Docket file

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

June 14, 1991

Docket No. 50-331

LICENSEE: Iowa Electric Light and Power Company

FACILITY: Duane Arnold Energy Center

SUBJECT: MEETING SUMMARY - DISCUSSION AND PRESENTATION OF PROPOSED BUSINESS AND PRIORITIZATION PLANS, VENDOR MANUAL PROGRAM, AND MAINTENANCE PROGRAM

On June 10, 1991, a meeting was held at NRC Headquarters in Rockville, Maryland, at which senior management from the Duane Arnold Energy Center (DAEC) presented their proposed business and prioritization plans, discussed their vendor manual program, and detailed initiatives and improvements in their maintenance program. The handouts dealing with these topics are attached as Enclosures 1, 2, and 3, respectively. Meeting participants included personnel from Iowa Electric Light and Power Company (IEL&P, the licensee), and NRC's Office of Nuclear Reactor Regulation (NRR). A list of attendees is provided in Enclosure 4.

The meeting opened with a brief discussion of the merger that recently took place between IEL&P and Iowa Southern. The two utilities will remain separate for five years, after which certain aspects, such as management and fossil generation, will begin to merge. Iowa Southern has no nuclear interest, and the licensee does not expect the relationship between the corporation and the DAEC staff to be affected.

The DAEC business plan was modeled after those of several other utilities that had been useful management aids. It is a single, integrated document whose purpose is to assist in and improve the management of plant operations. The plan's implementation will be the responsibility of the on-site personnel by whom it was developed. It was issued on May 14, 1991, and is currently in its initial implementation stages.

Initiatives and improvements in component maintenance were addressed by the plant manager. The emphasis in this area is being placed on the development of Maintenance Program Manuals to standardize and justify component maintenance. Twenty-five maintenance program manuals are scheduled for completion by Maintenance Engineering Component Specialists in December 1991. To date, five of this number have been completed. The manuals will contain guidance for predictive maintenance and trending, and preventive maintenance. The licensee has not yet implemented a reliability centered maintenance program. The licensee has established a Maintenance Quality Improvement Program (MQIP) which utilizes maintenance observers, a post-job critique and follow-up meetings with the individuals and organizations involved. Post-maintenance testing matrices are being developed which establish preapproved levels of testing. The matrix for motor-operated valve testing has been completed, with several others planned.

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PDR ADOCK 05000331
P PDR

NRC FILE CENTER COPY

The object of the Vendor Manual Program is to assure that up-to-date vendor manuals are available in the DAEC vendor information library. The first step, to implement a vendor information control procedure, is complete. The verification of safety-related and nonsafety-related equipment vendor manuals will be complete by the end of 1991.

In addition to providing the licensee an opportunity to present details of the initiatives currently in progress or under development, this meeting introduced the NRC staff to the senior management team that will be leading DAEC through the events of the upcoming months, including the SALP meeting in June. The plans presented are a first step toward improving the performance and management of DAEC. Successfully following through and implementing them remains ahead for the DAEC management and its staff.

Original Signed By:

Clyde Y. Shiraki, Sr. Project Manager
Project Directorate III-3
Division of Reactor Projects III/IV/V
Office of Nuclear Reactor Regulation

Enclosures:
As stated

cc w/enclosures:
See next page

DISTRIBUTION

Docket File	NRC & Local PDRs	PDIII-3 r/f	FMiraglia
JPartlow	BBoger	JZwolinski	CShiraki
PKreutzer	AChaffee, EAB	OGC	EJordan
JHannon	ACRS(10)	RLobel	EGreenman
JRHall	SSands		

LA/PDIII-3	PM/PDIII-3	PD/PDIII-3
PKreutzer	CShiraki:rc	JHannon
6/14/91	6/14/91	6/14/91

DOCUMENT NAME: DA MTG SUMMARY

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Division of Reactor Projects III/IV/V
Office of Nuclear Reactor Regulation

Enclosures:
As stated

cc w/enclosures:
See next page

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Kathleen H. Shea, Esquire
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Board of Supervisors
Cedar Rapids, Iowa 52406

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U.S. Nuclear Regulatory Commission
Resident Inspector's Office
Rural Route #1
Palo, Iowa 52324

Regional Administrator, Region III
U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Mr. John A. Eure
Assistant to the Division Director
for Environmental Health
Iowa Department of Public Health
Lucas State Office Building
Des Moines, Iowa 50319

50-331 Duane Arnold IE,PCO

Meeting Summary - Discussion and Presentation of Proposed Business and Prioritization Plans, Vendor Manual Program, and Maintenance Programs

rec'd w/ltr. dtd. 6/14/91 9106240292

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-NOTICE-

NUCLEAR REGULATORY COMMISSION / IOWA ELECTRIC MANAGEMENT MEETING JUNE 10, 1991

ENCLOSURE 1

NUCLEAR REGULATORY COMMISSION / IOWA ELECTRIC MANAGEMENT MEETING JUNE 10, 1991

- AGENDA
  - BUSINESS PLAN
  - PRIORITIZATION
  - PLANT
    - MAINTENANCE
    - OPERATING EXPERIENCE
  - ENGINEERING
    - VENDOR MANUAL PROGRAM

BUSINESS PLAN

- PURPOSE
- DEVELOPMENT
- HOW IT WORKS
- EFFECTIVENESS
- STATUS

BUSINESS PLAN

- PURPOSE
  - ASSIST MANAGEMENT OF OUR BUSINESS
    - SINGLE INTEGRATED DOCUMENT
  - FACILITATE UNDERSTANDING
    - RESPONSIBILITY
    - ACCOUNTABILITY
  - BETTER RELATE TO CORPORATION
    - GOALS
    - RESOUCES
  - CONVEY TO NRC, INPO, IOWA UTILITY BOARD AND CO-OWNERS THAT DAEC IS OPERATED IN A BUSINESS-LIKE MANNER

BUSINESS PLAN

- DEVELOPMENT
  - DIRECTION FROM SENIOR MANAGEMENT
  - EXAMPLES FROM INDUSTRY
  - DRAFT PLAN
  - VERIFICATION PROCESS
  - IMPLEMENTATION

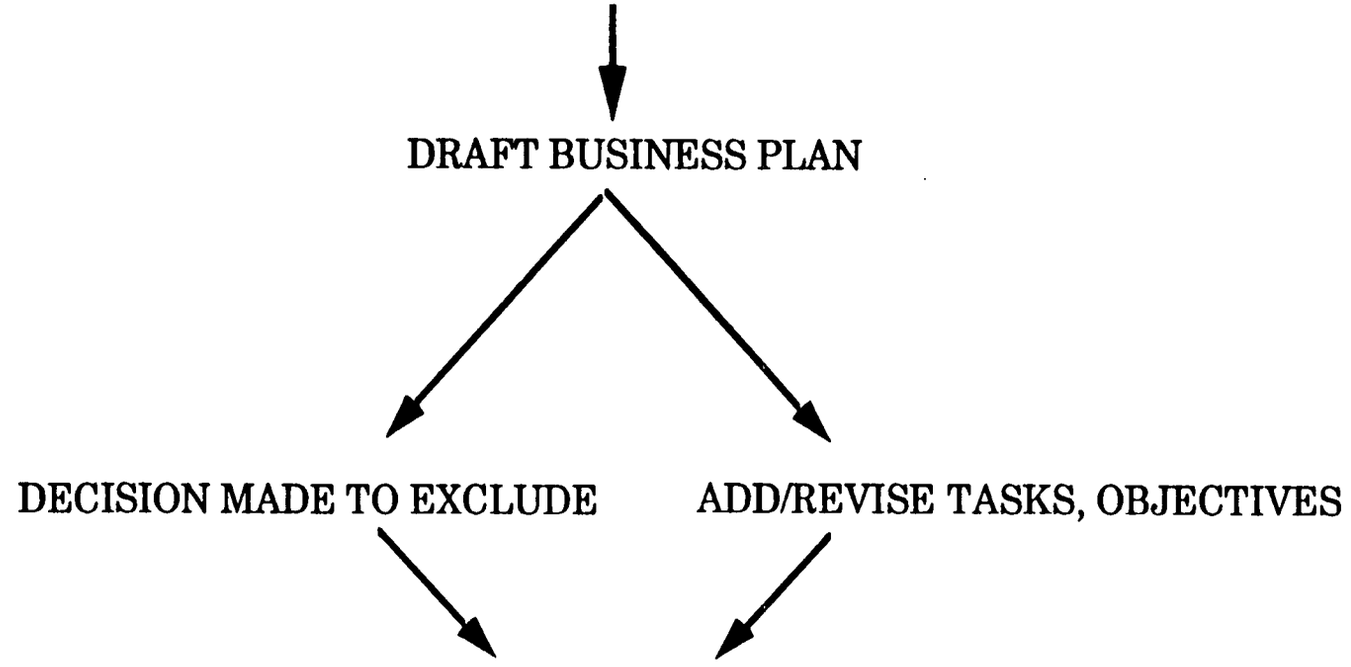
1991 BUSINESS PLAN VERIFICATION PROCESS

DOCUMENT REVIEW
JANUARY, 1990 - MARCH, 1991

NRC INSPECTION REPORTS
NRC VIOLATIONS
SALP REPORT

INPO EVALUATION
INTEGRATED PLAN
QA REPORTS

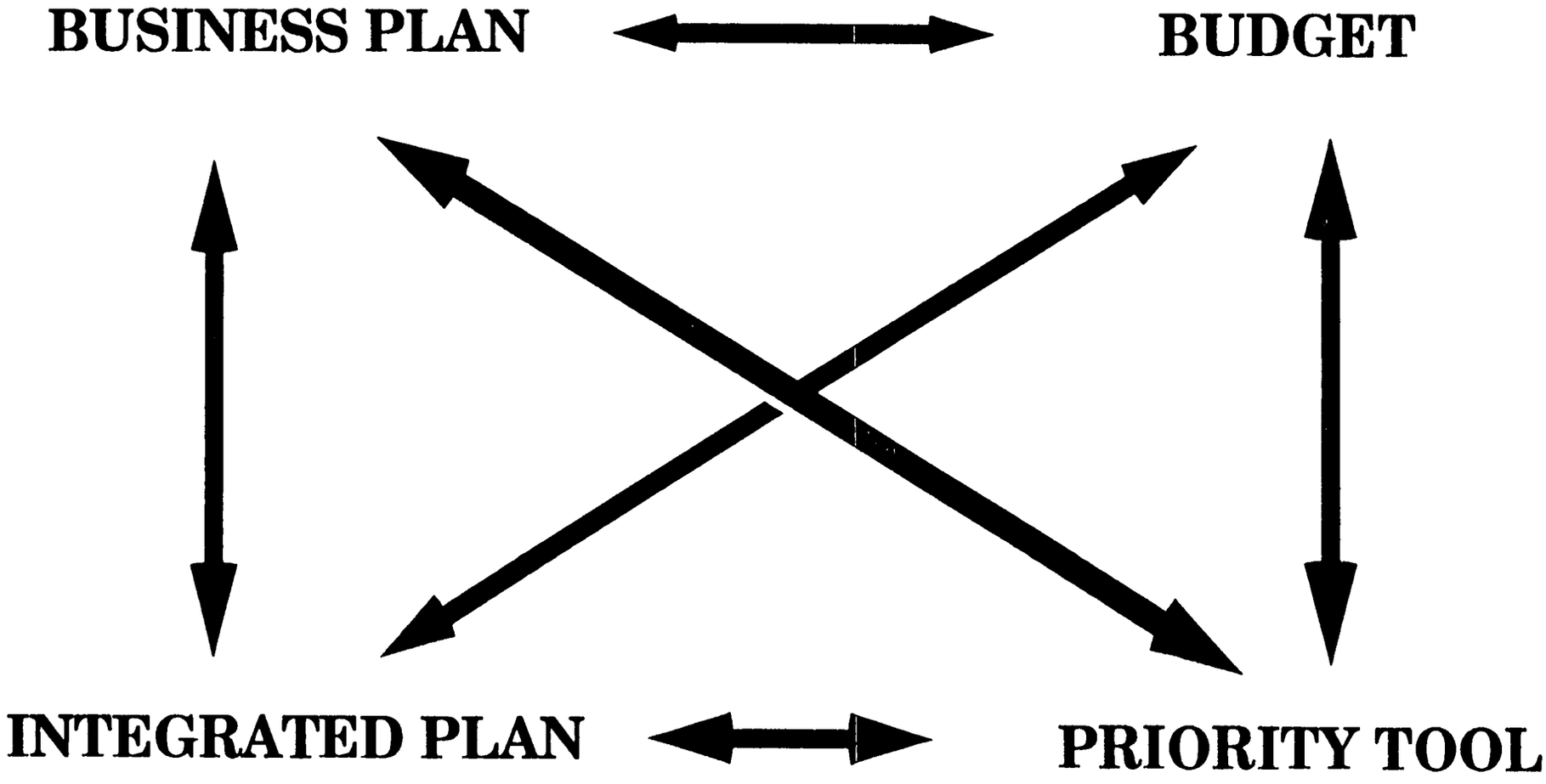
INTERNAL SELF-ASSESSMENTS



BUSINESS PLAN

- HOW IT WORKS
  - DIRECTED BY SENIOR MANAGEMENT
  - FOCUS NOW ON 1991
  - TIERED PLAN
    - GOALS
    - STRATEGIES
    - OBJECTIVES
    - TASKS
  - BUDGET AND PRIORITIES

