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RECIP.NAME RECIPIENT AFFILIATION
CRUTCHFIELD,D. Operating Reactors Branch 5

SUBJECT: Ack receipt of 810227 ltr w/final assessments for SEP Topics V-11.A & VI-7.C.1.None of utils alternatives to criteria addressed by NRC.Modified proposed topic assessments encl include new info re automatic closure of RHR valves.

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JOHN E. MAIER
VICE PRESIDENT

TELEPHONE
AREA CODE 716 546-2700

March 27, 1981

Director of Nuclear Reactor Regulation
ATTN: Mr. Dennis M. Crutchfield, Chief
Operating Reactors Branch #5
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: SEP Topics V-11.A and VI-7.C.1
R. E. Ginna Nuclear Power Plant
Docket No. 50-244

Dear Mr. Crutchfield:

We received your final assessments for SEP Topics V-11.A and VI-7.C.1, transmitted by letter dated February 27, 1981 and were disappointed by their content. None of RG&E's suggested acceptable alternatives to current criteria were addressed by the staff, and RG&E's letter was not even referenced in the assessment.

It appears that the NRC, by not evaluating acceptable alternatives at this time, is breaking from the spirit of the SEP review philosophy. Even previous SEP reviews which accepted deviations from the SRP were not accepted in this assessment, as exemplified by the issue of automatic closure of the RHR valves. This approach is inimical to the successful completion of the SEP, and will make the integrated assessment even more difficult and time consuming than anticipated. In meetings with the SEP Branch, and in our letter dated February 4, 1981 on the redirection of SEP, the issue of providing acceptable alternatives to current regulatory criteria in the licensee response to NRC's initial topic assessments was considered necessary in order to make the integrated assessment manageable. The phrase "will be evaluated during the integrated assessment" should not be overworked since many decisions can and should be made at this time. For these two specific assessments, we trust that the staff will again review our suggested acceptable alternatives, and reissue the "final" assessments. To hasten this process we have attached the proposed topic assessments, as modified by RG&E. Following review and concurrence by the NRC Staff, these could be used as the "final" topic assessments. (Note that new information regarding the ability of the RHR valves to operate against specific differential pressure has been integrated into the assessment of SEP Topic V-11.A, Section 3.1, and included as Enclosure 3).

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We have greatly expanded the list of references used in the topic assessments, since we believe that the lack of definitive and complete references in the evaluations will hamper both the SEP integrated assessment and the usefulness of the topic assessments as a documentation basis in the future.

In our earlier comments of January 8, 1981, we referenced Revision 1 to Regulatory Guide 1.139. Your letter responded that "the currently approved version of Regulatory Guide 1.139 is Revision 0." We note that both Revision 0 and Revision 1 were issued "For Comment." Thus, our reference to Revision 1 is entirely proper, and has been retained.

Very truly yours,

John E. Maier

Enclosures

Enclosure 1

SEP TECHNICAL EVALUATION

TOPIC V-11.A
ELECTRICAL, INSTRUMENTATION, AND CONTROL FEATURES FOR ISOLATION OF HIGH AND LOW PRESSURE SYSTEMS

FINAL DRAFT

R. E. GINNA NUCLEAR STATION

Docket No. 50-244

March 27, 1981

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TOPIC V-11.A
ELECTRICAL, INSTRUMENTATION, AND CONTROL FEATURES FOR ISOLATION OF HIGH AND LOW PRESSURE SYSTEMS

FINAL DRAFT

R. E. GINNA NUCLEAR STATION

1.0 INTRODUCTION

The purpose of this review is to determine if the electrical, instrumentation, and control (EI&C) features used to isolate systems with a lower pressure rating than the reactor coolant primary system are in compliance with current licensing requirements as outlined in SEP Topic V-11A. Current guidance for isolation of high and low pressure systems is contained in Regulatory Guide 1.139, Proposed Rev. 1, and the Standard Review Plan (SRP), Section 6.3.

