

# CATEGORY 1

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50-254 Quad-Cities Station, Unit 1, Commonwealth Edison Co.			05000254
50-261 H.B. Robinson Plant, Unit 2, Carolina Power & Light C			05000261
50-265 Quad-Cities Station, Unit 2, Commonwealth Edison Co.			05000265
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50-298 Cooper Nuclear Station, Nebraska Public Power Distric			05000298
50-304 Zion Nuclear Power Station, Unit 2, Commonwealth Edis			05000304
50-306 Prairie Island Nuclear Station, Unit 2, Northern Stat			05000306
50-321 Edwin I. Hatch Nuclear Plant, Unit 1, Georgia Power C			05000321
50-352 Limerick Generating Station, Unit 1, Philadelphia Ele			05000352
50-353 Limerick Generating Station, Unit 2, Philadelphia Ele			05000353
50-366 Edwin I. Hatch Nuclear Plant, Unit 2, Georgia Power C			05000366
50-373 LaSalle County Station, Unit 1, Commonwealth Edison C			05000373
50-374 LaSalle County Station, Unit 2, Commonwealth Edison C			05000374
STN-50-454 Byron Station, Unit 1, Commonwealth Edison Co.			05000454
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STN-50-456 Braidwood Station, Unit 1, Commonwealth Edison Co			05000456
STN-50-457 Braidwood Station, Unit 2, Commonwealth Edison Co			05000457
50-461 Clinton Power Station, Unit 1, Illinois Power Co.			05000461

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MASON, J.	
RECIP.NAME	RECIPIENT AFFILIATION
	Records Management Branch (Document Control Desk)

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SUBJECT: Engine Sys, Inc Part 21 rept (10CFR21-0079) re EGM controllers manufactured between Dec 1997 & May 1999 that may have questionable soldering workmanship. Caused by inadequate personnel training. Engine Sys issued C/A rept.

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DISTRIBUTION CODE: IE19T COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 11  
TITLE: Part 21 Rept (50 DKT)

NOTES: License Exp date in accordance with 10CFR2,2.109(12/22/72).	05000237
	05000352
Application for permit renewal filed.	05000353
Standardized Plant.	05000454
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## ENGINE SYSTEMS, INC.

1220 S. Washington St., Rocky Mount, NC 27801  
P.O. Box 1928, Rocky Mount, NC 27802-1928

Telephone: 919/977-2720  
Fax: 919/446-1134

September 23, 1999

U.S. Nuclear Regulator Commission  
Document Control Desk  
Mail Stop 0-11A1  
Washington, DC 20555

Subject: 10CFR21 Reporting of Defects and Non-Compliance -  
Engine Systems, Inc. Report No. 10CFR21-0079

Woodward EGM controllers

Dear Sir:

The enclosed report addresses a reportable defect and the corrective action to be taken by users of the EGM controllers.

Should you have any questions, please feel free to call.

Please sign below, acknowledging receipt of this report, and return a copy to the attention of Engineering Document Control at the address below (or, fax to number 919/446-1134) within 10 working days after receipt.

Yours very truly,

ENGINE SYSTEMS, INC.

Jo-Ann Mason  
Engineering Document Control

Please let us know if ANY of your mailing information changes - name of recipient, name of company/facility, address, etc. Mark the changes on this acknowledgment form and send to us by mail or FAX to the number above.

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Quality Performance With Pride



## ENGINE SYSTEMS, INC.

1220 S. Washington St., Rocky Mount, NC 27801  
P.O. Box 1928, Rocky Mount, NC 27802-1928

Telephone: 252/977-2720  
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Report No. 10CFR21-0079  
Rev. 0: September 21, 1999

### 10CFR21 REPORTING OF DEFECTS AND NON-COMPLIANCE

COMPONENT: Woodward EGM Controls (P/N 9903-081, 9903-085, 9903-109 & 9903-150)

SYSTEM: Turbine control systems

CONCLUSION: Defect is reportable in accordance with 10CFR21.

PREPARED BY:

Donald D. Galeazzi  
Engineering Manager

DATE:

9/22/99

REVIEWED BY:

Michael Nuding  
Quality Assurance Manager

DATE:

Sept 22, 1999

SUMMARY:

Engine Systems Inc. (ESI) has received notification from Woodward that EGM controllers manufactured between December 1997 and May 1999 may have questionable soldering workmanship. Soldering workmanship was affected because of inadequate personnel training. This issue was discovered by PECO, Limerick Station during a visual inspection of internal components of an EGM controller. Deficiencies identified included wire strands, excessive solder flux (splash) and cold solder connections.