PLANNING PROCESS



GOALS

- **GOAL 1:** SAFETY - PROTECT THE ENVIRONMENT AND THE HEALTH AND SAFETY OF THE PUBLIC AND EMPLOYEES (SERRA)
- **GOAL 2:** PROFESSIONALISM - MAXIMIZE INDIVIDUAL PERFORMANCE AND ENCOURAGE PARTICIPATION AND INNOVATION (SWAILS)
- **GOAL 3:** PRODUCTION - MAXIMIZE ELECTRIC GENERATION AND IMPROVE ORGANIZATIONAL EFFECTIVENESS SO THAT WE MAY OPTIMIZE THE USE OF OUR EXISTING FACILITY AND PROVIDE SUPERIOR QUALITY SERVICE TO OUR CUSTOMERS (WILSON)
- **GOAL 4:** DESIGN - UNDERSTAND, DOCUMENT, AND IMPLEMENT THE PLANT DESIGN AND DESIGN IMPROVEMENTS WHILE PROVIDING PRACTICAL AND TECHNICALLY ACCURATE SOLUTIONS, CONSISTENT WITH DESIGN INTENT, TO PROBLEMS AND ISSUES (LACY)
- **GOAL 5:** OUTAGE - IMPROVE MANAGEMENT OF OUTAGES (HANNEN)
- **GOAL 6:** COST - ACHIEVE BUDGET GOALS AND STABILIZE YEARLY INCREASES TO THE RATE OF INFLATION OR LESS (SALMON)

BUSINESS PLAN

BUSINESS PLAN

- **HOW IT WORKS** (continued)
  - **PLANS BY OBJECTIVE LEADERS AND TASK LEADERS**
  - **PRIORITIZATION BY GOAL MANAGERS**
  - **SUCCESS BECAUSE EXPECTATIONS ARE:**
    - **KNOWN**
    - **COMMUNICATED BY MANAGEMENT**
    - **REPORTED ON MONTHLY BASIS**
  - **ACCOUNTABILITY**

1991 TASK PLAN

Goal 3 Production: Maximize electric generation and improve organizational effectiveness so that we may optimize the use of our exlsting facillty and provide superior quality service to our customers.

Strategy E: Improve effectiveness of all organizations.

5 Year Objective 2: Evaluate and implement lessons learned from the DAEC and industry experience.

1991 Objective a: Evaluate and implement lessons learned from the DAEC and industry experience. Conduct and attend quarterly industry events training as applicable.

Lead Responsibility: Jeff Thorsteinson

TASK	RESPONSIBILITY DEPARTMENT	NAME	DESCRIPTION	SCHEDULED START	SCHEDULED FINISH
1.	Operations Support	Thorsteinson	Developed effective means of providing informationon certain DAEC events to the industry via the INPO network.		01/31/91
2.	Operations Support	Thorsteinson	Impelemented an organization change In Technical Support to assign dedicated individuals to industry operating experience and to in-house operating experience.		03/31/91
3.	Operations Support	Thorsteinson	Implemented electronic handling of the INPO network including automatic download of information from the Network and electronic distribution of Network information to NGD personnel.		03/31/91
4.	Operations Support	Thorsteinson	Implemented electronic distribution of summaries of NRC information including inspection exits, etc.		03/31/91
5.	Operations Support	Thorsteinson	Developed quarterly reports for management on Industry Operating Experience review status.		04/30/91

1991 TASK PLAN

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Lead Responsibility: Jeff Thorsteinson

6.	Operations Support	Thorsteinson	Develop and present a summary of the deficiency reporting system mechanisms to personnel.		04/30/91
7.	Operations Support	Thorsteinson	Expand the scope of the in-house devlation reporting system in the balance-of-plant area.		05/31/91
8.	Operations Support	Thorsteinson	Develop a tracking mechanism for Root Cause Analsyes to identify potential supplemental corrective actions.		05/31/91
9.	Operations Support	Thorsteinson	Quality Assurance Departmnet will complete a reviev of the quarterly trending program for potential enhancement.		06/91
10.	Operations Support	Thorsteinson	Implement screening program for review of lndustry operating experience documents to improve use of resources.		07/15/91
11.	Operations Support	Thorsteinson	Revise procedures for the handling of industry oeprating experience to eliminate discrepancies.		08/15/91
12.	Operations Support	Thorsteinson	Estahlish an operating experience effectiveness reivew program for review of the effectiveness of NGD reviev of in-house and industry operating experience documents.		10/31/91

1991 TASK PLAN

Goal 3 Production: Maximize electric generation and improve organizational effectiveness so that we may optimize the use of our exlsting facility and provide superior quality service to our customers.

Strategy E: Improve effectiveness of all organizations.

5 Year Objective 2: Evaluate and implement lessons learned from the DAEC and industry experience.

1991 Objective a: Evaluate and impiement lessons learned from the DAEC and industry experience. Conduct and attend quarterly industry events training as applicable.

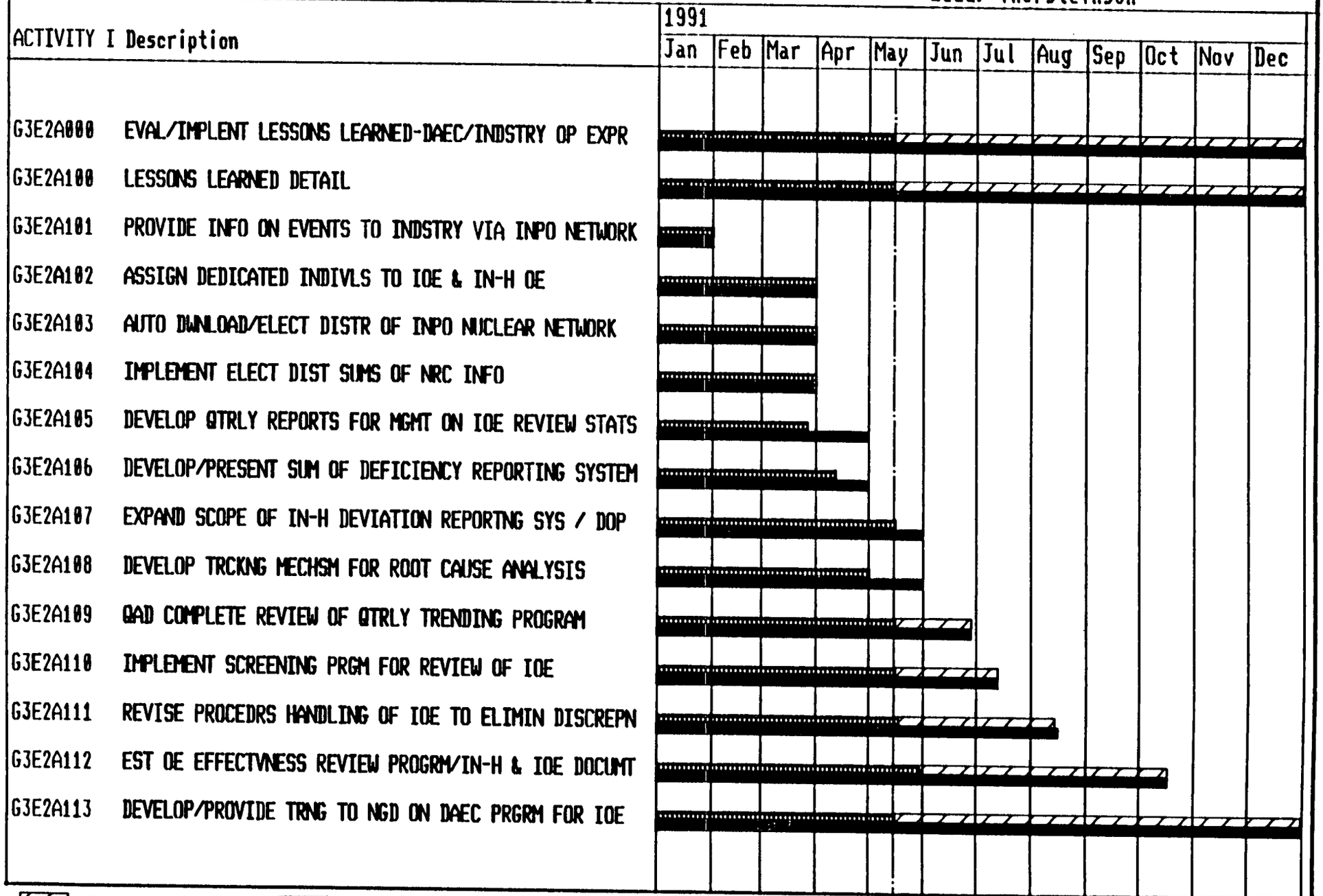
Lead Responsibility: Jeff Thorsteinson

13.	Operations Support Thorsteinson	Develop and provide training to NGD personnel on the DAEC program for industry oeprating experience.		12/31/91

IOWA ELECTRIC NUCLEAR GENERATION DIVISION BUSINESS PLAN

rev 0- update thru 5/15/91

GOAL 3: Production Manager: Wilson Lead: Thorsteinson



BUSINESS PLAN

- **EFFECTIVENESS**
  - **DID WE MEET OUR GOALS?**
  - **DID WE IMPROVE PERFORMANCE?**
  - **FEEDBACK LOOP TO FUTURE WORK**

BUSINESS PLAN

- STATUS
  - ISSUED ON MAY 14, 1991
  - MONTHLY
    - UPDATES
    - REPORTS
    - GOAL LEADER REVIEWS
  - PERIODIC PRESENTATIONS OF GOAL STATUS TO NUCLEAR GENERATION DIVISION STAFF

BUSINESS PLAN

- PRIORITIZATION
  - 1991 BUSINESS PLAN
  - 1992 BUSINESS PLAN
  - PRIORITY REVIEW BOARD

PRIORITIZATION

- 1991 BUSINESS PLAN
  - COMPILATION OF CURRENT / PLANNED PROGRAMS AND PROJECTS
  - SELF-PRIORITIZED PROJECTS LIST BY EACH DEPARTMENT
  - DEPARTMENT LISTS FITTED TO GOALS
  - CORRELATION AGAINST "IMPORTANT DOCUMENTS"
  - QUARTERLY ASSESSMENT BY GOAL LEADERS

PRIORITIZATION

- **PRIORITY REVIEW BOARD**
  - FOCUSES ON CAPITAL IMPROVEMENT PROJECTS
  - PURPOSE IS BUDGET CONROL THROUGH PROJECT SCREENING
  - COLLEGIAL PROCESS
  - 1991 PROJECTS ARE CATEGORIZED (FUNDED / NOT FUNDED)
  - 1992 PROJECTS PRELIMINARY CATEGORIZATION (FUNDED / DEFERRED / CANCELLED)
  - FINAL 1992 AND BEYOND PROJECT LISTS BY DELPHI POLLING

PRIORITIZATION

- 1992 BUSINESS PLAN
  - CONTINUATION OF 1991 MULTI-YEAR PROJECTS
  - SOLICIT NEW IDEAS AT "GRASS ROOTS"
  - REFINE LIST IN PARALLEL WITH BUDGET DEVELOPMENT
  - DEVELOP FINAL PROJECTS LIST AFTER BUDGET TARGETS ESTABLISHED
  - DEVELOP OBJECTIVES AND TASKS SAME AS IN 1991

VENDOR MANUAL

PROGRAM

ENCLOSURE 2

INDEX

PURPOSE

ASSURE THAT THE SPECIFIC, UP-TO-DATE VENDOR MANUAL AND EACH SAFETY-RELATED ITEM, DOWN TO THE SUBCOMPONENT LEVEL WHEN PRACTICABLE, IS IDENTIFIED IN OUR CHAMPS EQUIPMENT DATA BASE AND AVAILABLE IN OUR VENDOR INFORMATION LIBRARY.

