

HARRISON

June 6, 1984

Roger Fischer
Chief of Staff
Michigan Public Service Commission
6545 Mercantile Way
P. O. Box 30221
Lansing, MI 48910

Dear Mr. Fischer:

On May 3, 1984, NRC representatives met with you and your staff to discuss the Midland Nuclear Power Plant and NRC's views regarding eventual licensing and operation. On June 4, 1984 you requested this office to provide written documentation of the NRC views presented at the May 3, 1984 meeting. A summary of our views of the regulatory status of the plant are as follows:

1. The basic design for the Midland Nuclear plant was approved by the Office of Nuclear Reactor Regulation of the NRC as documented in NUREG 0793 Safety Evaluation Report in May, 1982. There are no foreseen major design changes to be required by the NRC.
2. The remedial soils work for the Midland Nuclear Plant has been approved by the NRC staff. The remedial soils work is being monitored by a third party reviewer (Stone and Webster), and the NRC is reviewing and authorizing each work activity. The NRC believes that the present remedial soils program and the CPCo management team charged with implementing this program, together with the continuing overview by both the NRC and Stone and Webster, should lead to satisfactory completion of that program.
3. A Construction Completion Program (CCP) has been put into effect to verify the adequacy of completed work under the responsibility of Bechtel, the architect-engineer, and to assure the orderly completion of future work. This program has been approved by the NRC. While some rework will be required as a result of this effort, it is too early to determine the extent of the rework. It appears that we will have this information by the end of 1984. The independent overviewer, Stone and Webster, has consistently stated that CPCo is satisfactorily implementing the CCP.

While one cannot guarantee the course of future events, we conclude that the licensee's present projected dates for fuel load and operations appear reasonable. This conclusion assumes no further major problems, including no major rework as a result of the reinspection of completed safety systems, and no significant issues arising out of the hearing process or the investigation of allegations.

Sincerely,

Original signed by
James G. Keppler

James G. Keppler
Regional Administrator

cc: W. J. Dircks, EDO
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H. R. Denton, NRR
G. Cunningham, ELD
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6/ /84

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**Consumers
Power
Company**

*Harrison
cys to RFW.*

James W Cook
Vice President - Projects, Engineering
and Construction

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May 14, 1984

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MIDLAND ENERGY CENTER
MIDLAND DOCKET NOS 50-329, 50-330
MIDLAND PROJECT SCHEDULE
FILE 0650 SERIAL 30677

PRINCIPAL STAFF	
<i>✓</i> A	DPRP
D/RA	DE
A/RA	DRMSP
RC	DRMA
PAO	SCS <i>Wig + 3</i>
SGA	<i>W</i>
ENF	File <i>W</i>

We appreciated the opportunity to discuss the Midland Project Schedule with you and the other representatives of the NRC staff on May 4, 1984. As stated during the presentation, we believe that based on the extensive planning effort undertaken over the past seven months, we now have an achievable schedule describing all known remaining activities. The schedule allows for a significant amount of rework that could result from the reinspection program, and also includes three months of schedule contingency.

The material presented at the public meeting is attached for your further study. In response to your concluding remarks at the May 4th meeting, we would be pleased to present a further briefing to the NRC staff after six months to report on our continuing experience in implementing the CCP.

JWC/ARM/bt

CC DSHood, US NRC, NRR
RJCook, Midland Resident Inspector

James W. Cook

MAY 21 1984

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3/14/84

MIDLAND PROJECT SCHEDULE

INTRODUCTION

JW COOK

MIDLAND PROJECT SCHEDULE PRESENTATION AGENDA

- INTRODUCTION J. W. COOK
- INTEGRATED PROJECT SCHEDULE A. R. MOLLENKOPF
 - Planning model & data base
 - Critical Activities & priorities
 - Schedule contingency
- MAJOR SCHEDULE COMPONENTS
 - Construction D. L. QUAMME
 - Quality Assurance R. A. WELLS
 - Testing D. L. QUAMME
 - Soils J. A. MOONEY
 - Licensing J. N. LEECH
- CONCLUSIONS J. W. COOK

MIDLAND PROJECT SCHEDULE SCHEDULE CONCLUSIONS

- Unit 2 Fuel Load July 86
 - Unit 2 Operation Dec. 86
 - Unit 1 Fuel Load Indeterminate
 - Unit 1 Operation Indeterminate
-

CCP ASSUMPTIONS

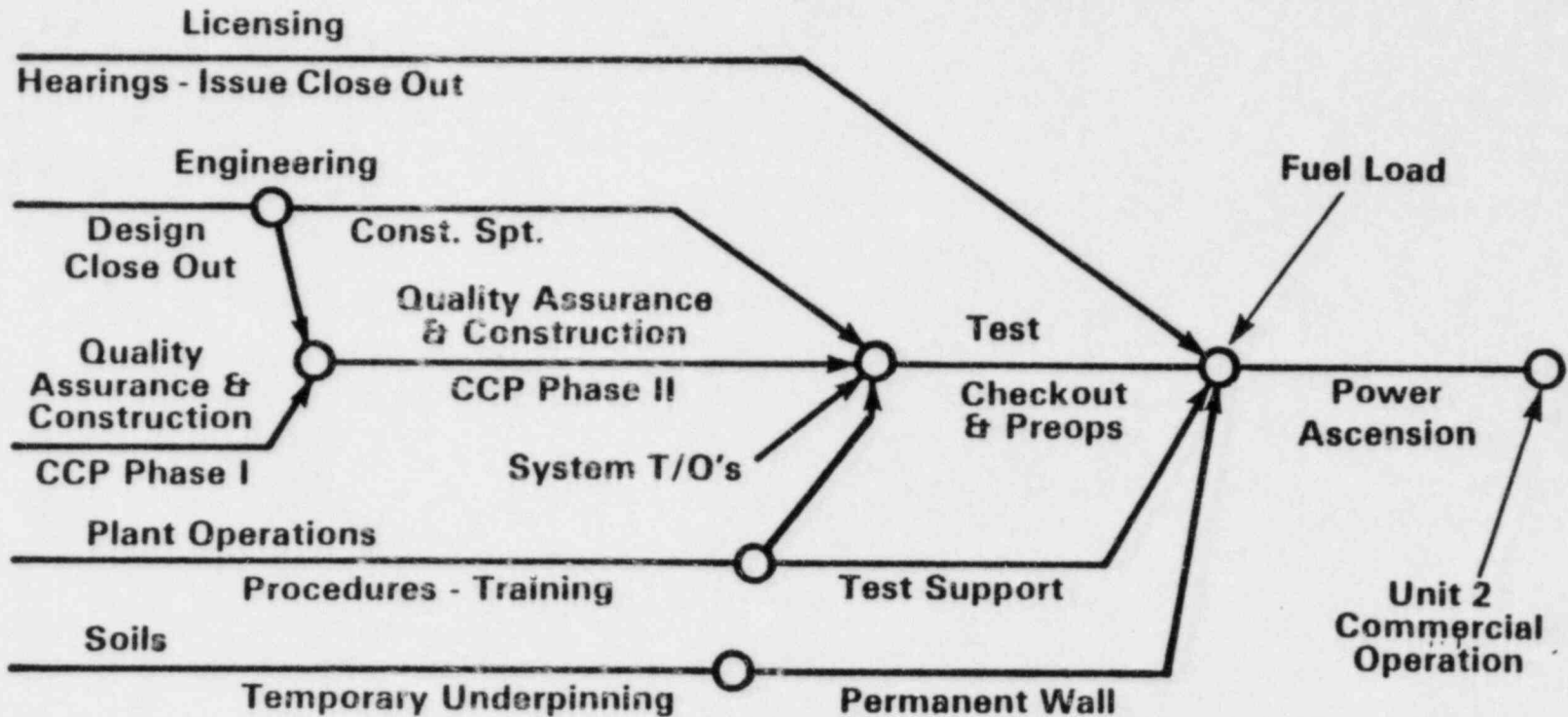
- 1) QVP — Based on 100% Reinspection**
- 2) Rework From Reinspection — Estimated to Require
1.6 x 10⁶ Hours**
- 3) Paperwork to Complete Job Estimated as 80,000 Construction Work Packages (CWPs), 33,000 NCRs and 16,500 FCRs/FCNs**

MIDLAND PROJECT SCHEDULE

MAJOR SCHEDULE ASSUMPTIONS

- Unit 1 Decoupling Recommendations Implemented
- Project Performance Merits Regulatory Support
- QC Inspector Rampup to Two-Shift Operation by Mid-Summer 1984
- Funding Available
- Scope Remains Stable
- Nonconformances and Total Rework Within Estimate

MIDLAND PROJECT SCHEDULE PROJECT COMPLETION PLAN SCHEDULE LOGIC



MIDLAND PROJECT SCHEDULE
MAJOR PROJECT MILESTONES
UNIT 2

- Complete Engineering & Design (Rev. 0) Jun. 84
- Turbine Roll Jun. 84
- QC Inspector Rampup Complete Aug. 84
- Complete Status Assessment Oct. 84
- Complete Temporary Underpinning Dec. 84
- Complete System QVP Jan. 85
- Auxiliary Flushes to Reactor Vessel Mar. 85
- Complete Area QVP July 85
- Reactor Coolant System Hydrostatic Test July 85
- Hot Functional Test Oct. 85
- Major Containment Tests Jan. 86
- Integrated Safety Systems Test Mar. 86
- Fuel Load July 86
- Commercial Operation Dec. 86