2.0 CRITERIA

2.1. Residual Heat Removal (RHR) Systems

Isolation requirements for RHR systems contained in Regulatory Guide 1.139 are:

1. Isolation of the suction side of each RHR system train from direct RCS pressure should be provided by at least two power operated valves in series, with valve positions indicated in the control room. Alarms in the control room should be provided to alert the operator if either valve is open when the RCS pressure exceeds the RHR system design pressure. The isolation valve system should have two or more independent interlocks to

prevent the valves from being opened unless the RCS pressure is below the RHR system design pressure. Upon loss of actuating power, isolation valves should not change position unless movement is to a position that provides greater safety. The isolation valve system should have two or more independent protective measures to close any open valve in the event of an increase in the RCS pressure above the RHR system design pressure. All isolation valves on the discharge and suction sides of the RHR system should be classified ASME Section XI Category A, and be leak tested at each refueling outage.

2. One of the following should be provided on the discharge side of the RHR system to isolate it from the RCS:

   a. The valves, position indicators, alarms, and interlocks described in item 1.

   b. One or more check valves in series with a normally closed power operated valve. The position of the power operated valve should be indicated in the control room. If the RHR system discharge line is used for an ECCS function, the power operated valve should be opened upon receipt of a safety-injection signal once the reactor coolant pressure has decreased below the ECCS design pressure.

   c. Two check valves in series.

2.2 Emergency Core Cooling System

Isolation requirements for ECCS are contained in SRP 6.3. Isolation of ECCS to prevent overpressurization must meet one of the following features:

1. One or more check valves in series with a normally-closed motor-operated valve (MOV) which is to be opened upon receipt of a SIS when RCS pressure is less than the ECCS design pressure.
2. Three check valves in series.
3. Two check valves in series, provided that both may be periodically checked for leak tightness and are checked at least annually.

2.3 Other Systems

All other low pressure systems interfacing with the RCS should meet the isolation requirements from Regulatory Guide 1.139 provided in 2.1 above. Regulatory Guide 1.139 interface criteria supersede the preliminary guidance recommended in BTP EICSB-3. The arrangement and overpressure concerns of these systems are identical to the RHR system when considering the need for separation of high and low pressure systems; thus the criteria are considered applicable.

3.0 DISCUSSION AND EVALUATION

There are three systems at R. E. Ginna Nuclear Station which have a direct interface with the RCS pressure boundary and have a design pressure rating of all or part of the system which is less than that of the RCS. These systems are the

Chemical and Volume Control System (CVCS), the Safety Injection System (SIS), and the Residual Heat Removal (RHR) system.

3.1 Residual Heat Removal System

The RHR system takes a suction on the RCS loop A hot leg, circulates the water through the RHR system heat exchanger, and discharges to the RCS loop B cold leg. Two motor-operated valves in series provide isolation capabilities in both the suction and discharge lines. Each of these MOVs has position indication in the control room. The design of the MOV's is such that they cannot open (or close) against a differential pressure greater than about 500 psid. The inboard (closest to the RCS) valves are also interlocked to prevent opening if RCS pressure is above RHR system design pressure. Both valves use the same pressure switch and relay to provide this interlock. The outboard valves have no pressure interlocks. None of the valves will automatically close if RCS pressure increases above RHR system design pressure during RHR system operation.

The RHR system is not in compliance with the current licensing requirements of Regulatory Guide 1.139, since none of the isolation valves will automatically close if RCS pressure exceeds RHR design pressure. Also, the outboard isolation valves have no interlocks to prevent RHR overpressurization.

