

**DUKE POWER COMPANY**

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CHARLOTTE, N.C. 28242

HAL B. TUCKER  
VICE PRESIDENT  
NUCLEAR PRODUCTION

TELEPHONE  
(704) 373-4531

December 31, 1984

Mr. D. G. Eisenhut  
Division of Licensing  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Re: Catawba Nuclear Station  
Docket Nos. 50-413, 50-414

Dear Mr. Eisenhut:

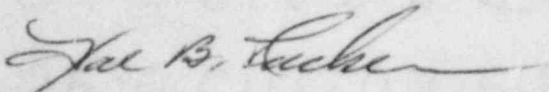
Our response of November 4, 1983 to Generic Letter 83-28 described our efforts regarding Item 3.1.2, Review of Vendor Engineering Recommendations for Reactor Trip System Components. We have completed our review of applicable Data Letters and Bulletins, the results of which can be found in Attachment 1. This review included Westinghouse data letters and technical bulletins for all other safety-related components as well.

In response to Item 4.2 please find Attachment 2, a description of the Preventative Maintenance Program for Reactor Trip Breakers which is currently in use at Catawba. This is accomplished through procedure MP/O/A/2001/05, a copy of which is included.

As discussed in our original response of November 4, 1983, the results of the Life Cycle Testing program which was conducted by Westinghouse for the Westinghouse Owner's Group are to be incorporated into an updated Instruction Manual from Westinghouse. A replacement program for reactor trip system components will be incorporated into an upgraded Duke maintenance program when the new manual is issued.

In our status letter of November 2, 1984, the scheduled implementation date for the component replacement program was incorrectly stated as December 31, 1984. Based upon timely receipt of the new Westinghouse manual implementation of the component replacement program at Catawba is expected by the end of the first scheduled refueling outage.

Very truly yours,



Hal B. Tucker

LTP/mjf

Attachments

*A055*  
*11*

8501070328 841231  
PDR ADDCK 05000413  
P PDR

Mr. D. G. Eisenhut, Director  
December 31, 1984  
Page two

cc: Mr. J. P. O'Reilly, Regional Administrator  
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Catawba Nuclear Station

Palmetto Alliance  
2135½ Devine Street  
Columbia, South Carolina 29205

ATTACHMENT 1

DATA LETTERS

- 63-2 Nuclear Maintenance I & E concurs with Design Engineering that appropriate noise reduction techniques were utilized in the design and construction of Catawba Nuclear Station. Catawba I & E has agreed that appropriate noise reduction techniques will be considered in the implementation of future NSM packages. Furthermore, Catawba Projects has agreed to make their personnel aware of these techniques.
- 63-5 The only mineral insulated cable we are aware of at Catawba is the cable used in the nuclear instrumentation and incore thermocouple applications. In both cases, vendor supplied, prefabricated cables were used (the cables and plugs were already assembled and ready to use). Therefore, this item does not affect Catawba. However, as a precaution the station was notified that any mineral insulated cable which is formed by site personnel for any future application should be heat dried just before sealing.
- 64-4 The use of any item containing lead within the primary system is controlled by a Materials Guide and by Station Directives.
- 68-14 This Data Letter was originally written by Westinghouse with reference to their old 7100 series equipment, and is therefore not applicable to Catawba. Furthermore, the Precautions, Limitations & Setpoints manual is used to determine the proper setpoints.
- 68-25 The Vital Bus is never used to supply non-vital loads at any time.
- 68-31 The content of this Data Letter has been superseded.
- 68-36 This Data Letter is not applicable to Catawba Nuclear Station.
- 70-18 All essential equipment utilizing triaxial cable has been successfully preoperationally tested. Furthermore, any faulty cable would already have been discovered during installation or testing.
- 71-20 There has been no problem with drifting output signals on Barton transmitters. If there were any defective transmitters at Catawba, they would have been noticed by now. However, if any problems are noted, either the site Westinghouse representatives or Barton representatives will be notified.
- 73-8 Breakers at Catawba Nuclear Station were originally sized based on manufacturer's specifications on the electrical loads, and also on Design Engineering calculations of the maximum motor starting current through each breaker. Any incorrectly sized breakers would be noticed during periodic breaker testing and preventative maintenance.

