9.72E+01 I131DE (Ci/sec) 3.95E-02*

RCS activity (uci/ml)
Xe131m 1.83E+02 Xe133m 1.27E+03 Xe133 6.00E+04 Xe135 3.09E+04
Kr85m 2.57E+03 Kr85 1.35E+03 Kr87 1.64E+03 Kr88 5.17E+03
I131 2.84E+04 I132 9.76E+03 I133 4.11E+04 I134 5.57E+03 I135 2.26E+04
Rb88 2.73E+01 Cs134 2.40E+03 Cs137 1.88E+03 Cs138 1.20E+03
RCS energy*activity factor (Ci*MeV/ml) 9.48E-02

Airborne activity in leak area (uci/ml)
Xe131m 3.22E+00 Xe133m 2.24E+01 Xe133 1.05E+03 Xe135 5.43E+02
Kr85m 4.52E+01 Kr85 2.37E+01 Kr87 2.89E+01 Kr88 9.08E+01
I131 4.98E+00 I132 1.71E+00 I133 7.22E+00 I134 9.78E-01 I135 3.97E+00
Rb88 4.79E-04 Cs134 4.21E-02 Cs137 3.29E-02 Cs138 2.12E-02
Leak area airborne energy*activity factor (Ci*MeV/ml) 5.82E-05
Leak area liquid energy*activity factor (Ci*MeV) 3.07E+06

Time (minutes from trip) 160

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 7.17E+01 I131DE (Ci/sec) 2.85E-02*

RCS activity (uci/ml)
Xe131m 1.83E+02 Xe133m 1.28E+03 Xe133 6.01E+04 Xe135 3.09E+04
Kr85m 2.51E+03 Kr85 1.35E+03 Kr87 1.50E+03 Kr88 4.96E+03
I131 2.83E+04 I132 9.28E+03 I133 4.09E+04 I134 4.88E+03 I135 2.22E+04
Rb88 1.85E+01 Cs134 2.40E+03 Cs137 1.88E+03 Cs138 9.79E+02
RCS energy*activity factor (Ci*MeV/ml) 9.15E-02

Airborne activity in leak area (uci/ml)
Xe131m 2.38E+00 Xe133m 1.66E+01 Xe133 7.82E+02 Xe135 4.02E+02
Kr85m 3.26E+01 Kr85 1.75E+01 Kr87 1.95E+01 Kr88 6.45E+01
I131 3.69E+00 I132 1.21E+00 I133 5.32E+00 I134 6.35E-01 I135 2.89E+00
Rb88 2.40E-04 Cs134 3.12E-02 Cs137 2.44E-02 Cs138 1.27E-02
Leak area airborne energy*activity factor (Ci*MeV/ml) 4.28E-05
Leak area liquid energy*activity factor (Ci*MeV) 2.19E+06

Time (minutes from trip) 170

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 5.29E+01 I131DE (Ci/sec) 2.06E-02*

RCS activity (uci/ml)
Xe131m 1.83E+02 Xe133m 1.28E+03 Xe133 6.03E+04 Xe135 3.09E+04
Kr85m 2.44E+03 Kr85 1.35E+03 Kr87 1.37E+03 Kr88 4.76E+03
I131 2.83E+04 I132 8.82E+03 I133 4.07E+04 I134 4.29E+03 I135 2.18E+04
Rb88 1.25E+01 Cs134 2.40E+03 Cs137 1.88E+03 Cs138 7.95E+02
RCS energy*activity factor (Ci*MeV/ml) 8.86E-02

Airborne activity in leak area (uci/ml)
Xe131m 1.77E+00 Xe133m 1.23E+01 Xe133 5.81E+02 Xe135 2.97E+02
Kr85m 2.35E+01 Kr85 1.30E+01 Kr87 1.32E+01 Kr88 4.58E+01
I131 2.73E+00 I132 8.49E-01 I133 3.91E+00 I134 4.13E-01 I135 2.10E+00
Rb88 1.21E-04 Cs134 2.31E-02 Cs137 1.81E-02 Cs138 7.66E-03
Leak area airborne energy*activity factor (Ci*MeV/ml) 3.15E-05
Leak area liquid energy*activity factor (Ci*MeV) 1.57E+06

Time (minutes from trip) 180

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 3.90E+01 I131DE (Ci/sec) 1.49E-02*

RCS activity (uci/ml)
Xe131m 1.84E+02 Xe133m 1.28E+03 Xe133 6.05E+04 Xe135 3.08E+04
Kr85m 2.38E+03 Kr85 1.35E+03 Kr87 1.25E+03 Kr88 4.57E+03
I131 2.83E+04 I132 8.39E+03 I133 4.04E+04 I134 3.76E+03 I135 2.15E+04
Rb88 8.48E+00 Cs134 2.40E+03 Cs137 1.88E+03 Cs138 6.46E+02
RCS energy*activity factor (Ci*MeV/ml) 8.59E-02

Airborne activity in leak area (uci/ml)
Xe131m 1.31E+00 Xe133m 9.14E+00 Xe133 4.31E+02 Xe135 2.20E+02
Kr85m 1.70E+01 Kr85 9.61E+00 Kr87 8.91E+00 Kr88 3.25E+01
I131 2.02E+00 I132 5.98E-01 I133 2.88E+00 I134 2.68E-01 I135 1.53E+00
Rb88 6.04E-05 Cs134 1.71E-02 Cs137 1.34E-02 Cs138 4.61E-03
Leak area airborne energy*activity factor (Ci*MeV/ml) 2.32E-05
Leak area liquid energy*activity factor (Ci*MeV) 1.13E+06

Time (minutes from trip) 190

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 2.88E+01 I131DE (Ci/sec) 1.08E-02*

RCS activity (uci/ml)
Xe131m 1.84E+02 Xe133m 1.28E+03 Xe133 6.06E+04 Xe135 3.08E+04
Kr85m 2.32E+03 Kr85 1.35E+03 Kr87 1.14E+03 Kr88 4.38E+03
I131 2.83E+04 I132 7.97E+03 I133 4.02E+04 I134 3.30E+03 I135 2.11E+04
Rb88 5.75E+00 Cs134 2.40E+03 Cs137 1.88E+03 Cs138 5.25E+02
RCS energy*activity factor (Ci*MeV/ml) 8.35E-02

Airborne activity in leak area (uci/ml)
Xe131m 9.69E-01 Xe133m 6.78E+00 Xe133 3.20E+02 Xe135 1.63E+02
Kr85m 1.22E+01 Kr85 7.11E+00 Kr87 6.02E+00 Kr88 2.31E+01
I131 1.49E+00 I132 4.21E-01 I133 2.12E+00 I134 1.74E-01 I135 1.11E+00
Rb88 3.03E-05 Cs134 1.26E-02 Cs137 9.89E-03 Cs138 2.77E-03
Leak area airborne energy*activity factor (Ci*MeV/ml) 1.70E-05
Leak area liquid energy*activity factor (Ci*MeV) 8.09E+05

Time (minutes from trip) 200

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 2.13E+01 I131DE (Ci/sec) 7.85E-03*

RCS activity (uci/ml)
Xe131m 1.84E+02 Xe133m 1.29E+03 Xe133 6.08E+04 Xe135 3.08E+04
Kr85m 2.26E+03 Kr85 1.35E+03 Kr87 1.04E+03 Kr88 4.21E+03
I131 2.83E+04 I132 7.58E+03 I133 4.00E+04 I134 2.89E+03 I135 2.07E+04
Rb88 3.89E+00 Cs134 2.40E+03 Cs137 1.88E+03 Cs138 4.27E+02
RCS energy*activity factor (Ci*MeV/ml) 8.13E-02

Airborne activity in leak area (uci/ml)
Xe131m 7.18E-01 Xe133m 5.03E+00 Xe133 2.37E+02 Xe135 1.20E+02
Kr85m 8.83E+00 Kr85 5.27E+00 Kr87 4.07E+00 Kr88 1.64E+01
I131 1.10E+00 I132 2.96E-01 I133 1.56E+00 I134 1.13E-01 I135 8.10E-01
Rb88 1.52E-05 Cs134 9.35E-03 Cs137 7.32E-03 Cs138 1.67E-03
Leak area airborne energy*activity factor (Ci*MeV/ml) 1.26E-05
Leak area liquid energy*activity factor (Ci*MeV) 5.83E+05

Time (minutes from trip) 210

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.57E+01 I131DE (Ci/sec) 5.69E-03*

RCS activity (uci/ml)
Xe131m 1.84E+02 Xe133m 1.29E+03 Xe133 6.10E+04 Xe135 3.08E+04
Kr85m 2.21E+03 Kr85 1.35E+03 Kr87 9.51E+02 Kr88 4.04E+03
I131 2.83E+04 I132 7.21E+03 I133 3.98E+04 I134 2.54E+03 I135 2.04E+04
Rb88 2.64E+00 Cs134 2.40E+03 Cs137 1.88E+03 Cs138 3.47E+02
RCS energy*activity factor (Ci*MeV/ml) 7.92E-02

Airborne activity in leak area (uci/ml)
Xe131m 5.31E-01 Xe133m 3.73E+00 Xe133 1.76E+02 Xe135 8.89E+01
Kr85m 6.37E+00 Kr85 3.90E+00 Kr87 2.75E+00 Kr88 1.17E+01
I131 8.17E-01 I132 2.08E-01 I133 1.15E+00 I134 7.34E-02 I135 5.89E-01
Rb88 7.62E-06 Cs134 6.92E-03 Cs137 5.42E-03 Cs138 1.00E-03
Leak area airborne energy*activity factor (Ci*MeV/ml) 9.25E-06
Leak area liquid energy*activity factor (Ci*MeV) 4.20E+05

Time (minutes from trip) 220

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.16E+01 I131DE (Ci/sec) 4.13E-03*

RCS activity (uci/ml)
Xe131m 1.84E+02 Xe133m 1.29E+03 Xe133 6.11E+04 Xe135 3.07E+04
Kr85m 2.15E+03 Kr85 1.35E+03 Kr87 8.69E+02 Kr88 3.87E+03
I131 2.82E+04 I132 6.85E+03 I133 3.96E+04 I134 2.23E+03 I135 2.00E+04
Rb88 1.79E+00 Cs134 2.40E+03 Cs137 1.88E+03 Cs138 2.82E+02
RCS energy*activity factor (Ci*MeV/ml) 7.74E-02

Airborne activity in leak area (uci/ml)
Xe131m 3.94E-01 Xe133m 2.77E+00 Xe133 1.31E+02 Xe135 6.57E+01
Kr85m 4.60E+00 Kr85 2.89E+00 Kr87 1.86E+00 Kr88 8.28E+00
I131 6.04E-01 I132 1.47E-01 I133 8.47E-01 I134 4.77E-02 I135 4.29E-01
Rb88 3.82E-06 Cs134 5.13E-03 Cs137 4.01E-03 Cs138 6.03E-04
Leak area airborne energy*activity factor (Ci*MeV/ml) 6.82E-06
Leak area liquid energy*activity factor (Ci*MeV) 3.03E+05

Time (minutes from trip) 230

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 8.57E+00 I131DE (Ci/sec) 3.00E-03*

RCS activity (uci/ml)
Xe131m 1.84E+02 Xe133m 1.29E+03 Xe133 6.13E+04 Xe135 3.07E+04
Kr85m 2.09E+03 Kr85 1.35E+03 Kr87 7.93E+02 Kr88 3.72E+03
I131 2.82E+04 I132 6.51E+03 I133 3.93E+04 I134 1.96E+03 I135 1.97E+04
Rb88 1.21E+00 Cs134 2.40E+03 Cs137 1.88E+03 Cs138 2.29E+02
RCS energy*activity factor (Ci*MeV/ml) 7.57E-02

Airborne activity in leak area (uci/ml)
Xe131m 2.91E-01 Xe133m 2.05E+00 Xe133 9.71E+01 Xe135 4.86E+01
Kr85m 3.32E+00 Kr85 2.14E+00 Kr87 1.26E+00 Kr88 5.89E+00
I131 4.47E-01 I132 1.03E-01 I133 6.23E-01 I134 3.10E-02 I135 3.12E-01
Rb88 1.92E-06 Cs134 3.79E-03 Cs137 2.97E-03 Cs138 3.63E-04
Leak area airborne energy*activity factor (Ci*MeV/ml) 5.02E-06
Leak area liquid energy*activity factor (Ci*MeV) 2.19E+05

Time (minutes from trip) 240

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 6.33E+00 I131DE (Ci/sec) 2.18E-03*

RCS activity (uci/ml)
Xe131m 1.84E+02 Xe133m 1.30E+03 Xe133 6.15E+04 Xe135 3.06E+04
Kr85m 2.04E+03 Kr85 1.35E+03 Kr87 7.24E+02 Kr88 3.57E+03
I131 2.82E+04 I132 6.19E+03 I133 3.91E+04 I134 1.72E+03 I135 1.94E+04
Rb88 8.20E-01 Cs134 2.40E+03 Cs137 1.88E+03 Cs138 1.86E+02
RCS energy*activity factor (Ci*MeV/ml) 7.41E-02

Airborne activity in leak area (uci/ml)
Xe131m 2.16E-01 Xe133m 1.52E+00 Xe133 7.21E+01 Xe135 3.59E+01
Kr85m 2.39E+00 Kr85 1.58E+00 Kr87 8.48E-01 Kr88 4.18E+00
I131 3.31E-01 I132 7.26E-02 I133 4.59E-01 I134 2.01E-02 I135 2.27E-01
Rb88 9.61E-07 Cs134 2.81E-03 Cs137 2.20E-03 Cs138 2.18E-04
Leak area airborne energy*activity factor (Ci*MeV/ml) 3.70E-06
Leak area liquid energy*activity factor (Ci*MeV) 1.59E+05

Time (minutes from trip) 250

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 4.68E+00 I131DE (Ci/sec) 1.58E-03

RCS activity (uci/ml)
Xe131m 1.84E+02 Xe133m 1.30E+03 Xe133 6.16E+04 Xe135 3.06E+04
Kr85m 1.99E+03 Kr85 1.35E+03 Kr87 6.61E+02 Kr88 3.42E+03
I131 2.82E+04 I132 5.89E+03 I133 3.89E+04 I134 1.51E+03 I135 1.90E+04
Rb88 5.56E-01 Cs134 2.40E+03 Cs137 1.88E+03 Cs138 1.51E+02
RCS energy*activity factor (Ci*MeV/ml) 7.26E-02

Airborne activity in leak area (uci/ml)
Xe131m 1.60E-01 Xe133m 1.13E+00 Xe133 5.35E+01 Xe135 2.65E+01
Kr85m 1.73E+00 Kr85 1.17E+00 Kr87 5.73E-01 Kr88 2.97E+00
I131 2.45E-01 I132 5.11E-02 I133 3.38E-01 I134 1.31E-02 I135 1.65E-01
Rb88 4.82E-07 Cs134 2.08E-03 Cs137 1.63E-03 Cs138 1.31E-04
Leak area airborne energy*activity factor (Ci*MeV/ml) 2.73E-06
Leak area liquid energy*activity factor (Ci*MeV) 1.15E+05

Time (minutes from trip) 260

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 3.46E+00 I131DE (Ci/sec) 1.15E-03

RCS activity (uci/ml)
Xe131m 1.84E+02 Xe133m 1.30E+03 Xe133 6.18E+04 Xe135 3.05E+04
Kr85m 1.94E+03 Kr85 1.35E+03 Kr87 6.03E+02 Kr88 3.28E+03
I131 2.82E+04 I132 5.60E+03 I133 3.87E+04 I134 1.32E+03 I135 1.87E+04
Rb88 3.76E-01 Cs134 2.40E+03 Cs137 1.88E+03 Cs138 1.23E+02
RCS energy*activity factor (Ci*MeV/ml) 7.13E-02

Airborne activity in leak area (uci/ml)
Xe131m 1.18E-01 Xe133m 8.36E-01 Xe133 3.97E+01 Xe135 1.96E+01
Kr85m 1.25E+00 Kr85 8.66E-01 Kr87 3.87E-01 Kr88 2.11E+00
I131 1.81E-01 I132 3.59E-02 I133 2.49E-01 I134 8.48E-03 I135 1.20E-01
Rb88 2.42E-07 Cs134 1.54E-03 Cs137 1.20E-03 Cs138 7.89E-05
Leak area airborne energy*activity factor (Ci*MeV/ml) 2.02E-06
Leak area liquid energy*activity factor (Ci*MeV) 8.37E+04

Time (minutes from trip) 270

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 2.56E+00 I131DE (Ci/sec) 8.38E-04

RCS activity (uci/ml)
Xe131m 1.84E+02 Xe133m 1.30E+03 Xe133 6.19E+04 Xe135 3.04E+04
Kr85m 1.89E+03 Kr85 1.35E+03 Kr87 5.50E+02 Kr88 3.15E+03
I131 2.82E+04 I132 5.32E+03 I133 3.85E+04 I134 1.16E+03 I135 1.84E+04
Rb88 2.55E-01 Cs134 2.40E+03 Cs137 1.88E+03 Cs138 9.98E+01
RCS energy*activity factor (Ci*MeV/ml) 7.00E-02

Airborne activity in leak area (uci/ml)
Xe131m 8.77E-02 Xe133m 6.20E-01 Xe133 2.95E+01 Xe135 1.45E+01
Kr85m 8.99E-01 Kr85 6.41E-01 Kr87 2.62E-01 Kr88 1.50E+00
I131 1.34E-01 I132 2.53E-02 I133 1.83E-01 I134 5.51E-03 I135 8.74E-02
Rb88 1.21E-07 Cs134 1.14E-03 Cs137 8.92E-04 Cs138 4.75E-05
Leak area airborne energy*activity factor (Ci*MeV/ml) 1.49E-06
Leak area liquid energy*activity factor (Ci*MeV) 6.08E+04

Time (minutes from trip) 280

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.89E+00 I131DE (Ci/sec) 6.10E-04*

RCS activity (uci/ml)
Xe131m 1.85E+02 Xe133m 1.31E+03 Xe133 6.21E+04 Xe135 3.04E+04
Kr85m 1.84E+03 Kr85 1.35E+03 Kr87 5.03E+02 Kr88 3.02E+03
I131 2.81E+04 I132 5.06E+03 I133 3.83E+04 I134 1.02E+03 I135 1.81E+04
Rb88 1.73E-01 Cs134 2.40E+03 Cs137 1.88E+03 Cs138 8.11E+01
RCS energy*activity factor (Ci*MeV/ml) 6.88E-02

Airborne activity in leak area (uci/ml)
Xe131m 6.50E-02 Xe133m 4.60E-01 Xe133 2.19E+01 Xe135 1.07E+01
Kr85m 6.49E-01 Kr85 4.75E-01 Kr87 1.77E-01 Kr88 1.06E+00
I131 9.90E-02 I132 1.78E-02 I133 1.35E-01 I134 3.58E-03 I135 6.36E-02
Rb88 6.08E-08 Cs134 8.43E-04 Cs137 6.60E-04 Cs138 2.86E-05
Leak area airborne energy*activity factor (Ci*MeV/ml) 1.10E-06
Leak area liquid energy*activity factor (Ci*MeV) 4.42E+04

Time (minutes from trip) 290

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.40E+00 I131DE (Ci/sec) 4.44E-04*

RCS activity (uci/ml)
Xe131m 1.85E+02 Xe133m 1.31E+03 Xe133 6.22E+04 Xe135 3.03E+04
Kr85m 1.80E+03 Kr85 1.35E+03 Kr87 4.59E+02 Kr88 2.90E+03
I131 2.81E+04 I132 4.81E+03 I133 3.81E+04 I134 8.92E+02 I135 1.78E+04
Rb88 1.17E-01 Cs134 2.40E+03 Cs137 1.88E+03 Cs138 6.59E+01
RCS energy*activity factor (Ci*MeV/ml) 6.77E-02

Airborne activity in leak area (uci/ml)
Xe131m 4.81E-02 Xe133m 3.41E-01 Xe133 1.62E+01 Xe135 7.89E+00
Kr85m 4.68E-01 Kr85 3.51E-01 Kr87 1.20E-01 Kr88 7.56E-01
I131 7.33E-02 I132 1.25E-02 I133 9.92E-02 I134 2.32E-03 I135 4.63E-02
Rb88 3.05E-08 Cs134 6.24E-04 Cs137 4.89E-04 Cs138 1.72E-05
Leak area airborne energy*activity factor (Ci*MeV/ml) 8.10E-07
Leak area liquid energy*activity factor (Ci*MeV) 3.22E+04

Time (minutes from trip) 300

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.03E+00 I131DE (Ci/sec) 3.24E-04*

RCS activity (uci/ml)
Xe131m 1.85E+02 Xe133m 1.31E+03 Xe133 6.24E+04 Xe135 3.02E+04
Kr85m 1.75E+03 Kr85 1.35E+03 Kr87 4.19E+02 Kr88 2.78E+03
I131 2.81E+04 I132 4.57E+03 I133 3.79E+04 I134 7.83E+02 I135 1.75E+04
Rb88 7.93E-02 Cs134 2.40E+03 Cs137 1.88E+03 Cs138 5.36E+01
RCS energy*activity factor (Ci*MeV/ml) 6.67E-02

Airborne activity in leak area (uci/ml)
Xe131m 3.56E-02 Xe133m 2.53E-01 Xe133 1.20E+01 Xe135 5.83E+00
Kr85m 3.38E-01 Kr85 2.60E-01 Kr87 8.08E-02 Kr88 5.37E-01
I131 5.42E-02 I132 8.82E-03 I133 7.30E-02 I134 1.51E-03 I135 3.37E-02
Rb88 1.53E-08 Cs134 4.62E-04 Cs137 3.62E-04 Cs138 1.03E-05
Leak area airborne energy*activity factor (Ci*MeV/ml) 5.98E-07
Leak area liquid energy*activity factor (Ci*MeV) 2.34E+04

Time (minutes from trip) 310

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 7.64E-01 I131DE (Ci/sec) 2.36E-04

RCS activity (uci/ml)
Xe131m 1.85E+02 Xe133m 1.31E+03 Xe133 6.25E+04 Xe135 3.01E+04
Kr85m 1.71E+03 Kr85 1.35E+03 Kr87 3.82E+02 Kr88 2.67E+03
I131 2.81E+04 I132 4.34E+03 I133 3.77E+04 I134 6.87E+02 I135 1.72E+04
Rb88 5.37E-02 Cs134 2.40E+03 Cs137 1.88E+03 Cs138 4.35E+01
RCS energy*activity factor (Ci*MeV/ml) 6.57E-02