The issue of automatic closure of the RHR valves was resolved in the NRC's Safe Shutdown Evaluation, transmitted to RG&E

on November 14, 1980. In Section 4.2 of that evaluation, it is stated that "...The deviation regarding lack of automatic closure for the RHR isolation valves is acceptable based on the administrative controls which the licensee provides for operation of these valves, coupled with the RHR system high pressure alarm at 550 psig and the RCS interlock pressure alarm at 410 psig. These alarms provide adequate assurance that the operator action required by procedure will be taken to shut the isolation valves when RCS pressure is increasing towards the RHR design pressure."

Although interlocks are not provided for all of the RHR valves, proper provisions are available to ensure that the RHR system would not become overpressurized, due to inadvertent opening of the RHR valves. The valve-motor design is such that the valves cannot open against a differential pressure greater than about 500 psid. Also, all four MOV's are key-locked closed, with power removed. The key is under the administrative control of the shift supervisor. It is thus not considered possible to inadvertently open these valves. Based on the combination of valve-motor design, administrative control of the key, lock-closure (power removal), and interlocks for the inboard RHR isolation valves, it is considered that the isolation criteria of 2.1.1 and 2.1.2 above are met.

3.2 Safety Injection System

One SIS subsystem consists of two accumulators pressurized with nitrogen with each accumulator isolated from the RCS by a pair of check valves. There are connections upstream of each check valve that can allow them to be tested. A locked-open (with power removed) motor-operated isolation valve upstream of the check valves for each accumulator has position indication in the control room. Each MOV, even though locked-open, also receives a safety injection signal. This arrangement meets the isolation criteria of 2.2 above, and the guidance provided in SRP 6.3, paragraph III-11.c.

The second SIS subsystem consists of two loops, each supplied by a safety injection pump. Each pump discharges to the hot and cold legs of one RCS loop. Isolation is provided by two check valves in series for each branch of the safety injection loop. The cold leg check valves are testable. The check valves in the lines supplying the RCS hot leg for each SIS loop are not individually testable. However, the MOV in each hot leg is locked-closed with power removed and is not required for accident mitigation. A motor-operated isolation valve with position indication in the control room is provided in each branch of the cold leg discharge lines. These valves are locked-open with power removed but also receive an open signal upon receipt of a safety injection signal. This arrangement meets the isolation criteria of 2.2 above, and the guidance provided in SRP 6.3 paragraphs III-11.a and III-11.c.

The third SIS subsystem uses the RHR system to provide low pressure water from the refueling water storage tank to the reactor vessel upper plenum (core deluge). Isolation is provided by a MOV in series with a check valve in each of two branches. The MOV's open upon receipt of a safety injection signal but have no interlocks to prevent opening when RCS pressure is above SIS design pressure.

The SIS is not in compliance with the current licensing requirements of SRP 6.3, since the MOV's for the low pressure injection lines have no interlocks to prevent opening when RCS pressure exceeds SIS design pressure. However, RG&E has committed by letter dated March 14, 1980 to develop and implement a periodic check valve pressure integrity test program, to be used during startups prior to exceeding the RHR system design pressure. This procedure is now included in the Ginna Startup Procedure, and is in the process of being included into the Ginna Technical Specifications. Based on the implementation of this testing program, it is considered that sufficient assurance exists that these check valves will be closed, and perform their isolation function, until RCS pressure decreases below the RHR system pressure.

3.3 Chemical and Volume Control System

The CVCS takes water from the RCS and passes it through a regenerative heat exchanger, an orifice to reduce its pressure, and a nonregenerative heat exchanger before reducing its pressure further by the use of a pressure control valve. After filtering and cleanup, the water may be returned to

the RCS by the use of the charging pumps, which increase the water pressure and pass it through the regenerative heat exchanger to either the hot or cold legs of the RCS or to the pressurizer auxiliary spray line.

