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William J. Cahill, Jr.
Chief Nuclear Officer

January 12, 1996
IPN-96-002

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Subject: Indian Point 3 Nuclear Power Plant
Docket No. 50-286
Response to Request for Information
Regarding the Status of Performance Improvement and
Corrective Actions Prior to Restarting Indian Point 3

Reference: NRC letter, T. Martin to W. J. Cahill, Jr., "Request for Information Regarding the Status of Performance Improvement/Corrective Actions Prior to Restarting Indian Point 3," dated December 22, 1995.

Dear Sir:

We welcome the opportunity to provide the information requested in your letter of December 22, 1995. As discussed below, we have aggressively pursued critical self-assessments of deficiencies in operations and operations support activities, and have developed corrective actions which address the events cited in your letter, and found in our total start-up experience to form the basis of our dynamic continuous improvement activities. The corrective actions which we implemented are structured to root cause assessments and tailored to ensure lasting improvement. Although your letter refers to operations department activities, we are addressing deficiencies observed in other aspects of operational support, including maintenance and engineering, as described in this letter.

During 1994, NYPA developed a Restart and Continuous Improvement Plan (RCIP) which was intended to identify deficiencies and improvement potentials in the physical plant and in the associated organization and staff. Throughout the completion of the outage work, and reactivation of the plant systems and equipment, many corrective actions and improvements were made. Some of these could only be identified during restart, or as plant conditions revealed a deficiency. During initial operation, we identified and corrected several physical deficiencies. Similarly, that initial operating experience has revealed the need to strengthen our operations organization to ensure timely response to plant needs, and to provide leadership in effecting change to a more formal mode of operation. The corrective actions associated with initial operating experience started before we reached full power and have culminated in a new organizational structure which is specifically designed to enhance safe, reliable operation in accordance with appropriate written procedures. The following summary serves to illustrate the ways in which we have implemented our policy of continuous improvement at Indian Point 3.

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After the extended outage, which commenced in February 1993, Indian Point 3 was successfully restarted (initial criticality in June 1995). It operated through four heatup and cooldown cycles. The operating philosophy demonstrated during the subsequent operational periods was based upon implementing a critical self-assessment of not only the physical and material condition of the plant, but most importantly, the performance demonstrated by our operational staff and management team. Executive management expectations were directed toward ensuring deliberate, conservative plant operations. In most situations, the plant staff was successful in meeting those expectations. One example of this was an action to replace the reactor head o-ring seals based upon evidence of minor leakage in May 1995. Similar conservative actions were demonstrated in response to the main generator hydrogen cooler leakage in September 1995, and the subsequent actions to take the plant to the cold shutdown condition in response to indications of problems with certain containment penetrations. As a result of a critical self-assessment of performance during this initial start-up evolution, the recent maintenance outage was extended to complete a comprehensive scope of corrective actions designed to ensure lasting improvement in plant operation.

Operational events, as referenced in your letter of December 22, 1995, represent performance deficiencies that were self-identified and have led to the accomplishment of several rigorous root-cause analyses through our self-assessment process. This effort was focused not only on the isolated events but also on a broad, integrated look at total performance. Deficiencies demonstrated during these and similar events indicated the need for additional corrective actions beyond the scope of the recently completed restart portion of the RCIP. These actions compliment the RCIP actions and provide additional clarification of management expectations. These continuing improvement initiatives have resulted in restructuring the plant organization to strengthen individual performance and the management process. Significant effort was directed toward improved definition of individual roles and responsibilities and increased emphasis on personal accountability. Additional improvements have been directed toward enhanced understanding of conservative decision-making and establishing an operating philosophy with reduced tolerance for equipment deficiencies. This understanding has been further developed and applied to staff use of operating procedures and a reinforced practical understanding of adherence to procedures.

Extensive effort has been extended to address equipment deficiencies to provide assurance that the plant operations staff would not be challenged with unnecessary equipment performance problems. An evaluation of surveillance testing results indicates a continuing improvement trend in the material condition of IP3 based upon a decreasing number of test result deficiencies as illustrated in Figure 1. We are completing prerequisites to assure timely implementation and compliance with the Maintenance Rule. An expert panel was used to identify 28 systems as risk-significant with a total of 110 systems included in oversight as stipulated by the Maintenance Rule. Activities in progress include the identification of system boundaries and equipment selection in support of the maintenance rule functions, training for the development of performance criteria and obtaining related system data. Compliance with the rule requirements is expected by April 1996.

A similar level of effort has been expended within the site engineering function to improve the effectiveness of that organization to support plant operations. Most significantly, a major reorganization has been accomplished which has consolidated the majority of site engineering functions within a single organization under the direction of a new manager who

has extensive industry experience and a record of success. Improved communications and focus on plant technical issues provides confidence in the ability of the engineering organization to support plant operations. As previously noted, system engineers are participating in training to support the development of system performance criteria and have implemented processes based on project management attributes. All of the above have contributed to improved responsiveness by the site engineering organization and improved technical and management skills, resulting in the timely resolution of both emergent and long-standing operational issues.

As previously stated, we have reorganized Indian Point 3 to support safe, effective plant operations in compliance with NRC requirements. This change includes the establishment of the General Manager Operations (GMO) position with functional responsibility for operations, radiation protection, chemistry, performance engineering, planning and scheduling, and training. This provides our new GMO, a person who successfully performed the function at our James A. FitzPatrick plant during a critical period of performance improvement, with the resources necessary to manage operations and to establish the priority of work for the plant. Additional changes made to support operations include the recent assignment of a new Operations Manager, who also has extensive industry experience.

Human performance has improved significantly, as illustrated in Figure 2, because of increased emphasis on personal accountability and improved understanding of individual roles and responsibilities. This positive performance trend and Figures 3 and 4 indicate improved attention to detail and improved performance in the area of conservative decision-making.

Additional oversight of plant operations has also been implemented with the reinstitution of the Operations Shift Mentoring Program, which consists of experienced nuclear professionals with prior shift supervisor experience. These mentors provide an additional level of technical oversight of plant operations and real-time critical feedback to shift operations and operations management concerning crew performance. Implementation of this oversight role commenced with the development of a plan, which included an orientation period to provide the shift mentors familiarity with previous operational deficiencies and a personal indoctrination concerning enhanced IP3 performance expectations. Specific assessments of crew performance focus on previously identified performance deficiencies and include the effectiveness of management leadership and direction, communications, shift turnover formality and effectiveness, procedural adherence, conservative decision-making, questioning attitude and attention to detail. Although the Operations Shift Mentoring Program has been in effect for only about one month, the shift mentors have provided meaningful feedback to operations management attesting to the technical capabilities of the operating shifts, increasing improvement in the effectiveness of the shift turnover process, communications and self-assessments of that process, and rigorous procedure compliance supplemented by a skeptical, but healthy, questioning attitude. Continuing feedback is being provided by the Shift Operations Mentors concerning process improvements and identified individual performance enhancements. Although subjective in nature, the Shift Mentors have assessed IP3 Plant Operations as being comparable to other operating staffs with apparent strengths in some areas, but recognized development needs in other areas.

