

OCT 05 1988

Docket No. 50-220

Niagara Mohawk Power Corporation
ATTN: Mr. C. V. Mangan
Senior Vice President
301 Plainfield Road
Syracuse, New York 13212

Gentlemen:

Subject: MAINTENANCE PROGRAM TEAM INSPECTION

This letter is to inform you that the NRC intends to perform a team inspection of your maintenance program at the Nine Mile Point 1 site on November 28, 1988, through December 9, 1988, and to request your assistance in accomplishing this task. The inspection will focus on the performance of maintenance and whether components, systems and structures of your plant are adequately maintained and properly repaired so that they are available to perform their intended safety function.

In order for us to prepare for the inspection and maximize the onsite time spent in observation of maintenance in progress, it will be necessary for the facility to furnish reference material listed in the enclosure to this letter. The team leader will be contacting you shortly regarding the information that will be needed prior to the start of the inspection and to arrange a suitable date for a meeting to explain the inspection and assessment methodology.

A copy of draft NRC Temporary Instruction 2915/97 "Maintenance Inspection" is enclosed for your information and to aid in preparation for the inspection.

Thank you for your cooperation in this matter. If you have any questions regarding this matter please contact Mr. Robert Gallo at 215/337-5291.

Sincerely,

ROBERT M. GALLO

Thomas T. Martin, Director
Division of Reactor Safety

Enclosures: As stated

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Niagara Mohawk Power Corporation -2-

cc w/ enclosures:

J. A. Perry, Vice President, Quality Assurance
T. Perkins, Vice President, Nuclear Generation
W. Hansen; Manager Corporate Quality Assurance
K. Dahlberg, Unit 1 Station Superintendent
R. Randall, Unit 1 Superintendent, Operations
C. Beckham, Manager Nuclear Quality Assurance Operations
W. Drews, Technical Superintendent
J. Willis, General Station Superintendent
C. Terry, Vice President Nuclear Engineering and Licensing
Troy B. Conner, Jr. Esquire
John W. Keib, Esquire
Director, Power Division
State of New York, Department of Law
Licensing Project Manager, NRR
Public Document Room (PDR)
Local Public Document Room (LPDR)
Nuclear Safety Information Center (NSIC)
NRC Resident Inspector
State of New York

bcc w/encl:

Region I Docket Room (with concurrences)
Management Assistant, DRMA (w/o encl)
DRP Section Chief
Robert J. Bores, DRSS
B. Clayton, EDO

E.H.Gens
RI:DRS
Finkel/djh

10/3/88

APB
RI:DRS
Blumberg

10/3/88

RI:DRS
Gallo

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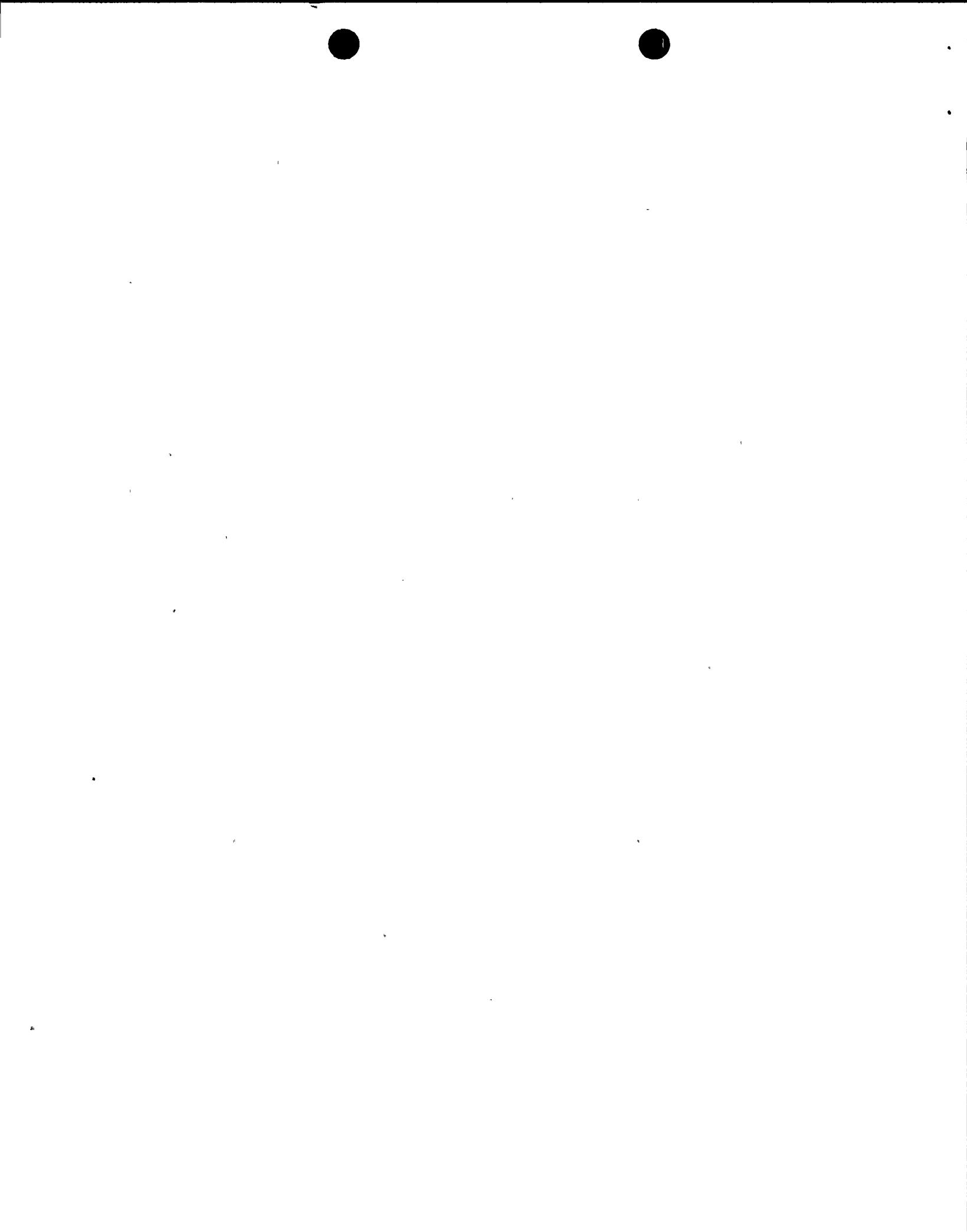


ENCLOSURE

To aid us in preparation for the maintenance inspection please provide us with the following documents, procedures and information in accordance with the designated numbers. If you do not have the requested document or information, it is not necessary to generate it to comply with this request. We recognize that many of the documents requested separately may be inclusive in a larger single document. Please provide six sets of the requested documents. A member of our staff will contact you regarding the best method of transmitting the documents to us.

