

MWE

Note: Major rewrite, no change bars.

BROWN & ROOT, INC. CPSES  JOB 35-1195	NUMBER	REVISION	ISSUE DATE	PAGE
	CP-QAP-16.1	21	JUN 11 1984	1 of 37
TITLE:  CONTROL OF NONCONFORMING ITEMS	ORIGINATOR: <u>B. Mills</u>		<u>6-11-84</u> DATE	
	REVIEWED BY: <u>R. Soren</u>		<u>6/11/84</u> DATE	
	APPROVED BY: <u>JBC</u> Site QA Manager		<u>6/11/84</u> DATE	

- 1.0 REFERENCES
- 2.0 GENERAL
- 2.1 PURPOSE AND SCOPE

INFO ONLY  
 CONTROLLED COPY  
 CONTROL No. 154

The purpose of this procedure is to establish a method by which nonconforming conditions are identified, documented, resolved, and closed. The requirements contained herein are applicable to Safety Class 1, 2, and 3 fluid piping systems, their supports, and in-line equipment. When implemented for other than Safety Class 1, 2, and 3 items, third party inspection (i.e., ANI) is not required.

NOTE: It is the responsibility of site employees to identify nonconforming conditions in accordance with this procedure.

2.2 DEFINITIONS

2.2.1 Nonconformance

A deficiency in characteristic, documentation, or procedure which renders the quality of an item unacceptable or indeterminate.

2.2.2 Nonconformance Report (NCR)

A Nonconformance Report is the document that is used to identify, disposition and verify adequacy of the executed disposition of properly identified and documented nonconformances.

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BROWN & ROOT, INC. CPSES	NUMBER	REVISION	ISSUE DATE	PAGE
JOB 35-1195	CP-QAP-16.1	21	<b>JUN 11 1984</b>	2 of 37

### 2.2.3 Deficiency

A product condition which departs from applicable project procedures/instructions and can be resolved with an existing standard repair procedure.

NOTE: Deficiencies are documented on a Unsat Inspection Report in accordance with Section 3.2.

### 2.3 DOCUMENTATION OF NONCONFORMING CONDITIONS

Nonconformances shall be identified, documented, segregated and dispositioned in accordance with this procedure.

Nonconforming conditions on items addressed under ASME Section XI Program, which have N symbol stamp applied (i.e., N, NA) shall be dispositioned and controlled in accordance with Attachment 1.

### 2.4 SEGREGATION AND IDENTIFICATION OF NONCONFORMING ITEMS

Nonconforming items identified on NCR's shall be segregated (where practical) to prevent their inadvertent use or installation and shall be clearly identified with signs, barriers and/or hold tags. The Hold Tag (Attachment 2) shall identify the nonconforming item, NCR number, name of the NCR initiator, and the date. Hold tags applied to nonconforming items shall not be removed by anyone other than Quality Engineering Group (QEG)/Quality Control Group (QCG) personnel in accordance with Paragraph 3.1.2.3.

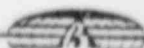
### 3.0 PROCEDURE

#### 3.1 NONCONFORMANCE REPORTS

##### 3.1.1 Nonconformance Reporting

##### 3.1.1.1 Initiation of NCR's

Nonconforming conditions, except as described in paragraphs 3.2 and 3.3 shall be documented by completing entries 1 through 9, 11, 12 and 18 on the NCR form (Attachment 3). Supporting documentation, (e.g., Inspection Reports, DWG's and NDE Reports) when applicable, shall be attached to or referenced on the NCR. Drawing/ISO numbers, procedures and any other referenced document shall include the latest revision status. The system/subsystem number, test number, elevation and/or room number (as applicable) shall also be recorded on the NCR form.



BROWN & ROOT, INC. CPSES  JOB 35-1195	NUMBER	REVISION	ISSUE DATE	PAGE
	CP-QAP-16.1	21	JUN 11 1984	3 of 37

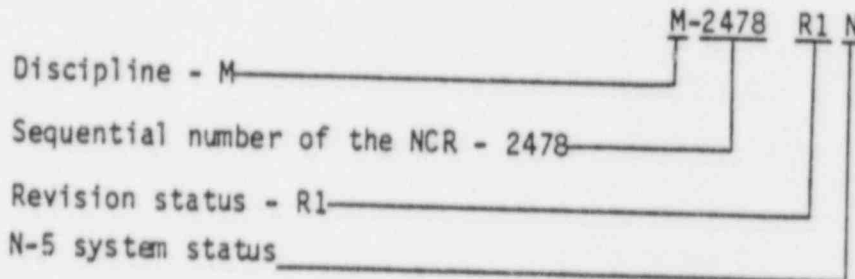
NOTE: For all nonconforming items on Safety Class 1, 2, and 3 fluid piping systems that do not effect ASME installation and N-5 certification, their supports and in-line equipment, entry 18 on the NCR form will be checked "No".

### 3.1.1.2 Numbering and Statusing

The NCR number shall be obtained from the field QE representative by the person reporting the nonconformance. The NCR number shall then be entered on the NCR form and on the Hold Tag (when used for identifying the nonconforming item).

The numbering system is as shown for the following example:

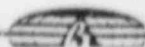
EXAMPLE:



When a NCR number is issued, the field QE will enter the NCR number and pertinent information in the NCR Log (Attachment 4). NCR's that have been issued numbers shall be submitted to the field QE by the end of the scheduled work shift. As a particular action occurs, field QE shall enter the dates and Responsible Party, as applicable, in order to maintain a current status of NCR processing.

NOTE: The "N" designation will be entered after the NCR number and revision to indicate the NCR is written on an item within a system, subsystem that has had an N-5 issued on it.

3.1.1.2.1 NCR's shall be controlled in the field by the field QE in accordance with this procedure.



BROWN & ROOT, INC. CPSES	NUMBER	REVISION	ISSUE DATE	PAGE
JOB 35-1195	CP-QAP-16.1	21	<b>JUN 11 1984</b>	4 of 37

3.1.1.3 Pre-issuance Review and NCR Approval

The reported nonconformance shall be evaluated by the applicable QCE/QE for legibility, clarity, accuracy, validity and specificity. Entry (10) on the NCR shall be determined and entered by the QCE/QE from the list of Trend Categories (Attachment 5). If it is a nonconforming condition, the QCE/QE shall assign the NCR to an "Action Addressee", complete entries 14, 15 and 16, sign entry 13 on the NCR to indicate review and concurrence and return the NCR to field QE representative. Distribution shall be per Attachment 5.