A number of performance indicators at IP3 have demonstrated a continuous improvement since the spring of 1995, when we first heated up the plant. The monthly and cumulative

average human performance error rate, as noted above, has improved continuously during the period and is approaching the industry goal (Figure 2). The percentage of deficiencies discovered by plant personnel compared to the number discovered by Quality Assurance personnel and outside agencies has also continued to improve during this period (Figures 3 and 4). This demonstrates that the critical self evaluation being performed by NYPA personnel over this period has improved. During this same period, the material condition of the plant has also improved. This is demonstrated by the fact that the rates of deficient surveillance test results, for Technical and Operational Specifications, has steadily declined, as noted above (Figure 1).

Three operator training requalification cycles have been completed since July 1995. Nine operators required remediation because of weak performance in the first cycle, three operators required remediation in the second cycle, and no remediation was required in the last cycle. Also, the seven operators who took the NRC exam in December, passed.

We are planning to resume power operation of IP3 upon satisfaction of the following criteria, which we expect to accomplish this month:

1. Plant Operating Procedures and related System Operating Procedures updated and training complete.

2. Requisite corrective actions associated with recent significant events completed, as determined by the GM-Operations.

3. Shift Technical Advisor roles and responsibilities defined, training completed and qualified STAs assigned to each operating shift. While we had qualified STAs before, we will now have the on-shift Watch Engineer qualified as the STA. These WEs/STAs will provide oversight of plant operations.

4. Plant material and equipment condition established to support restart based on evaluation of the integrated impact of the following parameters:

   - Outstanding Work Requests (Figure 5)
   - Control Room Deficiencies (Figure 6)
   - Operator Work-Arounds (Figure 7)
   - Temporary Modifications (Figure 8)
   - Catch Containments (Figure 9)

   In the case of operator work-arounds, the long term trend of total numbers is improving. In other cases, such as control room deficiencies and catch containments, the number has increased during periods when the plant has been at hot shutdown and operating, a more challenging period for these parameters. Our restart plan provides for a systematic evaluation of the impact of these items, both individually and in the aggregate, to assure that the plant will operate safely, effectively, and in compliance with regulatory requirements.

5. Supporting determinations will be provided by selected department managers to further ensure that there is nothing outstanding in their areas of responsibility that will preclude plant start up. These determinations will be supplemented by:

    - Operations Shift Managers and Control Room Supervisors,
    - Tactical Assessment Coordinator, and
    - Operations Shift Mentor Team Leader.

6. Determination and endorsement that the equipment and staff are capable of safely and effectively restarting IP3. This will be based on an evaluation performed by the GM-Operations and Operations Manager of the integrated impact of items 1-5.

7. Overall Approval for Restart

    - Site Executive Officer
    - Chief Nuclear Officer

The Continuous Improvement Plan (CIP) and the Restart Plan described here have been made part of the IP3 Action Item Tracking System (ACTS). Although the schedule for some of the CIP items from 1995 has been extended, these CIP items will be controlled by use of the ACTS system.

In some areas such as teamwork training, significant progress has been made. The CIP Action Plan C-1.1.1.1, addressing "core competence," is nearing completion. This topic involved identifying needed management skills for the plant staff, developing a training program to meet these needs and implementing the training. The development of a management skills training program covering teamwork and communication resulted from this action plan. Training has been provided for approximately 800 staff members, or 90% of the people scheduled to attend, in 2-3 day sessions as of the end of 1995. Another CIP Action Plan, C-1.2.1.1 addressing the personnel evaluation process, is complete. This new process is now being used to evaluate performance of Nuclear Generation Department personnel during 1995.

Each of the other CIP action plans will be tracked with the ACTS system for completion and closure. We recognize that in some cases, expected progress has not been realized. To address this, we have reinforced the importance of these plans and will assign a staff member to manage this program.

I would also like to address some of the points from the NRC Inspection Report 50-286/95-16, which we received on January 10, 1996. This report, covering inspections during the period October 31 to December 4, included a performance based team inspection of the Authority's Corrective Action Program. As a result of this inspection, we reviewed management observations performed in 1995 and ensured that observations requiring resolution were either corrected or entered into the appropriate corrective action process (DER, PID, ACTS, etc.). The Management Observation Plant Standard is being revised to make it more effective. These changes are scheduled for completion this month.

As previously mentioned, some parts of the CIP have been aggressively pursued and completed, while others were rescheduled. Also as noted above, the management of the entire CIP is being restructured this month.

The inspection report also noted that the Authority was not effectively prioritizing work backlogs. During December we implemented a new prioritization system similar to one recently implemented at our James A. FitzPatrick plant. Station work at IP3 is being prioritized using this new method. We will monitor the effectiveness of this method in addressing the management of work backlogs later this year.

CONCLUSION:

We have taken and are taking many actions to address our performance weaknesses. Some of the key actions are:

1. Clarifying improved instruction and enforcing those expectations relative to procedure adherence.

2. Extensively revising operating procedures to ensure they can be followed, consistent with item 1 above, and providing on-shift personnel to support procedure revisions.

3. Reorganizing the Operations department, including establishing the position of GM-Operations, with additional resources and authority to control operations and readiness to operate.

4. Providing and enforcing more specific directions to the shift crews regarding the formality and conduct of periodic walkdowns, logkeeping and shift turnovers.

5. Providing additional training on plant awareness and conservative decision-making.

6. Increased monitoring of operating performance by using Watch Engineers/STAs, the Tactical Assessment Group and shift mentors.

We believe these actions will significantly improve performance and facilitate lasting improvement because they address the root causes and common issues that have been part of our operating events, such as those cited in your letter.

Based on our experience in restarting and operating IP3 following an extended outage, in accomplishing numerous complex operational evolutions and recent confirming indications, we conclude that IP3 can be restarted safely and in conformance with procedures.

