Commonwealth Edison
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Address Reply to: Post Office Box 767
Chicago, Illinois 60690

July 2, 1980

Mr. D. G. Eisenhut, Director
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: Dresden Station Units 2 and 3
Quad Cities Station Units 1 and 2
Revised Schedule for Mark I
Containment and Feedwater Sparger
Replacement Projects
NRC Docket Nos. 50-237/249 and
50-254/265

Reference: Letter from C. Reed to D. G. Eisenhut
dated May 11, 1979.

Dear Mr. Eisenhut:

The referenced letter provided Commonwealth Edison's proposed schedule for the completion of presently identified Mark I Long Term Program modifications, and for the installation of improved feedwater spargers on Dresden Units 2 and 3 and Quad Cities Units 1 and 2. This letter provides a revised schedule which more accurately reflects progress to date (in some cases beyond that projected by the original schedule), and which identifies necessary delays for some parts of the program. In particular, some less significant components of the torus internal modification work have been re-scheduled for Quad Cities Unit 1 from Fall, 1980, to Fall, 1982. In addition, the feedwater sparger work for this unit has been similarly re-scheduled.

To meet the original (May, 1979) schedule, a 20-week outage on Quad Cities Unit 1 would be required this Fall. Commonwealth Edison has found it impossible to schedule or support an outage of this length at present for the following reasons:

1. Financial Concerns: The Company is under severe financial strain because of inadequate rate relief, and because in excess of $600 million has necessarily been budgeted over the next few years for implementation of post-TMI modifications for our 7 operating and 6 construction-phase nuclear plants. A shorter outage than originally scheduled for Quad Cities Unit 1 will significantly improve the corporate financial outlook.

2. Labor Availability: Recent experience at Quad Cities has shown that adequately staffing Mark I, feedwater sparger, TMI, and other outage work concurrently is at best difficult. Shortage of craft labor would hamper an outage of the original scope, preventing completion of scheduled work and requiring additional outage time and expense.

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3. Engineering Support: The engineering requirements of the Mark I program, post-TMI modifications, and recent bulletins and orders have stretched our engineering resources to the limits. We do not feel that we can provide adequate design support for the full scope of modifications originally scheduled for the outage.

4. Outage Coordination and Personnel Considerations: Commonwealth Edison has 4 Mark I-type plants to modify in accordance with the Long Term Program. The original schedule represented an apparently acceptable compromise between the Mark I completion requirements and the stations manpower capabilities and work loads. In the case of Quad Cities Station, Unit 2 began its outage in Mid-November, 1979, with the intent of completing the outage by March, 1980. However, the emergency repair to the core spray system at the end of the outage caused the outage to run through April. Current information suggests that a 20-week outage on Unit 1 this year would excessively strain station personnel and would bring aggregate personnel exposure to an unacceptably high level, preventing adequate staffing and management of these major projects.

With regard to the Mark I work, we are proceeding on a priority basis with those modifications which provide the largest increase to safety margins. Torus support modifications ("saddles") for all four units will be completed by the end of 1980. Vent header deflectors, T-quenchers, and other major torus internal modifications are being pursued on a priority basis.

Attached is the revised schedule and status information for the Mark I Program (Attachment A), Feedwater Sparger Replacement (Attachment B), and general work (Attachment C) planned for the Quad Cities Unit 1 outage. This information is provided in support of this letter for your review.

If you have any questions concerning the above, please contact me.

Very truly yours,

Robert F. Janecek
for Cordell Reed
Vice President of
Nuclear Operations

Attachments

4936A

Attachment "A"

Subject: Mark I Long Term Program Implementation

Reference: Letter C. Reed to D. Eisenhut dated 5-11-79

The intent of this attachment is to provide a summary of the current status of Mark I modifications and outline our plans for program closure. Included is an updated schedule for the subject modifications. The following discussion will concern the basis of this schedule and technical considerations and methods for program closure.

In the referenced letter we provided a preliminary schedule for completion of Mark I Long Term program modifications. To date we have exceeded our own expectations and have completed significantly more work than previously planned. We have fabricated quencher devices for all units. We have purchased the materials necessary for the major modifications and currently are acquiring additional materials for the less significant portions of the project. This program is directed at closure of the Mark I Program, with priority given to major safety concerns. The attached schedule should be regarded as a "best effort" implementation plan.

The plant modifications related to the Mark I Program hydrodynamic loads for Dresden Units 2 & 3 and Quad Cities Units 1 & 2 can be categorized as follows:

1. Reinforcement of the torus support system
2. Torus internal vent system deflector and reinforcement
3. Installation of quencher devices on SRV discharge lines
4. Reinforcement of supports for miscellaneous torus internal components (structural and piping)
5. Support modifications for piping systems

These modifications are tabulated in order of technical importance and therefore, priority assigned to our modification scheduling. The ensuing discussion concerns technical commentary on the above listed modification categories.

The reinforcement of the torus support system is the highest priority modification planned. The improvement in load carrying capacity (upload and download) afforded by the torus support saddles when considered in conjunction with the enhanced shell response to oscillatory loadings clearly highlight the desirability of these modifications. For this reason we have expedited installation of those modifications, nearly completing installation at both Dresden units, and anticipating completion of both Quad Cities units by the end of 1980. Preliminary analysis indicates that the addition of support saddles and the short term program column reinforcement have more than doubled the capacity of the support system. It should be noted that although LDR-based analyses currently overpredict shell response to forced-harmonic loadings, empirical analyses based on Monticello S/RV data indicate that the saddle modifications effectively reduce shell and support responses to within Long Term Program criteria.

The torus internal vent system deflector and reinforcement are mandated by pool swell impact loadings and downcomer lateral loadings observed in FSTF testing. These modifications are necessary to safeguard the integrity of the vent system and are the highest priority internal modifications. We have completed these modifications on Dresden Unit 3 and Quad Cities Unit 2 and plan installation of these modifications on the remaining units in the up-coming outages. Installation of these modifications is expected to bring the vent system to within Long Term Program acceptance criteria.

