



**Commonwealth Edison**

Quad Cities Nuclear Power Station  
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AMS-93-12

November 2, 1993

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D.C. 20555

SUBJECT: Quad Cities Nuclear Station Units 1 and 2  
Monthly Performance Report  
NRC Docket Nos. 50-254 and 50-265

Enclosed for your information is the Monthly Performance Report covering the operation of Quad-Cities Nuclear Power Station, Units One and Two, during the month of October 1993.

Respectfully,

COMMONWEALTH EDISON COMPANY  
QUAD-CITIES NUCLEAR POWER STATION

Anthony M. Scott  
System Engineering Supervisor

AMS/dak

Enclosure

cc: J. Martin, Regional Administrator  
T. Taylor, Senior Resident Inspector

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QUAD-CITIES NUCLEAR POWER STATION

UNITS 1 AND 2

MONTHLY PERFORMANCE REPORT

October 1993

COMMONWEALTH EDISON COMPANY

AND

IOWA-ILLINOIS GAS & ELECTRIC COMPANY

NRC DOCKET NOS. 50-254 AND 50-265

LICENSE NOS. DPR-29 AND DPR-30

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## I. INTRODUCTION

Quad-Cities Nuclear Power Station is composed of two Boiling Water Reactors, each with a Maximum Dependable Capacity of 769 MWe Net, located in Cordova, Illinois. The Station is jointly owned by Commonwealth Edison Company and Iowa-Illinois Gas & Electric Company. The Nuclear Steam Supply Systems are General Electric Company Boiling Water Reactors. The Architect/Engineer was Sargent & Lundy, Incorporated, and the primary construction contractor was United Engineers & Constructors. The Mississippi River is the condenser cooling water source. The plant is subject to license numbers DPR-29 and DPR-30, issued October 1, 1971, and March 21, 1972, respectively; pursuant to Docket Numbers 50-254 and 50-265. The date of initial Reactor criticalities for Units One and Two, respectively were October 18, 1971, and April 26, 1972. Commercial generation of power began on February 18, 1973 for Unit One and March 10, 1973 for unit Two.

This report was compiled by Matt Benson and Debra Kelley, telephone number 309-654-2241, extensions 2995 and 2240.

## II. SUMMARY OF OPERATING EXPERIENCE

### A. Unit One

Quad Cities Unit One began the month of October 1993 at full power. On October 16, Unit One was reduced to 25% power so a drywell entry could be made to test the torque switch settings of the recirculation 1-0202-5A valve. Concern over the 1-0202-5A valves ability to close under design basis differential pressure lead to the test.

### B. Unit Two

Quad Cities Unit Two began the month of October 1993 at full power. On October 1, Unit Two reduced power and took the turbine off line due to a hot cable in the Main Power transformer cabinet. The cable was replaced and the generator was back on line less than 5 hours later that same evening.

On October 17, Unit Two was reduced to 25% power so a drywell entry could be made to test the torque switch settings of the recirculation 2-0202-5B valve. Concern over the 2-0202-5B valves ability to close under design basis differential pressure lead to the test.

III. PLANT OR PROCEDURE CHANGES, TESTS, EXPERIMENTS,  
AND SAFETY RELATED MAINTENANCE

A. Amendments to Facility License or Technical Specifications

There were no Amendments to the Facility License or Technical Specifications for the reporting period.

B. Facility or Procedure Changes Requiring NRC Approval

There were no Facility or Procedure changes requiring NRC approval for the reporting period.

C. Tests and Experiments Requiring NRC Approval

There were no Tests or Experiments requiring NRC approval for the reporting period.

D. Corrective Maintenance of Safety Related Equipment

The following represents a tabular summary of the major safety related maintenance performed on Units One and Two during the reporting period. This summary includes the following: Work Request Numbers, Licensee Event Report Numbers, Components, Cause of Malfunctions, Results and Effects on Safe Operation, and Action Taken to Prevent Repetition.