Airborne activity in leak area (uci/ml)
Xe131m 2.64E-02 Xe133m 1.88E-01 Xe133 8.93E+00 Xe135 4.30E+00
Kr85m 2.44E-01 Kr85 1.93E-01 Kr87 5.46E-02 Kr88 3.81E-01
I131 4.01E-02 I132 6.20E-03 I133 5.38E-02 I134 9.81E-04 I135 2.45E-02
Rb88 7.67E-09 Cs134 3.42E-04 Cs137 2.68E-04 Cs138 6.22E-06
Leak area airborne energy*activity factor (Ci*MeV/ml) 4.41E-07
Leak area liquid energy*activity factor (Ci*MeV) 1.71E+04

Time (minutes from trip) 320

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 5.65E-01 I131DE (Ci/sec) 1.72E-04

RCS activity (uci/ml)
Xe131m 1.85E+02 Xe133m 1.32E+03 Xe133 6.27E+04 Xe135 3.00E+04
Kr85m 1.66E+03 Kr85 1.35E+03 Kr87 3.49E+02 Kr88 2.56E+03
I131 2.81E+04 I132 4.13E+03 I133 3.74E+04 I134 6.03E+02 I135 1.69E+04
Rb88 3.64E-02 Cs134 2.40E+03 Cs137 1.88E+03 Cs138 3.54E+01
RCS energy*activity factor (Ci*MeV/ml) 6.48E-02

Airborne activity in leak area (uci/ml)
Xe131m 1.95E-02 Xe133m 1.39E-01 Xe133 6.63E+00 Xe135 3.18E+00
Kr85m 1.76E-01 Kr85 1.43E-01 Kr87 3.69E-02 Kr88 2.71E-01
I131 2.97E-02 I132 4.37E-03 I133 3.96E-02 I134 6.37E-04 I135 1.78E-02
Rb88 3.85E-09 Cs134 2.53E-04 Cs137 1.98E-04 Cs138 3.74E-06
Leak area airborne energy*activity factor (Ci*MeV/ml) 3.26E-07
Leak area liquid energy*activity factor (Ci*MeV) 1.25E+04

Time (minutes from trip) 330

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 4.18E-01 I131DE (Ci/sec) 1.26E-04

RCS activity (uci/ml)
Xe131m 1.85E+02 Xe133m 1.32E+03 Xe133 6.28E+04 Xe135 2.99E+04
Kr85m 1.62E+03 Kr85 1.35E+03 Kr87 3.18E+02 Kr88 2.46E+03
I131 2.81E+04 I132 3.93E+03 I133 3.72E+04 I134 5.29E+02 I135 1.66E+04
Rb88 2.46E-02 Cs134 2.40E+03 Cs137 1.88E+03 Cs138 2.87E+01
RCS energy*activity factor (Ci*MeV/ml) 6.39E-02

Airborne activity in leak area (uci/ml)
Xe131m 1.45E-02 Xe133m 1.03E-01 Xe133 4.92E+00 Xe135 2.34E+00
Kr85m 1.27E-01 Kr85 1.06E-01 Kr87 2.49E-02 Kr88 1.92E-01
I131 2.19E-02 I132 3.07E-03 I133 2.91E-02 I134 4.14E-04 I135 1.30E-02
Rb88 1.93E-09 Cs134 1.87E-04 Cs137 1.47E-04 Cs138 2.25E-06
Leak area airborne energy*activity factor (Ci*MeV/ml) 2.41E-07
Leak area liquid energy*activity factor (Ci*MeV) 9.10E+03

Time (minutes from trip) 340

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 3.09E-01 I131DE (Ci/sec) 9.19E-05*

RCS activity (uci/ml)
Xe131m 1.85E+02 Xe133m 1.32E+03 Xe133 6.30E+04 Xe135 2.99E+04
Kr85m 1.58E+03 Kr85 1.35E+03 Kr87 2.91E+02 Kr88 2.36E+03
I131 2.80E+04 I132 3.73E+03 I133 3.70E+04 I134 4.64E+02 I135 1.63E+04
Rb88 1.67E-02 Cs134 2.40E+03 Cs137 1.88E+03 Cs138 2.34E+01
RCS energy*activity factor (Ci*MeV/ml) 6.31E-02

Airborne activity in leak area (uci/ml)
Xe131m 1.07E-02 Xe133m 7.64E-02 Xe133 3.65E+00 Xe135 1.73E+00
Kr85m 9.15E-02 Kr85 7.81E-02 Kr87 1.68E-02 Kr88 1.37E-01
I131 1.62E-02 I132 2.16E-03 I133 2.15E-02 I134 2.69E-04 I135 9.44E-03
Rb88 9.67E-10 Cs134 1.39E-04 Cs137 1.09E-04 Cs138 1.35E-06
Leak area airborne energy*activity factor (Ci*MeV/ml) 1.78E-07
Leak area liquid energy*activity factor (Ci*MeV) 6.65E+03

Time (minutes from trip) 350

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 2.29E-01 I131DE (Ci/sec) 6.71E-05*

RCS activity (uci/ml)
Xe131m 1.85E+02 Xe133m 1.32E+03 Xe133 6.31E+04 Xe135 2.98E+04
Kr85m 1.54E+03 Kr85 1.35E+03 Kr87 2.65E+02 Kr88 2.26E+03
I131 2.80E+04 I132 3.55E+03 I133 3.68E+04 I134 4.07E+02 I135 1.60E+04
Rb88 1.13E-02 Cs134 2.40E+03 Cs137 1.88E+03 Cs138 1.90E+01
RCS energy*activity factor (Ci*MeV/ml) 6.24E-02

Airborne activity in leak area (uci/ml)
Xe131m 7.94E-03 Xe133m 5.67E-02 Xe133 2.71E+00 Xe135 1.28E+00
Kr85m 6.60E-02 Kr85 5.78E-02 Kr87 1.14E-02 Kr88 9.71E-02
I131 1.20E-02 I132 1.52E-03 I133 1.58E-02 I134 1.75E-04 I135 6.87E-03
Rb88 4.85E-10 Cs134 1.03E-04 Cs137 8.04E-05 Cs138 8.14E-07
Leak area airborne energy*activity factor (Ci*MeV/ml) 1.31E-07
Leak area liquid energy*activity factor (Ci*MeV) 4.86E+03

Time (minutes from trip) 360

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.69E-01 I131DE (Ci/sec) 4.9.E-05*

RCS activity (uci/ml)
Xe131m 1.85E+02 Xe133m 1.32E+03 Xe133 6.33E+04 Xe135 2.97E+04
Kr85m 1.50E+03 Kr85 1.35E+03 Kr87 2.42E+02 Kr88 2.17E+03
I131 2.80E+04 I132 3.37E+03 I133 3.66E+04 I134 3.57E+02 I135 1.57E+04
Rb88 7.66E-03 Cs134 2.40E+03 Cs137 1.88E+03 Cs138 1.54E+01
RCS energy*activity factor (Ci*MeV/ml) 6.16E-02

Airborne activity in leak area (uci/ml)
Xe131m 5.88E-03 Xe133m 4.20E-02 Xe133 2.01E+00 Xe135 9.41E-01
Kr85m 4.76E-02 Kr85 4.28E-02 Kr87 7.69E-03 Kr88 6.90E-02
I131 8.89E-03 I132 1.07E-03 I133 1.16E-02 I134 1.13E-04 I135 5.00E-03
Rb88 2.43E-10 Cs134 7.60E-05 Cs137 5.95E-05 Cs138 4.89E-07
Leak area airborne energy*activity factor (Ci*MeV/ml) 9.69E-08
Leak area liquid energy*activity factor (Ci*MeV) 3.55E+03

Time (minutes from trip) 390

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 9.35E+01 I131DE (Ci/sec) 2.66E-02*

Time (minutes from trip) 420

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.06E+02 I131DE (Ci/sec) 2.91E-02*

Time (minutes from trip) 450

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 9.71E+01 I131DE (Ci/sec) 2.60E-02*

Time (minutes from trip) 480

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 8.55E+01 I131DE (Ci/sec) 2.23E-02*

Time (minutes from trip) 510

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 7.47E+01 I131DE (Ci/sec) 1.91E-02*

Time (minutes from trip) 540

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 6.55E+01 I131DE (Ci/sec) 1.64E-02*

Time (minutes from trip) 570

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 5.76E+01 I131DE (Ci/sec) 1.42E-02*

Time (minutes from trip) 600

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 5.09E+01 I131DE (Ci/sec) 1.23E-02*

Time (minutes from trip) 630

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 4.49E+01 I131DE (Ci/sec) 1.07E-02*

Time (minutes from trip) 660

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.82E+01 I131DE (Ci/sec) 4.29E-03*

Time (minutes from trip) 690

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 7.36E+00 I131DE (Ci/sec) 1.72E-03*

Time (minutes from trip) 720

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 2.98E+00 I131DE (Ci/sec) 6.90E-04*

Time (minutes from trip) 750

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.21E+00 I131DE (Ci/sec) 2.77E-04*

Time (minutes from trip) 780

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 4.88E-01 I131DE (Ci/sec) 1.11E-04*

Time (minutes from trip) 810

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.97E-01 I131DE (Ci/sec) 4.48E-05*

Time (minutes from trip) 840

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 7.98E-02 I131DE (Ci/sec) 1.80E-05*

Time (minutes from trip) 870

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 3.23E-02 I131DE (Ci/sec) 7.26E-06*

Time (minutes from trip) 900

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.31E-02 I131DE (Ci/sec) 2.93E-06*

Time (minutes from trip) 930

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 5.28E-03 I131DE (Ci/sec) 1.18E-06*

Time (minutes from trip) 960

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 2.14E-03 I131DE (Ci/sec) 4.76E-07*

Time (minutes from trip) 990

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 9.13E-04 I131DE (Ci/sec) 1.92E-07*

Time (minutes from trip)1020

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 4.29E-04 I131DE (Ci/sec) 7.76E-08*

Time (minutes from trip)1050

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 2.33E-04 I131DE (Ci/sec) 3.13E-08*

Time (minutes from trip)1080

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.54E-04 I131DE (Ci/sec) 1.27E-08*

Time (minutes from trip)1110

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.22E-04 I131DE (Ci/sec) 5.11E-09*

Time (minutes from trip)1140

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.09E-04 I131DE (Ci/sec) 3.07E-09*

Time (minutes from trip).170

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.04E-04 I131DE (Ci/sec) 1.05E-09*

Time (minutes from trip)1200

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.01E-04 I131DE (Ci/sec) 1.02E-09*

Time (minutes from trip)1230

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.01E-04 I131DE (Ci/sec) 1.01E-09*

Time (minutes from trip)1260

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.00E-04 I131DE (Ci/sec) 1.00E-09*

Time (minutes from trip)1290

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.00E-04 I131DE (Ci/sec) 1.00E-09*

Time (minutes from trip)1320

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.00E-04 I131DE (Ci/sec) 1.00E-09*

Time (minutes from trip)1350

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.00E-04 I131DE (Ci/sec) 1.00E-09*

Time (minutes from trip)1380

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.00E-04 I131DE (Ci/sec) 1.00E-09*

Time (minutes from trip)1410

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.00E-04 I131DE (Ci/sec) 1.00E-09*

Time (minutes from trip)1440

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.00E-04 I131DE (Ci/sec) 1.00E-09*

Time (minutes from trip)1470

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.00E-04 I131DE (Ci/sec) 1.00E-09*

Time (minutes from trip)1500

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.00E-04 I131DE (Ci/sec) 1.00E-09*

Time (minutes from trip)1530

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.00E-04 I131DE (Ci/sec) 1.00E-09*

Time (minutes from trip)1560

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.00E-04 I131DE (Ci/sec) 1.00E-09*

Time (minutes from trip)1590

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.00E-04 I131DE (Ci/sec) 1.00E-09*

Time (minutes from trip)1620

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.00E-04 I131DE (Ci/sec) 1.00E-09*

Time (minutes from trip)1650

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.00E-04 I131DE (Ci/sec) 1.00E-09*

Time (minutes from trip)1680

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.00E-04 I131DE (Ci/sec) 1.00E-09*

Time (minutes from trip)1710

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.00E-04 I131DE (Ci/sec) 1.00E-09

Time (minutes from trip)1740

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.00E-04 I131DE (Ci/sec) 1.00E-09

Time (minutes from trip)1770

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.00E-04 I131DE (Ci/sec) 1.00E-09

Time (minutes from trip)1800

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.00E-04 I131DE (Ci/sec) 1.00E-09

Time (minutes from trip)1830

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.00E-04 I131DE (Ci/sec) 1.00E-09

Time (minutes from trip)1860

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.00E-04 I131DE (Ci/sec) 1.00E-09

Time (minutes from trip)1890

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.00E-04 I131DE (Ci/sec) 1.00E-09

Time (minutes from trip)1920

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.00E-04 I131DE (Ci/sec) 1.00E-09

Time (minutes from trip)1950

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.00E-04 I131DE (Ci/sec) 1.00E-09

Time (minutes from trip)1980

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.00E-04 I131DE (Ci/sec) 1.00E-09

Time (minutes from trip)2010

Gaseous Effluent Release Rates
Xe133eq (Ci/sec): 1.00E-04 I131DE (Ci/sec) 1.00E-09

Time (minutes from trip)2040

Gaseous Effluent Release Rates
Xe133eq (Ci/sec) 1.00E-04 I131DE (Ci/sec) 1.00E-09

A P P E N D I X E

METEROLOGICAL DATA

NATIONAL WEATHER SERVICE 24-HOUR FORECAST

Arkansas Zones 4, 5, 7
1030 AM CST Wed, March 21, 1984

This afternoon... partly cloudy with a high in the mid 60's. Southeast wind around 10 mph.

Tonight... cloudy and warmer with low near 50. Easterly wind 5 to 10 mph. 30 percent chance of light rain by morning.

Tomorrow... partly cloudy with a high in the lower 70's. Northeast wind around 5 mph.

WP84220

In the event that GERMS becomes inoperable during the exercise, players who are formulating dose projections will implement backup procedures which use the TRS-80. If this occurs, the following meterological data is available for Controllers to provide, as appropriate, to players. Corresponding radiological release parameters are found in Appendix D.

METEROLOGICAL DATA

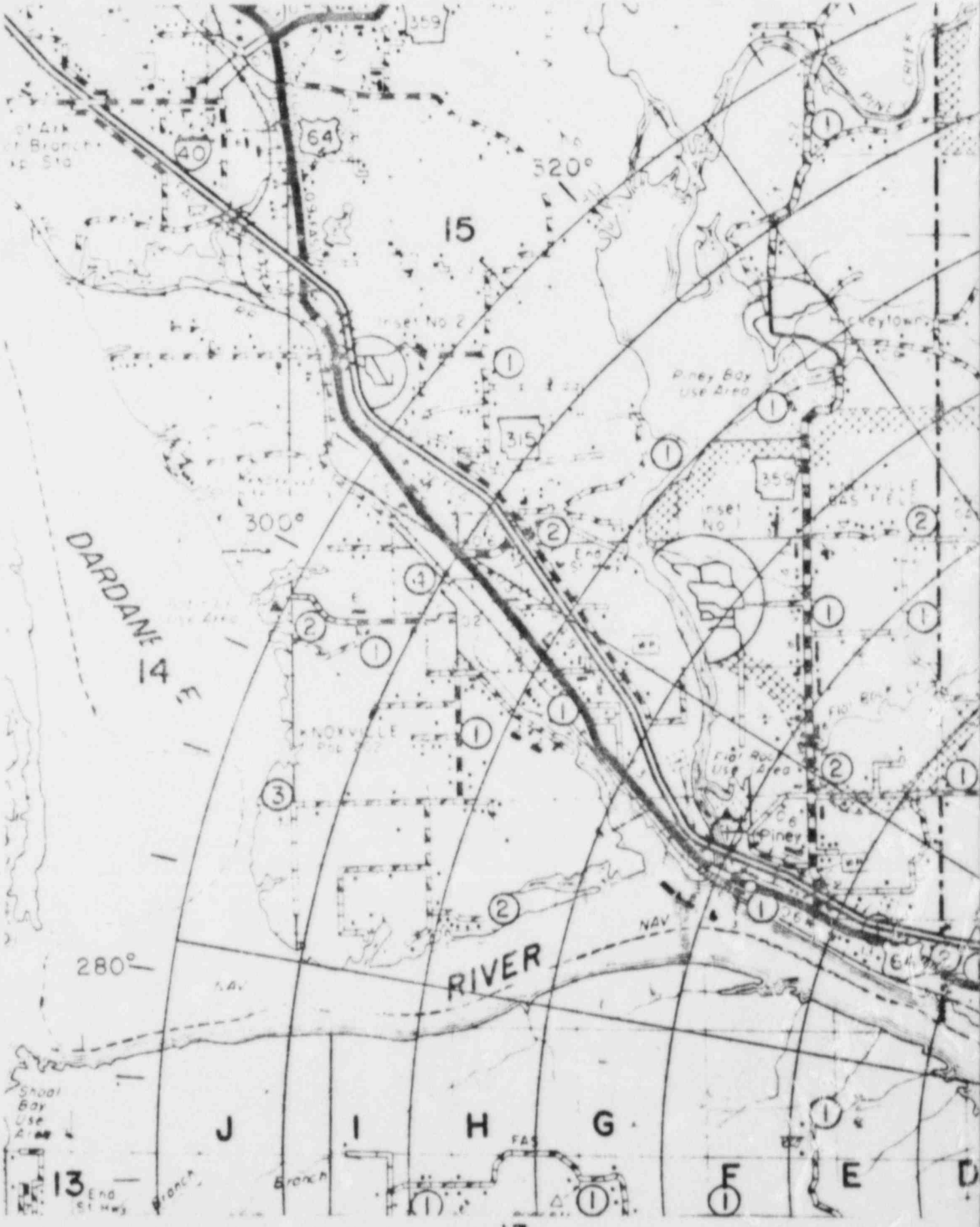
TIME	Lower Windspeed (MPH)	Lower Wind Direction (Degrees)	$\sigma\ \theta$	ΔT
1000	4.15	93	7.0	-0.92
1010	6.05	116	8.0	-1.18
1020	4.71	124	11.0	-1.23
1030	6.61	116	15.0	-1.33
1040	7.44	115	4.0	-1.25
1050	7.10	110	5.0	-1.21
1100	5.86	111	7.0	-1.27
1110	4.20	118	9.0	-1.46
1120	4.73	117	4.0	-1.69
1130	5.78	118	4.0	-1.75
1140	4.81	114	6.0	-1.71
1150	5.15	153	15.0	-2.04
1200	5.71	149	17.0	-2.35
1210	5.42	157	8.0	-2.37
1220	5.59	143	6.0	-2.25
1230	5.42	147	6.5	-2.03
1240	5.25	144	7.2	-1.92
1250	4.93	139	7.3	-1.85

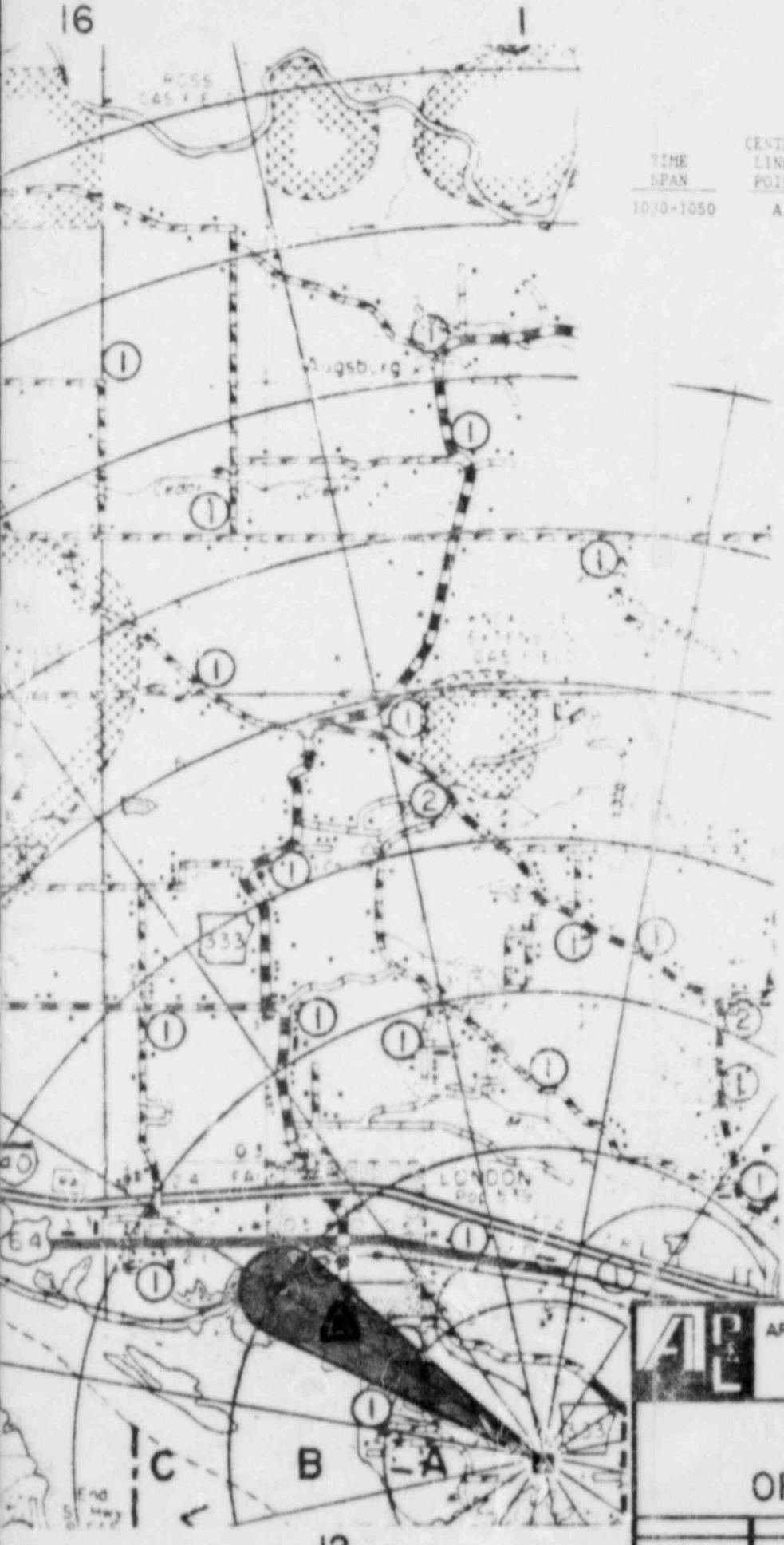
METEROLOGICAL DATA

TIME	Lower Windspeed (MPH)	Lower Wind Direction (Degrees)	$\sigma\theta$	ΔT
1300	5.00	150	7.6	-1.98
1310	5.61	145	7.9	-2.13
1320	5.66	156	8.0	-2.11
1330	5.90	154	8.2	-2.21
1340	2.95	90	9.6	-2.41
1350	2.51	142	13.0	-2.12
1400	4.29	179	14.0	-2.34
1410	4.51	177	14.0	-2.34
1420	5.98	175	13.0	-2.35
1430	5.34	178	15.0	-2.19
1440	5.64	173	12.0	-2.16
1450	5.39	197	11.0	-1.99
1500	5.49	185	10.0	-2.01
1510	6.00	186	8.0	-1.98
1520	5.15	187	8.0	-1.98
1530	4.78	165	9.0	-2.05
1540	4.73	166	10.0	-2.39
1550	4.63	159	11.0	-2.42
1600	6.20	156	12.0	-2.37