A copy of the NCR shall then be forwarded to the "Action Addressee" for dispositioning. The original NCR shall be retained by field QE for further processing.

3.1.1.4 Voiding an NCR

The Site QA Manager (SQAM) or his designee may, during processing, disposition an NCR to state "Not a Nonconforming Condition" or similar wording. He shall provide justification for such a disposition on the NCR, and shall sign for closure. When an NCR is dispositioned in this manner, the original is forwarded to the field QE representative and copies forwarded to the supervisor of the originator and the ANI, if applicable. The NCR shall then be closed in accordance with Paragraph 3.1.6.

3.1.1.5 Evaluation of NCR's

The SQAM, or his designee, shall evaluate nonconforming conditions with respect to CP-QP-16.1, "Reporting Significant Deficiency"

The applicable QCE/QE evaluating a nonconforming condition shall also evaluate the condition with respect to CP-QAP-17.1, "Corrective Action" .

Questionable NCR conditions will be resolved by the applicable QCE/QE in coordination with the QCG and/or QEG Supervisors.

BROWN & ROOT, INC. CPSES  JOB 35-1195	NUMBER	REVISION	ISSUE DATE	PAGE
	CP-QAP-16.1	21	JUN 11 1984	5 of 37

### 3.1.2 Disposition

The "Action Addressee" assigned the responsibility of evaluating and dispositioning the NCR shall do so in a timely manner. Supporting documentation should be referenced on, and/or attached to, the NCR.

Nonconforming conditions identified during final system walk down may be dispositioned by the field QE to "Repair/Rework in accordance with approved project procedures to conform with current design requirements" or similar wording. NCR's so dispositioned shall be submitted to the ANI for "Review".

#### 3.1.2.1 QE Review and Approval of NCR Dispositions

Upon receipt of the proposed disposition, QE shall update the NCR Log and review the NCR for adequacy and conformance to applicable specification, procedure and Code requirements.

If the disposition is not satisfactory, the QE shall resolve all concerns with the "Action Addressee." If an acceptable disposition can not be agreed upon, a higher level of management shall be notified for resolution.

If the proposed disposition is satisfactory, the QE shall have the disposition entered on the original NCR and obtain the following review/approval signatures:

- a. Engineering - Engineering Manager, Lead Discipline Engineer or designee(s); (Repair/Rework and Use-as-is)
- b. Construction Review - As applicable, Department Manager or designee.
- c. QE Review - QE to indicate compliance of the disposition with the Code and the QA program;
- d. ANI Review - items that require repair/rework by welding and shall be submitted to ANI for concurrence. All other NCR's shall be submitted to the ANI for review as applicable.

QE shall enter "N/A" and initial and date those specific "Review"/"Approvals" which are not required.

BROWN & ROOT, INC. CPSES  JOB 35-1195	NUMBER	REVISION	ISSUE DATE	PAGE
	CP-QAP-16.1	21	JUN 11 1984	6 of 37

### 3.1.2.2 Construction/Engineering "Risk Removal"

For those nonconforming items which Construction/Engineering desires to continue to process on a "risk removal" basis, the following conditions must be satisfied:

- a. The NCR disposition shall include sufficient information and direction for accomplishing the work.
- b. Engineer Review/Approval shall be by the Engineering Manager, or designee(s);
- c. QE/QC Review/Approval shall be by the SQAM or designee;
- d. ANI concurrence/review shall be obtained;

QE shall enter "N/A" and initial and date those specific "Review"/"Approvals" which are not required.

NOTE: "Partial Disposition" - Identification of the item as nonconforming shall be maintained with the "Hold Tag" until a "Final Disposition" is approved.

### 3.1.2.3 Implementation of the Disposition

For NCR's dispositioned as "Repair/Rework" and construction is ready to perform the required work as stated on the approved disposition they will contact TUGCO Startup for authorization. Once authorization is given Construction will contact QC for removal of the "Hold Tag" from the item.

For NCR's dispositioned as "Other," a copy of the NCR shall be sent to the responsible construction supervisor for implementation of the approved disposition. The disposition shall record the specific superseded documentation including the Operational Traveler (OT) number.

For NCR's dispositioned "use-as-is" by the Design Engineer, the QE will forward a copy of the dispositioned NCR to the responsible QC Supervisor to ensure timely follow-up and closure of the NCR.

### 3.1.3 Verification/Closure

The applicable QC Superintendent/QCE shall ensure that the work activities required by the NCR disposition are verified

BROWN & ROOT, INC. CPSES  JOB 35-1195	NUMBER	REVISION	ISSUE DATE	PAGE
	CP-QAP-16.1	21	JUN 11 1984	7 of 37

and/or witnessed by qualified inspection personnel. The inspector shall document the completion of the NCR disposition by:

- a. Assuring documentation is available to verify that the disposition has been satisfactorily implemented. This documentation shall be attached to or referenced on the NCR; and
- b. Signing the verification block on the NCR. This signature provides objective evidence that the hold tag has been removed.

QE will coordinate obtaining ANI concurrence. Should any discrepancies arise, they will be referred to the QCG and/or QEG Supervisors for resolution. Following ANI concurrence, the QE will review the NCR and applicable supporting documentation for legibility, clarity and specificity and then sign for "Closure" of the NCR.

#### 3.1.4 Distribution

Distribution of NCR's shall be performed by QE at the time of issuance, disposition approval, revision, and closure, in accordance with a schedule prepared by the QEG Supervisor (Attachment 6).

##### 3.1.4.1 Control

QE shall be responsible for maintaining the original NCR at all times, except during the review/signature cycle. Should the original NCR become lost during the review/signature cycle, a duplicate will be issued by QE and identified "Certified True Copy." The "Certified True Copy" shall be the document utilized for signature/review and implementation of the NCR.

