

IMPINGEMENT MONITORING PROGRAM

REPORT NO. 11 - FEBRUARY 1978

SALEM NUCLEAR GENERATING STATION
UNIT NO. 1

DOCKET NO. 50-272
OPERATING LICENSE NO. DPR-70

50-272
Docket #
Control #
Date *3/24/78* of Document
REGULATORY DOCKET FILE

PUBLIC SERVICE ELECTRIC AND GAS COMPANY
NEWARK, NEW JERSEY
MARCH 20, 1978

250880029

SUMMARY

This is the eleventh monthly impingement monitoring program report required by Section 3.1.2.2 of the Environmental Technical Specifications (ETS). The ETS are Appendix B of the Salem Nuclear Generating Station (SNGS) Operating License No. DPR-70. The tabular summaries attached include daily estimates of the number and weight of fish impinged on the Circulating Water System (CWS) traveling screens (Table 2) and the Service Water System (SWS) traveling screens (Table 3). CWS operation is also summarized (Table 1).

The monitoring program at both the CWS and SWS consisted of three 24-hour sampling periods per week. The CWS screens were sampled four times per 24-hour period at approximately six-hour intervals. Samples were collected by diverting approximately three minutes of screen wash water to the counting pool located on the north end of the CWS intake structure. Survival rates were calculated for CWS samples only. SWS screen samples consisted of either one 24-hour or two 12-hour samples per day. These samples consisted of all fish impinged and found in the trash baskets located on the intake structure proper.

MDL:aec

TABLE 1. - START TIME AND DURATION OF IMPINGEMENT SAMPLES AT THE CIRCULATING WATER INTAKE, S.M.G.S. UNIT 1
1 FEBRUARY THROUGH 28 FEBRUARY 1978. NUMBER OF PUMPS AND SCREENS IN OPERATION, SCREEN OPERATING MODE
= INTERMITTENT, C= CONTINUOUS), WEIGHT (G/3 MIN. SAMPLE) OF DETRITUS, AND WATER TEMPERATURE (C)
NAME INDICATED.

DATE	SAMPLE START TIME	DUR. (MIN)	PUMPS	SCREENS	OPERATING MODE	DETRITUS WEIGHT (G/3 MIN SAMPLE)	WATER TEMPERATURE (C)
02/01/78	1200	3	5	5	C	5,100	0.4
02/01/78	1800	3	5	5	C	17,600	0.9
02/02/78	0300	3	6	6	C	6,100	0.9
02/02/78	0600	3	6	6	C	600	0.9
02/02/78	1200	3	5	5	C	23,800	1.0
02/02/78	1800	3	5	5	C	1,400	1.2
02/03/78	0000	3	6	6	C	6,000	0.8
02/03/78	0600	3	6	6	C	400	0.9
02/06/78	1200	3	5	5	C	3,800	1.9
02/06/78	1800	3	6	6	C	5,000	1.0
02/07/78	0000	3	5	6	C	9,600	1.0
02/07/78	0600	3	6	6	C	2,100	1.0
02/08/78	1200	3	5	5	C	1,200	1.2
02/08/78	1800	3	6	6	C	4,600	0.0
02/09/78	0000	3	6	6	C	7,200	0.2
02/09/78	0600	3	6	6	C	45,500	0.3
02/09/78	1210	3	6	6	C	3,800	0.4
02/09/78	1800	3	6	6	C	35,000	0.0
02/10/78	0000	3	5	6	C	4,000	0.0
02/10/78	0600	3	6	6	C	60,000	0.0
02/13/78	1200	3	6	6	C	1,200	1.3
02/13/78	1800	3	6	6	C	3,800	1.0
02/14/78	0000	3	6	6	C	3,000	0.3
02/14/78	0600	3	6	6	C	3,000	0.4
02/15/78	1200	3	6	6	C	4,100	0.8
02/15/78	1800	3	6	6	C	700	0.4
02/16/78	0000	3	6	6	C	7,000	0.1
02/16/78	0600	3	6	6	C	200	0.0
02/16/78	1200	3	6	6	C	10,900	0.9
02/16/78	1800	3	6	6	C	100	1.2
02/17/78	0000	3	6	6	C	50,400	1.6
02/17/78	0600	3	6	6	C	1,400	0.8
02/21/78	1200	3	6	6	C	3,900	0.1
02/21/78	1800	3	6	6	C	8,200	0.4
02/22/78	0000	3	6	6	C	39,500	0.9
02/22/78	0600	3	6	6	C	17,000	0.1
02/22/78	1210	3	6	6	C	15,000	0.1
02/22/78	1810	3	6	6	C	35,000	0.1
02/23/78	0000	3	6	6	C	2,600	- 1.2
02/23/78	0600	3	6	6	C	41,000	- 1.2
02/23/78	1205	3	5	5	C	700	0.2
02/23/78	1800	3	5	5	C	10,000	- 0.7
02/24/78	0000	3	5	5	C	2,800	2.0
02/24/78	0600	3	5	5	C	19,100	0.5
02/27/78	1200	3	6	6	C	19,000	2.6
02/27/78	1800	3	5	5	C	72,000	2.9
02/28/78	0000	3	6	6	C	5,000	2.2
02/28/78	0600	3	6	6	C	11,000	3.0

IMPINGEMENT MONITORING PROGRAM
SALEM NUCLEAR GENERATING STATION UNIT 1
PSE&G, NEWARK, N.J.