A P P E N D I X F

OFFSITE MONITORING DATA


15
320°
300°
280°
DARDANELLE
14
RIVER
NAV
J
I
H
G
F
E
13



TIME SPAN	CENTER-LINE POINT	WHOLE BODY MR/HR	THYROID MR/HR	RM-14 CPM FOR 750 LITER ZEOLITE FILTER
1030-1050	A	1.92	30.6	5324

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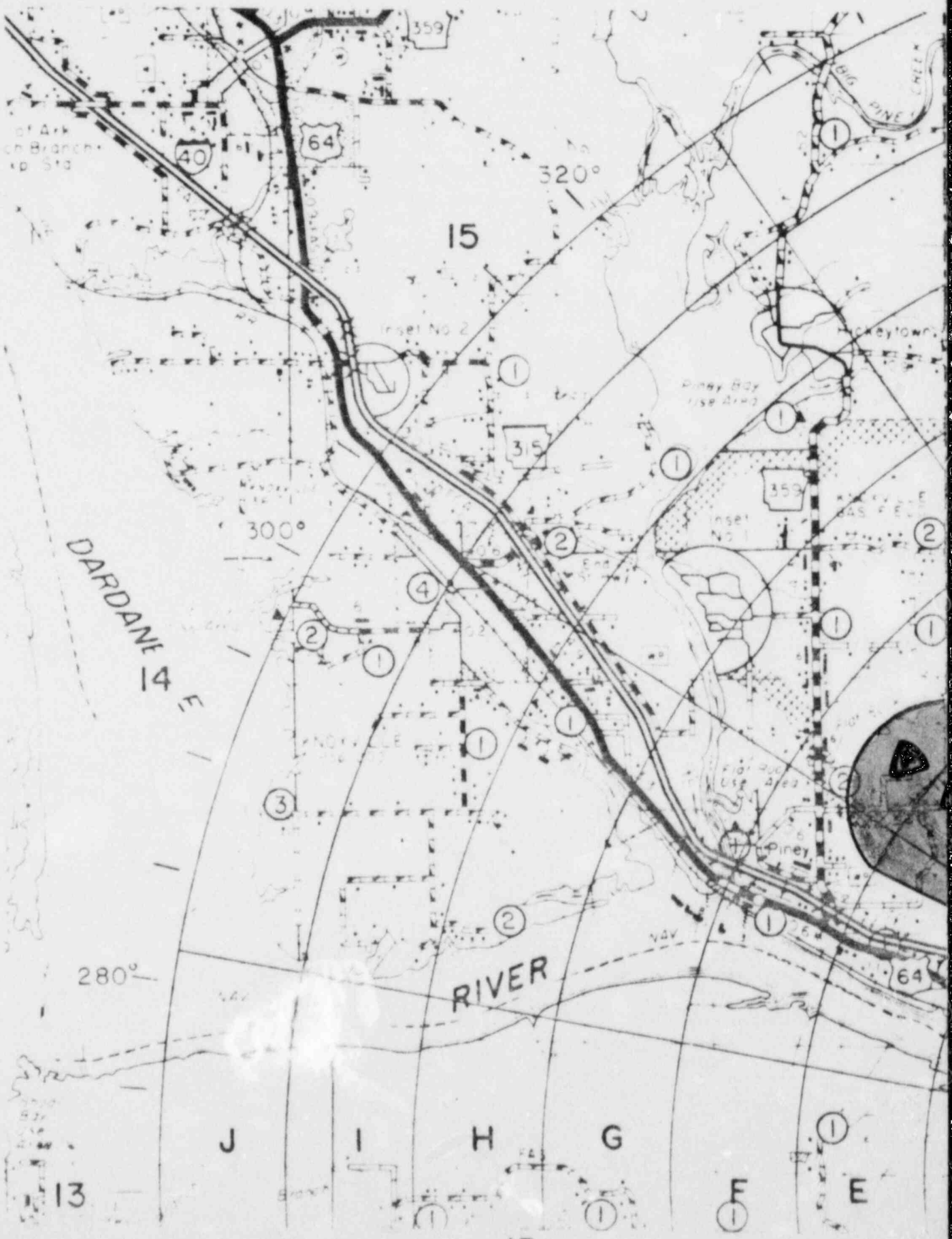
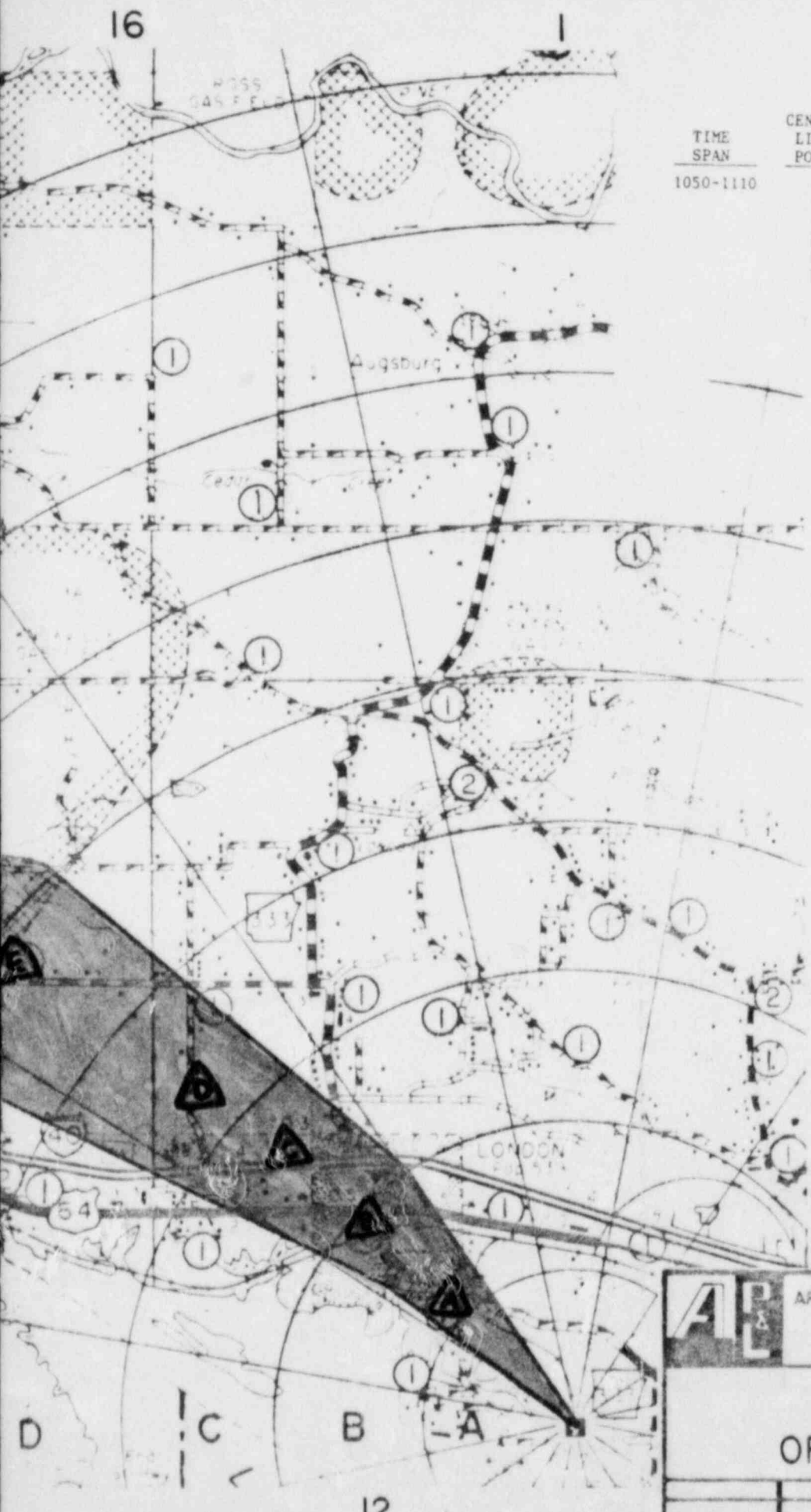
ARKANSAS POWER & LIGHT COMPANY
ARKANSAS NUCLEAR ONE

SIZE B

REX 1984
OFFSITE DOSE MAP

	TIME	FIGURE
	FROM 1030 TO 1050	1


15
320°
300°
280°
DARDANE
14
E
RIVER
Piney
64
40
359
315
J
I
H
G
F
E
13



TIME SPAN	CENTER-LINE POINT	WHOLE BODY MR/HR	THYROID MR/HR	RM-14 CPM FOR 750 LITER ZEOLITE FILTER
1050-1110	A	4.77	71.5	12441
	B	4.75	68.9	11989
	C	4.70	64.9	11293
	D	4.17	52.1	9065
	E	1.97	23.9	4159
	F	1.47	16.0	2784

N

8405010341-02

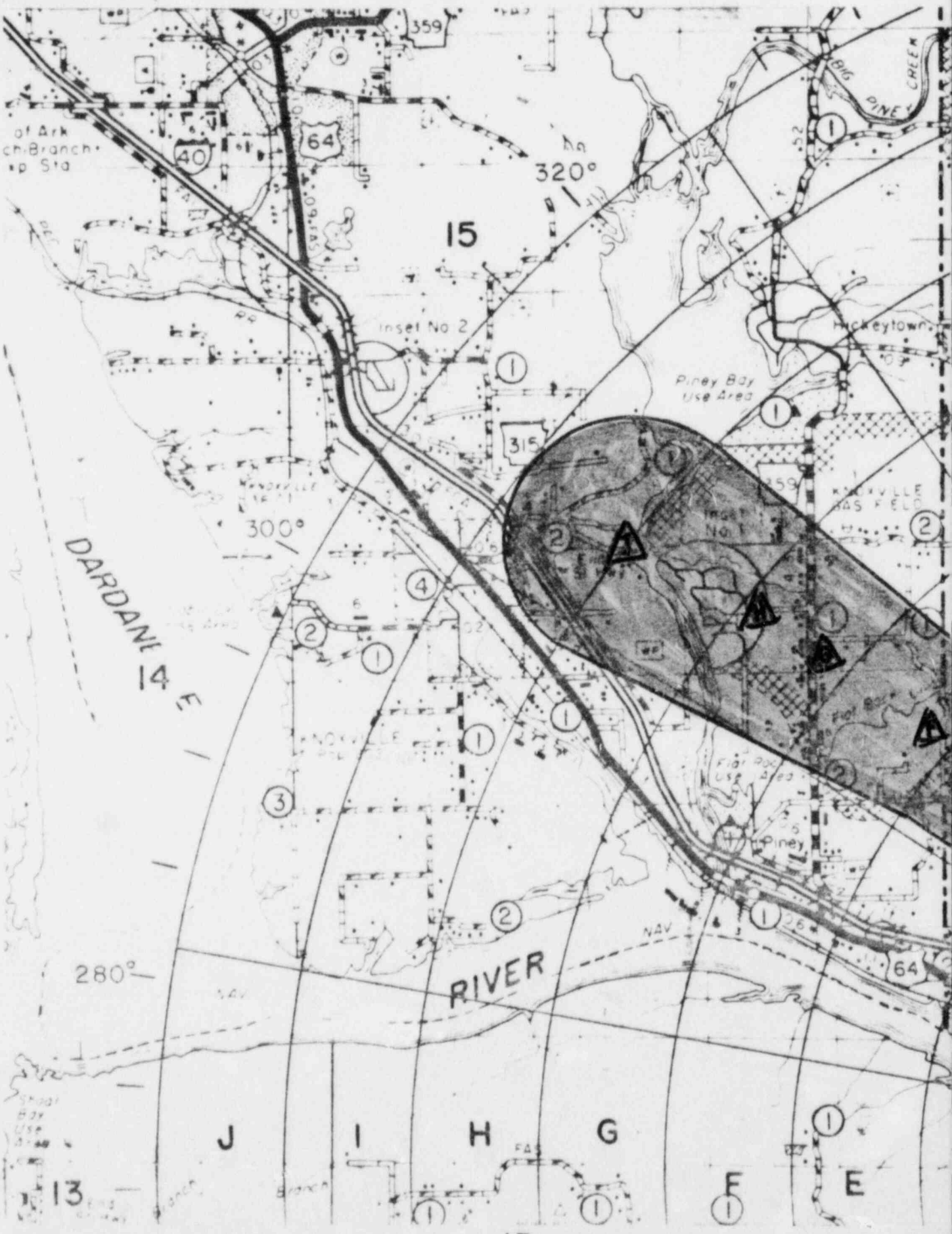
ARKANSAS POWER & LIGHT COMPANY
ARKANSAS NUCLEAR ONE

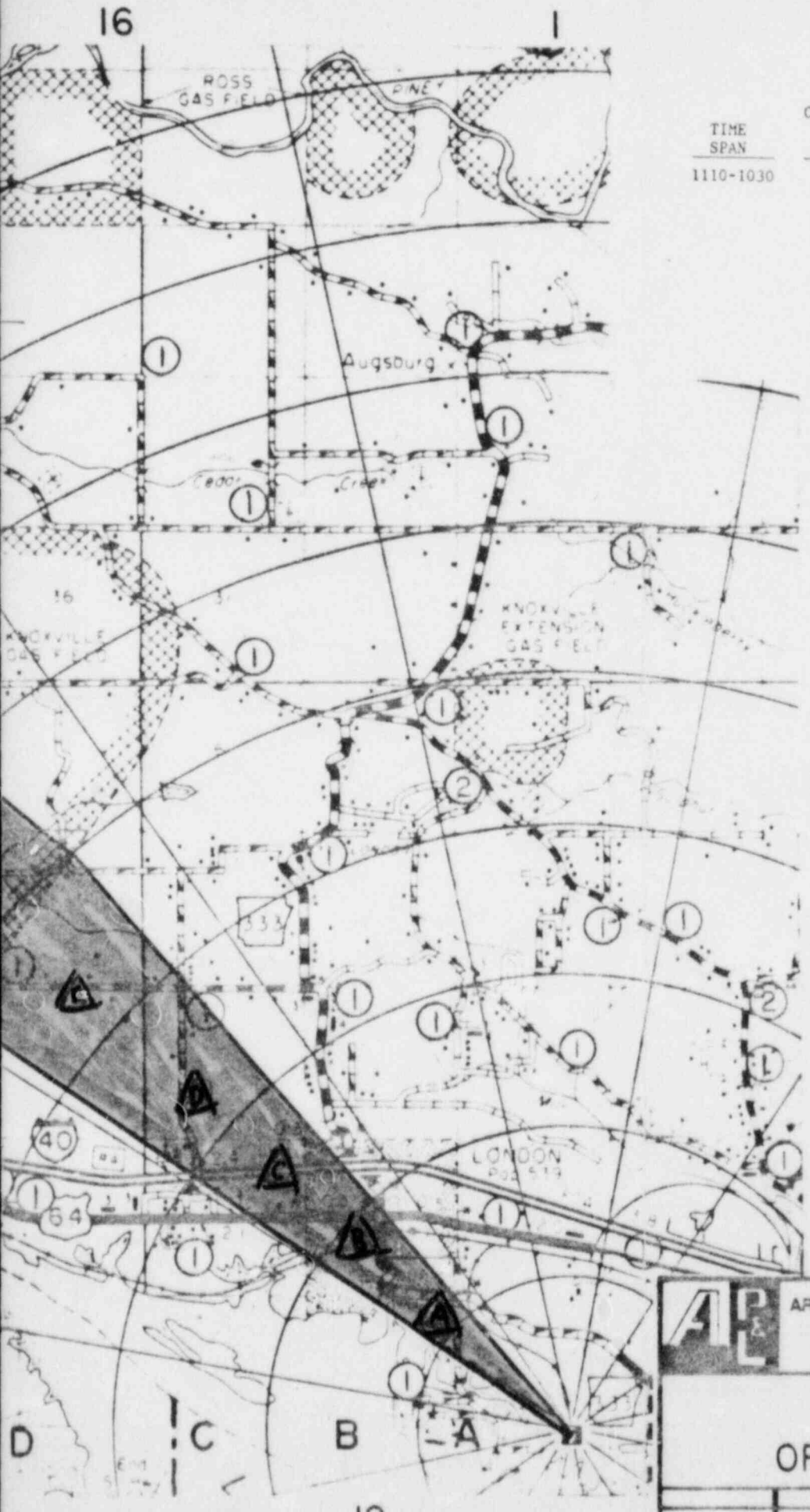
SIZE B

REX 1984
OFFSITE DOSE MAP

TIME: FROM 1050 TO 1110

FIGURE 2


359
64
40
320°
15
Inset No 2
Hickeytown
Piney Bay Use Area
315
300°
DARDANI
14
E
Inset No 1
Piney
NAV
280°
RIVER
64
J
I
H
G
F
E
13



TIME SPAN	CENTER-LINE POINT	WHOLE BODY MR/HR	THYROID MR/HR	RM-14 CPM FOR 750 LITER ZEOLITE FILTER
1110-1030	A	7.6	114	19836
	B	8.2	119	20706
	C	10.0	130	22620
	D	14.0	168	29232
	E	7.0	85.2	14824
	F	2.95	34.4	5986
	G	1.97	22.5	3915
	H	1.61	18.3	3184
	I	0.93	9.6	1670

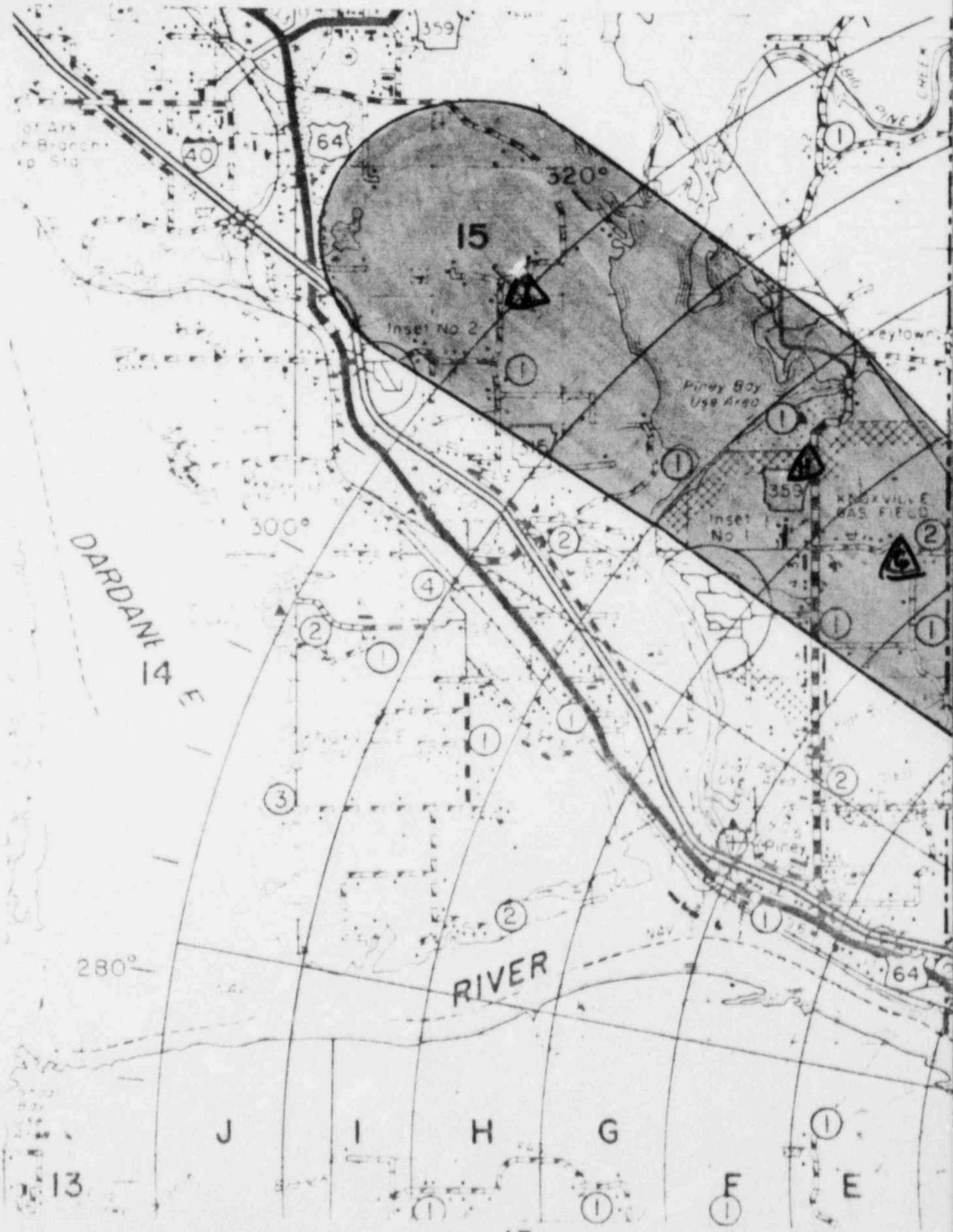
ARKANSAS POWER & LIGHT COMPANY
ARKANSAS NUCLEAR ONE