#### 3.1.5 NCR Revision

NCR's may be revised at any time prior to closure for the following reasons:

- a. Clarity of terms, conditions and dispositions;
- b. Additional descriptive information; and /or

BROWN & ROOT, INC. CPSES  JOB 35-1195	NUMBER	REVISION	ISSUE DATE	PAGE
	CP-QAP-16.1	21	JUN 11 1984	8 of 37

c. Change in disposition responsibility.

NOTE: Minor changes may be made by lining through, initialing and dating the change without the need for a revision, provided the technical content of the NCR is not altered.

#### 3.1.5.1 Revision Procedure

When a NCR requires revision, it shall be identified with the letter "R" immediately following the NCR number and a sequential number indicating the level of the revision. The nonconforming condition shall be re-stated in Block (11) and/or attached to the revised NCR. The reason for the revision and the individual initiating the revision shall be stated at the bottom of Block (11) of the NCR. Any revision to the NCR nonconformance shall be made by the organization that identified the nonconformance. Any revision to the NCR disposition shall be made by the organization that originated the disposition. NCR revisions shall receive the same review and approval cycle as the original NCR. QE shall maintain the original NCR until closure.

NOTE: NCR's may be revised one time only (R-1) on the original NCR. That portion being revised shall be identified with a delta one ( $\Delta$ ). This NCR revision shall receive the same review/approvals as the original (Rev-0).

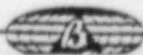
#### 3.1.5.2 Re-opened NCR's

NCR's may be re-opened to correct information as provided for in 3.1.5 (a) above. Changes will receive the same review/concurrence as the original NCR.

#### 3.1.6 Closure Process

QE shall complete the closure process for Brown and Root ASME NCR's as follows:

- a. Enter NCR closure date in NCR log.
- b. Assemble all previous revisions, if any, of the NCR being closed and include them in the closure package.
- c. Record stamp, initial, date and number the original NCR and/or revision(s) and process the closed NCR Package to the Owner in accordance with CP-QAP-18.1.





BROWN & ROOT, INC. CPSES  JOB 35-1195	NUMBER	REVISION	ISSUE DATE	PAGE
	CP-QAP-16.1	21	JUN 11 1984	9 of 37

### 3.2 INSPECTION REPORTS

#### 3.2.1 Base/Weld Metal Inspection Reports

Nonconforming conditions may be identified on a Base/Weld Metal Inspection Report (B/WMIR, Attachment 7) as delineated in the following paragraphs.

- NOTE:
- a. Prior to writing a B/WMIR, the QCI should refer to Attachment 8 of this procedure for clarification of noted condition.
  - b. Base metal defect and arc strikes discovered on "N" Symbol stamped component shall be documented on a NCR.

##### 3.2.1.1 Minimum Wall Violation

Minimum wall violations within ½" of piping end preps can be identified on a B/WMIR and forwarded to Welding Engineering for action.

The repair shall be performed in accordance with a standard repair/rework procedure.

All other minimum wall violations shall be documented on a NCR.

##### 3.2.1.2 Defects Discovered After System/Subsystem Pressure Testing

Arc strikes and base/weld metal defects discovered after accepted system testing shall be documented on a NCR.

NOTE: Weld repair to a pressure retaining item after an acceptable pressure test does not require the retest of the repaired area provided:

- a. The defect was not detected by RT.
- b. The depth of repair cavity prior to welding did not exceed 3/8" or 10% of the actual thickness, whichever is less.

##### 3.2.1.3 Distribution

Once the B/WMIR has been initiated, the serialized B/WMIR number, item description and condition shall be entered on the QC B/WMIR Log (Attachment 9). The B/WMIR shall then be forwarded to the applicable craft personnel for action and subsequent QC inspection.



BROWN & ROOT, INC. CPSES  JOB 35-1195	NUMBER	REVISION	ISSUE DATE	PAGE
	CP-QAP-16.1	21	JUN 11 1984	10 of 37

#### 3.2.1.4 Close Out

When the B/WMIR is satisfactorily completed, the QC B/WMIR Log shall be updated to reflect the status and the B/WMIR will be stamped with a QA Record Stamp (Attachment 10). The B/WMIR shall then be forwarded to the QE for review for technical adequacy, clarity, legibility and trending from the list of trend categories (Attachment 11). When entering the applicable trend categories on the B/WMIR, the QE will initial and date the entry. After QE review, the B/WMIR shall be processed in accordance with CP-QAP-18.1.

#### 3.2.2 Reporting Deficiencies

##### 3.2.2.1 General

The purpose of the Inspection Report (IR, Attachment 12) is to establish a method of documenting field QC activities not recorded on other Process Control or QA documents.

NOTE: IR's shall not be used to document any deficiency which is:

- a. Related to an "N" Symbol stamped component;
- b. Any deficiency identified after final QA acceptance of a hanger package or required Code pressure testing; or
- c. Cannot be reworked in accordance with existing approved project procedures.

##### 3.2.2.2 Preparation/Use

The IR shall completely and accurately describe the item or activity observed. Questions regarding inspection characteristics should be directed to the QCE/QC Supervisor.

##### 3.2.2.3 Numbering

Satisfactory inspections reported on an IR do not require a log number. The QCI shall enter sufficient applicable identification on the IR to maintain traceability to the item being inspected and N/A the IR log number space.

When completed, the IR shall become part of the item's documentation package.



BROWN & ROOT, INC. CPSES  JOB 35-1195	NUMBER	REVISION	ISSUE DATE	PAGE
	CP-QAP-16.1	21	JUN 11 1984	11 of 37

QCG Supervisor shall be responsible for preassigning Inspection Report numbers, for Unsatisfactory Inspection Reports, to the Group QCE's. Each QC Group shall in turn maintain an Inspection Report Log (Attachment 13) to prevent duplication of numbers and provide traceability. The Quality Control Inspector (QCI) shall obtain the serial number for an "Unsat" IR. The QCE shall review the "Unsat" IR to complete the necessary entries on the IR Log. The QCE shall assign the applicable deficiency trend code (Attachment 4) to the Unsat IR and log the trend code in the comments section of the IR Log. "Unsat" Inspection Reports shall be numbered as follows:

EXAMPLE: AM - 00001  
 |  
 |——MECHANICAL  
 |  
 ASME

#### 3.2.2.4 Reporting In-Process Deficiencies

If a deficiency is observed during in-process inspection, the QCI shall "unsat" the "Hold Point" on the appropriate process control documentation, enter the "Unsat" IR number and sign and date the entry. The original "Unsat" Inspection report describing the nature of the deficiency shall be returned to the organization responsible for resolving the deficiency. A copy shall be retained by the QCE until the satisfactory resolution of the IR has been completed.