REGULATORY AND INDUSTRY DOCUMENTS

- GENERIC LETTER 90-03

  REQUIRES A GOOD FAITH, DOCUMENTED EFFORT TO PERIODICALLY CONTACT SAFETY RELATED VENDORS TO OBTAIN ANY TECHNICAL INFORMATION APPLICABLE TO THE EQUIPMENT.

- INPO 87-009 GOOD PRACTICE DE-102 "CONTROL OF VENDOR MANUALS"

  A VENDOR MANUAL CONTROL PROGRAM SHOULD INCLUDE INCORPORATION OF CHANGE RESULTING FROM VENDOR UPDATES, IN-HOUSE AND EXTERNAL OPERATING EXPERIENCE, OR EQUIPMENT MODIFICATIONS.

COMMITMENT	
• IMPLEMENT VENDOR INFORMATION CONTROL PROCEDURE	COMPLETED
• VERIFICATION OF SAFETY RELATED EQUIPMENT VENDOR MANUALS	JUNE 15, 1991
• VERIFICATION OF NON SAFETY RELATED EQUIPMENT VENDOR MANUALS	DECEMBER 21, 1991

GENERAL:

TYPE 1 VENDOR MANUALS (MANUALS FOR PLANT INSTALLED EQUIPMENT REQUIRED FOR POWER PRODUCTION)	4070
TYPE 2 VENDOR MANUALS (MANUALS FOR NON-PLANT INSTALLED EQUIPMENT SUCH AS OFFICE EQUIPMENT, PORTABLE EQUIPMENT, ETC.)	297
TOTAL NUMBER OF VENDOR MANUALS	4367

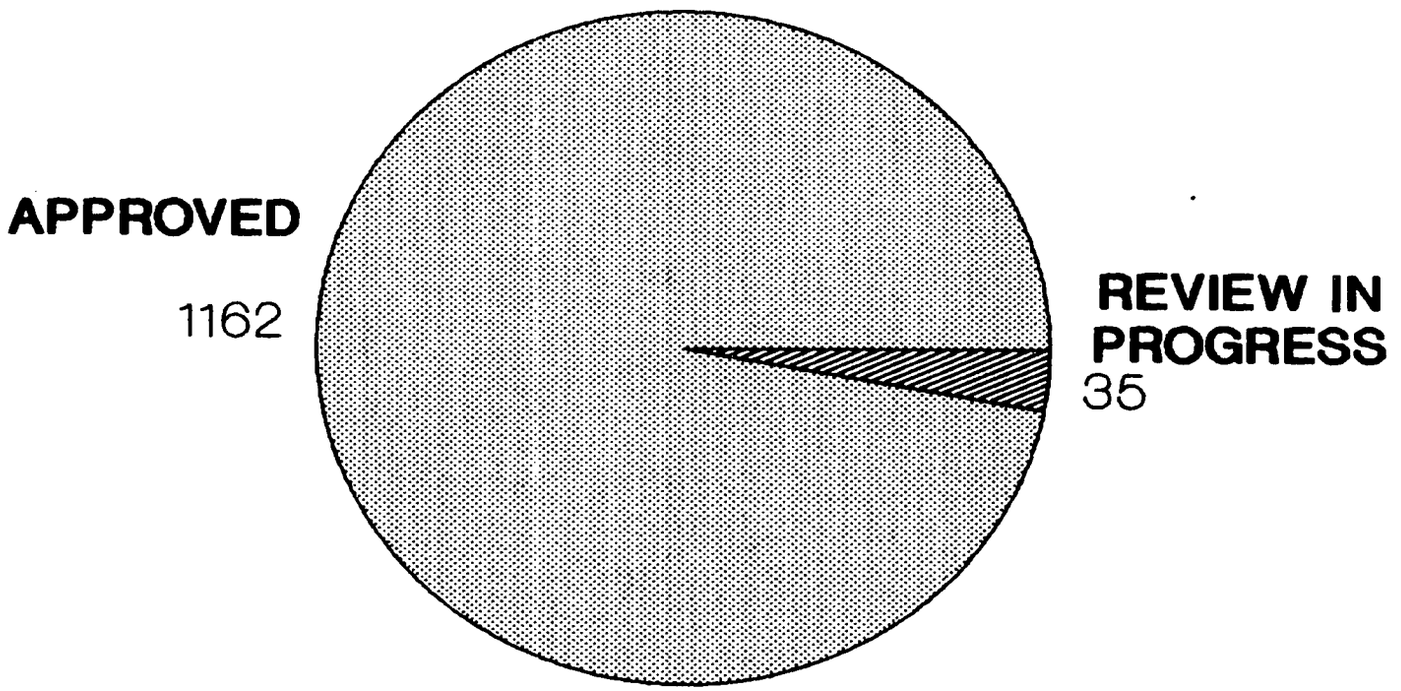
STATUS (JUNE 7, 1991)

	SR	NSR	TOTAL
TYPE 1 VENDOR MANUALS REVIEWED AND APPROVED	1162	2168	3330
TYPE 1 VENDOR MANUALS IN REVIEW CYCLE	35	601	636
TYPE 1 VENDOR MANUALS TO BE REVIEWED	0	104	104
TOTAL	1197	2873	4070