## UNIT 1 &amp; 1/2 MAINTENANCE SUMMARY

NWR#	SYSTEM	EPN#	WORK REQUESTED	WORK PERFORMED
Q10057	1000	1-1001-34B	Install new motor, pinion, and worm shaft gear for 1B torus spray/torus cooling stop valve.	Replaced limitorque with new motor, worm shaft, and pinion.
Q10142	1400	1-1402-57	Troubleshoot/repair ESS fill system pump. Motor temperature observed high.	Found filter clogged. Replaced entire pump/motor assembly.
Q10171	1100	1-1100	Adjust heat tracing for standby liquid control piping.	Adjusted heat tracing to acceptable range.
Q10275	203	1-203-1B	Troubleshoot/repair 1B MSIV. Dual indication received.	Replaced and adjusted limit switch.
Q10396	5700	1/2-5741-335	Repair pressure indicator for "B" control room HVAC compressor discharge.	Removed gauge, recalibrated, and reinstalled.
Q10519	756	1-756-6	Troubleshoot/repair APRM #6. Positive voltage out of tolerance.	Replaced voltage regulator.
Q89660	8350	1/2-8350	Investigate/repair 250VDC charger.	Installed new relays and circuit boards.



## UNIT 2 MAINTENANCE SUMMARY

NWR#	SYSTEM	EPN#	WORK REQUESTED	WORK PERFORMED
Q07630	1000	2-1001-65C	Repair RHR service water pump as required.	Replaced casing ring and rebuilt pump.
Q08627	300	2-305-125-1043	Replace nitrogen/water accumulator. Water is leaking past piston.	Replaced accumulator with a new one.
Q09529	263, 600	2-263-100A,B 152A,B 2-640-29B, 3B 2-646B	Repair/recalibrate reactor water level indicators.	Calibrated both "A" and "B" loops.
Q09837	220	2-220-62B	Repair "B" feedwater header 1st outboard check valve. Seal ring leaks.	Replaced seal ring and tightened bolts to 1 1/2 times normal torque. Reduced leakage from 3 and 1/2 gal/min to 1 quart/min.
Q09997	203	2-203-1A	Repair 1A inboard MSIV. Did not fail safe during surveillance.	Replaced live load assembly and packing assembly.
Q09998	203	2-203-1D	Repair 1D inboard MSIV. Did not fail safe during surveillance.	Unpacked valve and repacked valve with a new carbon spacer.
Q10092	750	2-750-7G	Investigate/repair IRM spiking full scale.	Replaced preamplifier.
Q10107	1000	2-1001-34A	Troubleshoot RHR torus spray/dump shutoff valve.	Replaced motor, worm shaft, pinion, and overload heater.



NWR#	SYSTEM	EPN#	WORK REQUESTED	WORK PERFORMED
Q10218	2300	2-2301-3	Investigate/repair leak on HPCI turbine inlet valve.	Replaced valve stem, seal ring, valve sleeve, and packing assembly.
Q10361	1000	2-1099-75C	Repair 2C RHR service water pump upstream seal isolation valve.	Found valve exterior badly corroded and valve stem frozen in the closed position. Took valve apart, cleaned, and reinstalled.
Q10363	1000	2-1099-76C	Repair 2C RHR service water pump downstream seal isolation valve.	Found valve exterior badly corroded and valve stem frozen in the closed position. Took valve apart, cleaned, and reinstalled.
Q10542	1700	2-1705-3B	Troubleshoot/repair "B" steam jet air ejector log rad monitor.	Replaced printed circuit board with correct type.
Q10608	590	2-590-108D	Repair SCRAM relay. Aux contact arm was disengaged from main relay.	Installed plunger post back into plunger arm.
Q10788	300	2-305-101-1831	Repair CRD insert valve leak.	Found packing bolt broken off and valve leaking. Installed new valve, bolt, and nut.

#### IV. LICENSEE EVENT REPORTS

The following is a tabular summary of all licensee event reports for Quad-Cities Units One and Two occurring during the reporting period, pursuant to the reportable occurrence reporting requirements as set forth in sections 6.6.B.1 and 6.6.B.2 of the Technical Specifications.

##### UNIT 1

There were no licensee event reports for Unit 1 for this reporting period.

##### UNIT 2

<u>Licensee Event Report Number</u>	<u>Date</u>	<u>Title of occurrence</u>
93-022	10-07-93	RCIC declared INOP when floor drain check valve failed test.