An "Unsat" IR shall generate an appropriate inspection "Hold Point" on the process control document(s) issued by the responsible organization used to correct the deficiency.

When the deficient item(s) are found satisfactory, the QCI shall close the previously generated "Unsat" IR and sign-off the process control documentation. The closed IR shall be retained with the process control documentation. QCI shall inform the QCE of the closed status of the IR to update the IR Log.

#### 3.2.2.5 Nonconformances

When a deficiency cannot be resolved by an "Unsat" IR disposition, the QCE/QE shall generate a NCR in accordance with this procedure.

BROWN & ROOT, INC. CPSES  JOB 35-1195	NUMBER	REVISION	ISSUE DATE	PAGE
	CP-QAP-16.1	21	JUN 11 1984	12 of 37

When a NCR is issued against an "Unsat" IR, the NCR number shall be recorded on the "Unsat" IR. The "Unsat" IR shall be closed per issuance of the NCR.

### 3.2.2.6 "Unsat" Inspection Report Closeout

An "Unsat" IR shall be closed by the QCI when one of the following is accomplished:

- a. All UNSAT items have been reinspected and found SAT, or
- b. An NCR has been issued for UNSAT items in accordance with 3.2.2.5.

After closeout of the "Unsat" IR, the responsible QCE/QC Supervisor shall update the Inspection Report Log.

### 3.2.2.7 "Unsat" Inspection Report Trend Analysis

At the end of each quarter, the responsible QCE shall send a copy of the completed IR Log to QE for Trend Analysis.

## 3.3 PIPING DEVIATIONS

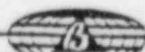
### 3.3.1 Initiation

Piping Deviation Record Forms (PDRF, Attachment 14) were used to document field piping deviations from design drawing requirements which do not constitute design changes as defined by Engineering. Piping deviations were documented for Unit I and II on generic NCR's M-2807 and M-3058.

### 3.3.2 NCR Closure

Portions of the NCR's (each PDRF) will be closed upon acceptance of satisfactory rework or the "use-as-is" disposition as a result of final Code analysis or normal design review. For PDRF's dispositioned "use-as-is" the Project Mechanical Design Engineering Group/Field Mechanical Engineering Organization will notify QEG in writing as final Code stress analysis is performed and accepted.

Upon satisfactory inspection of rework conditions or Engineering approval of Use-as-is conditions, each PDRF or group of PDRF's shall be removed from the generic NCR and addressed on individual NCR's. For tracking purposes, the original open PDRF's shall remain with the generic NCR until addressed on individual NCR's.



BROWN & ROOT, INC. CPSES	NUMBER	REVISION	ISSUE DATE	PAGE
JOB 35-1195	CP-QAP-16.1	21	JUN 11 1984	13 of 37

As a QE aid only, a computer printout shall be maintained for both generic NCR's as a readily retrievable index to reflect each PDRF status and its closure.

The final closure of NCR's will be in accordance with Paragraph 3.1.6. The final closure of both generic NCR's shall be performed by QE and shall include a list of each PDRF and its respective NCR closure.



BROWN & ROOT, INC. CPSES	NUMBER	REVISION	ISSUE DATE	PAGE
JOB 35-1195	CP-QAP-16.1	21	JUN 11 1984	14 of 37

ATTACHMENT 1

BROWN & ROOT SECTION XI  
REPAIR AND REPLACEMENT ACTIVITIES

- NOTE: 1 This Attachment describes the programmatic and administrative controls necessary to ensure that repair and replacements of items and parts by Brown & Root (B&R) are accomplished in accordance with the Owner's requirements and the requirements of the ASME Code Section XI.
- NOTE: 2 Brown & Root repair and replacement activities are applicable to specific repairs and replacements performed by direction of the Owner through a Work Authorization per Section XI Program (WASP).
- NOTE: 3 When a nonforming condition is identified on an "N" or "NA" stamped component by B&R, refer to Note 11 for processing.
- NOTE: 4 The Owner's engineering organization is divided into two responsible parts. TUGCo Nuclear Engineering (TNE) is responsible for pressure boundary items addressed under ASME Section XI Program, and Pipe Support Engineering (PSE) is responsible for component support work.
- NOTE: 5 TNE and PSE are responsible for coordinating the repair and replacement of component parts, including the following activities:
- a. Preparing the WASP;
  - b. Preparation and review of design drawings; and
  - c. Completing the required engineering activities.
- NOTE: 6 A WASP is generated by the Owner's responsible engineering organization (TNE/PSE). The WASP contains information and instructions for the repair or replacement including the design specification and applicable construction Code edition, addenda and Code cases. The WASP identifies Owner QA and Owner Authorized Nuclear Inspectors holdpoints and required approvals. The



BROWN & ROOT, INC. CPSES  JOB 35-1195	NUMBER	REVISION	ISSUE DATE	PAGE
	CP-QAP-16.1	21	JUN 11 1984	15 of 37

ATTACHMENT 1 (Cont.)

WASP, including design drawings and all applicable documentation, as determined by the Owner, is transmitted to B&R Welding Engineering (WE) and Construction Engineering for implementation of repairs or replacements.

NOTE: 7 Upon receipt of a WASP, B&R WE shall assemble a work package. The work package shall contain the process control documentation and supportive evidence necessary to accomplish actions specified on the WASP. The following is typical of documentation contained in a work package:

- a. Design drawings;
- b. Operation Traveler;
- c. Weld Data Cards;
- d. Weld Filler Material Logs;
- e. Material Requisitions;
- f. Welding Procedure Specifications;
- g. Welder Qualification Records;



BROWN & ROOT, INC. CPSES  JOB 35-1195	NUMBER	REVISION	ISSUE DATE	PAGE
	CP-QAP-16.1	21	JUN 11 1984	16 of 37

ATTACHMENT 1 (Cont.)