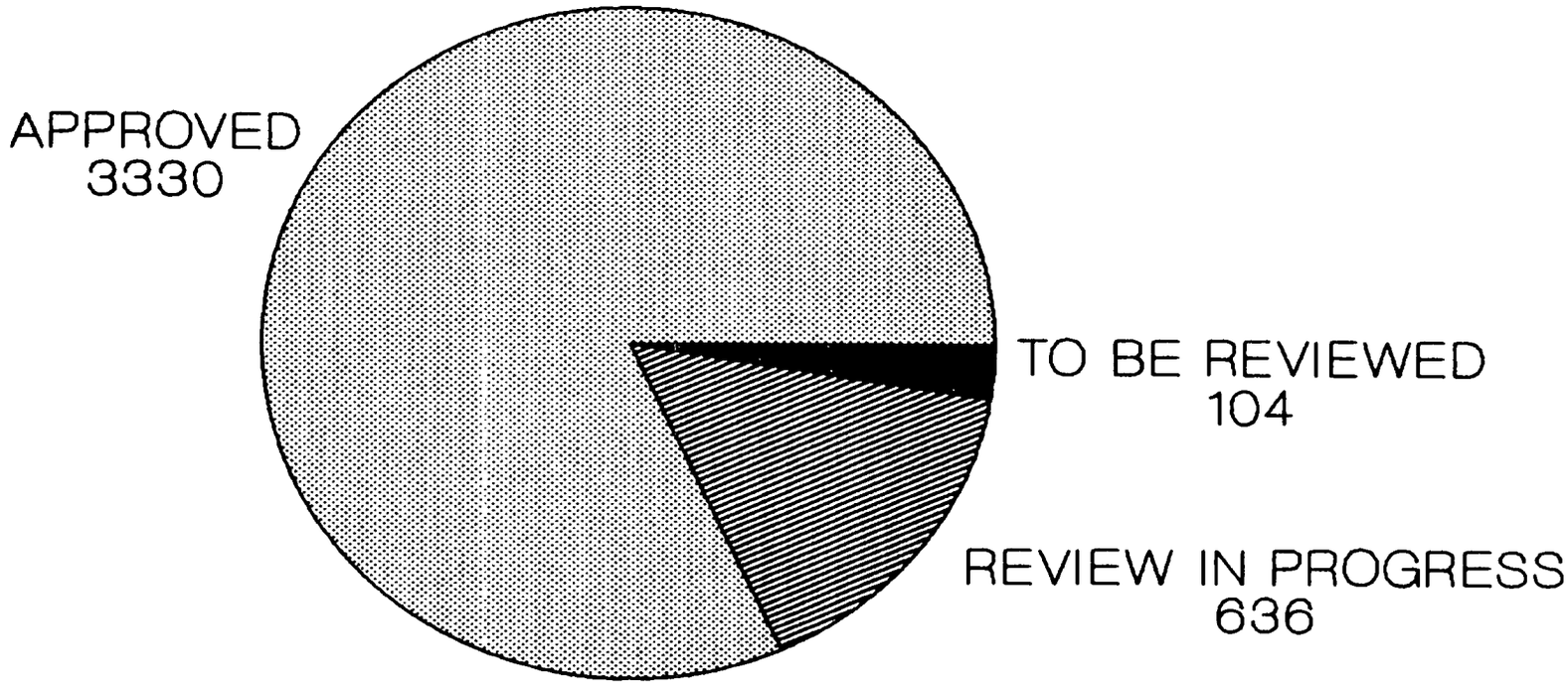
VENDOR MANUALS

TYPE 1

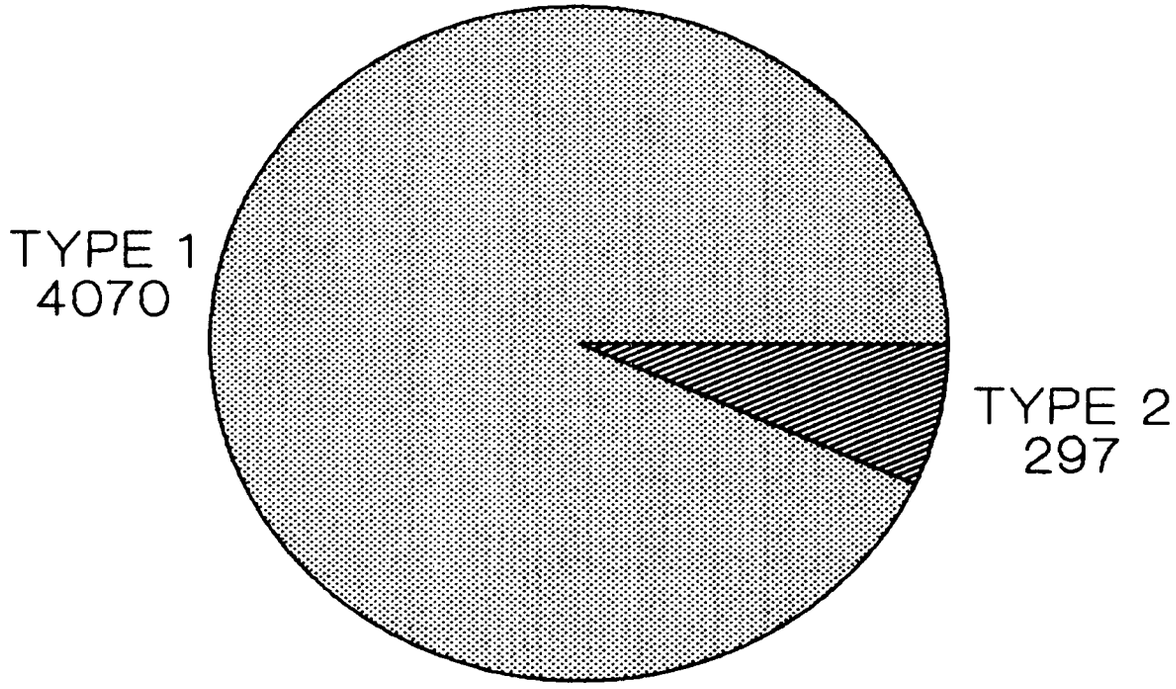
SAFETY-RELATED



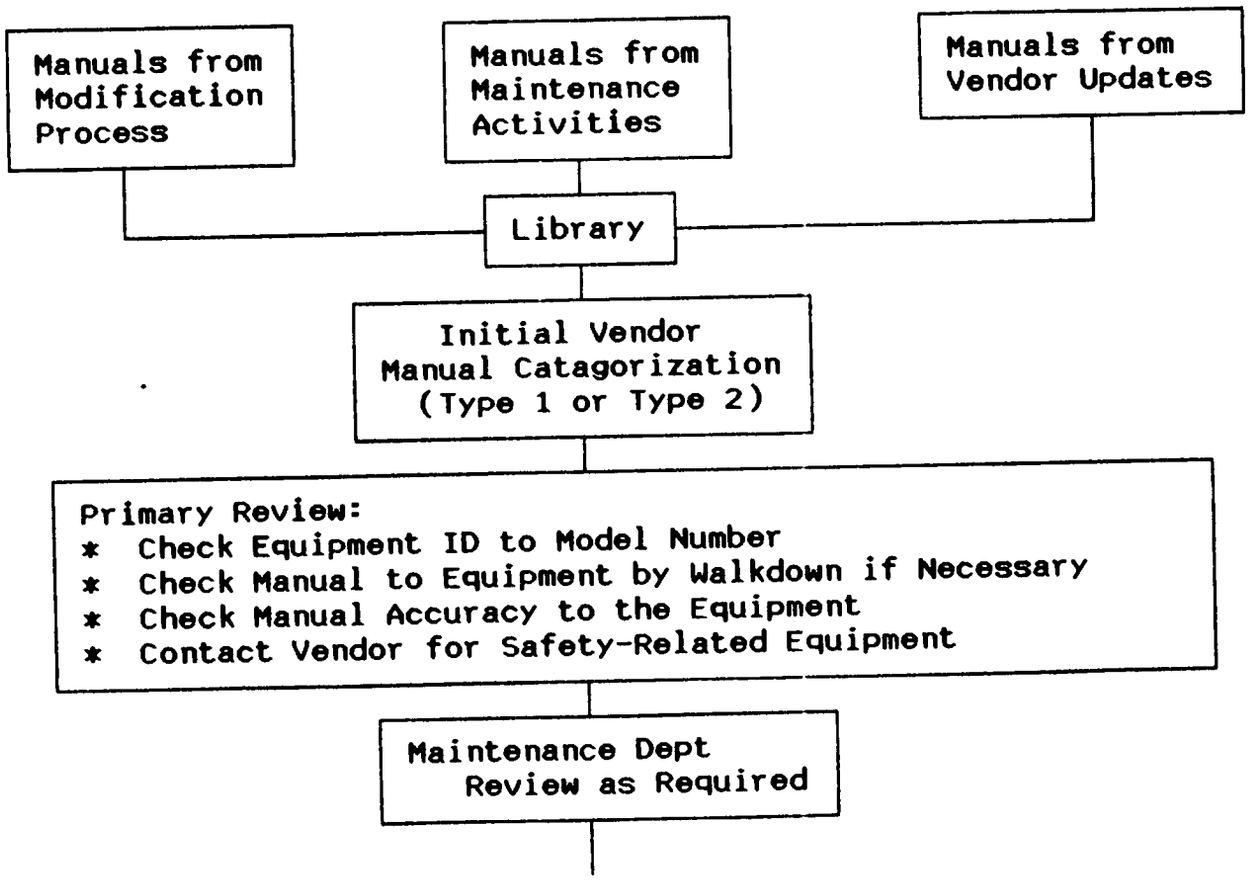
VENDOR MANUALS
TYPE 1
SAFETY-RELATED AND NON SAFETY-RELATED



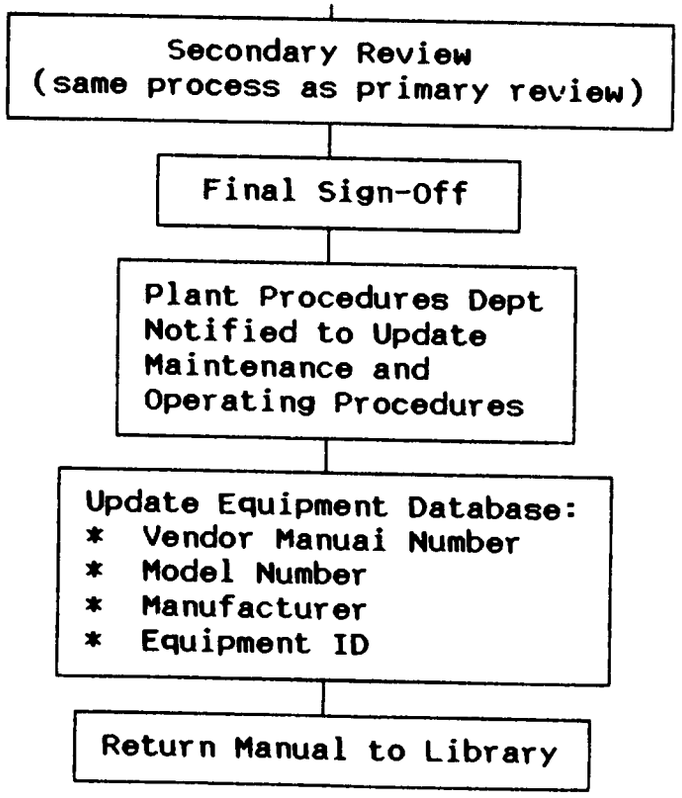
VENDOR MANUALS
TYPE 1 & 2



REVIEW PROCESS



REVIEW PROCESS (cont.)



VENDOR MANUAL REVIEW SHEET

Library Number B060ACM

Manufacturer Code B060

Model Number M3010

Applicable Equipment ID

1VEF030A-M, 1VEF030B-M, 1VEF030C-M

Revision No. 0

Quality Level 1

Component Class. MOTOR

EQ (Y/N)

N

Applicable Vendor Drawings

Page	MDL Number
P+ID	BECH-M161

ITEM	Y / N	ITEM	Y / N	ITEM	Y / N
Title	YES	Operation		Revisions	NO
Index	NO	Starting Inst	NO	Special Tools	NO
Equip Tech Data	YES	Operating Inst	YES	Storage Req	NO
Equip Desc	YES	Limits & Precautions	NO	Spare Pts Req	NO
Install Inst	YES	Operating Parameter	NO	Renewal Parts	YES
Troubleshoot	NO	Shutdown Inst	NO	Schem & Dwgs	YES
Maintenance Inst	YES	Character. Curves	NO	Cautions & Warnings	NO

COMMENTS:

Page 32 is motor break-down less capacitor and cover. 3 Phase motors do not have this feature. Maintenance data is on pages 37 and 38.

Primary Reviewer: Bill Holderman Date: 6/03/91

NG-002N Rev 0 (1206.12, 1406.13)

VENDOR CONTACT FORM

Vendor: A.C ELECTRIC CO. Date: 05/20/91 Time: 14:00

Manual Number: B060ACM

Phone Number: 207-784-7341
Address: BOX 1508
ALBURN MI. 04210

Contact Person: TERRIE LE ZASSEUR Ext.

Reason for Call:
REQUEST MANUAL FOR BALDOR MOTORS MODEL NUMBER M3010 THAT WERE SENT TO NATIONAL TECHNICAL SYSTEMS FOR QUALITY LEVEL 1 DEDICATION.THE MOTOR SPECIFICATIONS ARE; .5 HP, 460 VOLTS, MODEL NUMBER M3010 SERIAL NUMBER WE-90, FRAME 48. DO YOU PROVIDE MORE INFORMATION THAN MOTOR DATA SHEET OR GERNERAL INFROMATION FOR THESE MOTORS?

Response:
WILL RESEARCH AND CONTACT BALDOR AND SEND INFORMATION REQUESTED. IF ANY PROBLEMS SURFACE WE WILL CALL YOU, IF YOU DON'T HEAR FROM US IN A COUPLE OF WEEKS, CALL US FOR AN UP DATE.

Follow-up: Y (Call or Letter) C

Date for Follow-up: Time:

Person Placing Call: BILL HOLDERMAN

Additional Comments: RECEIVED DATA FROM BALDOR MOTOR (NTS) 06-03-91.

VENDOR CONTACT FORM

Vendor: NATIONAL TECHNICAL SYSTEMS Date: 06/06/91 Time: 8:30

Manual Number: B060ACM

Phone Number: 508-263-2933
Address: 533 MAIN ST.

ACTON MA.01720

Contact Person: CRAIG S. IRISH Ext.

Reason for Call:
WHAT PAGE WILL ILLUSTRATE THE BREAKEDOWN OF OUR MOTORS THAT WE INSTALLED ON 1VEF0303A-M ? IELP P.O# S56945 REV. 2.

Response:
PAGE 32 ILLUSTRATES BREAKDOWN OF OUR MOTORS LESS CAPACITOR AND COVER,3 PHASE MOTORS DON'T HAVE THIS FEATURE.

Follow-up: N (Call or Letter)

Date for Follow-up: Time:

Person Placing Call: BILL HOLDERMAN

Additional Comments:

TYPICAL QUESTIONS ASKED DURING VENDOR CONTACT

1. WHO IS THE PROPER CONTACT FOR CONTROLLING THE TECHNICAL INFORMATION PERTAINING TO VENDOR EQUIPMENT MANUAL UPDATES?

2. WHAT IS THE LATEST REVISION OF THE VENDOR EQUIPMENT MANUAL PERTAINING TO THE EQUIPMENT INSTALLED AT DAEC?

3. ARE THERE ANY CHANGES TO THE MANUAL THAT IMPACT THE DAEC'S OPERATION AND MAINTENANCE OF THE INSTALLED EQUIPMENT?

4. HAVE THERE BEEN ANY PRODUCT ALERTS ISSUED PERTAINING TO THE INSTALLED EQUIPMENT?

5. HAVE THERE BEEN ANY REPLACEMENT PARTS OBSOLETED PERTAINING TO THE INSTALLED EQUIPMENT? IF SO, PLEASE IDENTIFY THE SUPERSEDED PARTS AND THEIR REPLACEMENTS.

