

NUCLEAR POWER GENERATION  
DIABLO CANYON POWER PLANT  
SELF-PACED WBT AND STUDENT HANDOUT

PROGRAM: **MAINTENANCE DEPARTMENT TRAINING**  
COURSE: **MAINTENANCE ORIENTATION TRAINING** COURSE No.: **N/A**  
TOPIC: **MAINTENANCE DEPT. PROCEDURES & POLICIES** TOPIC No.: **PP1**  
LESSON: **MAINTENANCE DEPT. PROCEDURES & POLICIES** LESSON No.: **MS0091/R**  
APPROXIMATE TIME FOR INSTRUCTION: **10 HOURS**

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## Instructor Materials

1. Self-Paced WBT and Student Handout
2. Access to computer terminal

## Student Materials

1. Access to computer terminal

## Lesson References

1. See Lesson References on page 7 of this lesson guide.

## Remarks

1. This lesson guide is also used to present refresher orientation training MS0091R.
2. Target Audience can include: Maintenance Services personnel, PG&E TA's (Temporary Additional's), vendor task specialists and staff augment contract maintenance workers.
3. Learning objectives for "Working with Asbestos", "Working in Confined Spaces", & "Working at Heights" are in the Fire Safety Services (FSS) training program.
4. Learning objectives for Clearances and Tagging are found in CLETAG training module.
5. TIP 21152-Learning objectives for SISIP are removed, incorporated in JITTSISIP102
6. TIP 20702-Action 1 incorporated to remove MS policy 30 from lesson plan
7. TIP 20040-Action 1 incorporated to include recommendation 12C from SOER 09-1, Shutdown Safety
8. TIP 21762-Added objective material for N002225, "bumping"
9. TIP 19550-Action 1 incorporated to add information from SOER 85-2 regarding valve position
10. TIP 18983-Placekeeping section revised
11. TIP 21148-Added objective material for Maintenance operation of plant equipment
12. TIP 21966-Revised objectives A5 and A4
13. TIP 22201-Documents major re-write of lesson

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## Objectives

### Terminal Objective A

Describe the Procedure Use and Adherence requirements associated with maintenance at DCPD.

Number	Enabling Objective Description
A1	Explain the purpose and importance of using controlled procedures to perform plant maintenance.
A2	Describe how to obtain procedures and other controlled documents to support plant maintenance, and how to get them "Issued for Use".
A3	Explain what to do if an error is found in a procedure or if the scope of the procedure does not cover the job.
A4	Describe placekeeping, verbatim compliance and level of use.
A5	Explain self, concurrent, dual and independent verification and component flagging.
A6	Describe the roles of the Nuclear Regulatory Commission (NRC) and the Institute of Nuclear Power Operations (INPO) in the operation and maintenance of DCPD.
A7	State management's expectations concerning the use of qualified personnel.

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**Objectives**, continued

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<b>Terminal Objective B</b>	Describe the Industrial Safety responsibilities of maintenance department personnel at DCPD.
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Number	Enabling Objective Description
B3	Describe the Safe Work Practices associated with working on, in, or near: <ul style="list-style-type: none"> <li>• Over/In Water Tanks or the Intake Structure.</li> <li>• Double Hearing Protection</li> </ul>
B4	Describe the proper labeling and storage of Hazardous Materials.
B5	Describe the proper handling, transportation and use of Hazardous Materials.
B6	Describe the proper inspection and use of commonly used electrical components (e.g. drop lights, extension cords, and hand held power tools).
B7	Explain the inspection and proper use of Safety Equipment.

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## Objectives, continued

**Terminal  
Objective C**

Describe the requirements and activities associated with performing maintenance at DCPD.

Number	Enabling Objective Description
C1	Differentiate between “Safety Related” and “Non-Safety Related” parts and equipment to include handling, storage and identification requirements.
C2	Describe the proper disposal methods for job site waste.
C3	Describe the communication standards used at DCPD.
C4	Explain the requirements and controls for vehicle operation at DCPD.
C5	Explain the responsibilities of individual workers associated with the Boric Acid control program at DCPD.
C6	Describe the use and control of M&TE at DCPD.
C7	Describe the following documents and terms: Final Safety Analysis Report, Technical Specifications, Limiting Conditions for Operation, Equipment Control Guidelines and Licensee Event Reports.

*Continued on next page*

**Objectives**, continued**Terminal  
Objective D**

Describe the work control processes associated with performing maintenance at DCPD.

Number	Enabling Objective Description
D1	Describe the Work Control process to include types of work control vehicles per AD7.DC8.
D2	State the purpose and contents of a Work Package to include: <ul style="list-style-type: none"> <li>• Notification</li> <li>• Order/Operation</li> <li>• Work Authorizations</li> <li>• Data sheets</li> <li>• References (procedures, vendor manuals, &amp; drawings)</li> <li>• Spare parts and Dedication sheets</li> <li>• Required Permits</li> <li>• Evaluation of Failed Parts</li> <li>• Hold Points</li> </ul>
D3	Describe what “Signature Responsibilities” are and the proper way to document work activities in the Work Package.
D4	Describe the importance of station configuration control to include: <ul style="list-style-type: none"> <li>• Temporary alterations</li> <li>• Temporary attachments</li> <li>• Mispositioned plant components (to include bumped components)</li> <li>• Maintenance operation of plant components</li> <li>• Door impairments</li> <li>• Fire barriers</li> </ul>
D5	Describe the actions to take when drawings disagree with as-built configurations.
D6	Describe conditions, which would require a revision to a Work Package, and the steps involved.
D7	Describe what “Environmental Qualification” (EQ) is, and the requirements to work on EQ equipment.

*End of Objective List*

## Introduction

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**Lesson Name** This lesson covers Maintenance Department Procedures & Policies.

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**Purpose** The purpose of this lesson is to introduce maintenance personnel to DCPD maintenance conduct requirements.

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**Applicability** This lesson applies to all DCPD personnel (PG&E and contractor) involved in Maintenance work performed on plant equipment.

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*End of Introduction*

## Lesson References, continued

Lesson References		
	1.	ACAD 92-008 Guidelines for Training and Qualification of Maintenance Personnel.
	2.	IDAP AD2.ID1 Procedure Use and Adherence
	3.	IDAP AD3.ID2 Distribution, Control, and Use of Design Drawings, Field Drawings and Operation Valve Identification Diagrams
	4.	IDAP OM6.ID1 Injury and Illness Prevention Program
	5.	IDAP OM6.ID3 Rules for Entering and/or Working in Confined Spaces
	6.	IDAP OM6.ID4 Personal Safety and Protective Equipment
	7.	IDAP OM6.ID13 Safety at Heights and Associated Equipment
	8.	IDAP AD5.ID1 Independent Inspection Program
	9.	IDAP OM8.ID1 Fire Loss Prevention
	10.	IDAP OM8.ID2 Fire System Impairment
	11.	IDAP CF5.ID2 Control of Material in Storage
	12.	IDAP CF4.ID8 Temporary Attachments
	13.	IDAP MA2.ID1 Use and Control of Measuring and Test Equipment
	14.	IDAP CF4.ID7 Temporary Alteration
	15.	DLAP OP1.DC18 Authorization of Equipment Operation, Maintenance, and Testing
	16.	IDAP HR2.ID1 Signatures and Signature Responsibilities
	17.	PD MA1 Maintenance
	18.	IDAP OM7.ID1 Problem Identification and Resolution
	19.	IDAP AD4.ID1 Housekeeping
	20.	IDAP AD4.ID7 Cleanliness Controls for Corrosion-Resistance Alloys
	21.	IDAP CF5.ID12 Consumable Material Control
	22.	IDAP CF3.ID3 Environmental Qualification (EQ) Program
	23.	PG&E Accident Prevention Rules Book/Code of Safe Practices
	24.	Maintenance Services Policy No. 15, "Expectations for verifying electrical clearance points policy"
	25.	DLAP OP1.DC10 Conduct of Operations (Communication Standards)
	26.	IDAP ER1.ID2 Boric Acid Corrosion Control Program
	27.	DLAP AD7.DC8 Work Control
	28.	DLAP AD7.DC9 Maintenance Organization Procedure Use
	29.	IDAP OP1.ID5 Verifications and Checks
	30.	IDAP OP1.ID6 Definition and Measurement of Mispositioned Plant Components
	31.	SOER 85-2, Valve Mispositioning Events Involving Human Error
	32.	SOER 09-1, Shutdown Safety
	33.	DLAP MA1.DC54, Conduct of Maintenance
	34.	IDAP OM6.ID12, Electrical Safety Program

*End of References*

# PROCEDURE USE AND ADHERENCE REQUIREMENTS

## Purpose and Importance of Controlled Procedures

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**Objective A1** Explain the purpose and importance of using controlled procedures to perform plant maintenance.

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**Introduction** During maintenance at Diablo Canyon Power Plant (DCPP), it is very important to the safety of the general public, fellow workers and the safety of the nuclear reactor that all maintenance is performed correctly. To accomplish this, all work at DCPP is performed by well-engineered, written and approved work control documents.

Some of the Controlled Documents used to perform work are:

- Administrative Procedures
  - Maintenance Procedures
  - Vendor Manuals
  - Drawings
- 

**Controlled Procedures and Documents** All work is to be performed using controlled documents. Controlled documents:

- Someone is assigned the responsibility for them.
  - Measures are in place to prevent the use of outdated or inappropriate documents.
  - Processes are in place to incorporate approved changes.
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**Locating Controlled Documents** Once it is approved, a controlled copy is maintained on DCPP's computer network in the Electronic Document Management System (FileNET), the internet (intranet) based Procedure Navigator and in Controlled Procedure Manuals.

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*End of Objective*



## Obtaining Procedures to do Work

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**Objective A2**

Describe how to obtain procedures and other controlled documents to support plant maintenance, and how to get them “Issued for Use”.

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**Obtaining a Procedure**

During performance of work there will be many occasions when a copy of a procedure will be needed. To obtain a copy of the procedure you need:

- ask your supervisor or work planner to print you a copy, or
- if you have access to FileNET / Procedure Navigator, print it yourself.

If an immediate change was made to a controlled document, it will not be available via computer and must be obtained as a hard copy.

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**Obtaining a Procedure**

To ensure workers in the field are working from current revisions of these controlled documents, **they must be “Issued for Use” before they are used.** Anyone can issue a document for use per AD2.ID1, including trained craft personnel. If, however, trained craft personnel are unavailable, then it is normally the supervisor or planner.

Issued for Use:

- Any controlled documents used for work in the plant shall have the following information:

ISSUED FOR USE By: \_\_\_\_\_ Date: \_\_\_\_\_ Expires: \_\_\_\_\_

- The issued for use period may be up to 31 days.
- Ensure that the controlled document has been issued for use and revalidated prior to starting work during your shift.
- If you find the controlled document you are using has been revised or is otherwise in error, notify your supervisor.
- Any drawing reproduced from FileNet, a photocopy, electronic media or microfilm, shall be considered "For Information Only" until verified in SAP (computer software for controlling maintenance work) as current.