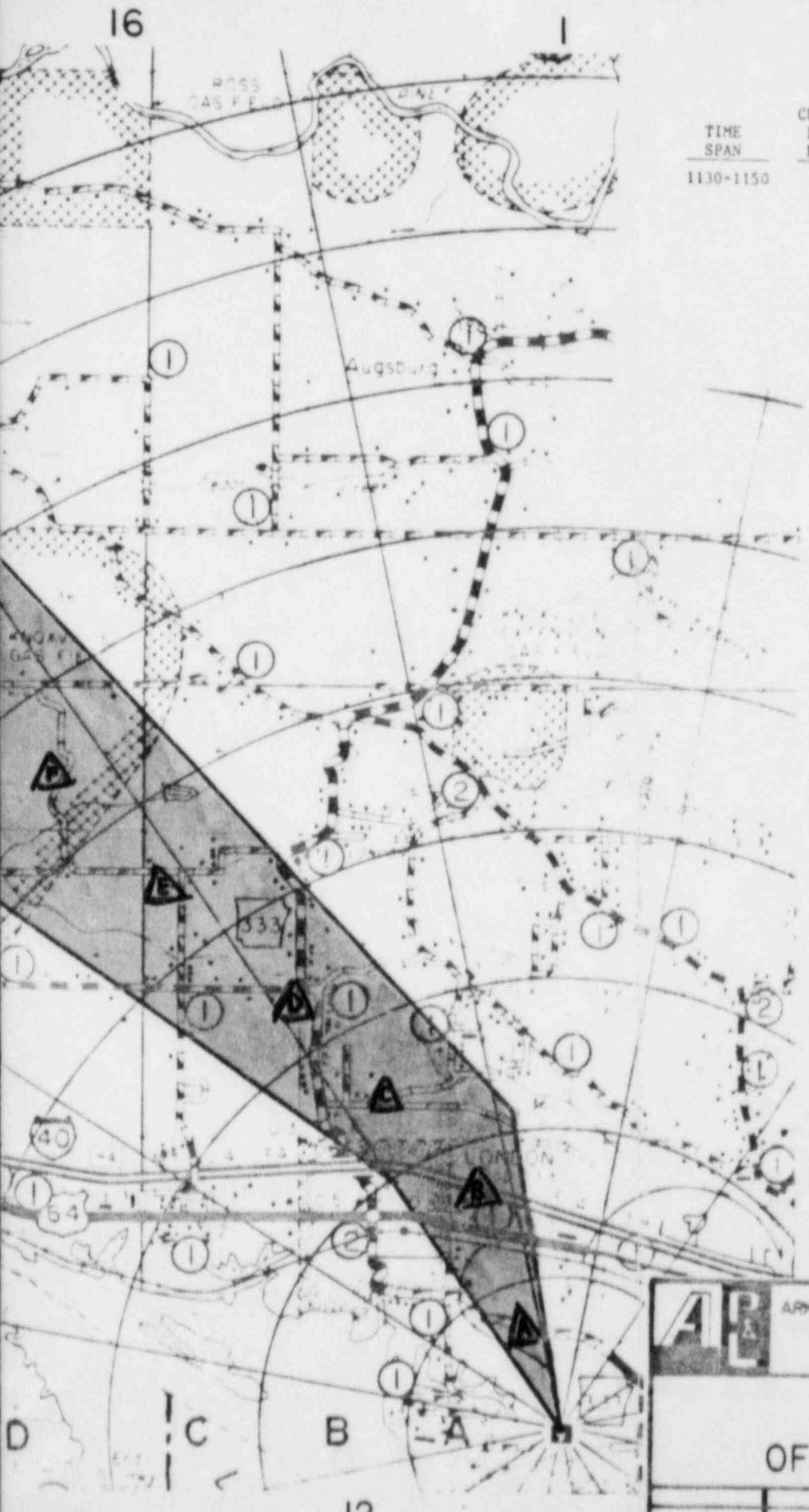
SIZE B

REX 1984
OFFSITE DOSE MAP

TIME: FROM 1110 TO 1130

FIGURE 3


359
64
40
320°
15
Inset No 2
Piney Bay
Use Area
Inset
No 1
300°
DARDANT
14 E
280°
RIVER
64
J
I
H
G
F
E
13



TIME SPAN	CENTER-LINE POINT	WHOLE BODY MR/HR	THYROID MR/HR	RM-14 CPM FOR 750 LITER ZEOLITE FILTER
1130-1150	A	4.77	64.3	11188
	B	4.77	64.3	11188
	C	4.59	59.5	10353
	D	4.22	49.6	8630
	E	2.84	30.6	5324
	F	2.12	23.4	4072
	G	1.70	19.1	3323
	H	0.849	9.29	1616
	I	0.402	4.31	750

N

8405010341-04

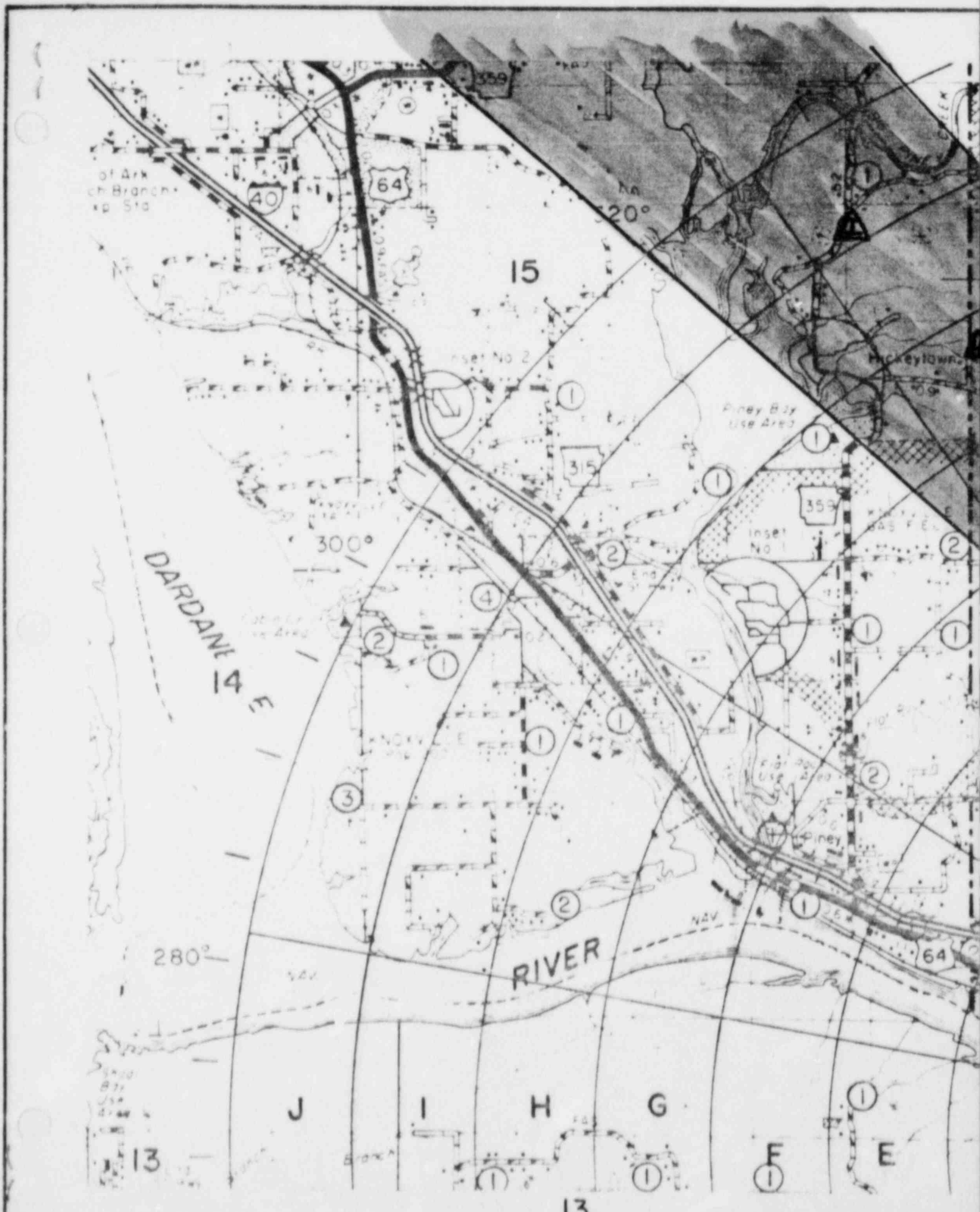
ARKANSAS POWER & LIGHT COMPANY
ARKANSAS NUCLEAR ONE

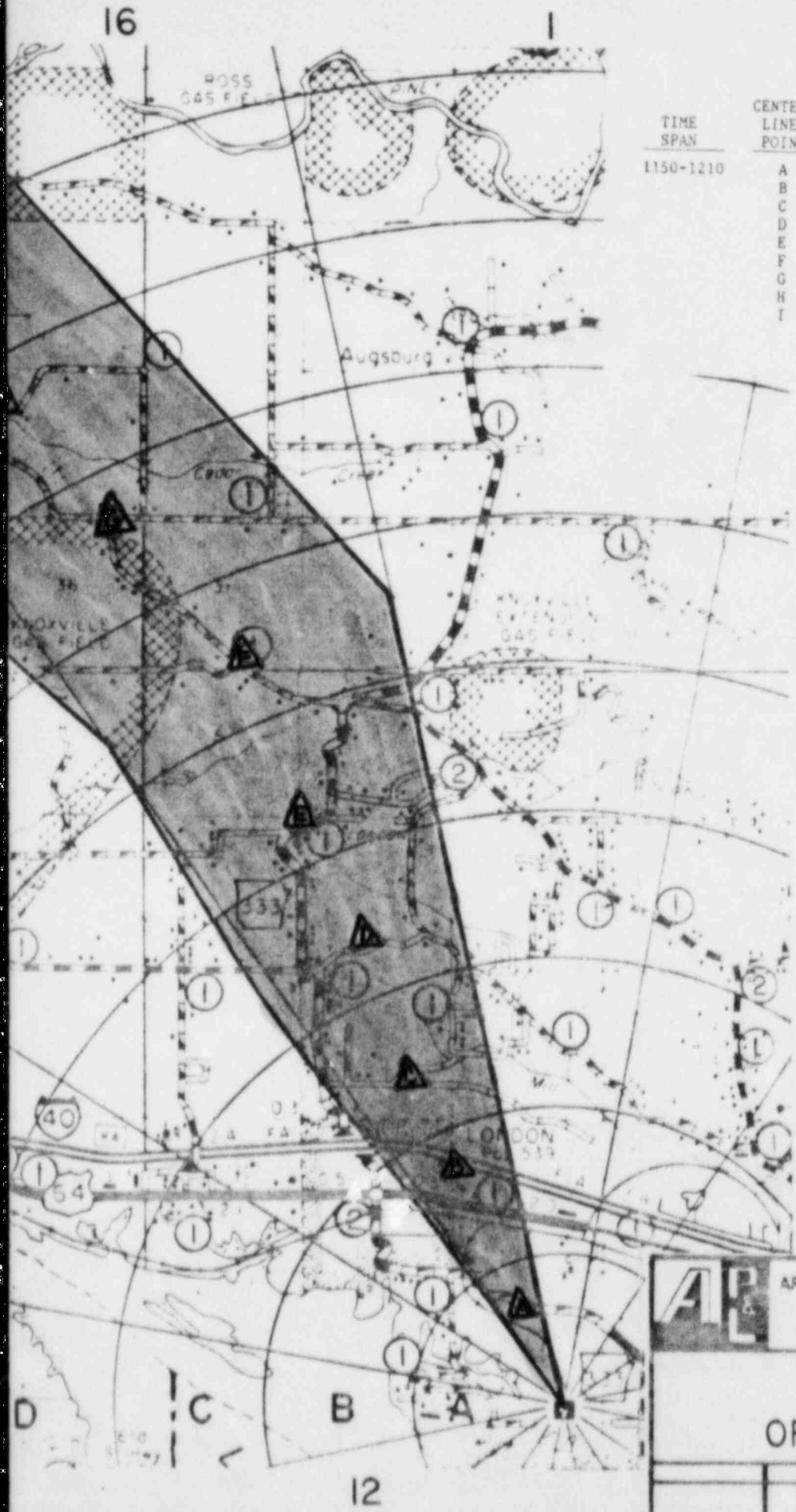
SIZE B

REX 1984
OFFSITE DOSE MAP

TIME
FROM 1130 TO 1150

FIGURE 4


359
64
40
20°
15
Inset No 2
Piney Bay Use Area
315
359
Inset No 1
300°
DARDANELLE
14
280°
NAV
RIVER
64
J
I
H
G
F
E
13



TIME SPAN	CENTER-LINE POINT	WHOLE BODY MR/HR	THYROID MR/HR	RM-14 CPM FOR 750 LITER ZEOLITE FILTER
1150-1210	A	9.37	126	21924
	B	9.37	126	21924
	C	7.79	103	17922
	D	3.83	46.7	8126
	E	2.02	22.2	3863
	F	1.00	11.7	2036
	G	1.05	11.3	1966
	H	0.821	8.72	1517
	I	0.63	6.6	1148

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8405010341-05

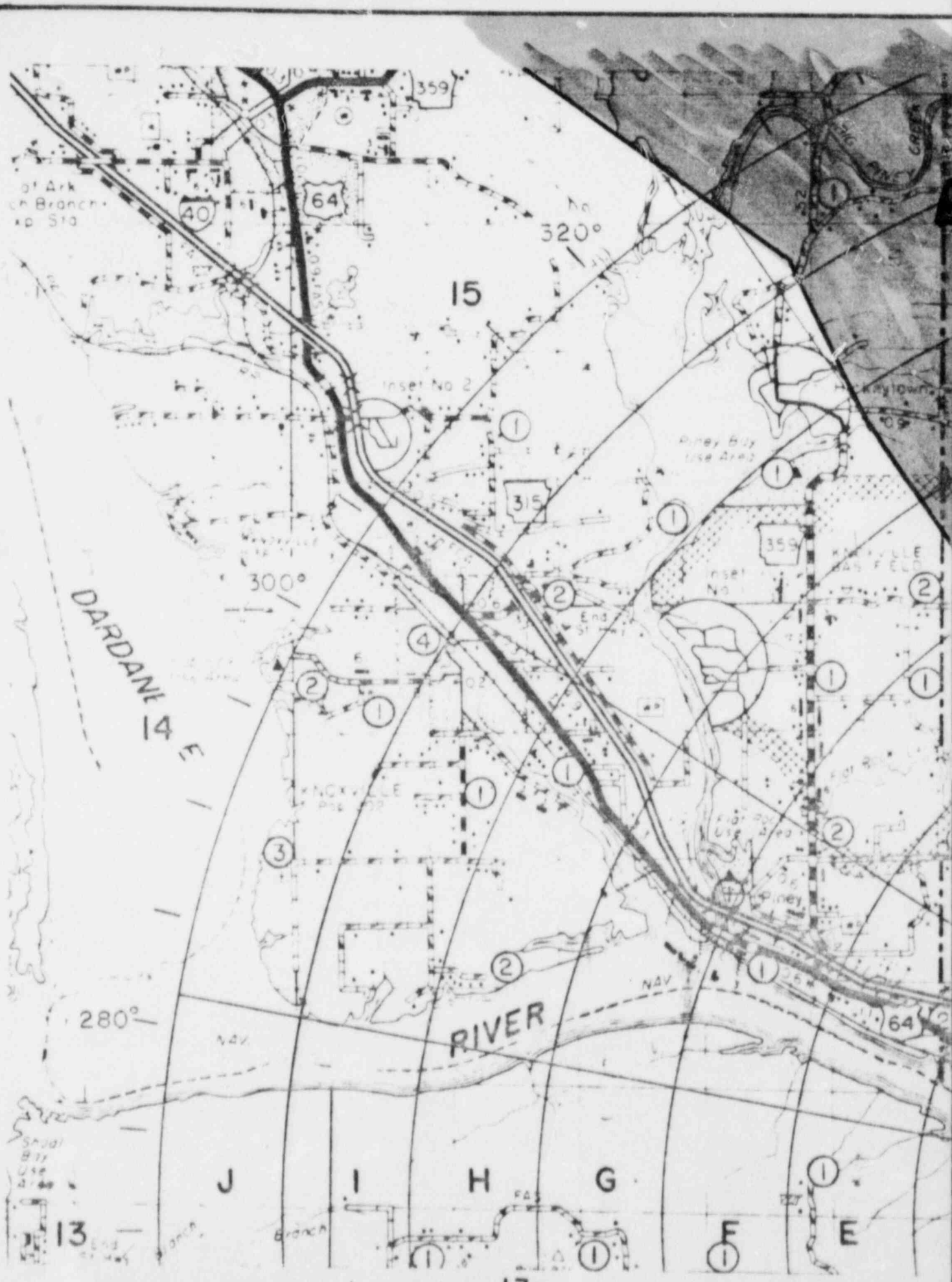
ARKANSAS POWER & LIGHT COMPANY
ARKANSAS NUCLEAR ONE

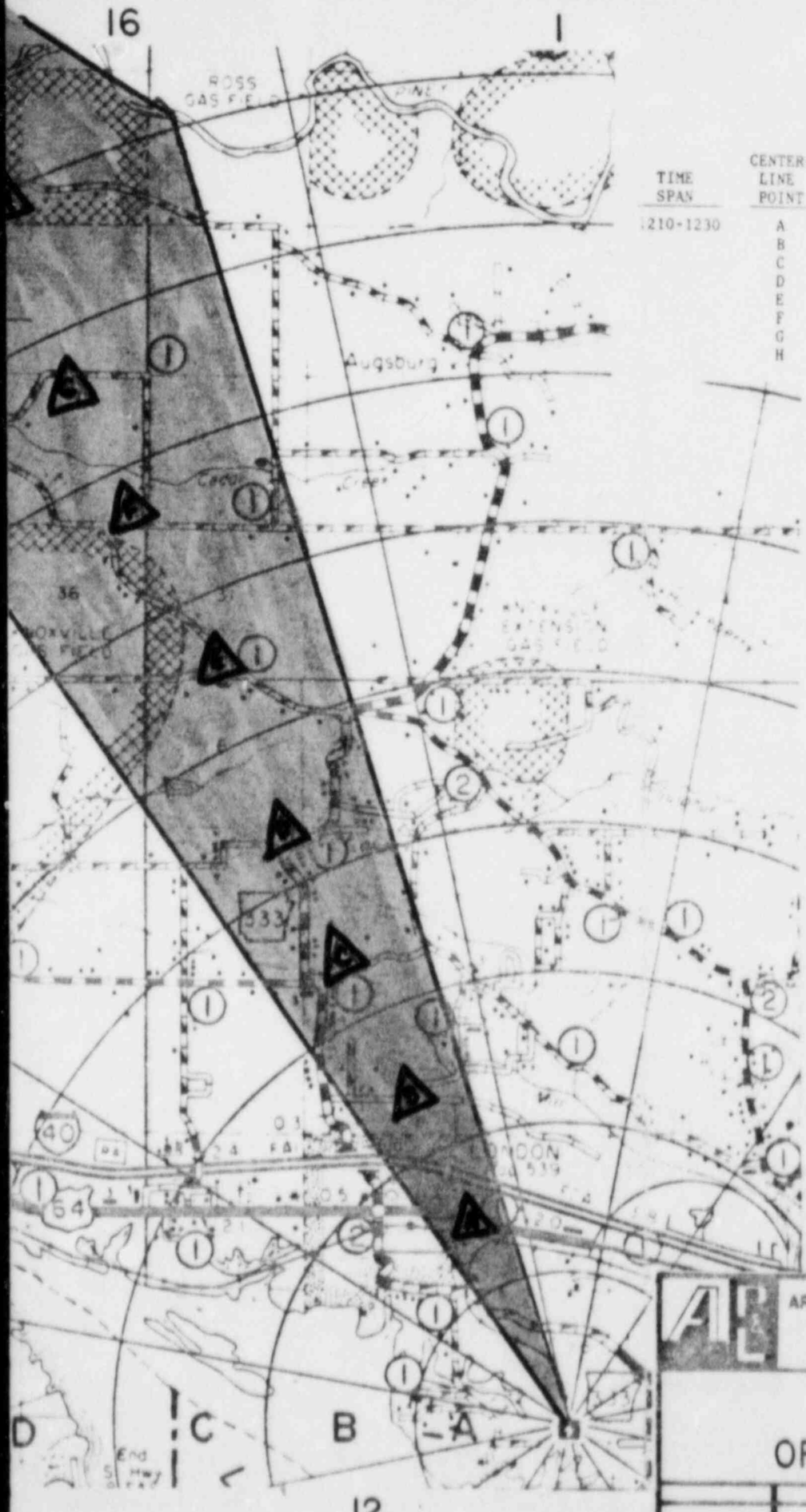
SIZE B

REX 1984
OFFSITE DOSE MAP

TIME: FROM 1150 TO 1210

FIGURE 5


359
64
40
320°
15
Inset No 2
315
359
300°
DARDANI
14
E
280°
NAV
RIVER
64
J
I
H
G
F
E
13



TIME SPAN	CENTER-LINE POINT	WHOLE BODY MR/HR	THYROID MR/HR	RM-14 CPM FOR 750 LITER ZEOLITE FILTER
1210-1230	A	10.3	139	24 [illegible]
	B	11.2	140	24500
	C	13.0	142	24708
	D	10.7	108	18792
	E	5.17	58.7	10213
	F	2.98	30.6	5324
	G	1.31	13.2	2297
	H	0.717	7.17	1248