We will continue to monitor the effectiveness of our actions using oversight groups previously mentioned and by performing self-assessments prior to exceeding 200°F, prior to criticality, at approximately 30-40 percent power and at full power. We will revise our Continuous Improvement Plan if necessary, based on the assessments we perform during start up.

We are confident that the actions described in this letter support the safe restart and continued safe operation of the plant which we anticipate will be ready to resume the latter part of this month.

If you have any questions, please contact me.

Very truly yours,

William J. Cahill, Jr.
Chief Nuclear Officer

Attachments

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U.S. Nuclear Regulatory Commission
Resident Inspectors' Office
Indian Point 3 Nuclear Power Plant

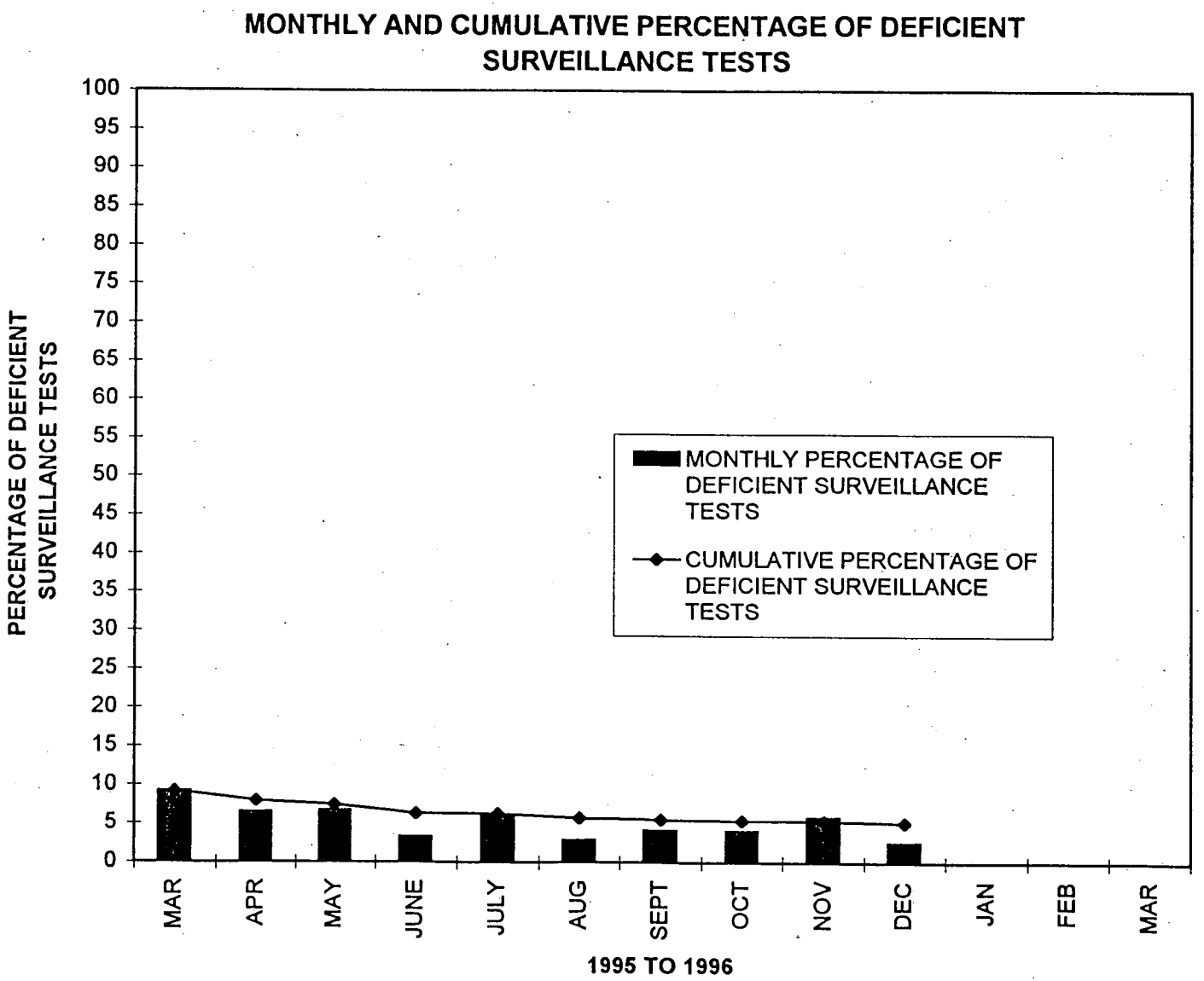

MONTHLY AND CUMULATIVE PERCENTAGE OF DEFICIENT SURVEILLANCE TESTS
PERCENTAGE OF DEFICIENT SURVEILLANCE TESTS
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
MONTHLY PERCENTAGE OF DEFICIENT SURVEILLANCE TESTS
CUMULATIVE PERCENTAGE OF DEFICIENT SURVEILLANCE TESTS
MAR
APR
MAY
JUNE
JULY
AUG
SEPT
OCT
NOV
DEC
JAN
FEB
MAR
1995 TO 1996

