

265

**From:** Edwin Gray  
**To:** Lawrence Doerflein  
**Date:** Tue, Feb 8, 2000 10:30 AM  
**Subject:** IP2 Steam Generator Primary to Secondary side leak

Indian Point Unit 2 has had a low level of primary to secondary side steam generator leakage in 3 of the four steam generators since the startup from an unplanned outage in October 1999. The total leakage has been slightly above one gallon per day ( 1 gpd). This weekend, 2/6/00, the N16 monitor for SG 24 alarmed , correlating with a leak rate of about 1.5 gpd from that SG. The indication of this leak has since reduced.

The licensee has reviewed the EPRI guidance resulting from the North Anna tube rupture event and has the following leak rate action levels in place:

- 10 gpd Begin Increased and continuous monitoring, alarm in control room
- 25 gpd Action level for increased concern, N16 readings every 15 minutes
- 60 gpd Initiate plant shutdown

It is not known if the leakage source is from degrading tubes or leaking tube plugs or a combination of both. Based on EPRI guidance and previous SG leak progression rate history, the current leak conditions are not a safety concern. When the leak rate begins to increase, this could change. The resident inspectors are monitoring the licensee actions on and for the leak. If the leak rate reaches 5 gpd, or there is a significant change in leak rate, NRC should initiate discussions with IP2 to confirm the licensee plans should the leak rate exceed 10 gpd.

**CC:** Brian Holian, James Wiggins, Kenneth Kolaczyk, ...

1.3 g/DAY on SG 24 as of 2/9 - Am

A1121

16

**Mail Envelope Properties** (38A0367F.882 : 14 : 34862)

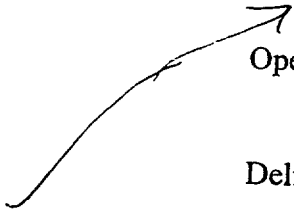
**Subject:** IP2 Steam Generator Primary to Secondary side leak  
**Creation Date:** Tue, Feb 8, 2000 10:30 AM  
**From:** Edwin Gray

**Created By:** KP\_DO.KP1\_PO:EHG

**Recipients**

	<b>Action</b>	<b>Date &amp; Time</b>
Post Office KP_DO.kp1_po	Delivered	02/08 10:30 AM
BEH CC (Brian Holian)		
GSB CC (Scott Barber)		
JTW1 CC (James Wiggins)		
KSK CC (Kenneth Kolaczyk)	Opened	02/08 10:33 AM
LMH1 CC (Leanne Harrison)		
LTD (Lawrence Doerflein)		
PJH2 CC (Peter Habighorst)		
PWE CC (Pete Eselgroth)		
WDL CC (Wayne Lanning)	Opened	02/08 10:31 AM
WJR CC (William Raymond)		
Post Office OWFN_DO.owf4_po	Delivered	02/08 10:30 AM
SMC1 CC (Stephanie Coffin)		

X 2778



**Domain.Post Office**

	<b>Delivered</b>	<b>Route</b>
KP_DO.kp1_po	02/08 10:30 AM	KP_DO.kp1_po
OWFN_DO.owf4_po	02/08 10:30 AM	OWFN_DO.owf4_po

<b>Files</b>	<b>Size</b>	<b>Date &amp; Time</b>
MESSAGE	2092	Tuesday, February 8, 2000 10:30 AM

**Options**

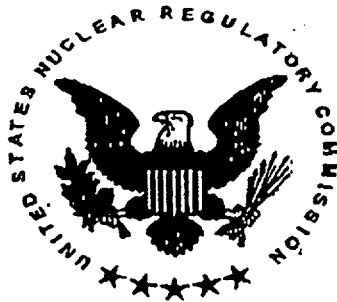
**Auto Delete:** No  
**Expiration Date:** None  
**Notify Recipients:** Yes  
**Priority:** Standard  
**Reply Requested:** No  
**Return Notification:** None

**Concealed Subject:** No  
**Security:** Standard

**To Be Delivered:** Immediate  
**Status Tracking:** Delivered & Opened

Action levels

- 4 10 gpd - alarm in control room
- 25 gpd - NRO takes N-16 readings every 15 min
- 60 gpd - take plant offline



