SMUD
SACRAMENTO MUNICIPAL UTILITY DISTRICT ☐ 6201 S Street, P.O. Box 15830, Sacramento CA 95852-1830, (916) 452-3211
AN ELECTRIC SYSTEM SERVING THE HEART OF CALIFORNIA

January 2, 1988

GCA 87-912

U. S. Nuclear Regulatory Commission
Attn: J. B. Martin, Regional Administrator
Region V, Office of Inspection and Enforcement
1450 Maria Lane, Suite 210
Walnut Creek, CA 94596

DOCKET NO. 50-312
RANCHO SECO NUCLEAR GENERATING STATION
LICENSE NO. DPR-54
FIRE PROTECTION SYSTEM ENHANCEMENT PLAN

Dear Mr. Martin:

In accordance with commitments made in LER 87-29, and the exit meeting with the Commission on November 19, 1987, the enclosed documents detail the District's efforts to ensure fire protection and detection systems meet NFPA requirements.

District report ERPT M-0049 evaluated the current fire protection program for compliance with NFPA 12, 13, 14 (except containment), 15, 20, 24, and 72D. An evaluation of the manual firefighting capabilities in containment is currently underway and will be completed prior to restart. One condition involving testing of unsupervised circuits, as reported in LER 87-29, was identified as a violation of Technical Specifications. Compensatory measures were implemented and modifications installed and tested to correct this deficiency. None of the identified conditions degraded the station's ability to achieve and maintain safe shutdown. The deviations from the NFPA code and options for corrective actions to eliminate these deviations are identified in Attachment I, Table 3-1 from ERPT M-0049. This table also includes modification options for the fire detection and alarm systems. Attachment II contains a detailed evaluation of the proposed alarm system modifications. The forecast completion dates in Table 3-1 are tentative; a firm date for each item will be discussed with the NRC in the first quarter of 1988, when the Long Range Schedule Process is finalized.

IE-01

Acceptance testing of the fire pumps as required to provide baseline data for future testing is scheduled for completion by May 31, 1988. This satisfies the District's commitment made in our letter dated December 15, 1987, "Resolution of Fire Pump Open Items."

In summary, the above evaluations verified the adequacy of the current fire protection systems to ensure safe shutdown capability is maintained. Additionally, in order to improve reliability of the systems and meet applicable NFPA requirements, modifications have been identified and scheduled through the Long Range Schedule Process.

Please contact me if you have any questions. Members of your staff requiring further information or clarification may contact Steve Crunk or Dave Swank of my Licensing Staff at extension 4913.

Sincerely,

Joseph F. Foltz for

G. Carl Andognini
Chief Executive Officer,
Nuclear

cc with attachments:

C. Ramsey, NRC, Region V
S. Stuart, NRC, Region V
A. D'Angelo, Resident Inspector
G. Kalman, NRC, Bethesda

TABLE 3-1

DEVIATIONS TO BE CORRECTED

TABLE 3-1
DEVIATIONS TO BE CORRECTED

NFPA CODE	CODE SECTION	CORRECTIVE ACTION	MODIFICATION DOCUMENT	FORECAST COMPLETION DATE
12-1968	122	A warning beacon will be installed outside each CO2 protected area in Auxiliary Building. A warning horn will be provided in overhead area of Zone 11, Mezzanine Battery Room.	New ECN or DCP	3/1/89
12-1968	1439	The push-button stations for Zones 36 and 39 will be labeled to describe the area they protect.	CCTS T871027101	12/10/88
12-1968	1644	As-built design calculations for the Auxiliary Building CO2 zones will be developed and/or discharge test will be performed. Perform a full discharge test on Zone 38 after new calculations prepared.	New Calc or STP	2/1/89
12-1968	1714	Incorporate vendor maintenance items from M14.03-IM03 into plant procedures as needed.	CCTS T871119301	4/1/88
12-1968	172	Revise AP.30 to include maintaining system operability for routine entry into CO2 zones per LER 87-15 response.	CCTS T871027101	12/10/88