## V. DATA TABULATIONS

The following data tabulations are presented in this report:

- A. Operating Data Report
- B. Average Daily Unit Power Level
- C. Unit Shutdowns and Power Reductions

## APPENDIX C

## OPERATING DATA REPORT

DOCKET NO. 50-254

UNIT One

DATE November 4,  
1993

COMPLETED BY Matt Benson

TELEPHONE (309) 654-2241

## OPERATING STATUS

0000 100193

1. REPORTING PERIOD: 2400 103193 GROSS HOURS IN REPORTING PERIOD: 745

2. CURRENTLY AUTHORIZED POWER LEVEL (MWt): 2511 MAX > DEPEND > CAPACITY: 769  
DESIGN ELECTRICAL RATING (MWe-NET): 789

3. POWER LEVEL TO WHICH RESTRICTED (IF ANY) (MWe-Net): N/A

4. REASONS FOR RESTRICTION (IF ANY):

	THIS MONTH	YR TO DATE	CUMULATIVE
5. NUMBER OF HOURS REACTOR WAS CRITICAL	745.00	6494.20	149255.10
6. REACTOR RESERVE SHUTDOWN HOURS	0.00	0.00	3421.90
7. HOURS GENERATOR ON LINE	745.00	6428.80	144820.40
8. UNIT RESERVE SHUTDOWN HOURS	0.00	0.00	909.20
9. GROSS THERMAL ENERGY GENERATED (MWH)	1756263.00	15052293.30	312634117.10
10. GROSS ELECTRICAL ENERGY GENERATED (MWH)	574387.00	4932446.00	101351536.00
11. NET ELECTRICAL ENERGY GENERATED (MWH)	549380.00	4718622.00	95594134.00
12. REACTOR SERVICE FACTOR	100.00	89.01	78.99
13. REACTOR AVAILABILITY FACTOR	100.00	89.01	80.80
14. UNIT SERVICE FACTOR	100.00	88.11	76.64
15. UNIT AVAILABILITY FACTOR	100.00	88.11	77.13
16. UNIT CAPACITY FACTOR (Using MDC)	95.89	84.10	65.79
17. UNIT CAPACITY FACTOR (Using Design MWe)	93.46	81.97	64.12
18. UNIT FORCED OUTAGE RATE	0.00	11.89	6.30
19. SHUTDOWNS SCHEDULED OVER NEXT 6 MONTHS (TYPE, DATE, AND DURATION OF EACH):			
20. IF SHUTDOWN AT END OF REPORT PERIOD < ESTIMATED DATE OF STARTUP: _____			
21. UNITS IN TEST STATUS (PRIOR TO COMMERCIAL OPERATION):			
	FORECAST	ACHIEVED	
INITIAL CRITICALITY			
INITIAL ELECTRICITY			
COMMERCIAL OPERATION			

APPENDIX C			
OPERATING DATA REPORT			
DOCKET NO.		50-265	
UNIT		Two	
DATE		November 4, 1993	
COMPLETED BY		Matt Benson	
TELEPHONE		(309) 654 2241	
OPERATING STATUS			
0000 100193			
1. REPORTING PERIOD: 2400 103193 GROSS HOURS IN REPORTING PERIOD: 745			
2. CURRENTLY AUTHORIZED POWER LEVEL (MWt): 2511 MAX > DEPEND > CAPACITY: 769 DESIGN ELECTRICAL RATING (MWe-NET): 789			
3. POWER LEVEL TO WHICH RESTRICTED (IF ANY) (MWe-Net): N/A			
4. REASONS FOR RESTRICTION (IF ANY):			
	THIS MONTH	YR TO DATE	CUMULATIVE
5. NUMBER OF HOURS REACTOR WAS CRITICAL	745.00	3965.50	143140.75
6. REACTOR RESERVE: SHUTDOWN HOURS	0.00	0.00	2985.80
7. HOURS GENERATOR ON LINE	740.30	3781.40	139422.85
8. UNIT RESERVE SHUTDOWN HOURS	0.00	0.00	702.90
9. GROSS THERMAL ENERGY GENERATED (MWH)	1732716.00	8269142.00	300932551.20
10. GROSS ELECTRICAL ENERGY GENERATED (MWH)	577251.00	2688045.00	96713306.00
11. NET ELECTRICAL ENERGY GENERATED (MWH)	552497.00	2545349.00	91576092.00
12. REACTOR SERVICE FACTOR	100.00	54.35	76.39
13. REACTOR AVAILABILITY FACTOR	100.00	54.35	77.98
14. UNIT SERVICE FACTOR	99.37	51.83	74.40
15. UNIT AVAILABILITY FACTOR	99.37	51.83	74.78
16. UNIT CAPACITY FACTOR (Using MDC)	96.44	45.37	63.55
17. UNIT CAPACITY FACTOR (Using Design MWe)	93.99	44.22	61.94
18. UNIT FORCED OUTAGE RATE	0.63	29.13	8.53
19. SHUTDOWNS SCHEDULED OVER NEXT 6 MONTHS (TYPE, DATE, AND DURATION OF EACH):			
20. IF SHUTDOWN AT END OF REPORT PERIOD < ESTIMATED DATE OF STARTUP:			
21. UNITS IN TEST STATUS (PRIOR TO COMMERCIAL OPERATION):			
	FORECAST	ACHIEVED	
INITIAL CRITICALITY			
INITIAL ELECTRICITY			
COMMERCIAL OPERATION			

