

# OPERATIONS DEPARTMENT INSTRUCTION

N2-ODI-1.10  
Rev 01  
TCN-2

Approved: [Signature] **OPERATION ONLY**

OPERATIONS SELF ASSESSMENT PROGRAM

1.0 PURPOSE

The purpose of this procedure is to define a self assessment program for the Unit 2 Operations Department.

2.0 SCOPE

The scope of this program shall involve all aspects of Operations Department activities in order to attain and ensure Excellence in Operations.

3.0 METHODS

Self assessment will be conducted by direct observation of tasks, review of documentation, inspections of work areas during and after work activities. Both the specific and the programmatic elements are to be assessed. Assessors should look for ways to improve the operation of the station, and note positive as well as negative findings.

4.0 FREQUENCY

Each of the listed activities should be assessed each quarter.

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5.0 ASSESSORS

Personnel performing the assessments must be Operations Department Supervisors. Nominally the Manager Operations: General Supervisor Operations or Supervisor - Operations will perform the assessments, but other supervisors, especially the SSS', may be utilized, as assigned by the Manager Operations.

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6.0 ITEMS TO BE ASSESSED ARE AS FOLLOWS:

- Control Room Activities (Attachment 3)

- Markups (Attachment 4)

Separate items to be assessed are the writing, hanging, and clearing of markups.

- Shift Turnover (Attachment 5)

- Surveillance Testing (Attachment 6)

- Rounds (Attachment 7)

- Backshift Operations (Attachment 8)

- Operator Training (Attachments 9, 10, 11)

Separate items to be assessed are classroom, simulator, and OJT.

- Previous Corrective Actions (Attachment 12)

7.0 DOCUMENTATION

Self assessments will be documented on Attachments 1, 2, and the applicable guide list from Attachments 3-12 of this procedure. Forward documentation to the Operations Manager for review and filing.

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8.0 CORRECTIVE ACTIONS

Personnel deficiencies observed must be corrected immediately by the assessor. The assessor must immediately notify the SSS of any deficiencies noted and/or corrected. Programmatic deficiencies will be corrected as prioritized by the Operations Manager.

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ATTACHMENT 1  
OPERATIONS SELF ASSESSMENT

ITEM ASSESSED: \_\_\_\_\_

QUARTER AND YEAR: \_\_\_\_\_ / \_\_\_\_\_

ASSESSMENT HOURS: \_\_\_\_\_

FINDINGS:

SPECIFIC:

CORRECTIVE ACTIONS:

PROGRAMMATIC:

CORRECTIVE ACTIONS:

ADDITIONAL COMMENTS:

POSITIVE ITEMS:

ITEMS NEEDING IMPROVEMENT:

ASSESSOR'S SIGNATURE/DATE \_\_\_\_\_ / \_\_\_\_\_

OPERATIONS MANAGER SIGNATURE/DATE \_\_\_\_\_ / \_\_\_\_\_

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ATTACHMENT 2  
QUARTERLY REVIEW CHECKLIST

| ASSESSMENT ITEM             | COMPLETED BY | DATE  |
|-----------------------------|--------------|-------|
| PROCEDURE COMPLIANCE        | _____        | _____ |
| MARKUPS                     | _____        | _____ |
| SHIFT TURNOVER              | _____        | _____ |
| ROUNDS                      | _____        | _____ |
| OPERATOR TRAINING           |              |       |
| CLASSROOM                   | _____        | _____ |
| SIMULATOR                   | _____        | _____ |
| OJT                         | _____        | _____ |
| CONTROL ROOM ACTIVITIES     | _____        | _____ |
| BACKSHIFT OPERATIONS        | _____        | _____ |
| PREVIOUS CORRECTIVE ACTIONS | _____        | _____ |

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ATTACHMENT 3  
NMP2-MANAGEMENT ASSESSMENT OF CONTROL ROOM ACTIVITIES

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Control Room Operator E \_\_\_\_\_  
Evaluator: \_\_\_\_\_  
SSS: \_\_\_\_\_  
Asst. SSS \_\_\_\_\_  
CSO: \_\_\_\_\_

Rating

- 3 - Excellent
- 2 - Satisfactory
- 1 - Improvement Required
- N - No Opportunity To Observe

Nuclear and Industrial Safety

- \_\_\_\_\_ SSS and/or operator identifies potential radiological or safety risk before assigning/requesting in-plant activity.
- \_\_\_\_\_ Operators identify potential radiological or safety risk associated with any change in plant status indicated by controls.
- \_\_\_\_\_ Activities in Control Room are conducted in a safe and efficient manner.

Policies and Procedures

- \_\_\_\_\_ Routine reference made to controlled copies of procedures in performing responsibilities.
- \_\_\_\_\_ Supervisor notified immediately when appropriate procedures not available; work stopped on any non-routine activity as appropriate, until an approved procedure is available.
- \_\_\_\_\_ Initiative taken to recommend revisions or additions to procedures as perceived necessary by an individual.
- \_\_\_\_\_ Annunciator response is timely and in accordance with established policy.
- \_\_\_\_\_ Procedure(s) utilized are written with steps in a logical order (start to finish).
- \_\_\_\_\_ Procedure(s) utilized are written such that steps that are easily understood. (Command format, action verbs used, no passive statements).
- \_\_\_\_\_ Procedure(s) utilized do not contain multiple actions in a single step.

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ATTACHMENT 3 (Cont)

Policies and Procedures (Cont)

\_\_\_\_ Procedure(s) utilized do not contain actions in notes or cautions.

\_\_\_\_ Procedure(s) utilized generally conform to the Site Writers Guide.

Comments:

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Accountability/Responsibility

\_\_\_\_ Clear demarcation of roles of SSS and ASSS, mutual support evident in communication and interaction.

\_\_\_\_ Sense of personal accountability demonstrated by (SSS/ASSS/CSO) asking follow-up questions or taking actions as appropriate to determine resolution of such events.

\_\_\_\_ The SSS and ASSS enforce Operations Department policies (e.g., communications, self verification).

\_\_\_\_ Personnel on duty on overtime are performing clearly assigned and necessary duties.

\_\_\_\_ The "at-the-controls" reactor operator is cognizant of plant and system status (questions concerning status are properly answered).

\_\_\_\_ The "at-the-controls" reactor operator performs periodic walkdowns of control panels to assess operation.

\_\_\_\_ The "at-the-controls" reactor operator does NOT allow administrative duties to distract his attention from the control panels for extended periods of time.

Comments:

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ATTACHMENT 3 (Cont)

Communication

- \_\_\_\_\_ Content of communications primarily work-related, with moderate amount of personal sharing as appropriate to a congenial work environment.
- \_\_\_\_\_ Tone of communications pleasant, courteous, and businesslike.
- \_\_\_\_\_ Visitors to Control Room acknowledged and treated with respect and courtesy.
- \_\_\_\_\_ Control Room personnel exhibit helpful, open, and cooperative attitude toward representative of NRC, INPO, ANI, etc.
- \_\_\_\_\_ Communications generally open and direct; intent of comments, instructions, questions generally understood and responded to promptly, appropriately.
- \_\_\_\_\_ Repeat backs are used.
- \_\_\_\_\_ Communications are clear and concise. Equipment piece numbers are used; slang and general terms ("its", "they") are avoided.
- \_\_\_\_\_ Phonetic alphabet is used when appropriate (e.g., "RHS\*PIB, Bravo Pump").

Comments:

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Quality

- \_\_\_\_\_ Control Room operators clearly ascertain that those performing work in the plant recognize their scope and limitations of their tasks and are qualified to perform them.
- \_\_\_\_\_ Communications between Control Room operators and workers give evidence that Control Room knows what work is being performed.
- \_\_\_\_\_ Work performed is checked to insure it has been done correctly.
- \_\_\_\_\_ Problems with materials, drawings, tools, or anything else which affects quality are identified immediately and rectified in a timely fashion.
- \_\_\_\_\_ SSS/CSO log entries are complete and the content adequate to reconstruct plant evolutions and status (ODI 5.01).

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ATTACHMENT 3 (Cont)

Quality (Cont)

\_\_\_\_\_ SSS/CSO log headings are in accordance with ODI 5.01.

Comments:

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Problem Identification and Resolution

\_\_\_\_\_ Appropriate people are utilized to respond to a problem situation.

\_\_\_\_\_ SSS or ASSS reviews test results to identify deviations from expectations and implications for plant safety.

\_\_\_\_\_ Control Room personnel make frequent checks of Control Room boards during shift to detect trends.

\_\_\_\_\_ Shift members take appropriate actions to insure no recurrence; appropriate recording methods are used: PRs, WRs, etc.

\_\_\_\_\_ Plant trends are discussed in shift briefings so potential problems can be identified.

\_\_\_\_\_ Concern for problem follow-up is shown by discussion of previous resolutions on later shifts.

Comments:

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Teamwork

\_\_\_\_\_ Nonverbal behaviors (facial expressions, body gestures, eye contact, tone of voice) indicate rapport with and respect for each other.

\_\_\_\_\_ Communications directed to all relevant personnel; participation/involvement of all relevant personnel is encouraged in interactions; opinions expressed and listened to.

\_\_\_\_\_ Shift members actively give and seek information required to accomplish work.

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ATTACHMENT 3 (Cont)

Teamwork (Cont)

- \_\_\_\_\_ Shift members express their feelings appropriately; no loss of temper or frustration is sensed.
- \_\_\_\_\_ Conflicts focused on ideas, work activities - not on personalities or differences such as race, gender, and physical condition.
- \_\_\_\_\_ Conflicts, disagreements related to work activities encouraged, openly expressed; criticisms are constructive in nature; conflicts are managed effectively (i.e., collaborative seeking of alternatives when time permits; decision of supervisor accepted and acted upon promptly in situations where quick decision required).
- \_\_\_\_\_ Cooperation and a shared sense of responsibility for getting the job done evident in interactions with each other and other work groups.

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ATTACHMENT 3 (Cont)

Timeliness

- \_\_\_\_\_ Shift team responds to requests from other plant support groups in a timely manner.
- \_\_\_\_\_ Work priorities are identified and communicated during the shift briefing.
- \_\_\_\_\_ Deviations from and alterations to the prioritized work schedule are communicated to all involved as soon as possible.
- \_\_\_\_\_ Operations management is alerted quickly of actual or potential unusual events.
- \_\_\_\_\_ Appropriate agencies are notified of off-normal situations within the appropriate time frames.

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ATTACHMENT 3 (Cont)

Management/Supervision

- \_\_\_\_\_ SSS ensures shift members are aware of shift goals and plant status.
- \_\_\_\_\_ Instruction and explanations given clearly and in a timely manner.
- \_\_\_\_\_ Supervisory time appropriately allocated to monitor activities of all personnel.
- \_\_\_\_\_ Appropriate decisiveness shown as required.
- \_\_\_\_\_ Good performance acknowledged by shift management; constructive feedback provided as required.
- \_\_\_\_\_ Firmness and fairness demonstrated in situations calling for disciplinary action.
- \_\_\_\_\_ The SSS and ASSS are active in Control Room evolutions (i.e., in Control Room supervising).

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ATTACHMENT 3 (Cont)

Goal Setting

- \_\_\_\_\_ Work tasks show awareness of Nuclear Division goals and objectives.
- \_\_\_\_\_ Goals are established for each shift and communicated during shift briefing.
- \_\_\_\_\_ Assessment is done to measure achievement of shift goals.
- \_\_\_\_\_ Discussions around work priorities reflect a concern for and commitment to Nuclear Division goals.
- \_\_\_\_\_ When appropriate, SSS discusses relevance of work tasks to individual shift members' personal goals.

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ATTACHMENT 4

NMP2 MANAGEMENT ASSESSMENT OF MARKUPS

Date: \_\_\_\_\_ Time: \_\_\_\_\_  
Evaluator: \_\_\_\_\_  
SSS: \_\_\_\_\_  
ASSS: \_\_\_\_\_  
CSO: \_\_\_\_\_  
E Operator: \_\_\_\_\_

Rating  
3 - Excellent  
2 - Satisfactory  
1 - Improvement Required  
N - No Opportunity to Observe

Nuclear and Industrial Safety

\_\_\_\_\_ SSS reviews the markup requests to ensure that application of the markup will not present any equipment or safety concerns.

\_\_\_\_\_ Operators consistently evaluate the markup requests to ensure that markup protects personnel and equipment involved in the scheduled work.

\_\_\_\_\_ If changes are required or clarification is needed during preparation, the markup man is consulted to ensure work groups understand the effects on their task.

\_\_\_\_\_ Markups are independently verified prior to hanging.

\_\_\_\_\_ CSO discusses the method of application including switching order and draining of systems before shift members hang the markups.

\_\_\_\_\_ Prior to issuing, the CSO explains the condition of the system to the markup man.

\_\_\_\_\_ While installing or removing markup tags, shift personnel demonstrate an awareness of safety and report any concerns to the Control Room.

\_\_\_\_\_ Shift personnel make changes to markup positions only after consulting with and receiving permission from the markup man.

\_\_\_\_\_ Shift members display the attitude that they have a personal responsibility for the safety of their co-workers and the general public.

\_\_\_\_\_ Fire markups are properly stamped and the Fire Chief is notified before the markup is hung.

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ATTACHMENT 4 (Cont)

Policies and Procedures

- \_\_\_\_\_ Reference is made to the markup procedure an' the safety book (green book) when policy questions arise.
- \_\_\_\_\_ Shift personnel support other groups by actions such as explaining requirements of the markup procedure.
- \_\_\_\_\_ CSO documents the issuing of markups in the Control Room log book.
- \_\_\_\_\_ CSO notifies the SSS when changes occur to system status due to the markup process.
- \_\_\_\_\_ SSS documents changes to plant conditions when markups are installed or removed.

Comments:

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Accountability/Responsibility.

- \_\_\_\_\_ SSS accepts the overall responsibility for the markup process.
- \_\_\_\_\_ CSO/operators recognize that they are held accountable for their performance.
- \_\_\_\_\_ Each team member recognizes their role in the markup process.
- \_\_\_\_\_ CSO/operators understand and accept their responsibility for the safety of equipment and personnel when dealing with markups.
- \_\_\_\_\_ Control Room personnel consistently work with other groups involved with markups. Discussions include information on the markup process or any general safety questions.
- \_\_\_\_\_ CSO/operators consistently remind personnel of their responsibilities.

Comments:

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ATTACHMENT 4 (Cont)

Communication

- \_\_\_\_\_ Shift personnel exhibit a spirit of cooperation and teamwork with other groups by aiding in the preparation of markup requests when required.
- \_\_\_\_\_ SSS encourages input from shift personnel about plant conditions to ensure markup activities can be planned and prioritized efficiently.
- \_\_\_\_\_ Shift personnel quickly communicate to the markup man any condition which could affect the safety of personnel involved with the markup.
- \_\_\_\_\_ "Repeat backs" are used when markup information is communicated (issuance, surrender, clearance).
- \_\_\_\_\_ Communications are clear and concise (equipment numbers are used; no use of "slang" and general terms is avoided).
- \_\_\_\_\_ Phonetic alphabet is used when appropriate (e.g., "RHS\*P1B, Bravo Pump").

Comments:

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Quality

- \_\_\_\_\_ Personnel involved in the markup process understand their roles.
- \_\_\_\_\_ CSO demonstrates an ability and willingness to organize and plan the markup process to ensure markups are placed and removed in a safe and efficient manner.
- \_\_\_\_\_ Operators place and remove markups as instructed by the CSO.
- \_\_\_\_\_ Personnel involved in the markup process demonstrate a high standard of performance and professionalism to ensure safety.
- \_\_\_\_\_ CSO maintains overall control to ensure personnel complete their duties properly.
- \_\_\_\_\_ When applying a particular markup, there is a concern for overall plant impact.
- \_\_\_\_\_ SSS assigns the markups in a timely manner.

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ATTACHMENT 4 (Cont)

Quality (Cont)

\_\_\_\_\_ System/component status is clearly documented on markups that have been surrendered.

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Problem Identification and Resolution

\_\_\_\_\_ As necessary, shift personnel seek appropriate help from other groups to resolve problems.

\_\_\_\_\_ Operators hanging markups notify CSO if there is problem hanging tag.

\_\_\_\_\_ Operators ensure understanding of plant impact before hanging tag.

\_\_\_\_\_ When writing markup and problem arises, the operator involves appropriate personnel to resolve the problem such as markup man and other groups that would provide special information.

\_\_\_\_\_ Operators are alert to problems or potential problems that could affect plant personnel and report them promptly.

\_\_\_\_\_ Operators are willing to respond to concerns expressed by others and to take appropriate action.

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ATTACHMENT 4 (Cont)

Teamwork

- \_\_\_\_\_ CSO/operators aid markup man in preparing request, if necessary.
- \_\_\_\_\_ Operators work with other groups to resolve problems while hanging, preparing, or clearing tags.
- \_\_\_\_\_ SSS aids requestor in defining plant impacts.
- \_\_\_\_\_ SSS/operators review markups with other groups to ensure personnel are safe.
- \_\_\_\_\_ SSS/operators assist other groups if they have questions about markup process and requirements.
- \_\_\_\_\_ Operators communicate between each other before hanging markup to ensure questions are addressed.
- \_\_\_\_\_ Personnel hanging markups communicate to ensure all personnel involved know what is going on.

Comments:

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Timeliness

- \_\_\_\_\_ Markup requests are evaluated and processed in a timely fashion.
- \_\_\_\_\_ Control Room operators plan markup activities well enough in advance to ensure markups are issued when requested.
- \_\_\_\_\_ When delays occur in issuing a markup, the personnel requesting the markup are notified promptly.
- \_\_\_\_\_ When work is completed and the markup man requests the markup to be cleared, it is removed in a timely manner.
- \_\_\_\_\_ If testing is required for a blue markup, operators support required system manipulations in a timely manner.

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ATTACHMENT 4 (Cont)

Management/Supervision

- \_\_\_\_\_ SSS ensures the shift is aware of planned markup activities.
- \_\_\_\_\_ SSS periodically monitors markup activities for procedure compliance.
- \_\_\_\_\_ SSS reviews markups prior to hanging to evaluate them for plant impact and safety concerns.

Comments:

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ATTACHMENT 5

NMP2 MANAGEMENT ASSESSMENT OF SHIFT TURNOVER

Date: \_\_\_\_\_ Time: \_\_\_\_\_  
Evaluator: \_\_\_\_\_  
SSS: \_\_\_\_\_  
ASSS: \_\_\_\_\_  
CSO: \_\_\_\_\_  
E Operator: \_\_\_\_\_

Rating

- 3 - Excellent
- 2 - Satisfactory
- 1 - Improvement Required
- N - No Opportunity to Observe

Nuclear and Industrial Safety

- \_\_\_\_\_ SSS/operators verify status of operating systems with particular emphasis on those related to Nuclear safety.
- \_\_\_\_\_ SSS conducts a shift briefing.
- \_\_\_\_\_ Turnover checksheets are utilized to thoroughly transfer information relating to general plant status and any special concerns.
- \_\_\_\_\_ Discussions during turnover include topics such as status of safety related equipment, inoperable equipment, work in progress, or any other unusual conditions.
- \_\_\_\_\_ If required, walkdowns are used to exchange additional information.
- \_\_\_\_\_ SSS, ASSS, CSO review and sign their respective logs prior to taking shift.

Comments:

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ATTACHMENT 5 (Cont)

Policies and Procedures

- \_\_\_\_\_ Control Room and in-plant operators use appropriate shift turnover and relief checklists to support turnover activities.
- \_\_\_\_\_ SSS, ASSS, and CSO read their respective log book prior to relieving the off-going personnel.
- \_\_\_\_\_ Turnover activities take place at an appropriate area.

Comments:

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Accountability/Responsibility

- \_\_\_\_\_ Each shift team member has a clear definition of his/her area of responsibility.
- \_\_\_\_\_ Each member is assigned a particular area for rounds and ensures pertinent information such as markups applied, lineup changes, or unusual events are communicated during shift change.
- \_\_\_\_\_ Turnovers are conducted in a professional manner and take place in the Control Room, operations area room, or work area as applicable.

Comments:

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Communication

- \_\_\_\_\_ Communication during turnover is generally work related.
- \_\_\_\_\_ Off-going operator ensures the turnover includes all necessary information such as work in process and unusual conditions.
- \_\_\_\_\_ On-coming operators demonstrate a knowledge of work in progress and general system conditions.
- \_\_\_\_\_ Communications are clear and concise (use of slang or general terms is avoided; equipment piece numbers are used).

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ATTACHMENT 5 (Cont)

Communication (Cont)

- \_\_\_\_\_ Repeat backs are used.
- \_\_\_\_\_ Phonetic alphabet is used when appropriate (e.g., "RHS\*PIB, Bravo Pump").
- \_\_\_\_\_ Log books are filled in properly and reflect the conditions and work activities completed during the shift.

Comments:

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Quality

- \_\_\_\_\_ Shift personnel understand what is required to complete a good turnover.
- \_\_\_\_\_ It is evident that on-coming operators understand plant conditions.
- \_\_\_\_\_ Shift personnel demonstrate a knowledge of plant conditions and work activities that are planned or in progress.

Comments:

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Problem Identification and Resolution

- \_\_\_\_\_ Control Room operators inspect panel indications during turnover to identify any problems.
- \_\_\_\_\_ SSS, ASSS, CSO review and sign documents (logs, turnovers, etc.) necessary for identification of problems and the corrective action taken.

Comments:

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ATTACHMENT 5 (Cont)

Teamwork

- \_\_\_\_\_ Team members communicate openly during shift turnover and shift brief.
- \_\_\_\_\_ Teamwork is evident in that operators are conducting complete and accurate turnovers and any special concerns are identified.
- \_\_\_\_\_ Group discussions are used when necessary to identify problems and possible corrective actions.

Comments:

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Timeliness

- \_\_\_\_\_ Shift turnovers are conducted on time and at an appropriate location.
- \_\_\_\_\_ Deviations from normal plant conditions (testing, maintenance activities, etc.) are covered during turnover.

Comments:

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Management/Supervision

- \_\_\_\_\_ SSS periodically monitors turnover activities to ensure that turnovers contain necessary information.
- \_\_\_\_\_ SSS stresses the importance of a proper turnover.
- \_\_\_\_\_ SSS reviews important information with the shift personnel such as night orders to ensure the shift is aware of conditions.

Comments:

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ATTACHMENT 5 (Cont)

Goal Setting

— The information exchanged during turnover indicates a consistent understanding of the short and long-term goals.

Comments:

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ATTACHMENT 6

NMP2 MANAGEMENT ASSESSMENT OF SURVEILLANCE TESTING

Date: \_\_\_\_\_ Time: \_\_\_\_\_  
Evaluator: \_\_\_\_\_  
SSS: \_\_\_\_\_  
ASSS: \_\_\_\_\_  
CSO: \_\_\_\_\_  
E Operator: \_\_\_\_\_

Rating  
3 - Excellent  
2 - Satisfactory  
1 - Improvement Required  
N - No Opportunity to Observe

Nuclear and Industrial Safety

- \_\_\_\_\_ SSS/operators review and understand steps of a particular surveillance test prior to giving permission to commence.
- \_\_\_\_\_ SSS ensures surveillance tests address the conditions required and the associated plant impacts.
- \_\_\_\_\_ SSS/test coordinator encourages team members to openly ask questions about any concerns they have.
- \_\_\_\_\_ SSS stresses to the team members the importance of safety as it relates to individuals and the general public.

Comments:

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Policies and Procedures

- \_\_\_\_\_ Surveillance tests are performed utilizing only approved procedures.
- \_\_\_\_\_ Procedures are verified against the master prior to use.
- \_\_\_\_\_ Any problems with surveillance procedures encountered during review or while using the procedures are addressed immediately.
- \_\_\_\_\_ SSS/CSO stresses to all personnel that a thorough understanding of the test is required prior to initiation.

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ATTACHMENT 6 (Cont)

Policies and Procedures (Cont)

- \_\_\_\_\_ SSS/CSO stresses to the team that surveillance procedures are written to satisfy Technical Specification requirements and with specific conditions in mind. These conditions are verified and understood during test.
- \_\_\_\_\_ Personnel conducting tests notify their supervisor and the SSS whenever a test cannot be run as written.
- \_\_\_\_\_ SSS/CSO ensures there is proper documentation of the start and completion of surveillance procedures.

Comments:

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Accountability and Responsibility

- \_\_\_\_\_ Team members demonstrate a sense of integrity by their willingness to accept responsibility for their part in the surveillance test process.
- \_\_\_\_\_ SSS displays a sense of personal accountability by ensuring surveillance tests are conducted properly and taking appropriate actions when problems occur.
- \_\_\_\_\_ Accountability by the team is ensured by defining the roles of each participant.

Comments:

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Communication

- \_\_\_\_\_ Communication during the planning process is open and direct.
- \_\_\_\_\_ Team members utilize the planning process as a time to openly voice any concerns about the general test process or specifically their role.

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ATTACHMENT 6 (Cont)

Communication (Cont)

- \_\_\_\_\_ During the test, communications are conducted in a professional manner.
- \_\_\_\_\_ Repeat backs are used when required to ensure accurate flow of information.
- \_\_\_\_\_ Communications are clear and concise (equipment piece numbers are used; slang and general terms are avoided).
- \_\_\_\_\_ The test coordinator ensures that adequate communication systems are utilized to support the test.
- \_\_\_\_\_ Phonetic alphabet is used when appropriate (e.g., "RHS\*PIB, Bravo Pump").

Comments:

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Quality

- \_\_\_\_\_ A high standard of quality is evident in the way personnel plan and conduct surveillance tests.
- \_\_\_\_\_ Test participants demonstrate knowledge of the system being tested.
- \_\_\_\_\_ Pre-planning is done efficiently and is demonstrated by each participant knowing and understanding their tasks before test commencement. This will ensure test is done in the safest and most efficient manner.
- \_\_\_\_\_ Personnel demonstrate integrity by their willingness to follow procedures and, if a problem arises, to notify their supervisor and make necessary changes.

Comments:

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ATTACHMENT 6 (Cont)

Problem Identification and Resolution

- \_\_\_\_\_ Problems identified with the specific test before or during the test are addressed immediately.
- \_\_\_\_\_ Personnel involved in the performance of a surveillance test are knowledgeable about the Technical Specification requirements and the specific conditions required to conduct the test.
- \_\_\_\_\_ If specific conditions cannot be met or the test cannot be conducted as written, the SSS is notified immediately.
- \_\_\_\_\_ SSS or department supervisor addresses problems to determine plant impact and specific corrective actions necessary.

Comments:

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Teamwork

- \_\_\_\_\_ SSS encourages teamwork by including all participants in the pre-planning stages.
- \_\_\_\_\_ Test coordinator/SSS discuss with the participants the tasks each one is responsible for and how proper execution affects the team.
- \_\_\_\_\_ A general spirit of cooperation is evident between shift members and other groups involved in running surveillance tests.

Comments:

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Timeliness

- \_\_\_\_\_ Surveillance tests are planned far enough in advance to allow shift personnel and other involved groups sufficient time to review and understand the tasks required.
- \_\_\_\_\_ When problems arise during conduct of testing, the SSS is notified immediately.

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ATTACHMENT 6 (Cont)

Timeliness (Cont)

- \_\_\_\_\_ SSS, when notified of a problem, evaluates the potential plant impact and promptly takes corrective action.
- \_\_\_\_\_ If necessary, appropriate NMPC managers and outside agencies are notified within the required timeframe.

Comments:

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Management/Supervision

- \_\_\_\_\_ SSS ensures each team member is aware of test requirements and each person's responsibility for the completion of the test.
- \_\_\_\_\_ SSS encourages open communication and a general spirit of teamwork. SSS ensures team members are included in the planning process and is willing to address questions related to the testing.
- \_\_\_\_\_ SSS periodically monitors the progress of testing to ensure testing is completed in an efficient manner.
- \_\_\_\_\_ SSS resolves problems as they arise during the testing process.
- \_\_\_\_\_ The test coordinator directs performance of the test and ensures the test is conducted in an efficient manner and, if problems arise, the SSS is notified.

Comments:

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ATTACHMENT 6 (Cont)

Goal Setting

- \_\_\_\_\_ High professional standards are evident when dealing with surveillance tests.
- \_\_\_\_\_ SSS stresses as a goal that surveillance tests are completed as written or corrected as necessary.
- \_\_\_\_\_ SSS periodically provides feedback to shift personnel about the progress achieved in meeting their goals.

Comments:

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ATTACHMENT 7

NMP2 MANAGEMENT ASSESSMENT OF ROUNDS

Date: \_\_\_\_\_ Time: \_\_\_\_\_  
Evaluator: \_\_\_\_\_  
SSS: \_\_\_\_\_  
ASSS: \_\_\_\_\_  
CSO: \_\_\_\_\_  
E Operator: \_\_\_\_\_

Rating

- 3 - Excellent
- 2 - Satisfactory
- 1 - Improvement Required
- N - No Opportunity to Observe

Nuclear and Industrial Safety

- \_\_\_\_\_ SSS briefs the on-coming shift about any in-progress or planned evolutions which could potentially affect safety.
- \_\_\_\_\_ SSS/CSO encourages shift personnel to report questionable, unusual or abnormal conditions discovered when doing rounds.
- \_\_\_\_\_ Conditions are checked for deficiency tags if applicable. Operators conducting rounds routinely check conditions and systems identified as safety concerns.
- \_\_\_\_\_ SSS takes appropriate action when notified of a safety problem.
- \_\_\_\_\_ Operators follow applicable safety rules while on rounds such as the use of hardhats, hearing protection, safety shoes, and the adherence to radiation protection procedures.
- \_\_\_\_\_ Operators routinely demonstrate an awareness of conditions while on rounds which can affect safety. Examples are:
  - a. Water on floor is noted and source is determined. Action is initiated to cleanup.
  - b. Markups are reviewed for changed conditions and reasons for changes are known or determined.
  - c. Good ALARA practices are followed.
  - d. Work in progress is observed for good safety practices and workers are questioned to keep track of work status and problems.

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ATTACHMENT 7 (Cont)

Nuclear and Industrial Safety (Cont)

- e. Burned out or missing lights are noted. Action is initiated to replace or repair.

Comments:

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Policies and Procedures

- \_\_\_\_\_ Operators conducting rounds make routine reference to controlled copies of procedures required to document completion of rounds.
- \_\_\_\_\_ Operators verify procedures against the master prior to use.
- \_\_\_\_\_ SSS is notified immediately if any part of a procedure cannot be completed as written.
- \_\_\_\_\_ Operators use applicable rounds guides in the performance of rounds. Checks are made as specified on rounds guides.
- \_\_\_\_\_ Applicable procedures and rounds guides accompany operators while conducting rounds.
- \_\_\_\_\_ Operators review markups, night orders, logs, and special instructions prior to rounds.
- \_\_\_\_\_ Operators review Control Room indicators and annunciators when planning rounds.
- \_\_\_\_\_ Operators making rounds are alert for hookups, hoses, structures that may constitute temporary mods and checks for authorization.

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ATTACHMENT 7 (Cont)

Accountability/Responsibility

- \_\_\_\_\_ There is clear definition of roles and responsibilities for the performance of rounds.
- \_\_\_\_\_ Operators demonstrate a sense of personal accountability by completing rounds in a professional manner and ensuring Control Room personnel are aware of any unusual conditions.
- \_\_\_\_\_ SSS accepts responsibility for the successful completion of rounds by periodically monitoring rounds activities.
- \_\_\_\_\_ Operators using procedures on rounds ensure second verifications are obtained.
- \_\_\_\_\_ Licensed operators ensure new personnel are qualified before making rounds.

Comments:

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Communication

- \_\_\_\_\_ Effective communication is demonstrated by the Control Room being aware of the progress of routine and unusual activities during the completion of rounds.
- \_\_\_\_\_ Operators routinely notify the SSS when unusual or abnormal conditions are noted on rounds. Examples are leaks, safety hazards, and accumulations of trash.
- \_\_\_\_\_ SSS communicates special instructions to operators prior to commencing rounds.
- \_\_\_\_\_ Problems found on rounds which may be a concern to other groups are reported to them.
- \_\_\_\_\_ Repeat backs are used when communicating information.
- \_\_\_\_\_ Communications are clear and concise (equipment piece numbers are used; slang and general terms are avoided).

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ATTACHMENT 7 (Cont)

Communication (Cont)

\_\_\_\_\_ Phonetic alphabet is used when appropriate (e.g., "RHS\*PIB, Bravo Pump").

Comments:

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Quality

\_\_\_\_\_ Operators understand their responsibilities and the specific tasks required to complete a set of rounds.

\_\_\_\_\_ Communication is efficient as indicated by the Control Room knowing what activities are being performed.

\_\_\_\_\_ Personnel performing rounds utilize approved procedures to accomplish specific tasks.

\_\_\_\_\_ Problems discovered during rounds are promptly reported to the Control Room.

\_\_\_\_\_ SSS/ASSS completes periodic tours in the plant to identify potential problems.

\_\_\_\_\_ Rounds guides are considered minimum standards. Operators understand their responsibility goes beyond rounds guides.

\_\_\_\_\_ Rounds guides specify parameters to be monitored, readings to be taken, and normal readings for equipment.

\_\_\_\_\_ General implant log entries are complete and content is adequate to reconstruct evolutions (ODI 5.01).

Comments:

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ATTACHMENT 7 (Cont)

Problem Identification and Resolution

- \_\_\_\_\_ Information received from shift briefings is efficiently used to identify potential problems during rounds.
- \_\_\_\_\_ Rounds determine the condition of all plant equipment including identification of problems.
- \_\_\_\_\_ Operators immediately notify the SSS when problems are discovered while conducting rounds.
- \_\_\_\_\_ Problems discovered on rounds are properly documented to ensure the status is effectively communicated to other shifts.
- \_\_\_\_\_ SSS ensures proper actions are taken such as completing WR, PR, DCR when notified of problems.

Comments:

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Teamwork

- \_\_\_\_\_ SSS uses shift briefings to ensure instructions are communicated to operators performing rounds.
- \_\_\_\_\_ SSS encourages comments and feedback in shift briefings from operators who perform rounds.
- \_\_\_\_\_ Discussions during shift briefings include unusual plant conditions and areas or equipment that require special attention during rounds.
- \_\_\_\_\_ The Control Room ensures all shift personnel are aware of changing conditions that may affect performance of rounds.
- \_\_\_\_\_ Evolutions are identified that may require more than one operator, or participation of other groups such as Fire Department or Radiation Protection, to accomplish during rounds.

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ATTACHMENT 7 (Cont)

Timeliness

- \_\_\_\_\_ Rounds are completed as soon as practicable after taking the shift.
- \_\_\_\_\_ Operators performing rounds respond to unusual situations promptly.
- \_\_\_\_\_ When problems are discovered on rounds, the SSS is notified immediately.
- \_\_\_\_\_ Readings required to be taken at specific times are completed on time.
- \_\_\_\_\_ Problems discovered on rounds are reported promptly to other concerned groups.

Comments:

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Management/Supervision

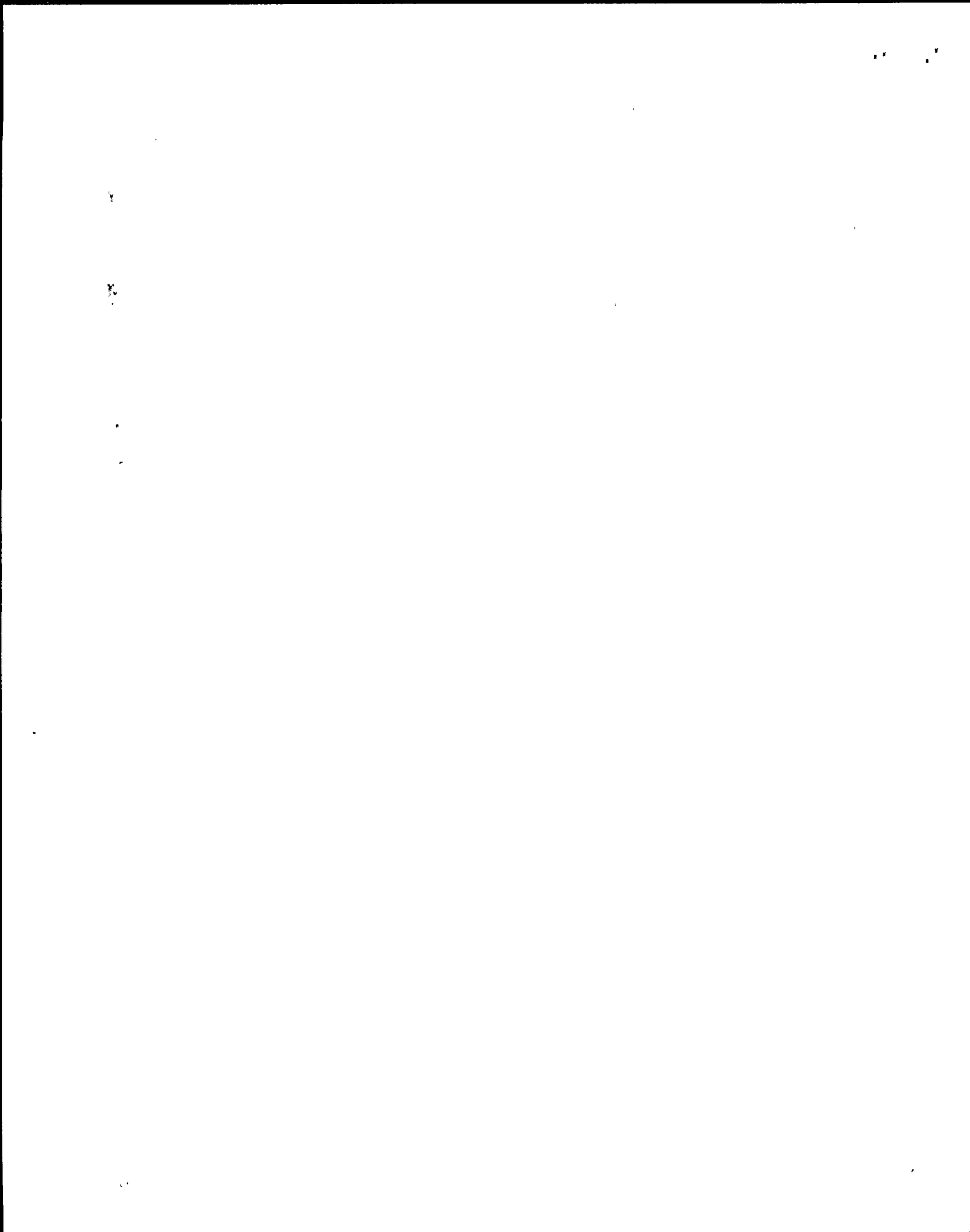
- \_\_\_\_\_ SSS ensures operators are aware of the requirements for rounds.
- \_\_\_\_\_ SSS notifies operators of any unusual conditions or specific instructions during shift briefings.
- \_\_\_\_\_ SSS periodically monitors rounds activities.
- \_\_\_\_\_ SSS responds to the concerns of operators on rounds in a timely manner.
- \_\_\_\_\_ SSS reviews night orders and shift checks for items that concern rounds.
- \_\_\_\_\_ SSS ensures operators performing rounds are qualified.
- \_\_\_\_\_ If appropriate, SSS takes direct in-plant control of problems or concerns that arise during rounds.
- \_\_\_\_\_ Managers and supervisors make periodic tours in plant to maintain knowledge of rounds routes and conditions.

Comments:

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ATTACHMENT 7 (Cont)

Goal Setting

- \_\_\_\_\_ SSS establishes goals for performance of rounds and periodically reviews them with operators making rounds.
- \_\_\_\_\_ Operators demonstrate an awareness of rounds goals.
- \_\_\_\_\_ SSS assesses performance of rounds periodically to ensure Standards of Performance are maintained at a high level.

Comments:

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ATTACHMENT 8

NMP2 MANAGEMENT ASSESSMENT OF BACKSHIFT OPERATIONS

Date: \_\_\_\_\_ Time: \_\_\_\_\_  
Evaluator: \_\_\_\_\_  
SSS: \_\_\_\_\_  
ASSS: \_\_\_\_\_  
CSO: \_\_\_\_\_  
E Operator: \_\_\_\_\_

Rating

- 3 - Excellent
- 2 - Satisfactory
- 1 - Improvement Required
- N - No Opportunity to Observe

Nuclear and Industrial Safety

- \_\_\_\_\_ SSS periodically monitors personnel performance to ensure personnel are alert and able to operate in a safe and efficient manner.
- \_\_\_\_\_ CSO/operators are alert to system changes which could potentially affect personnel or reactor safety.
- \_\_\_\_\_ Shift members quickly report safety concerns to SSS/ASSS.
- \_\_\_\_\_ Plant rounds records indicate identification of unsafe condition in the plant and actions to rectify.
- \_\_\_\_\_ SSS/operators demonstrate awareness that less support on backshift may require more of their direct involvement in plant activities.

Comments:

\_\_\_\_\_  
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Policies and Procedures

- \_\_\_\_\_ Personnel routinely refer to controlled copies of procedures when carrying out various responsibilities.
- \_\_\_\_\_ Personnel complete shift duties using applicable rounds guides and surveillance procedures.
- \_\_\_\_\_ Results of rounds and procedures are documented and any unsatisfactory results are reported to the SSS.

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ATTACHMENT 8 (Cont)

Policies and Procedures (Cont)

\_\_\_\_\_ SSS notifies appropriate agencies or plant management/supervision when required for guidance or notification.

Comments:

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Accountability/Responsibility

\_\_\_\_\_ There is a clear definition of tasks for which each individual is responsible.

\_\_\_\_\_ Personal accountability is demonstrated by personnel taking appropriate action to maintain the plant in a safe operating condition.

\_\_\_\_\_ SSS utilizes shift briefings and other communication techniques to ensure individuals are aware of their responsibilities to the team and also the limits on their authority.

\_\_\_\_\_ SSS demonstrates an awareness of conditions which require notification of outside agencies and NMPC management/supervision and how to use on-call list to obtain assistance not available on shift.

Comments:

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Quality

\_\_\_\_\_ SSS/CSO ensure shift personnel clearly recognize their responsibilities and are qualified prior to being assigned a task.

\_\_\_\_\_ SSS/CSO routinely follow-up on progress of jobs to ensure they are being done correctly.

\_\_\_\_\_ Communication on backshift is effective as indicated by Control Room knowledge of work being performed.

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ATTACHMENT 8 (Cont)

Quality (Cont)

- \_\_\_\_\_ Problems discovered by or reported to the Control Room are identified and rectified in a timely fashion.
- \_\_\_\_\_ Problems or unusual conditions are accurately communicated to on-coming shift.
- \_\_\_\_\_ An individual's quality of life is considered when developing work schedules or assigning overtime.

Comments:

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Problem Identification and Resolution

- \_\_\_\_\_ SSS periodically monitors shift activities for problem identification and resolution.
- \_\_\_\_\_ Control Room personnel inspect control boards throughout the shift for abnormal conditions and respond appropriately.
- \_\_\_\_\_ Operators inspect condition of equipment during rounds and report problems to SSS.
- \_\_\_\_\_ Personnel take appropriate actions in response to annunciators and abnormal conditions and notify the SSS of these conditions.
- \_\_\_\_\_ SSS utilizes shift briefings as a means to ensure that shift personnel are aware of actual or potential problems.
- \_\_\_\_\_ SSS notifies plant management/supervision and outside agencies as required when problems are identified.
- \_\_\_\_\_ SSS responds appropriately to concerns and problems of other site groups.

Comments:

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ATTACHMENT 8 (Cont)

Teamwork

- \_\_\_\_\_ Communication during shift work activities demonstrates openness.
- \_\_\_\_\_ Shift personnel demonstrate a willingness to accept input from others.
- \_\_\_\_\_ Interactions between operators and support groups demonstrate a strong spirit of cooperation and teamwork.
- \_\_\_\_\_ Personnel comments and attitudes show awareness of being part of a larger team than just the backshift.

Comments:

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Timeliness

- \_\_\_\_\_ Shift team responds to requests from other plant groups in a timely manner.
- \_\_\_\_\_ Work priorities are identified and communicated during shift briefings.
- \_\_\_\_\_ Deviations from and alterations to the prioritized work schedule are promptly communicated to all involved.
- \_\_\_\_\_ Appropriate management personnel are alerted quickly of actual or potential safety related conditions.
- \_\_\_\_\_ Appropriate agencies are notified as required of off-normal situations within the appropriate timeframes.
- \_\_\_\_\_ Shift personnel complete an initial evaluation of plant conditions and complete their particular rounds responsibilities in a timely manner.

Comments:

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ATTACHMENT 8 (Cont)

Management/Supervision

- \_\_\_\_\_ SSS ensures team members are aware of shift goals and plant status.
- \_\_\_\_\_ Instructions and explanations are given clearly and in a timely manner.
- \_\_\_\_\_ Supervisory time is appropriately allocated to monitor activities of all personnel.
- \_\_\_\_\_ Appropriate decisiveness is shown as required.
- \_\_\_\_\_ Good performance is acknowledged by shift management; constructive feedback is provided as required.
- \_\_\_\_\_ SSS recognizes physical hardships of backshift work and is effective in leading the shift to stay alert and productive.
- \_\_\_\_\_ SSS encourages shift involvement beyond minimum requirements of each individual.
- \_\_\_\_\_ SSS receives necessary support from management and other groups to accomplish shift objectives.

Comments:

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Goal Setting

- \_\_\_\_\_ Work assignments show relation to Nuclear Division goals and objectives.
- \_\_\_\_\_ Goals are established for each shift and communicated during shift briefing.
- \_\_\_\_\_ Assessment is done to measure achievement of shift goals.
- \_\_\_\_\_ Discussions around work priorities reflect a concern for and commitment to Nuclear Division goals.
- \_\_\_\_\_ When appropriate, SSS discusses relevance of work tasks to individual shift members' personal goals.

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ATTACHMENT 8 (Cont)

Goal Setting (Cont)

Goals are realistically set keeping in mind the physical hardships of backshift work.

Comments:

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Communications

- Content of communications are primarily work related, with a moderate amount of personal sharing as appropriate to a congenial work place.
- Visitors to the Control Room are treated with respect and courtesy.
- Repeat backs are used in accordance with N2-ODI-1.06.
- Communications are clear and concise (equipment piece numbers, noun names are used; slang and general terms are avoided).
- Phonetic alphabet is used, when appropriate (e.g., "RHS\*PIB, Bravo Pump").

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ATTACHMENT 9

NMP2 MANAGEMENT ASSESSMENT OF TRAINING ACTIVITIES

Date: \_\_\_\_\_ Time: \_\_\_\_\_  
Evaluator: \_\_\_\_\_  
SSS: \_\_\_\_\_  
OJT Evaluator: \_\_\_\_\_  
Trainee: \_\_\_\_\_  
OJT Task(s) Being Assessed:  
\_\_\_\_\_

Rating

- 3 - Excellent
- 2 - Satisfactory
- 1 - Improvement Required
- N - No Opportunity to Observe

OJT Training

Nuclear and Industrial Safety

- \_\_\_\_\_ SSS and/or operator observes radiological and safety rules before performing in-plant activity.
- \_\_\_\_\_ Operators identify potential radiological or safety risk associated with performing any in-plant activity.

Comments:

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Policies and Procedures

- \_\_\_\_\_ Routine reference made to controlled copies of procedures in performing responsibilities.
- \_\_\_\_\_ Evaluator reviewed and is familiar with the task being evaluated.
- \_\_\_\_\_ Evaluator has ensured that knowledge portion of task has been signed off prior to evaluating task.
- \_\_\_\_\_ Initiative taken to recommend revisions or additions to procedures as perceived necessary by an individual. Procedure Evaluation Request (S-SUP-4) initiated.

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ATTACHMENT 9 (Cont)

Policies and Procedures (Cont)

Comments:

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Accountability/Responsibility

- \_\_\_\_\_ Clear demarcation of roles between evaluator and trainee.
- \_\_\_\_\_ Sense of personal accountability demonstrated by evaluator asking follow-up questions or taking actions as appropriate to determine understanding of task.
- \_\_\_\_\_ Evaluators provide consistency to trainees in evaluating tasks.
- \_\_\_\_\_ Clear understanding of task demonstrated by trainee.
- \_\_\_\_\_ During OJE (evaluation) the evaluator does not prompt or otherwise help the candidate perform the task.

Comments:

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Communication

- \_\_\_\_\_ Content of communications primarily work-related.
- \_\_\_\_\_ Tone of communications pleasant, courteous.
- \_\_\_\_\_ Communications generally open and direct; intent of comments, instructions, questions generally understood and responded to promptly, appropriately.
- \_\_\_\_\_ Repeat backs are used in accordance with N2-ODI-1.06.
- \_\_\_\_\_ Communications are clear and concise (equipment piece numbers, noun names are used; slang and general terms are avoided).

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ATTACHMENT 9 (Cont)

Communication (Cont)

\_\_\_\_\_ Phonetic alphabet is used, when appropriate (e.g., "RHS\*PIB, Bravo Pump").

Comments:

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Quality

\_\_\_\_\_ Operator understands responsibilities and specific tasks required to be completed.

\_\_\_\_\_ Communication is efficient as indicated by evaluator and trainee understanding each other with minimum of repeats and questions/corrections.

\_\_\_\_\_ Trainee performing OJT utilizes approved procedures to accomplish specific tasks.

\_\_\_\_\_ OJT task is accomplished correctly the first time.

Comments:

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Problem Identification and Resolution

\_\_\_\_\_ OJT on plant equipment is used to determine condition of the equipment including identification of problems.

\_\_\_\_\_ Plant problems identified during OJT are promptly reported to the SSS.

\_\_\_\_\_ Problems with training material identified during OJT are reported using the applicable process.

Comments:

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ATTACHMENT 9 (Cont)

Teamwork

- \_\_\_\_\_ Evaluator and trainee demonstrate teamwork in completing OJT without the evaluator assisting the trainee in completing task(s) being evaluated.
- \_\_\_\_\_ Support groups are involved as necessary when problems are identified or assistance is needed.
- \_\_\_\_\_ Requirements for support or plant conditions are identified and communicated to those involved.

Comments:

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Timeliness

- \_\_\_\_\_ OJT is completed in a timely manner.
- \_\_\_\_\_ Problems identified during OJT are reported and resolved in a timely manner.

Comments:

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Management/Supervision

- \_\_\_\_\_ Chain of command is used to identify problems to appropriate management and obtain resolution.

Comments:

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ATTACHMENT 9 (Cont)

Goal Setting

\_\_\_\_\_ Evaluator establishes goal for performance of specific OJT task(s) being evaluated.

\_\_\_\_\_ Trainee demonstrates an awareness of the goal and actively works to achieve the goal.

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ATTACHMENT 10

NMP2 MANAGEMENT ASSESSMENT OF TRAINING ACTIVITIES

Date: \_\_\_\_\_ Time: \_\_\_\_\_  
Evaluator: \_\_\_\_\_  
SSS: \_\_\_\_\_  
ASSS: \_\_\_\_\_  
Shift: \_\_\_\_\_  
Instructor: \_\_\_\_\_  
Classroom Training Subject:  
\_\_\_\_\_

Rating

- 3 - Excellent
- 2 - Satisfactory
- 1 - Improvement Required
- N - No Opportunity to Observe

Classroom Training

Nuclear and Industrial Safety

- \_\_\_\_\_ Nuclear and industrial safety considerations are included in instruction when applicable.
- \_\_\_\_\_ Nuclear safety is clearly communicated as the principal consideration in all activities related to the operation and maintenance of Units 1 and 2.
- \_\_\_\_\_ The subject of nuclear safety is discussed in a serious, professional manner by attendees and instructor.
- \_\_\_\_\_ Nuclear safety questions are answered accurately and completely.

Comments:

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Policies and Procedures

- \_\_\_\_\_ Procedural compliance is covered during instruction when applicable.
- \_\_\_\_\_ As appropriate for the subject, reference to or use of procedures is included in material being presented.

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ATTACHMENT 10 (Cont)

Policies and Procedures (Cont)

\_\_\_\_ Procedure Evaluation Request (S-SUP-4) form is initiated when revisions or additions to procedures are considered necessary.

Comments:

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Accountability/Responsibility

\_\_\_\_ If present, SSS/ASSS conveys awareness of Operations' responsibility for effectiveness of training.

\_\_\_\_ Instructor demonstrates responsibility for effectively presenting training material.

\_\_\_\_ Attendees act responsibly in a classroom training environment as indicated by professional conduct and participation in the learning process.

Comments:

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Communication

\_\_\_\_ Instructor presents training material effectively - states learning objectives, includes material which covers objectives, uses training aids, involves attendees, reviews main points and checks for understanding of material presented.

\_\_\_\_ Attendees comment and ask questions openly and receive responses that address their concerns.

Comments:

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ATTACHMENT 10 (Cont)

Quality.

\_\_\_\_\_ Classroom training experience meets high standards - class starts and ends on time; scheduled attendees are present; instructor is prepared and professional in delivering the training material; attendees are cooperative and motivated to learn; training objectives are met.

Comments:

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Problem Identification and Resolution

\_\_\_\_\_ Problems are identified and resolved.

\_\_\_\_\_ Attendees and instructors are aware of process(es) to resolve training problems.

\_\_\_\_\_ Instructor provides feedback on resolution of problems.

Comments:

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Teamwork

\_\_\_\_\_ Non-verbal behaviors (facial expressions, body gestures, eye contact, tone of voice) indicate rapport with and respect for each other.

\_\_\_\_\_ Communications directed to all personnel; participation/involvement of all personnel is encouraged in interactions; opinions expressed and listened to.

\_\_\_\_\_ Team members actively give and seek information required to accomplish understanding of training material.

\_\_\_\_\_ Conflicts, disagreements related to work activities encouraged, openly expressed; conflicts managed effectively (i.e., collaborative seeking of alternatives when time permits).

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ATTACHMENT 10 (Cont)

Teamwork (Cont)

\_\_\_\_\_ Cooperation and a shared sense of responsibility for getting the job done evident in interactions among attendees and between attendees and instructors.

Comments:

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Timeliness

\_\_\_\_\_ Classroom attendees are present at the schedule time for training.

\_\_\_\_\_ Classroom breaks are reasonable and duration is not excessive.

\_\_\_\_\_ Deviations from or alterations to published training schedule are communicated to attendees promptly.

\_\_\_\_\_ Time set aside for self-study, routed reading or procedural review is used effectively.

\_\_\_\_\_ Training objectives are accomplished in schedule time.

Comments:

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Management/Supervision

\_\_\_\_\_ Training management observes classroom training session being assessed.

\_\_\_\_\_ If present, SSS/ASSS is a visible management presence who assesses the training session and takes action as necessary to ensure that training is effective.

Comments:

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ATTACHMENT 10 (Cont)

Goal Setting

\_\_\_\_\_

Instructor establishes goal(s) for the training session.

\_\_\_\_\_

Attendees demonstrate an awareness of the goal(s) and actively work to achieve the goal(s).

Comments:

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ATTACHMENT 11

NMP2 MANAGEMENT ASSESSMENT OF TRAINING ACTIVITIES

Date: \_\_\_\_\_ Time: \_\_\_\_\_  
Evaluator: \_\_\_\_\_  
SSS: \_\_\_\_\_  
ASSS: \_\_\_\_\_  
CSO: \_\_\_\_\_  
E Operator: \_\_\_\_\_  
Simulator Instructor: \_\_\_\_\_  
Shift: \_\_\_\_\_  
Simulator Scenario: \_\_\_\_\_

Rating

- 3 - Excellent
- 2 - Satisfactory
- 1 - Improvement Required
- N - No Opportunity to Observe

Simulator Training

Nuclear and Industrial Safety

- \_\_\_\_\_ SSS and/or operator identifies potential radiological or safety risk before requesting simulated in-plant activity.
- \_\_\_\_\_ Operators identify potential radiological or safety risk associated with any change in plant status.
- \_\_\_\_\_ Activities in simulator are conducted in a safe and efficient manner consistent with that required in the Control Room.

Comments:

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Policies and Procedures

- \_\_\_\_\_ Routine reference made to controlled copies of procedures in performing responsibilities.
- \_\_\_\_\_ SSS/simulator instructor notified immediately when appropriate procedures not available; work stopped until an approved procedure is available.
- \_\_\_\_\_ Initiative taken to recommend revisions or additions to procedures as perceived necessary by an individual. Procedure Evaluation Request (S-SUP-4) form initiated.

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ATTACHMENT 11 (Cont)

Policies and Procedures (Cont)

Comments:

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Accountability/Responsibility

\_\_\_\_\_ Clear demarcation of roles of SSS and Assistant SSS, mutual support evident in communication and interaction.

\_\_\_\_\_ Sense of personal accountability demonstrated by asking follow-up questions or taking actions as appropriate to determine resolution of such events.

Comments:

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Communication

\_\_\_\_\_ Content of communications primarily work-related.

\_\_\_\_\_ Tone of communications pleasant, courteous.

\_\_\_\_\_ Simulator trainees exhibit helpful, open, and cooperative attitude toward representative of NRC, INPO, ANI.

\_\_\_\_\_ Communications generally open and direct; intent of comments, instructions, questions generally understood and responded to promptly, appropriately.

\_\_\_\_\_ Repeat backs are used in accordance with N2-ODI-1.06. .

\_\_\_\_\_ Communications are clear and concise (equipment piece numbers, noun names are used; slang and general terms are avoided).

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ATTACHMENT 11 (Cont)

Communication (Cont)

\_\_\_\_\_ Phonetic alphabet is used, when appropriate (e.g., "RHS\*PIB, Bravo Pump).

Comments:

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Quality

\_\_\_\_\_ Operators understand their responsibilities and specific tasks to mitigate consequences of simulator scenario.

\_\_\_\_\_ Communications between Control Room operators and simulator instructor give evidence that Control Room operators understand the scenario.

\_\_\_\_\_ Actions taken are checked to ensure they have been done correctly.

\_\_\_\_\_ Problems with simulator hardware, software, and courseware, or anything else that affects quality, are identified promptly and rectified in a timely manner.

\_\_\_\_\_ Self-verification techniques are used.

\_\_\_\_\_ Efforts made by operators and trainers to provide realism.

Comments:

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ATTACHMENT 11 (Cont)

Problem Identification and Resolution

- \_\_\_\_\_ Appropriate people are utilized to respond to the simulated event.
- \_\_\_\_\_ SSS observes "big picture situation" to identify deviations from expectations and implications for plant safety. SSS does not focus on minor problems.
- \_\_\_\_\_ Shift team inspects boards before and during scenario to detect trends.
- \_\_\_\_\_ Shift members take appropriate responses to annunciators and computer alarms.
- \_\_\_\_\_ All trainees participate in shift briefings so potential problems can be identified.
- \_\_\_\_\_ All trainees actively participate in "post-exercise" critique.

Comments:

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Teamwork

- \_\_\_\_\_ Non-verbal behaviors (facial expressions, body gestures, eye contact, tone of voice) indicate rapport with and respect for each other.
- \_\_\_\_\_ Communications directed to all relevant personnel; participation/ involvement of all relevant personnel is encouraged in interactions; opinions expressed and listened to.
- \_\_\_\_\_ Team members actively give and seek information required to mitigate consequences of simulator scenario.
- \_\_\_\_\_ Team members express their feelings appropriately; during periods of stress occasional incidents of anger, frustration, etc., are tolerated; individuals able to apologize for such interactions shortly thereafter with apologies easily accepted.
- \_\_\_\_\_ Conflicts focused on mitigation strategy - not on personalities or differences such as race, gender, and physical condition.

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ATTACHMENT 11 (Cont)

Teamwork (Cont)

\_\_\_\_\_ Conflicts, disagreements related to work activities encouraged, openly expressed; conflicts managed effectively (i.e., collaborative seeking of alternatives when time permits; decision of supervisor accepted and acted upon promptly in situations where quick decision required).

\_\_\_\_\_ Cooperation and a shared sense of responsibility for getting the job done evident in interactions with each other.

Comments:

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Timeliness

\_\_\_\_\_ Training shift responds to information received from other plant support groups in a timely manner.

\_\_\_\_\_ Deviations from and alterations to the prioritized work schedule are promptly communicated to all involved.

\_\_\_\_\_ Declarations of emergency classifications are made in a timely fashion.

\_\_\_\_\_ In response to simulator scenario, appropriate agencies are notified (simulated) of off-normal situations within the appropriate time frames.

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ATTACHMENT 11 (Cont)

Management/Supervision

- \_\_\_\_\_ SSS ensures team members are aware of board assignments and plant status.
- \_\_\_\_\_ Instruction and explanations given clearly and in a timely manner.
- \_\_\_\_\_ Appropriate decisiveness shown as required.
- \_\_\_\_\_ Good performance acknowledged by shift management; constructive feedback provided as required.
- \_\_\_\_\_ Firmness and fairness demonstrated in situations calling for corrective action.

Comments:

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Goal Setting

- \_\_\_\_\_ Simulator instructor/SSS establishes goals for the training sessions.
- \_\_\_\_\_ Operators demonstrate an awareness of the goal(s) and actively work to achieve the goal(s).

Comments:

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ATTACHMENT 12

NMP2 MANAGEMENT ASSESSMENT OF PREVIOUS CORRECTIVE ACTION

DATE: \_\_\_\_\_

EVALUATOR: \_\_\_\_\_

1. Previous corrective action to be assessed:

a. Reference: \_\_\_\_\_ NCTS: \_\_\_\_\_

b. Description: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2. Deficiency or condition from OR, LER, INPO Finding, NRC IR Unresolved Item, Zone Inspection Item, or other source which resulted in corrective action:

a. Reference: \_\_\_\_\_

b. Description: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

3. Did corrective action as described satisfactorily address initiating condition or deficiency? \_\_\_\_\_

If not, provide amplifying information:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

4. How and when was corrective action implemented?

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ATTACHMENT 12 (Cont)

5. Was corrective action satisfactorily implemented? \_\_\_\_\_

If not, provide amplifying information:

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6. Does corrective action as implemented satisfactorily address initiating condition or deficiency? \_\_\_\_\_

If not, provide amplifying information:

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7. Has initiating condition or deficiency recurred after implementation of corrective action? \_\_\_\_\_

If yes, provide amplifying information and recommended corrective action:

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SECTION 10 ACUATOR MANUAL  
ADJUSTMENTS FOR TORQUE SEATING

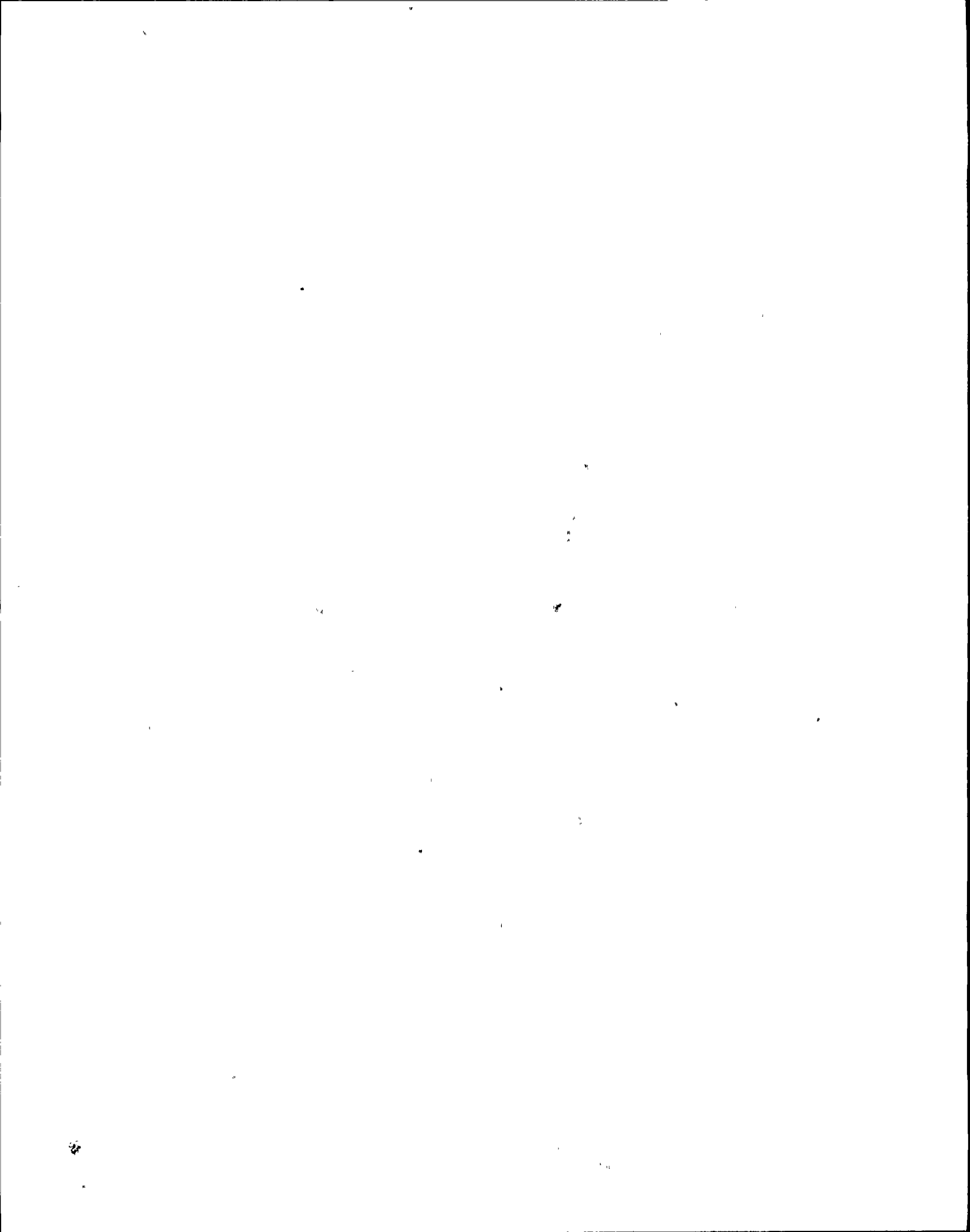
LIMITORQUE TYPE SMB MODIFICATION FOR TWO OR  
FOUR TRAIN GEARED LIMIT SWITCH - ROTOR TYPE

To assure that a Limitorque Type SMB is properly wired to allow torque seating of a C & S Tricentric Valve, a jumper wire must be in place between terminal No. 53 and terminal No. 51 on rotor #2 (close rotor). Refer to page No. 39 of the Limitorque type SMB manual for the wiring diagram.

PROCEDURE FOR SETTING THE GEARED  
LIMIT SWITCH

Refer to page No. 6 of the Limitorque Type SMB manual for step by step procedures. All of these descriptions apply with the exception of setting the close switch. Modify as follows:

Set the close switch to trip when the valve disc assembly is within 5% of full closure. This will allow the torque switch to operate upon closure of the valve.



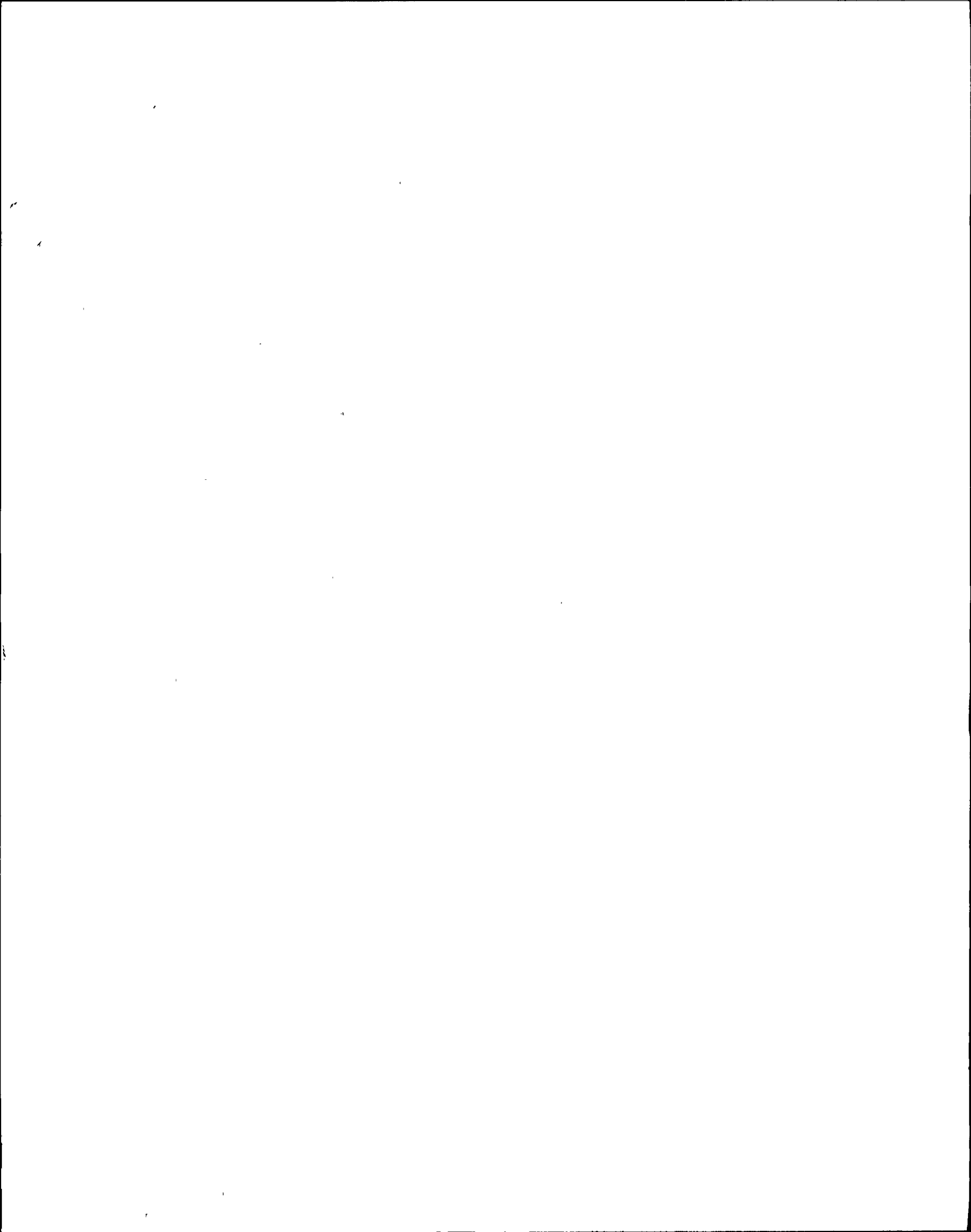
# LIMITORQUE® TYPE HBC

INSTRUCTION AND MAINTENANCE MANUAL

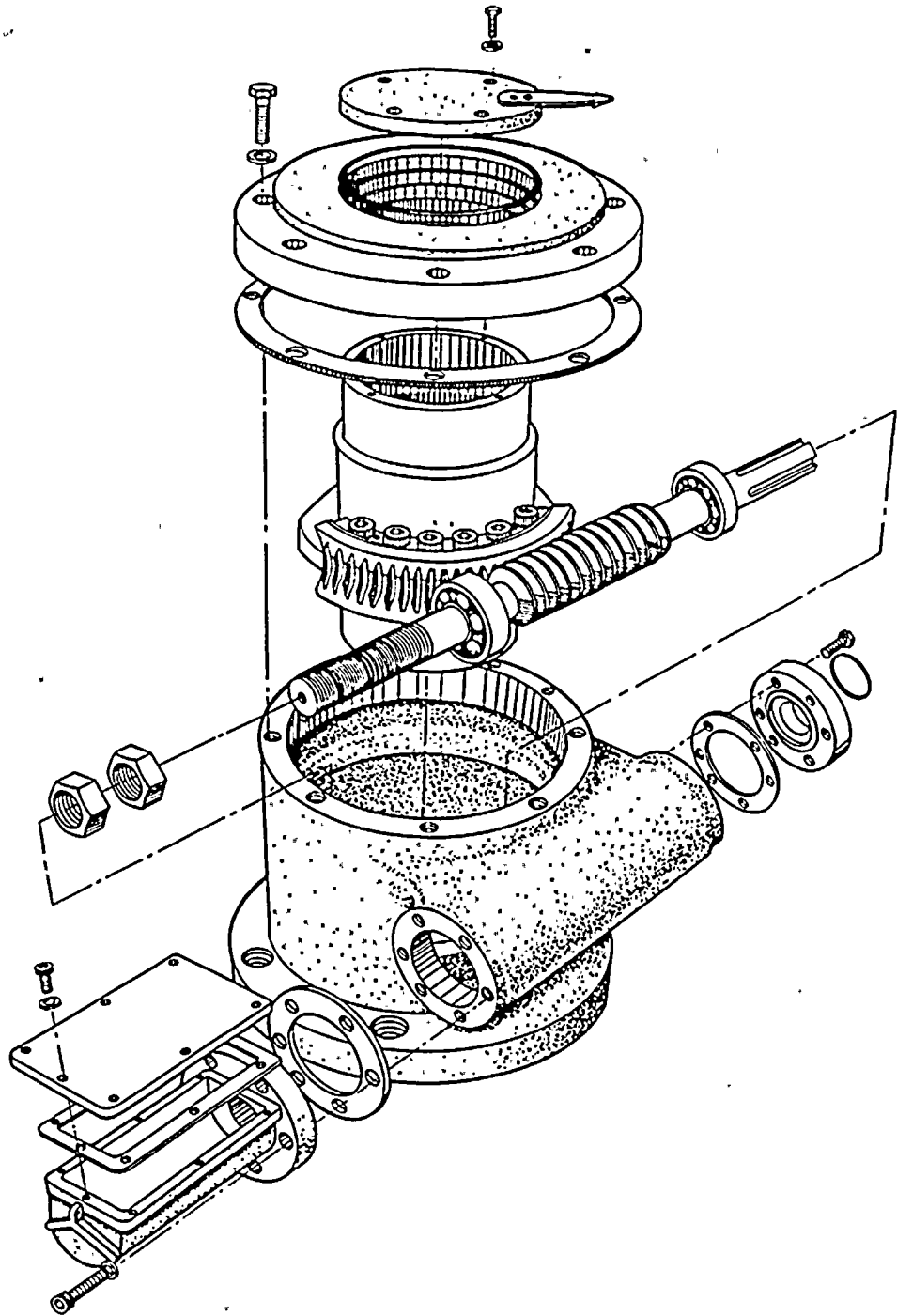
Bulletin HBC1-82B



A PRODUCT OF LIMITORQUE® CORPORATION



# A TYPICAL HBC GEAR OPERATOR



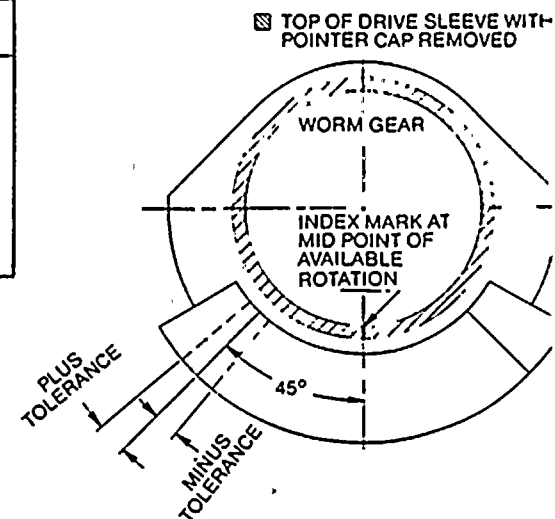


# HBC ANGULAR DISPLACEMENT TOLERANCES

| UNIT SIZE | ANGULAR DISPLACEMENT |                   | SPLINE TOOTH SPACE IN DEGREES |
|-----------|----------------------|-------------------|-------------------------------|
|           | STOP                 | GEAR              |                               |
| HBC-0     | *105°                | 170° Gear Segment | 9.00°                         |
| HBC-1     | *114°                | 170° Gear Segment | 6.42°                         |
| HBC-2     | *114°                | 170° Gear Segment | 4.50°                         |
| HBC-3     | *114°                | 110° Gear Segment | 3.46°                         |
| HBC-4     | ** ±7°               |                   | 3.00°                         |
| HBC-5     | ** ±6.75°            | ±6.75°            | 2.14°                         |
| HBC-6     | ** ±9°               | ±9°               | 1.80°                         |
| HBC-7     | ** ±9°               | ±9°               | N/A                           |
| HBC-10    | ±10%                 | ±10%              | N/A                           |

\* Stops used on H08C through H38C incorporate standard hex nuts. The tolerance listed is  $\pm .031$  from basic size on the thickness. The data shown above is based on maximum thickness of both nuts

\*\* Displacement is based on 45° travel on either side of gear centerline.



## LUBRICATION

The Limatorque HBC actuators are shipped with \*Nebula EP-0 (Exxon) grease in the unit. This lubricant is suitable for a temperature range of  $-20^{\circ}\text{F}$  to  $150^{\circ}\text{F}$ . The lubricant should be checked every 18 months for manual actuators.

The three primary considerations in a lubrication inspection are: (1) Quantity, (2) Quality, and (3) Consistency.

**Quantity**—Limatorque operators are built to operate on the partial immersion principle. The primary concern in the amount of lubricant is whether the "worm" is totally immersed in grease. This can be verified by the use of one or more of the many "fill" and "drain" plugs provided on the operator housing.

**Quality**—When removing a "fill" or "drain" plug to inspect the lube level, remove a small amount and insure that it is clean and free of any contaminant including water. Should dirt, water, or other foreign matter be found, the units should be flushed with a commercial degreaser/cleaner like Exxon VARSOL #1 or #3 which is non-corrosive and does not affect seal materials such as Buna N or Viton. Repack unit with fresh lubricant.

**Consistency**—The main gear box lubricant should be slightly fluid approximating a standard NLGI-1 grade consistency or less. Thinners such as Amoco WAYTAC #31 oil may be added provided the volume of thinner does not exceed 20% of the total lubricant.

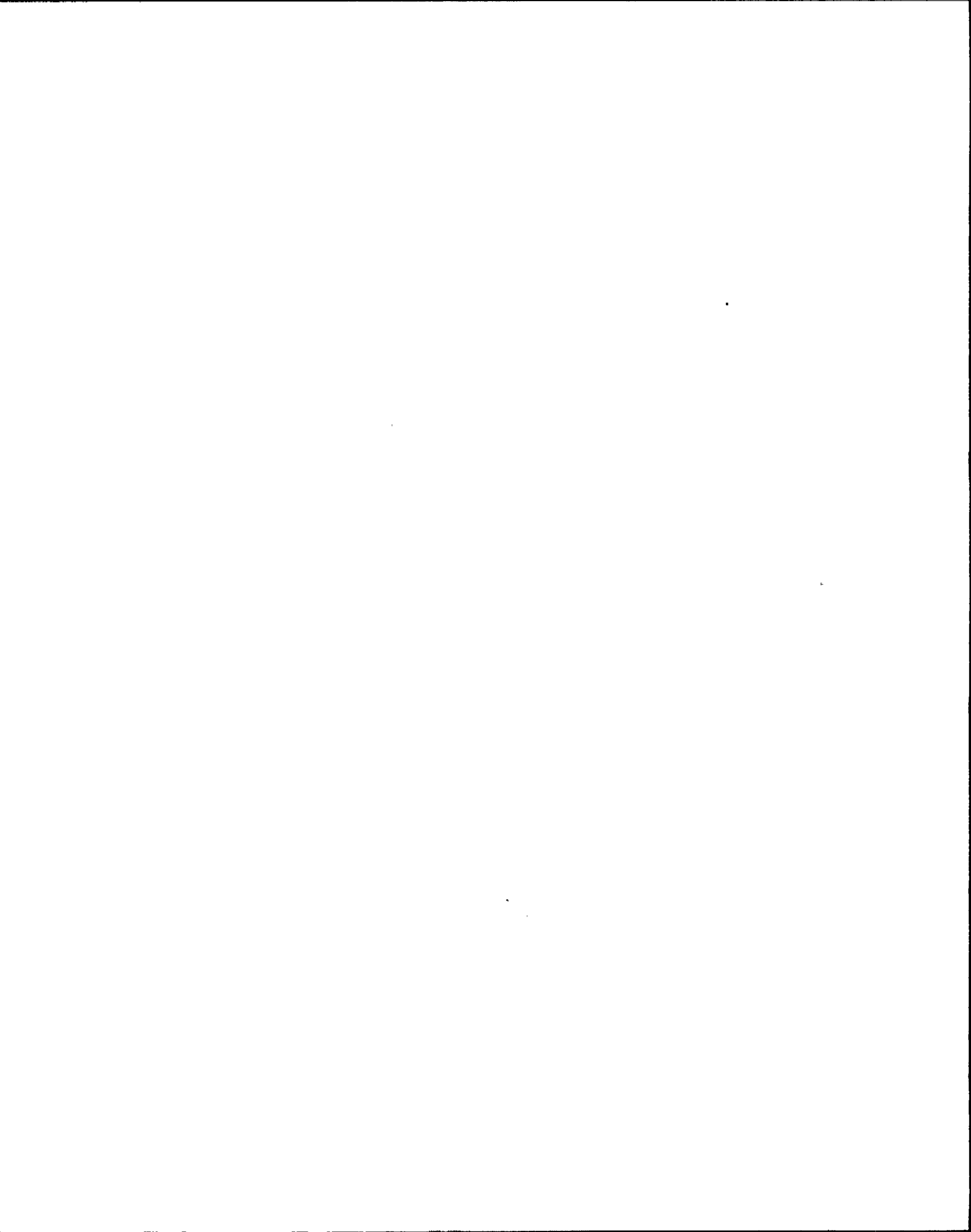
Alternate lubricants may be used IN PLACE of the standard lubricants supplied by Limatorque provided they are equivalent to the Nebula EP-0 or P-290 as applicable.

Do not add a different lubricant to a Limatorque operator unless it is of the same soap base as the existing lubricant unless you have received the approval of the lubricant manufacturer.

\*For applications with ambient temperatures below  $-20^{\circ}\text{F}$ , Limatorque uses Humble P-290 (Exxon).

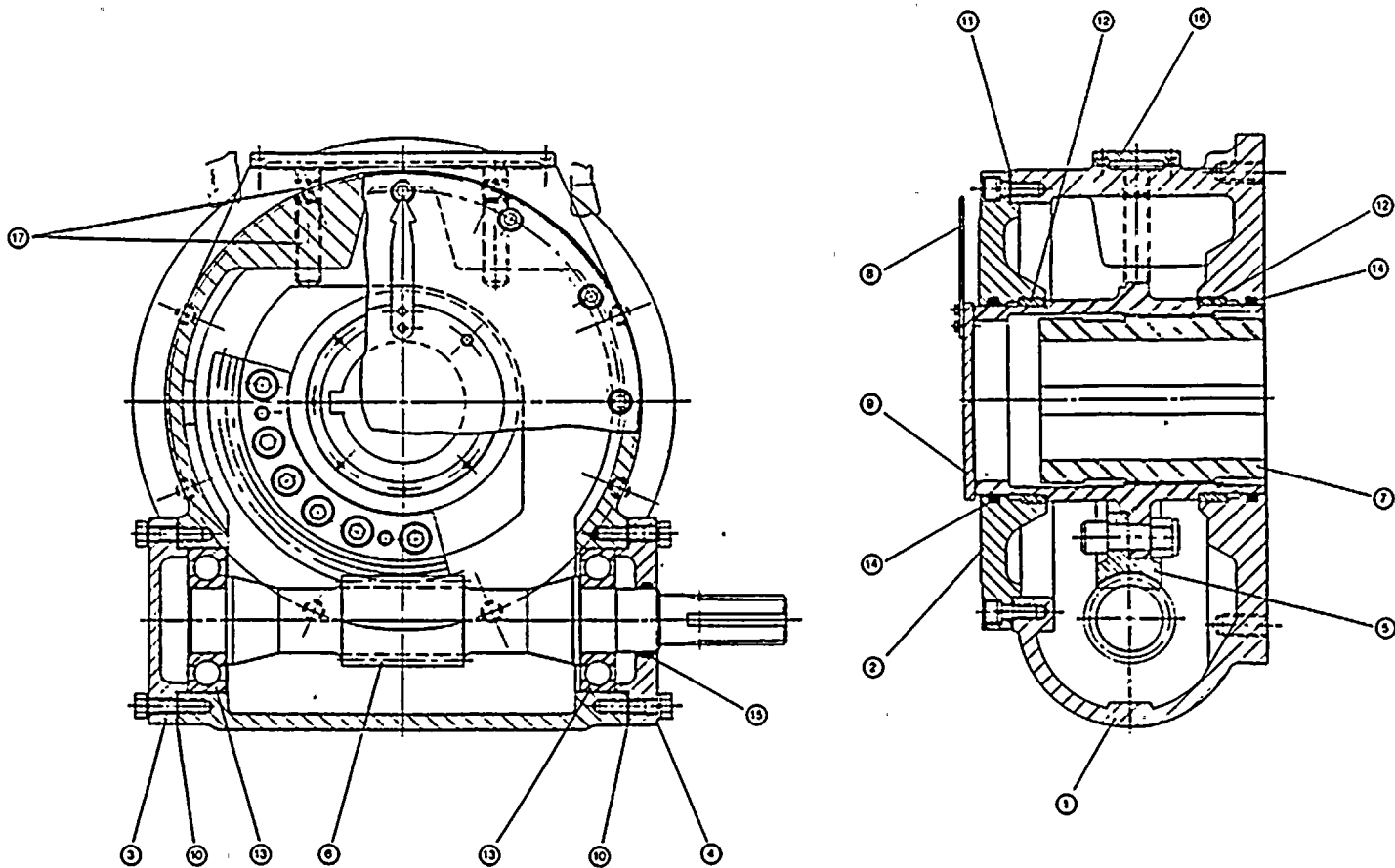
| UNIT SIZE | AMOUNT OF LUBRICANT      |                         |
|-----------|--------------------------|-------------------------|
|           | Approx. Volume (Gallons) | Approx. Weight (Pounds) |
| HBC-0     | .20                      | 1.5                     |
| HBC-1     | .35                      | 3.0                     |
| HBC-2     | .50                      | 4.0                     |
| HBC-3     | 1.40                     | 12.0                    |
| HBC-4     | 3.50                     | 30.0                    |
| HBC-5     | 5.20                     | 45.0                    |
| HBC-6     | 9.25                     | 80.0                    |
| HBC-7     | 14.50                    | 125.0                   |
| HBC-10    | 26.00                    | 225.0                   |

| Manufacturer   | Type                | Temperature Range                              | Base                       |
|----------------|---------------------|--|----------------------------|
| Exxon          | Humble P290         | $-40^{\circ}\text{F}$ to $120^{\circ}\text{F}$ | Lithium Lime               |
| Arco           | Litholine HEP1      | $-10^{\circ}\text{F}$ to $220^{\circ}\text{F}$ | Lithium                    |
| Gulf Oil       | Gulfcrown EPO       | $-20^{\circ}\text{F}$ to $220^{\circ}\text{F}$ | Lithium                    |
| Cities Service | City AP             | $0^{\circ}\text{F}$ to $220^{\circ}\text{F}$   | Lithium                    |
| Mobil Oil Co.  | Mobilux EPO         | $-10^{\circ}\text{F}$ to $220^{\circ}\text{F}$ | Lithium 12                 |
| Shell Oil      | Darina 0            | $-10^{\circ}\text{F}$ to $250^{\circ}\text{F}$ | Hydroxystearate<br>No soap |
| Fiske          | Lubriplate Low Temp | $-40^{\circ}\text{F}$ to $150^{\circ}\text{F}$ | Lithium                    |
| Texaco         | Marfak 0            | $+20^{\circ}\text{F}$ to $200^{\circ}\text{F}$ | Sodium                     |
|                | Low Temp EP         | $-40^{\circ}\text{F}$ to $200^{\circ}\text{F}$ | Lithium                    |
| Tidewater Oil  | Veedol Alitho 10    | $-10^{\circ}\text{F}$ to $150^{\circ}\text{F}$ | Lithium                    |





# DISASSEMBLY INSTRUCTIONS FOR HBC-4 THRU HBC-10



### PARTS LIST

| PC. NO. | DESCRIPTION              |
|---------|--------------------------|
| 1       | HOUSING                  |
| 2       | HOUSING COVER            |
| 3       | END CAP                  |
| 4       | THRU CAP                 |
| 5       | DRIVE SLEEVE & WORM GEAR |
| 6       | WORM SHAFT               |
| 7       | SPLINE ADAPTER           |

| PC. NO. | DESCRIPTION           |
|---------|-----------------------|
| 8       | POINTER               |
| 9       | POINTER CAP           |
| 10      | END & THRU CAP GASKET |
| 11      | HSG. COVER GASKET     |
| 12      | DRIVE SLEEVE BUSHING  |
| 13      | WORM SHAFT BEARING    |
| 14      | DRIVE SLEEVE "O" RING |

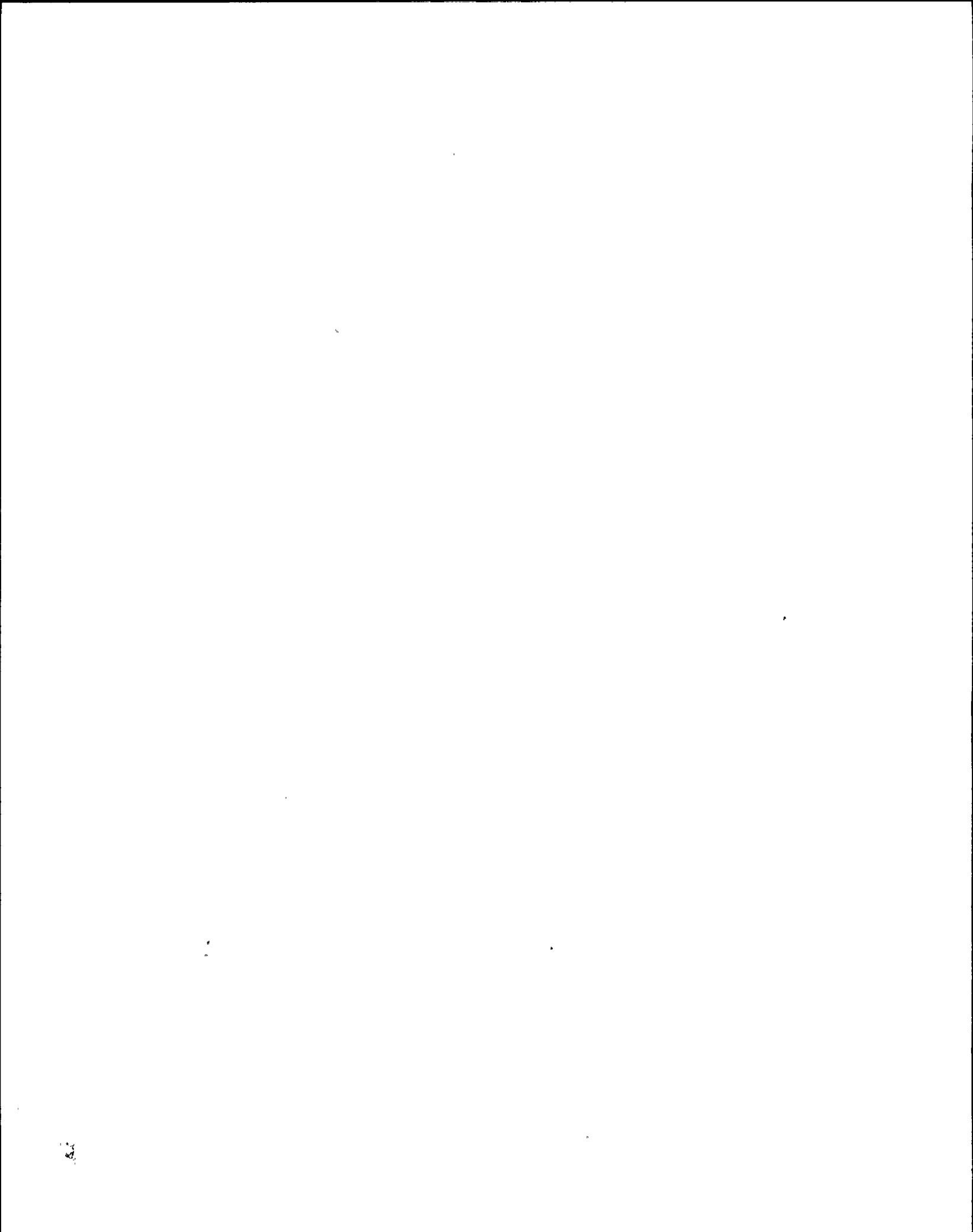
| PC. NO. | DESCRIPTION            |
|---------|------------------------|
| 15      | WORM SHAFT "O" RING    |
| 16      | STOP SCREW COVER       |
| 17      | STOP SCREW & LOCKSCREW |

1. Remove stop screw cover piece, pc #16.
2. Remove stop screw and lock screw, (total 2 each), pc #17.
3. Rotate worm shaft full clockwise until pointer cap, pc #9, stops rotating or until the worm shaft can no longer be turned.
4. Remove end cap, pc #3, and thru cap, pc #4.
5. Remove pointer cap, pc #9, and housing cover, pc #2.

