

SUPPLEMENTARY INFORMATION

Report No.: 50-302/81-036/03L-0

Facility: Crystal River Unit 3

Report Date: July 15, 1981

Occurrence Date: June 18, 1981

Identification of Occurrence:

Primary Coolant Dose Equivalent I-131 was greater than 1.0 microcuries per gram contrary to Technical Specification 3.4.8.

Conditions Prior to Occurrence:

Mode 1 (power operation 97%)

Description of Occurrence:

At 1155 after Reactor startup, it was discovered that Dose Equivalent I-131 exceeded 1.0 microcuries per gram. At 0450 on June 27, 1981 after a Reactor trip and again at 0930 on July 1, 1981 after a Reactor trip, it was discovered that Dose Equivalent I-131 exceeded 1.0 microcuries per gram.

Designation of Apparent Cause:

The cause of these events is attributed to leaking fuel or "tramp uranium" (i.e., uranium in the cladding within one recoil radius of the surface) and an anticipated Dose Equivalent Iodine transient following a Reactor Coolant System transient.

Analysis of Occurrence:

There was no effect upon the health or safety of the general public.

Corrective Action:

The Reactor Coolant System flowrate through the Makeup and Purification System was increased. Dose Equivalent I-131 was determined to be less than 1.0 microcuries per gram at 0130 on June 19, 1981, at 0357 on June 28, 1981 and at 1350 on July 1, 1981. We are also conducting an evaluation to determine if failed fuel is present.

Failure Data:

These are the twenty-first, twenty-second, and twenty-third events reported under this Specification.

Reactor Power History of Prior

Forty-eight Hours

Item I

Event Date: 6/27/81

DATE 6.25.81

HOOR	GMWE (E710) %/FP	TURB G (T856) BTU/KWH	MWTH (P753) %/FP	NI (P723) %/FP	RATIO NI/MT %/FP	RATIO ME/MT %/FP
1	96.26	10125	99.84	100.00	1.002	.964
2	96.26	10125	99.84	100.00	1.002	.964
3	96.26	10125	99.84	100.00	1.002	.964
4	96.26	10125	99.84	100.00	1.002	.964
5	96.26	10125	99.84	100.00	1.002	.964
6	96.26	10125	99.84	100.00	1.002	.964
7	96.26	10125	99.84	100.00	1.002	.964
8	96.26	10125	99.84	100.00	1.002	.964
9	96.26	10125	99.84	100.00	1.002	.964
10	96.53	10125	99.92	100.30	1.004	.966
11	96.50	10135	99.96	100.30	1.003	.966
12	96.49	10141	100.04	100.30	1.003	.965
13	96.50	10147	100.08	100.40	1.003	.964
14	96.12	10152	99.71	100.20	1.005	.964
15	95.42	10134	98.82	99.60	1.008	.966
16	95.72	10132	99.10	99.70	1.006	.966
17	95.77	10142	99.27	99.90	1.006	.965
18	95.81	10141	99.31	100.00	1.007	.965
19	95.74	10132	99.14	99.80	1.007	.966
20	95.80	10115	99.02	99.60	1.006	.967
21	95.80	10117	99.06	99.60	1.005	.967
22	96.50	10102	99.67	100.10	1.004	.968
23	96.57	10102	99.71	100.10	1.004	.968
24	96.61	10099	99.71	100.10	1.004	.969

AVERAGE DAILY GENERATOR GROSS 822.30 MWH(E)
 AVERAGE DAILY THERMAL POWER 2442.87 MWH(T)
 AVERAGE DAILY TURBINE GROSS HEAT RATE 10127 BTU/KWH
 AVERAGE DAILY MWTH POWER 99.628 %/FP
 AVERAGE DAILY NUCLEAR INST. POWER 100.000 %/FP