6. IS THE VENDOR EQUIPMENT MANUAL IN PROCESS OF BEING UPDATED? IF SO, WHEN WILL THE REVISED MANUAL BE ISSUED.

PROGRAM CONTINUATION

- IMPLEMENT VETIP PROGRAM ELEMENTS FOR MAINTAINING INCORPORATION OF INDUSTRY INFORMATION TO VENDOR MANUALS

- ESTABLISH ANNUAL VENDOR CONTACT FOR SAFETY RELATED MANUALS

- INCORPORATE NEW VENDOR MANUALS INTO THE PROGRAM BASED ON PLANT MAINTENANCE ACTIVITIES AND PLANT MODIFICATION PROCESSES

MAINTENANCE INITIATIVES/IMPROVEMENTS

- Maintenance Program Manuals
- Maintenance Quality Improvement Program
- Predictive Maintenance
- Preventive Maintenance
- Post Maintenance Testing Matrices

ENCLOSURE 3

MAINTENANCE PROGRAM MANUALS

- Purpose - standardize and provide justification for bases of maintenance program at component level
- Developed and maintained by Maintenance Engineering Component Specialist
- Twenty-five Program Manuals to be developed
- Business Plan Task Commitment - program complete December 1991
- Five Manuals complete to date

MAINTENANCE PROGRAM MANUALS SCOPE

Check Valves	Complete
Motor Operators	Complete
Relief Valves	Complete
Motors	
Diesel Generator/Engines	Complete
Solenoid Valves	Complete
Main Steam Isolation Valves	
Batteries	
Relays	
Valves	
Neutron Monitoring	
Snubbers	
Control Rod Drives	

MAINTENANCE PROGRAM MANUALS SCOPE (continued)

Generator
Heat Exchanger/Pressure Vessel
Temperature Monitoring
Circuit Breakers
Main Turbine
Vibration Analysis
Measuring and Test Equipment
Pumps
Thermography
LLRT
Oil Analysis
Transformers

MAINTENANCE PROGRAM MANUAL
TABLE OF CONTENTS

- Content
  - Part I - description of the program
    - historical/regulatory basis
    - plant specific information
    - program scope
    - equipment listing
    - preventive/predictive program schedule basis
  - Part II - suppert documentation
    - equipment trending information
    - industry event reports evaluations
    - regulatory information
    - maintenance background
    - vendor information

SOLENOID VALVE PROGRAM MANUAL

- Developed in Parallel to Recent AEOD Report
- Meets the Recommendations of AEOD Report
- Component Expert on Industry Technical Advisory Group
- Incorporates DAEC and Industry Experience

RESULTS OF SOV PROGRAM MANUAL DEVELOPMENT

- Identified Actual Configurations
- Reduced Models from 138 to 50-75
- Included Associated Air Regulators for Preventive Maintenance
- Incorporated Training in Advance of Scram Solenoid Work
- Resolved Application Deficiencies

MAINTENANCE QUALITY IMPROVEMENT PROGRAM

- MQIP - critical self-assessment of maintenance activities
- MQIP Coordinator appoints observers
- Detailed Observation Guideline
  - Job planning
  - In progress activity
  - Post job activity
- Immediate post-job review with participants
- Follow-up meeting with supervision, participants, and support groups
- Periodic Summary Reports

MAINTENANCE QUALITY IMPROVEMENT PROGRAM RESULTS

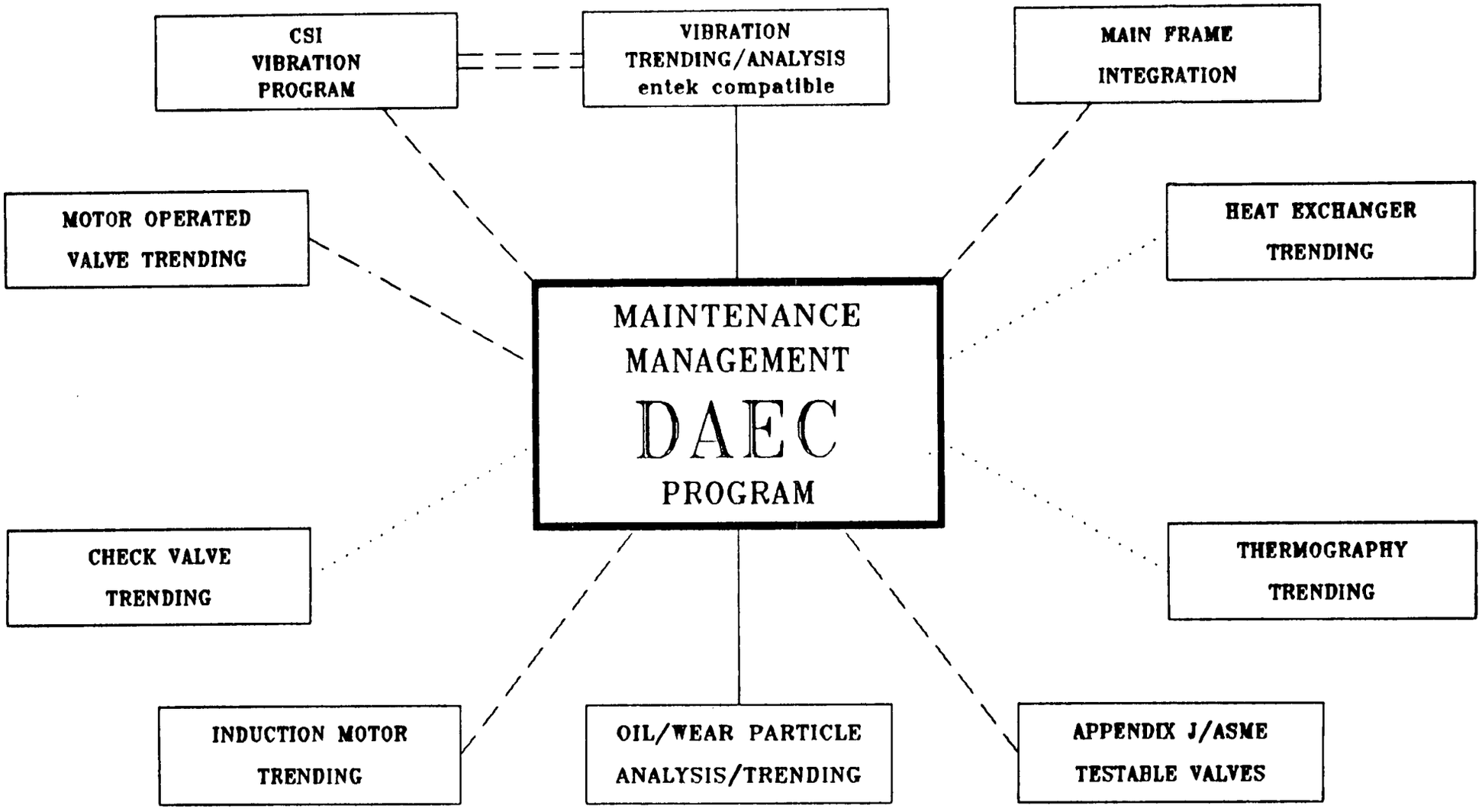
- 20 Observations Completed to Date
- Problems Identified
  - Inter-departmental coordination
  - Procurement of spare parts
  - Procedure deficiencies
- Resulting Program Changes
  - Fire protection impairment request system
  - Maintenance procedures
  - Maintenance planning process

PREDICTIVE MAINTENANCE

- Present Predictive Monitoring/Trending
  - Thermography
  - Heat exchanger performance
  - Oil/wear particle analysis/trending
  - Vibration monitoring
  - MOV trending
  - LLRT trending
- Future Predictive Monitoring/Trending
  - Induction motor trending
  - Check valve trending
- Computerized Central Maintenance Management Program
  - Integrates and manages data from predictive monitoring and trending programs

