

ZION GENERATING STATION  
ANNUAL OPERATING REPORT  
1979  
DOCKETS 50-295 AND 50-304  
COMMONWEALTH EDISON COMPANY

8005800

420

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## Introduction

This Annual Report by Commonwealth Edison Company, Zion Station transmits environmental data, near-site airport expansion plans, facility modifications and occupational exposures. Although the Annual Report is no longer required by Zion Technical Specifications, the annual reporting of certain items is required. The following areas are addressed in this report:

- I. Environmental Report regarding chemical and temperature discharges.
- II. Expansion Plans for the Waukegan Memorial Airport.
- III. Modifications, tests and experiments conducted at the plant
- IV. Occupational Exposure Report

I ENVIRONMENTAL REPORT

A. UNIT 1 INTAKE AND DISCHARGE TEMPERATURE DATA

MONTH (1979)	$\Delta T$ °F (AVG.)	INLET TEMP. °F (AVG.)	DISCHARGE TEMP. °F (AVG.)
JAN.	19.3	38.0	57.3
FEB.	19.4	37.0	56.4
MAR.	16.8	37.0	53.8
APR.	16.9	40.6	57.5
MAY	18.3	49.5	67.8
JUNE	16.0 (18 DAYS)	52.7 (18 DAYS)	68.7 (18 DAYS)
JULY	15.9	60.8	76.7
AUG.	16.3	61.6	77.9
SEPT.	14.3	61.6	75.9
OCT.	11.0 (5 DAYS)	62.1 (5 DAYS)	73.1 (5 DAYS)
NOV.	OUTAGE	OUTAGE	OUTAGE
DEC.	OUTAGE	OUTAGE	OUTAGE

THE INFORMATION IN THIS COLUMN WAS DERIVED FROM THE TECH. STAFF DAILY LOG WHICH IS TAKEN FROM THE STRIP CHART.

THE INFORMATION IN THIS COLUMN WAS DERIVED BY SUBTRACTING THE  $\Delta T$  AVG. FROM THE DISCHARGE TEMP. AVG.

THE INFORMATION IN THIS COLUMN WAS DERIVED FROM THE TECH. STAFF DAILY LOG WHICH IS TAKEN FROM THE STRIP CHARTS.

A. UNIT 2 INTAKE AND DISCHARGE TEMPERATURE DATA

MONTH (1979)	$\Delta T$ °F (AVG.)	INLET TEMP. °F (AVG.)	DISCHARGE TEMP. °F (AVG.)
JAN.	17.7	37.5	55.2
FEB.	12.9	35.9	48.8
MAR.	18.7 (11 DAYS)	27.6 (11 DAYS)	46.3 (11 DAYS)
APR.	15.4 (11 DAYS)	44.6 (11 DAYS)	60.0 (11 DAYS)
MAY	16.7	49.0	65.7
JUNE	16.0 (18 DAYS)	51.6 (18 DAYS)	67.6 (18 DAYS)
JULY	17.8	59.8	77.6
AUG.	17.1	61.5	78.8
SEPT.	17.4	60.6	78.0
OCT.	16.3 (26 DAYS)	55.3 (26 DAYS)	71.6 (26 DAYS)
NOV.	OUTAGE	OUTAGE	OUTAGE
DEC.	OUTAGE	OUTAGE	OUTAGE

THE INFORMATION IN THIS COLUMN WAS DERIVED FROM THE TECH. STAFF DAILY LOG WHICH IS TAKEN FROM THE STRIP CHART.

THE INFORMATION IN THIS COLUMN WAS DERIVED BY SUBTRACTING THE  $\Delta T$  AVG. FROM THE DISCHARGE TEMP. AVG.

THE INFORMATION IN THIS COLUMN WAS DERIVED FROM THE TECH. STAFF DAILY LOG WHICH IS TAKEN FROM THE STRIP CHARTS.