MIDLAND PROJECT SCHEDULE

INTEGRATED PROJECT
SCHEDULE

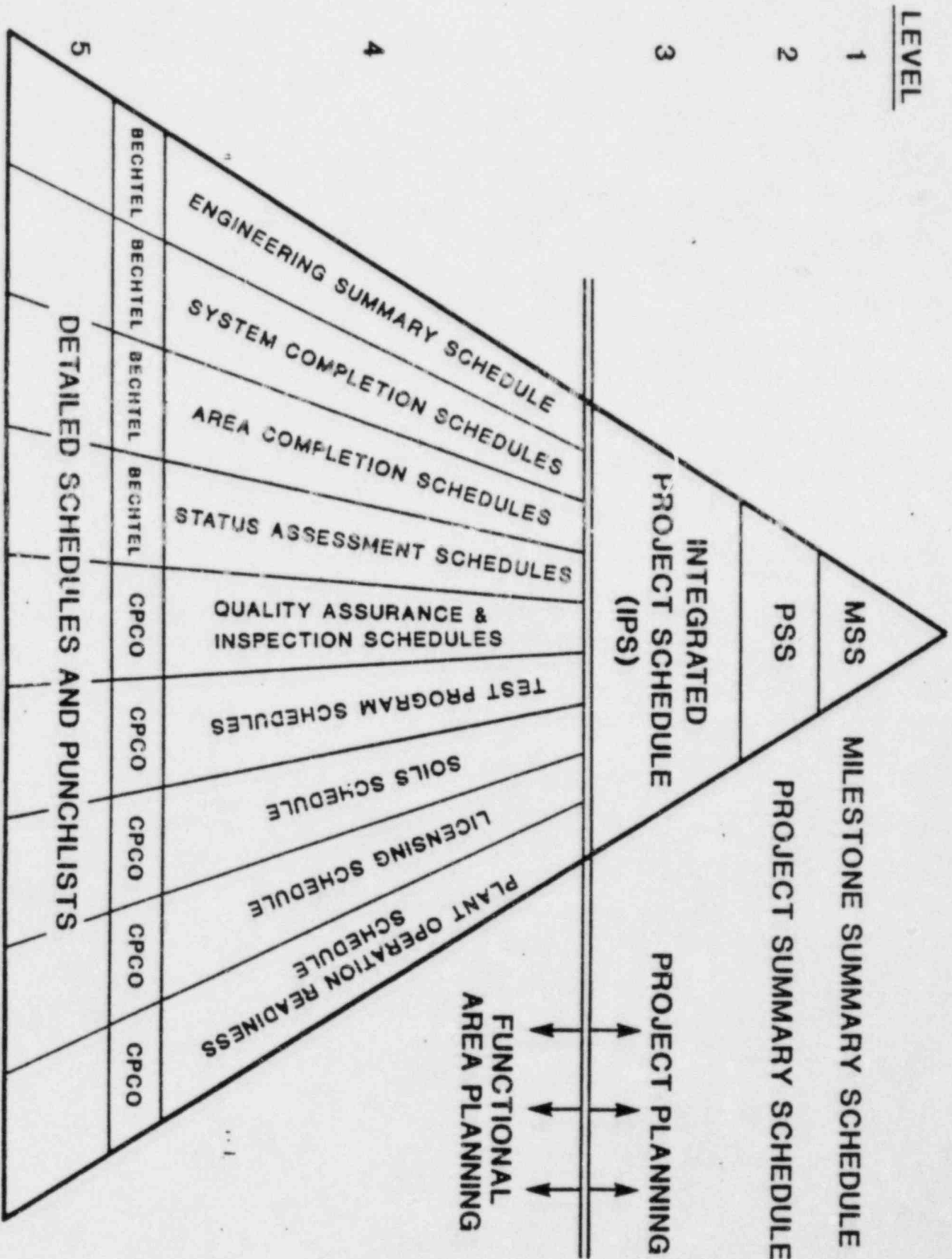
AR MOLLENKOPF

INTEGRATED PROJECT SCHEDULE

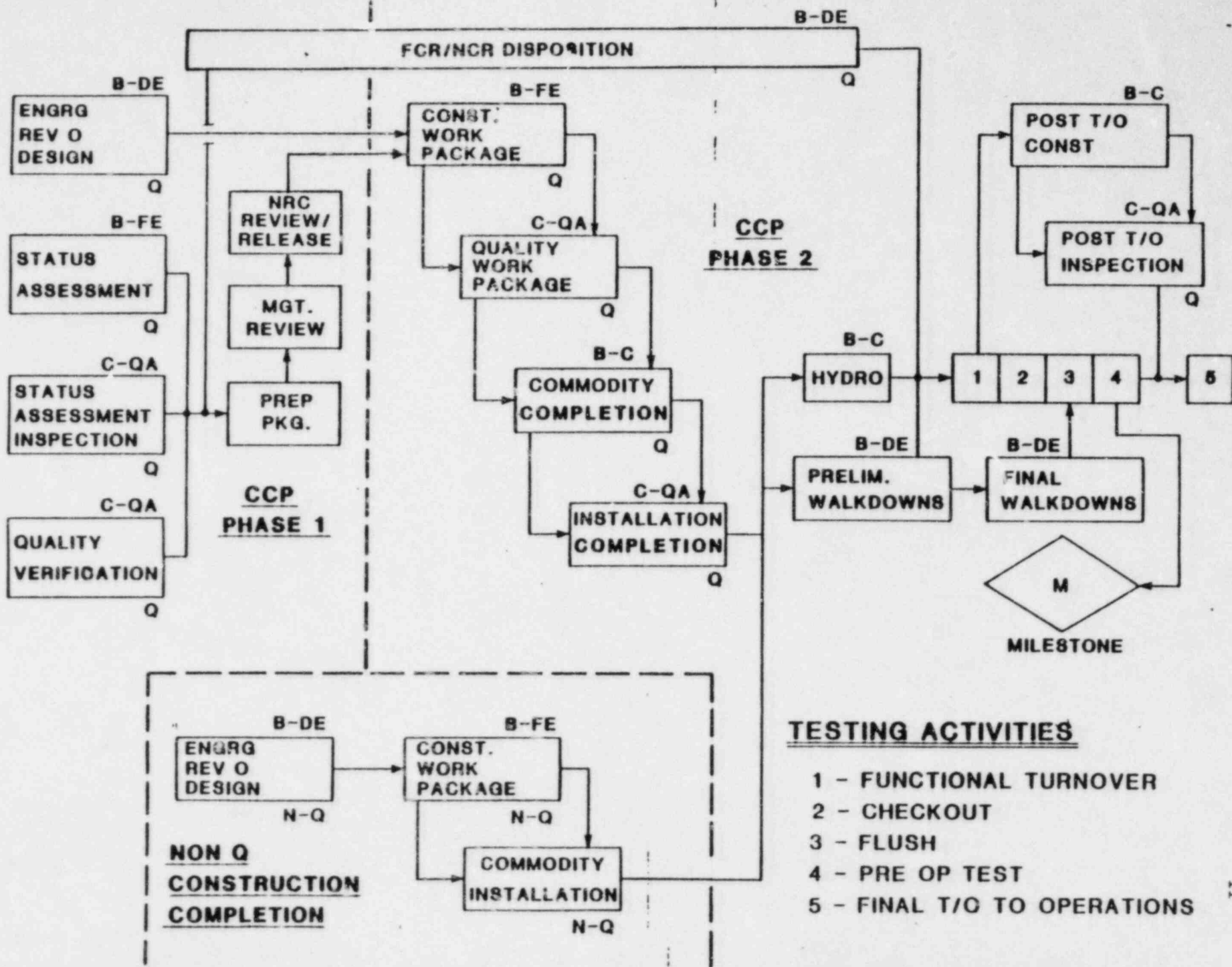
INTRODUCTION

- **PLANNING MODELS**
- **PLANNING DATA BASE**
- **PROJECT PRIORITIES**
- **SCHEDULE CRITICAL PATHS
ACTIVITIES**
- **SCHEDULE CONTINGENCY**

INTEGRATED PROJECT SCHEDULE SCHEDULE HIERARCHY



GENERIC IPS MODEL - PLANT SYSTEMS



INTEGRATED PROJECT SCHEDULE

PLANNING DATA BASE WORKSHEET

DATE: <u>4/18/84</u>		Q/NQ: <u>Q/NQ</u>		APPROVALS: _____						
TEAM: <u>12</u>		SYSTEM: <u>2BGB-2</u>		BY TEAM	PLNR	F.E.	SUPVR			
ACTIVITY CODE	COMMODITY	Q/NQ	QTY.	UNIT RATE	MAN-HOURS	TOTAL MH	NO.OF CRAFT	MH / DAY	DUR (DAYS)	SHIFTS
214766208	SMALL PIPE (LF)	Q	B 4	8.3	33	696	2	16	6	1
			P 126	5.1	643					
214766257		NQ	B 42	6.7	281	870	4	32	27	1
			P 128	4.6	589					
214766208	SM. HGRS									

MPQAD - QC INSPECTION - PHASE 2						SYSTEM: <u>2BGB-2</u>	
ACTIVITY CODE	TASK DESCRIPTION	DUR DAYS	QTY	UNIT RATE	QC MHRS	RESOURCE CODE	REF ACTIVITY
21470208	ERECT SMALL PIPE-Q	6	130lf	0.8	104	702.07	66,206
21470210	ERECT SMALL PIPE HGRS	15	48 ea.	3.0	144	702.07	
21470212	PIPE INSULATION						

INTEGRATED PROJECT SCHEDULE

RELATED DATA BASE SYSTEMS

- RWS - REMAINING WORK SCHEDULE
(ENGINEERING PUNCHLIST)
- MLCS - MATERIAL/LABOR CONTROL SYSTEM
- CPL - CONSTRUCTION PUNCHLIST
- MIRS - MIDLAND INSPECTION RECORDS SYSTEM
- QUAIL - QUALITY ACTION ITEM LIST
- MPL - MASTER PUNCHLIST