Section 1-Description of General Plant Maintenance Activities

- 1-1 Maintenance administrative procedures which describe your corrective, preventive and predictive maintenance activities.
- 1-2 Organization charts including the maintenance organization and plant wide organizations.
- 1-3 Procedures, charts and other documents which describe your Planning Department and its activities.
- 1-4 Documents which describe maintenance planning and scheduling meetings and status of maintenance reports.
- 1-5 Documents which describe the Maintenance and Operations interface during planning, scheduling, work start, work closeout and post maintenance/functional testing.
- 1-6 Documents which describe your work control process: how a work order is started, planned, executed, completed, closed out and equipment returned to service.
- 1-7 Documents which describe training and retraining of plant and contractor maintenance personnel. (For maintenance activities only, do not include GET.)
- 1-8 Documents which describe interfaces and communications among the technical support, engineering support and the maintenance/I&C Departments.
- 1-9 Documents which describe maintenance work procedure establishment and control: Criteria as to when a procedure is to be used; initial writeup; reviews and approval; revisions; human factors reviews; QA reviews; requirements for conduct of work; troubleshooting criteria; work closeout; post maintenance testing and restoration of systems.
- 1-10 Description of methods by which maintenance performance is measured. Are performance indicators used? What are they? Who is informed of the results?



1-11 Description of process for communications with vendors for technical services and latest technical information on equipment and systems installed at the plant, and interfaces with vendors or NSSS for training, modifications and equipment replacement.

1-12 Documents which describe the preventive maintenance and predictive maintenance programs.

- Which equipment is included?
- How is maintenance frequency determined?
- What is done with results of these maintenance actions.

1-13 Documents which describe management involvement in maintenance.

- Are there goals set for the maintenance and I&C Departments.
- Are these goals used in the performance evaluation of managers and supervisors?
- Are these goals communicated to first line supervisors and chiefs?

Section 2-Status of Plant and Contractor Personnel Who Perform Maintenance.

2-1 The number of craft personnel for electrical, mechanical and I&C maintenance organizations. Please include foremen and the foreman to craft ratio.

2-2 The average years of experience for each individual and the turnover rate.

2-3 Description of shift work and work assignments. How do foremen decide on which craft is to perform what type of work?

Section 3-Status of Plant Equipment and Plant Maintenance

3-1 What equipment failures occurred during the last year of operations?

3-2 What equipment failures have been found during shutdown of plant?

3-3 Describe maintenance and testing for diesel generators and electrical equipment including switchgear that would be required in case of loss of offsite power.

3-4 What component failures present greatest risk from a probabilistic risk standpoint to the plant?

3-5 What have been the areas of high maintenance activity on safety related and non-safety related equipment and components?



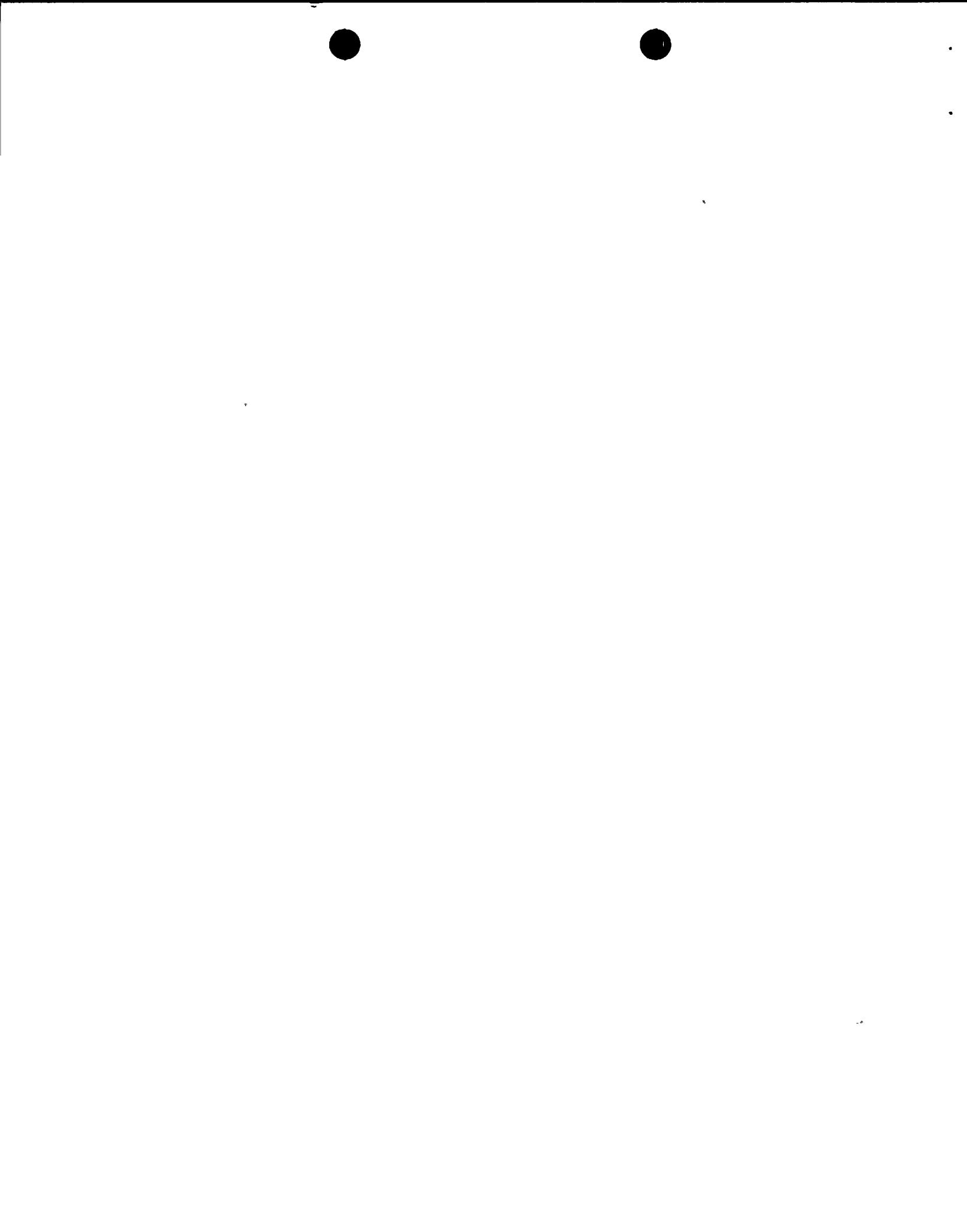
3-6 Provide the following status concerning Maintenance Work Orders (MWO).