The CVCS suction line pressure reduction is provided by three parallel letdown orifices, each of which is in series with a solenoid-operated valve. Each of these valves is operated from the control room and has valve position indicated. None of the valves have interlocks to prevent opening or to automatically close if the pressure exceeds the design rating of the low pressure portions of the system. However, the letdown orifices reduce the RCS pressure below that of the CVCS. Further, a relief valve (RV203) downstream of the valves, which has a capacity greater than the combined capacity of the three orifices, is located inside containment and relieves to the pressurizer relief tank inside containment. Since system design thus precludes the overpressurization of the CVCS from the RCS, the isolation valve criteria of Regulatory Guide 1.139 do not apply.

The entire CVCS discharge line from the charging pumps to the RCS is rated at RCS pressure. It is therefore not a low pressure system connected to the RCS, and is not in the scope of this review.

4.0 SUMMARY

The R.E. Ginna Nuclear Station has three systems with a lower design pressure rating than the RCS, which are directly connected to the RCS. The CVCS, SIS, and RHR systems do not use the methods prescribed by current regulatory criteria for isolation of high and low pressure systems. However, acceptable alternative methods, including system design and administrative controls, provide assurance that proper separation of low pressure systems from the RCS at Ginna exists.

5.0 REFERENCES

1. NUREG-075/087, Standard Review Plan 6.3.
2. Updated Final Facility Description and Safety Analysis Report, Ginna Nuclear Power Plant, Unit No. 1.
3. RG&E drawings 33013-422, -424, -425, -426, -427, -428, -432, -433, -434, -435, and -436.
4. RG&E drawings 10905-280, -285, -287, -295, -296, -300, and -301.
5. Regulatory Guide 1.139, Proposed Revision 1, February 25, 1980.
6. Amendment No. 16 to the Ginna Operating License, May 14, 1975.
7. Letter, D. H. Lauderbach, EG&G, to James Knight, NRC, "SEP Safety Topics V-11.A and V-11.B for R.E. Ginna", February 21, 1980.
8. Letter, Dennis L. Ziemann, NRC, to L. D. White, Jr. RG&E "Verification of Plant Information on SEP Topic V-11.A", December 21, 1978.

9. Letter, L. D. White Jr., RG&E, to Dennis Ziemann, NRC, "Verification of Plant Information on SEP Topic V-11.A", January 25, 1979.

10. Letter, L. D. White, Jr., RG&E, to Dennis L. Ziemann, NRC, "LWR Primary Coolant System Pressure Isolation Valves," March 14, 1980.

11. Letter, Dennis M. Crutchfield, NRC, to Leon D. White, Jr. RG&E, "SEP Topics V-10.B, V-11.A, V-11.B, VII-3, and IX-3 (Safe Shutdown Systems)" and enclosure "SEP Review of Safe Shutdown Systems for the R. E. Ginna Nuclear Power Plant, Revision 1," dated November 14, 1980.

12. Letter, Dennis M. Crutchfield, NRC, to Leon D. White Jr. RG&E, "SEP Topics III-10.A, V-11.A, VI-7.C.1, VI-7.F, and VIII-3.B," August 20, 1980.

13. Letter, John E. Maier, RG&E, to Dennis M. Crutchfield, NRC, "SEP Topics III-10.A, VII-A, VI-7.C.1, VI-7.F, and VIII-3.B", dated January 8, 1981.

14. Letter, John E. Maier, RG&E, to Dennis M. Crutchfield, NRC, "SEP Topic V-11.B, RHR Interlock Requirements", dated January 8, 1981.

15. Letter, Dennis M. Crutchfield, NRC, to John E. Maier, RG&E, "SEP Topics V-11.A and VI-7.C.1, dated February 27, 1981.

16. Letter, John E. Maier, RG&E, to Dennis M. Crutchfield, NRC, "SEP Topics V-11.A and VI-7.C.1", dated March 27, 1981.

Enclosure 2

SEP TECHNICAL EVALUATION

TOPIC VI-7.C.1
INDEPENDENCE OF REDUNDANT ONSITE POWER SYSTEMS

FINAL DRAFT

R. E. GINNA NUCLEAR STATION

Docket No. 50-244

March 27, 1981

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SEP TECHNICAL EVALUATION

TOPIC VI-7.C.1
INDEPENDENCE OF REDUNDANT ONSITE POWER SYSTEMS

FINAL DRAFT

R. E. GINNA NUCLEAR STATION

1.0 INTRODUCTION

The objective of this review is to determine if the onsite electrical power systems (AC and DC) are in compliance with current licensing criteria for electrical independence between redundant standby (onsite) power sources and their distribution systems.