INTEGRATED PROJECT SCHEDULE

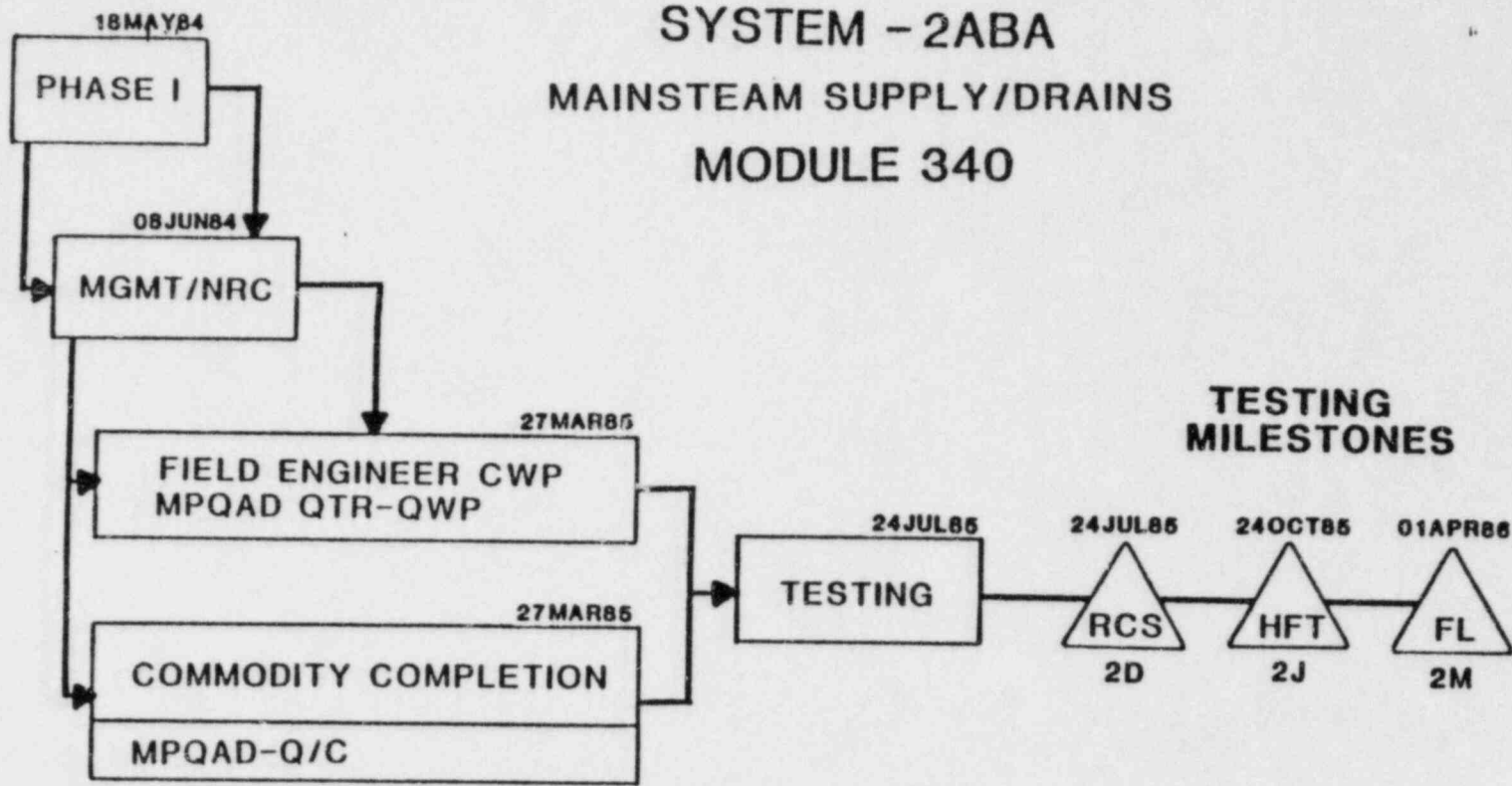
SHORT-TERM PROJECT PRIORITIES

	<u>PRIORITY</u>	<u>SYSTEM/AREA</u>	<u>SUPPORTS</u>
1.	TURBINE ROLL EXCEPTIONS	2ABA-2, -3, 2ABB-3 (MAIN STM LINE/ISO VALVES)	2TR
2.	MODULE 800 SWPS	CONDENSER CIRC. WATER	2TR
3.	MODULE 120D A/B LOWER ELEV.	2ALA-2 (AFW)	2G (F.W. FLUSHES) MODULE RELEASE
4.	NON-Q SYSTEM SPT-BY QC INSPECTION	NON-Q WORK INTERFACE W/ Q COMMODITIES	NON-Q SYSTEM COMPLETION IN 1984
5.	MODULE 240A	CONTROL ROOM CEILING	EFFICIENT CONST. SEQUENCING & CTL RM TESTING
6.	FLOOD & SECURITY DOORS	TOTAL PLANT	SECURITY SYSTEM COMPLETION
7.	MODULE 340 B&G (FWVIP) MODULE 102 (A/B PIPE CHASE) MODULE 120 (A/B LOWER ELEV.)	2AEA-3 (FEEDWATER) 2ALA-2 (AFW)	2G (F.W. FLUSHES)
8-13	MODULES 340, 150, 320, 330, 240, & 160	21 PARTIAL Q SYSTEMS	2B (AUX FLUSHES) 2C (CANAL HYDRO) 2D (RCS COLD HYDRO)

INTEGRATED PROJECT SCHEDULE
SCHEDULE CRITICAL PATHS
(TO 4/86 TARGET FUEL LOAD)

- | | |
|---------------------------|---|
| • MECHANICAL SYSTEMS (99) | 3 W/ 0 FLOAT
3 W/ 1 MONTH FLOAT
93 W/ 2 TO 4 MONTHS FLOAT |
| • HVAC SYSTEMS (25) | 3 W/ + 1 MONTH
22 W/ + 3 MONTHS |
| • ELECTRICAL SYSTEMS (33) | NOT CRITICAL
PREOPS COMPLETE EARLY 85 |
| • SOILS-AUX BLDG | +2 MONTHS |
| • AREAS-CONTROL RM (5/85) | +2 MONTHS |
| -ALL OTHER AREAS | -NOT CRITICAL |

CRITICAL PATH
SYSTEM - 2ABA
MAINSTEAM SUPPLY/DRAINS
MODULE 340



SYSTEM 2ABA MODULE 340
MILESTONE 2D

MAINSTEAM SUPPLY & DRAINS	REMNMHS	REMNDUR	FIN DATE
1. PHASE I MPQAD	7	5	18MAY84
2. PHASE I BPCO FLD. ENGR.	716	23	18MAY84
3. MEC MANAGEMENT REVIEW	NA	5	25MAY84
4. NRC REVIEW & RELEASE	NA	10	8JUN84
5. * FIELD ENGINEERING	2477	209	27MAR85
6. * MPQAD QTR/QWP -	1486	209	27MAR85
7. * CONSTRUCTION -	24743	204	27MAR85
8. * MPQAD QC -	3712	204	27MAR85
9. MECH. SYSTEM WLKDNW P119 & P129	NA	5	3APR85
10. FUNCTIONAL TURNOVER	NA	5	10APR85
11. MILESTONE (TESTING)	SEE BELOW	75	24JUL85
TOTAL FOR ABOVE ACTIVITIES	35,266		
SYSTEM TOTAL FOR ENGINEERING	2,860	NA	NA
SYSTEM TOTAL FOR MPQAD	14,845	NA	NA
SYSTEM TOTAL FOR FIELD ENGR	16,392	NA	NA
SYSTEM TOTAL FOR CONSTRUCTION	93,922	NA	NA
SYSTEM TOTAL FOR GSO	3,370	NA	NA
SYSTEM TOTAL FOR TESTING	2,125	NA	NA
GRAND TOTAL	133,514		

* NOT SERIES ACTIVITIES . OCCUR WITH OVERLAP

INTEGRATED PROJECT SCHEDULE

SUMMARY

- **PROJECT PLANNING - IPS**
 - INTEGRATES & ALIGNS TOTAL TO-GO SCOPE
 - SETS SHORT TERM PROJECT PRIORITIES
 - RESOURCE REQUIREMENTS
 - PROBLEM AREA IDENTIFICATION
 - PROJECT COMPLETION FORECAST
 - SCHEDULE CONTINGENCY MANAGEMENT

- **FUNCTIONAL AREA PLANNING**
 - SYSTEM/AREA COMPLETION TEAMS
 - DETAILED WORKING SCHEDULES
 - BASED ON IPS REQUIREMENTS
 - SHORT TERM RESOURCE ALIGNMENT
 - FEEDS PROGRESS TO IPS

MIDLAND PROJECT SCHEDULE

CONSTRUCTION

DL QUAMME

MIDLAND SCHEDULE
MAJOR/KEY SCHEDULE ASSUMPTIONS
CONSTRUCTION SCHEDULE

- **FUNDING AVAILABLE**
- **TO-GO SCOPE REMAINS STABLE**
- **NON CONFORMANCES AND TOTAL REWORK WITHIN ESTIMATE**
- **QC INSPECTOR RAMP-UP TO TWO-SHIFT OPERATION BY
MID-SUMMER 1984**
- **NRC/THIRD PARTY REVIEW OF PHASE 1 PACKAGES WILL
SUPPORT THE SCHEDULE**

MIDLAND SCHEDULE
CONSTRUCTION MANHOUR (TO-GO) SCOPE SUMMARY
(TOTAL TO-GO AS OF 1/1/84)

	<u>MANHOURS (MILLIONS)</u>
• BECHTEL	
• NONMANUAL	6.5
• MANUAL	6.3
• MAJOR SUBCONTRACTS	
• NSSS	0.2
• HVAC	1.1
• INSULATION	0.3
• PENETRATION SEALING	0.2
• AUX. BLDG. UNDERPINNING	1.9
• SERV. WTR. BLDG. UNDERPINNING	0.5

MIDLAND SCHEDULE
BECHTEL SITE MANHOUR SUMMARY
(TOTAL TO-GO AS OF 1/1/84)