TABLE 2. - IMPINGEMENT - S.N.G.S. CIRCULATING WATER SYSTEM INTAKE, 1 FEBRUARY 1978 TO 28 FEBRUARY 1978.

SAMPLING PERIOD - 02/01/78 1200 THROUGH 02/02/78 0600

SPECIES	N	CF	X SURVIVAL			TOTAL NUMBER COLLECTED	MEAN ESTIMATED NUMBER/ 24 HOURS	STANDARD DEVIATION	MEAN ESTIMATED WT/24 HRS (KG)	STANDARD DEVIATION	WEIGHT (GM)		LENGTH (MM)	
			L	D	D*						MIN.	MAX.	MIN.	MAX.
M. MUCALIS	4	4	35	1	62	76	9360	8309.2	95.31	79.7	3.3	24.7	67.5	127.5
M. AMERICANA	4	4	6	11	61	61	7320	8102.1	53.39	57.1	2.2	53.2	57.5	137.5
M. SAXATILIS	4	2	16	0	83	12	1440	1838.2	12.27	15.3	4.3	17.0	72.5	107.5
D. CEPEDIANUM	4	1	0	0	100	1	120	240.0	5.07	10.1	42.3	42.3	152.5	152.5
I. CATUS	4	2	50	0	50	2	240	277.1	106.05	128.0	346.2	537.6	292.5	342.5
TOTAL						154	18480		272.09					

N = NUMBER OF 3-MINUTE SAMPLES.

CF = CATCH FREQUENCY (NUMBER OF SAMPLES IN WHICH THE SPECIES APPEARED).

X SURVIVAL: L = LIVE; D = DEAD; D* = DAMAGED.

MEAN ESTIMATED NUMBER PER 24 HOURS FOR EACH SPECIES WAS CALCULATED BY MULTIPLYING THE NUMBER OF SPECIMENS IN EACH 3-MINUTE SAMPLE BY 480 TO OBTAIN A 24-HOUR ESTIMATE. THE ESTIMATED NUMBER FOR EACH SAMPLE WAS SUMMED AND DIVIDED BY THE NUMBER OF SAMPLES TO OBTAIN THE MEAN.

MEAN ESTIMATED WEIGHT PER 24 HOURS FOR EACH SPECIES WAS CALCULATED BY THE SAME METHOD AS MEAN ESTIMATED NUMBER.

IMPINGEMENT MONITORING PROGRAM
SALEM NUCLEAR GENERATING STATION UNIT 1
PSE86, NEWARK, N.J.

TABLE 2. - (CONTINUED).

SAMPLING PERIOD - 02/02/78 1200 THROUGH 02/03/78 0600

SPECIES	N	CF	% SURVIVAL			TOTAL NUMBER COLLECTED	MEAN ESTIMATED NUMBER/ 24 HOURS	STANDARD DEVIATION	MEAN ESTIMATED WT/24 HRS (KG)	STANDARD DEVIATION	WEIGHT (GM)		LENGTH (MM)	
			L	D	D*						MIN.	MAX.	MIN.	MAX.
H. MACHALIS	4	4	45	13	40	22	2640	831.3	29.97	13.2	2.3	31.3	67.5	142.5
M. AMERICANA	4	4	0	6	93	16	1920	1239.3	38.16	51.4	3.0	213.4	62.5	217.5
D. CEPEDIANUM	4	1	0	100	0	1	120	240.0	6.96	13.9	58.0	58.0	162.5	162.5
TOTAL						39	4680		75.09					

N = NUMBER OF 3-MINUTE SAMPLES.

CF = CATCH FREQUENCY (NUMBER OF SAMPLES IN WHICH THE SPECIES APPEARED).

% SURVIVAL: L = LIVE; D = DEAD; D* = DAMAGED.

MEAN ESTIMATED NUMBER PER 24 HOURS FOR EACH SPECIES WAS CALCULATED BY MULTIPLYING THE NUMBER OF SPECIMENS IN EACH 3-MINUTE SAMPLE BY 480 TO OBTAIN A 24-HOUR ESTIMATE. THE ESTIMATED NUMBER FOR EACH SAMPLE WAS SUMMED AND DIVIDED BY THE NUMBER OF SAMPLES TO OBTAIN THE MEAN.

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IMPINGEMENT MONITORING PROGRAM
 SALEM NUCLEAR GENERATING STATION UNIT 1
 PSE86, NEWARK, N.J.

TABLE 2. - (CONTINUED).