IE

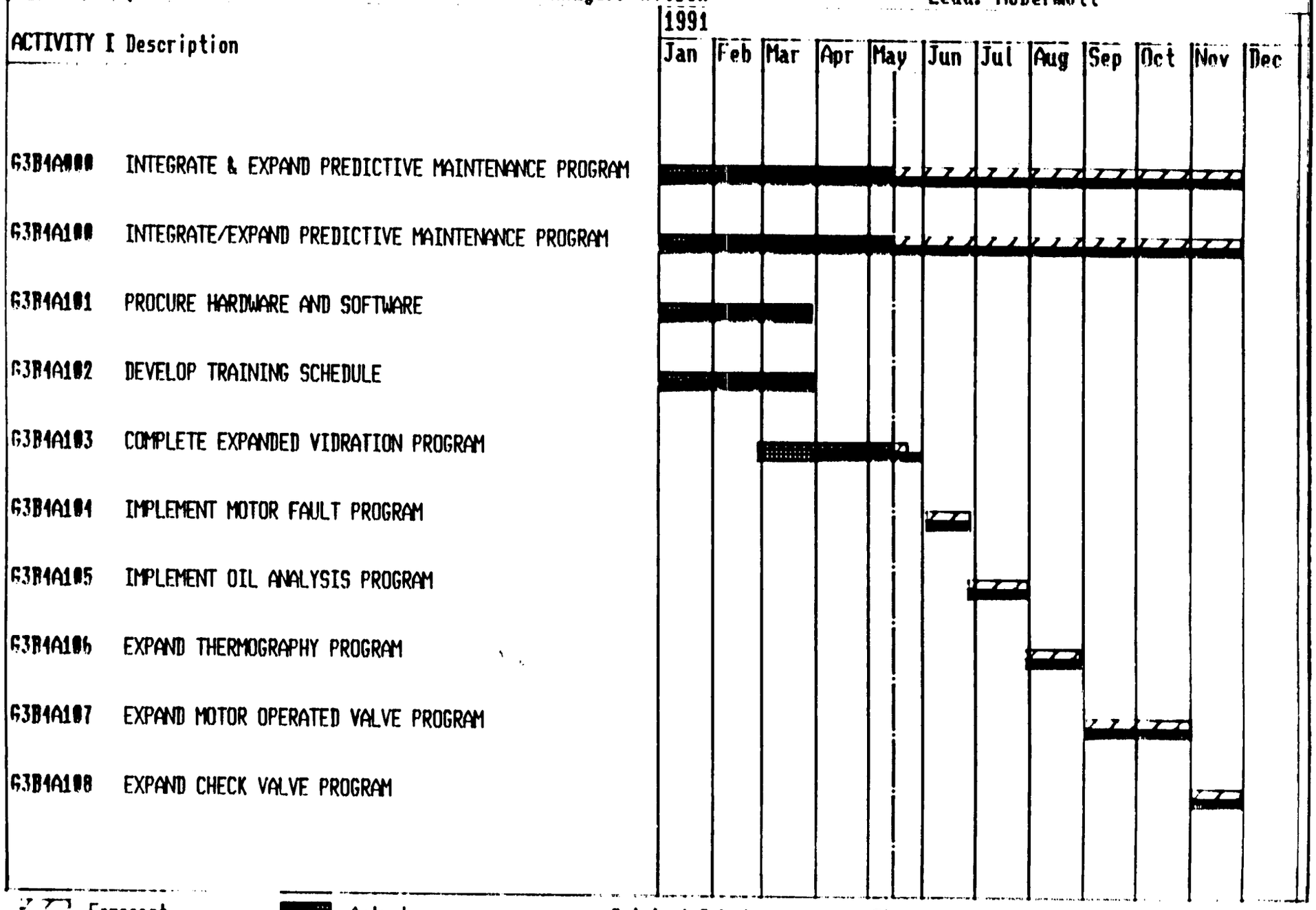
MAINTENANCE ENGINEERING PREDICTIVE MONITORING/TRENDING PROGRAM



IOWA ELECTRIC — NUCLEAR GENERATION DIVISION — BUSINESS PLAN

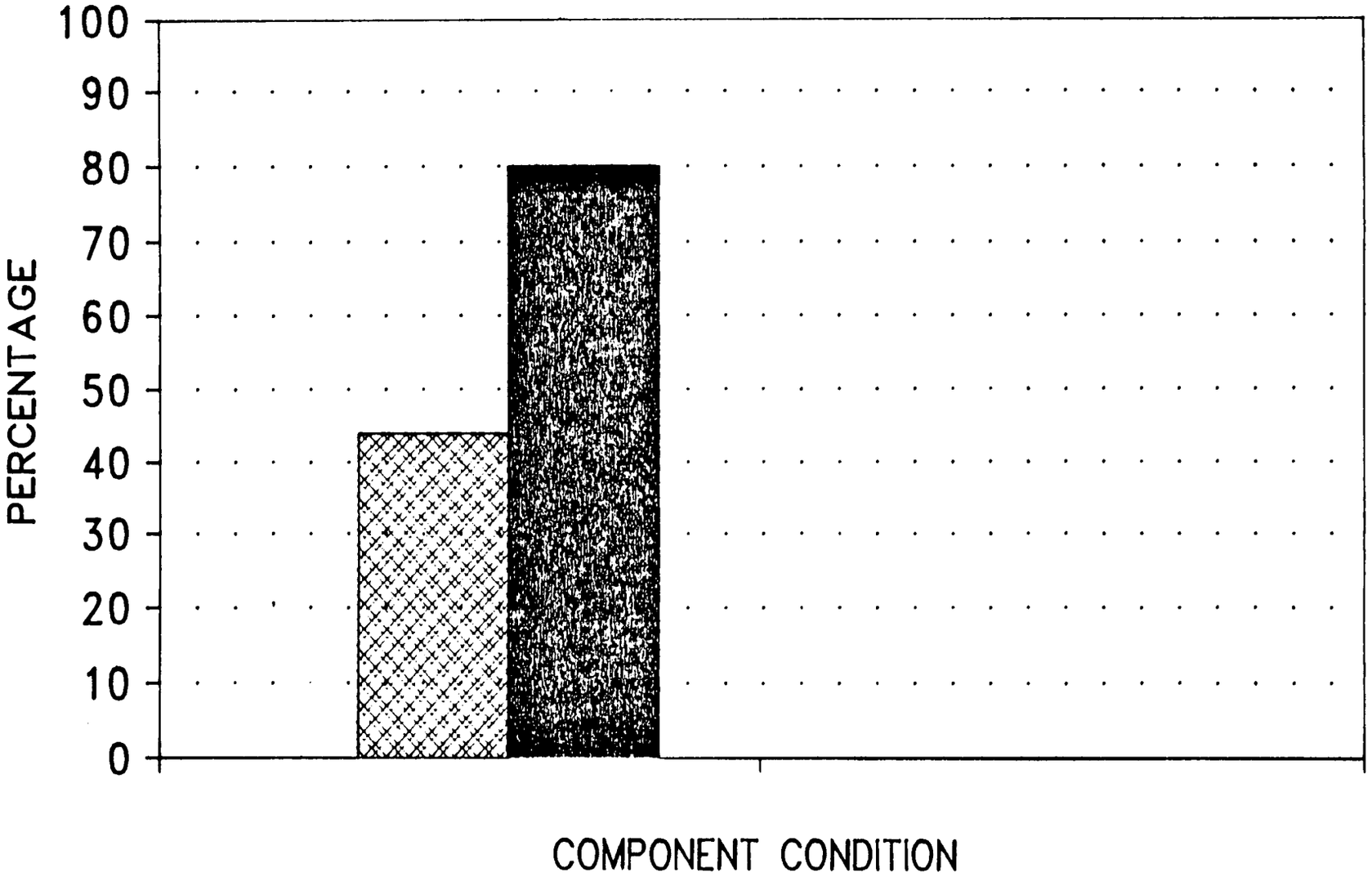
rev 0- updated thru 5/15/91

GOAL 3: Production — Manager: Wilson — Lead: McDermott



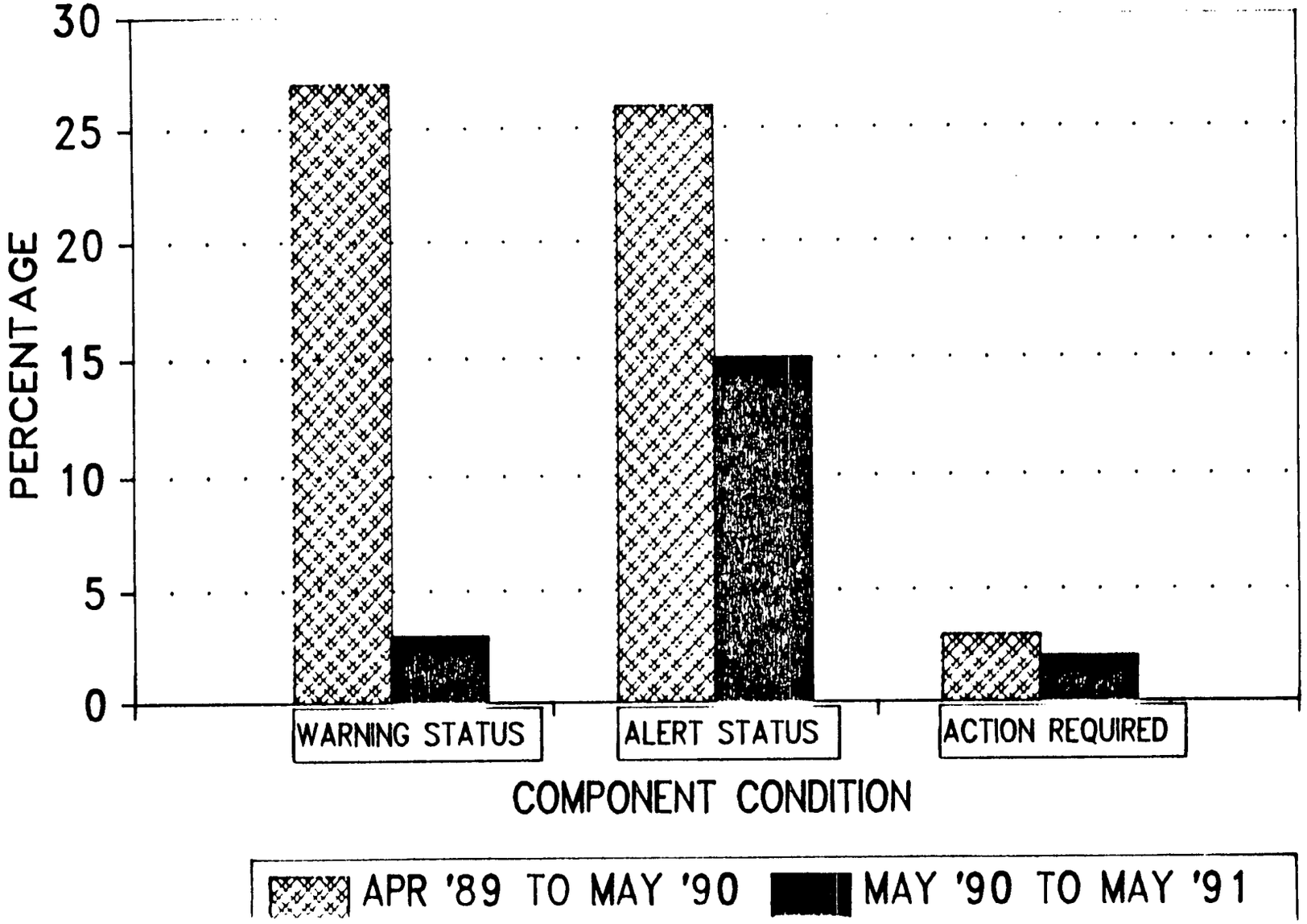
OVERALL PLANT VIBRATION CONDITION

COMPONENTS WITH ACCEPTABLE VIBRATION



OVERALL PLANT VIBRATION CONDITION

COMPONENTS IN ALARM



PREVENTIVE MAINTENANCE ENHANCEMENT

- TWO LEVEL APPROACH
- NON-SAFETY RELATED, NON-CRITICAL SYSTEMS
  - review completed by shops
  - approximately 1500 PMARs in scope
  - in process of changing PMAR database
- SAFETY-RELATED, CRITICAL SYSTEMS
  - joint systems/maintenance engineering review
  - assess and assign equipment criticality code
  - develop tiered preventive maintenance program

EQUIPMENT CRITICALITY CODES

- **A - Failure would result in immediate plant scram or transient. (Example: Feedwater Pump)**
- **B - Failure would result in:**
  - **A limiting condition of operation to be entered in tech specs, or**
  - **A half-scram to be inserted. (Example: RPS M/G Set)**
  - **Equipment that is used to determine the operability of safety-related equipment. (Example: Reactor building differential pressure indicator)**
- **C - Failure would result in the plant operating in a degraded mode which would threaten long-term operation. (Example: RWCU Heat Exchanger)**
- **D - Failure would have no significant effect on plant operation but it is cost-effective to perform minor PM to avoid a major maintenance repair effort. (Example: Cooling Tower Fan Motor)**

ECC	MOTORS		
	Preventive Maintenance	Frequency	$
A	Vibration Analysis	Qtrly	
	Oil Analysis	Qtrly	
	Thermographic Analysis	Semi Annual	
	Motor Surge Test	Cycle	
	Hypot	Cycle	
	Megger	Cycle	
	Winding Resistance	Cycle	
	Lubricate/Grease	Semiannual	
	Change Oil	2 Cycles	
B	Vibration Analysis	Qtrly	
	Oil Analysis	Annual	
	Thermographic Analysis	Annual	
	Motor Surge Test	Annual	
	Hypot	Biannual	
	Megger	Biannual	
	Winding Resistance	Annual	
	Performance Test	Qtrly	
	Lubricate/Grease	Annual	
	Change Oil	4 Years	
C	Vibration Analysis	Qtrly	
	Motor Surge Test	Annual	
	Lubricate/Grease	Semiannual	
	Change Oil	2 Year	
D	Lubricate/Grease	Semiannual	
	Change Oil	3 Year	

POST MAINTENANCE TESTING MATRICES

- Part of On-going Effort to Strengthen Program
- Assists Planners in Determining Appropriate Testing for Various Types of Maintenance
- Establishes Pre-approved Levels of Testing
- Benefits
  - Eliminates interpretation
  - Enhances consistency
  - Ensures requirements satisfied
- MOV Matrix Complete
- Future Matrices
  - Pumps
  - Doors
  - Manual valves
  - Check valves

MOV POST-MAINTENANCE TESTING

MOV ID	GROUP
MO1024A	23
MO1024B	23
MO1024C	23
MO1024D	23
MO1025	23
MO1027	23
MO1028	23
MO1034	23
MO1035	23
MO1038	23
MO1039	23
MO1040	23
MO1041	23
MO1042	23
MO1043	23
MO1044	23
MO1054	23
MO1055	23
MO1087A	23
MO1087B	23
MO1087C	23
MO1087D	23
MO1098	23
MO1099	23
MO1169	23
MO1170	23
MO1171	23
MO1172	23
MO1178	20
MO1180	20
MO1184	23
MO1185	23
MO1306	23
MO1396	23
MO1470	23
MO1473	23
MO1474	23
MO1484	23
MO1485	23
MO1494	23
MO1546	23
MO1547	23

MOV ID	GROUP
MO1548	23
MO1549	23
MO1550	23
MO1592	23
MO1631	23
MO1636	23
MO1708	23
MO1830	23
MO1833	23
MO1902	6
MO1903	15
MO1904	11
MO1905	2
MO1908	3
MO1909	3
MO1912	16
MO1913	13
MO1920	16
MO1921	13
MO1932	11
MO1933	7
MO1934	11
MO1935	11
MO1936	15
MO1937	15
MO1939	9
MO1940	11
MO1941	12
MO1942	23
MO1943A	16
MO1943B	16
MO1947	18
MO1949A	23
MO1949B	23
MO1969	13
MO1998A	18
MO1998B	18
MO2000	6
MO2001	15
MO2003	2
MO2004	11
MO2005	11

MOV ID	GROUP
MO2006	7
MO2007	11
MO2009	11
MO2010	19
MO2011	16
MO2012	13
MO2015	13
MO2016	16
MO2029	9
MO2030	11
MO2031	12
MO2039A	16
MO2039B	16
MO2039C	23
MO2044A	23
MO2044B	23
MO2046	18
MO2069	13
MO2077	16
MO2078	16
MO2100	14
MO2104	11
MO2112	10
MO2115	4
MO2117	1
MO2120	14
MO2124	11
MO2132	10
MO2135	4
MO2137	1
MO2146	14
MO2147	14
MO2202	11
MO2238	5
MO2239	5
MO2247	13
MO2290A	5
MO2290B	5
MO2300	15
MO2311	13
MO2312	5
MO2316	17