<u>NONMANUAL</u>		<u>MANUAL</u>	
<u>CATEGORY</u>	<u>MANHOURS (MILLIONS)</u>	<u>CATEGORY</u>	<u>MANHOURS (MILLIONS)</u>
● CONSTRUCTION SUPERVISION	0.5	● NEW WORK	
● FIELD ENGINEERING		● CONCRETE/CIVIL	0.4
● CONSTRUCTION WORK PACKAGES	1.2	● MECHANICAL/PIPING	1.1
● STATUS ASSESSMENT	0.2	● ELECTRICAL	0.6
● FCR/FCN/NCR RESOLUTION	0.8	● MODIFICATIONS	
● CONSTRUCTION WALKDOWNS	0.2	● CONCRETE/CIVIL	0.4
● STAFF	0.2	● MECHANICAL/PIPING	0.6
● DOCUMENT CONTROL	0.6	● ELECTRICAL	0.4
● SOILS ORGANIZATION	1.0	● SOILS REMEDIAL	0.2
● SUPPORT GROUPS	1.8	● DISTRIBUTABLES	2.0
		● STARTUP SUPPORT	0.6
TOTAL	6.5	TOTAL	6.3

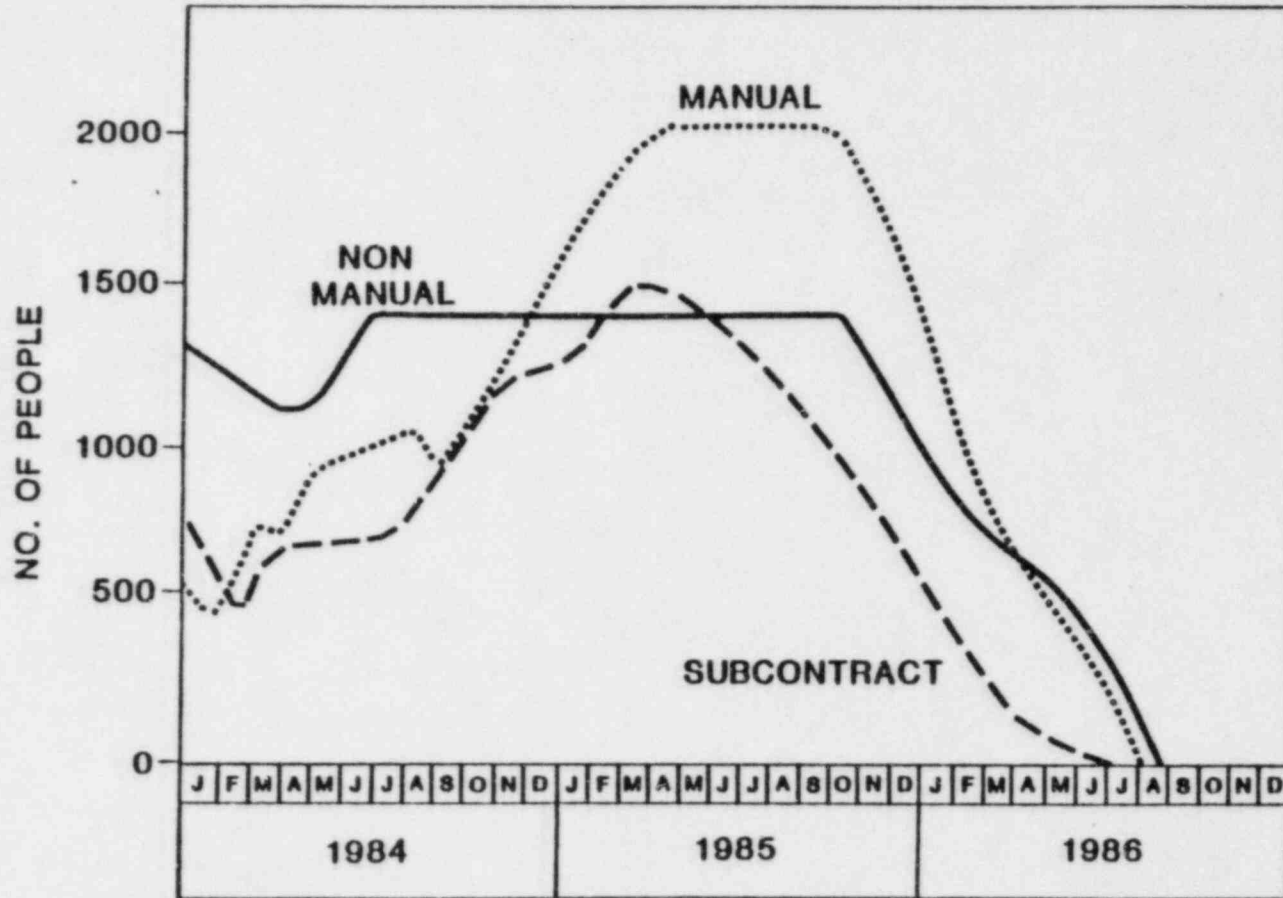
MIDLAND SCHEDULE
STATUS ASSESSMENT (BECHTEL SCOPE)
PHASE 1 QUANTITIES/MANHOURS

	<u>QUANTITIES</u>	<u>HOURS</u>
● MECHANICAL		
• LARGE PIPE	26,000 (LF)	6,500
• LARGE PIPE HANGERS	3,500 (EA)	23,000
• SMALL PIPE	39,800 (LF)	9,500
• SMALL PIPE HANGERS	8,200 (EA)	27,000
• MISC		<u>4,000</u>
		S/T 70,000
● ELECTRICAL		
• TERMINATIONS	44,200 (EA)	12,200
• EQUIPMENT	300 (EA)	<u>3,800</u>
		S/T 16,000
● INSTRUMENTATION		
• TUBING	35,200 (LF)	7,000
● RACEWAYS		
• SUPPORTS	6,700 (EA)	40,000
● AREA		
• STRUCTURAL STEEL	1,340 (TONS)	20,100
• PLATFORMS	480 (TONS)	18,300
• WHIP RESTRAINTS & JET BARRIERS	320 (EA)	6,500
• BLOCKWALLS	290 (EA)	6,900
• MISC		<u>27,400</u>
		S/T 79,200
	TOTAL	<u>212,200</u>

MIDLAND SCHEDULE
INSTALLATIONS - SCOPE SUMMARY

	<u>CURRENT FORECAST</u>	<u>TO-GO</u>
• LARGE PIPE (LF)	294,800	1,600
• LARGE PIPE HANGERS (EA)	16,000	1,460
• SMALL PIPE (LF)	339,400	28,090
• SMALL PIPE HANGERS (EA)	18,700	3,940
• WIRE & CABLE (LF)	10,694,000	680,640
• TERMINATIONS (EA)	356,000	62,220
• CONDUIT (LF)	623,300	47,360
• CABLE TRAY (LF)	87,300	500
• INSTRUMENT TUBING (LF)	160,000	43,640

MIDLAND SCHEDULE
BECHTEL SITE MANPOWER



MIDLAND PROJECT SCHEDULE

QUALITY ASSURANCE

RA WELLS

MPQAD INSPECTION REQUIREMENTS (CCP)

QUALITY VERIFICATION PLAN (QVP)

- 100% VERIFICATION OF ALL INSPECTIONS COMPLETED PRIOR TO DECEMBER 1982
 - PHYSICAL INSPECTION
 - DOCUMENT REVIEW

STATUS ASSESSMENT REINSPECTIONS

- VERIFICATION OF PARTIALLY COMPLETED INSPECTIONS PRIOR TO DECEMBER 1982
 - PHYSICAL INSPECTION
 - DOCUMENT REVIEW
- UPDATING OF INSPECTIONS TO LEVEL OF CONSTRUCTION COMPLETION