The addition of quencher devices is an item highlighted by NRC in a letter to the Mark I owners group dated 3-16-79. We have been responsive to this request and have installed quenchers and torus S/RV line supports on all SRV lines for Dresden Unit 3, and have installed all torus SRV line supports on all SRV lines plus one quencher on the low setpoint SRV on Quad Cities Unit 2. Efforts to quantitatively assess the ability of the quencher to mitigate S/RV discharge loads have emphasized the overconservatism inherent in the LDR approach and have resulted in the development of empirical analytical methodology to be used in conjunction with in-plant testing. We are currently assessing the adequacy of this approach for implementation on our plants as well as alternative additional modifications. Quencher installation on all units will be completed by the end of 1981.

The reinforcement of supports for miscellaneous torus internal components can be divided into two categories, structures and piping. The structures under consideration include the catwalks and monorails (Quad Cities). The internal piping of concern includes the RHR spray header, RHR/LPCI, return lines, HPCI/RCIC exhaust lines, and related piping. The loads affecting these components are of a secondary nature, i.e. froth loads, and submerged structure loads. Additionally, postulated deformation and/or loss of operability of these components does not result in degradation of containment integrity or function. These components have been observed to withstand S/RV Ramshead discharge loads without negative consequence. Assessment of submerged structures loads is dependent on completion of the shell analysis, to the extent that FSI affects must be considered per the acceptance criteria. It should be noted that the FSI efforts dominate the direct flow field loadings. Therefore, although the miscellaneous internal components necessarily are analyzed and modified subsequent to primary containment structures, the attendant risk to site operation can be considered negligible.

The support modifications for torus attached piping systems are categorized last by virtue of their order in implementation. As highlighted in previous NRC/owner's group discussion, analysis and modification of attached piping necessarily must follow the analysis modification of the containment shell. The results of the shell analysis are used as inputs for the analysis of the attached piping. This effort is directly related to the LDR analysis <u>vs</u>. empirical methodology now under evaluation and will be scheduled accordingly. It should be noted that material availability (particularly snubbers) will dictate the time necessary to implement these modifications.

Conclusions

In conclusion, the Commonwealth Edison Company approach for implementation of the Mark I Long Term Program has been directed towards significant improvement in safety margins for major containment structures. We remain committed to timely closure of the Mark I Long Term Program, but recognize that effective closure will require extensive analysis and resultant modifications.

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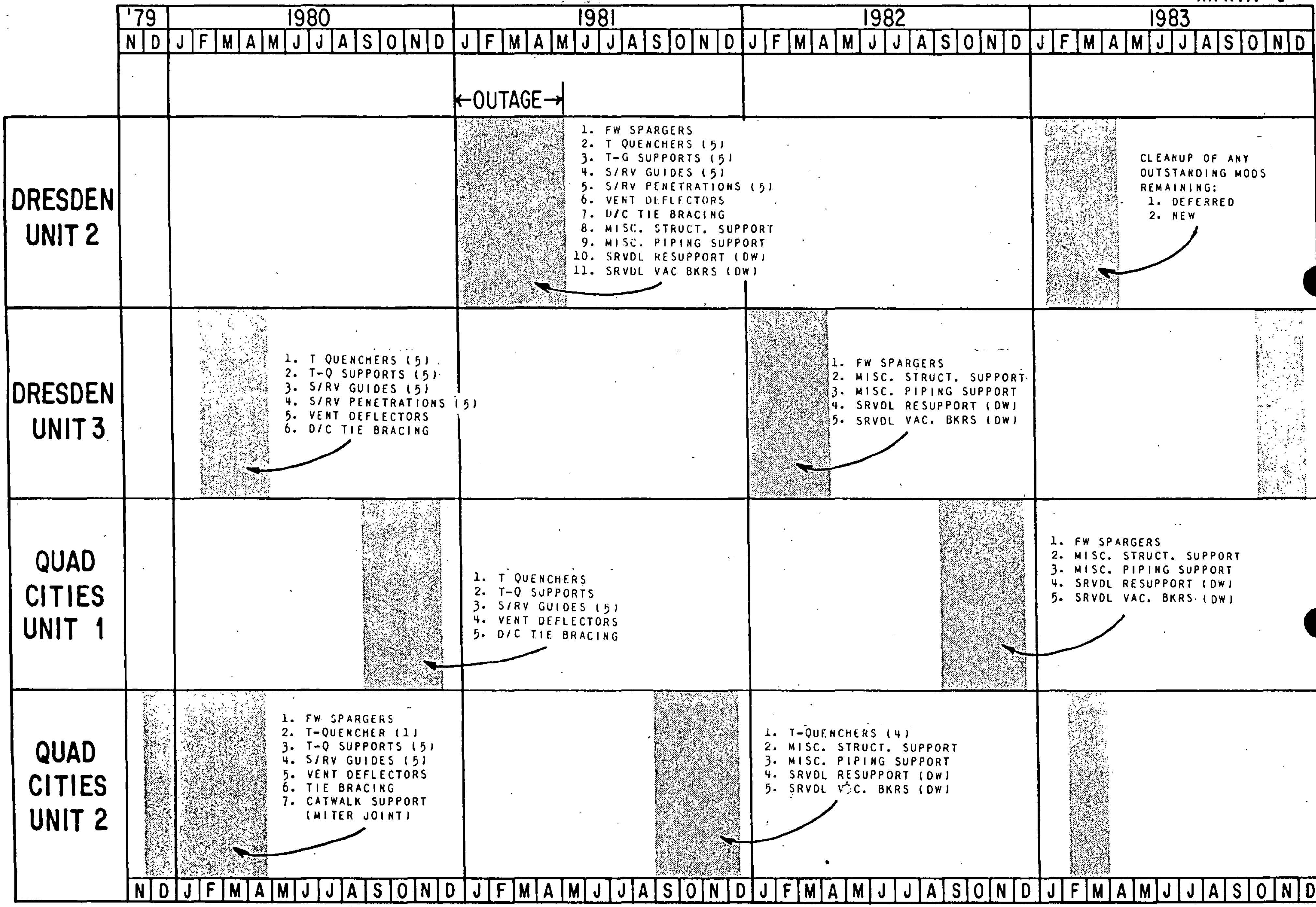
COMMONWEALTH EDISON COMPANY BWR OUTAGE SCHEDULE