TABLE 3-1
DEVIATIONS TO BE CORRECTED

NFPA CODE	CODE SECTION	CORRECTIVE ACTION	MODIFICATION DOCUMENT	FORECAST COMPLETION DATE
12-1968	2212	Install a damper in the ventilation panel in Zone 19 which is interlocked with the CO2 system.	New ECN or DCP	3/1/89
12-1980	1-6.2	Install a warning beacon outside each CO2 protected area on the Turbine deck.	New ECN or DCP	3/1/89
12-1980	1-7.2	Create as-built design calculations for the Turbine zones and the NSEB and/or perform discharge tests.	New Calc or STP	2/1/89
12-1980	1-8.3.3	Replace the push-button stations on the Turbine deck with weatherproof devices or protect in place.	New ECN	3/1/89
12-1980	1-8.3.8	Create new Turbine zone design calculations and/or perform a discharge test.	New Calc or STP	2/1/89
12-1980	1-9.1	Create new Turbine zone design calculations and/or perform a discharge test.	New Calc or STP	2/1/89
12-1980	1-10.4	Clean the extended discharge nozzles in Zone 52 to remove corrosion.		
		Perform system discharge test on Zone 76 per NCR S-6987.	STP	2/1/89
12-1980	1-10.5.2	Create new Turbine zone design calculations and/or perform discharge tests.	New Calc or STP	2/1/89
12-1980	1-11.3	Revise procedure AP.30 to retain system operability for routine entry per LER 87-15 response. Procedure will be revised after hardware fixes are completed.	CCTS T871021101	3/1/89
12-1980	2-5.3.3	Perform a full discharge test for Turbine zone 51.	STP	2/1/89

TABLE 3-1
DEVIATIONS TO BE CORRECTED

NFPA CODE	CODE SECTION	CORRECTIVE ACTION	MODIFICATION DOCUMENT	FORECAST COMPLETION DATE
12-1980	3-3.1	Create new Turbine zone calculations and/or perform discharge tests.	New Calc or STP	2/1/89
13-1971	2110	A hydraulic calculation of the as-built Turbine Building wet-pipe system will be performed to verify the adequacy of the system.	New Calc	9/1/88
13-1971	3072	The hose station at the northwest corner of the Turbine Building, grade level, will be modified so that it is supplied by 2-1/2 inch or larger piping.	New ECN or DCP	3/1/89
13-1971	3151	An evaluation and analysis of the ability of the piping to withstand a seismic event will be performed, or at the locations indicated below, one to two inches of clearance will be provided around the cross mains which are grouted to wall penetrations; the penetrations will be sealed with a flexible fire rated material. 1) Cross Main #11 at grade level of the Auxiliary Building Basement penetrates the corridor wall at S & 10.3. 2) Cross Main #13 grade level at N-P & 10.3. 3) Cross Main #11 supplying the grade elevation at K & 9.7. 4) Cross Main #1 supplying the turbine elevation at K & 10.6. 5) The 4 inch cross main supplying suppression Zone 7 on the Turbine Deck level penetrates the wall at R-S & 10.6. 6) Cross Main #1 supplying suppression Zone 5 on the Turbine Deck level penetrates the wall at S & 10.3-10.6.	New Calc or ECN	6/1/89
13-1971	3160	Earthquake bracing will be installed on the lead-in piping from the fire loop to the Auxiliary Building systems where the lead-in exits the ground in the Tank Farm.	New ECN or DCP	6/1/89

TABLE 3-1
DEVIATIONS TO BE CORRECTED

NFPA CODE	CODE SECTION	CORRECTIVE ACTION	MODIFICATION DOCUMENT	FORECAST COMPLETION DATE
13-1971	3490	Signs will be installed on sprinkler system control valves indicating the systems controlled by each valve.	Work Request	8/1/88
13-1971	3570	The piping being supported by branch line 95 in the Turbine Building will be repaired so that it is not supported by branch line 95.	Work Request	12/31/88
13-1971	3560	Missing and broken hangers will be replaced in the areas indicated below: AUXILIARY BUILDING 1) No hanger is provided on branch line #24 (Turbine Level) between the 4th and the 7th sprinklers from the end of this branch line. 2) No hanger is provided near the end head on branch line #77 (Turbine Level). 3) Branch line #47 (Turbine Level) between column lines K and L is not provided with pipe hangers. 4) Branch line #33 (Mezzanine Level) closest to cross main M-9 has no hanger supporting it. 5) Branch line #11 (Grade Level) closest to cross main M-11 has had the hanger removed. The pipe is unsupported. 6) Branch line #15 (Grade Level) at the east end has had a hanger removed. The pipe at this location is not supported. 7) Branch line #14 (Grade Level) at the first tee from cross main #13 has had a hanger removed. The pipe at this location is not supported. 8) The branch line along the south wall of the main corridor Grade Level has a hanger removed at the west end. The pipe at this location is not supported.	Work Request	12/31/88