B. UNIT 1 RATES OF CIRCULATING WATER  $\Delta T$  CHANGE  
 UNDER NORMAL STARTUP AND SHUTDOWN (1979)

DATE	RATE OF CHANGE °F/HR.	DATE	RATE °F/HR.
2-1-79	+ 3.8	6-24-79	- 4.5
2-2-79	+ 1.8	6-27-79	+ 4.0
3-2-79	+ 5.2	8-18-79	+ 5.4
3-6-79	+ 2.7	8-26-79	- 3.2
3-16-79	+ 3.3	8-27-79	+ 3.0
3-22-79	+ 7.5	9-1-79	+ 4.2
3-28-79	- 4.3	9-26-79	+ 1.9
4-3-79	+ 5.0	10-6-79	- 2.0
4-27-79	+ 9.0		
4-27-79	+ 2.5		
4-27-79	+ 5.3		
5-24-79	+ 2.5		
6-16-79	+ 3.2		
6-23-79	- 4.8		
6-23-79	+ 4.6		
6-23-79	- 4.8		
6-23-79	+ 4.5		

Note: The rate of change for  $\Delta T$  was calculated by noting  $\Delta T$  at the beginning and end of normal startup and shutdown. The difference in  $\Delta T$  was then divided by the number of elapsed minutes giving an average rate per minute. This was multiplied by 60 giving an average rate per hour.

B. UNIT 2 RATES OF CIRCULATING WATER  $\Delta T$  CHANGE  
UNDER NORMAL STARTUP AND SHUTDOWN (1979)

DATE	RATE OF CHANGE °F/HR
2-14-79	+ 1.8
2-14-79	+ 2.3
2-14-79	+ 4.5
2-14-79	+ 7.8
3-5-79	+5.3
4-18-79	+ 1.9
4-19-79	+ 1.5
5-8-79	+ 1.9
6-14-79	+ 1.8
7-25-79	+ 1.6
8-18-79	+ 2.0
8-18-79	+ 2.3
9-13-79	+ 6.5
10-10-79	+ 3.0
10-14-79	+ 5.0
10-15-79	+ 5.2
10-27-79	- 4.2

Note: Method of calculation  
is the same as noted on  
Unit 1



### C. De-Icing

Zion Station operated in the De-icing Mode during the first three months of 1979. The De-icing Mode was not required throughout the winter.

### D. Violations of the Environmental Technical Specifications

There were three violations of the ETS during 1979.

1. Boric Acid usage exceeded the 1000 lbs/yr limit specified in Appendix B, Section 1.3.b. (Boric acid usage has no intent or bearing on the Appendix B concerns of liquid releases to Lake Michigan).  
Reference: LER #50-295/79-17
2. The pH of the Waste Water Treatment Facility effluent exceeded the pH range as specified in Appendix B, Section 1.3. The pH range is not practical and a Technical Specification change has been submitted.  
Reference: LER #50-295/79-85
3. The pH of the Waste Water Treatment Facility effluent was lower than the limit specified in the Technical Specifications Section 1.3. An acidic solution from the WNT drained via bad packing glands of the WNT pumps. (The packing glands were repaired.)  
Reference: LER #50-295/79-94

### E. Malfunctions of Environmental Equipment

There were no malfunctions of the environmental equipment during 1979.

### F. Hypochlorite Usage

No sodium hypochlorite was used at the Station during 1979.

### G. Shoreline Erosion Status

Commonwealth Edison Company is continuing to monitor the status of shoreline erosion at the Station and adjoining properties. Monthly photographic surveys of the area are being conducted, and will be continued until such time as the company and the State of Illinois determine whether any additional restoration work will be required. At this time, some erosion is taking place at the northern end of the property. This erosion is caused by 60 concrete blocks submerged in about 4 feet of water off shore. Plans are being made to remove the blocks this year.

USED AT ZION STATION

TO LAKE MICHIGAN

Year: 1979

Component Cooling Potassium Hydroxide (Lbs.)	Component Cooling Potassium Dichromate (Lbs.)	Lake Dis. Tank Boric Acid (Lbs.)	Lake Dis. Tank Detergents * (Lbs.)
16.00	37.00	442.21	--
1.00	2.50	622.24	--
6.00	15.00	568.65	--
17.00	41.00	929.80	--
14.00	35.00	943.74	--
15.00	30.00	8.25	--
20.00	55.00	11.77	--
121.00	272.00	18.87	--
97.00	201.00	36.26	--
18.00	45.00	14.25	--
0.00	0.00	14.04	--
0.00	0.00	6.07	--
<u>325.00</u>	<u>733.50</u>	<u>3616.15</u>	<u>340.00</u>

phate free.

ing and ending inventories for the year.