RATIO OF NI TO MWTH = 1.004

DATE 6.26.81

HOUR	GMWE (E710) °/°FP	TURB G (T856) BTU/KWH	MWTH (P753) °/°FP	NI (P723) °/°FP	RATIO NI/MT °/°FP	RATIO ME/MT °/°FP
1	96.58	10098	99.67	100.00	1.003	.969
2	96.62	10099	99.76	99.90	1.001	.969
3	96.58	10102	99.80	100.10	1.003	.968
4	96.58	10102	99.80	100.20	1.004	.968
5	96.58	10099	99.76	100.10	1.003	.968
6	96.62	10097	99.80	100.10	1.003	.968
7	96.62	10096	99.76	100.10	1.003	.969
8	96.57	10097	99.71	100.10	1.004	.968
9	96.64	10087	99.71	100.10	1.004	.969
10	96.62	10096	99.80	100.10	1.003	.968
11	96.64	10103	99.88	100.20	1.003	.968
12	96.64	10108	99.92	100.30	1.004	.967
13	96.65	10115	100.00	100.50	1.005	.967
14	96.47	10130	99.96	100.50	1.005	.965
15	96.26	10150	99.96	100.40	1.004	.963
16	95.71	10155	99.39	100.00	1.006	.963
17	95.58	10161	99.35	99.90	1.006	.962
18	94.97	10131	98.33	99.20	1.009	.966
19	95.65	10086	98.61	99.30	1.007	.970
20	95.65	10095	98.65	99.30	1.007	.970
21	95.74	10090	98.74	99.50	1.008	.970
22	96.18	10084	99.10	99.80	1.007	.970
23	96.28	10080	99.18	99.90	1.007	.971
24	48.18	10075	49.59	99.90	2.014	.971

AVERAGE DAILY GENERATOR GROSS	806.06 MWH(E)
AVERAGE DAILY THERMAL POWER	2388.87 MWH(T)
AVERAGE DAILY TURBINE GROSS HEAT RATE	10106 BTU/KWH
AVERAGE DAILY MWTH POWER	97.426 °/°FP
AVERAGE DAILY NUCLEAR INST. POWER	99.979 °/°FP

RATIO OF NI TO MWTH = 1.026

DATE 6.27.81

HOUR	GMWE (E710) %/FP	TURB G (T856) BTU/KWH	MWTH (P753) %/FP	NI (P723) %/FP	RATIO NI/MT %/FP	RATIO ME/MT %/FP
1	54.41	0	83.65	81.80	.978	.650
2	0.00	0	.00	0.00	0.000	0.000
3	0.00	0	.00	0.00	0.000	0.000
4	0.00	0	.00	0.00	0.000	0.000
5	0.00	0	.00	0.00	0.000	0.000
6	0.00	0	.00	0.00	0.000	0.000
7	0.00	0	.00	0.00	0.000	0.000
8	0.00	0	.00	0.00	0.000	0.000
9	0.00	0	.00	0.00	0.000	0.000
10	0.00	0	.00	0.00	0.000	0.000
11	5.06	62818	12.40	16.30	1.315	.408
12	20.56	18858	26.14	29.70	1.136	.787
13	20.74	12443	24.06	29.20	1.214	.862
14	22.55	12250	25.98	31.40	1.209	.868
15	31.36	11524	34.95	41.30	1.182	.897
16	39.88	10853	43.31	50.90	1.175	.921
17	59.67	10141	61.91	70.30	1.136	.964
18	63.77	9914	64.97	74.10	1.141	.982
19	69.11	9799	69.70	77.80	1.116	.992
20	80.28	9707	80.14	86.60	1.081	1.002
21	90.34	9713	90.05	94.80	1.053	1.003
22	91.16	9693	90.58	94.40	1.042	1.006
23	73.74	9759	74.23	80.00	1.078	.994
24	67.46	9963	69.45	75.70	1.090	.971

AVERAGE DAILY GENERATOR GROSS	281.47 MWH(E)
AVERAGE DAILY THERMAL POWER	869.96 MWH(T)
AVERAGE DAILY TURBINE GROSS HEAT RATE	8643 BTU/KWH
AVERAGE DAILY MWTH POWER	35.480 %/FP
AVERAGE DAILY NUCLEAR INST. POWER	38.929 %/FP

RATIO OF NI TO MWTH = 1.097

Fuel Burnup by Core Region

Item 2

Event Date: 6/27/81 4

Item 2

The burnup was calculated at 248.1 EFPD for the four (4) enrichment regions.

<u>Region</u>	<u>Number of FA</u>	<u>Burnup</u>
B	9	25,037 MWD/MTU
C	60	23,041 MWD/MTU
D	52	13,145 " "
E	56	6,438 " "
Av.		14,982 " "

CLEANUP FLOW HISTORY

ITEM 3

EVENT DATE: 6/27/81

Item 3

Cleanup flow history starting forty-eight (48) hours prior to the first sample in which the limit was exceeded is as follows:

<u>Date</u>	<u>Time</u>	<u>Letdown Flow</u>
6/26/81	0015	47
6/27/81	0315	46

Item 4

Event Date: 6/27/81 @ 0450

<u>Date</u>	<u>Time</u>	<u>Location</u>
6/26/81	1700	PZR
6/26/81	1750	PZR

Time Duration When DEI-131 Exceeded 1.0

u Ci/gram and I-131 Analysis Results

Item 5

Event Data: 6/27/81

Item 5

As per Technical Specification 3.4.8.