N

8405010341-06

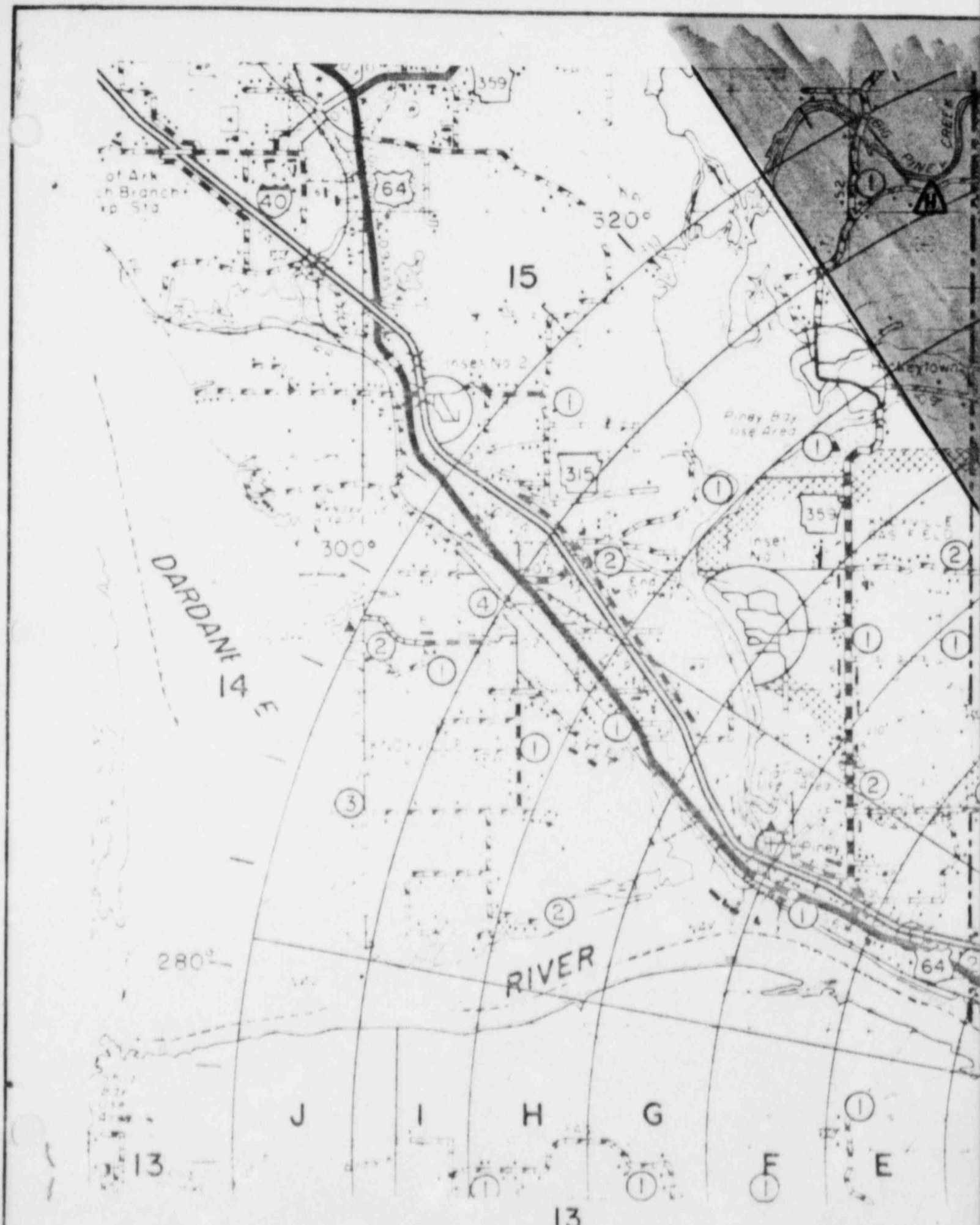
ARKANSAS POWER & LIGHT COMPANY
ARKANSAS NUCLEAR ONE

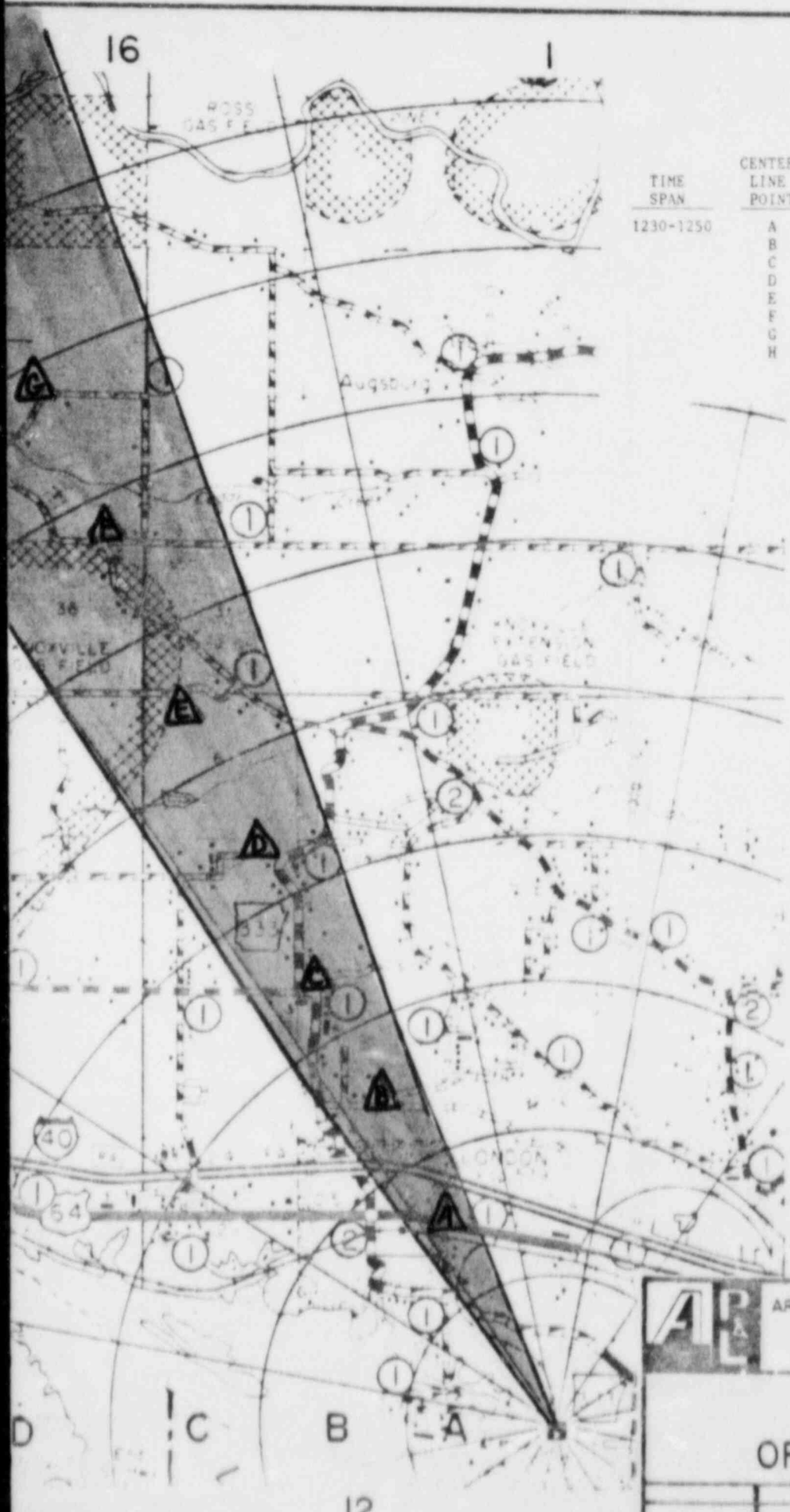
SIZE B

REX 1984
OFFSITE DOSE MAP

TIME: FROM 1210 TO 1230

FIGURE 6


15
320°
300°
280°
DARDANI
14 E
RIVER
64
40
359
315
J
I
H
G
F
E
13



TIME SPAN	CENTER-LINE POINT	WHOLE BODY MR/HR	THYROID MR/HR	RM-14 CPM FOR 750 LITER ZEOLITE FILTER
1230-1250	A	7.31	94.2	16391
	B	8.79	102	11748
	C	11.5	121	21054
	D	10.8	110	19140
	E	7.91	79	13746
	F	6.04	59.6	10370
	G	4.60	46.1	8021
	H	2.83	27.2	4733

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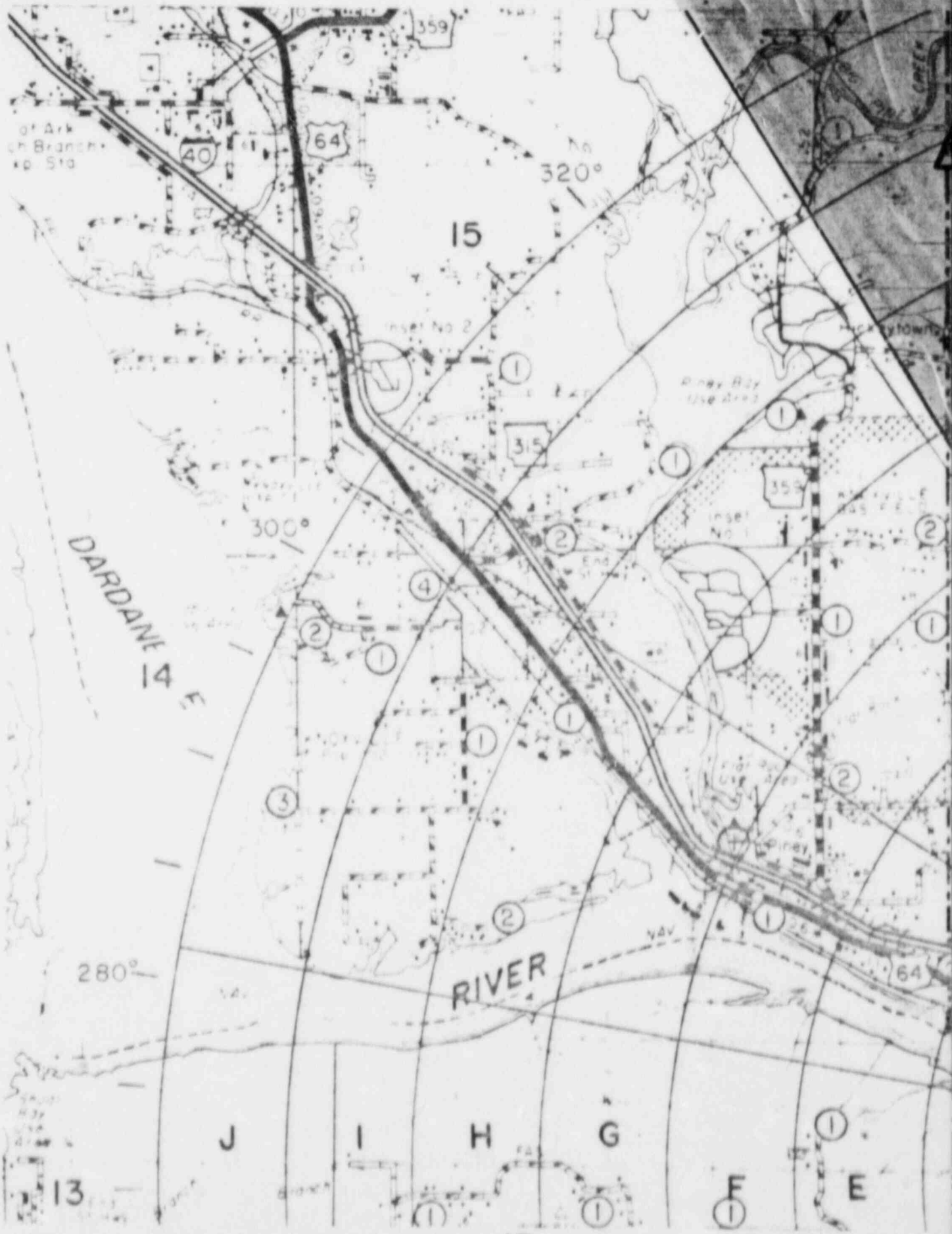
ARKANSAS POWER & LIGHT COMPANY
ARKANSAS NUCLEAR ONE

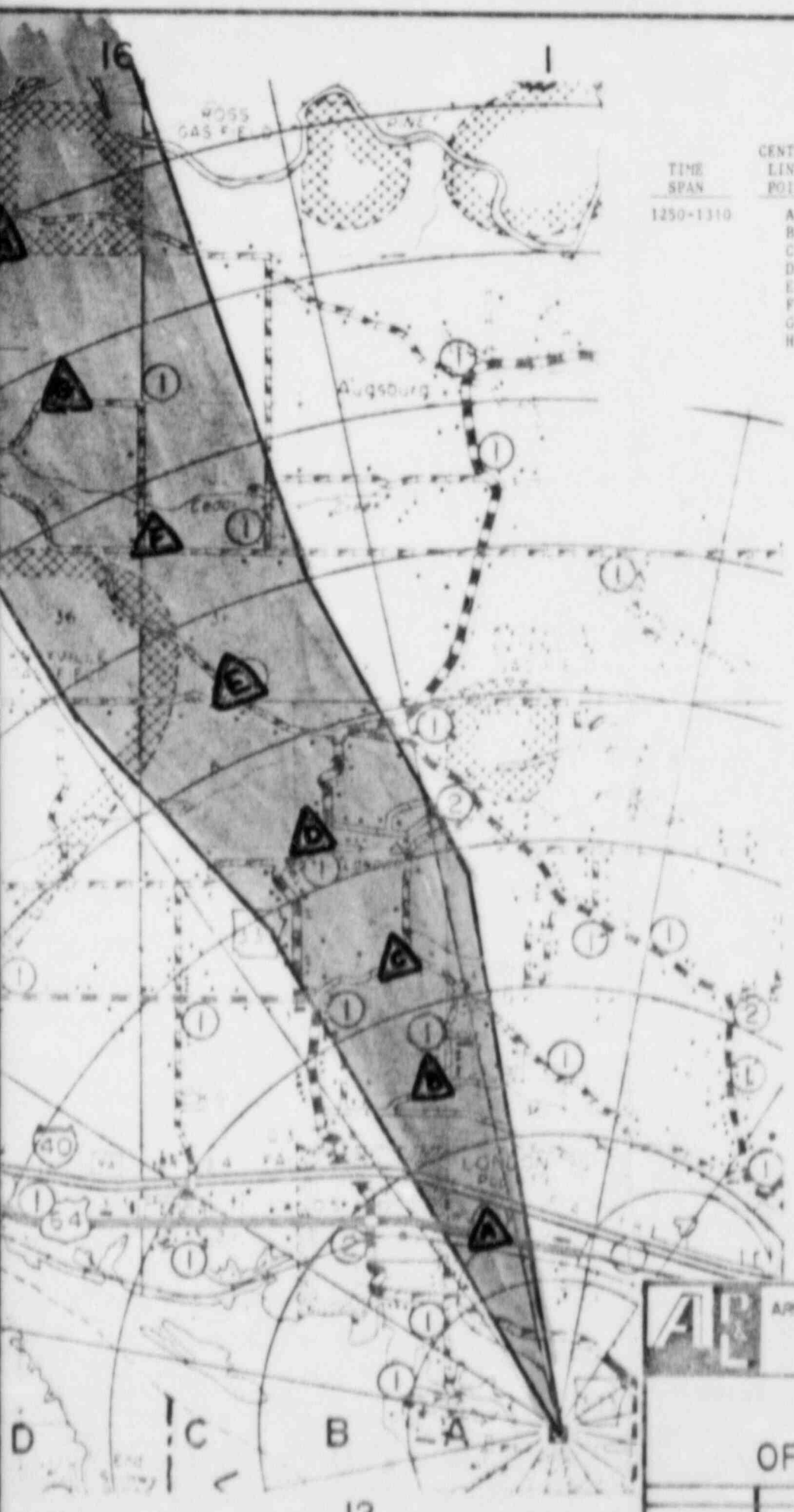
SIZE B

REX 1984
OFFSITE DOSE MAP

TIME: FROM 1230 TO 1250

FIGURE 7


359
64
40
320°
15
300°
DARDANELLE
14
280°
RIVER
J
I
H
G
F
E
13



TIME SPAN	CENTER-LINE POINT	WHOLE BODY MR/HR	THYROID MR/HR	FOR 750 LITER ZEOLITE FILTER
1250-1310	A	5.35	55.0	9570
	B	4.93	52.0	9048
	C	3.55	35.6	6194
	D	2.82	27.4	4768
	E	2.88	27.6	4802
	F	2.95	27.8	4817
	G	3.01	28.1	4889
	H	2.59	23.8	4141

N

8405010341-08

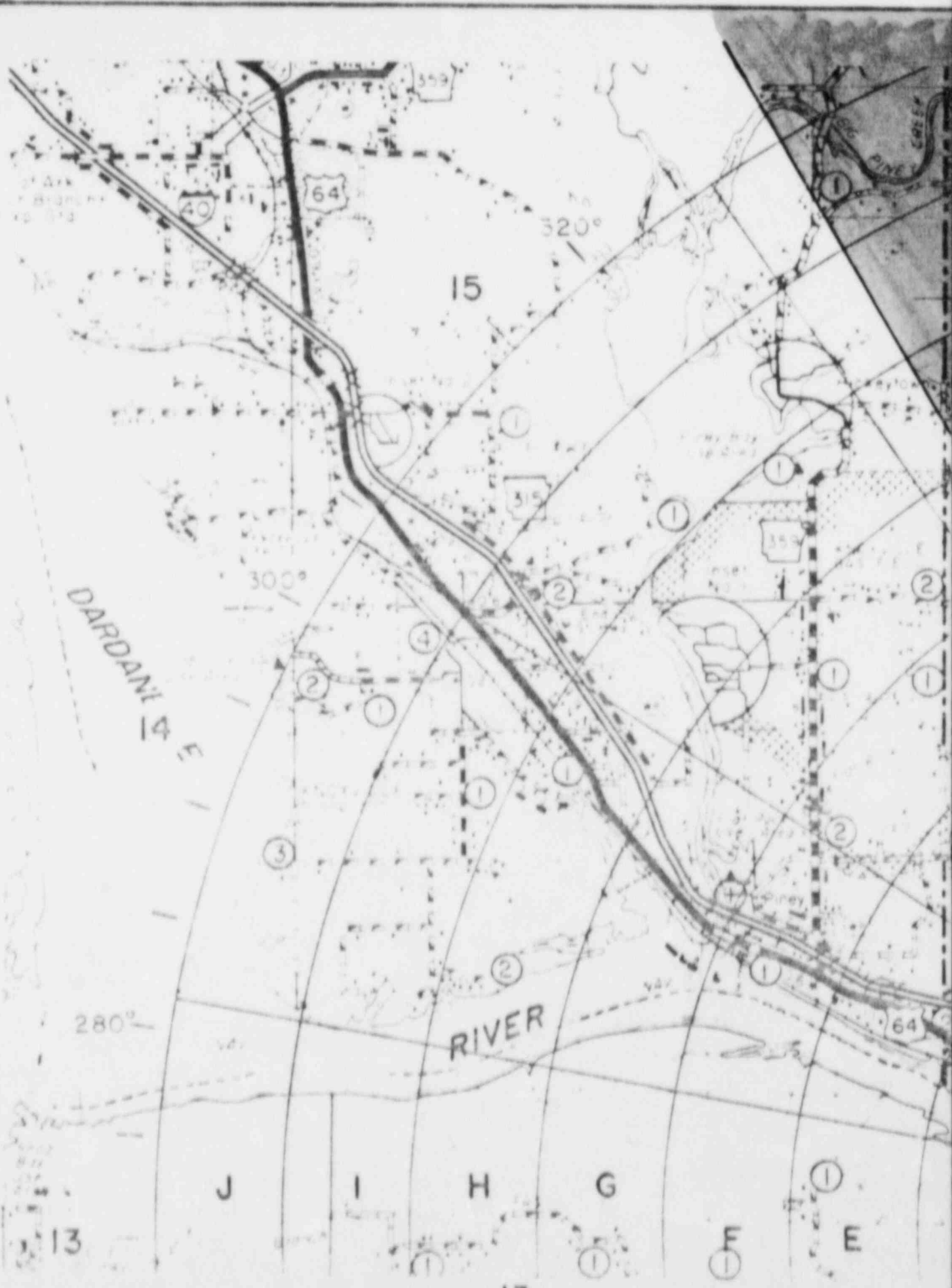
ARKANSAS POWER & LIGHT COMPANY
ARKANSAS NUCLEAR ONE

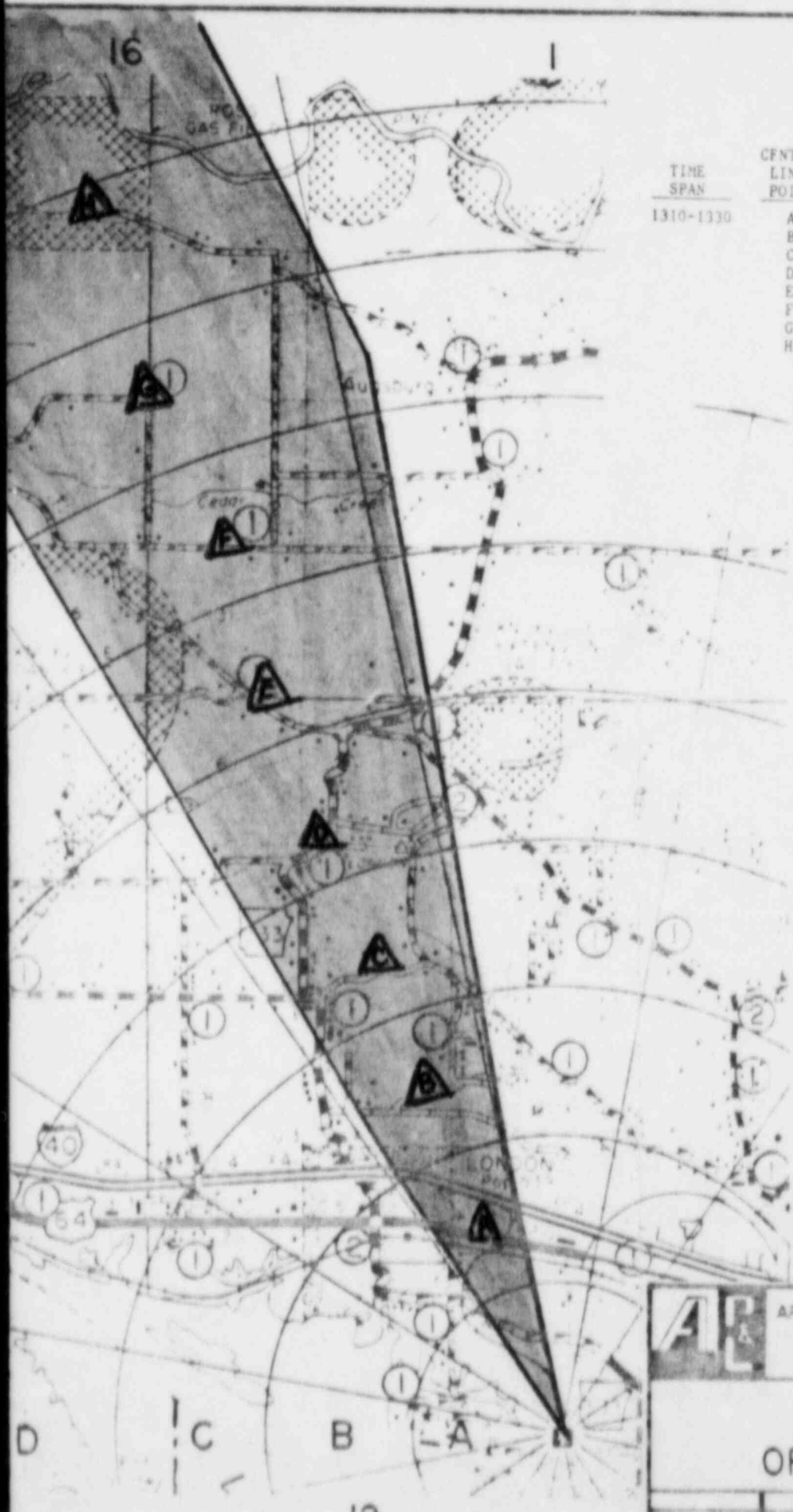
SIZE B

REX 1984
OFFSITE DOSE MAP

TIME
FROM 1250 TO 1310

FIGURE 8


15
64
40
320°
300°
280°
DARDANI
14 E
RIVER
J
I
H
G
F
E
13



TIME SPAN	CENTER-LINE POINT	WHOLE BODY MR/HR	THYROID MR/HR	RM-14 CPM FOR 750 LITER ZEOLITE FILTER
1310-1330	A	1.95	22.4	3898
	B	1.85	20.3	3532
	C	1.60	16.2	2819
	D	1.36	12.8	2227
	E	1.22	11.3	1966
	F	1.06	9.6	1670
	G	1.01	9.13	1589
	H	1.15	10.2	1775