APPENDIX B  
AVERAGE DAILY UNIT POWER LEVEL

DOCKET NO 50-254  
UNIT One  
DATE November 4, 1993  
COMPLETED BY Matt Benson  
TELEPHONE (309) 654-2241

MONTH October 1993

DAY AVERAGE DAILY POWER LEVEL  
(MWe-Net)

1.	<u>761</u>
2.	<u>762</u>
3.	<u>727</u>
4.	<u>760</u>
5.	<u>754</u>
6.	<u>758</u>
7.	<u>755</u>
8.	<u>756</u>
9.	<u>760</u>
10.	<u>758</u>
11.	<u>754</u>
12.	<u>757</u>
13.	<u>758</u>
14.	<u>760</u>
15.	<u>734</u>
16.	<u>280</u>

DAY AVERAGE DAILY POWER LEVEL  
(MWe-Net)

17.	<u>660</u>
18.	<u>757</u>
19.	<u>761</u>
* 20.	<u>760</u>
21.	<u>758</u>
22.	<u>760</u>
23.	<u>729</u>
24.	<u>755</u>
25.	<u>757</u>
26.	<u>758</u>
27.	<u>759</u>
28.	<u>757</u>
29.	<u>761</u>
30.	<u>760</u>
* 31.	<u>760</u>

INSTRUCTIONS

On this form, list the average daily unit power level in MWe-Net for each day in the reporting month. Compute to the nearest whole megawatt. These figures will be used to plot a graph for each reporting month. Note that when maximum dependable capacity is used for the net electrical rating of the unit, there may be occasions when the daily average power level exceeds the 100% line (or the restricted power level line). In such cases, the average daily unit power output sheet should be footnoted to explain the apparent anomaly.



APPENDIX B  
AVERAGE DAILY UNIT POWER LEVEL

DOCKET NO 50-265  
UNIT Two  
DATE November 4, 1993  
COMPLETED BY Matt Benson  
TELEPHONE (309) 654-2241

MONTH October 1993

DAY AVERAGE DAILY POWER LEVEL  
(MWe-Net)

1.	<u>503</u>
2.	<u>697</u>
3.	<u>766</u>
4.	<u>768</u>
5.	<u>769</u>
6.	<u>766</u>
7.	<u>766</u>
8.	<u>764</u>
9.	<u>765</u>
10.	<u>766</u>
11.	<u>766</u>
12.	<u>763</u>
13.	<u>755</u>
14.	<u>761</u>
15.	<u>765</u>
16.	<u>747</u>

DAY AVERAGE DAILY POWER LEVEL  
(MWe-Net)

17.	<u>400</u>
18.	<u>754</u>
19.	<u>760</u>
20.	<u>763</u>
21.	<u>765</u>
22.	<u>765</u>
23.	<u>765</u>
24.	<u>761</u>
25.	<u>762</u>
26.	<u>765</u>
27.	<u>764</u>
28.	<u>765</u>
29.	<u>766</u>
30.	<u>766</u>
31.	<u>765</u>

INSTRUCTIONS

On this form, list the average daily unit power level in MWe-Net for each day in the reporting month. Compute to the nearest whole megawatt. These figures will be used to plot a graph for each reporting month. Note that when maximum dependable capacity is used for the net electrical rating of the unit, there may be occasions when the daily average power level exceeds the 100% line (or the restricted power level line). In such cases, the average daily unit power output sheet should be footnoted to explain the apparent anomaly.