II WAUKEGAN MEMORIAL AIRPORT  
EXPANSION PLANS

## II Waukegan Memorial Airport Expansion Plans

Based aircraft numbered 250 at the end of 1979. The total number of operations for 1979 was approximately 210,000.

Phase two of the expansion project (the acquisition of land necessary to lengthen the main runway 1400 feet to the northeast) has not yet been completed.

Phase three (the acquisition of land to the northwest for corporate aircraft) has not started.

The following events occurred during 1979:

1. Land was acquired for a corporate taxiway along runway 14.
2. A new fixed base operator started business on the field.

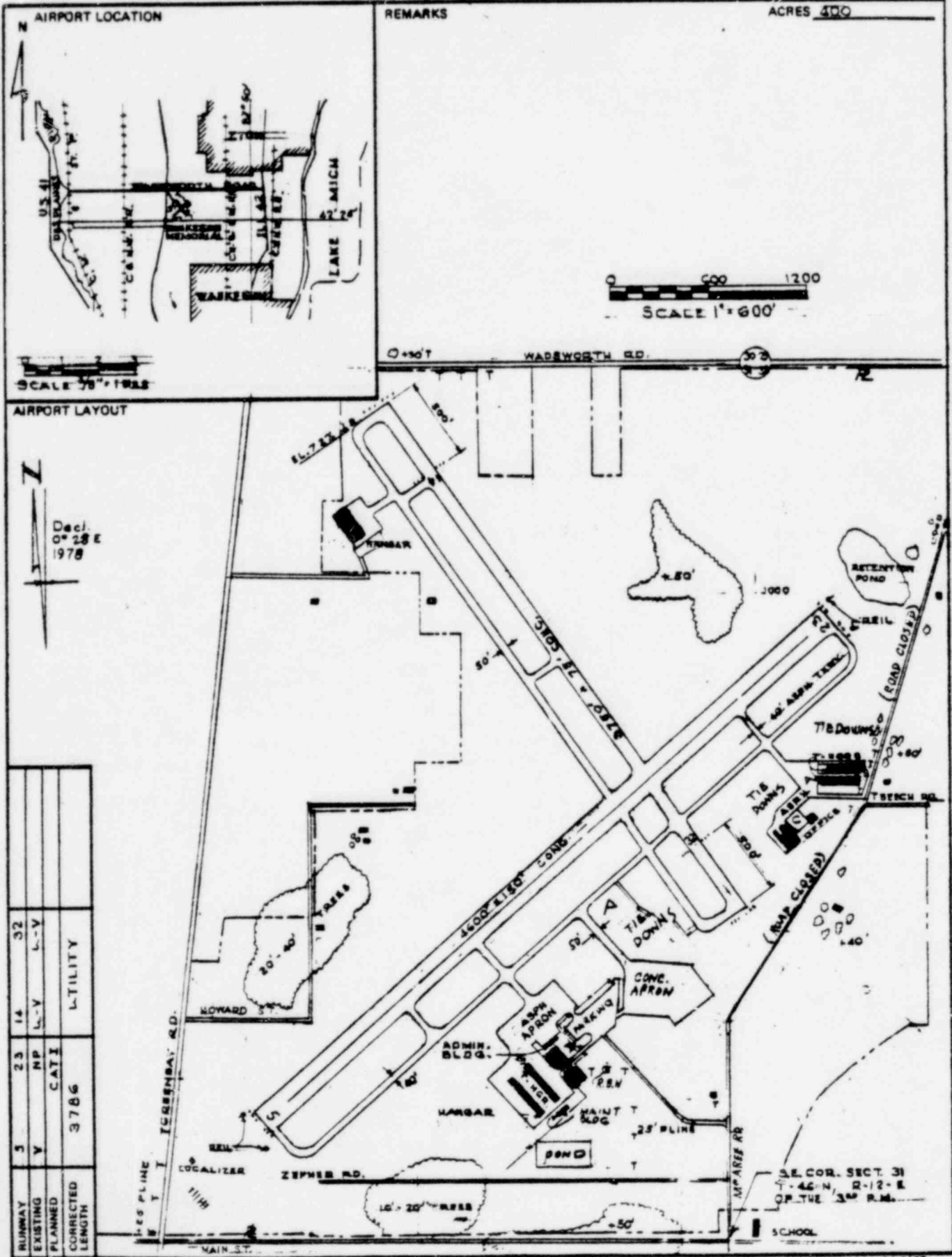
The airport's Environmental Impact Assessment Report was submitted in 1978. The review has not yet been completed.