U.S. NUCLEAR REGULATORY COMMISSION  
 INDIAN POINT 2 NUCLEAR POWER PLANT  
 RESIDENT INSPECTOR'S OFFICE

FACSIMILE TO: P. Eselgroth / H. Gray

IN THE OFFICE OF: \_\_\_\_\_

TELECOPY NO.: \_\_\_\_\_

NUMBER OF PAGES TRANSMITTED INCLUDING THIS FORM: 5

SUBJECT: \_\_\_\_\_

\*\*\*\*\*

BILL RAYMOND, SENIOR RESIDENT INSPECTOR ✓

PETE HABIGHORST, RESIDENT INSPECTOR \_\_\_\_\_

ROSEMARY MARTIN, SECRETARY \_\_\_\_\_

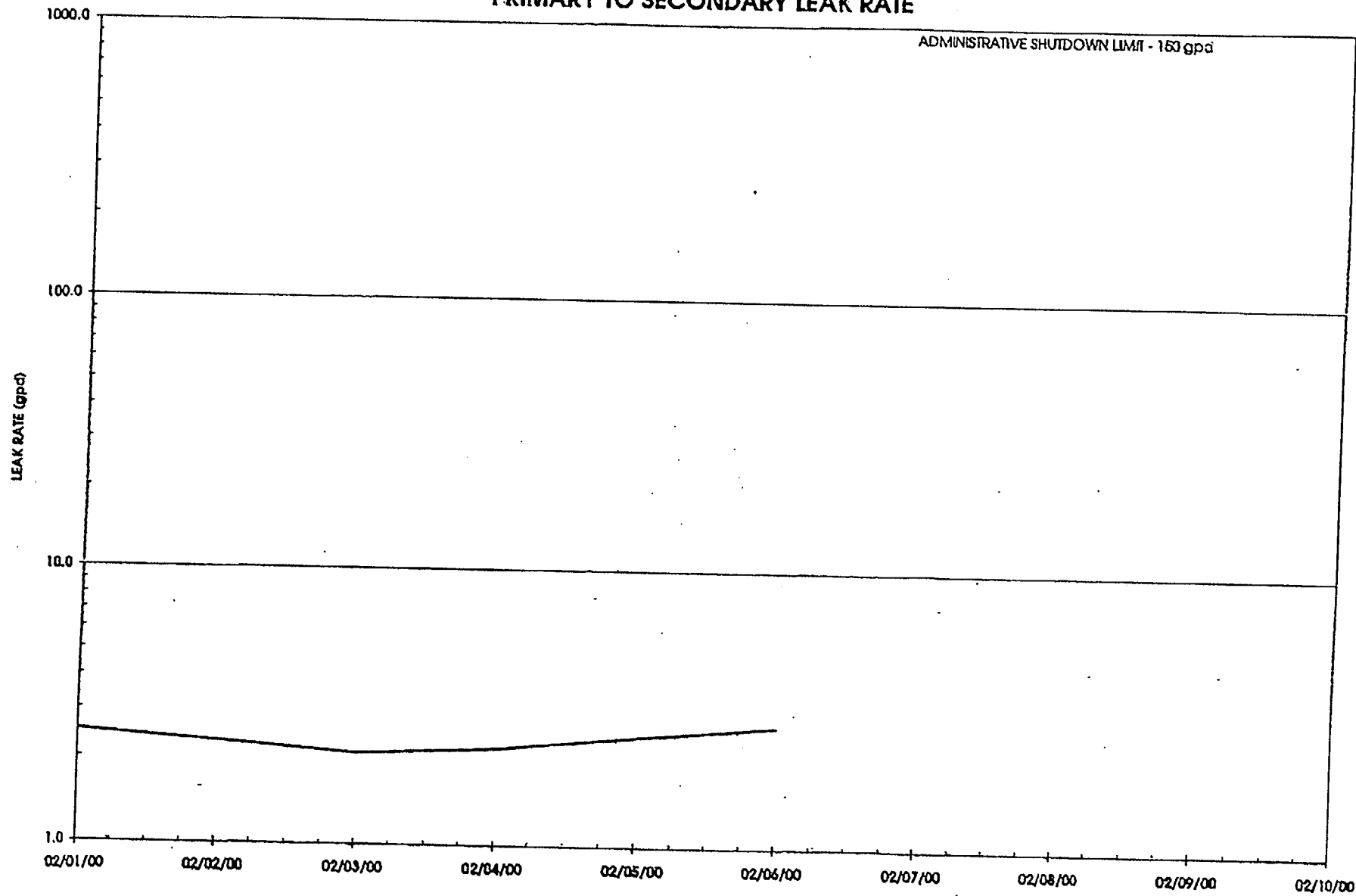
\*\*\*\*\*

NRC  
 P.O. BOX 59  
 BUCHANAN, NY 10511

(914) 739-9360 OFFICE  
 (914) 739-9359 FAX

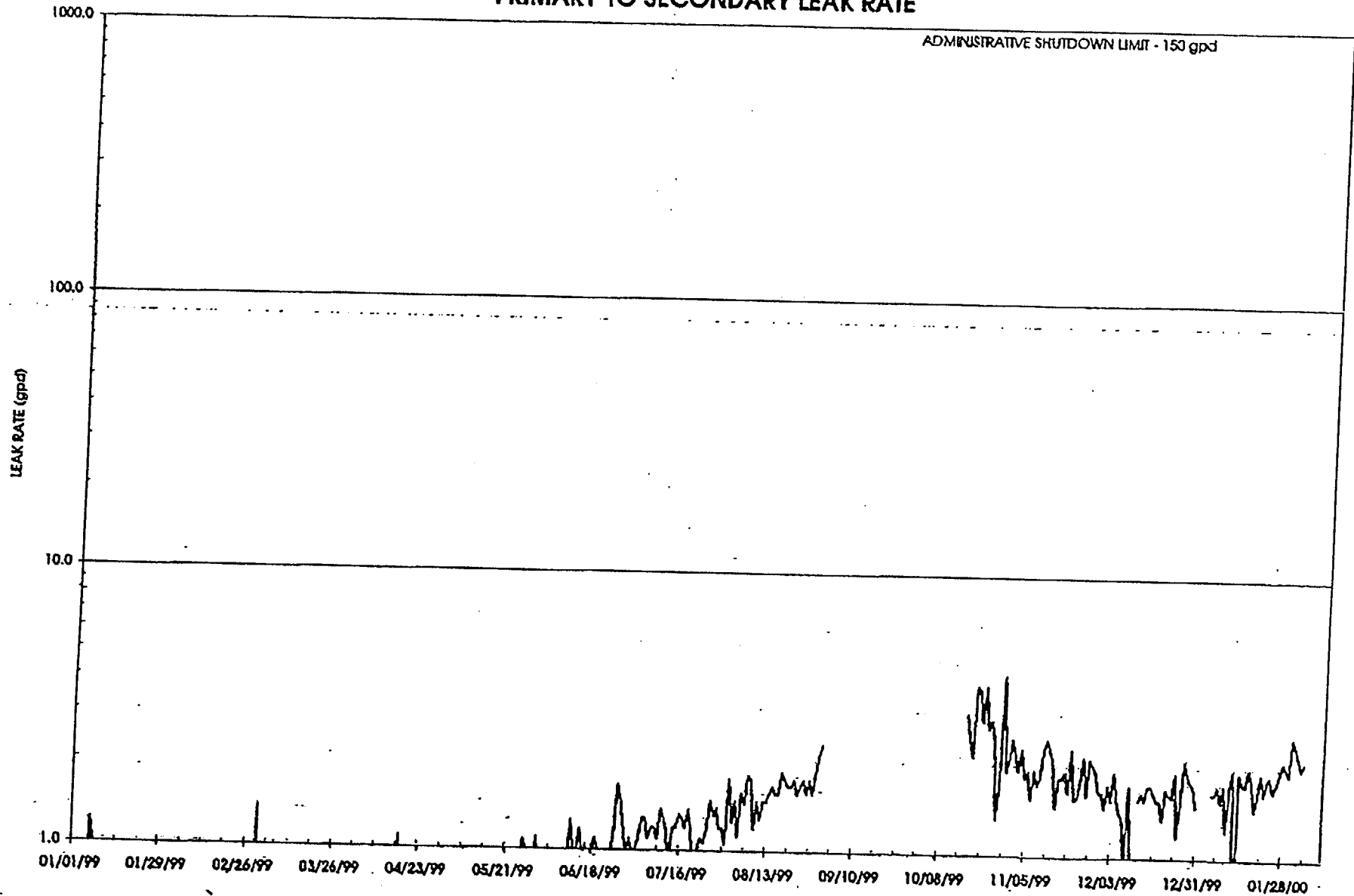
# PRIMARY TO SECONDARY LEAK RATE

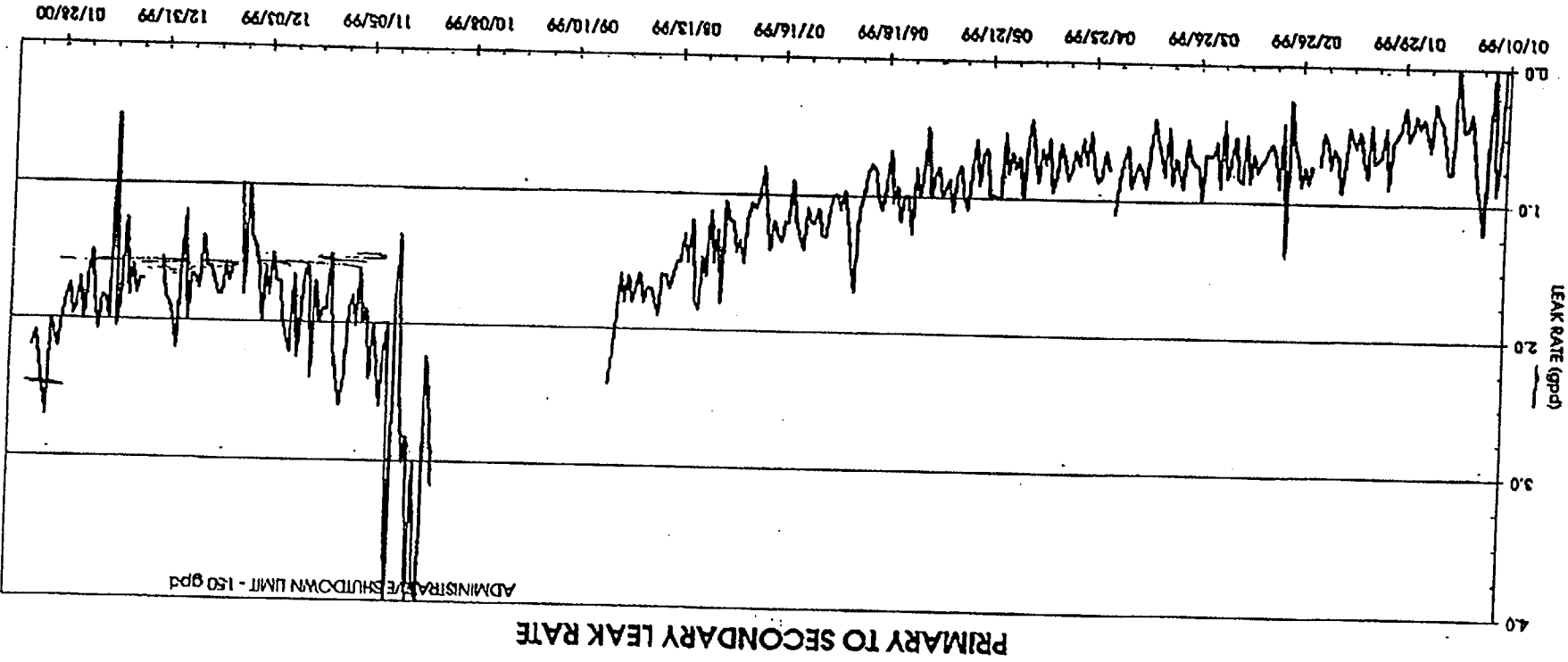
ADMINISTRATIVE SHUTDOWN LIMIT - 150 gpd



# PRIMARY TO SECONDARY LEAK RATE

ADMINISTRATIVE SHUTDOWN LIMIT - 150 gpd





NO.	COM	PAGES	FILE	DURATION	X/R	IDENTIFICATION	DATE	TIME	DIAGNOSTIC
01	OK	004	135	00:04'07	RCU				
02	OK	003	136	00:02'09	RCU	603 474 9018	FEB-04	16:03	C0142B0A27000