**Remember**, all documents used to perform work on the plant’s systems and components **MUST BE** “Issued for Use”.

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*End of Objective*

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## Correcting Errors in Procedures

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**Objective A3**

Explain what to do if an error is found in a procedure or if the scope of the procedure does not cover the job.

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**Introduction**

During the performance of a job you may find that there is a problem with what your work control documents are saying. This may be caused by:

- errors in the procedure
- job requires out of the ordinary actions
- wrong procedure is referenced

It is Diablo Canyon management's expectation that all personnel adhere to the procedures, but employ their knowledge, experience and a questioning attitude when doing a job. AD2.ID1 specifies:

Perform all procedures exactly as written. Contact your supervisor if you can't follow the procedure for any reason.

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**Getting a Procedure Changed**

If any of these deficiencies exist while following a procedure.

- A procedure deficiency affects its technical content.
- A procedure deficiency induces additional risks to equipment and/or personnel.
- The procedure simply cannot be performed as written.
- There are unforeseen results or situations.
- The procedure is not appropriate for the task.

Then the procedure performer shall:

- Stop.
- Place affected plant equipment in a safe condition.
- Discuss the problem with your supervisor.

There are four methods of revising procedures. Three methods allow relatively rapid changes in addition to the normal revision process.

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## Correcting Errors in Procedures, continued

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**Summary**

If a procedure problem is found, do the following:

**STOP!**

**Place your work in a safe condition.**

**Contact your supervisor!**

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*End of Objective*

## Using Procedures

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**Objective A4** Describe placekeeping, verbatim compliance and level of use.

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**Introduction** It is management's expectation that you adhere to procedures, but employ your knowledge, experience and a questioning attitude to perform your work. Verbatim Compliance and Level of Use are two terms you may hear, in regards to adhering to procedures.

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**Placekeeping** During work activities, workers constantly shift their attention between work instructions, indicators, equipment, data sheets, and attachments. Placekeeping is a tool to help minimize human performance errors as workers progress through lengthy procedure, order (order/operations are work control documents that will be discussed in a later section), or vendor manual instructions. Placekeeping allows workers to keep track of their place in the work document so steps are not inadvertently missed or performed out of sequence. When job delays occur or shift turnovers take place, placekeeping also helps the worker locate the last step performed before the interruption.

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**Applicability** Placekeeping is applicable to the following documents:

- All maintenance working level procedures.
- Orders (controls work in the plant) with no signoffs for work steps.
- Vendor manuals where step-by-step work instructions are used to perform the activity.
- Drawings where step-by-step work instructions are used to perform the activity.

Workers may use placekeeping in any document when they consider the existing signoffs are not sufficient to minimize errors.

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## Using Procedures, continued

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### How to Use Placekeeping

- When the step is initiated, circle the step number or bullet. This includes cautions and notes and must be read **prior** to step performance.
- When the step is complete or marked N/A, slash through the circle prior to proceeding to the next step.

For an example, refer to the Site Standards Handbook

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### Repeating Procedure Steps

If performing multiple passes through a series of steps is planned, use additional circle/slash in the left margin maintaining horizontal alignment.

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## Using Procedures, continued

### Verbatim Compliance

This is a very strict application of procedural compliance. Verbatim means “word for word”, therefore, verbatim compliance means **following the procedure word for word.**

A “Shall” statement is a procedural requirement that must be performed.

### Level of Use

Level of use describes how you utilize the procedure during the actual job. Depending on the criticality of the work, dangers involved, or your familiarity with the procedure, you may need to refer to the procedure more or less often during the actual work. DCPD management has recognized this, and has defined 4 levels of use.

Level of Use	Description
Continuous	Each step is read and performed one step at a time.
Periodic	Segments of the procedure are read prior to, during, or after performance to verify completion.
Reference	Activities are performed by memory in accordance with the procedure.
Multiple	Procedure contains segments requiring different levels of use, specifically continuous and periodic.

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## Using Procedures, continued

**Continuous Use** In hand, continuous use is used when the task is critical.

When is it used?	<p>Continuous use is the most conservative level of use classification.</p> <ul style="list-style-type: none"> <li>• <u>Use continuous use when you cannot undo a mistake.</u></li> <li>• This classification typically involves equipment operations that could have significant negative consequences.</li> <li>• Continuous use is normally not applied to low risk activities.</li> </ul>
How do I use it?	<ul style="list-style-type: none"> <li>• Follow the procedure as written or stop and request a change or correction.</li> <li>• Use STAR (Stop, Think, Act, Review).</li> <li>• Read each step prior to performing the step. For this classification to be effective, the user must act immediately after reading the step without any distractions.</li> <li>• If a reader is used, the performer acknowledges completion of each step.</li> </ul>
Where is the procedure?	The procedure shall be at the job site and in-hand to the greatest degree practical.
What about the sequence of steps?	The <u>sequence of steps shall be followed in order</u> unless otherwise provided for within the specific procedure.
What about sign-offs?	Sign-off each step when completed and prior to proceeding to the next step.
Example	Procedures that may have an immediate effect on operating equipment such as causing a plant transient, plant trip, safeguards actuation, or license violation.

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## Using Procedures, continued

### Periodic Use

Periodic use is used when the task is less critical and immediate results of an error in following the procedure would not result in a personnel safety concern or equipment damage.

When is it used?	<p>Periodic use is a less conservative level of use classification.</p> <ul style="list-style-type: none"> <li>• <u>Use periodic use when you can undo a mistake.</u></li> <li>• This classification is selected in cases where you can recognize and correct mistakes before completing a procedure segment or activity.</li> <li>• This classification typically involves work on cleared equipment with no chance of affecting other equipment or systems. Usually, significant mistakes will be caught prior to returning the equipment to service.</li> </ul>
How do I use it?	<ul style="list-style-type: none"> <li>• Follow the procedure as written or stop and request a change or correction.</li> <li>• The user must read the relevant instructions each time a task is performed. How many instructions are read (a single step, group of steps, or procedure segment) is dependent on the user's familiarity and experience with the activity, as well as his or her recollection abilities.</li> <li>• Review each procedure segment before, during, or after performing that segment. Depending on the user's experience, memory, and elapsed time, a segment may range from a complete subsection to one step.</li> </ul>
Where is the procedure?	Generally, the procedure should be at the job site. However, there may be times when it is unnecessary, such as only one step must be performed.
What about the sequence of steps?	The <u>sequence of steps shall be followed in order</u> unless otherwise provided for within the specific procedure.
What about sign-offs?	When required, sign off steps as soon as practicable after completion but not later than the end of shift in which the activity was performed.
Examples	Portions of procedures involving overhaul and preventive maintenance on equipment already removed from service.

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## Using Procedures, continued

**Reference Use**     Reference use is applied to a procedure that is performed frequently (daily) and it would be reasonable to expect someone to perform the procedure from memory without error.

When is it used?	Reference use is the least conservative classification. <ul style="list-style-type: none"> <li>• <u>Use reference use for very simple maintenance tasks and most administrative tasks.</u></li> </ul>
How do I use it?	<ul style="list-style-type: none"> <li>• Follow the procedure as written or stop and request a change or correction.</li> <li>• This classification requires the user to review the procedure as often as needed (e.g., prior to performing it) to ensure the activity is being performed completely and correctly.</li> </ul>
Where is the procedure?	There is no need to have the procedure at the job site provided the user is knowledgeable of its requirements.
What about the sequence of steps?	The <u>sequence of steps shall be followed in order</u> unless otherwise provided for within the specific procedure.
What about sign-offs?	Perform needed sign-offs as soon as practical but not later than end of shift.
Examples	Bolting, equipment lubrication

**Multiple Use**     Multiple use is employed when more than one of the above types of use is warranted.

One procedure may contain segments requiring different levels of use. Follow the requirements for the appropriate level of use classification for each procedure segment.

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## Using Procedures, continued

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**Level of Use Policy**

Maintenance Services procedures issued for use shall indicate the minimum level of use.

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**Determining Level of Use**

The procedure minimum level of use will normally be indicated by the following:

- Print the procedure from the Procedure Navigator <http://www.npg/ps/procnv.htm>. The procedure will include a cover sheet that indicates the minimum level of use.
  - The supervisor has the authority to require a more restrictive level of use due to worker inexperience, unusual circumstances, etc.. (Continuous Use is the most restrictive; Reference Use is the least restrictive.)
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**Assigning Level of Use During Pre-Job Brief**

Normally a Pre-Job Brief (Tailboard) is given by the supervisor who will explain or assign the procedure “level of use”.

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## Using Procedures, continued

### Pink Card or Pre-Job Brief Card

Below is an example of a “pink card”. These cards should be utilized as a guideline check off sheet when a Pre-Job Brief is being presented.

What are the <b>safety risks</b> to you or anyone else during the performance of this work?
<ul style="list-style-type: none"> <li>• Perform a Job Hazard Analysis at the job site</li> </ul>
<ul style="list-style-type: none"> <li>• Verify you have the required qualification for this task using PIMS, Qual Tracker, or e-mail.</li> </ul>
Do you have the required quals for this task?
<ul style="list-style-type: none"> <li>• Verify using PIMS, Qual Tracker, or e-mail</li> </ul>
<b>Summarize</b> the critical steps.
<b>Anticipate</b> errors for each critical step and relevant error precursors.
<b>Foresee</b> probable and worst-case consequences should an error occur during each critical step.
<b>Evaluate</b> controls or consequences at each critical step to prevent, catch, and recover from errors, and to reduce their consequences.
<b>Review</b> previous OE and lessons learned relevant to the specific task and critical steps.
Review and understand the clearance scope and points involved
<ul style="list-style-type: none"> <li>• Is the clearance adequate for the work?</li> <li>• Was it verified against the applicable drawings</li> <li>• Are there special instructions or precautions outlined in the clearance notes section?</li> </ul>
Verify Procedural requirements including:
<ul style="list-style-type: none"> <li>• Is the revision correct and issued for use?</li> <li>• Is the type of usage clear and understood?</li> <li>• Are the place keeping methods understood?</li> </ul>
Are personnel responsibilities clear?
What ALARA concerns are there for this work?
Do you know your RWP/SWP number, PED settings, and expected dose?
Are FME requirements provided and understood?
What verification practices will be used for this task?
How is plant status control maintained during component manipulations?

Revision 09/15/2008

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## Using Procedures, continued

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**Procedure Use  
General  
Expectations**

The following is a summary of procedure use general expectations:

- Clearly understand work procedure prerequisites and precautions.
  - If the procedure contains any initials, signatures, or data collection, performers shall print their name and write their initials on the governing work package. All performers shall be identified in the procedure or work package unless their actions or the results of their actions are observed by a performer that is identified.
  - If both a procedure and a vendor manual or drawing exist for the same activity, you shall use the procedure.
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**Excessive Out  
Of Tolerance  
Conditions**

If the as-found data is outside the desired tolerance by more than a factor of three, stop your work and contact your supervisor.

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*End of Objective*

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## Performing Verifications

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**Objective A5**

Explain self, concurrent, independent and dual verification and component flagging.

