

REVISION

S. B. 9207

Date: 11/16/92

CRACKED DISC RETAINING NUTS
IN
TARGET ROCK CORPORATION
MANUAL AND MOTOR OPERATED VALVES

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11/24/92
Date

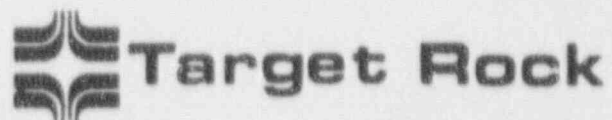
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TRFUB-0038(3/83)



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1.0 SCOPE

This bulletin alerts users of Target Rock manual and motor operated valves that circumferential cracks have been observed on one Model (71J-002) valve, and suggests corrective action to be taken.

Effectivity: All Target Rock manufactured manual and motor operated valves utilizing a swaged lip to prevent disc retaining nut unthreading. See Table I for valve identification.

Corrective Action:

- (a) Inspection: Inspect all valves where a probability of disc retention nut cracking exists (indicated on Table I). Valves having no probability of cracking (where swaging was not employed) need not be included.
- (b) Modification: Valves having a high probability of disc retention nut cracking or where inspection has determined that cracking is evident should be modified as shown in Figure 2. The modification removes the swaged material subject to cracking, and employs a plug weld onto the disc thread to eliminate the possibility of nut unthreading.

2.0 BACKGROUND

Target Rock had designed, manufactured and supplied manual and motor operated valves to a number of nuclear power plants during the years 1971 through 1978. The size of these valves ranged from 2" to 8" in diameter, and at various pressure applications up to 2500 psig.

3.0 PROBLEM DESCRIPTION

Recently at Arkansas Nuclear One (ANO), a number of 2" valves were found to have a circumferential crack along the edge of the swaged lip of the disc retaining nut (See Figure 1). The cracks were located such that a breakage or loss of the swaged lip could conceivably permit the disc nut to unthread. Should the disc become loose it could render the valve incapable of performing its safety related function.

4.0 DISCUSSION

In the High Pressure Safety Injection (HPSI) Valves at Arkansas Nuclear One (ANO), a heavy load is transmitted through the Disc Nut threads to the disc (and possibly through the swaged member) when the valve is being opened against the full plant system ΔP of 2485 psi. For this 2" valve, a lifting force of over 5000 lbs. could be a primary cause of the crack.

A similarly manufactured 6" valve in the Low Pressure Safety Injection System (LPSI valves) is not expected to evidence the same problem since the ΔP is lower resulting in 1/3 less stress. It is suggested, however, that all valves having the same retention method be examined at the next convenient time. The following chart (Table I) identifies each of the