MARK I



ATTACH. A

Attachment "B"

Subject: Quad Cities Station Unit
Feedwater Nozzle/Sparger Inspection Program

References (a): G.A. Abrell letter to D.L. Ziemann dated September 22, 1976

(b): G.A. Abrell letter to D.L. Ziemann dated October 18, 1976

(c): General Electric Report, NEDC-21189 dated February 1976, "Quad-Cities 1 Feedwater Nozzle Cladding Crack Repair Report"

(d): General Electric Report, NEDE-21821 dated March 1978, "Boiling Water Reactor Feedwater Nozzle/Sparger Final Report"

(e): M.S. Turbak letter to D.K. Davis dated June 23, 1977

(f): M.S. Turbak letter to G. Lear dated November 8, 1977

This document provides the proposed feedwater nozzle inspection program which would be performed during the upcoming QC-1 outage presently scheduled for Sept. 1980.

Feedwater Nozzle Program

I. Feedwater Nozzle/Sparger Inspections

The feedwater nozzle/sparger inspection program for Quad-Cities Unit 1 will consist of the following:

1. Examination of the visible portions of the four (4) spargers using underwater television equipment.

2. Ultrasonic examination of the inner blend radius and bore of the four (4) nozzles using procedures NDT-C-24 and NDT-C-25.

3. Ultrasonic examination of the four (4) feedwater nozzle safe ends and safe end welds.

4. Acceptance criteria for the ultrasonic examination shall be identical to that defined in Reference (a), i.e.:

   a. The calibration piece shall be a duplicate (same material and geometry) of the actual feedwater nozzle and the adjoining section of the vessel wall and associated weld.

   b. Instrument calibration shall be performed by setting the response of an 8 mm deep notch in the blend radius and bore of the duplicate nozzle to 80% of full screen height (FSH).

   c. The examination shall be conducted at a sensitivity equal to the calibration sensitivity plus an additional 6 db in accordance with ASME Code, Article I-5112 of Section XI for NDT-C-24 which is a code exam of the inner radius.

   d. All relevant indications with an amplitude greater than or equal to either 50% of the reference reflector (8 mm notch) or 10% FSH above the clad roll noise level shall be recorded and evaluated. This evaluation shall be in accordance with the methods defined in Reference (b). All evaluations will be made at calibration sensitivity.

   e. If a relevant indication is evaluated as 80% FSH or more at calibration sensitivity, a dye penetrant examination will be made of the area containing the indication.

II. <u>Justification for the Proposed Program</u>

Originally Commonwealth Edison had intended to remove clad and install the triple thermal sleeve/double seal interference fit spargers during the upcoming QC-1 outage. To minimize the outage length, a reevaluation of the original program was performed. As a result it was determined that there was sufficient justification to postpone any dye penetrant work and the "final fix" work until the fall of 1982. This would be in keeping with the Dec. 1982 deadline proposed in NUREG-0619 for installing a "final fix" for the sparger/nozzle problem. To fully comprehend Edison's position a short review of pertinent information will follow.

Quad-Cities Unit 1 is scheduled to begin, in Sept. 1980, its third refueling outage following the installation of the interference fit forged-T feedwater spargers. These spargers were installed during the January 1976 refueling outage. A complete dye penetrant examination of the four feedwater nozzles was performed prior to the installation of the new spargers. All indications found were removed by grinding as reported in Reference (c), leaving no linear indications. A re-examination of these nozzles was performed during the winter 1977 and the winter 1979 refueling outages after 18 and 31 accumulated startup/shutdown (SU/SD) cycles respectively. The examinations consisted of an external ultrasonic inspection of the nozzle using CECo. procedures NDT-C-24 and NDT-C-25 which have previously been transmitted to the NRC. An underwater TV camera inspection was also performed. No relevant indications were found.

The CECo. ultrasonic testing procedures used for examination of the feedwater nozzles have been demonstrated to be capable of detecting flaws 4 mm in-depth. However, for the purpose of the vessel examination, the procedure requires that an 8 mm notch be used as a calibration reference which ensures the detection of flaws 8 mm in depth. General Electric has similar experience with their UT techniques as reported in Reference (d).

Crack growth curves developed by General Electric and CECo. were formulated assuming leakage flow past the thermal sleeve of the feedwater sparger as was the characteristic of the loose fit spargers. General Electric formulated a curve assuming a generic SU/SD cycle which was later found to be much more severe than the actual operating conditions. This was determined (Reference (e) and (f)) while reviewing operating data on Dresden 2 & 3 and Quad-Cities 1 & 2 for the purpose of constructing a plant unique cycle for the CECo. units. It is evident upon comparison of the two curves that the G.E. curve is much more prohibitive towards accumulating SU/SD cycles and continuing unit operation. (Figure 1)

Figure 2 contains data accumulated by General Electric on crack depth for up to 80 SU/SD cycles with the interference sparger in use. A curve established using the G.E. assumed thermal cycle is compared to the actual interference fit data. It can be seen that the worst case of the 10 units with the interference fit sparger has a maximum crack depth of 0.2", with only one other unit having a maximum crack depth of 0.1". The remaining eight units however, had maximum crack depths that were much smaller or non-existent.

Inspections on Dresden Unit 2 and Quad-Cities Unit 2 confirmed the above trend for plants with interference fit spargers. During the Fall 1977 outage on Dresden Unit 2, a dye penetrant examination was performed on the accessible areas of three of the feedwater nozzle and a complete dye penetrant exam was performed on the remaining nozzle with the sparger removed. Nine linear indications were found, eight of which were removed by flapper wheel grinding. The ninth indication was removed by grinding less than 1/16" in-depth. Seven of these indications including the 1/16" crack were located on the inner bore. The unit had 33 accumulated SU/SD cycles since the original repair and installation of the interference fit spargers.