NEW INSPECTIONS

- NEW CONSTRUCTION ACTIVITIES

QVP/SA MAN HOUR ESTIMATES

- IDENTIFIED CLOSED INSPECTION RECORDS BY PQCI

- 100,000 PHYSICAL INSPECTIONS-DOCUMENT REVIEW
- 28,000 DOCUMENT REVIEW ONLY

- IDENTIFIED OPEN INSPECTION RECORDS BY PQCI

- 11,000 PHYSICAL INSPECTIONS-DOCUMENT REVIEW

- ESTIMATED NUMBER OF UPDATE INSPECTIONS

- 15% OF Q-CONSTRUCTION 3 MONTHS PRIOR TO DECEMBER 1982

- ESTIMATED UNIT RATES BY PQCI

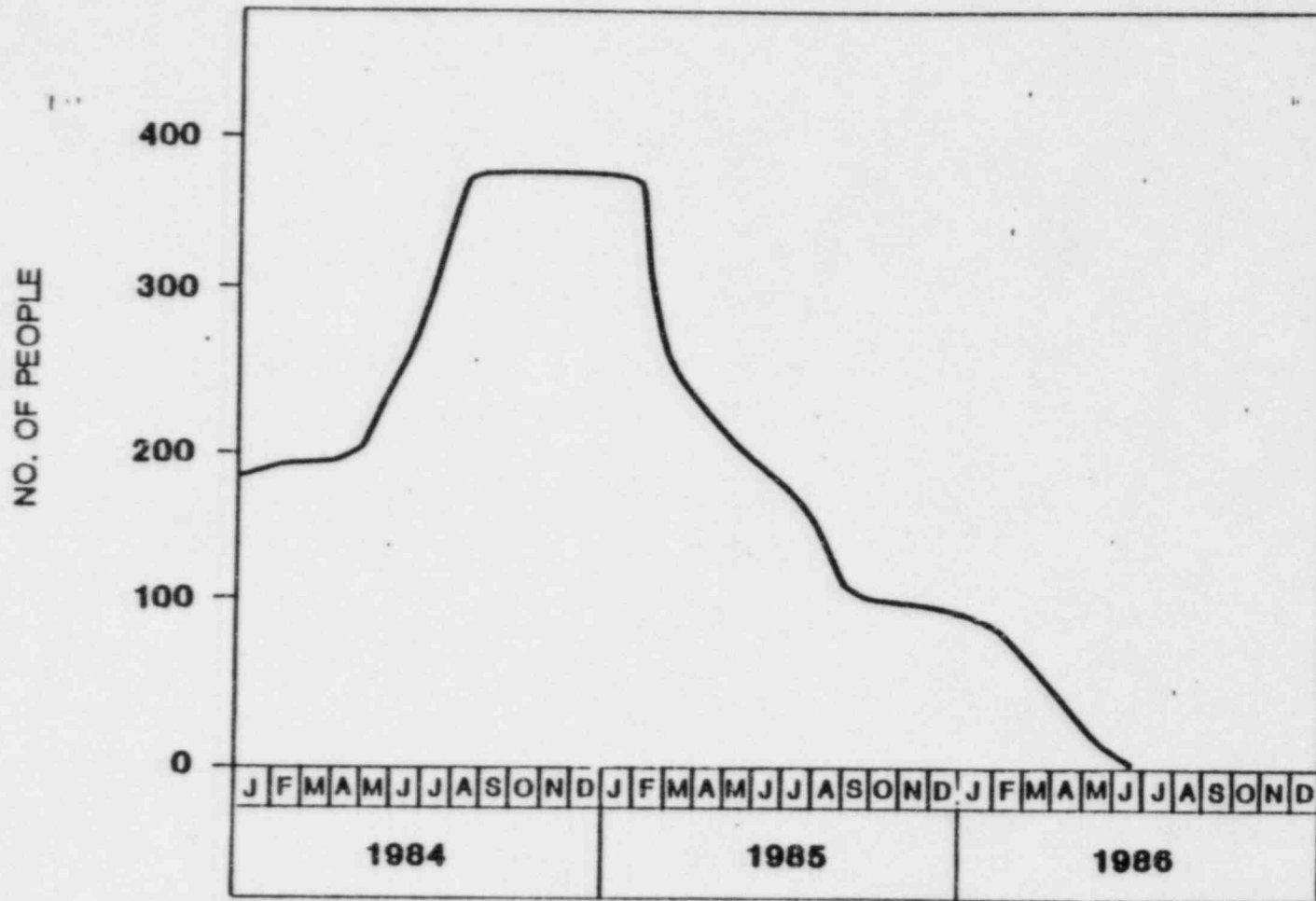
- HISTORICAL BASIS
- PILOT TEAMS FOR MAJOR PQCI

- DETERMINED MAN HOUR ESTIMATES

- 295,000 QVP - REINSPECTION/DOCUMENT REVIEW
- 20,000 QVP - DOCUMENT REVIEW ONLY
- 210,000 SA - REINSPECTION/DOCUMENT REVIEW

MIDLAND PROJECT FORECAST (84)

MPQAD INSPECTION MANPOWER



SCHEDULED SUPPORT TO DATE

- SUPPORTED TR MILESTONES
- SUPPORTING 120D MILESTONES
- SCHEDULE TO SUPPORT CRITICAL NEAR TERM MILESTONES

REINSPECTION RESULTS

● 2,500 QVP REINSPECTIONS

- NUMBER OF NCR's CONSISTENT WITH SCHEDULE ASSUMPTIONS
- WORKMANSHIP GOOD
- CONFORMANCE TO DETAIL LACKING

● PREVIOUS CABLE REINSPECTIONS

- 9,000 CABLES AND 63,500 ATTRIBUTES
- LESS THAN 2% NONCONFORMANCES
- LESS THAN 0.5% REWORK

● 1,500 HANGER REINSPECTIONS

- 30% REWORK—GENERALLY MINOR

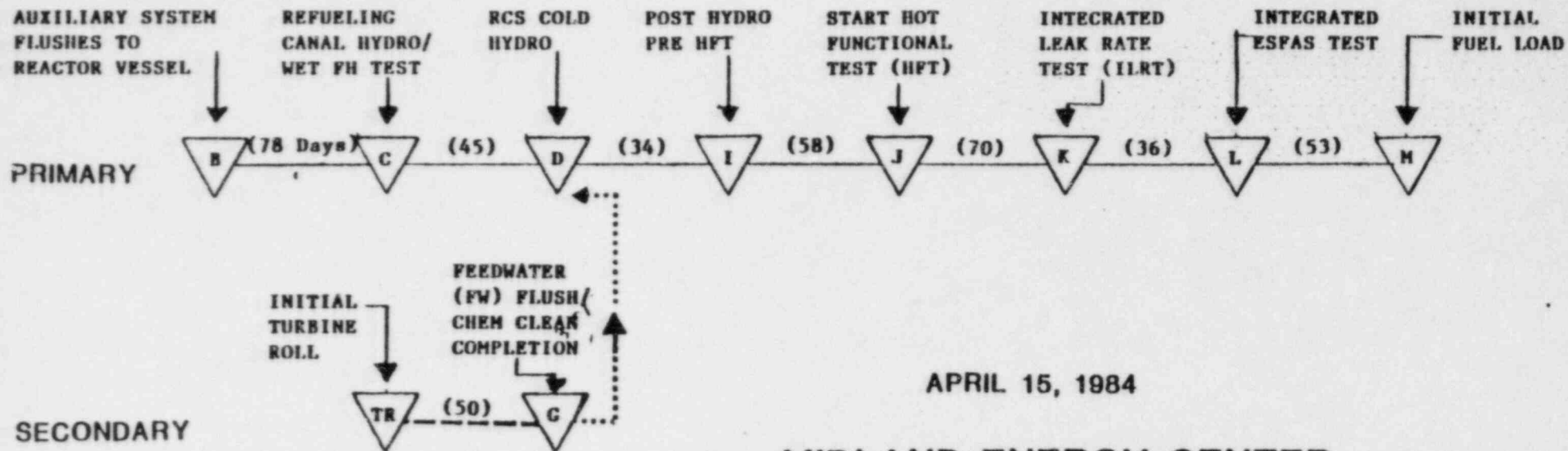
PERFORMANCE EFFICIENCIES

- SPECIAL DOCUMENT REVIEW GROUPS
- INSPECTION PLAN COMBINATION
- LEARNING CURVE IMPROVEMENTS
- PERFORMANCE MONITORING SYSTEM
- INSPECTION EVALUATION PROGRAM
- INCREASED STAFF
- TRAINING/CERTIFICATION PROCESS IMPROVEMENTS

MIDLAND PROJECT SCHEDULE

TESTING

DL QUAMME



MIDLAND ENERGY CENTER TESTING DEPARTMENT

UNIT 2 MILESTONE SEQUENCE

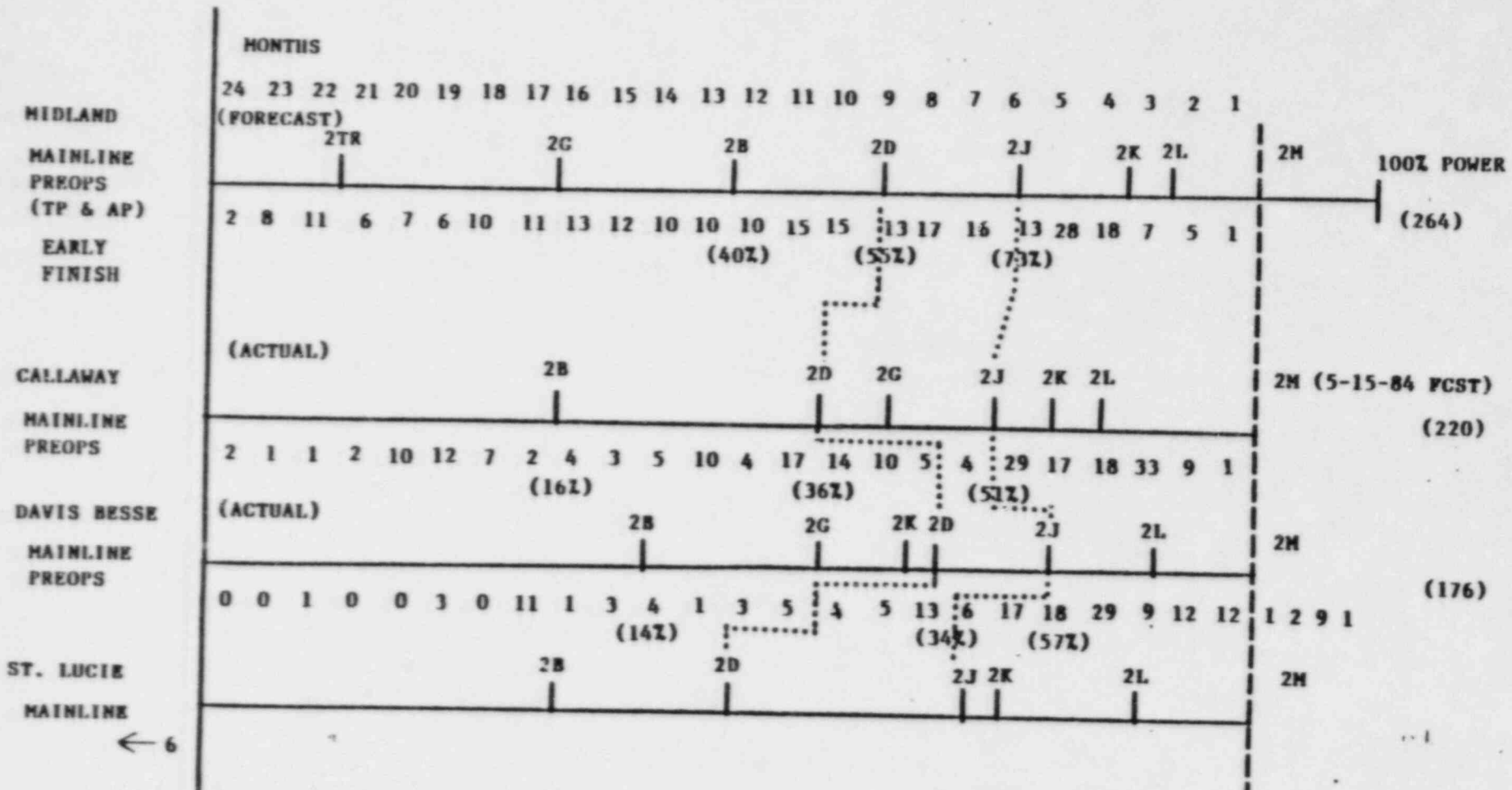
COMPLETED MILESTONES:

- 2A - DRY FUEL HANDLING INDEX PREOP TEST (8-82)
- 2E - CONDENSATE STORAGE & TRANSFER FLUSH (10-82)
- 2F - CONDENSATE PUMP INITIAL RUN (11-82)
- 2H - INITIAL CONDENSER VACUUM (3-84)

MIDLAND ENERGY CENTER UNIT 2 TURNOVER STATUS

TOTAL TESTABLE	
SUB SYSTEMS REQUIRED	693
TURNED-OVER	536
TO-GO 'Q'	95
TO-GO 'NON-Q'	<u>62</u>
TOTAL TO-GO	<u>157</u>

MIDLAND ENERGY CENTER UNIT 2 TEST SCHEDULE COMPARISONS



MAINLINE LEGEND

- | SECONDARY | PRIMARY |
|------------------------|------------------------|
| 2TR - TURBINE ROLL | 2B - AUXILIARY FLUSHES |
| 2G - FEEDWATER FLUSH | 2D - RCS HYDRO |
| SECONDARY SIDE TESTING | 2J - HOT FUNCTIONAL |
| COMPLETE | 2K - SIT/ILRT TESTING |
| | 2L - ESPAS TESTING |

← 6

MIDLAND ENERGY CENTER UNIT 2
TEST PROCEDURE STATUS
PREOPERATIONAL AND ACCEPTANCE TESTS

TOTAL NUMBER OF PROCEDURES	264
TO DEVELOP	51
IN REVIEW CYCLE	68
APPROVED PROCEDURES	145

MAY 1, 1984

TESTING ACTIVITIES STATUS

PERCENT COMPLETE

		CURRENT TOTAL F/C	SCHED %	ACTUAL %
INITIAL SYSTEM CHECKOUT	MH	550,000	19	49
SYSTEM FLUSHES	MH	66,000	15	28
SYSTEM PREOPERATIONAL TESTING	MH	266,000	9	15

EQUIPMENT RELIABILITY PROGRAMS

B & W OWNERS GROUP

NUCLEAR OPERATIONS & MAINTENANCE INFORMATION SERVICE

OTSG TASK FORCE

LAY-UP / PACS PROGRAM

- UNIT 1 SYSTEMS
- CRITICAL UNIT 2 REVIEW

PRE-CALIBRATION / TEMPORARY RELEASE PROGRAM

- EXECUTION OF REMAINING WORK UNDER CCP WILL RESULT IN A MORE COMPLETE SYSTEM WITH VERIFIED LEVEL OF QUALITY AT TIME OF SYSTEM TURNOVER AND INITIATION OF SYSTEM TESTING.
- DECOUPLING OF THE TWO UNITS RESULTS IN REQUIREMENT TO START-UP ONE PLANT RATHER THAN THE PARALLEL TWO UNIT START-UP PLANNED IN PREVIOUS SCHEDULES.
- TEST PROCEDURE DEVELOPMENT - ALL TEST PROCEDURES WILL BE APPROVED BY END OF THE YEAR INSURING WE MEET NRC REQ'T OF "AT LEAST 2 MONTHS PRIOR TO TEST START DATE".
- 2TR AND 2G MILESTONES PRIOR TO 2B THEREBY REDUCING SIGNIFICANTLY WORK HAS TO BE PERFORMED DURING PRIMARY MAINLINE ACTIVITIES.
- TRAINED AND EXPERIENCED TEST ENGINEER FROM BOP TESTING TO MOVE DIRECTLY INTO PRIMARY SYSTEM TESTING.
- TESTING MANPOWER BUDGETED FOR 1984 - 118
 - CPCO PERSONNEL 53
 - CONTRACT PERSONNEL 65
 - CURRENT TOTAL 119