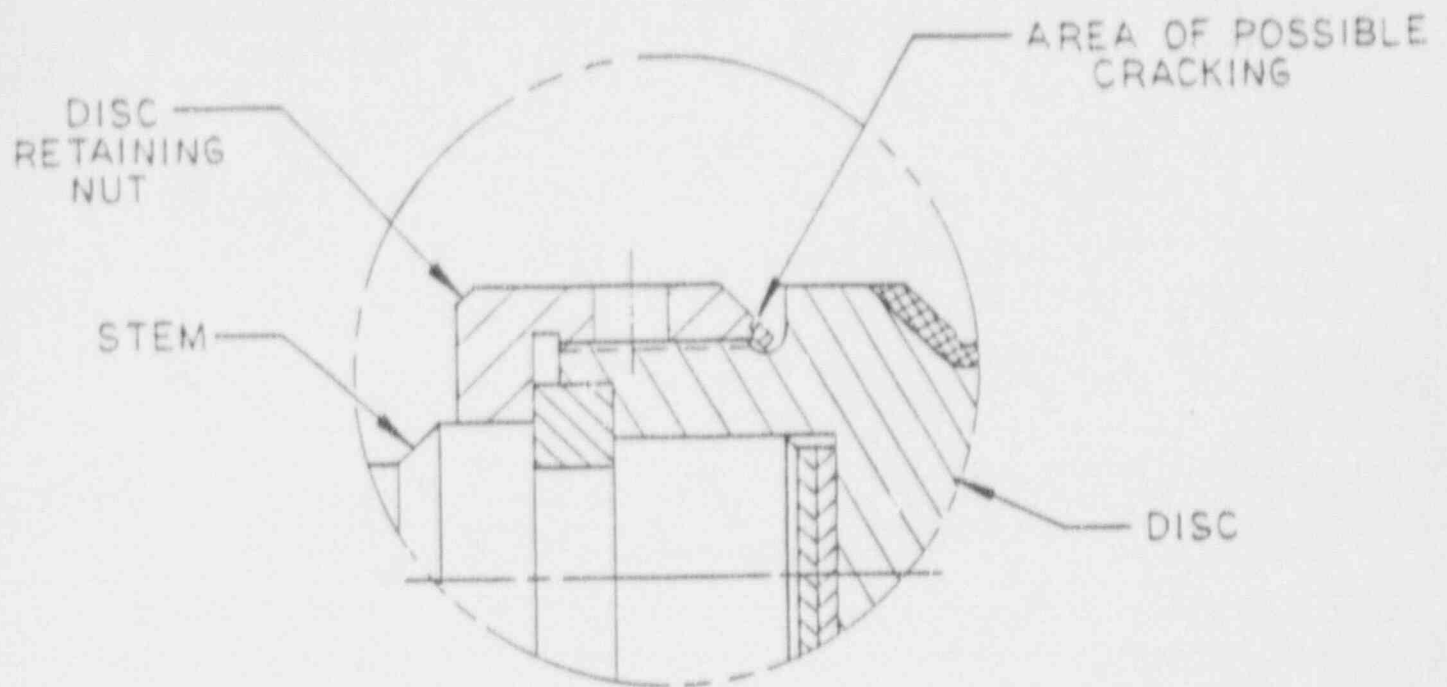


FIGURE 1

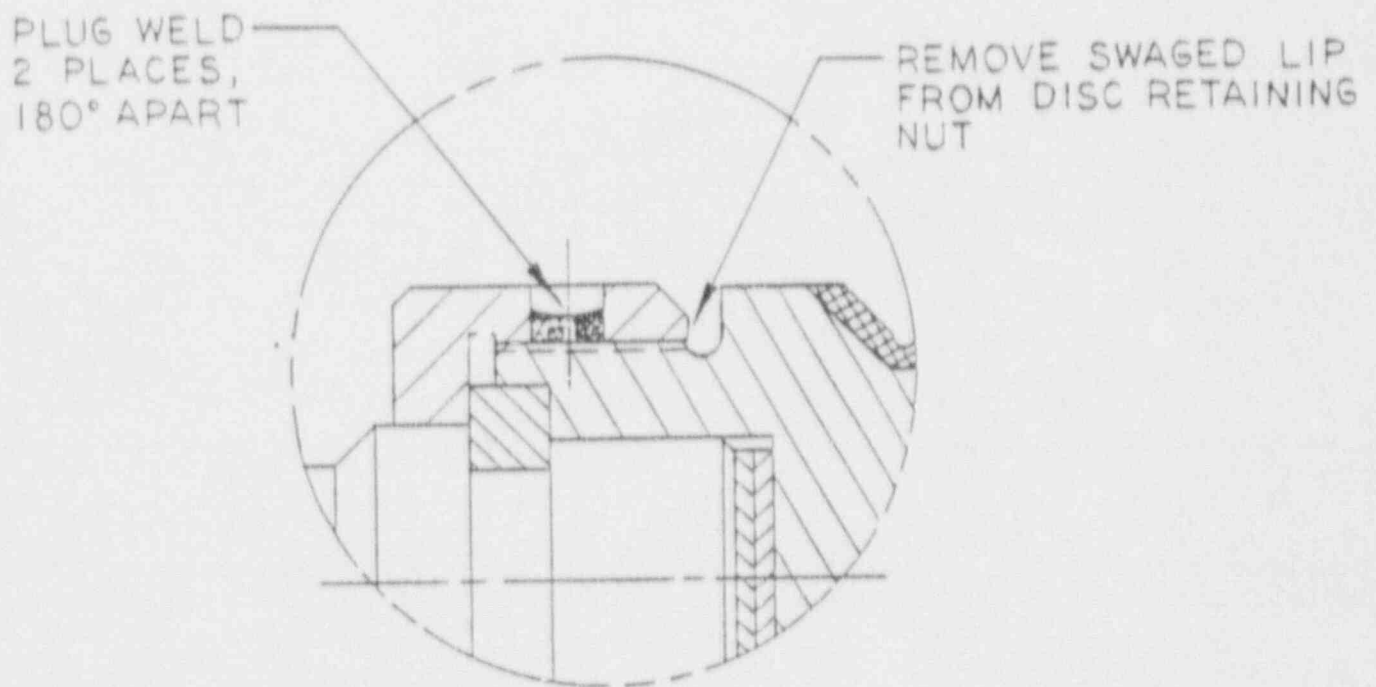


FIGURE 2

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valves herein affected, giving plant site, tag numbers, TRC valve model, size, design pressure differential, maximum temperature, and range of force level imposed on the affected zone (high, low).

5.0 RECOMMENDATION

Of primary concern is the possibility of nut unthreading. Since many disc nuts are already drilled for spanner wrench tightening, a plug weld on the disc thread through these two holes (Figure 2) will prevent disc nut unthreading. The swaged lip may then be machined off to minimize concerns of particle separation either affecting valve operation or causing problems downstream of the valve. Drawings of each valve requiring this rework will be supplied by Target Rock on request.

It is also recommended that the Target Rock Service Department be contacted for assistance in valve rework.

TARGET ROCK CONTACTS:

- (a) Kurt Wenzel, Manager, Spare Parts and Service Manager (X-647)
- (b) Joseph Sefcik, Project Engineer (X-562)

TABLE 1

UTILITY	PLANT SITE	VALVE SIZE (ins. dia.)	TBC MODEL	DESIGN PRESS. DIFFERENTIAL (psi)	MAX. TEMP OF	RANGE OF FORCE LEVEL	VALVE TAG #'s	COMMENTS