During the Spring 1978 outage on Quad-Cities Unit 2, a dye penetrant examination of the accessible areas of three nozzles and of all the areas of the remaining nozzle with the sparger removed was also performed. No linear indications were found. The unit had 44 SU/SD cycles since the initial repair and interference fit sparger installation.

Up to the present time, Quad Cities Unit 1 has accumulated 63 1/2 SU/SD cycles since the original repair. Based on this figure it was estimated that QC-1 will have approximately 66 cycles at the start of the fall 1980 outage and an additional 29 cycles prior to the fall 1982 outage. Therefore, there will be a total of 95 SU/SD cycles at the start of the fall 1982 outage.

Considering the above the following arguments can be formulated.

A. The ultrasonic examination procedures to be used will insure that any cracks 8 mm in-depth will be detected. Using the crack growth curves formulated for the inner radius an 8 mm crack would grow to critical flaw size after 43 SU/SD cycles as indicated by the GE curve and after 68 SU/SD cycles using the CECo. curve. Clearly both values fall well within the estimated 29 thermal cycles which are to occur prior to the Fall 1982 outage. Therefore it is felt that based on this evaluation no crack existing subsequent to a UT performed this upcoming outage would reach critical flaw by the Fall 1982 outage.

B. As stated previously Figure 2 contains data on crack depth for up to 80 SU/SD cycles with the interference fit spargers in use. Of the 10 units presented eight units had very small cracks or none at all. This along with the Quad Cities Unit 2 and Dresden Unit 2 P.T. inspection results indicates the effectiveness of the interference fit spargers in eliminating the leakage flow to at least 80 thermal cycles. Based on the trend of this data it seems reasonable to extend this data to encompass the projected 95 accumulated SU/SD cycles for Quad Cities Unit 1. Therefore it is felt that considering the number of thermal cycles having occurred on QC-1 there is reasonable assurance that any flaw existing would be well below critical flaw size at the start of the Fall 1982 outage.

C. Another means for extending the existing interference fit sparger data beyond the known 80 SU/SD cycles would be to assume loss of the interference fit at that time. The 80 SU/SD cycle point would then correspond to time "0" for the existing crack growth curves which are determined using heat transfer coefficients for a loose fit sparger. Assuming that an initial crack size of 0.25" is instantaneously developed a crack depth of 0.33" would be reached using the GE curve and 0.29" using the CECo. curve after the additional 15 SU/SD cycles. Therefore, any cracks forming once the interference fit would be lost would not approach critical flaw size prior to the 1982 fall outage.

D. Finally, consider the hypothetical case that no UT inspections have been performed since the original repair. QC-1 will have 95 SU/SD cycles at the start of the Fall 1982 outage. The CECo. plant unique cycle crack growth curve indicates that it would take 88 thermal cycles for a crack to reach critical flaw size. Considering the conservatism incorporated in the crack growth curve (that a loose fit sparger leaking from time zero is in use) and the conservatisms incorporated in the determination of the critical flaw size it seems reasonable to assume that a flaw might be approaching critical flaw size only after 95 cycles. This evaluation shows the conclusion that operation to 95 SU/SD cycles presents no safety concern and is not highly dependent on the realistic input assumption in A, B & C.

In summary, an evaluation of the existing Feedwater Nozzle situation on Quad Cities - 1 has resulted in the following:

1. Conservative crack growth curves still predict that a flaw remaining in the QC-1 nozzles subsequent to the previous inspection would be well below critical flaw size.

2. Feedwater nozzle data encompassing 80 SU/SD cycles has proven the effectiveness of the interference fit sparger for providing an end to the effects of the thermal cycling. An extrapolation of the available data points indicates that the projected 95 cycles for Quad Cities - 1 still falls within the realm of data predicting small crack growth.

3. Assuming that the extrapolation of the interference fit data beyond the 80 SU/SD cycle point is invalid, the conservative crack growth curves when employed to determine crack growth for the additional 15 cycles predict only small crack growth.

4. Considering the conservatisms incorporated in the feedwater nozzle crack growth analysis, the CECo. plant unique curves predict that critical flaw size is being approached after 95 SU/SD cycles. This ignores any effect that the interference spargers have in limiting leakage.

Based on the above arguments which are each felt to be self sufficient it is the Edison position that there is ample justification to proceed with the inspection program as indicated and perform the "final fix" modification during the fall 1982 refueling outage. Unit availability would not be affected since there is strong evidence that no crack would approach critical flaw size prior to the 1982 outage.