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**Introduction**

At Diablo Canyon we have different types of verifications that we use, to ensure the safety and quality of our work. They are:

- Self-checking
  - Concurrent verification
  - Dual verification
  - Independent verification
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**Self-Checking  
STAR**

Self-checking is an expected standard of performance for personnel at all times during their daily work activities. Self-checking helps ensure that the action being taken is correct before manipulating any equipment. Self-checking is accomplished using the STAR Method of Verification: STOP-THINK-ACT-REVIEW

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**Concurrent  
Verification**

A series of actions by two individuals working together at the same time and place to separately confirm the condition of a component before, during, and after an action.

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**Independent  
Verification**

A series of actions by two individuals working independently to confirm the condition of a component after the original act that placed it in that condition.

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**Dual  
Verification**

A series of actions by two individuals, working together at the same time and place or working independently, to separately confirm completion and correctness of actions during activities on equipment removed from service.

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## Performing Verifications, Continued

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**Verification Practices:  
When do we use them?**

Various letters are normally used in governing work documents, procedures, or data sheets to identify verifications:

- Independent verifications are usually marked as IV or independent.
  - If the verification space is identified with the letters CV or CIV, concurrent verification is required.
  - If the verification space is identified with the letters VERF, concurrent verification is required unless directed by your supervisor.
- 

**Flagging**

Flagging refers to the process of identifying plant components to be worked on by use of a temporary label (flag).

Flagging shall be used on field installed equipment to help consistently manipulate the correct component by denoting the correct component to perform work on. This is known as CCV, correct component verification.

Identify the component to be flagged using self-checking:

1. Flags can be any of the following:
    - Information tag(s)
    - Ribbon(s)
    - Sticker(s)
    - Magnetic device(s)
    - Wire clip(s)
  2. Remove CCV flag(s) when leaving the job site.
  3. Reapply CCV flag upon return to the job site as part of the two minute rule.
  4. Remove flagging device(s) when work is complete.
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*End of Objective*

## Auditing Agencies

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**Objective A6** Describe the roles of the Nuclear Regulatory Commission (NRC) and the Institute of Nuclear Power Operations (INPO) in the operation and maintenance of DCP.

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**Introduction** Working in Nuclear Power involves working with many outside agencies. Two agencies we work with often are the NRC and INPO. These agencies play very important roles in our operation of the plant and you should be aware of them.

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**NRC** The Atomic Energy Act by congress created the Nuclear Regulatory Commission to oversee the use of nuclear power. The NRC has the responsibility for inspection and enforcement of the regulations. We have a Resident NRC Inspector on site and there are bulletin boards posted around site providing you with information on the NRC and your rights.

There are times when inspection or audit teams perform routine or special inspections. You may be approached on the job by NRC Inspectors during your work at DCP. Cooperate and provide truthful accurate job information as requested. There are laws with penalties against providing false information to the NRC. If you don't know the requested information or are not sure, direct them to your supervisor. Inform your supervisor if the NRC requested information from you to ensure they receive any additional support.

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**INPO** The Institute of Nuclear Power Operations is an industry group that provides guidelines for the operation and maintenance of the plant. INPO conducts inspections and audits we need to cooperate with them. Inform your supervisor know of any job interactions you have with INPO auditors. Your supervisor needs to stay informed in case a question comes up later about the INPO audit.

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*End of Objective*

## Worker Qualification

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**Objective A7** State management's expectations concerning the use of qualified personnel.

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**Use of  
Qualified  
Personnel**

Plant procedures require that only qualified technicians perform work for which a qualification is required. At DCPD before the performance of an assigned job or task either the worker or the supervisor must insure by checking either the web based qualification tracker or the PIMS database program that the worker who is doing the work is officially qualified to do that job or task.

As a worker at DCPD you must ensure that this qualification check has been performed prior to working on equipment that requires a qualification. If you do not have computer network access, contact your supervisor.

If there is a change to the work scope that could change the task that you were verified qualified to perform, then you shall stop work and see your supervisor to verify if you are still qualified to continue work.

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*End of Objective*



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## Industrial Safety Work Practices

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**Objective B3** Describe the Safe Work Practices associated with:

- Over/In Water Tanks or the Intake Structure.
  - Double hearing protection.
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**Over Water /In  
Tanks or the  
Intake  
Structure**

If you are working in, over or near water, you must wear a Coast Guard approved life vest, or an adequately secured safety line, if there is a possibility of falling into water, which is deep or dangerous. Also, an approved life vest is required if working in/on boats or watercraft.

Life vests are not required if you are protected from falling by handrails or walls.

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**Double Hearing  
Protection  
AR # A0668385**

Double Hearing Protection:

- **If diesel engine is able to start**, double hearing protection is required to be **on your person** as follows:
    - Single foam plugs in ear with muffs on ears that can be lifted away from the ear to communicate – Recommended
    - Single foam plugs in ear with ear muffs on hard hat
    - Single foam plugs in ear with ear muffs around neck
  - Double hearing protection **must be worn when diesel is starting or running**.
  - Hearing protection is not required in diesel room when a diesel engine is cleared for maintenance.
  - Single hearing protection is **not** adequate to ensure protection from hearing damage during start or while diesel is running.
  - The diesel start motors are louder than a shotgun blast. Hearing damage can occur within 30 seconds without adequate protection.
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*End of Objective*

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## Labeling and Storage of Hazardous Materials

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**Objective B4** Describe the proper labeling and storage of Hazardous Materials.

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**Definition** Approved hazardous waste containers are containers made of plastic or metal compatible with the waste to be contained. Flammable or combustible waste shall only be stored in metal containers unless approved by the Safety and Fire Protection Group.

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**Responsibilities** At DCPD hazardous materials can only be stored in designated Workplace accumulation areas (WPAA's) and temporarily at the job site. For more information contact your supervisor.

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**Labeling of Hazardous Materials** As mentioned in other training, all containers of hazardous material **MUST** be identified by its **GREEN LABEL** except for low hazard material in its original container and aerosol cans. The tool rooms, Warehouse, Intake office and Fab shop are locations to get Green Labels. Whenever you dispense material into a breakdown container, label the container first. If you have difficulty getting the correct green label, contact your supervisor.

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*Continued on next page*

## Labeling and Storage of Hazardous Materials, continued

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### Storage of Hazardous Materials

DCPPs Hazard Communication Program (Procedure EV2.ID1) contains storage requirements for hazardous materials. The program has divided the hazardous materials into 6 groups:

- RED — Combustible and Flammable materials.
- YELLOW — Reactive Chemicals.
- ORANGE — Low Hazard Chemicals.
- WHITE A — Inorganic Acids.
- WHITE B — Alkaline products.
- BLUE — Poisonous Chemicals.

Some materials are not compatible to be stored with each other and may cause a fire, for more information on hazardous material storage contact your supervisor.

NOTE: THE STORAGE LOCKER COLOR MAY NOT MATCH THE STORAGE COLOR CODE!

THE STORAGE COLOR CODE IS TYPED ON A WHITE STICKER ON THE FRONT OF THE LOCKER, NO MATTER WHAT COLOR THE LOCKER IS!

Example: Flammable materials storage coded RED are normally stored in lockers that are painted YELLOW.

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*End of Objective*

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# Handling Hazardous Materials

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**Objective B5** Describe the proper handling, transportation and use of Hazardous Materials.

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**Introduction** There are Federal, State and local laws to protect the health and safety of workers when dealing with hazardous materials. Diablo Canyon has several programs to satisfy these laws and protect employees.

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**Before  
Handling  
Hazardous  
Materials**

Before you handle any hazardous materials you must review the safety information associated with that product. The sources of this information are:

Material Safety Data Sheet (MSDS) — document the manufacturer provides which contains safety information such as:

- Material identification data
- Occupational exposure limits
- Fire/explosive properties
- Reactivity (chemical) data
- Health hazards data
- Spill, leak, disposal procedures
- Special precautions

Green Label — the DCPD label which provides:

- Material identification data and stock code
- Storage group color information
- Approval status for use in the Radiological Controlled Area (RCA)
- Health and Safety data
- Handling information (personal protective equipment, material hazards and storage information)
- Spill response and disposal information

Also, you should have a Pre-Job Brief with your supervisor and discuss the hazards involved and job expectations.

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*Continued on next page*

## Handling Hazardous Materials, continued

### Handling, Use, & Transport

When your job involves using hazardous materials, follow the steps below:

Step	Action
1	Review green label and Pre-Job Brief job with supervisor.
2	Obtain any Personal Protective Equipment (PPE).
3	If material poses contact hazards to the skin or eyes, locate the eye wash/chemical shower in job location. If the eye wash/ chem. shower location not appropriate or not available, contact your supervisor to obtain portable units. Verify equipment is able to function if required.
4	Label containers per the green label program.
5	Take care not to cause a spill, and minimize hazardous waste produced by the job.
6	Be attentive to symptoms associated with the Health and Safety information for the material.
7	Properly dispose of all wastes associated with the job, and return all unused material to the proper storage location.
8	If a personal exposure or spill occurs, perform immediate actions and call 779.

*Continued on next page*

## Handling Hazardous Materials, continued

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### Consumable Materials

To protect certain metals, such as stainless steel and Inconel (super stainless steel) from corrosion, certain chemical contaminants must not contact these metals.

Consumable materials are items like tape, glue, oil, or solvent, in other words, materials that are used in our day to day work activities. DCPD has an approved Consumable Material List, which identifies approved items (Category A), controlled items (Category B), and disapproved items (Category C).

Only approved items and controlled items when directed, can be used on stainless steel and on the water side of the feed and condensate systems. Controlled items are also restricted from general use in the RCA. The list can be found on the DCPD internet (intranet). Also, tool rooms may have a copy of the list.

Another way to tell if a material is allowed for use in the RCA or on stainless steel anywhere in the plant, is to look on the Green Label. A block on the Green Label will have one of four responses:

USE on S/S?

1. Yes (Category A) (unrestricted use anywhere in the plant)
2. Yes w/permission (Category B) (may be used in the RCA or on stainless steel only with written instructions in an Operation (work document), or procedure)
3. No (Category C) (never allowed in the RCA or on stainless steel)
4. N/A (Materials that are not evaluated and will not be used in the RCA or water side of the condensate feedwater)

### Industry Event OE11363

#### **Chemical Reaction of Residual Hydrazine with Organic Material**

Maintenance workers were cleaning a plant system which contained the chemical hydrazine. During the course of work some of the hydrazine dripped on the floor which had an oily residue on it. Following the job, the workers noted vapors/smoke coming from residual oil on the floor. Hydrazine and oil are not compatible materials and can start a fire when in contact with each other.

Serious injury including death can occur when working with hazardous chemicals. **Read the MSDS sheet**. Understand the potential hazards involved with the material you are handling. Be aware of the reactivity with other chemicals or materials and avoid their coming in contact with each other. Always wear the appropriate personal protective equipment when handling hazardous materials.

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*End of Objective*

## Inspection and Use of Electric Power Tools

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**Objective B6**

Describe the proper inspection and use of commonly used electrical components (e.g. drop lights, extension cords, and hand held power tools).

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**Inspection of Power Tools**

As with all tools and equipment, you should perform a visual inspection of the component prior to use.

