

P. O. Box 361, Platteville, Colorado 80651

10-23-75

October 21, 1975

Mr. E. Morris Howard, Director
Nuclear Regulatory Commission
Region IV
Office of Inspection and Enforcement
Suite 1000
Arlington, Texas 76012

REF: Facility Operating License
No. DPR-34

Docket No. 50-267

Dear Mr. Howard:

Enclosed please find a copy of Abnormal Occurrence Report No. 50-267/75/
18A, Final, submitted per the requirements of the Technical Specifications.

Very truly yours,

Frederic E. Swart
Superintendent, Nuclear Production
Fort St. Vrain Nuclear
Generating Station

FES/alk

cc: Mr. Roger S. Boyd

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REPORT DATE: October 21, 1975

ABNORMAL OCCURRENCE 75/18A

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OCCURRENCE DATE: August 16, 1975

FORT ST. VRAIN NUCLEAR GENERATING STATION
PUBLIC SERVICE COMPANY OF COLORADO
P. O. BOX 361
PLATTEVILLE, COLORADO 80651

REPORT NO. 50-267/75/18A

Final

IDENTIFICATION OF
OCCURRENCE:

Damage to helium circulator during installation preparation.

This is identified as an abnormal occurrence under item 2.1 (g) of the Technical Specifications. Notification of the cause of the incident was received from the contractor on August 26, 1975.

CONDITIONS PRIOR
TO OCCURRENCE:

<u> </u>	Steady State Power	<u> </u>	Routine Shutdown
<u> </u>	Hot Shutdown	<u> </u>	Baseline Load Change
<u> X </u>	Cold Shutdown	<u> </u>	Other (specify)
<u> </u>	Refueling Shutdown	<u> </u>	
<u> </u>	Routine Startup	<u> </u>	

The major plant parameters at the time of the event were as follows:

Power	RTR	<u> 0 </u>	MWth
	ELECT	<u> 0 </u>	MWe
Secondary Coolant	Pressure	<u> N/A </u>	psig
	Temperature	<u> N/A </u>	°F
	Flow	<u> N/A </u>	#/hr.
Primary Coolant	Pressure	<u> 0 </u>	psig
	Temperature	<u> 120°F </u>	°F Core Inlet
		<u> 120°F </u>	°F Core Outlet
	Flow	<u>1 circulator at 4,000 RPM</u>	

DESCRIPTION OF
OCCURRENCE:

During preparation of helium circulator, S/N C-2101 for installation, into the "B" circulator penetration, damage to the circulator was sustained as the handling cask assembly was lowered while the circulator within the cask was being supported by the multi-stage ram. This action resulted in the transfer of the cask assembly support from the single stage rams to the multi-stage ram through the circulator.

The contact for load transfer occurred between the closed ball valve and the helium circulator. The occurrence was a result of failure to adhere to approve procedures. (See Figures 1.1 and 1A).

APPARENT CAUSE
OF OCCURRENCE:

<u> </u> Design	<u> </u> Unusual Service Cond. Including Environ.
<u> </u> Manufacture	<u> </u> Component Failure
<u> </u> Installation/Const.	<u> X </u> Other (specify)
<u> </u> Operator	<u> </u> Lack of adherence to approved
<u> </u> Procedure	<u> </u> procedure.

ANALYSIS OF
OCCURRENCE:

A thorough investigation to determine the extent of the damage incurred by helium circulator S/N C-2101, being installed in "B" circulator penetration has been completed by the contractor.

The investigation determined that circulator damage was confined to the stator assembly, a non-rotating component. No damage was sustained by rotating components.

Visual inspection of the ball valve revealed a broken index plunger assembly (P/N T-2101-5). The ball valve moved freely without any indications of binding.

Visual inspection of the circulator showed a depression 2" - 2 1/2" deep in the stator cone (P/N C-2101-380-5) from ball valve contact. The upper rim of the cone also showed contact on its inner diameter with the ball valve as evidenced by paint transfer from the ball valve to the cone. The heaviest contact was indicated in the segment between pin (C-2101-380-7) and the circulator reference mark. The pin also showed light contact. No other damage was detected through visual inspection. Compressor clearance checks revealed an approximate .030 inch deflection of the retaining ring (C-2101-380-6) downward toward the compressor in the segment in which the heaviest contact was noted. This was determined by the compressor upper axial clearance devia-