SAMPLING PERIOD - 02/06/78 1200 THROUGH 02/07/78 0600

SPECIES	N	CF	% SURVIVAL			TOTAL NUMBER COLLECTED	MEAN ESTIMATED NUMBER/ 24 HOURS	STANDARD DEVIATION	MEAN ESTIMATED WT/24 HRS (KG)	STANDARD DEVIATION	WEIGHT (GM)		LENGTH (MM)	
			L	D	D*						MIN.	MAX.	MIN.	MAX.
M. AMERICANA	4	4	5	7	87	133	15960	8676.8	135.84	95.6	2.0	86.1	52.5	177.5
M. SAXATILIS	4	2	0	33	66	3	360	459.5	3.31	4.2	3.8	18.5	67.5	117.5
H. MUCALIS	4	3	42	7	50	28	3360	2569.9	42.74	37.3	3.6	19.6	62.5	127.5
D. CEPEDIANUM	4	1	0	0	100	1	120	240.0	5.16	10.3	43.2	43.2	147.5	147.5
U. CHUSS	4	1	0	0	100	1	120	240.0	.81	1.6	6.8	6.8	97.5	97.5
TOTAL						166	19920		167.88					

N = NUMBER OF 3-MINUTE SAMPLES.

CF = CATCH FREQUENCY (NUMBER OF SAMPLES IN WHICH THE SPECIES APPEARED).

% SURVIVAL: L = LIVE; D = DEAD; D* = DAMAGED.

MEAN ESTIMATED NUMBER PER 24 HOURS FOR EACH SPECIES WAS CALCULATED BY MULTIPLYING THE NUMBER OF SPECIMENS IN EACH 3-MINUTE SAMPLE BY 480 TO OBTAIN A 24-HOUR ESTIMATE. THE ESTIMATED NUMBER FOR EACH SAMPLE WAS SUMMED AND DIVIDED BY THE NUMBER OF SAMPLES TO OBTAIN THE MEAN.

MEAN ESTIMATED WEIGHT PER 24 HOURS FOR EACH SPECIES WAS CALCULATED BY THE SAME METHOD AS MEAN ESTIMATED NUMBER.

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SALEM NUCLEAR GENERATING STATION UNIT 1
PSE&G, NEWARK, N.J.

TABLE 2. - (CONTINUED).

SAMPLING PERIOD - 02/08/78 1200 THROUGH 02/09/78 0600

SPECIES	N	CF	X SURVIVAL			TOTAL NUMBER COLLECTED	MEAN ESTIMATED NUMBER/ 24 HOURS	STANDARD DEVIATION	MEAN ESTIMATED WT/24 HRS (KG)	STANDARD DEVIATION	WEIGHT (GM)		LENGTH (MM)	
			L	D	D*						MIN.	MAX.	MIN.	MAX.
M. AMERICANA	4	4	2	25	71	101	12120	7069.4	82.82	56.7	2.2	89.4	52.5	172.5
M. MICHALIS	4	4	37	37	25	8	960	391.9	12.04	6.9	4.0	23.0	72.5	127.5
M. SAXATILIS	4	2	0	100	0	2	240	277.1	1.12	1.3	3.7	5.7	72.5	72.5
I. CATUS	4	2	0	0	100	3	360	459.5	140.70	166.8	269.8	489.0	267.5	317.5
A. AESTIVALIS	4	1	0	100	0	1	120	240.0	.32	.6	2.7	2.7	62.5	62.5
TOTAL						115	13800		237.00					

N = NUMBER OF 3-MINUTE SAMPLES.

CF = CATCH FREQUENCY (NUMBER OF SAMPLES IN WHICH THE SPECIES APPEARED).

X SURVIVAL: L = LIVE; D = DEAD; D* = DAMAGED.

MEAN ESTIMATED NUMBER PER 24 HOURS FOR EACH SPECIES WAS CALCULATED BY MULTIPLYING THE NUMBER OF SPECIMENS IN EACH 3-MINUTE SAMPLE BY 480 TO OBTAIN A 24-HOUR ESTIMATE. THE ESTIMATED NUMBER FOR EACH SAMPLE WAS SUMMED AND DIVIDED BY THE NUMBER OF SAMPLES TO OBTAIN THE MEAN.

MEAN ESTIMATED WEIGHT PER 24 HOURS FOR EACH SPECIES WAS CALCULATED BY THE SAME METHOD AS MEAN ESTIMATED NUMBER.

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SALEM NUCLEAR GENERATING STATION UNIT 1
PSEG, NEWARK, N.J.

TABLE 2. - (CONTINUED).

SAMPLING PERIOD - 02/09/78 1210 THROUGH 02/10/78 0600

SPECIES	N	CF	% SURVIVAL			TOTAL NUMBER COLLECTED	MEAN ESTIMATED NUMBER/ 24 HOURS	STANDARD DEVIATION	MEAN ESTIMATED WT/24 HRS (KG)	STANDARD DEVIATION	WEIGHT (GM)		LENGTH (MM)	
			L	D	D*						MIN.	MAX.	MIN.	MAX.
M. AMERICANA	4	4	4	24	71	45	5400	3578.6	105.83	77.6	1.6	427.6	52.5	267.5
M. MUCHALIS	4	3	50	0	50	4	480	391.9	3.45	3.8	4.2	11.7	77.5	107.5
M. SAKATILIS	4	1	0	0	100	1	120	240.0	1.44	2.8	12.0	12.0	102.5	102.5
I. NEBULOSUS	4	2	50	0	50	2	240	277.1	19.27	23.6	60.0	100.6	172.5	197.5
P. FLAVESCENS	4	1	0	0	100	1	120	240.0	1.09	2.1	9.1	9.1	97.5	97.5
M. BILINEARIS	4	1	0	100	0	1	120	240.0	1.46	2.9	12.2	12.2	117.5	117.5
TOTAL						54	6480		132.54					

N = NUMBER OF 3-MINUTE SAMPLES.