03	OK	005	137	00:01'10	RCU	315 342 2714	FEB-04	16:10	C0542B0A37000
04	OK	001	137	00:00'56	RCU	603 474 9018	FEB-04	16:21	C0542B0377000
05	OK	005	138	00:02'29	RCU	914 739 9359	FEB-04	16:22	C0542B0A37000
06	OK	005	139	00:03'04	RCU	914 739 8624	FEB-04	18:30	C0542B0A37000
07	OK	001	140	00:00'59	RCU	315 342 4079	FEB-06	13:33	C0542B0A37000
08	OK	014	141	00:04'30	RCU		FEB-07	06:52	C0542B0A37000
09	OK	012	142	00:07'54	RCU	570 542 4573	FEB-07	07:33	C0142B0377000
10	OK	004	143	00:01'24	RCU	914 739 8624	FEB-07	07:50	C0542B0A37000
11	OK	003	144	00:04'26	RCU		FEB-07	08:02	C0542B0A37000
12	OK	002	145	00:02'03	RCU	315 342 4079	FEB-07	08:12	C0142B0A17000
13	OK	004	146	00:01'48	RCU		FEB-07	09:08	C0542B0A37000
14	OK	005	147	00:02'31	RCU	856 935 3741	FEB-07	09:20	C0142B0A37000
15	OK	001	148	00:01'02	RCU	315 342 4079	FEB-07	09:53	C0542B0A37000
16	OK	004	149	00:02'09	RCU	860 443 5893	FEB-07	09:56	C0542B0A37000
17	OK	003	150	00:02'37	RCU	610 323 6590	FEB-07	10:17	C0542B0A37000