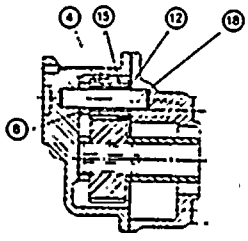
6. Remove worm shaft, pc #6, by pulling from housing, pc #1. It will be necessary to slightly rotate or cock the drive sleeve, pc #5, away from the worm in order to allow the bearing, pc #13, to clear. It is not necessary to remove the bearing, pc #13, from the worm shaft.

To reassemble the actuator, proceed in the reverse order listed above. In order to insure good stop nut engagement at

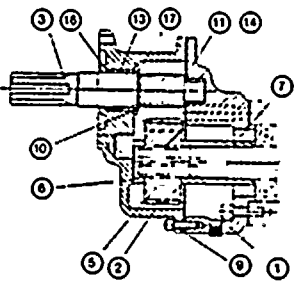
the end of travel, it is recommended that the stops be preset for 90° of rotation by establishing 45° rotation on either side of the worm gear center line while installing the stop screws. It will then be necessary to re-adjust the stops once the actuator is on the valve, however, this will minimize the risk of disorienting the worm gear sector.



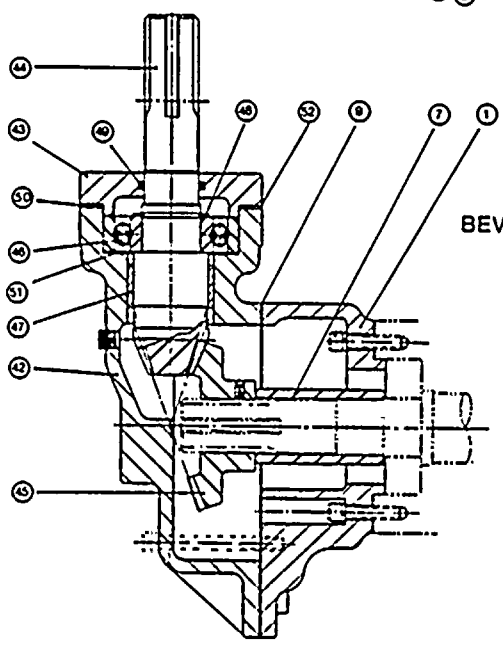
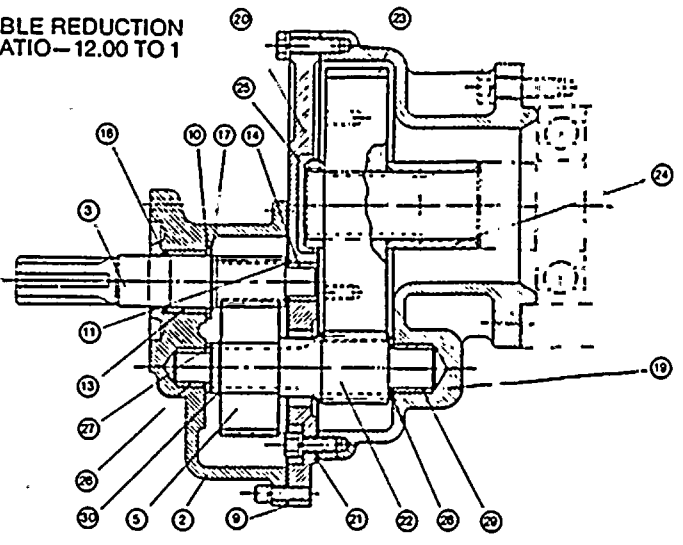
# DISASSEMBLY INSTRUCTIONS FOR SPUR & BEVEL GEAR ATTACHMENTS



SINGLE REDUCTION  
RATIO—2.86 TO 1

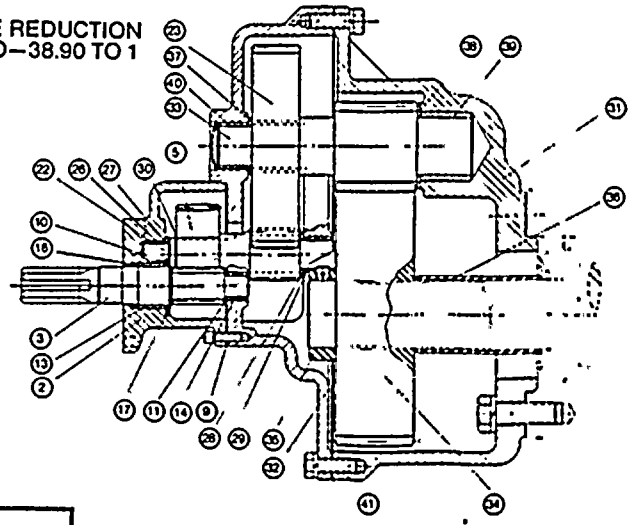


DOUBLE REDUCTION  
RATIO—12.00 TO 1



BEVEL GEAR REDUCTION  
RATIO—2.86 TO 1

TRIPLE REDUCTION  
RATIO—38.90 TO 1



| PARTS LIST |                            |
|------------|----------------------------|
| PC. NO.    | DESCRIPTION                |
| 1          | 1ST SET HOUSING ADAPTER    |
| 2          | 1ST SET HOUSING            |
| 3          | 1ST INPUT SHAFT & PINION   |
| 4          | IDLER GEAR                 |
| 5          | 1ST SET OUTPUT GEAR        |
| 6          | 1ST SET COLLAR             |
| 7          | 1ST SET OUTPUT GEAR SPACER |
| 8          | IDLER GEAR SPACER          |
| 9          | 1ST SET HOUSING GASKET     |
| 10         | THRUST BRG. INPUT SHAFT    |
| 11         | THRUST BRG. INPUT SHAFT    |
| 12         | THRUST BRG. IDLER GEAR     |
| 13         | BEARING 1ST SET HSG.       |
| 14         | BEARING 1ST HSG. ADAPTER   |
| 15         | BEARING IDLER GEAR         |
| 16         | QUAD RING INPUT SHAFT      |
| 17         | RETAINING RING INPUT SHAFT |
| 18         | IDLER SHAFT PIN            |

| PC. NO. | DESCRIPTION                   |
|---------|-------------------------------|
| 19      | 2ND SET HOUSING               |
| 20      | 2ND SET HOUSING ADAPTER       |
| 21      | 2ND HSG. GASKET               |
| 22      | INTERM. SHAFT & PINION        |
| 23      | 2ND SET OUTPUT GEAR           |
| 24      | 2ND SET OUTPUT SHAFT SPACER   |
| 25      | COLLAR OUTPUT GEAR 2ND SET    |
| 26      | BEARING INTERM. SHAFT         |
| 27      | THRUST BRG. INTERM. SHAFT     |
| 28      | THRUST BRG. INTERM. SHAFT     |
| 29      | BEARING 2ND SET HOUSING       |
| 30      | INTERM. SHAFT RETAINING RING  |
| 31      | 3RD SET HOUSING               |
| 32      | 3RD SET HSG. ADAPTER          |
| 33      | INTERM. SHAFT & OUTPUT PINION |
| 34      | 3RD OUTPUT GEAR               |
| 35      | COLLAR OUTPUT GEAR 3RD SET    |
| 36      | 3RD SET OUTPUT SHAFT SPACER   |

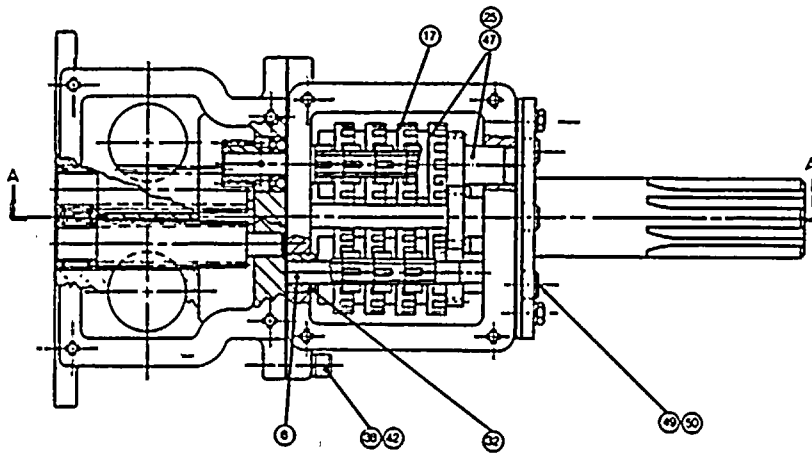
| PC. NO. | DESCRIPTION                     |
|---------|---------------------------------|
| 37      | THRUST BRG. OUTPUT PIN. & SHAFT |
| 38      | THRUST BRG. OUTPUT PIN. & SHAFT |
| 39      | BRG. 3RD SET HOUSING            |
| 40      | BRG. 3RD SET HSG. ADAPTER       |
| 41      | 3RD SET HSG. GASKET             |
| 42      | BEVEL GEAR HOUSING              |
| 43      | B. G. HSG. CAP                  |
| 44      | BEVEL PINION & SHAFT            |
| 45      | BEVEL GEAR                      |
| 46      | PINION SHAFT BEARING            |
| 47      | PINION SHAFT BUSHING            |
| 48      | BEVEL PINION RETAINING RING     |
| 49      | B. G. CAP "O" RING              |
| 50      | B. G. CAP GASKET                |
| 51      | PINION SHAFT BRG. SHIM          |
| 52      | PINION SHAFT CAP SHIM           |



# AWWA INPUT SHAFT STOP

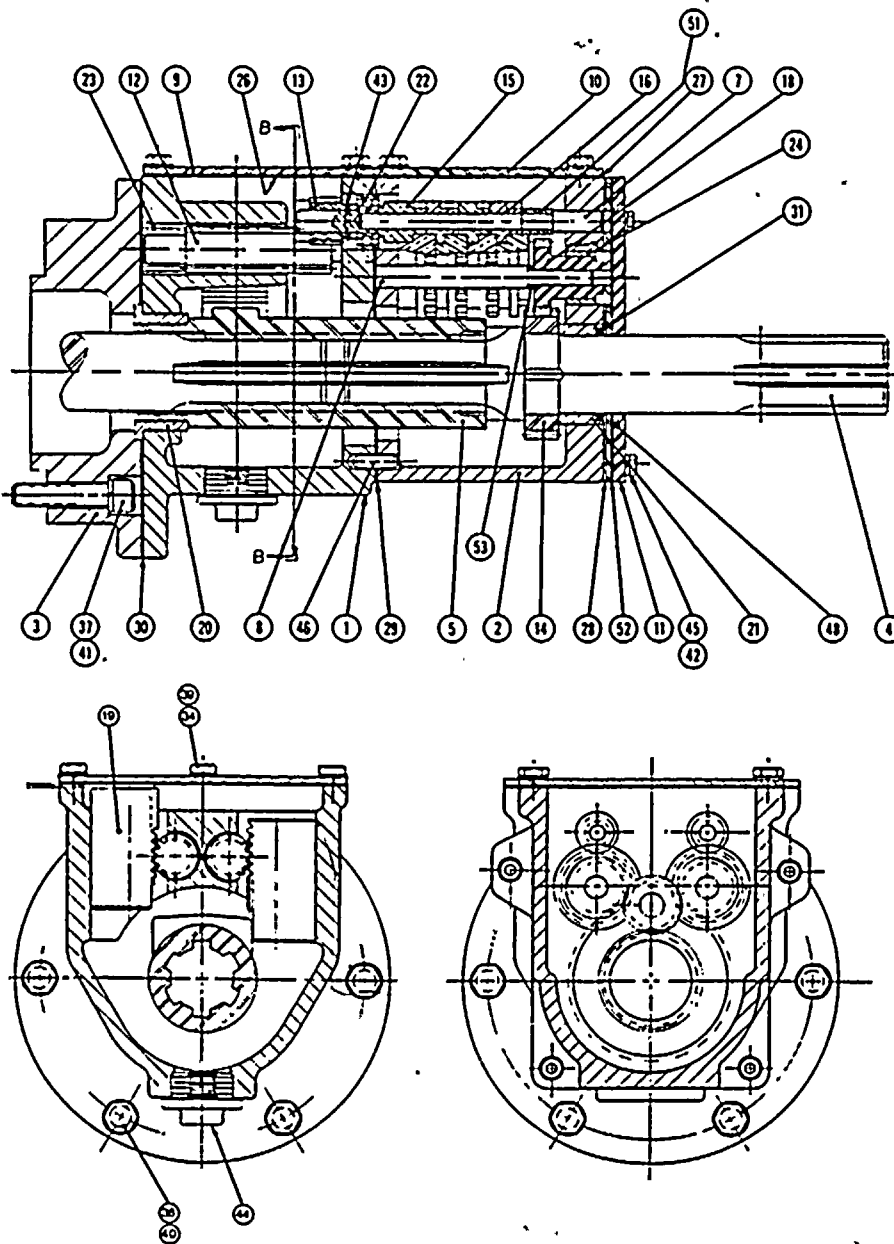
PATENTED

\*COMPLIES FULLY WITH  
AWWA SPEC. NO. C504-70



When the AWWA input shaft stop is used the standard limit stop is also furnished.

## PARTS LIST

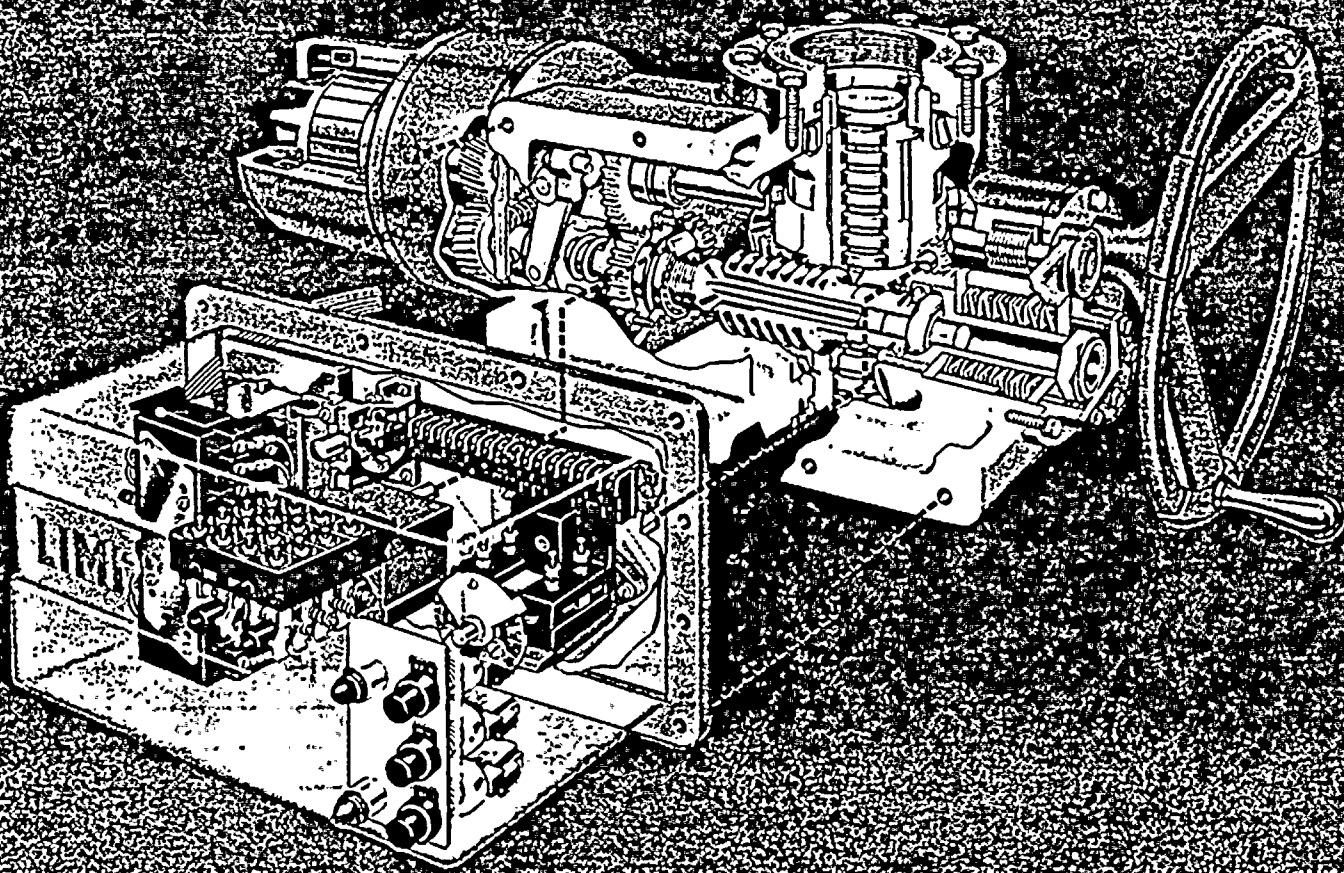


| PC No. | DESCRIPTION                            |
|--------|--|
| 1      | LIMIT STOP HOUSING                     |
| 2      | GEAR FRAME                             |
| 3      | LIMIT STOP HSG. ADAPTER                |
| 4      | INPUT SHAFT                            |
| 5      | SPLINED-LUG SLEEVE                     |
| 6      | INTERMITTENT GEAR SHAFT                |
| 7      | INTERMITTENT PINION SHAFT              |
| 8      | INTERMITTENT DRIVE SHAFT               |
| 9      | COVER (LIMIT STOP HSG.)                |
| 10     | COVER (GEAR FRAME HSG.)                |
| 11     | GEAR FRAME THRU CAP                    |
| 12     | RACK PINION                            |
| 13     | PINION                                 |
| 14     | INPUT GEAR                             |
| 15     | INTERMITTENT STEM PINION               |
| 16     | INTERMITTENT PINION                    |
| 17     | INTERMITTENT GEAR                      |
| 18     | IDLER GEAR                             |
| 19     | RACK                                   |
| 20     | FLANGED BUSHING                        |
| 21     | INPUT SHAFT BUSHING                    |
| 22     | INTERMITTENT STEM PINION BRG.          |
| 23     | RACK PINION BEARING                    |
| 24     | BUSHING                                |
| 25     | INPUT PINION                           |
| 26     | HOUSING COVER GASKET                   |
| 27     | GEAR FRAME COVER GASKET                |
| 28     | THRU CAP GASKET                        |
| 29     | HOUSING GASKET                         |
| 30     | ADAPTER GASKET                         |
| 31     | "O" RING                               |
| 32     | BUSHING                                |
| 34     | CAP SCREW RD. HD. #10-32 x 1/2" LG.    |
| 35     | ROLL PIN 3/8" DIA. x 3/4" LG.          |
| 36     | CAP SCREW HEX. HD. 3/8-18 x 1" LG.     |
| 37     | CAP SCREW SOC. HD. 3/8-16 x 1 1/2" LG. |
| 38     | CAP SCREW SOC. HD. 1/2-20 x 3/4" LG.   |
| 39     | LOCKWASHER #10                         |
| 40     | LOCKWASHER 3/8"                        |
| 41     | LOCKWASHER 1/2"                        |
| 42     | LOCKWASHER 3/4"                        |
| 43     | ROLL PIN 1/2" DIA. x 3/4" LG.          |
| 44     | 1"-20 DRAIN PLUG                       |
| 45     | CAP SCREW RD. HD. 1/2-20 x 1/2" LG.    |
| 46     | DOWEL PIN 1/2" DIA. x 1/2" LG.         |
| 47     | INPUT PINION-GEAR ASSY                 |
| 48     | GEAR FRAME RETAINING PL.               |
| 49     | 1/4-20 x 7/16 LG SOC. HD. CAP SCR.     |
| 50     | 1/4 LOCKWASHER HI-COLLAR               |
| 51     | PINION SPACER                          |
| 52     | GASKET-THRU CAP                        |
| 53     | IDLE GEAR SPACER                       |



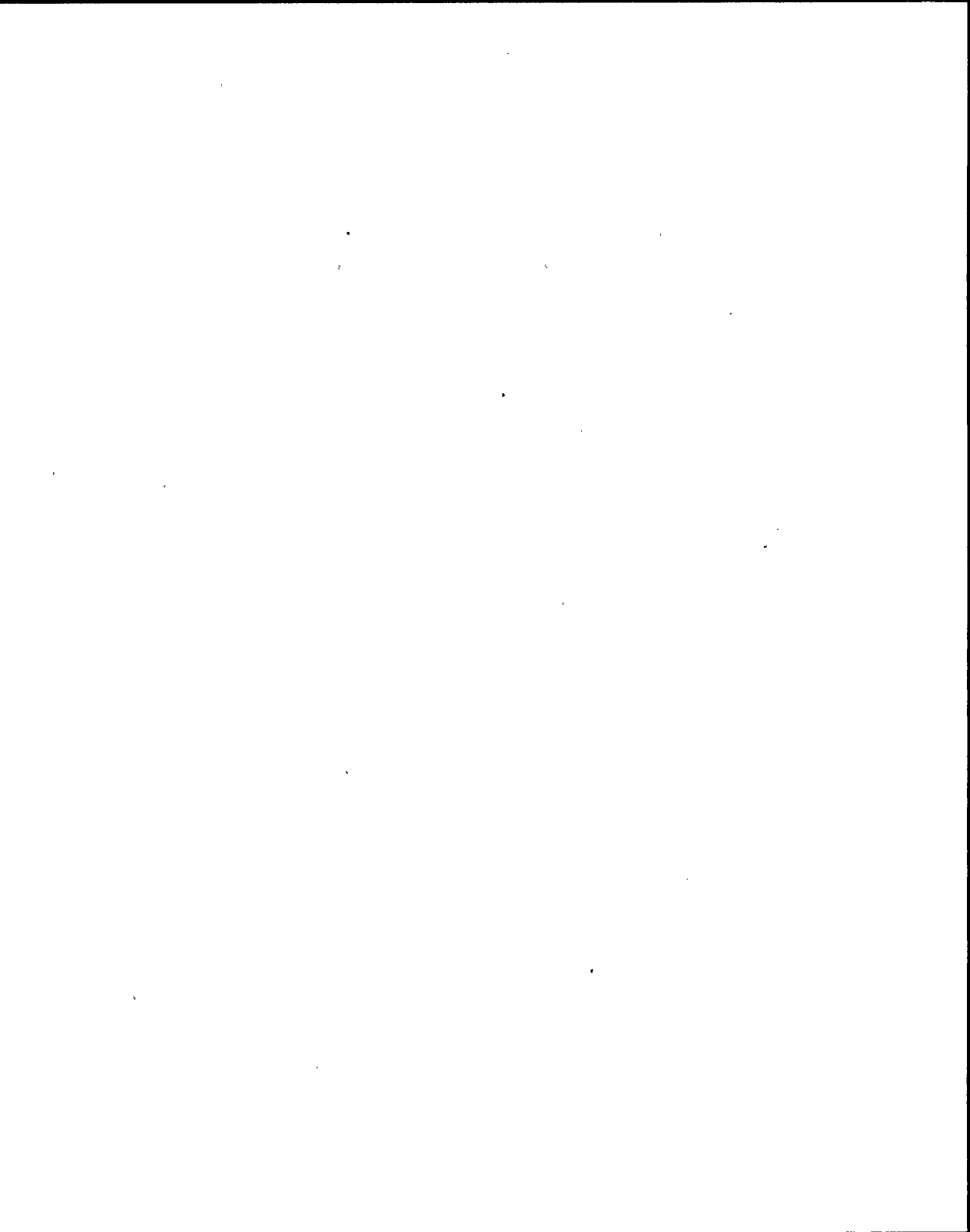
# LIMITORQUE® TYPE SMB

## INSTRUCTION AND MAINTENANCE MANUAL



A PRODUCT OF LIMITORQUE CORPORATION

Publ. in SMNIE-82C





# INSTALLATION TIPS

## Do:

1. Do store crated units under shelter. Your Limatorque is not weatherproof until properly installed.

2. Do cut power off before opening or replacing limit switch compartment cover.

3. Do check limit switch operation in conjunction with motor rotation. If motor is turning in wrong direction interchange motor leads.

4. Do mount motors on horizontal plane, if possible. It is preferred to keep motor or limit switch compartment from hanging down. This prevents head of grease being against motor or switch seals.

5. Do connect space heaters if unit is to be stored in a damp place prior to installation.

6. Do keep valve stem clean and properly lubricated.

7. Do set up periodic operating schedule for Limatorque control if valve is infrequently used.

8. Do lubricate drive sleeve top bearing every six months, using grease gun on pressure fitting in housing cover.

9. Do keep geared limit and torque switch contacts clean. Use carbon tetrachloride or other solvent on lint-free cloth.

10. Do keep limit switch compartment clean and dry.

11. Do be sure area is clean before disassembling Limatorque. Clean all parts and housing before re-assembly.

12. Do apply fresh, clean lubricant after reassembly.

13. Do reset geared limit switch before motor operation if Limatorque has been either dismantled or removed from valve.

14. Do replace whole limit switch gear box rather than attempt repairs in field.

15. Do replace moulded plastic conduit tap protectors (installed for shipping and storage only) with pipe plugs when installation wiring is completed.

16. Do check valve stem travel before mounting stem protection cover on rising stem valves. All stems should have protection cover.

17. Do check for proper direction of rotation of motor. If valve closes when open button is pushed the motor may have to be electrically reversed.

18. Do distinguish between "normally open" and "normally closed" terminals on geared limit switch micro switches (when used) when wiring control circuit.

19. Do keep armature clean and periodically check brushes for proper contact and wear when D.C. motors are employed.

20. Do remember that D.C. motor speed is not constant but will fluctuate widely with the load applied.

21. Do clean limit switch cover thoroughly and apply thin coat of grease on bearing surfaces before mounting on explosion proof Limatorque.

22. Do check and replace damaged limit switch cover gasket before securing on weatherproof Limatorque.

23. Do refer to parts list when ordering replacement or spare parts.

Give nameplate data:

|           |            |
|-----------|------------|
| Unit Type | Order No.  |
| Unit Size | Serial No. |

24. Do check to be sure stem nut is secured tightly by locking nut and that top thread of lock nut is crimped or staked in two places.

## Don't:

1. Don't force declutch lever into motor operation position. Lever returns to this position automatically when motor is energized.

2. Don't try to force declutch lever from motor operation position to hand operation position.

3. Don't use abrasive cloth or paper to clean silver contacts of geared limit switch and torque switch. Contacts should be burnished.

4. Don't depress declutch lever during motor operation to stop valve travel, except in emergency on SMB000 and SMB00.

5. Don't torque seat plug valves or butterfly valves unless valve manufacturer is consulted.

6. Don't use cheater on handwheel.

7. Don't plug motor—by alternately starting and stopping motor to open or close a valve too tight for normal operation.

8. Don't use oversize motor overload heaters—instead look for cause of overloading.

9. Don't reset torque switch seating heavier than maximum recommended by factory.

10. Don't run "plug" type valve against stop as damage may result to valve.

11. Don't attempt to remove either spring cartridge cap or housing cover from Limatorque while valve is torque seated. Always back valve off seat several hand-wheel turns before dismantling unit.

12. Don't attempt to set limit switches without first disconnecting control and power circuits.

13. Don't motor operate valve without first checking limit switch setting.

## Trouble-Shooting:

If geared limit switch fails to stop valve travel, check the following:

A. Control wiring and motor reversing contactor.

B. Geared limit switch setting.

C. Setting rod to see that it has been backed off after each side of switch has been set.

D. Remove limit switch gear box cover and inspect for damaged or broken gear teeth.

If unable to operate Limatorque by motor:

A. Check both motor power and control circuits for supply and continuity.

B. Compare supply voltage with motor and controller nameplate rating, if O.K., then check motor amperage load.

C. If stalled motor is indicated, shut off power and operate Limatorque by hand-wheel to move valve.

Excessive handwheel effort can indicate the following:

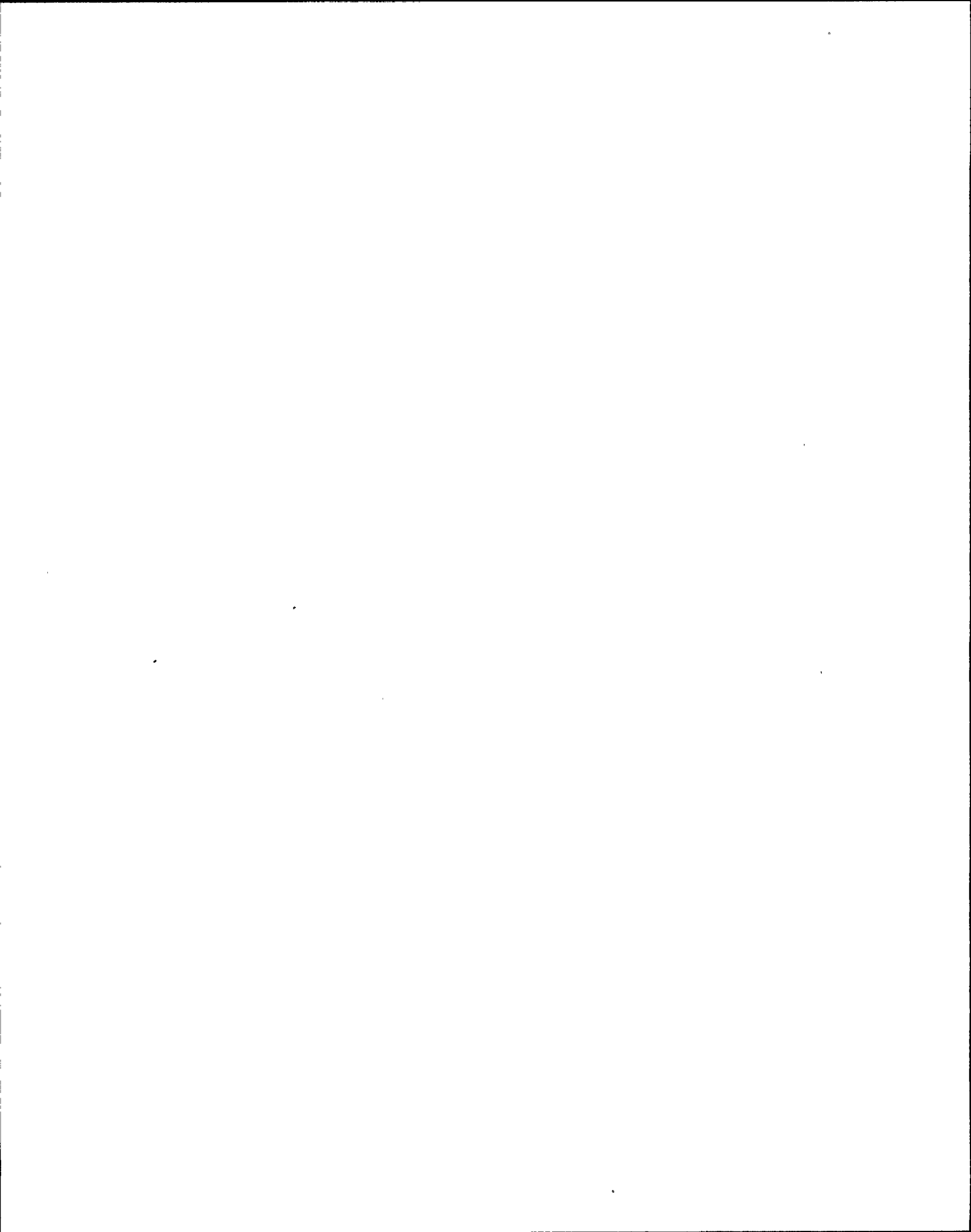
A. Improperly lubricated or damaged valve stem.

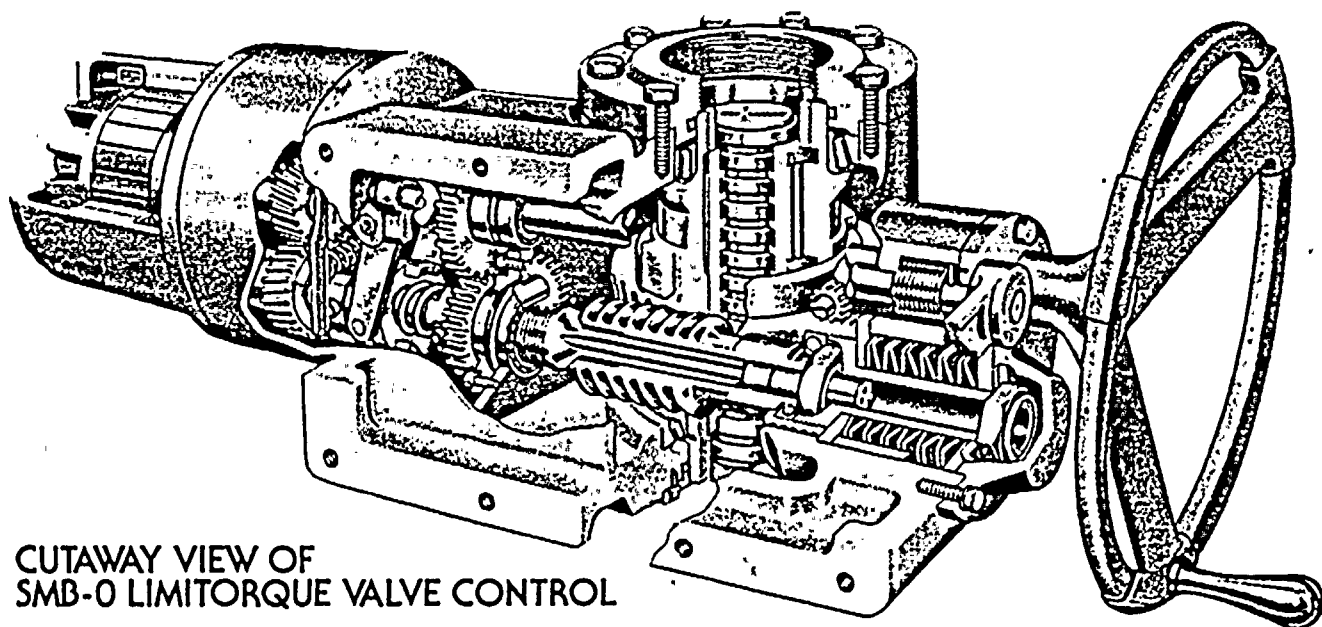
B. Valve packing gland too tight.

C. Improperly lubricated valve.

D. Stem nut too tight on valve stem.

E. Faulty or damaged valve or parts.





CUTAWAY VIEW OF  
SMB-0 LIMITORQUE VALVE CONTROL

## Description of Hand Operation:

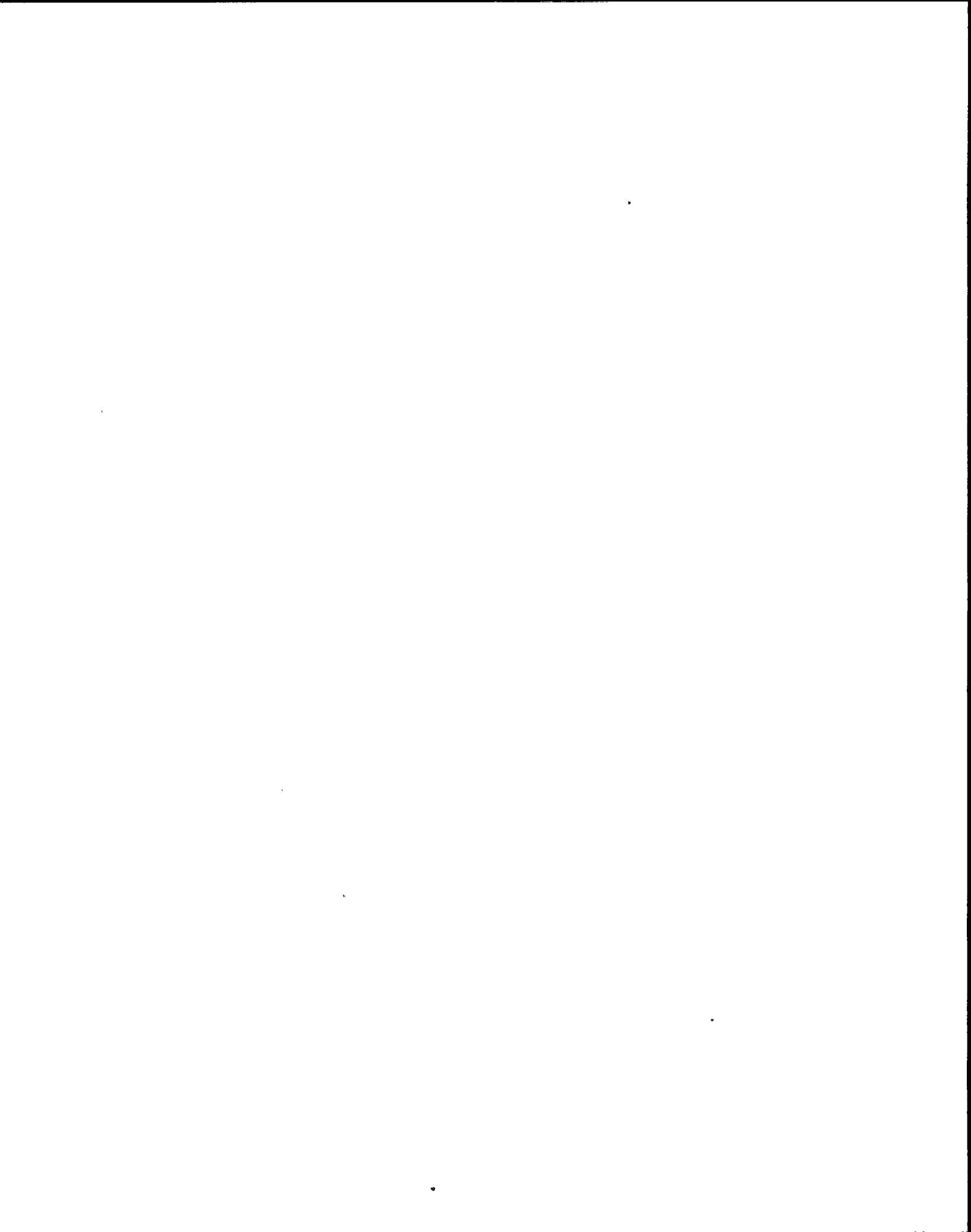
In the event of power failure, a handwheel is provided for emergency hand operation of the Limitorque valve control. The SMB type of operator has an automatic handwheel declutching arrangement. In order to hand operate the type SMB operator the declutch lever is pulled downward. This mechanically disconnects the electric motor from the handwheel through the clutch assembly. In the case of the SMB-000 and SMB-00 (refer to page 18), the clutch ring, pc. #28, and clutch keys, pc. #14, are moved upward until the clutch keys engage with the lugs on the bottom of the handwheel. Where the handwheel is side mounted on the SMB-00 (refer to page 19), the clutch keys engage the lugs on the bottom of the bevel gear pc. #100.

This assembly is held in this position by trippers which are illustrated on the parts drawing. The operator will remain in hand operation indefinitely until the electric motor is energized and the tripper cams mounted on the worm shaft cause the trippers to release the clutch ring and clutch keys from their hand position. This is an automatic feature of the Limitorque valve control.

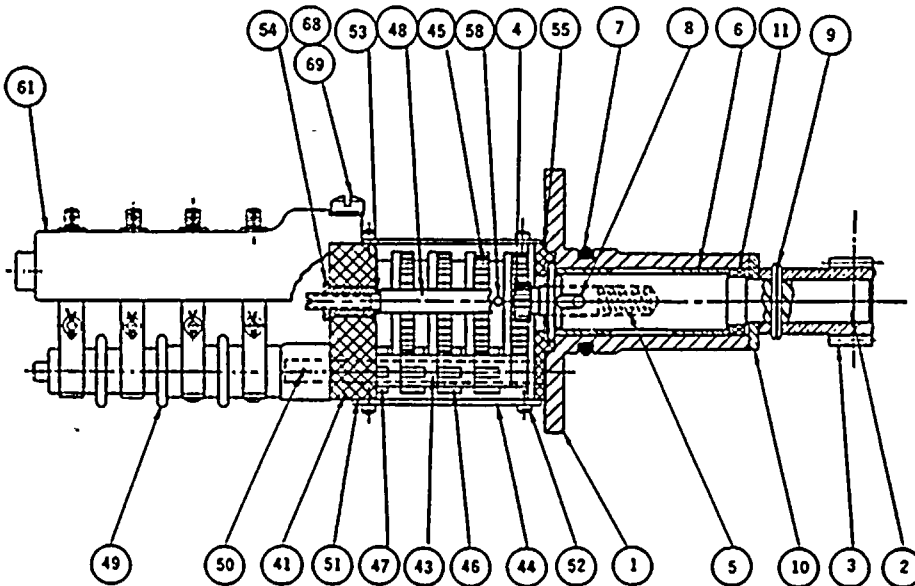
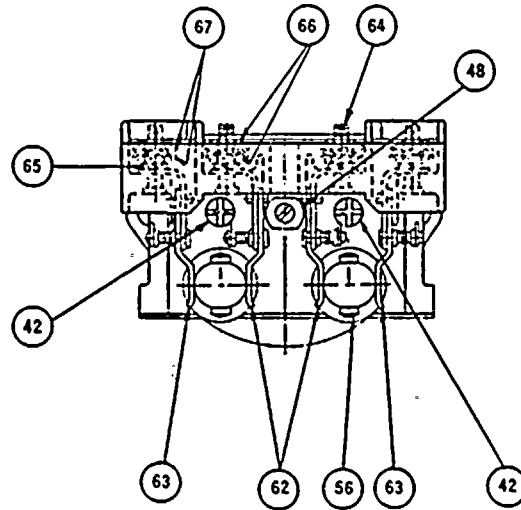
This declutching action is similar in all the larger size SMB operators. Referring to the parts drawing for the SMB-0, it should be noted that when the declutch lever is depressed, the declutch lever shaft causes the declutch fork to push the worm shaft clutch out of engagement with the motor helical gearing and into engagement with the handwheel clutch pinion. The worm shaft clutch is locked in this position by the trippers. Therefore, when the handwheel is rotated, the handwheel gear turns the handwheel clutch pinion and in turn the worm shaft, putting the Limitorque operator into motion.

As soon as the electric motor is energized, the tripper pins, which are part of the worm shaft clutch gear, cause the trippers to be released allowing the worm shaft clutch to be released from hand operation and engage in motor operation.

In all cases with the SMB operator, when the handwheel is turned it does not rotate the motor. Similarly, when the motor is in operation the handwheel does not turn.



# TWO TRAIN GEARED LIMIT SWITCH-ROTOR TYPE\*



| PC. NO. | NO. REQD. | DESCRIPTION  |
|---------|-----------|--|
| 1       | 1         | CARTRIDGE  |
| 2       | 1         | DRIVE SLEEVE & SHAFT                                   |
| 3       | 1         | DRIVE PINION   |
| 4       | 1         | DRIVE PINION (SECONDARY)                               |
| 5       | 1         | DECLUTCH SPRING  |
| 6       | 2         | BUSHING  |
| 7       | 1         | "O"-RING #8227-21                                      |
| 8       | 1         | PIN  |
| 9       | 1         | GROOVE PIN $\frac{1}{8}$ $\phi$ x 1" LG.               |
| 10      | 1         | WASHER   |
| 11      | 1         | OIL SEAL   |
| 41      | 1         | GEAR FRAME   |
| 42      | 2         | INTER. GEAR SHAFT                                      |
| 43      | 2         | INTER. PINION SHAFT                                    |
| 44      | 2         | G.L. FRAME COVER                                       |
| 45      | 8         | INTERMITTENT GEAR                                      |
| 46      | 6         | INTERMITTENT PINION                                    |
| 47      | 2         | STEM SPUR PINION                                       |
| 48      | 1         | SET ROD  |
| 49      | 2         | ROTOR  |
| 50      | 2         | GROOVE PIN $\frac{3}{32}$ $\phi$ x $\frac{3}{8}$ " LG. |
| 51      | 2         | COVER GASKET   |
| 52      | 8         | #6-32 x $\frac{1}{2}$ LG. FILL. HD. MACH. SCR.         |
| 53      | 1         | "O"-RING #1820-3                                       |
| 54      | 1         | SETTING ROD BUSHING                                    |
| 55      | 1         | GASKET, GEAR FRAME                                     |
| 56      | 8         | INSERT (ROTOR)   |
| 57      | 2         | "O"-RING (FOR INTER. GEAR SHAFT PC. 42)                |
| 58      | 2         | GROOVE PIN $\frac{1}{8}$ $\phi$ x 1" LG.               |
| 61      | 1         | FINGER BASE  |
| 62      | 8         | R.H. FINGER ASSY                                       |
| 63      | 8         | L.H. FINGER ASSY                                       |
| 64      | 16        | #10-32 x 1" LG. HEX. HD. C.S.                          |
| 65      | 16        | #10 LOCKWASHER   |
| 66      | 32        | #10-32 HEX. NUT  |
| 67      | 32        | #10 SW 'B'D WASHER                                     |
| 68      | 2         | # $\frac{1}{4}$ -20 x $\frac{1}{2}$ LG. FILL. HD. C.S. |
| 69      | 2         | $\frac{1}{8}$ " INT. TOOTH LOCKWASHER                  |

\* Individual items not sold separately. Consult factory for the sub-assembly required.

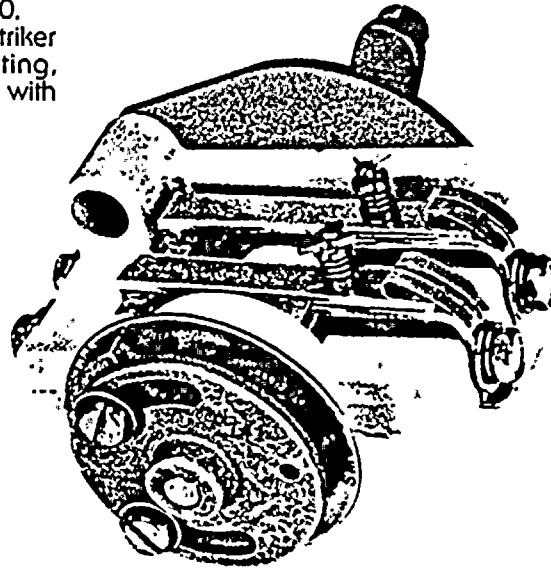


# SMB-000 DOUBLE TORQUE SWITCH\*

## Procedure for Setting:

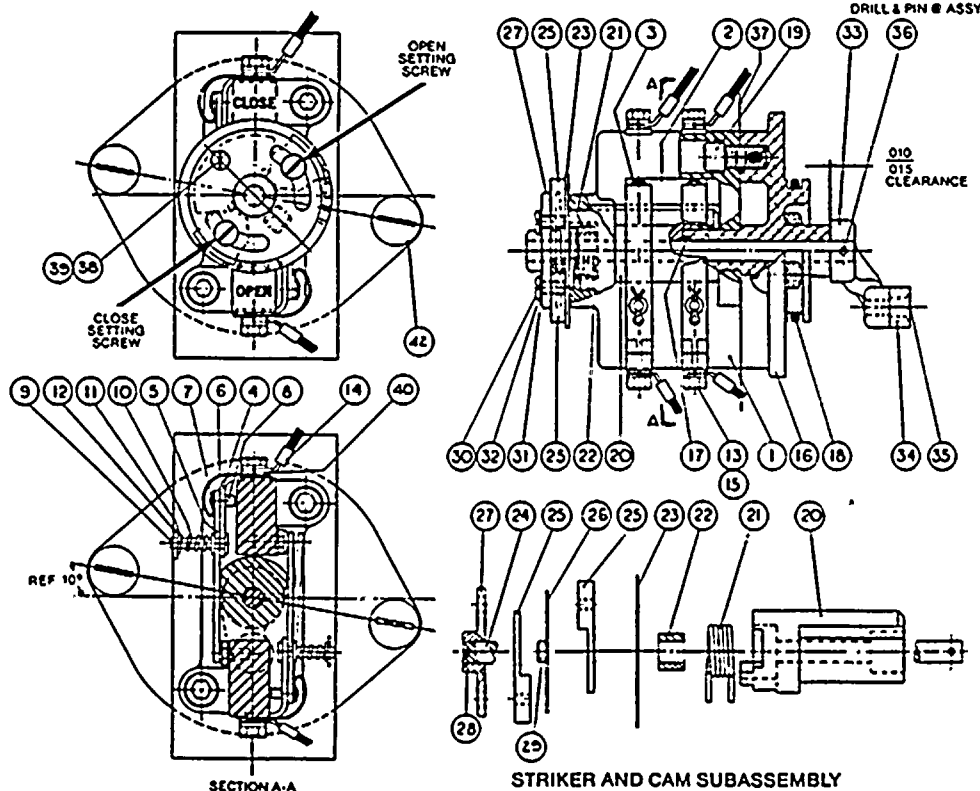
1. Torque setting must be made with switch mounted in Limitorque.
2. Make sure all electric power is off.
3. Loosen pan head screws, pc. #30.
4. For open or close operation set striker pc. #25 to required torque setting, matching the edge of the striker with

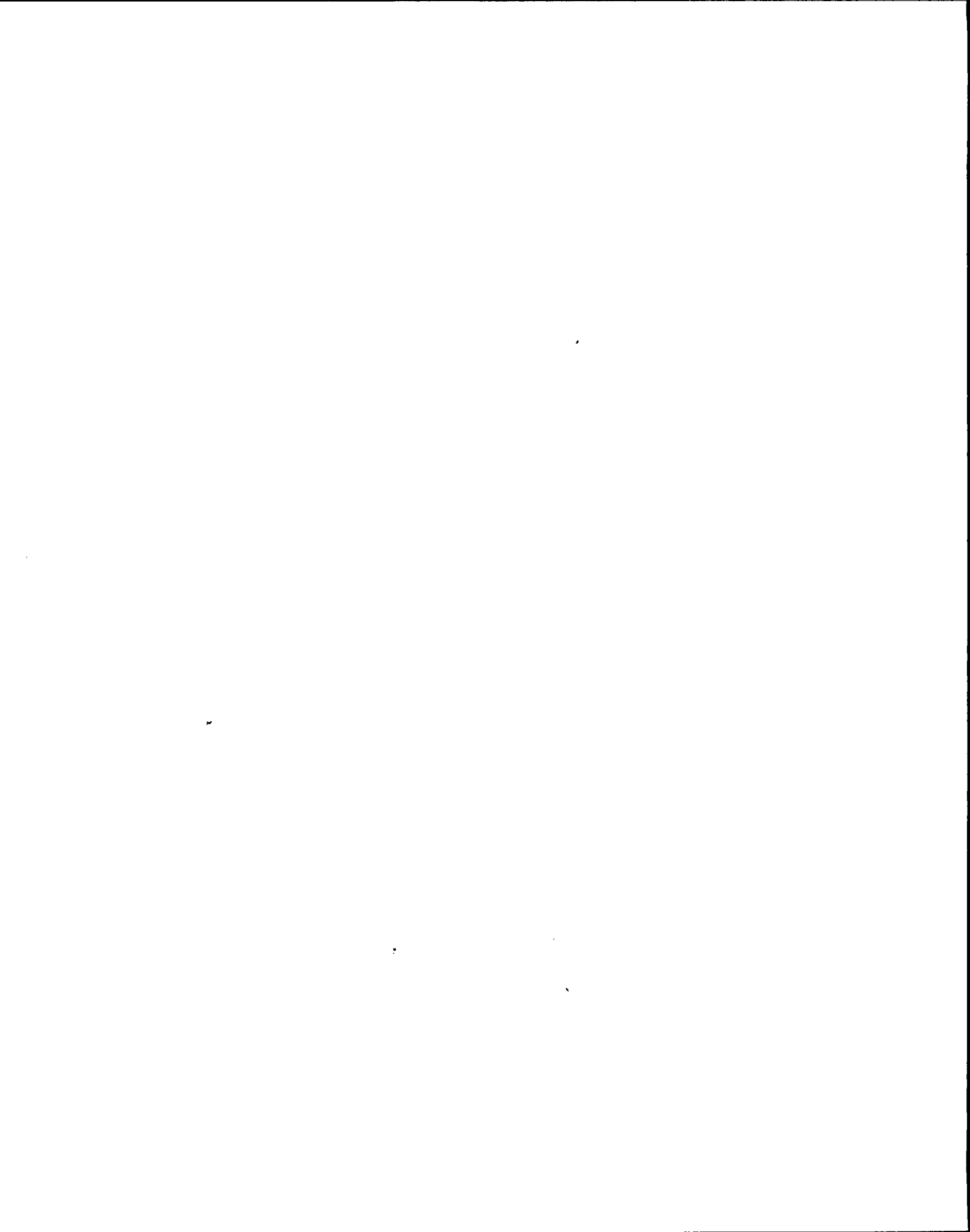
- desired number. Output torque increases with higher numbers.
5. Tighten pc. #30.
6. Operate valve electrically to seat valve, insuring tight shut-off.



\* Available in assembled form only.

| PC. NO. | NO. RECD. | DESCRIPTION  |
|---------|-----------|--|
| 1       | 1         | TERMINAL BLOCK                                       |
| 2       | 2         | CONTACT BRIDGE                                       |
| 3       | 4         | CONTACT SCREW  |
| 4       | 4         | FINGER HOLDER  |
| 5       | 4         | FINGER   |
| 6       | 4         | SHUNT  |
| 7       | 4         | SHUNT WASHER 1/2 O.D.<br>3/32 I.D. 1/32 THK.         |
| 8       | 4         | RIVET  |
| 9       | 4         | FINGER SPRING STUD                                   |
| 10      | 4         | COMPRESSION SPRING                                   |
| 11      | 8         | SPRING CUP WASHER                                    |
| 12      | 4         | COTTER PIN (3/64 x 1/2)                              |
| 13      | 4         | HEX. HD. MACH. SCR.<br>#10-32 x 3/8                  |
| 14      | 4         | RING TORQUE CONNECTOR<br>18" #16 AWG TYPE TU PIGTAIL |
| 15      | 4         | LOCKWASHER SHAKEPROOF                                |
| 16      | 1         | TORQUE SW. MTG. BRACKET                              |
| 17      | 1         | "O" RING   |
| 18      | 1         | "O" RING   |
| 19      | 2         | SOC. HD. CAP SCR.<br>1/4-20 x 1/2 LG.                |
| 20      | 1         | CAM  |
| 21      | 1         | TORSION SPRING                                       |
| 22      | 1         | SPRING MANDREL                                       |
| 23      | 1         | DIAL   |
| 24      | 1         | SHAFT  |
| 25      | 2         | STRIKER  |
| 26      | 1         | TORQUE LIMITING PLATE                                |
| 27      | 1         | STRIKER HUB  |
| 28      | 1         | ROLL PIN 1/16 Ø x 1/2                                |
| 29      | 1         | #4 SWAGE NUT   |
| 30      | 2         | PAN HD. SCREW<br>#8-32 x 1/16 LG. SLOTTED            |
| 31      | 2         | LOCKWASHER SHAKEPROOF                                |
| 32      | 2         | FLAT WASHER 1/16 I.D. x 1/16<br>O. D. x .032 THK.    |
| 33      | 1         | ARM  |
| 34      | 1         | ROLLER   |
| 35      | 1         | ROLLER PIN   |
| 36      | 1         | GROOVE PIN 3/32 DIA. x 3/8                           |
| 37      | 1         | ARC BARRIER  |
| 38      | 1         | PAN HD. SCR. #4-40 x 1/2                             |
| 39      | 1         | LOCKWASHER,<br>EXTERNAL TOOTH                        |
| 40      | 4         | WASHER 1/16 O.D. x 1/16<br>I.D. x 1/32 THK.          |
| 42      | 2         | RD. HD. MACH. SCR.<br>1/16-18 x 3/8                  |







# LUBRICATION

## INSPECTION PROCEDURE & DATA

### General:

Proper lubrication is an absolute essential in achieving the design life of all types of power transmission products and Limitorque valve controls are no exception.

The design of the actuator has been specially tailored to absolutely minimize the maintenance and re-lubrication requirements; however, periodic inspection is the only way to guarantee trouble-free service.

Limitorque utilizes a totally sealed gear case factory-packed with grease. The gear case can be mounted in any position (as all penetrations into it are sealed); however, those mounting positions which would cause vulnerable areas of the operator (e.g., motor and limit switch compartment) to be saturated with lubricant should a seal failure occur, should be avoided if possible and are not recommended. Grease is used in normal service instead of oil to minimize the impact of a seal failure (should one occur).

No seal can remain absolutely tight at all times; therefore, it is not unusual to find a very small amount of weeping around shaft seals—especially during long periods of idleness such as storage. The use of grease minimizes this condition as much as possible. Should a small amount of weeping be found in the limit switch compartment on start-up, it should be removed with a clean rag. Once the equipment has begun operating, this phenomenon should disappear.

### Lubrication Inspection:

It is recommended that all Limitorque operators be inspected for proper lubrication prior to operating—especially if they had been stored for a long period of time.

The frequency of lubrication inspections should be based upon historical data on the installed equipment. Every operator application has its own effect on lubricants and each facility should pattern its inspections around its particular needs. The following schedule of lubrication inspection should be followed until operating experience indicates otherwise.

**Main Gear Case:** Inspect lubrication on approximate intervals of 18 months or 500 cycles—whichever occurs first. Lubricate the Zerk fitting in the housing cover at the same interval.

**Geared Limit Switch:** Inspect lubrication on approximate intervals of 36 months or 1000 cycles—whichever occurs first.

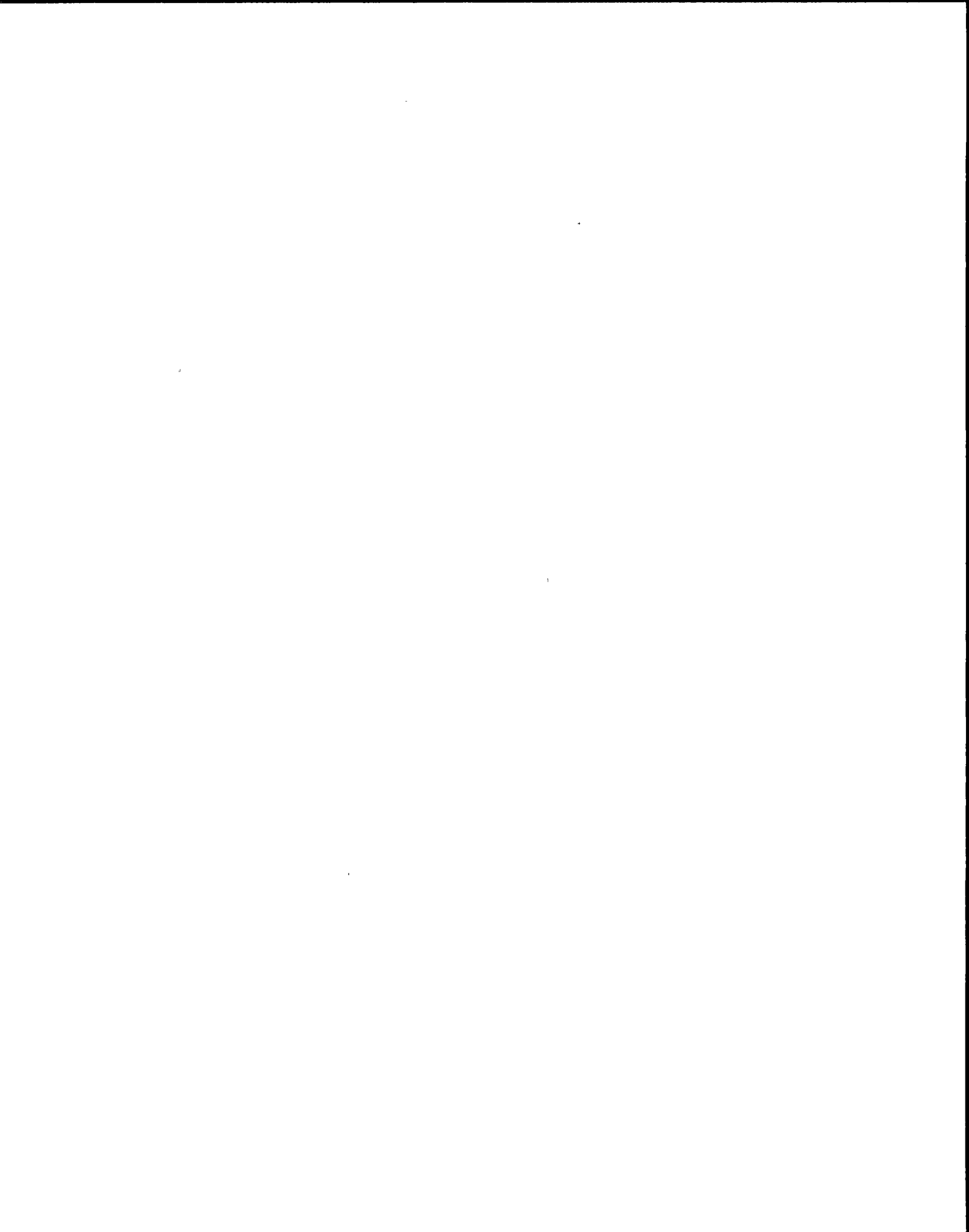
The three primary considerations in a lubrication inspection are: (1) Quantity; (2) Quality; (3) Consistency.

**Quantity**—Limitorque operators are built to operate on the partial immersion principle. The primary concern in the amount of lubricant is whether the "worm" is totally immersed in grease. This can be verified by the use of one or more of the many "fill" and "drain" plugs provided on the operator housing.

**Quality**—When removing a "fill" or "drain" plug to inspect the lube level, remove a small amount and insure that it is clean and free of any contaminant including water. Should dirt, water, or other foreign matter be found, the units should be flushed with a commercial degreaser/cleaner like Exxon VARSOL #18 which is non-corrosive and does not affect seal materials such as Buna N or Viton. Repack unit with fresh lubricant.

**Consistency**—The main gear box lubricant should be slightly fluid approximating a standard NLGI-1 grade consistency or less. Thinners such as Amoco WAYTAC #31 oil may be added provided the volume of thinner does not exceed 20% of the total lubricant.

The geared limit switch lube should be soft to the touch approximating an NLGI-2 consistency or less.



# MAINTENANCE PROCEDURE

## Routine Maintenance:

A schedule should be made to periodically inspect all Limitorque equipment. The time interval of this inspection should depend upon the frequency of operation and the ambient environmental conditions in which the equipment is stored or installed. A minimum inspection period of eighteen months should be used as a base until experience indicates otherwise. This routine maintenance should include —

1. Remove limit switch compartment and/or control cabinet cover. Should moisture be evident, dry the compartment and components.
2. Inspect and clean all electrical controls and contacts in the limit switch compartment and/or control cabinet. This cleaning should consist of wiping clean of all electrical contacts with electrical type solvent cleaner similar to CRC Lectro Clean and removal of foreign residue.
3. Check all terminal connections for tightness.

4. Clean gasketed surfaces on limit switch compartment and/or control cabinet cover. Replace all damaged gaskets or seals for weatherproof or submersible units. Wipe a coating (approximately 2 mils) of lightweight bearing grease on surfaces of explosion-proof cover flanges for protection.

5. Inspect lubricant per Lubrication Procedure. Visually check shaft penetrations for indications of seal leakage. If abnormal leakage is found, the seal should be replaced. (Slight oil weepage is not cause for seal replacement.) SEE MAJOR MAINTENANCE.

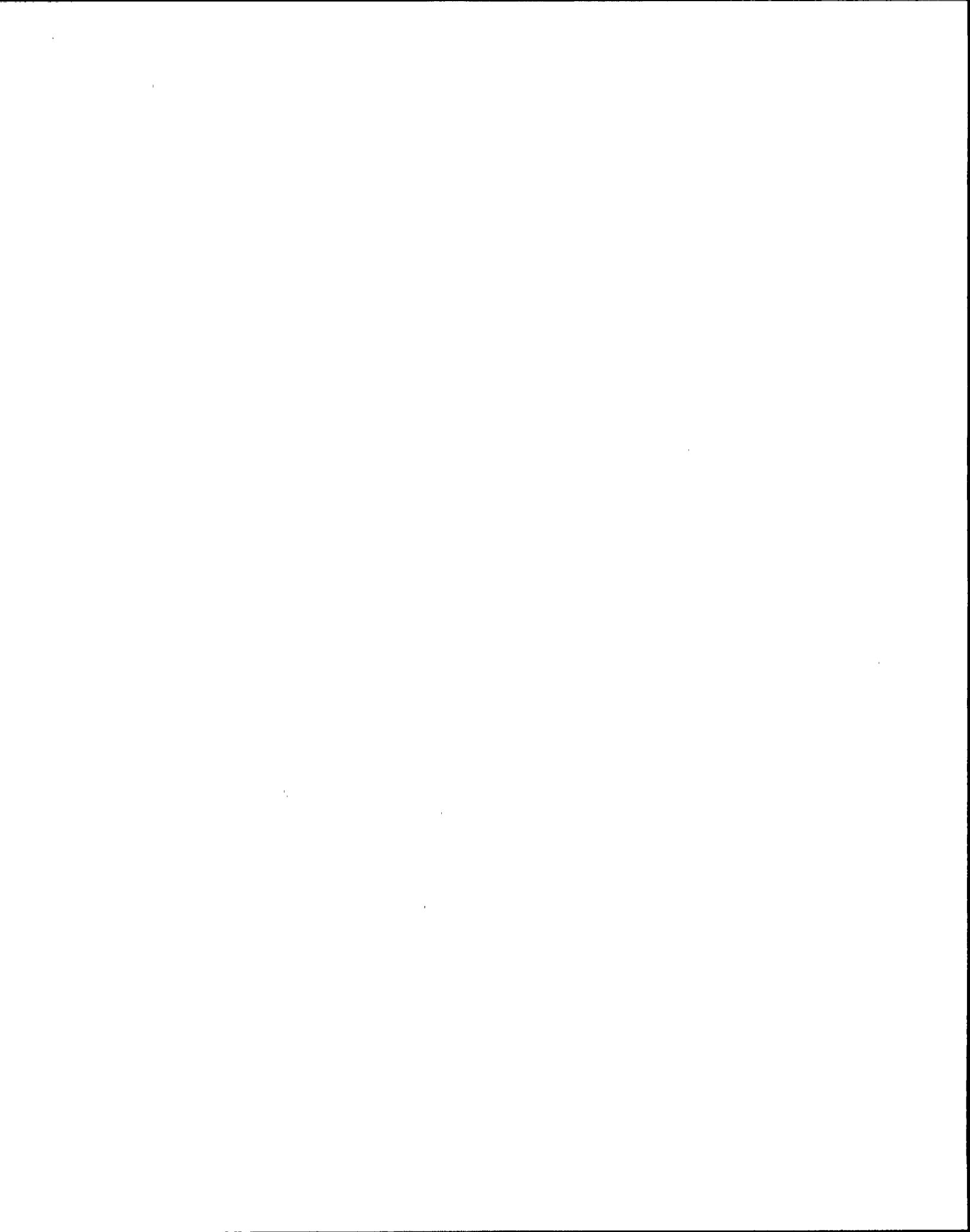
6. Megger the motor. (One MEG-OHM or better is considered normal.)

7. Clean and lubricate the valve stem (obtain valve manufacturer's recommendation for lubricant) for rising stem applications.

## Major Maintenance:

The need for major maintenance on Limitorque equipment occurs when some operational deficiency is evident. Care should be taken to evaluate the deficiency in order to determine the extent to which the major maintenance should proceed. Major maintenance should always include the routine maintenance requirements but in addition should proceed as follows:

1. Disassembly of deficient portion of equipment.
2. Replacement of any damaged or excessively worn component with new factory parts. It is recommended that worm and worm gears be replaced as a set to ensure the greatest benefit from the replacement.
3. Replacement of lubricant if main gear box was involved in the major maintenance.
4. Replacement of all torn gaskets and seals.
5. Inspect stem and stem nut thread carefully for wear and/or damage.
6. Check operability of all electrical control components before reinstallation.



# SMB-000

## DISASSEMBLY/REASSEMBLY

### General:

Drawing References: 01-403-0033-4  
01-403-0034-4  
Exploded View: 08-403-0001-4

To disassemble the Limitorque Valve Control, size SMB000, please observe the following procedure. Refer to the parts drawing of this unit whenever disassembly is to be made. Be certain to read the gasketing instructions before replacing gaskets, and be certain to keep all parts clear and free from dirt when disassembly is made.

### Disassembly:

1. Shut off all power to Limitorque unit.
2. Remove the limit switch compartment cover.
3. Disconnect the leads on the geared limit switch and torque switch making sure they are properly marked for reconnecting to the terminals. The torque switch and geared limit switch are held on the housing by two (2) screws each. Removing these screws will allow you to remove the geared limit switch and the torque switch.
4. To remove the electric motor from the Limitorque operator, first disconnect the motor leads inside of the limit switch compartment. The motor leads must be guided through the conduit opening while removing the motor.
5. The motor pinion, pc #20, is keyed to the motor shaft and held there with a set screw to retain the pinion in its proper position.
6. Put unit in manual operation by depressing declutch lever, pc #7.
7. Remove declutch lever, pc #7.
8. Remove spring cartridge cap cover, pc #43.
9. Remove spring cartridge cap, pc #2.
10. Remove worm, pc #24, and torque spring assembly by pulling directly out.
11. Remove clutch tripper lever assembly, pc #15. Note a hex head cap screw locates and secures the tripper lever on the declutch shaft (end of shaft should be flush with tripper lever).
12. Remove housing cap, pc #6, and handwheel assembly.
13. Remove drive sleeve assembly completely including pcs #8, 10, 11, 17, 30, 33, 34, 50, 67, and 69. To disassemble, see Step #21.

14. Remove worm shaft gear, pc #22, by removing locknut, pc #77.

15. Remove tripper cam, pc #27, and cam spacers, pcs #31 and 37.

16. Remove worm shaft, pc #21, and worm shaft bearing cap, pc #4.

17. To remove worm, pc #24, from worm assembly, remove internal retaining ring, pc #74.

18. To remove torque spring, pc #49, first remove elastic stop nut, pc #78, noting the number of turns to remove.

19. Remove thrust washer, pc #42; limiter sleeve, pc #35; torque spring (discs), pc #49; thrust washer, pc #41, noting the orientation of the torque spring discs, spacers and thrust washers.

20. To remove declutch lever shaft, pc #40, or clutch fork, pc #9, pull the declutch lever shaft out of the actuator from the motor side of the unit. It will be necessary to remove the retaining ring, pc #75, on the opposite side of the actuator before removing the declutch shaft.

21. To disassemble the drive sleeve assembly, press off the lower drive sleeve bearing, pc #66. All remaining components should now slide off the drive sleeve easily.

### Reassembly:

To reassemble, follow the above procedure in the reverse order noting the following:

21. When reinstalling declutch fork, pc #9, be sure to orient it on the declutch shaft as shown on the exploded view.

19. Be sure thrust washers, torque spring (discs) and spacers are reinstalled exactly as removed.

18. Replace elastic stop nut, pc #78, with exact number of turns used to remove.

7. Manually declutch unit and rotate worm shaft gear, pc #22.

To Adjust Clutch Trippers:

1. Follow Steps 1, 2, and 4.

2. Loosen lock screw on tripper adjustment arm, pc #26.

3. Hold down declutch lever, pc #7.

4. Lifting adjusting arm up to touch trippers, pcs #28 and 29, and tighten lock screw (previously loosened in Step 2) while holding down declutch lever.

5. Rotate worm shaft gear to ensure unit shifts into motor operation automatically.

6. Declutch unit again and repeat Step 5.

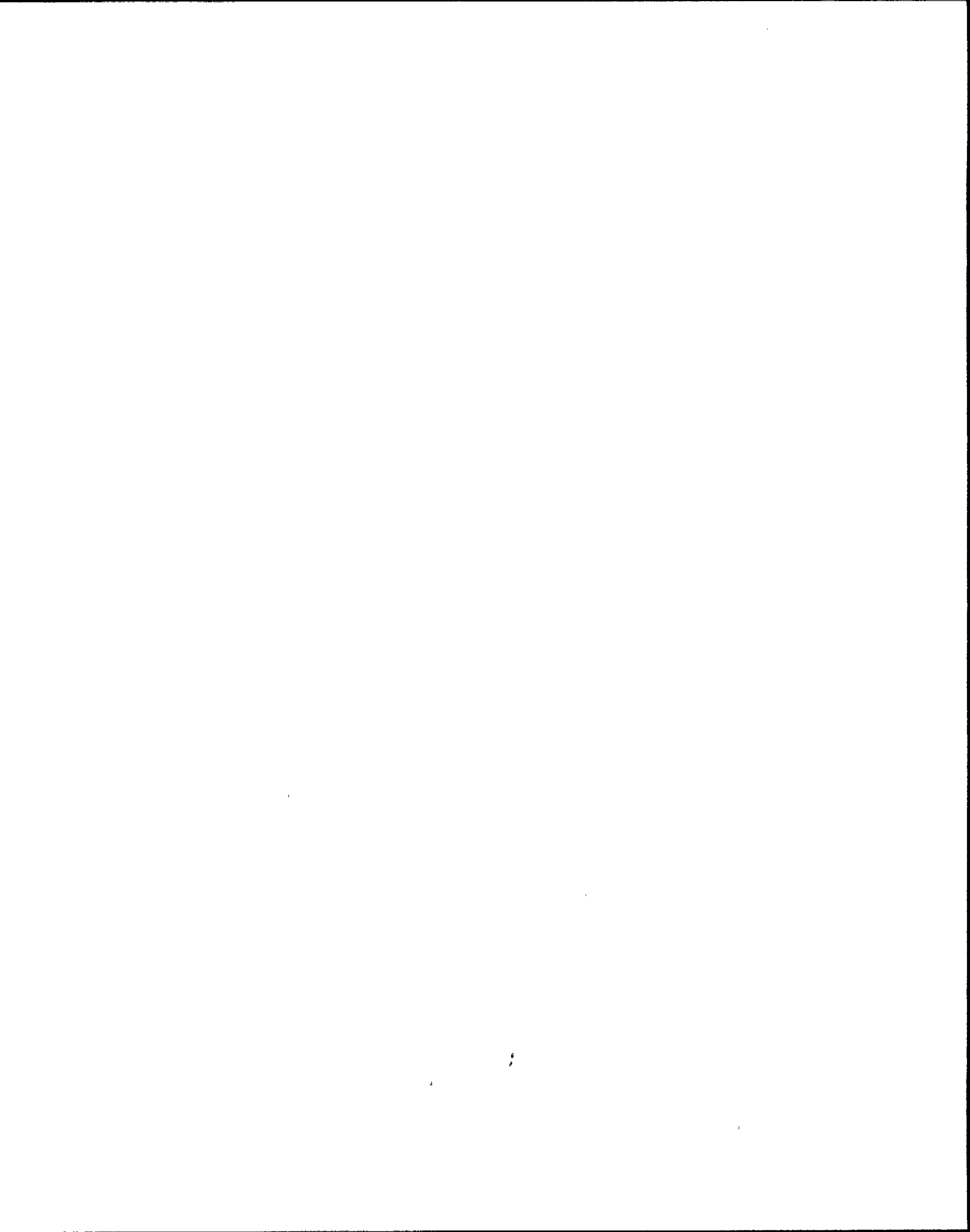
To Replace the Stem Nut Only: If the stem nut, pc #11, is to be removed from the assembled Limitorque valve control, it is necessary to remove the locking nut, pc #30, and then remove stem nut by lifting out top of unit.

**CAUTION!** Do not remove with unit under load or with valve under pressure (See below).

The locknut, pc #30, is staked in two places so it will be necessary to locate the stakes and spot with a drill. Clean all metal particles and remove. If Limitorque is mounted on a valve having a threaded stem, and removal of the stem nut is required, merely remove the locking nut, pc #30, as mentioned above, then rotate the handwheel of the Limitorque operator to close the valve. The stem nut will rise up the threaded stem of the valve. When the stem nut splines are free from the drive sleeve, the stem nut may be rotated by hand and remainder of the length of the valve stem and replaced, if necessary. When new stem nut is installed with pc #30, stake the top threads in two places. If valve must be left in service while the stem nut is replaced, the valve stem must be locked in such a way as to prevent any movement of valve stem.

**Gasketing Instructions:** All gaskets except the housing cover gaskets are 1/32" thick anchorite. The housing cover gaskets vary in thickness and to determine correct size follow the following procedure:

1. Clean both housing cover and main housing gasketed surface.
2. Install unit drive sleeve assembly complete with bearings.
3. Install housing cover and measure the gap between the housing cover and the main housing.
4. Take measurement found in Step 3 and add 10% to it and use the closest nominal gasket thickness or combination available.



# SMB-00

## DISASSEMBLY/REASSEMBLY

### General:

Drawing References: 01-403-0090-4  
01-403-0121-4

Exploded View: 08-403-0002-4

To disassemble the Limitorque Valve Control, size SMB-00, please observe the following procedure. Refer to the parts drawing of this unit whenever disassembly is to be made. Be certain to keep all parts clean and free from dirt during disassembly.

### Disassembly:

1. Shut off all power to Limitorque unit.
2. Remove or swing open the limit switch compartment cover.
3. Disconnect the leads on the geared limit switch and torque switch making sure they are properly marked for reconnecting to the terminals. The torque switch and geared limit switch are held on the housing by two (2) screws each. Removing these screws will allow you to remove the geared limit switch and the torque switch.
4. To remove the electric motor from the Limitorque operator, first disconnect the motor leads inside of the limit switch compartment. The motor leads must be guided through the conduit opening while removing the motor.
5. The motor pinion, pc #20, is keyed to the motor shaft and held there with a set screw to retain the pinion in its proper position.
6. Put unit in manual operation by depressing declutch lever, pc #5.
7. Remove declutch lever, pc #5.
8. Remove spring cartridge cap cover, pc #25.
9. Remove spring cartridge cap, pc #3.
10. Remove worm, pc #19, and torque spring assembly by pulling directly out.
11. Remove clutch tripper lever assembly, pc #10. Note a hex head cap screw locates and secures the tripper lever on the declutch shaft (end of shaft should be flush with tripper lever).
12. Remove housing cap, pc #88, and handwheel assembly for top mounted handwheel. **WARNING!** Do not remove if a thrust load is on the actuator or if the valve is under pressure and not fully open as personal injury may result.
13. For side mounted handwheel, remove bevel gear housing, pc #96, and entire handwheel assembly (including pc #98, bevel gear cartridge).

14. Remove drive sleeve assembly completely including pcs #4, 7, 8, 12, 14, 28, 29, 30, 43, 64, and 66. To disassemble, see Step 22.

15. Remove worm shaft gear, pc #18, by removing locknut, pc #73.

16. Remove tripper cam, pc #24, and cam spacers, pcs #31 and 36.

17. Remove worm shaft, pc #17, and worm shaft bearing cap, pc #35.

18. To remove worm, pc #19, from worm assembly, remove internal retaining ring, pc #71.

19. To remove torque spring, pc #46, first remove elastic stop nut, pc #74, noting the number of turns to remove.

20. Remove thrust washer, pc #39; limiter sleeve, pc #32; torque spring (disc), pc #46; thrust washer, pc #38, noting the orientation of the torque spring discs, spacers, and thrust washers.

21. To remove declutch lever shaft, pc #34, of clutch fork, pc #6, pull the declutch lever shaft out of the actuator from the motor side of the unit. It will be necessary to remove the retaining ring, pc #70, on the opposite side of the actuator before removing the declutch shaft.

22. To disassemble the drive sleeve assembly, press off the lower drive sleeve bearing, pc #66. All remaining components (except pcs #12 and 64) should now slide off the drive sleeve easily.

23. To remove G.L. drive hypoid gear, pc #12, press off the upper drive sleeve bearing, pc #64, and slide pc #12 off drive sleeve.

### Reassembly:

To reassemble, follow the Disassembly Procedure in the reverse order noting the following:

Follow gasketing instruction below.

21. When reinstalling declutch fork, pc #6, be sure to orient it on the declutch shaft as shown on the exploded view.

20. Be sure thrust washers, torque spring (discs), and spacers are reinstalled exactly as removed.

19. Replace elastic stop nut, pc #74, with exact number of turns used to remove.

7. Manually declutch unit and rotate worm shaft gear, pc #18.

To Adjust Clutch Trippers:

1. Follow Steps 1, 2, and 4.
2. Loosen lock screw on tripper adjustment arm, pc #21.

3. Hold down declutch lever, pc #15.

4. Lift adjusting arm up to touch trippers, pcs #26 and 27, and tighten lock screw (previously loosened in Step 2) while holding down declutch lever.

5. Rotate worm shaft gear to ensure unit shifts into motor operation automatically.

6. Declutch unit again and repeat Step 5.

To Replace the Stem Nut Only: If the stem nut, pc #8, is to be removed from the assembled Limitorque Valve Control, it is necessary to remove the locking nut, pc #30, and then remove stem nut by lifting out of unit.

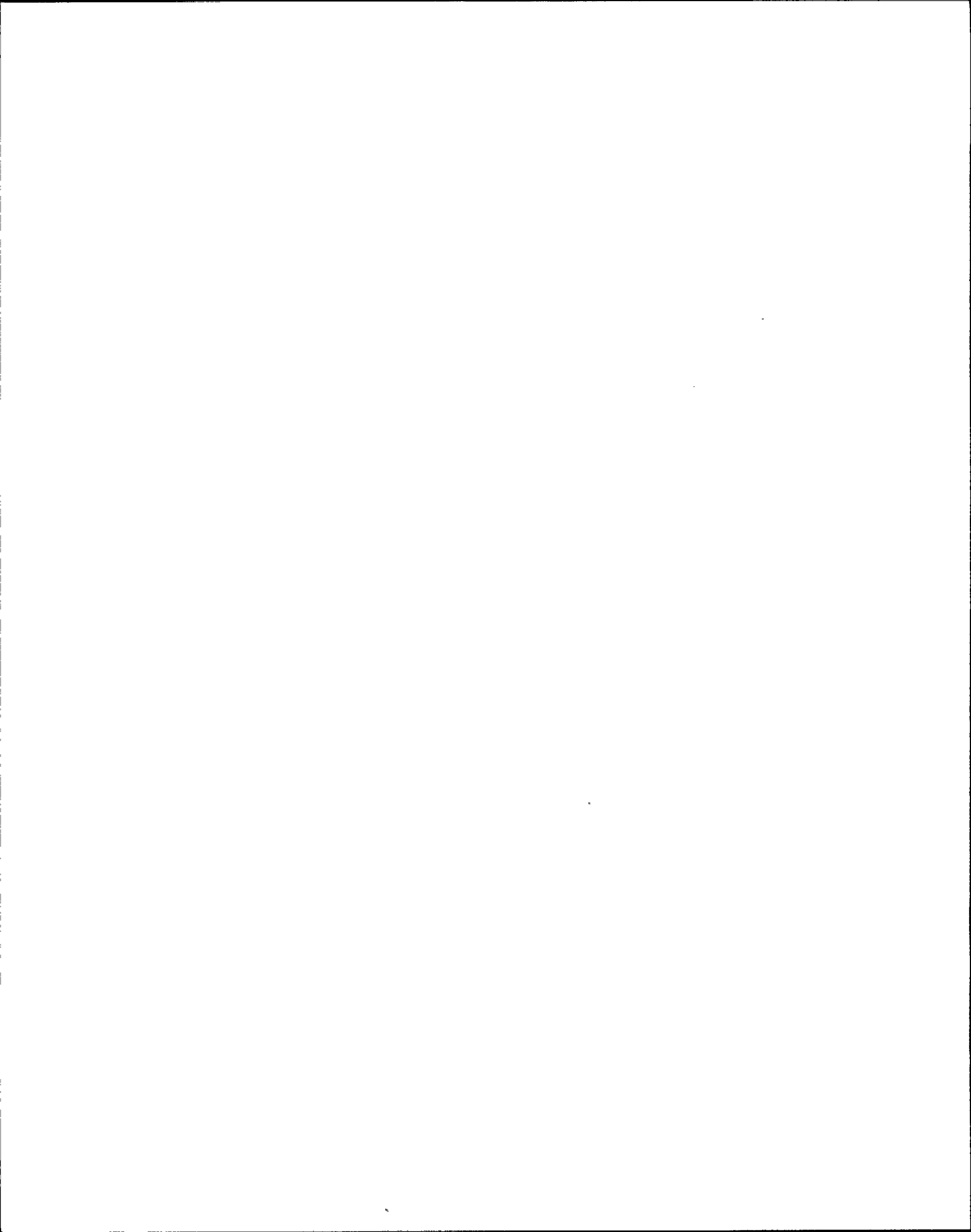
**WARNING!** Do not remove locknut, pc #3, with unit under load or with valve under pressure. (See warning for Step 12.)