- Inspect the component prior to use for external damage or defects.
  - If you find a power cord or tool with a problem return it to the group who issued it for repairs and ensure you tag it, identifying the problem.
- 

**Use of Power Tools**

Always follow the manufacturer's recommendations for use of power tools. Also, observe the following safety rules:

- Do not remove safety guards from power tools without your supervisor's approval, and replace them when you are done using the tool.
  - Double insulated tools do not need to be grounded and are manufactured with a two prong plug.
  - Use approved lighting where high shock hazards exists (for example: use 12 Volt lighting in condenser water boxes).
- 

**Resetting Electrical Protective Devices (MTB0402 Summary) N0002160**

If a fuse blows or a circuit breaker opens:

- For installed plant equipment:
  - Check equipment for damage or fire
  - Contact your supervisor
  - Electronic SAP Notification generated to document the problem
- For portable hand tools:
  - Check equipment for damage or fire
  - Unplug the equipment
  - Contact your supervisor

Summary: When a fuse blows or a circuit breaker trips on permanent plant equipment, do not replace the fuse or reset the breaker without a Notification being written and direction from your supervisor.

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*End of Objective*

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## Inspection and Use of Safety Equipment

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**Objective B7** Explain the inspection and proper use of Safety Equipment.

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**Inspection of Safety Equipment**

In addition to routine inspections, anyone who uses safety equipment is responsible to perform an inspection prior to use. This inspection consists of:

- Visual inspection, looking for signs of obvious damage. (Torn or frayed threads, burn marks, damaged closure devices, unauthorized modifications, etc.)
- Functional inspection, checking that the equipment operates or can operate per its function.

If the equipment is faulty, **DO NOT USE IT.** Attach an information tag to it identifying the problem, and turn it in to the group or person responsible for it.

---

**Use of Safety Equipment**

If you are not familiar with the use of a particular piece of safety equipment, contact your supervisor or safety group representative. They can instruct you in the proper use of the equipment.

If the safety gear is something you wear, make sure it fits you. Poor fitting safety gear can be more dangerous than no safety gear. Items like safety belts, acid suits, chemical gloves, etc. come in different sizes.

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**Fall Protection Basics**

Fall Protection: All personnel shall use a personal fall-arrest system including a full-body harness, lanyard, and suitable anchorage point whenever:

- a) There is a fall hazard of six (6) feet or greater.
  - b) Working within six (6) feet of an unguarded edge with a fall hazard of six (6) feet or greater.
  - c) Working on a slope  $> 40^\circ$ .
- Safety Belts are illegal except for use as a ladder climbing device and as a travel-restriction device.
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## Inspection and Use of Safety Equipment, continued

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### Hand Protection Work Gloves

#### Work Gloves

All personnel SHALL wear appropriate hand protection when physically engaged in maintenance, operational, or other industrial work activities anywhere on site. Work gloves MAY be removed only when necessary to perform "delicate" work requiring dexterity not achievable while wearing work gloves. Work gloves SHALL be put back on when delicate work is complete. Examples of delicate work are, but not limited to, the following:

- Log taking / paperwork
- Handling small fasteners
- Checking equipment temperatures with the hand
- Instrumentation calibrations
- Wiring termination / determination

When working in a contaminated area, carrying/wearing anti-contamination PC gloves satisfy the requirement for carrying work gloves.

Leather gloves are also available in the RCA and will remain inside the RCA at the completion of work. They should be returned to a tool drop off box at the completion of work. New gloves can be obtained for work inside the RCA.

To help facilitate increased glove use, glove clips and gloves are available so employees can easily carry their gloves with them while at work.

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*End of Objective*

# GENERAL WORK CONTROL REQUIREMENTS

## Safety Related Materials Storage Requirements

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**Objective C1** Differentiate between “Safety Related” and “Non-Safety Related” parts and equipment to include handling, storage and identification requirements.

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**Introduction** “Safety Related” pertains to systems, structures, and components that are needed to protect the integrity of the reactor coolant pressure boundary and to shutdown the reactor and maintain it in a safe shutdown condition following a design basis event (major accident).

To protect these safety related systems, structures, and components, all parts and equipment for them are traceable back to its manufacture and have undergone certain required inspections.

Shop stock is not for use on safety related components since parts traceability is not provided.

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**Storage of “Safety Related” parts & equipment** Safety-related material shall be stored in a separate location from nonsafety-related material with the same manufacturer and part number. Any exceptions shall be clearly tagged, flagged, or otherwise identified to prevent any chance of inadvertent issue of material not qualified for its intended use.

Note: If material is stored in the plant, the Order number and the supervisor’s name and number should be clearly posted, such that Operations, Rad Protection and Housekeeping personnel can contact the supervisor if needed.

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*End of Objective*

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## Disposing of Hazardous Waste

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**Objective C2** Describe the proper disposal methods for job site waste.

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**Introduction** PG&E is an environmentally conscious company. We have programs to meet the Federal, State and local laws. We are also involved in recycling much of our wastes. Your supervisor and the hazardous waste group will help you out if you have any questions, or wastes you need to dispose of.

---

**Hazardous Waste in the RCA** If you are working in the RCA and have generated some hazardous waste on the job, attempt to get the material released from the RCA and dispose of it in an accumulation site. If the waste material is contaminated with radioactive material, then take it to Bay 6 of the Radwaste building. Bay 6 is where contaminated hazardous waste is disposed of.

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**Common Job Waste** There are different garbage dumpsters for different types of job wastes. Diablo Canyon recycles metals, wood, cardboard, etc. Put your trash in the proper dumpster. If you have questions, ask your supervisor for the location of the different recycle dumpsters in your area.

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**Liquid Wastes and Floor Drains** Do not dump liquid wastes down floor drains, unless you are directed to by your supervisor. Many floor drains lead to the ocean with no treatment facility in between. There are deep sinks and other sewer facilities for disposing of non-hazardous liquid wastes.

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*End of Objective*

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## Communication Standards

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**Objective C3** Describe the communication standards used at DCP.

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**Introduction** To prevent mistakes, and minimize accidents, there must be good communication between plant personnel. Many jobs and plant evolutions require transmitting vital information between workers and between different work groups. Diablo Canyon has a communication standard that must be followed when communicating to Operations and Maintenance personnel.

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**Maintenance Services' Expectations** Three-way communication is the required standard when direction is being given to operate plant equipment, when reporting critical plant information, and while giving or receiving specific direction (i.e. Pre-Job Briefing). It is also required when communicating with Operations department on equipment control such as gaining approval to perform work or any clearance related discussions.

Refer to the Site Standards Handbook (red book) for examples.

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*Continued on next page*

## Communication Standards, continued

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**Reactor Trip  
Due to  
Personnel  
Error**  
OE11784/  
TIP 13019 01-  
02

Surry Power Station Unit 1 in Virginia experienced a reactor trip due to a maintenance error. A mechanic was assigned to replace a relief valve and was handed the part in a bag by his supervisor. The part was labeled for unit 2. Thinking the work was complete on unit 2, the unit in an outage, the mechanic went to unit 1 and discovered normal (high) oil pressure, which indicates a running unit. The mechanic called an engineer, not his supervisor, if this was expected. Not understanding the mechanic was talking about unit 1, the engineer informed the mechanic that the clearance tagging for the relief valve replacement was correct. The mechanic then proceeded to unbolt the relief valve from the running system, resulting in high pressure oil spray and a reactor trip.

Some of the contributing causes:

- Work performed on a running unit without Shift Foreman permission.
- No pre-job briefing or “tailboard”.
- Craft did not perform a clearance (tag out) walkdown.
- The mechanic did not read the component label on the bag, which had a unit designator.
- No “questioning attitude”.

Overall root cause:

- Three way communication was not used during this event

DCPP communication standards are designed to avoid confusion during critical tasks.

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*End of Objective*

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## On-Site Vehicle Operation

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**Objective C4** Explain the requirements and controls for vehicle operation at DCP.

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**Introduction** Vehicle operation at Diablo Canyon involves several concerns. As with any vehicle operation, there is a safety concern for vehicle occupants and pedestrians. In addition to these, there are insurance liability and nuclear security concerns. These requirements must be satisfied when operating vehicles on site.

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**Requirements to Operate a Vehicle** Listed below is a summary of the rules to operate a vehicle at Diablo Canyon:

- A test of the vehicles brakes shall be made at the start of each day, and for trailers each time they are coupled or uncoupled.
- Use caution when moving a vehicle from a parked position, and use an observer if your vision is obstructed when backing.
- If parking a vehicle where it's possible the vehicle could roll down a grade, turn the steering wheels into the curb and/or chock the wheels to prevent the possibility of the vehicle rolling.
- All passengers and drivers shall wear automotive seat belts when riding in vehicles, if so equipped.
- No employees shall ride on fenders, running boards, side rails, top of vehicles, or in pick-up beds.

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## On-Site Vehicle Operation, continued

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### Transformer Area Vehicle Operation

DCPP has a procedure (OM6.ID7) to control activities near high voltage lines and transformer areas. A Removable Safety Barrier has been installed around these areas. This procedure controls entry into this area, and removal and replacement of the barriers.

**No employee shall be permitted to perform any activity in proximity to energized high voltage lines or equipment UNTIL provisions are made to avoid accidental contact AND, for maintaining required Minimum Clearance Distances.**

The procedure requirement applies to:

- movement of equipment, supplies, hoisting equipment
- transit of vehicles and individuals
- movement of buildings

With a few exceptions (identified in the procedure), entry into a Removable Safety Barrier Area must be accompanied by a written work package. If your job requires you to remove the barriers, verify that your work package addresses it, and you've been Pre-Job Briefed by your supervisor on removing the barrier and the hazards present.

The Shift Foreman shall be notified prior to entry into a Removable Safety Barrier Area.

Although pedestrian access is permitted to/through Removable Safety Barrier Areas, this practice is **NOT** recommended. Personnel should attempt to use other routes whenever possible.

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*End of Objective*

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## Boric Acid Control Program

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**Objective C5**

Explain the responsibilities of individual workers associated with the Boric Acid control program at DCPD.

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**Introduction**

As previously described in Protected Area training, In March 2002, Davis-Besse identified substantial wastage (loss of metal) of the low alloy steel reactor vessel head due to boric acid leakage on the head.

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**Policy**

The company's policy is to minimize boric acid induced corrosion by applying a comprehensive program that provides for:

- early detection of boric acid leaks
  - thorough inspection of the surrounding areas
  - proper evaluation of areas where leakage has occurred
  - prompt action to mitigate the leak, perform repairs, and avoid future damage
- 

**Important Definition****Boric Acid Leakage:**

Leakage from plant systems containing boric acid that results in accumulation of boric acid crystals. Crystals often appear at valve packing or at pipe caps after venting. Crystals are generally a housekeeping concern only, however, it may be an indication of a serious problem.

---

**Individual Responsibilities**

Any individual who discovers a leaking component in the plant is responsible for identification of the problem. An electronic SAP Notification must be initiated (contact your supervisor).