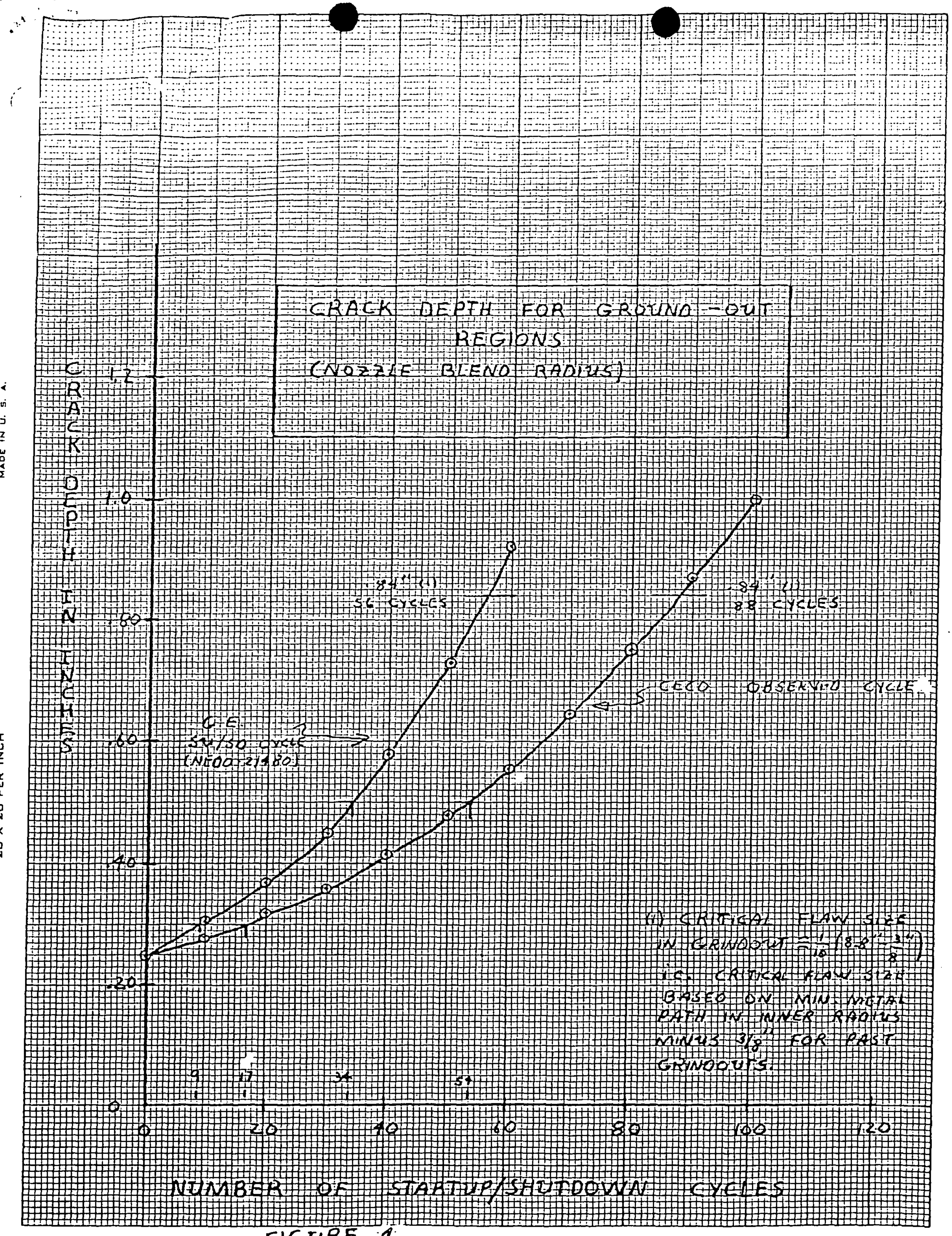

CRACK DEPTH FOR GROUND-OUT REGIONS
(NOZZLE BLEND RADIUS)
CRACK DEPTH IN INCHES
NUMBER OF STARTUP/SHUTDOWN CYCLES
0
20
40
60
80
100
120
.20
.40
.60
.80
1.0
1.2
9
17
34
54
G.E.
54/50 CYCLE
(NEDO-21480)
CECO OBSERVED CYCLE
.84" (1)
56 CYCLES
.84" (1)
88 CYCLES
(1) CRITICAL FLAW SIZE IN GRINDOUT
i.e. CRITICAL FLAW SIZE BASED ON MIN. METAL PATH IN INNER RADIUS MINUS 3/8" FOR PAST GRINDOUTS.
NO. 340R-20L DIETZGEN GRAPH PAPER
20 X 20 PER INCH
EUGENE DIETZGEN CO.
MADE IN U. S. A.