To date, users have not reported any operability issues with the suspect EGM's. ESI has thermally, radiation and seismically tested two (2) (#9903-085 & #9903-109) of the suspect EGM's without any failures. Each part was also subjected to an additional seismic test by ESI; again, no failures were observed. In addition, each EGM was subjected to a 50 hour burn-in test at Woodward as part of their normal manufacturing tests.

COMPONENT:

Woodward EGM controllers (P/N 9903-081, 9903-085, 9903-109 and 9903-150) manufactured between December 1997 and May 1999.

CUSTOMERS AFFECTED:

Woodward has provided a list of all suspect EGM's by serial number. Only new EGM's are suspect and these are identified in Exhibit 1. The listing contains all suspect EGM's; and identifies controllers supplied by ESI as well as controllers supplied directly by Woodward. Only customers with suspect EGM's supplied by ESI are listed below.

Carolina Power & Light, H.B. Robinson  
Commonwealth Edison  
Georgia Power, Hatch  
Illinois Power, Clinton  
Nebraska Public Power, Cooper  
Northern States Power, Prairie Island  
PECO Energy, Limerick

DEFECT:

The controller circuit boards may have soldering workmanship deficiencies because of inadequate personnel training at the time of assembly.

CORRECTIVE ACTION:

1. Engine Systems issued a Corrective Action Report. Woodward had already performed corrective action to require proper personnel training/certification in the assembly area.
2. Users should return suspect controllers for repair. For controllers supplied by ESI, please contact ESI's Customer Service Department. Please contact Woodward (Steve Thompson @ 970/498-3196) for repair of controllers supplied directly by Woodward.

Because operability problems have not been identified, controllers can be returned at customer's convenience.

EXHIBIT 1

SUSPECT WOODWARD EGM CONTROLLERS

SUSPECT WOODWARD EGM CONTROLLERS  
SUPPLIED BY ENGINE SYSTEMS, INC.

<u>Customer</u>	<u>Part Number</u>	<u>Serial Number</u>
Carolina Power & Light, Robinson	9903-109	11985991
	9903-109	11985992
Commonwealth Edison	9903-085	12049616
	9903-085	12049617
	9903-085	12049618
	9903-085	12049619
	9903-085	12049620
	9903-085	12049621
	9903-085	12049622
	9903-085	12049623
	9903-085	12049624
Georgia Power, Hatch	9903-085	11983380
	9903-085	11983381
	9903-085	11983382
	9903-085	11953484
	9903-085	11953485
	9903-109	11983332
	9903-109	11983333
	9903-109	11983335
	9903-109	11955402
	9903-109	11955403
Illinois Power, Clinton	9903-085	12048589
	9903-085	12048590
	9903-085	12048591
Nebraska Public Power, Cooper	9903-085	12047526
	9903-085	12047527
	9903-109	11983334
	9903-109	12048594
	9903-109	12048596
Northern States Power, Prairie Island	9903-109	12044586
Peco, Limerick	9903-085	12046552
	9903-085	12046553
	9903-085	12046554
	9903-085	12046555
	9903-085	12046556
	9903-085	12046557
	9903-109	12048592
	9903-109	12048593
	9903-109	12048595
	9903-109	12048597
	9903-109	12049425
	9903-109	12049426