- Current total listing and status of MWOs, number in planning, number in final sign-off, number on hold for lack of parts, number on hold for engineering assistance, number available to be worked on
- Projected number of corrective MWOs to be outstanding at start-up by priority
- Rate of completion of corrective MWO in terms of number completed/month and manhours expended (by craft)/month for the past 12 months
- Current number of preventive maintenance work orders overdue
- Rate of completion of preventive MWO for the past 12 months.
- Estimated manhours required to complete current preventive maintenance MWOs
- Number MWOs requiring rework over past 6 months.

3-7 Provide five corrective maintenance procedures for work that is scheduled for the upcoming outage. MOVs, PRVs, ECS Pumps, Batteries, Switchgear, etc.

3-8 Provide five preventive maintenance procedures that are scheduled for the upcoming outage.

3-9 Provide your overall outage schedule.



TEMPORARY INSTRUCTION 2515/97

MAINTENANCE INSPECTION

2515/97-01 PURPOSE

To provide guidance for conducting a performance-based inspection of an established and implemented maintenance process at an operating nuclear power station.

2515/97-02 OBJECTIVES

The primary objective is to determine whether all components, systems, and structures of nuclear power plants are adequately maintained so that they are available to perform their intended functions. Additionally, it should be determined whether the maintenance process provides for the prompt repair of plant components, systems, and structures, as appropriate to their prescribed function.

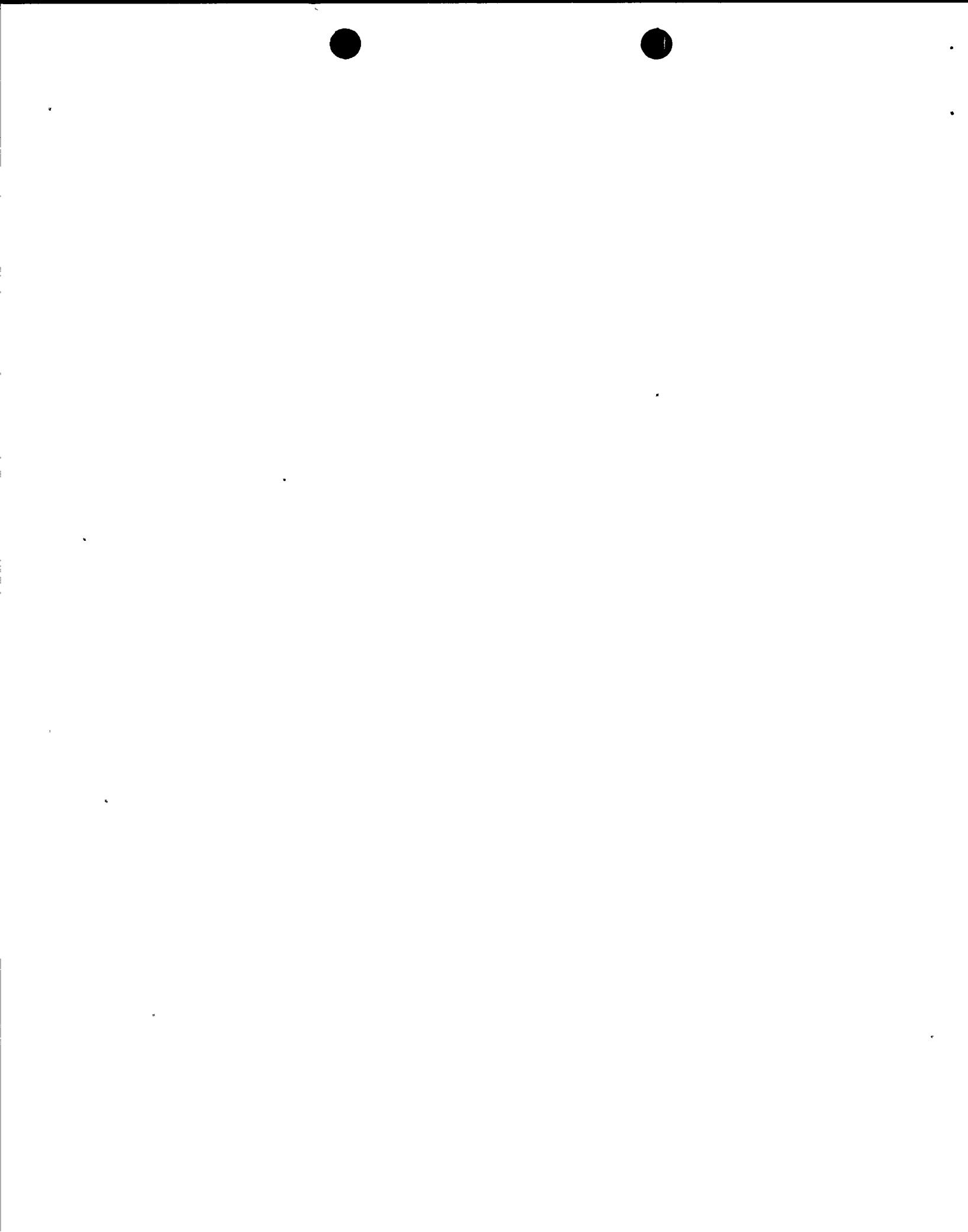
2515/97-03 BACKGROUND

The NRC has examined nuclear power plant maintenance programs and has found a wide variation in effectiveness. Inadequate maintenance has been a significant contributor to plant and system reliability problems and, thus, is a safety concern. Analysis of operational events has shown that nuclear power plant components are not being maintained at a level commensurate with their importance to safety.

This Temporary Instruction (TI) was developed for the inspection and assessment of the effectiveness of maintenance at selected nuclear power plant sites. A Maintenance Inspection Tree (logic tree) will be utilized as a product of these inspections to collate and present inspection findings. The tree will also provide a systematic approach to the inspections and is intended to ensure consistency.

2515/97-04 CONDUCTING TEAM INSPECTIONS

The maintenance team inspections will be announced when the team leader prepares for the pre-inspection visit (05.01) to the site. The full scope inspection cycle will generally be of a 6-week duration with the team leader possibly taking an additional 2 weeks to initially coordinate the inspection, gather information and issue the final inspection report.



The 6 weeks of team effort should consist of 1 week preparation, 1 week in-office inspection, 2 weeks on-site inspection and 2 weeks documentation. The sequence of the inspection effort will be determined by the Regional Office. For example, the 2 weeks of on-site inspection may be consecutive or separated by 1 week of in-office inspection.