CF = CATCH FREQUENCY (NUMBER OF SAMPLES IN WHICH THE SPECIES APPEARED).

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IMPINGEMENT MONITORING PROGRAM
 SALEM NUCLEAR GENERATING STATION UNIT 1
 PSE&G, NEWARK, N.J.

TABLE 2. - (CONTINUED).

SAMPLING PERIOD - 02/13/78 1200 THROUGH 02/14/78 0600

SPECIES	N	CF	% SURVIVAL			TOTAL NUMBER COLLECTED	MEAN ESTIMATED NUMBER/ 24 HOURS	STANDARD DEVIATION	MEAN ESTIMATED WT/24 HRS (KG)	STANDARD DEVIATION	WEIGHT (GM)		LENGTH (MM)	
			L	D	D*						MIN.	MAX.	MIN.	MAX.
M. AMERICANA	4	4	7	3	88	26	3120	3427.8	88.04	161.7	2.1	272.5	57.5	232.5
H. MUCALIS	4	3	0	20	80	5	600	459.5	8.36	7.5	8.6	18.1	87.5	122.5
P. FLAVESCENS	4	1	100	0	0	1	120	240.0	1.26	2.5	10.5	10.5	102.5	102.5
I. CATUS	4	1	0	0	100	1	120	240.0	50.06	100.1	417.2	417.2	302.5	302.5
A. PSEUDOHARENGUS	4	1	0	0	0	1	120	240.0	.51	1.0	4.3	4.3	72.5	72.5
M. SAKATILIS	4	1	0	0	100	2	240	480.0	2.86	5.7	11.5	12.4	102.5	102.5
TOTAL						36	4320		151.09					

N = NUMBER OF 3-MINUTE SAMPLES.

CF = CATCH FREQUENCY (NUMBER OF SAMPLES IN WHICH THE SPECIES APPEARED).

% SURVIVAL: L = LIVE; D = DEAD; D* = DAMAGED.

MEAN ESTIMATED NUMBER PER 24 HOURS FOR EACH SPECIES WAS CALCULATED BY MULTIPLYING THE NUMBER OF SPECIMENS IN EACH 3-MINUTE SAMPLE BY 480 TO OBTAIN A 24-HOUR ESTIMATE. THE ESTIMATED NUMBER FOR EACH SAMPLE WAS SUMMED AND DIVIDED BY THE NUMBER OF SAMPLES TO OBTAIN THE MEAN.

MEAN ESTIMATED WEIGHT PER 24 HOURS FOR EACH SPECIES WAS CALCULATED BY THE SAME METHOD AS MEAN ESTIMATED NUMBER.

IMPINGEMENT MONITORING PROGRAM
SALEM NUCLEAR GENERATING STATION UNIT 1
PSE&G, NEWARK, N.J.

TABLE 2. - (CONTINUED).

SAMPLING PERIOD - 02/15/78 1200 THROUGH 02/16/78 0600

SPECIES	N	CF	X SURVIVAL			TOTAL NUMBER COLLECTED	MEAN ESTIMATED NUMBER/ 24 HOURS	STANDARD DEVIATION	MEAN ESTIMATED WT/24 HRS (KG)	STANDARD DEVIATION	WEIGHT (GM)		LENGTH (MM)	
			L	D	D*						MIN.	MAX.	MIN.	MAX.
H. MACHALIS	4	2	25	0	75	8	960	1615.9	13.79	25.8	4.3	22.9	82.5	127.5
M. SAXATILIS	4	2	0	25	75	4	480	554.2	7.60	8.7	10.1	22.1	97.5	122.5
M. AMERICANA	4	4	0	29	70	17	2040	1536.7	22.15	23.6	1.9	65.5	57.5	162.5
P. FLAVESCENS	4	1	100	0	0	1	120	240.0	24.06	48.1	200.5	200.5	237.5	237.5
TOTAL						30	3600		67.60					

N = NUMBER OF 3-MINUTE SAMPLES.

CF = CATCH FREQUENCY (NUMBER OF SAMPLES IN WHICH THE SPECIES APPEARED).

X SURVIVAL: L = LIVE; D = DEAD; D* = DAMAGED.

MEAN ESTIMATED NUMBER PER 24 HOURS FOR EACH SPECIES WAS CALCULATED BY MULTIPLYING THE NUMBER OF SPECIMENS IN EACH 3-MINUTE SAMPLE BY 480 TO OBTAIN A 24-HOUR ESTIMATE. THE ESTIMATED NUMBER FOR EACH SAMPLE WAS SUMMED AND DIVIDED BY THE NUMBER OF SAMPLES TO OBTAIN THE MEAN.

MEAN ESTIMATED WEIGHT PER 24 HOURS FOR EACH SPECIES WAS CALCULATED BY THE SAME METHOD AS MEAN ESTIMATED NUMBER.