TABLE 3-1
DEVIATIONS TO BE CORRECTED

NFPA CODE	CODE SECTION	CORRECTIVE ACTION	MODIFICATION DOCUMENT	FORECAST COMPLETION DATE
13-1971	3560 (Continued)	TURBINE BUILDING		
		1) Line 119 @ C (broken)		
		2) Line 62 @ G (2 missing)		
		3) Line 70 @ E (broken)		
		4) Line 76 @ D5.6 (broken)		
		5) Line 62 @ G (broken)		
		6) Line 85 @ F (broken)		
		7) Line 90 @ F (2 broken)		
		8) Line 90 @ F10.5 (broken)		
		9) Line 60 @ A3 (broken)		
		10) Line 17 @ E (broken)		
		11) Line 72 @ G (broken)		
		12) Line 72 @ G5.6 (broken)		

TABLE 3-1
DEVIATIONS TO BE CORRECTED

NFPA CODE	CODE SECTION	CORRECTIVE ACTION	MODIFICATION DOCUMENT	FORECAST COMPLETION DATE
13-1971	3610	The sprinkler head that is out of position in the Auxiliary Building (branch line 34, zone 20) will be removed from its branch line and the piping will be capped where the head is removed. The sprinkler heads listed below will be repositioned to their correct positions:	New ECN or DCP	6/1/89
		TURBINE BUILDING 1) On line 64 @ D3, grade level, the sprinkler head is installed approximately 45 degrees out of its designed position. 2) On line 81 @ D8, grade level, the sprinkler head is installed approximately 45 degrees out of its designed position. 3) On line 77 between E & G, grade level, a pendent head is installed in an upright position. 4) On line 95 between E & G @ 11.8, grade level, the upright head is turned down.	Work Request	7/1/88
13-1971	3670	AUXILIARY BUILDING Damaged sprinkler heads will be replaced at the following locations: 1) Chemical Storage Balcony 2) Main Corridor Mezzanine Elevation 3) Main Corridor Turbine Deck Elevation	Work Request	12/31/88

TABLE 3-1
DEVIATIONS TO BE CORRECTED

NFPA CODE	CODE SECTION	CORRECTIVE ACTION	MODIFICATION DOCUMENT	FORECAST COMPLETION DATE
13-1971	3670 (Continued)	TURBINE BUILDING Guards will be repaired or replaced at the following locations: 1) Line 95 @ D11.6 2) Line 74 @ D5.2 3) Line 65 @ D2.6 4) Line 76 @ E5.6 5) Line 81 @ D7.6 6) Line 82 @ D8.2 (this head not shown on drawing M31.01-124) 7) Line 111 between C & D 8) Line 111 @ B4.4 9) Line 111 @ C4.4 10) Line 60 @ A2 11) Line 60 @ B2 12) Line 60 @ C2 13) Line 116 @ B12.2 Baffles will be repaired or replaced at the locations indicated below: 1) Baffles (20) have been removed from the outdoor branch lines located at the edge of the Turbine Deck. 2) Baffles (3) removed from line 111 @ B-C4.6 3) Baffles (2) removed from line 111 @ C-D4.6 4) Baffle removed from line 82 @ G8.2		