ATTACHMENT 1

- 74-4 No action by Duke Power Company is required - this Data Letter was transmitted for our information.
- 77-2 Catawba Nuclear Station already uses the Keithley 602 electrometer.
- 77-3 This Data Letter is not applicable to Catawba Nuclear Station.
- 78-4 The recommended changes will be made to the appropriate instrument calibration procedures by Catawba I & E.
- 79-4 Station procedures specify the use of permanently installed voltmeters to ensure proper P-4 permissive contact operation following all reactor trips. These voltmeters were installed as a modification in response to a Westinghouse letter of 11-7-79 to the NRC.
- 80-3 The proper connectors have already been ordered as spares, and the necessary instructions for their use are already in the appropriate instrument procedure.
- 80-8 It is a common practice of Catawba I & E to "exercise" the calibration potentiometers of a transmitter if the output of that transmitter is not steady.

ATTACHMENT 1  
TECHNICAL BULLETINS

- 73-24 Rev. 1 The potential for RF I & C interference as a result of the use of radio equipment within the station has already been addressed in response to IE Information Notice 83-83. Catawba Nuclear Station has established administrative controls on areas where transmitter use will not be allowed.
- 74-12 No action is necessary for Catawba Nuclear Station Unit 1, as construction has been completed for this unit. Catawba Construction has committed to notify/train the electrical crews of this situation by December 31, 1984, in order to be alert for this potential problem on Unit 2. This training will be documented on Construction Training Form V-1C.
- 75-2 This Technical Bulletin is not applicable to Catawba Nuclear Station.
- 77-10 The actions recommended by this Technical Bulletin have been completed.
- 80-4 Catawba Nuclear Station was alerted to the possibility of the subject voltage oscillations occurring, and were instructed to notify both Westinghouse and Nuclear Maintenance I & E if any such oscillations are observed. None have been seen to date.
- 80-5 Catawba Nuclear Station plans to always use a reference power level of 100%, with Incore Axial Offset data taken at 75%. However, a note will be added to the appropriate instrument procedure by I & E to provide proper scaling for other reference power levels.
- 80-6 This bulletin is not applicable, since Catawba Nuclear Station does not utilize 10-50 mA transmitters.
- 80-8 This Technical Bulletin is not applicable to Catawba Nuclear Station.
- 81-11 Action on this Technical Bulletin has been completed for Catawba Nuclear Station.
- 81-13 Catawba Nuclear Station was not affected by this Technical Bulletin.

## Attachment 2

### Catawba Nuclear Station Westinghouse DS-416 Reactor Trip Breakers Summary of Preventative Maintenance Program

The subject breakers are cleaned, inspected, and tested every six months under procedure MP/O/A/2001/05. A description of the preventative maintenance follows below:

The breakers are given a visual inspection as they are removed from service. If any cracked welds, broken parts, and/or loose or missing bolts are discovered, repairs are made immediately. The breakers are then cleaned by means of vacuum, compressed air, or an oil free solvent. The cubicle is cleaned, and lubricated if necessary. Next, the arc chute shields, barriers, covers, and arc chutes are removed (wet arc chutes or insulators are dried with a suitable heat source).

A Force Test on the Trip Bar is performed, followed by a Force Test on the UV Trip Device (the Trip Load must be less than 2 lbs., and the acceptance criteria for the latter test is 3.0 lbs. minimum). Pre and Post Travel tolerances for the Trip Tap on the UV Trip Device are checked. (No adjustments to the UV Trip Attachment are allowed to satisfy clearance requirements within the device or between the device and the reactor trip breaker shaft lever pin, unless a Westinghouse service representative is present. If a UV device is in need of repair and no Westinghouse representative is present, a new UV device is installed). Proper cleanliness and lubrication of the roller bearing is verified.

An inspection of the contacts is now performed. They are cleaned, and contact wipe, contact resistance, pressure, and alignment are checked (see Attachment 3 for a drawing showing the alignment tolerances checked). The mechanism linkage is checked for proper operation, including an inspection of every pin, keeper, or spring used in the assembly. Any necessary repairs are made. All other measurements and adjustments required by the instruction manual (CNM-1399.40-0011) are made, and then the equipment is lubricated and cleaned.

Finally, the breaker is tested mechanically and electrically for proper operation. The Force Tests on the Trip Bar and UV Trip Device are performed again, and the Pre and Post Travel tolerances for the Trip Tap on the UV Trip Device are again checked. The roller bearing is re-examined, and then the breaker is cycled ten times (using the UV trip device). Finally, all parts which were earlier removed (chutes, shields, etc.) are reinstalled.