SUSPECT WOODWARD EGM CONTROLLERS  
 SUPPLIED DIRECTLY BY WOODWARD

<u>Customer</u>	<u>Part Number</u>	<u>Serial Number</u>
Arizona Public Service	9903-085	12004728
	9903-085	12019248
Commonwealth Edison	9903-085	12071911
Dresser Rand	9903-085	12086357
	9903-109	12049427
Energy Northwest (Wash Pub Ser)	9903-085	12017603
	9903-085	12017604
GE Nuclear - San Jose	9903-085	11946520
	9903-085	11946948
	9903-085	12034000
	9903-085	12034001
	9903-085	12034002
	9903-085	12034003
	9903-085	12034004
	9903-085	12034005
	9903-085	12054126
	9903-085	12054127
	9903-085	12054128
	9903-109	11993328
	9903-109	11993329
	9903-109	12036290
	9903-109	12036291
	9903-109	12036292
	9903-109	12036293
	9903-109	12036294
	9903-109	12036295
	9903-109	12036296
Northern States Power, Prairie Island	9903-085	12017640
Pennsylvania Power & Light	9903-085	12083808
	9903-085	12083809
	9903-085	12083810
	9903-109	12056912
	9903-109	12056913
Woodward - Japan	9903-081	11937746
	9903-085	11925080
	9903-085	11948690
	9903-085	11984451
	9903-085	11984452
	9903-085	11984453
	9903-085	11992393
	9903-150	11955454

## 10CFR21 REPORT LIST

9/22/99

REPORT 10CFR21-	DATE	SUBJECT	REPORTABLE
0001	5/3/82	CHECK-ALL VALVE CON 075 (3/4)	YES
0002	6/16/81	RECORD OF TURBO FAILURES AND PM CHANGEOUTS AT THE TOLEDO-EDISON COMPANY - DAVIS-BESSE NUCLEAR PLANT	YES
0003	1/23/80	NRC IE INFORMATION NOTICE 79-23 - EMERGENCY DIESEL GENERATOR LUBE OIL COOLERS (PORTLAND GE)	YES
0004	12/31/80	EMD SPRING DRIVE GEAR	NO
0005	6/28/79	NRC IE CIRCULAR NO. 79-12 - POTENTIAL DIESEL/GENERATOR TURBOCHARGER PROBLEM - LUBE OIL MODIFICATION	YES
0006	4/3/80	SWITCHGEAR DEFECT (PHIPPS BEND & HARTSVILLE)	YES
0007	6/19/81	WOODWARD GOVERNOR COMPANY - GOVERNORS FOR DIESEL GENERATOR SPEED CONTROL - DROOP LEVER SPRINGS	YES
0008	9/12/79	IE BULLETIN 79-23 - POTENTIAL FAILURE OF EMERGENCY DIESEL GENERATOR FIELD EXCITER TRANSFORMER	NO
0009	3/8/81	IE CIRCULAR NO. 80-23 - POTENTIAL DEFECTS IN BELOIT POWER SYSTEMS EMERGENCY GENERATORS	NO
0010	2/9/82	AIR START MOTOR DEFECT (EMD)	YES
0011	5/19/82	ROBERTSHAW CONTROLS COMPANY TEMPERATURE CONTROL VALVE MODELS 1284 AND 1825, SIZE 5" AND 6"	NO
0012	6/8/82	GE IAC OVERCURRENT RELAYS	NO
0013	6/1/82	TELEPHONE RELAYS - LIBERTY CONTROL CO.	NO
0014	4/14/82	HFA RELAYS - LEXAN COIL SPOOLS	NO
0015	5/8/85	HEAT LOAD OF EMD 16-645E4 DIESEL WITH AUXILIARIES INTO ENGINE ROOM	YES
0016	1/27/83	HYDROGEN IGNITER GLOW PLUG (RIVERBEND AND PERRY)	YES
0017	8/1/83	A.C. GENERATOR ROLLER BEARING PROBLEM (NEI)	YES