**Removal** of boric acid deposits shall not be performed without specific instructions from your supervisor.

For active leaks, the following short term corrective actions should be implemented:

- Immediate installation of drip bags, diverting curbs, or splash pans to mitigate the leak's impact on the surrounding environment. Prompt use of these measures is necessary to maintain plant cleanliness, personnel safety, and equipment reliability.
- 

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## Boric Acid Control Program, continued

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**Industry Event**  
**Davis Besse**  
**Flawed**  
**Decision**  
**Making**

Tip 14509  
A0568945  
SOER 02 04

Recall the event at Davis-Besse where boric acid nearly corroded a hole the reactor head. If this had been allowed to continue a severe nuclear accident would have resulted.

There were many red flag indicators that if acted on by plant personnel would have prevented the degradation of the reactor vessel:

- Plant personnel had actually witnessed and reported white **boric acid** crystals piled on top of the reactor.
- Indications of corrosion (rust color of crystals) went unresolved.
- Unidentified leaks of reactor coolant water went unresolved.
- Containment air filters were being changed at rate of once every other day instead of the normal frequency of once a month.

This is why it is important to have a "questioning attitude".

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*End of Objective*

## Use and Control of M&TE

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**Objective C6** Describe the use and control of M&TE at DCP.

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**M&TE** M&TE (Metrology and Test Equipment) refers to the calibrated measuring and test equipment that is available from our tool rooms. Examples are:

- Digital Multi-Meter
- Pressure Gauge
- Torque Wrench

To aid in tracking usage, each item has its own unique serial number.

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**M&TE Usage** User responsibilities:

- Select M&TE of suitable type, range, and accuracy for the intended application.
  - M&TE is used within the dates specified on the calibration sticker.
  - All Order/Operation numbers the M&TE will be used for have been communicated to the proper tool room personnel. (Normally done when “checking out” the M&TE)
  - There is no “Inactive” sticker on the M&TE.
  - M&TE is properly handled and cared for.
- 

**M&TE Control** When M&TE is checked out for your use, maintain positive control of the M&TE until it has been checked back in to the tool room. Aspects of positive control:

- Maintain the M&TE within your physical control when practical. (Keep it with you)
  - Label the M&TE (Information tag) when it is out of your physical control for more than a brief period (>15 minutes).
  - Return the M&TE promptly when its usage is complete.
  - When returning M&TE and the tool room is unoccupied, lock up the M&TE in the lockers provided.
- 

*End of Objective*

## Technical Specifications

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**Objective C7** Describe the following documents and terms: Final Safety Analysis Report, Technical Specifications, Limiting Conditions for Operation, Equipment Control Guidelines and Licensee Event Reports.

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**Descriptions Of Documents And Terms**

Final Safety Analysis Report (FSAR):

The final safety analysis report shall include information that describes the facility, presents the design bases and the limits on its operation, and presents a safety analysis of the structures, systems, and components and of the facility as a whole. This document periodically updated. Items included in the FSAR:

- Descriptions of the reactor core, reactor coolant system, instrumentation and control systems, electrical systems, containment system and other engineered safety features.
- The kinds and quantities of radioactive materials expected to be produced.
- Plans for conduct of normal operations, including maintenance, surveillance, and periodic testing of structures, systems, and components.
- Plans for coping with emergencies.

Technical Specifications (Tech Specs):

To ensure compliance with our FSAR, it provides specific operational limits for:

- Power level
- Equipment availability
- Performance levels of equipment

Limiting Conditions for Operation (LCO):

The minimum amount of equipment which must remain operable to maintain the plant in a safe condition as required by Technical Specifications. (Important equipment)

Equipment Control Guidelines (ECGs):

Equipment that should be kept operable for safe plant operation, but are not covered in the Technical Specifications. (Slightly less important equipment)

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*Continued on next page*

## Technical Specifications, continued

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**Descriptions Of Documents And Terms**

*continued*

**Licensee Event Report (LER):**

The holder of an operating license for a nuclear power plant (licensee) shall submit a Licensee Event Report (LER) to the NRC (normally within 60 days) for any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to:

- Shut down the reactor and maintain it in a safe shutdown condition;
- Remove residual heat;
- Control the release of radioactive material; or
- Mitigate (reduce the severity of) the consequences of an accident.

An LER is also required for other abnormal conditions such as a violation of Tech Specs or a valid actuation of the reactor protection system.

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*End of Objective*

## Work Control Process

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### Objective D1

Describe the Work Control process to include types of work control vehicles per AD7.DC8.

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### Work Control Procedure

Work Control procedure AD7.DC8 scope:

- This procedure provides requirements for the work control process.
- This procedure applies to all personnel who perform activities that use some or all of the work control process.

Parts of the work control process are:

- Identify Work
  - Schedule
  - Plan
  - Execute
  - Package Closure
- 

### Definitions

Terms used in the work control process:

Types of Maintenance Orders	There are 5 types of maintenance Orders: <ul style="list-style-type: none"> <li>• Emergency Maintenance (EM)</li> <li>• Corrective Maintenance (CM)</li> <li>• Preventive Maintenance (PM)</li> <li>• Deficient Maintenance (DM, equipment still functions)</li> <li>• Other Maintenance (OM, work on non-plant equipment)</li> </ul>
Quality Related Activity	An activity that could affect the ability of a quality (nuclear safety) related system or component to perform its intended function.
Work Document	A document that specifies work activities for a job (typically an SAP order/operation)

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*Continued on next page*

## Work Control Process, continued

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### Report Identified Problems

All employees are required to initiate an SAP Notification for identified or perceived problems, issues, and concerns. If you do not know how to create a Notification, contact your supervisor.

- Notifications should be initiated even if the identified issue is resolved immediately to allow further evaluation as to cause or trending as appropriate.
- If there is doubt about the decision to initiate a notification, employees should initiate the notification.

Notifications are also used to initiate Orders/Work Packages or even perform work under some circumstances.

---

### Common Work Control Vehicles

A work control vehicle is the term used to describe the method used to manage work in the plant. There are three methods (work control vehicles) available.

The work control vehicles include:

Toolpouch - Used to correct minor deficiencies when the problem and its solution are self-evident. Additionally, toolpouch work:

- Is not scheduled.
- Is within the worker's qualifications.

Notification – Used when minimum planning and work performance documentation are needed.

- Written work instructions may or may not be provided
- Procedures shall be used if available

Order – Used when:

- Simple or Complex planning, work coordination, or work performance documentation are needed
  - Written work instructions shall be provided
  - Procedures shall be used if available
- 

*Continued on next page*

## Work Control Process, continued

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### Toolpouch Work

Toolpouch Work is for the repair of minor deficiencies when the problem and its solution are self-evident. Additionally, toolpouch work:

- Is **NOT** required to be scheduled.
- Increases the efficiency of the Work Control Process by allowing qualified individuals to perform the work on the spot without detailed planning.
- Is within the work performer's qualifications.

Toolpouch work is authorized for the following equipment:

- Work on non-plant equipment.
- Equipment previously approved for this work.

If there is any question about whether or not the work is toolpouch, it probably is **NOT**. You should contact your supervisor for further direction.

If the scope of the work changes, contact supervision.

Even if a deficiency is to be corrected by toolpouch work, a Notification shall be written. If the deficiency is on plant equipment, Shift Foreman authorization shall be obtained prior to performing the work. This authorization shall be documented in the body of the Notification.

---

### Work On Notification Only

Work on Notification Only is for the job that requires simple planning and it may be planned and performed using only a Notification.

Documentation of the work activity is **NOT** entered in component history.

The Notification may be used to:

- Notify individuals of necessary actions.
- Document work accomplished.

Work On Notification can **NOT** be used if:

- A clearance (tag out) is needed.
  - Parts traceability is needed.
  - More than minimum work instructions are needed.
  - M&TE is needed.
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*Continued on next page*

## Work Control Process, continued

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**Order** For all other work an order will be created by a qualified work planner. What the maintenance worker will typically receive is the order and one or more operations to perform the required work.

---

**Execute (do the work)** The execute portion consists of three major parts:

- Perform prejob activities
- Perform the work
- Perform postjob activities

---

**Pre-job Activities** The **supervisor** or **worker** should review the work and ensure resources, support, material, instructions, and permits are ready or available for the work to start as scheduled. Examples of items that should be considered include:

Permits	Order instructions
Scaffolding	Tools or special equipment
FME covers	Support personnel availability
Temporary power	Personnel safety equipment
Rigging equipment	Hazardous material or waste controls
Parts and material	Procedures, drawings, vendor manuals
Worker qualifications	Clearance (tag out) requirements

**Workers** shall read the order and work procedures, paying particular attention to any precautions or prerequisites prior to the pre-job brief.

---

**Perform the Work** **Supervisor** shall ensure a tailboard is conducted.

**Workers** shall:

- Ensure they are working on the correct equipment or component.
- Perform the work per the order, procedures, drawings, etc.
- Notify the supervisor if they become aware of changes to the equipment or plant conditions that affect the work scope, risk level, or the clearance.

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*Continued on next page*



## Work Control Process, Continued

### Post-job Activities

The **workers** shall restore job-site housekeeping.

Examples of activities that should be performed are:

- Removing M&TE or temporary equipment
- Restoring job-site housekeeping to as-found or better condition
- Returning unused parts to stock
- Removing the notification tag

Remove all maintenance red tags if hung.

The **supervisor** or **workers** shall inform the shift foreman that the work is complete.

**Workers** who did the work shall:

- Document any problems discovered during the job in the order completion remarks and SAP Notification.
- Enter component history information in the order completion remarks.

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*Continued on next page*

## Work Control Process, continued

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**Expectations For Verifying Electrical Clearance Points Policy** The expectations for various Maintenance Services disciplines to verify clearance points associated with electrical circuit breakers is to:

- Verify clearance tags properly hung,
- Open the circuit breaker cubicle door, and
- Verify the actual circuit breaker position

The participation level for each discipline is described in the table below:

<b>Discipline</b>	<b>Participation Level</b>
Electrician	May perform
Others who: <ul style="list-style-type: none"> <li>• Have received sufficient training,</li> <li>• And are comfortable with the task</li> </ul>	May perform
All others	Perform with the assistance of an Electrician or Nuclear Operator

**Live-Dead-Live checks**

For personnel and equipment safety, the electrical clearance (tag out) points shall be additionally verified by performing a **live-dead-live** voltage check, when appropriate.