18	OK	008	151	00:02'28	RCU		FEB-07	10:44	C0542B0A37000
19	459	002	152	00:03'39	RCU	856 935 3741	FEB-07	10:53	C0142B0377000
20	OK	003	153	00:02'36	RCU	856 935 3741	FEB-07	11:15	C0542B0A37000
21	OK	008	154	00:03'20	RCU	856 935 3741	FEB-07	11:22	C0542B0A37000
22	OK	013	154	00:09'42	RCU	315 342 4079	FEB-07	11:26	C0542B0A37000
23	OK	001	154	00:01'02	RCU	315 342 4079	FEB-07	12:01	C0542B0A37000
24	OK	004	155	00:01'55	RCU	856 935 3741	FEB-07	13:05	C0542B0A37000
25	OK	009	156	00:02'29	RCU	315 524 6937	FEB-07	13:17	C0542B0A37000
26	OK	016	157	00:04'47	RCU		FEB-07	13:36	C0542B0377000
27	OK	004/004	158	00:01'49	XMT	MILLSTONE	FEB-07	14:17	C0142B0377000
28	OK	004	159	00:05'03	RCU	914 739 8624	FEB-07	14:29	C8444B0A37000
29	OK	002	160	00:00'42	RCU		FEB-07	14:57	C0542B0A37000
30	OK	002	161	00:01'55	RCU		FEB-07	16:24	0110270377000
31	OK	004	162	00:03'03	RCU	717 948 1163	FEB-08	07:18	C0142B0C37000
32	495	005	163	00:01'48	RCU	914 739 9359	FEB-08	08:54	C0542B0A37000
							FEB-08	08:58	C0542B0A37000