FIGURE 1

MONTHLY AND CUMULATIVE AVERAGE HUMAN PERFORMANCE ERROR RATES PER 10,000 HOURS WORKED

Goal is ≤ 1.0 errors per month per 10,000 hours worked

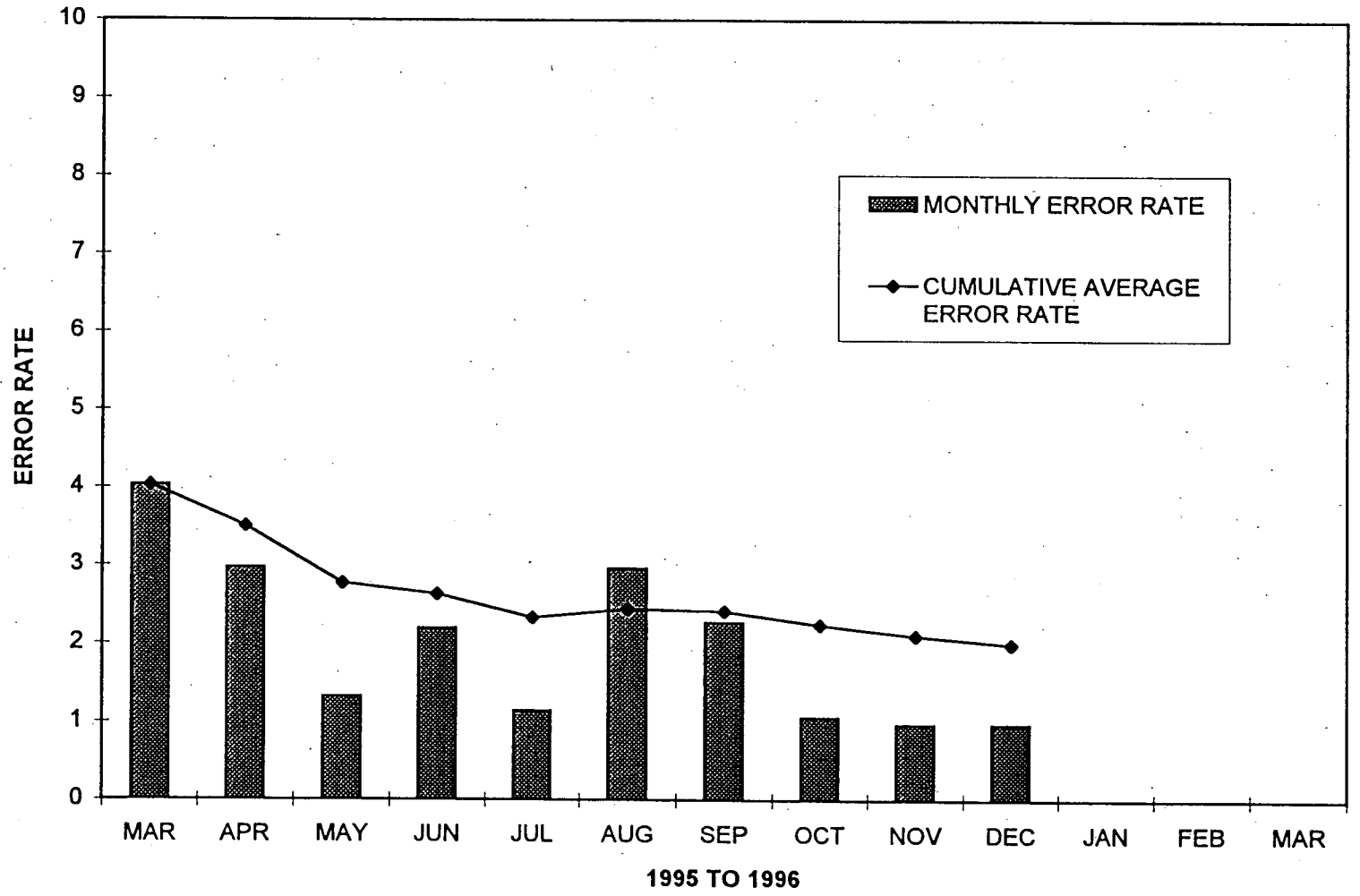


FIGURE 2

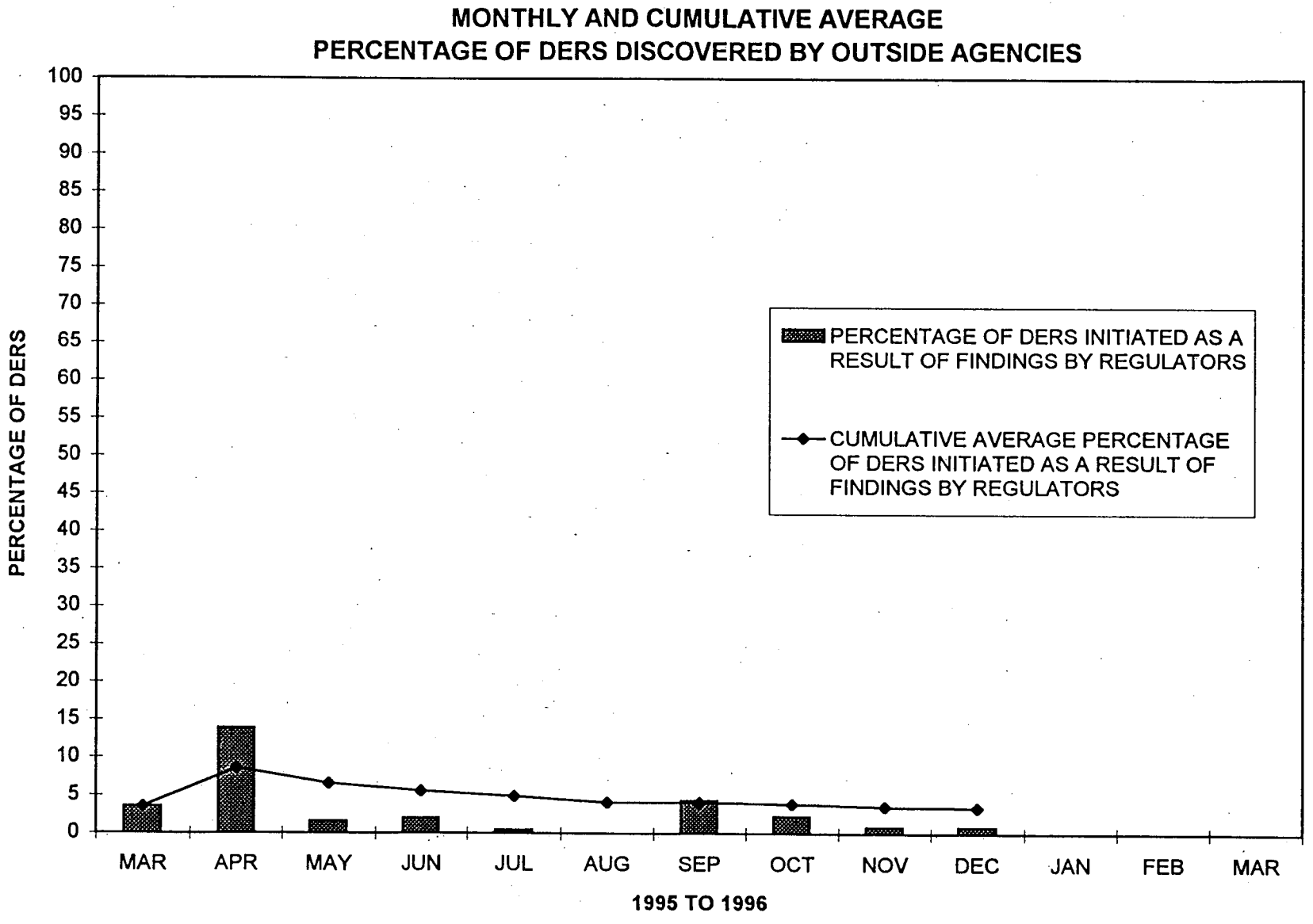

MONTHLY AND CUMULATIVE AVERAGE
PERCENTAGE OF DERS DISCOVERED BY OUTSIDE AGENCIES
PERCENTAGE OF DERS
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
PERCENTAGE OF DERS INITIATED AS A RESULT OF FINDINGS BY REGULATORS
CUMULATIVE AVERAGE PERCENTAGE OF DERS INITIATED AS A RESULT OF FINDINGS BY REGULATORS
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
JAN
FEB
MAR
1995 TO 1996

