

30-315

NRC DISTRIBUTION FOR PART 50 DOCKET MATERIAL

FILE NUMBER

TO: Mr Rusche

FROM: American Elec. Power Service Co
New York, NY
R S Hunter

DATE OF DOCUMENT

11-11-76

DATE RECEIVED 11-16-76

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PROP

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one signed

DESCRIPTION

Ltr re our 9-30-76 ltr.....furnishing
info concerning loose parts monitoring
system.....

ENCLOSURE

DO NOT REMOVE
ACKNOWLEDGED

PLANT NAME: D C Cook #1

SAFETY

FOR ACTION/INFORMATION

ENVIRO.

11-20-76

ehf

ASSIGNED AD:		ASSIGNED AD:	
BRANCH CHIEF:	Ziemann (5)	BRANCH CHIEF:	
PROJECT MANAGER:	Fletcher	PROJECT MANAGER:	
LIC. ASST.:	Diggs	LIC. ASST.:	

INTERNAL DISTRIBUTION

REG FILE	SYSTEMS SAFETY	PLANT SYSTEMS	SITE SAFETY &
NRC PDR	HEINEMAN	TEDESCO	ENVIRO ANALYSIS
I & E (2)	SCHROEDER	BENAROYA	DENTON & MULLER
OELD		LAINAS	
GOSSICK & STAFF	ENGINEERING	IPPOLITO	ENVIRO TECH.
MIPC	MACCARRY	KIRKWOOD	ERNST
CASE	KNIGHT		BALLARD
HANAUER	STHWEIL	OPERATING REACTORS	SPANGLER
HARLESS	PAWLICKI	STELLO	
			SITE TECH.
PROJECT MANAGEMENT	REACTOR SAFETY	OPERATING TECH.	GAMMILL
BOYD	ROSS	EISENHUT	STEPP
P. COLLINS	NOVAK	SHAO	HULMAN
HOUSTON	ROSZTOCZY	BAER	
PETERSON	CHECK	BUTLER	SITE ANALYSIS
MELTZ		GRIMES	VOLLMER
HEITEMES	AT & I		BUNCH
SKOVHOLT	SALTZMAN		J. COLLINS
	RUTBERG		KREGER

EXTERNAL DISTRIBUTION

CONTROL NUMBER

LPDR:	NAT LAB:	BROOKHAVEN NAT LAB	
TIC:	REG. VIE	ULRIKSON(ORNL)	
NSIC:	LA PDR		
ASLB:	CONSULTANTS		
ACRS/6 CYS HOLDING/SEN:	AS CAT B 11-20-76		

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AMERICAN ELECTRIC POWER Service Corporation



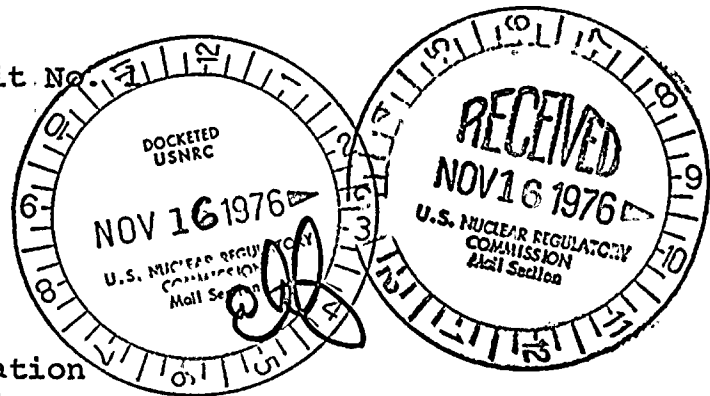
2 Broadway, New York, N. Y. 10004
(212) 422-4800