Form 34731 (10-81)  
(Formerly SPD-1002-1)

DUKE POWER COMPANY  
PROCEDURE PREPARATION  
PROCESS RECORD

(1) ID No: MP/O/A/2001/05  
Change(s) 0 to  
0 Incorporated

(2) STATION: Catawba Nuclear  
(3) PROCEDURE TITLE: Westinghouse DS-416 Air Circuit Breaker Inspection  
and Maintenance

(4) PREPARED BY: Jeff Ashe DATE: 11/17/83

(5) REVIEWED BY: J.M. Stachley DATE: 2/13/84

Cross-Disciplinary Review By: C. H. Hagedorn 2/13/84 N/R: SRC 84/4

(6) TEMPORARY APPROVAL (IF NECESSARY):  
By: \_\_\_\_\_ (SRO) Date: \_\_\_\_\_  
By: \_\_\_\_\_ Date: \_\_\_\_\_

(7) APPROVED BY: Fred Smith Date: 3-2-84

(8) MISCELLANEOUS:  
\* Reviewed/Approved By: R.E. Hume Date: 12-12-83

Reviewed/Approved By: \_\_\_\_\_ Date: \_\_\_\_\_

REVIEWED BY  
QUALITY ASSURANCE DEPARTMENT  
OPERATIONS DIVISION  
Richard Bennett 2-13-84  
QA REPRESENTATIVE DATE

This copy has been compared with  
the control copy and is verified  
correct.  
Initial \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

**WORKING COPY**

Procedure TCP/CNO/A/0006/00/0/SM  
(MP/O/A/2001/05)

QA Department  
Review N/A JH Date \_\_\_\_\_

Section  
Approval E. E. H. H. H. Date 12-12-83

DUKE POWER COMPANY  
TRANSMISSION DEPARTMENT  
SUBSTATION DIVISION  
MAINTENANCE SECTION  
CHARLOTTE DISTRICT/GRUOP  
CATAWBA LOCATION/STATION

WESTINGHOUSE DS-416 AIR CIRCUIT BREAKER INSPECTION AND MAINTENANCE

NOTE: Sections in this procedure that are preceded by an asterisk shall be initialed on Enclosure 13.1 of this procedure. Double asterisks indicate QA inspection steps. Sign off in step 11.16.

1.0 Purpose

1.1 This procedure establishes the requirements to control the inspection and maintenance of Westinghouse DS-416 breakers.

2.0 References

2.1 Current copy of Instruction Manual for DS-416 Breakers. CNM 1399.40-0011.

2.2 Westinghouse Drawing No. 693C350.

2.3 Westinghouse Drawing No. 588C785.

3.0 Personnel Requirements

3.1 The number of manhours necessary to complete the inspection and testing depends on the extent of repairs to be made. Record actual manhours on the work request.

3.2 Personnel performing maintenance on Westinghouse DS-416 breakers shall have qualifications satisfying Catawba Nuclear Station Directive 2.7 and the Transmission Administrative Manual Section 2.3.

4.0 Safety Considerations

4.1 Equipment Clearance and Isolation

4.1.1 Breaker maintenance will require that the breaker be racked out to the disconnect position and placed on the floor. Red tags should be issued if needed according to Catawba Nuclear Station Directive 3.1.1.



## 4.2 Health Physics Considerations

4.2.1 If the work request indicates, obtain a Radiation Work Permit or a Standing Radiation Work Permit from Health Physics.

## 4.3 Special Safety Considerations

4.3.1 Assure good ventilation or use air masks when using "Penolene", "Spot Check", or similar chlorinated hydrocarbon cleaners.

4.3.2 Use red tape to identify any exposed high voltage areas and warn personnel of any possible shock hazards.

## 5.0 Station (or Unit) Status

\*5.1 Routine maintenance on breakers should coincide with PM requirements and Technical Specification requirements. Availability should be determined by the shift supervisor or his superior, in order to insure safe unit operation.

## 6.0 Prerequisites

\*6.1 Verify that this procedure is the same as the control copy at the station.

\*6.2 Notify Quality Assurance personnel before beginning work if the Work Request so indicates.

\*6.3 Before or during the job, the job supervisor, planner, or engineer shall review, initial and "N/A" any procedure steps that are not applicable to the job.

\*6.4 If necessary, obtain current manufacturer's drawings and/or instruction books.

\*\*6.5 While performing this procedure if any leads are lifted, jumpers added, or switches opened or closed, double verification of removal and double verification of replacement must be documented on Enclosure 13.2.