General Design Criterion 17 requires that the onsite electrical power supplies and their onsite distribution systems shall have sufficient independence to perform their safety function assuming a single failure. Regulatory Guide 1.6, "Independence Between Redundant Standby (Onsite) Power Sources and Between Their Distribution System," and IEEE Standard 308-1974, "IEEE Standard Criteria for Nuclear Power Generating Stations" provide a basis acceptable to the NRC staff for meeting GDC 17 in regards to electrical independence of onsite power systems.

2.0 CRITERIA

2.1 AC Supplies

As stated in Regulatory Guide 1.6, Section D.4, the following independence criteria apply.

When operating from standby sources, redundant load groups and redundant standby sources should be independent of each other at least to the following extent.

1. The standby source of one load group should not be automatically paralleled with the standby source of another load group under accident conditions.
2. No provisions should exist for automatically transferring one load group to another load group or loads between redundant power sources.
3. If means exist for manually connecting redundant load groups together, at least one interlock should be provided to prevent an operator error that would parallel their standby power sources.

2.2 DC Supplies

As stated in Regulatory Guide 1.6, Section D.3, each d-c load group should be energized by a battery and battery charger. The battery-charger combination should have no automatic connection to any other redundant d-c load group.

3.0 DISCUSSION AND EVALUATION

3.1 AC Supplies

Discussion. Ginna onsite emergency AC power system consists of two redundant diesel-generator power trains. Diesel generator 1A (DG1A) supplies 480 V buses 14 and 18 while diesel generator 1B (DG1B) supplies buses 16 and 17.

Manual means exist to tie buses 17 and 18 through a tie breaker and to tie buses 14 and 16 through a tie breaker.

The control circuit for each breaker provides interlocks such that the breaker cannot be shut if either DG is closed on either bus or if the normal feeders to the bus are closed. Additionally, if the tie breakers are closed, they will trip open upon restoration of normal power, DG closing on the bus, or any safety injection signal.

Means exist to power safety injection pump SI-IC from either bus 14 or 16. The control circuit for the breaker from each bus is designed such that shutting of one breaker prevents shutting the other breaker so that paralleling the redundant DGs is prevented.

Instrument buses 1A, 1B, 1C, and 1D are capable of being supplied by multiple sources. Each bus is supplied by a pair of mechanically interlocked breakers such that paralleling of redundant sources is prevented.

Evaluation. The redundant onsite AC power trains have no automatic transfers of loads and/or load groups. The manual transfer of load groups or manual interconnection of emergency buses have the required interlocks to prevent inadvertent paralleling of redundant sources. Therefore, the onsite emergency AC system is in compliance with current licensing requirements for independence of onsite power systems.

3.2 DC Systems

Discussion. Ginna Nuclear Station has two redundant battery and charger trains to supply 125 V DC emergency loads. Each train consists of a battery, a 75-amp charger, and a 150-amp charger.

Means exist to interconnect both trains by manually shutting a tie breaker. This breaker is padlocked open and the key is maintained by the shift foreman. Current operating procedures require removal of the feeder fuse from one of the buses feeding the tie breaker prior to closing the tie breaker[3]. Although no interlocks exist to prevent closure of the tie breaker if the feeder fuse has not been removed, the administrative procedures in effect at Ginna ensure that there would be no paralleling of the redundant DC trains.