MOV ID	GROUP
MO2318	11
MO2321	11
MO2322	11
MO2400	5
MO2401	5
MO2404	11
MO2405	11
MO2426	11
MO2500	15
MO2510	11
MO2511	13
MO2512	5
MO2515	15
MO2516	11
MO2517	11
MO2700	7
MO2701	7
MO2723	23
MO2727	23
MO2731	23
MO2732	23
MO2740	6
MO2902	22
MO2903	22
MO3435	23
MO3725	22
MO3726	22
MO4150A	23
MO4150B	23
MO4151	20
MO4156	23
MO4159A	23
MO4159B	23
MO4160A	23
MO4160B	23
MO4208	21
MO4209	21
MO4249	21
MO4250	21
MO4251	21
MO4252	21
MO4253	20

MOV ID	GROUP
MO4309A	18
MO4310A	18
MO4320A	13
MO4320B	13
MO4323A	14
MO4323B	14
MO4369A	20
MO4369B	20
MO4369C	20
MO4414A	21
MO4414B	21
MO4414C	21
MO4423	7
MO4424	7
MO4441	8
MO4442	8
MO4601	22
MO4602	22
MO4627	15
MO4628	15
MO4629	15
MO4630	15
MO4772	21
MO4775	21
MO4841A	7
MO4841B	7
MO8401A	11
MO8401B	11
MO8401C	11
MO8401D	11
MO8402A	13
MO8402B	13
MO8402C	13
MO8402D	13
MO8403A	11
MO8403B	11
MO8403C	11
MO8403D	11

MOV GROUP	TESTING	VALVE				
		PACKING			INTERNAL	
		ADJUST	REPACK	LIVE LOAD	REPAIR	INSPECTION
1	MAINTENANCE OPERABILITY	A(2),E(5),F(5),I C	A,E(5),F(5),I C	A,E(5),F(5),I C	A,E,F,G,H,I C	A,E,F,G,H,I C
2	MAINTENANCE OPERABILITY	A(2),E(5),I C,D	A,E(5),I C,D	A,E(5),I C,D	A,E,G,H,I C,D	A,E,G,H,I C,D
3	MAINTENANCE OPERABILITY	A(2),E(5),I C	A,E(5),I C	A,E(5),I C	A,E,G,H,I C	A,E,G,H,I C
4	MAINTENANCE OPERABILITY	A(2),F(5),I C,D	A,F(5),I C,D	A,F(5),I C,D	A,F,G,H,I C,D	A,F,G,H,I C,D
5	MAINTENANCE OPERABILITY	A(2),F(5),I C,D	A,F(5),I C,D	A,F(5),I C,D	A,F,G,H,I C,D	A,F,G,H,I C,D
6	MAINTENANCE OPERABILITY	A(2),F(5),I C	A,F(5),I C	A,F(5),I C	A,F,G,H,I C	A,F,G,H,I C
7	MAINTENANCE OPERABILITY	A(2),F(5),I C	A,F(5),I C	A,F(5),I C	A,F,G,H,I C	A,F,G,H,I C
8	MAINTENANCE OPERABILITY	F(2),I	F,I	F,I	F,G,H,I	F,G,H,I
9	MAINTENANCE OPERABILITY	A(2),I C,D	A,I C,D	A,I C,D	A,H,I C,D	A,H,I C,D
10	MAINTENANCE OPERABILITY	A(2),I C	A,I C	A,I C	A,G,H,I C	A,G,H,I C
11	MAINTENANCE OPERABILITY	A(2),I C,D	A,I C,D	A,I C,D	A,G,H,I C,D	A,G,H,I C,D
12	MAINTENANCE OPERABILITY	A(2),I C,D	A,I C,D	A,I C,D	A,H,I C,D	A,H,I C,D
13	MAINTENANCE OPERABILITY	A(2),I D	A,I D	A,I D	A,G,H,I D	A,G,H,I D
14	MAINTENANCE OPERABILITY	A(2),I D	A,I D	A,I D	A,H,I D	A,H,I D
15	MAINTENANCE OPERABILITY	A(2),I C	A,I C	A,I C	A,G,H,I C	A,G,H,I C
16	MAINTENANCE OPERABILITY	A(2),I C	A,I C	A,I C	A,H,I C	A,H,I C
17	MAINTENANCE OPERABILITY	A(2),I	A,I	A,I	A,G,H,I	A,G,H,I
18	MAINTENANCE OPERABILITY	A(2),I	A,I	A,I	A,H,I	A,H,I
19	MAINTENANCE OPERABILITY	A(2),I	A,I	A,I	A,H,I	A,H,I
20	MAINTENANCE OPERABILITY	I,J(2)	I,J(2)	I,J(2)	G,H,I	G,H,I
21	MAINTENANCE OPERABILITY	I,J(2)	I,J(2)	I,J(2)	H,I	H,I
22	MAINTENANCE OPERABILITY	I,J(2)	I,J(2)	I,J(2)	G,H,I	G,H,I
23	MAINTENANCE OPERABILITY	I,J(2)	I,J(2)	I,J(2)	H,I	H,I

TEST	DESCRIPTION
A	VOTES (STATIC)
B	VOTES (DYNAMIC)
C	STROKE TEST CLOSED (BTC)
D	STROKE TEST OPEN (BTO)
E	HYDROSTATIC TEST PER BS-14
F	LOCAL LEAK RATE TEST PER APPLICABLE STP (47A003/5)
G	VERIFY AUTOMATIC ACTUATION CIRCUITRY.
H	VALVOP-L200 SERIES PROCEDURE OPERABILITY CHECK WHICH ELECTRICALLY EXERCISES THE MOV TWICE AND CHECKS FOR SMOOTH OPERATION, PROPER OPERATION OF SWITCHES, PROPER CURRENT, AND CORRECT POSITION INDICATION.
I	VERIFY NO EXTERNAL LEAKAGE AT NORMAL SYSTEM PRESSURE.
J	MEASURE AND RECORD MOTOR RUNNING CURRENT.

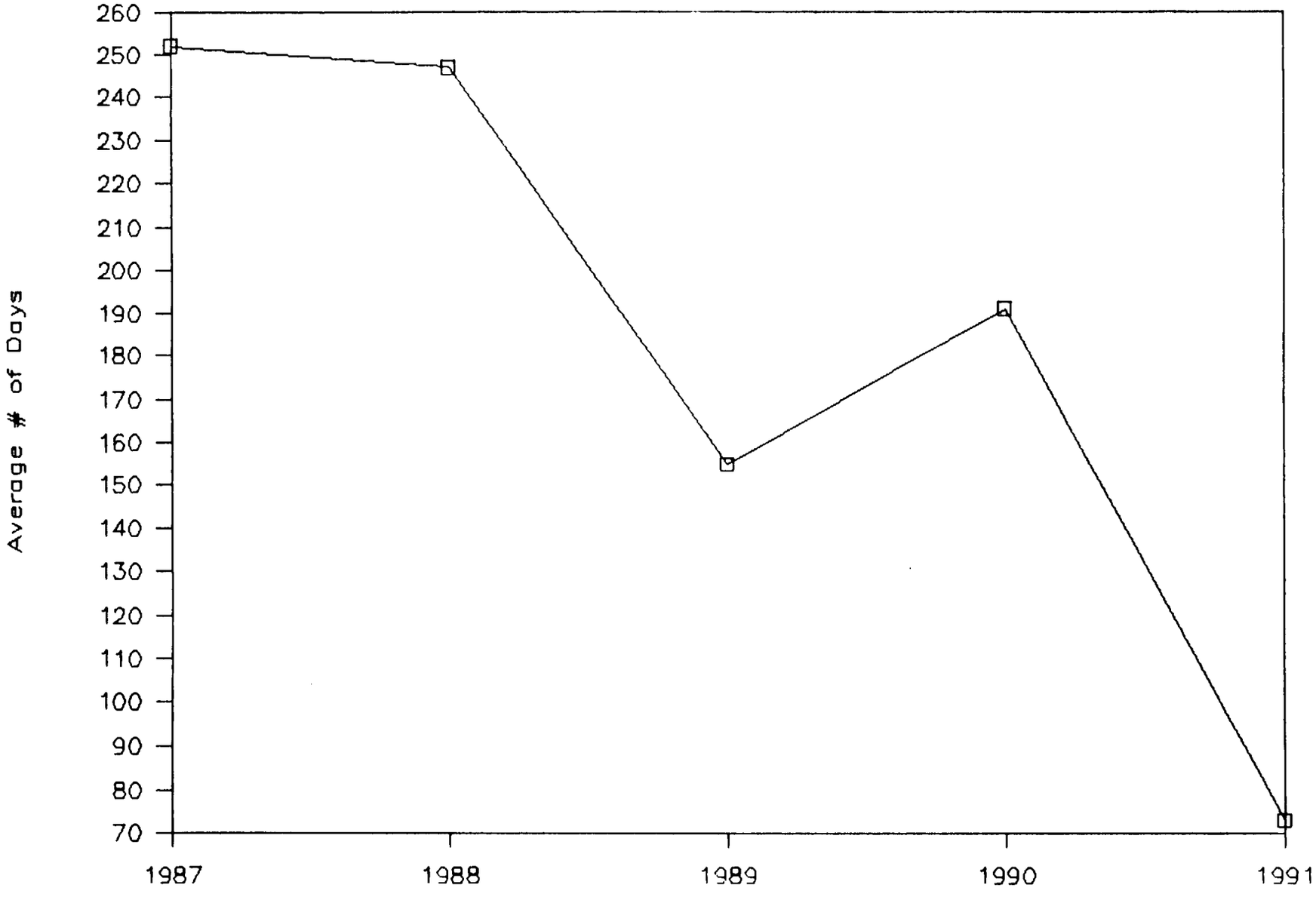
Average Review Time for NRC Documents*

(OPEN)