## APPENDIX D

DOCKET NO. 50-254

UNIT NAME One

COMPLETED BY Matt Benson

DATE October 6, 1993 REPORT MONTH October 1993

TELEPHONE 309-654-2241

[illegible]

## APPENDIX D

### UNIT SHUTDOWNS AND POWER REDUCTIONS

DOCKET NO. 50-265

UNIT NAME Two

COMPLETED BY Matt Benson

DATE November 4, 1993 REPORT MONTH October, 1993

TELEPHONE 309-654-2241

[illegible]

## VI. UNIQUE REPORTING REQUIREMENTS

The following items are included in this report based on prior commitments to the commission:

### A. Main Steam Relief Valve Operations

There were no Main Steam Relief Valve Operations for the reporting period.

### B. Control Rod Drive Scram Timing Data for Units One and Two

The basis for reporting this data to the Nuclear Regulatory Commission are specified in the surveillance requirements of Technical Specifications 4.3.C.1 and 4.3.C.2.

The following table is a complete summary of Units One and Two Control Rod Drive Scram timing for the reporting period. All scram timing as performed with reactor pressure greater than 800 PSIG.

RESULTS OF SCRAM TIMING MEASUREMENTS  
PERFORMED ON UNIT 1 & 2 CONTPOL  
ROD DRIVES, FROM 01/01/93 TO 12/31/93

DATE	NUMBER OF RODS	AVERAGE TIME IN SECONDS AT % INSERTED FROM FULLY WITHDRAWN				MAX. TIME FOR 90% INSERTION	DESCRIPTION
		5 0.375	20 0.900	50 2.00	90 3.5		
01-28-93	1	0.30	0.67	1.42	5	H-12 2.15	For Accumulator Replacement
02-12-93	1	0.33	0.72	1.54	2.77	D-5 2.77	Accumulator Replacement U2 Q05404
02-26-93	1	0.32	0.69	1.46	2.61	K-7 2.61	Scram Inlet Valve U2 Q05593
05-28-93	177	0.32	0.705	1.49	2.60	D-9 3.47	U2 Start Up Scram Timing Q2R12
07-13-93	4	0.33	0.73	1.51	2.60	D-9 2.69	For WR Test Q08085 Q07146 U2 Q08364 Q07147
07-23-93	90	0.31	0.69	1.45	2.53	D-8 3.4	U1 SEQA & Q08229
07-29-93	1	0.32	0.71	1.51	2.66	F-10 2.66	U2 Q08629 Accumulator
08-07-93	1	0.28	0.64	1.37	2.39	F-15 2.39	U1 Q09059 Scram Solenoid
08-19-93	1	0.28	0.60	1.26	2.19	A-8 2.19	U1 Q09374 Diaphragm
09-24-93	1	0.32	0.68	1.41	2.46	C-11 2.46	U2 Q08627 Accumulator
10-23-93	1	0.34	0.71	1.45	2.51	D-4 2.51	U1 Q11022 Scram Valve
10-28-93	1	0.28	0.65	1.42	2.52	J-12 2.52	U1 Q11231, Q11151 2 WR 1 CRD

## VII. REFUELING INFORMATION

The following information about future reloads at Quad-Cities Station was requested in a January 26, 1978, licensing memorandum (78-24) from D. E. O'Brien to C. Reed, et al., titled "Dresden, Quad-Cities and Zion Station--NRC Request for Refueling Information", dated January 18, 1978.