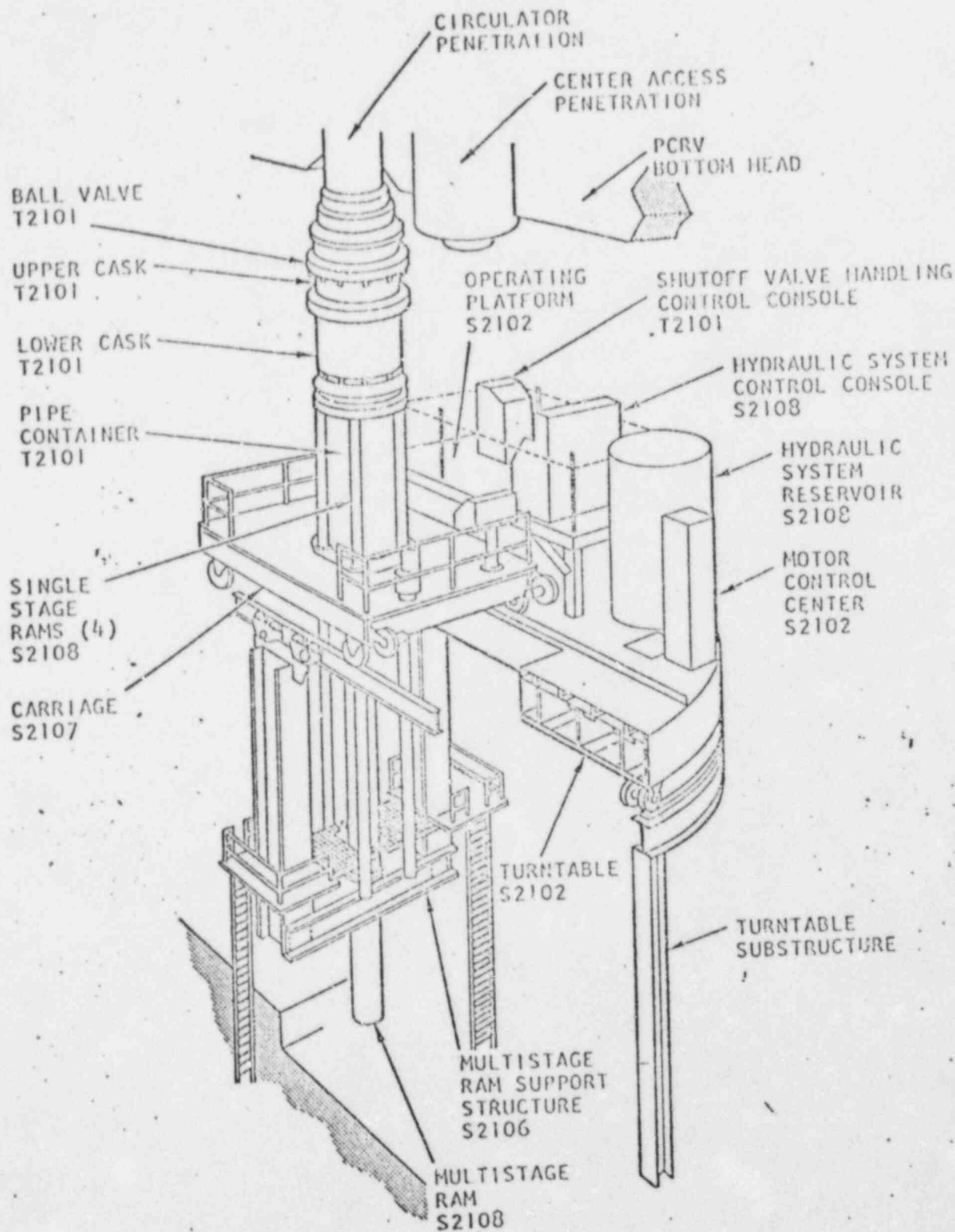


Fig. 1-1. Helium circulator handling equipment

[illegible]

ANALYSIS OF
OCCURRENCE (continued):

tion from nominal. Compressor lower axial clearances and compressor blade tip clearances indicated that there was no distortion or displacement of the inlet duct relative to the compressor wheel. The stator assembly was removed and revealed no evidence of stator contact with the compressor. Both the stator and compressor were coated with a light film of rusty type dust accumulated during handling. No disturbance of this dust could be seen. A check of compressor wheel bolt torques was also made and found normal. This was an additional indication that no abnormal loads had been imposed on the compressor.

The welds on the inlet duct struts (C-2101-341-6) which carry duct and stator loads were dye checked for evidence of failure. Four welds showed 1/32 inch linear indications on the weld to strut interface at the strut trailing edges. These indications were burnished out. A recheck with dye penetrant showed that there is no material failure. Cross sectional area reduction through burnishing at the strut to weld interface was less than .001 square inches on any one strut. (See attached drawings).