ROBERT S. HUNTER
Vice President-Nuclear Engineering

Library Docket File
Library Docket File

November 11, 1976

Donald C. Cook Nuclear Plant Unit No.
Docket No. 50-315
DPR No. 58



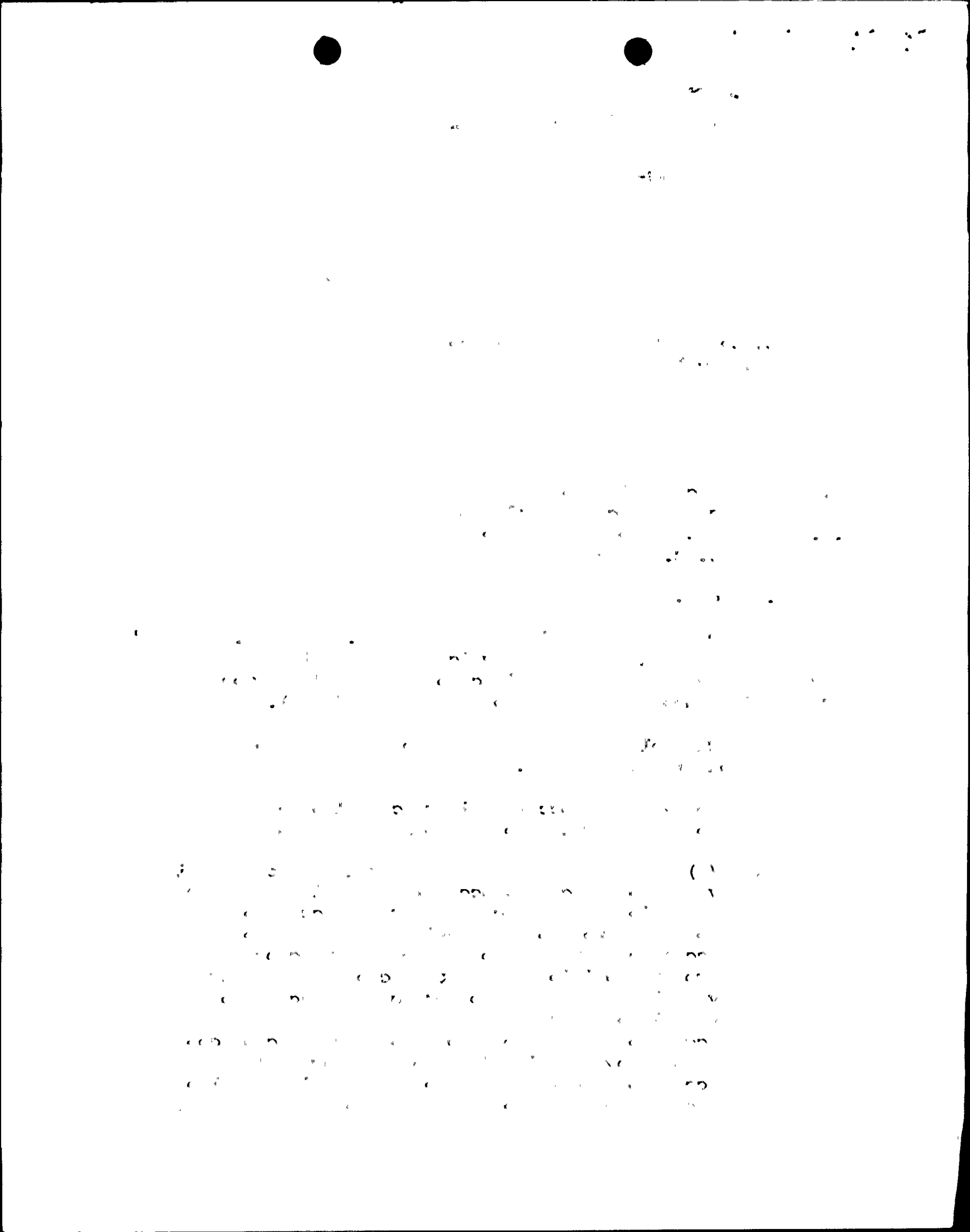
Mr. Benard Rusche, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Rusche:

This letter is in response to Mr. Dennis L. Ziemann's letter dated September 30, 1976 which requested information concerning the operating experience of the Donald C. Cook Nuclear Plant Loose-Parts Monitoring Systems (LPMS).

The following numbered responses refer to the four questions in the request:

1. No event has occurred in which a loose-part has been found in any part of the primary system.
2. (a) The LPMS enables the detection of changes in vibration which may occur in the primary system. Vibrations are detected by twelve accelerometers, mounted throughout the primary system. Four accelerometers are mounted on the reactor vessel. Two are positioned on the reactor flange above the vessel head, and the other two are located on the vessel bottom where the hemisphere begins. One accelerometer is positioned on each reactor coolant pump, above the impeller, on the lower flange. An accelerometer is mounted on the outside shell of each steam generator, near the lower tube sheet.