TABLE 3-1
DEVIATIONS TO BE CORRECTED

NFPA CODE	CODE SECTION	CORRECTIVE ACTION	MODIFICATION DOCUMENT	FORECAST COMPLETION DATE
13-1971	3670 (Continued)	5) Baffle removed from line 113 @ C11.6		
		6) Baffle removed from line 98 @ D12.6		
		7) Baffle removed from line 74 @ D5.2		
		8) Baffle removed from line 76 @ E5.6		
		9) Baffle removed from line 81 @ D8		
		10) Baffle removed from line 110 @ A2		
		11) Baffle removed from line 110 @ B2		
		12) Baffle removed from line 95 @ D11.6		
		13) Baffle removed from line 90 @ G10		
		14) Baffle removed from line 115 @ B12.4		
		15) Baffle removed from line 90 @ E10		
		16) Baffle removed from line 90 @ E-G10		
		17) Baffle removed from line 95 @ D11.6		
		18) Out of position on line 118 @ A13		
		19) Out of position on line 118 @ A11.6		
		20) Out of position on line 64 @ D3		
		21) Out of position on line 65 @ D2.6		
		22) Out of position on line 82 @ D8		
		23) Out of position on line 77 @ E-G6.4		
		24) Out of position on line 60 @ C2		
		25) Out of position on line 111 @ C4		

TABLE 3-1
DEVIATIONS TO BE CORRECTED

NFPA CODE	CODE SECTION	CORRECTIVE ACTION	MODIFICATION DOCUMENT	FORECAST COMPLETION DATE
13-1971	3670 (Continued)	26) Out of position on line 111 @ C-D4 27) Out of position on line 111 @ B4.8 28) Out of position on line 60 @ C-D2		
13-1971	3680	TURBINE BUILDING The two painted sprinkler heads will be replaced. These heads are located at branch line 81 at D7.6 and branch line 82 at D8.2.	Work Request	12/31/88
13-1971	4260	AUXILIARY BUILDING The sprinkler heads in the Chemical Storage Room will be repositioned so that they are within 16 inches of the ceiling.	New ECN or DCP	5/1/89
13-1971	4329	A baffle will be installed between the two sprinklers closer than six feet apart on branch line 24, 40 foot elevation, in the Auxiliary Building. A baffle will be installed between sprinklers on branch line 72, between columns D5 and E5, on the 20 foot elevation of the Turbine Building.	New ECN or DCP	5/1/89

TABLE 3-1
DEVIATIONS TO BE CORRECTED

NFPA CODE	CODE SECTION	CORRECTIVE ACTION	MODIFICATION DOCUMENT	FORECAST COMPLETION DATE
13-1980	3-9	Modify the inspectors test connections on the NSEB pre-action systems and the DG Building system so that they will provide a flow equivalent to one sprinkler head.	New ECN or DCP	6/1/89
13-1980	3-10.3.5	An evaluation and analysis of the ability of the piping to withstand a seismic event will be performed, or at the locations listed below earthquake backing will be provided: Earthquake bracing will be provided at the top of the TSC system riser. Earthquake bracing will be provided where the TSC system cross main changes direction at R & 11.7. Earthquake bracing will be provided on the third floor of the NSEB where the cross main changes direction before penetrating the wall at column lines M & 14.2. Earthquake bracing will be installed on the third floor of the NSEB at the end of the cross main at column lines M & 14. Earthquake bracing at the top of the riser for the NSEB room 362 system will be reinstalled correctly. Earthquake bracing will be installed on the end of the cross main in room 362 of the NSEB. Earthquake bracing will be installed on the end of the cross main in room 363 of the NSEB. Earthquake bracing will be installed at the top of the riser at column lines P.6 & 23 of the DG Building. Earthquake bracing will be provided on the end of the cross main in the east mezzanine area of the DG Building. Earthquake bracing will be installed on the end of the cross main in the west control room of the DG building.	New Calc or ECN	6/1/89
13-1980	3-15.5	The sprinkler head on the 20 foot elevation, at column lines N & 15, in the NSEB will be repositioned so that its pattern is not obstructed.	New ECN or DCP	9/30/89
13-1980	3-15.7	See section 3-10.3.5 of NFPA 13-1980.	New Calc or ECN	6/1/89
13-1980	3-16.2	The sprinkler head on the grade elevation, at column lines M & 15, in the NSEB will be reinstalled to its correct position.	Work Request	12/31/88