The four (4) hour sampling frequency was initiated at 0647 on 6/27/81 and the Dose Equivalent I-131 was 1.64 microcuries per gram. The four (4) hour sampling frequency was terminated at 0218 on 6/28/81 when the DEI-131 was determined to be .772 microcuries per gram. DEI-131 was $\leq 1 \mu\text{Ci/gram}$ at 0218 on June 28, 1981 when the sample results were .772 $\mu\text{Ci/gram}$.

<u>Date</u>	<u>Time</u>	<u>Ci/gram</u>
6/27	0647	1.64
6/27	1050	2.43
6/27	1445	2.08
6/27	1845	1.51
6/27	2245	1.03
6/28	0218	.772

Reactor Power History of Prior

Forty-eight Hours

Item 1

Event Date: 6/18/81

DATE 6, 16, 81

HOUR	GMWE (E710) °/°FP	TURB G (T856) BTU/KWH	MWTH (P753) °/°FP	NI (P723) °/°FP	RATIO NI/MT °/°FP	RATIO ME/MT °/°FP
1	96.54	10124	99.96	100.30	1.003	.966
2	96.54	10123	99.88	100.20	1.003	.967
3	96.56	10123	99.92	100.20	1.003	.966
4	96.55	10121	99.88	100.20	1.003	.967
5	96.51	10128	99.92	100.20	1.003	.966
6	96.56	10127	99.96	100.20	1.002	.966
7	96.50	10131	99.92	100.30	1.004	.966
8	96.09	10131	99.47	100.10	1.006	.966
9	96.07	10131	99.47	99.70	1.002	.966
10	95.80	10142	99.31	99.50	1.002	.965
11	95.88	10127	99.23	99.60	1.004	.966
12	96.08	10126	99.43	99.70	1.003	.966
13	95.64	10143	99.18	99.50	1.003	.964
14	89.92	10234	93.96	95.90	1.021	.957
15	80.16	10087	82.18	86.00	1.047	.975
16	82.84	10101	85.15	87.60	1.029	.973
17	85.39	10097	87.85	89.50	1.019	.972
18	86.60	10126	89.40	90.80	1.016	.969
19	94.25	10161	97.88	98.00	1.001	.963
20	95.08	10157	98.74	99.00	1.003	.963
21	95.32	10600	98.90	99.50	1.006	.964
22	95.56	11034	99.10	100.10	1.010	.964
23	95.63	10135	99.10	100.40	1.013	.965
24	69.01	0	76.71	73.00	.952	.900

AVERAGE DAILY GENERATOR GROSS 791.26 MWH(E)
 AVERAGE DAILY THERMAL POWER 2354.42 MWH(T)
 AVERAGE DAILY TURBINE GROSS HEAT RATE 9767 BTU/KWH
 AVERAGE DAILY MWTH POWER 96.020 °/°FP
 AVERAGE DAILY NUC'LAR INST. POWER 96.646 °/°FP

RATIO OF NI TO MWTH = 1.007

Plant down on 6/17/81

DATE 6,18,81

HOUR	GMWE (E710) %/FP	TURB G (T856) BTU/KWH	MWTH (P753) %/FP	NI (P723) %/FP	RATIO NI/MT %/FP	RATIO ME/MT %/FP
1	0.00	0	.00	0.00	0.000	0.000
2	0.00	0	.00	0.00	0.000	0.000
3	0.00	0	.00	0.00	0.000	0.000
4	0.00	0	.00	0.00	0.000	0.000
5	0.00	0	.00	0.00	0.000	0.000
6	0.00	0	.00	0.00	0.000	0.000
7	0.00	0	.00	0.00	0.000	0.000
8	0.00	0	10.97	15.40	1.404	0.000
9	0.00	0	11.34	15.80	1.394	0.000
10	0.00	0	11.05	15.40	1.393	0.000
11	0.00	0	11.17	15.60	1.396	0.000
12	0.00	0	11.17	15.60	1.396	0.000
13	.75	52669	11.26	15.90	1.413	.067
14	25.79	12527	30.83	37.70	1.229	.876
15	47.90	10907	52.20	59.00	1.130	.919
16	76.76	10302	80.42	84.00	1.044	.954
17	92.08	10183	95.88	96.10	1.002	.960
18	93.36	10216	97.55	97.00	.994	.977
19	94.18	10200	98.33	97.00	.986	.958
20	94.37	10208	98.74	97.30	.985	.956
21	94.62	10214	98.94	98.00	.991	.956
22	95.32	10781	98.82	98.60	.998	.965
23	95.51	10128	99.02	98.80	.998	.965
24	95.38	10140	98.90	99.40	1.005	.964