(See Table 1 and Figure No. 1 for details).

The accelerometer output is an electrical signal which is fed into an amplifier. Six amplifiers (two input signals per amplifier) are mounted on the Unit 1 control room panels and provide a visual display on a sensitivity meter. Should the signal magnitude exceed a preset limit, both an audible and visual alarm are activated.

2b. The LPMS has been in operation since April 1975.

2c. The LPMS monitors vibrations on a continuous basis and sends signals to the control room throughout the monitoring process. In addition, expanded surveillance is conducted every three months utilizing a real-time spectrum analyzer and an XY plotter to trace acceleration versus frequency for the reactor vessel, the reactor coolant pumps and the steam generators. At this time, traces are made from each of the twelve detectors over a frequency range. These traces can then be evaluated for accuracy against previous data sets available.

3. Operating experience since April 1975 has revealed no significant change in vibration signals. No abnormally large vibration signals have been detected that could not be identified as monitoring system faults. Overall signal magnitudes at all frequencies have increased slightly, with increased power operation.

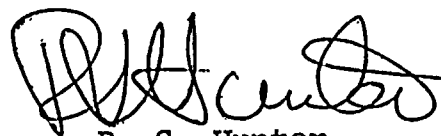
Of the twelve instrumentation channels sending signals to the six amplifiers, three have failed due to an open circuit in one channel and a short circuit of two channels.

4. The loose parts monitoring system appears to be an accurate and sensitive method of collecting and analyzing primary system vibrations. By employing this equipment we have been able to closely monitor variations in vibration since April 1975. The

November 11, 1976

installed cost of the LPMS on Unit 1 is approximately \$100,000. The benefit to us is that we have an early warning system to detect a loose part and a diagnostic tool to evaluate its significance.

Very truly yours,



R. S. Hunter

Vice President-Nuclear Engineering

RSH:mam

cc: G. Charnoff
R. R. Vollen
R. C. Callen
P. W. Steketee
R. Walsh
John Tillinghast
R. W. Jurgensen - Bridgman

THE
FEDERAL BUREAU OF INVESTIGATION
UNITED STATES DEPARTMENT OF JUSTICE
WASHINGTON, D. C. 20535

MEMORANDUM FOR THE DIRECTOR

FROM: SAC, NEW YORK

SUBJECT: [REDACTED]

RE: [REDACTED]

DATE: [REDACTED]

CLASSIFICATION: [REDACTED]

EXEMPTION: [REDACTED]

REASON: [REDACTED]

DATE OF REVIEW: [REDACTED]

BY: [REDACTED]

REVIEWED BY: [REDACTED]

DATE OF REVIEW: [REDACTED]

BY: [REDACTED]

REVIEWED BY: [REDACTED]