IMPINGEMENT MONITORING PROGRAM
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 PSEB6, NEWARK, N.J.

TABLE 2. - (CONTINUED).

SAMPLING PERIOD - 02/16/78 1400 THROUGH 02/17/78 0600

SPECIES	N	CF	% SURVIVAL			TOTAL NUMBER COLLECTED	MEAN ESTIMATED NUMBER/ 24 HOURS	STANDARD DEVIATION	MEAN ESTIMATED WT/24 HRS (KG)	STANDARD DEVIATION	WEIGHT (GM)		LENGTH (MM)	
			L	D	D*						MIN.	MAX.	MIN.	MAX.
M. NUCHALIS	4	3	33	22	44	18	2160	2524.7	26.98	29.7	4.6	22.1	77.5	127.5
M. AMERICANA	4	3	0	45	55	40	4800	5852.5	56.02	64.8	2.9	114.4	57.5	162.5
A. ROSTRATA	4	1	100	0	0	1	120	240.0	3.91	7.8	32.6	32.6	262.5	262.5
M. SAXATILIS	4	1	0	0	100	1	120	240.0	3.64	7.2	30.4	30.4	132.5	132.5
TOTAL						60	7200		90.55					

N = NUMBER OF 3-MINUTE SAMPLES.

CF = CATCH FREQUENCY (NUMBER OF SAMPLES IN WHICH THE SPECIES APPEARED).

% SURVIVAL: L = LIVE; D = DEAD; D* = DAMAGED.

MEAN ESTIMATED NUMBER PER 24 HOURS FOR EACH SPECIES WAS CALCULATED BY MULTIPLYING THE NUMBER OF SPECIMENS IN EACH 3-MINUTE SAMPLE BY 480 TO OBTAIN A 24-HOUR ESTIMATE. THE ESTIMATED NUMBER FOR EACH SAMPLE WAS SUMMED AND DIVIDED BY THE NUMBER OF SAMPLES TO OBTAIN THE MEAN.

MEAN ESTIMATED WEIGHT PER 24 HOURS FOR EACH SPECIES WAS CALCULATED BY THE SAME METHOD AS MEAN ESTIMATED NUMBER.

IMPINGEMENT MONITORING PROGRAM
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TABLE 2. - (CONTINUED).

SAMPLING PERIOD - 02/21/78 1200 THROUGH 02/22/78 0600

SPECIES	N	CF	Σ SURVIVAL			TOTAL NUMBER COLLECTED	MEAN ESTIMATED NUMBER/ 24 HOURS	STANDARD DEVIATION	MEAN ESTIMATED WT/24 HRS (KG)	STANDARD DEVIATION	WEIGHT (GM)		LENGTH (MM)	
			L	D	DA						MIN.	MAX.	MIN.	MAX.
H. MUCHALIS	4	3	25	0	75	4	480	391.9	7.31	5.6	9.9	18.4	92.5	117.5
A. ROSTRATA	4	2	50	50	0	2	240	277.1	4.41	8.7	.1	36.7	62.5	282.5
M. AMERICANA	4	4	11	20	67	34	4080	2431.7	63.67	85.8	2.2	136.7	57.5	197.5
C. CARPIO	4	1	0	0	100	1	120	240.0	88.52	177.0	737.7	737.7	337.5	337.5
M. SAXATILIS	4	1	0	0	100	1	120	240.0	.60	1.2	5.0	5.0	77.5	77.5
TOTAL						42	5040		164.51					

N = NUMBER OF 3-MINUTE SAMPLES.

CF = CATCH FREQUENCY (NUMBER OF SAMPLES IN WHICH THE SPECIES APPEARED).

Σ SURVIVAL: L = LIVE; D = DEAD; DA = DAMAGED.

MEAN ESTIMATED NUMBER PER 24 HOURS FOR EACH SPECIES WAS CALCULATED BY MULTIPLYING THE NUMBER OF SPECIMENS IN EACH 3-MINUTE SAMPLE BY 480 TO OBTAIN A 24-HOUR ESTIMATE. THE ESTIMATED NUMBER FOR EACH SAMPLE WAS SUMMED AND DIVIDED BY THE NUMBER OF SAMPLES TO OBTAIN THE MEAN.

MEAN ESTIMATED WEIGHT PER 24 HOURS FOR EACH SPECIES WAS CALCULATED BY THE SAME METHOD AS MEAN ESTIMATED NUMBER.

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PSE&G, NEWARK, N.J.

TABLE 2. - (CONTINUED).

SAMPLING PERIOD - 02/22/78 1210 THROUGH 02/23/78 0600

SPECIES	N	CF	Σ SURVIVAL			TOTAL NUMBER COLLECTED	MEAN ESTIMATED NUMBER/ 24 HOURS	STANDARD DEVIATION	MEAN ESTIMATED WT/24 HRS (KG)	STANDARD DEVIATION	WEIGHT (GM)		LENGTH (MM)	
			L	D	D*						MIN.	MAX.	MIN.	MAX.
M. AMERICANA	4	4	0	32	68	25	3000	1725.1	30.56	30.7	2.6	95.5	62.5	182.5
M. MICHALIS	4	2	8	58	33	12	1440	2036.4	11.92	17.7	2.6	20.5	67.5	112.5
TOTAL						37	4440		42.48					

N = NUMBER OF 3-MINUTE SAMPLES.