The locknut, pc #30, is staked in two places so it will be necessary to locate the stakes and spot with a drill. Clean all metal particles and remove. If Limitorque is mounted on a valve having a threaded stem, and removal of the stem nut is required, merely remove the locking nut, pc #30, as mentioned above, then rotate the handwheel of the Limitorque operator to close the valve. The stem nut will rise up the threaded stem of the valve. When the stem nut splines are free from the drive sleeve, the stem nut may be rotated by hand the remainder of the length of the valve stem and replaced, if necessary. When new stem nut is installed with pc #30, stake the top threads in two places.

If the valve must be left in service while the stem nut is replaced, the valve stem must be locked in such a way as to prevent any movement of valve stem.

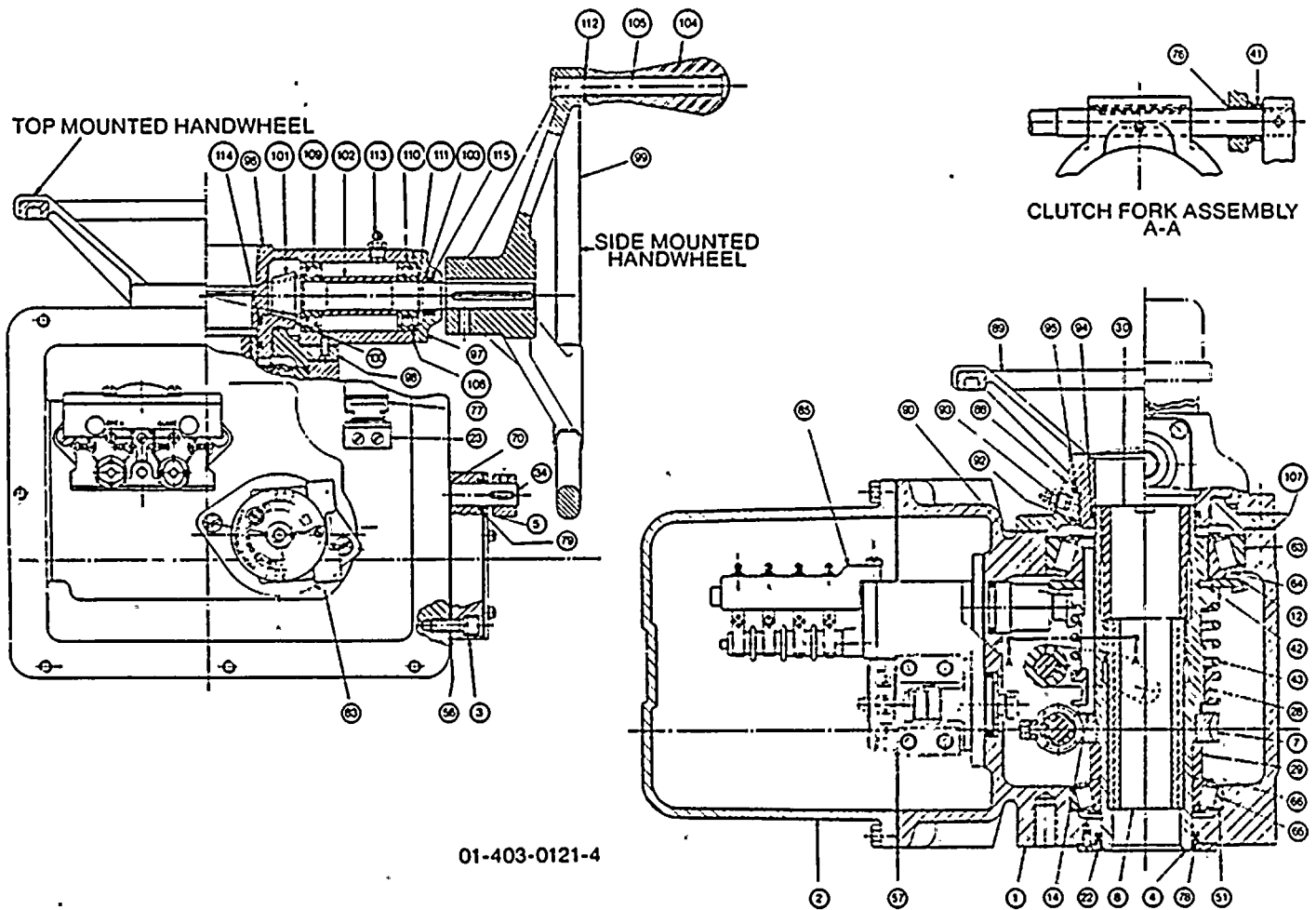
**Gasketing Instructions:** All gaskets except the housing cover gaskets are 1/32" thick anchorite. The housing cover gaskets vary in thickness and to determine correct size follow the following procedure:

1. Clean both housing cover and main housing gasketed surface.
2. Install unit drive sleeve assembly complete with bearings.
3. Install housing cover and measure the gap between the housing cover and the main housing.
4. Take measurement found in Step 3 and add 10% to it and use the closest nominal gasket thickness or combination available.





# SMB-00



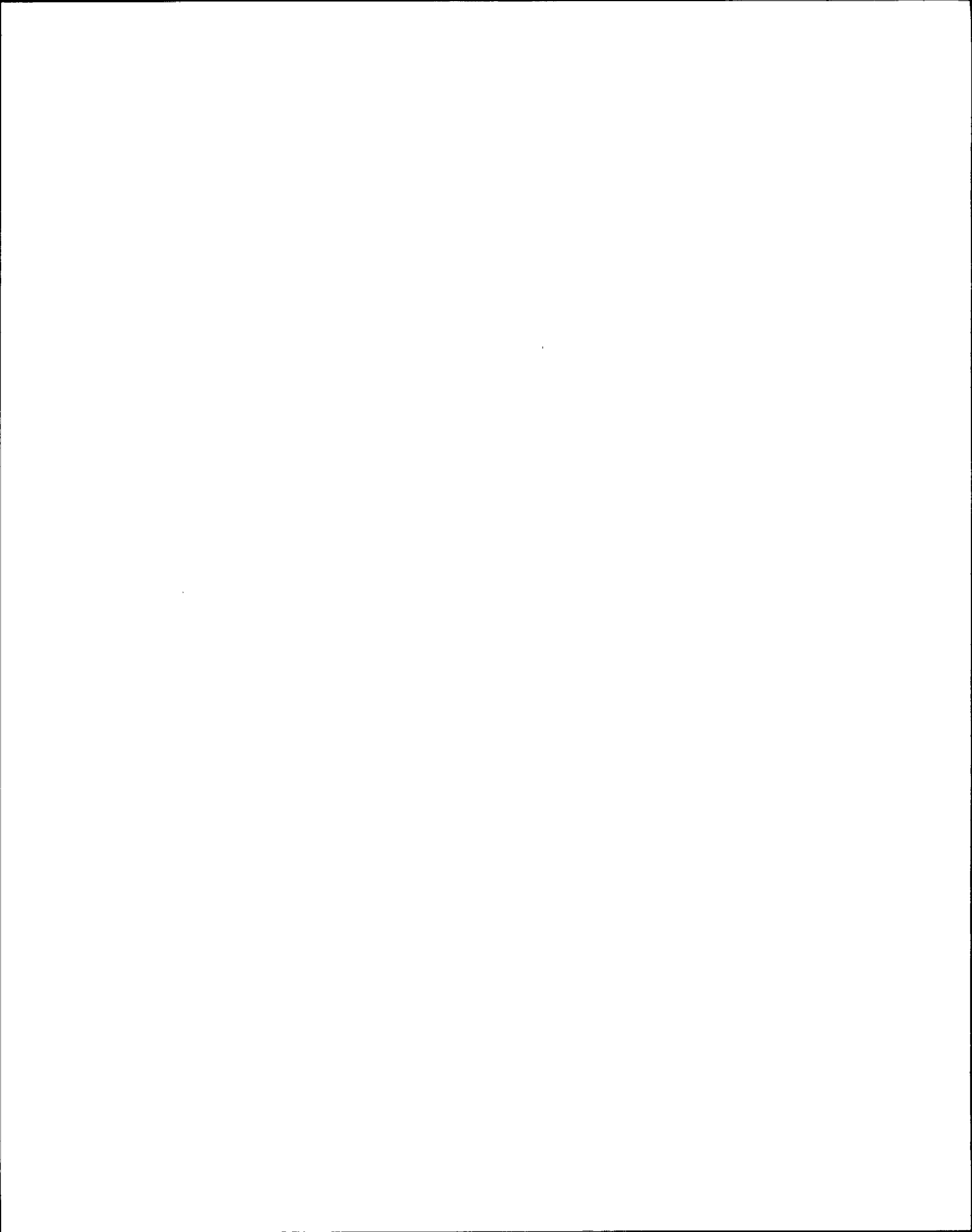
01-403-0121-4

| PC. NO. | DESCRIPTION          |
|---------|----------------------|
| 88      | HOUSING COVER        |
| 89      | HANDWHEEL            |
| 90      | HOUSING COVER GASKET |
| 92      | RETAINING RING       |
| 93      | GREASE FITTING       |
| 94      | QUAD RING            |
| 95      | "O" RING             |

TOP  
MOUNTED  
HANDWHEEL

|     |                        |
|-----|------------------------|
| 96  | BEVEL GEAR HOUSING     |
| 97  | BEVEL PINION CAP       |
| 98  | BEVEL GEAR CARTRIDGE   |
| 99  | HANDWHEEL              |
| 100 | BEVEL GEAR             |
| 101 | HANDWHEEL BEVEL PINION |
| 102 | BEARING SPACER         |
| 103 | "O" RING SPACER        |
| 104 | HANDLE                 |
| 105 | HANDLE ROD             |
| 106 | GASKET                 |
| 107 | GASKET                 |
| 109 | BALL BEARING           |
| 110 | BALL BEARING           |
| 111 | RETAINING RING         |
| 112 | RETAINING RING         |
| 113 | GREASE FITTING         |
| 114 | QUAD RING              |
| 115 | "O" RING               |

SIDE  
MOUNTED  
HANDWHEEL



# SMB-0 TO SMB-4 & SMB-4T

## DISASSEMBLY

### General:

Drawing References: 01-408-0013-4  
01-408-0073-4  
01-408-0074-4

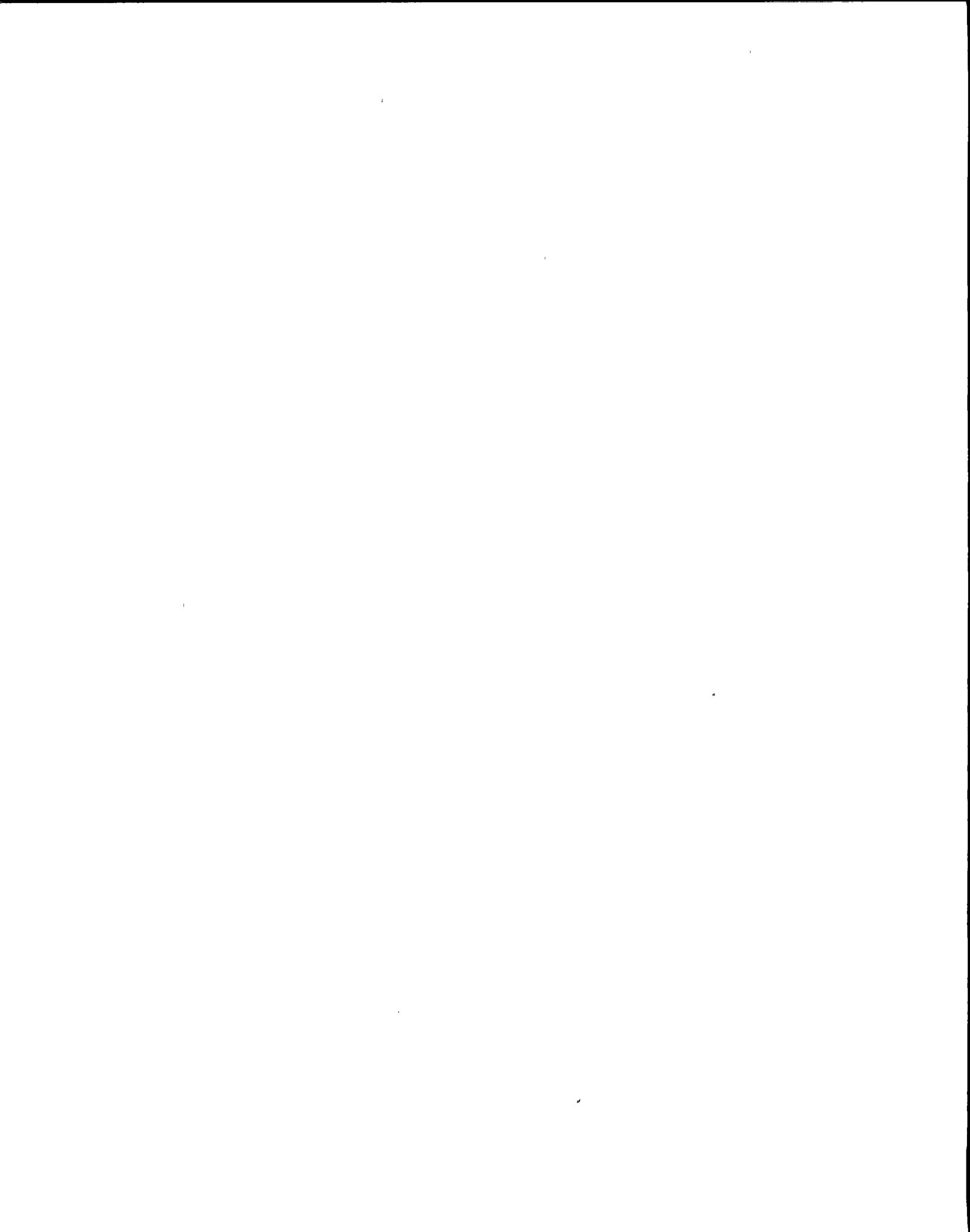
Exploded View: 08-408-0001-4

The disassembly of the Limitorque Valve Control, size SMB-0, will be used as a general example. Refer to the parts drawings of these units whenever disassembly is to be made. Be certain to keep all parts clean and free from dirt when disassembly is made.

### Disassembly:

To completely disassemble the Limitorque Valve Control, size SMB-0 through SMB-4 and SMB-4T, please observe the following procedure:

1. Shut off all power to Limitorque unit.
2. Swing open or remove the limit switch compartment cover.
3. Disconnect the leads on the geared limit switch and torque switch, making sure they are properly marked for reconnecting to the terminals before removing these parts. The torque switch and geared limit switch are held on the housing by two (2) screws each. Removing these screws will allow you to remove the geared limit switch and the torque switch.
4. To remove the electric motor from the Limitorque operator, first disconnect the motor leads inside of the limit switch compartment. The motor leads must be guided through the conduit opening while removing the motor.
5. The motor pinion, pc #40, is keyed to the motor shaft and held there with a set screw and lockwire to retain the pinion in its proper position. (The motor pinion should be shouldered on the motor shaft.)
6. Put unit in manual operation by depressing declutch lever, pc #10.
7. Remove handwheel, pc #5, by loosening set screw. Handwheel can then be pulled from handwheel shaft, pc #25.
8. Remove declutch lever, pc #10, by loosening set screw and sliding lever from declutch shaft, pc #24.
9. Remove end cap, pc #4. CAUTION! Declutch lever shaft must be held in position and not allowed to be pulled out when removing the end cap. A loud snap will be heard on removal of this end cap which is the torsion spring, pc #54, being released. Do not be alarmed. Later models have declutch lever shaft held in place by a snap ring located behind the declutch link.
10. Remove worm and torque spring assembly completely by temporarily replacing the handwheel and then rotating in the close direction to cause the worm to screw out of engagement and worm gear and causing torque spring cartridge to emerge from housing. The cartridge may be further disassembled if required. (See Step 22).
11. Remove housing cover, pc #3.  
**WARNING!** Do not remove if a thrust load is on the actuator or if the valve is under pressure and not fully open as personal injury may result.
12. Lift complete drive sleeve assembly from unit housing. The drive sleeve assembly consists of locking nut, pc #30, stem nut, pc #20, drive sleeve, pc #11, upper thrust bearings, pcs #77 and 78, worm gear, pc #16, worm gear spacer, pc #28, and lower thrust bearing, pcs #75 and 76. The drive sleeve assembly may be further dismantled if required by pressing off lower drive sleeve bearing, pc #75.
13. Remove retaining ring, pc #89, split ring retainer, pc #27, and split ring, pc #47. Removal of these three pieces will allow the worm shaft clutch gear, pc #41, to be pulled from the worm shaft.
14. Remove spacer, pc #46 (only on SMB-0 and SMB-1).
15. Spread clutch trippers with a tool (do not use hands as spring forces could result in personal injury) to shift unit into motor operation.
16. Remove bolts holding clutch housing, pc #1, to housing, pc #2, and withdraw clutch housing together with trippers, pcs #32 and 33, and forks, pc #12. Worm shaft clutch, pc #50, will slide off worm shaft when withdrawing clutch housing.
17. Slide clutch spring, pc #58, off of worm shaft toward motor end. Slide declutch link, pc #9, off splined manual declutch shaft, pc #24.
18. Remove elastic stop unit, pc #84, and pull handwheel gear, pc #7, which is keyed to the shaft, pc #25.
19. Remove bolts holding shaft bearing cap, pc #8, and slide cap off worm shaft. Handwheel clutch pinion, pc #42, may be removed from bearing cap by removing retaining ring, pc #92, being careful not to lose spring, pc #57, and spring ring, pc #17.
20. Remove handwheel shaft by tapping on the motor end of the shaft which will free bearing, pc #80, from housing. Handwheel shaft will break free from bearing, pc #79, and may then be removed from housing.
21. Having removed declutch link from splined end of declutch shaft (Step 16), shaft may be withdrawn from handwheel end of housing.
22. If the worm assembly (removed in Step 11) is to be disassembled further, remove elastic stop nut, pc #85, noting the number of turns to remove.
23. Remove thrust washers, pc #48, limit sleeve, pc #29, and Belleville disc springs, pc #56, noting the orientation of the discs for reassembly later.
24. The bearing cartridge stem, pc #45, is threaded into the bearing cartridge cap, pc #44. To remove, locate set screw in threaded area and unscrew.
25. Remove the worm, pc #53, and ball bearing, pc #82.
26. To remove the ball bearing, pc #82, locate set screw in bearing locknut and remove set screw and locknut, pc #83.



# SMB-0 TO SMB-4 & SMB-4T

## REASSEMBLY

### Reassembly:

To reassemble, follow the above procedure in the reverse order noting the following:

Follow gasketing instructions below.

23. Be sure to stack Belleville discs, thrust washers, and whatever spacers were removed in the exact order as they were removed.

22. Reinstall elastic stop nut, pc #85, with the same number of turns as were used to remove.

17. To replace declutch links, pc #9, be sure to align with declutch lever, pc #10, to assure correct positioning of lever.

16. When replacing worm shaft clutch, pc #50, be sure to install with smaller set of lugs first, to engage with lugs on hand-wheel clutch pinion, pc #42.

10. When worm is replaced, it may be easier to rotate worm shaft clutch, pc #50, to engage splines on worm shaft. Then place unit in manual operation by replacing declutch lever, pc #10, and hand-wheel temporarily and rotate handwheel in opposite direction used to remove worm.

9. Before replacing end cap, align torsion spring, pc #54, which holds declutch lever in its normal position. Remove declutch lever and replace end cap, pc #4, and spring cartridge plate with gasket, pcs #71 and 72, but do not bolt up tight. Allow 3/8" space between end cap and housing and replace declutch lever. Depress declutch lever in manual operation and while holding down declutch lever, secure end cap, pc #4.

5. When reinstalling the motor pinion, pc #40, insure it is a tight fit on the motor shaft (preferably a light press fit). Note that the SMB-0 motor pinion is installed with the set screw lockwire between the gear teeth and the motor flange. On the SMB-1 through 4, the gear teeth are between the set screw/lockwire and the flange.

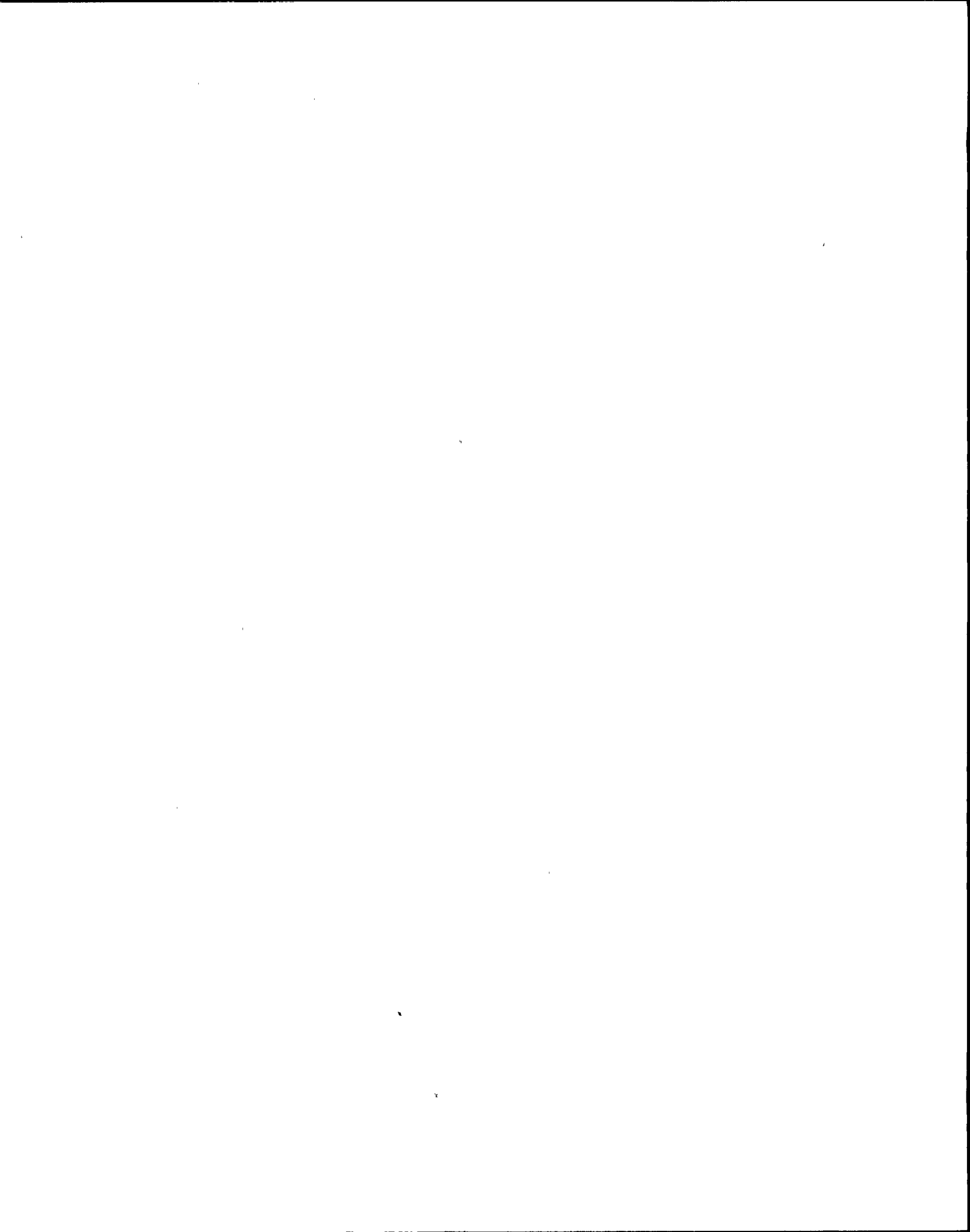
**To Replace the Stem Nut Only:** If the stem nut, pc #20, is to be removed from the assembled Limatorque Valve Control it is necessary to remove the locking nut, pc #30, and then remove stem nut by lifting out top of unit.

**WARNING!** Do not remove locknut, pc #30, with unit under load or with valve under pressure. (See warning for Step 11.)

The locknut, pc #30, is staked in two places so it will be necessary to locate the stakes and spot with a drill. Clean all metal particles and remove. If Limatorque is mounted on a valve having a threaded stem, and removal of the stem nut is required, merely remove the locking nut, pc #30, as mentioned above, then rotate the handwheel of the Limatorque operator to close the valve. The stem nut will rise up the threaded stem of the valve. When the stem nut splines are free from the drive sleeve, the stem nut may be rotated by hand the remainder of the length of the valve stem and replaced, if necessary. When new stem nut is installed with pc #30, stake the top threads in two places. If valve must be left in service while the stem nut is replaced, the valve stem must be locked in such a way as to prevent any movement of valve stem.

**Gasketing Instructions:** All gaskets except the housing cover gaskets are 1/32" thick anchorite. The housing cover gaskets vary in thickness and to determine correct size follow the following procedure:

1. Clean both housing cover and main housing gasketed surface.
2. Install unit drive sleeve assembly complete with bearings.
3. Install housing cover and measure the gap between the housing cover and the main housing.
4. Take measurement found in Step 3 and add 10% to it and use the closest nominal gasket thickness or combination available.



# SMB-5 & SMB-5T

## DISASSEMBLY OF VALVE OPERATOR

### General:

Exploded View: 08-408-0002-4

Thrust Assembly: 01-413-0060-4

The SMB-5 is a thrust type actuator made up of an SMB-5T torque type unit mounted on a thrust bearing assembly. If the existing unit is an SMB-5T (torque only) disregard the first section of this procedure (Steps A1 and A2).

### SMB-5 (Thrust Unit Only):

**A1. CAUTION:** Ensure that unit is not under load and that valve is not under pressure before proceeding. If so, the valve must be in the full open position.

A. Remove drive sleeve locknut, pc #130. **WARNING!** SMB-5 drive sleeve locknut has left hand threads and must be rotated clockwise to remove.

B. Rotate handwheel to close valve causing stem nut, pc #127, to rise up threaded valve stem until stem nut splines are free of drive sleeve, pc #126.

C. Rotate stem nut by hand for remainder of length of valve stem and remove.

**A2.** Remove thrust adapter assembly, pc #125, from operator.

**NOTE:** If disassembly of thrust adapter assembly is not required, continue to Step 1. If thrust adapter is to be disassembled, proceed as follows:

A. Remove seal retainer plate, pc #129, and oil seal, pc #132.

B. Loosen set screw and remove thrust bearing cartridge, pc #128, from thrust adapter housing, pc #125.

C. Remove upper bearing roller assembly, pc #131.

D. Lift thrust drive sleeve, pc #126, out of thrust adapter housing, pc #125.

E. Remove lower bearing roller assembly, pc #131.

### SMB-5T (Torque Unit):

1. To disassemble, please observe the following procedure:

A. Remove limit switch compartment cover, pc #12.

B. Disconnect motor leads and leads to torque switch, pc #116, and geared limit switch, pc #117.

**Note:** Ensure leads are labeled for reassembly.

C. Remove torque switch and geared limit switch.

2. Using lifting eyebolts, remove housing cover, pc #3, drive sleeve, pc #11, and worm gear, pc #17.

3. Remove handwheel washer, pc #60, and pull off handwheel, pc #10, and handwheel clutch, pc #13, from handwheel shaft, pc #40.

4. Remove worm shaft end cap, pc #7, and declutch housing cover, pc #4.

5. Remove declutch assembly as follows:

A. Remove declutch stop, pc #28, tripper spring, pc #67, trippers, pc #34, and roll pin, pc #110.

B. Loosen set screws on declutch lever, pc #9, and collar, pc #103, remove declutch lever, declutch shaft end cap, pc #59, and slide declutch shaft, pc #30, out through bottom of unit.

C. Remove declutch fork, pc #14, and other declutch shaft mounted components, pc #66, pc #70, pc #69, and pc #103, from unit.

D. Remove handwheel shaft and pinion, pc #40.

6. Remove drive shaft, pc #43, and flexible jaw clutch, pc #50, as integral assembly, gear clutch spacer, pc #47, sliding clutch gear, pc #51, and clutch compression spring, pc #68.

7. Remove splined insert, pc #54, using jack screws, Spirolox ring, pc #107, and handwheel gear, pc #6.

8. A. Remove gear mounting bracket, pc #8, using jackscrews, bearing, pc #93, and bearing adapter, pc #65.

B. Pull hollow drive shaft, pc #55, toward declutch end and remove Spirolox ring, pc #106.

9. Remove declutch housing, pc #2.

10. A. Push hollow drive shaft, pc #55, toward motor end, loosen set screw and remove bearing locknut, pc #99. (Hold hollow drive shaft using adjustable spanner on splines.)

B. Remove bearing, pc #95, by pushing hollow drive shaft toward declutch end.

C. Remove gear limit threaded collar, pc #32, and key.

D. Remove hollow drive shaft, pc #55, from declutch end of unit.

11. A. Loosen set screw in cartridge stem locking nut, pc #48, and replace declutch housing, pc #2, with two screws to compress torque spring.

B. Remove locking nut, pc #48.

12. **CAUTION!** Declutch Housing is under spring load.

A. Remove declutch housing, pc #2.

B. Pull bearing cartridge stem, pc #45, out partially and remove thrust washers, pc #46, torque limit sleeve, pc #62, and springs, pc #58.

13. Remove bearing cartridge/worm assembly from unit. To disassemble further:

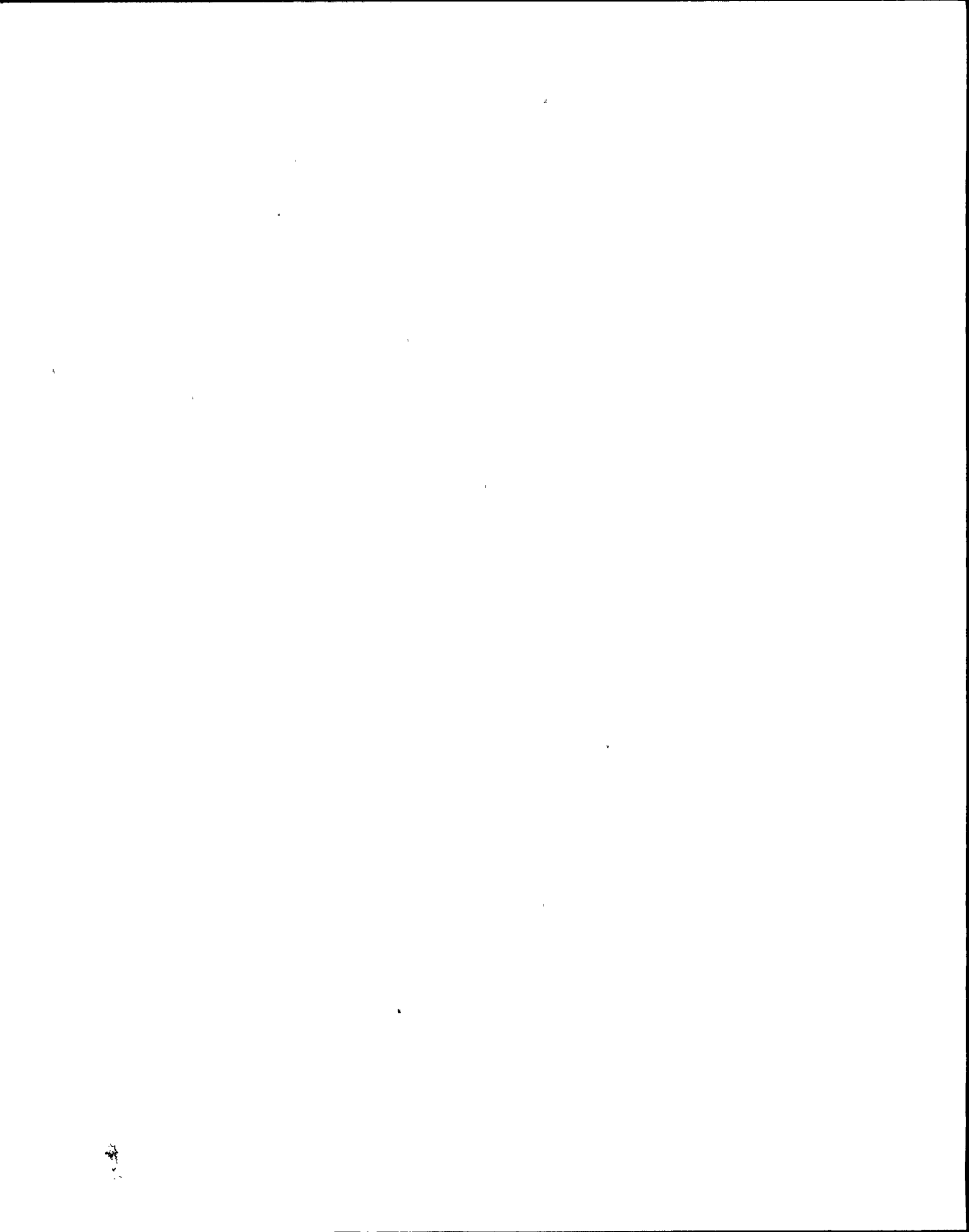
A. Loosen two set screws on bearing cartridge cap, pc #44, and unscrew bearing cartridge stem, pc #45.

B. Slide bearing cartridge cap off toward worm threads.

C. Loosen set screw and remove bearing locknut, pc #100.

D. Press off two bearings, pc #90, and pc #91.

14. Remove motor, pc #115, motor adapter, pc #5, intermediate pinion and gear assembly, pc #15, pc #41 as an integral assembly, drive shaft gear, pc #42, and bearing spacer, pc #64.





# SMB-5 & SMB-5T

## REASSEMBLY OF VALVE OPERATOR

### SMB-5 (Thrust Unit Only):

B1. If thrust adapter assembly, pc #125, was not disassembled, continue to Step B2.

NOTE: Thrust bearing races should be pressed on thrust drive sleeve, pc #126, and in thrust adapter housing, pc #125, and thrust bearing cartridge, pc #128, prior to beginning assembly procedure.

A. Install lower bearing roller assembly, pc #131, in thrust adapter housing, pc #125.

B. Install short end of thrust drive sleeve, pc #126, into thrust adapter housing, pc #125.

C. Install upper bearing roller assembly, pc #131, on thrust drive sleeve, pc #126.

D. Install thrust bearing cartridge, pc #128, thread in tight or until drag is felt on thrust drive sleeve and tighten set screw.

E. Install oil seal, pc #132, and seal retainer plate, pc #129.

B2. Lift unit or turn upside down and install housing thrust adapter assembly, pc #125. Ensure that thrust drive sleeve "O" ring, pc #134, is in place.

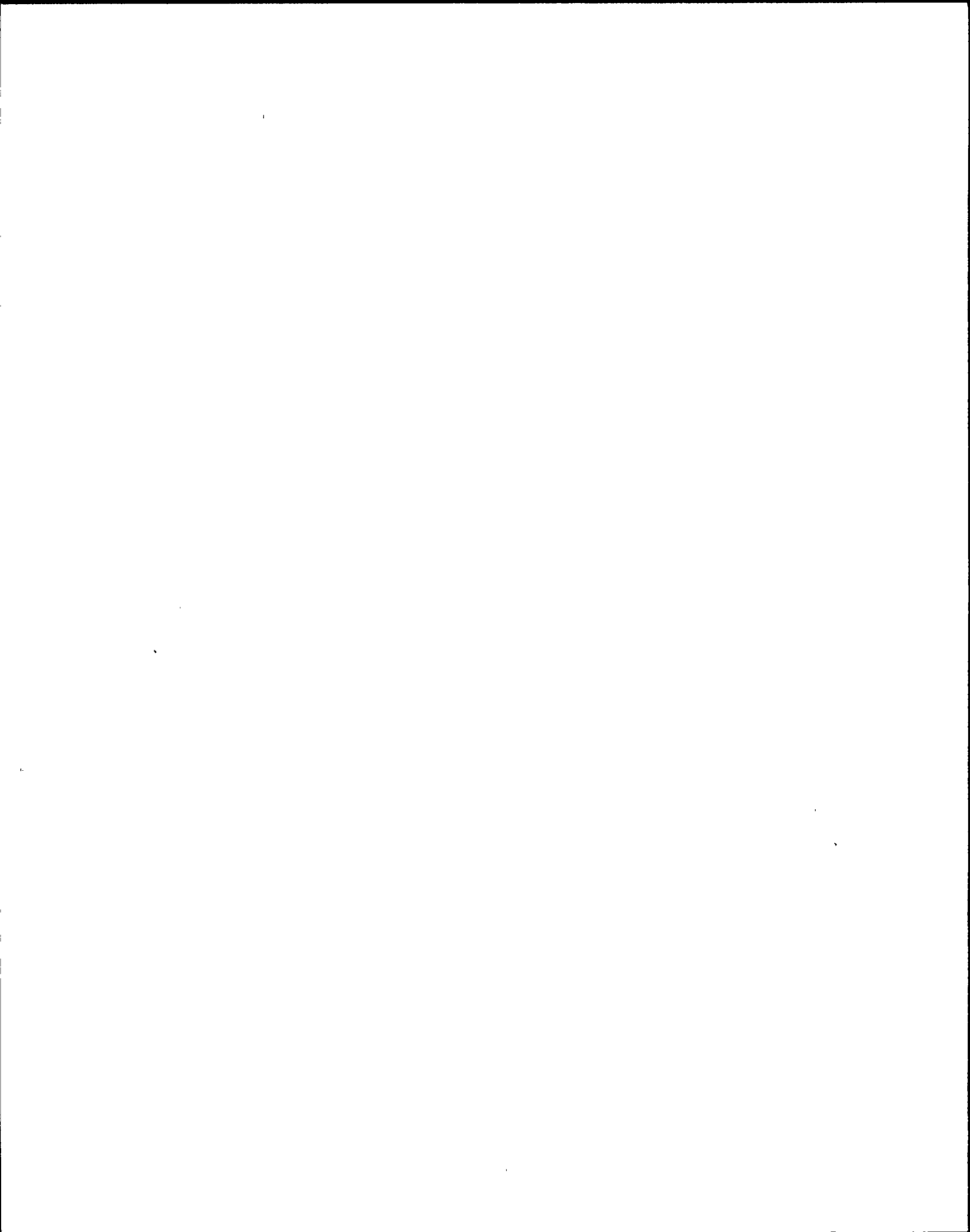
B3. Install stem nut, pc #127.

B4. Install drive sleeve locknut, pc #130, and crimp or stake the top threads in two places.

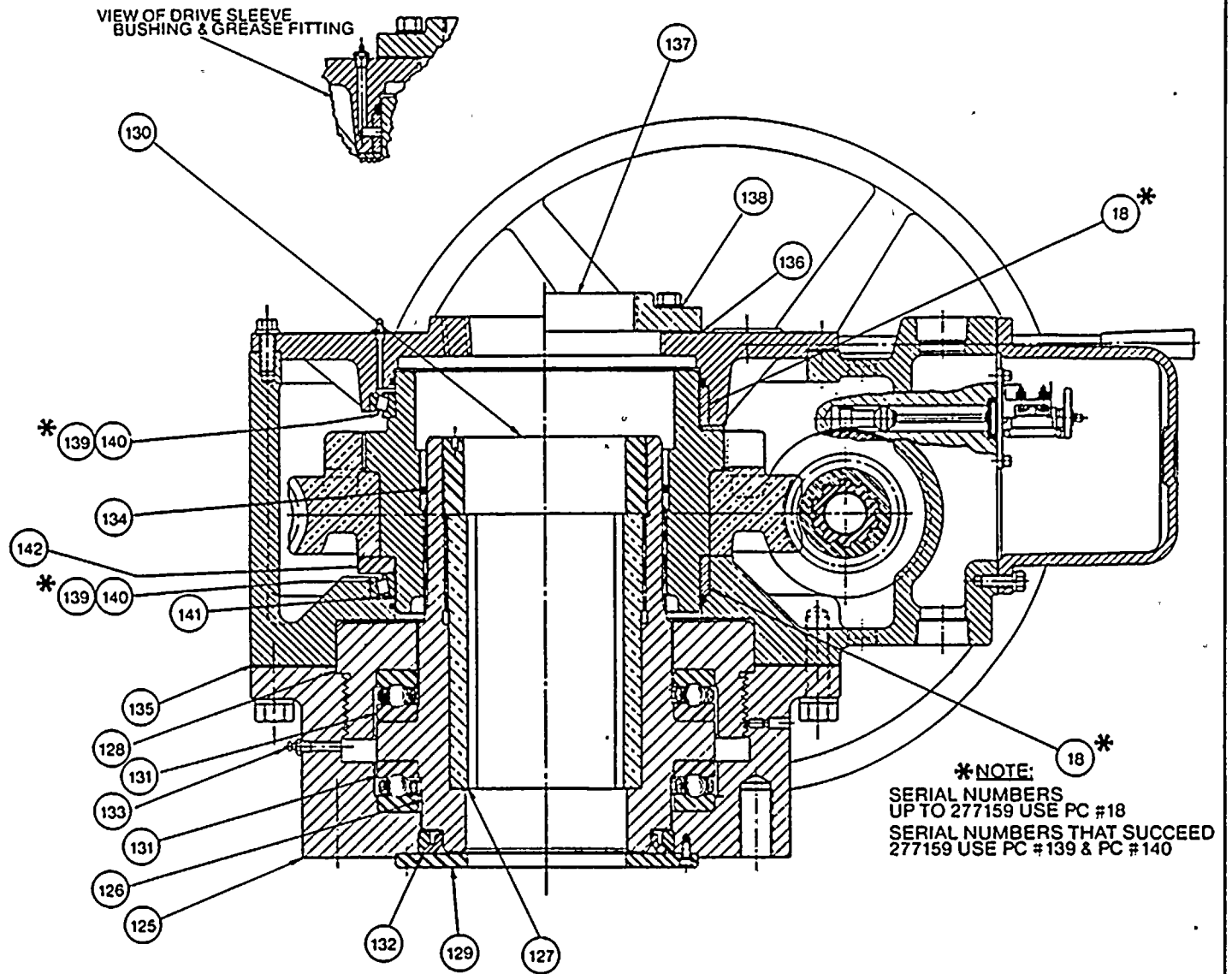
WARNING! SMB-5 drive sleeve locknut has left hand threads and must be rotated counter-clockwise to install.

| PC. NO. | DESCRIPTION                   |
|---------|-------------------------------|
| 1       | HOUSING                       |
| 2       | DECLUTCH HOUSING              |
| 3       | HOUSING COVER                 |
| 4       | DECLUTCH HOUSING COVER        |
| 5       | MOTOR ADAPTER                 |
| 6       | HANDWHEEL GEAR                |
| 7       | WORM SHAFT END CAP            |
| 8       | GEAR MOUNTING BRACKET         |
| 9       | DECLUTCH LEVER                |
| 10      | HANDWHEEL 30"                 |
| 11      | TORQUE DRIVE SLEEVE           |
| 12      | LIMIT SWITCH COMPT. COVER     |
| 13      | HANDWHEEL CLUTCH              |
| 14      | FORK                          |
| 15      | INTERMEDIATE PINION AND SHAFT |
| 17      | WORM GEAR                     |
| 18      | DRIVE SLEEVE BUSHING          |
| 19      | DRIVE SLEEVE THRUST BEARING   |
| 20      | WORM BUSHING                  |
| 21      | BUSHING - HANDWHEEL GEAR      |
| 22      | RETAINING RING                |
| 23      | GEAR INSERT                   |
| 24      | SPLIT RING                    |
| 25      | SPIROLOX                      |
| 27      | DECLUTCH LEVER DRUM           |
| 28      | DECLUTCH LEVER STOP           |
| 30      | DECLUTCH SHAFT                |
| 31      | TRIPPER BOLT                  |
| 32      | G. L. THREADED COLLAR         |
| 33      | CLUTCH TRIPPER #1             |
| 34      | CLUTCH TRIPPER #2             |
| 35      | HANDLE ROD                    |
| 36      | HANDLE CHROME PLATE           |
| 37      | HINGE-UPPER                   |
| 38      | HINGE-LOWER                   |
| 39      | MOTOR PINION                  |
| 40      | HANDWHEEL SHAFT & PINION      |
| 41      | MOTOR DRIVE INTERMEDIATE GEAR |
| 42      | DRIVE SHAFT GEAR              |
| 43      | DRIVE SHAFT (SOLID)           |
| 44      | BEARING CARTRIDGE CAP         |
| 45      | BEARING CARTRIDGE STEM        |
| 46      | THRUST WASHER                 |
| 47      | GEAR CLUTCH SPACER            |
| 48      | NUT - CARTRIDGE STEM          |
| 49      | FORK - ROLLER                 |
| 50      | FLEXIBLE JAW CLUTCH HOUSING   |
| 51      | SLIDING GEAR CLUTCH           |
| 52      | MOTOR CLUTCH GEAR CAM PIN     |
| 53      | PIN FORK ROLLER               |
| 54      | SPLINED INSERT                |
| 55      | HOLLOW DRIVE SHAFT            |
| 56      | WORM                          |
| 57      | TORSION SPRING                |
| 58      | BELLEVILLE SPRING             |
| 59      | DECLUTCH CAP                  |
| 60      | WASHER - HANDWHEEL            |

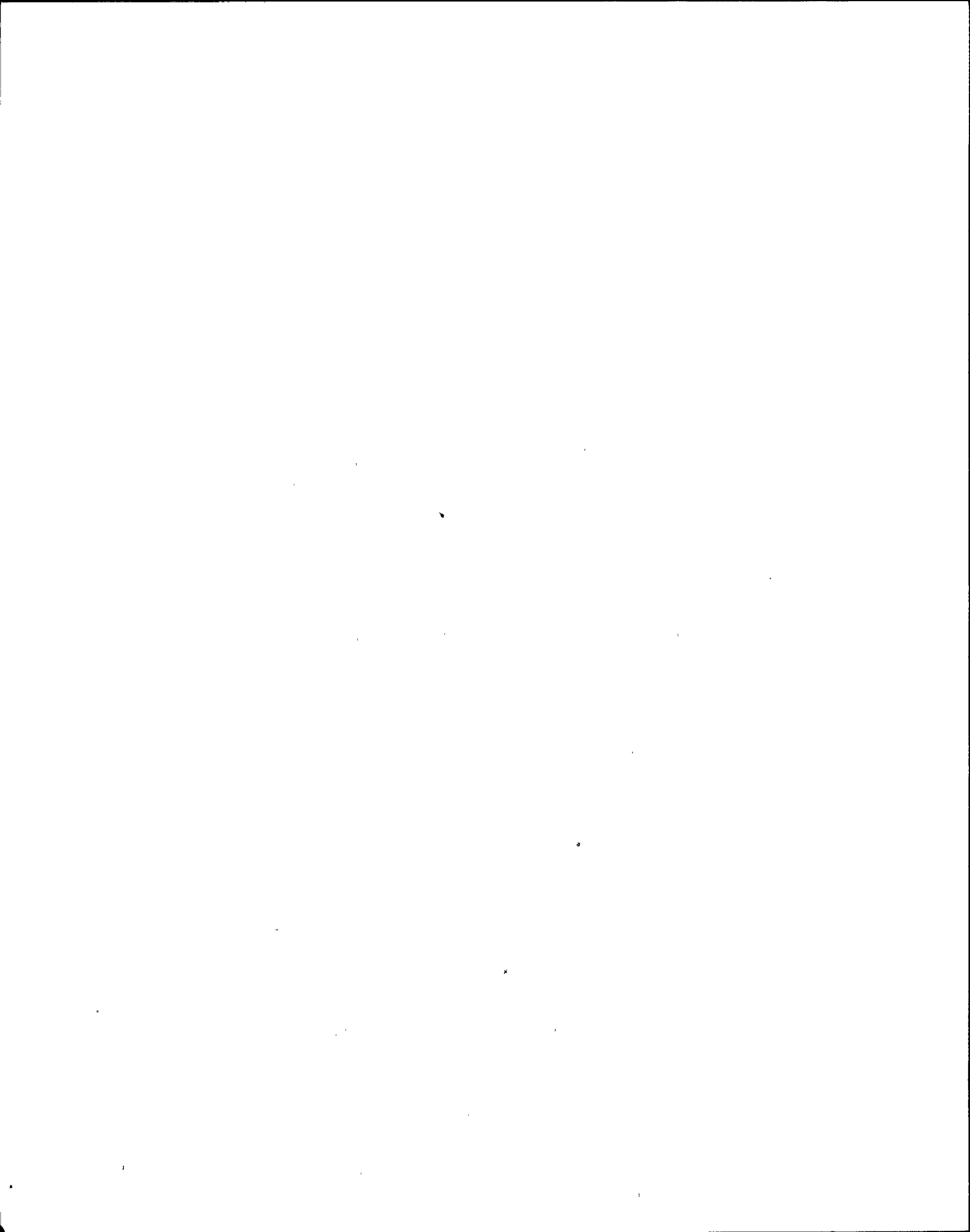
| PC. NO. | DESCRIPTION                  |
|---------|------------------------------|
| 61      | SPRING WASHER                |
| 62      | TORQUE LIMIT SLEEVE          |
| 63      | HANDWHEEL GEAR SPACER        |
| 64      | BEARING SPACER               |
| 65      | BEARING ADAPTER              |
| 66      | DECLUTCH ARM                 |
| 67      | TRIPPER SPRING               |
| 68      | CLUTCH COMPRESSION SPRING    |
| 69      | DECLUTCH SHAFT SPACER        |
| 70      | DECLUTCH SHAFT WASHER        |
| 71      | DECLUTCH LEVER NAME PLATE    |
| 72      | STOP STUD                    |
| 73      | FLEXIBLE JAW CLUTCH SLEEVE   |
| 74      | FLEXIBLE JAW CLUTCH COLLAR   |
| 75      | NYLON INSERT                 |
| 76      | INTERNAL SPACER              |
| 79      | HOUSING COVER GASKET         |
| 80      | DECLUTCH HOUSING GASKET      |
| 81      | DECLUTCH CAP GASKET          |
| 82      | DECLUTCH COVER GASKET        |
| 83      | WORM SHAFT END CAP GASKET    |
| 84      | MOTOR ADAPTER GASKET         |
| 85      | GASKET MOTOR                 |
| 88      | LIMIT SWITCH COVER GASKET    |
| 90      | BEARING CONE                 |
| 91      | BEARING CUP                  |
| 92      | BEARING SPACER               |
| 93      | BEARING                      |
| 94      | HANDWHEEL SHAFT BEARING      |
| 95      | BEARING                      |
| 96      | BEARING                      |
| 97      | BEARING                      |
| 98      | BEARING LOCKNUT              |
| 99      | BEARING LOCKNUT              |
| 100     | BEARING LOCKNUT W/CUP PT.    |
| 101     | ROLL PIN 1/4" x 1 1/2"       |
| 102     | RETAINING RING               |
| 103     | HALLOWELL COLLAR (1/2" BORE) |
| 104     | QUAD RING                    |
| 105     | OIL SEAL                     |
| 106     | SPIROLOX RING                |
| 107     | SPIROLOX RING                |
| 108     | OIL SEAL                     |
| 109     | GROOVE PIN                   |
| 110     | ROLL PIN                     |
| 111     | GREASE FITTING               |
| 112     | WELSH PLUG                   |
| 115     | MOTOR                        |
| 116     | TORQUE SWITCH                |
| 117     | GEAR LIMIT SWITCH            |
| 124     | HOUSING COVER                |
| 125     | HOUSING THRUST ADAPTER       |
| 126     | THRUST DRIVE SLEEVE          |
| 127     | STEM NUT                     |
| 128     | THRUST BEARING CARTRIDGE     |
| 129     | SEAL RETAINER PLATE          |
| 130     | DRIVE SLEEVE LOCKNUT         |
| 131     | THRUST BEARING               |
| 132     | OIL SEAL                     |
| 133     | GREASE FITTING               |
| 134     | "O" RING                     |
| 135     | GASKET                       |
| 136     | GASKET                       |
| 137     | THREADED FLANGE              |
| 138     | DYNA-SEAL WASHER             |
| 139     | BEARING CUP                  |
| 140     | BEARING CONE                 |



# SMB-5 & SMB-5T



THRUST ASSEMBLY



# SB-O

## DISASSEMBLY/ASSEMBLY/STEM NUT REMOVAL

Gen  
The SB  
with its  
locknut  
spring  
disas  
SMB  
prox  
rem

### General:

The SB-O actuator is a basic SMB-O unit with the housing cover, drive sleeve and locknut changed or modified to provide spring compensation to the stem nut. The disassembly/assembly procedure for the SMB-O, is applicable with the following procedure replacing Step 11 and stem nut removal procedure.

### Disassembly/ Stem Nut Removal:

#### Special SB Spring Compensator Parts:

1. Remove compensator spring housing, pc #3.
2. Remove compensator spring cartridge, pc #106. The Belleville spring, pc #109, and spacer, pc #108, will come off with spring cartridge, pc #106.
3. Remove spring compensator bearing cartridge, pc #107, being careful not to loosen or damage seal, pc #94. Bearing, pc #116, will come out with bearing cartridge, pc #107.
4. To remove drive sleeve—proceed as Step 11 of SMB-O standard instructions. If only the stem nut is to be removed proceed to Step 5.

5. The stem nut, pc #20, is now accessible and can be lifted directly from the actuator provided the actuator is not on the valve. If the actuator is on the valve, the stem nut may be removed by bolting a support ring or bar across the top of the main housing of the actuator to hold thrust bearing, pc #78, in place. After this is done, the actuator could be placed in hand operation and the handwheel rotated in the direction to effect a downward movement of the stem (usually the close direction). The stem nut will then climb up the stem until it clears its splines. The stem nut can then be rotated off the stem.

### Reassembly/ Stem Nut Installation:

1. Replace the stem nut, pc #20. If the actuator is not on the valve, the stem nut will drop in the drive sleeve, pc #11, until it bottoms out on the shoulder in the bottom of the drive sleeve. Insure splines are engaged. If the actuator is mounted on the valve, the stem nut, pc #20, can be installed by threading the stem nut down

the stem until the splines for in manual operation handwheel in the direction stem upward (usually the o, The stem nut will lower as the turns, until it bottoms out on l. in the bottom of the drive sleeve stem starts to move up.

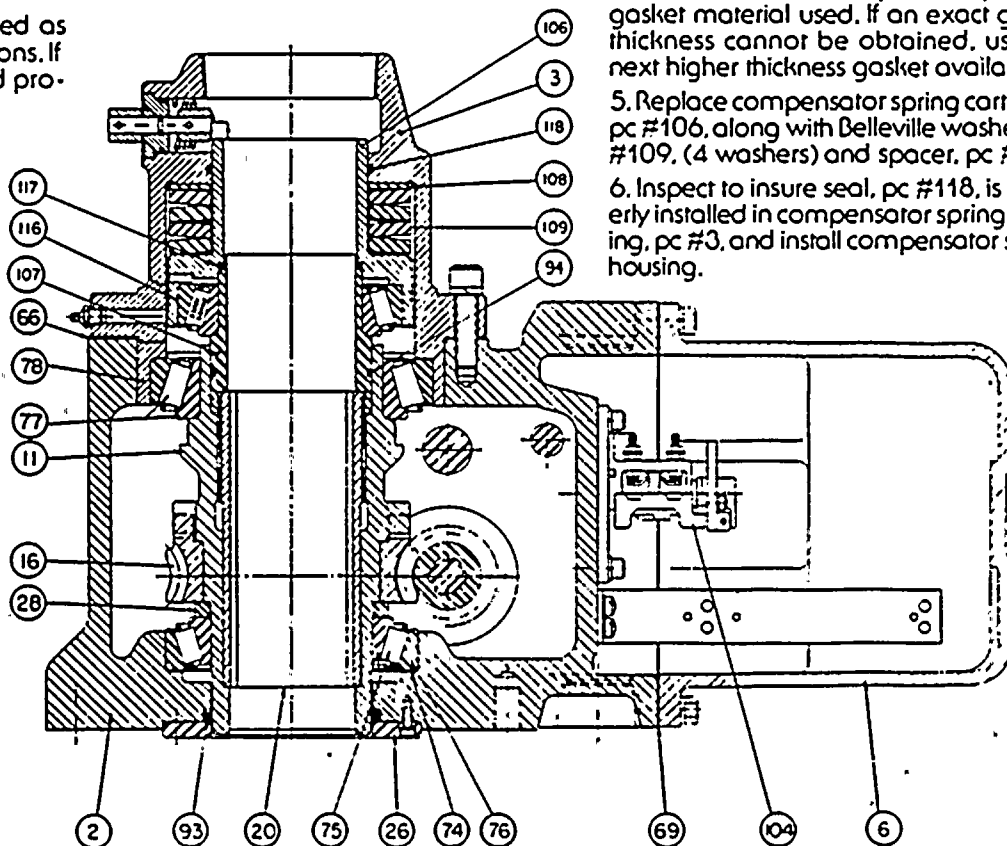
2. Replace bearing cartridge, pc #107, and bearing, pc #116, insuring seal #117 and #94, are properly installed. sure bearing cartridge engages splines on the top of the stem nut (cartridge will not rotate if engaged properly

3. Clean main housing, pc #2, flange, and mounting flange of the compensator spring housing, pc #3. Install compensator spring housing without any gasket. Measure the gap between the compensator spring housing, pc #3, and the main housing, pc #2.

4. Remove compensator spring housing pc #3, and install a gasket between main housing and compensator spring housing. The gasket thickness should be the same as the gap measured in Step 3, plus or allowance for the compressibility of the gasket material used. If an exact gasket thickness cannot be obtained, use the next higher thickness gasket available.

5. Replace compensator spring cartridge pc #106, along with Belleville washers, pc #109, (4 washers) and spacer, pc #108

6. Inspect to insure seal, pc #118, is properly installed in compensator spring housing, pc #3, and install compensator spring housing.





# SB-2

## DISASSEMBLY/ASSEMBLY/STEM NUT REMOVAL

### General:

The SB-2 actuator is a basic SMB-2 unit with the housing cover, drive sleeve and locknut changed or modified to provide spring compensation to the stem nut. The disassembly/assembly procedure for the SMB-2, is applicable with the following procedure replacing Step 11 and stem nut removal procedure.

### Disassembly/ Stem Nut Removal:

#### Special SB Spring Compensator Parts:

1. Remove compensator spring housing cover, pc #161.
2. Remove compensator spring cartridge, pc #173, complete with Belleville springs, pc #179, thrust washers, pc #178, limiter sleeve, pc #199, and locknut, pc #180. (See note for further disassembly.)
3. Remove spring compensator bearing cartridge, pc #168, complete with bearings, pc #169.
4. Remove compensator spring housing, pc #163. (Read Step 6 before removing.)
5. To remove drive sleeve, proceed as Step 12 of standard SMB-0 instructions. If the stem nut is to be removed, proceed to Step 6.
6. The stem nut, pc #20, is now accessible and can be lifted directly from the actuator provided the actuator is not on the valve. The stem nut may be removed by leaving or reinstalling spring housing, pc #163. The stem nut may also be removed by bolting a support ring or bar across the top of the main housing of the actuator to hold thrust bearing, pc #78, in place. After this is done, the actuator could be placed in hand operation and the handwheel rotated in the direction to effect a downward movement of the stem (usually the close direction). The stem nut will then climb up the stem until it clears its splines. The stem nut can then be rotated off the stem.

### Reassembly/ Stem Nut Installation:

1. Replace the stem nut, pc #20. If the actuator is not on the valve, the stem nut will drop in the drive sleeve, pc #11, until it bottoms out on the shoulder in the bottom of the drive sleeve. Insure splines are engaged. If the actuator is mounted on the valve, the stem nut, pc #20, can be installed by threading the stem nut down the stem until the splines hit. Put the actuator in manual operation and rotate the handwheel in the direction to move the stem upward (usually the open direction). The stem nut will lower as the handwheel turns, until it bottoms out on the shoulder in the bottom of the drive sleeve and the stem starts to move up.
2. Replace bearing cartridge, pc #168, and bearing, pc #169, insuring seals, pcs #194 and #176, are properly installed. Insure bearing cartridge engages the splines on the top of the stem nut (cartridge will not rotate if engaged properly).
3. Clean main housing, pc #2, flange, and mounting flange of the compensator spring housing, pc #163. Install compensator spring housing without any gasket. Measure the gap between the compensator spring housing, pc #163, and the main housing, pc #2.
4. Remove compensator spring housing, pc #163, and install a gasket between main housing and compensator spring housing. The gasket thickness should be the gap measured in Step 3, plus an allowance for the compressibility of the gasket material used. If an exact gasket thickness cannot be obtained, use the next higher thickness.

5. Install compensator spring housing, pc #163.

6. Replace compensator spring cartridge, pc #173, as an assembly. Install seal, pc #197, in locknut.

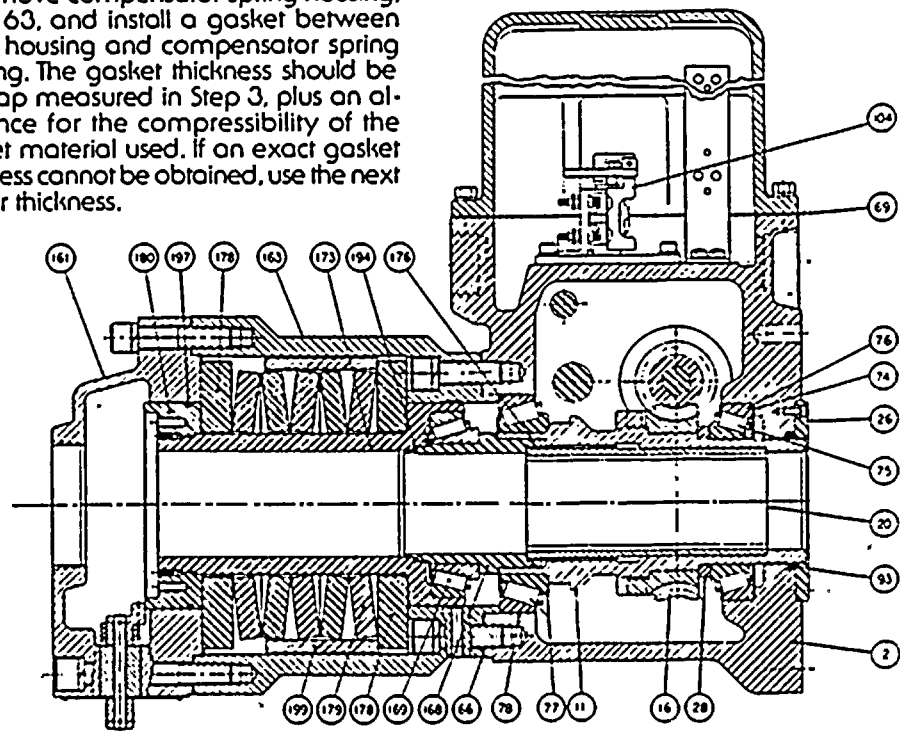
7. Install compensator spring housing cover, pc #161, using a gasket of sufficient thickness, including an allowance for compressibility, to fill any gap between the cover and the spring housing.

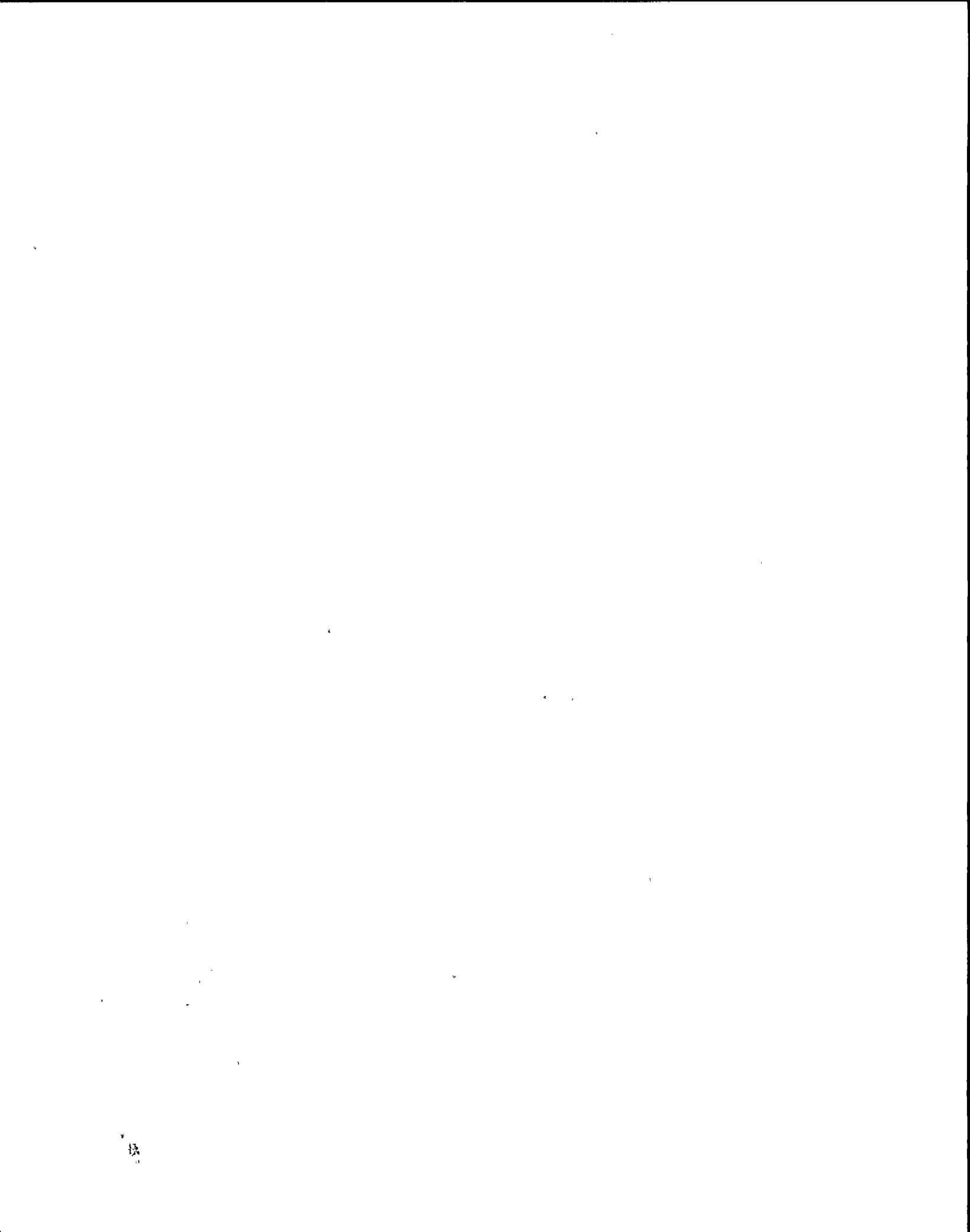
**NOTE:** The spring assembly should not be disassembled unless absolutely necessary! To disassemble the compensator spring cartridge:

1. Remove locknut, pc #180. Be careful to remove the set screws securing the locknut to the cartridge before trying to remove locknut.

2. Lift off thrust washer, pc #178, Belleville spring, pc #179, (5 washers), and thrust limiter sleeve, pc #199.

To reassemble, position Belleville springs, pc #179, as shown in drawing 01-416-0030-4 between the two thrust washers, pc #178. Thread locknut, pc #180, onto the compensator spring cartridge, pc #173, until it hits the shoulder on the cartridge. Reinstall set screws or drill and tap for new set screw locations.







# SB-4

## DISASSEMBLY/ASSEMBLY/STEM NUT REMOVAL

### General:

The SB-4 actuator is a basic SMB-4 unit with the housing cover, drive sleeve and locknut changed or modified to provide spring compensation to the stem nut. The disassembly/assembly procedure for the SMB-4, is applicable with the following procedure replacing Step 11 and stem nut removal procedure.

### Disassembly/ Stem Nut Removal:

Special SB Spring Compensator Parts:

1. Remove compensator spring housing, pc #163.
2. Remove thrust washer, pc #178.
3. Remove compensator spring cartridge assembly including pcs #180, #173, and #179.
4. Remove compensator bearing cartridge, pc #168. Bearing, pc #169, will come out with bearing cartridge.
5. The drive sleeve assembly can now be removed as per Step 12 of standard SMB-0 instructions. If stem nut alone is to be removed, proceed as in Step 6.

6. The stem nut, pc #20, is now accessible and can be lifted directly from the actuator provided the actuator is not on the valve. If the actuator is on the valve, the stem nut may be removed by bolting housing cover, pc #155, to housing using two 1" - 8UN x 2.5" LG bolts. After this is done the actuator could be placed in hand operation and the handwheel rotated in the direction to effect a downward movement of the stem (usually the close direction). The stem nut will then climb up the stem until it clears its splines. The stem nut can then be rotated off the stem.

### Reassembly/ Stem Nut Installation:

1. Replace the stem nut, pc #20, and seal, pc #182. If the actuator is not on the valve, the stem nut will drop in the drive sleeve, pc #11, until it bottoms out on the shoulder in the bottom of the drive sleeve. Insure splines are engaged. If the actuator is mounted on the valve, the stem nut, pc #20, can be installed by threading the stem nut down the stem until the splines hit. Put the actuator in manual operation and rotate the handwheel in the direction to move the stem upward (usually the

open direction). The stem nut will lower as the handwheel turns, until it bottoms out on the shoulder in the bottom of the drive sleeve and the stem starts to move up.

2. Replace bearing cartridge, pc #168, and bearing, pc #169, insuring seals, pcs #175 and #176, are properly installed. Insure bearing cartridge engages the splines on the top of the stem nut (cartridge will not rotate if engaged properly).

3. Replace compensator spring cartridge, pc #173, as an assembly with thrust washer, pc #178, installed in bottom and Belleville spring, pc #179, (4 washers) arranged as shown in drawing 01-416-0031-4, plus spring cartridge cover, pc #180, and seal, pc #181.

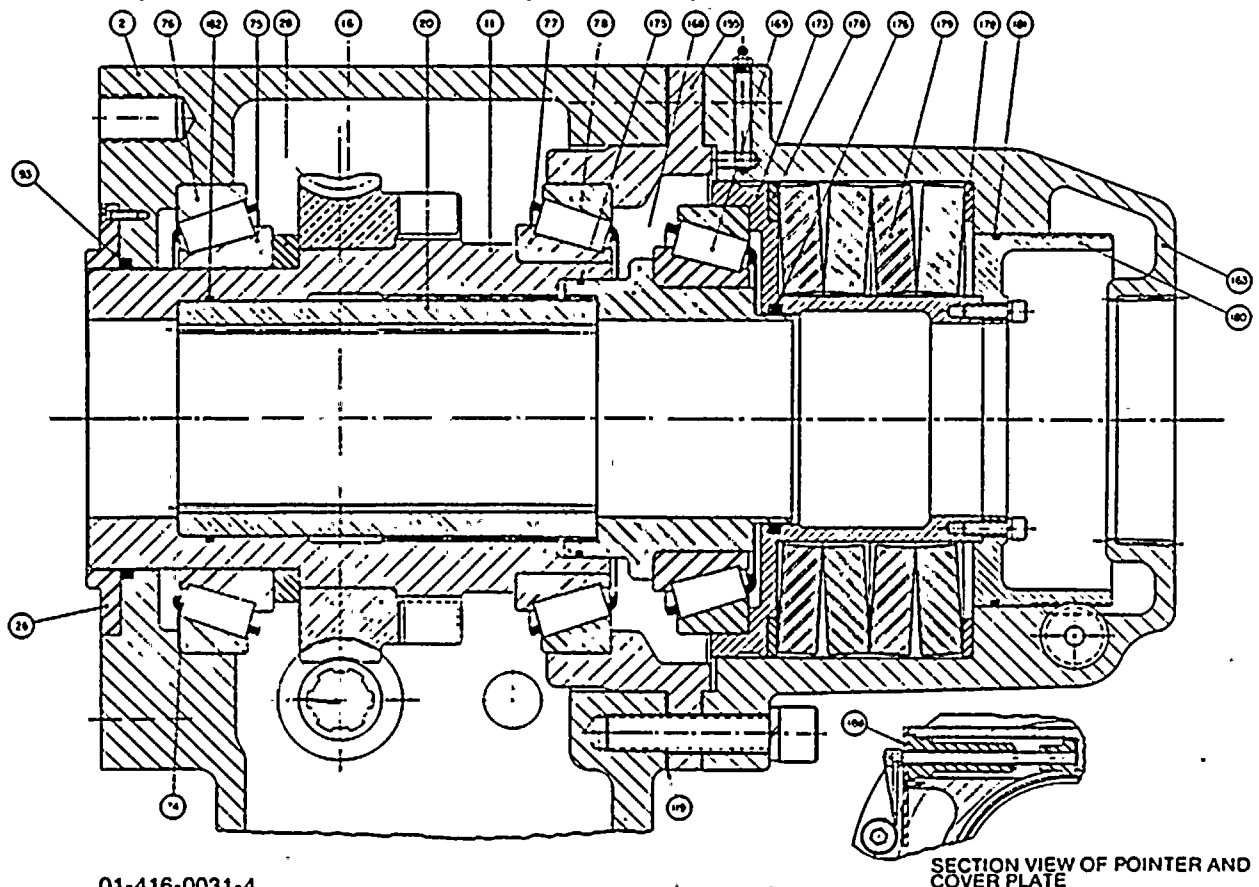
4. Replace thrust washer, pc #178, on the top of the spring cartridge.

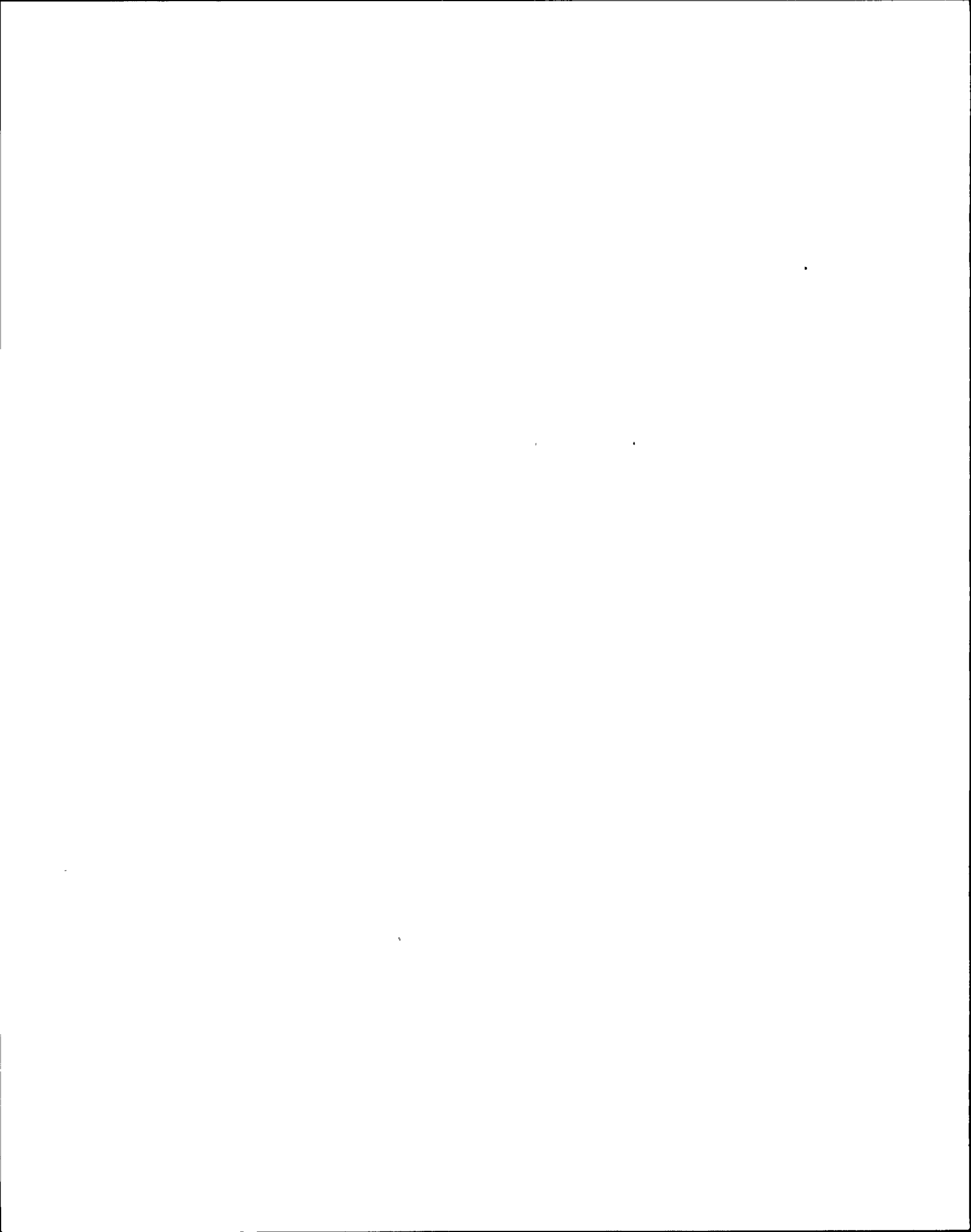
5. Replace compensator spring housing, pc #163, with a 1/33" gasket.

6. To realign deflection indicator, remove cover plate, pc #188.

7. Pull pointer and pointer shaft outward and move to "O" deflection.

8. Push pointer and pointer shaft back in and replace cover plate, pc #188.





# ELECTRICAL COMPONENTS

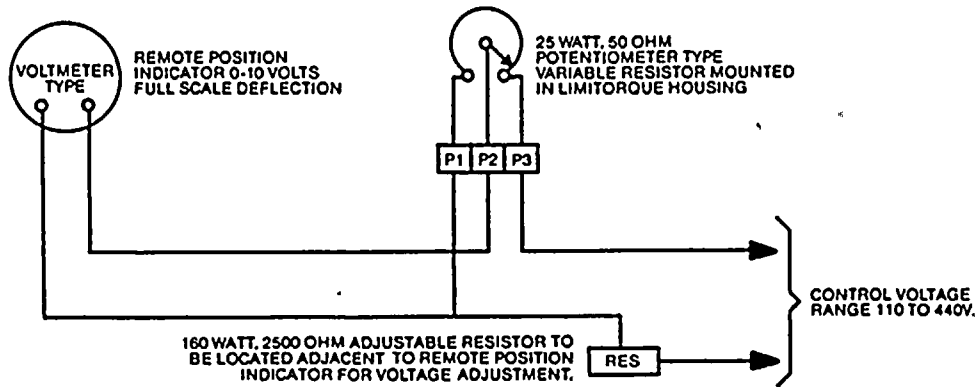
## Remote Position Indicators

Setting and Installation Instructions/  
Slidewire Type Position Indicator:

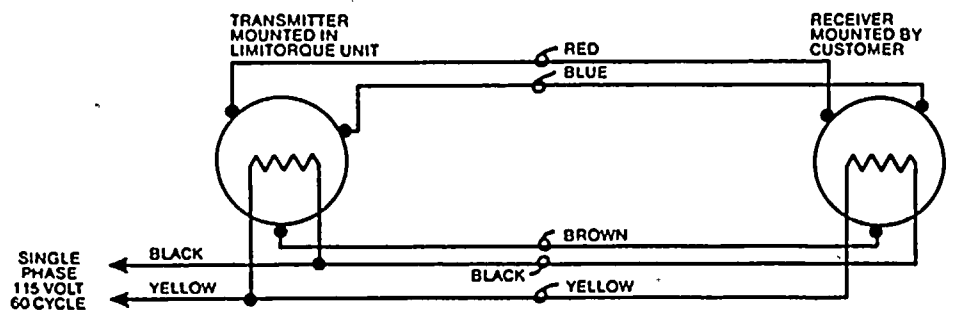
**CAUTION:** The voltmeter indicator is built to accept a maximum of ten (10) volts only. Therefore, it will be necessary to use a separate test voltmeter with a scale suitable for the maximum incoming control voltage.

1. Refer to P.G.C. Wiring Diagram 15-477-0183-1.
2. Mount the adjustable resistor as near as possible to the voltmeter indicator.
3. WITH POWER OFF connect all wires as shown on the W/D except the two on the voltmeter indicator; connect these two to the test meter, (see caution above).
4. Move the slider of the adjustable resistor to the extreme opposite end of the resistor from the power connection.

5. Open the indicator compartment of the Limitorque unit and uncouple transmitter shaft from gearing.
6. Operate Limitorque to a fully closed position of the valve.
7. Rotate wiper arm of transmitter to the zero degree position and recouple shaft.
8. Turn POWER ON. Test meter should now read "zero" or almost zero.
9. Run or crank unit to the fully open position.
10. Move the adjustable resistor slider toward the power connected end until the test meter reads ten (10) volts.
11. Turn Power Off—Disconnect the test meter and connect the leads to the voltmeter indicator.
12. Turn Power On—Indicator should now read full open.
13. Final adjustment may be necessary. If indicator reads less than full open move the adjustable resistor slider ahead slightly being careful not to exceed full open position on the dial. If meter reads more than zero, when unit is fully closed repeat setting starting with step #7.
14. After setting indicator, lock adjustable resistor slider in place.