Generally, the inspection team will be composed of the following six members:

- Team Leader (Region)
- Two Reactor/Project Engineers (Region)
- Radiation Specialist (Region) .
- Two Engineers (HQ)

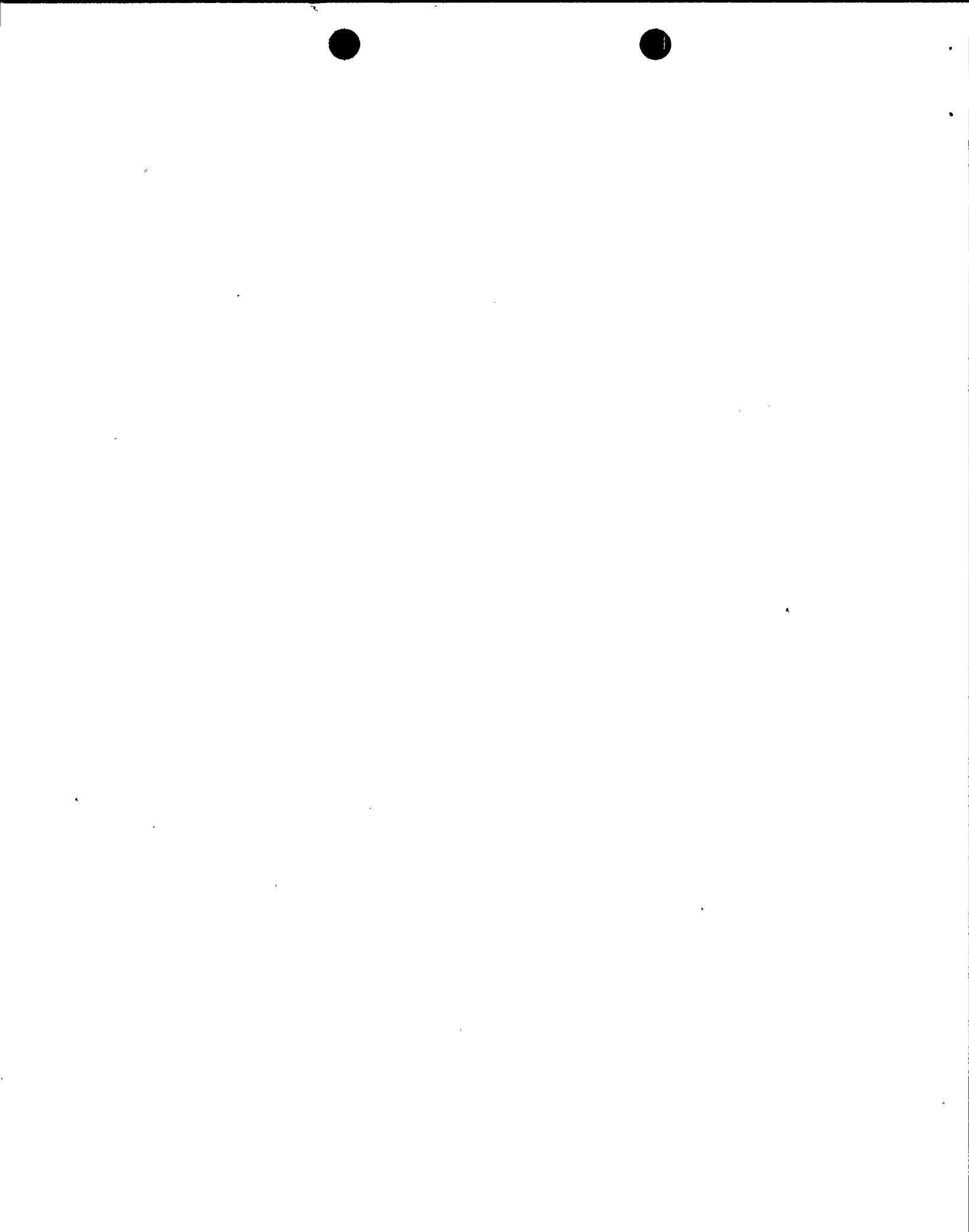
The team composition and/or the extent of effort for individual members may be adjusted by the Region. For example, the extent of radiation specialist involvement may be determined to be less than a full 6 weeks, as appropriate by the Regional Office. In addition, the Regions may include Resident Inspector involvement. During the monthly maintenance observations, the Resident Inspector is able to observe the performance of maintenance more readily than a Region-based team. Consequently, for a specific inspection, the Resident may be used to complete portions of a tree based on a number of IP-62703 monthly examinations, thereby reducing the size of the team and/or the amount of team member participation. The Resident should be provided training in the use of the logic tree by the appropriate team leader prior to his utilization for this purpose.

The Project Manager (PM) will be involved with each inspection to the following extent:

- Be available to the team leader to facilitate contacts with the licensee
- Attend 1-2 days of the team preparation
- Attend final team meeting
- Attend exit meetings

The team will determine what recent failures of significant equipment (PRA identified, safety-related, Balance of Plant that impacts on safety-related and special interest items) have occurred and inspect the licensee's maintenance activities to schedule, repair and prevent further failure of that equipment. Other selective examinations of equipment failures attributed to maintenance will determine the adequacy of licensee corrective actions and root cause determinations. The inspection should be performed using the Maintenance Inspection Tree (working tree) and inspection guidance provided in Appendix A. These provide the means of determining adequacy, implementation and an evaluation of maintenance activities. The tree is used as a tool to provide uniformity in inspection structure and to document inspection results. It is important to stress that the tree not drive the inspection, but that it is to be completed as a result of the inspection. The tree consists of three major sections: (1) Overall Plant Performance, (2) Management Support of Maintenance, and (3) Maintenance Implementation.

The inspection requirements for Maintenance Implementation that focus on the plant systems and components and related activities receive the



majority (at least 80%, including direct observations of maintenance being performed) of the inspection effort. It should be recognized that inspection results from the Maintenance Implementation area will also provide input to the Management Support area. Further, portions of the Management Support of Maintenance portion of the tree, especially the Management Commitment and Management Organization Sections, may be conducted by a single team member in a relatively short time.

The amount of inspection effort devoted to the individual subsections of the tree will be determined by the Regional Office, considering recent inspection findings and future inspections for specific areas.

The purpose of the inspection is to determine the effectiveness of power reactor licensees' total integrated maintenance process. By the very nature of the goal, the team inspection may be directed into areas for which explicit regulatory requirements may not currently exist. Thus, the inspection is geared more towards analyzing the performance of maintenance activities rather than towards the identification of violations. A specific example of an area not subject to explicit requirements is the licensee's participation with INPO. Review of licensee resolution of INPO activities shall be conducted in accordance with established policy and, thus, observations in this area should be treated as indicators of strength or weaknesses.

Although the inspection may result in the identification of inadequacies that are not covered by explicit regulatory requirements, there is no intent to "ratchet" licensees. Individual findings that licensees are not following published NRC guides and industry guidelines do not necessarily indicate that a program or area is inadequate. The goal of the inspection effort is to emphasize the use of plant experience, recent component failures, PRA insights and items of interest in evaluating the licensee's maintenance process in terms of capabilities and performance and to identify major strengths and weaknesses.