CF = CATCH FREQUENCY (NUMBER OF SAMPLES IN WHICH THE SPECIES APPEARED).

Σ SURVIVAL: L = LIVE; D = DEAD; D* = DAMAGED.

MEAN ESTIMATED NUMBER PER 24 HOURS FOR EACH SPECIES WAS CALCULATED BY MULTIPLYING THE NUMBER OF SPECIMENS IN EACH 3-MINUTE SAMPLE BY 480 TO OBTAIN A 24-HOUR ESTIMATE. THE ESTIMATED NUMBER FOR EACH SAMPLE WAS SUMMED AND DIVIDED BY THE NUMBER OF SAMPLES TO OBTAIN THE MEAN.

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TABLE 2. - (CONTINUED).

SAMPLING PERIOD - 02/23/78 1205 THROUGH 02/24/78 0600

SPECIES	N	CF	% SURVIVAL			TOTAL NUMBER COLLECTED	MEAN ESTIMATED NUMBER/ 24 HOURS	STANDARD DEVIATION	MEAN ESTIMATED WT/24 HRS (KG)	STANDARD DEVIATION	WEIGHT (GM)		LENGTH (MM)	
			L	D	D*						MIN.	MAX.	MIN.	MAX.
M. AMERICANA	4	4	0	5	94	17	2040	603.9	51.28	48.7	4.5	69.1	62.5	182.5
H. MUCALIS	4	1	60	0	40	5	600	1200.0	3.44	6.8	4.7	7.1	77.5	87.5
M. SAKATILIS	4	1	0	0	100	1	120	240.0	.72	1.4	6.0	6.0	82.5	82.5
TOTAL						23	2760		55.44					

N = NUMBER OF 3-MINUTE SAMPLES.

CF = CATCH FREQUENCY (NUMBER OF SAMPLES IN WHICH THE SPECIES APPEARED).

% SURVIVAL: L = LIVE; D = DEAD; D* = DAMAGED.

MEAN ESTIMATED NUMBER PER 24 HOURS FOR EACH SPECIES WAS CALCULATED BY MULTIPLYING THE NUMBER OF SPECIMENS IN EACH 3-MINUTE SAMPLE BY 480 TO OBTAIN A 24-HOUR ESTIMATE. THE ESTIMATED NUMBER FOR EACH SAMPLE WAS SUMMED AND DIVIDED BY THE NUMBER OF SAMPLES TO OBTAIN THE MEAN.

MEAN ESTIMATED WEIGHT PER 24 HOURS FOR EACH SPECIES WAS CALCULATED BY THE SAME METHOD AS MEAN ESTIMATED NUMBER.

IMPINGEMENT MONITORING PROGRAM
 SALEM NUCLEAR GENERATING STATION UNIT 1
 PSE&G, NEWARK, N.J.

TABLE 2. - (CONTINUED).

SAMPLING PERIOD - 02/27/78 1200 THROUGH 02/28/78 0600

SPECIES	N	CF	% SURVIVAL			TOTAL NUMBER COLLECTED	MEAN ESTIMATED NUMBER/ 24 HOURS	STANDARD DEVIATION	MEAN ESTIMATED WT/24 HRS (KG)	STANDARD DEVIATION	WEIGHT (GM)		LENGTH (MM)	
			L	D	D*						MIN.	MAX.	MIN.	MAX.
G. ACULEATUS	4	2	100	0	0	2	240	277.1	.51	.5	2.0	2.3	52.5	57.5
H. MUCALIS	4	2	66	33	0	3	360	459.5	2.79	3.4	6.9	8.3	92.5	97.5
M. AMERICANA	4	4	0	0	100	7	840	459.5	16.54	16.9	2.1	80.5	47.5	172.5
M. SAXATILIS	4	1	0	0	100	1	120	240.0	3.96	7.9	33.0	33.0	147.5	147.5
TOTAL						13	1560		23.80					

N = NUMBER OF 3-MINUTE SAMPLES.

CF = CATCH FREQUENCY (NUMBER OF SAMPLES IN WHICH THE SPECIES APPEARED).

% SURVIVAL: L = LIVE; D = DEAD; D* = DAMAGED.

MEAN ESTIMATED NUMBER PER 24 HOURS FOR EACH SPECIES WAS CALCULATED BY MULTIPLYING THE NUMBER OF SPECIMENS IN EACH 3-MINUTE SAMPLE BY 480 TO OBTAIN A 24-HOUR ESTIMATE. THE ESTIMATED NUMBER FOR EACH SAMPLE WAS SUMMED AND DIVIDED BY THE NUMBER OF SAMPLES TO OBTAIN THE MEAN.

MEAN ESTIMATED WEIGHT PER 24 HOURS FOR EACH SPECIES WAS CALCULATED BY THE SAME METHOD AS MEAN ESTIMATED NUMBER.

IMPINGEMENT MONITORING PROGRAM
SALEM NUCLEAR GENERATING STATION UNIT 1
PSE&G, NEWARK, N.J.