8405010341-09

ARKANSAS POWER & LIGHT COMPANY
ARKANSAS NUCLEAR ONE

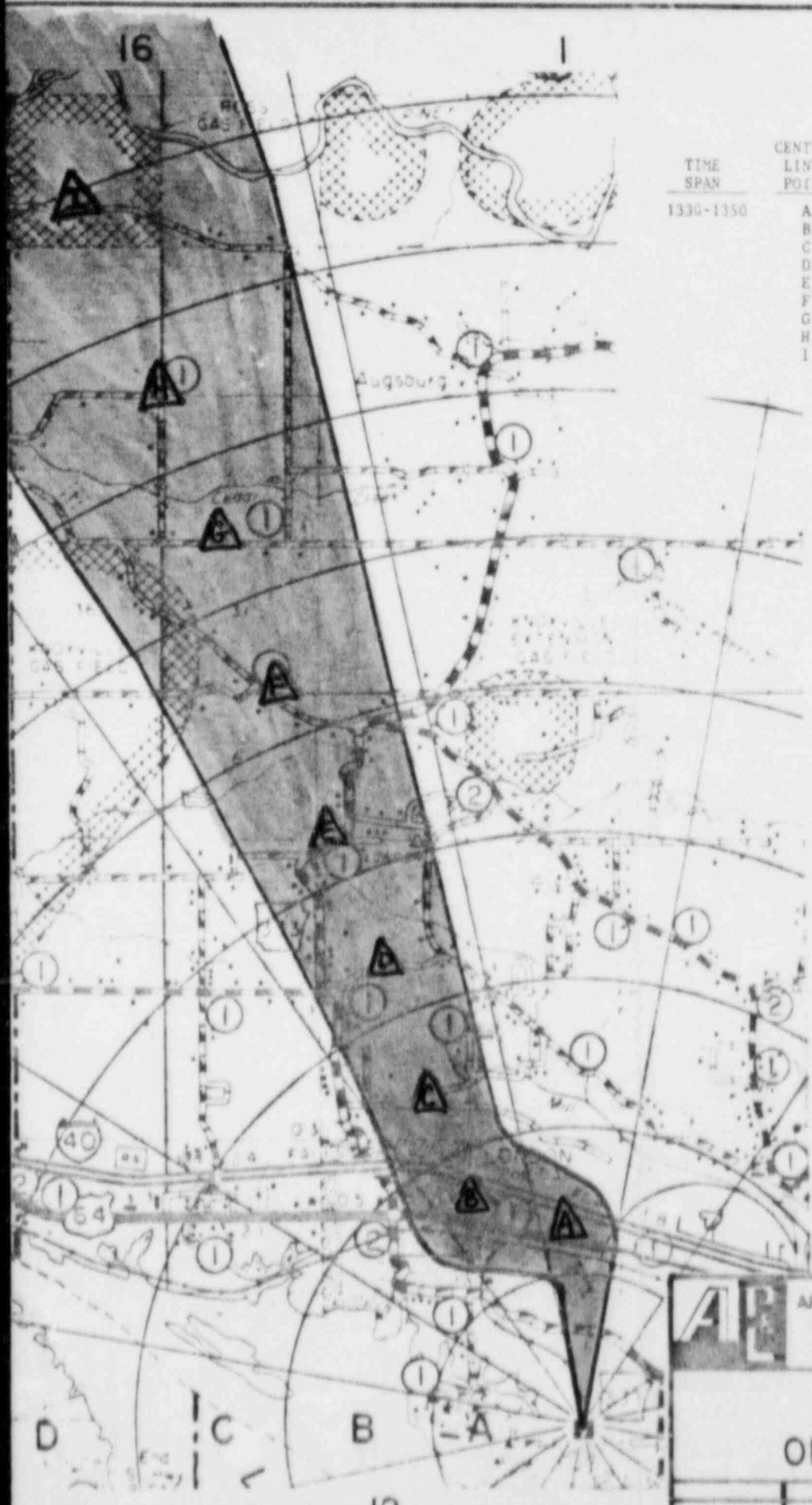
SIZE B

REX 1984
OFFSITE DOSE MAP

TIME: FROM 1310 TO 1330

FIGURE 9


15
320°
300°
280°
DARDANT
14
RIVER
13
J
I
H
G
F
E
64
359
315
40
CREEK



TIME SPAN	CENTER-LINE POINT	WHOLE BODY MR/HR	THYROID MR/HR	RM-14 CPM FOR 750 LITER ZEOLITE FILTER
1330-1350	A	1.89	19.0	3306
	B	1.36	14.5	2523
	C	1.04	10.4	1810
	D	0.657	6.24	1086
	E	0.531	4.76	828
	F	0.457	4.08	710
	G	0.448	3.93	684
	H	0.438	3.78	658
	I	0.466	4.00	696

8405010341-10

ARKANSAS POWER & LIGHT COMPANY
ARKANSAS NUCLEAR ONE

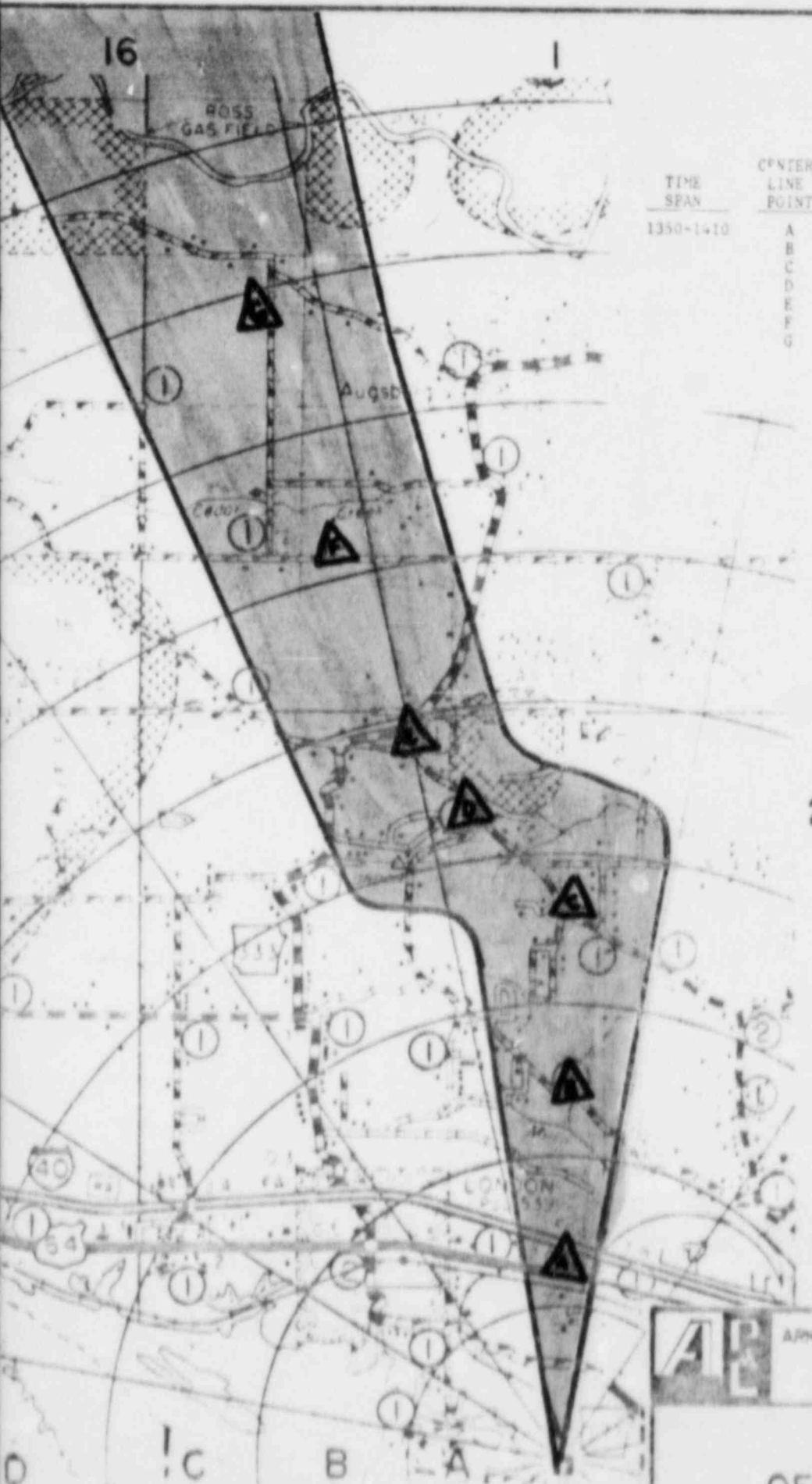
SIZE B

REX 1984
OFFSITE DOSE MAP

TIME: FROM 1330 TO 1350

FIG. 10


64
40
320°
15
300°
DARDANT
14
280°
RIVER
NAV
64
J
I
H
G
F
E
17



TIME SPAN	CENTER-LINE POINT	WHOLE BODY MR/HR	THYROID MR/HR	RM-14 CPM FOR 750 LITER ZEOLITE FILTER
1350-1410	A	.518	4.95	861
	B	.353	3.30	574
	C	.238	2.20	383
	D	.266	2.35	409
	E	.238	2.03	353
	F	.154	1.29	224
	G	.150	1.26	219

Also Available On Aperture Card

TI APERTURE CARD

N

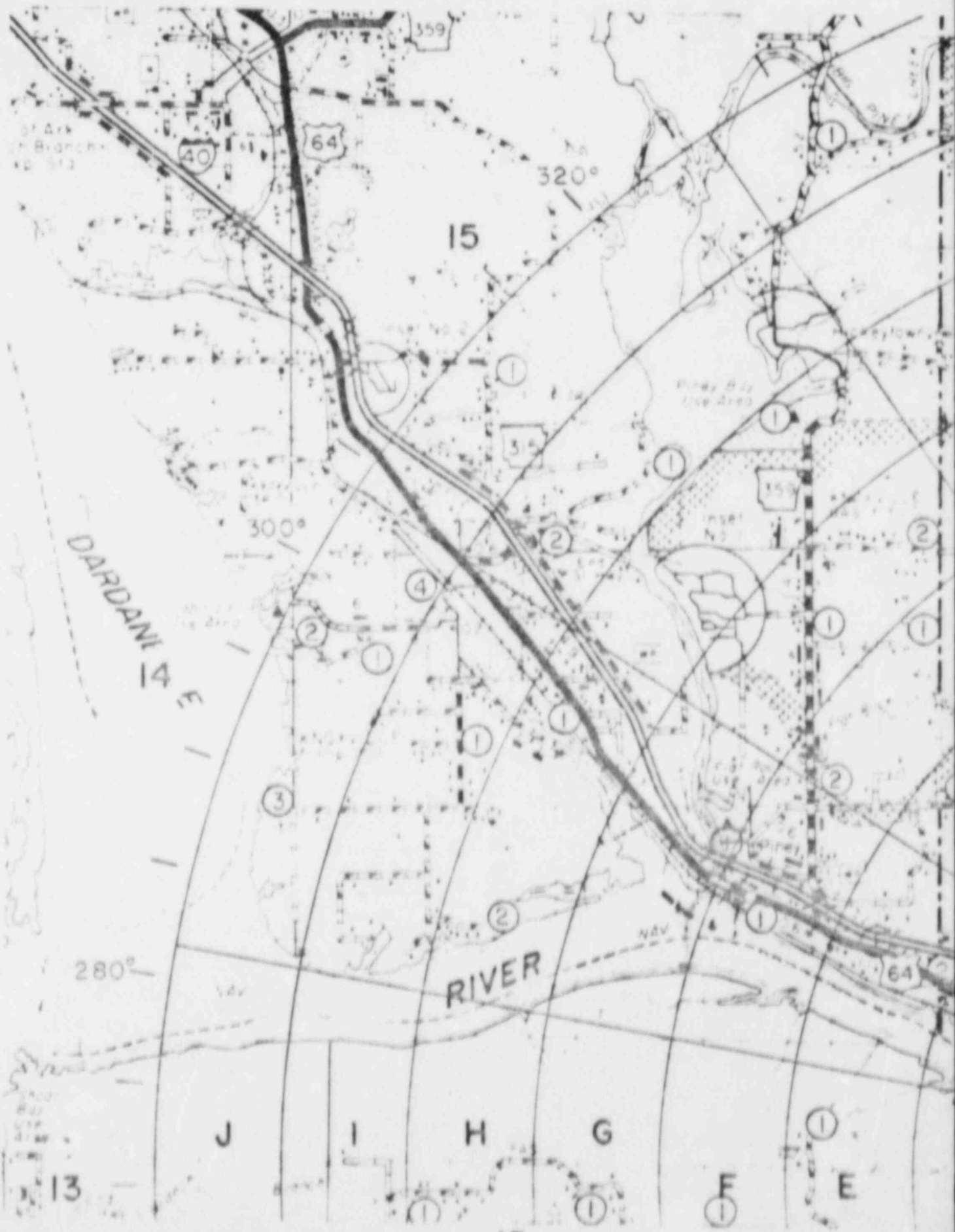
8405010341-11

ARKANSAS POWER & LIGHT COMPANY
ARKANSAS NUCLEAR ONE

SIZE B

REX 1984
OFFSITE DOSE MAP

1350 1410 11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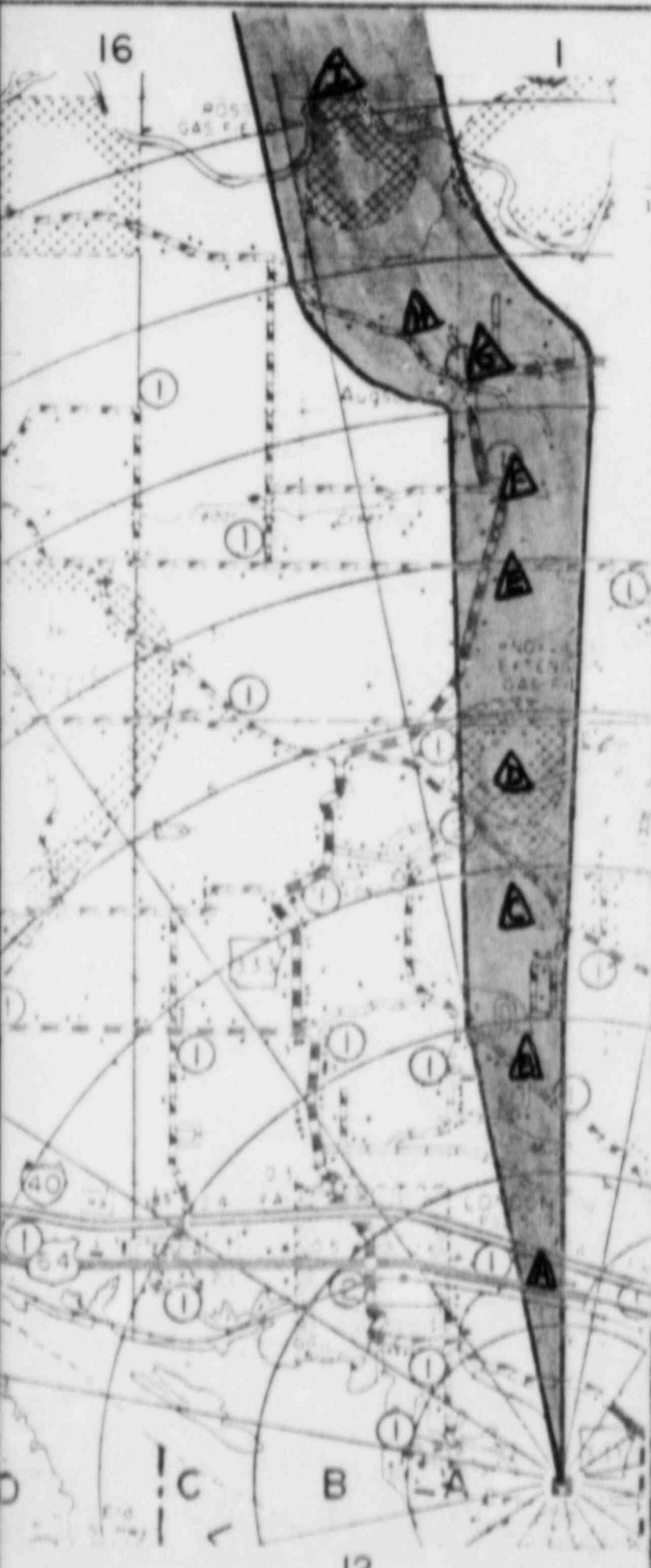


TIME SPAN	CENTER-LINE POINT	WHOLE BODY MR/HR	THYROID MR/HR	RM-14 CPM FOR 750 LITER ZEOLITE FILTER
1410-1430	A	.181	1.58	275
	B	.139	1.16	202
	C	7.02E-2	0.606	105
	D	6.29E-2	0.543	95
	E	6.13E-2	0.511	89
	F	6.35E-2	0.535	91
	G	7.04E-2	0.530	96
	H	9.16E-2	0.735	128
	I	6.00E-2	0.493	87

Also Available On Aperture Card

/TI APERTURE CARD

8405010341-12

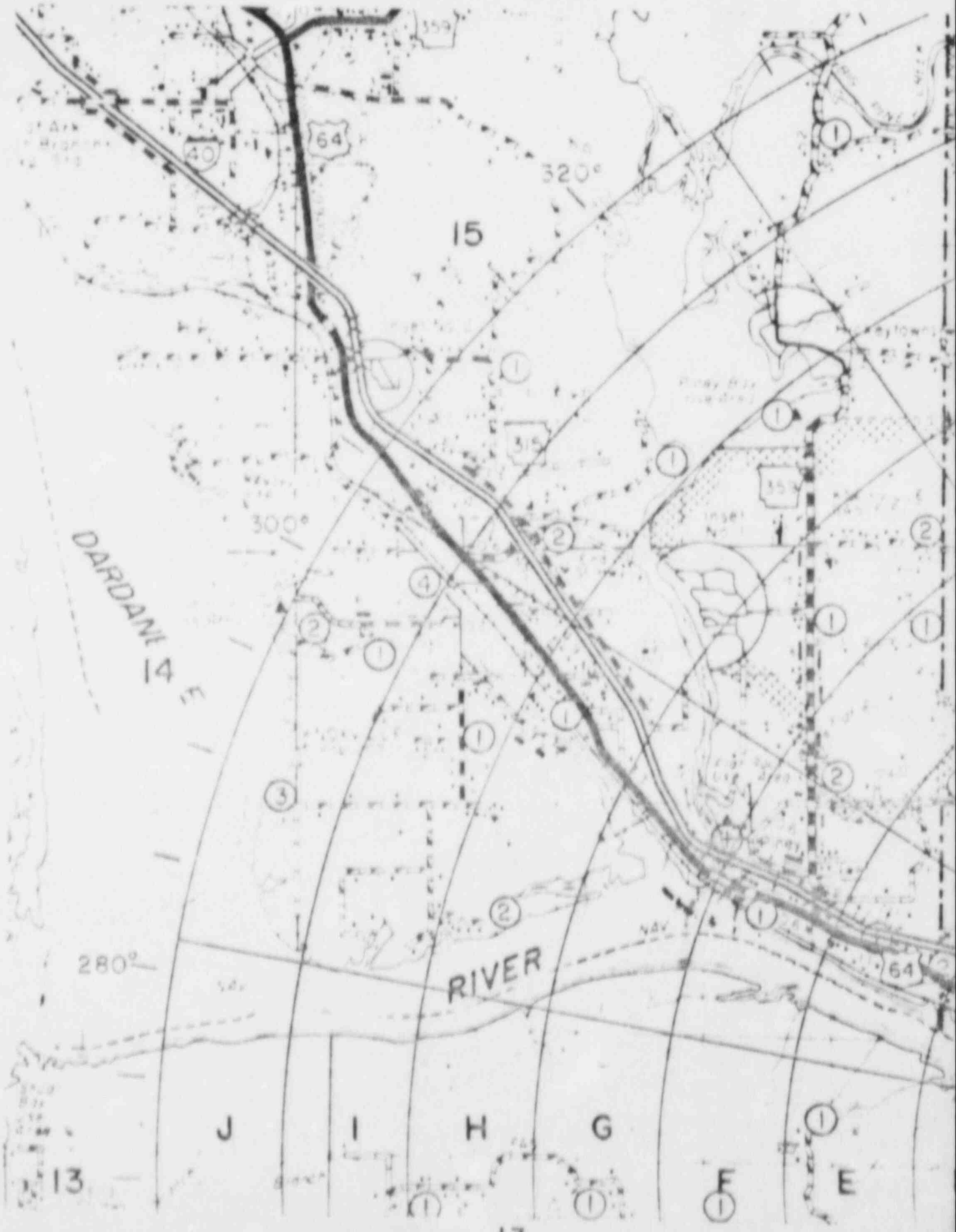
ARKANSAS POWER & LIGHT COMPANY
ARKANSAS NUCLEAR ONE