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NFPA CODE	CODE SECTION	CORRECTIVE ACTION	MODIFICATION DOCUMENT	FORECAST COMPLETION DATE
13-1980	4-3.1	The sprinkler heads located above the false ceiling in the TSC will be relocated to within 16 inches of the ceiling. The four sprinkler heads north of column line 16.7 in the hallway of the 21 foot elevation of the NSEB will be relocated within 16 inches of the ceiling. The three sprinkler heads east of column lines M & 15.2 on the 21 foot elevation of the NSEB will be relocated within 16 inches of the ceiling. The sprinkler head at M & 15.3 on the 21 foot elevation of the NSEB will be repositioned to within 16 inches of the ceiling.	New ECN or DCP	6/1/89
13-1980	7-3.3	Hydraulic calculations of the as-built sprinkler systems in the NSEB will be performed.	New Calc	9/1/88
13-1980	7-4.3	Hydraulic calculations of the as-built sprinkler systems in the NSEB will be performed.	New Calc	9/1/88

TABLE 3-1
DEVIATIONS TO BE CORRECTED

NFPA CODE	CODE SECTION	CORRECTIVE AC	MODIFICATION DOCUMENT	FORECAST COMPLETION DATE
14-1980	5-6	The sign indicating the system supplied by the fire department connection on the T & R Building will be changed to read "Standpipe System".	Work Request	4/1/88
14-1980	7-4	An evaluation and analysis of the ability of the piping to withstand a seismic event will be performed or, four-way sway brace will be installed at the top of the riser in the Auxiliary Building stairwell.	New Calc or ECN	6/1/89
14-1980	7-4	Unpainted piping on the system riser will be painted.	Work Request	7/1/89

TABLE 3-1
DEVIATIONS TO BE CORRECTED

NFPA CODE	CODE SECTION	CORRECTIVE ACTION	MODIFICATION DOCUMENT	FORECAST COMPLETION DATE
15-1969	6012	Revise surveillance procedures to include flushing of strainers on the Transformer Yard and Turbine Building water spray systems.	CCTS T871119301	3/31/88
15-1969	8050	Revise surveillance procedures to include verifying that the actuation detectors on the Transformer Yard and Turbine Building water spray systems operate within 40 seconds when a standard heat source is applied to the detectors.	CCTS T871119301	3/31/88
15-1969	NFPA-13 3-10-3	Provide clearance around the riser piping that penetrates the foundation of the Transformer Yard Valve House.	New ECN or DCP	6/1/89

TABLE 3-1
DEVIATIONS TO BE CORRECTED

NFPA CODE	CODE SECTION	CORRECTIVE ACTION	MODIFICATION DOCUMENT	FORECAST COMPLETION DATE
15-1979	3-2	Hydraulic calculations, for the as-built water spray systems in the NSEB, will be performed to verify the adequacy of the systems.	New Calc	9/1/88
15-1979	4-8.1	The obstructed nozzle at hydraulic reference point 18, off of branch line 84, at the (-)11 foot elevation, in tunnel 661 of the NSEB will be repositioned so that it is not obstructed.	New ECN or DCP	6/1/89
15-1979	6-2.2	Revise surveillance procedures to include flushing of strainers on the NSEB water spray systems.	CCTS T871119301	3/31/88

TABLE 3-1
DEVIATIONS TO BE CORRECTED

NFPA CODE	CODE SECTION	CORRECTIVE ACTION	MODIFICATION DOCUMENT	FORECAST COMPLETION DATE
24-1970	4	General arrangement drawings of P-440 will be made.	New Drawing	7/1/88
20-1970	143	Clearance will be provided around the supply piping to P-996 where the piping penetrates the foundation.	New ECN or DCP	12/31/88
20-1970	235	The 3/4 inch air release valve on P-440 will be replaced with a 1-1/2 inch air release valve.	New ECN or DCP	12/31/88
20-1970	514	Provide separate annunciation for pump running and loss of power alarms from P-440.	New ECN or DCP	6/1/89

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NFPA CODE	CODE SECTION	CORRECTIVE ACTION	MODIFICATION DOCUMENT	FORECAST COMPLETION DATE
24-1970	11, 12	Drawing C-182 will be revised to correct the deviations cited below: 1) Post Indicator Valves (PIVs) Nos. 33 (FPW 485), 35 (FPW 963), and 40 (FPW 998) are not shown. 2) PIV No. 5, as shown on the diagram, does not exist. 3) Fire hydrant FH No. is not labeled and its associated hose house is not shown. 4) Fire hydrants FH Nos. 4, 9, 16, and 21 do not have hose houses as shown on the drawing. 5) The hose houses for fire hydrants FH Nos. 23 and 26 are not indicated. 6) The connection to the diesel fire pump P-996 from the yard main loop is not shown. In addition, the fire hydrant near the PAP Security Building is not identified.	Drawing Change	6/1/88
24-1970	55	Fire hydrants and hose houses will be labeled with identification numbers.	Work Request	3/31/88
24-1970	62	Surveillance procedures will be revised to include an annual service test of all fire hose in hose houses.	CCTS T871119301	4/1/88
24-1970	64	Surveillance procedures will be revised to include ensuring that fire hose in hose houses is refolded at different points or rolled up after use.	CCTS T871119301	4/1/88