## 7.0 Repair Parts

7.1 Work on safety related breakers will require Quality Assurance approved parts.

7.2 Parts utilized during repairs will be listed on the Work Request. The Work Request must be presented at the parts room to obtain parts.

## 8.0 Special Tools

\*\*8.1 Verify that calibration dates on tools and measurement equipment are current. Record serial number and calibration date due on Enclosure 13.2.

9.0 Acceptance Requirements

Note: This section is applicable only when a complete PM of the breaker is performed and need not be initialed when making minor repairs or adjustments that may arise between scheduled PM periods.

\*9.1 The successful completion of the applicable parts of Section 11.0 of this procedure will determine the acceptability of the A. C. B.

10.0 Interference Items

None

11.0 Procedure

Note: The following steps are not necessarily required to be performed in chronological order. Some steps may be performed at any time. This procedure is to be used as a guide by experienced breaker repairmen only.

\*11.1 Verify that the Work Request has been approved, and the "Clearance to Begin Work" section has been properly completed. Be sure the breaker is de-energized and/or red tagged. Maintain all enclosures that are applicable to the maintenance activity being performed.

\*\*11.2 Visually check equipment as removed from service. Inspect the equipment for broken parts, cracked welds, and/or loose or missing bolts. Repair or replace any damaged parts and record action taken.

\*11.3 Remove dust and dirt by vacuum, air, or oil free solvent.

\*\*11.4 Clean and inspect cubicle for loose hardware or broken parts and lubricate where necessary.

\*11.5 Remove arc chute shields, barriers, covers, and arc chutes. "Wet" arc chutes or insulators may be dried with a heat gun, oven, or other heat source.

\*11.6 Perform the following tests and record the data obtained on Enclosure 13.3. Include the total number of times the breaker was tripped.

Before preventive maintenance testing on UV trip device "AS FOUND"

Westinghouse Drawing No. 693C350 and No. 588C785 should be consulted if needed.

11.6.1 Perform a Force Test on the Trip Bar.

11.6.2 Perform a Force Test on the UV trip device.

11.6.3 Check the tolerances regarding Pre and Post Travel of the Trip Tap on the UV trip device.

11.6.4 Check the condition of the roller bearing with regard to the proper cleanliness and lubricant.

11.6.5 Should a UV device be found faulty and adjustments cannot be made, field installation of a new UV device should be made as per Westinghouse Drawing No. 588C735. No adjustments to the undervoltage trip attachment are to be made in the field to satisfy either intraclearance requirements (within the device proper) or interclearance requirements (between the device and the RTB trip shaft lever pin) without an appropriate Westinghouse service representative present.

\*\*11.7 Inspect the contacts; clean, check contact wipe, contact resistance, pressure and alignment. This includes checking measurements as per instruction book. Repair or replace as needed.

\*\*11.8 Inspect mechanism linkage for binding, looseness, worn or defective parts. Check every pin, keeper, and spring in the mechanism. Repair or replace as needed.

\*11.9 Make and/or check any mechanism measurements and adjustments needed per instruction or technical bulletins and record on Enclosure 13.1.

\*11.10 Lubricate and perform final cleaning of the equipment.

\*11.11 Check breaker operation mechanically and electrically.

\*11.12 Perform the following tests and record the data obtained on Enclosure 13.3.

After preventive maintenance testing of UV device "AS LEFT"

Westinghouse Drawing No. 69C350 and No. 588C785 should be consulted if needed.

\*\*11.12.1 Perform a Force Test on the Trip Bar.

\*\*11.12.2 Perform a Force Test on the UV Trip Device.

\*11.12.3 Check the tolerances regarding Pre and Post Travel of the Trip Tab on the UV Trip Device.

\*\*11.12.4 Check the condition of the roller bearing with regard to the proper cleanliness and lubricant.

\*\*11.13 On the test bench, cycle the breaker ten times using the UV trip device. Report any failures to appropriate personnel.

\*\*11.14 Install necessary parts (chutes, shields, and front cover).

\*11.15 Complete all documentation on the Work Request and the Enclosures.

\*11.16 Q.C. inspector verifies that all inspections with double asterisks have been performed.

12.0      Restoration

\*12.1      Contact the shift supervisor to clear the red tags if any were issued and return the breaker to the station for operation.

\*12.2      Notify the I&E group for additional testing requirements.

\*12.3      Forward the completed copy of the Work Request and applicable enclosures to the Planning Office or the Station Support Engineer.