FIM

0ASG,A 760311MP.
FACILITY WARNING 100000000000

0ASG,A 76031SP.
FACILITY WARNING 100000000000

0USE SPECIES-FILE.,76031SP.
READY

0XQT 76031SYM.402RPTIM

TABLE 3. - IMPINGEMENT - S.N.G.S. SERVICE WATER SYSTEM INTAKE, 1 FEBRUARY 1978 TO 28 FEBRUARY 1978.

SAMPLING PERIOD - 02/01/78 0730 TO 02/02/78 0730

NUMBER OF PUMPS 3 - 3

SPECIES	NUMBER	WT. (GM)	WEIGHT		LENGTH	
			MIN.	MAX.	MIN.	MAX.
H. MUCHALIS	25	280.30	3.6	21.1	72.5	127.5
M. AMERICANA	13	81.10	2.2	9.8	57.5	92.5
I. PUNCTATUS	1	3.50	3.5	3.5	67.5	67.5
M. SARATILIS	2	20.50	6.0	14.5	67.5	107.5
TOTAL	41	385.40				

IMPINGEMENT MONITORING PROGRAM
SALEM NUCLEAR GENERATING STATION UNIT 1
PSE&G, NEWARK, N.J.

TABLE 3. - (CONTINUED).

SAMPLING PERIOD - 02/02/78 0730 TO 02/03/78 0730

NUMBER OF PUMPS 3 - 4

SPECIES	NUMBER	WT. (GM)	WEIGHT		LENGTH	
			MIN.	MAX.	MIN.	MAX.
M. AMERICANA	6	46.40	1.1	18.1	57.5	102.5
M. NUHALIS	5	32.90	1.8	15.8	62.5	117.5
D. CEPEDIANUM	1	46.10	46.1	46.1	157.5	157.5
TOTAL	12	125.40				

IMPINGEMENT MONITORING PROGRAM
SALEM NUCLEAR GENERATING STATION UNIT 1
PSE&G, NEWARK, N.J.

TABLE 3. - (CONTINUED).

SAMPLING PERIOD - 02/06/78 0730 TO 02/07/78 0730

NUMBER OF PUMPS 3 - 4

SPECIES	NUMBER	WT. (GM)	WEIGHT		LENGTH	
			MIN.	MAX.	MIN.	MAX.
M. AMERICANA	16	214.80	3.9	121.8	57.5	197.5
M. MUCALIS	4	43.10	5.9	24.4	82.5	117.5
P. FLAVESCENS	1	36.00	36.0	36.0	147.5	147.5
M. SANATILIS	1	7.30	7.3	7.3	87.5	87.5
TOTAL	22	301.20				

IMPINGEMENT MONITORING PROGRAM
SALEM NUCLEAR GENERATING STATION UNIT 1
PSE&G, NEWARK, N.J.

TABLE 3. - (CONTINUED).

SAMPLING PERIOD - 02/07/78 1500 TO 02/08/78 1500

NUMBER OF PUMPS 3 - 3

SPECIES	NUMBER	WT. (GM)	WEIGHT		LENGTH	
			MIN.	MAX	MIN.	MAX
M. AMERICANA	190	1261.80	2.0	32.4	57.5	132.5
C. CARPIO	1	33.50	33.5	33.5	112.5	112.5
P. FLAVESCENS	1	10.20	10.2	10.2	97.5	97.5
P. HETEROCLITUS	1	6.50	6.2	6.5	77.5	77.5
M. SAXATILIS	11	83.60	4.0	12.7	67.5	102.5
H. NUCHALIS	18	168.30	4.1	24.0		162.5

TOTAL	222	1563.90				
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IMPINGEMENT MONITORING PROGRAM
SALEM NUCLEAR GENERATING STATION UNIT 1
PSE&G, NEWARK, NEW JERSEY

TABLE 3. - (CONTINUED).

SAMPLING PERIOD - 02/09/78 0730 TO 02/10/78 0730
NUMBER OF PUMPS 3 - 3

SPECIES	NUMBER	WT. (GM)	WEIGHT		LENGTH	
			MIN.	MAX.	MIN.	MAX.
M. AMERICANA	96	555.50	2.9	90.0	57.5	87.5
M. MICHALIS	2	22.10	8.8	13.3	92.5	112.5
M. SANATILIS	1	30.20	30.2	30.2	132.5	132.5
TOTAL	99	607.80				

IMPINGEMENT MONITORING PROGRAM
SALEM NUCLEAR GENERATING STATION UNIT 1
PSEG, NEWARK, N.J.

TABLE 3. - (CONTINUED).

SAMPLING PERIOD - 02/13/78 0730 TO 02/14/78 0730

NUMBER OF PUMPS 3 - 3

SPECIES	NUMBER	WT. (GM)	WEIGHT		LENGTH	
			MIN.	MAX.	MIN.	MAX.
H. NUCHALIS	4	57.80	4.2	20.4	77.5	122.5
F. HETEROCLITUS	1	2.00	2.0	2.0	42.5	42.5
M. AMERICANA	1	3.20	3.2	3.2	67.5	67.5
TOTAL	6	63.00				

IMPINGEMENT MONITORING PROGRAM
SALEM NUCLEAR GENERATING STATION UNIT 1
PSE&G, NEWARK, N.J.