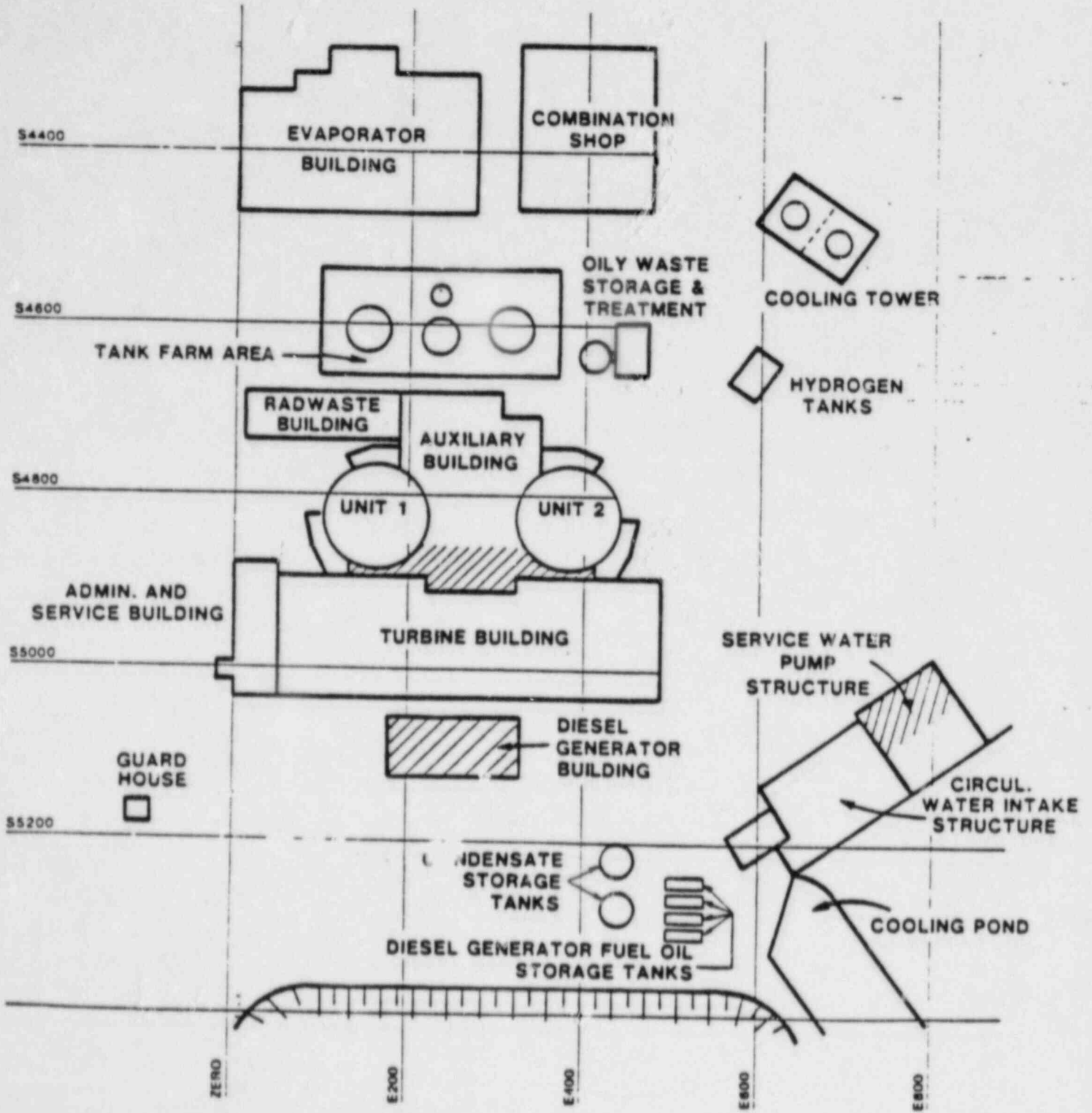
MIDLAND PROJECT SCHEDULE

SOILS

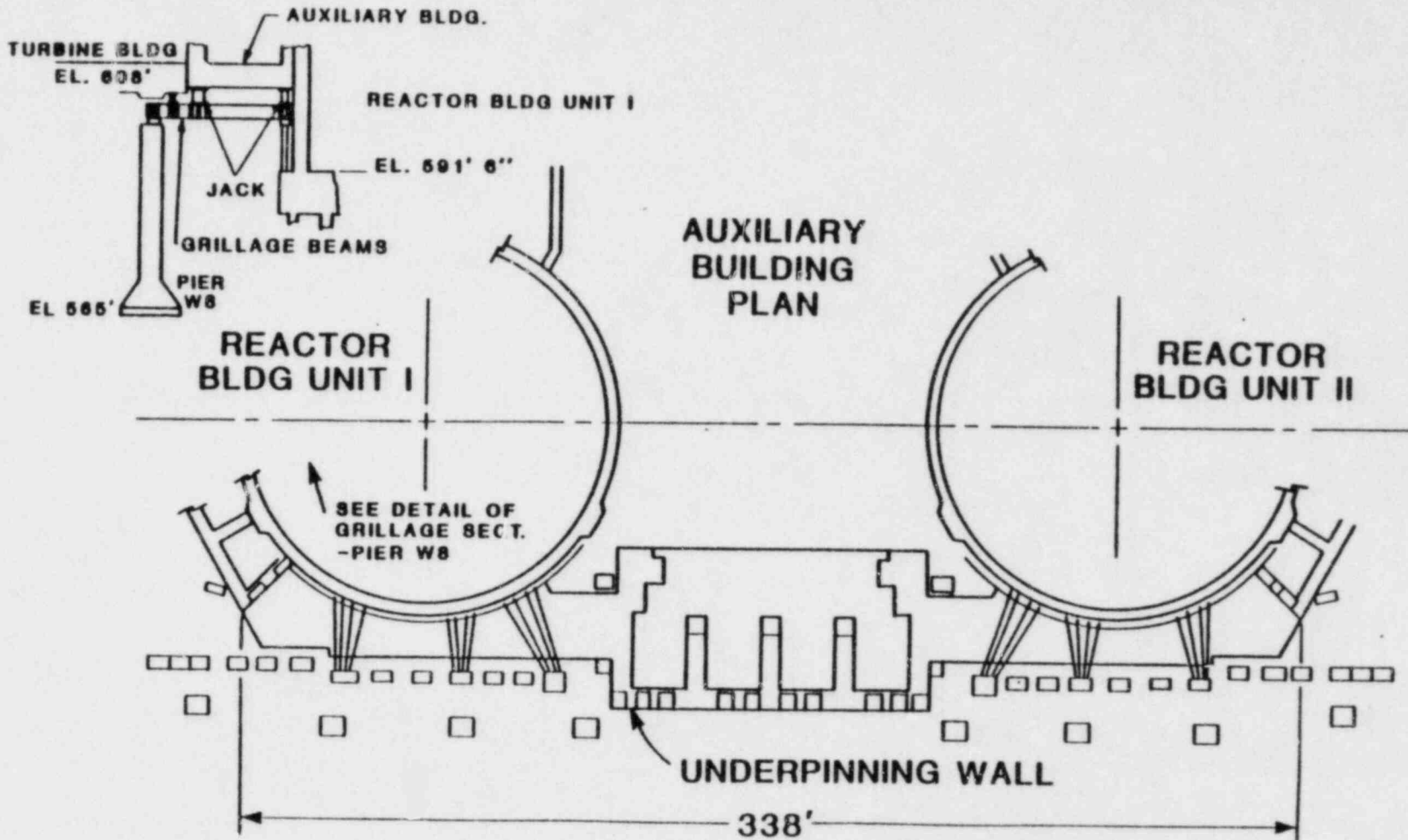


JA MOONEY

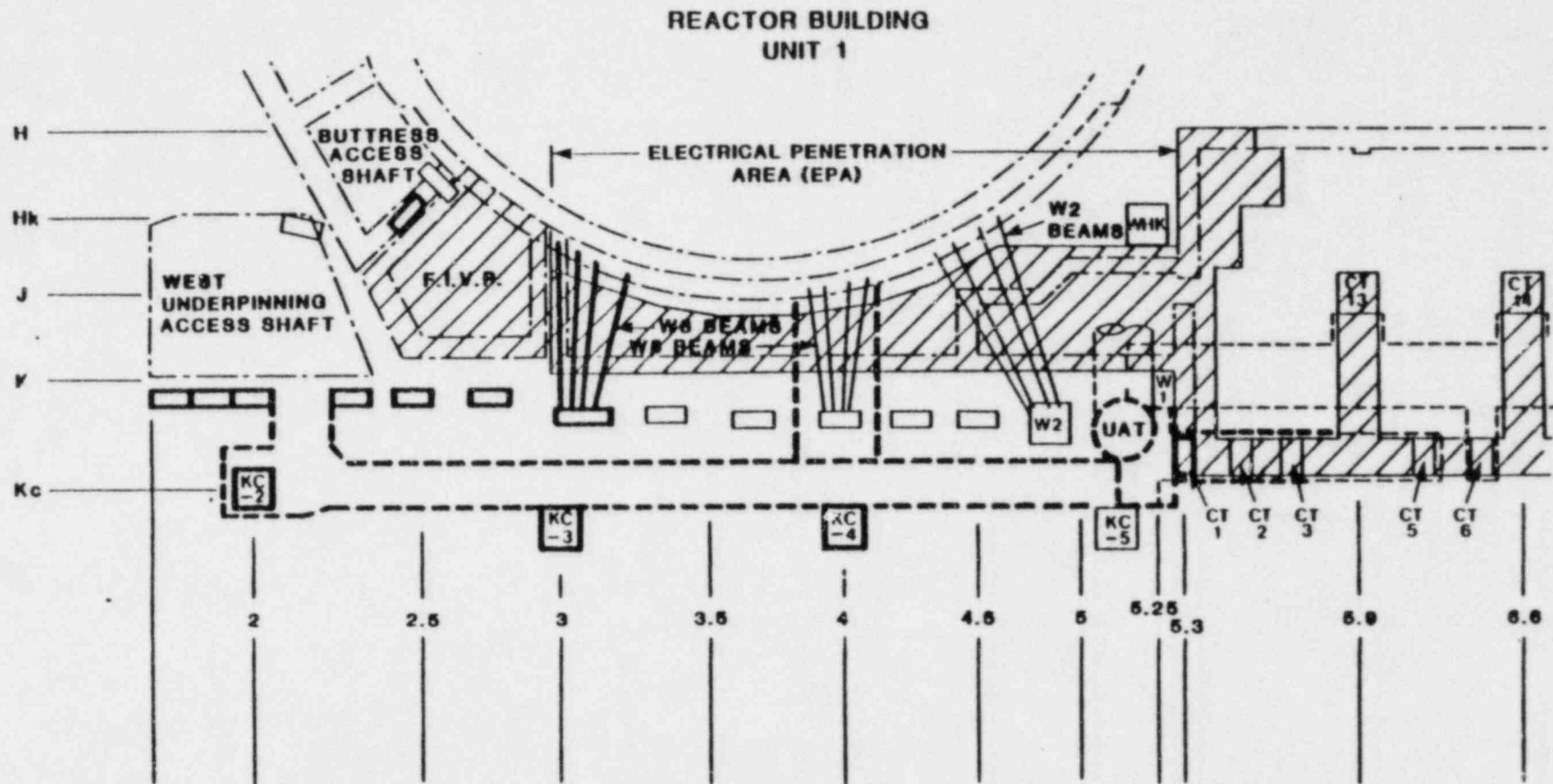
MIDLAND PROJECT SITE PLAN



MIDLAND PROJECT AUX. BUILDING SOILS REMEDIAL WORK



AUXILIARY BUILDING UNDERPINNING PLAN VIEW

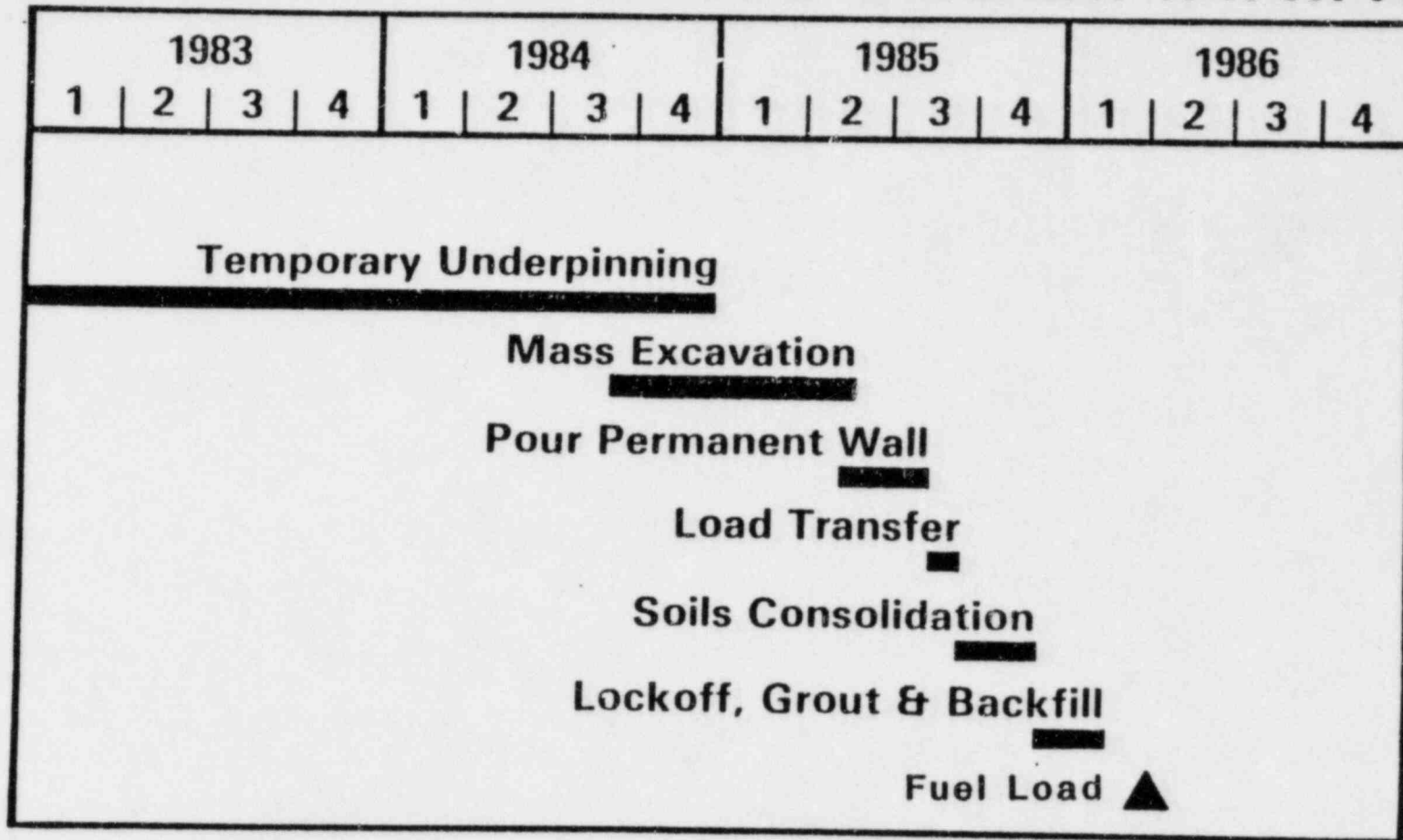


AUXILIARY BUILDING UNDERPINNING
SELECTED PRODUCTION RATES

<u>ACTIVITY DESCRIPTION</u>	<u>UNIT</u>	<u>RATE/ CREW SHIFT</u>
DRIFT EXCAVATION	HF	1.2
PIER EXCAVATION	VF	2.4
MASS EXCAVATION BY HAND	CY	8.7
MASS EXCAVATION BY MACH	CY	21.0
INSTALL PIER RESTEEL	LBS	438.0
INSTALL PIER CONCRETE	CY	6.1
INSTALL GRILLAGE BEAMS	LBS	1000.0