- h. Manufacturing Record Sheets/Material Identification Logs;
- i. QC Personnel Certification Records;
- j. NDE Reports (Completed Package); and
- k. Work Package Index (Completed Package).

NOTE: 8 B&R WE and Construction Engineering shall be responsible for coordination of repair and replacement activities. B&R WE shall maintain a work package index which will list all process documents, specific qualification records and Inspection Reports which make up the work package.

NOTE: 9 B&R Construction Engineering shall generate an OT in accordance with approved procedures. The OT shall specify sequential operations necessary to accomplish the repair or replacement specified on the Owner's WASP. The OT shall provide for sign off and dating of each operation by responsible personnel and specify procedures and instructions for completion of operations.

B&R Quality Engineering (QE) shall perform the following:

- a. Review all documentation to ensure compliance with the requirements specified on the WASP, including code and design requirements;
- b. Assign QC holdpoints to process documentation;
- c. Enter specific inspection attributes, procedures, and procedural and acceptance





BROWN & ROOT, INC. CPSES  JOB 35-1195	NUMBER	REVISION	ISSUE DATE	PAGE
	CP-QAP-16.1	21	JUN 11 1984	17 of 37

ATTACHMENT 1 (Cont.)

criteria on the OT to provide technical direction to the QCI performing inspections or NDE; and

- d. Identify QCI's performing inspections or NDE.

B&R QA will then present the work package to the Owner's responsible engineering organization for approval and establishment of TUGCo's QA and the Owner's Authorized Inspector's holdpoints on the OT.

After establishing necessary holdpoints, the work package will be submitted to B&R WE for craft work.

- NOTE: 10 Following completion of craft activities and QCI acceptance, B&R QE shall review all work package documentation for completeness, legibility, and compliance to Code, design and Owner requirements, and upon acceptance, initiate a NIS-2 form.

B&R QA will transmit the entire documentation package to the Owner's responsible engineering organization.

- NOTE: 11 When a nonconforming condition has been identified on an "N" or "NA" stamped component, the following shall take place:

- a. A Nonconformance Report is generated in accordance with Paragraph 3.1.1.1 and submitted to the field QE representative. The QE shall review the NCR for legibility, accuracy, validity and specificity, and complete entries 13 thru 17 on the NCR form.
- b. The QE shall review the NCR to determine if the nonconforming condition effects items addressed under the ASME Section XI Program as defined in Note 4. If so, he will assign the "Action Addressee" to the Owner's responsible engineering organizations (i.e., TNE, PSE) for



BROWN & ROOT, INC. CPSES  JOB 35-1195	NUMBER	REVISION	ISSUE DATE	PAGE
	CP-QAP-16.1	21	JUN 11 1984	18 of 37


ATTACHMENT 1 (Cont.)

dispositioning. If during QE's review, he determines that the items addressed under the ASME Section XI Program are not affected (as defined in Note 4) then he will assign the "Action Addressee" to Comanche Peak Project Engineering. (CPPE) and process in accordance with Paragraph 3.1.1.3.

- c. For NCR's assigned to TNE/PSE, a copy of the NCR shall be sent for dispositioning. If repair or replacement is required, TNE/PSE will generate a WASP (per Note 6), reference the WASP's number on the NCR, and submit the NCR back to the QE for disposition concurrence. QE shall also obtain the Owner's Authorized Nuclear Inspector's concurrence of the disposition before issue of distribution.
- d. Upon issuance of the NCR, TNE/PSE will issue the WASP and necessary documentation (as described in Note 6), to B&R WE for development of a work package (as outlined in Note 7 thru Note 9.)
- e. Upon completion of craft work, QCI will verify closure of NCR and sign completion of the OT.
- f. QE will coordinate obtaining the Owner's Authorized Nuclear Inspector's concurrence of closure and process closure per Paragraph 3.1.6.
- g. B&R QA shall perform final review of the completed work package as described in Note 10.

BROWN & ROOT, INC. CPSES  JOB 35-1195	PROCEDURE NUMBER	REVISION	EFFECTIVE DATE	PAGE
	CP-QAP-16.1	21	JUN 11 1984	19 of 37

ATTACHMENT 2



## HOLD


DO NOT RELEASE  
FOR CONSTRUCTION

NO. \_\_\_\_\_

ID \_\_\_\_\_

**QC** \_\_\_\_\_ / /

DO NOT REMOVE THIS TAG  
WITHOUT QC AUTHORITY




## RECEIVING HOLD

DO NOT RELEASE  
FOR CONSTRUCTION

NO. \_\_\_\_\_

ID \_\_\_\_\_

QC \_\_\_\_\_



## HOLD

DO NOT RELEASE  
FOR CONSTRUCTION

NO. \_\_\_\_\_

ID \_\_\_\_\_

QC \_\_\_\_\_

NOTE: All three examples given are red in color with black printing.





BROWN & ROOT, INC. CPSES  JOB 35-1195	PROCEDURE NUMBER	REVISION	EFFECTIVE DATE	PAGE
	CP-QAP-16.1	21	JUN 11 1984	22 of 37

ATTACHMENT 5

NCR/IR DEFICIENCY TREND CATEGORIES

- A - Valves
- B - Bulk Material
- C - Component Supports
- D - Piping
- E - Equipment
- F - Flange/Mech. Joints
- G - Sway Struts/Snubbers
- H - Tanks/Vessels
- I - General/Miscellaneous

NUMBER IDENTIFIER

1. Shipping Damage
2. Incomplete/Incorrect Vendor Documentation
3. Handling/Storage
4. Maintenance/House Keeping
5. DWG/CMC (Incomplete/Incorrect)
6. Documentation (Incomplete/Incorrect)
7. Procedure/Specification Violation
8. Hold Point Violation
9. Material Traceability
10. Material (Damage/Incorrect)
11. Fabrication (Incomplete/Incorrect)
12. Installation (Incomplete/Incorrect)
13. Alignment (Equip./Piping, Etc.)
14. Malfunction (Equip./Valves, Etc.)
15. Cleanliness/Contamination
16. Welding
17. Welding Procedure
18. Welder Qualification
19. Weld Filler Material
20. NDE (Results/Methods)
21. Arc Strikes, Base Metal Defects, Min. Wall Violation
22. Heat Treatment
23. Hydro/Pneumatic Testing
24. Coating/Painting & Insulation
25. Mishandling
26. Construction Fabrication/Installation - Damage
27. Calibration/Instrumentation
28. Inspection Surveillance
29. Miscellaneous
30. Generic