*NRC Documents include:
INs, GLs, Bulletins

Average Review Time for INPO Documents*

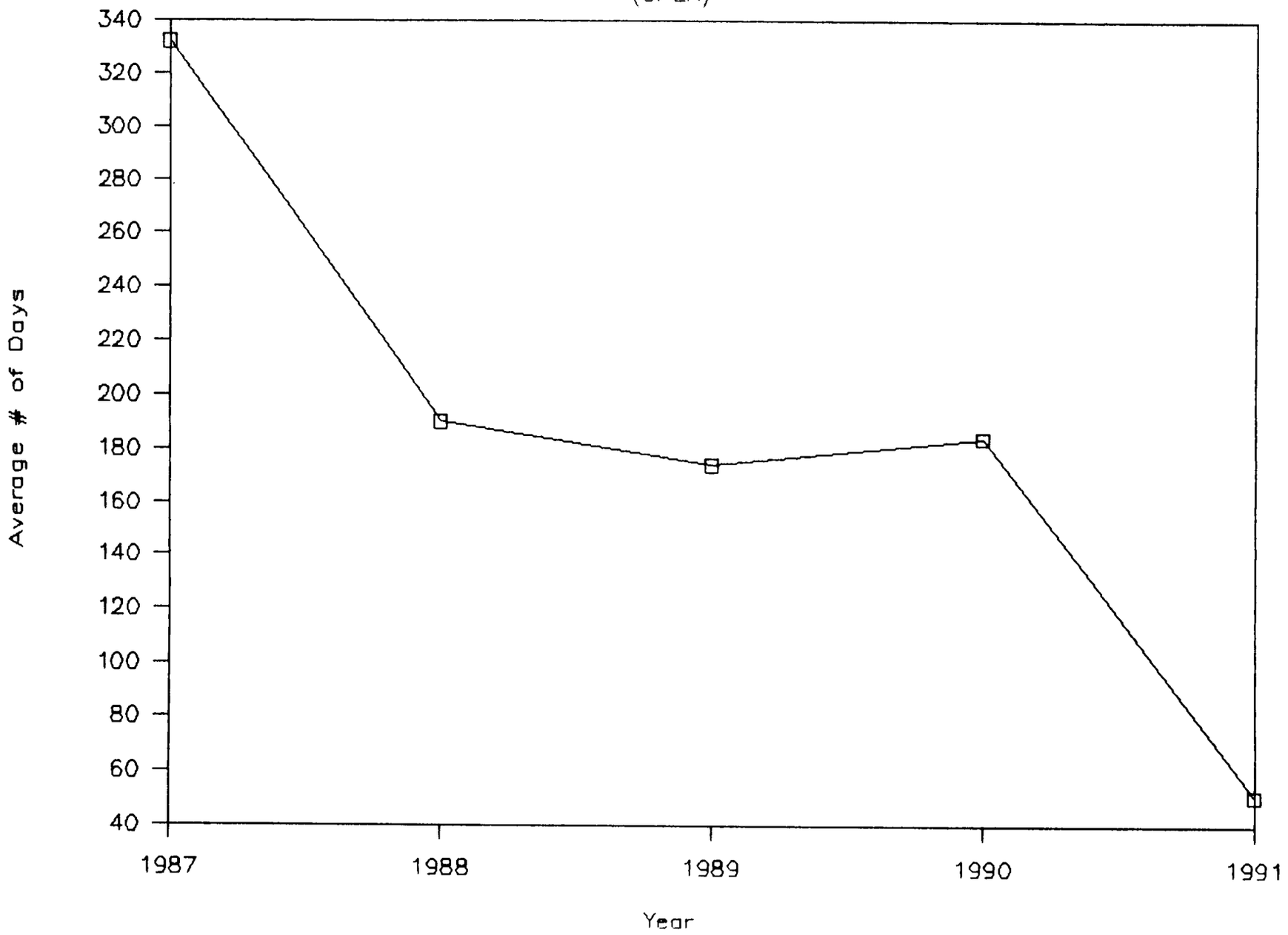
(OPEN)



*INPO Documents include:
SOERs, SERs, SENs, O&MRs

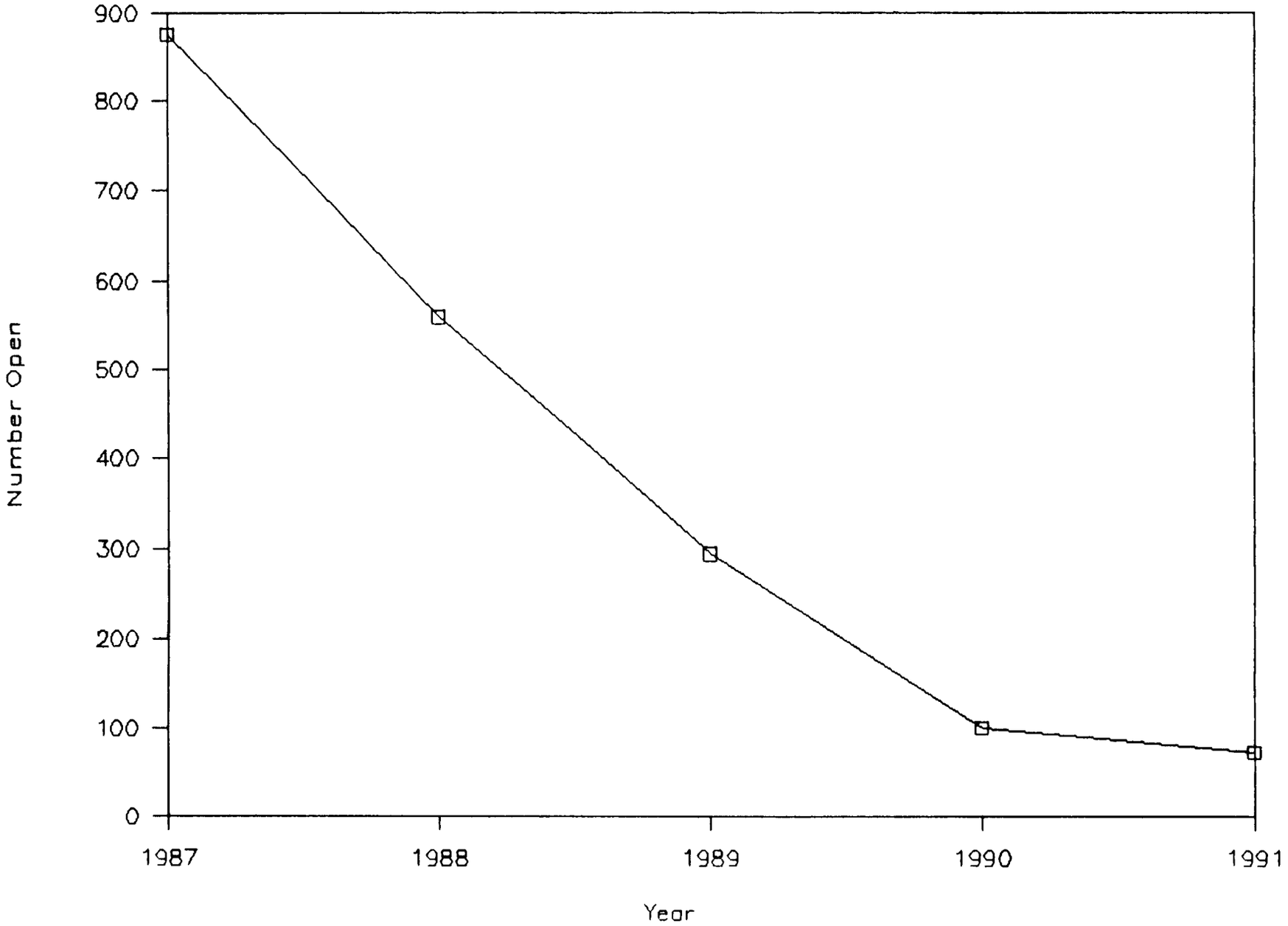
Average Review Time for GE Documents*

(OPEN)



*GE Documents include:
PRCs, SILs, RICSILs, TILs, SALs

Deviation Report Worklist



Average Time Open:
1987 - 12 months
1991 - 1 month

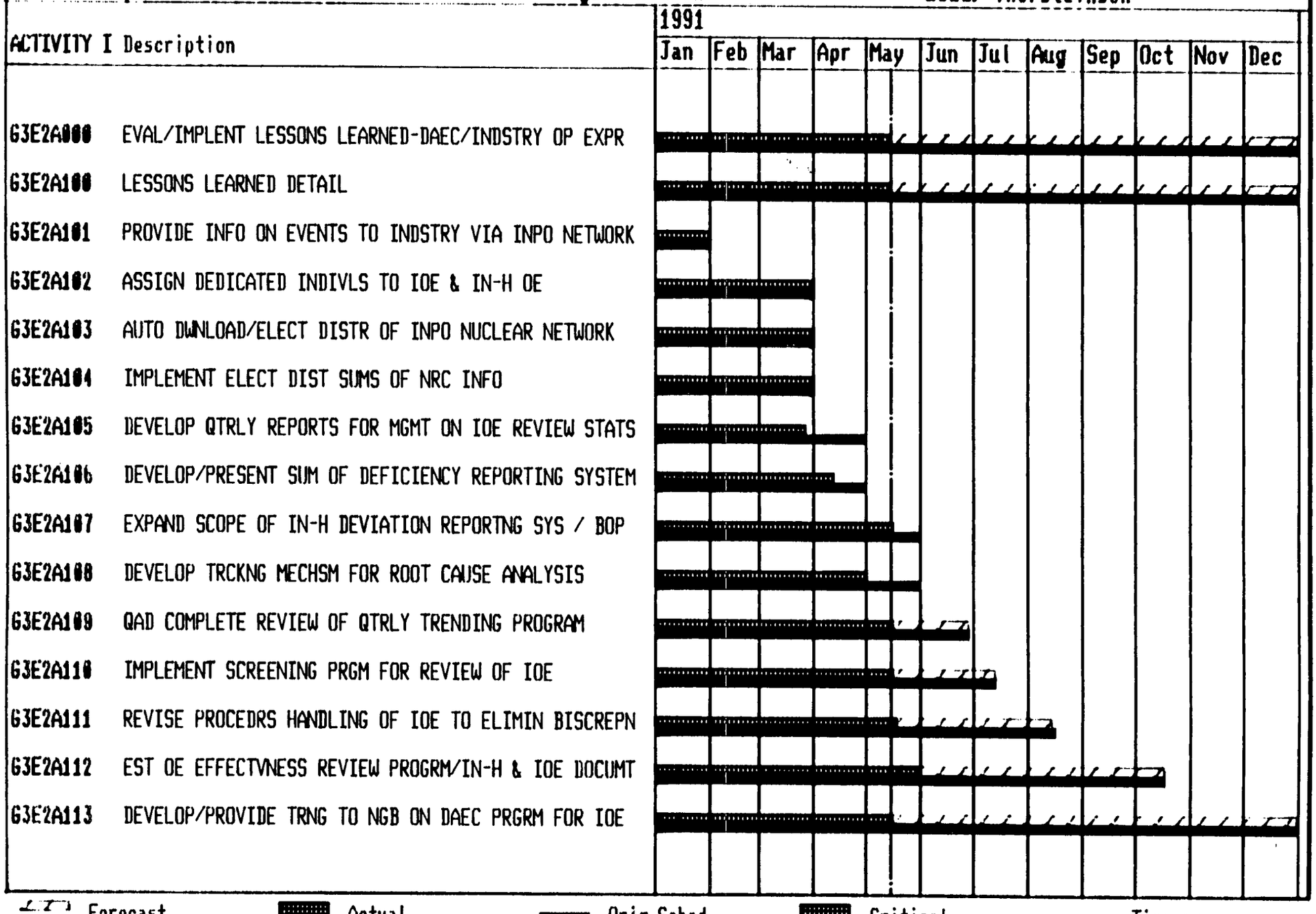
OPERATING EXPERIENCE PROGRAM IMPROVED PERFORMANCE

- Established Core Group in Technical Support
- Improved Screening for Applicability
- Implemented Electronic Distribution
- All Technical Support Personnel HPES/Root Cause Trained
- More Involvement by Responsible Supervisors
- More Aggressive Review Effort by all Departments

IOWA ELECTRIC — NUCLEAR GENERATION DIVISION — BUSINESS PLAN

rev 0- update thru 5/15/91

GOAL 3: Production — Manager: Wilson — Lead: Thorsteinson



ENCLOSURE 4

ATTENDANCE LIST

BUSINESS AND PRIORITIZATION PLANS, MAINTENANCE INITIATIVES,
VENDOR MANUAL PROGRAM

PLANT: DUANE ARNOLD ENERGY CENTER

DATE: June 10, 1991

Bruce Boger	NRC-NRR-DRP III/IV/V
Ed Greenman	NRC-Region 3
John A. Zwolinski	NRC-NRR-PDIII-3
John N. Hannon	NRC-NRR-PDIII-3
James R. Hall	NRC-NRR-PDIII-3
Clyde Y. Shiraki	NRC-NRR-PDIII-3
Stephen P. Sands	NRC-NRR-PDIII-3
Dave Wilson	Iowa Electric Light and Power Company
D. L. Mineck	Iowa Electric Light and Power Company
Ken Peveler	Iowa Electric Light and Power Company
R. F. Salmon	Iowa Electric Light and Power Company
Jeff Thorsteinson	Iowa Electric Light and Power Company
Narindra N. Sikka	Iowa Electric Light and Power Company