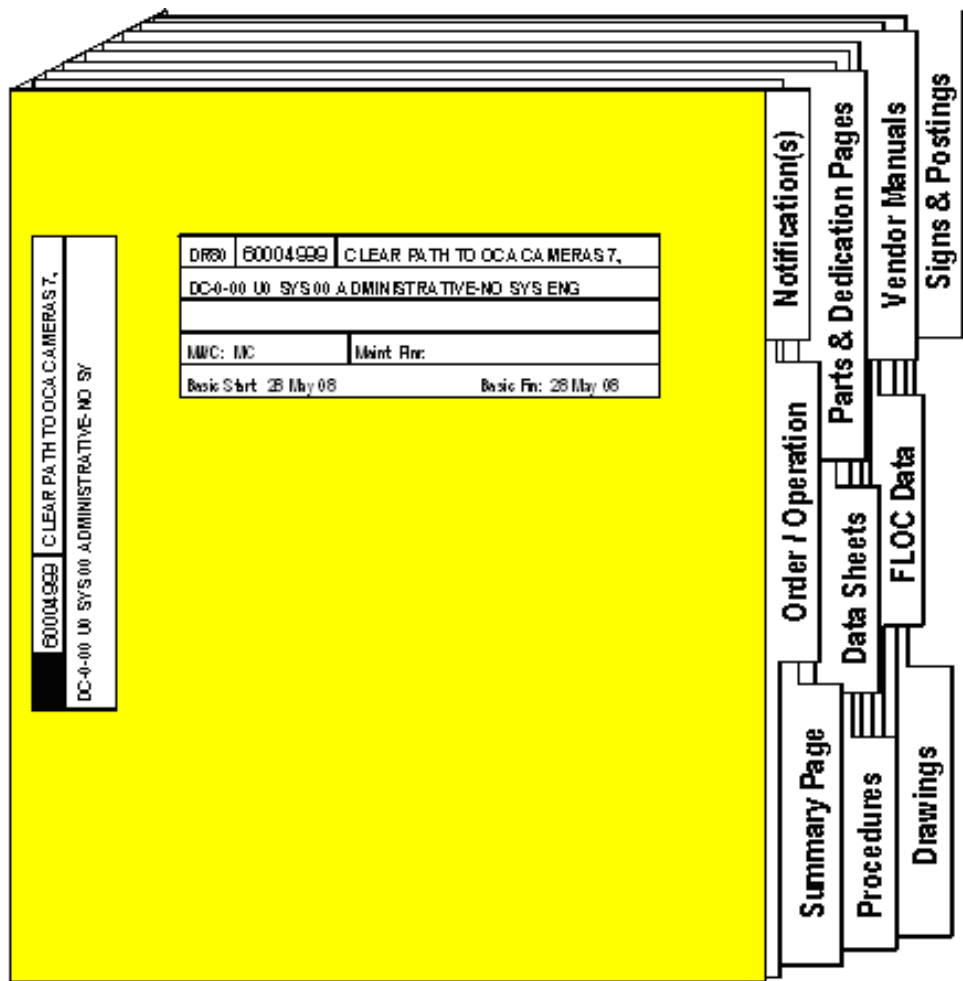
*End of Objective*

# Work Package Use

**Objective D2**

State the purpose and contents of a Work Package to include:

- Notification
- Order/Operation
- Work Authorizations
- Data sheets
- References (procedures, vendor manuals, & drawings)
- Spare parts and Dedication sheets
- Required Permits
- Evaluation of Failed Parts
- Hold Points



*Continued on next page*

## Work Package Use, continued

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**Purpose of a Work Package**

A Work Package is intended to provide the references and instructions needed to perform the job safely, efficiently and correctly the first time. At a minimum, a Work Package will contain an Order and at least one Operation (described below).

Work Package binders/folders are color coded:

Orange = Unit One

Blue = Unit two

Green = Common (Supports both units or neither)

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**Notification**

The Notification is the SAP document that initiates the Order.

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**Order/ Operation**

An **Order** is written once a Notification has been generated. The Order will contain one or more **Operations** that will coordinate the maintenance actions necessary to complete the job and correct the problem (task list). Operations are written to support the intent of the Order. The more complicated or involved maintenance tasks may require several Operations to coordinate all of the actions needed to complete the job.

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**Work Authorizations**

Work authorizations for each Operation:

- Work Control Shift Foreman Initials : Shift Foreman's permission to perform work on plant equipment is always required. The permission is granted by the Work Control Shift Foreman:
  - a. Initialing the Operation or
  - b. Approving the clearance if one is associated with the job

- Supervisor : A supervisor (normally your supervisor) must sign this authorization prior to starting work on this Operation.

Note: There are exceptions for some routine work where this signature is not required.

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*Continued on next page*

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## Work Package Use, continued

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**Data Sheets**

If there are any procedures used to perform the work, which require filling in data sheets, both the procedure and data sheets will be included in the work package.

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**References**

In the Work Package is a list of required references to accomplish the work. Ensure any references (drawings, vendor manuals, procedures) that are included in the work package are issued for use prior to work.

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**Spare Parts and Parts Dedication**

In the work package will be a parts page, listing the parts staged. Parts ordered for the job will normally be staged in a local parts storage staging area for your work group.

Any parts ordered will be listed on the material tracking form, ensure this form (s) stays with the work package.

Certain parts have additional activities that must be performed before that part can be used in the plant. When these parts are issued from the warehouse, a Parts Dedication page is printed indicating the additional requirements. If your work package has parts dedication pages in it, you will need to perform these dedication activities if you use the part. Parts Dedication pages must be filled out if the parts are used or not. There are two boxes on each dedication form:

- Part was not used, dedication activities not performed.
- Dedication activities performed.

You must check which one was performed for that part and initial and date it.

Note: Sometimes only part of the activities are completed prior to installation with the remainder completed after installation. In this case, record the portion done in the remarks section when completed and initial and date it.

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## Work Package Use, continued

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### Hot Work Permits

Unless otherwise specified, a hot work permit is required for the following activities performed in all areas of the plant site:

- Brazing
- Welding
- Air arcing
- Flame cutting
- Use of open flames
- Wildland prescription burns

A hot work permit is **NOT** required in the following areas or for the following activities:

- Electrical shops
- Intake suction bays
- Hot and cold welding shops
- Hot and cold instrument shops
- Fabrication shops located outside the plant structure.
- Automotive shop
- Chemical laboratories
- Hot and cold machine shops
- Maintenance training shop – Bldg. 119 shops
- Small soldering evolutions not involving open flame. For example, instrument circuit boards, etc.

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### Other Permits

Other work permits that may be required:

- Confined Space Permit
- Radiation Work Permit

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### Evaluation of Failed Parts

To allow equipment failure evaluation, **workers** should retain failed parts removed during corrective maintenance:

- Retained failed parts should be bagged and/or clearly tagged or marked indicating that they are unacceptable for use.
- Inform your supervisor of the failed parts storage location.

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### Hold Points & Inspection Points

Hold points and inspection points are mandatory quality inspections. The job must stop at the hold point until the inspection is performed and accepted.

**Never work through a Hold Point.**

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*End of Objective*

## Work Package Entries

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**Objective D3** Describe what “Signature Responsibilities” are and the proper way to document work activities in the Work Package

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**Signature Responsibilities** A signature is an accepted means of indicating authenticity of a document. If a document contains a signature block for the performance or verification of some action, item or condition, the person(s) signing the block is attesting that the action, item or condition exists.

Initialing a Work Package statement represents the same action as signing it.

Data entry and data base manipulations within SAP are viewed the same as a signature requirement.

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**Sign-offs** When provisions for signing steps are provided, sign off the steps as the work is performed or as soon as practical, **NO** later than the end of the shift.

- Do **NOT** sign documents in advance or on the understanding that a condition will be corrected or an activity will be performed later.
  - If needed, sign for another person by signing your own name followed by "for," then print the name of the individual you are signing for. To sign for someone per a telephone conversation, print “for (the persons name)” per telecon, sign your name and date the entry. **NEVER** sign someone else's name to a document or computer screen.
  - Do **NOT** back date documents.
  - Make sure that the steps match the work being done in the field, if not, get the steps changed **prior** to the work being performed.
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## Work Package Entries, continued

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**Making and Changing Entries in Plant Documents**

When making entries into work packages or other documents at Diablo Canyon, write or print legibly in black or blue ink. All entries should be signed (or initialed) and dated.

Never cover over, cross out, scribble, or blacken out an entry in a work document.

Corrections are needed sometimes, mistakes happen. If you enter some wrong information or incorrectly sign off a step in a work package, it is easy to properly correct it. Listed next are the steps involved.

Step	Action
1	Draw a single line, in black or blue ink, through the information needing correction.
2	In any space that's available, enter the correct information.
3	Initial and date your correction.

**Use of N/A (Not Applicable)**

Unless authorized in writing by the procedure or Order/Operation in use, do not N/A any steps or sections without authorization from your supervisor.

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*End of Objective*



# Configuration Control

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<b>Objective D4</b>	<p>Describe the importance of station configuration control to include:</p> <ul style="list-style-type: none"><li>• Temporary alterations</li><li>• Temporary attachments</li><li>• Mispositioned plant components (to include bumped components)</li><li>• Maintenance operation of plant components</li><li>• Door impairments</li><li>• Fire barriers</li></ul>
<b>Configuration Control</b>	<p>Configuration control has two components:</p> <ul style="list-style-type: none"><li>• Prevent improper component alignment on the operating unit.</li><li>• After performing maintenance, equipment is returned to its normal "in service" condition ensuring its configuration follows plant design. Configuration examples: Valves, circuit breakers, fuses, wiring etc.</li></ul>
<b>Temporary Alterations</b>	<p>During plant operation, maintenance, and testing, we sometimes must temporarily alter a system or component and later return it to its original configuration. Examples of temporary alterations are:</p> <ul style="list-style-type: none"><li>• Gagging non-safety relief type valves (actuated control valves).</li><li>• Alterations that affect <b>in-service</b> plant structure, system or components (SSCs).</li><li>• For equipment <b>removed from service or cleared</b>, (typical outage work) the work control process (AD7.DC8), controls the installation and removal of all mechanical or electrical jumpers, lifted leads, mechanical blocks, etc. These changes are documented in:<ul style="list-style-type: none"><li>• Procedures or Orders that include instructions for making the change.</li><li>• A form (69-11636) in the Work Package.</li></ul>Note: <u>Prior</u> to making configuration changes as documented on form 69-11636, independent verification is now <u>required</u>.</li></ul>

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## Configuration Control, continued

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### Temporary Attachments

Temporary attachments are items that are attached to, or lay on, permanent plant systems or components (extension cords, welding leads, air or water hoses, drip bags, rope, barrier tape, etc.). Anyone installing these items shall adhere to procedure CF4.ID8 "Temporary Attachments". Plant components that these items **SHALL NOT** be attached to include:

- Moving parts or equipment
- Snubbers (shock absorbers)
- Spring Hangers
- HVAC (heating, ventilation and air conditioning)
- Fire Protection System components (unless compensatory measures are taken)
- Wiring or cables.

Temporary attachments SHOULD NOT:

- Create the potential for plugging floor drains
- Cause spurious electrical interference
- Prevent doors from opening on control cabinets
- Present personnel hazards (tripping)
- Cause damage to the surface of the component it is attached to
- Cross over or connect different colored open cable trays if the item can catch on fire.

All electrical cable shall maintain a minimum distance from cable trays (5 feet below horizontal and 3 feet from vertical cable trays).

Items weighing 5 pounds or less can be attached to any system or component meeting the above requirements. For items over 5 pounds, refer to the procedure for the appropriately sized component.

To aid in owner identification and attachment removal, the name and phone number of the responsible person or supervisor should be provided on all temporary attachments, except:

- Drip bags and associated tubing
- Radiation protection or safety barrier rope, tape or signs

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## Configuration Control, continued

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**Mispositioned  
Plant  
Components**

All DCPD and contractor personnel should immediately notify the appropriate unit Shift Foreman (SFM) in the event:

- A component is believed to have inadvertently been mispositioned
  - An unanticipated situation arises where a question exists concerning an existing equipment configuration
  - A question exists on what position a component should be left during performance of work activities
- 

**SOER 85-2**

According to INPO, human error is the predominant cause of valve mispositions. INPO references many misposition events. One of them states that four safety-related instrument isolation valves were left closed by instrument mechanics (I&C Technicians) resulting in incorrect level measurements. One contributing factor: During the maintenance process, the Instrument Mechanics had decided not to use the valve checklist when manipulating the instrument valves.