Automatic transfer of 125 V DC load groups from train A to B (or vice versa) occurs in seven locations. Control power for 480 V switchgear on buses 14, 16, 17, and 18, DG1A control panel, DG1B control panel, and the rod drive MG set control panel automatically transfers to the redundant train on a loss of power from the normal source. Each load will automatically transfer back to the normal supply when it is regained. Separation between trains is provided by redundant fuses (in series) which are sized and coordinated to prevent a load fault from affecting both redundant safeguards trains.

Evaluation. The 125 V DC system has one manual tie between redundant trains and seven automatic transfers of power from one redundant train to the other. Administrative controls and fuse protection are provided to prevent paralleling redundant trains via the tie breaker, in lieu of physical or electrical interlocks to prevent parallel operation of the two trains. Although the 125 V DC system is not in compliance

with current regulatory criteria with respect to independence of onsite power systems, independence is maintained by alternative acceptable means.

4.0 SUMMARY

The review of docketed information and plant electrical drawings indicate that the Ginna Nuclear Station onsite AC redundant power sources and distribution system meet the current licensing requirements for independence of onsite power systems. The 125 V DC system has seven automatically transferred loads and one manual tie breaker which are not in compliance with current regulatory criteria for independence of onsite power systems. However, administrative controls and fuse protection provide acceptable alternative means to ensure the required independence.

5.0 REFERENCES

1. General Design Criterion 17, "Electrical Power System," of Appendix A, "General Design Criteria of Nuclear Power Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities."
2. "Independence Between Redundant Standby (Onsite) Power Sources and Between Their Distribution Systems," Regulatory Guide 1.6, March 1971.
3. Rochester Gas and Electric Corp. letter (White) to NRC (Ziemann) dated April 18, 1979.
4. RG&E Corp. drawings 10905-59, 62, 63, 74 and 75.
5. RG&E Corp. drawings D-206-51, 21489-269, and 33013-652.

6. RG&E Letter, L. D. White, Jr. to Dennis L. Ziemann (NRC), "Technical Specification Change for the Inclusion of Two 75-Amp Battery Chargers," August 10, 1979.

7. Letter and attachments from Dennis M. Crutchfield, NRC, to Leon D. White, Jr., RG&E, "SEP Topics III-10.A, V-11.A, VI-7.C.1, VI-7.F, VIII-3.B," dated August 20, 1980.

8. Letter, John E. Maier, RG&E, to Dennis M. Crutchfield, NRC, "SEP Topics III-10.A, V-11.A, VI-7.C.1, VI-7.F, VIII-3.B," dated January 8, 1981.

9. Letter, Dennis M. Crutchfield, NRC, to John E. Maier, RG&E, "SEP Topics V-11.A and VI-7.C.1," dated February 27, 1981.

10. Letter, John E. Maier, RG&E, to Dennis M. Crutchfield, NRC, "SEP Topics V-11.A and VI-7.C.1", dated March 27, 1981.

4.2.3 Design temperature of the motor operated valve assembly - use maximum service temperature listed in the valve specification sheets.

4.2.4 Electrical supply to motor - see Valve Specification Sheets.

4.2.5 Maximum differential pressure across valve disc during opening and closing - see Valve Specification sheets.

4.2.6 Differential pressure across valve disc during hydrostatic test, both directions, shall be 1.5 times the design pressure referred by Paragraph 4.2.2 above, unless noted otherwise.

4.2.7 Ambient temperature - 120°F (49°C) except as noted.

4.2.8 Open-shut cycles - 50 per year for 40 years.

4.2.9 The properties of the working fluids WF are defined in Addendum "A".

4.2.10 All valves shall be capable of being heated and cooled at a rate of 100°F(38°C) per hour between 40°F (4.44°C) and the design temperature of the valve. In addition, certain valves shall be capable of sustaining cyclic thermal transients (TT) as defined in Addendum "A".