FIGURE 1

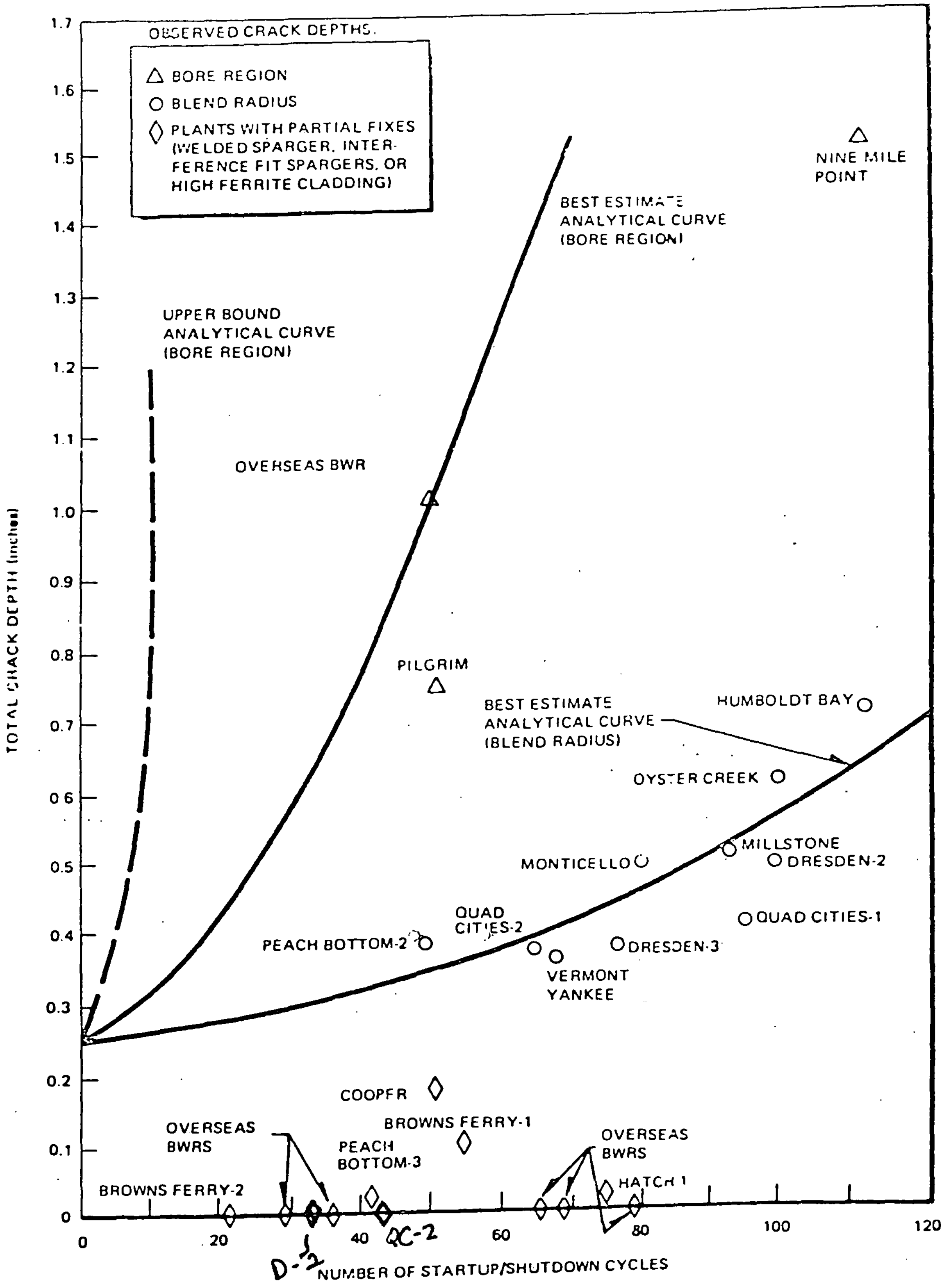