AVERAGE DAILY GENERATOR GROSS	322.80 MWH(E)
AVERAGE DAILY THERMAL POWER	1038.63 MWH(T)
AVERAGE DAILY TURBINE GROSS HEAT RATE	7020 BTU/KWH
AVERAGE DAILY MWTH POWER	42.358 %/FP
AVERAGE DAILY NUCLEAR INST. POWER	44.033 %/FP

RATIO OF NI TO MWTH = 1.040

Fuel Burnup by Core Region

Item 2

Event Date: 6/18/81

Item 2

The burnup was calculated at 239.4 EFPD for the four (4) enrichment regions.

<u>Region</u>	<u>Number of FA</u>	<u>Burnup</u>
B	9	24,790 MWD/MTU
C	60	22,787 " "
D	52	12,848 " "
E	56	6,204 " "
Av.		14,722 " "

Clean-up Flow History

Item 3

Event Date: 6/18/81

Item 3

Cleanup flow history starting forty-eight (48) hours prior to the first sample in which the limit was exceeded is as follows:

<u>Date</u>	<u>Time</u>	<u>Letdown Flow</u>
6/16/81	0000	47 gpm
6/17/81	1020	55 gpm

Item 4

Event Date: 6/18/81

<u>Date</u>	<u>Time</u>	<u>Degas Point</u>
6/17/81	2308	PZR

Time Duration When DEI-131 Exceeded 1.0

u Ci/gram and I-131 Analysis Results

Item 5

Event Date: 6/18/81

Item 5

As per Technical Specification 3.4.8

The four (4) hour sampling frequency was initiated at 1020 on 6/18/81 and the Dose Equivalent I-131 was 2.23 microcuries per gram. The four (4) hour sampling frequency was terminated at 0125 on 6/19/81 when the DEI-131 was determined to be .285 microcuries per gram. DEI-131 was $\leq 1 \mu\text{Ci/gram}$ at 0125 on 6/19/81 when the sample results were .285 $\mu\text{Ci/gram}$.

Date	Sample Time	DEI-131 ($\mu\text{Ci/gram}$)
6/18/81	1020	2.23
6/18/81	1330	1.70
6/18/81	1732	1.31
6/18/81	2130	1.01
6/19/81	0125	.285

Reactor Power History of Prior

Forty-eight Hours

Item 1

Event Date: July 1, 1981

DATE 3.29.81

HOUR	GMWE (E710) %/FP	TURB G (T856) BTU/KWH	MWTH (P753) %/FP	NI (P723) %/FP	RATIO NI/MT %/FP	RATIO ME/MT %/FP
1	69.86	9977	71.74	77.40	1.079	.974
2	69.85	9977	71.70	77.50	1.081	.974
3	69.85	10102	72.59	78.20	1.077	.962
4	69.98	10031	72.19	77.70	1.076	.969
5	69.91	9914	71.29	76.70	1.076	.981
6	70.85	9859	71.82	77.10	1.074	.987
7	80.12	9496	78.10	82.60	1.058	1.026
8	85.04	9542	83.24	87.40	1.050	1.022
9	90.89	9214	85.36	92.20	1.080	1.063
10	94.62	9960	89.72	96.50	1.076	1.055
11	96.68	9960	91.60	98.60	1.076	1.055
12	97.13	9960	85.36	99.20	1.162	1.138
13	97.18	9960	85.36	99.20	1.162	1.139
14	97.20	9970	99.10	99.30	1.002	.981
15	80.95	9600	99.10	99.30	1.002	.817
16	97.15	9977	99.10	99.30	1.002	.980
17	97.15	9977	99.10	99.30	1.002	.980
18	93.86	10320	99.06	99.40	1.003	.947
19	97.12	9977	99.10	99.60	1.005	.980
20	97.03	9985	99.10	99.50	1.004	.979
21	97.13	9971	99.06	99.40	1.003	.981
22	97.11	9968	98.98	99.60	1.006	.981
23	95.02	9961	96.70	97.60	1.009	.983
24	93.51	9955	95.02	96.20	1.012	.984