## 10CFR21 REPORT LIST

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REPORT 10CFR21 -	DATE	SUBJECT	REPORTABLE
0018	3/30/84	LUBE OIL COOLER LEAK (TVA - WATTS BAR)	YES
0019	3/29/84	GENERATOR ELECTRIC (MP&L) SELECTOR SWITCH	NO
0020	5/9/85	AFFECT OF LUBE OIL MODIFICATION ON 6 GPM CIRCULATING SYSTEM (LOW STANDBY LUBE OIL PRESSURE ALARM SWITCH)	NO
0021	3/28/86	EMD TURBOCHARGER INSPECTION 17.9:1 HIGH CAPACITY TURBO (LOCOMOTIVE APPLICATION)	NO
0022	5/20/85	FAILURE OF #6RB CYLINDER (COOPER-BESSEMER MODEL KSV20T (PP&L)	NO
0023	4/17/85	FAILURE WESTINGHOUSE/PHILIPPINES DIESEL GENERATOR	NO
0024	7/16/85	TVA BROWNS FERRY UNIT #2 - FAILURE OF FUEL FILTER BRACKET ASSEMBLY	NO
0025	7/1/86	GENERATOR SHAFT BEARING INSULATION DESIGN (ELECTRIC PRODUCTS)	YES
0026	7/16/85	CLARIFICATION OF DESIGNATION OF RH OR LH AIR START MOTORS FOR EMD 645E DIESELS USED FOR EMERGENCY POWER	YES
0027	9/6/85	ENGINE GOVERNOR ACTUATOR ELECTRIC CONNECTING PLUG (TVA-SEQUOYAH)	YES
0028	12/11/85	PP&L - SUSQUEHANNA APCO AIR RECEIVERS	YES
0029	1/27/86	EMD - AIR START MOTOR LUBRICATING ASSEMBLY (TOLEDO-EDISON)	NO
0030	4/28/86	DESIGN ERROR IN ELECTRIC PRODUCTS DIVISION/PSD CONTROL CIRCUITS	YES
0031	5/19/86	EMD UPPER CONNECTING ROD BEARING #8354118	YES
0032	7/3/86	PP&L - SUSQUEHANNA, BASE WELDING PROBLEM, PIPE WELDS	NO
0033	1/12/87	SQUARE D GENERAL PURPOSE RELAYS, CLASS 8501, TYPE KPD-13	YES
0034	2/5/87	PP&L TURBOCHARGER - TURBINE INLET CASTING DEFECTS	NO
0035	9/4/87	MAIN AND CONNECTING ROD BEARINGS MANU- FACTURED BY CLEVITE	YES

## 10CFR21 REPORT LIST

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REPORT 10CFR21 -	DATE	SUBJECT	REPORTABLE
0036	2/10/88	POTENTIAL TRANSFORMER CABLE FAILURE - LACK OF PENCILLING (TVA)	YES
0037	9/7/88	GENERATOR FIELD CIRCUIT BREAKER FAILURE (GE TED 136100)	YES
0038	9/29/87	SATURABLE CORE TRANSFORMER FAILURE (BASLER BEI 2173-001) (TVA BROWN'S FERRY)	NO
0039	12/16/87	FAILURE OF TUBING TURBOCHARGER - WESTINGHOUSE PHILIPPINES	NO
0040	3/17/88	CONNECTING ROD BEARING SHELLS - EMD P/N 8354118 AND 8136114	NO
0041	4/11/88	CLEVITE UPPER CONNECTING ROD BEARING - P/N 8354118	YES
0042	4/28/88	EMD MODEL G645E4 - CAMSHAFT BRACKET (SAN ONOFRE)	YES
0043	7/7/88	TVA WATTS BAR - MANUAL/AUTOMATIC VOLTAGE REGULATOR TRANSFER CIRCUIT	NO
0044	1/23/89	REVIEW OF PARTS DEDICATION PROGRAM	NO
0045	4/28/89	EMD AIR START MOTORS/INGERSOLL RAND 150 BMP MODEL D	NO
0046	6/7/89	RADIATOR FAN SHAFT BEARING FAILURE (FP&L)	YES
0047	7/10/89	DEGRADATION OF CONTROL WIRING INSULATION IN EMD 645E4 DIESEL/GENERATOR ENGINE AND GENERATOR CONTROL (999/MP SERIES)	YES
0048	8/28/89	C&D BATTERY CHARGER MODEL ARR130HK	YES
0049	8/24/89	MK/PSD DEDICATION REPORT: EXHAUST VALVE BRIDGE ASSEMBLY P/N 8085260	NO
0050	9/14/89	AIR START CONTROL SYSTEM DESIGN DEFECT	YES
0051	10/25/89	PP-EP A.C. GENERATOR (ALLENS CREEK) (NOT REPORTABLE)	NO
0052	1/13/89	EXHAUST VALVE - EMD P/N 9319735	NO
0053	3/26/90	WOODWARD GOVERNOR UG8 SYNCHRONOUS MOTOR MOUNTING	NO