FIGURE 3

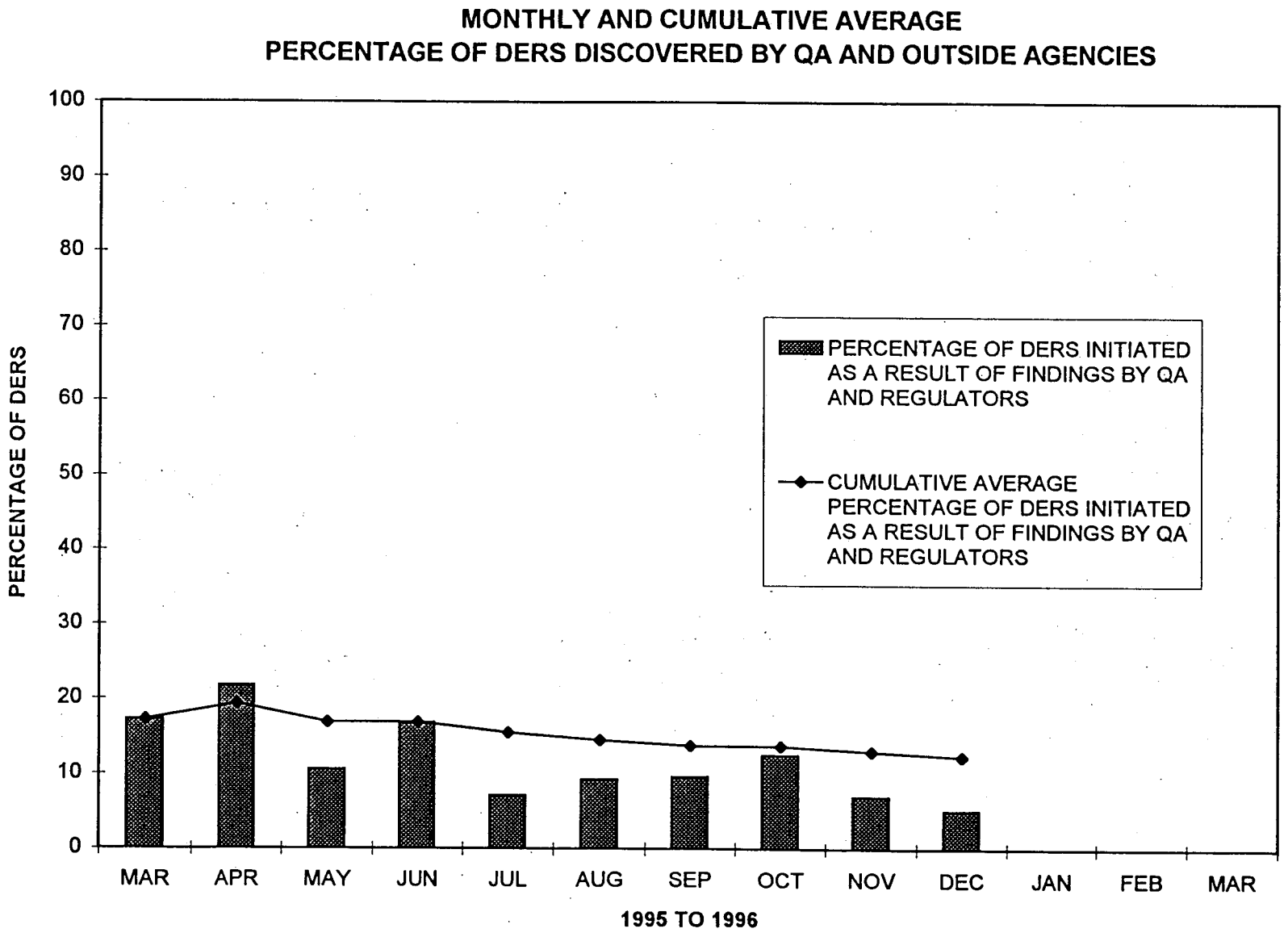

MONTHLY AND CUMULATIVE AVERAGE
PERCENTAGE OF DERS DISCOVERED BY QA AND OUTSIDE AGENCIES
PERCENTAGE OF DERS
100
90
80
70
60
50
40
30
20
10
0
PERCENTAGE OF DERS INITIATED AS A RESULT OF FINDINGS BY QA AND REGULATORS
CUMULATIVE AVERAGE PERCENTAGE OF DERS INITIATED AS A RESULT OF FINDINGS BY QA AND REGULATORS
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
JAN
FEB
MAR
1995 TO 1996