AVERAGE DAILY GENERATOR GROSS	749.97 MWH(E)
AVERAGE DAILY THERMAL POWER	2159.29 MWH(T)
AVERAGE DAILY TURBINE GROSS HEAT RATE	9901 BTU/KWH
AVERAGE DAILY MWTH POWER	88.062 %/FP
AVERAGE DAILY NUCLEAR INST. POWER	92.033 %/FP

RATIO OF NI TO MWTH = 1.045

DATE 6.30.81

HOUR	GMWE (E710) %/FP	TURB G (T856) BTU/KWH	MWTH (P753) %/FP	NI (P723) %/FP	RATIO NI/MT %/FP	RATIO ME/MT %/FP
1	93.42	9960	95.02	95.90	1.009	.983
2	93.50	9955	95.07	95.90	1.009	.984
3	93.43	9962	95.07	96.00	1.010	.983
4	95.23	9962	96.94	97.30	1.004	.982
5	97.39	9965	99.23	99.00	.998	.982
6	97.37	9964	99.18	98.90	.997	.982
7	97.77	9956	99.51	99.00	.995	.982
8	97.98	9957	99.76	99.40	.996	.982
9	98.00	9950	99.71	99.70	1.000	.983
10	97.99	9948	99.67	99.70	1.000	.983
11	98.00	9947	99.67	99.90	1.002	.983
12	97.94	9952	99.67	100.20	1.005	.983
13	97.98	9990	99.67	100.30	1.006	.983
14	97.98	9952	99.71	100.10	1.004	.983
15	98.06	9948	99.78	100.20	1.004	.983
16	97.95	9963	99.80	100.30	1.005	.982
17	98.06	9958	99.84	100.30	1.005	.982
18	93.49	9950	94.94	96.10	1.012	.985
19	24.46	9950	25.61	27.10	1.058	.955
20	0.00	0	.00	0.70	0.000	0.000
21	0.00	0	.00	0.00	0.000	0.000
22	0.00	0	.00	0.00	0.000	0.000
23	0.00	0	.00	0.00	0.000	0.000
24	0.00	0	.00	0.00	0.000	0.000

AVERAGE DAILY GENERATOR GROSS 629.12 MWH(E)
 AVERAGE DAILY THERMAL POWER 1836.79 MWH(T)
 AVERAGE DAILY TURBINE GROSS HEAT RATE 7883 BTU/KWH
 AVERAGE DAILY MWTH POWER 74.910 %/FP
 AVERAGE DAILY NUCLEAR INST. POWER 75.221 %/FP

RATIO OF NI TO MWTH = 1.004

Fuel Burnup by Core Region

Item 2

Event Date: July 1, 1981

July 1, 1981

Item 2

The burnup was calculated at 250.5 EFPD for the four (4) enrichment regions.

<u>REGION</u>	<u>NUMBER of FA</u>	<u>BURNUP</u>
B	9	25,104 MWD/MTU
C	60	23,111 MWD/MTU
D	52	13,227 MWD/MTU
E	56	6,502 MWD/MTU
Av.		15,054 MWD/MTU

CLEANUP FLOW HISTORY

Item 3

Event Date: July 1, 1981

Item 3

Cleanup flow history starting forty-eight (48) hours prior to the first sample in which the limit was exceeded is as follows:

<u>DATE</u>	<u>TIME</u>	<u>LETDOWN FLOW</u>
6/29/81	0113	65

Item 4

Event Date: July 1, 1981 @ 0930

<u>Date:</u>	<u>Time</u>	<u>Location</u>
6/29/81	1816	PZR
6/29/81	1153	MU Tank

Time Duration When DEI-131 Exceeded 1.0
μCi/gram and I-131 Analysis Results

Item 5

Event Date: July 1, 1981

Item 5

As per Technical Specification 3.4.8

The four (4) hour sampling frequency was initiated at 0750 on 7/1/81 and the Dose Equivalent I-131 was 1.06 microcuries per gram. The four hour sampling frequency was terminated at 1235 on 7/1/81 when the DEI-131 was determined to be .762 microcuries per gram. DEI-131 was ≤ 1 $\mu\text{Ci/gram}$ at 1235 on 7/1/81 when the sample results were .762 $\mu\text{Ci/gram}$.

<u>DATE</u>	<u>TIME</u>	<u>$\mu\text{Ci/gram}$</u>
7/1/81	0750	1.06
7/1/81	1235	.762