CORRECTIVE
ACTION:

Notification has been given to construction management that personnel involved are not to proceed on their own. They shall have approved procedures and proper supervision present to verify adherence to such procedures. Replacement of the index plunger assembly has restored the ball valve. Replacement of the stator assembly and cone has restored S/N C-2101, "B" circulator to full operational capability. The replacement stator and cone assembly utilized were from the circulator removed (S/N C-2105) from the "B" penetration and were inspected and certified by the contractors quality assurance department.

FAILURE DATA/SIMILAR REPORTED OCCURRENCES:

None

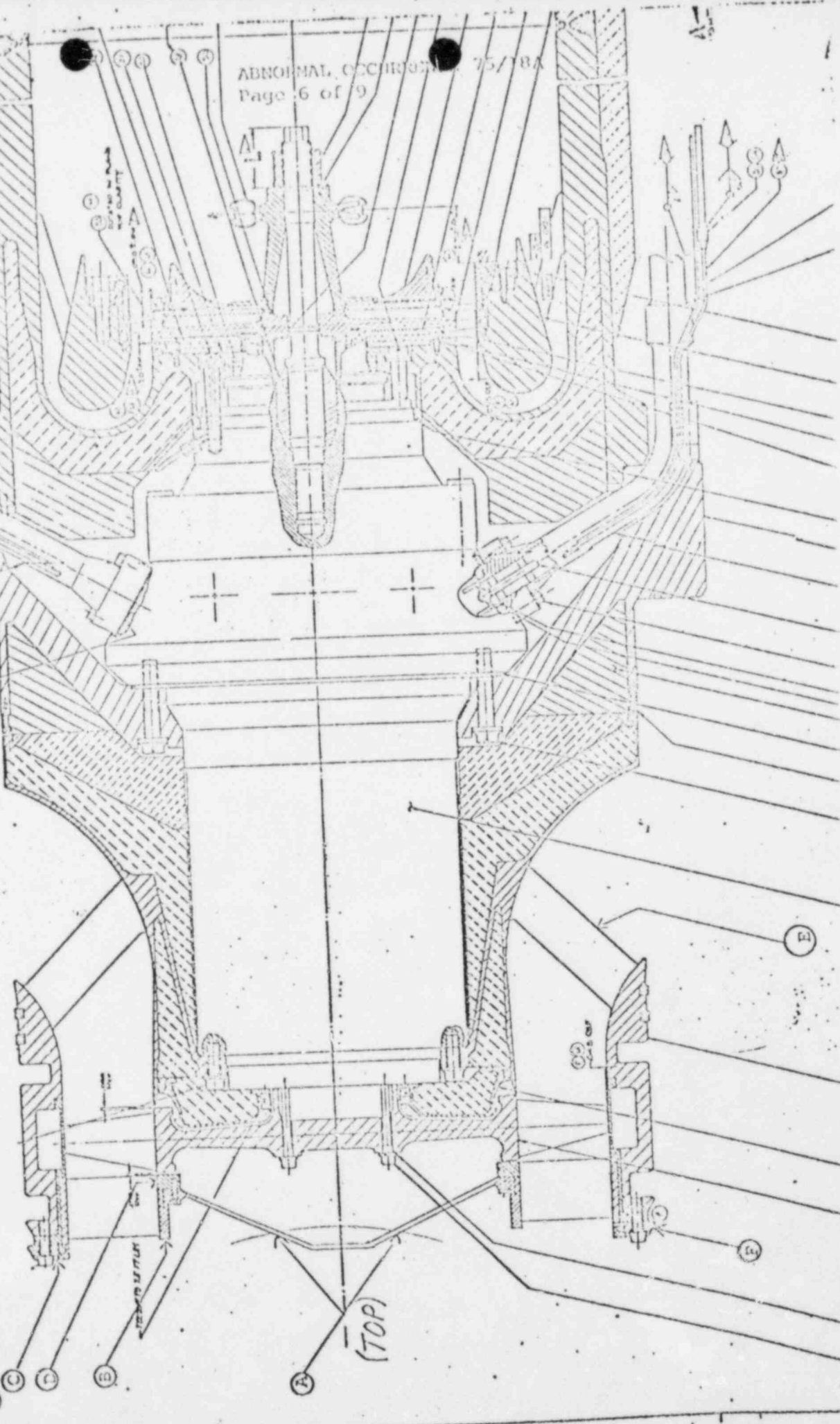
PROGRAMMATIC IMPACT:

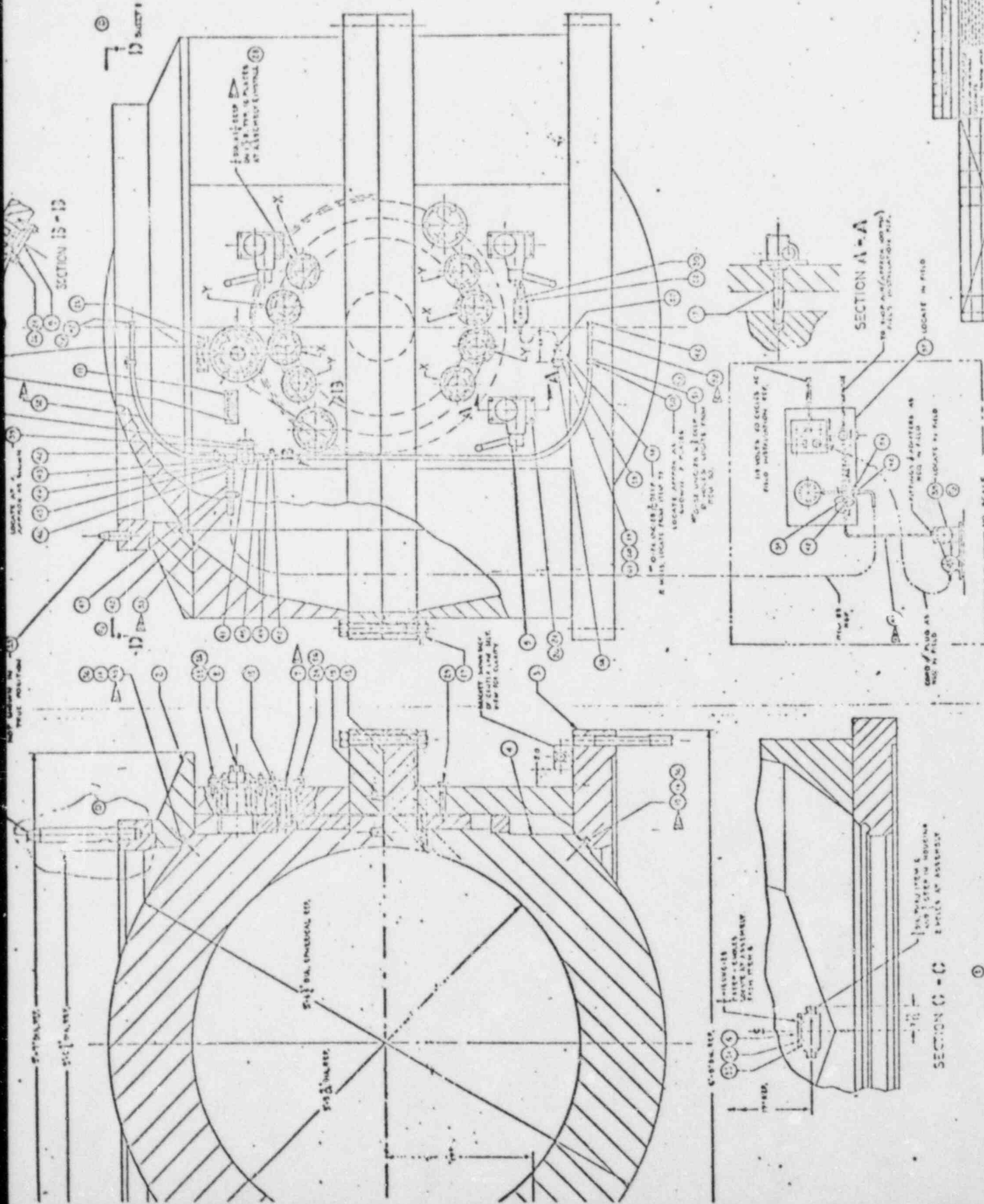
None

CODE IMPACT:

None

- A Progression of stator cone
- B P/N C-2101-380-5 End Cone.
- C P/N C-2101-380-7 Dowel pin. Not shown this drawing. In circumferential plane of stator assembly. Replaced with stator assembly.
- D P/N C-2101-380-6 Retraining Ring.
- E P/N C-2101-341-6 Duct Strut (Air Foil).
- F P/N C-2101-380 Compressor Stator Unit Replaced.





SECTION A-A
LOCATE APPROX AS SHOWN

SECTION B-B
LOCATE APPROX AS SHOWN

SECTION C-C
LOCATE APPROX AS SHOWN

SECTION D-D
LOCATE APPROX AS SHOWN

SECTION E-E
LOCATE APPROX AS SHOWN

Submitted By:

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