04.01 Team Leader Preparation. A meeting should be planned and held with the licensee to describe the scope of the inspection and to obtain preliminary review materials such as licensee's procedures for planning, conducting and assessing maintenance as well as organizational charts, work schedules, equipment lists, component failure data, completed work orders and related QC inspection procedures. The material obtained by the team leader from the licensee should be distributed to the team members for their review. Following completion of the in-office review of the licensee's maintenance process, the results of these reviews should be discussed with the team members and factored into the plan for the on-site inspection.

04.02 Inspection Preparation. In preparation for site inspections, the inspection team should review the elements of the Maintenance Inspection Tree and determine which areas may have received recent inspections, which areas may not be applicable, and which areas will be reviewed at the plant site. The three major parts of maintenance (i.e., overall plant performance, management support of maintenance, maintenance implementation) should be inspected to the degree required to provide an accurate conclusion regarding the licensee's maintenance program.

During the preparation phase, the team should select several components/systems for detailed inspection either through consideration of PRA



insights, recent component failures in safety-related or BOP systems that affect safety, or selected topics of interest to the Commission such as check valves, motor-operated valves, air systems. The PRA insights may be used to select components whose failures (or unreliability) would contribute most to the risk at that plant. At least one PRA identified high risk system should be included to verify that all performance related maintenance has been accomplished including preventive maintenance. Recent equipment failures provide a vehicle for review of various aspects of maintenance, including root cause analysis, equipment history, corrective actions, and past maintenance (preventative or corrective). Inspection of failed equipment repairs or work packages will provide the opportunity to examine the adequacy of the interaction of all licensee functions supporting maintenance, including such things as engineering analyses and trending.

Review of performance indicator data, SALP reports, previous inspection findings, LERs, maintenance radiation exposure history and other direct measures may identify potential weak areas at that plant for more detailed inspection through utilization of the Maintenance Inspection Tree. The attached figure (Inspection Flow Chart) depicts the initiators that may be selected to enter the tree.

During the preparation, program strengths and weaknesses in certain areas may be recorded on the Maintenance Inspection Tree (working tree). If there are sufficient data to provide an evaluation rating during the preparation, the elements should be rated in accordance with the Maintenance Inspection Guidance. However, selected items and, in particular, identified weaknesses should be verified during the on-site inspection, even if an evaluation rating is assigned during the preparation.

04.03 On-Site Inspection. An entrance meeting should be held with the licensee to detail the scope, and schedule of the inspection, introduce the team members and establish the licensee's contacts for the inspection. The team should obtain from the licensee the status of ongoing work applicable to the inspection or which may affect the performance of the inspection or the inspection schedule. The exit meetings and interim meetings between the team leader and licensee management may also be established during the entrance meeting.

Team members shall perform a detailed walkdown of the plant on the first or second day on site to observe the overall plant and equipment material condition. This walkdown should include but not be limited to (observe the condition of numerous valves, pumps, motors etc.)

- Condition of components
- Tagged equipment
- Housekeeping and environment
- Labeling
- Comparisons with drawings/procedures
- Status of annunciators

This walkdown may provide areas for further investigation during the inspection.

The on-site inspection should focus on the direct observation of work in progress, including following of a job in progress, e.g., tagouts,



procedures work packages, engineering support, materials, communications, testing, approvals, quality control holdpoints, etc.; significance of the maintenance backlog; rework; licensee assessment of performance of maintenance; work control processes; control of interfaces; post-maintenance testing; plant material condition and maintenance facilities.

Based on the collected data, determine the apparent nature of the cause of any problems noted; that is, is it related to the adequacy of procedures, work packages, qualification of personnel, management, engineering, etc.? This analysis provides entry to elements of the tree which then provides a tool to explore the suspected cause and assess effectiveness of implementation of an element. All areas listed need not be utilized in forming conclusions for each element. Further, other areas selected by the team may be used for inspection of tree elements.

04.04 Analysis. Utilizing the inspection findings and results with the Maintenance Inspection Tree, determine whether each of the areas inspected has been adequately implemented and whether or not there is enough data to assign a rating. Refer to Appendix A, the Maintenance Inspection Guidance and Criteria for assistance in using the Maintenance Inspection Tree. Assign a rating to the applicable elements identified on the work sheets.

The team should assign the overall evaluation rating to each of the elements inspected. When this analysis has been completed, an overall rating can be determined in accordance with the Maintenance Inspection Guidance and Criteria.

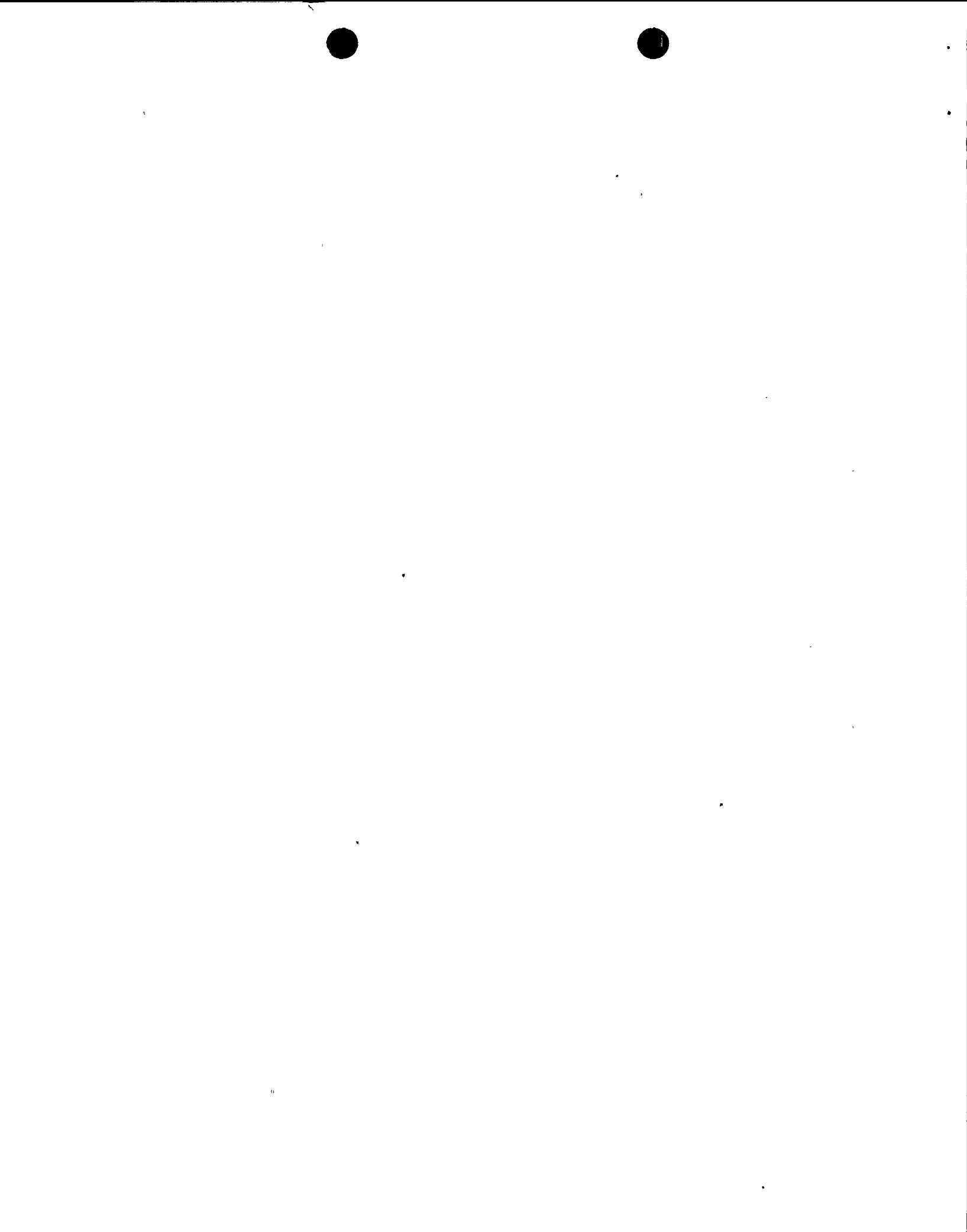
04.05 Exit Meeting. Prior to the final days of inspection, written issues and findings should be used to highlight the presentation version of the Maintenance Inspection Tree (unbulleted Maintenance Inspection Tree) and to complete the rating roll-up. The exit meeting should include a brief discussion of the preliminary inspection findings and a discussion using the Presentation Tree. The Presentation Tree is used during the exit meeting to depict inspection results in a summary fashion; however, the licensee should be informed that the findings are preliminary until they are reviewed by regional management and that a completed chart will be forwarded to the licensee.