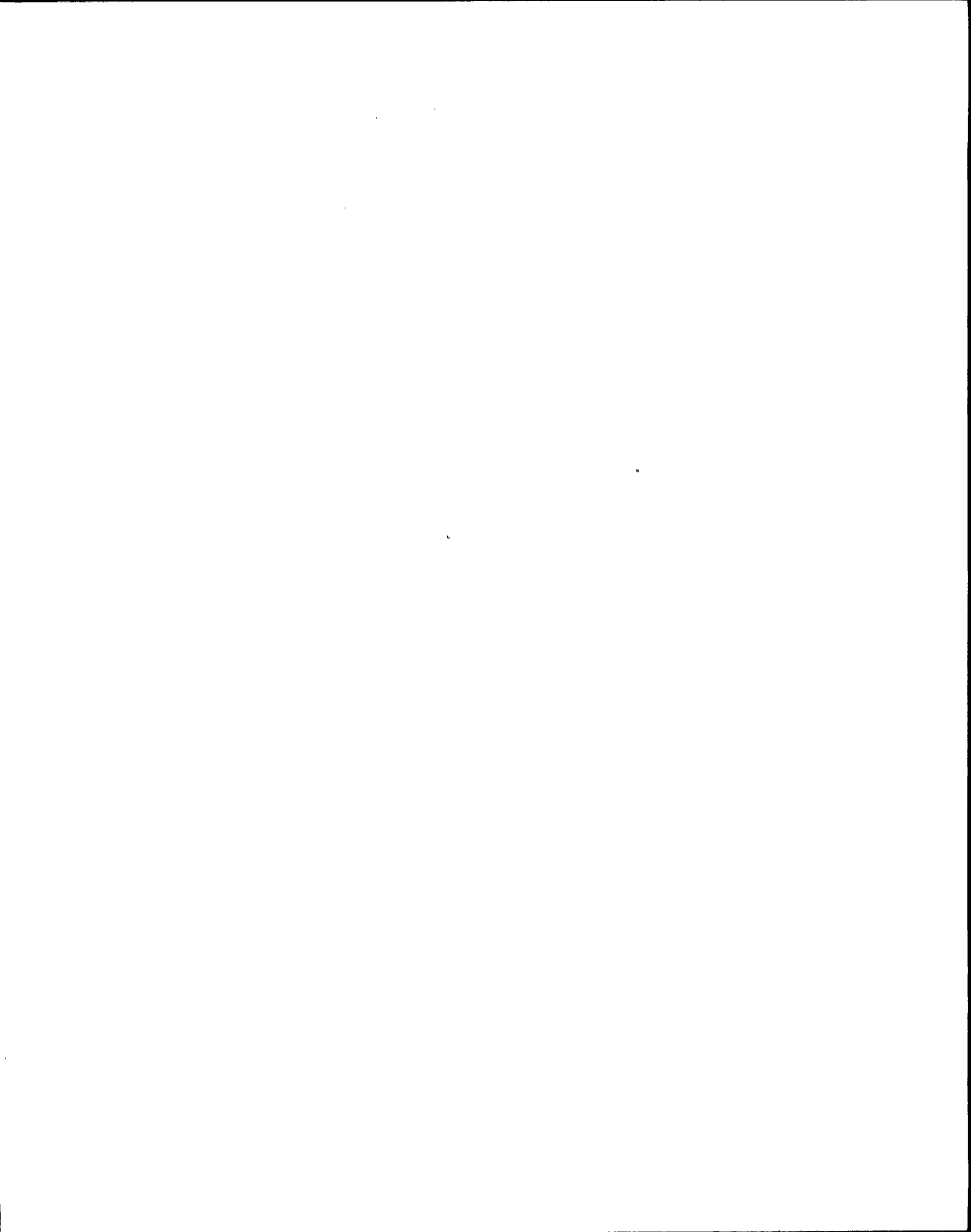


15-477-0183-1



15-490-0006-1

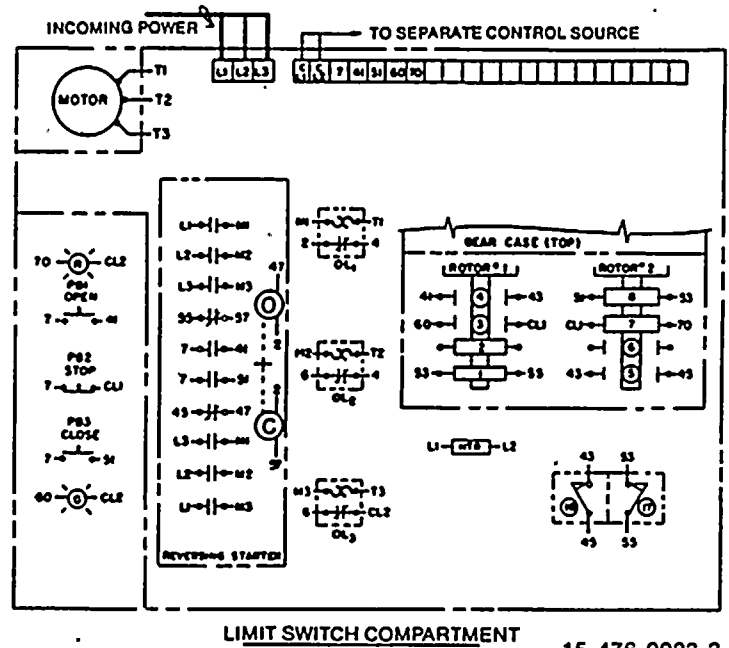
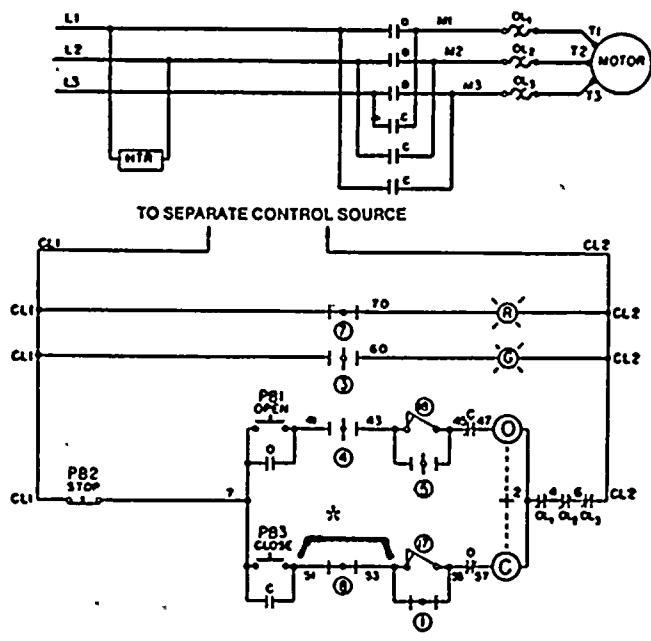
SELSYN TYPE POSITION TRANSMITTER WIRING DIAGRAM



# TYPICAL WIRING DIAGRAMS

## Legend:

- C—CLOSE CONTACT
- O—OPEN CONTACT
- ⊖—CLOSING COIL
- ⊕—OPENING COIL
- ⊙—GREEN INDICATING LIGHT
- ⊙—RED INDICATING LIGHT
- PB1—OPEN PUSHBUTTON
- PB2—STOP PUSHBUTTON
- PB3—CLOSE PUSHBUTTON
- OL—OVERLOAD RELAY (1,2,8,3)
- HTR—SPACE HEATER (LS COMP)
- +—MECHANICAL INTERLOCK



LIMIT SWITCH COMPARTMENT 15-476-0023-3

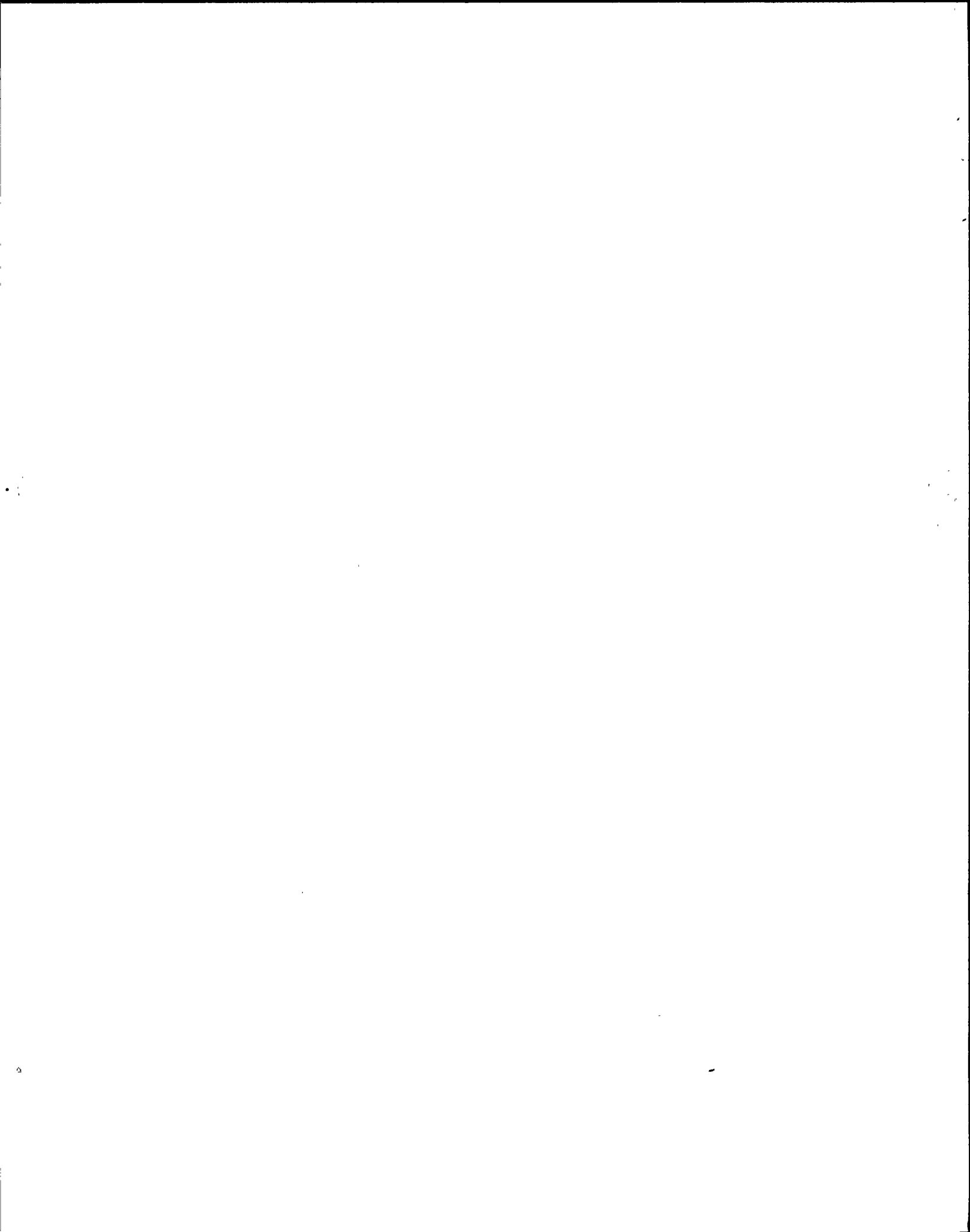
VALVE SHOWN IN FULL OPEN POSITION

| ROTOR | CONTACT | VALVE POSITION |             | FUNCTION    |
|-------|---------|----------------|-------------|-------------|
|       |         | FULL OPEN      | FULL CLOSED |             |
| 1     | 1       | 1              | 1           | BY PASS CIR |
|       | 2       | 1              | 1           | SPARE       |
|       | 3       | 1              | 1           | IND LIGHT   |
|       | 4       | 1              | 1           | OPEN LIMIT  |
| 2     | 5       | 1              | 1           | BY PASS CIR |
|       | 6       | 1              | 1           | SPARE       |
|       | 7       | 1              | 1           | IND LIGHT   |
|       | 8       | 1              | 1           | CLOSE LIMIT |

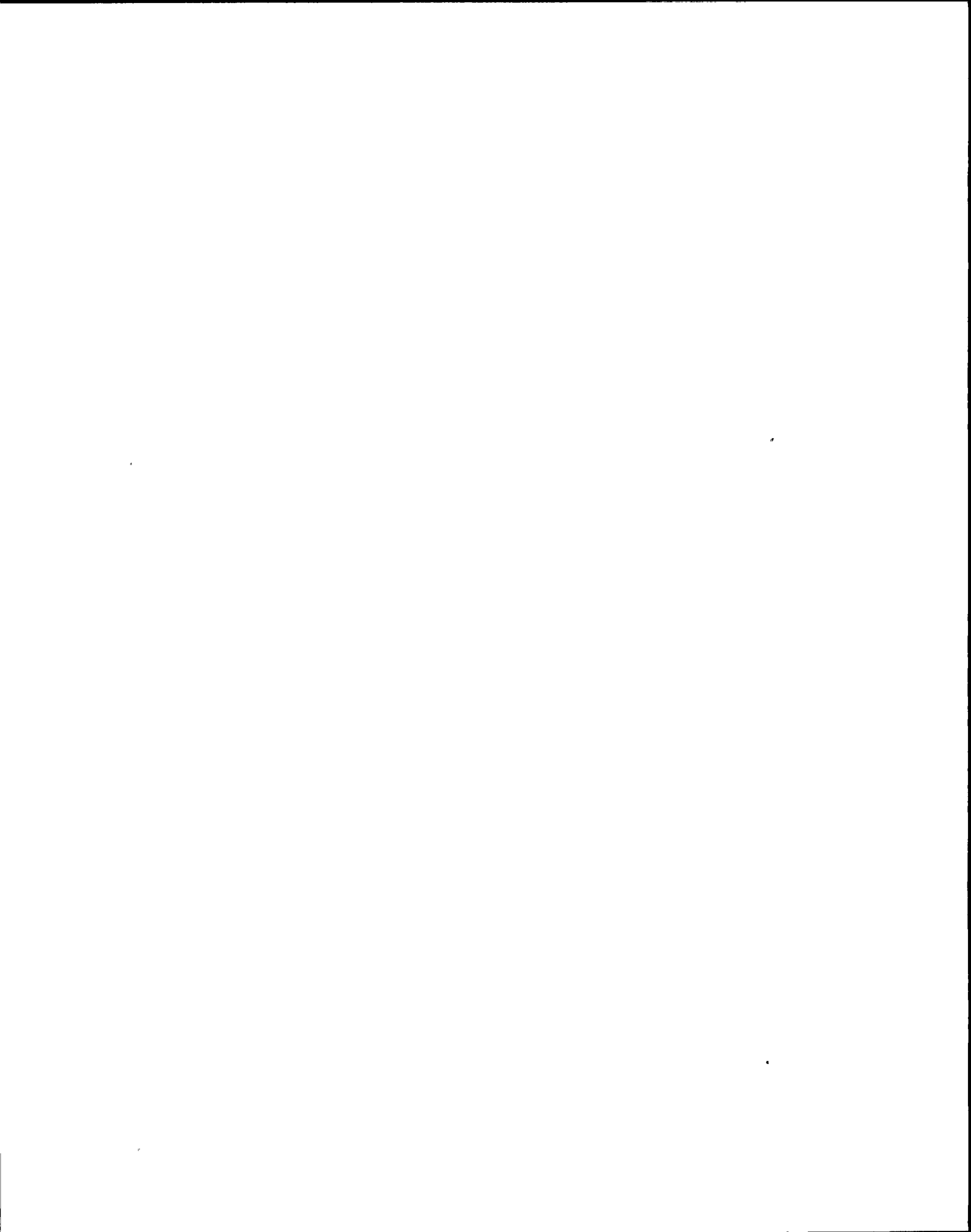
NOTES  
 1 — CLOSED CONTACT  
 2 — OPEN CONTACT

- 17 CLOSING TORQUE SWITCH INTERRUPTS CONTROL CIRCUIT IF MECHANICAL OVERLOAD OCCURS DURING CLOSING CYCLE.
- 18 OPENING TORQUE SWITCH INTERRUPTS CONTROL CIRCUIT IF MECHANICAL OVERLOAD OCCURS DURING OPENING CYCLE.

\* JUMPER: FOR TORQUE SEATING VALVES ADD JUMPER BETWEEN WIRES 51 & 53.



Maintenance history is based on the old values.  
2CUM-MNU84A/B/C were replaced under  
Mod 90-023. The WP's that are open ( $\frac{4}{7}$ )  
are on the new values. The new values were  
installed during the 1<sup>st</sup> Refueling outage (10/90-1/91).  
(Mod. 90-023) Randy Ferrer

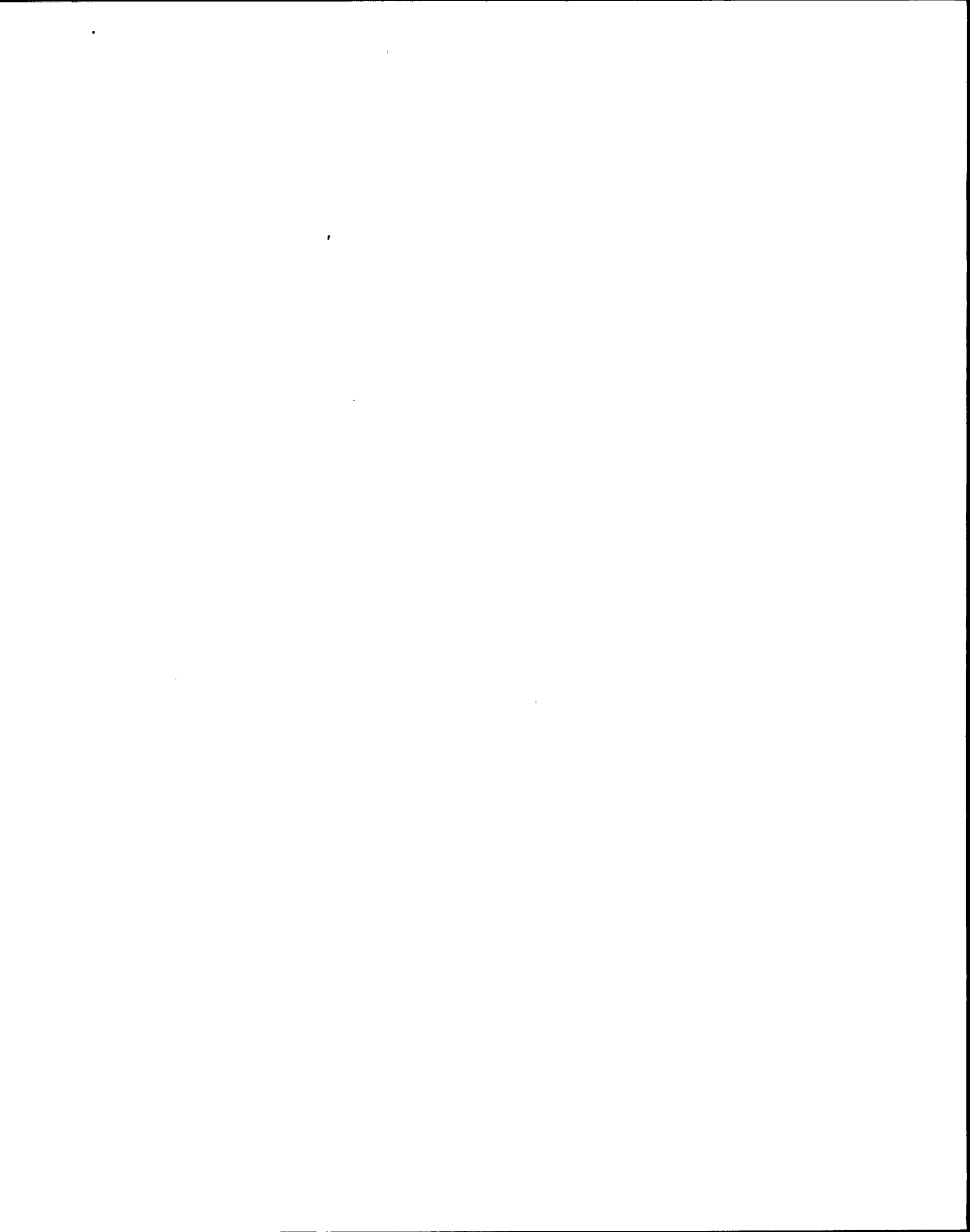




Display of Work Item Data

HIT..... 1  
Work No..... W120786  
Issued..... 870522  
Depart..... 200  
Status..... C  
Lead or Supprt..... L  
WCC Status..... 100  
Priority..... 4  
Unit..... 2  
Component No..... 2CNM-MOV84A  
System No..... CNM  
BIP No..... 003.002, CONDENSATE BOOSTER PUMP, FEEDWATER HEATER,  
FEEDWATER STARTUP BYPASS LINE & ASSOCIATED PIPING  
Safety Class..... NSR  
EQ..... N  
ASME Component..... N  
Cleanness Class..... B  
Title..... 2CNM-MOV84A (EL 277-A HEATER BAY)  
Work Item Description... RELEASED LEAKAGE, 2CNM-MOV84A IS LEAKING FROM THE  
FLANGE OF THE VALVE, FLANGE NEEDS TO BE TIGHTENED  
DOWN  
NPRDS Failcode..... E  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

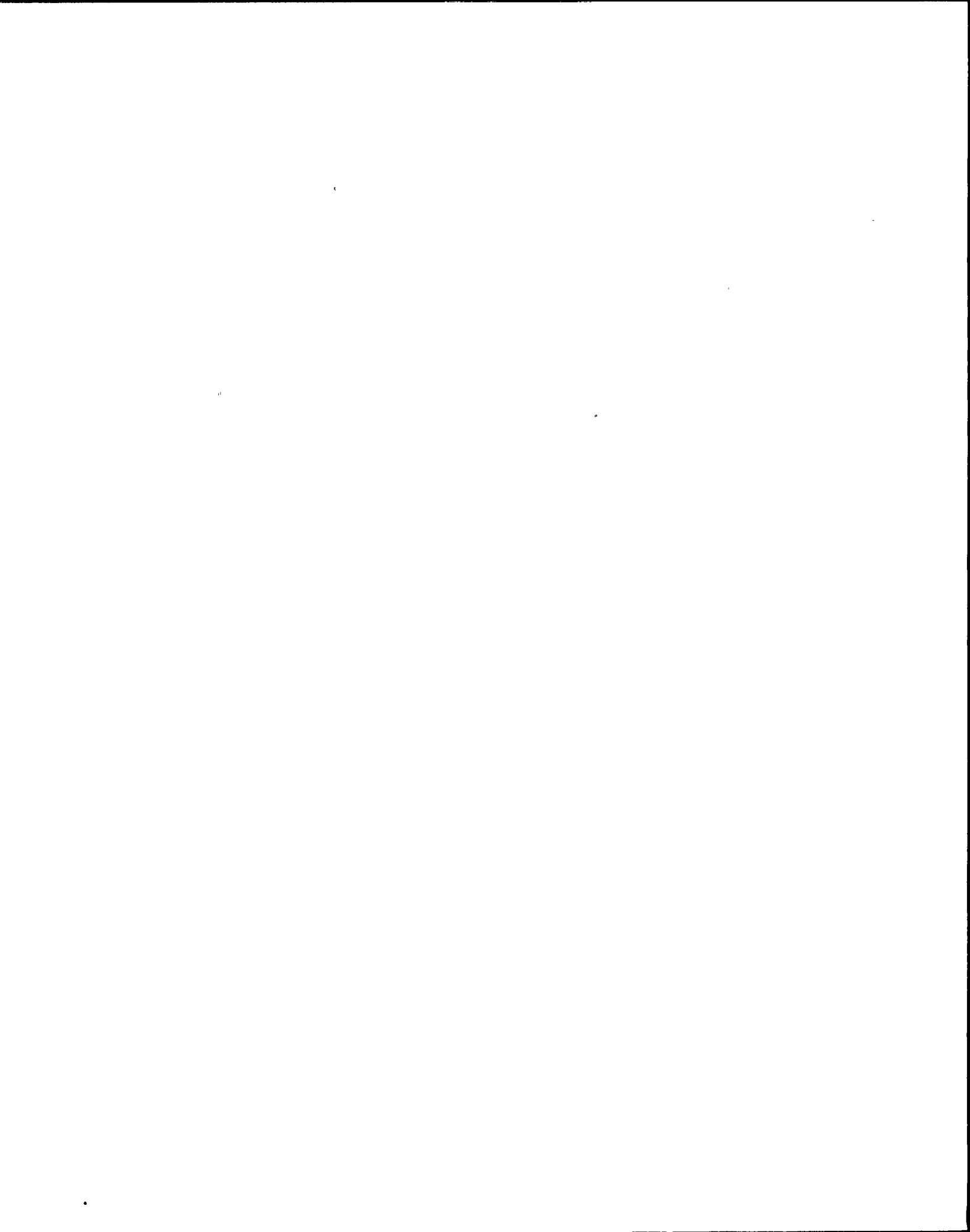
CAPS



Display of Work Item Data

Originator..... MOONAN K  
Approved by..... ANDERSEN A  
Approval date..... 870522  
Received By..... CRISS H  
Rcvd By Dt..... 870526  
Account Code..... 380.08--0912-190000--200-0110----0015  
QC Review..... BOYLE F  
QA Review Date..... 870527  
Inspection Req'd..... N  
Left Planning..... 870527  
Operations Priority..... PRI-2.3  
Remarks..... CLOSED 5/28  
Assign to..... SPICER D  
Assigned Date..... 870526  
SSS Notify..... 870526  
Corrective Action Code.. AA  
Corrective Action..... TIGHTENED UP ON FLANGE NUTS  
Cause of Failure Code... BC  
Cause of failure..... FLANGE NUTS LOOSE CAUSING LEAKAGE  
Attachments..... CLEANNESS SHEET  
QCIR Nos..... NA  
NCR's..... NA  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS



Display of Work Item Data

|                          |                  |
|--------------------------|------------------|
| Completed by.....        | SPICER D         |
| Completion date.....     | 870527           |
| Supervisor Review.....   | KEMPSTON C       |
| Supervisor Review Date.. | 870527           |
| QC Work Accepted by..... | BOYLE,F          |
| QC Work Accept date..... | 870526           |
| PMT Review By.....       | CRISS H          |
| PMT Rev Date.....        | 870522           |
| PMT Test Rpt.....        | N                |
| Accepted by.....         | PICCARILLI W     |
| Acceptance date.....     | 870528           |
| Plan LO.....             | 870528           |
| Fld Compl Log Dte.....   | 870527           |
| SSS Logout Date.....     | 870528           |
| Craft.....               | 1391, 1371, 1361 |
| Man Hours.....           | 11.5, 36.5, 11.5 |
| OT Hours.....            | 0, 7, 0          |
| Lead/Supprt Dpt.....     | 200              |

Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

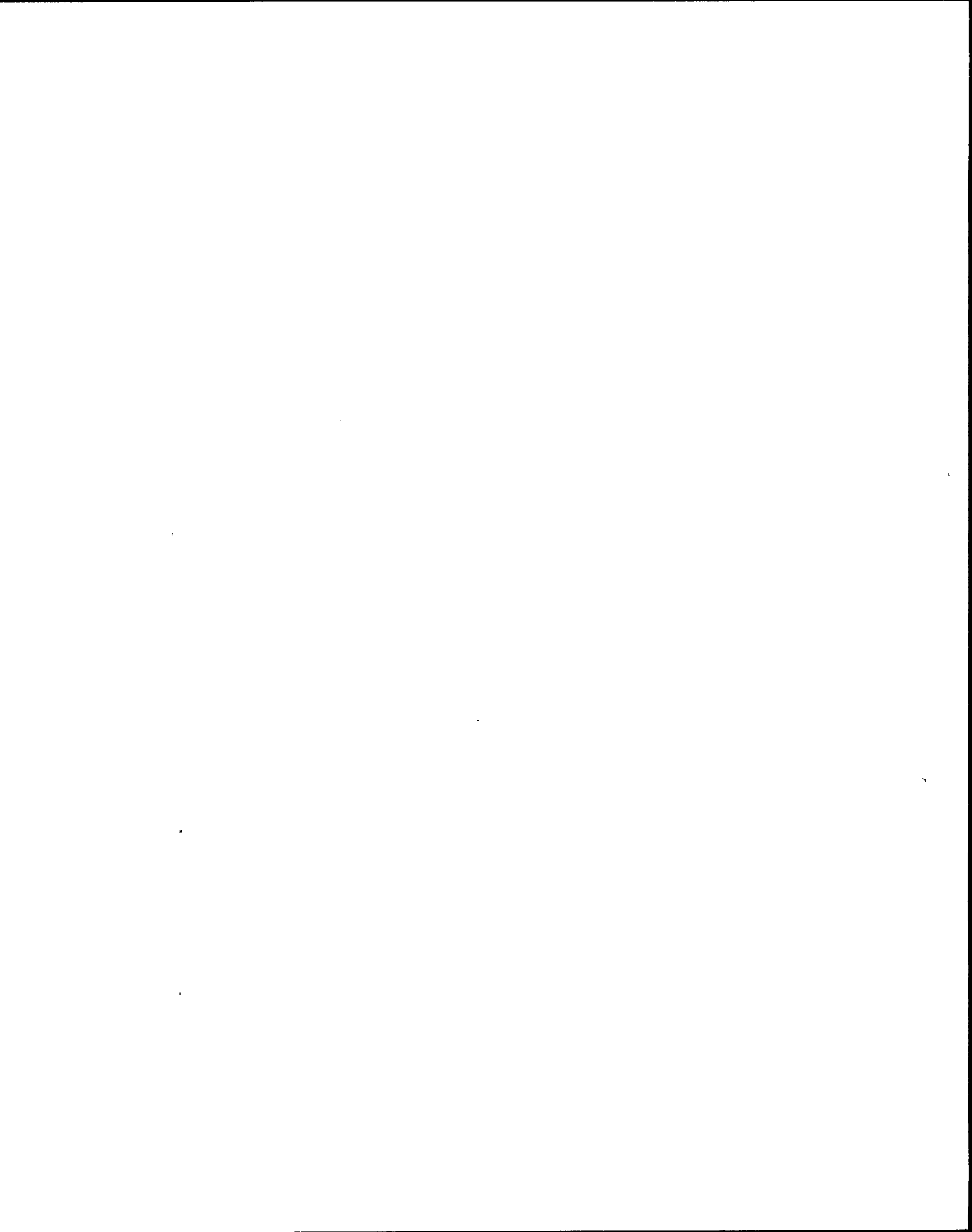
CAPS



Display of Work Item Data

HIT..... 2  
Work No..... W137371  
Issued..... 880214  
Depart..... 200  
Status..... C  
Lead or Supprt..... L  
WCC Status..... 100  
Priority..... 5  
Unit..... 2  
Component No..... 2CNM-MOV84A  
System No..... CNM  
BIP No..... 003.000  
Safety Class..... NSR  
EQ..... N  
ASME Component..... N  
Title..... -A- FEEDWATER PUMP SUCTION ISOLATION  
Work Item Description... 2CNM-MOV84A IS LEAKING AT THE UPPER FLANGE, REPAIR  
LEAK AS NECESSARY, LOCATED -A- HEATER BAY UPPER LEVEL  
NORTH BETWEEN 3RD AND 4TH POINT HEATERS  
  
NPRDS Failcode..... E  
Originator..... PITTS G  
Approved by..... TOPLEY DD  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS

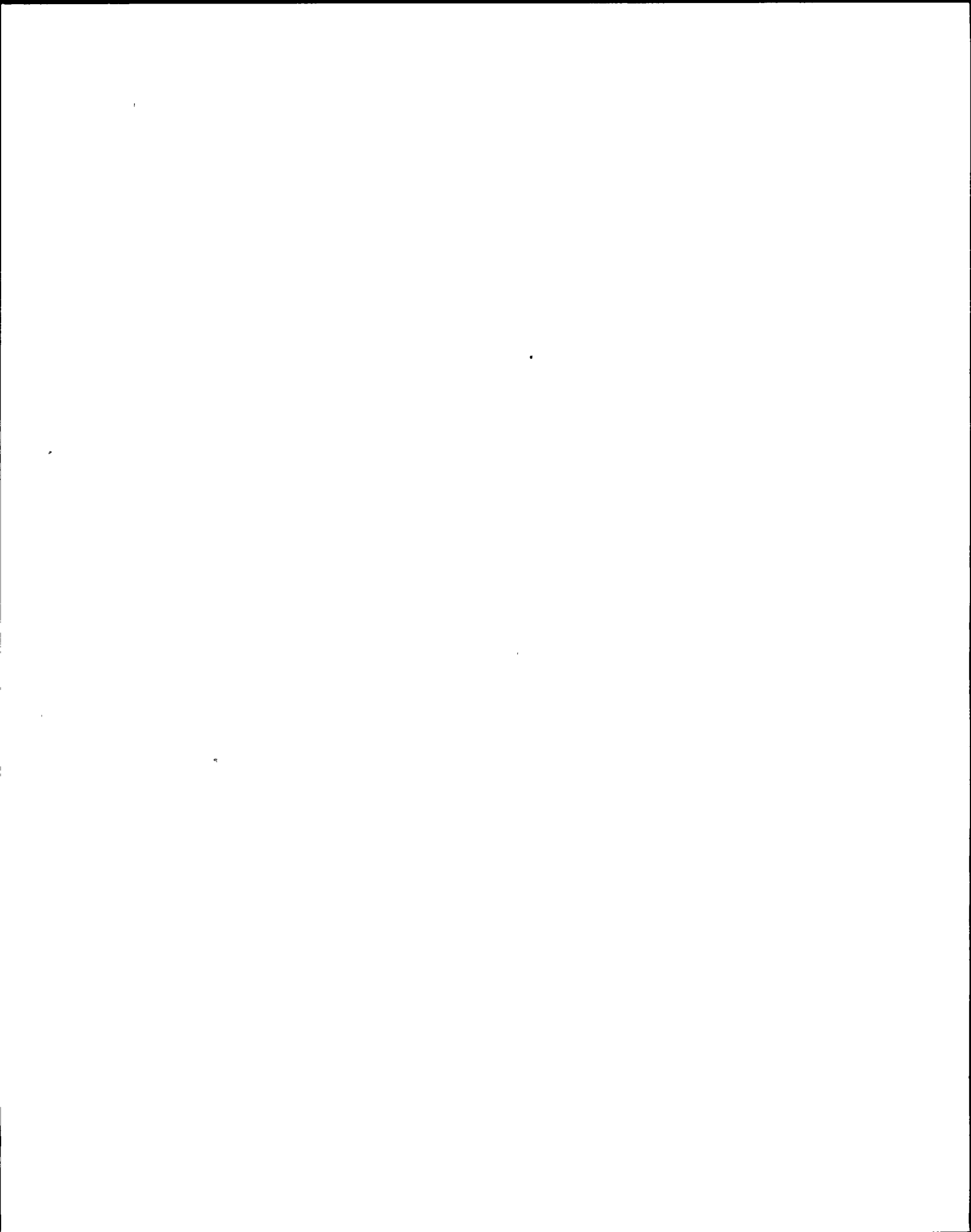




Display of Work Item Data

Approval date..... 880214  
Received By..... CRISS H  
Rcvd By Dt..... 880214  
Account Code..... 380.08--0912-190000--200-0110----0015  
QC Review..... LAVALLEE P  
QA Review Date..... 880215  
Inspection Req'd..... N  
Left Planning..... 880215  
Operations Priority..... PRI-6.2  
Remarks..... MRF 20484, REQ 88-000464 ETA TBD  
Staged By..... FAHNESTOCK T  
Staged By Date..... 880218  
Proj Crew..... 4  
Proj Dur..... 16  
Corrective Action..... VOID, LEAK ON HV60A, W137797  
QCIR Nos..... NA  
NCR's..... NA  
Completed by..... BUNNELL J  
Completion date..... 880307  
Supervisor Review..... BUNNELL J  
Supervisor Review Date.. 880307  
QC Work Accepted by..... LAVALLEE, P  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS

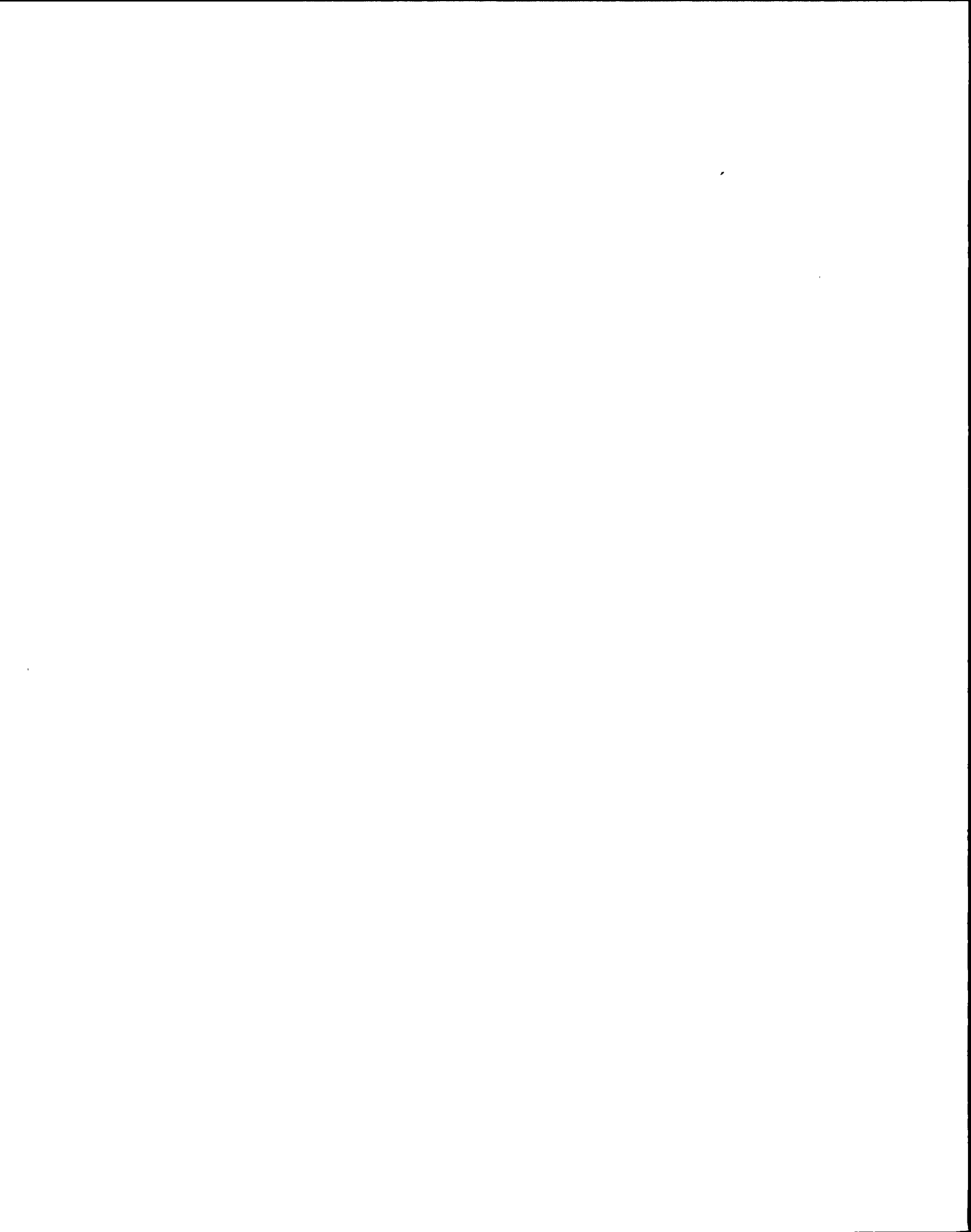


Display of Work Item Data

|                          |            |
|--------------------------|------------|
| QC Work Accept date..... | 880215     |
| PMT Review By.....       | CRISS H    |
| PMT Rev Date.....        | 880214     |
| PMT Test Rpt.....        | N          |
| Accepted by.....         | DRAGOMER E |
| Acceptance date.....     | 880308     |
| Plan LO.....             | 880308     |
| Fld Compl Log Dte.....   | 880307     |
| SSS Logout Date.....     | 880308     |
| Lead/Supprt Dpt.....     | 200        |

Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

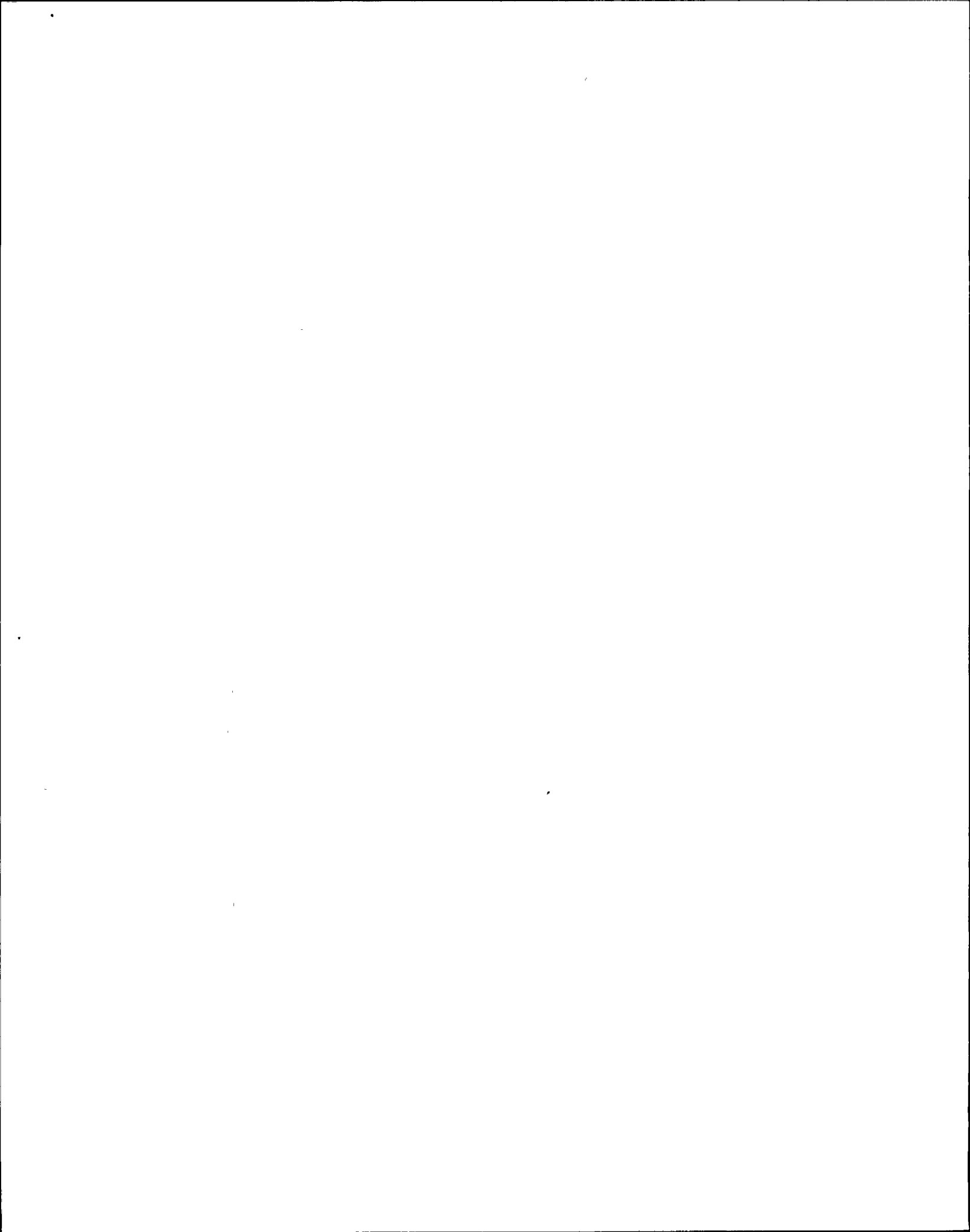
CAPS



Display of Work Item Data

|                         |  |
|-------------------------|--|
| HIT.....                | 3  |
| Work No.....            | W136229  |
| Issued.....             | 880502   |
| Depart.....             | 200  |
| Status.....             | C  |
| Lead or Supprt.....     | L  |
| WCC Status.....         | 100  |
| Priority.....           | 3  |
| Unit.....               | 2  |
| Component No.....       | 2CNM-MOV84C  |
| System No.....          | CNM  |
| BIP No.....             | 003.000  |
| Safety Class.....       | NSR  |
| EQ.....                 | N  |
| ASME Component.....     | N  |
| Title.....              | C FW PUMP SUCTION VALVE  |
| Work Item Description.. | LEAKING FROM VALVE FLANGE, TIGHTEN OR REPAIR AS REQD,<br>EL 277 C HEATER BAY |
| NPRDS Failcode.....     | E  |
| Originator.....         | SMITH C  |
| Approved by.....        | POINDEXTER J   |
| Approval date....       |  |

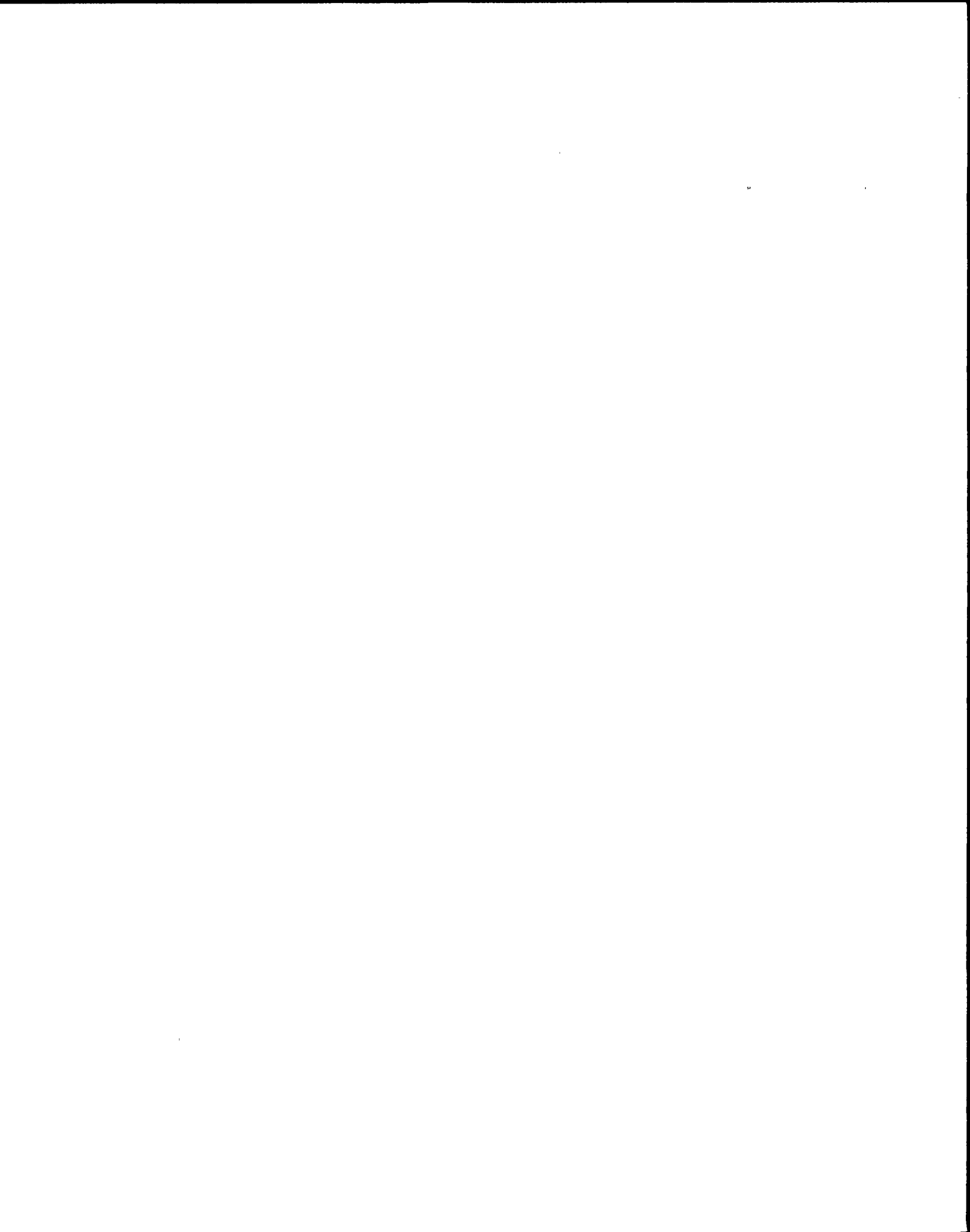
CAPS



Display of Work Item Data

Received By..... CRISS H  
Rcvd By Dt..... 880503  
Account Code..... 706.30--9571-321115--200-0110  
QC Review..... MCCLOWSKY D  
QA Review Date..... 880504  
Inspection Req'd..... N  
Left Planning..... 880504  
Operations Priority..... PRI-6.1  
Remarks..... RECEIVED 880505  
Assign to..... MICELI B  
Assigned Date..... 880515  
Corrective Action Code.. AG  
Corrective Action..... GROUND OUT PEROSITY IN WELD AND REPAIRED WITH NEW  
WELD  
Cause of Failure Code... BG  
Cause of failure..... PEROSITY IN WELD  
Attachments..... WELD RECORD, WELD MATERIAL ISSUE, NM MATERIAL ISSUE  
012829  
Mark Up No..... 048384  
Completed by..... MICELI B  
Completion date..... 880515  
Supervisor Review..... WATSON R  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS





Display of Work Item Data

|                          |          |
|--------------------------|----------|
| Supervisor Review Date.. | 880515   |
| PMT Review By.....       | CRISS H  |
| PMT Rev Date.....        | 880503   |
| PMT Test Rpt.....        | N        |
| PMT Ver.....             | NA - NSR |
| Accepted by.....         | MOYER G  |
| Acceptance date.....     | 880516   |
| Plan LO.....             | 880517   |
| Fld Compl Log Dte.....   | 880515   |
| SSS Logout Date.....     | 880517   |
| Lead/Supprt Dpt.....     | 200      |

Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

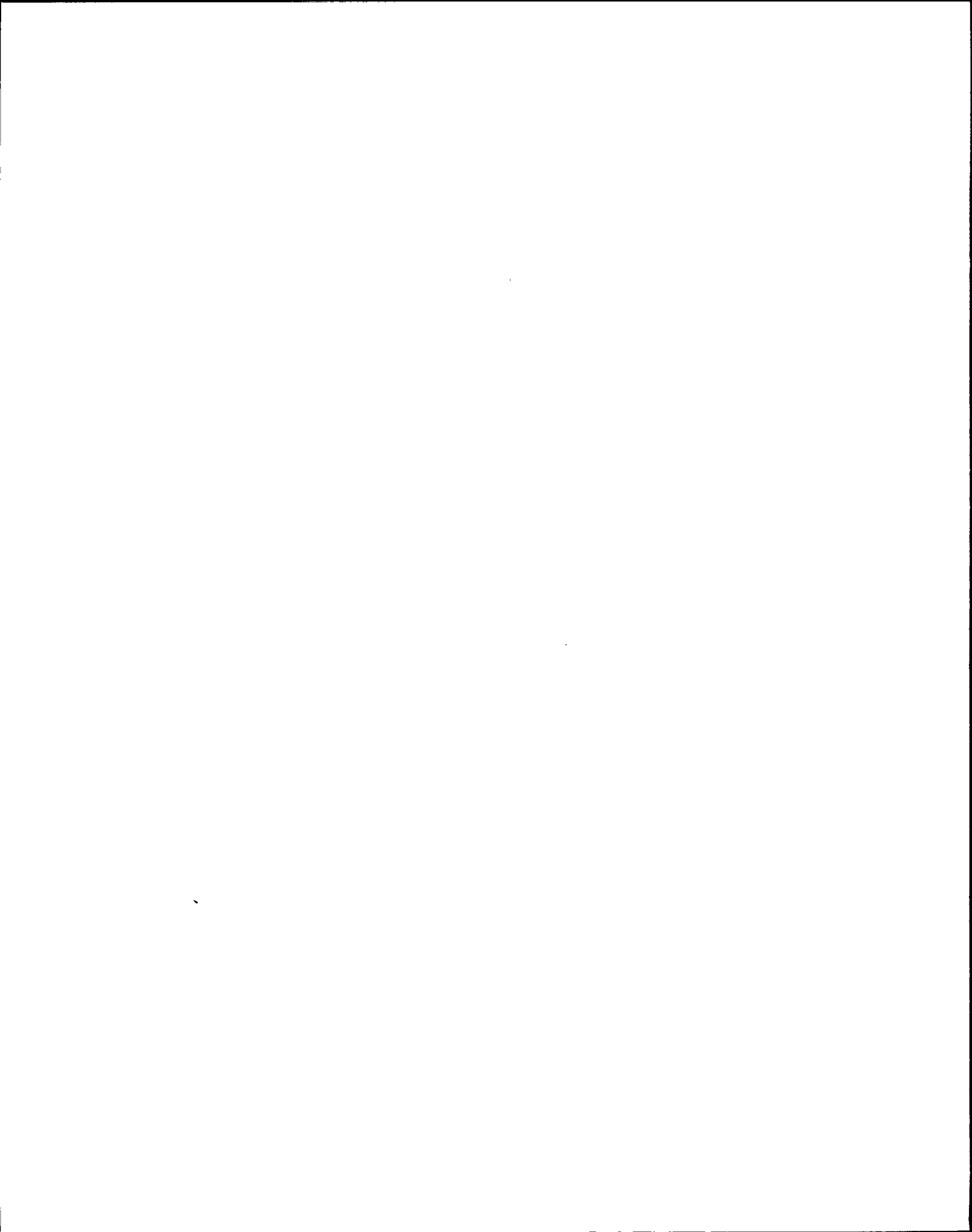
CAPS



Display of Work Item Data

|                          |   |
|--------------------------|---|
| HIT.....                 | 4   |
| Work No.....             | W115753   |
| Issued.....              | 861203  |
| Depart.....              | 200   |
| Status.....              | C   |
| Lead or Supprt.....      | L   |
| WCC Status.....          | 100   |
| Priority.....            | 3   |
| Unit.....                | 2   |
| Component No.....        | 2CNM-MOV84C   |
| System No.....           | CNM   |
| BIP No.....              | 003.002, CONDENSATE BOOSTER PUMP, FEEDWATER HEATER,<br>FEEDWATER STARTUP BYPASS LINE & ASSOCIATED PIPING  |
| Safety Class.....        | NSR   |
| EQ.....                  | N   |
| ASME Component.....      | N   |
| Cleanness Class.....     | B   |
| Work Item Description... | FEEDWATER PUMP SUCTION ISOLATION VALVE, HANDWHEEL<br>FELL OFF, HANDWHEEL FALLS OFF WHEN PIPE IS VIBRATING |

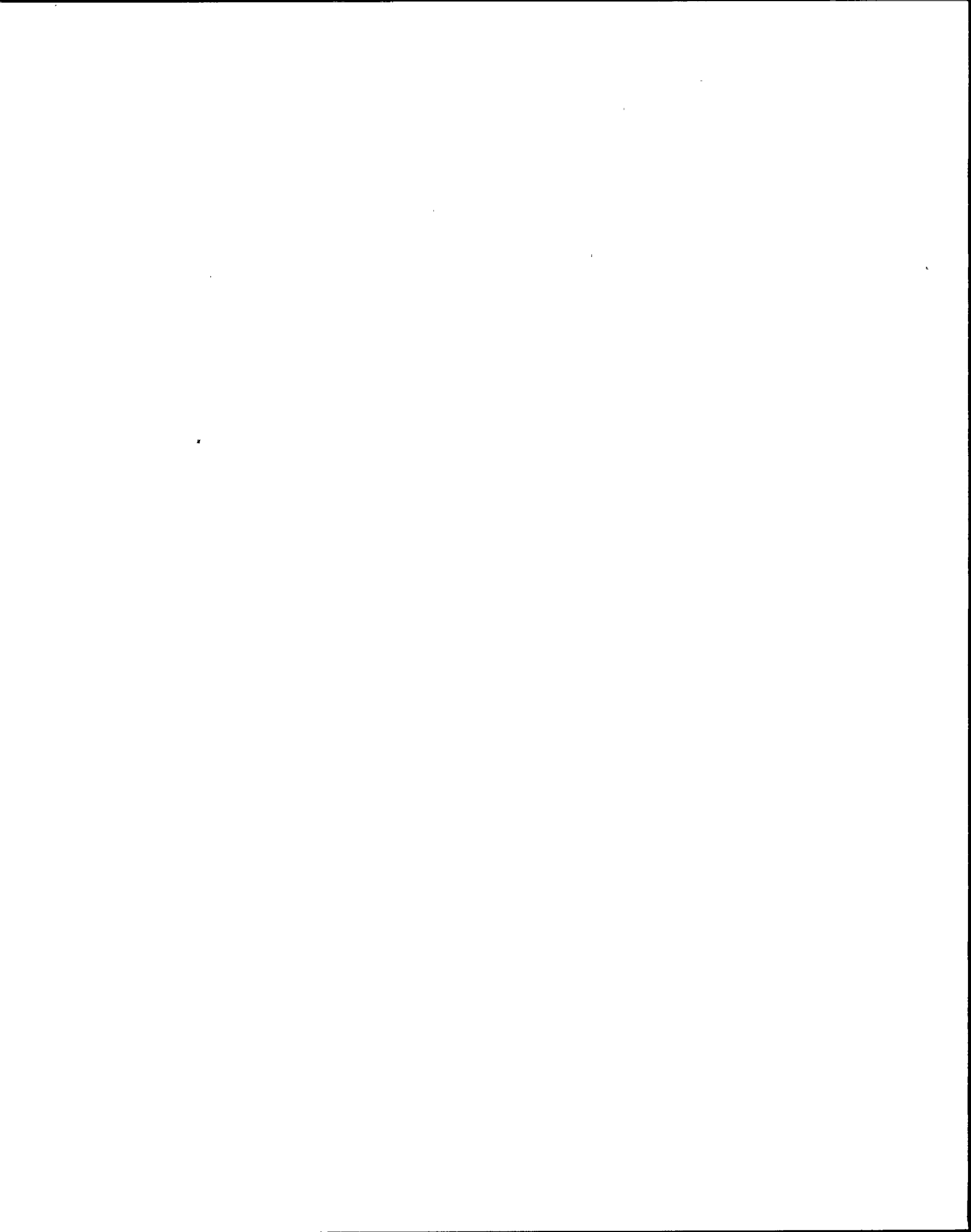
CAPS



Display of Work Item Data

Approved by..... KIBBE J  
Approval date..... 861203  
Received By..... WATSON R  
Rcvd By Dt..... 861205  
Account Code..... 380.08--0912-190000--200-0110----0015  
QC Review..... KING D  
QA Review Date..... 861205  
Inspection Req'd..... N  
Left Planning..... 861205  
Assign to..... MULCAHEY R  
Assigned Date..... 861215  
Corrective Action..... INSTALLED HANDWHEEL, TOOK UP ON SET SCREW AND SET  
WITH PUNCH  
Cause of failure..... VIBRATION  
Completed by..... MULCAHEY R  
Completion date..... 861215  
Supervisor Review..... CRISS H  
Supervisor Review Date.. 861215  
PMT Review By..... WATSON R  
PMT Rev Date..... 861205  
PMT Test Rpt..... N  
PMT Ver..... NA  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS

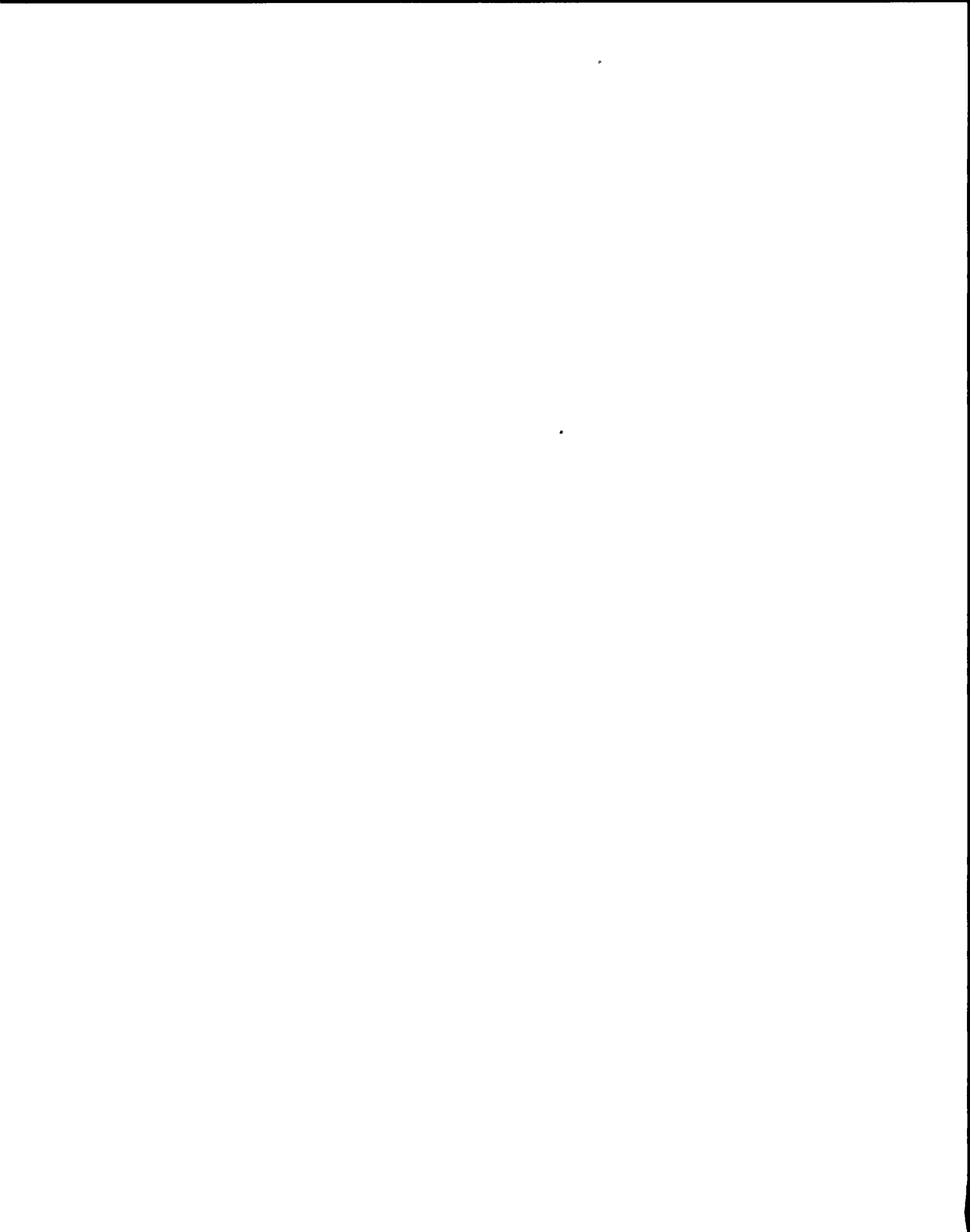


Display of Work Item Data

|                        |              |
|------------------------|--------------|
| Accepted by.....       | POINDEXTER J |
| Acceptance date.....   | 861217       |
| Plan LO.....           | 861219       |
| Fld Compl Log Dte..... | 861215       |
| SSS Logout Date.....   | 861218       |
| Lead/Supprt Dpt.....   | 200          |

Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS





Display of Work Item Data

HIT..... 5  
Work No..... W120180  
Issued..... 870529  
Depart..... 100  
Status..... C  
Lead or Supprt..... L  
WCC Status..... 100  
Priority..... 3  
Unit..... 2  
Component No..... 2CNM-MOV84A  
System No..... CNM  
BIP No..... 003.000  
Safety Class..... NSR  
EQ..... N  
ASME Component..... N  
Title..... A RX FEEDWATER PUMP SUCTION VALVE  
Work Item Description... ON AN OPEN SIGNAL, VALVE MOVES -1 INCH BEFORE VALVE  
AND MOTOR STOPS, MAY BE TORQUING OUT EARLY,  
TROUBLESHOOT, ALSO ATTEMPTED TO MOVE AFTER MANUALLY  
OPENING OFF THE SEAT, VALVE DID NOT MOVE OPEN  
ELECTRICALLY, IT WILL CLOSE  
  
NPRDS Failcode..... C  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

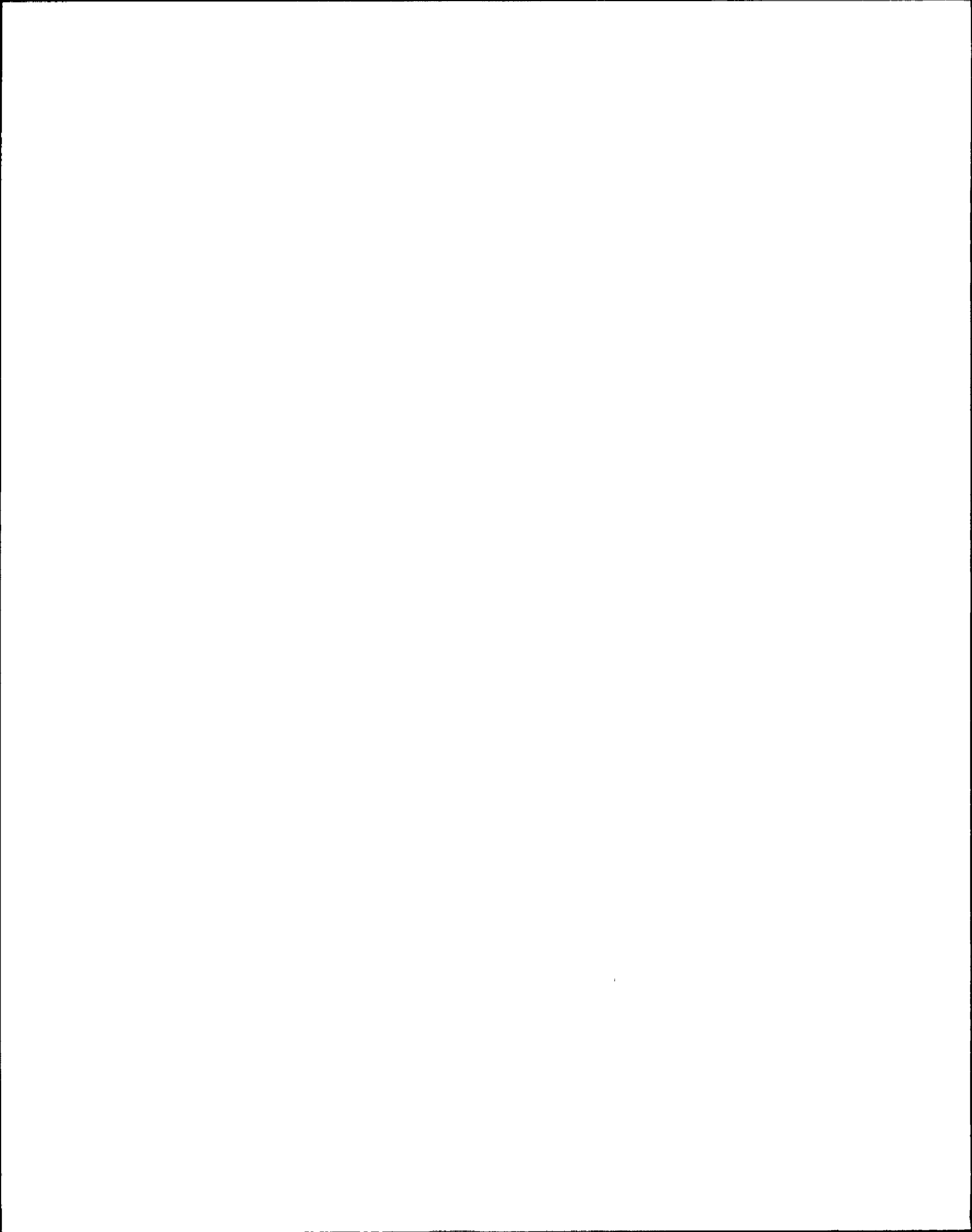
CAPS



Display of Work Item Data

Originator..... LAWRENCE J  
Approved by..... KIBBE J  
Approval date..... 870529  
Received By..... WILLIAMS M  
Rcvd By Dt..... 870602  
Account Code..... 380.08--0912-190000--200-0110----0016  
QC Review..... MCCARTNEY R  
QA Review Date..... 870604  
Inspection Req'd..... N  
Left Planning..... 870605  
Operations Priority..... PRI-2.2  
Remarks..... STAGED 6/9  
Assign to..... CARROLL  
Assigned Date..... 870608  
SSS Notify..... 870609  
Corrective Action Code.. AA  
Corrective Action..... ADJUSTED LS 5 TO 5 PERCENT(6 SEC), UPPED TS SETTING  
TO 1.5(MAX SETTING 2)  
Cause of Failure Code... BC  
Cause of failure..... IMPROPER TS SETTING  
Mark Up No..... 038451  
QCIR Nos..... NA  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS

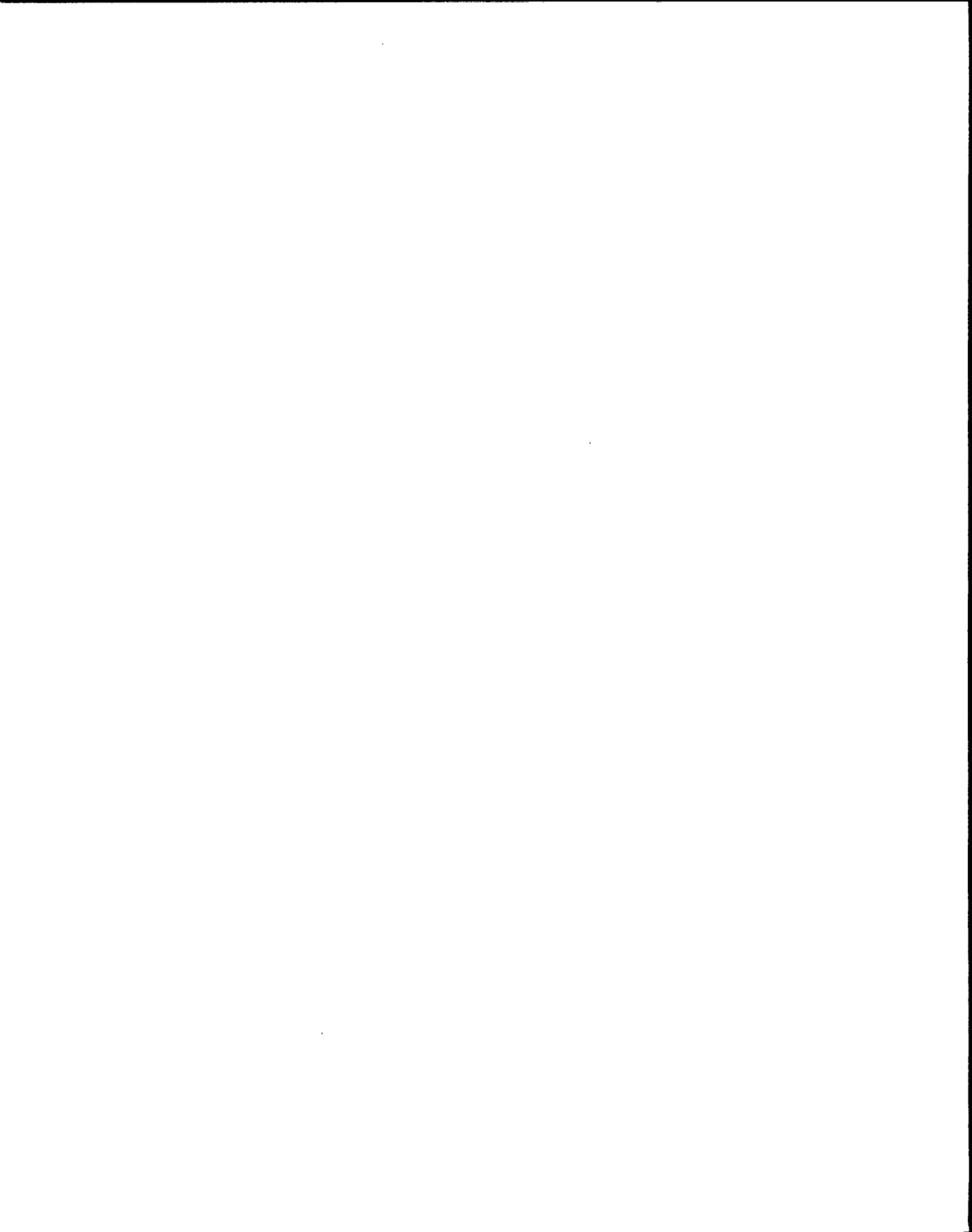


Display of Work Item Data

|                          |                  |
|--------------------------|------------------|
| NCR's.....               | NA               |
| Completed by.....        | CARROLL          |
| Completion date.....     | 870609           |
| Supervisor Review.....   | MORYL SG         |
| Supervisor Review Date.. | 870609           |
| QC Work Accepted by..... | MCCARTNEY,R      |
| QC Work Accept date..... | 870604           |
| PMT Review By.....       | WILLIAMS M       |
| PMT Rev Date.....        | 870602           |
| PMT Procedures.....      | NSR              |
| PMT Test Rpt.....        | N                |
| Accepted by.....         | PICCARILLI W     |
| Acceptance date.....     | 870611           |
| Plan LO.....             | 870611           |
| Fld Compl Log Dte.....   | 870609           |
| SSS Logout Date.....     | 870611           |
| Craft.....               | 1331, 1311, 1341 |
| Man Hours.....           | 17, 8, 9         |
| OT Hours.....            | 0, 0, 0          |
| Lead/Supprt Dpt.....     | 100              |

Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS



Display of Work Item Data

HIT..... 6  
Work No..... W115668  
Issued..... 861124  
Depart..... 200  
Status..... C  
Lead or Supprt..... L  
WCC Status..... 100  
Priority..... 3  
Unit..... 2  
Component No..... 2CNM-MOV84C  
System No..... FWS  
BIP No..... 006.000  
Safety Class..... NSR  
EQ..... N  
ASME Component..... N  
Cleanness Class..... B  
Work Item Description... FEEDWATER 2FWS-P1C PUMP SUCTION ISOLATION VALVE,  
LEAKING AT VALVE TRANNION, THE OUTBOARD TRANNION OF  
BUTTERFLY VALVE, 2FWS-MOV84C IS LEAKING TAKE UP ON  
PACKING, REPACK AS REQD  
NPRDS Failcode..... E  
Originator..... TANNER J  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS

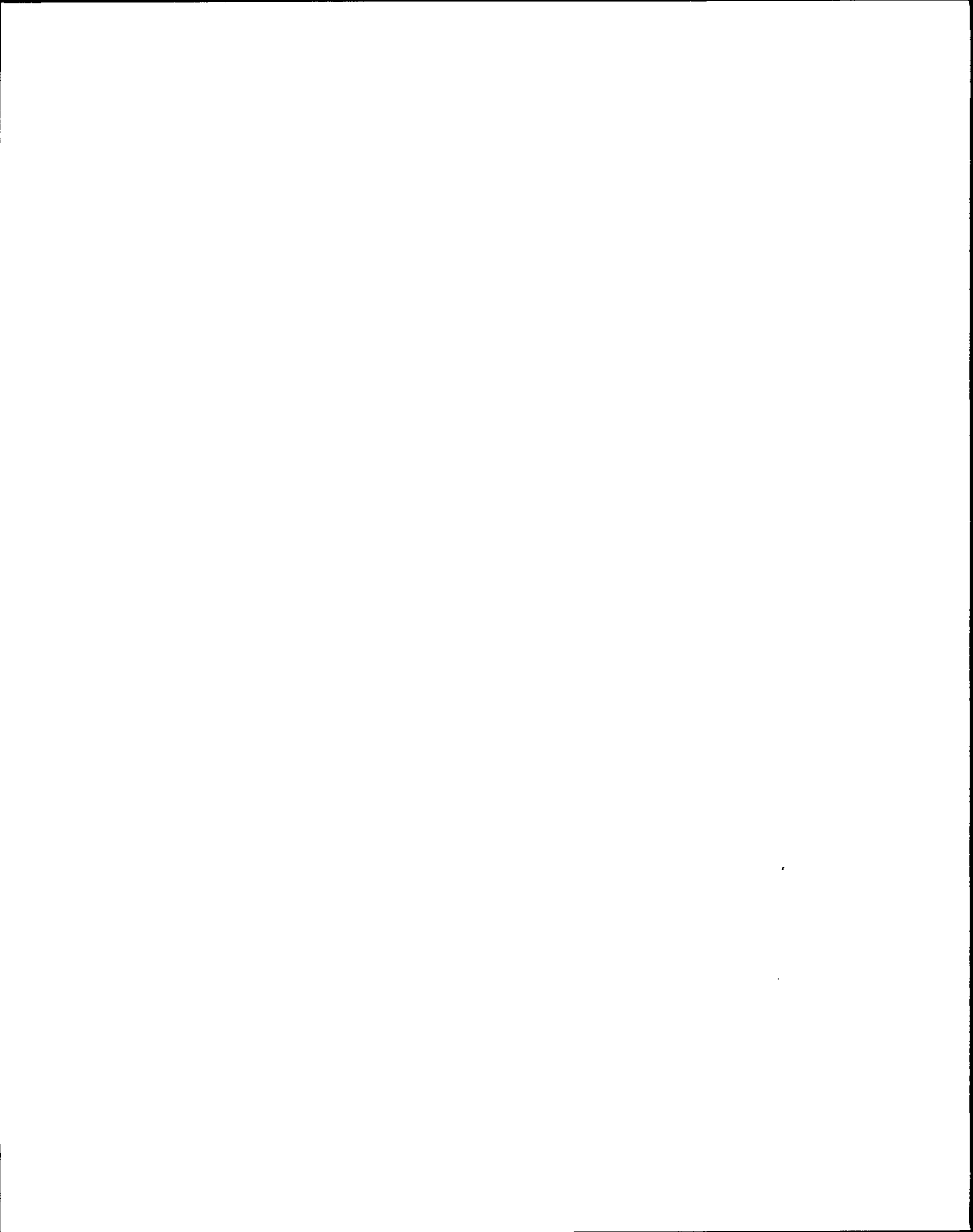




Display of Work Item Data

Approved by..... KEMPSTON C  
Approval date..... 861125  
Received By..... KEMPSTON C  
Rcvd By Dt..... 861125  
Account Code..... 380.08--0912-190000--200-0110----0015  
QC Review..... KING D  
QA Review Date..... 861125  
Inspection Req'd..... N  
Left Planning..... 861125  
Operations Priority..... PRI-2  
Remarks..... ON HOLD, WAITING UNTIL SYSTEM IS RUNNING UNDER  
PRESSURE BEFORE CLOSING WR, PER JON TANNER DTD  
861201.IF LEAKS FROM PACKING, REPACK, TANNER WILL  
INFORM AND MARK UP SYSTEM  
Assign to..... CALTABIANO C, WEIGELT R  
Assigned Date..... 861201  
SSS Notify..... 861201  
Corrective Action Code.. AA  
Corrective Action..... ADDED ONE RING OF PACKING TO VALVE 4/2/87  
Cause of Failure Code... BC  
Cause of failure..... LOOSE PACKING  
Mark Up No..... 44031  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS



Display of Work Item Data

|                          |                     |
|--------------------------|---------------------|
| Completed by.....        | CALTABIANO, WEIGELT |
| Completion date.....     | 861210              |
| Supervisor Review.....   | PICCIOTT T          |
| Supervisor Review Date.. | 870402              |
| PMT Review By.....       | KEMPSTON C          |
| PMT Rev Date.....        | 861125              |
| PMT Test Rpt.....        | Y                   |
| PMT Ver.....             | LAWRENCE J          |
| PMT Ver Dt.....          | 870403              |
| Accepted by.....         | WILSON D            |
| Acceptance date.....     | 870403              |
| Plan LO.....             | 870406              |
| Fld Compl Log Dte.....   | 870402              |
| SSS Logout Date.....     | 870406              |
| Craft.....               | 1361, 1371, 1351    |
| Man Hours.....           | 8, 16, 8            |
| OT Hours.....            | 0, 0, 0             |
| Lead/Supprt Dpt.....     | 200                 |

Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

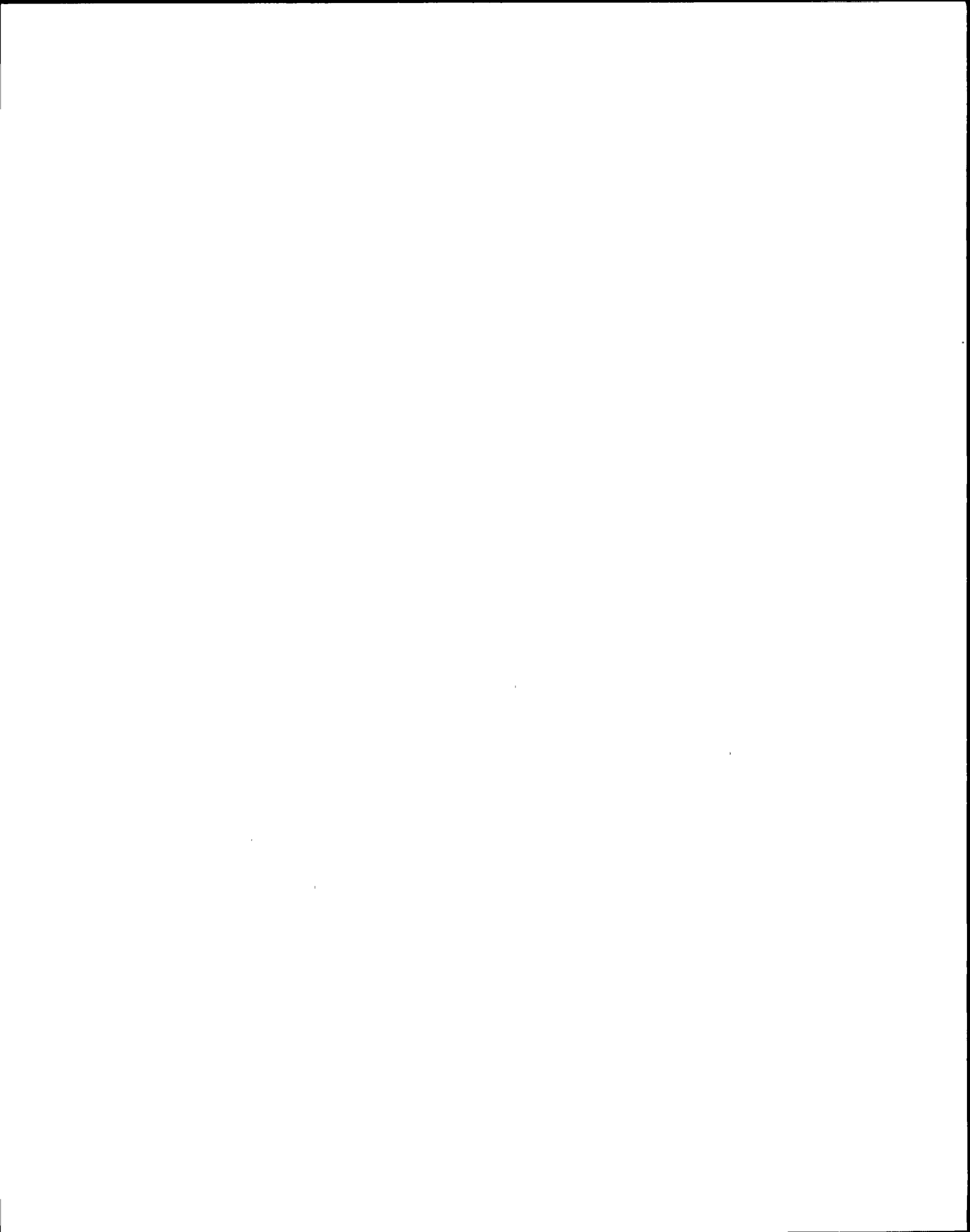
CAPS



Display of Work Item Data

HIT..... 7  
Work No..... W164643  
Issued..... 890912  
Depart..... 100  
Status..... C  
Lead 'or Supprt..... L  
WCC Status..... 100  
Priority..... 3  
Unit..... 2  
Component No..... 2CNM-MOV84A  
System No..... CNM  
BIP No..... 003  
Safety Class..... NSR  
ASME Component..... N  
Cleanness Class..... B, D  
Title..... BUTTERFLY OR TRICENTRIC V  
Work Item Description... 2CNM-MOV84A NEEDS THE MOV HAND WHEEL REINSTALLED  
LOCATED TB A HEATER BAY BETWEEN 3 AND 4 HEATERS NORTH  
END OF HEATERS UPSTAIRS  
  
Location..... HB,277,FA,006.00  
Originator..... CONAWAY J  
Approved by..... POINDEXTER J  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

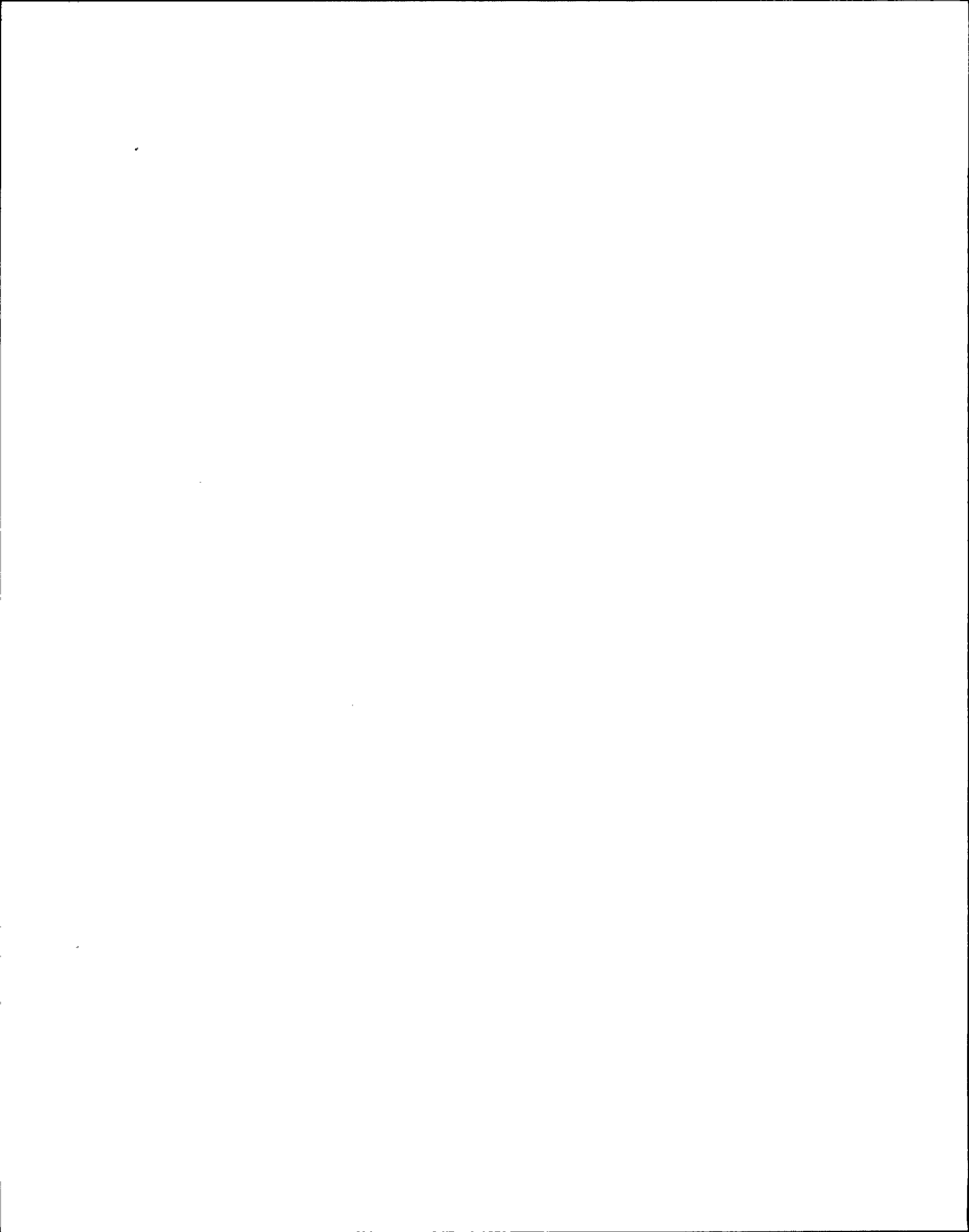
CAPS



Display of Work Item Data

Approval date..... 890912  
Received By..... DOTY S  
Rcvd By Dt..... 890915  
Account Code..... 706.30--9571-321116--200-0110  
QC Review..... SIEMERS W  
QA Review Date..... 890915  
Inspection Req'd..... N  
Left Planning..... 890915  
IP Code..... 15G  
Work Cond. Code..... A  
Work Type Code..... CM  
Power Block Flag..... Y  
Staged By..... DONAHUE G  
Staged By Date..... 891027  
Assign to..... WHITCOMB B  
Assigned Date..... 891207  
Sched. Start Date..... 891207  
SSS Notify..... 891207  
Corrective Action Code.. AA  
Corrective Action..... NEED XH-10 KEY REINSTALL HANDWHEEL ON MOV AND TIGHTEN  
LOCKING SCREW  
Cause of Failure Code... AM  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS

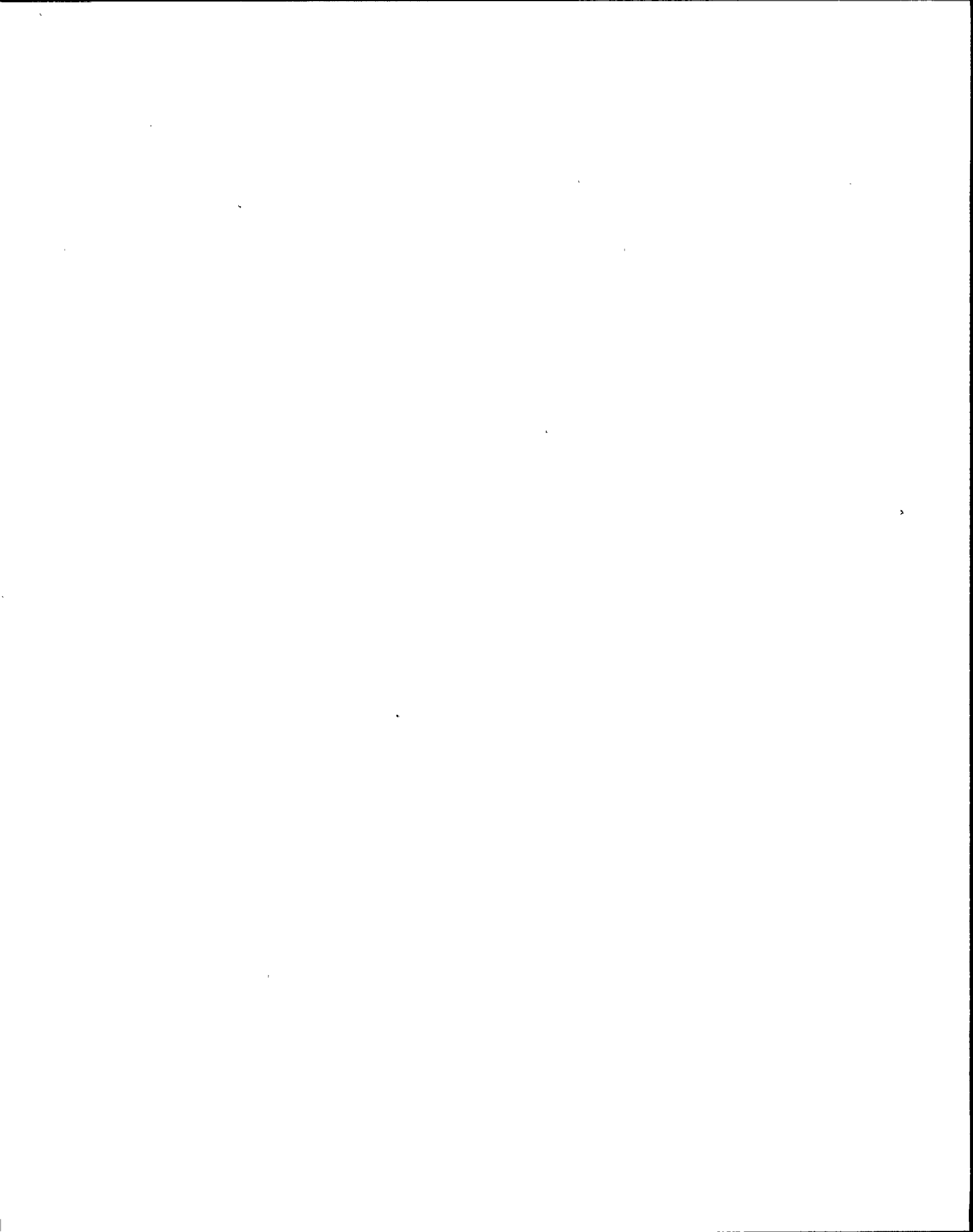




Display of Work Item Data

|  |   |
|--|---|
| Cause of failure.....                        | HANDWHEEL HAD BEEN REMOVED OR LOOSEMED FOR WORK |
| QCIR Nos.....                                | NA  |
| NCR's.....                                   | NA  |
| Completed by.....                            | PARKER/BELLARDINI                               |
| Completion date.....                         | 891207  |
| Supervisor Review.....                       | FOX F   |
| Supervisor Review Date..                     | 891209  |
| QC Work Accepted by.....                     | SIEMERS W                                       |
| QC Work Accept date.....                     | 890915  |
| PMT Review By.....                           | DOTY S  |
| PMT Rev Date.....                            | 890915  |
| PMT Test Rpt.....                            | Y   |
| PMT Ver.....                                 | FOX F   |
| PMT Ver Dt.....                              | 891209  |
| Accepted by.....                             | PICCIRILLI W                                    |
| Acceptance date.....                         | 891211  |
| Plan LO.....                                 | 891213  |
| Fld Compl Log Dte.....                       | 891209  |
| SSS Logout Date.....                         | 891213  |
| Craft.....                                   | 1331, 1301                                      |
| Man Hours.....                               | 3.0, 3.0  |
| OT Hours.....                                | 0, 0  |
| Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?) |   |