-DRP

\*\*\*\*\* -610 337 5354

- \*\*\*\*\* -

6103375354- \*\*\*\*\*

Action levels

- Δ 10 gpd - alarm in control room
- Δ 25 gpd - NPO takes N-16 readings every 15 min.
- Δ 60 gpd - take plant offline



U.S. NUCLEAR REGULATORY COMMISSION  
 INDIAN POINT 2 NUCLEAR POWER PLANT  
 RESIDENT INSPECTOR'S OFFICE

FACSIMILE TO: P. Eselgroth / H. Gray

IN THE OFFICE OF: \_\_\_\_\_

TELECOPY NO.: \_\_\_\_\_

NUMBER OF PAGES TRANSMITTED INCLUDING THIS FORM: 5

SUBJECT: \_\_\_\_\_

\*\*\*\*\*

BILL RAYMOND, SENIOR RESIDENT INSPECTOR

PETE HABIGHORST, RESIDENT INSPECTOR

ROSEMARY MARTIN, SECRETARY

\_\_\_\_\_ ✓

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

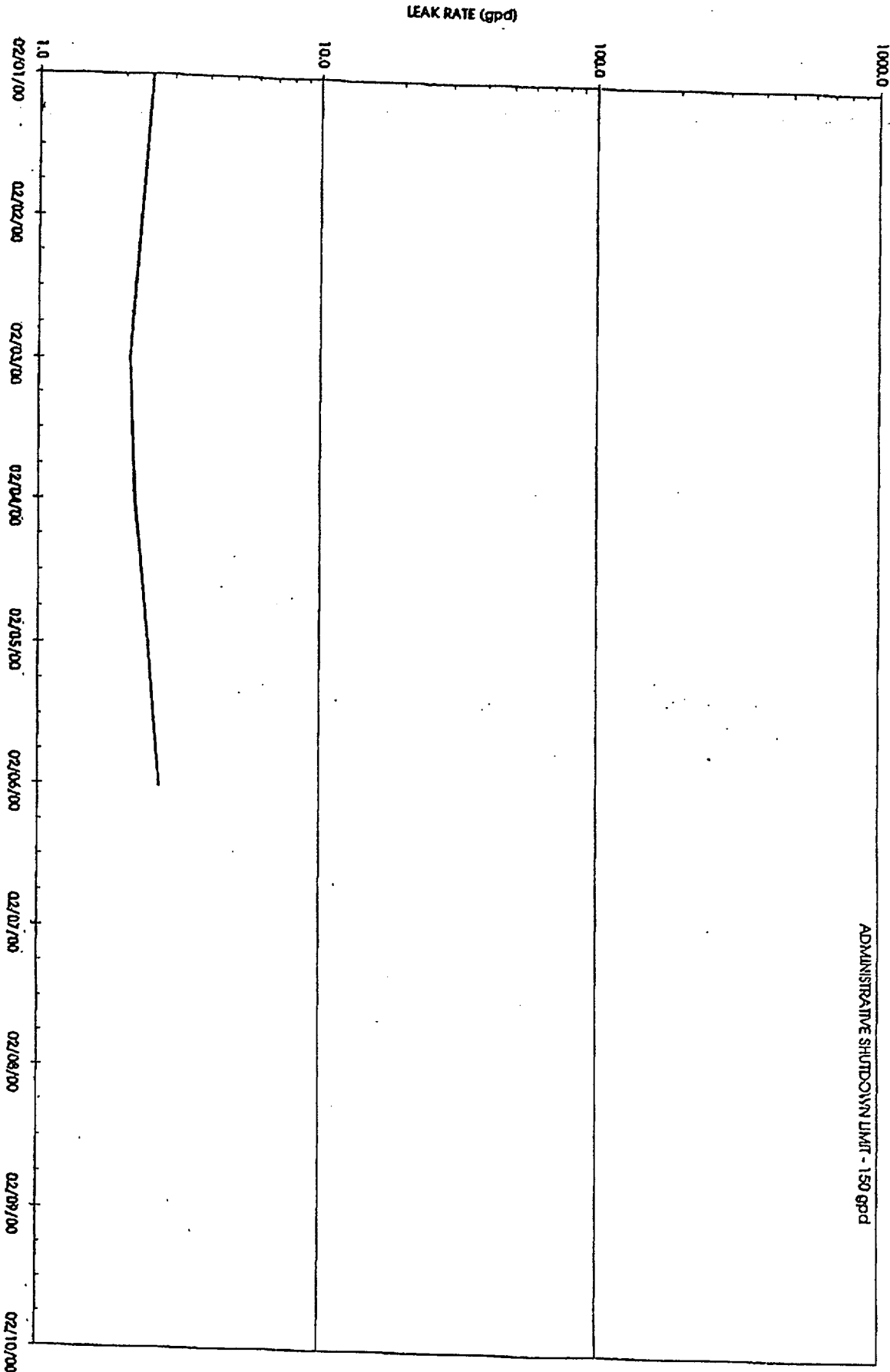
NRC  
 P.O. BOX 59  
 BUCHANAN, NY 10511