04.06 Report Preparation. Because of the extent of the inspection, documentation of inspection activities should commence early in the process. This will minimize the time required to complete the final report. The final report should document the assumptions used, elements inspected, elements that were not applicable, licensee strengths and weaknesses and overall conclusions consistent with IMC-0610. The report should address elements of the tree to at least the depth of the tier with eight areas (e.g., Direct Measures, Management Commitment and Involvement, etc.).

04.07 Follow-up. Any findings identified during the inspection will be appropriately tracked and resolved by the Regional Office.

2515/97-05 INSPECTION REQUIREMENTS

The inspection requirements, guidance and criteria contained in Appendix A address the aspects of maintenance listed below. Inspection findings should



be based on observation of maintenance activities in progress, review of licensee implementation of their procedures and controls, results of review of selected documents, such as work packages and engineering evaluations, and interviews with personnel.

- Overall Plant Performance Related to Maintenance
 - Direct Measures
- Management Support of Maintenance
 - Management Commitment and Involvement
 - Management Organization and Administration
 - Technical Support
- Maintenance Implementation
 - Work Control
 - Plant Maintenance Organization
 - Maintenance Facilities, Equipment, and Materials Control
 - Personnel Control

05.01 Overall Plant Performance Related to Maintenance

a. Direct Measures. Overall plant performance with respect to plant operability, equipment availability and plant material condition can directly be related to the effective implementation of a maintenance process.

Inspection of plant performance should include plant (1) availability, (2) operability, and (3) reliability. These items can be obtained from the plant's operating history. Other sources for obtaining the information are SALP Reports, Performance Indicator Data, AEOD-Scram, ESF Actuations, and Safety System Unavailability Studies, Technical Specification Violations, Monthly Operating Report Data and Capacity Factors from NUREG-0020. Data collection should be directed to those measures related to the maintenance process. In addition, a detailed walkdown of the overall plant material condition will show the effectiveness of a licensee's maintenance process. Perform the inspection in accordance with the criteria listed under direct measures for:

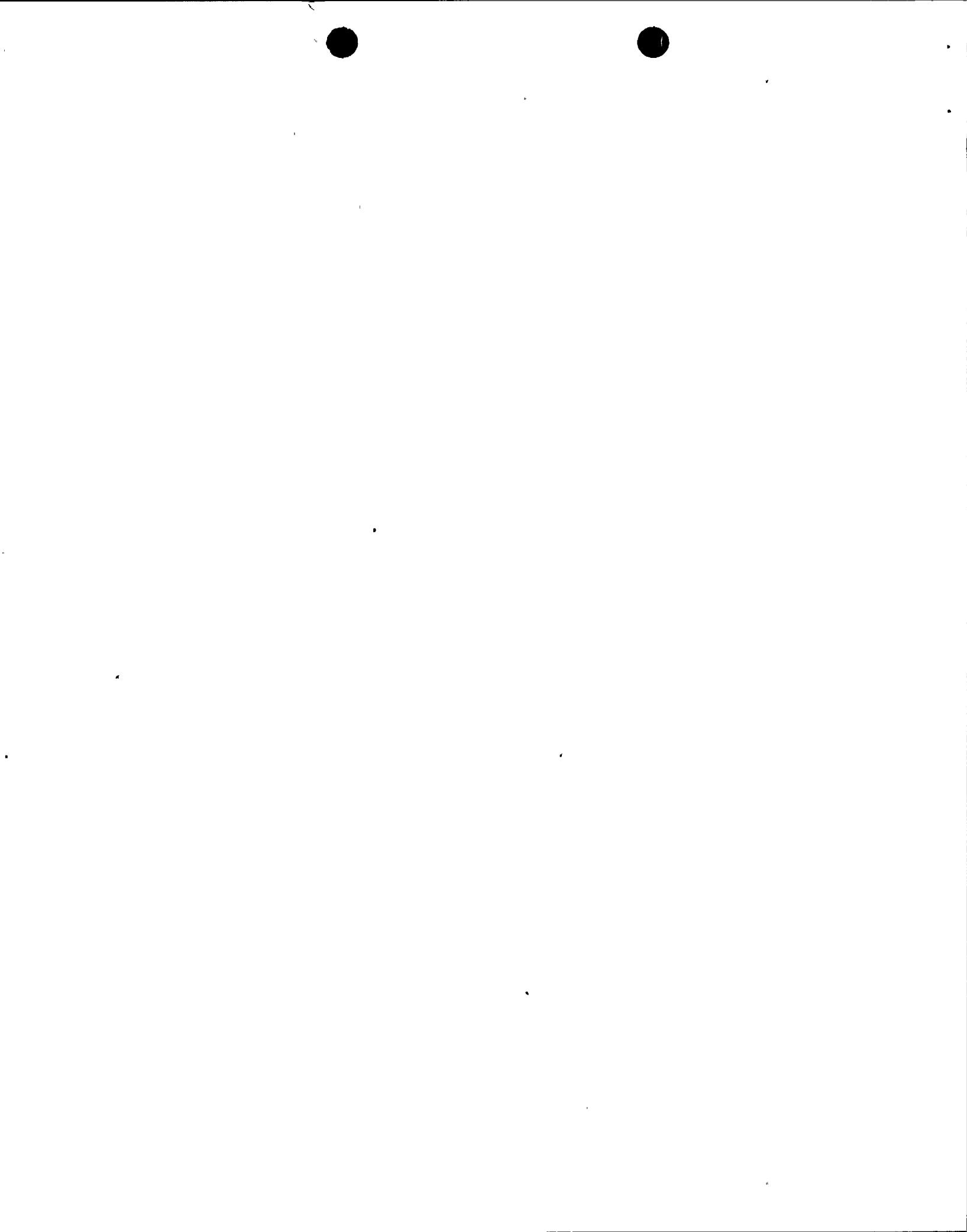
- Historical Data
- Plant Material Condition