FIGURE 4

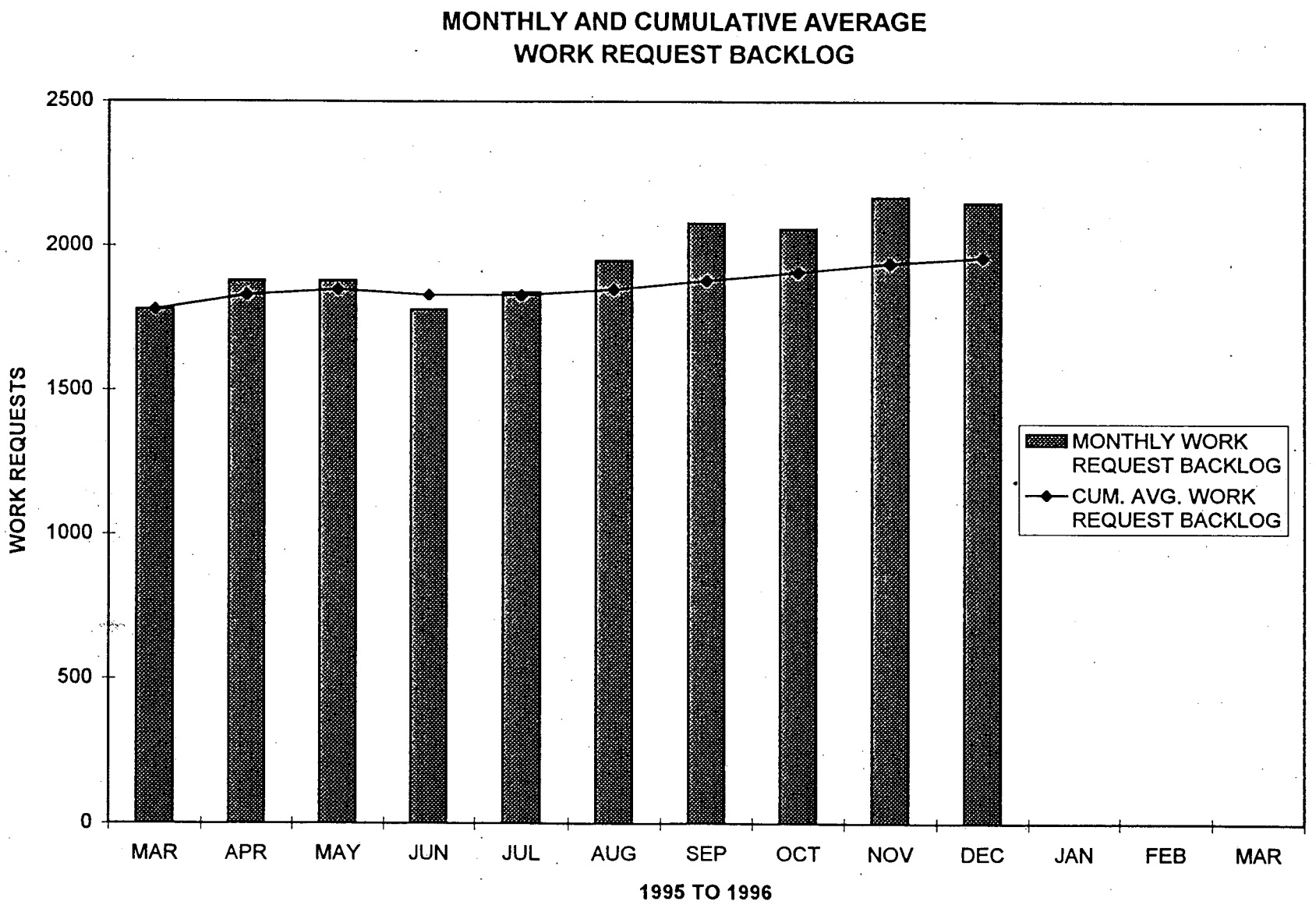

MONTHLY AND CUMULATIVE AVERAGE
WORK REQUEST BACKLOG
WORK REQUESTS
2500
2000
1500
1000
500
0
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
JAN
FEB
MAR
1995 TO 1996
MONTHLY WORK REQUEST BACKLOG
CUM. AVG. WORK REQUEST BACKLOG