TABLE 3-1
DEVIATIONS TO BE CORRECTED

NFPA CODE	CODE SECTION	CORRECTIVE ACTION	MODIFICATION DOCUMENT	FORECAST COMPLETION DATE
72D-1967	2032	Replace the Control Room annunciation system (H3FPA & H3FPB) with a system meeting NFPA 72D or demonstrated equivalents.	New ECN or DCN	9/30/89
72D-1967	2422	Tie general fire alarm circuits to Control Room annunciation (ECNs R-1993A & B).	New ECN or DCP	9/30/89
		Upgrade Control Room annunciation.	New ECN or DCP	9/30/89
72D-1967	2423	Upgrade Control Room annunciation.	New ECN or DCP	9/30/89
72D-1967	3555	Tie general fire alarm circuits (ECNR-1993A & B).	New ECN or DCP	9/30/89
		Upgrade Control Room annunciation.	New ECN or DCP	9/30/89
72D-1967	4042	Upgrade Control Room annunciation.	New ECN or DCP	9/30/89
72D-1967	4090	Upgrade Control Room annunciation.	New ECN or DCP	9/30/89

TABLE 3-1
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NFPA CODE	CODE SECTION	CORRECTIVE ACTION	MODIFICATION DOCUMENT	FORECAST COMPLETION DATE
72D-1980	2-2.2	Replace IDADS annunciation system with a system complying with the requirements of NFPA 72D or demonstrated equivalents.	New ECN or DCN	9/30/89
72D-1980	2-6.2.3	Perform analysis of backup power supplies for all fire panels or provide internal battery units complying with NFPA 72D.	New ECN or DCN	9/30/89
72D-1980	2-7.1	Tie the general fire alarm signal from each local panel to Control Room annunciation (ECN R-1993A & B). Upgrade Control Room annunciation.	New ECN or DCN	9/30/89
72D-1980	3-6.3	Separate the detection zone circuits from the devices which indicate water flow from suppression systems.	New ECN or DCN	9/30/89
72D-1980	3-9.3	Separate pressure switch high and valve position switch for zones 81 and 82.	New ECN or DCN	9/30/89
72D-1980	3-10.1	Upgrade Control Room annunciation.	New ECN or DCN	9/30/89
72D-1980	4-3.1	Upgrade Control Room annunciation.	New ECN or DCN	9/30/89
72D-1980	4-5.3.4	Separate pressure switch high and valve position switch for zones 81 and 82.	New ECN or DCN	9/30/89
72D-1980	4-5	Revise IDADS point E-8005 to describe general panel trouble (interim).	New ECN or DCN	9/30/89

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DEVIATIONS TO BE CORRECTED

NFPA CODE	CODE SECTION	CORRECTIVE ACTION	MODIFICATION DOCUMENT	FORECAST COMPLETION DATE
72E-1978	4-3.2	Replace the suspended ceiling that has been removed from Computer Room 338.	Work Request	6/1/88
		Relocate the detectors in NSEB rooms 146, 147, 234, 235, 236, 237, [illegible] and 363 to a ceiling mounted configuration.	New ECN or DCP	9/30/89
72E-1978	4-3.7.2	Additional detectors will be installed and/or relocated in order to enhance the reliability of the detector in the 480 volt and 4160 volt switchgear rooms.	New ECN or DCP	9/30/89
72E-1978	4-3.7.3	Detection will be provided above rooms 232, 232, 358 and 359 in the NSEB.	New ECN or DCP	9/30/89
72E-1978	4-4.1	Relocate the ISD in room 361 of the NSEB.	New ECN or DCP	9/30/89