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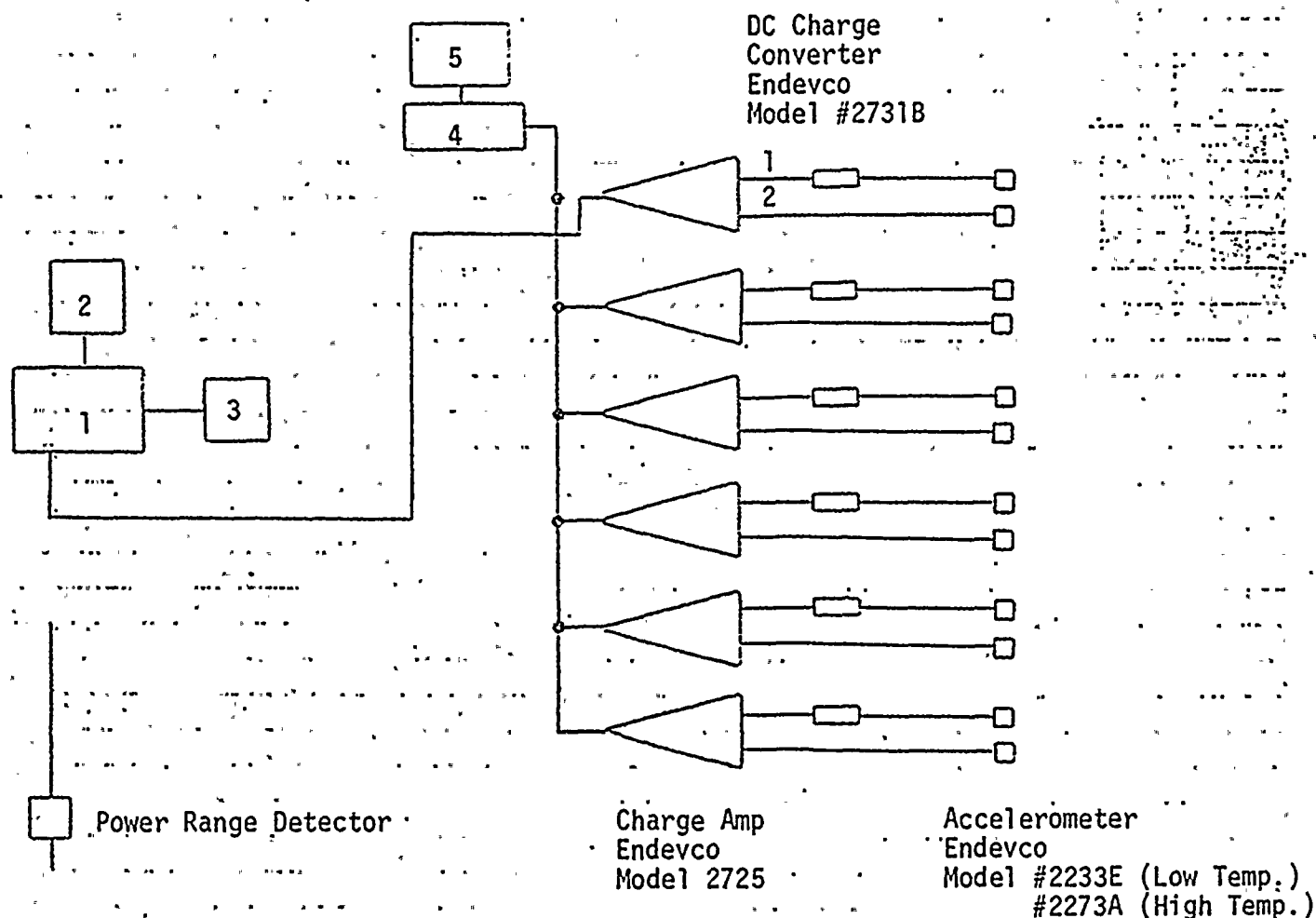
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DATE OF REVIEW: [REDACTED]

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NOTE:

1. Honeywell SAI-52B Real Time Spectrum Analyzer/Digital Averager
2. Tektronix 5103N Oscilloscope
3. Hewlett - Packard 7035B X-Y Plotter
4. DC Level Alarm Detection Panel
5. "Loose Parts System Activated" Alarm

* Input #2 employs built in amplifier charge converter.

FIGURE NO. 1

LOOSE PARTS MONITORING

Table 1 Accelerometer Summary

<u>Cable No.</u>	<u>Accelerometer Location Designation</u>	<u>Acceler. Serial #</u>	<u>Sensitivity</u> 1 PC/g PC		<u>Design Temp⁰F</u>	<u>Cable Length</u>	<u>Chg. Ampl.</u>
1	Reactor Vessel - Upper West	CD 66	2.91	2.79	750	600	1
2	Reactor Vessel - Lower West	DR 48		64.0	500	580	1
3	Reactor Vessel - Upper North	CD 65	2.87		750	665	2
4	Reactor Vessel - Lower North	DQ 83		63.6	500	580	2
5	Reactor Coolant Pump #1 (East)	CD 82	2.87		750	430	3
6	Reactor Coolant Pump #2 (West)	DQ 95		63.3	500	660	3
7	Reactor Coolant Pump #4 (East)	CD 49	2.83		750	650	4
8	Reactor Coolant Pump #3 (West)	DQ 80		61.1	500	555	4
9	Steam Generator #1 (East)	CD 55	2.77		750	450	5
10	Steam Generator #2 (West)	DQ 71		60.1	500	550	5
11	Steam Generator #4 (East)	CD 51	2.75		750	560	6
12	Steam Generator #3 (West)	DE 70		58.5	500	575	6

Six - 750⁰F Accel. (#2273) → 3' S.S. 3075 Cable → Chg. Converter RG Coax Cable → Cont. Rm.

Six - 500⁰F Accel. (#2233) → All Special Cable (#3090 B) → Control Room



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