FIGURE 5

MONTHLY AND CUMULATIVE AVERAGE NUMBER OF CONTROL ROOM DEFICIENCIES

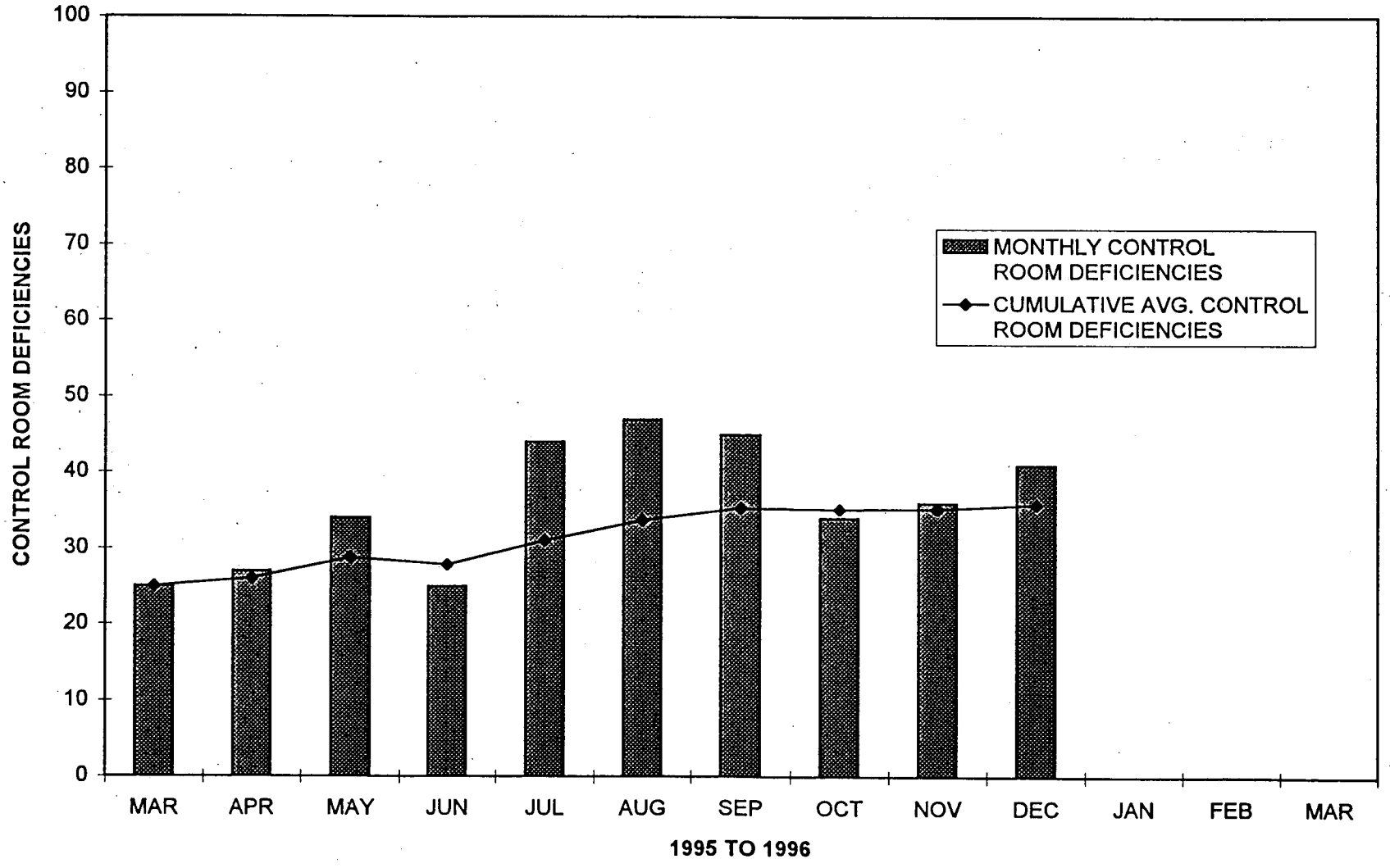


FIGURE 6

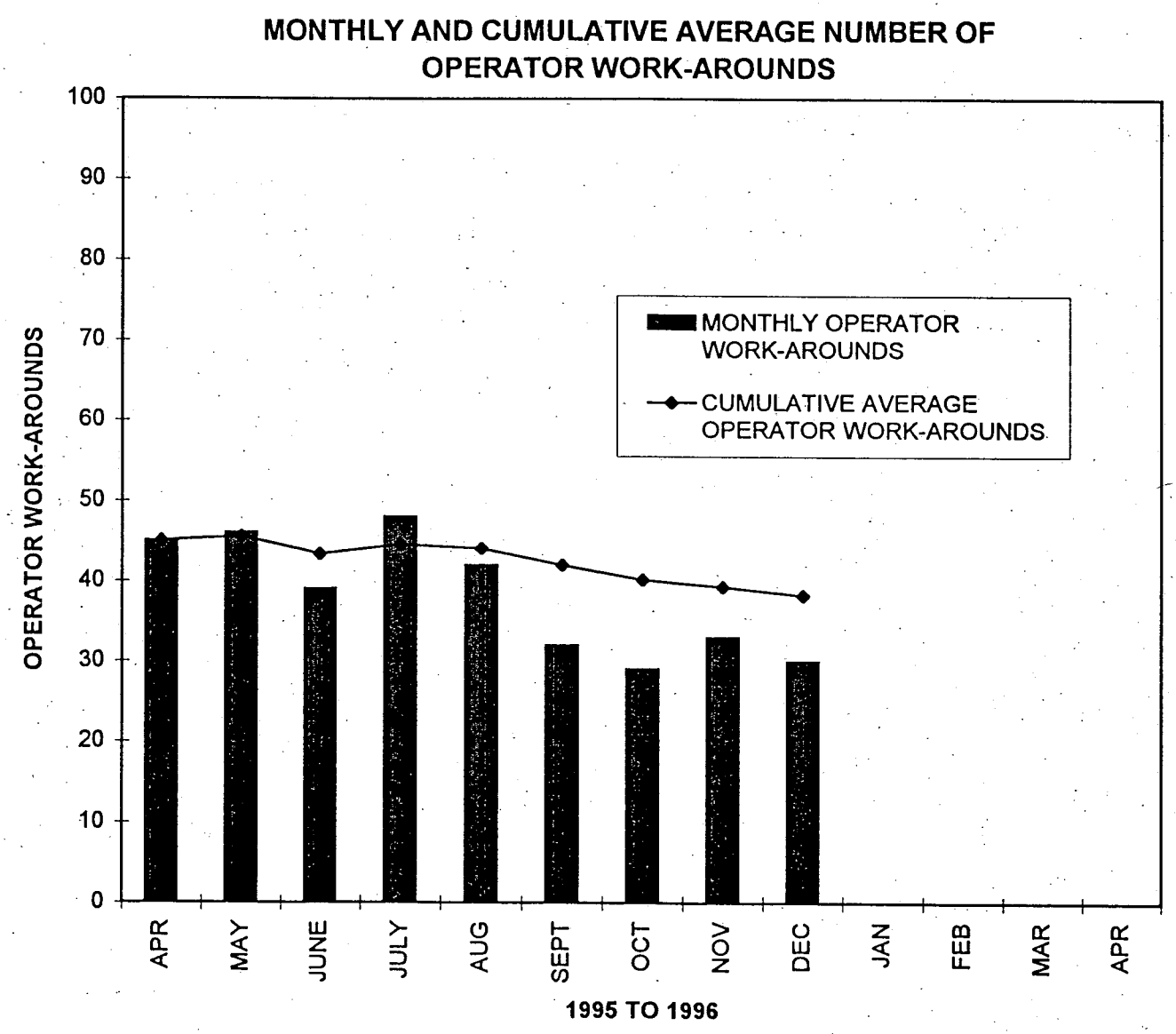
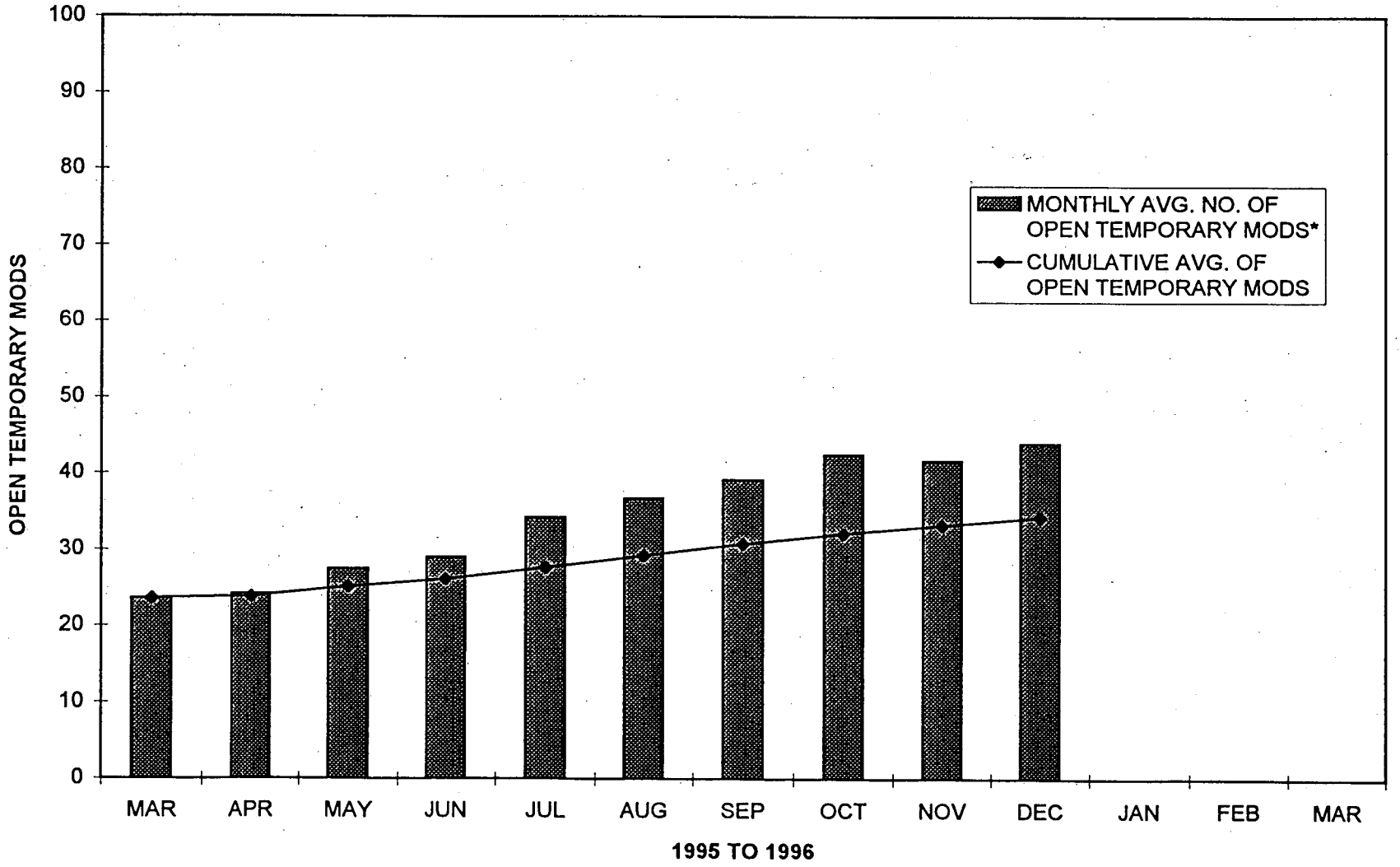