13.0      Enclosures

13.1      Procedure Checklist

13.2      Tool, Instrument, and Torque Value List

13.3      Force Tests and Tolerance Checks for UV Device

ENCLOSURE 13.1  
 PROCEDURE CHECKLIST  
 TCP/CNO/A/0006/00/0/SM

Foreman \_\_\_\_\_

W.R. # \_\_\_\_\_

Date \_\_\_\_\_

Breaker Nameplate: Type \_\_\_\_\_  
 Mfr \_\_\_\_\_  
 Volts \_\_\_\_\_  
 Amps \_\_\_\_\_  
 Serial # \_\_\_\_\_

5.1	_____	Status	11.8	_____	Mechanism
6.1	_____	Verification	11.9	_____	Adjustments
6.2	_____	QA	11.10	_____	Lubrication
6.3	_____	Review	11.11	_____	Operation
6.4	_____	I.B.	11.12	_____	As Left
6.5	_____	Leads	11.13	_____	Cycle
9.1	_____	Acceptance	11.14	_____	Arc Chutes
11.1	_____	Clearance	11.15	_____	Documentation
11.2	_____	Visual	11.16	_____	QC
11.3	_____	Dust	12.1	_____	S.S.
11.4	_____	Cubicle	12.2	_____	I&E
11.5	_____	Arc Chutes	12.3	_____	Forward
11.6	_____	As Found			
11.7	_____	Contacts			

Contact resistance

\_\_\_\_\_ Left

\_\_\_\_\_ Middle

\_\_\_\_\_ Right

Comments or Discrepancies: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

ENCLOSURE 13.2  
 TOOL, INSTRUMENT, AND TORQUE VALUE LIST  
 TCP/CNO/A/0006/00/0/SM

WORK REQUEST \_\_\_\_\_

<u>INSTRUMENT/TOOL</u>	<u>SERIAL NUMBER</u>	<u>CALIBRATION DUE DATE</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

<u>ITEM TORQUED</u>	<u>TORQUE VALUE</u>	<u>QC INSPECTOR</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

List Leads Lifted/Jumpers Added or switches opened

<u>Terminal/Etc</u>	<u>Date Removed</u>	<u>Verified By</u>	<u>Date Returned</u>	<u>Verified By</u>
_____	_____	/	_____	/
_____	_____	/	_____	/
_____	_____	/	_____	/
_____	_____	/	_____	/
_____	_____	/	_____	/

ENCLOSURE 13.3  
FORCE TESTS AND TOLERANCE CHECKS OF THE UV DEVICE  
FOR WESTINGHOUSE DS-416 BREAKERS

TCP/CNO/A/0006/00/0/SM

Breaker \_\_\_\_\_ Group \_\_\_\_\_ Name \_\_\_\_\_

BEFORE PREVENTIVE MAINTENANCE TESTING ON UV TRIP DEVICE (AS FOUND)

- 11.6.1 Force Test on Trip Bar \_\_\_\_\_ lbs.  
(Trip load less than 2 lbs. indicates satisfactory operation)
- 11.6.2 Force Test on UV Trip Device \_\_\_\_\_ lbs.  
(3.0 lbs. minimum)
- 11.6.3 Tolerance of Pre-Travel was \_\_\_\_\_ inches.  
(.03 inch minimum)
- Tolerance of Post Travel satisfactory (Yes or No) \_\_\_\_\_
- 11.6.4 Condition of roller bearing satisfactory (Yes or No) \_\_\_\_\_

AFTER PREVENTIVE MAINTENANCE TESTING ON UV TRIP DEVICE (AS LEFT)

- 11.12.1 Force Test on Trip Bar \_\_\_\_\_ lbs.  
(Trip load less than 2 lbs. indicates satisfactory operation)
- 11.12.2 Force Test on UV Device \_\_\_\_\_ lbs.  
(3.0 lbs. minimum)
- 11.12.3 Tolerance of Pre-Travel \_\_\_\_\_ inches.  
Tolerance of Post Travel acceptable (Yes or No) \_\_\_\_\_
- 11.12.4 Condition of roller bearing satisfactory (Yes or No) \_\_\_\_\_

TOTAL NUMBER OF TIMES BREAKER WAS TRIPPED \_\_\_\_\_

### 12.1.1 When to Inspect

Industry standards for this type of equipment recommend a general inspection and lubrication after the number of operations listed in Section 12.3.1 of this instruction book. This should also be conducted at the end of the first six months of service if the number of operations has not been reached.