BROWN & ROOT, INC.  
CPSES  
JOB 35-1195

PROCEDURE NUMBER	CP-QAP-16.1
REVISION	21
EFFECTIVE DATE	JUN 11 1984
PAGE	23 OF 37

ASME NCR DISTRIBUTION

	ISSUANCE No. of copies	DISPOSITION No. of copies	CLOSURE No. of copies
B&R Construction Project Welding Eng.	1	1	1
Unit 2 Package Flow Control	1	1	1
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Interim Records Vault (for Unit 2)	0	0	Original
TUGCo Site QA Supervisor	1	1	1
Authorized Nuclear Inspectors (ANI)	0	1	1
NSSS Site Rep. (Westinghouse items only)*	1	0	1
TUGCo Start-Up *	0	1	0
B&R Site QA Manager	1	0	0
Tech Services	1	1	1

\* When applicable.

ATTACHMENT 6

BROWN & ROOT, INC. CPSES  JOB 35-1195	PROCEDURE NUMBER	REVISION	EFFECTIVE DATE	PAGE
	CP-QAP-16.1	21	JUN 11 1984	24 of 37

ATTACHMENT 7



**Brown & Root, Inc.**  
BASE/WELD METAL INSPECTION REPORT

SERIAL NUMBER \_\_\_\_\_

PAGE \_\_\_\_\_ OF \_\_\_\_\_

PROJECT: COMANCHE PEAK    JOB NO. 35-1195    UNIT \_\_\_\_\_ PAGE \_\_\_\_\_ OF \_\_\_\_\_

DRAWING:	SYSTEM:	CLASS: 1 2 3	OTHER
LOCATION:	ITEM NUMBER:		
MTL. TYPE:	MTL. THICKNESS:		

Sketch & Comments

\_\_\_ ARC STRIKE      \_\_\_ BASE METAL      \_\_\_ MIN. WALL      \_\_\_ GOUGE

ACCEPTANCE STD

V.T.:	Rev.	Accept <input type="checkbox"/>	Reject <input type="checkbox"/>	Inspector	DATE
P.T.:	Rev.	Accept <input type="checkbox"/>	Reject <input type="checkbox"/>	Inspector	DATE
Penetrant Batch #					Cleaner Batch #
Developer Batch #					Attachment #
U.T.:	Rev.	Accept <input type="checkbox"/>	Reject <input type="checkbox"/>	Inspector	DATE
M&TE IRC #					Cal. Due Date:
CALIBRATION BLOCK(S)					
COUPLANT	MIN. READING		ALLOW READING		

NCR NO. \_\_\_\_\_      QC INSPECTOR & LEVEL \_\_\_\_\_      DATE \_\_\_\_\_



BROWN & ROOT, INC. CPSES  JOB 35-1195	PROCEDURE NUMBER	REVISION	EFFECTIVE DATE	PAGE
	CP-QAP-16.1	21	JUN 11 1984	25 of 37

ATTACHMENT 8

1.0 BASE METAL DAMAGE AND ARC STRIKE REPAIR ON THE BASE METAL

1.1 REPAIR OF ARC STRIKES AND BASE METAL DAMAGE ON ASME CODE CLASS 1 (NB) PIPING

- a. Arc strikes on ASME code class 1 items shall be removed by grinding or buffing. The ground area shall be blended uniformly into the surrounding area and shall be examined by PT or MT. Pipe wall thickness shall be checked after grinding or blending to assure that minimum wall thickness requirements have not been violated, per Table 1.
- b. Mechanical marks, abrasions or other surface defects including cable marks, tool marks or pits, deeper than 1/16 inch, shall be removed by grinding and blending followed by PT or MT to assure removal of the defect. Also, surface defect no deeper than 1/16 inch if of abrupt nature and becomes a stress riser, shall be removed by grinding and blending followed by PT or MT to assure removal of the defect. The defect area shall be minimum wall thickness examined to assure that the requirements, per Table 1, have not been violated.

NOTE: Surface defects no deeper than 1/16 inch need not be removed if the defect is uniformly blended into the surrounding area and does not encroach on minimum wall.

1.2 REPAIR OF ARC STRIKES AND BASE METAL DAMAGE ON ASME CODE CLASS 2 (NC) AND CLASS 3 (ND) PIPING

- a. Arc strikes on P-1 Carbon Steel shall be visually inspected for linear indications such as cracks or unacceptable undercuts or crater. (Surface may require preparation by filing or application of abrasive paper to provide a surface suitable for visual inspection.) If linear indications are found, they should be lightly ground and blended then visually inspected and followed by a minimum wall thickness examination to assure that the requirements per Table 1 for class 2 and 3 piping have not been violated. Arc strikes on all steel, other than P-1, shall be removed by grinding and visually inspected to assure that it has been removed. After grinding and blending, wall thickness shall be checked to assure the minimum wall.

BROWN & ROOT, INC. CPSES	NUMBER	REVISION	ISSUE DATE	PAGE
JOB 35-1195	CP-QAP-16.1	21	JUN 11 1984	26 of 37

ATTACHMENT 8 (Continued)

- b. Mechanical marks, abrasions or other surface defects including cable marks, tool marks, or pits, deeper than 1/16 inch, shall be removed by grinding and blending followed by a visual inspection. Also, surface defect no deeper than 1/16 inch if of abrupt nature and becomes a stress riser, shall be removed by grinding and blending followed by a visual inspection. The defect area shall then be minimum wall thickness examined to assure that the requirements per Table 1 for class 2 and 3 piping have not been violated.

NOTE: Surface defects no deeper than 1/16 inch need not be removed if the defect is uniformly blended into the surrounding area and does not encroach on minimum wall.