INPO goes on to discuss the need for valve checklists and training regarding valve position recognition and how to check for correct position.

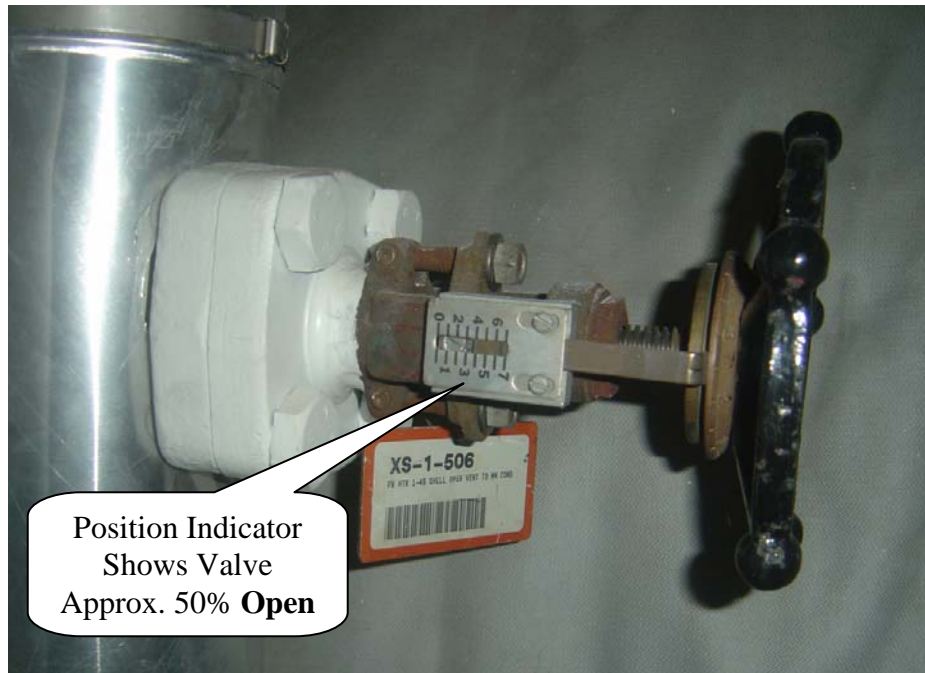
Methods to Recognize Valve Positions:

- Many valves have position indicators on them.
    - Local position indicators
    - Remote position indicators
  - Many valves have design features that allow recognition of valve position.
    - Rising Stem and Rising Handwheel valves
    - Quarter turn valves with lever handles
    - Flats and scribe lines on quarter turn valve stems
  - Some valves have no visual means of determining position
    - Non-rising stem (inside screw) gate and globe valves
    - Check valves
- 

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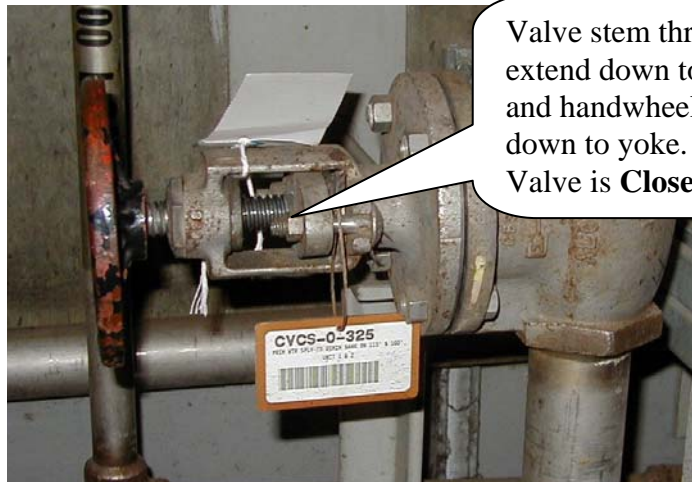
## Configuration Control, Continued

### Valve Position Example



**XS-1-506 Position Indicator (throttled 50%)**

### Another Valve Position Example



**CVCS-0-325 Globe Valve Closed**

*Continued on next page*

## Configuration Control, Continued

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### Valve Position Verification

The proper technique is to:

- Check the visual signs of valve position, (position indicator, stem, etc.)
- Determine the direction of rotation for closing the valve, and then
- **Attempt to turn the valve in the closed direction.**

Never check a valve by turning the valve in the open direction.

Not all valves close in the clockwise direction, but most do. If the valve is open and you get movement in the closed direction:

- Return it to the “as found” position if it is supposed to be open.
  - Stop and notify your foreman if it is supposed to be closed.
- 

### Practice

What is the position of this rising stem valve?

Answer:



*Continued on next page*

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## Configuration Control, Continued

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**Component Mis-Positioning due to “Bumping” Non-Conformance Report: N002225 SAPN: 50044323 50250378 50260660**

In 2009, Maintenance had 10 mis-positioning events. Of those 10 events, over ½ of them were attributed to “bumped” components. What are some plant components that are very susceptible to being bumped?

- Valves (typically the handle on small ¼ turn valves that provide motive air for air operated valves)
- Electrical circuit breakers handles
- Electrical protective relays
- Electrical switches inside instrument sensors
- Panel or bracket that electrical devices are attached to

What are some of the potential effects of bumping the above components?

- Unanticipated air operated valve motion
- Air operated valves unable to operate when demanded
- Loss of electrical power to vital equipment
- False signals generated to control room indicators and/or protection circuits

What can be done to help prevent future bumping events? Increase the situational awareness at the work site by using:

- 2 minute rule
- STAR (check the work site for potential bump components, e.g. valve handles or electrical switches)
- Line-of-fire
- Consider the use of temporary barriers
- Re-route equipment transfers if necessary

Since no one wants to be involved with the next bumped component event, DCPP needs everyone’s help to foster a culture or attitude where our work practices simply will not allow plant components to be bumped.

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## Configuration Control, continued

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### Door Impairment

The shift foreman (ext. 3600) shall be informed prior to impairing (blocking, removing, altering etc.) any of the following doors:

- Fire door
- HELB door (High Energy Line Break e.g. steam)
- HVAC door (Ventilation)
- Flood door

If an undamaged fire door is **continuously** attended and can be closed in the event of an emergency, it is considered functional and unimpaired while open for movement of equipment or to perform work in the area of the door.

The routing of air hose, water hose, electrical cable, fiber optic cable, etc., under fire doors shall be evaluated for impairment. Contact your supervisor.

---

### Fire System Impairment

Individuals discovering conditions that could represent a fire protection system impairment are responsible for:

- Notifying the Shift Foreman about the condition
  - Ensuring a SAP Notification is generated
- 

*Continued on next page*

## Configuration Control, continued

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**Penetration Seal** Penetration seals and fire barriers are equally important to the plants safe configuration.

When a worker is about to affect a seal penetration of any kind:

- STOP
- double-check with your supervisor, before proceeding.

Consider the following...

- Fire barriers and penetration seals in fire barriers constitute an element of passive fire protection for maintaining containment of fire.

Penetration seal examples of fiber (left) and foam (right):



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*End of Objective*



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## Maintaining Configuration Control

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**Objective D5**

Describe the actions to take when drawings disagree with as-built configurations.

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**Introduction**

During maintenance, you may come across a work control document (drawing) that indicates a different configuration than the actual as-built configuration. This may be a problem and it must be addressed.

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**Actions**

If you find a conflict between the actual as-built configuration of plant systems or components and the “Issued for Use” drawings in your work package, follow the steps below:

Step	Action
1	Stop your work activity, and place it in a safe condition.
2	Contact your supervisor, giving him the details of the problem.

Drawings that do not match as-built configurations require a Notification.

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*End of Objective*

## Making Changes to Work Packages

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### Objective D6

Describe conditions which would require a revision to a Work Package, and the steps involved.

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### Conditions Requiring Work Package Revision

There are several conditions that require a revision to the Work Package. In some cases, the supervisor may be able to make a pen and ink change. Often it is better to send the work package back to the work planner to have the necessary changes made. Workers must always notify their supervisor when there is a change to the equipment or plant conditions that affect the work scope, risk level, or the clearance. Listed below are conditions which would require a change to the work package:

- As found damage requires an increase in the job scope.
- Specified references do not agree with component being worked on.
- Work instructions cannot be performed as written.

### Making Changes to a Work Package

If you come across a condition that requires a possible work package revision, follow the steps listed below:

Step	Action
1	Stop your work activity and place it in a safe condition.
2	Contact you supervisor.
3	If the job task changes re-evaluate your qualification before continuing the work.

*End of Objective*

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## Environmental Qualification Program

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**Objective D7**

Describe what “Environmental Qualification” (EQ) is, and the requirements to work on EQ equipment.

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**EQ Equipment**

Electric components located in harsh environments that are relied upon to perform a nuclear safety functions are called “Environmental Qualification” (EQ) equipment. To survive the harsh environment, seals, gaskets, and other soft parts must be evaluated and qualified.

Not only does the component have to be able to perform its function during an accident, the documentation required to prove that it can do its function is also required. Therefore, if the paper work is lost or messed up, the component loses its EQ status.

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**Requirements to Work on EQ Equipment**

Each EQ device shall be physically identified (e.g., tag, label) in such a manner, if practicable; as to clearly inform any personnel working with the equipment that said device is "EQ." To work on this equipment you must be EQ qualified. This will require additional training.

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*End of Objective*

## SUMMARY

### Review of the Lesson

**Objectives**      The following objectives were discussed in the lesson:

Number	Enabling Objective Description
A1	Explain the purpose and importance of using controlled procedures to perform plant maintenance.
A2	Describe how to obtain procedures and other controlled documents to support plant maintenance, and how to get them "Issued for Use".
A3	Explain what to do if an error is found in a procedure or if the scope of the procedure does not cover the job.
A4	Describe placekeeping, verbatim compliance and level of use.
A5	Explain self, concurrent, dual and independent verification and component flagging.
A6	Describe the roles of the Nuclear Regulatory Commission (NRC) and the Institute of Nuclear Power Operations (INPO) in the operation and maintenance of DCP.
A7	State management's expectations concerning the use of qualified personnel.
B3	Describe the Safe Work Practices associated with working on, in, or near: <ul style="list-style-type: none"> <li>• Over/In Water Tanks or the Intake Structure.</li> <li>• Double Hearing Protection</li> </ul>
B4	Describe the proper labeling and storage of Hazardous Materials.
B5	Describe the proper handling, transportation and use of Hazardous Materials.
B6	Describe the proper inspection and use of commonly used electrical components (e.g. drop lights, extension cords, and hand held power tools).
B7	Explain the inspection and proper use of Safety Equipment.