(914) 739-9360 OFFICE  
 (914) 739-9359 FAX



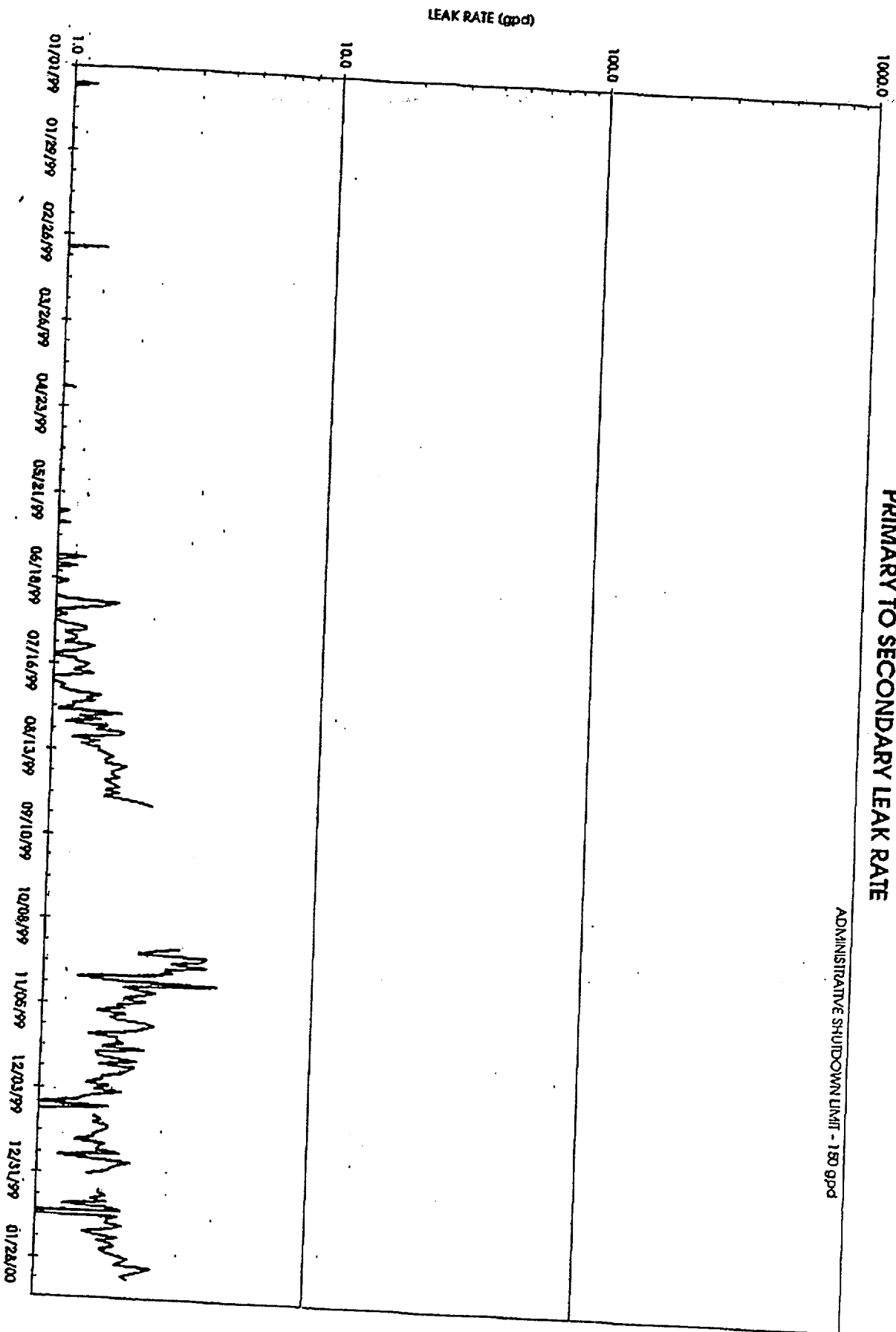
# PRIMARY TO SECONDARY LEAK RATE

ADMINISTRATIVE SHUTDOWN LIMIT - 150 gpd

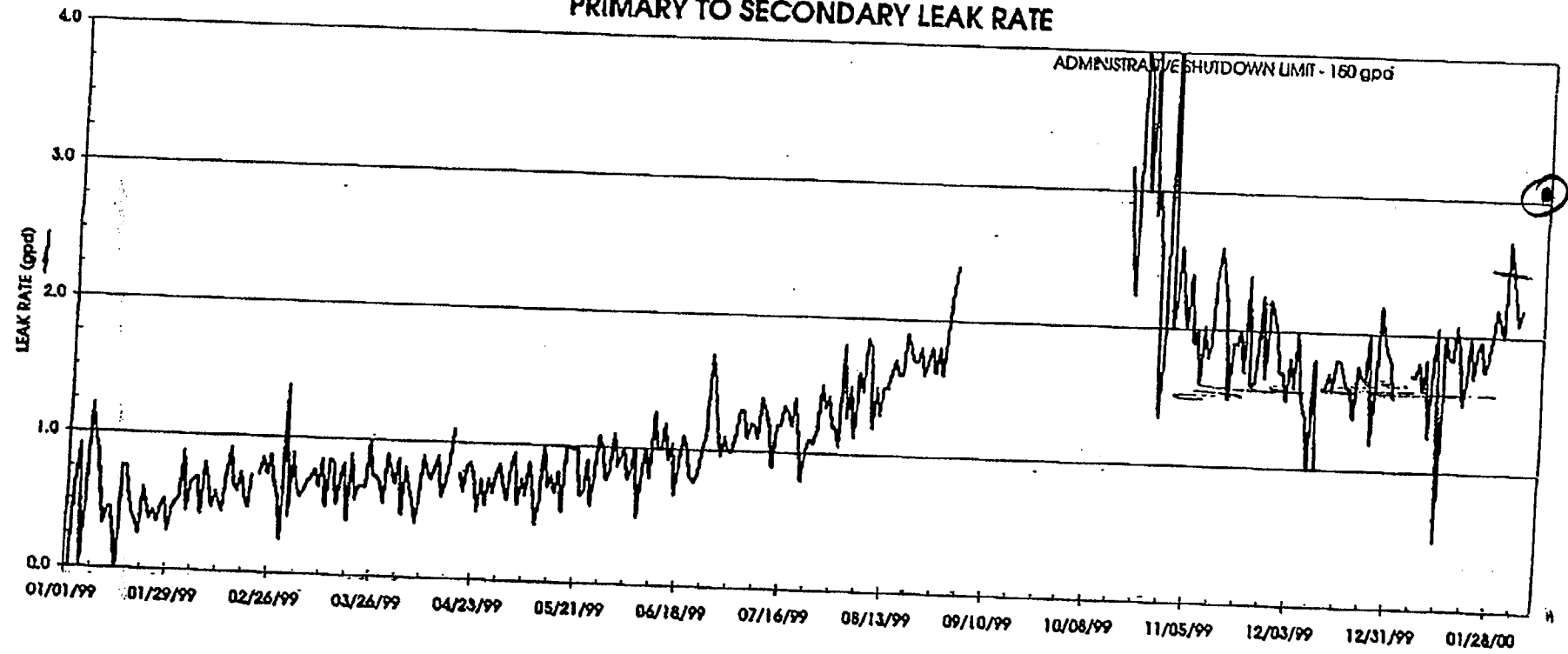


# PRIMARY TO SECONDARY LEAK RATE

ADMINISTRATIVE SHUTDOWN LIMIT - 150 gpd



# PRIMARY TO SECONDARY LEAK RATE



Operating Guidelines for Primary-to-Secondary Leakage