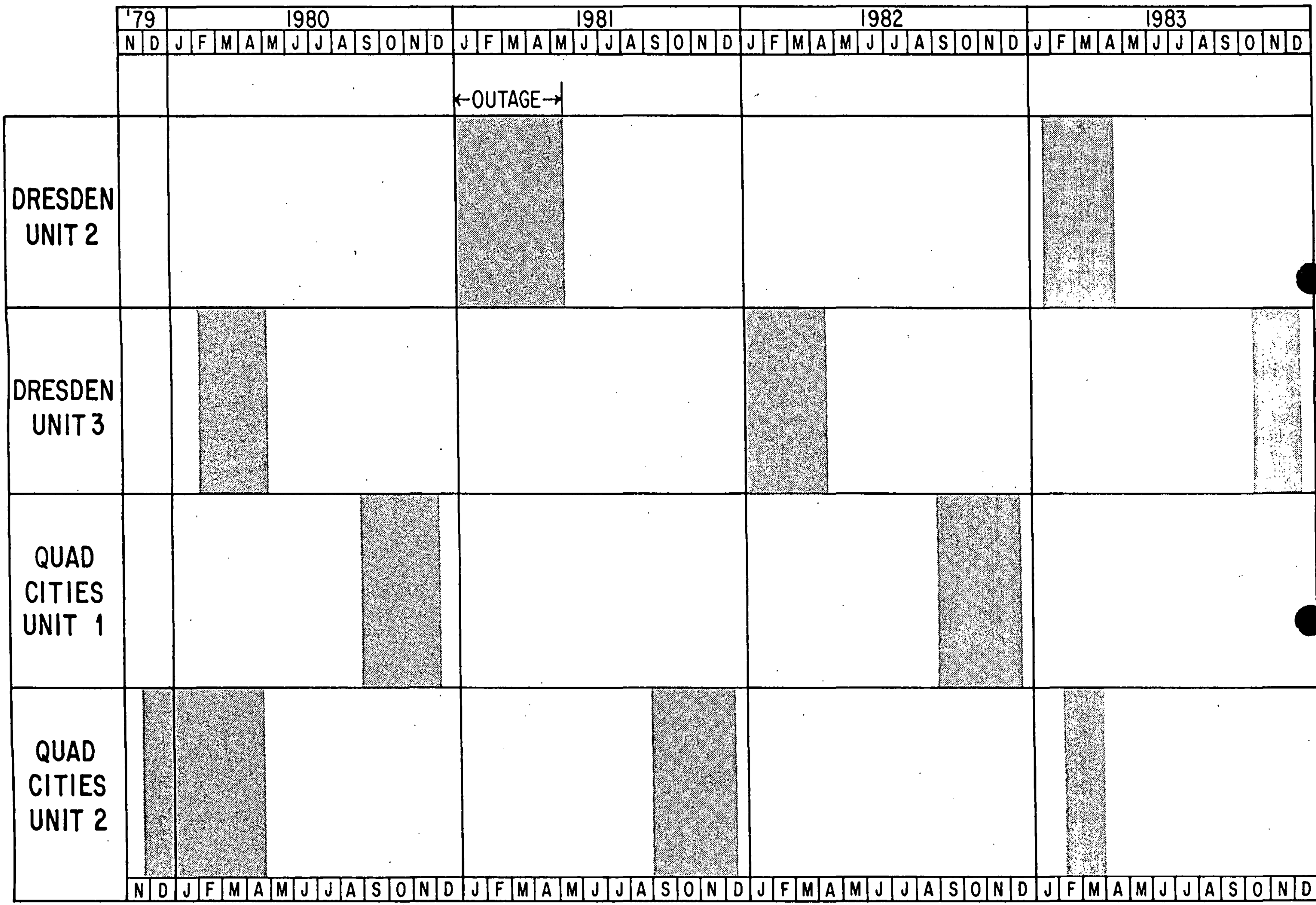
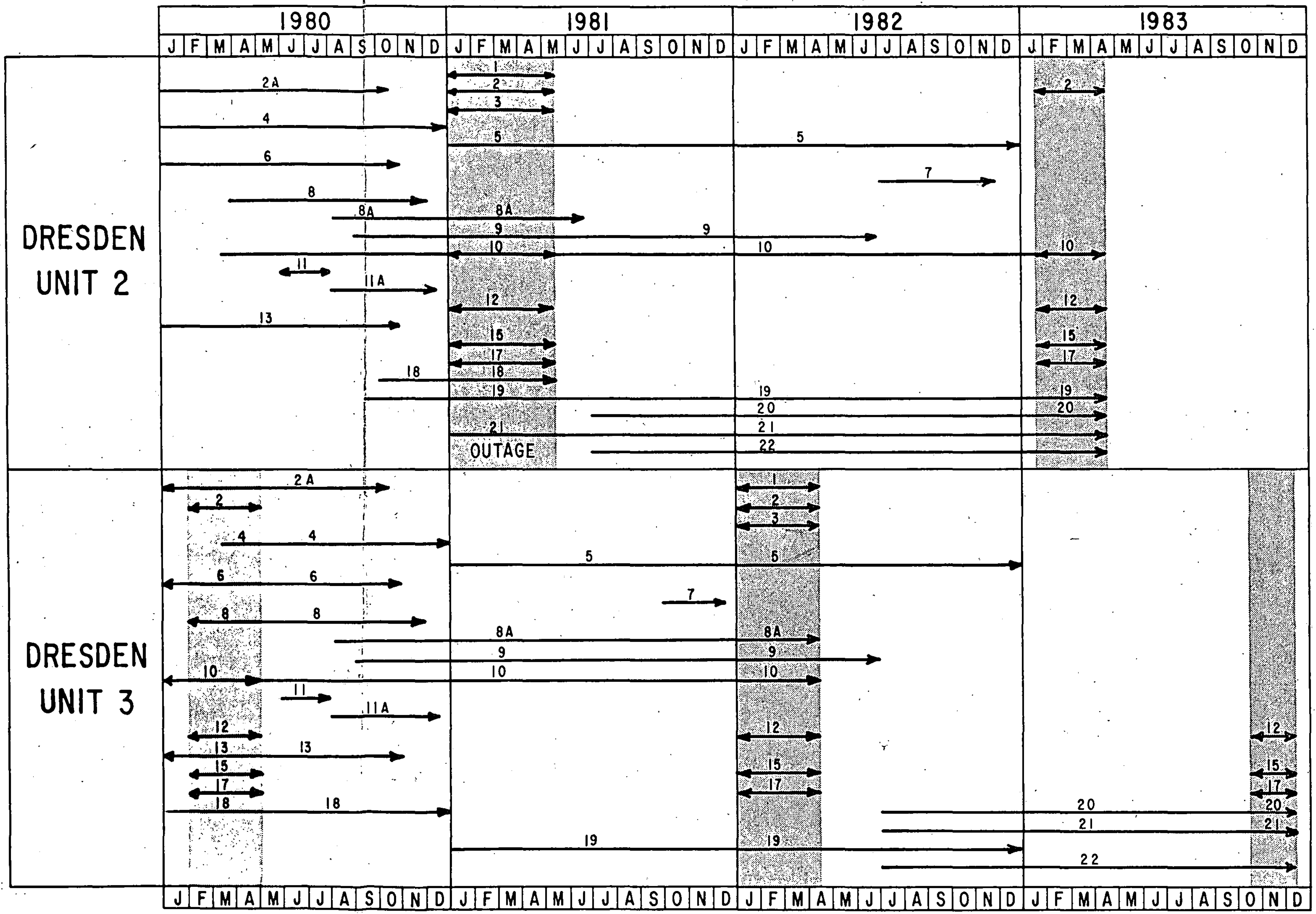