After the first inspection, inspect at least once a year. If these recommended inspections show no maintenance requirements, the period may be extended to a more economical point. Conversely, if the recommended inspection

shows, for instance, heavy accumulations of dirt or other foreign matter that might cause mechanical, insulation or other electrical damage, the inspection and maintenance interval should be decreased.

When a breaker opens a heavy fault, at or near its rating, give it a visual inspection withdrawn from the compartment and with insulating barriers and arc chutes removed.

### 12.1.2 What to Inspect

First withdraw the breaker from the compartment. Remove barriers. Remove arc chutes. If there is a deposit

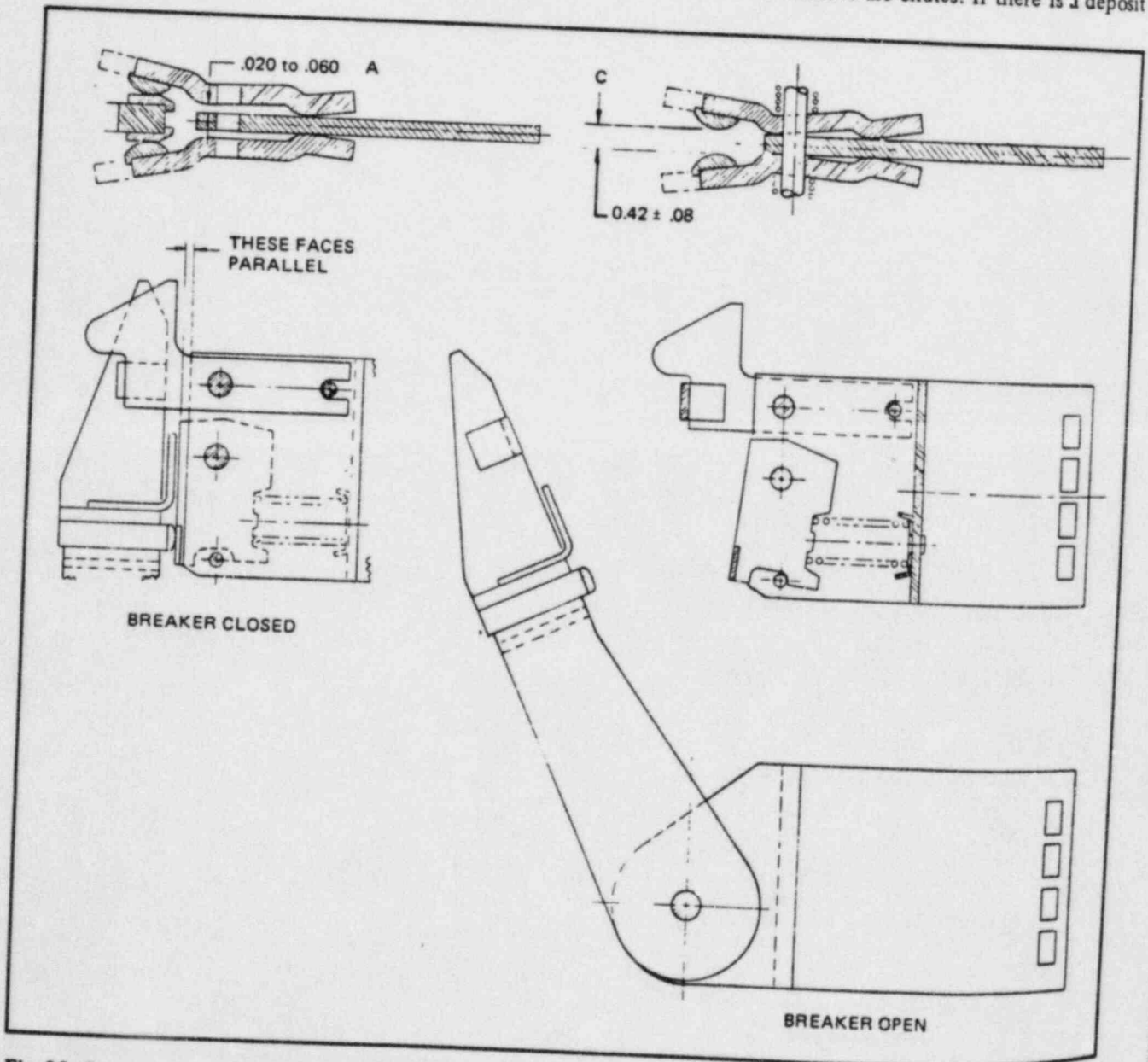


Fig. 85 Contacts and their Adjustment, DS-416/420 Breaker