bend. These plots are not the actual data from the North Anna tube rupture, but are intended to be representative of a best fit of the data and the outside range for a tube with higher mean stress.

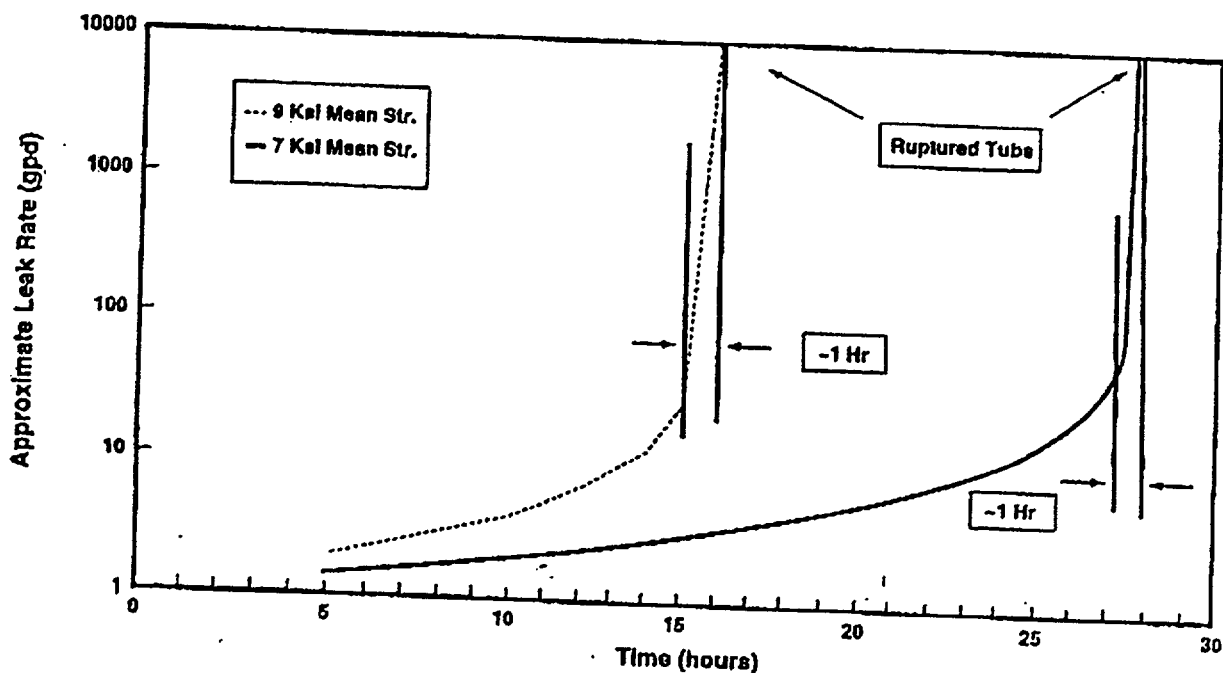


Figure 2-1  
Trends of Industry Tube Rupture Events Resulting from Fatigue Cracking