1.3 REPAIR OF ARC STRIKES AND BASE METAL DAMAGE ON NF CLASS 1 HANGERS

1.3.1 NF Class 1 Hangers

- a. Arc strike on Class 1 items shall be removed by grinding and ground area shall be examined by VT. The grinding and determination of possible weld repair shall be in accordance with Table 2.
- b. Mechanical marks, abrasions, cable marks, tool marks or pits shall be removed by grinding if it violates section minimum wall and ground area shall be examined by VT. Determination of possible weld repair shall be in accordance with Table 2.

1.3.2 NF Class 2 and 3 Hangers

- a. Arc strike on P-1 carbon steel shall be visually inspected for linear indications such as cracks or unacceptable undercuts or crater. (Surface may require preparation by filing or application of abrasive paper to provide a surface suitable for visual inspection.) If linear indications are found the arc strike shall be removed by grinding and area shall be visually examined. Determination of possible weld repair shall be in accordance with Table 2. Arc strike on all other steel (i.e., other than P-1) shall be removed by grinding and visually examined. Determination of possible weld repair shall be in accordance with Table 2.



BROWN & ROOT, INC. CPSES  JOB 35-1195	NUMBER	REVISION	ISSUE DATE	PAGE
	CP-QAP- 16.1	21	JUN 11 1984	27 of 37

ATTACHMENT 8 (con't)

- b. Mechanical marks, abrasion or other surface defects including cable marks, tool marks or pits may be removed by grinding if it violates section minimum wall thickness per Table 2. The defect may be removed by grinding and visually examined. Determination of possible weld repair shall be in accordance with Table 2.



BROWN & ROOT, INC. CPSES JOB 35-1195	NUMBER	REVISION	ISSUE DATE	PAGE
	CP-OAP- 16.1	21	JUN 11 1984	28 of 37

ATTACHMENT 8 (con't)  
Table 1  
MINIMUM ACCEPTABLE WALL THICKNESS FOR PIPING

PIPE SIZE	O.D. INCHES	SCH. 5S	SCH. 10S	SCH. 10	SCH. 20	SCH. 30	STD.	SCH. 40
1/8	.405	—	.043	.043	—	—	.060	.060
1/4	.540	—	.057	.057	—	—	.077	.077
3/8	.675	—	.057	.057	—	—	.080	.080
1/2	.840	.057	.073	.073	—	—	.095	.095
3/4	1.050	.057	.073	.073	—	—	.099	.099
1	1.315	.057	.095	.095	—	—	.116	.116
1 1/4	1.660	.057	.095	.095	—	—	.122	.122
1 1/2	1.9	.057	.095	.095	—	—	.127	.127
2	2.375	.057	.095	.095	—	—	.135	.135
2 1/2	2.875	.073	.105	.105	—	—	.178	.178
3	3.5	.073	.105	.105	—	—	.189	.189
3 1/2	4.0	.073	.105	.105	—	—	.198	.198
4	4.5	.073	.105	.105	—	—	.207	.207
5	5.563	.095	.116	.116	—	—	.226	.226
6	6.625	.095	.116	.116	—	—	.245	.245
8	8.625	.095	.130	.130	.219	.242	.282	.282
10	10.750	.116	.145	.145	.219	.269	.319	.319
12	12.750	.136	.158	.158	.219	.289	.328	.355
14	14.00	.136	.164	.219	.273	.328	.328	.383
16	16.00	.145	.164	.219	.273	.328	.328	.438
18	18.00	.145	.164	.219	.273	.383	.328	.492
20	20.00	.164	.191	.219	.328	.438	.328	.519
22	22.00	.164	.191	.273	.328	.438	.328	.519
24	24.00	.191	.219	.273	.328	.492	.328	.601
26	26.00	—	—	.273	.438	—	.328	—
28	28.00	—	—	.273	.438	.547	.328	—
30	30.00	.215	.273	.273	.438	.547	.328	—
32	32.00	—	—	.273	.438	.547	.328	.601
34	34.00	—	—	.273	.438	.547	.328	.601
36	36.00	—	—	.273	.438	.547	.328	.656
42	42.00	—	—	—	—	—	.328	—

NOTE: Use only for pipe specified by nominal wall thickness.  
Do not use for pipe specified by minimum wall thickness.  
Specification defines minimum acceptable wall thickness.

CONT'D



BROWN & ROOT, INC. CPSES  JOB 35-1195	NUMBER	REVISION	ISSUE DATE	PAGE
	CP-QAP-16.1	21	JUN 11 1984	29 of 37

ATTACHMENT 8 (con't)

Table 1 (con't)

MINIMUM ACCEPTABLE WALL THICKNESS FOR PIPING

PIPE SIZE	SCH. 60	EXT. STRONG	SCH. 80	SCH. 100	SCH. 120	SCH. 140	SCH. 160	XX STRONG
1/8	—	.083	.083	—	—	—	—	—
1/4	—	.104	.104	—	—	—	—	—
3/8	—	.110	.110	—	—	—	—	—
1/2	—	.129	.129	—	—	—	.164	.257
3/4	—	.135	.135	—	—	—	.191	.270
1	—	.157	.157	—	—	—	.219	.313
1 1/4	—	.167	.167	—	—	—	.219	.334
1 1/2	—	.175	.175	—	—	—	.246	.350
2	—	.191	.191	—	—	—	.300	.382
2 1/2	—	.242	.242	—	—	—	.328	.483
3	—	.262	.262	—	—	—	.383	.525
3 1/2	—	.278	.278	—	—	—	—	.557
4	.246	.295	.295	—	.383	—	.465	.590
5	—	.328	.328	—	.438	—	.547	.656
6	—	.378	.378	—	.492	—	.629	.756
8	.355	.438	.438	.519	.629	.710	.793	.766
10	.438	.438	.519	.629	.738	.875	.984	—
12	.492	.438	.601	.738	.875	.984	1.148	—
14	.519	.438	.656	.820	.956	1.094	1.230	—
16	.573	.438	.738	.902	1.066	1.258	1.393	—
18	.656	.438	.820	1.012	1.203	1.367	1.558	—
20	.710	.438	.902	1.121	1.312	1.531	1.722	—
22	.766	.438	.984	1.203	1.422	1.641	1.86	—
24	.847	.438	1.066	1.340	1.586	1.804	2.050	—
26	—	.438	—	—	—	—	—	—
28	—	.438	—	—	—	—	—	—
30	—	.438	—	—	—	—	—	—
32	—	.438	—	—	—	—	—	—
34	—	.438	—	—	—	—	—	—
36	—	.438	—	—	—	—	—	—
42	—	.438	—	—	—	—	—	—