Attached is FAA form 5010-1 for Waukegan Memorial Airport for 1979 as required by Technical Specification 6.6.3.C.

# POOR ORIGINAL

WAUKEGAN MEMORIAL WAUKEGAN SITE NO. 3052

ACRES 400



SEALED NUMBER

SCALE 3/8" = 1" = 184.8

AIRPORT LAYOUT



RUNWAY	3	23	14	32
EXISTING	Y	NP	L-V	L-V
PLANNED		CATI		
CORRECTED LENGTH		3786		L-TILITY

SE. COR. SECT. 31  
T-40-N, R-12-E  
OF THE 34<sup>TH</sup> P.M.

REVISED 10/17/72  
REV. 5/24/74 CHUDMAGVAR.  
REV. 7/16/74 RELOCATED  
REV. 2/27/76

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### III MODIFICATIONS, TESTS AND EXPERIMENTS

Attached is a description of all modifications, tests and experiments done at Zion Station during 1979, per the requirements of 10CFR50.59(b).

There were 76 modifications completed during 1979. The only testing conducted was the Eddy Current Test done on a Unit II Steam Generator. There was an experiment begun on four fuel assemblies to assess the effects of extended burnup.

These modifications, test, and experiment did not involve an unreviewed safety question as defined in 10CFR50.59(a)(2).

Modifications Completed During 1979

at Zion Station

<u>Mod. Number *</u>	<u>Description</u>
M22-2-74-6	Install sight flow indicators on leakoff lines
M22-2-74-63	Install vent valve in line 2SC006-10"-N aux. Feedwater
M22-2-74-183	Disconnect flow 22E 24787 & 22E 24788 Alarm circuit.
M22-2-74-110	Generator Turbine Runback
M22-2-74-196	Break the partition line drain and add valve and cup at M.S.R.
M22-1-74-183	Disconnect lo flow alarm circuit
M22-1-74-110	Generator turbine runback
M22-1-74-138	Install leakoff lines to condenser on MSR
M22- $\frac{1}{2}$ -75-34	Cathode Protection
M22-2-75-6	Install Nuclear Axial offset alarms
M22-1-75-100	Interlock Relay R-12 with OAOV-SW0021 Solenoid on Diesel C.S. Pump
M22-2-75-30	Spray additive tank level indication
M22-1-75-25	Emergency oil pump FW pump turbine
M22-2-76-80	RCP Motor Drip Pan MOD.
M22-1-76-67	TD-Install Filter Element and Valve on to Fill Lines
M22- $\frac{1}{2}$ -77-36	Upgrade Misc. structural beams
M22- $\frac{1}{2}$ -77-37	Misc. Cable tray enclosures
M22- $\frac{1}{2}$ -77-34	Fire Dampers (TV)
M22- $\frac{1}{2}$ -77-35	Fire Dampers (PV)
M22- $\frac{1}{2}$ -77-39	Process monitor for fire sump discharge (TD)

\* M22-A-79-B is interpreted; M22: Mod. for Zion Station; A: Specific unit (either 1,2 or  $\frac{1}{2}$  (both units)); 79: year assigned; B: sequence number for specific mod.