CAPS



Display of Work Item Data

Lead/Supprt Dpt..... 100

Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

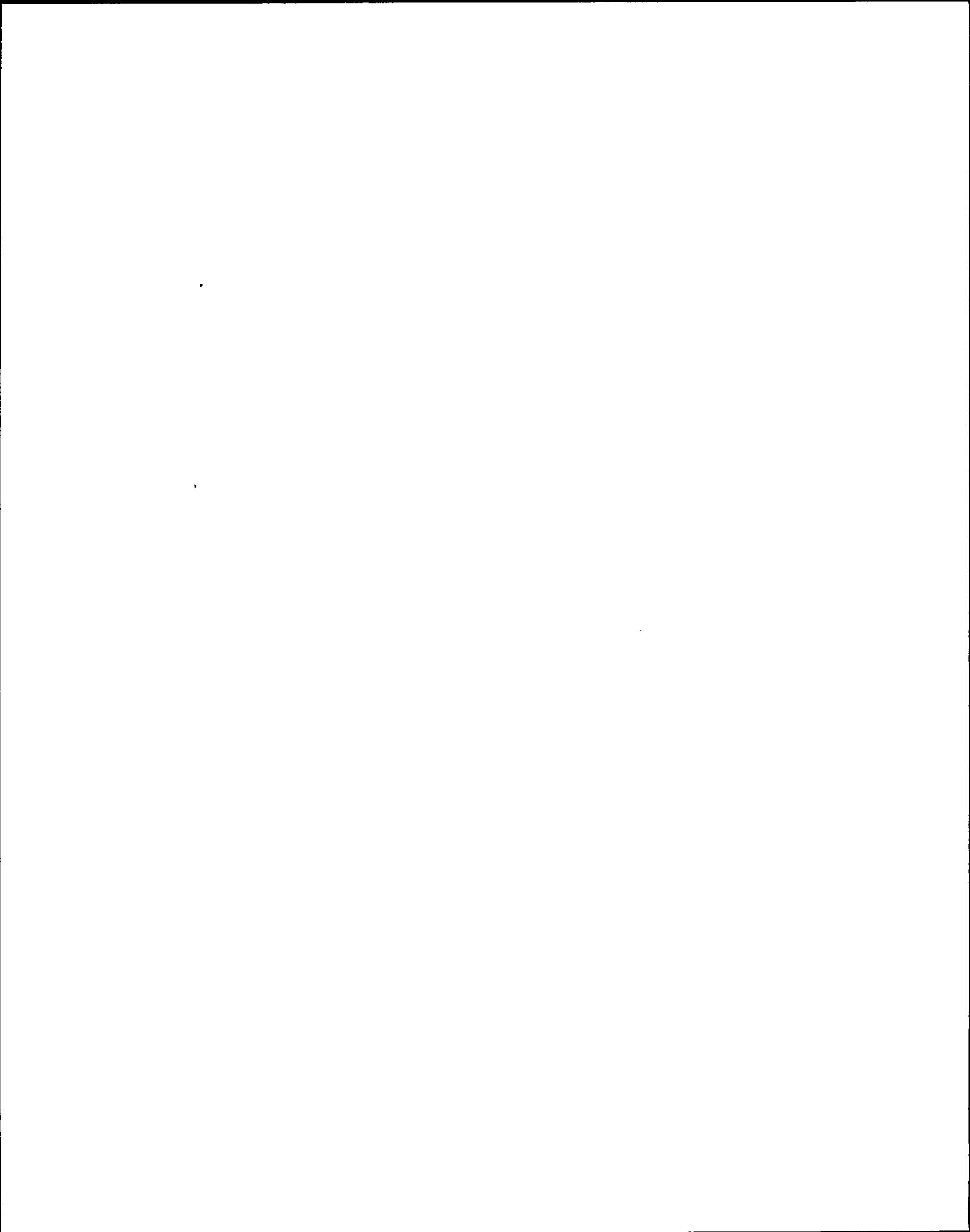
CAPS



Display of Work Item Data

HIT..... 8  
Work No..... W164150  
Issued..... 891005  
Depart..... 200  
Status..... C  
Lead or Supprt..... L  
WCC Status..... 100  
Priority..... 2  
Unit..... 2  
Component No..... 2CNM-MOV84A  
System No..... CNM  
BIP No..... 003.000  
Safety Class..... NSR  
ASME Component..... N  
Cleanness Class..... B, D  
Title..... BUTTERFLY OR TRICENTRIC V  
Work Item Description... TAKE UP ON FLANGE LEAK ON MOV84A 277 ELEVATION  
BETWEEN 5TH AND 6TH POINT HEATERS - A HEATER BAY  
Location..... HB,277,FA,006.00  
NPRDS Failcode..... E  
Originator..... BUNNELL J  
Approved by..... HELKER J  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

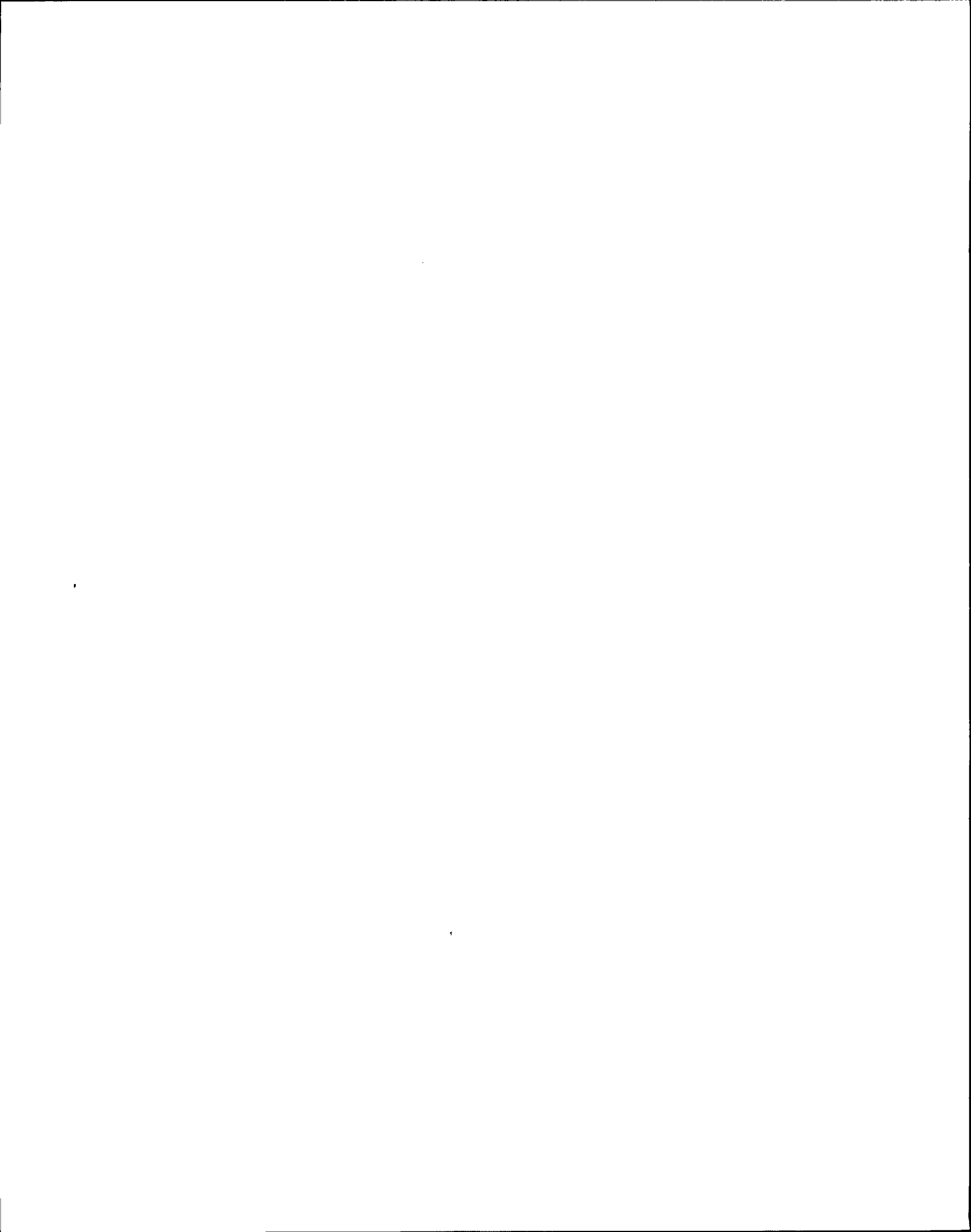
CAPS



Display of Work Item Data

|  |   |
|--|---|
| Approval date.....                           | 891005                                      |
| Received By.....                             | WATSON R                                    |
| Rcvd By Dt.....                              | 891003                                      |
| Account Code.....                            | 706.30--9571-321115--200-0110               |
| QC Review.....                               | COLLINS D                                   |
| QA Review Date.....                          | 891005                                      |
| Inspection Req'd.....                        | N   |
| Left Planning.....                           | 891005                                      |
| IP Code.....                                 | 14A   |
| Work Cond. Code.....                         | B   |
| Work Type Code.....                          | CM  |
| Power Block Flag.....                        | Y   |
| SSS Notify.....                              | 891005                                      |
| Corrective Action.....                       | VOID  |
| Cause of failure.....                        | WORK TO BE PERFORMED ON DUPLICATE WR 170288 |
| RWP.....                                     | 895476                                      |
| QCIR Nos.....                                | N/A   |
| NCR's.....                                   | N/A   |
| Completed by.....                            | BUNNELL J                                   |
| Completion date.....                         | 891104                                      |
| Supervisor Review.....                       | BUNNELL J                                   |
| Supervisor Review Date..                     | 891104                                      |
| Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?) |   |

CAPS



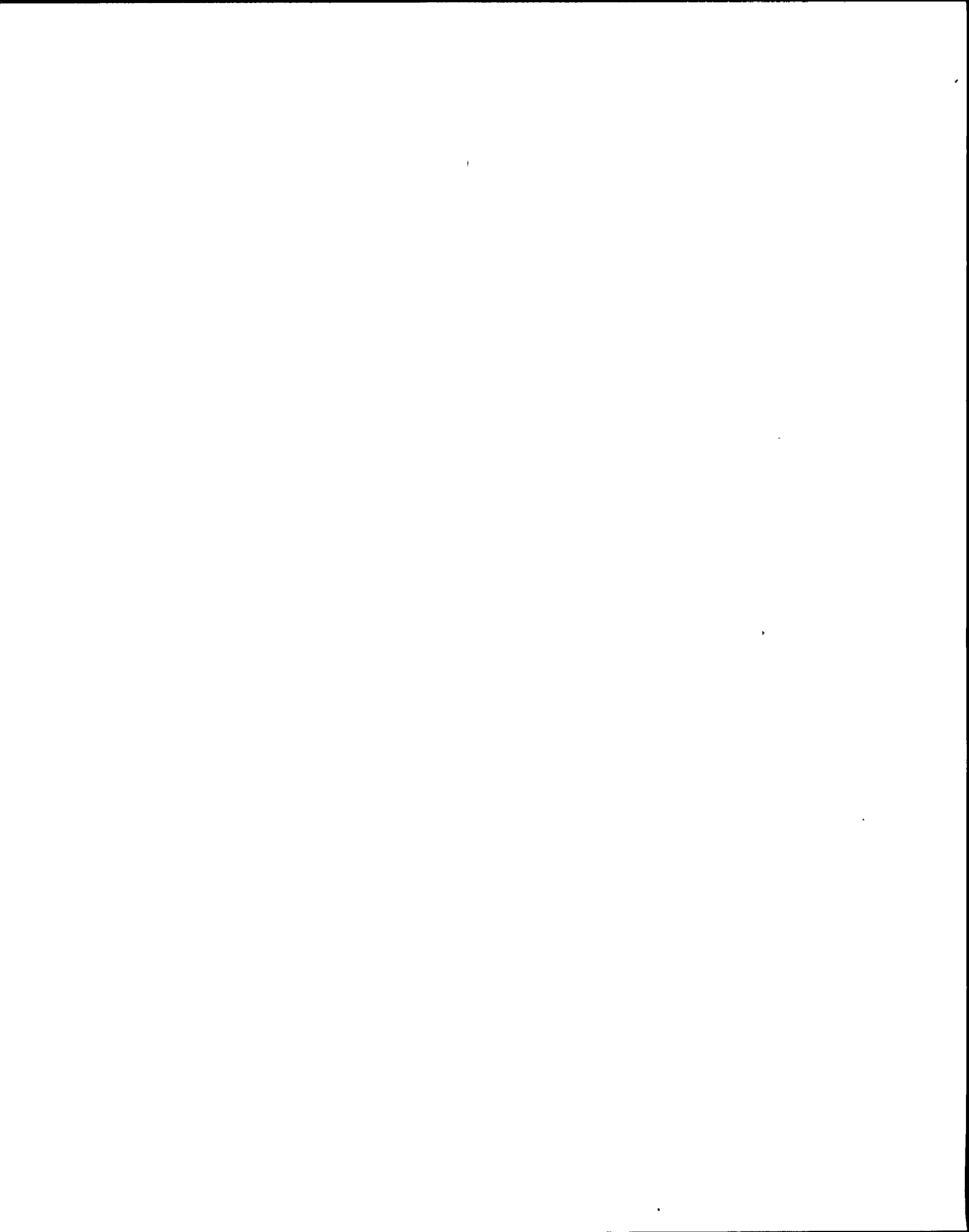


Display of Work Item Data

QC Work Accepted by..... COLLINS D.  
QC Work Accept date..... 891005  
PMT Review By..... WATSON R  
PMT Rev Date..... 891005  
PMT Test Rpt..... Y  
Accepted by..... RANALLI D  
Acceptance date..... 891108  
Plan LO..... 891109  
Fld Compl Log Dte..... 891104  
SSS Logout Date..... 891109  
Lead/Supprt Dpt..... 200  
Doc System No..... 0109184484

Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

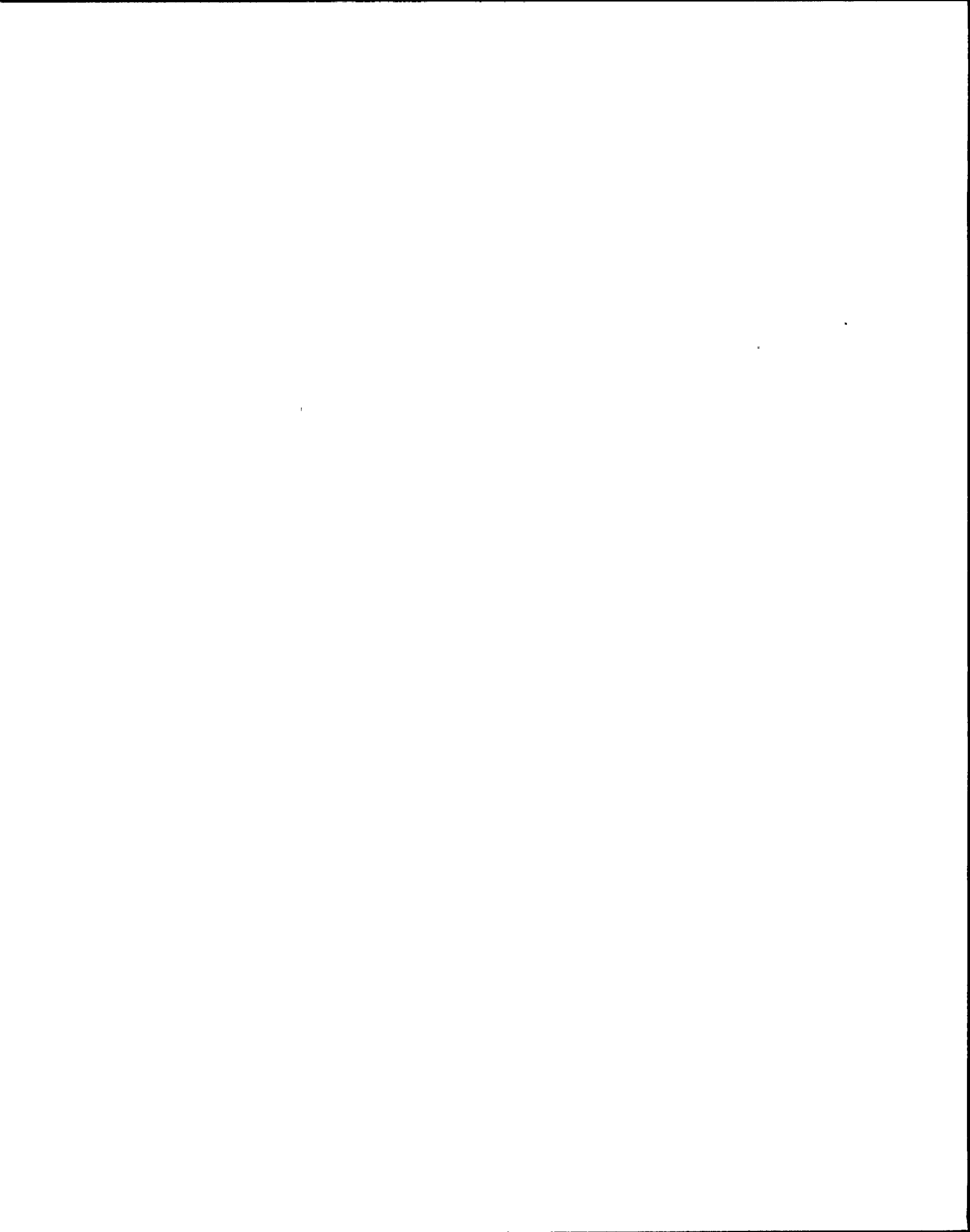
CAPS



Display of Work Item Data

|  |   |
|--|---|
| HIT.....                                     | 9   |
| Work No.....                                 | W170288   |
| Issued.....                                  | 891104  |
| Depart.....                                  | 200   |
| Status.....                                  | C   |
| Lead or Supprt.....                          | L   |
| Deficiency Tag Number...                     | 011884  |
| WCC Status.....                              | 100   |
| Priority.....                                | 2   |
| Unit.....                                    | 2   |
| Component No.....                            | 2CNM-MOV84A   |
| System No.....                               | CNM   |
| BIP No.....                                  | 003   |
| Safety Class.....                            | NSR   |
| ASME Component.....                          | N   |
| Cleanness Class.....                         | B, D  |
| Title.....                                   | BUTTERFLY OR TRICENTRIC V   |
| Work Item Description...                     | WATER IS LEAKING FROM THE 1 INCH PIPE CONNECTED TO<br>2CNM-MOV84A AT THE JOINT 1 IN. PIPE CONNECTS TO<br>2CNM-HV60A. DEFICIENCY TAG NO. 11884 HUNG AT<br>CNM-MOV84A |
| Location.....                                | HB,277,FA,006.00  |
| Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?) |   |

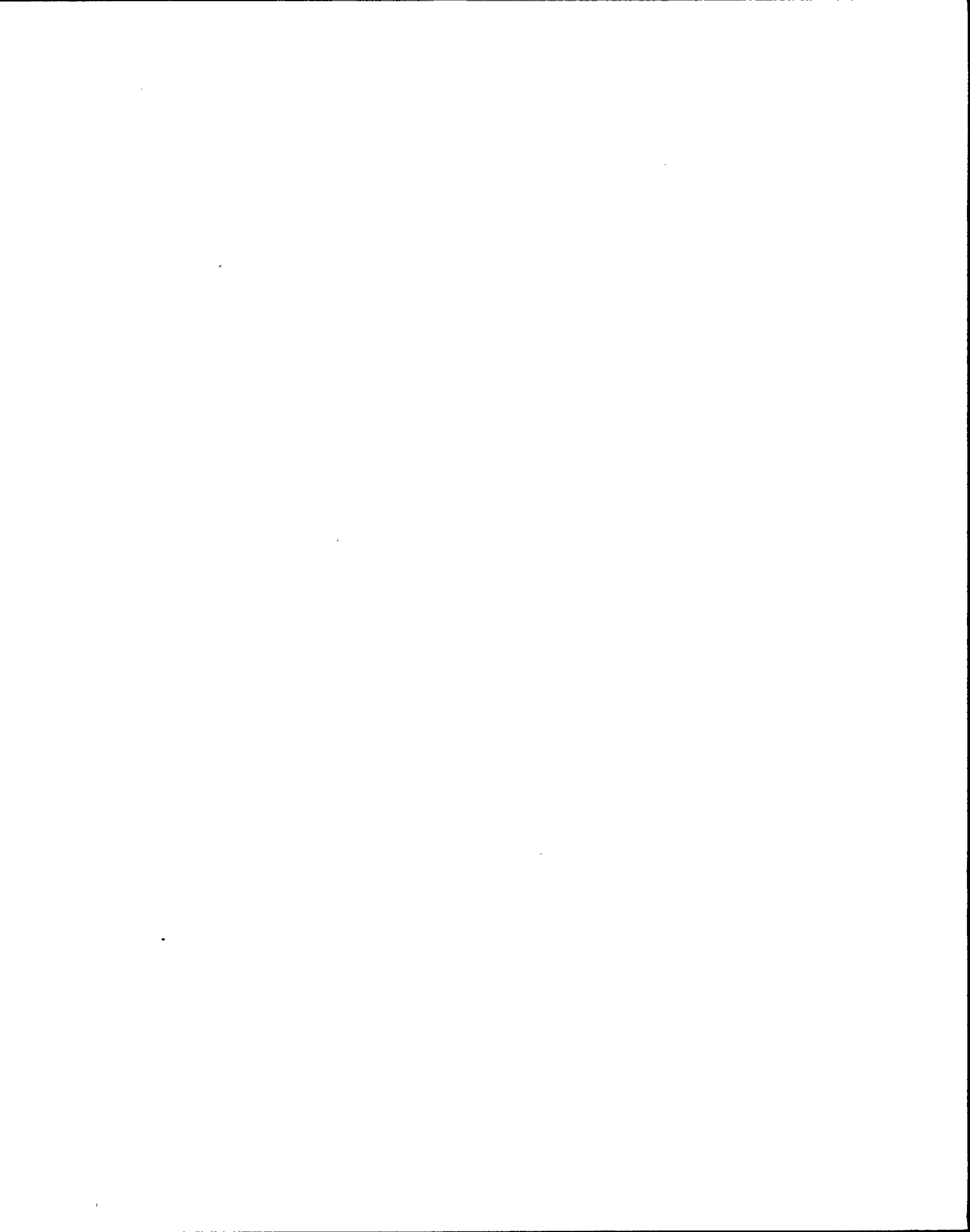
CAPS



Display of Work Item Data

|  |                               |
|--|-------------------------------|
| NPRDS Failcode.....                          | E                             |
| Originator.....                              | WILSON D                      |
| Approved by.....                             | WILSON D                      |
| Approval date.....                           | 891104                        |
| Received By.....                             | BUNNELL J                     |
| Rcvd By Dt.....                              | 891104                        |
| Account Code.....                            | 706.30--9571-321115--200-0110 |
| QC Review.....                               | DICK L                        |
| QA Review Date.....                          | 891104                        |
| Inspection Req'd.....                        | N                             |
| Left Planning.....                           | 891104                        |
| IP Code.....                                 | 2                             |
| Merit Score.....                             | 789                           |
| Work Cond. Code.....                         | F                             |
| Work Type Code.....                          | CM                            |
| Power Block Flag.....                        | Y                             |
| Staged By Date.....                          | 891104                        |
| Assign to.....                               | CORNELL P                     |
| Assigned Date.....                           | 891104                        |
| Sched. Start Date.....                       | 891104                        |
| SSS Notify.....                              | 891104                        |
| Corrective Action Code..                     | AG                            |
| Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?) |                               |

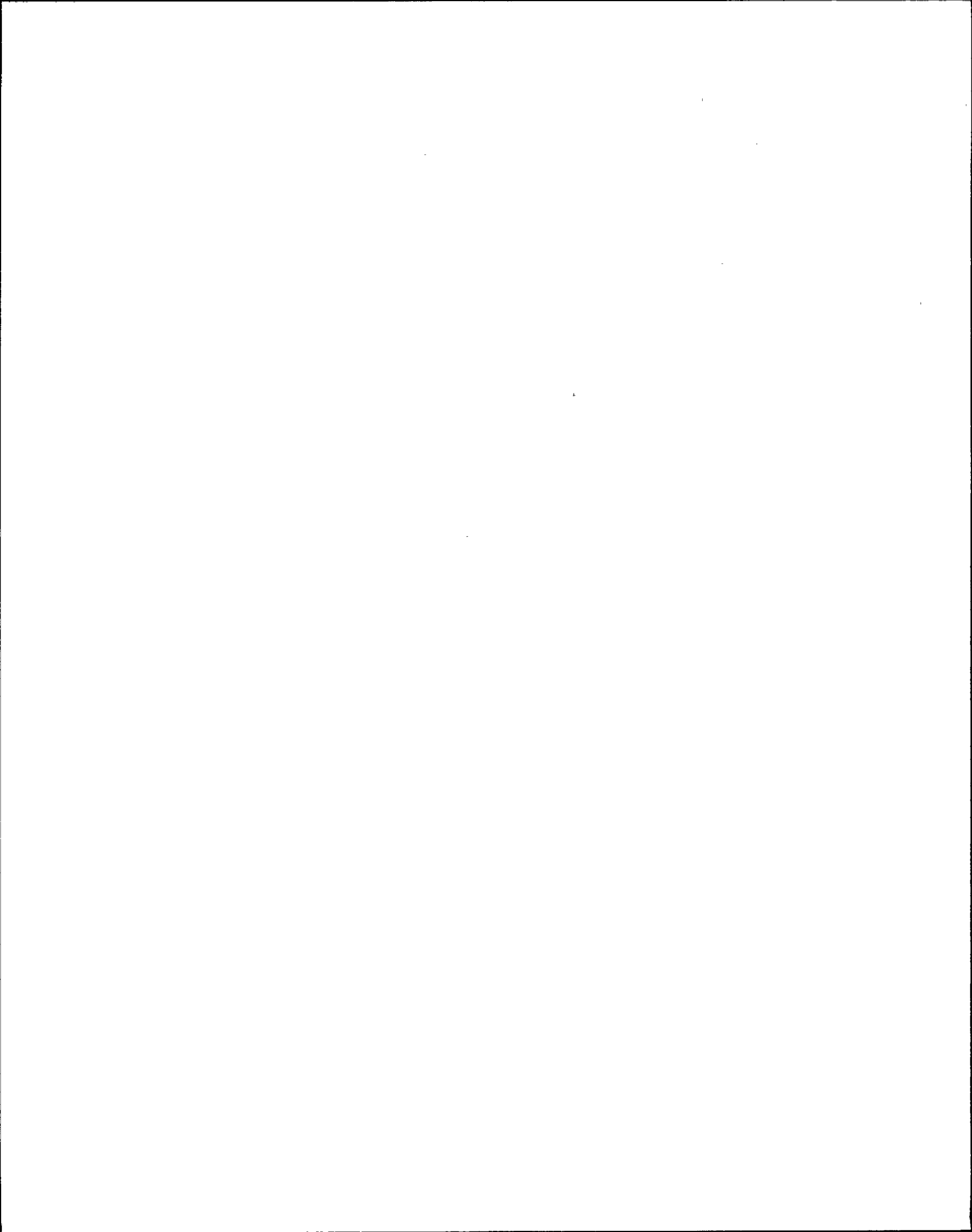
CAPS



Display of Work Item Data

Corrective Action..... WE WELDED THE PIPE CONNECTION, CANNOT LOCATE  
DEFICIENCY TAG THAT WAS IN THE FIELD  
Cause of Failure Code... BG  
Cause of failure..... THE PIPE CONNECTION WAS RUSTED  
Attachments..... MATERIAL ISSUES  
RWP..... 895288-034  
QCIR Nos..... NA  
NCR's..... NA  
Completed by..... RICE M  
Completion date..... 891105  
Deficiency Tag Removed.. L  
Supervisor Review..... WATSON R  
Supervisor Review Date.. 891106  
QC Work Accepted by..... MCCLOSKEY D  
QC Work Accept date..... 891107  
PMT Review By..... BUNNELL J  
PMT Rev Date..... 891104  
PMT Test Rpt..... Y  
PMT Ver..... DAVIS S  
PMT Ver Dt..... 900404  
Accepted by..... DAVIS S  
Acceptance date..... 900404  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS





Display of Work Item Data

|                        |                  |
|------------------------|------------------|
| Plan LO.....           | 900405           |
| Fld Compl Log Dte..... | 891106           |
| Craft.....             | 1381, 1361, 1351 |
| Man Hours.....         | 64, 22, 22       |
| OT Hours.....          | 58, 20, 20       |
| Lead/Supprt Dpt.....   | 200              |
| OMG System Window..... | 030              |

Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS



Display of Work Item Data

HIT..... 10  
Work No..... W154770  
Issued..... 891227  
Depart..... 100  
Status..... C  
Lead or Supprt..... S  
WCC Status..... 100  
Priority..... 2  
Unit..... 2  
Component No..... 2CNM-MOV84C  
System No..... CNM  
BIP No..... 003  
Safety Class..... NSR  
ASME Component..... N  
Cleanness Class..... B, D  
Title..... BUTTERFLY OR TRICENTRIC V  
Work Item Description... MOV84C LEAKS BY THE SEAT. DISASSEMBLE AND REPAIR  
Location..... HB,277,FA,008.20  
NPRDS Failcode..... F  
Originator..... WATSON R  
Approved by..... DEGRACIA A  
Approval date..... 891227  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

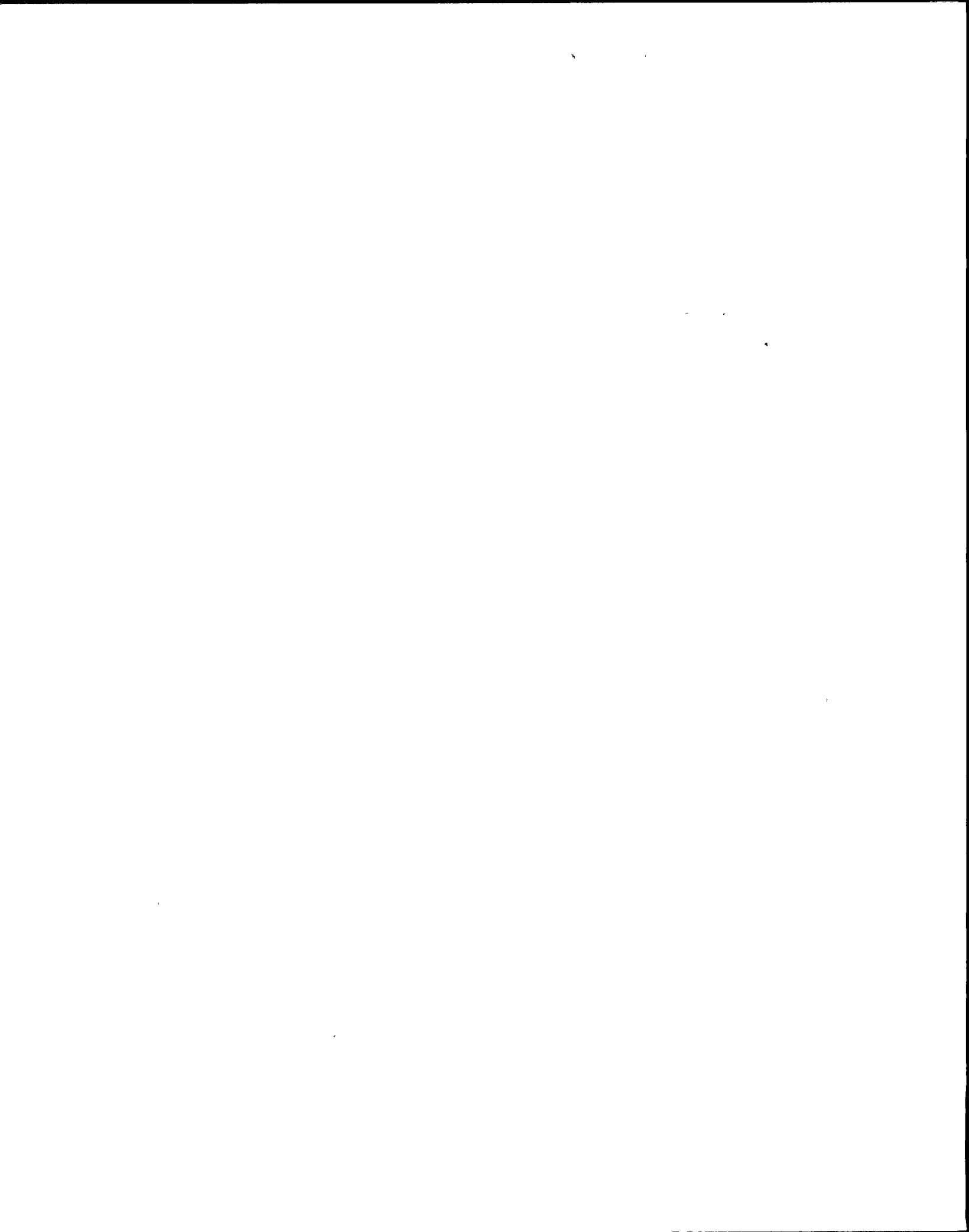
CAPS



Display of Work Item Data

Received By..... WATSON R  
Rcvd By Dt..... 891227  
Account Code..... 706.30--9571-321115--200-0110  
QC Review..... LAVALLEE P  
QA Review Date..... 891227  
Inspection Req'd..... N  
Left Planning..... 891228  
IP Code..... 15G  
Work Cond. Code..... F  
Work Type Code..... CM  
Power Block Flag..... Y  
Supprt Acct..... 706.30--9571-321116--200-0110  
Data Sht Rcvd..... DOTY S  
Staged By..... BARRETT D  
Staged By Date..... 891228  
Assign to..... OTTMAN, PARKER  
Assigned Date..... 891229  
Sched. Start Date..... 900120  
SSS Notify..... 900120  
Corrective Action..... WIRES DISCONNECTED AND RECONNECTED AND REPLACED LM SW  
COMP CRV GASKET  
Attachments..... MATERIAL ISSUES  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS

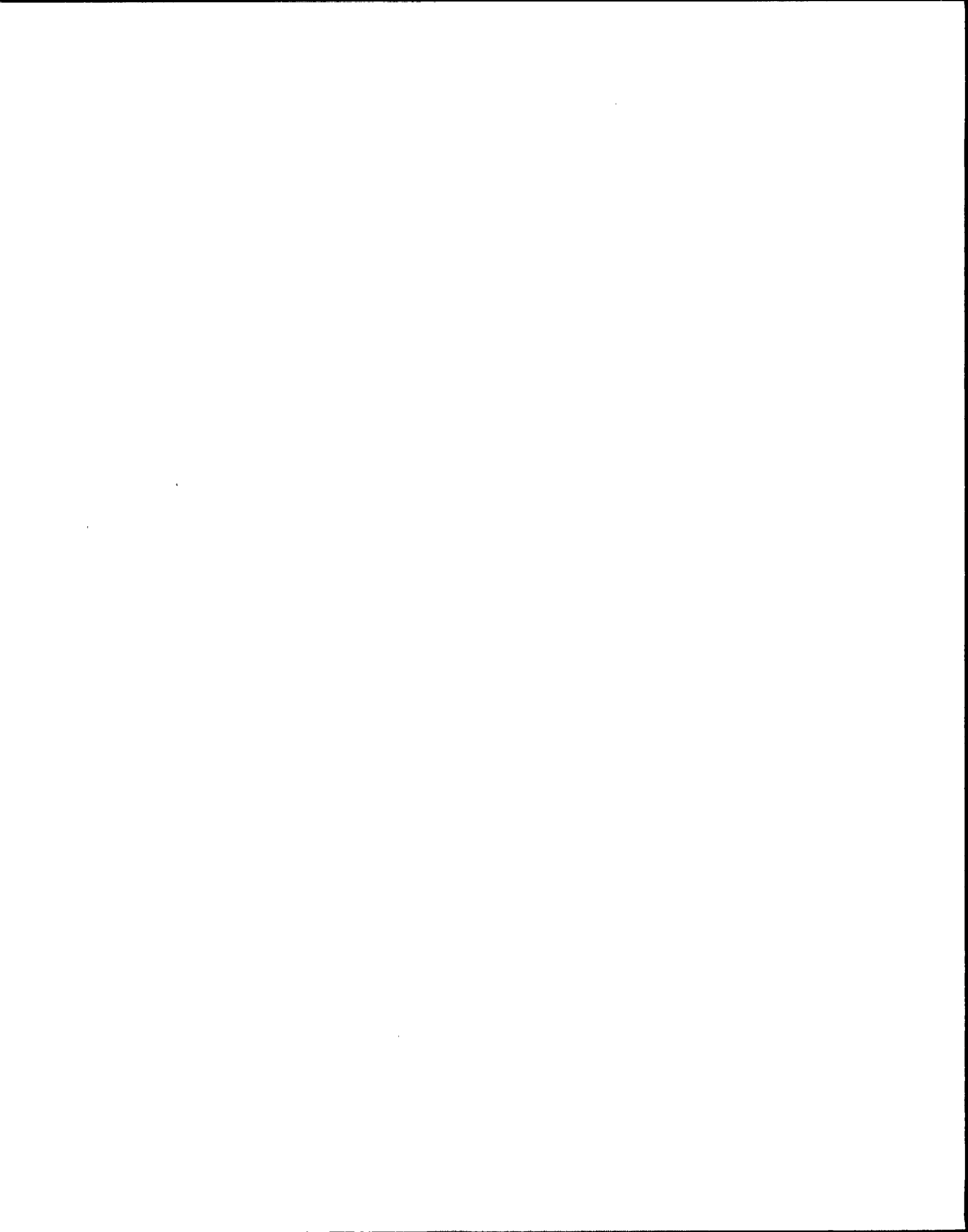


Display of Work Item Data

|                          |                        |
|--------------------------|------------------------|
| Mark Up No.....          | R00125, B50070         |
| QCIR Nos.....            | NA                     |
| NCR's.....               | NA                     |
| Completed by.....        | MCCONKEY M             |
| Completion date.....     | 900123                 |
| Supervisor Review.....   | MORYL S                |
| Supervisor Review Date.. | 900123                 |
| QC Work Accepted by..... | LAVALLEE P.            |
| QC Work Accept date..... | 891227                 |
| PMT Test Rpt.....        | Y                      |
| Acceptance date.....     | 900206                 |
| Fld Compl Log Dte.....   | 900123                 |
| Craft.....               | 1331, 1341, 1311, 1301 |
| Man Hours.....           | 57.5, 13.5, 20.5, 6    |
| OT Hours.....            | 24.5, 5.5, 9.5, 5      |
| Lead/Supprt Dpt.....     | 200, 003, 100          |
| Completion Entry Date... | 900123                 |

Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS

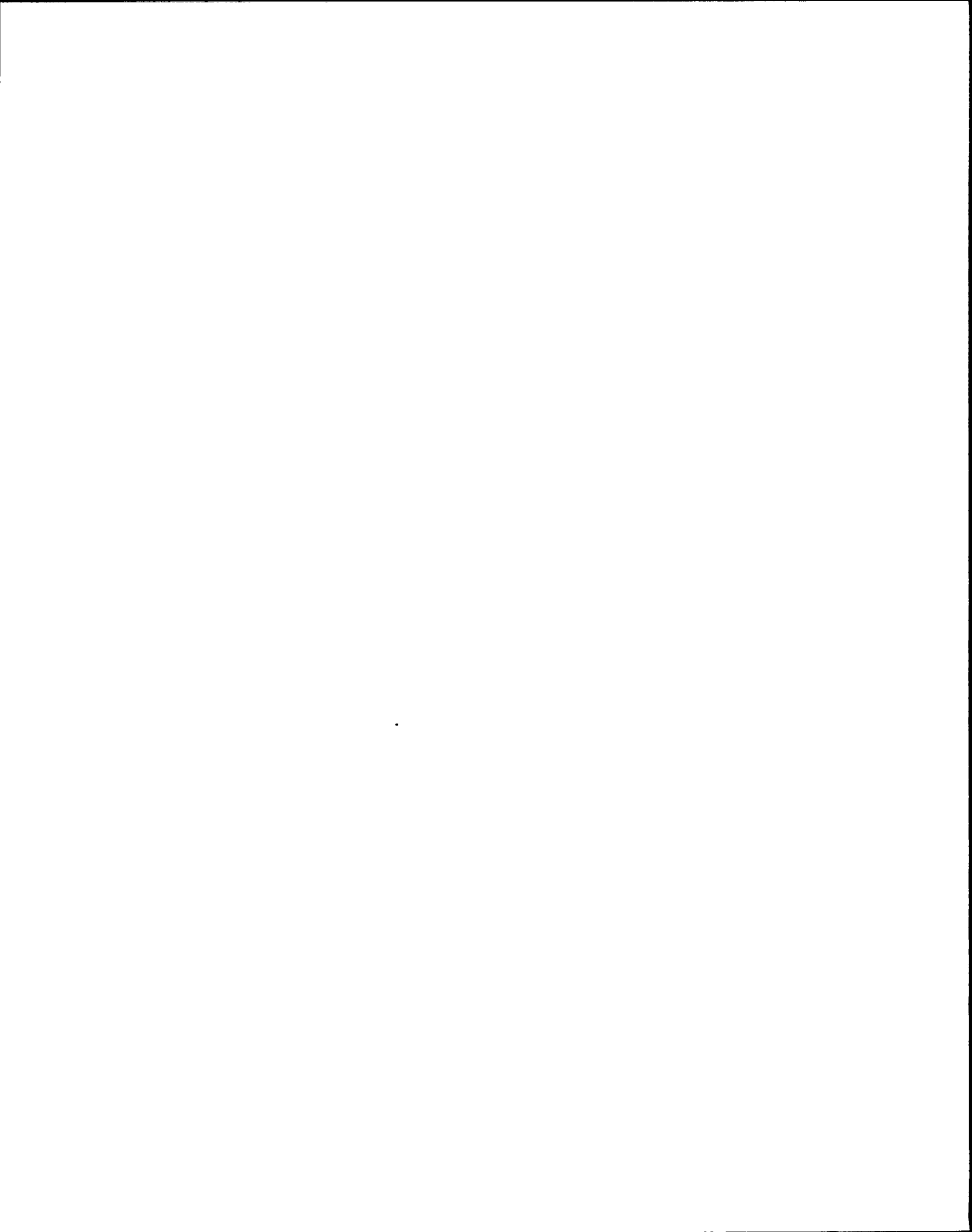




Display of Work Item Data

HIT..... 11  
Work No..... W154769  
Issued..... 891227  
Depart..... 100  
Status..... C  
Lead or Supprt..... S  
WCC Status..... 100  
Priority..... 2  
Unit..... 2  
Component No..... 2CNM-MOV84B  
System No..... CNM  
BIP No..... 003  
Safety Class..... NSR  
ASME Component..... N  
Cleanness Class..... B, D  
Title..... BUTTERFLY OR TRICENTRIC V  
Work Item Description... MOV84B LEAKS BY THE SEAT. DISASSEMBLE AND REPAIR  
Location..... HB,277,FA,007.20  
NPRDS Failcode..... F  
Originator..... WATSON R  
Approved by..... DEGRACIA A  
Approval date..... 891227  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

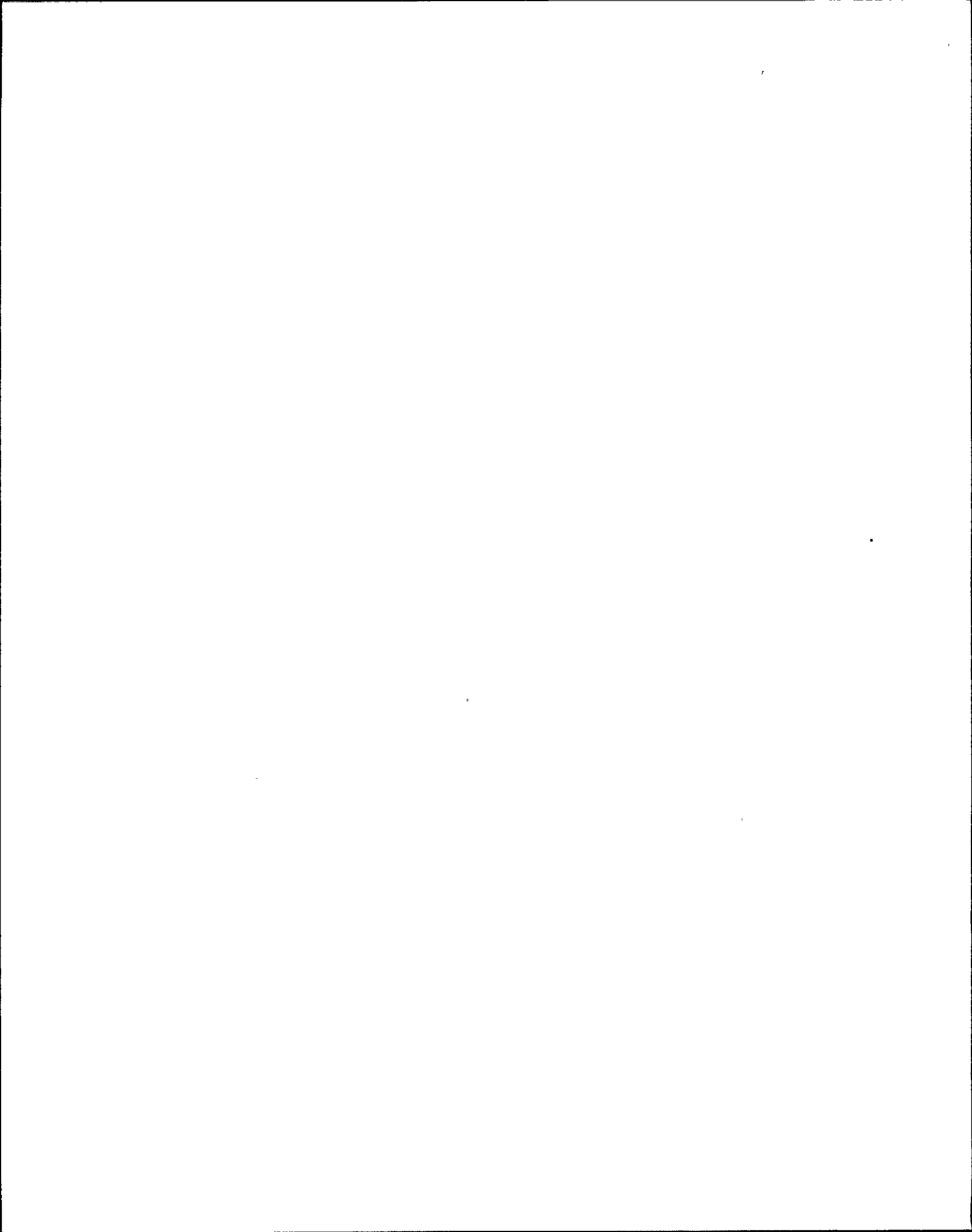
CAPS



Display of Work Item Data

Received By..... WATSON R  
Rcvd By Dt..... 891227  
Account Code..... 706.30--9571-321115--200-0110  
QC Review..... LAVALLEE P  
QA Review Date..... 891227  
Inspection Req'd..... N  
Left Planning..... 891228  
IP Code..... 15G  
Work Cond. Code..... F  
Work Type Code..... CM  
Power Block Flag..... Y  
Supprt Acct..... 706.30--9571-321116--200-0110  
Staged By..... BARRETT D  
Staged By Date..... 891228  
Assign to..... KLEE K  
Assigned Date..... 891229  
Sched. Start Date..... 891228  
SSS Notify..... 891229  
Corrective Action..... DETERMED AND WIRES RECONNECTED  
Mark Up No..... R00126  
QCIR Nos..... NA  
NCR's..... NA  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS

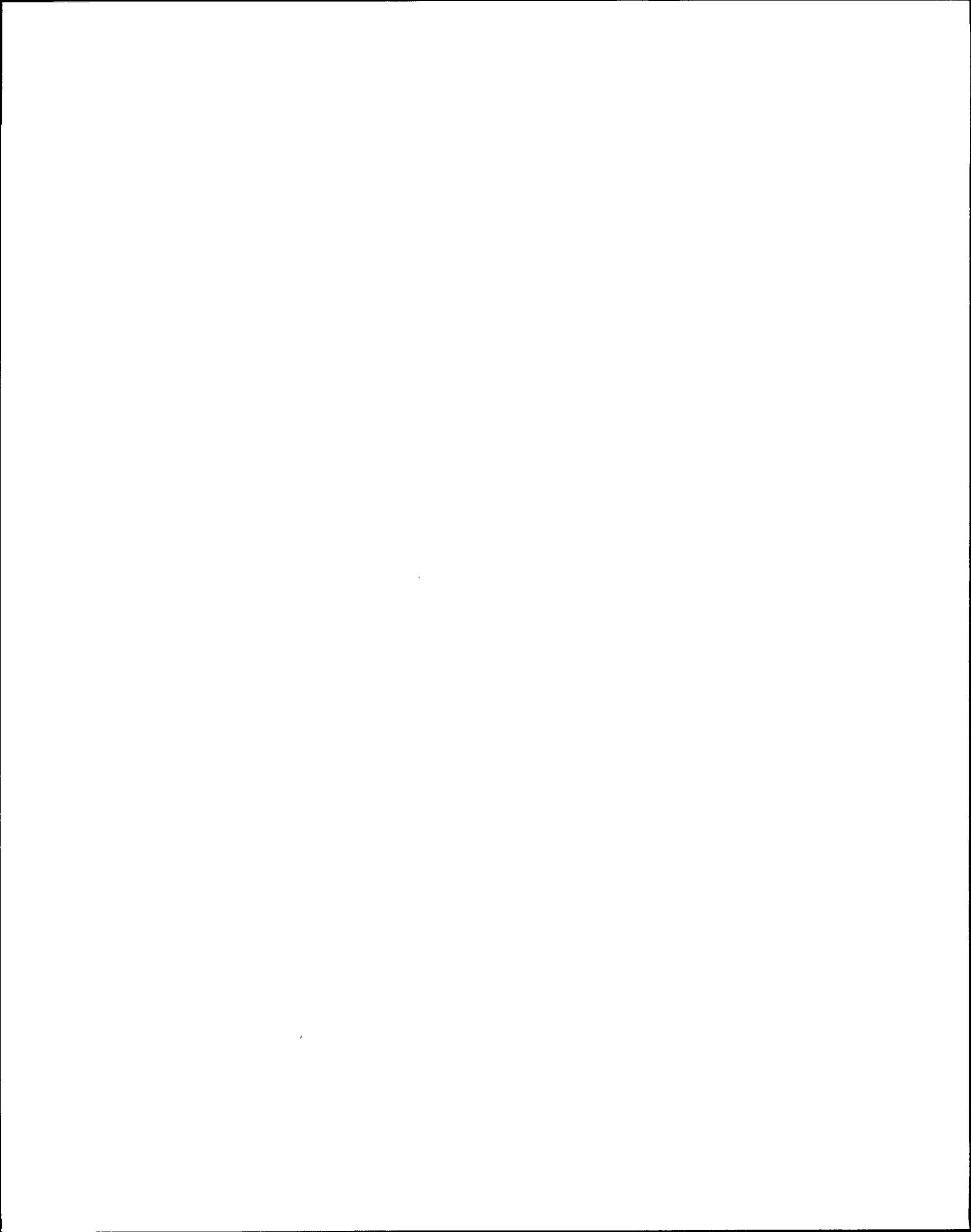


Display of Work Item Data

|                          |                        |
|--------------------------|------------------------|
| Completed by.....        | MCCONKEY, PATERSON     |
| Completion date.....     | 900123                 |
| Supervisor Review.....   | MORYL S                |
| Supervisor Review Date.. | 900123                 |
| QC Work Accepted by..... | LAVALLEE P.            |
| QC Work Accept date..... | 891227                 |
| PMT Test Rpt.....        | Y                      |
| Acceptance date.....     | 900204                 |
| Fld Compl Log Dte.....   | 900123                 |
| Craft.....               | 1341, 1311, 1301, 1331 |
| Man Hours.....           | 29, 19, 12, 48         |
| OT Hours.....            | 5, 3, 0, 3             |
| Lead/Supprt Dpt.....     | 200, 100, 003          |
| Completion Entry Date... | 900123                 |

Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS



Display of Work Item Data

HIT..... 12  
Work No..... W154769  
Issued..... 891227  
Depart..... 200  
Status..... C  
Lead or Supprt..... L  
WCC Status..... 100  
Priority..... 2  
Unit..... 2  
Component No..... 2CNM-MOV84B  
System No..... CNM  
BIP No..... 003  
Safety Class..... NSR  
ASME Component..... N  
Cleanness Class..... B, D  
Title..... BUTTERFLY OR TRICENTRIC V  
Work Item Description... MOV84B LEAKS BY THE SEAT. DISASSEMBLE AND REPAIR  
Location..... HB,277,FA,007.20  
NPRDS Failcode..... F  
Originator..... WATSON R  
Approved by..... DEGRACIA A  
Approval date..... 891227  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS

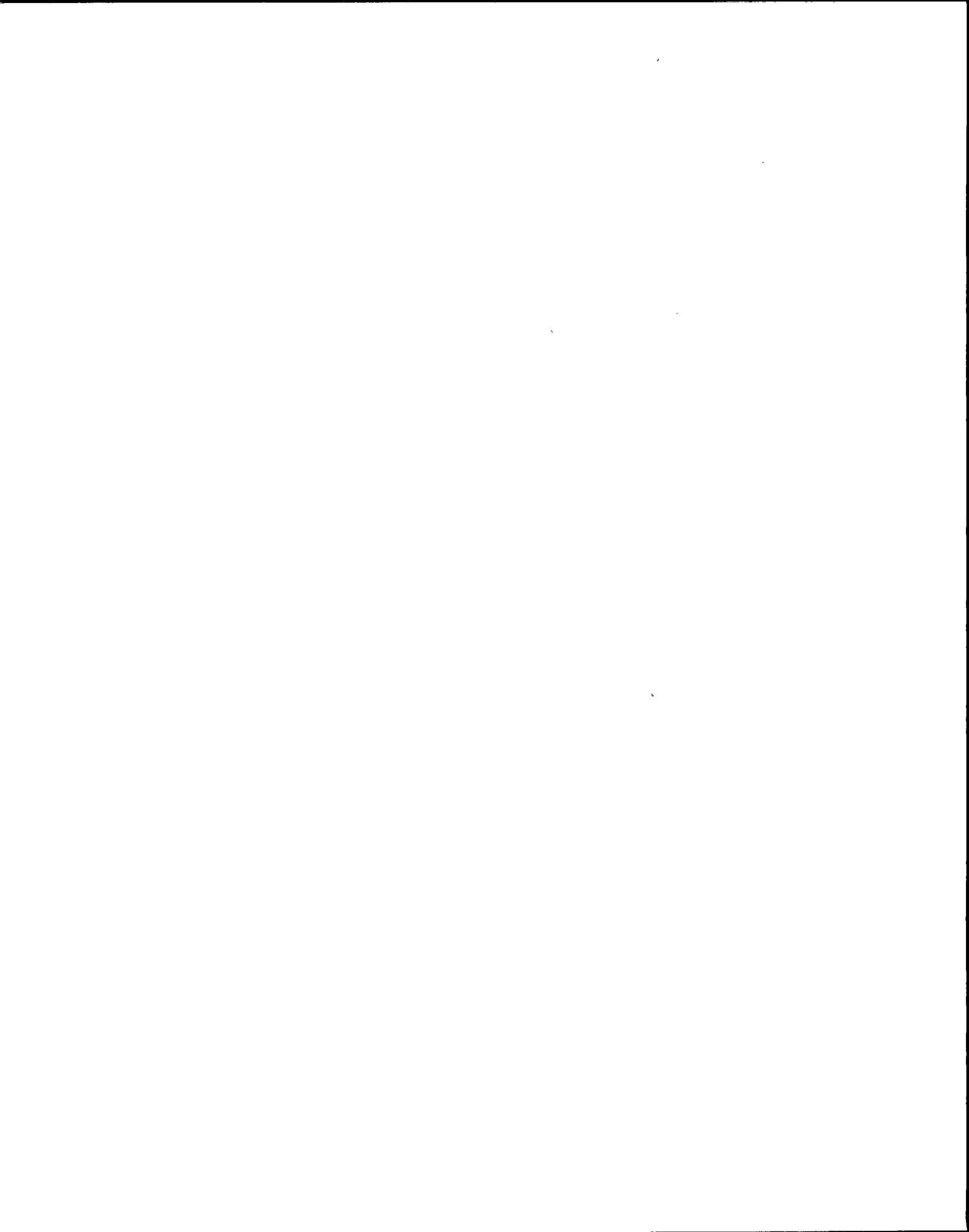




Display of Work Item Data

Received By..... WATSON R  
Rcvd By Dt..... 891227  
Account Code..... 706.30--9571-321115--200-0110  
QC Review..... LAVALLEE P  
QA Review Date..... 891227  
Inspection Req'd..... N  
Left Planning..... 891228  
IP Code..... 15G  
Work Cond. Code..... F  
Remarks..... ASSIGNED TO TOM FAHNESTOCK  
Work Type Code..... CM  
Power Block Flag..... Y  
Staged By Date..... 891228  
Assign to..... FITZGERALD, SHERMAN, YABLONSKI  
Assigned Date..... 900103  
Sched. Start Date..... 900102  
SSS Notify..... 900102  
Corrective Action Code.. AH  
Corrective Action..... REPLACED LAMINATED SEAL PACK GASKET AND CAP SCREWS  
Cause of Failure Code... BC  
Cause of failure..... LIMIT SWITCH WAS OUT OF ADJUSTMENT. ROLLING OVER OF  
THE SEAL PACK AND ALLOWING THE VALVE TO LEAK BY  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

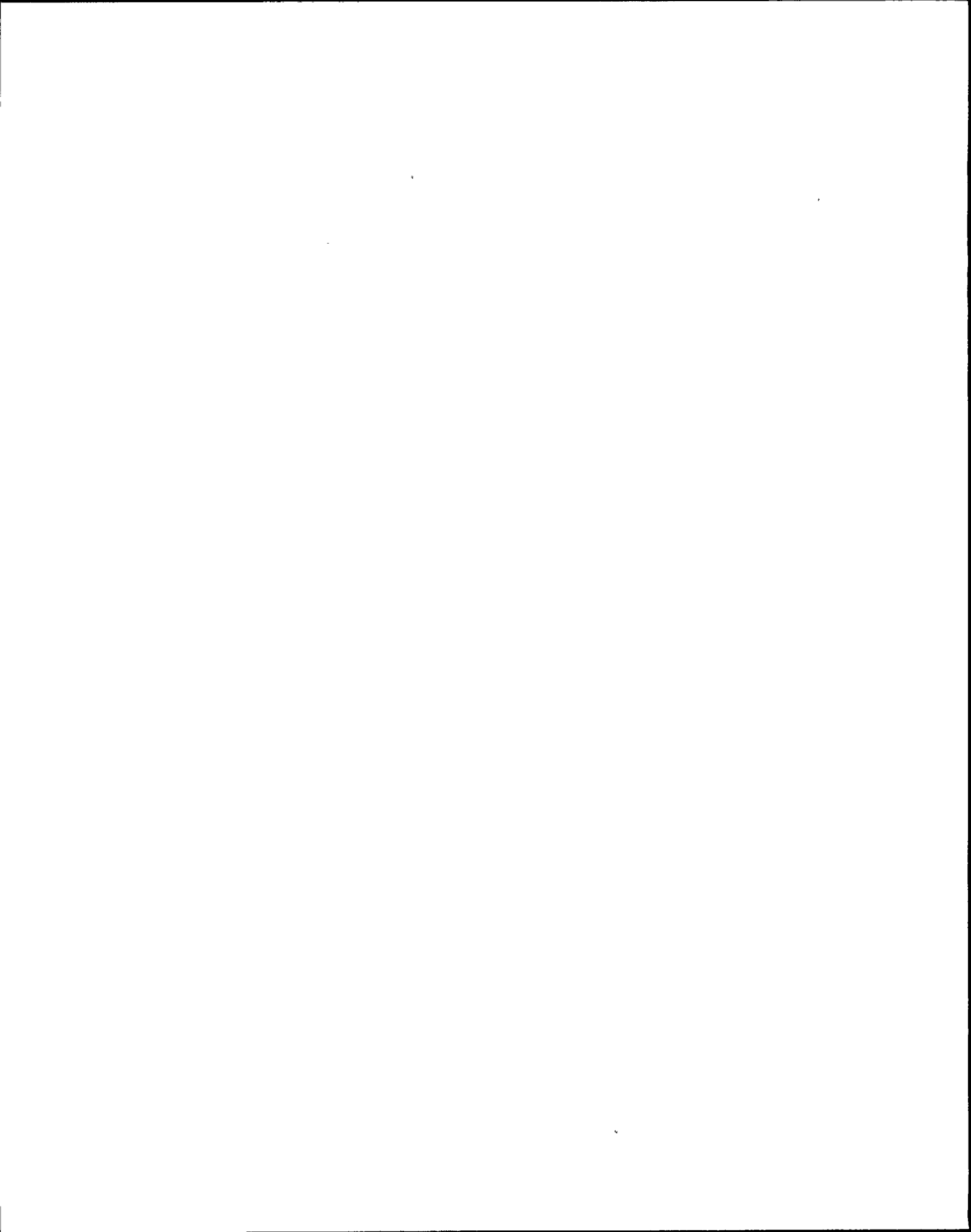
CAPS



Display of Work Item Data

|  |                     |
|--|---------------------|
| Attachments.....                             | MATERIAL ISSUES     |
| RWP.....                                     | NA                  |
| QCIR Nos.....                                | NA                  |
| NCR's.....                                   | NA                  |
| Completed by.....                            | SHERMAN, FITZGERALD |
| Completion date.....                         | 900119              |
| Supervisor Review.....                       | FAHNESTOCK T        |
| Supervisor Review Date..                     | 900119              |
| QC Work Accepted by.....                     | LAVALLEE P.         |
| QC Work Accept date.....                     | 891227              |
| PMT Review By.....                           | WATSON R            |
| PMT Rev Date.....                            | 891227              |
| PMT Test Rpt.....                            | Y                   |
| PMT Ver.....                                 | LAWRENCE J          |
| PMT Ver Dt.....                              | 900204              |
| Accepted by.....                             | RICHARDS D          |
| Acceptance date.....                         | 900204              |
| Plan LO.....                                 | 900205              |
| Fld Compl Log Dte.....                       | 900119              |
| SSS Logout Date.....                         | 900205              |
| Craft.....                                   | 1391, 1381, 1361    |
| Man Hours.....                               | 28, 99.5, 8.0       |
| Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?) |                     |

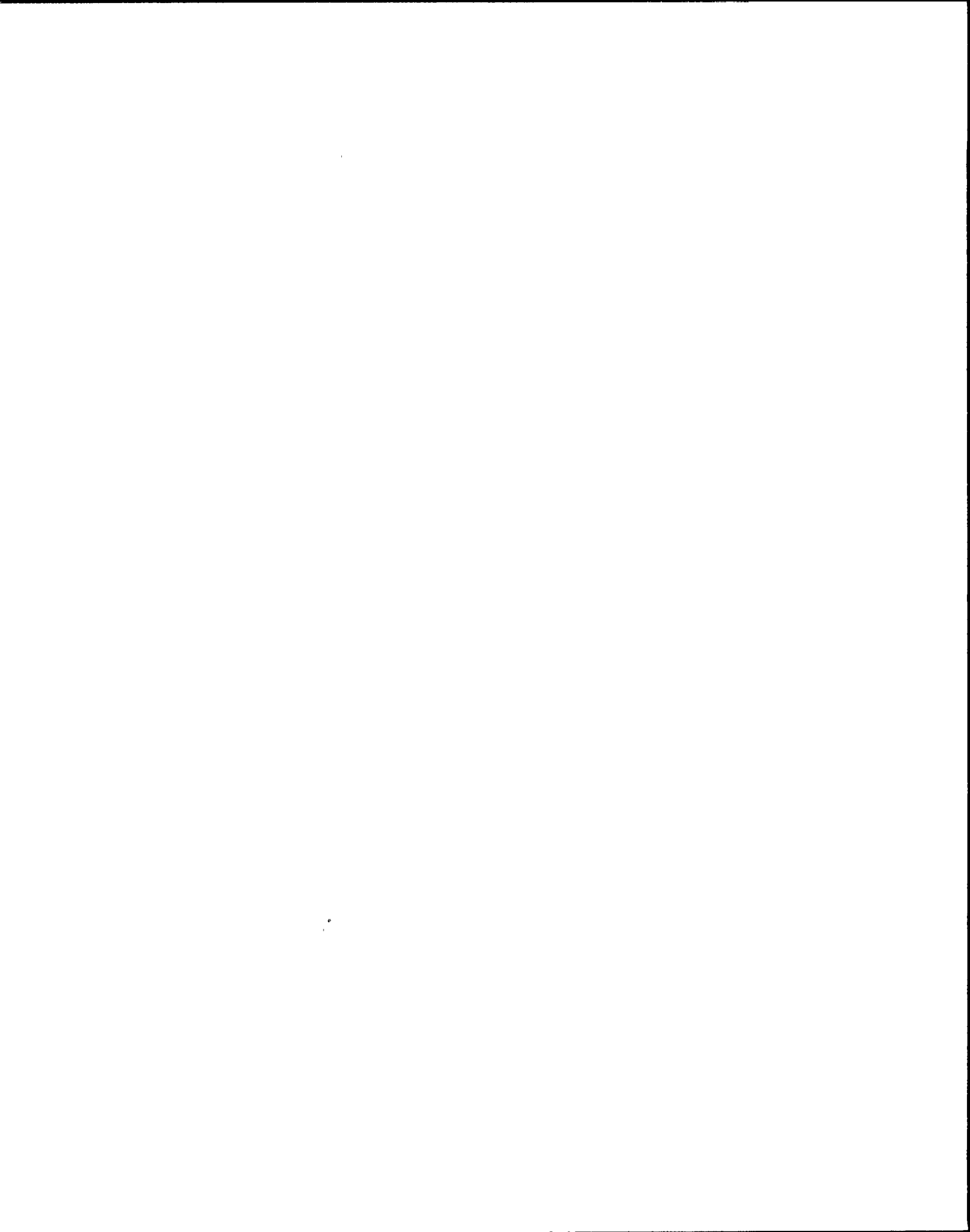
CAPS



Display of Work Item Data

OT Hours..... 6, 16, 0  
Lead/Supprt Dpt..... 200, 100, 003  
OMG Availability Code... F1  
Completion Entry Date... 900119

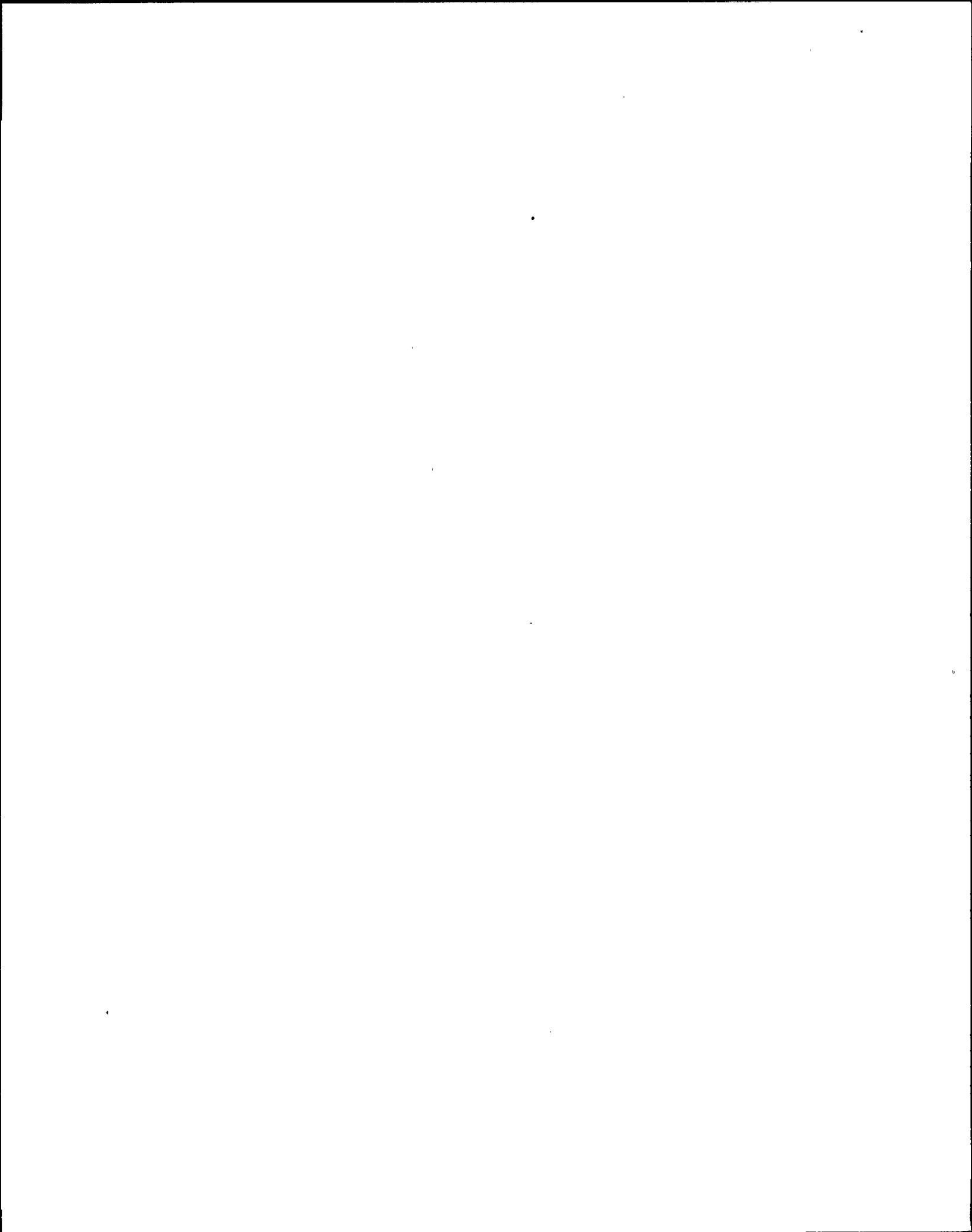
CAPS



Display of Work Item Data

HIT..... 13  
Work No..... W154769  
Issued..... 891227  
Depart..... 003  
Status..... C  
Lead or Supprt..... S  
WCC Status..... 100  
Priority..... 2  
Unit..... 2  
Component No..... 2CNM-MOV84B  
System No..... CNM  
BIP No..... 003  
Safety Class..... NSR  
ASME Component..... N  
Cleanness Class..... B, D  
Title..... BUTTERFLY OR TRICENTRIC V  
Work Item Description... MOV84B LEAKS BY THE SEAT. DISASSEMBLE AND REPAIR  
Location..... HB,277,FA,007.20  
NPRDS Failcode..... F  
Originator..... WATSON R  
Approved by..... DEGRACIA A  
Approval date..... 891227  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS

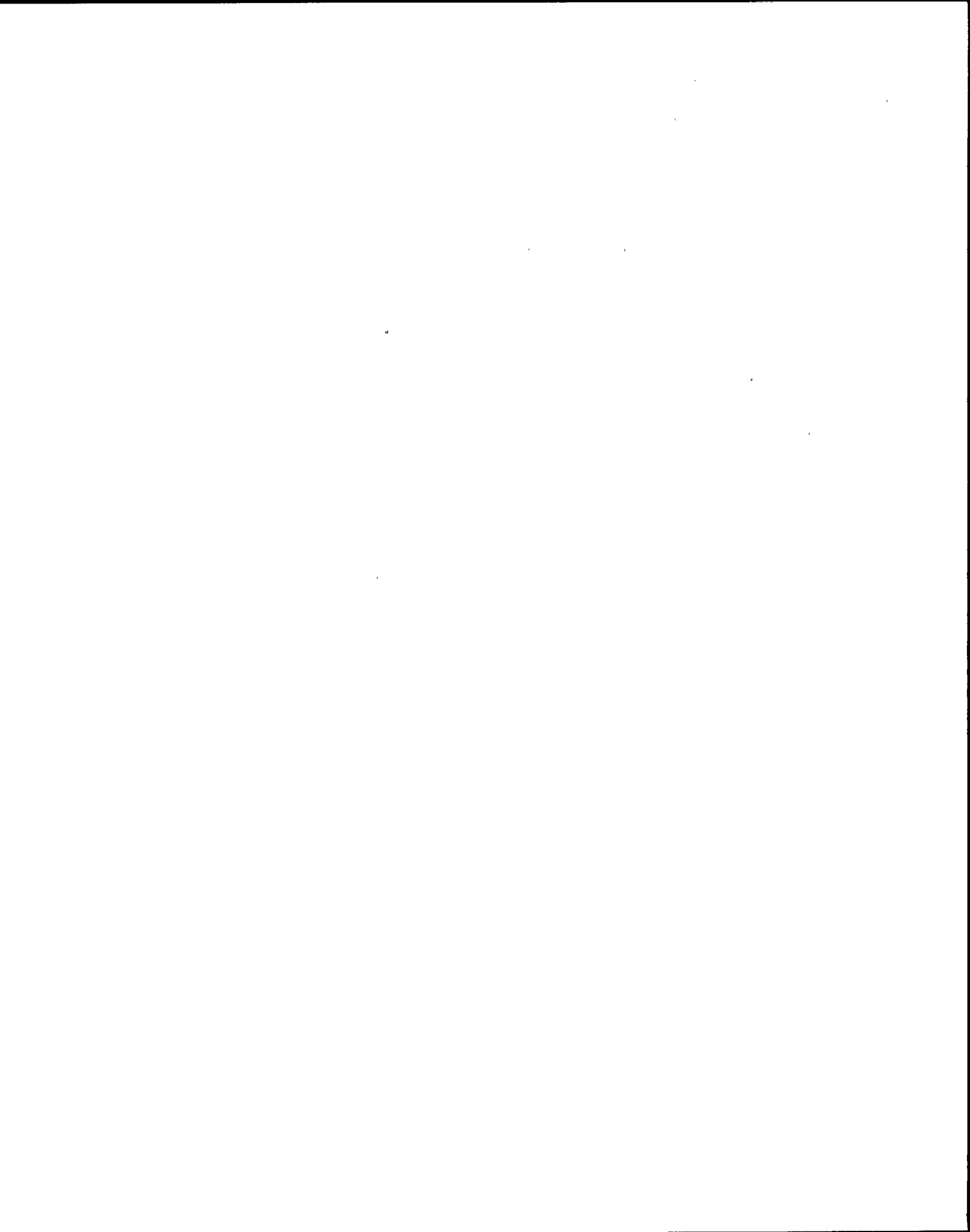




Display of Work Item Data

Received By..... WATSON R  
Rcvd By Dt..... 891227  
Account Code..... 706.30--9571-321115--200-0110  
QC Review..... LAVALLEE P  
QA Review Date..... 891227  
Inspection Req'd..... N  
Left Planning..... 891228  
IP Code..... 15G  
Work Cond. Code..... F  
Work Type Code..... CM  
Power Block Flag..... Y  
Supprt Acct..... NA  
Staged By Date..... 891230  
Assign to..... HENNING D  
Assigned Date..... 891230  
Sched. Start Date..... 891230  
SSS Notify..... 891230  
QA Notified date..... 891230  
Corrective Action..... REMOVED AND REINSTALLED 2CNM-MOV84B  
Cause of failure..... NUCLEAR RECORDS INDEX  
Attachments..... 2-89-00123, 2-90-00052  
QCIR Nos..... NA  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS

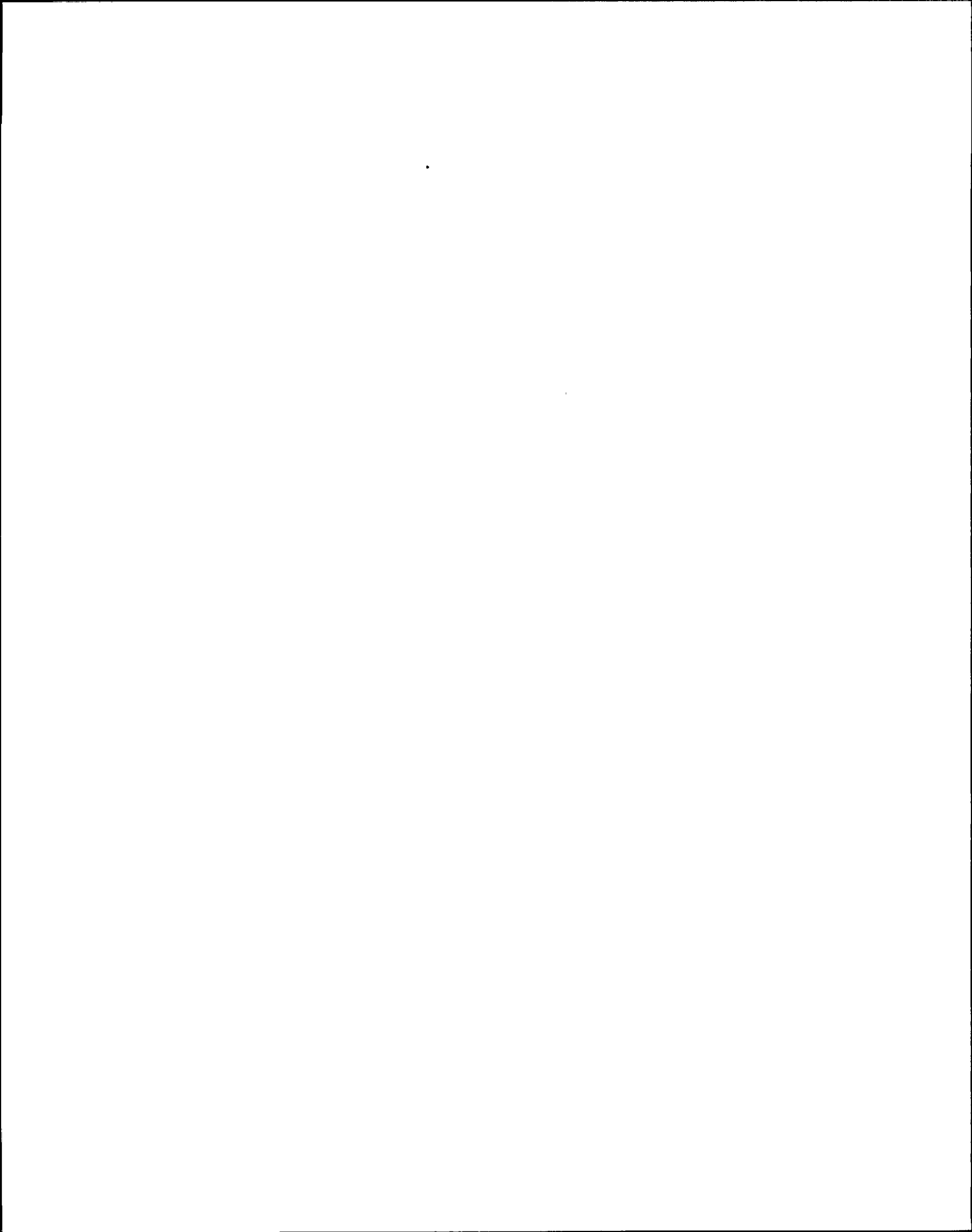


Display of Work Item Data

|                          |               |
|--------------------------|---------------|
| NCR's.....               | NA            |
| Completed by.....        | 900122        |
| Completion date.....     | 900122        |
| Supervisor Review.....   | COOGAN W      |
| Supervisor Review Date.. | 900122        |
| QC Work Accepted by..... | BUSBY M       |
| QC Work Accept date..... | 891227        |
| PMT Test Rpt.....        | Y             |
| Acceptance date.....     | 900204        |
| Fld Compl Log Dte.....   | 900122        |
| Lead/Supprt Dpt.....     | 200, 100, 003 |
| Contractor.....          | CBI           |
| Completion Entry Date... | 900122        |

Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

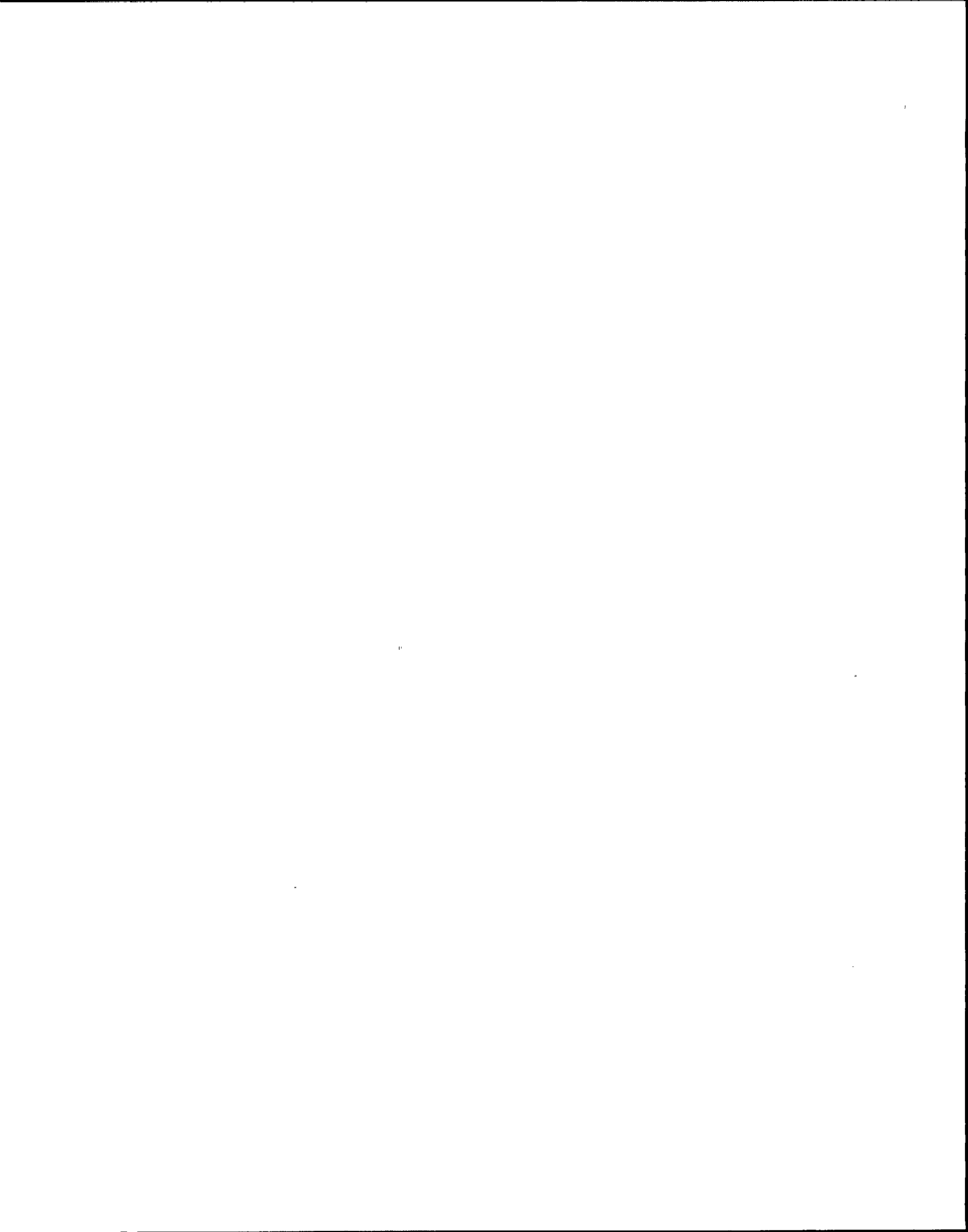
CAPS



Display of Work Item Data

HIT..... 14  
Work No..... W154770  
Issued..... 891227  
Depart..... 003  
Status..... C  
Lead or Supprt..... S  
WCC Status..... 100  
Priority..... 2  
Unit..... 2  
Component No..... 2CNM-MOV84C  
System No..... CNM  
BIP No..... 003  
Safety Class..... NSR  
ASME Component..... N  
Cleanness Class..... B, D  
Title..... BUTTERFLY OR TRICENTRIC V  
Work Item Description... MOV84C LEAKS BY THE SEAT. DISASSEMBLE AND REPAIR  
Location..... HB,277,FA,008.20  
NPRDS Failcode..... F  
Originator..... WATSON R  
Approved by..... DEGRACIA A  
Approval date..... 891227  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS



Display of Work Item Data

Received By..... WATSON R  
Rcvd By Dt..... 891227  
Account Code..... 706.30--9571-321115--200-0110  
QC Review..... LAVALLEE P  
QA Review Date..... 891227  
Inspection Req'd..... N  
Left Planning..... 891228  
IP Code..... 15G  
Work Cond. Code..... F  
Work Type Code..... CM  
Power Block Flag..... Y  
Supprt Acct..... NA  
Supprt Procs..... TRAVELER CWA-231-74  
Staged By Date..... 900103  
Assign to..... HENNING D  
Assigned Date..... 891230  
Sched. Start Date..... 900103  
SSS Notify..... 891231  
QA Notified date..... 891231  
Corrective Action..... REMOVED AND REINSTALLED 2CNM-MOV84C  
Attachments..... NUCLEAR RECORDS INDEX  
Mark Up No..... 2-89-00123, 2-90-00052  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS



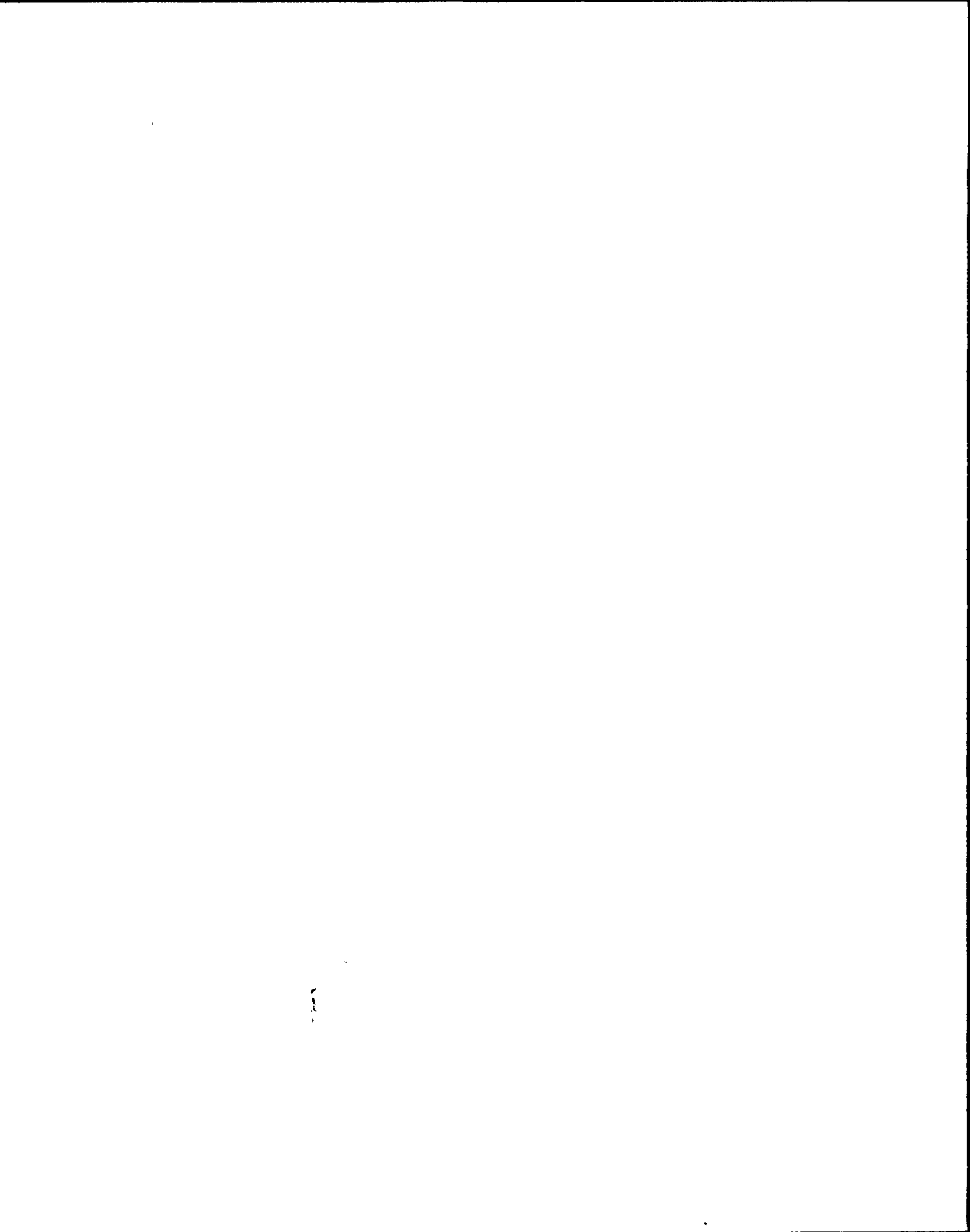


Display of Work Item Data

|                          |               |
|--------------------------|---------------|
| QCIR Nos.....            | NA            |
| NCR's.....               | NA            |
| Completed by.....        | BIERY J       |
| Completion date.....     | 900122        |
| Supervisor Review.....   | COOGAN W      |
| Supervisor Review Date.. | 900122        |
| QC Work Accepted by..... | BUSBY M       |
| QC Work Accept date..... | 900123        |
| PMT Test Rpt.....        | Y             |
| Acceptance date.....     | 900206        |
| Fld Compl Log Dte.....   | 900122        |
| Lead/Supprt Dpt.....     | 200, 003, 100 |
| Contractor.....          | CBI           |
| Completion Entry Date... | 900122        |

Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

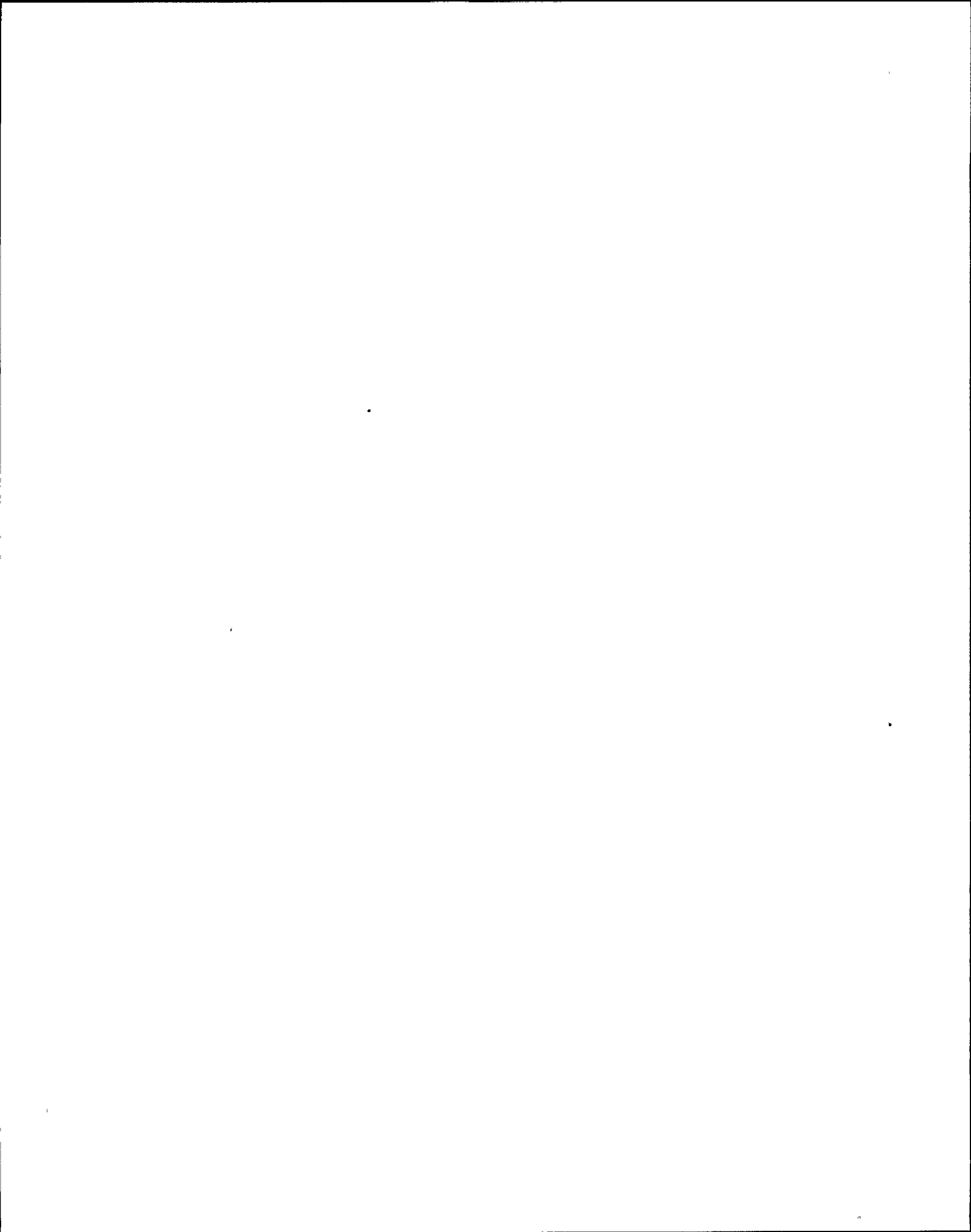
CAPS



Display of Work Item Data

Work No..... #154770  
Issued..... 891227  
Depart..... 200  
Status..... C  
Lead or Supprt..... L  
WCC Status..... 100  
Priority..... 2  
Unit..... 2  
Component No..... 2CNM-MOV84C  
System No..... CNM  
BIP No..... 003  
Safety Class..... NSR  
ASME Component..... N  
Cleanness Class..... B, D  
Title..... BUTTERFLY OR TRICENTRIC V  
Work Item Description... MOV84C LEAKS BY THE SEAT. DISASSEMBLE AND REPAIR  
Location..... HB,277,FA,008.20  
NPRDS Failcode..... F  
Originator..... WATSON R  
Approved by..... DEGRACIA A  
Approval date..... 891227  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS

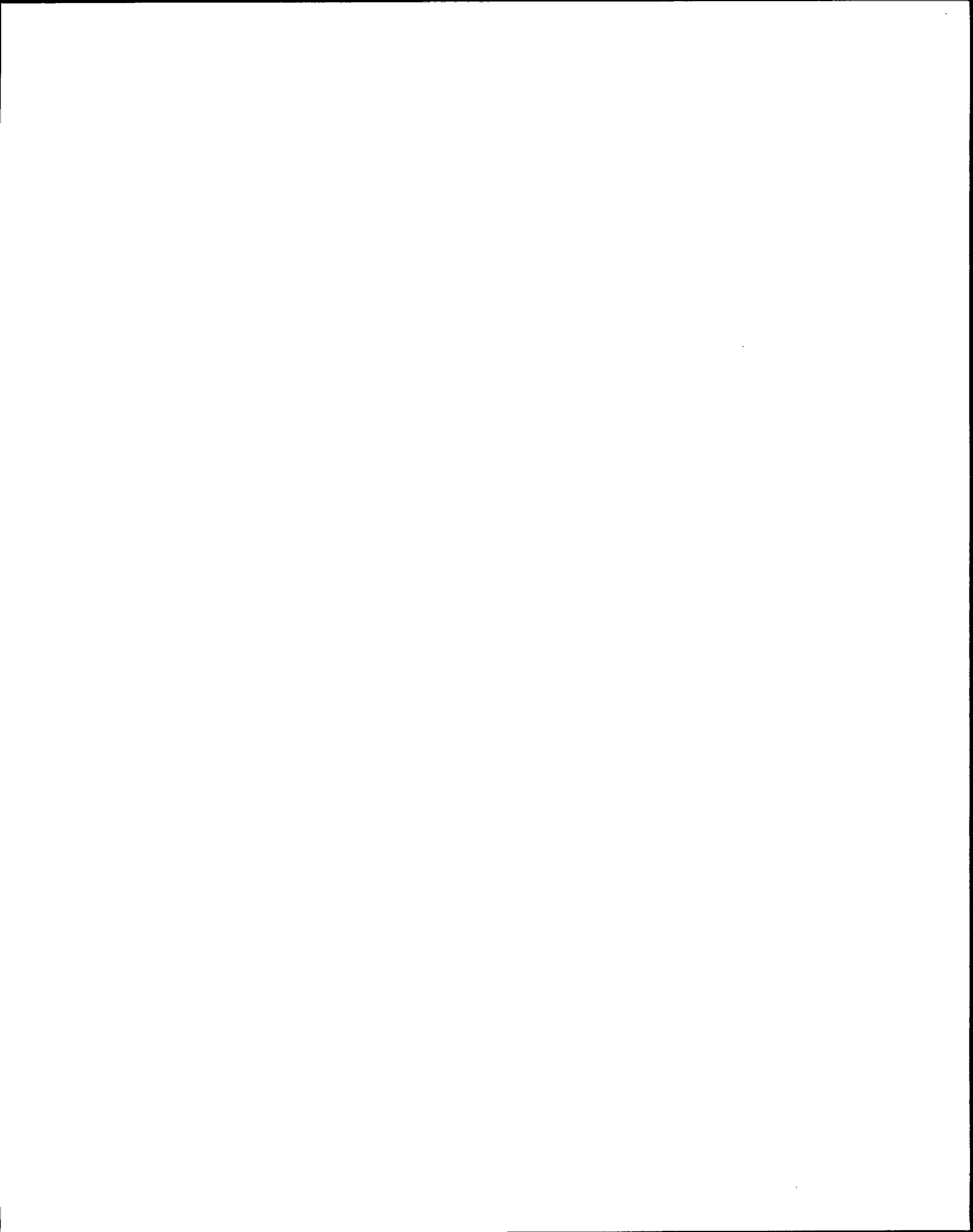


Display of Work Item Data

Received By..... WATSON R  
Rcvd By Dt..... 891227  
Account Code..... 706.30--9571-321115--200-0110  
QC Review..... LAVALLEE P  
QA Review Date..... 891227  
Inspection Req'd..... N  
Left Planning..... 891228  
IP Code..... 15G  
Work Cond. Code..... F  
Work Type Code..... CM  
Power Block Flag..... Y  
Staged By Date..... 900105  
Assign to..... AHART R  
Assigned Date..... 900104  
Sched. Start Date..... 900105  
SSS Notify..... 900104  
Corrective Action Code.. AH  
Corrective Action..... REPLACED LAMINATED SEAL PACK GASKET AND CAP SCREWS  
Cause of Failure Code... BC  
Cause of failure..... LIMIT SWITCH WAS OUT OF ADJUSTMENT. ROLLING OVER OF  
THE SEAL PACK AND ALLOWING THE VALVE TO LEAK BY

Attachments.