05.02 Management Support of Maintenance

a. Management Commitment and Involvement. Maintenance is influenced by the management philosophy toward maintenance activities. The areas to be inspected are listed below. The inspection should be directed to determining the extent of corporate and plant management awareness and support of maintenance using the criteria listed under the following:

- Application of Industry Initiatives
- Management Vigor and Example

b. Management Organization and Administration. The inspection of management organization and administration controls should be directed to determining how the organization supports maintenance activities, what maintenance activity plan has been established, how the maintenance activity plan has been implemented and controlled, and the control of resources. Perform the inspection in accordance with the criteria listed under the following:



- Identify Program Coverage for Maintenance
- Establish Policy, Goals, and Objectives for Maintenance
- Allocate Resources
- Define Maintenance Requirements
- Conduct Performance Measurement
- Document Control System for Maintenance
- Maintenance Decision Process

c. Technical Support. The topics that are to be used to inspect the technical support organizations with regard to maintenance are as follows:

- Internal/Corporate Communication Channels
- Engineering Control
- PRA into Maintenance Process
- Quality Control
- Radiological Controls into Maintenance Process
- Safety Review Committees
- Regulatory Documents

Some of the applicable departments or organizations are as follows:

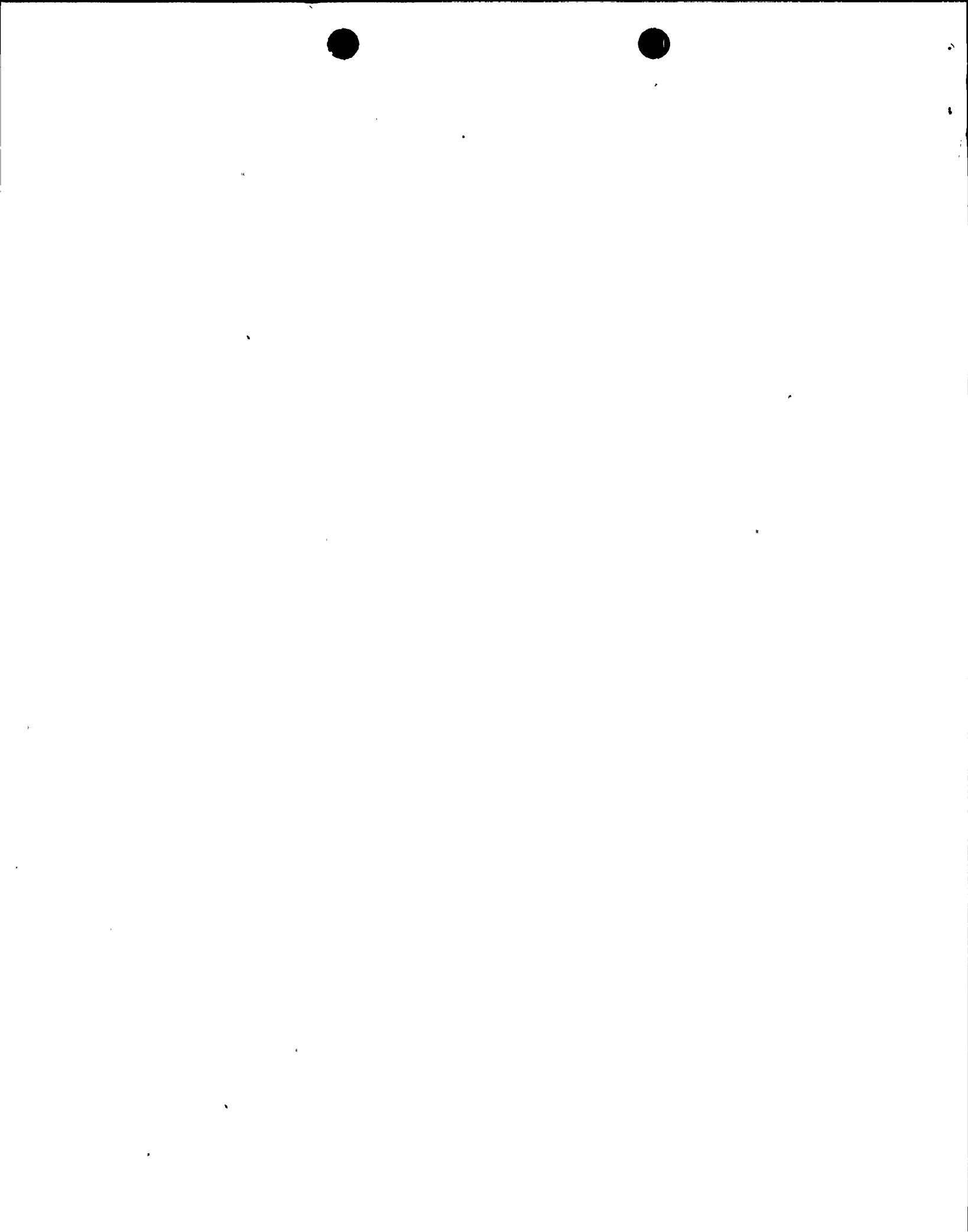
- Engineering (nuclear, I&C, mechanical, electrical, licensing, systems, etc.)
- Quality Assurance (QA)
- Quality Control (QC)
- Health Physics (HP)
- Safety
- Fire Protection
- Operations

05.03 Maintenance Implementation

a. Work Control. The inspection of the work control process should be directed to work order documentation, equipment history, planning and scheduling, and document review. Perform the inspection in accordance with the criteria listed under the following:

- Review of Maintenance in Process
- Work Order Control
- Maintain Equipment Records and History
- Conduct Job Planning
- Perform Work Prioritization
- Maintenance Work Scheduling
- Backlog Controls
- Provide Maintenance Procedures
- Conduct Post Maintenance Testing.
- Review of Completed Work Control Documents

b. Plant Maintenance Organization. The inspection of the plant maintenance organization should be directed to how the organization supports maintenance activities, how the maintenance activities are controlled and implemented, how personnel are controlled, how the organization establishes documentation, and how open the lines of communication between plant management and craft personnel are. Perform the inspection in accordance with the criteria listed under the following:



- Establish Control of Plant Maintenance Activities
 - Establish Control of Contracted Maintenance
 - Establish Deficiency Identification and Control System
 - Perform Maintenance Trending
 - Establish Support Interfaces
- c. Maintenance Facilities, Equipment and Materials Control. The following topics are to be used to inspect the facilities, equipment, and material controls with regard to their support of the maintenance process.
- Provide maintenance facilities and equipment
 - Establish material controls
 - Establish maintenance tool and equipment control
 - Provide control and calibration of measurement and test equipment
- d. Personnel Control. The following topics are to be used to inspect personnel control. The inspection should include consideration for staffing, training, and qualification.
- Establish staffing control
 - Provide personnel training
 - Establish test and qualification process
 - Assess the current personnel control status

2515/97-06 REPORTING REQUIREMENTS

The appropriate Regional Office will document the findings and actions taken in an inspection report and in addition to the normal distribution, will forward one copy to the Director, Division of DLPQ, Office of NRR and one copy to each of the other Regional Offices. (Director, Division of Reactor Safety).

2515/97-07 COMPLETION SCHEDULE

Inspections should be scheduled such that completion is within 2 years from the issuance of this instruction.

2515/97-08 EXPIRATION

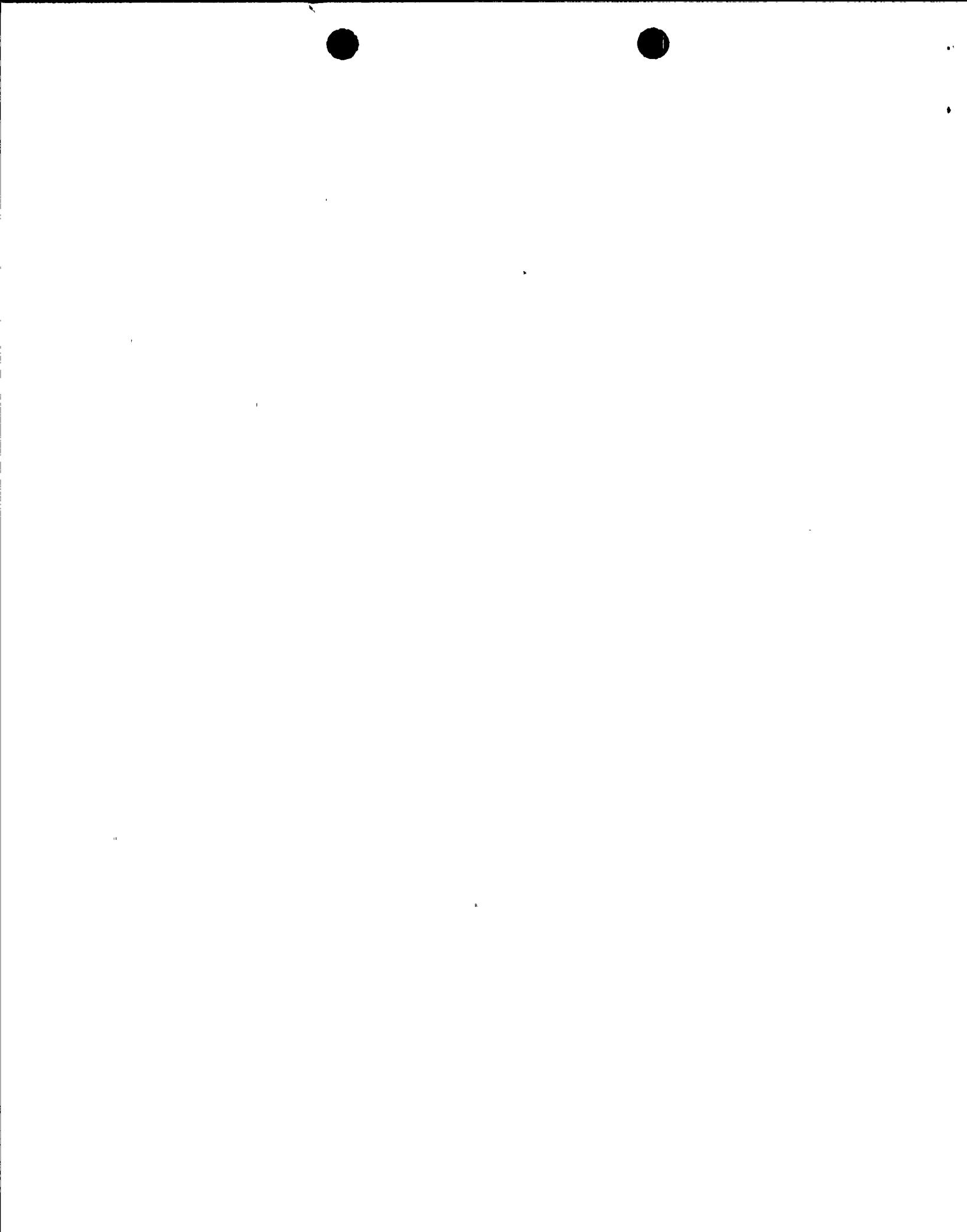
This Temporary Instruction shall remain in effect for 24 months or until the inspections have been completed.

2515/97-09 NRR CONTACT

Any questions regarding this Temporary Instruction should be addressed to A. T. Gody (FTS 492-1117).

2515/97-10 STATISTICAL DATA REPORTING

For 766 input, record the actual inspection effort against the review of module 25597.



2515/97-11 ORIGINATING ORGANIZATION INFORMATION

11.01 Organization Responsibilities. The Performance Evaluation Branch of NRR will provide support and overall guidance for these inspections.

11.02 Estimated Resources. Each inspection is planned for 6 weeks for six persons, with expected additional effort by the team leader (38 staff weeks).

11.03 Parallel Inspection Procedures

Inspection Procedures this TI may satisfy totally or in part are listed below. Where credit is taken, the inspection report should note the module number per IMC-0610. The Region should make final determinations based on the scope and documentation of the inspection.

37701	56700	62704
37702	61700	62705
37828 CIP	61725	72701
38701	62700	83000 series
38702	62702	92700
41400	62703 CIP	92701