TABLE 3. - (CONTINUED).

SAMPLING PERIOD - 02/15/78 0730 TO 02/16/78 0730

NUMBER OF PUMPS 3 - 3

SPECIES	NUMBER	WT. (GM)	WEIGHT		LENGTH	
			MIN.	MAX.	MIN.	MAX.
P. FLAVESCENS	1	26.50	26.5	26.5	127.5	127.5
M. AMERICANA	3	15.70	3.5	6.3	62.5	77.5
H. NUCHALIS	1	17.50	17.5	17.5	112.5	112.5
M. SANATILIS	1	5.50	5.5	5.5	82.5	82.5
TOTAL	6	65.20				

IMPINGEMENT MONITORING PROGRAM
SALEM NUCLEAR GENERATING STATION UNIT 1
PSE&G, NEWARK, N.J.

TABLE 3. - (CONTINUED).

SAMPLING PERIOD - 02/16/78 0730 TO 02/17/78 0730

NUMBER OF PUMPS 3 - 3

SPECIES	NUMBER	WT. (GM)	WEIGHT		LENGTH	
			MIN.	MAX.	MIN.	MAX.
H. MUCHALIS	4	40.40	6.5	16.9	77.5	117.5
M. MENIDIA	1	2.50	2.5	2.5	62.5	62.5
M. AMERICANA	19	120.10	3.0	11.9	57.5	92.5
M. SAXATILIS	4	28.50	5.3	14.4	72.5	107.5
F. HETERODCLITUS	2	6.70	2.2	4.5	47.5	72.5
C. CARPIO	1	61.20	61.2	61.2	137.5	137.5
P. FLAVESCENS	1	5.00	5.0	5.0	77.5	77.5
TOTAL	32	264.40				

IMPINGEMENT MONITORING PROGRAM
SALEM NUCLEAR GENERATING STATION UNIT 1
PSE&G, NEWARK, N.J.

TABLE 3. - (CONTINUED).

SAMPLING PERIOD - 02/21/78 0730 TO 02/22/78 0730

NUMBER OF PUMPS 3 - 3

SPECIES	NUMBER	WT. (GM)	WEIGHT		LENGTH	
			MIN.	MAX.	MIN.	MAX.
M. AMERICANA	9	46.20	2.5	8.6	52.5	77.5
H. NUCHALIS	3	39.20	7.6	20.0	92.5	127.5
G. ACULEATUS	1	1.70	1.7	1.7	62.5	62.5
TOTAL	13	87.10				

IMPINGEMENT MONITORING PROGRAM
SALEM NUCLEAR GENERATING STATION UNIT 1
PSE&G, NEWARK, N.J.

TABLE 3. - (CONTINUED).

SAMPLING PERIOD - 02/22/78 0730 TO 02/23/78 0730

NUMBER OF PUMPS 3 - 3

SPECIES	NUMBER	WT. (GM)	WEIGHT		LENGTH	
			MIN.	MAX.	MIN.	MAX.
P. FLAVESCENS	2	166.20	10.8	155.4	102.5	222.5
M. AMERICANA	11	115.30	2.5	45.9	62.5	152.5
M. NUCHALIS	5	82.50	3.2	20.0	72.5	147.5
I. NEBULOSUS	1	11.10	11.1	11.1	92.5	92.5
M. SA&ATILIS	2	20.00	8.5	11.5	72.5	102.5

TOTAL	21	395.10				

IMPINGEMENT MONITORING PROGRAM
SALEM NUCLEAR GENERATING STATION UNIT 1
PSE&G, NEWARK, N.J.

TABLE 3. - (CONTINUED).

SAMPLING PERIOD - 02/23/78 0730 TO 02/24/78 0730

NUMBER OF PUMPS 3 - 3

SPECIES	NUMBER	WT. (GM)	WEIGHT		LENGTH	
			MIN.	MAX.	MIN.	MAX.
M. AMERICANA	7	44.80	3.1	8.8	67.5	82.5
M. MICHALIS	2	22.50	3.6	18.9	72.5	117.5
TOTAL	9	67.30				

IMPINGEMENT MONITORING PROGRAM
SALEM NUCLEAR GENERATING STATION UNIT 1
PSE&G, NEWARK, N.J.

TABLE 3. - (CONTINUED).

SAMPLING PERIOD - 02/27/78 0730 TO 02/28/78 0730

NUMBER OF PUMPS 3 - 3

SPECIES	NUMBER	WT. (GM)	WEIGHT		LENGTH	
			MIN.	MAX.	MIN.	MAX.
H. NUCHALIS	1	9.00	9.0	9.0	102.5	102.5
P. FLAVESCENS	1	8.10	8.1	8.1	87.5	87.5
M. AMERICANA	1	4.90	4.9	4.9	62.5	62.5
TOTAL	3	22.00				

IMPINGEMENT MONITORING PROGRAM
SALEM NUCLEAR GENERATING STATION UNIT 1
PSE&G, NEWARK, N.J.

WBRKPT PRINTS