MIDLAND PROJECT SCHEDULE

AUXILIARY BUILDING UNDERPINNING



MIDLAND SOILS SCHEDULE

SCHEDULE CERTAINTIES

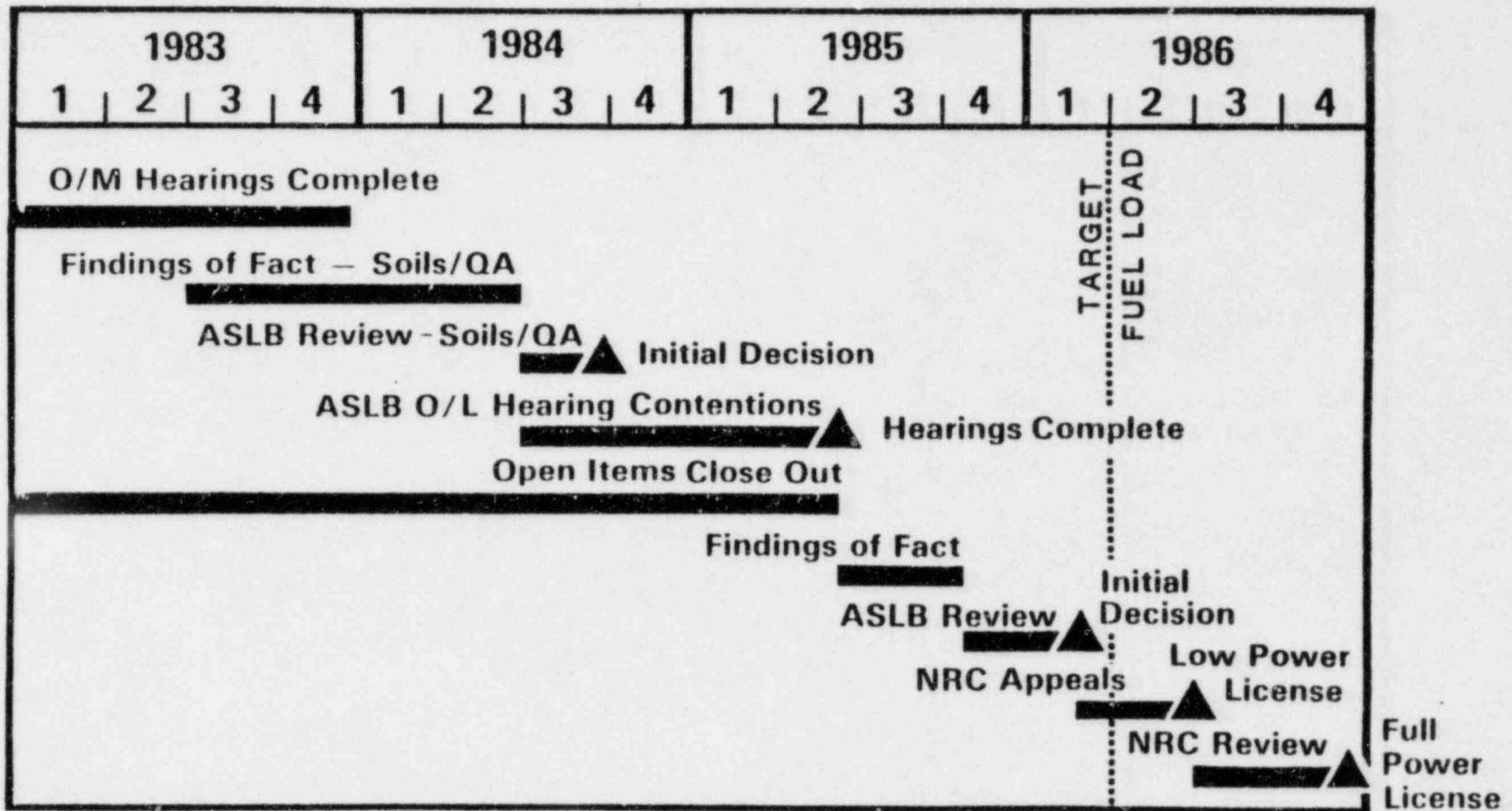
- DESIGN COMPLETE
- SSER ISSUED
- CONSTRUCTION 35% COMPLETE
- DEMONSTRATED PRODUCTIVITY RATE
- EXPERIENCED ORGANIZATION

MIDLAND PROJECT SCHEDULE

LICENSING

JN LEECH

MIDLAND PROJECT SCHEDULE LICENSING SCHEDULE



MIDLAND PROJECT SCHEDULE

CONCLUSIONS

JW COOK

BASES FOR SCHEDULE CONFIDENCE

- **Soils Activities Defined and Demonstrated**
- **CCP Program Approved and Implementation Initiated**
- **Design Complete**
- **Single Plant Completion**
- **Improved Overall Project Planning**
- **Additional Senior Staff**
- **Project Milestones**
- **Target Schedule**

Telecon

4/29/93

Underpinning Solls Activity, Problem
Jacking Pier 11W - load Test

2:30 PM

NRC

J. Harrison

J. Kone

CPC's

KAC Roedan

Zerma

- CPC's 649 - dated April 29, 93

Question J. Kone

- Carlson meters - 60+ put - PSI in

Concrete - $Q_c = \text{Pressure} \times \text{concrete area}$

TOP (Bottom only one)
 Both ends of

$\text{Modulus} = \frac{\text{area of rebar} \times \text{stress}}{\text{area of concrete}}$
 - No on site electrical

Concrete only

TOP (average)

Lower

300 K

173

Soil Modulus - Computed current = 500

6.8 to 8.8 - 2,500 to 5,000

4400 K² - concrete modulus

3900 K² - "

1.5 2,000 + 1570

- Decision on cycling

for 3 months

5 lane

J. Harrison

B. Lawson

magnitude of 2.0 for 2.03

1.1 - 500

1.5

->

Building of ...

- Building ...

- Limit -

- Capacity ... 750 ...

- Small increment of 50 ...
changing, growing, ...

Contract:

- Was Building upward movement 5b - ...

A - only .001 to .002

- Skin Friction breaks at ...

Caution - Compare Soil ...

- Test Pier Load, Test question answered?

(3)

121-31500 of current / 31500 =
Compare the two proceeds

- 600 ^{TTC} _{ending 300}

Current value of property with price

1000 ^{price} ₁₀₀₀

- Estate (Current Value)
600 - 300 =

- (1000 - 600) = 400

- 1000 ^{price} ₁₀₀₀

1000 - 600 = 400 (1000 - 600)

1000 full into account in value

- Anderson = 225 ^{price} _{175 =}
300 (x 600)

JK- 2000-01

2000-01-01
8/01 2 / 2000 - 2000-01-01

2000-01-01
2000-01-01

Bottom Line
Cycle

Data - 2000

Some Data - 2000
2000-01-01
2000-01-01

2000-01-01
2000-01-01
2000-01-01

Telecon:

Underpinning - Soles Activity

4/29/83

1:30 PM

Problem Jacking Pier 11 w Load Test

NRC

J. Harrison

J. Kane

~~Boyle~~

~~Penalt~~

Consumers Power

K. Razdan

M. Lewis (B)

R. Meriani

J. Davison (B)

Reich

(Consultant)

Jim Shoul

Memo April 27, 1983 Bechtel to CFCO

Ann - friction liner not working

1.3 x specified

Tip Clearing Pressure of

Spec. (Range - Limit) 600 KIPS
(CFCO Value)

Test 9AM - 600 KIPS reached -
~~452~~

.43 inches tip settlement
100 minutes after 600 kips reached

Carlson Metering not accurate
600 KIP Load

Carlson = 230 kips - 245 kips - 312 kips
4/27 9AM Initial 175 kips
(+/- 30% much lap and connections) - upper - lower

Rebar - maybe causing load not to reach Carlson

Calculations:
Tall-tail
deflection
Compression

.025
L = 40'
E =

If Bottom Load was transferred to

.009

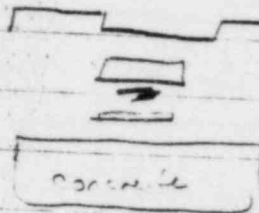
- Verticality was checked - OK

- Lagging

1" Plywood

Grease

1/4" Plywood



girders in level F7
both sides of plywood is slicking down
Lagging pier
plywood - release?

- Concrete Pressure - local areas
- one located into groove on lagging -
grease may have also pushed into corners.

- Grout was applied in some areas along
horizontal direction

- 225 kips reached column
± 15% ??

$\frac{RL}{AE}$ (Rebar = compounds calc)

- 6.8 to 8.8 current data will allow
data from other pier would also allow
E to be calc

- Know - based on a list of assumptions

J. Kane Suggest:

- Cycle Load - 0.6 600-30-600
20 min up 20 min back
- Hesitate going over 600 KIPS until data is reviewed
- Want to Review data time
- If load is not cycling toward 600 considered another test pier.

Who asked for hearing!

Confidence cost time 2120 129

- How Many Cycles? ~~2120~~ No. • MIN.
- Load - MAX - min cycle - Time cycle/Hold
- Hold 600 KIPS effect test?
- Procedural Changes
- Work Authorization Procedure
- SCN
- Letter to NRC