Modifications Completed During 1979 (con't)

at Zion Station

<u>Mod. Number *</u>	<u>Description</u>
M22- $\frac{1}{2}$ -77-31	Ionization Detectors
M22- $\frac{1}{2}$ -77-32	Various sprinkler system changes (FP)
M22- $\frac{1}{2}$ -77-33	Battery room oil exhaust duct reroute (TV)
M22-1-79-12	FH-Modify Gripper Air Cyclinder to use Air on Gripper
M22-1-79-15	SI-Modify annu & comp. Logic to match safeguards actuation logic
M22-1-79-17	AP-Install Test circuits on Swag valves to test contacts for Welded Shut
M22-2-79-6	Eliminate Pzr level input to safeguards logic actuation
M22-2-79-10	MS-replace relays R9 & 10 ABCD with more reliable
M22-2-79-8	Install switches in aux Elec. Rm. & Reroute cables to isolate control rm. instruments
M22- $\frac{1}{2}$ -78-3	MU Demin Acid piping upgrade
M22- $\frac{1}{2}$ -78-4	FP Failure detection system
M22- $\frac{1}{2}$ -78-6	Auto Fire Supp for CC pump area
M22-2-78-23	LPMS-Complete install of Unit 2 loose parts network
M22-2-78-24	RCC Change fixture tensiometer
M22-2-78-25	CS piping containment riser
M22-2-78-13	Containment Riser covers
M22- $\frac{1}{2}$ -78-16	Control room hose station
M22-2-78-20	Part length rod removal
M22-2-78-21	Install cabling for temporary Feed to vacuum fill rig.
M22-2-78-2	NIS Power Regulator Removal
M22- $\frac{1}{2}$ -78-6	Auto Fire Suppressor for Aux FP & S/D panel
M22-2-78-9	CRD Vent Fan Lead Box
M22-1-78-12	FWP 1B,1C Control SYS replacement
M22-1-78-19	Frequency monitoring instruments

Modifications Completed During 1979 (con't)

at Zion Station

<u>Mod Number *</u>	<u>Description</u>
M22-1-77-44	Turbine modification warranty work
M22-1-77-56	Cable spreading ducts
M22-2-77-8	Install tube hold down service on 2AE, 2CE, 2BW, 2CW MSR's
M22-2-77-56	Cable spreading ducts
M22-4-77-53	CS pump room fire protection
M22-2-77-54	Fire Dampers (OV)
M22-1-77-36	EHC Computer inputs
M22-4-77-55	Fire Dampers (AV)
M22-2-77-29	2A FWP oil pump interlock
M22-1-78-24	FH-RCC change fixture tension on meter
M22-2-79-13	AP-Replace W Control switches to eliminate reopening valves after an SI
M22-2-79-15	SI-Modify Ann. & Comp. logic to match safeguards actuation Logic
M22-2-79-17	AP-install test circuit on Swag valves to test contacts for welded shut
M22-2-79-4	MS-Internal mod to 2BE MSR by adding Performed plates
M22-1-79-10	MS-Replace relays R9 & 10, ABCD with more reliable
M22-2-79-20	SI-Make Vent hole in probe to minimize pressure influence

## Tests

Eddy Current testing and evaluation of 2D Steam Generator was conducted during the period of March 12, 1979 through March 20, 1979. The final inspection results of the 407 tubes tested revealed no reportable indications and insignificant denting of approximately 100 tubes. All testing and evaluation was conducted to approved written procedures.

## EXPERIMENTS

An experiment is being conducted to assess the extended lifetime capabilities of spent fuel assemblies. Four previously discharged fuel assemblies ( $\sim 38000$  MWD/MTU average burnup) have been loaded into the Unit II Cycle 4 core for additional irradiation. These assemblies have been scheduled for inspection in 1980 at the end of one cycle of extended burnup ( $\sim 47000$  MWD/MTU average burnup).

In anticipation of increased burnup, Technical Specification changes were submitted to and accepted by the NRC. These Technical Specifications addressed the rod bow penalty and clad collapse concerns.

This experiment is an EPRI/Westinghouse program initiated by the Department of Energy to improve uranium fuel utilization without reprocessing by extending the burnup of nuclear fuel elements.

IV Annual Occupational Exposure Data

Annual Occupational Exposure Data  
for  
Zion Station During 1979

These data were submitted to the Nuclear Regulatory Commission under a separate cover. A letter from N. E. Wandke, Superintendent, Zion Station, to Mr. James G. Keppler, Regional Director dated February 4, 1980 transmitted the exposure data.