*Continued on next page*

## Review of the Lesson, Continued

### Objectives, Continued

Number	Enabling Objective Description
C1	Differentiate between “Safety Related” and “Non-Safety Related” parts and equipment to include handling, storage and identification requirements.
C2	Describe the proper disposal methods for job site waste.
C3	Describe the communication standards used at DCPD.
C4	Explain the requirements and controls for vehicle operation at DCPD.
C5	Explain the responsibilities of individual workers associated with the Boric Acid control program at DCPD.
C6	Describe the use and control of M&TE at DCPD.
C7	Describe the following documents and terms: Final Safety Analysis Report, Technical Specifications, Limiting Conditions for Operation, Equipment Control Guidelines and Licensee Event Reports.
D1	Describe the Work Control process to include types of work control vehicles per AD7.DC8.
D2	State the purpose and contents of a Work Package to include: <ul style="list-style-type: none"> <li>• Notification</li> <li>• Order/Operation</li> <li>• Work Authorizations</li> <li>• Data sheets</li> <li>• References (procedures, vendor manuals, &amp; drawings)</li> <li>• Spare parts and Dedication sheets</li> <li>• Required Permits</li> <li>• Evaluation of Failed Parts</li> <li>• Hold Points</li> </ul>
D3	Describe what “Signature Responsibilities” are and the proper way to document work activities in the Work Package.
D4	Describe the importance of station configuration control to include: <ul style="list-style-type: none"> <li>• Temporary alterations</li> <li>• Temporary attachments</li> <li>• Mispositioned plant components (to include bumped components)</li> <li>• Maintenance operation of plant components</li> <li>• Door impairments</li> <li>• Fire barriers</li> </ul>
D5	Describe the actions to take when drawings disagree with as-built configurations.
D6	Describe conditions that would require a revision to a Work Package, and the steps involved.
D7	Describe what “Environmental Qualification” (EQ) is, and the requirements to work on EQ equipment.

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## Review of the Lesson, Continued

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**Learning  
Assessment**

Assessment of the student's comprehension will be evaluated by:

- Written test
- 

**Summary**

Successful completion of this lesson prepares the student to:

- Apply material learned in this lesson to perform plant maintenance efficiently and safely.
  - Advance to subsequent training in maintenance qualification areas.
- 

*End of Lesson Guide*

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## Current Issues

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**Introduction**

Listed below are current issues dealing with conducting work. All the material has been incorporated into the body of the lesson and these items are presented here for entry into MS0091 Current Issues WBT.

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**Copies of Controlled Documents**

Any drawing reproduced from FileNet, a photocopy, electronic media or microfilm, shall be considered "For Information Only" until verified in SAP (computer software for controlling maintenance work) as current.

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**Placekeeping**

Placekeeping is applicable to the following documents:

- All maintenance working level procedures.
  - Orders (controls work in the plant) with no signoffs for work steps.
  - Vendor manuals where step-by-step work instructions are used to perform the activity.
  - Drawings where step-by-step work instructions are used to perform the activity.
- 

**Repeating Procedure Steps**

If performing multiple passes through a series of steps is planned, use additional circle/slash in the left margin maintaining horizontal alignment.

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## Current Issues, Continued

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### Flagging

Flagging refers to the process of identifying plant components to be worked on by use of a temporary label (flag).

Flagging shall be used on field installed equipment to help consistently manipulate the correct component by denoting the correct component to perform work on. This is known as CCV, correct component verification.

Identify the component to be flagged using self-checking:

1. Flags can be any of the following:
    - Information tag(s)
    - Ribbon(s)
    - Sticker(s)
    - Magnetic device(s)
    - Wire clip(s)
  2. Remove CCV flag(s) when leaving the job site.
  3. Reapply CCV flag upon return to the job site as part of the two minute rule.
  4. Remove flagging device(s) when work is complete.
- 

### Fall Protection Basics

Fall Protection: All personnel shall use a personal fall-arrest system including a full-body harness, lanyard, and suitable anchorage point whenever:

- a) There is a fall hazard of six (6) feet or greater.
  - b) Working within six (6) feet of an unguarded edge with a fall hazard of six (6) feet or greater.
  - c) Working on a slope  $> 40^\circ$
- 

### Toolpouch Work

Even if a deficiency is to be corrected by toolpouch work, a Notification shall be written. If the deficiency is on plant equipment, Shift Foreman authorization shall be obtained prior to performing the work. This authorization shall be documented in the body of the Notification.

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*Continued on next page*



## Current Issues, continued

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**SAP Signatures** Data entry and data base manipulations within SAP are viewed the same as a signature requirement.

---

**Configuration Changes** Prior to making configuration changes as documented on form 69-11636, independent verification is now required.

---

**Door Impairment** The shift foreman (ext. 3600) shall be informed prior to impairing (blocking, removing, altering etc.) any of the following doors:

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- HELB door (High Energy Line Break e.g. steam)
- HVAC door (Ventilation)
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The routing of air hose, water hose, electrical cable, fiber optic cable, etc., under fire doors shall be evaluated for impairment. Contact your supervisor.

---

**Fire System Impairment** Individuals discovering conditions that could represent a fire protection system impairment are responsible for:

- Notifying the Shift Foreman about the condition
  - Ensuring a SAP Notification is generated
- 

*Continued on next page*

## Current Issues, Continued

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### Mispositioned Plant Components

All DCPD and contractor personnel should immediately notify the appropriate unit Shift Foreman (SFM) in the event:

- A component is believed to have inadvertently been mispositioned
  - An unanticipated situation arises where a question exists concerning an existing equipment configuration
  - A question exists on what position a component should be left during performance of work activities
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### SOER 85-2

According to INPO, human error is the predominant cause of valve mispositions. INPO references many misposition events. One of them states that four safety-related instrument isolation valves were left closed by instrument mechanics (I&C Technicians) resulting in incorrect level measurements. One contributing factor: During the maintenance process, the Instrument Mechanics had decided not to use the valve checklist when manipulating the instrument valves.

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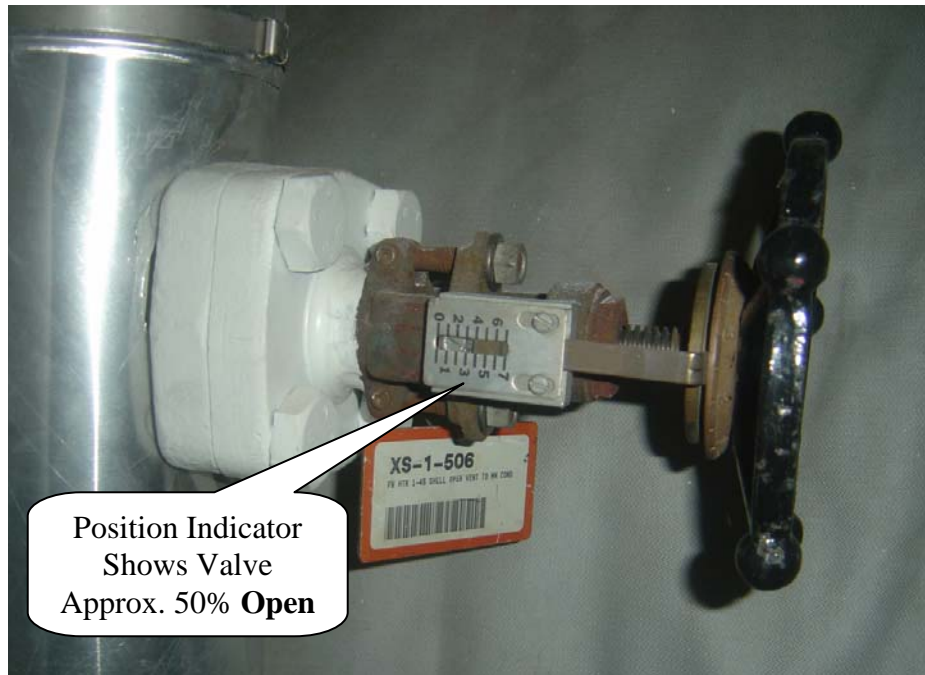
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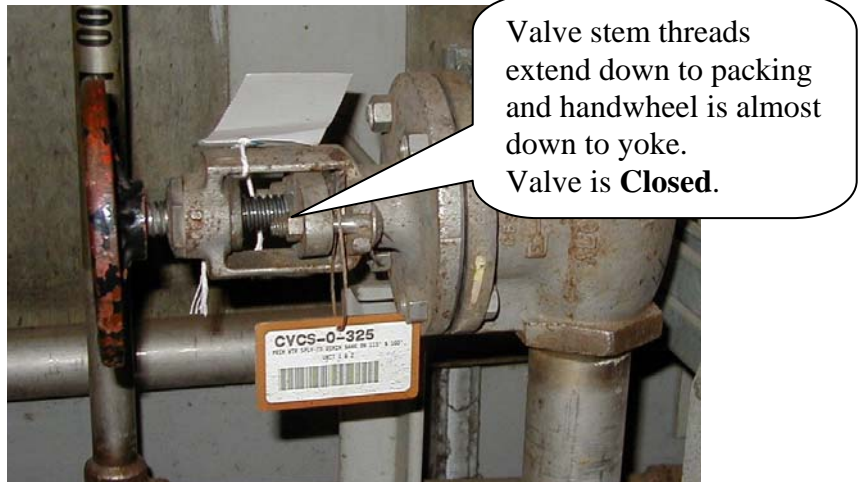
## Current Issues, Continued

### Valve Position Example



**XS-1-506 Position Indicator (throttled 50%)**

### Another Valve Position Example



**CVCS-0-325 Globe Valve Closed**

*Continued on next page*

## Current Issues, Continued

---

### Valve Position Verification

The proper technique is to:

- Check the visual signs of valve position, (position indicator, stem, etc.)
- Determine the direction of rotation for closing the valve, and then
- **Attempt to turn the valve in the closed direction.**

Never check a valve by turning the valve in the open direction.

Not all valves close in the clockwise direction, but most do. If the valve is open and you get movement in the closed direction:

- Return it to the “as found” position if it is supposed to be open.
  - Stop and notify your foreman if it is supposed to be closed.
- 

### Practice

What is the position of this rising stem valve?

Answer:



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## Current Issues, Continued

---

**Component Mis-Positioning due to “Bumping” Non-Conformance Report: N002225 SAPN: 50044323 50250378 50260660**

In 2009, Maintenance had 10 mis-positioning events. Of those 10 events, over ½ of them were attributed to “bumped” components. What are some plant components that are very susceptible to being bumped?

- Valves (typically the handle on small ¼ turn valves that provide motive air for air operated valves)
- Electrical circuit breakers handles
- Electrical protective relays
- Electrical switches inside instrument sensors
- Panel or bracket that electrical devices are attached to

What are some of the potential effects of bumping the above components?

- Unanticipated air operated valve motion
- Air operated valves unable to operate when demanded
- Loss of electrical power to vital equipment
- False signals generated to control room indicators and/or protection circuits

What can be done to help prevent future bumping events? Increase the situational awareness at the work site by using:

- 2 minute rule
- STAR (check the work site for potential bump components, e.g. valve handles or electrical switches)
- Line-of-fire
- Consider the use of temporary barriers
- Re-route equipment transfers if necessary

Since no one wants to be involved with the next bumped component event, DCPP needs everyone’s help to foster a culture or attitude where our work practices simply will not allow plant components to be bumped.

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