The leak rate criteria recommended in this section should be applied automatically (i.e., prior to management notification) when confirmed by a second *qualitative* method (e.g., steam generator blowdown radiation monitors, main steam line monitors, etc.) that the leak rate is rapidly propagating. Rapid operator response to this trend is key to minimizing the consequences of a tube rupture; the confirmation time should be kept to a minimum. If no second qualitative method is available, the recommended actions should be taken based on the available information.

The Action Level 2 recommendations call for rapid shutdown if exceeded. The details of the shutdown response should be determined on a plant-specific basis, but should generally result in reaching Mode 3 in about one hour. These recommendations were reviewed against the recommendations of US NSSS vendors and were deemed to be consistent with or conservative when compared to them. The recommended actions are also more conservative than required by station Technical Specifications, as they consider appropriate responses to rapidly propagating leaks. Thus, the recommendations should be aggressive in reducing the probability of a tube rupture



U.S. NUCLEAR REGULATORY COMMISSION  
INDIAN POINT 2 NUCLEAR POWER PLANT  
RESIDENT INSPECTOR'S OFFICE

FACSIMILE TO: Harold Gray  
IN THE OFFICE OF: DRS  
TELECOPY NO.: \_\_\_\_\_  
NUMBER OF PAGES TRANSMITTED INCLUDING THIS FORM: 2  
SUBJECT: \_\_\_\_\_

\*\*\*\*\*

BILL RAYMOND, SENIOR RESIDENT INSPECTOR

✓

PETE HABIGHORST, RESIDENT INSPECTOR

\_\_\_\_\_

ROSEMARY MARTIN, SECRETARY

\_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

NRC  
P.O. BOX 59  
BUCHANAN, NY 10511

(914) 739-9360 OFFICE  
(914) 739-9359 FAX





U.S. NUCLEAR REGULATORY COMMISSION  
 INDIAN POINT 2 NUCLEAR POWER PLANT  
 RESIDENT INSPECTOR'S OFFICE

FACSIMILE TO: Harold Gray  
 IN THE OFFICE OF: DRS  
 TELECOPY NO.: \_\_\_\_\_  
 NUMBER OF PAGES TRANSMITTED INCLUDING THIS FORM: 2  
 SUBJECT: \_\_\_\_\_

\*\*\*\*\*

BILL RAYMOND, SENIOR RESIDENT INSPECTOR

PETE HABIGHORST, RESIDENT INSPECTOR

ROSEMARY MARTIN, SECRETARY

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

\*\*\*\*\*

NRC  
 P.O. BOX 59  
 BUCHANAN, NY 10511

(914) 739-9360 OFFICE  
 (914) 739-9359 FAX

February 8, 2000

TODAY'S ESTIMATE				PREVIOUS WORK DAY EXPOSURE SUMMARY (mrem)				MONTH TO DATE (Person Rem)				
ESTIMATE		Est.	Act.	Planned / Worked		Planned / Not Worked		Non Scheduled / Emergent		UNIT I	Goal	Actual
0	ADMIN SUPPORT	0	2	41	48	-	-	-	53	UNIT I	0.80	0.14
1	ENGINEERING	0	5							UNIT II	1.30	0.34
5	MAINT/CONST.	0	2							<b>MTD TOTAL</b>	<b>2.10</b>	<b>0.48</b>
6	OPERATIONS	4	47							<b>YEAR TO DATE (Person Rem)</b>		
6	OTHER	20	13							UNIT I	4.0	1.5
30	RAD PROTECTION	17	32							UNIT II	193.7	1.5
48	<b>TOTAL</b>	<b>41</b>	<b>101</b>							<b>YTD TOTAL</b>	<b>197.7</b>	<b>3.1</b>

HIGHEST EXPOSURE JOBS FOR PREVIOUS WORK DAY (mrem)		
000004	ROUTINE OPERATIONS AND INSPECTIONS FOR SHIFT PERSONNEL	27
000223	BACKWASH SPENT FUEL DEMINERALIZER, THAN PLACE BACK IN	26
000219	Analysis of Spent Fuel racks to include installing and	17

2.4 Acc. cm  
2000 ppm

HIGHEST EXPOSURE JOBS ESTIMATED FOR TODAY (mrem)		
	Waste Processing, housekeeping	25
	Westinghouse spent fuel pool moves	6
	House Maintenance planning / Job walkdowns in pipe pen	5