QUAD CITIES REFUELING  
INFORMATION REQUEST

QTP 300-S32  
Revision 2  
October 1989

1. Unit: Q1 Reload: 12 Cycle: 13
2. Scheduled date for next refueling shutdown: 3-14-94
3. Scheduled date for restart following refueling: 6-13-94
4. Will refueling or resumption of operation thereafter require a Technical Specification change or other license amendment:  
YES. Safety Limit MCPR to be changed from 1.06 to 1.07 due to GE10 Fuel.
5. Scheduled date(s) for submitting proposed licensing action and supporting information:  
11-19-93
6. Important licensing considerations associated with refueling, e.g., new or different fuel design or supplier, unreviewed design or performance analysis methods, significant changes in fuel design, new operating procedures:  
160 GE10 Fuel Bundles will be loaded during Q1R13.
7. The number of fuel assemblies.
  - a. Number of assemblies in core: 724
  - b. Number of assemblies in spent fuel pool: 1557
8. The present licensed spent fuel pool storage capacity and the size of any increase in licensed storage capacity that has been requested or is planned in number of fuel assemblies:
  - a. Licensed storage capacity for spent fuel: 3657
  - b. Planned increase in licensed storage: 0
9. The projected date of the last refueling that can be discharged to the spent fuel pool assuming the present licensed capacity: 2009

QUAD CITIES REFUELING  
INFORMATION REQUEST

QTP 300-S32  
Revision 2  
October 1989

1. Unit: Q2 Reload: 12 Cycle: 13
2. Scheduled date for next refueling shutdown: 09-24-94
3. Scheduled date for restart following refueling: 12-04-94
4. Will refueling or resumption of operation thereafter require a Technical Specification change or other license amendment:  
YES - Safety limit MCPR to be changed from 1.06 to 1.07 due to GE10 Fuel.
5. Scheduled date(s) for submitting proposed licensing action and supporting information:  
5-13-94
6. Important licensing considerations associated with refueling, e.g., new or different fuel design or supplier, unreviewed design or performance analysis methods, significant changes in fuel design, new operating procedures:  
GE10 Fuel will be loaded during Q2R13.
7. The number of fuel assemblies.
  - a. Number of assemblies in core: 724
  - b. Number of assemblies in spent fuel pool: 2583
8. The present licensed spent fuel pool storage capacity and the size of any increase in licensed storage capacity that has been requested or is planned in number of fuel assemblies:
  - a. Licensed storage capacity for spent fuel: 3897
  - b. Planned increase in licensed storage: 0
9. The projected date of the last refueling that can be discharged to the spent fuel pool assuming the present licensed capacity: 2009



# VIII. GLOSSARY

The following abbreviations which may have been used in the Monthly Report, are defined below:

ACAD/CAM	- Atmospheric Containment Atmospheric Dilution/Containment Atmospheric Monitoring
ANSI	- American National Standards Institute
APRM	- Average Power Range Monitor
ATWS	- Anticipated Transient Without Scram
BWR	- Boiling Water Reactor
CRD	- Control Rod Drive
EHC	- Electro-Hydraulic Control System
EOF	- Emergency Operations Facility
GSEP	- Generating Stations Emergency Plan
HEPA	- High-Efficiency Particulate Filter
HPCI	- High Pressure Coolant Injection System
HRSS	- High Radiation Sampling System
IPCLRT	- Integrated Primary Containment Leak Rate Test
IRM	- Intermediate Range Monitor
ISI	- Inservice Inspection
LER	- Licensee Event Report
LLRT	- Local Leak Rate Test
LPCI	- Low Pressure Coolant Injection Mode of RHRS
LPRM	- Local Power Range Monitor
MAPLHGR	- Maximum Average Planar Linear Heat Generation Rate
MCPR	- Minimum Critical Power Ratio
MFLCPR	- Maximum Fraction Limiting Critical Power Ratio
MPC	- Maximum Permissible Concentration
MSIV	- Main Steam Isolation Valve
NIOSH	- National Institute for Occupational Safety and Health
PCI	- Primary Containment Isolation
PCOMR	- Preconditioning Interim Operating Management Recommendations
RBCCW	- Reactor Building Closed Cooling Water System
RBM	- Rod Block Monitor
RCIC	- Reactor Core Isolation Cooling System
RHRS	- Residual Heat Removal System
RPS	- Reactor Protection System
RWM	- Rod Worth Minimizer
SBGTS	- Standby Gas Treatment System
SBLC	- Standby Liquid Control
SDC	- Shutdown Cooling Mode of RHRS
SDV	- Scram Discharge Volume
SRM	- Source Range Monitor
TBCCW	- Turbine Building Closed Cooling Water System
TIP	- Traversing Incore Probe
TSC	- Technical Support Center