4.2.11 The maximum allowable fluid head loss coefficient, L/D, or C_v for each valve is specified in the valve specification sheet. The coefficient L/D is the equivalent length in pipe diameters of connected straight pipe which will produce the same head loss as the valve itself under the same flow conditions with the valve fully open. The C_v value is the flow coefficient of the valve measured in gallons per minute corresponding to a pressure drop of one pound per square inch.

4.3 Mechanical

4.3.1 The pressure containment parts of the valve assembly shall be designed in accordance with ASA B16.5, "Steel Pipe Flanges and Flanged Fittings," or MSS-SP 66 "Pressure Temperature Ratings for Steel Butt Welding End Valves."

4.3.2 The valves stuffing box designed for radioactive service (see valve specification sheets) shall be provided with a lantern ring leakoff connection with a minimum of a full set of packing below the lantern ring and a maximum of one half of a set of packing above the lantern ring. (A full set of packing is

NO. 0 ISSUED 7-9-60

ECTS TAG NO.

Westinghouse Electric Corporation

ATOMIC POWER DIVISION

SPECIFICATION SHEET

MOTOR OPERATED VALVES
S.L.S.

K6C PROJECT

VALVE TYPE NOS.
856A
856B
857A
857B

E - SPEC. NO. G-676255
SPEC. SHEET NO. 5 OF 7

1	TAG NUMBER (TYPE NO.)	856A	856B	857A	857B	
	BODY					
2	NOMINAL SIZE	10X10X10	10X10X10	6X4X6	6X4X6	
3	FORM	GATE	GATE	GATE	GATE	
4	END CONNECTIONS - SCH	B.W -	B.W	B.W	B.W	
5	BONNET SEAL TYPE	**	**	**	**	
6	STEM PACKING MATERIAL	**	**	**	**	
7	BODY AND BONNET MATERIAL	S.S.	S.S.	S.S.	S.S.	
8						
9						
	TRIM					
10	PORT MATERIAL	**	**	**	**	
11	DISC. MATERIAL	**	**	**	**	
12	SEAT MATERIAL	**	**	**	**	
13						
14						
15						
16						
17						
	OPERATOR					
18	POWER VOLTS/PHASE/CYCLE	440/3/60	440/3/60	440/3/60	440/3/60	
19	FULL STROKE TIME TO OPEN	10 SEC MAX	10 SEC MAX	10 SEC MAX	10 SEC MAX	
20	FULL STROKE TIME TO CLOSE	120 SEC	120 SEC	120 SEC	120 SEC	
21						
22						
23						
	ACCESSORIES					
24	MANUAL OVERRIDE	**	**	**	**	
25	LIMIT SWITCHES	**	**	**	**	
26	POSITION INDICATOR	**	**	**	**	
27	LEAKOFF	YES	YES	YES	YES	
28	BACKSEAT	**	**	**	**	
29						
30						
	SERVICE CONDITIONS					
31	FLUID / RADIOACTIVITY	WFI / YES	WFI / YES	WFI / YES	WFI / YES	
32	S. G. @ 60 °F NORMAL S.G.	1	1	1	1	
33	FLOW RATE MAX. NORMAL					
34	PRESSURE MAX. PSIG NORMAL	500	500	500	500	
35	TEMP. MAX. °F NORMAL	400	400	400	400	
36	L/D FULL OPEN & MAX. FLOW (GPM)	13	13	50	50	
37	MAX. ΔP VALVE MUST CLOSE AGAINST PSI	500	500	500	500	
38	MAX. ΔP VALVE OPEN AGAINST PSI	500	500	500	500	
39						
40						
41						
42						
43						
44	MANUFACTURER	*	*	*	*	
45	MODEL NO.	*	*	*	*	
46	DRAWING NO.	*	*	*	*	
47						
48						
49	SPECIAL REQUIREMENTS					

NOTES: ** PER SPEC

* - INDICATES DATA TO BE FURNISHED BY SUPPLIER WITH QUOTATION

FORM 54074