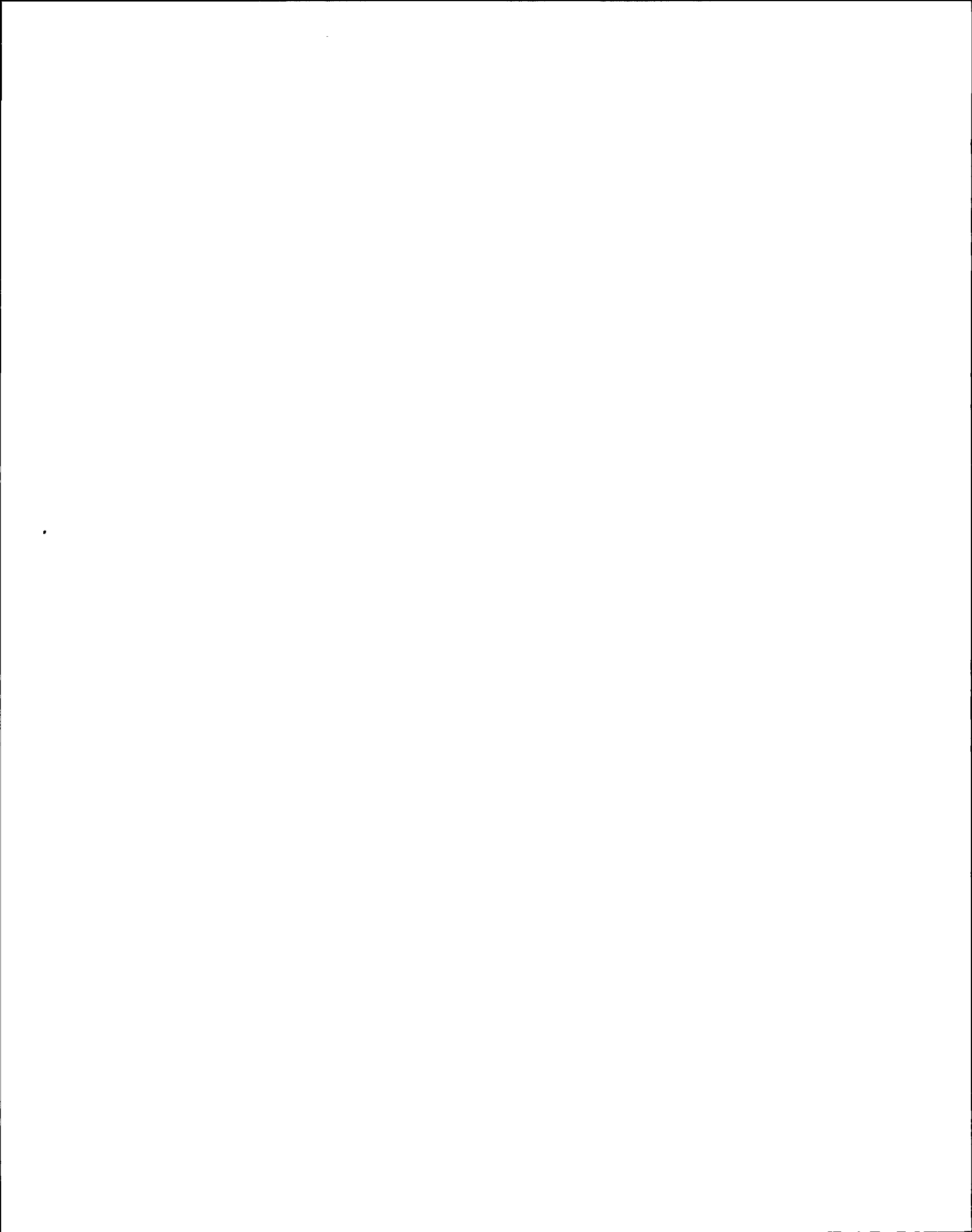
CAPS



Display of Work Item Data

Mark Up No..... 890023  
RWP..... NA  
QCIR Nos..... NA  
NCR's..... NA  
Completed by..... SHERMAN, FITZGERALD  
Completion date..... 900119  
Supervisor Review..... FAHNESTOCK T  
Supervisor Review Date.. 900119  
QC Work Accepted by..... LAVALLEE P.  
QC Work Accept date..... 891227  
PMT Review By..... WATSON R  
PMT Rev Date..... 891227  
PMT Test Rpt..... Y  
PMT Ver..... RICHARDS D  
PMT Ver Dt..... 900206  
Accepted by..... RICHARDS D  
Acceptance date..... 900206  
Plan LO..... 900207  
Fld Compl Log Dte..... 900119  
SSS Logout Date..... 900207  
Craft..... 1381, 1361, 1391  
Man Hours..... 194, 19, 30  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS



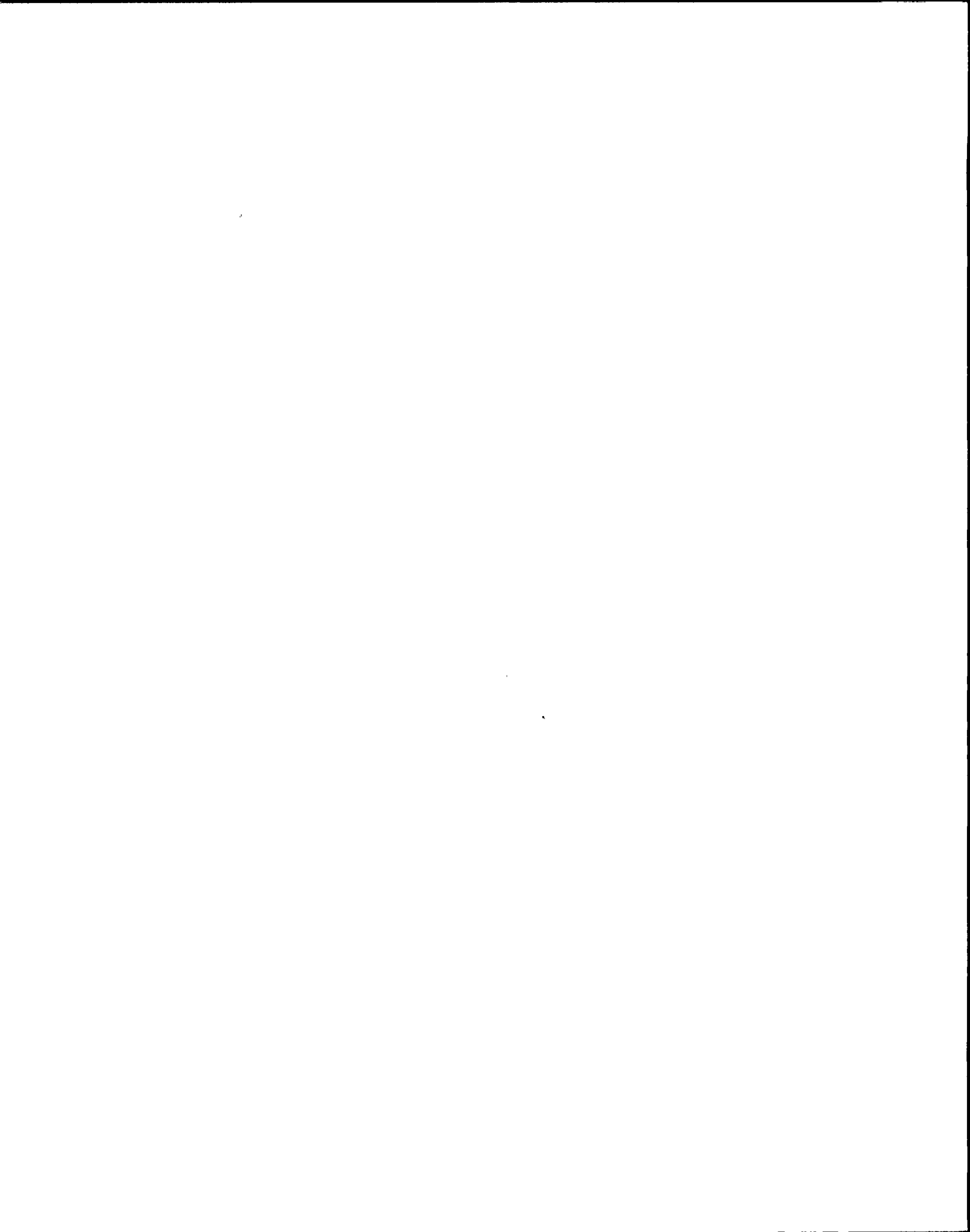


Display of Work Item Data

OT Hours..... 54, 2, 12  
Lead/Supprt Dpt..... 200, 003, 100  
OMG Availability Code... F1  
Completion Entry Date... 900119

Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

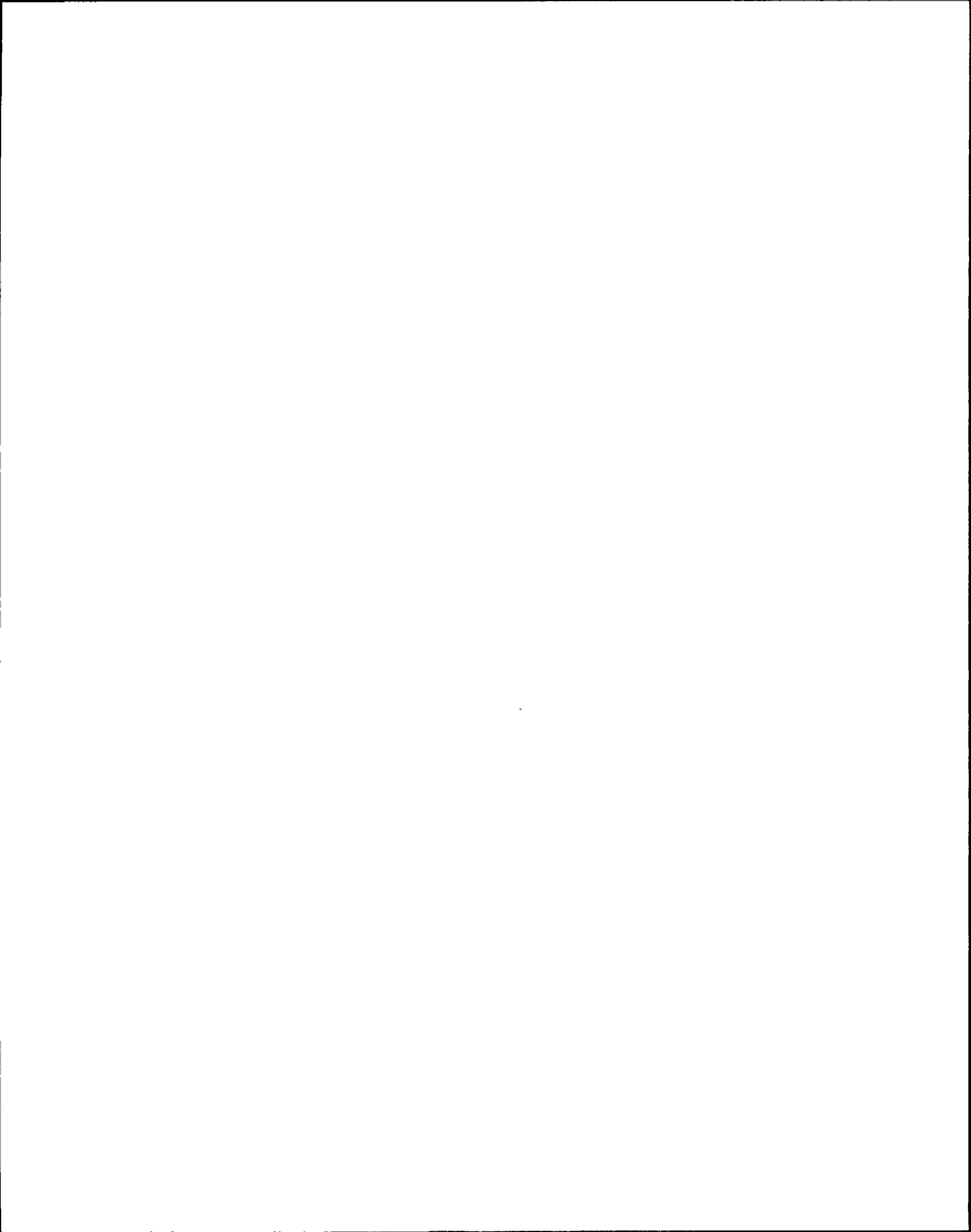
CAPS



Display of Work Item Data

HIT..... 16  
Work No..... W154772  
Issued..... 891228  
Depart..... 003  
Status..... C  
Lead or Supprt..... S  
WCC Status..... 100  
Priority..... 2  
Unit..... 2  
Component No..... 2CNM-MOV84A  
System No..... CNM  
BIP No..... 003  
Safety Class..... NSR  
ASME Component..... N  
Cleanness Class..... B, D  
Title..... BUTTERFLY OR TRICENTRIC V  
Work Item Description... MOV84A LEAKS BY. PULL VALVE FOR INSPECTION AND REPAIR  
Location..... HB,277,FA,006.00  
NPRDS Failcode..... F  
Originator..... WATSON R  
Approved by..... WILLIS D  
Approval date..... 891228  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

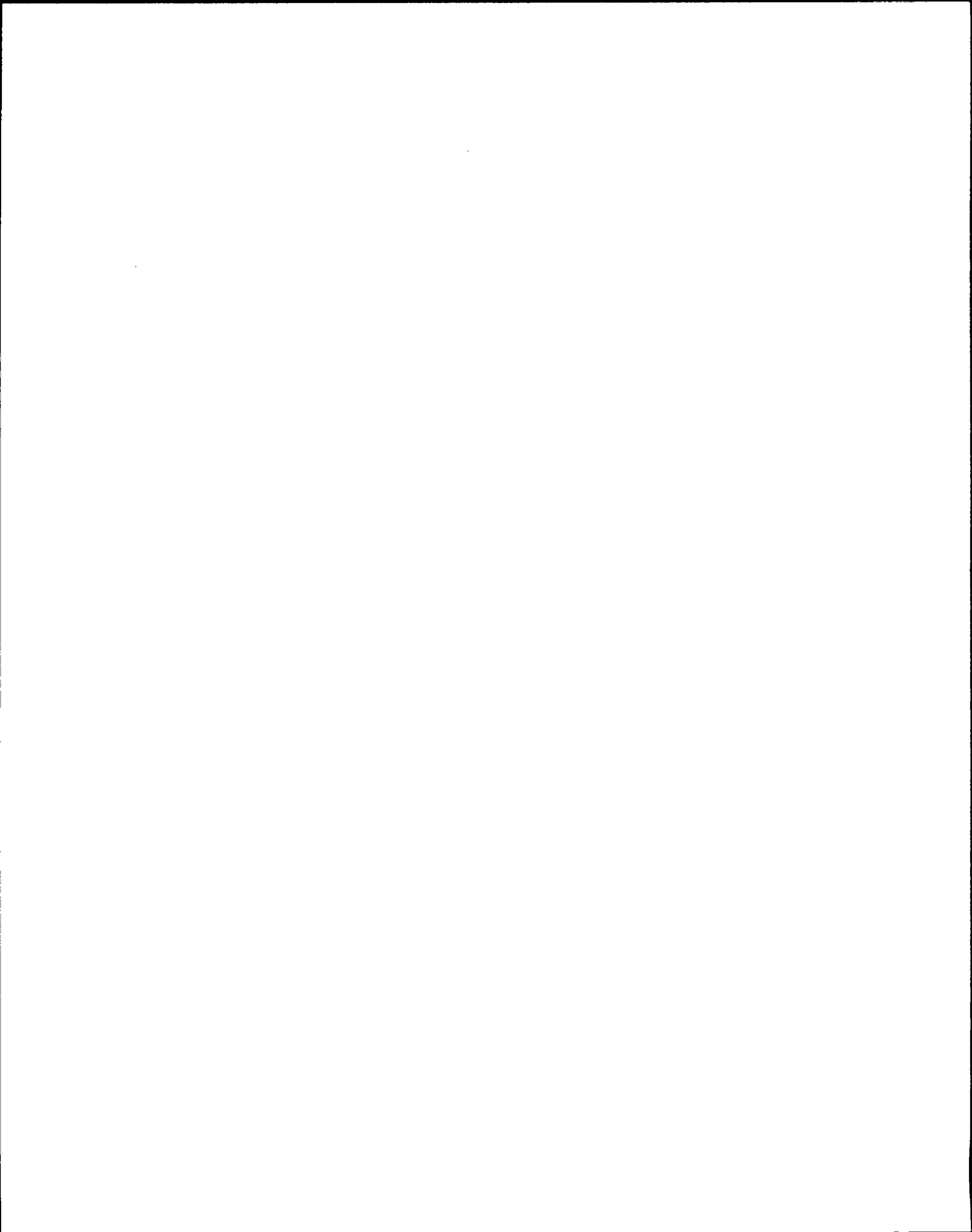
CAPS



Display of Work Item Data

Received By..... WATSON R  
Rcvd By Dt..... 891228  
Account Code..... 706.30--9571-321115--200-0110  
QC Review..... DEAN J  
QA Review Date..... 891228  
Inspection Req'd..... N  
Left Planning..... 891228  
IP Code..... 3  
Merit Score..... 000  
Work Cond. Code..... F  
Work Type Code..... CM  
Power Block Flag..... Y  
Supprt Acct..... NA  
Supprt Procs..... TRAVELER CWA-231-72  
Staged By Date..... 891230  
Assign to..... HENNING D  
Assigned Date..... 891228  
Sched. Start Date..... 891230  
SSS Notify..... 891230  
QA Notified date..... 891231  
Corrective Action..... REMOVED AND REINSTALLED 2CNM-MOV84A  
Attachments..... NUCLEAR RECORDS INDEX  
Option? (NL, Hn, D; DP, SR, RD, RV, S, Q, ?)

CAPS

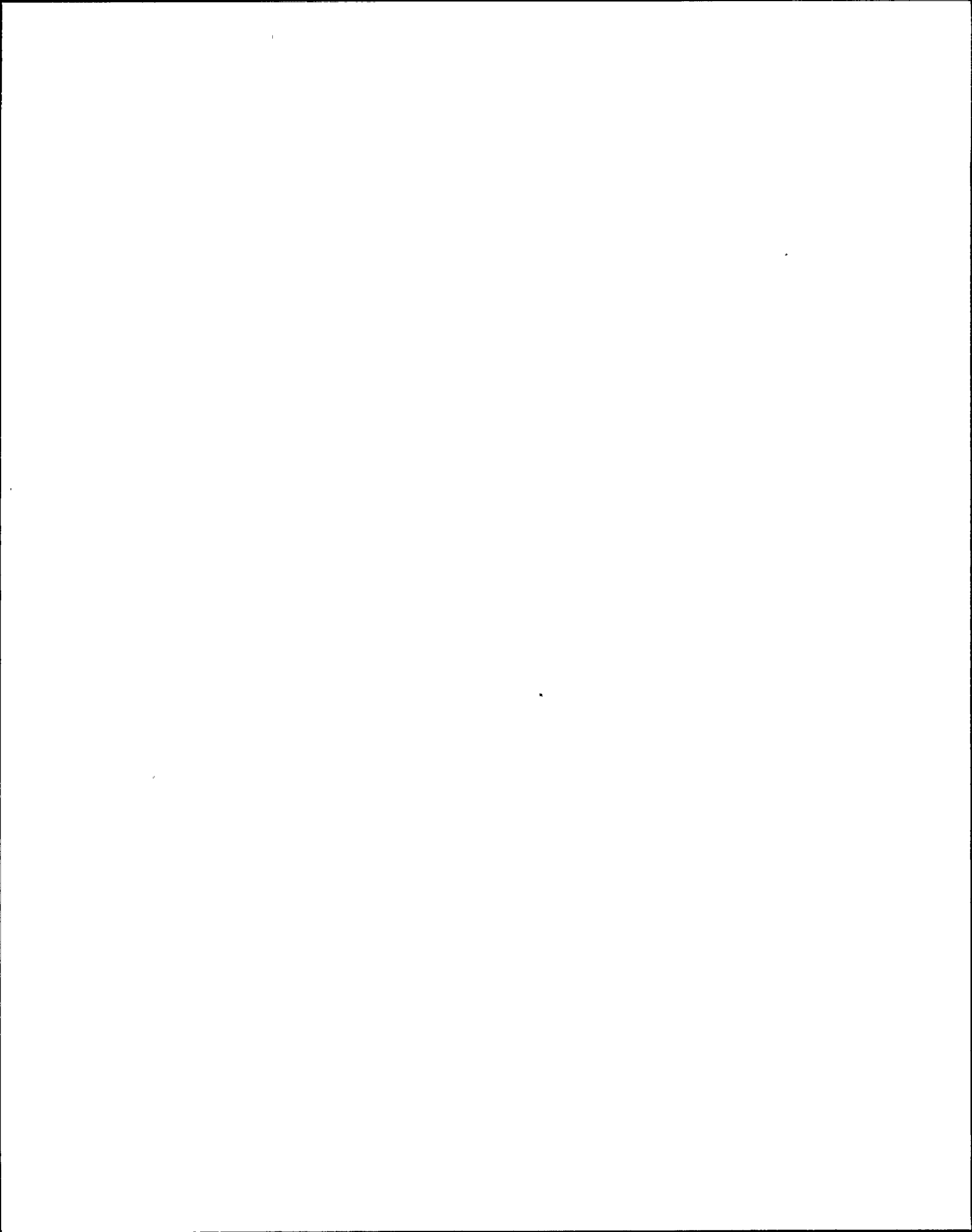


Display of Work Item Data

|                          |                        |
|--------------------------|------------------------|
| Mark Up No.....          | 2-89-00123, 2-90-00052 |
| QCIR Nos.....            | NA                     |
| NCR's.....               | NA                     |
| Completed by.....        | BIERY J                |
| Completion date.....     | 900122                 |
| Supervisor Review.....   | COOGAN W               |
| Supervisor Review Date.. | 900122                 |
| QC Work Accepted by..... | BUSBY M                |
| QC Work Accept date..... | 900123                 |
| PMT Test Rpt.....        | Y                      |
| Acceptance date.....     | 900321                 |
| Plan LO.....             | 900407                 |
| Fld Compl Log Dte.....   | 900122                 |
| Lead/Supprt Dpt.....     | 200, 100, 003          |
| Contractor.....          | CBI                    |
| Completion Entry Date... | 900122                 |

Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS

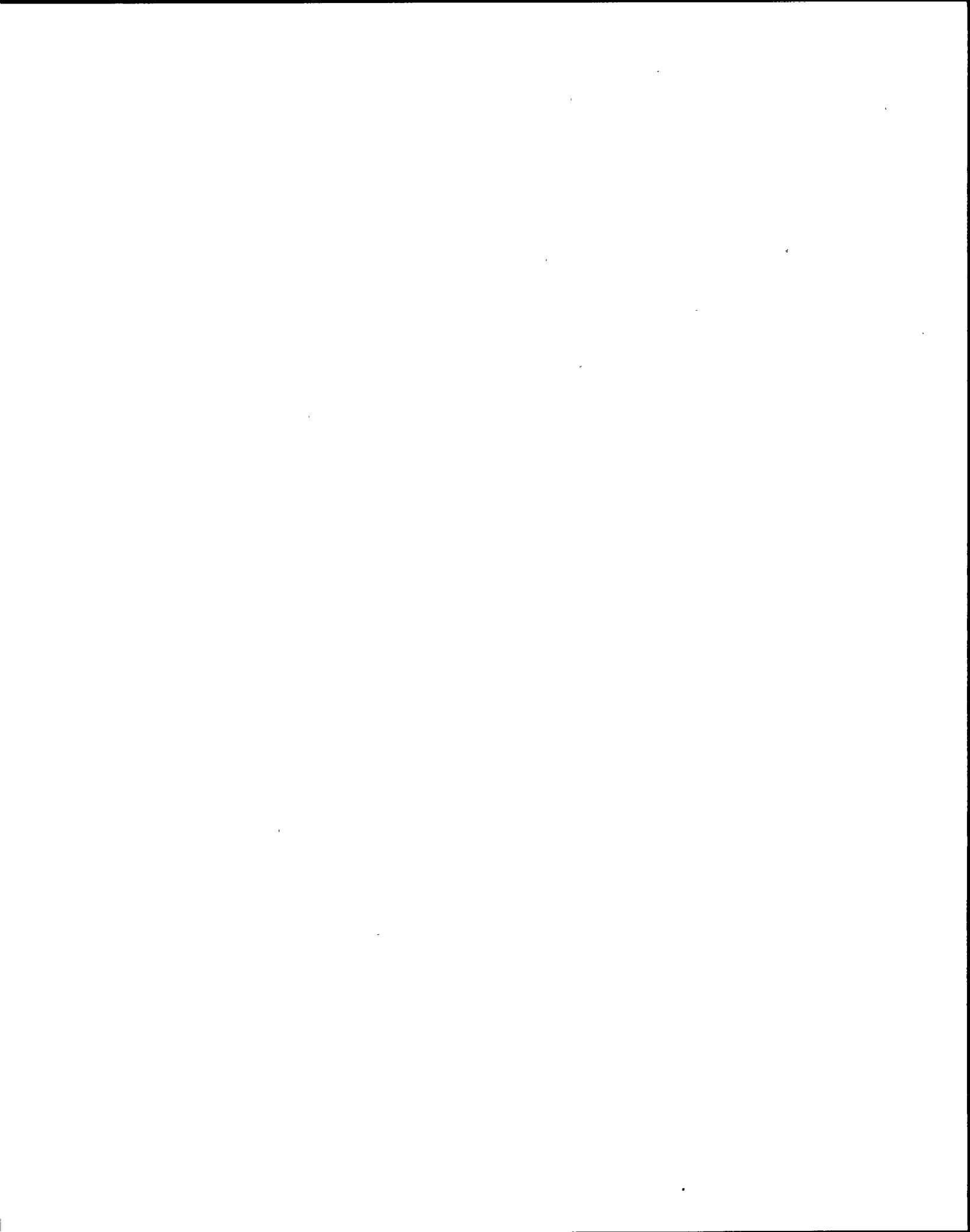




Display of Work Item Data

HIT..... 17  
Work No..... W154772  
Issued..... 891228  
Depart..... 200  
Status..... C  
Lead or Supprt..... L  
Deficiency Tag Number... 010858  
WCC Status..... 100  
Priority..... 2  
Unit..... 2  
Component No..... 2CNM-MOV84A  
System No..... CNM  
BIP No..... 003  
Safety Class..... NSR  
ASME Component..... N  
Cleanness Class..... B, D  
Title..... BUTTERFLY OR TRICENTRIC V  
Work Item Description... MOV84A LEAKS BY. PULL VALVE FOR INSPECTION AND REPAIR  
Location..... HB,277,FA,006.00  
NPRDS Failcode..... F  
Originator..... WATSON R  
Approved by..... WILLIS D  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

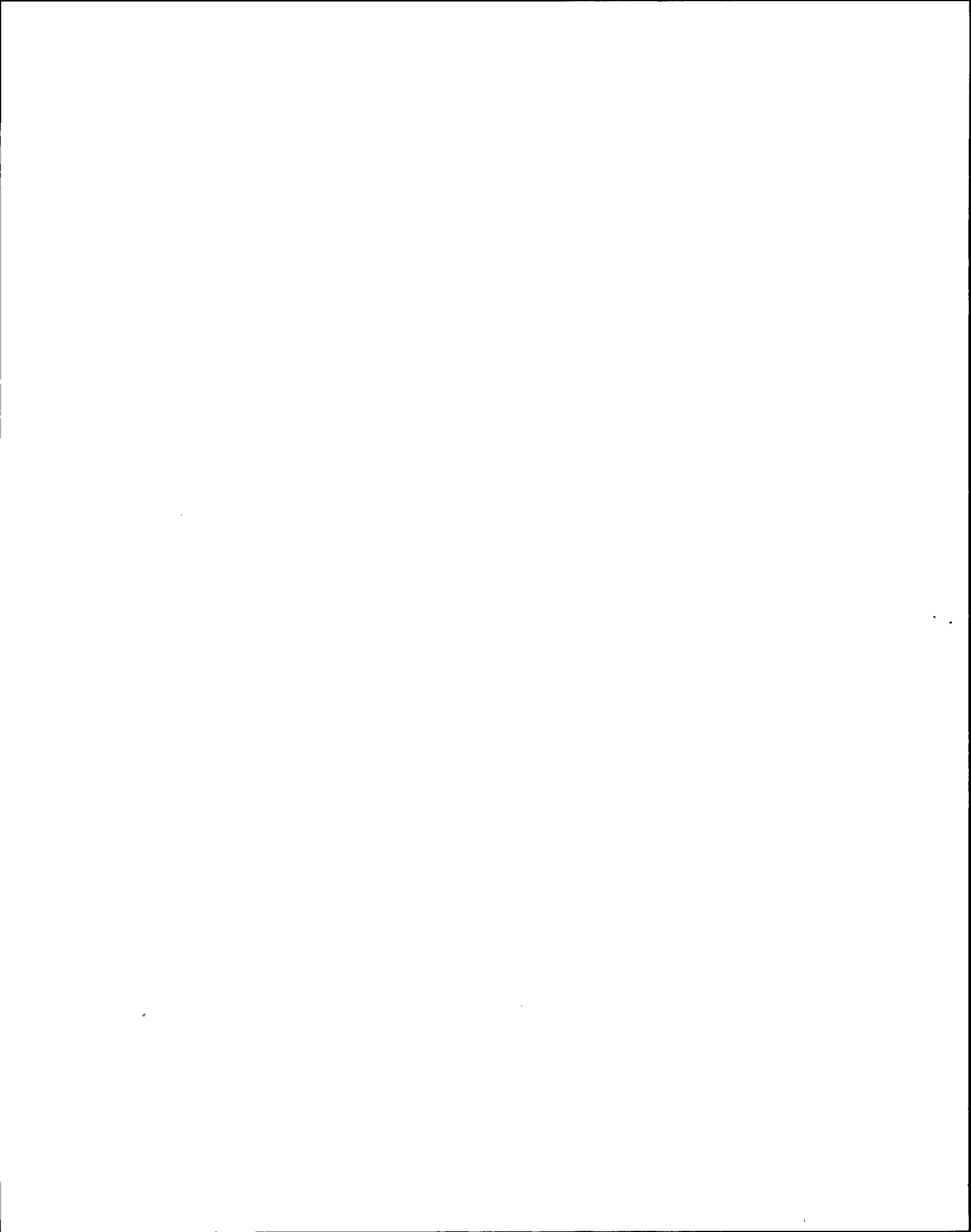
CAPS



Display of Work Item Data

Approval date..... 891228  
Received By..... WATSON R  
Rcvd By Dt..... 891228  
Account Code..... 706.30--9571-321115--200-0110  
QC Review..... DEAN J  
QA Review Date..... 891228  
Inspection Req'd..... N  
Left Planning..... 891228  
IP Code..... 3  
Merit Score..... 000  
Work Cond. Code..... F  
Work Type Code..... CM  
Power Block Flag..... Y  
Staged By Date..... 891229  
Assign to..... FITZGERALD, SHERMAN, YABLONSKI  
Assigned Date..... 900103  
Sched. Start Date..... 891230  
SSS Notify..... 900104  
Corrective Action Code.. AH  
Corrective Action..... REPLACED LAMINATED SEAL PACK GASKET AND CAP SCREW  
Cause of Failure Code... BC  
Cause of failure..... LIMIT SWITCH WAS OUT OF ADJUSTMENT - ROLLING OVER OF  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS

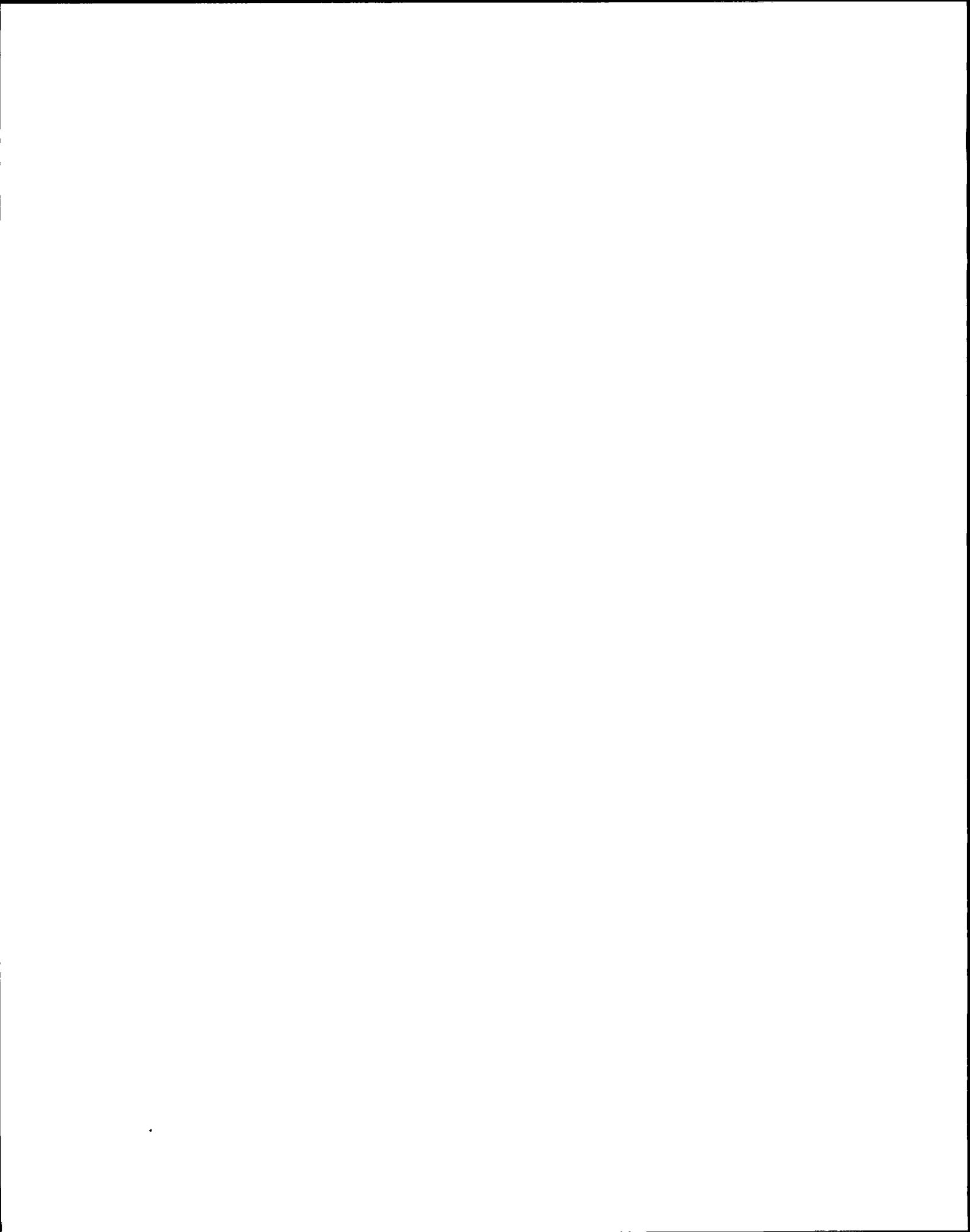


Display of Work Item Data

THE SEAL PACK AND ALLOWING THE VALVE TO LEAK BY  
MATERIAL ISSUES

|  |                                |
|--|--------------------------------|
| Attachments.....                             | NA                             |
| QCIR Nos.....                                | NA                             |
| NCR's.....                                   | NA                             |
| Completed by.....                            | FITZGERALD, SHERMAN, YABLONSKI |
| Completion date.....                         | 900119                         |
| Deficiency Tag Removed..                     | Y                              |
| Supervisor Review.....                       | FAHNESTOCK T                   |
| Supervisor Review Date..                     | 900119                         |
| QC Work Accepted by.....                     | DEAN J.                        |
| QC Work Accept date.....                     | 891228                         |
| PMT Review By.....                           | WATSON R                       |
| PMT Rev Date.....                            | 891228                         |
| PMT Test Rpt.....                            | Y                              |
| PMT Ver.....                                 | DAVIS S                        |
| PMT Ver Dt.....                              | 900320                         |
| Accepted by.....                             | DAVIS S                        |
| Acceptance date.....                         | 900321                         |
| Plan LO.....                                 | 900407                         |
| Fld Compl Log Dte.....                       | 900119                         |
| Craft.....                                   | 1391, 1381                     |
| Man Hours.....                               | 22, 66                         |
| Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?) |                                |

CAPS

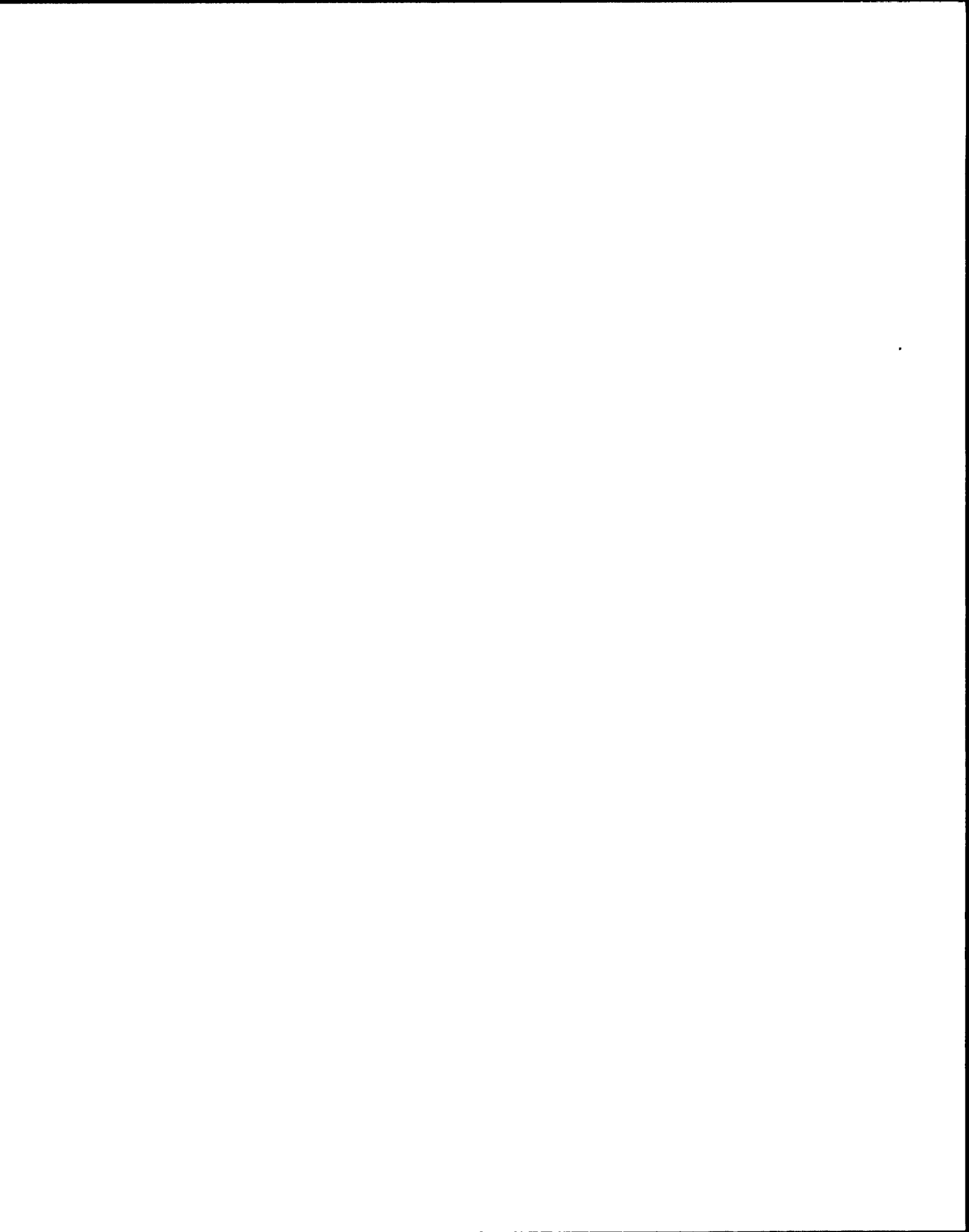


Display of Work Item Data

OT Hours..... 4, 12  
Lead/Supprt Dpt..... 200, 100, 003  
Completion Entry Date... 900119

Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS

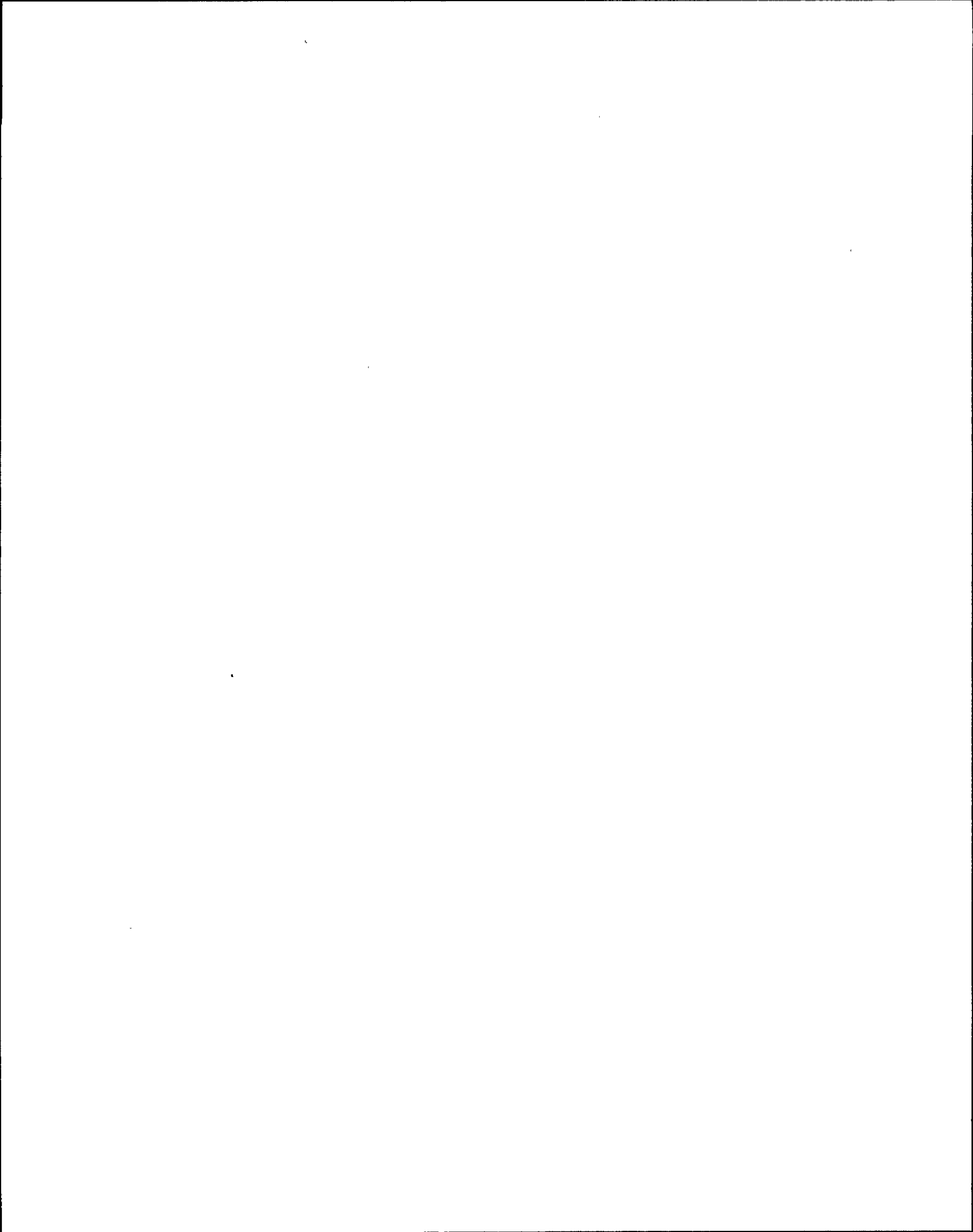




Display of Work Item Data

HIT..... 18  
Work No..... W154772  
Issued..... 891228  
Depart..... 100  
Status..... C  
Lead or Supprt..... S  
WCC Status..... 100  
Priority..... 2  
Unit..... 2  
Component No..... 2CNM-MOV84A  
System No..... CNM  
BIP No..... 003  
Safety Class..... NSR  
ASME Component..... N  
Cleanness Class..... B, D  
Title..... BUTTERFLY OR TRICENTRIC V  
Work Item Description... MOV84A LEAKS BY. PULL VALVE FOR INSPECTION AND REPAIR  
Location..... HB,277,FA,006.00  
NPRDS Failcode..... F  
Originator..... WATSON R  
Approved by..... WILLIS D  
Approval date..... 891228  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

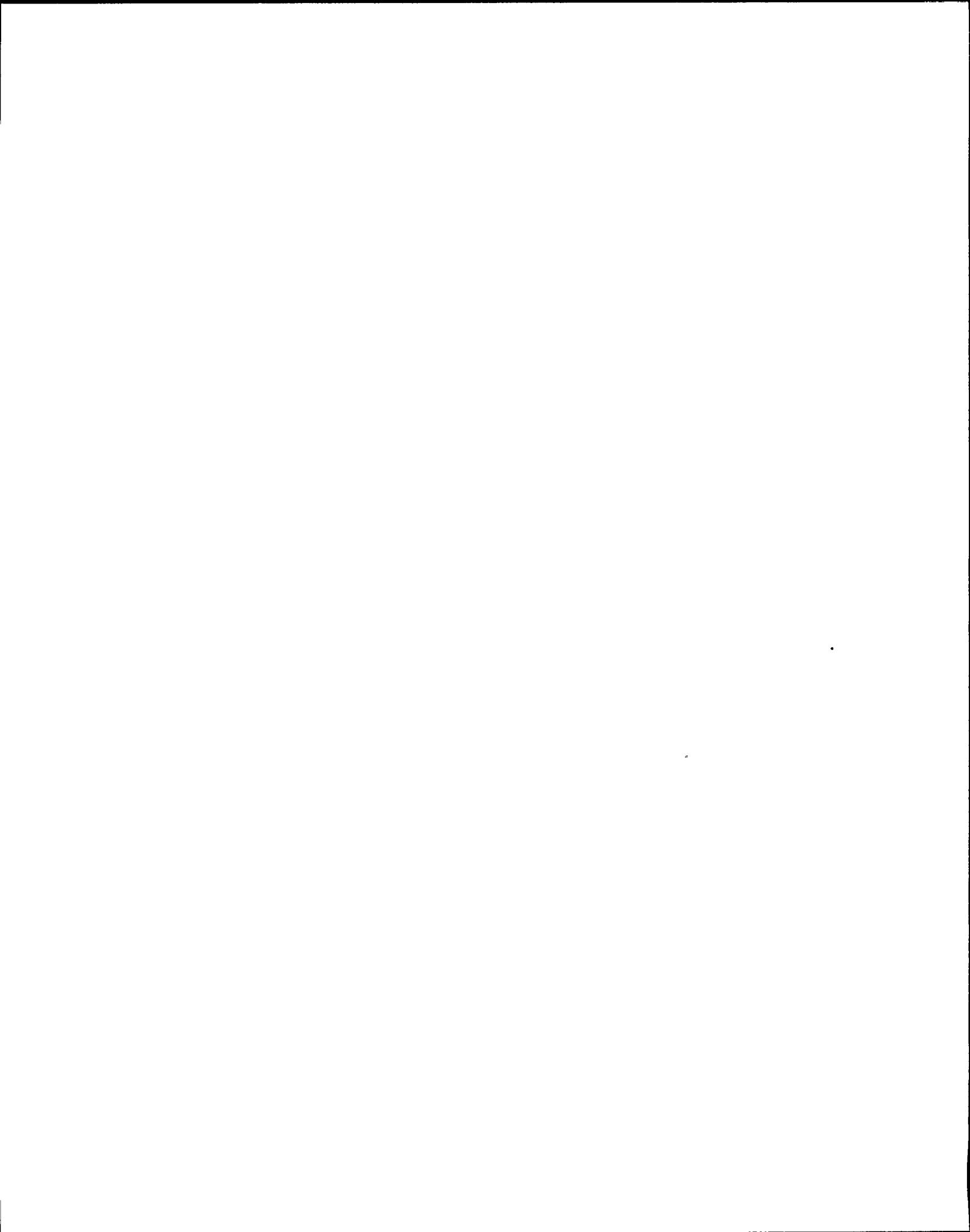
CAPS



Display of Work Item Data

Received By..... WATSON R  
Rcvd By Dt..... 891228  
Account Code..... 706.30--9571-321115--200-0110  
QC Review..... DEAN J  
QA Review Date..... 891228  
Inspection Req'd..... N  
Left Planning..... 891228  
IP Code..... 3  
Merit Score..... 000  
Work Cond. Code..... F  
Work Type Code..... CM  
Power Block Flag..... Y  
Supprt Acct..... 706.30--9571-321116--200-0110  
Staged By Date..... 891228  
Assign to..... KLEE K  
Assigned Date..... 891228  
Sched. Start Date..... 891228  
SSS Notify..... 891228  
Corrective Action..... DETERMED AND RETERMED  
Mark Up No..... RED 2-89-00130, BMU 2-90-50078  
QCIR Nos..... NA  
NCR's..... NA  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS

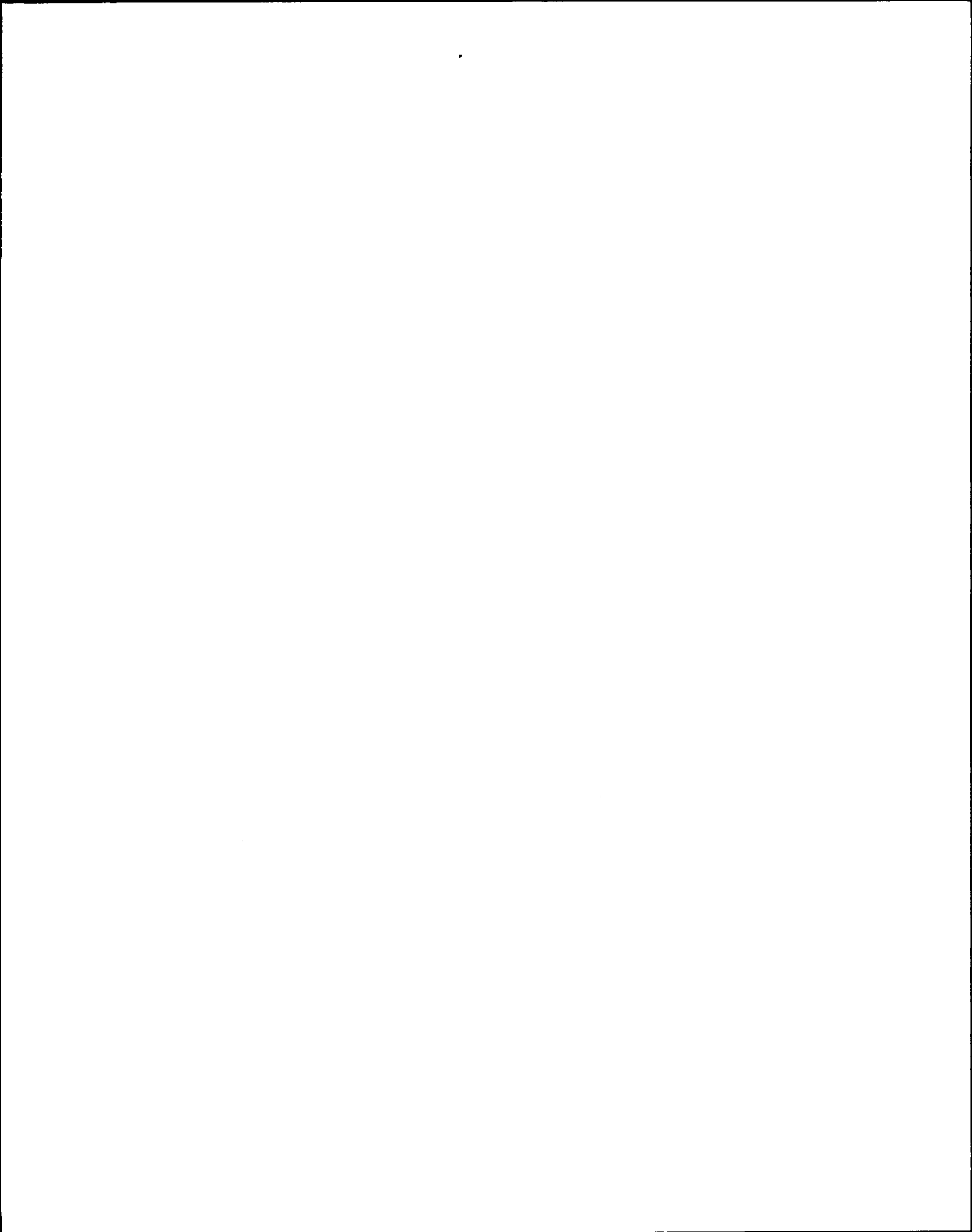


Display of Work Item Data

Completed by..... MCCONKEY  
Completion date..... 900123  
Supervisor Review..... MORYL S  
Supervisor Review Date.. 900123  
QC Work Accepted by..... DEAN J.  
QC Work Accept date..... 891228  
PMT Test Rpt..... Y  
Acceptance date..... 900321  
Plan LO..... 900407  
Fld Compl Log Dte..... 900123  
Craft..... 1331, 1301, 1341, 1311  
Man Hours..... 42, 5, 3, 9  
OT Hours..... 3, 5, 0, 0  
Lead/Supprt Dpt..... 200, 100, 003  
Completion Entry Date... 900123

Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

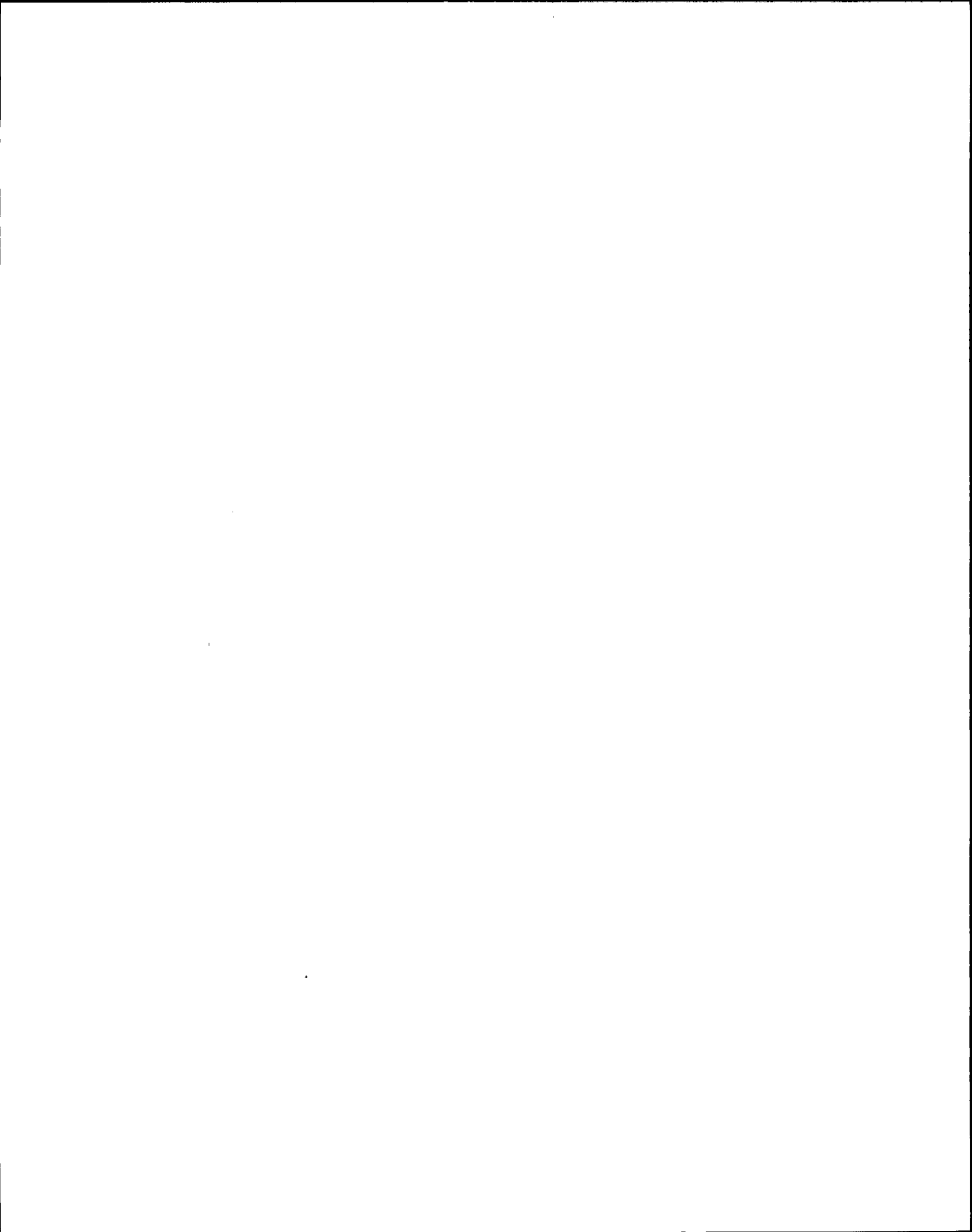
CAPS



Display of Work Item Data

HIT..... 19  
Work No..... W170431  
Issued..... 891229  
Depart..... 200  
Status..... C  
Lead or Supprt..... L  
WCC Status..... 100  
Priority..... 2  
Unit..... 2  
Component No..... 2CNM-MOV84A  
System No..... CNM  
BIP No..... 003  
Safety Class..... NSR  
ASME Component..... N  
Cleanness Class..... B, D  
Title..... BUTTERFLY OR TRICENTRIC V  
Work Item Description... VALVE LEAKS BY. PLEASE REPAIR  
Location..... HB,277,FA,006.00  
Originator..... WAMBSGAN W  
Approved by..... WAMBSGAN W  
Approval date..... 891229  
Received By..... FAHNESTOCK T  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS





Display of Work Item Data

Rcvd By Dt..... 891229  
Account Code..... 706.30--9571-321115--200-0110  
QC Review..... SIEMERS W  
QA Review Date..... 891229  
Inspection Req'd..... N  
Left Planning..... 891229  
IP Code..... 05  
Work Cond. Code..... A  
Work Type Code..... CM  
Power Block Flag..... Y  
Staged By Date..... 891229  
Sched. Start Date..... 891229  
SSS Notify..... 891229  
Corrective Action..... VOID - WORK TO BE DONE ON WR 154772  
Cause of failure..... VOID  
QCIR Nos..... NA  
NCR's..... NA  
Completed by..... BUNNELL J  
Completion date..... 891230  
Supervisor Review..... BUNNELL J  
Supervisor Review Date.. 891230  
QC Work Accepted by..... SEIMERS W.  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS

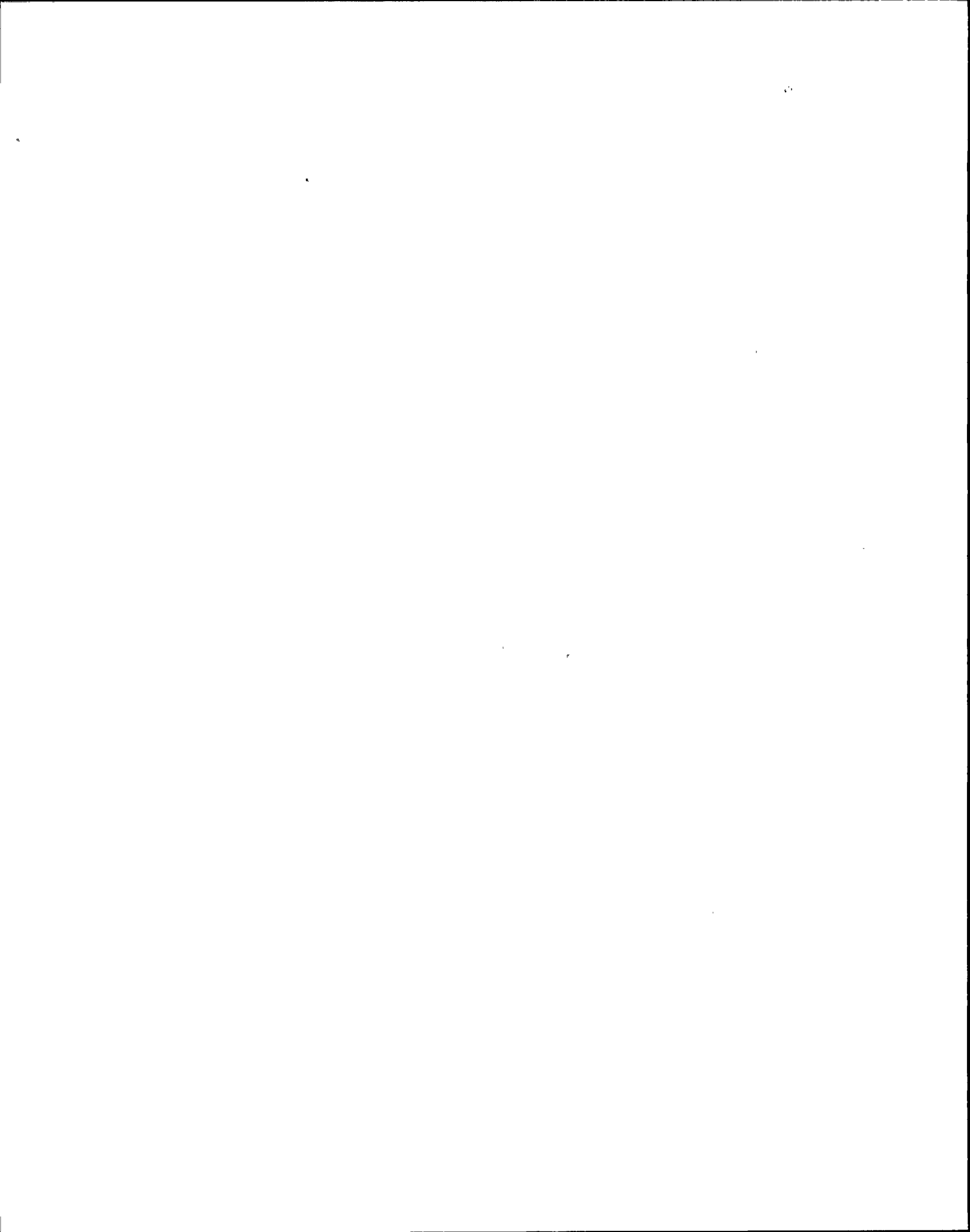


Display of Work Item Data

|                          |              |
|--------------------------|--------------|
| QC Work Accept date..... | 891229       |
| PMT Review By.....       | FAHNESTOCK T |
| PMT Rev Date.....        | 891229       |
| Accepted by.....         | DRAGOMER E   |
| Acceptance date.....     | 900105       |
| Plan LO.....             | 900106       |
| Fld Compl Log Dte.....   | 891230       |
| Lead/Supprt Dpt.....     | 200          |

Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

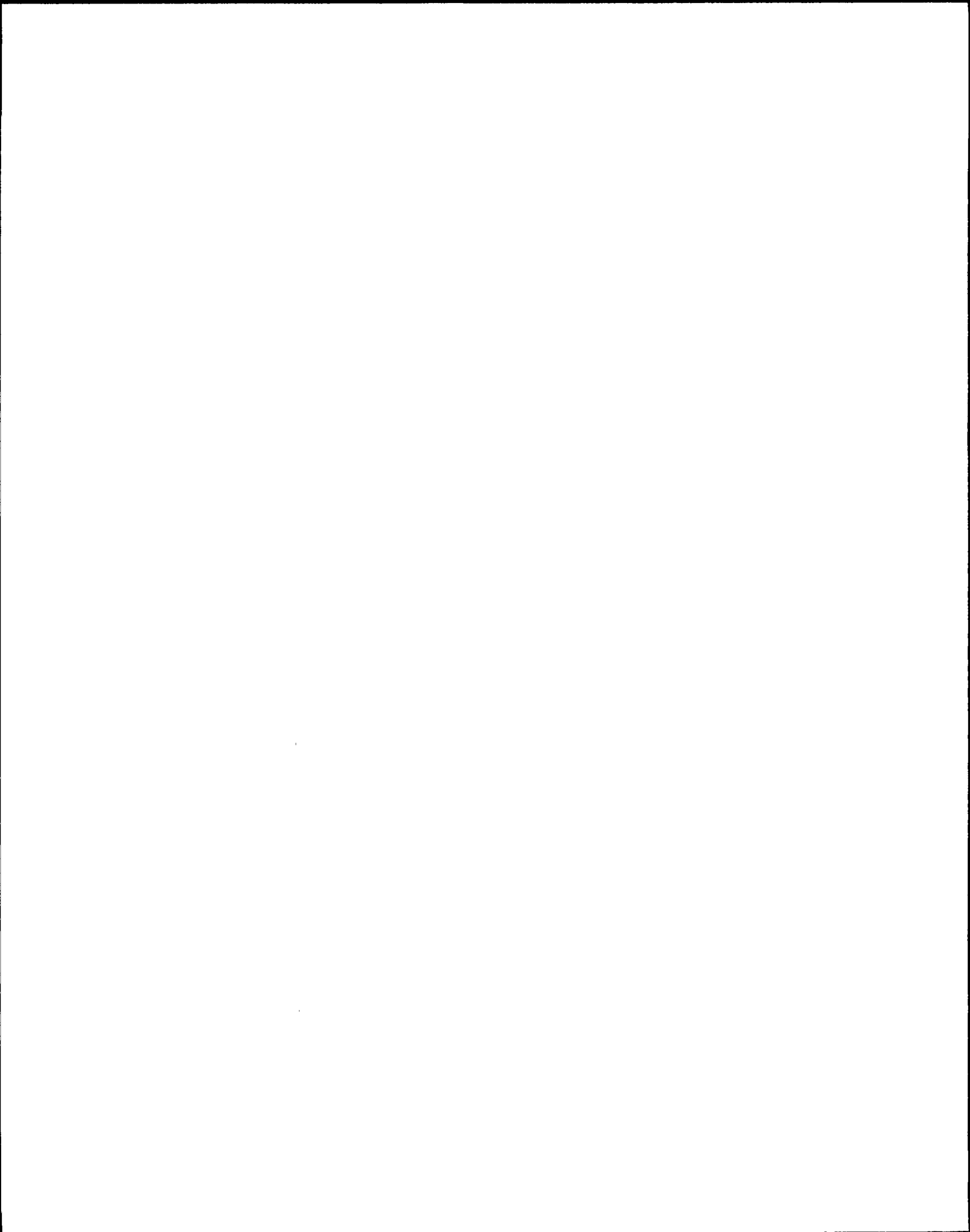
CAPS



Display of Work Item Data

HIT..... 20  
Work No..... W134941  
Issued..... 891229  
Depart..... 001  
Status..... C  
Lead or Supprt..... L  
WCC Status..... 100  
Priority..... 3  
Unit..... 2  
Component No..... 2CNM-MOV84A, 2CNM-MOV84B, 2CNM-MOV84C  
System No..... CNM, CNM, CNM  
BIP No..... 003, 003, 003  
Safety Class..... NSR, NSR, NSR  
EQ..... <null>, <null>, <null>  
ASME Component..... N, N, N  
Cleanness Class..... B, B, B, D  
Title..... BUTTERFLY OR TRICENTRIC V, BUTTERFLY OR TRICENTRIC V,  
BUTTERFLY OR TRICENTRIC V  
Work Item Description... REMOVE AND REINSTALL INSULATION AS REQUIRED TO  
FACILITATE THE REMOVAL OF 2CNM-MOV84 A B AND C IN  
HEATER BAYS  
Location..... HB,277,FA,006.00, HB,277,FA,007.20, HB,277,FA,008.20  
Option? (NL, Hn, D, DP, SR, RD, RV, S,

CAPS



Display of Work Item Data

Originator..... WOOLEY R  
Approved by..... GAYNE R  
Approval date..... 891229  
Received By..... WOOLEY R  
Rcvd By Dt..... 891229  
Account Code..... NA  
QC Review..... FRITZ R  
QA Review Date..... 891229  
Inspection Req'd..... N  
Left Planning..... 900107  
IP Code..... 17G  
Work Cond. Code..... A  
Work Type Code..... TM  
Power Block Flag..... Y  
Staged By..... WOOLEY R  
Staged By Date..... 891229  
Assign to..... DAVITT T  
Assigned Date..... 891229  
Sched. Start Date..... 891229  
SSS Notify..... 891229  
Corrective Action..... INSULATION WAS REMOVED THEN REPLACED AS REQUIRED  
QCIR Nos..... NA  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS



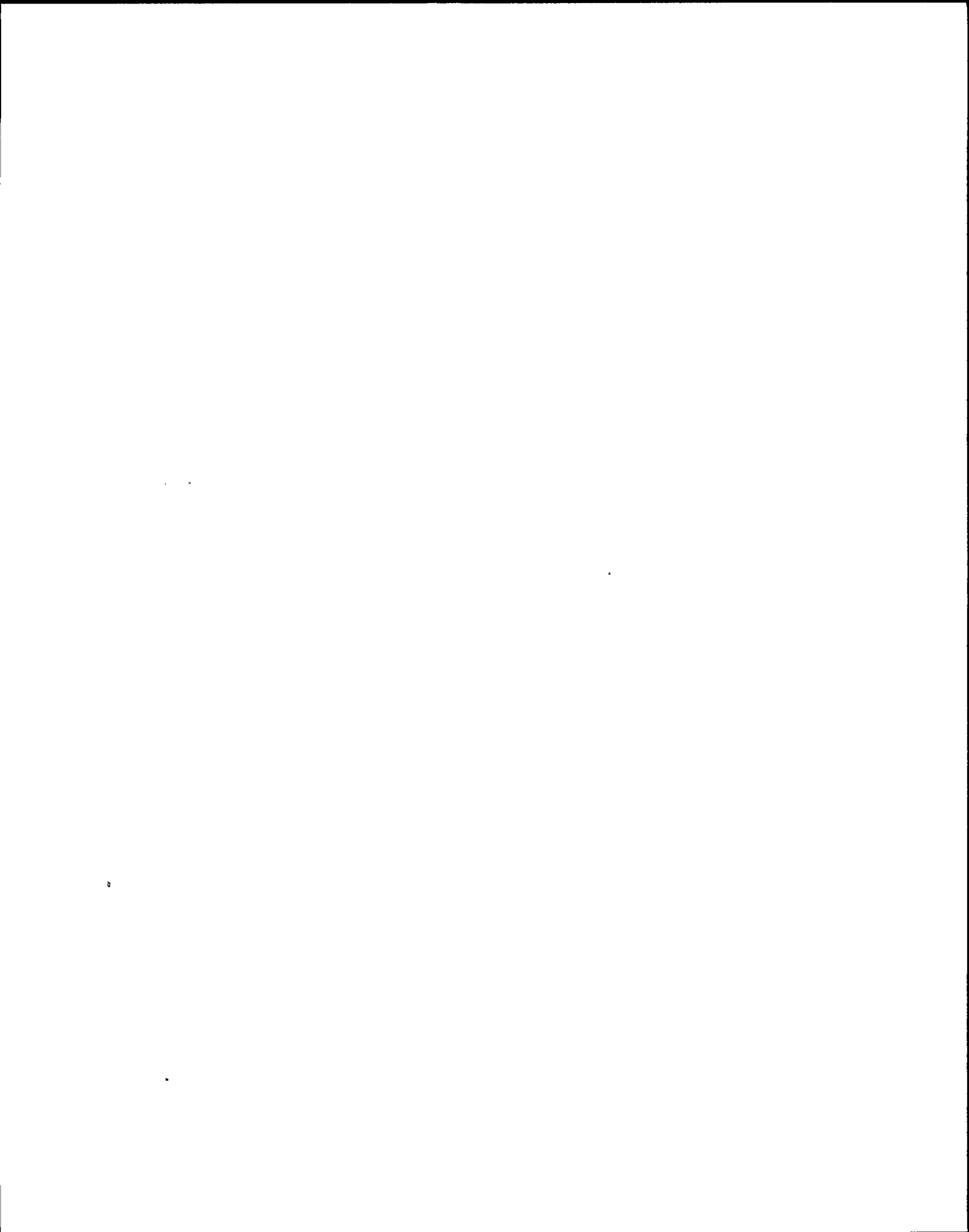


Display of Work Item Data

|                          |  |
|--------------------------|--|
| Completed by.....        | DAVITT T                               |
| Completion date.....     | 900203                                 |
| Supervisor Review.....   | WOOLEY R                               |
| Supervisor Review Date.. | 900207                                 |
| QC Work Accepted by..... | RKN                                    |
| QC Work Accept date..... | 891229                                 |
| PMT Review By.....       | WOOLEY R                               |
| PMT Rev Date.....        | 900208                                 |
| PMT Procedures.....      | NO EFFECT ON PLANT OPERATION/EQUIPMENT |
| PMT Test Rpt.....        | N                                      |
| Accepted by.....         | HELKER J                               |
| Acceptance date.....     | 900208                                 |
| Plan LO.....             | 900208                                 |
| Fld Compl Log Dte.....   | 900207                                 |
| Lead/Supprt Dpt.....     | 001                                    |
| Contractor.....          | ICMS                                   |
| Completion Entry Date... | 900203                                 |

Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

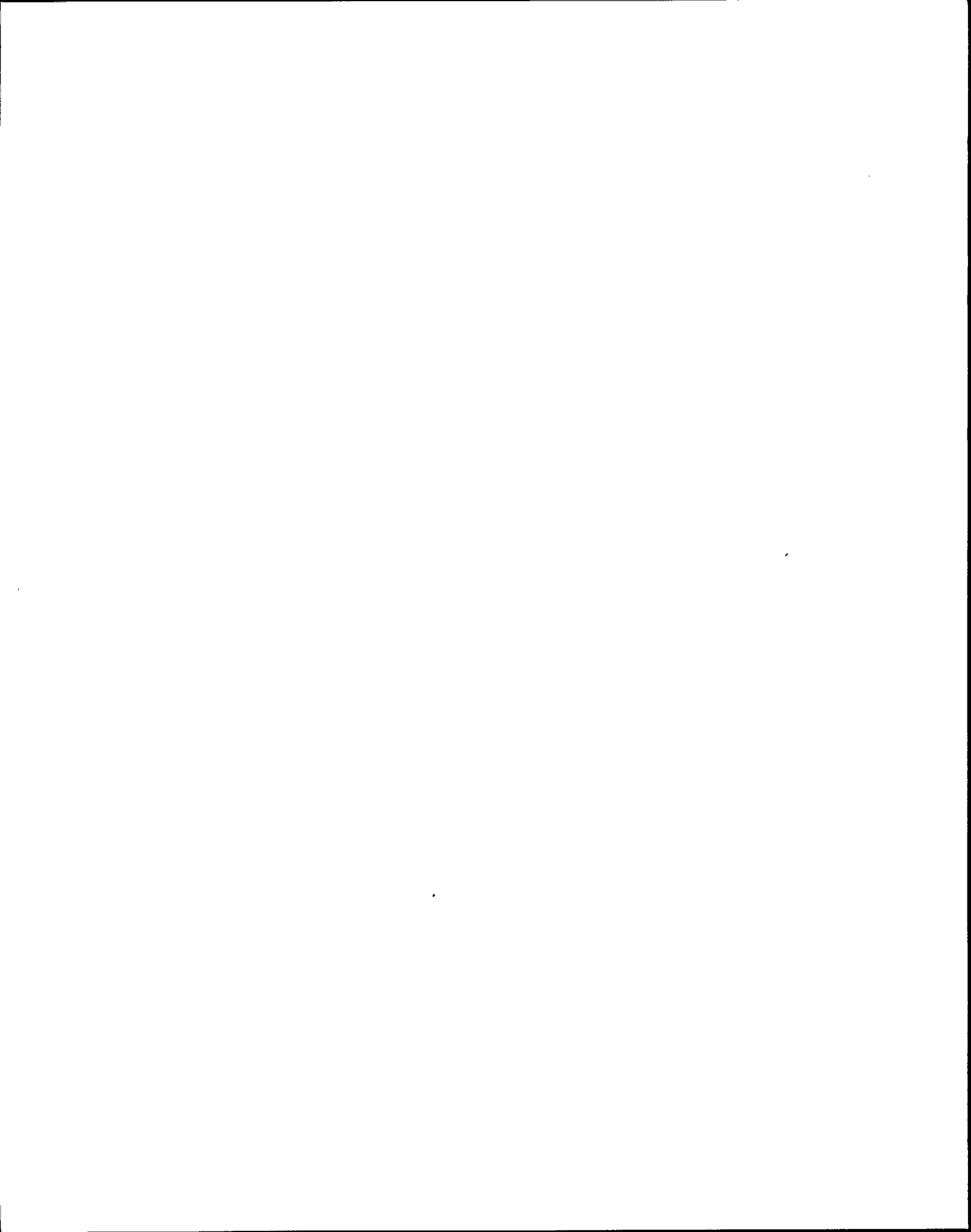
CAPS



Display of Work Item Data

HIT..... 21  
Work No..... P11104  
Issued..... 900109  
Depart..... 100  
Status..... C  
Lead or Supprt..... L  
WCC Status..... 100  
Unit..... 2  
Component No..... 2CNM-MOV84B, 2NHS-MCC010-31B  
System No..... NHS  
Title..... "AC" LIMITORQUE OPERATORS (TYPE SMB, SB, AND SMC) AND  
ASSOCIATED MOTOR CONTROL CENTER (MCC) UNIT  
Originator..... PATERSON D  
Procedure No..... N2-EPM-GEN-R520  
Account Code..... 706.50--0002-321116--200-0110  
Left Planning..... 900109  
Remarks..... STEP 7.5.4.1 NOTE 1 CRACK IN BARREL NUMBER 3 WR WROTE  
W148614. STEP 7.5.8 NO VALVE STEM HBC UNIT. STEP  
7.5.14.1 NO STEM, NO PROTECTOR. STEP 8.1 NO RWP  
REQUIRED. STEP 7.4.4.1 VALVE CLOSED ON LIMIT REF. EDC  
NUMBER 2F00050.  
Work Type Code..... PD  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS

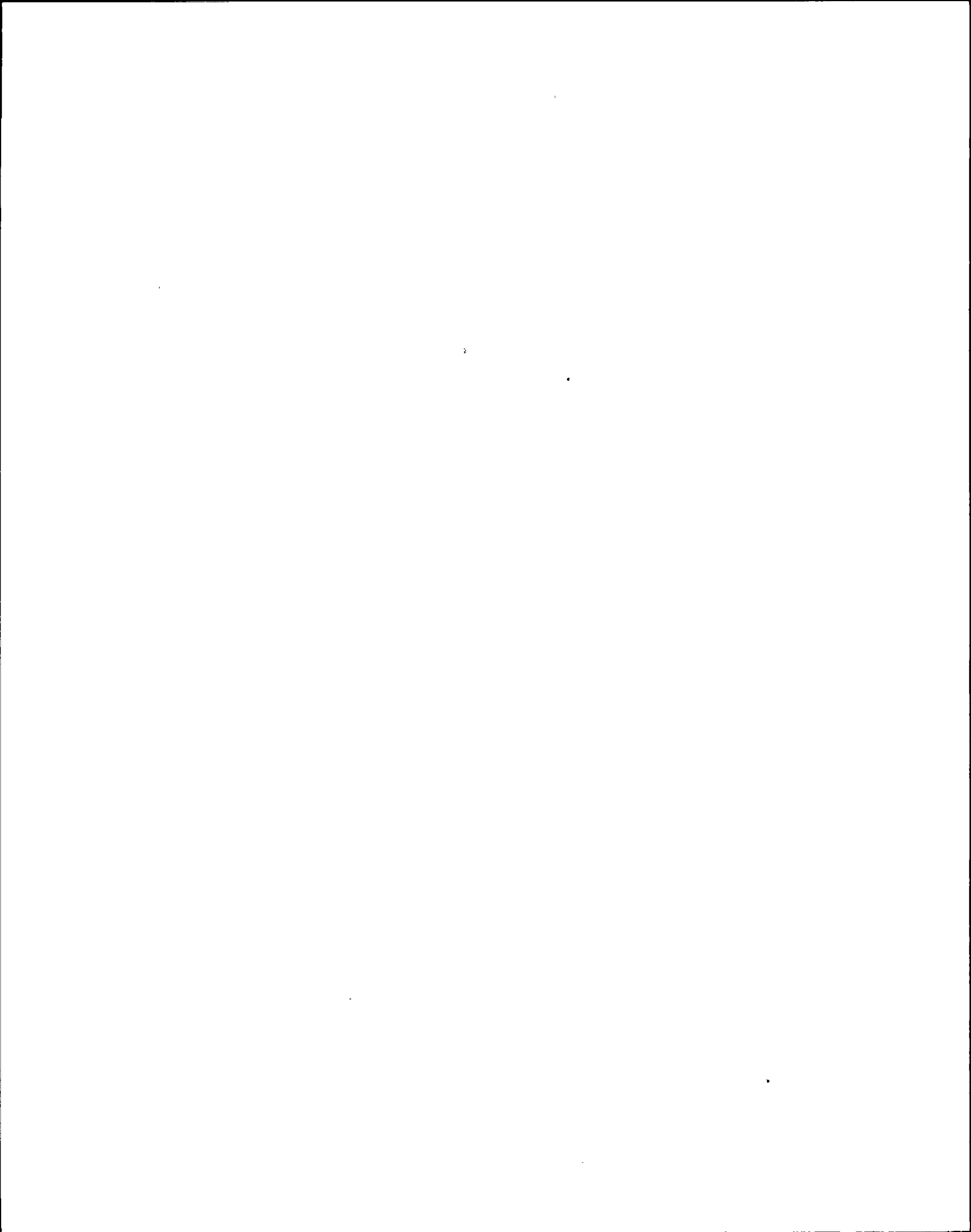


Display of Work Item Data

Assign to..... PATERSON D  
Assigned Date..... 900109  
Completed by..... MCCONKEY M  
Completion date..... 900123  
Acceptance date..... 900123  
Craft..... 1341, 1331, 1311  
Man Hours..... 8, 11, 8  
OT Hours..... 2, 4, 2  
Parameter Keywords..... FUSE HOLDER TYPE, FUSE HOLDER SIZE, BREAKER MEGGER  
READING LINE TO GROUND CLOSE CONTACTOR CLOSED A.,  
BREAKER MEGGER READING LINE TO GROUND CLOSE CONTACTOR  
CLOSED B., BREAKER MEGGER READING LINE TO GROUND  
CLOSE CONTACTOR CLOSED C., BREAKER MEGGER READING  
LINE TO GROUND OPEN CONTACTOR CLOSED A., BREAKER  
MEGGER READING LINE TO GROUND OPEN CONTACTOR CLOSED  
B., BREAKER MEGGER READING LINE TO GROUND OPEN  
CONTACTOR CLOSED C., MEGGER SECONDARY OF TRANSFORMER  
TO GROUND, MEGGER PRIMARY OF TRANSFORMER TO GROUND,  
AS FOUND TORQUE SWITCH SETTING OPEN, AS FOUND TORQUE  
SWITCH SETTING CLOSE, AS FOUND LIMITING PLATE OPEN,  
AS FOUND LIMITING PLATE CLOSE, AS FOUND LABEL REC.  
OPEN, AS FOUND LABEL REC. CLOSE, AS FOUND LABEL MAX.

Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS



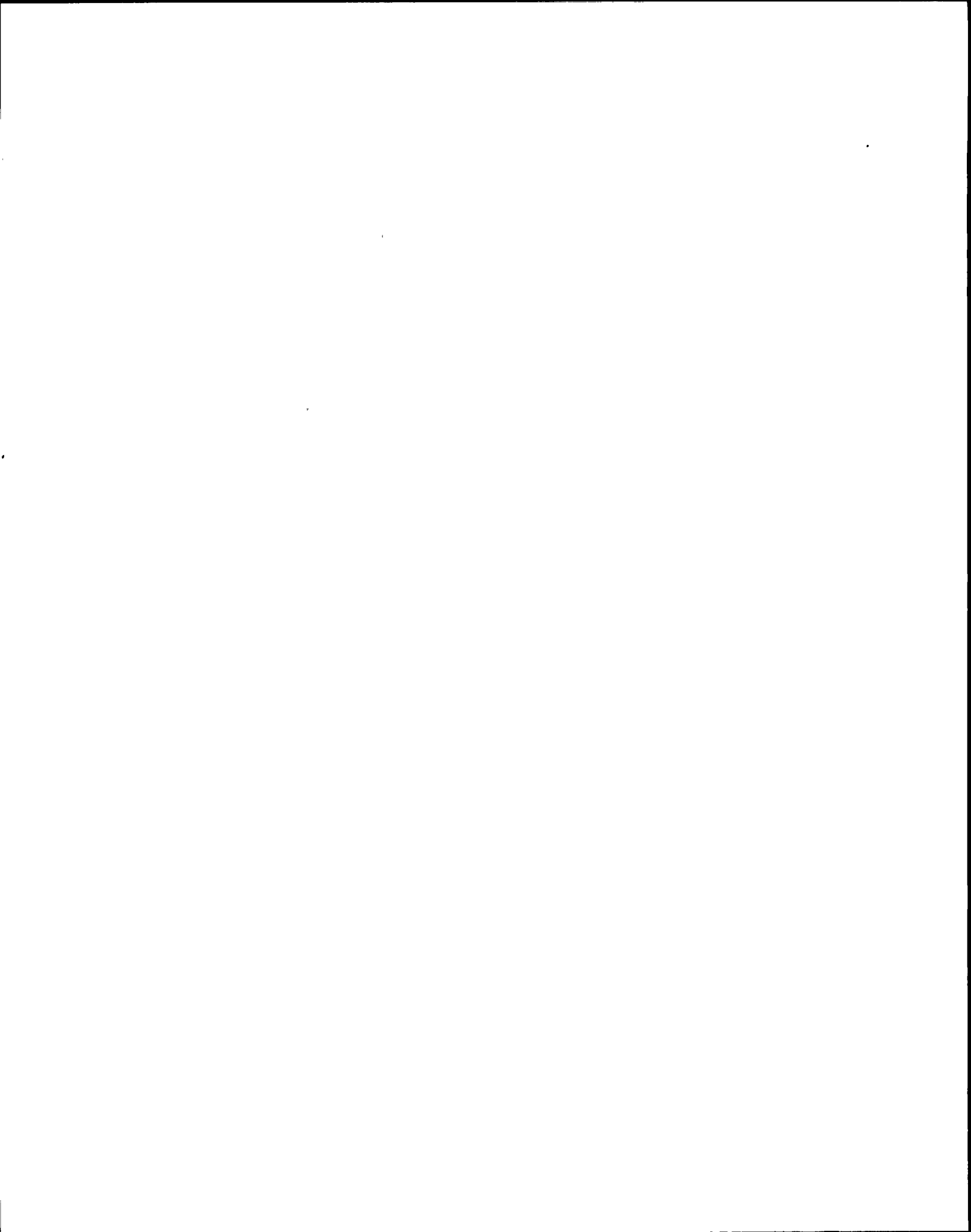
Display of Work Item Data

OPEN, AS FOUND LABEL MAX. CLOSE, SPRING PACK NUMBER,  
MOTOR AND POWER CABLE INSULATION RESISTANCE A, MOTOR  
AND POWER CABLE INSULATION RESISTANCE B, MOTOR AND  
POWER CABLE INSULATION RESISTANCE C, MOTOR AND POWER  
CABLE PHASE RESISTANCE 1-2, MOTOR AND POWER CABLE  
PHASE RESISTANCE 1-3, MOTOR AND POWER CABLE PHASE  
RESISTANCE 2-3, VALVE STROKE TIMES CLOSED, VALVE  
STROKE TIMES OPEN, INRUSH CURRENT, UNSEATING CURRENT,  
RUNNING CURRENT OPEN TO CLOSE, RUNNING CURRENT CLOSE  
TO OPEN, SEATING CURRENT, CUTOFF CURRENT

Frequency..... R  
Sat Results..... Y  
Corr WR No..... W148614

Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS

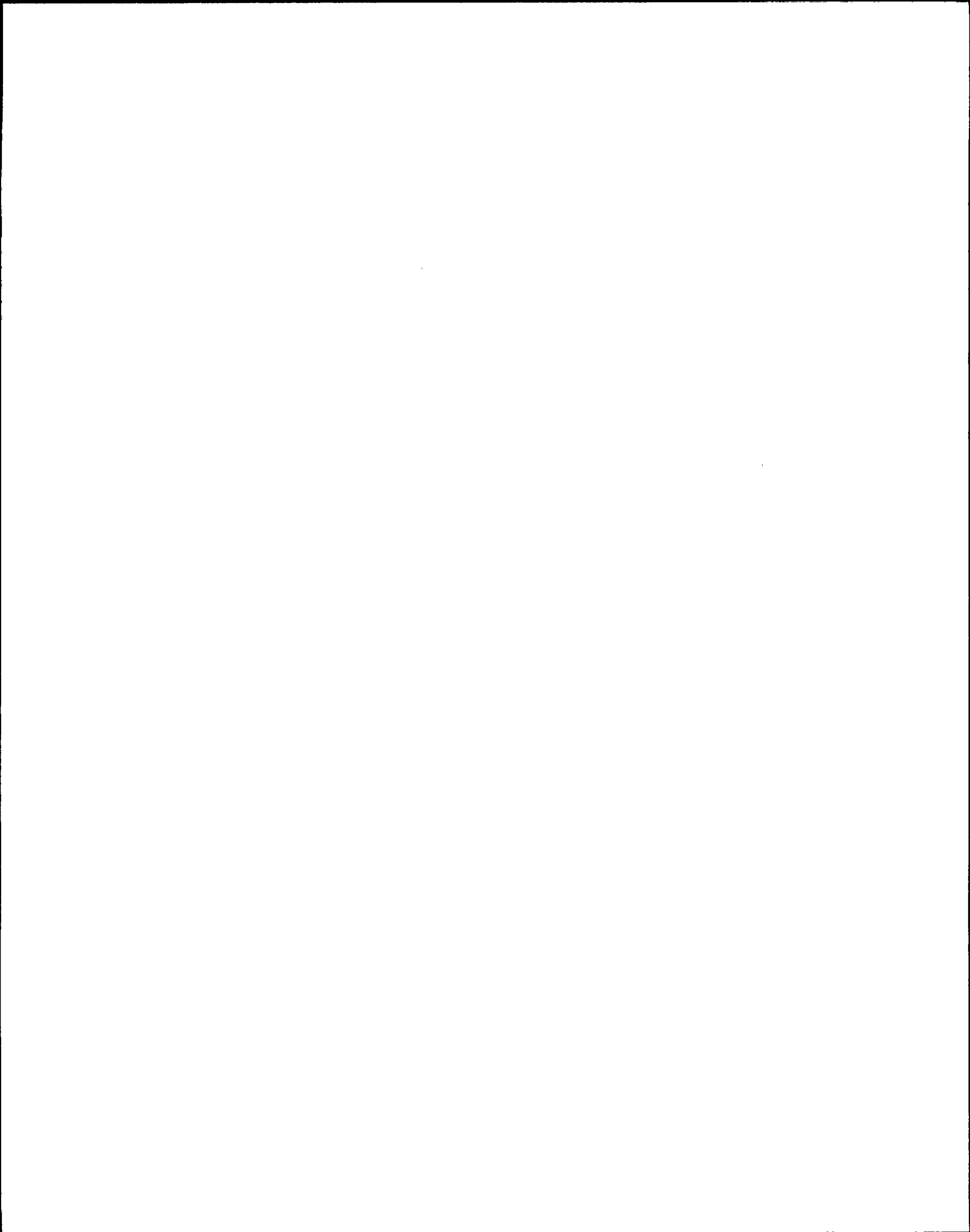




Display of Work Item Data

HIT..... 22  
Work No..... W148610  
Issued..... 900121  
Depart..... 100  
Status..... C  
Lead or Supprt..... L  
WCC Status..... 100  
Priority..... 2  
Unit..... 2  
Component No..... 2CNM-MOV84A  
System No..... CNM  
BIP No..... 003  
Safety Class..... NSR  
ASME Component..... N  
Cleanness Class..... B, D  
Title..... BUTTERFLY OR TRICENTRIC V  
Work Item Description... INSTALL TEMP MOD 90-005 IN ACCORDANCE WITH EDC  
2F00050  
Location..... HB,277,FA,006.00  
NPRDS Failcode..... B  
Originator..... MORYL S  
Approved by..... TOWNSEND E  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

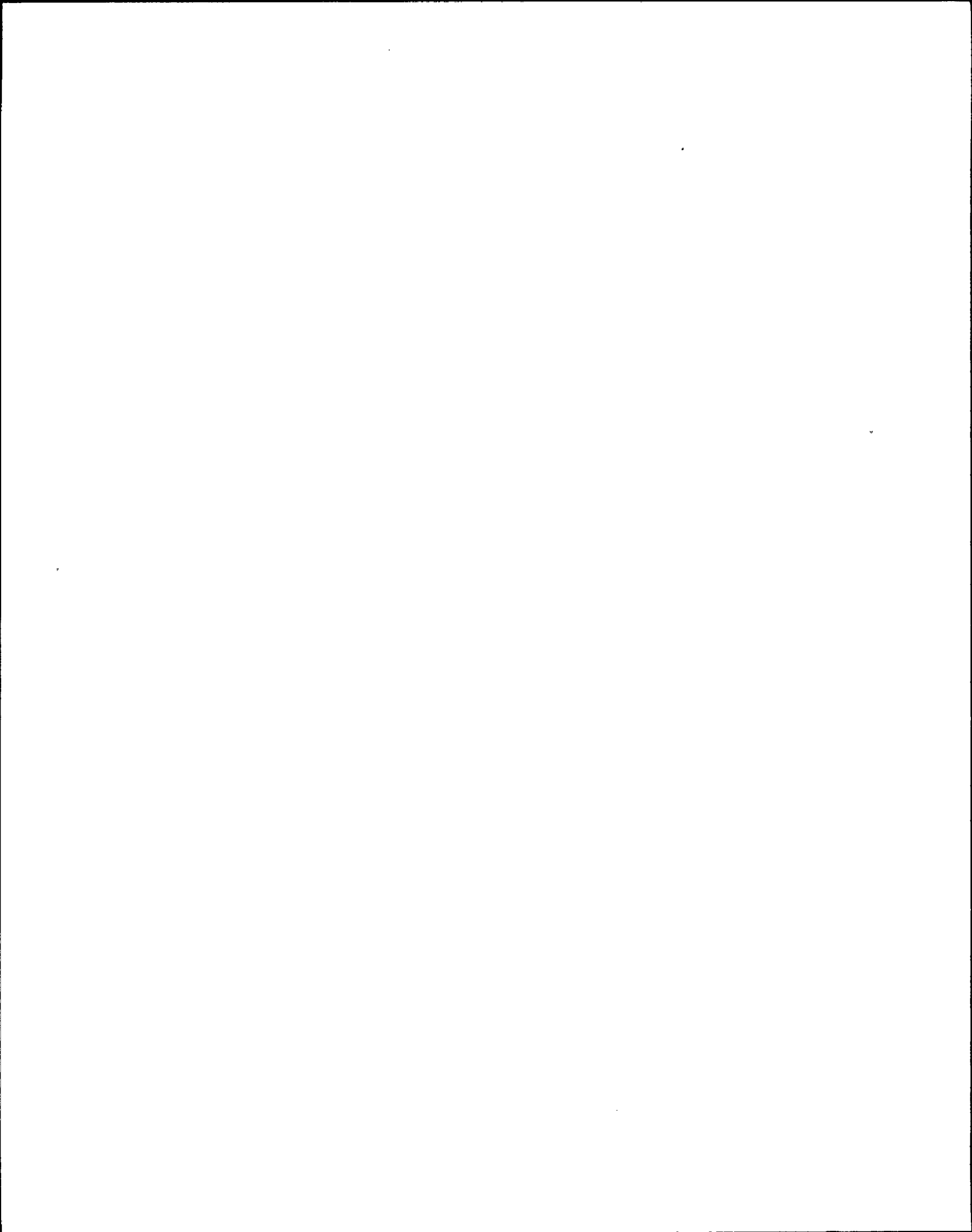
CAPS



Display of Work Item Data

Approval date..... 900121  
Received By..... MORYL S  
Rcvd By Dt..... 900121  
Account Code..... 706.40--9591-321116--200-0110  
QC Review..... LAVALLEE P  
QA Review Date..... 900121  
Inspection Req'd..... N  
Left Planning..... 900121  
Operations Priority..... PRI-1.2  
IP Code..... 2  
Merit Score..... 789  
Work Cond. Code..... F  
Remarks..... DR  
Work Type Code..... TM  
Power Block Flag..... Y  
Staged By Date..... 900121  
Proj Dur..... 900125  
Assign to..... PATERSON D  
Assigned Date..... 900121  
Sched. Start Date..... 900121  
Est. Compl..... 900125  
SSS Notify..... 900121  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

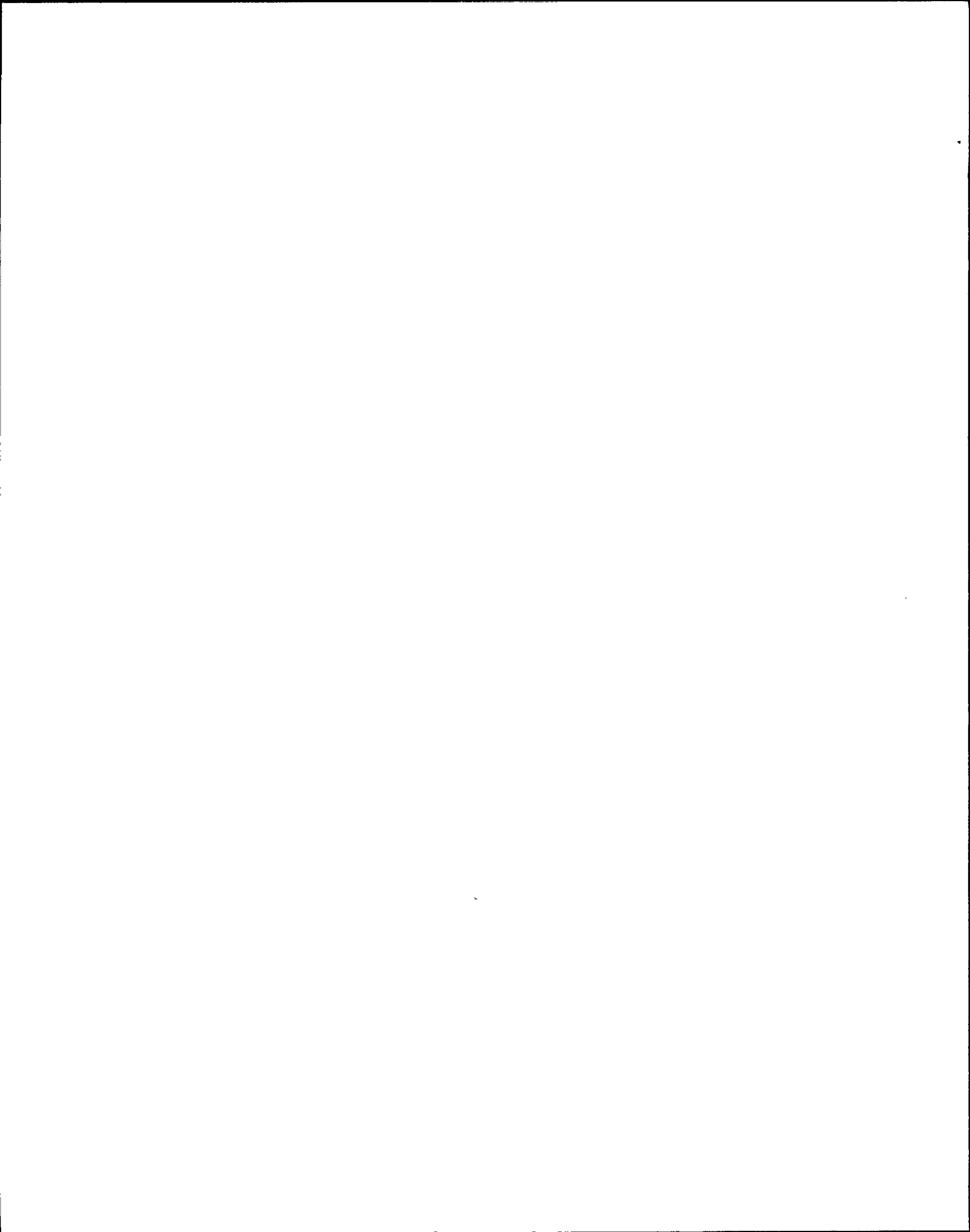
CAPS



Display of Work Item Data

QA Notified date..... 900121  
Corrective Action Code.. AC  
Corrective Action..... VALVE CLOSES ON LIMIT NOT TORQUE. INSTALLED JUMPERS  
IN ACCORDANCE WITH EDC 2F00050  
Cause of Failure Code... AL  
Cause of failure..... CHANGE OF VALVE CLOSING. VALVE CHANGED FROM A TORQUE  
SEATED VALVE TO CLOSE ON LIMIT  
Attachments..... NA  
Mark Up No..... NA  
RWP..... NA  
QCIR Nos..... NA  
NCR's..... NA  
Completed by..... MCCONKEY M  
Completion date..... 900122  
Supervisor Review..... MORYL S  
Supervisor Review Date.. 900123  
QC Work Accepted by..... LAVALLEE P.  
QC Work Accept date..... 900121  
PMT Review By..... MORYL S  
PMT Rev Date..... 900121  
PMT Test Rpt..... Y  
PMT Ver..... MCCONKEY M  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS



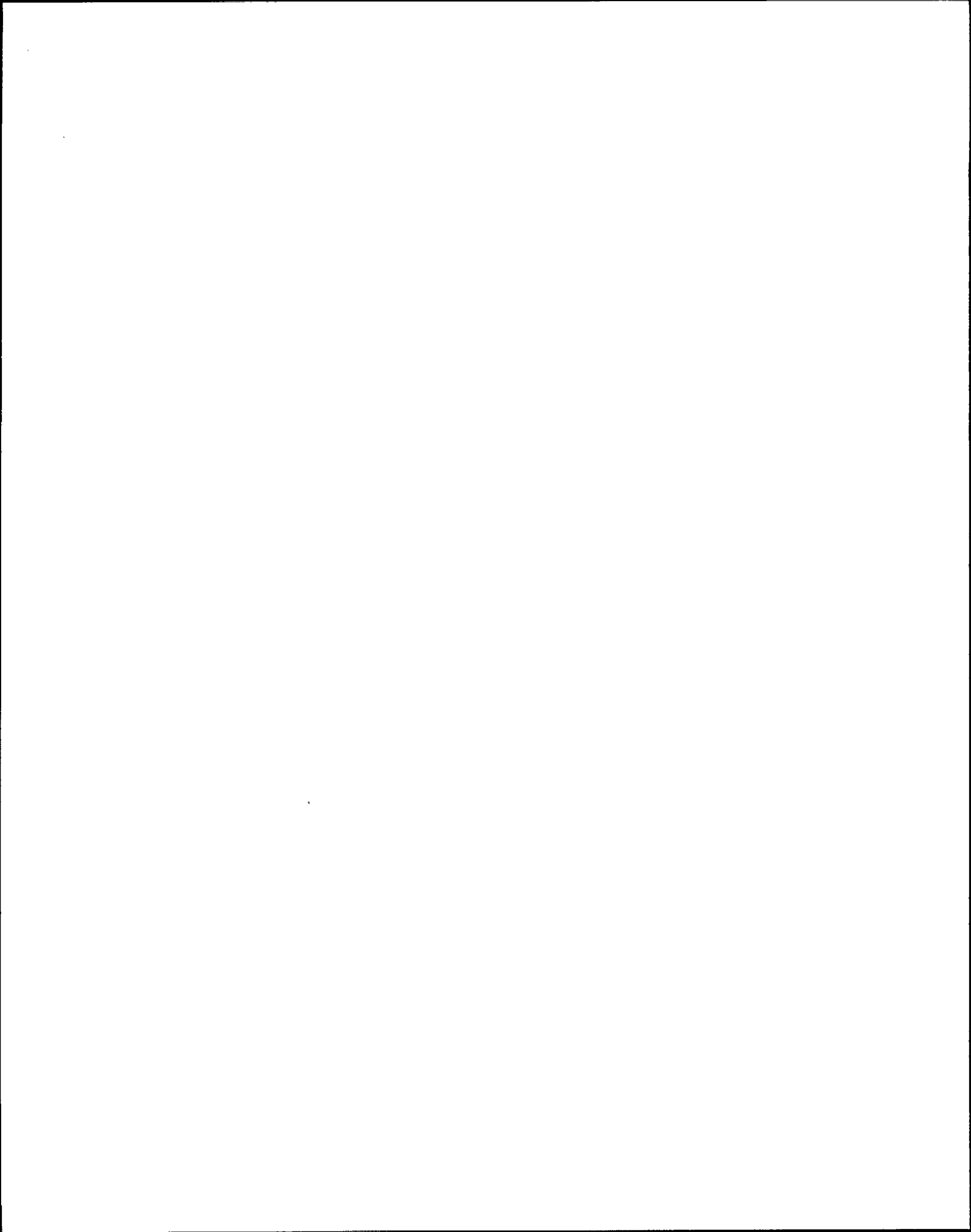
Display of Work Item Data

PMT Ver Dt..... 900122  
Accepted by..... DRAGOMER E  
Acceptance date..... 900124  
Plan LO..... 900125  
Fld Compl Log Dte..... 900123  
SSS Logout Date..... 900125  
Lead/Supprt Dpt..... 100  
Completion Entry Date... 900122

Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS

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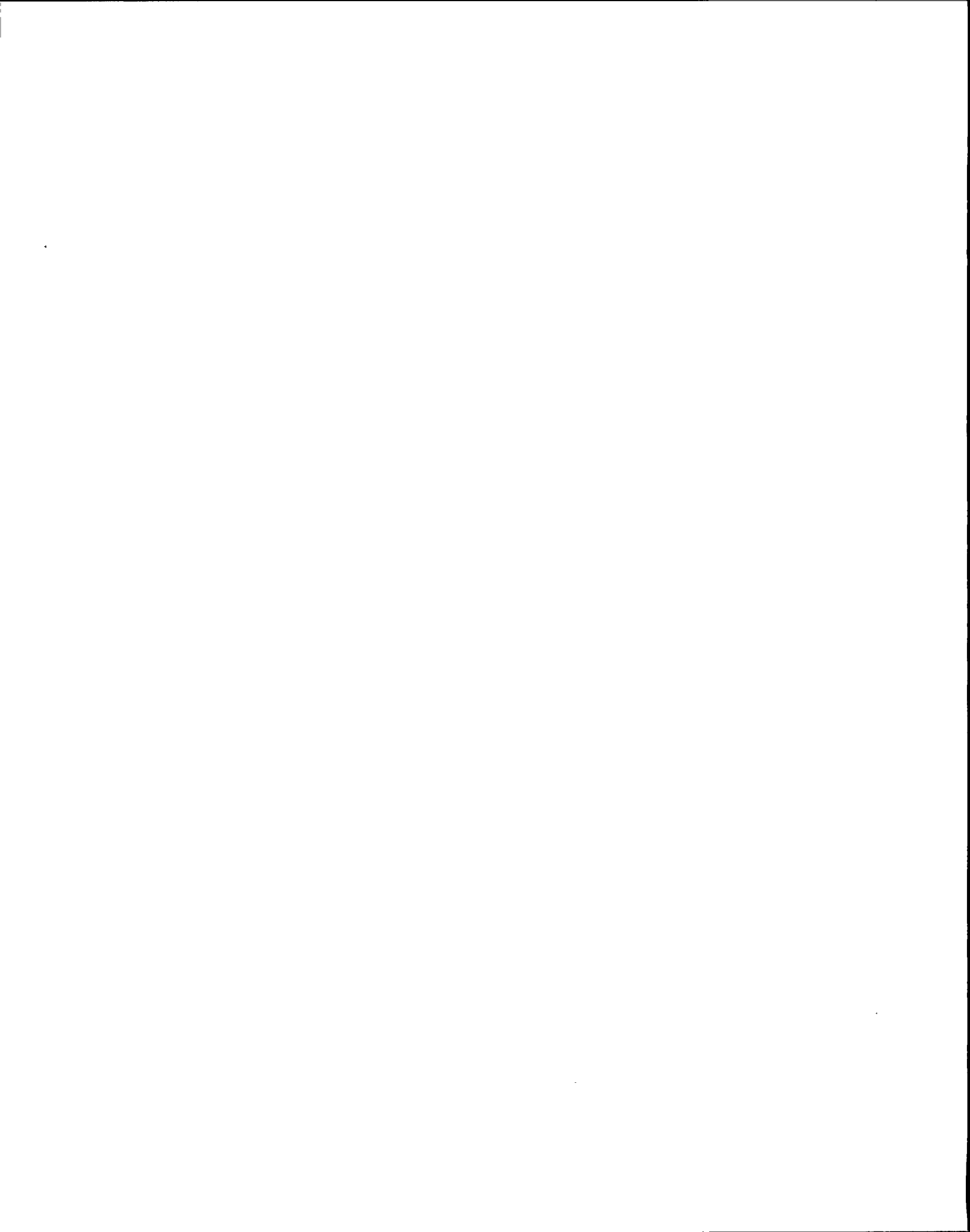




Display of Work Item Data

HIT..... 23  
Work No..... W148612  
Issued..... 900121  
Depart..... 100  
Status..... C  
Lead or Supprt..... L  
WCC Status..... 100  
Priority..... 2  
Unit..... 2  
Component No..... 2CNM-MOV84C  
System No..... CNM  
BIP No..... 003  
Safety Class..... NSR  
ASME Component..... N  
Cleanness Class..... B, D  
Title..... BUTTERFLY OR TRICENTRIC V  
Work Item Description... INSTALL TEMP MOD 90-007 IN ACCORDANCE WITH EDC.  
2F00050  
Location..... HB,277,FA,008.20  
NPRDS Failcode..... B  
Originator..... MORYL S  
Approved by..... TOWNSEND E  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

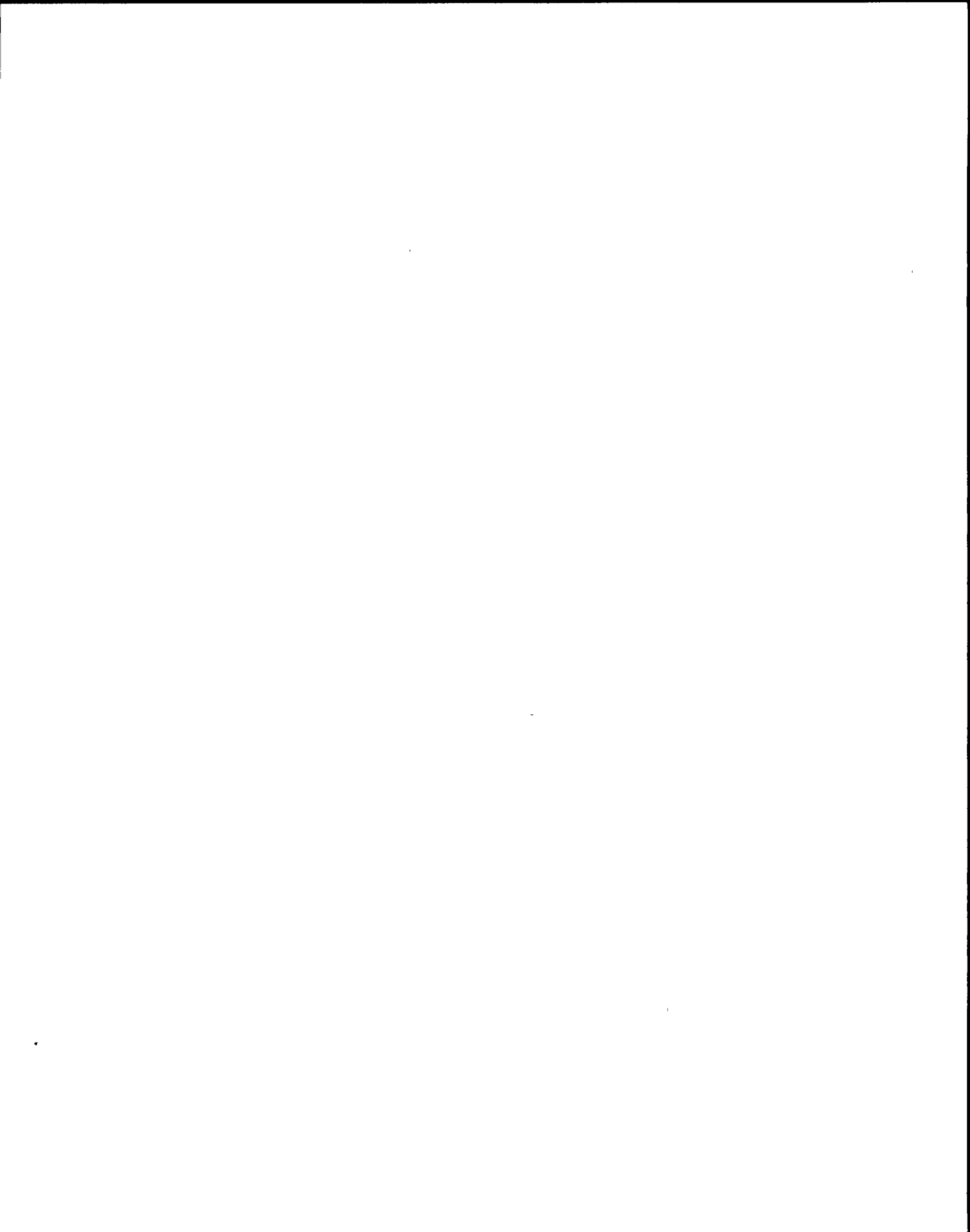
CAPS



Display of Work Item Data

Approval date..... 900121  
Received By..... MORYL S  
Rcvd By Dt..... 900121  
Account Code..... 706.40--9591-321116--200-0110  
QC Review..... LAVALLEE P  
QA Review Date..... 900121  
Inspection Req'd..... N  
Left Planning..... 900121  
Operations Priority..... PRI-1.2  
IP Code..... 2  
Merit Score..... 789  
Work Cond. Code..... F  
Work Type Code..... TM  
Power Block Flag..... Y  
Staged By Date..... 900121  
Assign to..... PATERSON D  
Assigned Date..... 900121  
Sched. Start Date..... 900121  
SSS Notify..... 900121  
Corrective Action Code.. AC  
Corrective Action..... VALVE CLOSES ON LIMIT NOT TORQUE - INSTALLED JUMERS  
IN ACCORDANCE WITH EDC  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS



Display of Work Item Data

Cause of Failure Code... AL  
Cause of failure..... CHANGE OF VALVE CLOSING - VALVE CHANGED FROM TORQUE  
SEATED VALVE TO CLOSE ON LIMIT  
Mark Up No..... BMU 2-90-00088  
QCIR Nos..... NA  
NCR's..... NA  
Completed by..... MCCONKEY M  
Completion date..... 900122  
Supervisor Review..... MORYL S  
Supervisor Review Date.. 900123  
QC Work Accepted by..... LAVALLEE P.  
QC Work Accept date..... 900121  
PMT Review By..... MORYL S  
PMT Rev Date..... 900121  
PMT Test Rpt..... Y  
PMT Ver..... MCCONKEY M  
PMT Ver Dt..... 900122  
Accepted by..... DRAGOMER E  
Acceptance date..... 900124  
Plan LO..... 900125  
Fld Compl Log Dte..... 900123  
SSS Logout Date..... 900125  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS



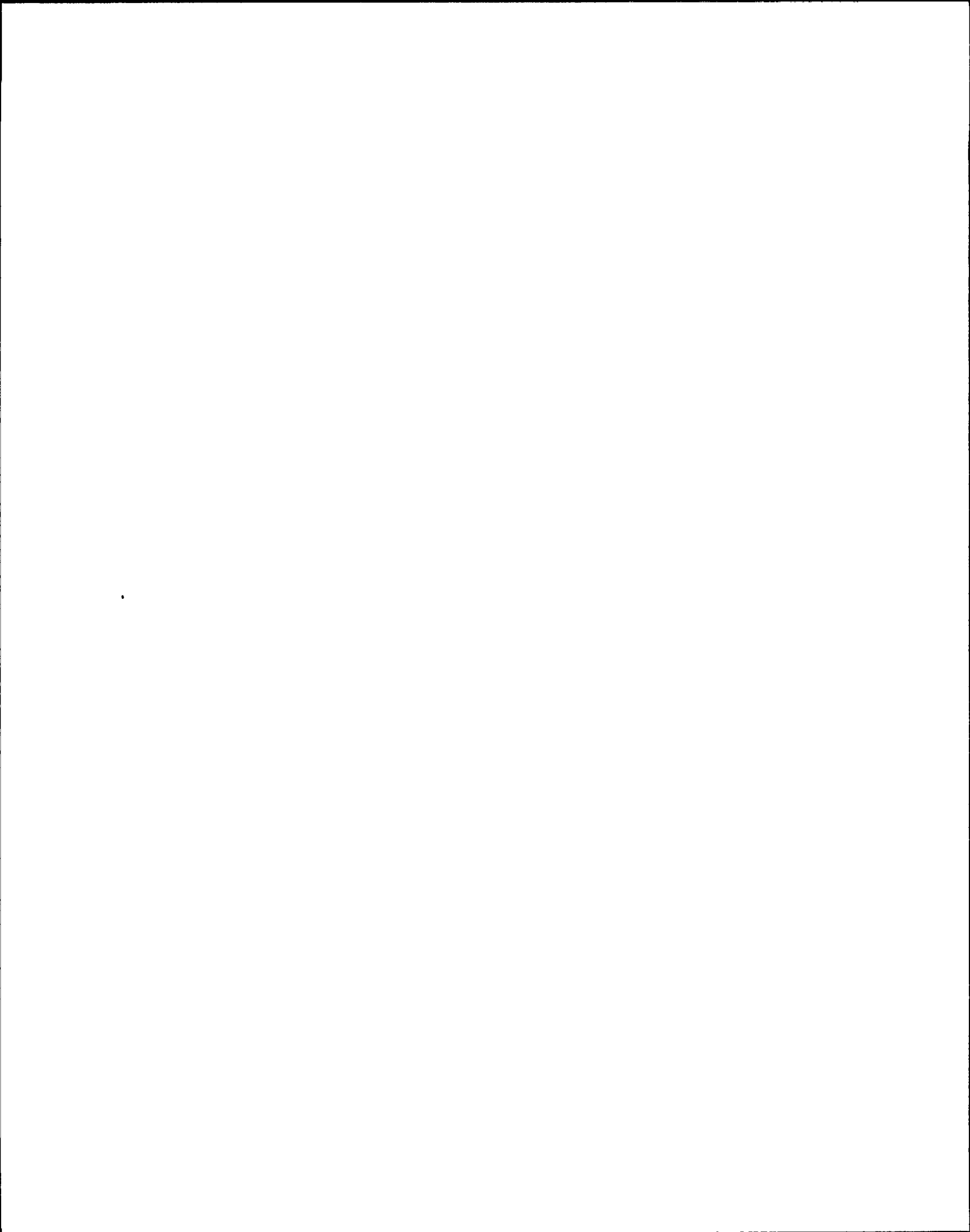
Display of Work Item Data

Lead/Supprt Dpt..... 100

Completion Entry Date... 900122

Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS

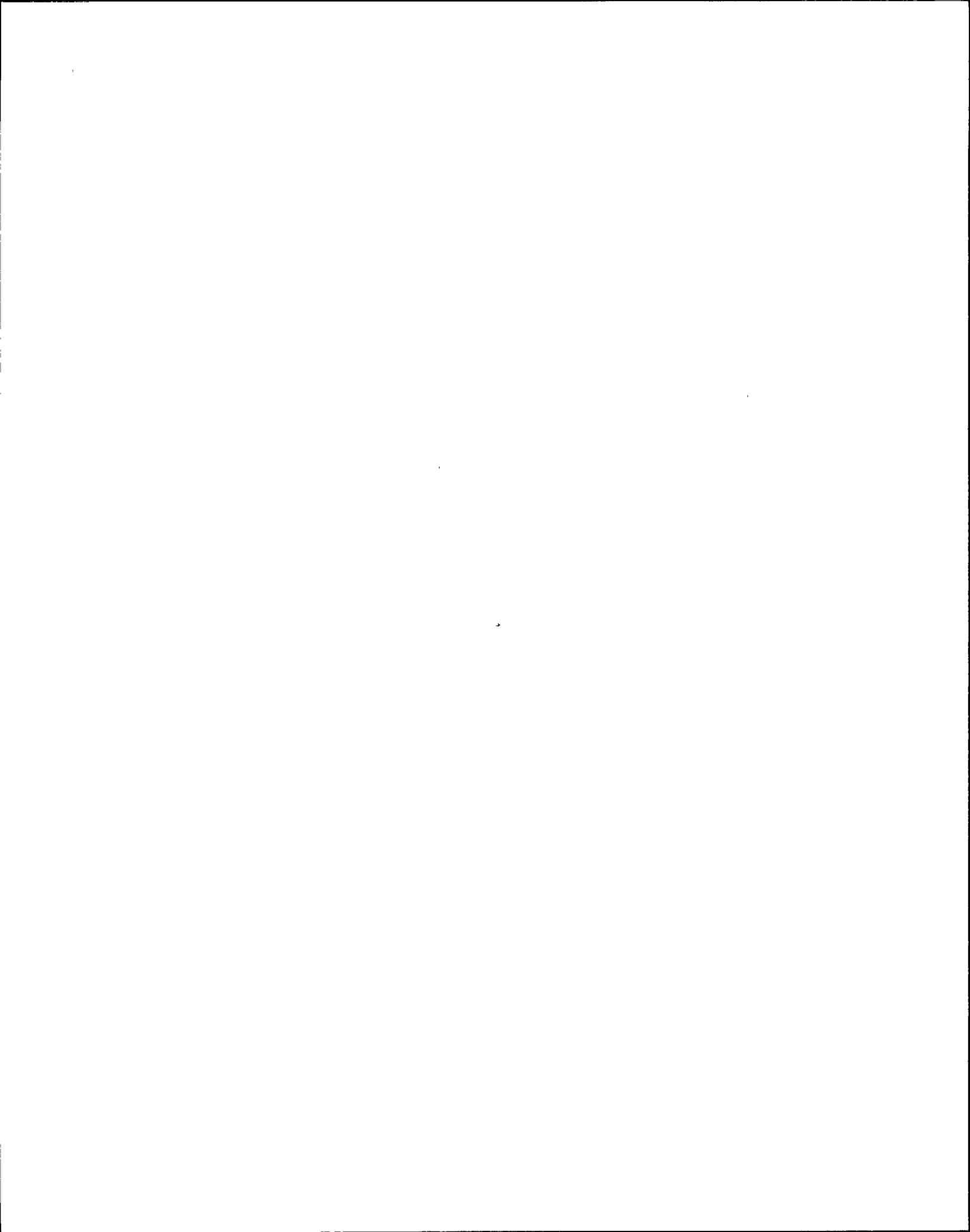




Display of Work Item Data

HIT..... 24  
Work No..... W148611  
Issued..... 900121  
Depart..... 100  
Status..... C  
Lead or Supprt..... L  
WCC Status..... 100  
Priority..... 2  
Unit..... 2  
Component No..... 2CNM-MOV84B  
System No..... CNM  
BIP No..... 003  
Safety Class..... NSR  
ASME Component..... N  
Cleanness Class..... B, D  
Title..... BUTTERFLY OR TRICENTRIC V  
Work Item Description... INSTALL TEMP MOD 90-006 IN ACCORDANCE WITH EDC  
2F00050  
Location..... HB,277,FA,007.20  
NPRDS Failcode..... B  
Originator..... MORYL S  
Approved by..... TOWNSEND E  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

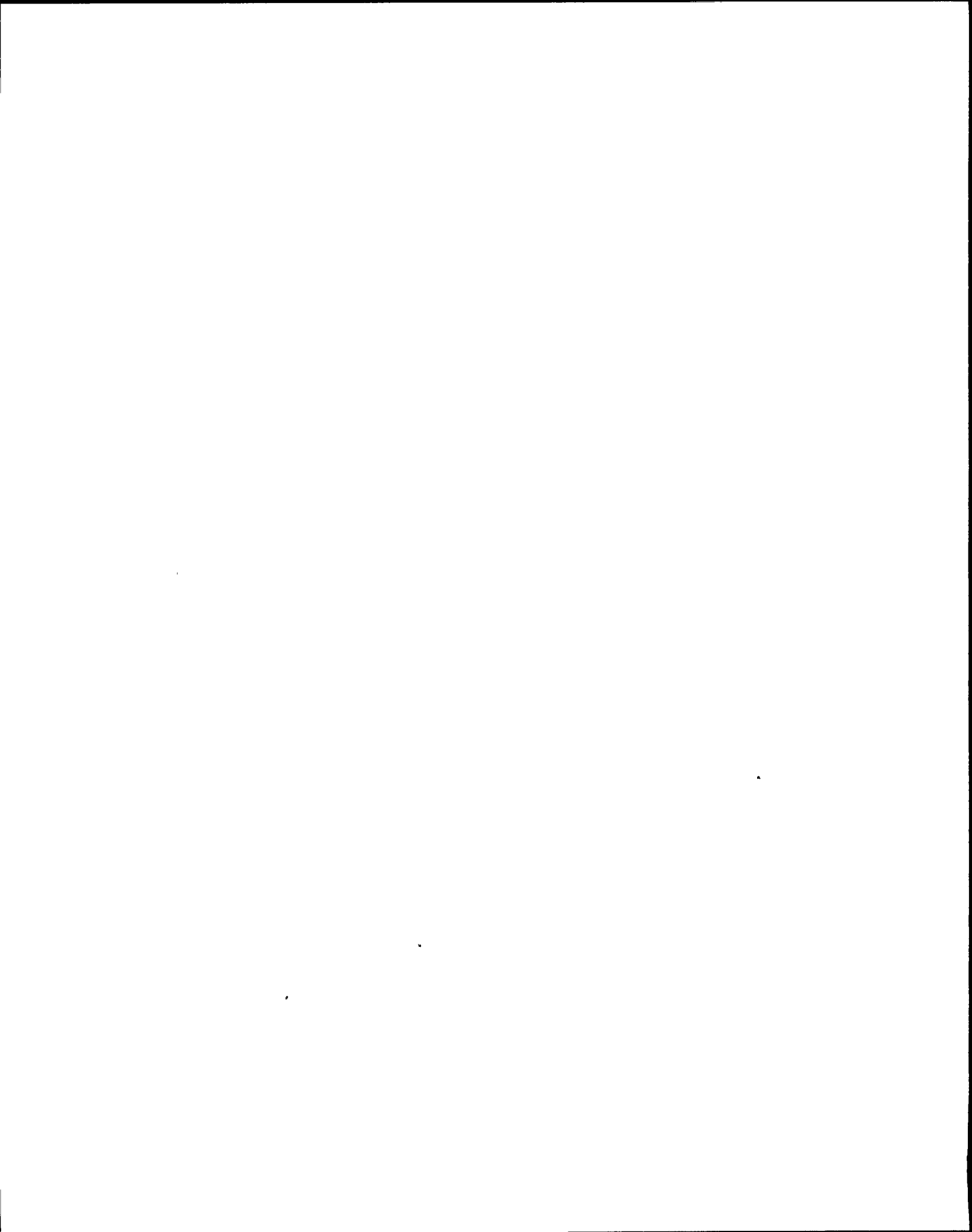
CAPS



Display of Work Item Data

Approval date..... 900121  
Received By..... MORYL S  
Rcvd By Dt..... 900121  
Account Code..... 706.40--9591-321116--200-0110  
QC Review..... LAVALLEE P  
QA Review Date..... 900121  
Inspection Req'd..... N  
Left Planning..... 900121  
Operations Priority..... PRI-1.2  
IP Code..... 2  
Merit Score..... 789  
Work Cond. Code..... F  
Work Type Code..... TM  
Power Block Flag..... Y  
Staged By Date..... 900121  
Assign to..... PATERSON D  
Assigned Date..... 900121  
Sched. Start Date..... 900121  
SSS Notify..... 900121  
Corrective Action Code.. AC  
Corrective Action..... VALVE CLOSES ON LIMIT NOT TORQUE - INSTALLED JUMPERS  
IN ACCORDANCE WITH EDC  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

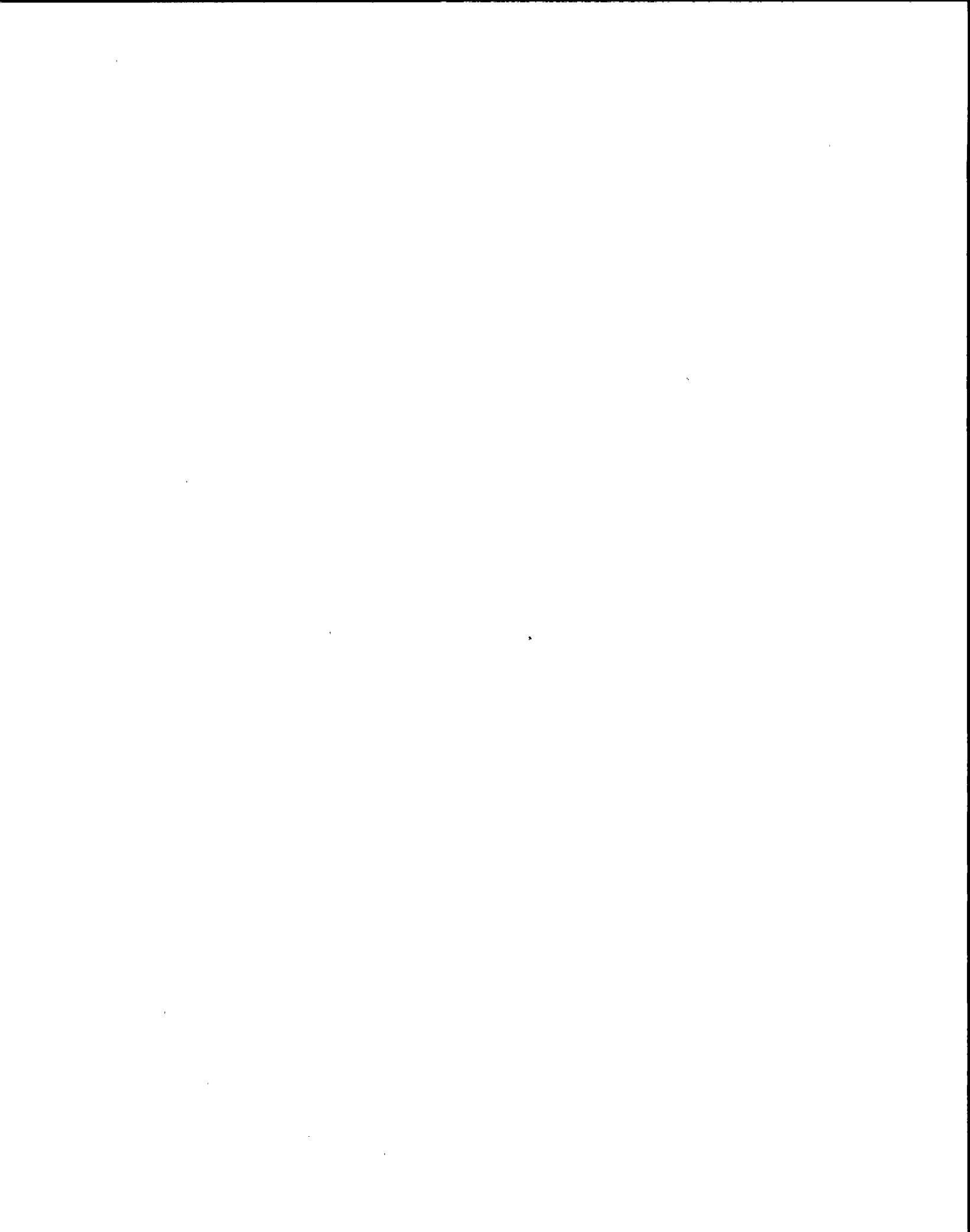
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Display of Work Item Data

Cause of Failure Code... AL  
Cause of failure..... CHANGE OF VALVE CLOSING - VALVE CHANGED FROM TORQUE  
SEATED VALVE TO CLOSE ON LIMIT  
Mark Up No..... BMU 2-90-50089  
QCIR Nos..... NA  
NCR's..... NA  
Completed by..... MCCONKEY M  
Completion date..... 900123  
Supervisor Review..... MORYL S  
Supervisor Review Date.. 900123  
QC Work Accepted by..... LAVALLEE P.  
QC Work Accept date..... 900121  
PMT Review By..... MORYL S  
PMT Rev Date..... 900121  
PMT Test Rpt..... Y  
PMT Ver..... MCCONKEY M  
PMT Ver Dt..... 900123  
Accepted by..... DRAGOMER E  
Acceptance date..... 900124  
Plan LO..... 900125  
Fld Compl Log Dte..... 900123  
SSS Logout Date..... 900125  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS

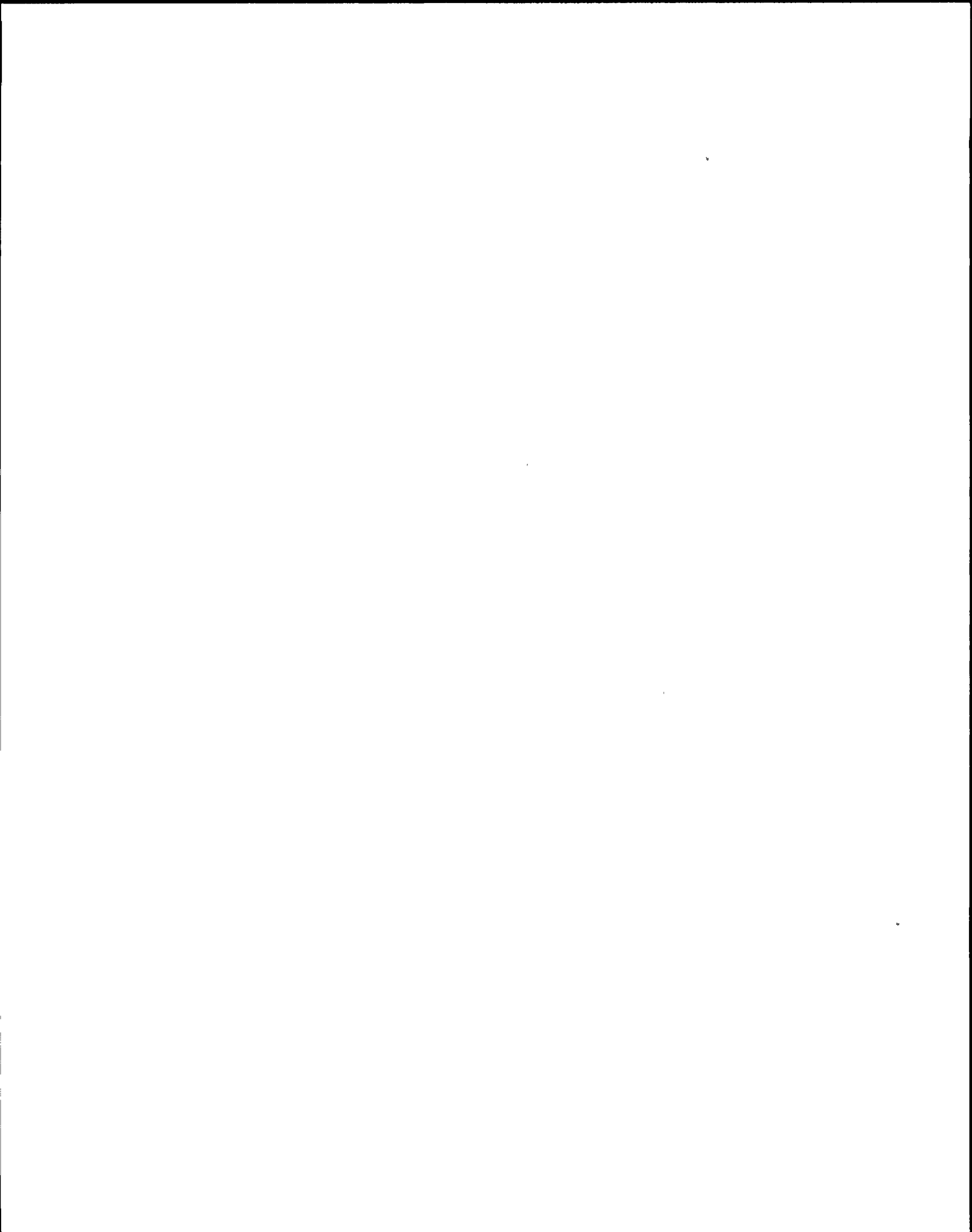


Display of Work Item Data

|                          |                        |
|--------------------------|------------------------|
| Craft.....               | 1341, 1331, 1311, 1301 |
| Man Hours.....           | 4.0, 20, 5.0, 5.0      |
| OT Hours.....            | 4.0, 11, 5.0, 5.0      |
| Lead/Supprt Dpt.....     | 100                    |
| Completion Entry Date... | 900123                 |

Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS

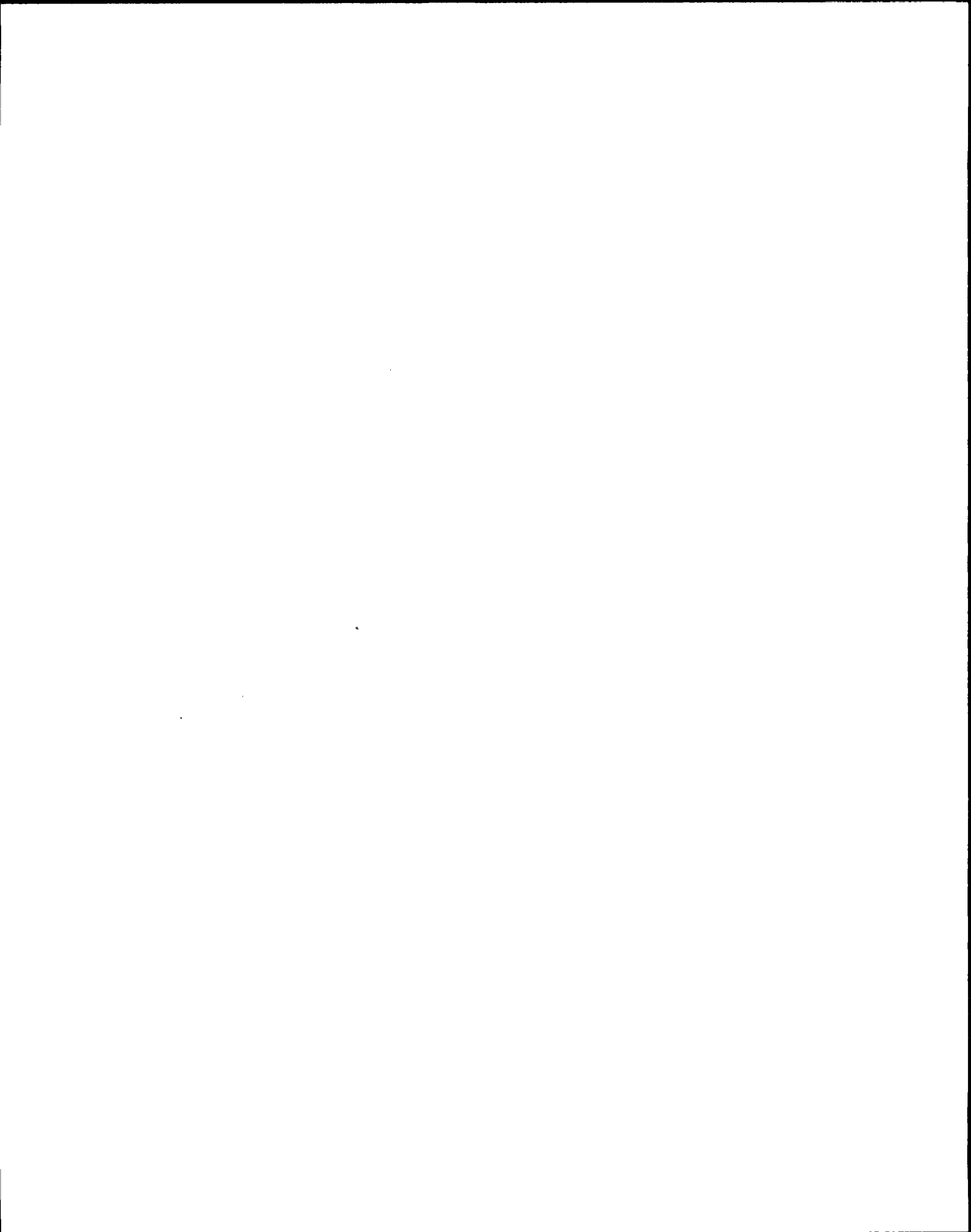




Display of Work Item Data

HIT..... 25  
Work No..... W148614  
Issued..... 900121  
Depart..... 100  
Status..... C  
Lead or Supprt..... L  
WCC Status..... 100  
Priority..... 2  
Unit..... 2  
Component No..... 2CNM-MOV84B  
System No..... CNM  
BIP No..... 003  
Safety Class..... NSR  
ASME Component..... N  
Cleanness Class..... B, D  
Title..... BUTTERFLY OR TRICENTRIC V  
Work Item Description... ROTOR IS CRACKED (BARREL) NO. 3. BARRREL IS A SPARE  
Location..... HB,277,FA,007.20  
NPRDS Failcode..... A  
Originator..... MCCONKEY M  
Approved by..... POINDEXTER J  
Approval date..... 900123  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

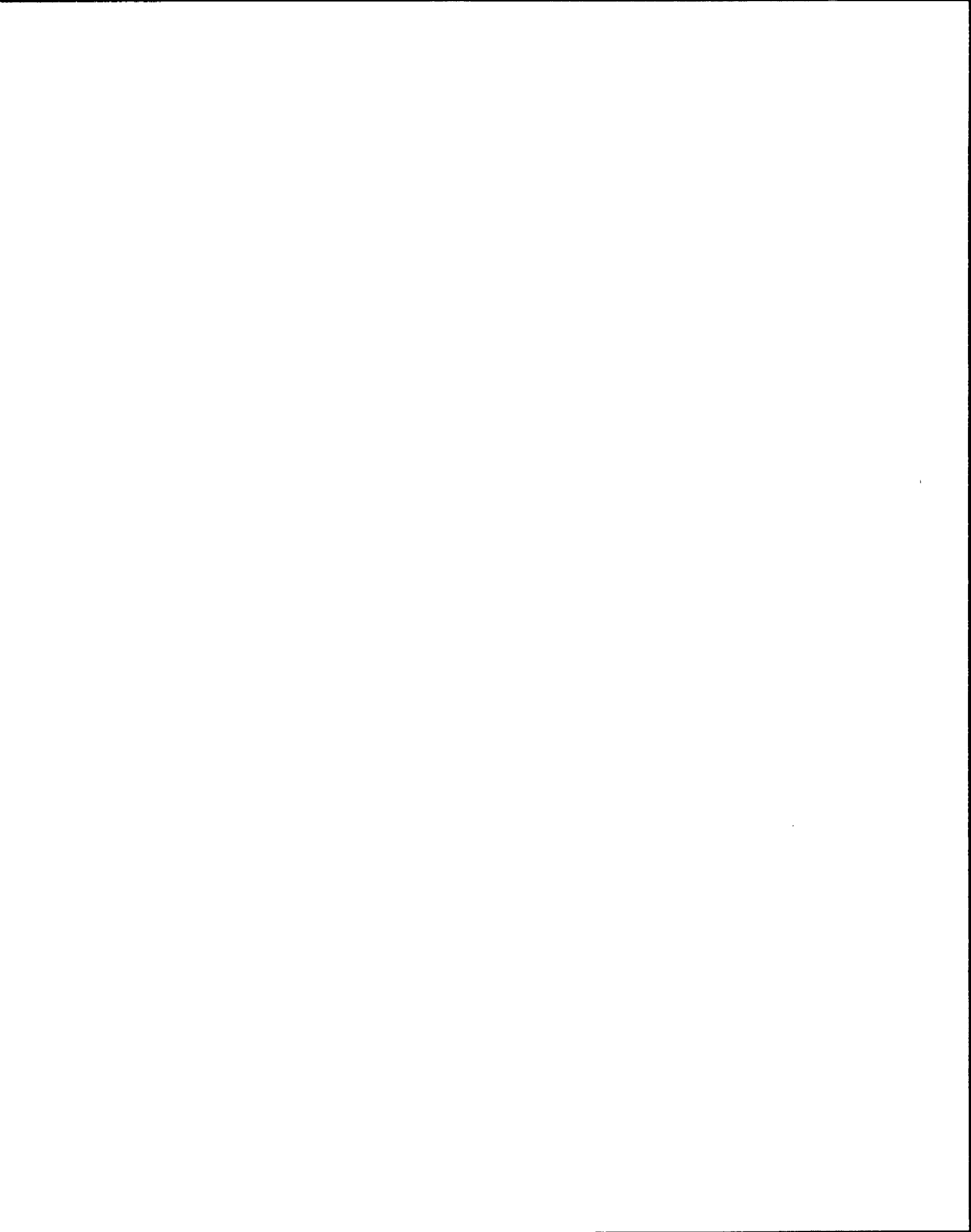
CAPS



Display of Work Item Data

|  |                               |
|--|-------------------------------|
| Received By.....                             | DOTY S                        |
| Rcvd By Dt.....                              | 900124                        |
| Account Code.....                            | 706.30--9571-321116--200-0110 |
| QC Review.....                               | DEAN J                        |
| QA Review Date.....                          | 900124                        |
| Inspection Req'd.....                        | N                             |
| Left Planning.....                           | 900125                        |
| IP Code.....                                 | 3                             |
| Merit Score.....                             | 000                           |
| Work Cond. Code.....                         | F                             |
| Work Type Code.....                          | PL                            |
| Power Block Flag.....                        | Y                             |
| Staged By.....                               | DISHAW J                      |
| Staged By Date.....                          | 900403                        |
| MSRF.....                                    | 108924                        |
| Proj Crew.....                               | 2                             |
| Proj Dur.....                                | 6                             |
| Assign to.....                               | CORNELL R                     |
| Assigned Date.....                           | 900929                        |
| Sched. Start Date.....                       | 900919                        |
| SSS Notify.....                              | 900930                        |
| Corrective Action Code..                     | AH                            |
| Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?) |                               |

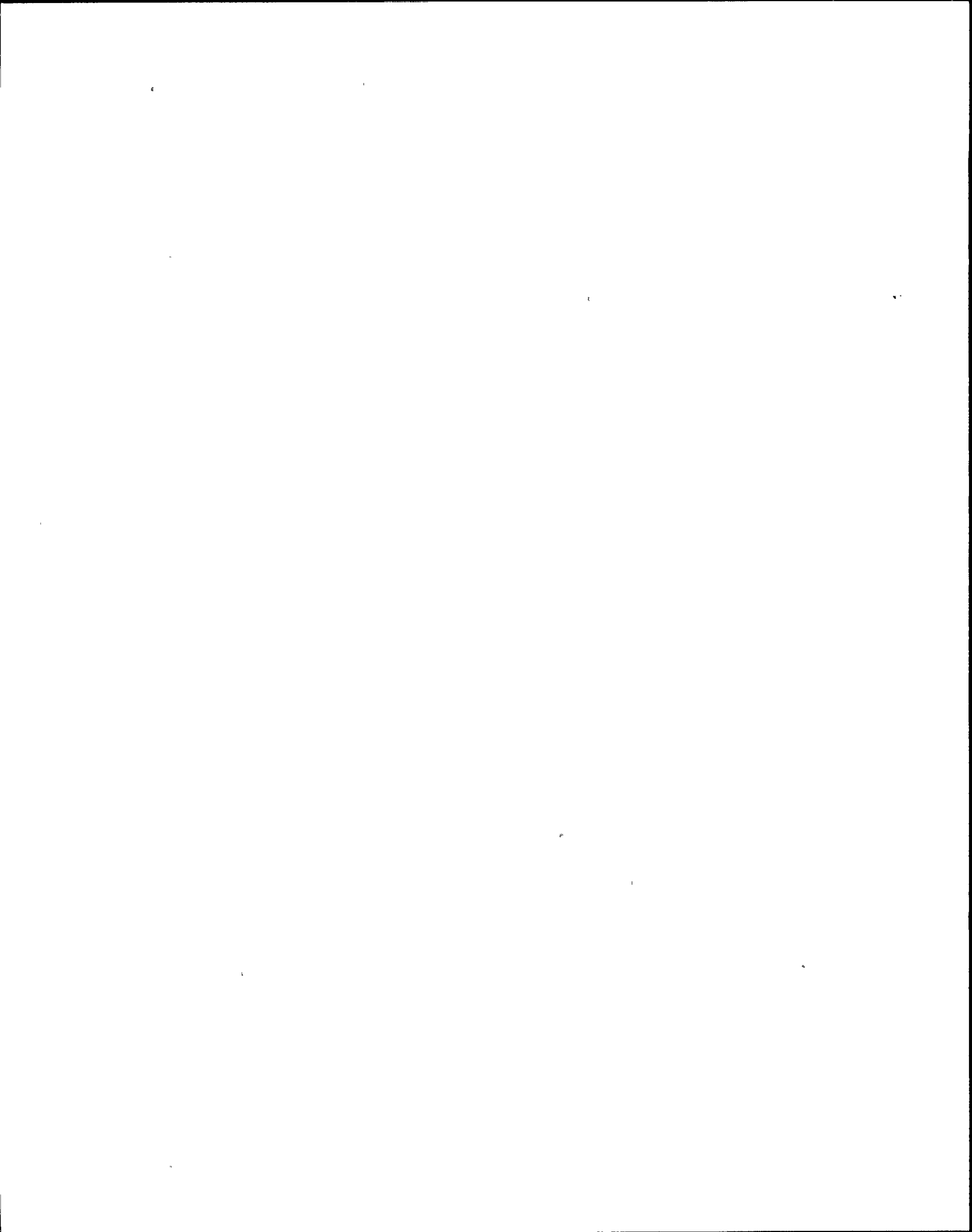
CAPS



Display of Work Item Data

|  |   |
|--|---|
| Corrective Action.....                       | REPLACED ROTOR AND FINGER BASE. REPLACE PARTS |
| Cause of Failure Code...                     | AZ  |
| Cause of failure.....                        | ROTOR AND FINGER BASE WERE CRACKED            |
| Attachments.....                             | MATERIAL ISSUES                               |
| Mark Up No.....                              | R01273 R51458                                 |
| RP Requirement.....                          | C   |
| Control Point.....                           | TB250   |
| QCIR Nos.....                                | NA  |
| NCR's.....                                   | NA  |
| Completed by.....                            | KLEE K  |
| Completion date.....                         | 901001  |
| Supervisor Review.....                       | MORYL S                                       |
| Supervisor Review Date..                     | 901129  |
| QC Work Accepted by.....                     | DEAN J  |
| QC Work Accept date.....                     | 900124  |
| PMT Review By.....                           | DOTY S  |
| PMT Rev Date.....                            | 900124  |
| PMT Test Rpt.....                            | Y   |
| PMT Ver.....                                 | CORNELL R                                     |
| PMT Ver Dt.....                              | 901128  |
| Accepted by.....                             | MOYER G                                       |
| Acceptance date.....                         | 901129  |
| Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?) |   |

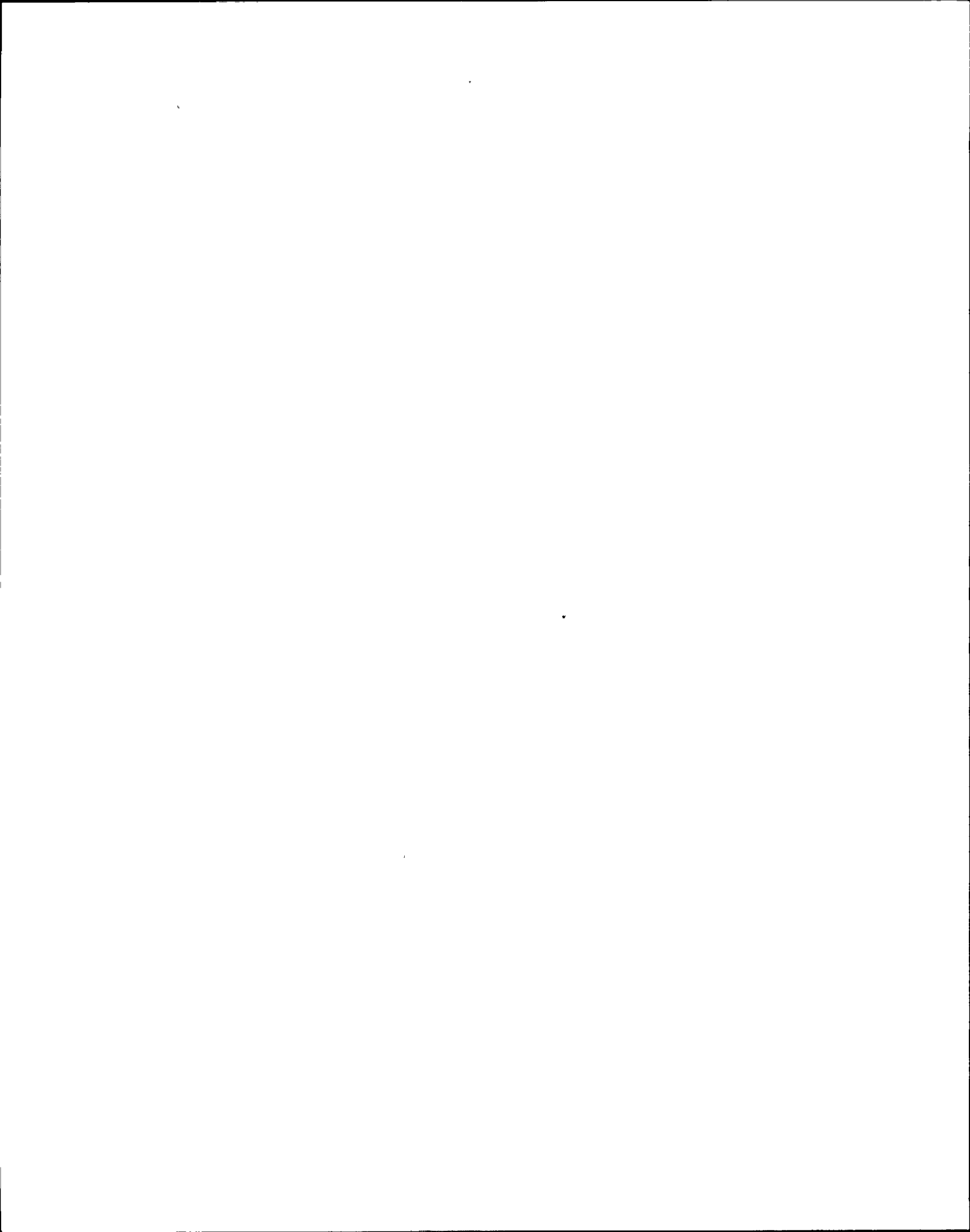
CAPS



Display of Work Item Data

Plan LO..... 901130  
Fld Compl Log Dte..... 901129  
Craft..... 1341, 1331, 9501, 1311  
Man Hours..... 4, 6, 2.0, 2.0  
OT Hours..... 0, 0, 0, 0  
Lead/Supprt Dpt..... 100  
OMG System Window..... 060  
OMG Availability Code... R1  
OMG Remarks..... FOR REFUEL, PARALLEL TO WR# 154767 (MECH.) 3/15/90..,  
MRF #108924 3/22/90.. MAT. RESERVE TAG #3661/RESERVE  
REQ. #7342..3/27/90..  
Completion Entry Date... 901129  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS

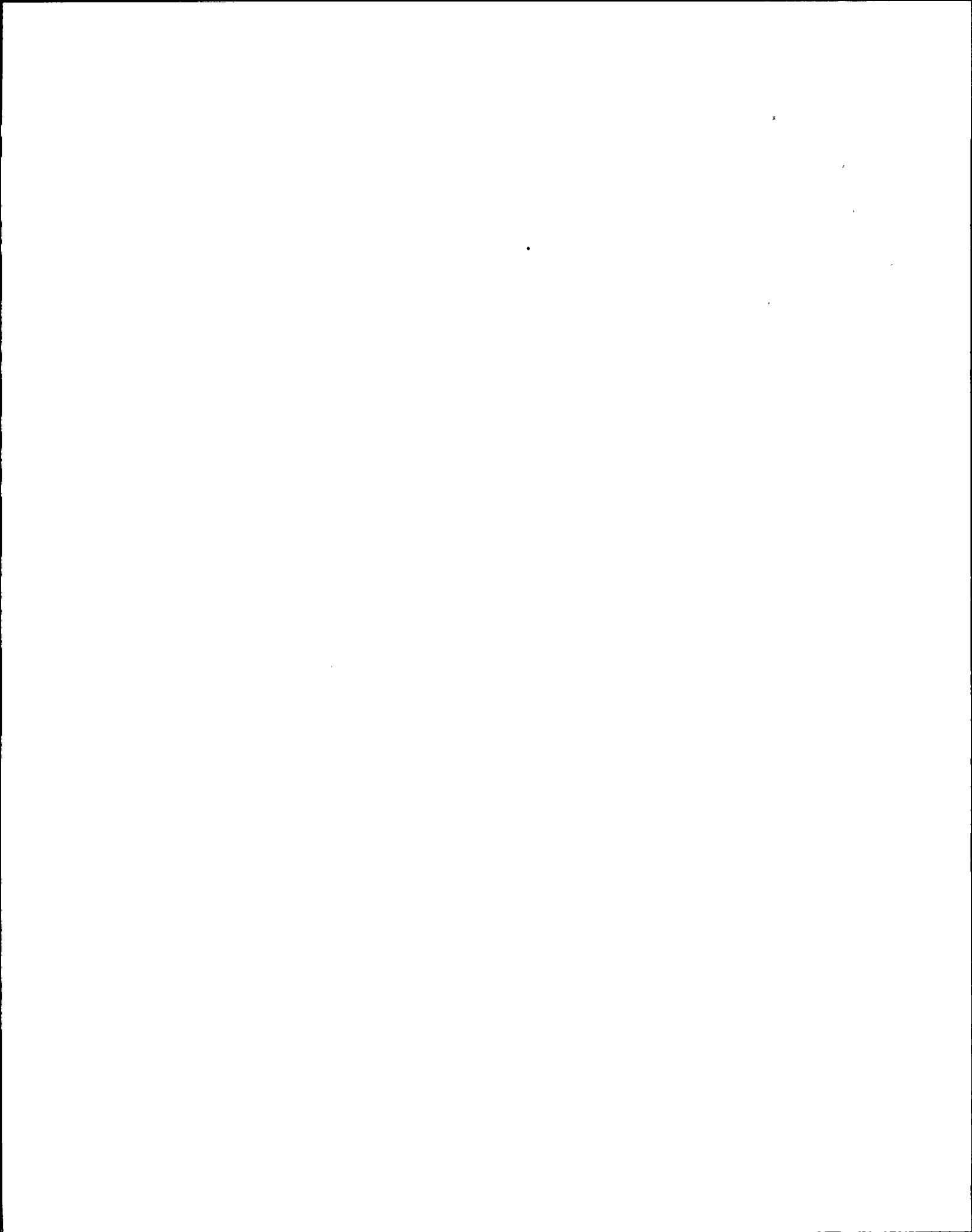




Display of Work Item Data

HIT..... 26  
Work No..... W169962  
Issued..... 900918  
Depart..... 100  
Status..... C  
Lead or Supprt..... L  
WCC Status..... 100  
Unit..... 2  
Component No..... 2CNM-MOV84C, 2CNM-MOV84B, 2CNM-MOV84A  
System No..... CNM, CNM, CNM  
BIP No..... 003, 003, 003  
Safety Class..... NSR, NSR, NSR  
ASME Component..... N, N, N  
Cleanness Class..... B, D, B, D, B, D  
Title..... BUTTERFLY OR TRICENTRIC V, BUTTERFLY OR TRICENTRIC V,  
BUTTERFLY OR TRICENTRIC V  
Work Item Description... REMOVE RESTORE TEMP MOD'S 90-005 90-006 AND 90-007  
PRIOR TO INSTALLING MOD 90-023. REPLACING  
2CNM-MOV84A-B-C  
Location..... HB,277,FA,008.20, HB,277,FA,007.20, HB,277,FA,006.00  
Originator..... FERRER I  
Approved by..... WINKLER T  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

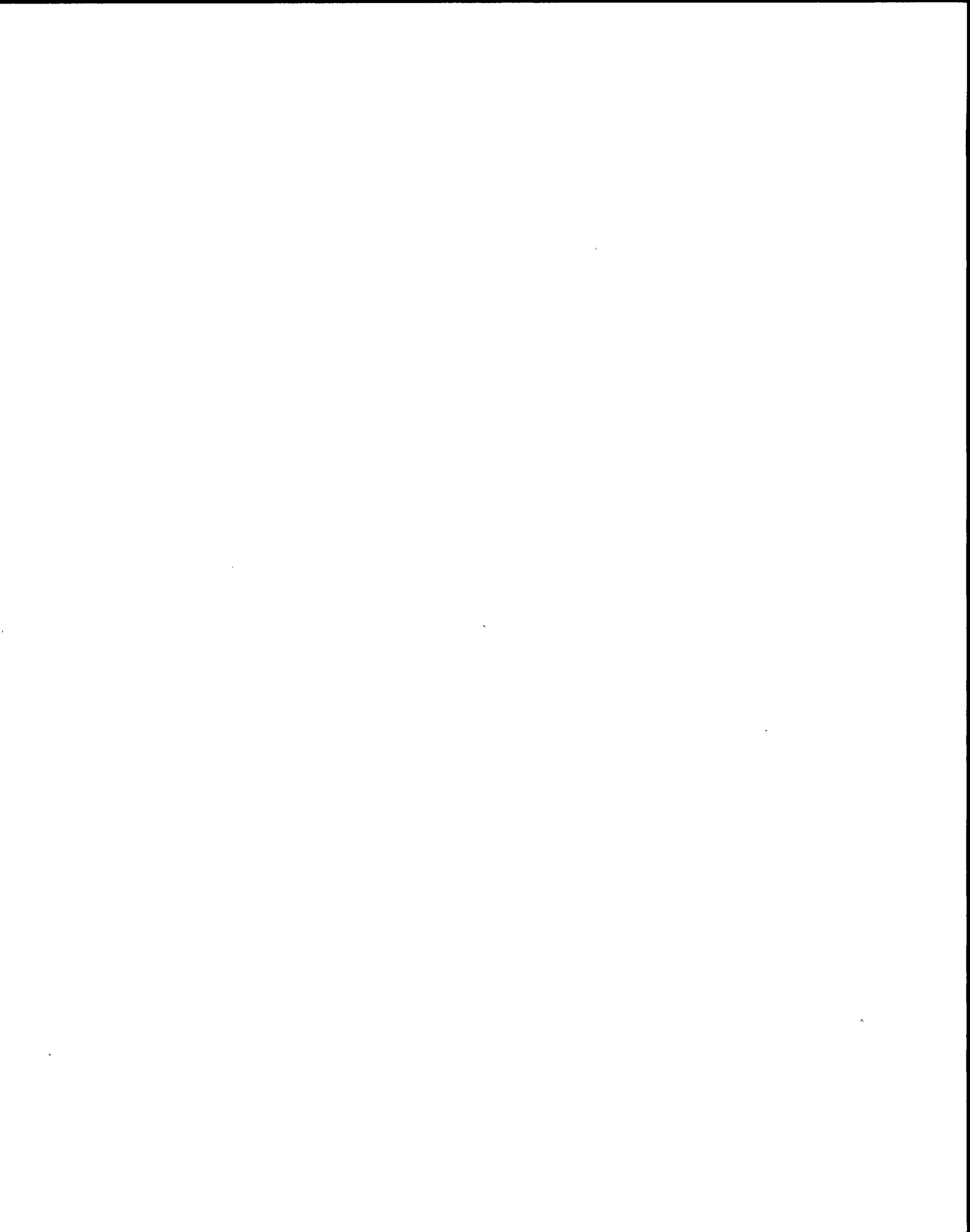
CAPS



Display of Work Item Data

Approval date..... 900918  
Received By..... GIBSON R  
Rcvd By Dt..... 900918  
Account Code..... 706.30--0185-321116--200-0110  
QC Review..... DONOGHUE M  
QA Review Date..... 900919  
Inspection Req'd..... N  
Left Planning..... 900919  
IP Code..... 3  
Merit Score..... 000  
Work Cond. Code..... G  
Remarks..... EDC 2F00050, SHOP 901118  
Work Type Code..... SM  
Power Block Flag..... Y  
Staged By..... PLNG  
Staged By Date..... 900918  
Assign to..... CORNELL R  
Assigned Date..... 900929  
Sched. Start Date..... 901118  
SSS Notify..... 900930  
Corrective Action..... REMOVED TEMP MODS 90-005 90-006 AND 90-007. RETURNED  
OPERATOR WIRING BACK TO PRE MOD STATUS  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