B

REX 1984
OFFSITE DOSE MAP

TIME
FROM 1410 TO 1430

FIGURE
12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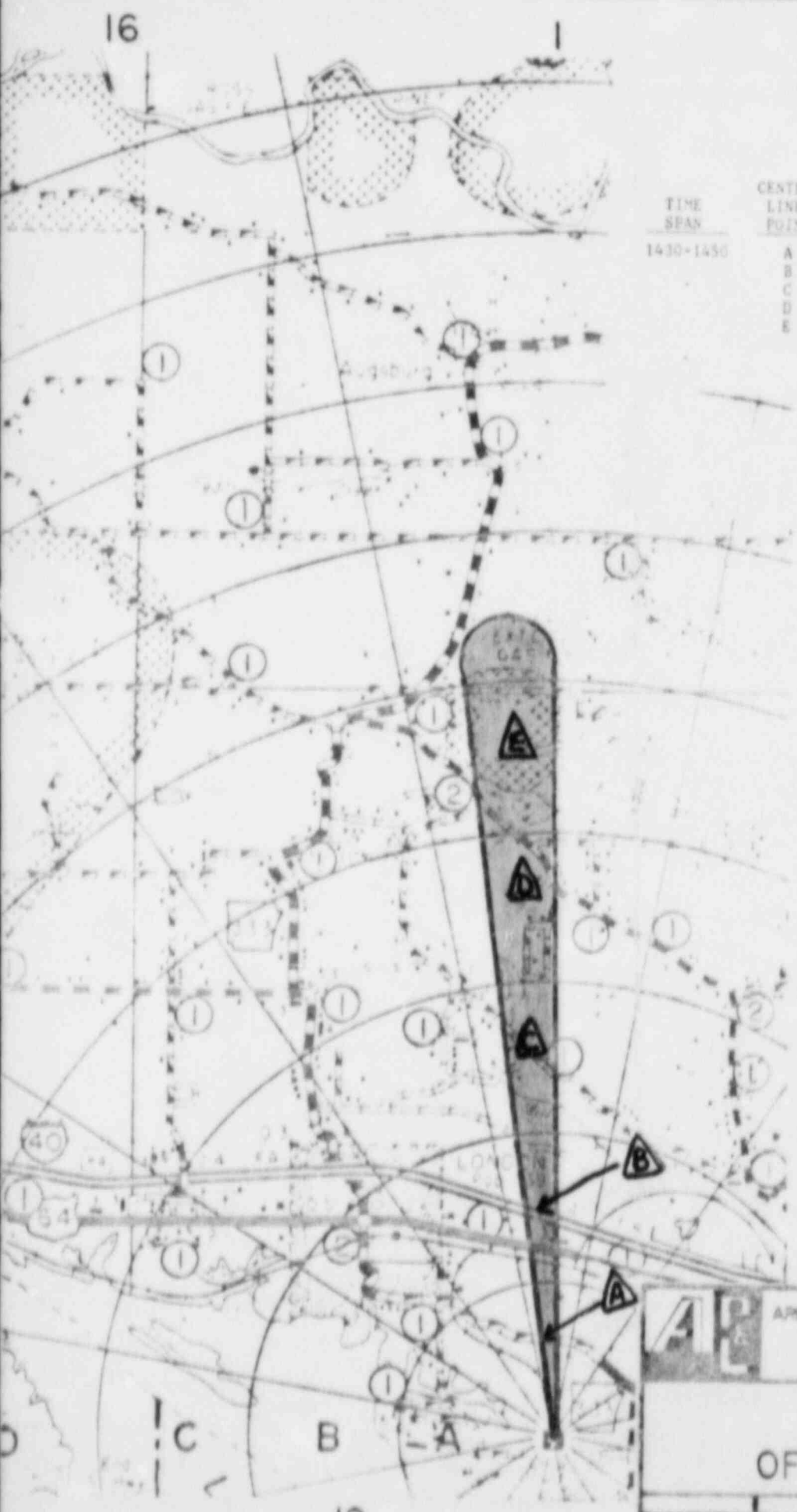


TIME SPAN	CENTER-LINE POINT	WHOLE BODY MR/HR	THYROID MR/HR	RM-14 CPM FOR 750 LITER ZEOLITE FILTER
1430-1450	A	.468	4.18	727
	B	.468	4.18	727
	C	.343	3.03	527
	D	.172	1.45	254
	E	.103	0.902	157

Also Available On Aperture Card

ATI APERTURE CARD

8405010341 -13

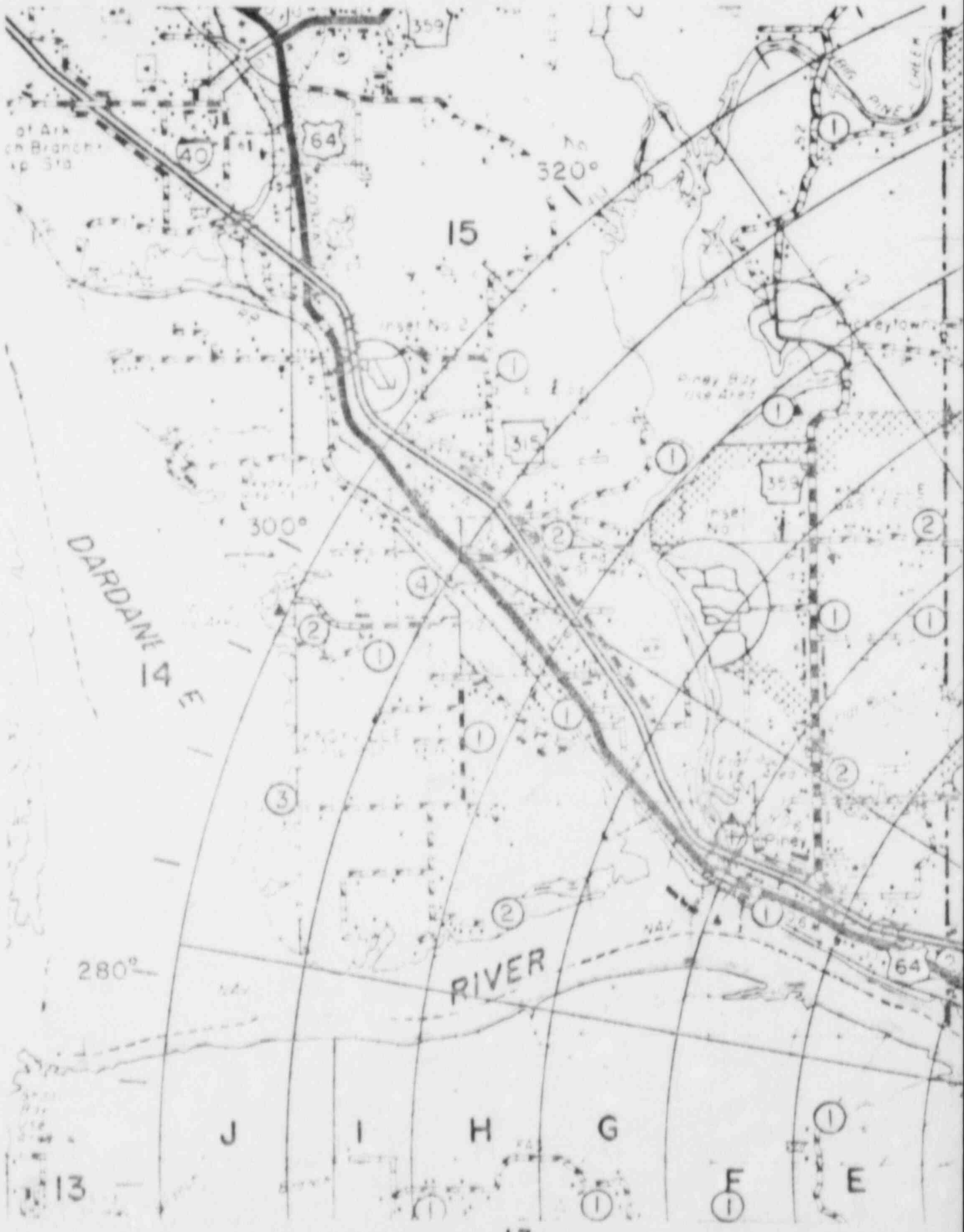
ARKANSAS POWER & LIGHT COMPANY
ARKANSAS NUCLEAR ONE

SIZE B

REX 1984
OFFSITE DOSE MAP

TIME FROM 1430 TO 1450

FIGURE 13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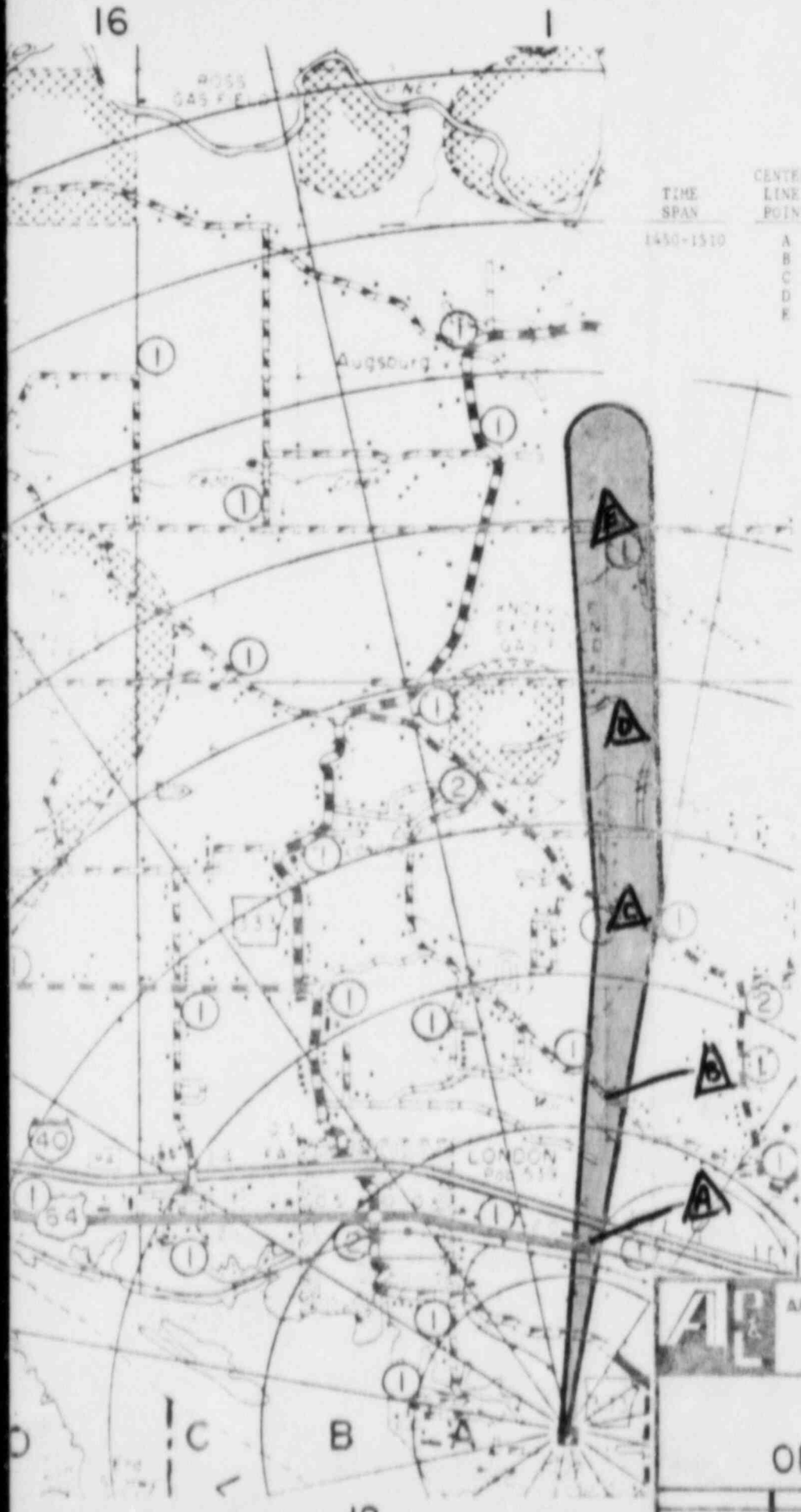


TIME SPAN	CENTER-LINE POINT	WHOLE BODY MR/HR	THYROID MR/HR	RM-14 CPM FOR 750 LITER ZEOLITE FILTER
1450-1510	A	.236	2.04	355
	B	.186	1.65	287
	C	.117	0.941	164
	D	9.33E-2	0.743	129
	E	7.59E-2	0.596	104

8405010341-14

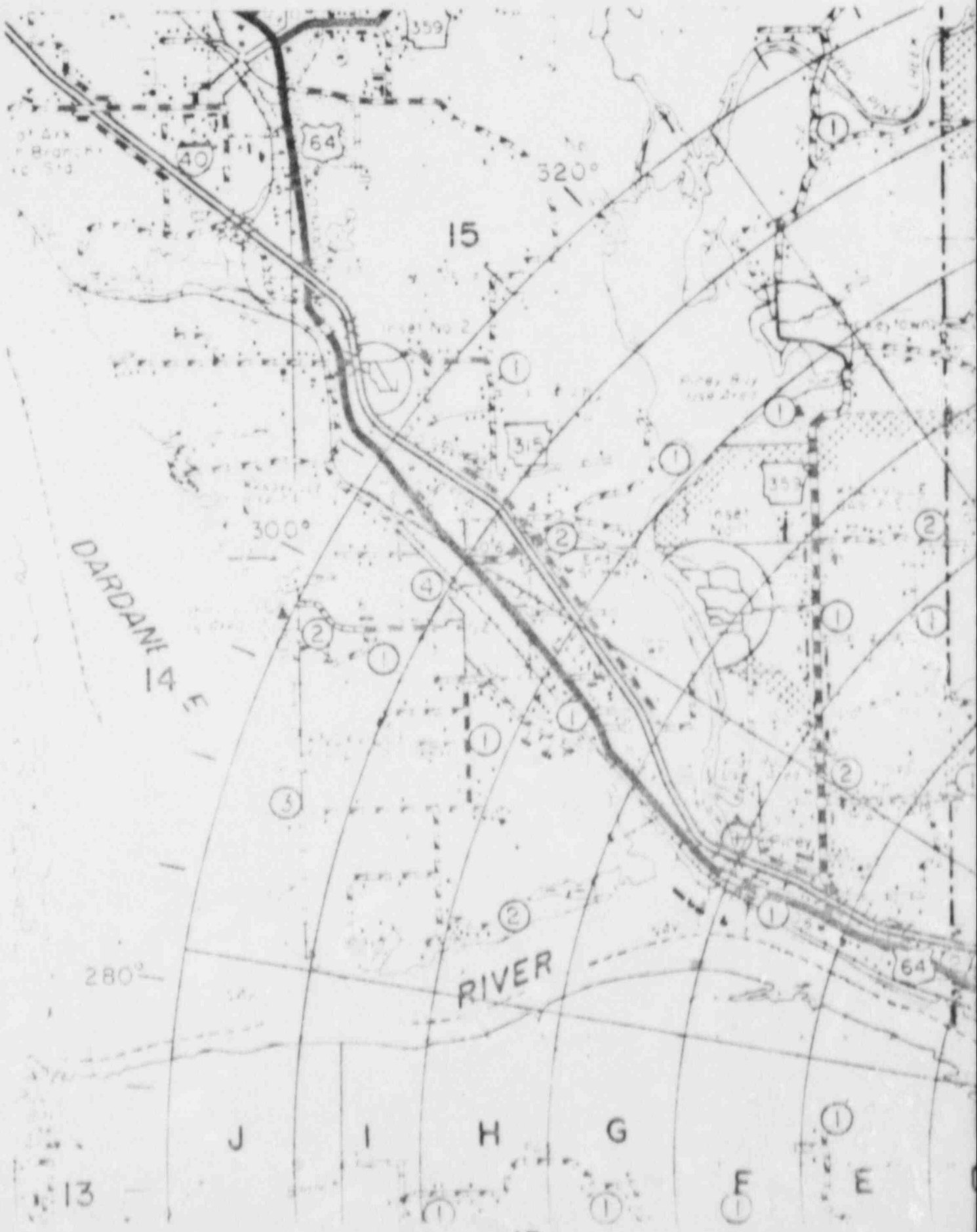
ARKANSAS POWER & LIGHT COMPANY
ARKANSAS NUCLEAR ONE

SIZE B

REX 1984
OFFSITE DOSE MAP

TIME: FROM 1450 TO 1510

FIGURE 14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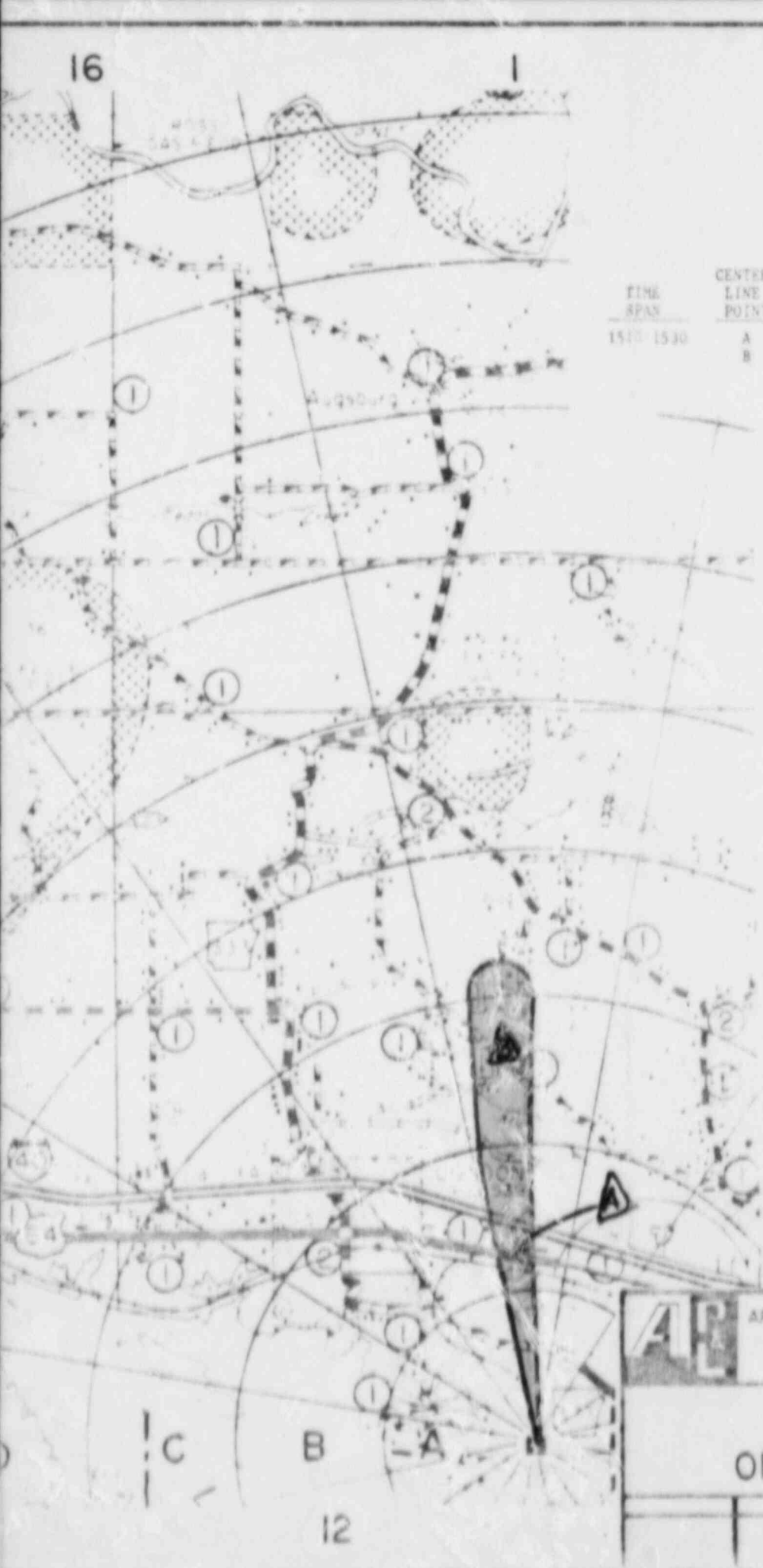


TIME SPAN	CENTER-LINE POINT	WHOLE BODY MR/HR	THYROID MR/HR	RM-14 CPM FOR 750 LITER ZEOLITE FILTER
1510 1530	A	.123	1.29	224
	B	9.46E-2	.849	148