## 10CFR21 REPORT LIST

9/22/99

REPORT 10CFR21-	DATE	SUBJECT	REPORTABLE
0054	5/17/90	IMMERSION HEATER CONTACTOR - CUTLER-HAMMER A10 SERIES, NEMA SIZE 1, 2, AND 3 - EMD #8455508	YES
0055	6/13/90	AIR START SOLENOID VALVE - EMD P/N 9513134, GRAHAM WHITE #712-051	YES
0056	10/9/91	BASLER BE1-59 OVERVOLTAGE RELAY	NO
0057	10/7/91	HIGH VOLTAGE POWER CABLE - VOLTAGE REGULATOR POWER TRANSFORMER (EPT) AND METERING AND RELAYING POTENTIAL TRANSFORMERS (PT1-PT5) (TVA WATTS BAR ONLY)	NO
0058	11/8/91	MOUNTING BOLT - EMD #188146 CAMSHAFT BEARING BLOCK ASSEMBLY MOUNTING (SAN ONOFRE NUCLEAR GENERATING STATION ONLY)	NO
0059	11/8/91	STUD - EMD #8034672, CAMSHAFT LOCATING STUD (SAN ONOFRE NUCLEAR GENERATING STATION ONLY)	NO
0060	9/30/91	CRANKCASE END BAR WELD CRACKS - KNOLLS ATOMIC POWER LABORATORY	NO
0061	1/2/92	GENERATOR ROTOR POLE MOUNTING BOLT TORQUE	YES
0062	5/11/92	EMD TURBOCHARGER PLANETARY BEARING SHAFT (DIESEL GENERATORS WITH EMD 645 ENGINES USING TURBOCHARGERS REMANUFACTURED FROM MAY, 1991 TO JANUARY, 1992)	YES
0063	1/25/93	AUTOMATIC DRAIN FLOAT - BALSTON 21554-1; AIR PIPING ASSY - A912A-DX AND A913A-DX (ALL A912A-DX AND A913A-DX AIR FILTERS MANUFACTURED PRIOR TO NOVEMBER 1989)	YES
0064	2/16/93	CONNECTING ROD BASKET NUT - EMD #8487883 (SHIPPED SINCE JANUARY 1992).	YES
0065 Rev. 0	6/14/93	EMD PRESSURE, TEMPERATURE, AND VACUUM SWITCHES MANUFACTURED BY SQUARE D	YES
0065 Rev. 1	7/14/93	EMD PRESSURE, TEMPERATURE, AND VACUUM SWITCHES MANUFACTURED BY SQUARE D	YES
0066	7/15/93	75 PSIG RELIEF CHECK VALVE, 1" NPT, EMD #9521844; KEPNER #416C-1-75	YES

## 10CFR21 REPORT LIST

9/22/99

REPORT 10CFR21 -	DATE	SUBJECT	REPORTABLE
0067	12/2/93	CYLINDER LINER - EMD #9318833, "L-3" AND "L-6" VERSIONS	YES
0067 Rev. 1	12/10/93	CYLINDER LINER - EMD #9318833, "L-3" AND "L-6" VERSIONS	YES
0068	4/14/94	GOVERNOR ACTUATOR - MISSING TOOTH FROM GOVERNOR SHAFT	NO
0069	4/25/94	VOLTAGE RELAY - EMD 8412411, 8282624 & 8365716; WESTINGHOUSE TYPE SV	YES
0070	3/1/95	POTTER & BRUMFIELD RELAY #R10-E3286-2 C&D #JR-461-E C&D HVSD PRINTED CIRCUIT BOARD #MBC-2920-E	YES
0071	4/24/95	SQUARE D CLASS 8501, TYPE KPD RELAY INTERIM REPORT	NO
0072	4/28/95	G.E. HEA63 LOCKOUT RELAY W/ELEC RESET MANUFACTURED 1990-1994 (FP&L TURKEY POINT ONLY)	YES
0073	4/27/96	NEI PEEBLES VOLTAGE REGULATORS "R4" VOLTAGE ADJUST POTENTIOMETER	YES
0074	11/4/96	"EXC" CONTACTOR, EMD #9562575 (GPU OYSTER CREEK ONLY)	YES
0075	3/10/97	PARSONS PEEBLES/ELECTRIC PRODUCTS GENERATORS WITH MODIFIED BRG INSULATION	YES
0076	9/22/97	EMD AIR START MOTORS #40047506 & #40047507	YES
0077	1/22/98	GRAHAM-WHITE AIR START SOLENOID VALVES #712-065 & #712-015	YES
0078	1/21/99	SYNCHROSTART ESSB-4AT SPEED SWITCHES	YES
0079	9/21/99	WOODWARD EGM CONTROLLERS	YES