BROWN & ROOT, INC. CPSES  JOB 35-1195	NUMBER	REVISION	ISSUE DATE	PAGE
	CP-QAP- 16.1	21	JUN 11 1984	30 of 37

ATTACHMENT 8 (con't)

Table 2

Arc strikes and base metal defects on NF component supports may be repaired without weld build up provided the following conditions are met:

- A. The damaged/defect area ground is well faired without abrupt changes in contour and shows no visual indication of being previously repaired.
- B. The depression produced by grinding does not exceed an area 2 inches in diameter.
- C. The depth of the depression produced by grinding does not exceed the following:
  - a. Structural Shapes
    - 1. 1/32 inch for material less than 3/8 inch in thickness.
    - 2. 1/16 inch for 3/8 to 2 inches inclusive in thickness.
    - 3. 1/8 inch for material over 2 inches in thickness.
  - b. Tube Steel
    - 1. 10% of the nominal wall thickness.
  - c. Plate
    - 1. 7% of the nominal plate thickness up to a maximum of 1/8 inch.

If the above requirements cannot be met, the damaged/defected area shall be repaired by welding and grinding unless otherwise approved by engineering.





BROWN & ROOT, INC. CPSES  JOB 35-1195	PROCEDURE NUMBER	REVISION	EFFECTIVE DATE	PAGE
	CP-QAP-16.1	21	JUN 11 1984	32 of 37

ATTACHMENT 10

QA RECORD

RTN.	QA REVIEW
FILE NO.	
SUBFILE NO.	



BROWN & ROOT, INC. CPSES	PROCEDURE NUMBER	REVISION	EFFECTIVE DATE	PAGE
JOB 35-1195	CP-QAP-16.1	21	JUN 11 1984	33 of 37

ATTACHMENT 11

BWMIR TREND CATEGORIES

BWMIR's were divided into the following trend categories:

1. Minimum wall violations
2. Arc strikes
3. Mishandling marks
4. Gouges
5. Miscellaneous (weld spatter, excessive grinding, etc.)
6. Mishandling marks and arc strikes



BROWN & ROOT, INC. CPSES	PROCEDURE NUMBER	REVISION	EFFECTIVE DATE	PAGE
JOB 35-1195	CP-QAP-16.1	21	JUN 11 1984	35 of 37

ATTACHMENT 12 (con't)

- Block 1: Enter IR Number only for unsatisfactory inspection. N/A for satisfactory inspections.
- Blocks 2 & 3: Record sufficient information to uniquely identify the item or activity observed.
- Block 4: Record the system and/or structure designation sufficient to specifically locate the item.
- Blocks 5 & 6: Record the governing specification number and revision.
- Block 7: Record the Quality procedure and/or instruction and revision number.
- Block 8: Record the M&TE number(s) of the calibrated instrument used to verify an inspection attribute and the calibration due date.
- Block 9: Check the type of inspection performed.
- Block 10: Check the appropriate block and sign and date in the space provided.
- Blocks 11 & 12: Describe the characteristics to be observed. (A characteristic is a property which can be appraised in terms of whether it does or does not exist.)
- Block 13: Sign and date this block after satisfactory correction of the "UNSAT" characteristic. Do not use this block for "SAT" characteristic.
- Block 14: Reference all applicable documentation such as drawing numbers, specification, DCA's, CMC's, etc.
- Block 15: Record all applicable NCR number(s), if applicable.
- Block 16: Upon satisfactory completion of unsatisfactory characteristic(s), check the "IR Closed" block, sign and date the report. Do not use this block if all the attributes are "SAT".



BROWN & ROOT, INC. CPSES  JOB 35-1195	PROCEDURE NUMBER	REVISION	EFFECTIVE DATE	PAGE
	CP-QAP-16.1	21	JUN 11 1984	37 of 37

ATTACHMENT 14

PIPING DEVIATION RECORD FORM

Nonconformance Report M- \_\_\_\_\_ Attachment No. \_\_\_\_\_

BRP- \_\_\_\_\_ Line No. \_\_\_\_\_ T/O No. \_\_\_\_\_  
 Stress Prob. \_\_\_\_\_ Safety Related  Non-Safety Related

1.  Gradient tolerance deviation \_\_\_\_\_ Degree of Deviation \_\_\_\_\_  
spool no., component no., or other descriptions  
 Use-as-is  
 Rework to comply with design tolerance

2.  Centerline tolerance deviation \_\_\_\_\_ Degree of Deviation \_\_\_\_\_  
spool no., component no., or other descriptions  
 Use-as-is  
 Rework to comply with design tolerance

**TYPICAL**

3.  Sleeve centerline tolerance deviation \_\_\_\_\_ Degree of Deviation \_\_\_\_\_  
 Pipe Spool No. \_\_\_\_\_ Wall/Floor \_\_\_\_\_  
 Use-as-is  
 Rework to comply with design tolerance

4.  Clearance deviation \_\_\_\_\_ Spool no., component no., or other description \_\_\_\_\_  
 is \_\_\_\_\_ from \_\_\_\_\_ distance \_\_\_\_\_  
 at \_\_\_\_\_ spool no., component no., other description \_\_\_\_\_  
location (elevation & coordinates)  
 Use-as-is  
 Rework to comply with design tolerance

Dispositioned by: \_\_\_\_\_  
(Signature) Preparer Reviewer Date

Mech. Design Review \_\_\_\_\_  
 Final Approval \_\_\_\_\_ Signature (Required for Safety Related Deviation for 1 & 2 only) \_\_\_\_\_ Date \_\_\_\_\_

1. White - QA/Rel 2. Green - F.P.E. 3. Canary - Pipe Supp. Engr. 4. Pink - Tech. Services 5. Golden R.D. - Construction