Also Available On
Aperture Card

N

8405010341-15

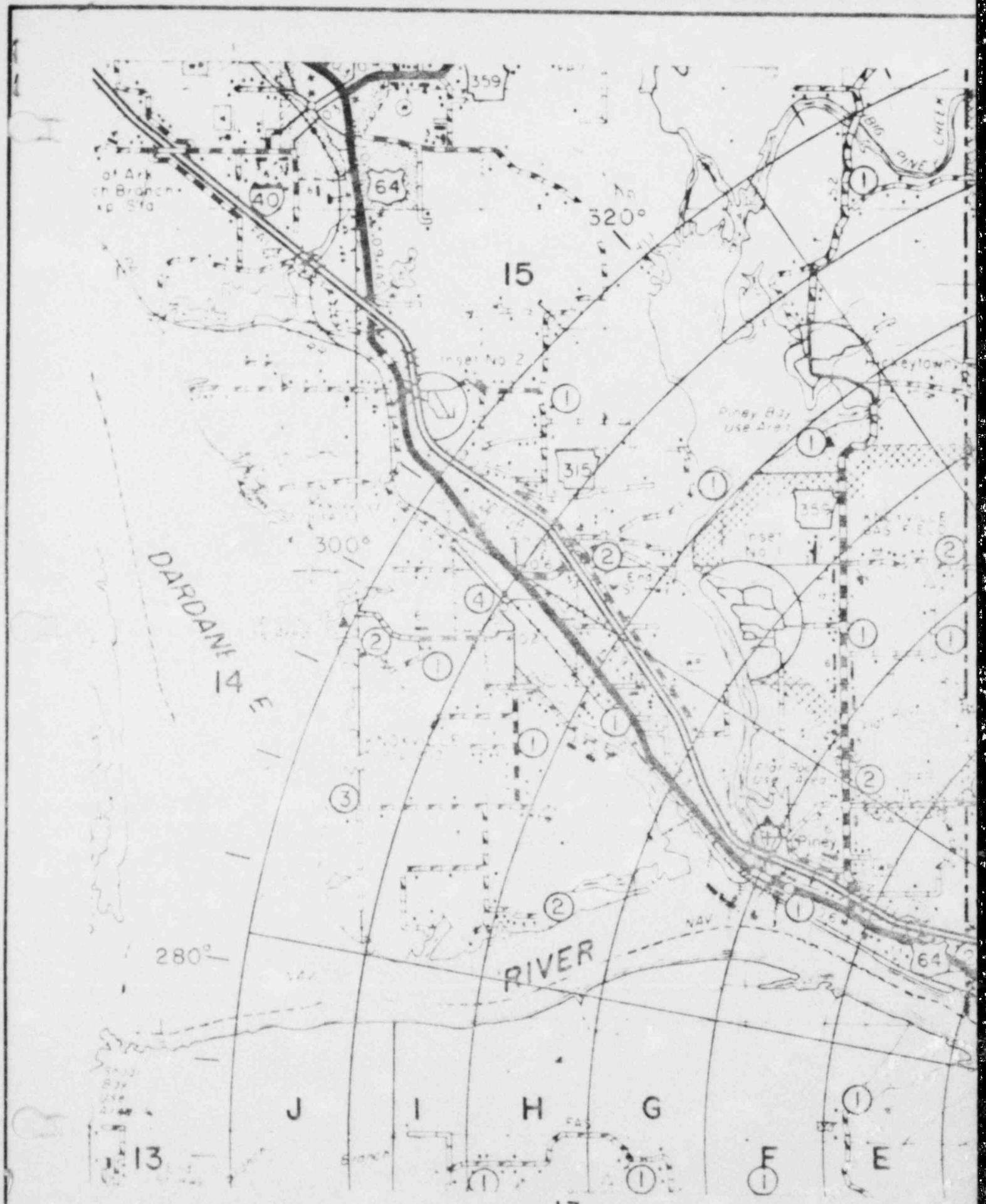
ARKANSAS POWER & LIGHT COMPANY
ARKANSAS NUCLEAR ONE

SIZE B

REX 1984
OFFSITE DOSE MAP

TIME: FROM 1510 TO 1530

FIGURE 15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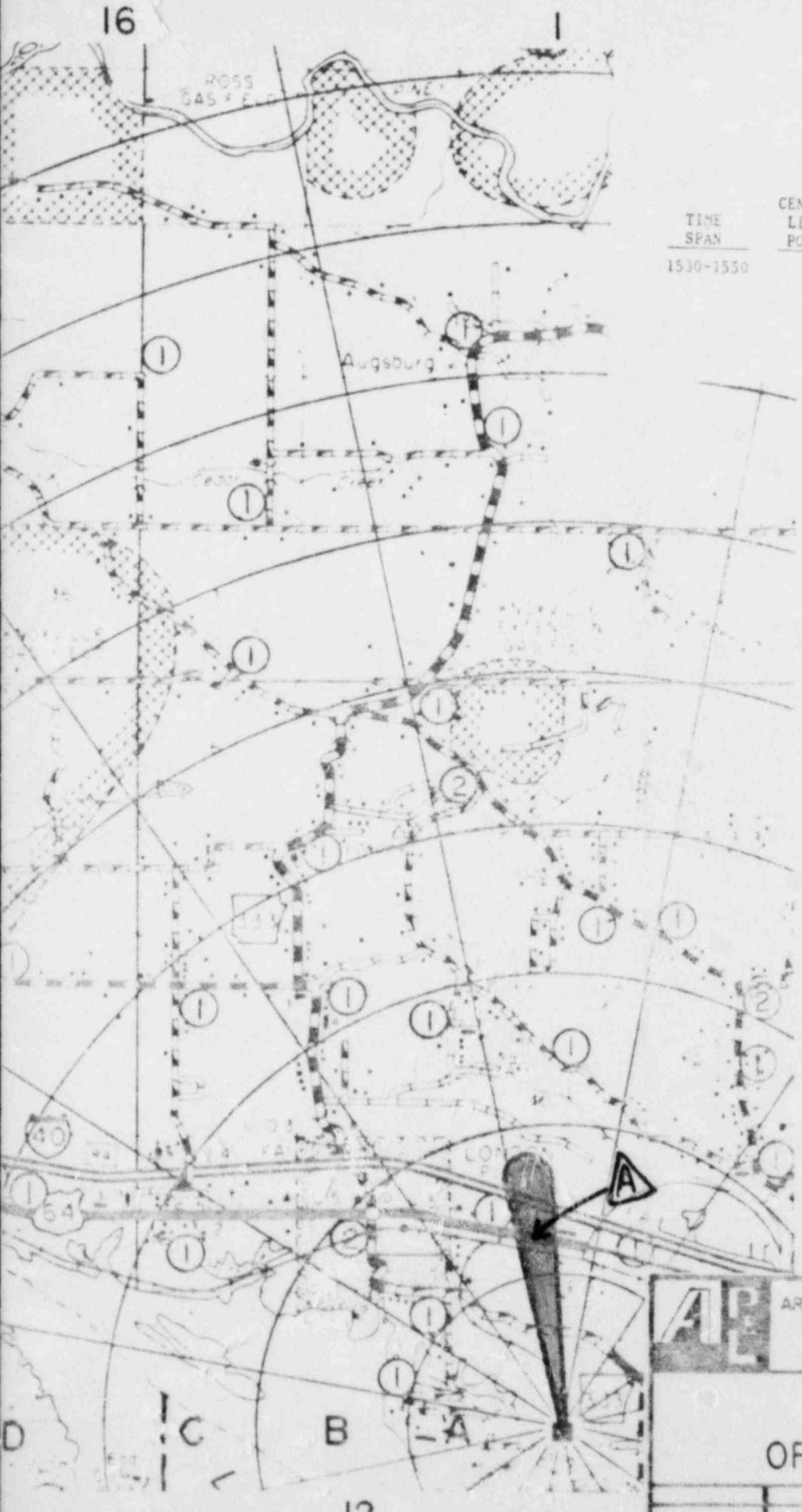

TIME SPAN	CENTER-LINE POINT	WHOLE BODY MR/HR	THYROID MR/HR	RM-14 CPM FOR 750 LITER ZEOLITE FILTER
1530-1550	A	9.43E-2	.788	137

TI APERTURE CARD

Also Available On Aperture Card

N

8405010341-16

ARKANSAS POWER & LIGHT COMPANY
ARKANSAS NUCLEAR ONE

SIZE B

REX 1984
OFFSITE DOSE MAP

TIME: FROM 1530 TO 1550

FIGURE 16

A P P E N D I X G

PUBLIC INFORMATION MESSAGES

PUBLIC INQUIRY/MEDIA MESSAGE NO. 1

TO: ANO Switchboard

FROM: Public Inquiry Controller

LOCATION:

TIME: 1100 hours

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

"I'm from London. The sirens have been going off. I need to know what I should do about my children who are at London Elementary School. I tried to call the school but can't get an answer. I've called the state and county civil defense offices, but the lines are always busy."

PUBLIC INQUIRY/MEDIA MESSAGE NO. 2

TO: Media Center

FROM: Public Inquiry Controller

LOCATION:

TIME: ~1300 hours

MESSAGE:

THIS IS A DRILL

Do not initiate actions affecting normal plant conditions.

"I'm from London. The sirens have been going off. I need to know what I should do about my children who are at London Elementary School. I tried to call the school but can't get an answer. I've called the state and county civil defense offices, but the lines are always busy."

PUBLIC INQUIRY/MEDIA MESSAGE NO. 3

TO: ANO Switchboard

FROM: Public Inquiry Controller

LOCATION:

TIME: 1200 hours

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

"I'm from London. The sirens have been going off. I need to know what I should do about my children who are at London Elementary School. I tried to call the school but can't get an answer. I've called the state and county civil defense offices, but the lines are always busy."

PUBLIC INQUIRY/MEDIA MESSAGE NO. 4

TO: ECC Switchboard

FROM: Public Inquiry Controller

LOCATION:

TIME: 1230 hours

MESSAGE:

THIS IS A DRILL

Do not initiate actions affecting normal plant conditions.

"I live near Lamar where they say all the radiation is going; and I've got a whole herd of cattle up here. How can I protect them, and if they die, who am I suppose to send the bill to?"

PUBLIC INQUIRY/MEDIA MESSAGE NO. 5

TO: Media Center

FROM: Public Inquiry Controller

LOCATION:

TIME: 1400 hours

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

"I'm from London. The sirens have been going off. I need to know what I should do about my children who are at London Elementary School. I tried to call the school but can't get an answer. I've called the state and county civil defense offices, but the lines are always busy."

PUBLIC INQUIRY/MEDIA MESSAGE NO. 6

TO: Russellville Office - 968-5050

FROM: Public Inquiry Controller

LOCATION:

TIME: 1415 hours

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

"I'm from London. The sirens have been going off. I need to know what I should do about my children who are at London Elementary School. I tried to call the school but can't get an answer. I've called the state and county civil defense offices, but the lines are always busy."

PUBLIC INQUIRY/MEDIA MESSAGE NO. 7

TO: ANO Switchboard - 6601

FROM: Public Inquiry Controller

LOCATION:

TIME: 1115 hours

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

You are with the Houston Chronicle and just heard about a declaration of General Emergency for ANO. You would like full details and the latest status update.

PUBLIC INQUIRY/MEDIA MESSAGE NO. 8

TO: Recovery Manager - 6604

FROM: Public Inquiry Controller

LOCATION:

TIME: 1120 hours

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

You are with the Houston Chronicle and just heard about a declaration of General Emergency for ANO. You would like full details and the latest status update.

PUBLIC INQUIRY/MEDIA MESSAGE NO. 9

TO: IRD

FROM: Public Inquiry Controller

LOCATION:

TIME: 1300 hours

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

You are with the Houston Chronicle and just heard about a declaration of General Emergency for ANO. You would like full details and the latest status update.

PUBLIC INQUIRY/MEDIA MESSAGE NO. 10

TO: ANO Switchboard

FROM: Public Inquiry Controller

LOCATION:

TIME: 1120 - 1150

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

"This is the News Director for Channel 4 - Little Rock. I would like to speak to the Plant Manager, or someone else in-charge there."

(If able to talk to someone ask questions concerning the accident, health effects, rumor of injuries, etc.)

(Repeat similar calls for the next 30 minutes for different news stations - Channel 9, KARV radio, WAGA-TV-Atlanta, WCNN-Cable News Network, ABC News-Washington)

(Call ANO switchboard. If not transferred to someone, call TSC directly)

PUBLIC INQUIRY/MEDIA MESSAGE NO. 11

TO: TSC Switchboard Operator

FROM: Public Inquiry Controller

LOCATION:

TIME: 1130 - 1200

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

"This is the News Director for Channel 4 - Little Rock. I would like to speak to the Plant Manager, or someone else in-charge there."

(If able to talk to someone ask questions concerning the accident, health effects, rumor of injuries, etc.)

(Repeat similar calls for the next 30 minutes for different news stations - Channel 9, KARV radio, WAGA-TV-Atlanta, WCNN-Cable News Network, ABC News-Washington)

(Call ANO switchboard. If not transferred to someone, call TSC directly)

PUBLIC INQUIRY/MEDIA MESSAGE NO. 12

TO: ECC Switchboard

FROM: Public Inquiry Controller

LOCATION:

TIME: 1315 - 1345

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

"This is the News Director for Channel 4 - Little Rock. I would like to speak to the Plant Manager, or someone else in-charge there."

(If able to talk to someone ask questions concerning the accident, health effects, rumor of injuries, etc.)

(Repeat similar calls for the next 30 minutes for different news stations - Channel 9, KARV radio, WAGA-TV-Atlanta, WCNN-Cable News Network, ABC News-Washington)

(Call ANO switchboard. If not transferred to someone, call TSC directly)

PUBLIC INQUIRY/MEDIA MESSAGE NO. 13

TO: Media Center

FROM: Public Inquiry Controller

LOCATION:

TIME: 1330 - 1140

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

"This is the News Director for Channel 4 - Little Rock. I would like to speak to the Plant Manager, or someone else in-charge there."

(If able to talk to someone ask questions concerning the accident, health effects, rumor of injuries, etc.)

(Repeat similar calls for the next 30 minutes for different news stations - Channel 9, KARV radio, WAGA-TV Atlanta, WCNN-Cable News Network, ABC News-Washington)

(Call ANO switchboard. If not transferred to someone, call TSC directly)

PUBLIC INQUIRY/MEDIA MESSAGE NO. 14

TO: Tech Support Mgr./IRD

FROM: Public Inquiry Controller

LOCATION:

TIME: 1345 - 1415

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

"This is the News Director for Channel 4 - Little Rock. I would like to speak to the Plant Manager, or someone else in-charge there."

(If able to talk to someone ask questions concerning the accident, health effects, rumor of injuries, etc.)

(Repeat similar calls for the next 30 minutes for different news stations - Channel 9, KARV radio, WAGA-TV-Atlanta, WCNN-Cable News Network, ABC News-Washington)

(Call ANO switchboard. If not transferred to someone, call TSC directly)

PUBLIC INQUIRY/MEDIA MESSAGE NO. 15

TO: Media Center

FROM: Public Inquiry Controller

LOCATION:

TIME: 1200

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

"I was fishing down near the plant this morning when, I guess, somebody got hurt.... anyway the ambulance and fire trucks came. But I left right after that then all of those sirens went off. The news says some radiation leaked out. I caught a whole bunch of fish; are they safe to eat, radioactive, or what?"

PUBLIC INQUIRY/MEDIA MESSAGE NO. 16

TO: Russellville Office

FROM: Public Inquiry Controller

LOCATION:

TIME: 1215

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

"I was fishing down near the plant this morning when, I guess, somebody got hurt.... anyway the ambulance and fire trucks came. But I left right after that then all of those sirens went off. The news says some radiation leaked out. I caught a whole bunch of fish; are they safe to eat, radioactive, or what?"

PUBLIC INQUIRY/MEDIA MESSAGE NO. 17

TO: ANO Switchboard

FROM: Public Inquiry Controller

LOCATION:

TIME: 1215

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

"My son went fishing down at the plant. . . . you know where the water comes out. The sirens up here in Knoxville went off an hour ago, and I haven't heard or seen him. How can I find out where he is and if he is safe? Will he become radioactive?"

PUBLIC INQUIRY/MEDIA MESSAGE NO. 18

TO: Russellville Office

FROM: Public Inquiry Controller

LOCATION:

TIME: 1225

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

"My son went fishing down at the plant. . . . you know where the water comes out. The sirens up here in Knoxville went off an hour ago, and I haven't heard or seen him. How can I find out where he is and if he is safe? Will he become radioactive?"

PUBLIC INQUIRY/MEDIA MESSAGE NO. 19

TO: ANO Switchboard

FROM: Public Inquiry Controller

LOCATION:

TIME: 1130

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

"I live near Dover, Arkansas, and I have one of those little radios from the plant. It came on but all we could get was static. Listening to my CB, it sounds like there may be trouble at the plant. . . . what should we do?

PUBLIC INQUIRY/MEDIA MESSAGE NO. 20

TO: Russellville Office

FROM: Public Inquiry Controller

LOCATION:

TIME: 1140

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

"I live near Dover, Arkansas, and I have one of those little radios from the plant. It came on but all we could get was static. Listening to my CB, it sounds like there may be trouble at the plant. . . . what should we do?

PUBLIC INQUIRY/MEDIA MESSAGE NO. 21

TO: ECC Switchboard

FROM: Public Inquiry Controller

LOCATION:

TIME: 1200

MESSAGE:

THIS IS A DRILL

Do not initiate actions affecting normal plant conditions.

"I live near Dover, Arkansas, and I have one of those little radios from the plant. It came on but all we could get was static. Listening to my CB, it sounds like there may be trouble at the plant. . . . what should we do?

PUBLIC INQUIRY/MEDIA MESSAGE NO. 22

TO: ANO Switchboard

FROM: Public Inquiry Controller

LOCATION:

TIME: 0930

MESSAGE:

****
* THIS IS A DRILL *
* Do not initiate actions affecting normal *
* plant conditions. *
****

"I am a reporter with the Chicago Sun-Times and I have heard that you have had an accident at your nuclear plant when transporting spent resins, and that a worker was seriously injured.

How much radiation was involved?

Who was injured? Is he critically ill? What medical facility was he taken to? His name?

Has the Nuclear Regulatory Commission been called?

PUBLIC INQUIRY/MEDIA MESSAGE NO. 23

TO: Tech. Analysis Supt.

FROM: Public Inquiry Controller

LOCATION:

TIME: 0945

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

"I am a reporter with the Chicago Sun-Times and I have heard that you have had an accident at your nuclear plant when transporting spent resins, and that a worker was seriously injured.

How much radiation was involved?

Who was injured? Is he critically ill? What medical facility was he taken to? His name?

Has the Nuclear Regulatory Commission been called?

PUBLIC INQUIRY/MEDIA MESSAGE NO. 24

TO: ECC Switchboard

FROM: Public Inquiry Controller

LOCATION:

TIME: 1000

MESSAGE:

THIS IS A DRILL

Do not initiate actions affecting normal plant conditions.

"I am a reporter with the Chicago Sun-Times and I have heard that you have had an accident at your nuclear plant when transporting spent resins, and that a worker was seriously injured.

How much radiation was involved?

Who was injured? Is he critically ill? What medical facility was he taken to? His name?

Has the Nuclear Regulatory Commission been called?

PUBLIC INQUIRY/MEDIA MESSAGE NO. 25

TO: Tech. Support Mgr./IRD

FROM: Public Inquiry Controller

LOCATION:

TIME: 1300

MESSAGE:

THIS IS A DRILL

Do not initiate actions affecting normal plant conditions.

"I am a reporter with the Chicago Sun-Times and I have heard that you have had an accident at your nuclear plant when transporting spent resins, and that a worker was seriously injured.

How much radiation was involved?

Who was injured? Is he critically ill? What medical facility was he taken to? His name?

Has the Nuclear Regulatory Commission been called?

REX-84

PUBLIC INQUIRY/MEDIA MESSAGE NO. 26

TO: Media Center

FROM: Public Inquiry Controller

LOCATION:

TIME: 1500

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

You are the News Director for Channel 4 and would like full details on the situation at ANO. You have a news team enroute to the plant and would like to shoot some film footage of the facility.

PUBLIC INQUIRY/MEDIA MESSAGE NO. 27

TO: ANO Switchboard

FROM: Public Inquiry Controller

LOCATION:

TIME: 1500

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

You represent WREG-TV news in Memphis and want to know the latest plant status and directions to the plant. You would like to know where you can land your helicopter.

PUBLIC INQUIRY/MEDIA MESSAGE NO. 28

TO: Media Center

FROM: Public Inquiry Controller

LOCATION:

TIME: 1500

MESSAGE:

THIS IS A DRILL

Do not initiate actions affecting normal plant conditions.

You represent WREG-TV news in Memphis and want to know the latest plant status and directions to the plant. You would like to know where you can land your helicopter.

PUBLIC INQUIRY/MEDIA MESSAGE NO. 29

TO: ANO Switchboard

FROM: Public Inquiry Controller

LOCATION:

TIME: 1430

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

You are with KCAB-Radio and you want to confirm the rumor that the injured person is critically ill from radiation poisoning due to swallowing small beads of radioactive material this morning.

PUBLIC INQUIRY/MEDIA MESSAGE NO. 30

TO: TSC Operator

FROM: Public Inquiry Controller

LOCATION:

TIME: 1415

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

"I was fishing down near the plant this morning when, I guess, somebody got hurt.... anyway the ambulance and fire trucks came. But I left right after that then all of those sirens went off. The news says some radiation leaked out. I caught a whole bunch of fish; are they safe to eat, radioactive, or what?"

PUBLIC INQUIRY/MEDIA MESSAGE NO. 31

TO: Media Center

FROM: Public Inquiry Controller

LOCATION:

TIME: 1430

MESSAGE:

THIS IS A DRILL

Do not initiate actions affecting normal plant conditions.

"I was fishing down near the plant this morning when, I guess, somebody got hurt.... anyway the ambulance and fire trucks came. But I left right after that then all of those sirens went off. The news says some radiation leaked out. I caught a whole bunch of fish; are they safe to eat, radioactive, or what?"

PUBLIC INQUIRY/MEDIA MESSAGE NO. 32

TO: ANO Switchboard

FROM: Public Inquiry Controller

LOCATION:

TIME: 1300

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

You are a reporter for WCNN (Cable News Network) and you want more information on the fire you heard resulted from attempted sabotage and the emergency declaration at ANO.

PUBLIC INQUIRY/MEDIA MESSAGE NO. 33

TO: TSC Operator

FROM: Public Inquiry Controller

LOCATION:

TIME: 1330

MESSAGE:

THIS IS A DRILL

Do not initiate actions affecting normal plant conditions.

You are a reporter for WCNN (Cable News Network) and you want more information on the fire you heard resulted from attempted sabotage and the emergency declaration at ANO.

PUBLIC INQUIRY/MEDIA MESSAGE NO. 34

TO: Russellville Office

FROM: Public Inquiry Controller

LOCATION:

TIME: 1345

MESSAGE:

****
*
* THIS IS A DRILL
*
* Do not initiate actions affecting normal
* plant conditions.
*
****

You are a reporter for WCNN (Cable News Network) and you want more information on the fire you heard resulted from attempted sabotage and the emergency declaration at ANO.