OBSERVED CRACK DEPTHS.
BORE REGION
BLEND RADIUS
PLANTS WITH PARTIAL FIXES (WELDED SPARGER, INTERFERENCE FIT SPARGERS, OR HIGH FERRITE CLADDING)
UPPER BOUND ANALYTICAL CURVE (BORE REGION)
BEST ESTIMATE ANALYTICAL CURVE (BORE REGION)
BEST ESTIMATE ANALYTICAL CURVE (BLEND RADIUS)
NINE MILE POINT
OVERSEAS BWR
PILGRIM
HUMBOLDT BAY
OYSTER CREEK
MONTICELLO
MILLSTONE
DRESDEN-2
QUAD CITIES-1
QUAD CITIES-2
PEACH BOTTOM-2
DRESDEN-3
VERMONT YANKEE
COOPER
BROWNS FERRY-1
OVERSEAS BWRS
PEACH BOTTOM-3
OVERSEAS BWRS
HATCH 1
BROWNS FERRY-2
TOTAL CRACK DEPTH (inches)
NUMBER OF STARTUP/SHUTDOWN CYCLES
D-1/2
QC-2

Figure 2

COMMONWEALTH EDISON COMPANY BWR OUTAGE SCHEDULE



COMMONWEALTH EDISON COMPANY BWR OUTAGE SCHEDULE



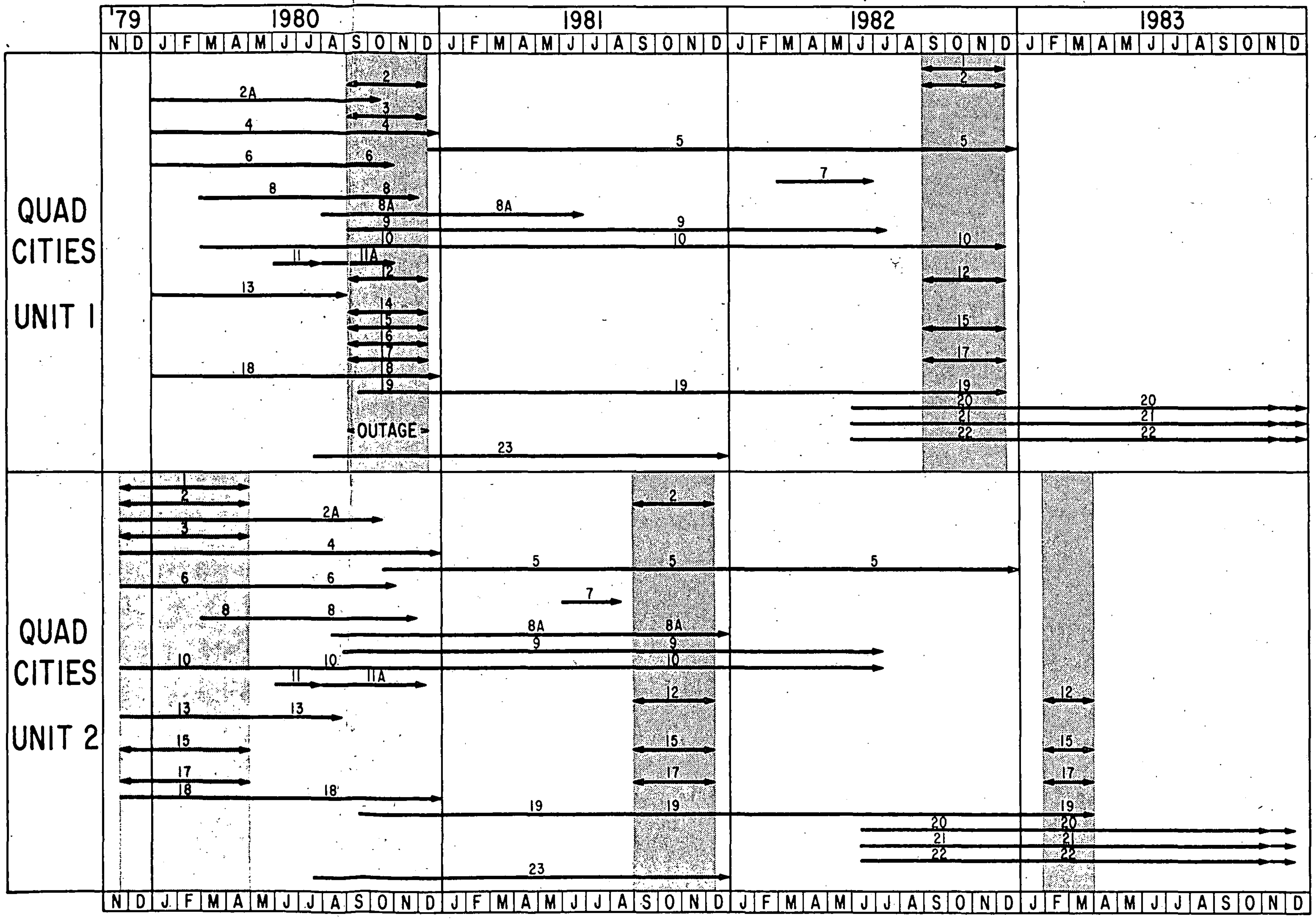
LEGEND

ITEM NO.	DESCRIPTION
1.	FDWTR. SPARGER & CLAD REMOVAL
2.	MARK I INTERNAL } SEE DETAIL SCHEDULE
2A.	MARK I EXTERNAL }
3.	FDWTR. TEMP. MONITORING
4.	TMI – JANUARY, 81.
	a) SAFE RELIEF VALVE POSITION IND.
	b) PRIMARY CONTAINMENT ISOLATION.
	c) HIGH RADIATION SAMPLE SYSTEM
	I. NOBLE GAS MONITOR
	II. HIGH RANGE RAD. MONITORS–CONTAIN.
	d) CONTAINMENT PRESSURE
	e) TORUS WATER LEVEL
	f) H_2 MONITORS
	g) ONSITE TECH. SUPP. CTR.
5.	TMI – 81/82
	a) CONTROL RM. HABITABILITY
	b) HPCI–RCIC ISOLATION
	c) ADS LOGIC CHANGES
	d) MISC.
6.	FIRE PROTECTION
7.	SPENT FUEL RACKS
8.	SAFETY RELATED ELEC. EQUIPT. ANCHOR INVESTIGATION. 8A – MODIFICATION.
9.	FIXES FOR SAFETY RELATED HANGERS
10.	ENV. QUAL. OF ELEC. EQUIPT. ANALYSIS & MODS
11.	CONCRETE BLOCK WALL INSP.
12.	TURBINE INSPECTIONS U.T.
13.	SECURITY SYSTEM
14.	THERMAL SLEEVE REMOVAL CRD–QC.1
15.	JET PUMP INSPECTION
16.	Rx WATER CLEAN UP. QC
17.	VISUAL INSP. OF COPE SPRAY SPARGER
18.	ATWS ALT 2 RPT–ARI
19.	ATWS ALT 3
	a) CONTROL ROD DRIVE SYSTEM
	b) STANDBY LIQUID CONTROL
	c) RCIC, HPCI/HPCS & ISO–COND.
	d) FEEDWATER RUNBACK CONTROL
	e) Rx WTR. CLEANUP & SAMPLE SYSTEM
	f) MISC
20.	SEISMIC MODS – SEP.
21.	MISC MODS – SEP.
22.	HELB INSIDE CONTAINMENT.
23.	SERVICE BLDG. ADDITION – QC.

COMMONWEALTH EDISON COMPANY BWR OUTAGE SCHEDULE

	19												198												198												198											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
DRESDEN UNIT																																																
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D

COMMONWEALTH EDISON COMPANY BWR OUTAGE SCHEDULE



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	d) CONTAINMENT PRESSURE
	e) TORUS WATER LEVEL
	f) H_2 MONITORS
	g) ONSITE TECH. SUPP. CTR.
5.	TMI – 81/82
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11.	CONCRETE BLOCK WALL INSP.
12.	TURBINE INSPECTIONS U.T.
13.	SECURITY SYSTEM
14.	THERMAL SLEEVE REMOVAL CRD-QC.1
15.	JET PUMP INSPECTION
16.	Rx WATER CLEAN UP. QC
17.	VISUAL INSP. OF CORE SPRAY SPARGER
18.	ATWS ALT 2 RPT-ARI
19.	ATWS ALT 3
	a) CONTROL RED DRIVE SYSTEM
	b) STANDBY LIQUID CONTROL
	c) RCIC, HPCI/HPCS & ISO-COND.
	d) FEEDWATER RUNBACK CONTROL
	e) Rx WTR. CLEANUP & SAMPLE SYSTEM
	f) MISC
20.	SEISMIC MODS – SEP.
21.	MISC MODS – SEP.
22.	HELB INSIDE CONTAINMENT.
23.	SERVICE BLDG. ADDITION – QC.

COMMONWEALTH EDISON COMPANY BWR OUTAGE SCHEDULE

	19												198												198												198											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
DRESDEN UNIT																																																
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D