MONTHLY AND CUMULATIVE AVERAGE NUMBER OF OPERATOR WORK-AROUNDS
OPERATOR WORK-AROUNDS
100
90
80
70
60
50
40
30
20
10
0
MONTHLY OPERATOR WORK-AROUNDS
CUMULATIVE AVERAGE OPERATOR WORK-AROUNDS
APR
MAY
JUNE
JULY
AUG
SEPT
OCT
NOV
DEC
JAN
FEB
MAR
APR
1995 TO 1996

FIGURE 7

MONTHLY AND CUMULATIVE AVERAGE NUMBER OF TEMPORARY MODS



*This number represents the average of weekly open temporary mods for each month.

FIGURE 8

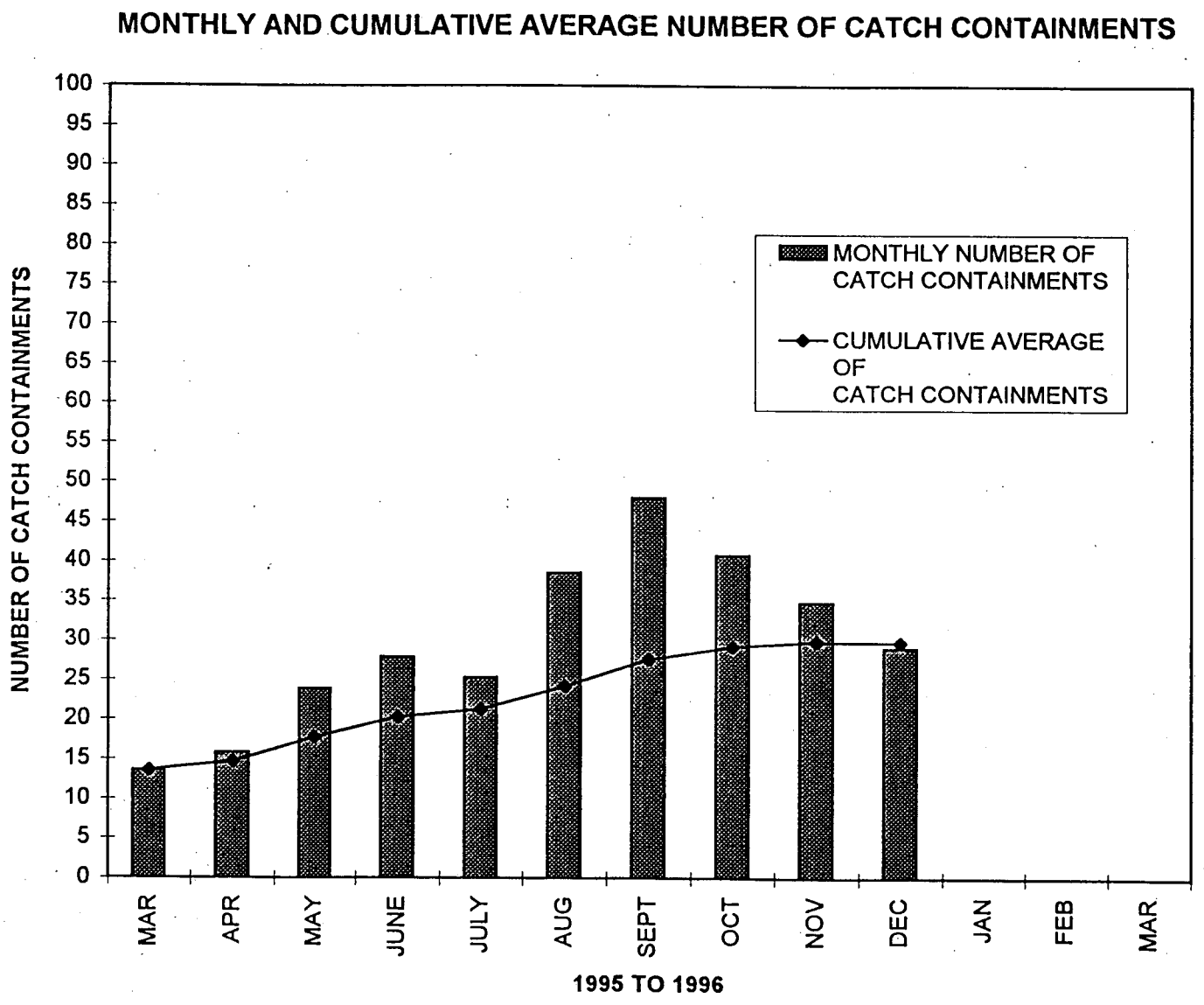

MONTHLY AND CUMULATIVE AVERAGE NUMBER OF CATCH CONTAINMENTS
NUMBER OF CATCH CONTAINMENTS
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
MONTHLY NUMBER OF CATCH CONTAINMENTS
CUMULATIVE AVERAGE OF CATCH CONTAINMENTS
MAR
APR
MAY
JUNE
JULY
AUG
SEPT
OCT
NOV
DEC
JAN
FEB
MAR
1995 TO 1996

FIGURE 9