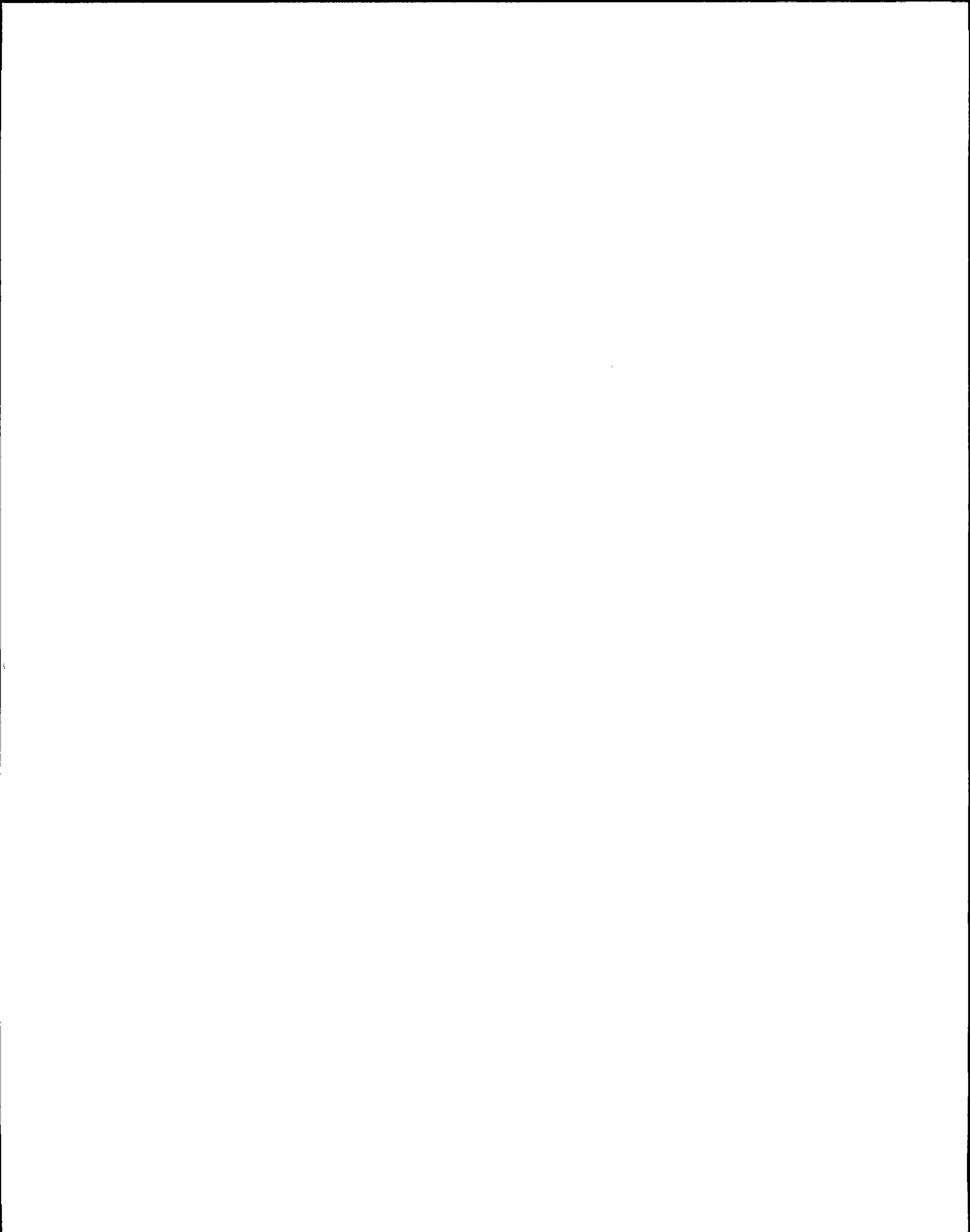
CAPS



Display of Work Item Data

Cause of failure..... NO FAILURE  
Attachments..... PROCEDURE CHECKLIST EDC 2F00050  
Mark Up No..... R01273 R01274  
QCIR Nos..... NA  
NCR's..... NA  
Completed by..... KLEE K  
Completion date..... 901002  
Supervisor Review..... MORYL S  
Supervisor Review Date.. 901129  
QC Work Accepted by..... DONOGHUE M  
QC Work Accept date..... 900919  
PMT Review By..... MORYL S  
PMT Rev Date..... 901128  
PMT Test Rpt..... Y  
PMT Ver..... CORNELL R  
PMT Ver Dt..... 901128  
Accepted by..... MOYER G  
Acceptance date..... 901129  
Plan LO..... 901130  
Fld Compl Log Dte..... 901129  
Craft..... 1341, 1331, 9501, 1311, 1301, 9511  
Man Hours..... 6, 17.5, 8, 5, 2.0, 2.0  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS

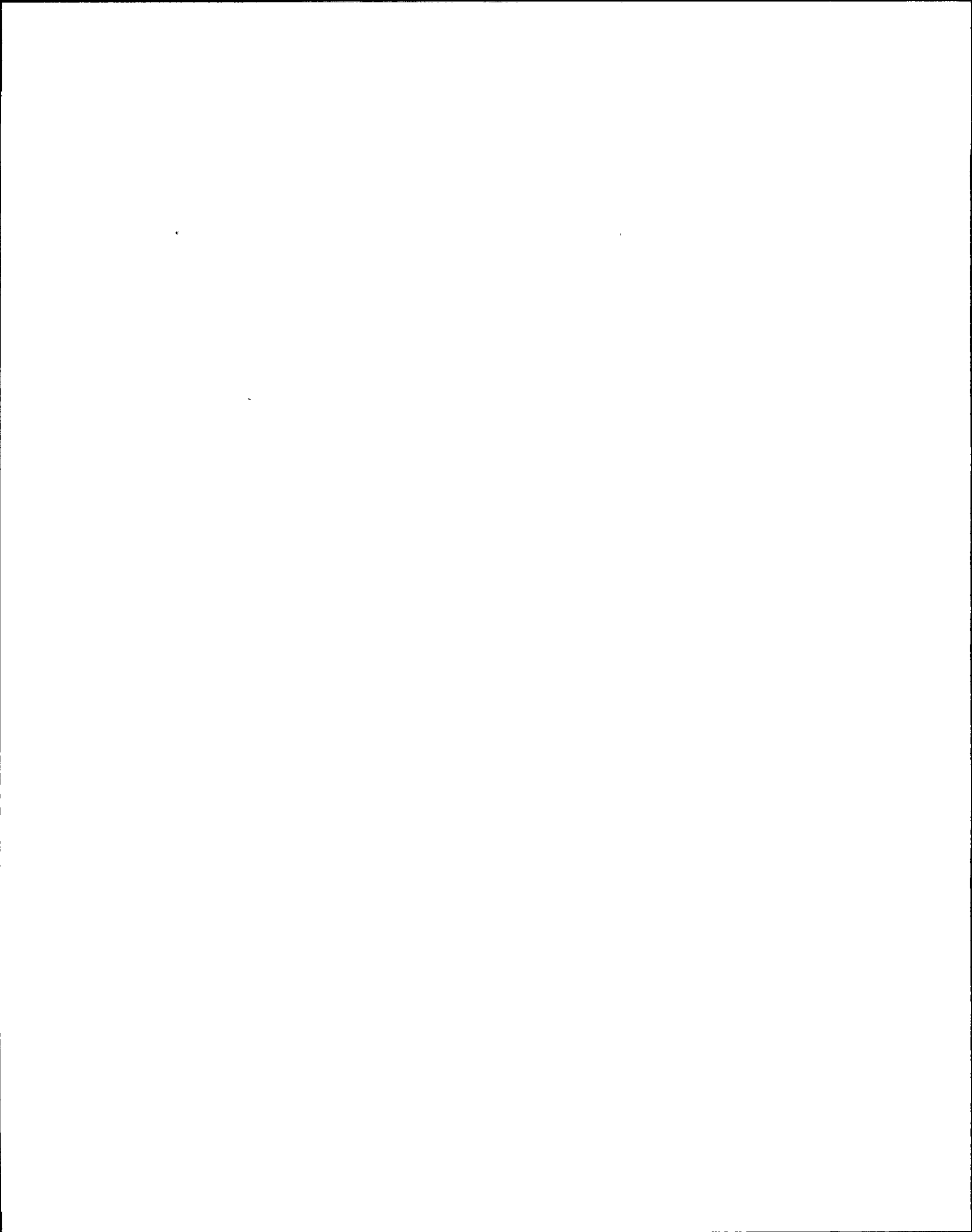


Display of Work Item Data

OT Hours..... 3, 5.5, 5, 2, 0, 0  
Lead/Supprt Dpt..... 100  
OMG System Window..... 060  
OMG Availability Code... R1, A2  
Completion Entry Date... 901129

Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS

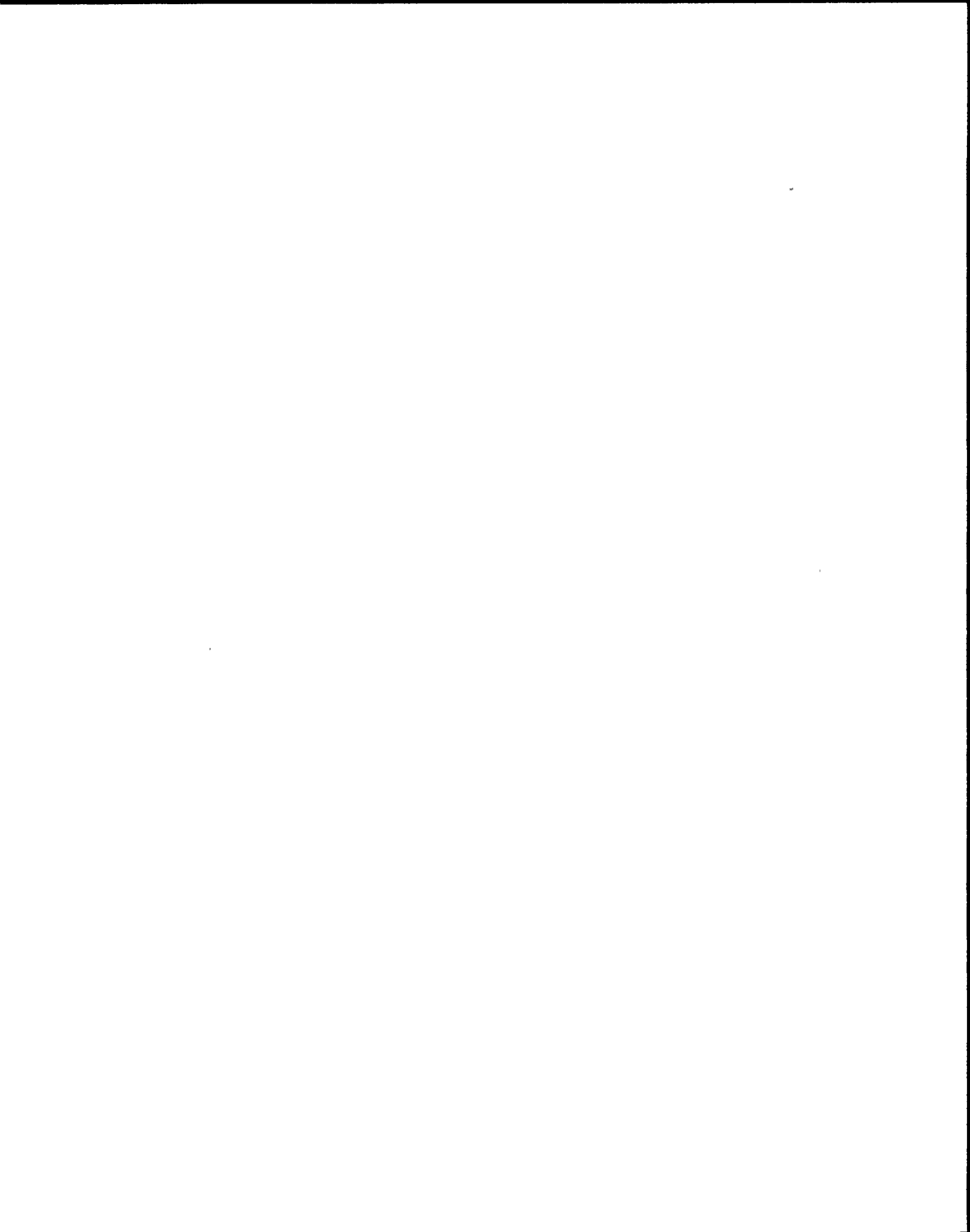




Display of Work Item Data

HIT..... 27  
Work No..... W169961  
Issued..... 900918  
Depart..... 100  
Status..... C  
Lead or Supprt..... L  
WCC Status..... 100  
Unit..... 2  
Component No..... 2CNM-MOV84C, 2CNM-MOV84B, 2CNM-MOV84A  
System No..... CNM, CNM, CNM  
BIP No..... 003, 003, 003  
Safety Class..... NSR, NSR, NSR  
ASME Component..... N, N, N  
Cleanness Class..... B, D, B, D, B, D  
Title..... BUTTERFLY OR TRICENTRIC V, BUTTERFLY OR TRICENTRIC V,  
BUTTERFLY OR TRICENTRIC V  
Work Item Description... DETERM RETERM WIRES TO 2CNM-MOV84A-B-C TO SUPPORT  
INSTALLATION OF MOD-423  
Location..... HB,277,FA,008.20, HB,277,FA,007.20, HB,277,FA,006.00  
Originator..... FERRER I  
Approved by..... WINKLER T  
Approval date..... 900918  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

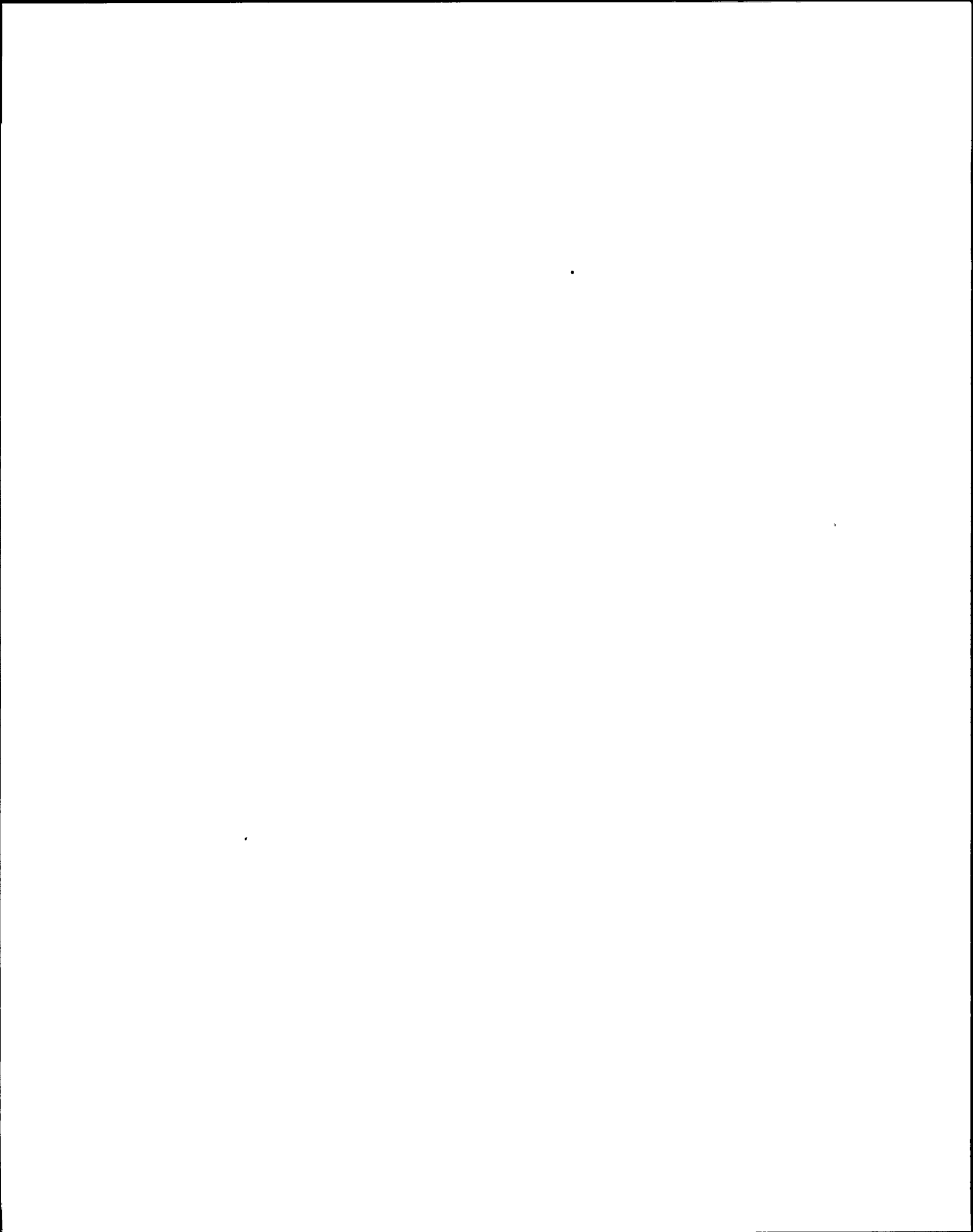
CAPS



Display of Work Item Data

Received By..... GIBSON R  
Rcvd By Dt..... 900918  
Procedure No..... N2-EMP-GEN-510  
Account Code..... 706.30--0185-321116--200-0110  
QC Review..... DONOGHUE M  
QA Review Date..... 900919  
Inspection Req'd..... N  
Left Planning..... 900919  
IP Code..... 3  
Merit Score..... 000  
Work Cond. Code..... G  
Work Type Code..... SM  
Power Block Flag..... Y  
Staged By..... PARSNOW M  
Staged By Date..... 901012  
Assign to..... CORNELL R  
Assigned Date..... 900925  
Sched. Start Date..... 901012  
SSS Notify..... 900930  
Corrective Action..... DETERMED OPERATORS TO SUPPORT VALVE REMOVAL LIFTED  
LEADS DOCUMENTED IN PROCEDURE. RETERMED 84C 901119.  
RETERMED 84B AND 84A ON 901123  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS



Display of Work Item Data

Cause of failure..... NO FAILURE  
Attachments..... PROCEDURE CHECKLIST  
Mark Up No..... R01272 R01273 R051458 R051459 R01274  
QCIR Nos..... NA  
NCR's..... NA  
Completed by..... KLEE K  
Completion date..... 901002  
Supervisor Review..... MORYL S  
Supervisor Review Date.. 901204  
QC Work Accepted by..... DONOGHUE M  
QC Work Accept date..... 900919  
PMT Review By..... MORYL S  
PMT Rev Date..... 901128  
PMT Test Rpt..... Y  
PMT Ver..... CORNELL R  
PMT Ver Dt..... 901128  
Accepted by..... PICCIRILLI W  
Acceptance date..... 901204  
Plan LO..... 901205  
Fld Compl Log Dte..... 901204  
Craft..... 1341, 1331, 9501, 1311, 1321, 1301, 9511  
Man Hours..... 10.5, 51, 28, 3.5, 4.0, 2.0, 2.0  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS



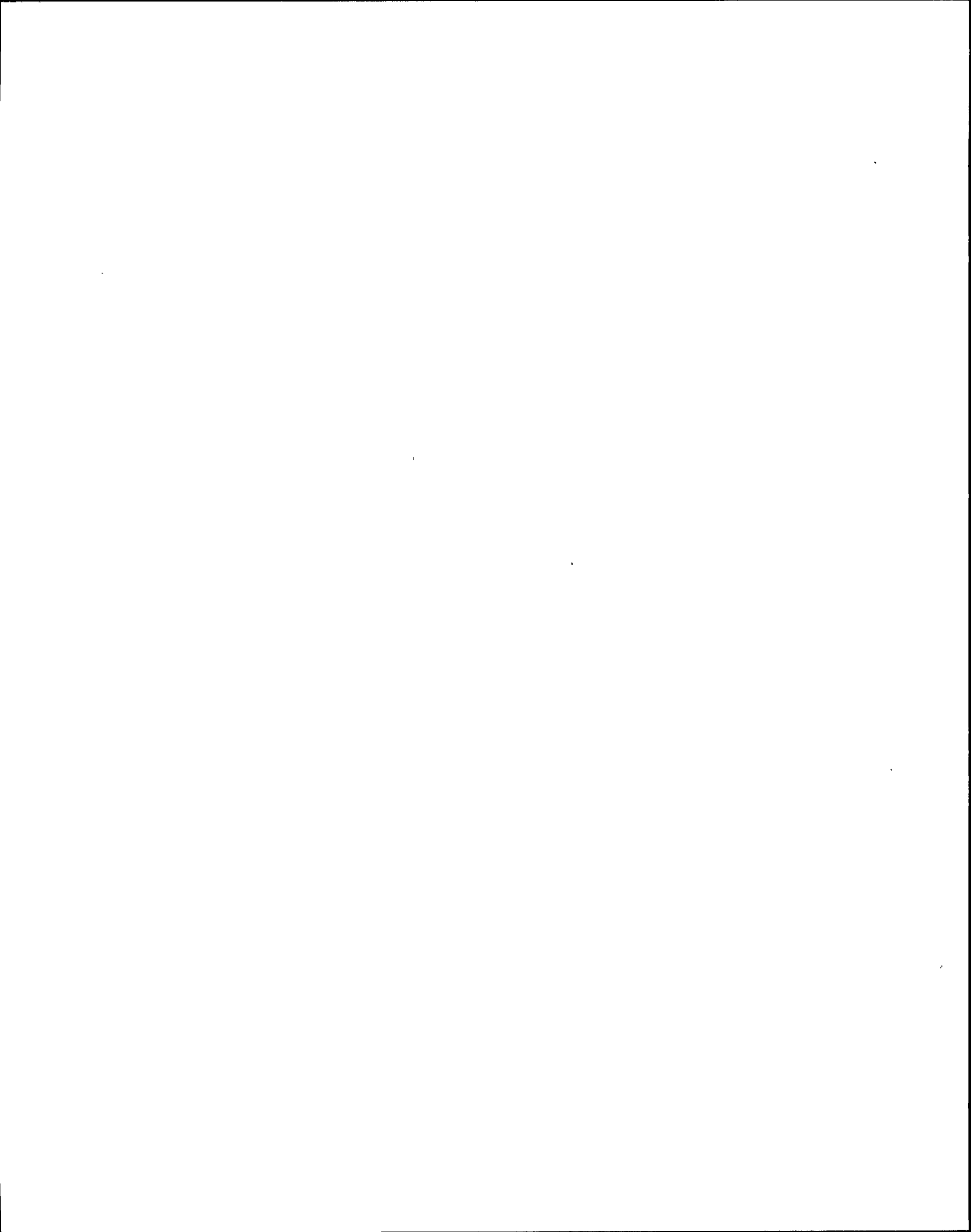
Display of Work Item Data

OT Hours..... 2, 32, 22.5, 0, 0, 0, 0  
Lead/Supprt Dpt..... 100  
OMG System Window..... 060  
OMG Availability Code... R1, A2  
Completion Entry Date... 901204

Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

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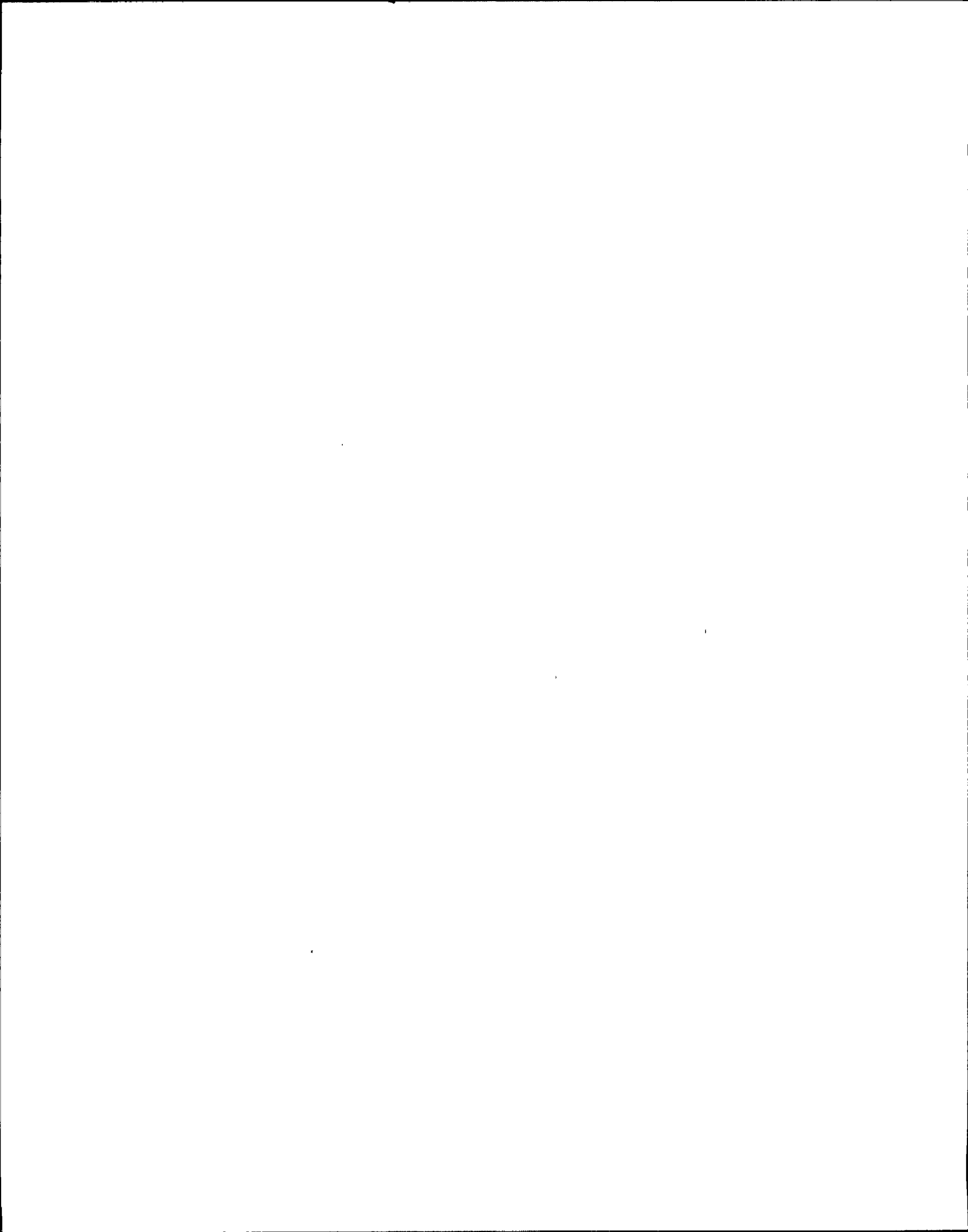




Display of Work Item Data

HIT..... 28  
Work No..... W184729  
Issued..... 901003  
Depart..... 200  
Status..... C  
Lead or Supprt..... L  
WCC Status..... 100  
Unit..... 2  
Component No..... 2CNM-MOV84B  
System No..... CNM  
BIP No..... 003  
Safety Class..... NSR  
ASME Component..... N  
Cleanness Class..... B, D  
Title..... BUTTERFLY OR TRICENTRIC V  
Work Item Description... 2CNM-MOV84B HAS A CRACK BY STEM NUT AT THE KEY.  
REPLACE STEM NUT  
Location..... HB,277,FA,007.20  
NPRDS Failcode..... A  
Originator..... WATSON R  
Approved by..... WATSON R  
Approval date..... 901004  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

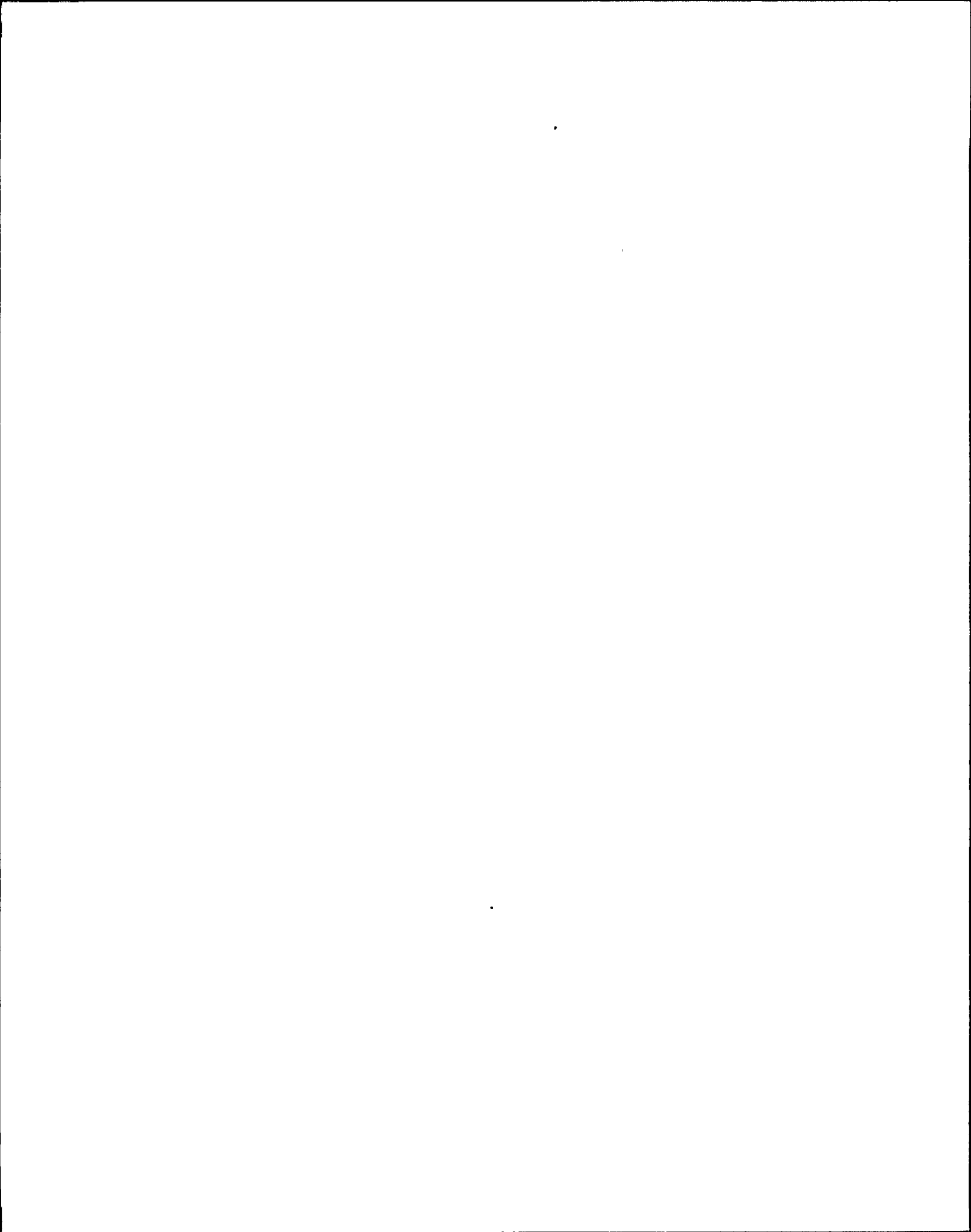
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Display of Work Item Data

Received By..... LEMAY D  
Rcvd By Dt..... 901004  
Procedure No..... N2-EMP-GEN-510  
Account Code..... 706.30--0185-321256--200-0110  
QC Review..... SIEMERS W  
QA Review Date..... 901012  
Inspection Req'd..... N  
Left Planning..... 901022  
IP Code..... 3  
Merit Score..... 000  
Work Cond. Code..... G  
Remarks..... AWAITING MSRF #113174  
Work Type Code..... CM  
Power Block Flag..... Y  
Staged By Date..... 901229  
MSRF..... 113174  
Sched. Start Date..... 901229  
SSS Notify..... 901229  
Corrective Action..... STEM NUT REPLACED UNDER MOD 90-023  
Cause of Failure Code... AG  
Attachments..... MATERIAL ISSUES  
QCIR Nos..... NA  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS



Display of Work Item Data

|                          |           |
|--------------------------|-----------|
| Completed by.....        | STUDENT D |
| Completion date.....     | 901229    |
| Supervisor Review.....   | STUDENT D |
| Supervisor Review Date.. | 901229    |
| QC Work Accepted by..... | SIEMERS W |
| QC Work Accept date..... | 901012    |
| PMT Review By.....       | NEWMAN D  |
| PMT Rev Date.....        | 910103    |
| PMT Test Rpt.....        | N         |
| Accepted by.....         | NEWMAN D  |
| Acceptance date.....     | 910103    |
| Plan LO.....             | 910104    |
| Fld Compl Log Dte.....   | 910103    |
| Lead/Supprt Dpt.....     | 200       |
| OMG System Window.....   | 030       |
| OMG Availability Code... | R1        |
| Completion Entry Date... | 910103    |

Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

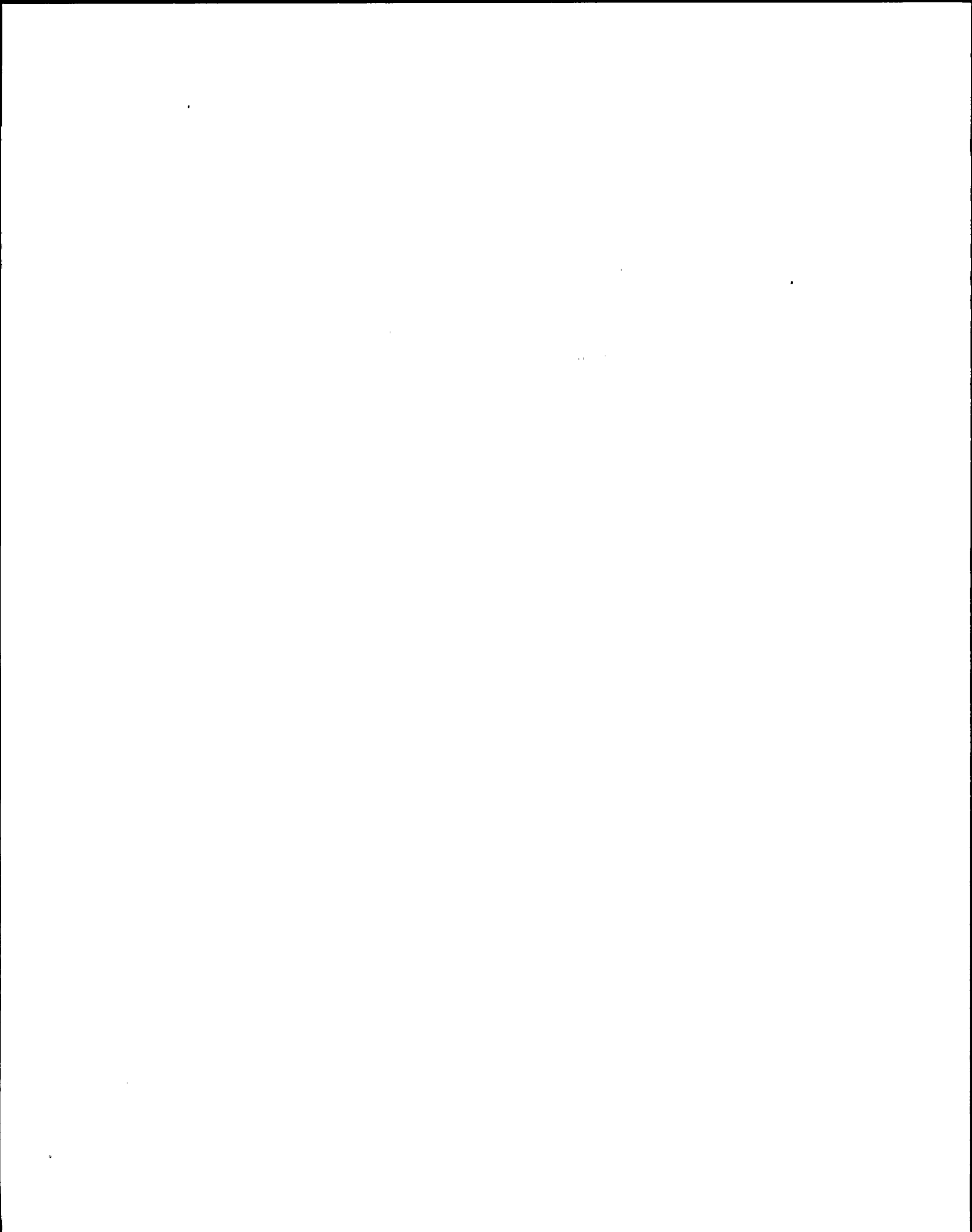
CAPS

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Display of Work Item Data

HIT..... 29  
Work No..... W180250  
Issued..... 901022  
Depart..... 200  
Status..... C  
Lead or Supprt..... L  
WCC Status..... 100  
Unit..... 2  
Component No..... 2CNM-MOV84C-ACT, 2CNM-MOV84B-ACT, 2CNM-MOV84A-ACT  
System No..... CNM, CNM, CNM  
BIP No..... 003, 003, 003  
Safety Class..... NSR, NSR, NSR  
ASME Component..... N, N, N  
Title..... ELECTRIC MOTOR, 0X0 BUTTERFLY OR TRICENTRIC VALVE  
MOTOR OPERATOR, -X- BUTTERFLY OR TRICENTRIC VALVE  
MOTOR OPERATOR  
Work Item Description... IN ORDER TO SUPPORT MOD 90-023 MODIFY 3 EXISTING  
SPLINE ADAPTORS AND 3 NEW KEYS PER EDC 2M10246 (SHOP  
WORK ONLY)  
Location..... HB,277,,, HB,277,,, HB,277,,  
Originator..... LANE M  
Approved by..... WINKLER T  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS

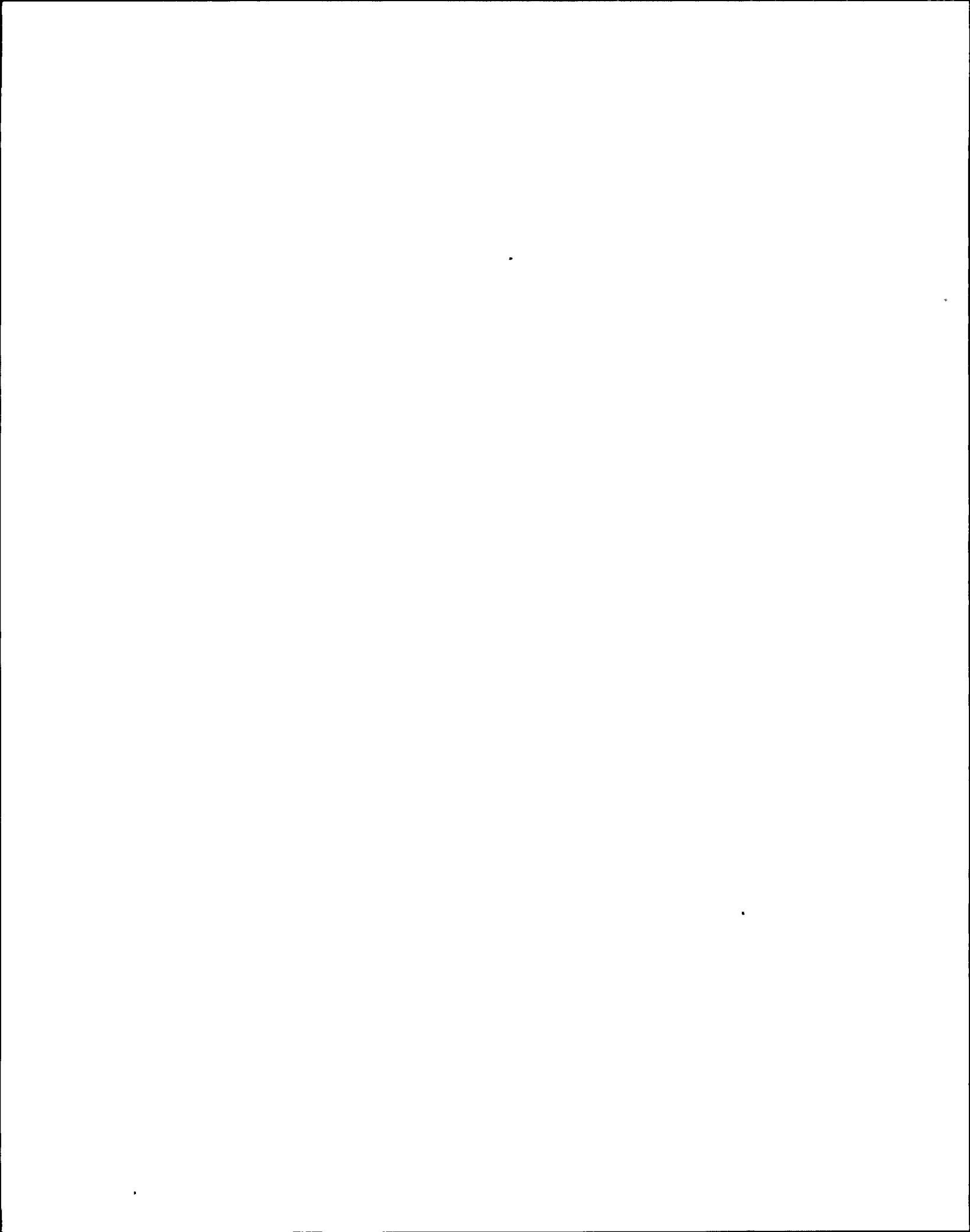




Display of Work Item Data

Approval date..... 901022  
Received By..... BUNNELL J  
Rcvd By Dt..... 901022  
Account Code..... 706.30--0185-321256--200-0110  
QC Review..... SIEMERS W  
QA Review Date..... 901022  
Inspection Req'd..... N  
Left Planning..... 901023  
IP Code..... 3  
Merit Score..... 000  
Work Cond. Code..... G  
Work Type Code..... SM  
Power Block Flag..... Y  
Staged By Date..... 901229  
Sched. Start Date..... 901229  
SSS Notify..... 901229  
Corrective Action..... COMPONENTS MODIFIED PER EDC 2M10246  
QCIR Nos..... NA  
Completed by..... STUDENT D  
Completion date..... 901229  
Supervisor Review..... STUDENT D  
Supervisor Review Date.. 901229  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS

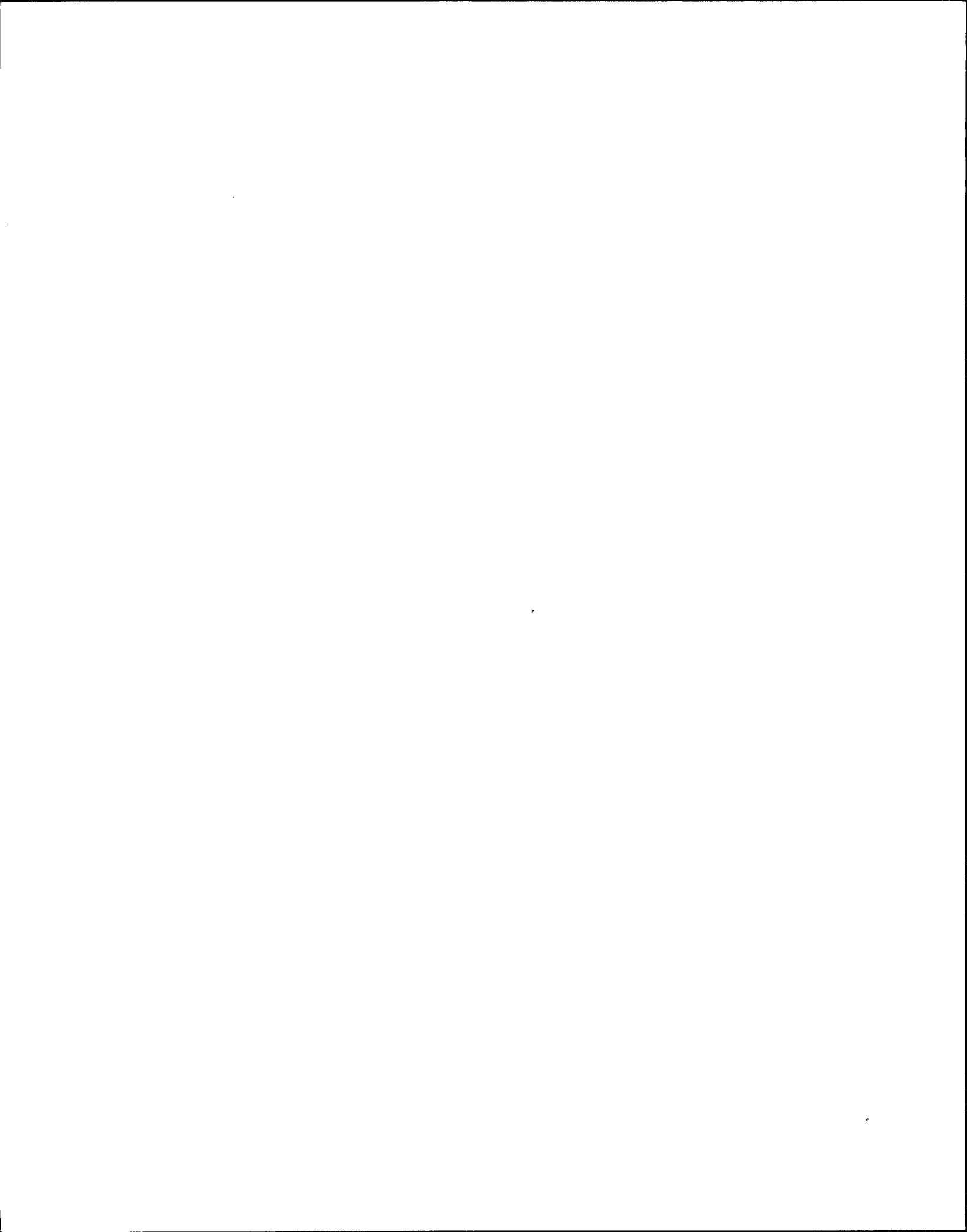


Display of Work Item Data

|                          |          |
|--------------------------|----------|
| QC Work Accepted by..... | DEAN J   |
| QC Work Accept date..... | 910103   |
| PMT Review By.....       | NEWMAN D |
| PMT Rev Date.....        | 910103   |
| PMT Test Rpt.....        | N        |
| Accepted by.....         | NEWMAN D |
| Acceptance date.....     | 910103   |
| Plan LO.....             | 910104   |
| Fld Compl Log Dte.....   | 910103   |
| Lead/Supprt Dpt.....     | 200      |
| OMG System Window.....   | 030      |
| OMG Availability Code... | R1, A3   |
| Completion Entry Date... | 910103   |

Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

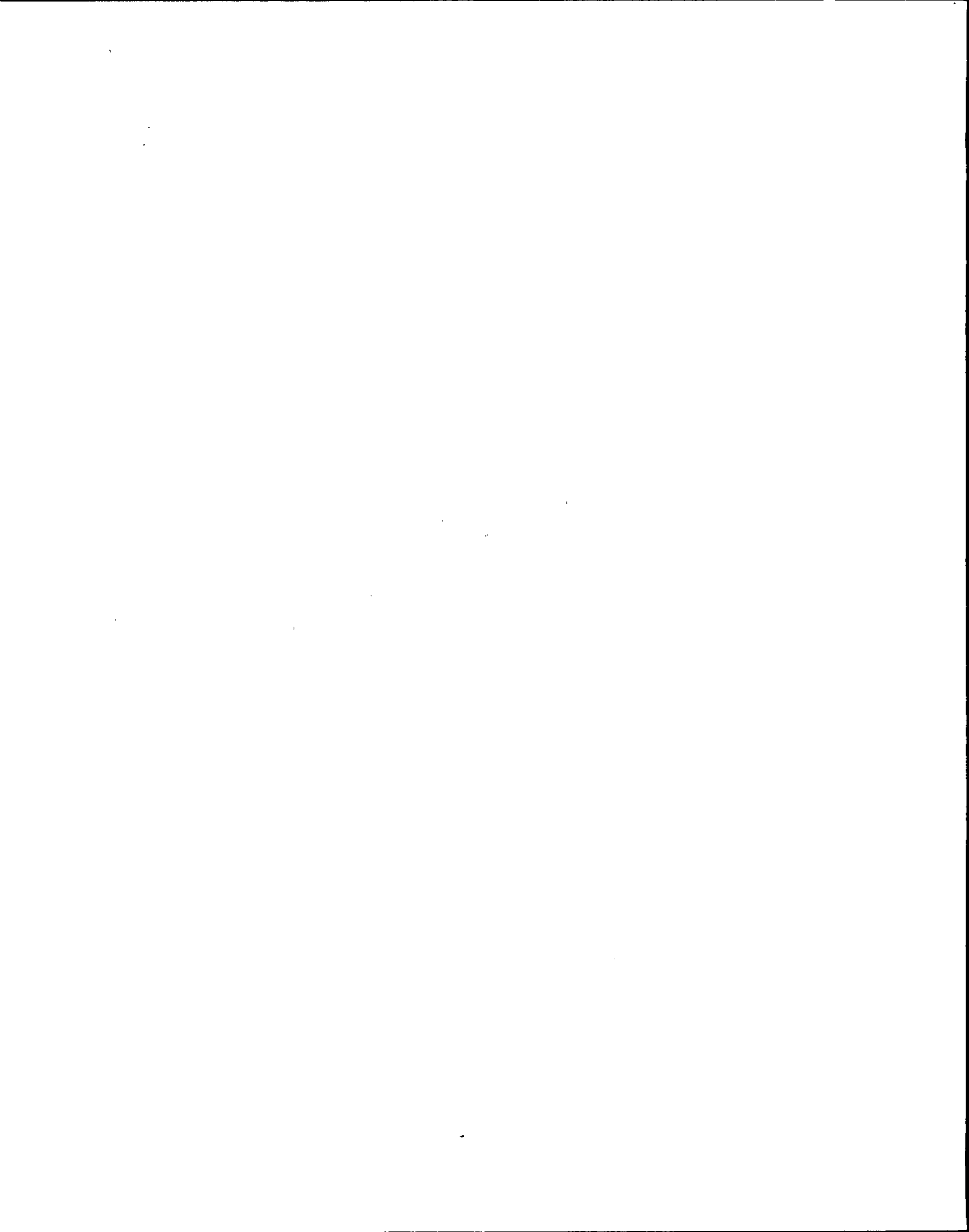
CAPS



Display of Work Item Data

HIT..... 30  
Work No..... W183188  
Issued..... 901219  
Depart..... 081  
Status..... C  
Lead or Supprt..... L  
WCC Status..... 100  
Unit..... 2  
Component No..... 2FWS-P1A, 2FWS-P1B, 2FWS-P1C, 2CNM-MOV84A,  
2CNM-MOV84B, 2CNM-MOV84C  
System No..... FWS, FWS, FWS, CNM, CNM, CNM  
BIP No..... 006, 006, 006, 003, 003, 003  
Div..... <null>, <null>, <null>, <null>, <null>, <null>  
Safety Class..... NSR, NSR, NSR, NSR, NSR, NSR  
EQ..... <null>, <null>, <null>, <null>, <null>, <null>  
ASME Component..... N, N, N, N, N, N  
Cleanness Class..... B, B, B, B, B, B, D  
Title..... REACTOR FEED PUMP A, REACTOR FEED PUMP B, REACTOR  
FEED PUMP C, BUTTERFLY OR TRICENTRIC V, BUTTERFLY OR  
TRICENTRIC V, BUTTERFLY OR TRICENTRIC V  
Work Item Description... PERFORM INSERVICE LEAK TEST NUMBER CNM-I-021 ON FEED  
PUMP SUCTION LINES FOR 2FWS-P1A/B/C AND ON FEED PUMP  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS



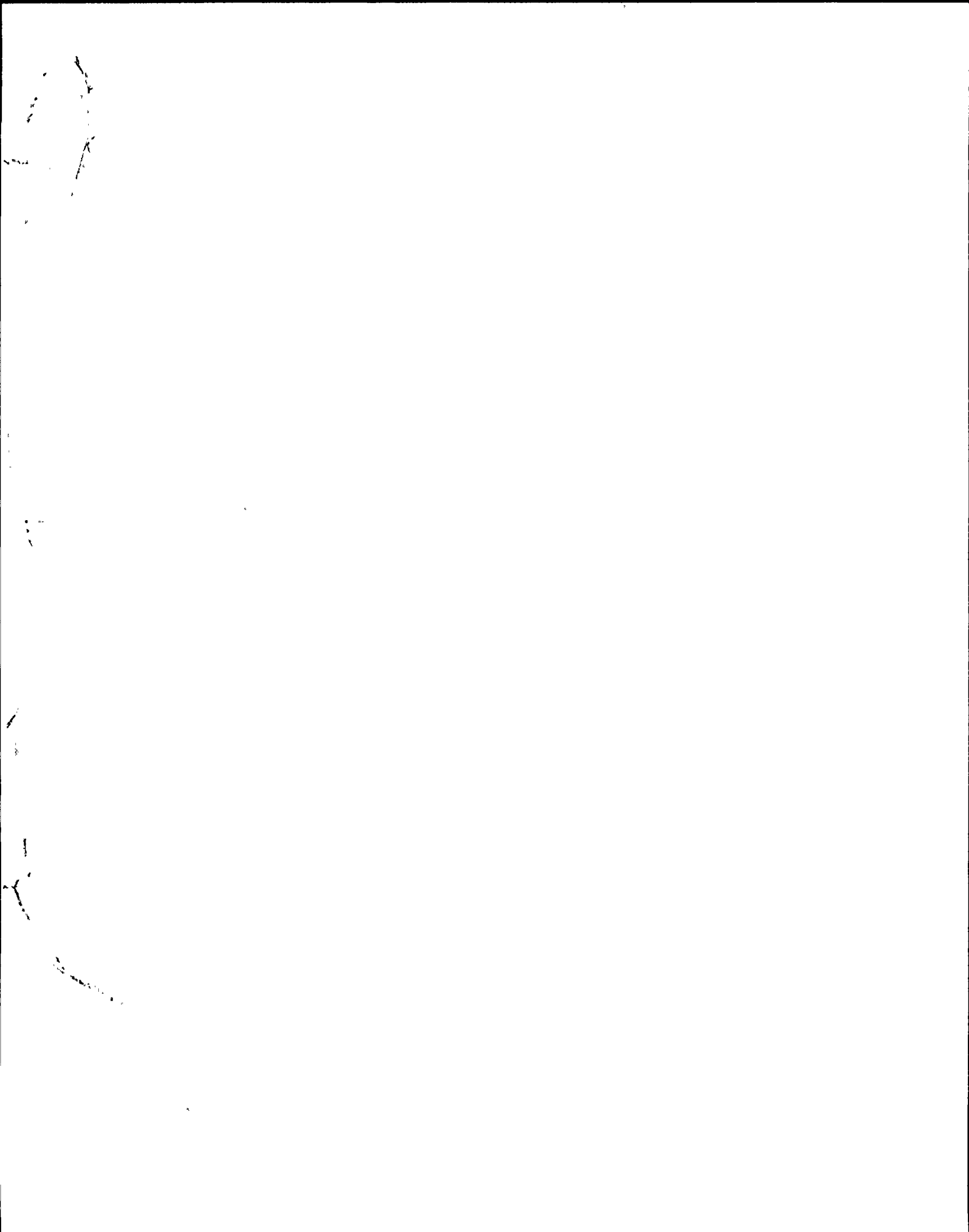
Display of Work Item Data

SUCTION VALVES 2CNM-MOV84A/B/C WHICH WERE REVISED  
UNDER MODS PN2Y90MX023 AND PN2Y90MX016  
TB,250,C,005.90, TB,250,Y,007.00, TB,250,Y,008.50,  
HB,277,FA,006.00, HB,277,FA,007.20, HB,277,FA,008.20

Location.....  
Originator.....  
Approved by.....  
Approval date.....  
Received By.....  
Rcvd By Dt.....  
Account Code.....  
QC Review.....  
QA Review Date.....  
Inspection Req'd.....  
Left Planning.....  
IP Code.....  
Merit Score.....  
Work Cond. Code.....  
Work Type Code.....  
Power Block Flag.....  
Staged By Date.....  
Assign to.....  
Assigned Date.....  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

FERRER I  
WINKLER T  
901227  
FERRER I  
910308  
705.10--0001-321264--200-0110  
JOHNSTON L  
910308  
N  
910312  
3  
000  
A  
CM  
Y  
910308  
FERRER I  
910308

CAPS





Display of Work Item Data

Lead/Supprt Dpt..... 200  
OMG System Window..... 030  
OMG Availability Code... R2

Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS

d.

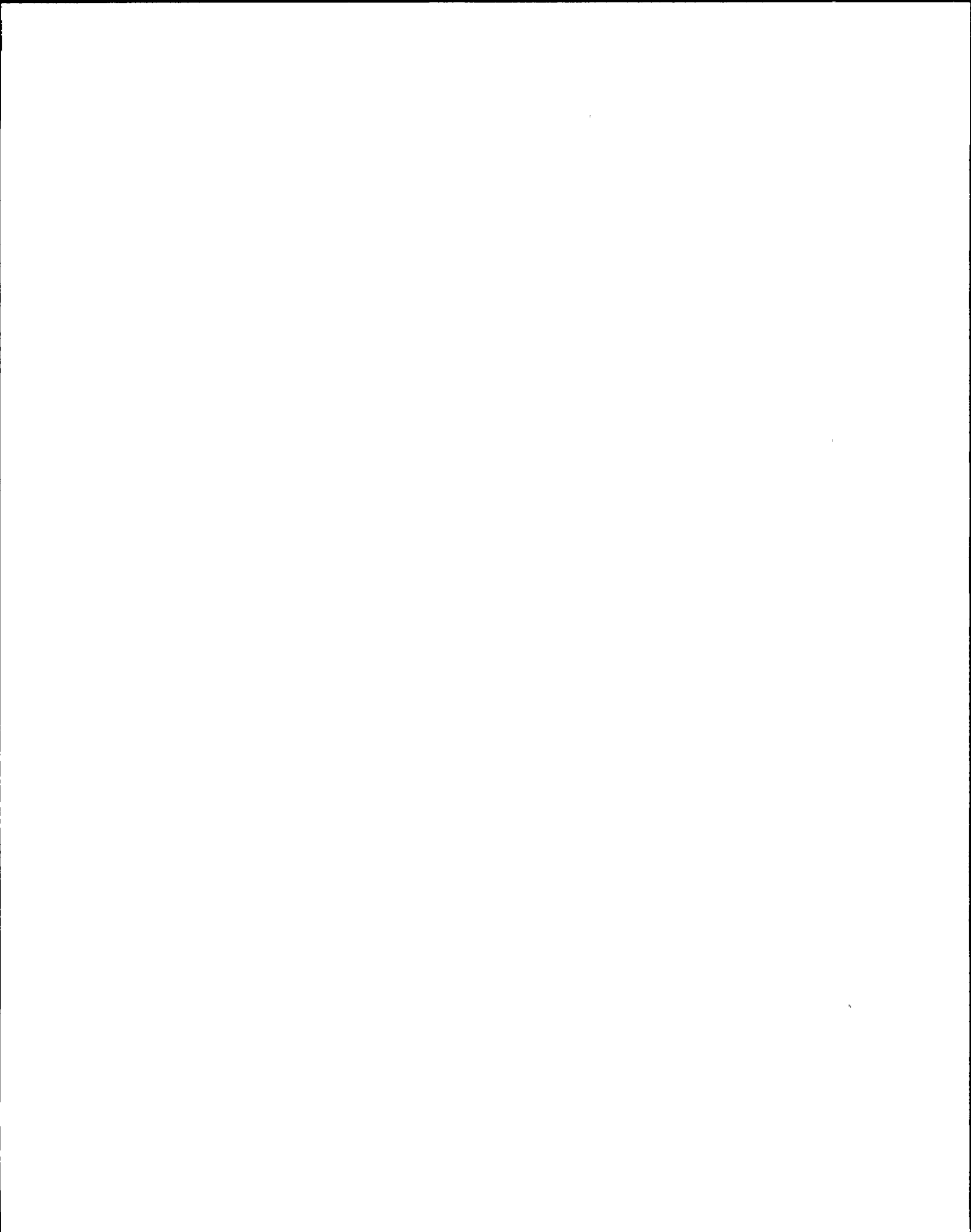
A

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Display of Work Item Data

|  |                 |
|--|-----------------|
| Sched. Start Date.....                       | 910308          |
| SSS Notify.....                              | 910308          |
| Corrective Action.....                       | ISLT SAT        |
| QCIR Nos.....                                | NA              |
| NCR's.....                                   | NA              |
| Completed by.....                            | FERRER I        |
| Completion date.....                         | 910311          |
| Supervisor Review.....                       | GREEN R         |
| Supervisor Review Date..                     | 910311          |
| QC Work Accepted by.....                     | JOHNSTON L      |
| QC Work Accept date.....                     | 910308          |
| PMT Review By.....                           | GREEN R         |
| PMT Rev Date.....                            | 910311          |
| PMT Procedures.....                          | N2-ISI-INSP-036 |
| PMT Test Rpt.....                            | Y               |
| PMT Ver.....                                 | ERON M          |
| PMT Ver Dt.....                              | 910312          |
| Accepted by.....                             | ERON M          |
| Acceptance date.....                         | 910312          |
| Plan LO.....                                 | 910313          |
| Fld Compl Log Dte.....                       | 910312          |
| Lead/Supprt Dpt.....                         | 081             |
| Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?) |                 |

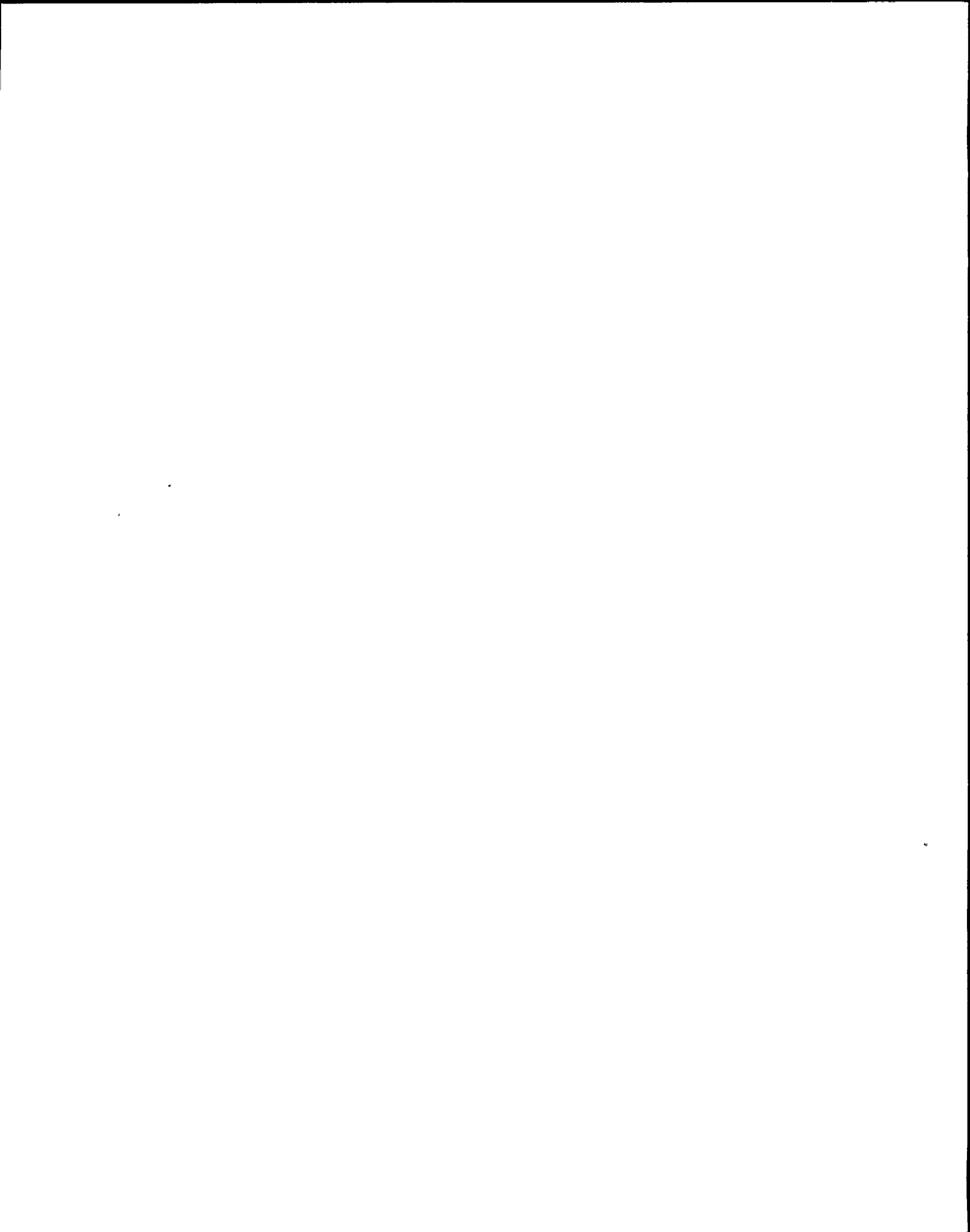
CAPS



Display of Work Item Data  
Completion Entry Date... 910312

Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS

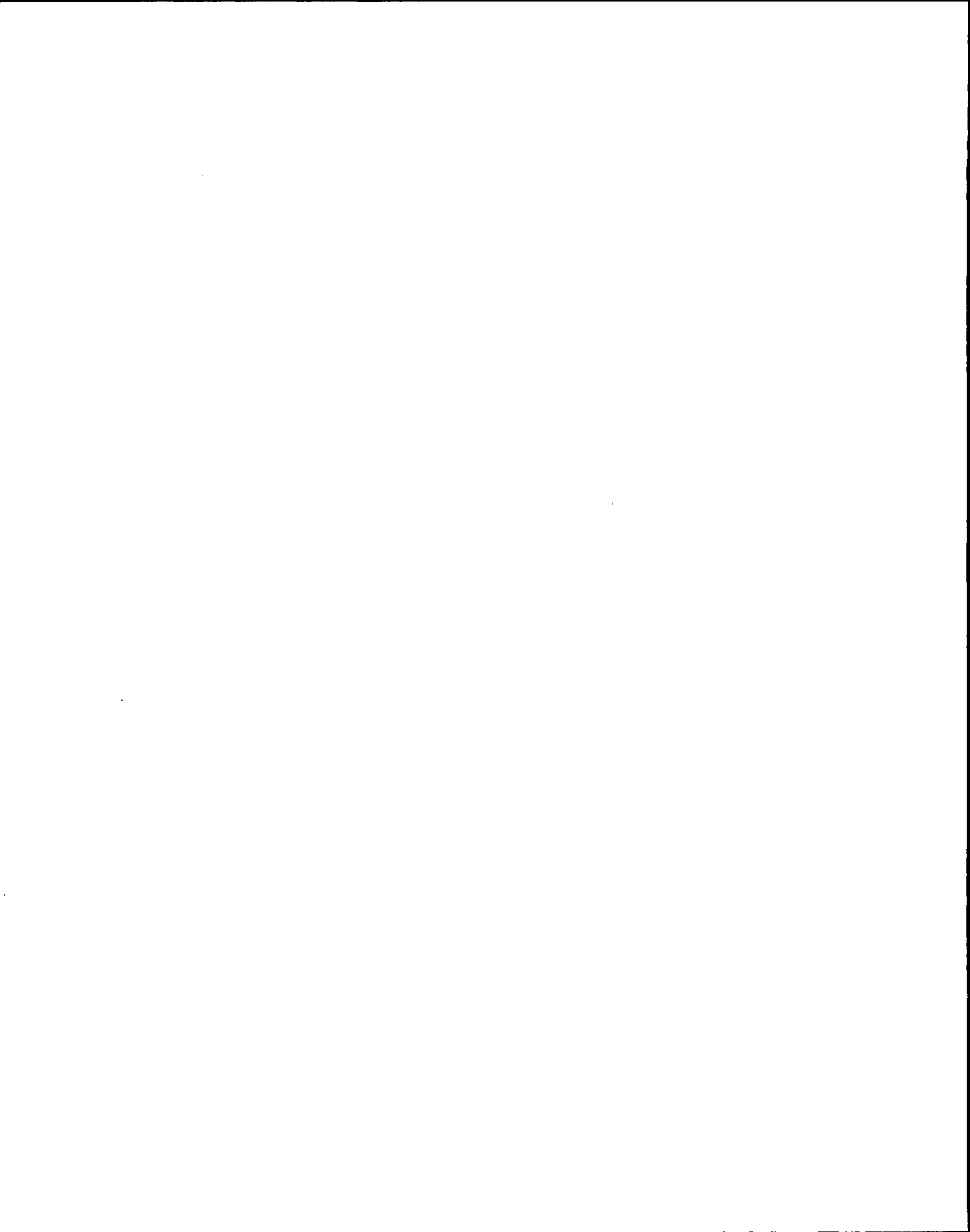


Display of Work Item Data

HIT..... 31  
Work No..... W193115  
Issued..... 910723  
Depart..... 200  
Status..... 0  
Lead or Supprt..... L  
Deficiency Tag Number... 014345  
WCC Status..... 03  
WCC Resp..... OM  
Unit..... 2  
Component No..... 2CNM-MOV84A  
System No..... CNM  
BIP No..... 003  
Safety Class..... NSR  
ASME Component..... N  
Cleanness Class..... B, D  
Title..... BUTTERFLY OR TRICENTRIC V  
Work Item Description... SUSPECT THAT CNM-MOV84A IS HITTING THE MECHANICAL  
STOPS BEFORE THE VALVE IS FULLY CLOSED. ADJUST STOPS  
AS NECESSARY TO ALLOW MOV84A TO CLOSE FULLY. VALVE  
LOCATED; A HEATER BAY 277 LINE FA COLUMN 006. TAG AT  
PNL 851 CR

Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS

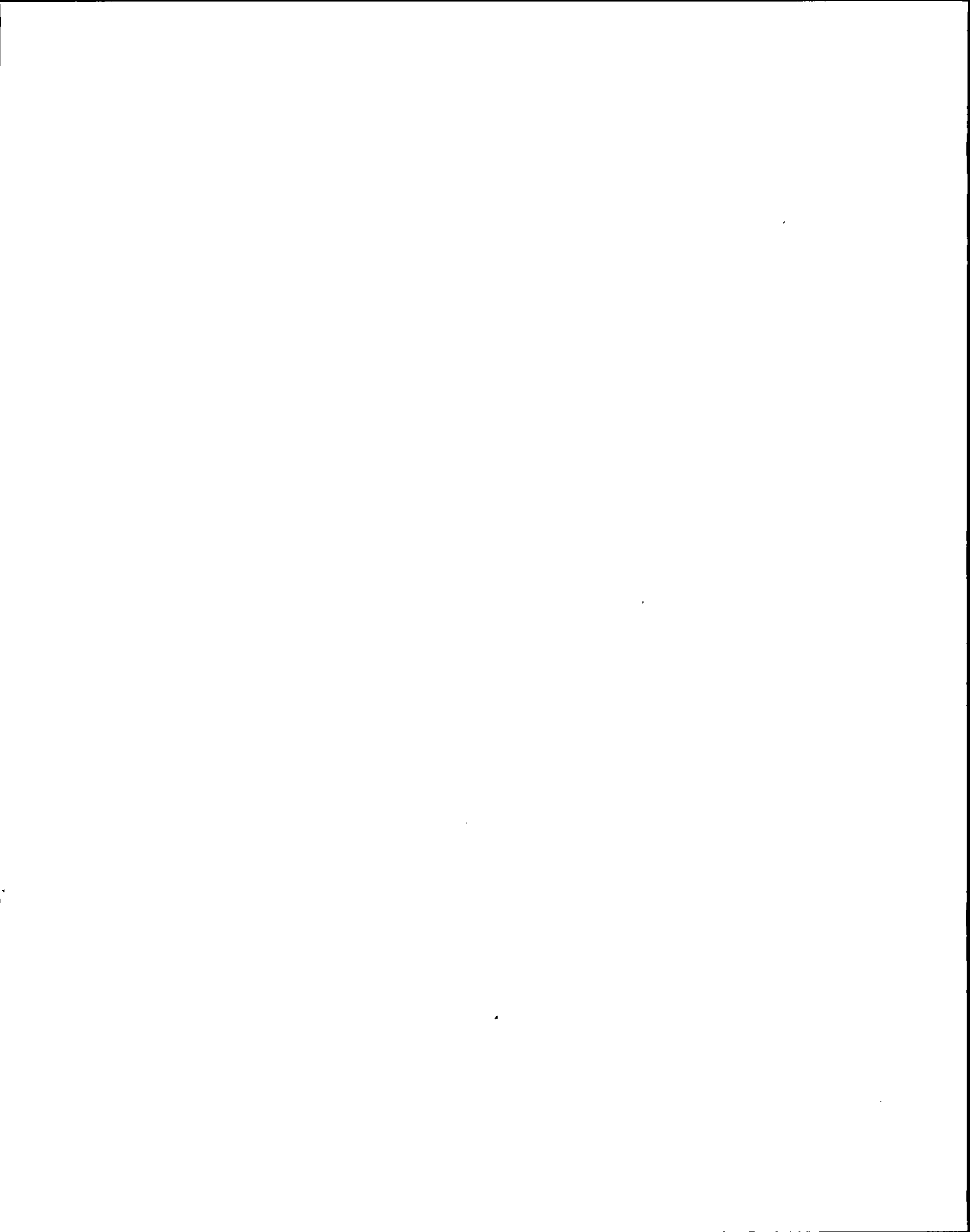




Display of Work Item Data

Location..... HB,277,FA,006.00  
NPRDS Failcode..... B  
Originator..... DAVIS E  
Approved by..... KLEIN E  
Approval date..... 910723  
Received By..... KLEIN E  
Rcvd By Dt..... 910723  
Account Code..... 706.50--9521-321256--200-0110  
QC Review..... SIEMERS W  
QA Review Date..... 910723  
Inspection Req'd..... N  
Left Planning..... 910731  
IP Code..... 3  
Merit Score..... 000  
Work Cond. Code..... D  
Remarks..... MADE ELECT SUPPORT  
Work Type Code..... CM  
Power Block Flag..... Y  
Staged By..... FOX R  
Staged By Date..... 910731  
Proj Crew..... 4  
Proj Dur..... 40  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

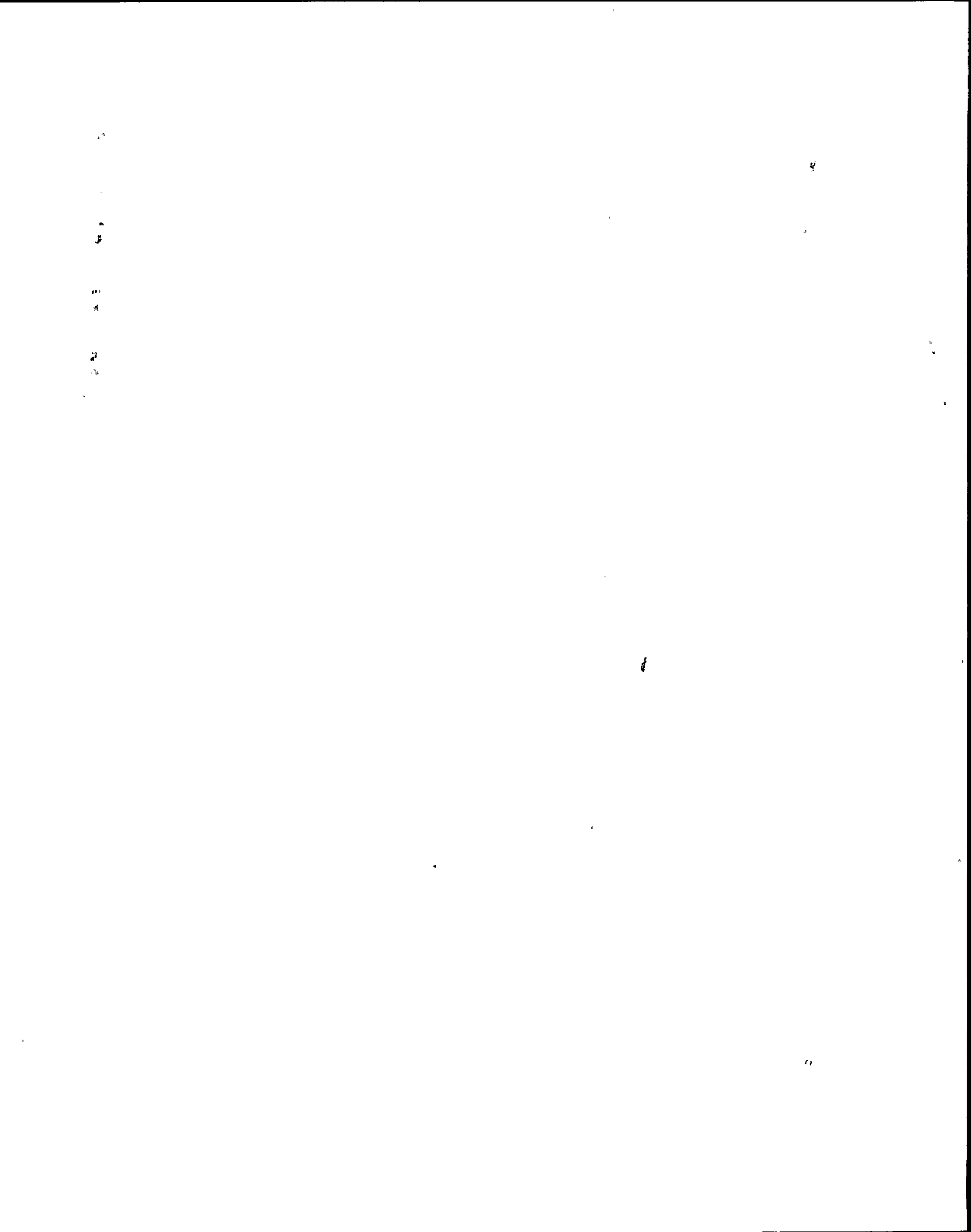
CAPS



Display of Work Item Data

HIT..... 33  
Work No..... W192891  
Issued..... 910817  
Depart..... 100  
Status..... O  
Lead or Supprt..... L  
WCC Status..... 06  
WCC Resp..... EN  
Unit..... 2  
Component No..... 2CNM-MOV84B  
System No..... CNM  
BIP No..... 003  
Safety Class..... NSR  
ASME Component..... N  
Cleanness Class..... B, D  
Title..... BUTTERFLY OR TRICENTRIC V  
Work Item Description... CHECK AND VERIFY TORQUE SETTING. REFER TO EP 410C FOR  
SETTINGS  
Location..... HB,277,FA,007.20  
Originator..... FERRER I  
Approved by..... MURRAY R  
Approval date..... 910817  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS



Display of Work Item Data

HIT..... 32  
Work No..... W192892  
Issued..... 910817  
Depart..... 100  
Status..... O  
Lead or Supprt..... L  
WCC Status..... 06  
WCC Resp..... EN  
Unit..... 2  
Component No..... 2CNM-MOV84C  
System No..... CNM  
BIP No..... 003  
Safety Class..... NSR  
ASME Component..... N  
Cleanness Class..... B, D  
Title..... BUTTERFLY OR TRICENTRIC V  
Work Item Description... CHECK AND VERIFY TORQUE SETTING. REFER TO EP 410C FOR  
SETTINGS  
Location..... HB,277,FA,008.20  
Originator..... FERRER I  
Approved by..... MURRAY R  
Approval date..... 910817  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS

2014-10-10

Display of Work Item Data

Received By..... GIBSON R  
Rcvd By Dt..... 910817  
Account Code..... 706.30--0635-321257--200-0110  
QC Review..... QUEEN S  
QA Review Date..... 910817  
Inspection Req'd..... N  
Left Planning..... 910818  
IP Code..... 3  
Merit Score..... 000  
Work Cond. Code..... D  
Work Type Code..... PL  
Power Block Flag..... Y  
Staged By..... DONAHUE G  
Proj Crew..... 2  
Proj Dur..... 4  
Lead/Supprt Dpt..... 100  
OMG Availability Code... ##, 11, HO

Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS

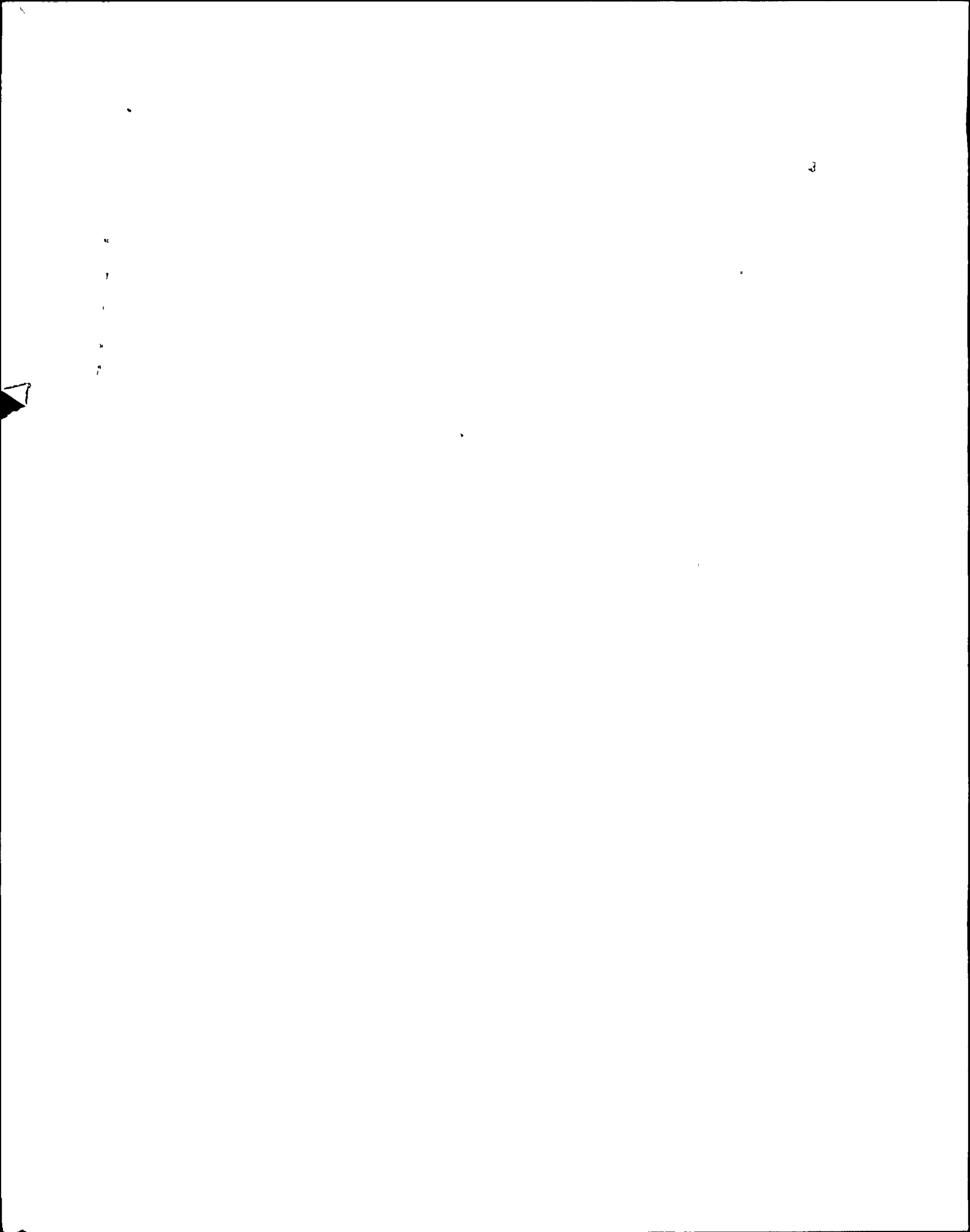




Display of Work Item Data

HIT..... 34  
Work No..... W194591  
Issued..... 910817  
Depart..... 100  
Status..... O  
Lead or Supprt..... L  
WCC Status..... 06  
WCC Resp..... EN  
Unit..... 2  
Component No..... 2CNM-MOV84A  
System No..... CNM  
BIP No..... 003  
Safety Class..... NSR  
ASME Component..... N  
Cleanness Class..... B, D  
Title..... BUTTERFLY OR TRICENTRIC V  
Work Item Description... CHECK AND VERIFY TORQUE SETTING. REFER TO EP 4106 FOR  
SETTINGS  
Location..... HB,277,FA,006.00  
Originator..... FERRER J  
Approved by..... MURRAY R  
Approval date..... 910817  
Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS



Display of Work Item Data

|                          |                               |
|--------------------------|-------------------------------|
| Received By.....         | GIBSON R                      |
| Rcvd By Dt.....          | 910817                        |
| Account Code.....        | 706.30--0635-321257--200-0110 |
| QC Review.....           | QUEEN S                       |
| QA Review Date.....      | 910817                        |
| Inspection Req'd.....    | N                             |
| Left Planning.....       | 910818                        |
| IP Code.....             | 3                             |
| Merit Score.....         | 000                           |
| Work Cond. Code.....     | D                             |
| Remarks.....             | TO SHOP                       |
| Work Type Code.....      | PL                            |
| Power Block Flag.....    | Y                             |
| Staged By.....           | DONAHUE G                     |
| Proj Crew.....           | 2                             |
| Proj Dur.....            | 4                             |
| Assign to.....           | PARKER D                      |
| Assigned Date.....       | 910822                        |
| Lead/Supprt Dpt.....     | 100                           |
| OMG Availability Code... | ##, 11, HO                    |

Option? (NL, Hn, D, DP, SR, RD, RV, S, Q, ?)

CAPS

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