FL P & L	St. Lucie Unit 2	3	75C-023	2485	650	High	V-3550 V-3551	
FL P & L	St. Lucie Unit 2	3	74P-005	200	250	Low	V-2154 V-2155	
CONSUMER POWER CO	Midland Units 1 & 2	2 1/2	74K-001	300	350	Low	21-HCC-GB-RL (22 Valves)	Note: Midland valves may have been procured by other plants. This notice to follow paper trail to end user
CONSUMER POWER CO	Midland Units 1 & 2	2 1/2	74K-002	300	350	Low	21-HCC-GB-DRL (6 Valves)	
CONSUMER POWER CO	Midland Units 1 & 2	2 1/2	74K-003	750	350	Low	21-HCB-GB-RL (2 Valves)	
CONSUMER POWER CO	Midland Units 1 & 2	4	74K-004	300	350	Low	4" HCB-GB-RL (2 Valves)	
CONSUMER POWER CO	Midland Units 1 & 2	2 1/2	75D-001	2485	350	High	21-CCC-GB-L (2 Valves)	
						High	21-CCB-GB-L (2 Valves)	
						High	21-CCB-GB-DLR (2 Valves)	
CONSUMER POWER CO	Midland Units 1 & 2	2 1/2	75D-011	2485	350	High	21-CCB-GB-1MO-0341A-RLV 21-CCB-GB-2MO-0441A-RLV 21-CCB-GB-1MO-0341B 21-CCB-GB-2MO-0441B 21-CCB-GB-1MO-0341C-RLV 21-CCB-GB-1MO-0441C-RLV 21-CCB-GB-1MO-0341D-RLV 21-CCB-GB-2MO-0441D-RLV	
WASH. PUB POWER	Knolls Gen. Atomic	4	76A-005	1600	250	High	453-H12-4008	
WASH. PUB POWER	WPPSS Unit 3	3	77HH-004	2050	400	High	NP3-2CS-VQ005SAR NP3-2CS-VQ006SBR	
WASH. PUB POWER	WPPSS Unit 3	3	77HH-004	2485	350	High	NP3-251VQ172SAR NP3-251VQ173SBR	
WASH. PUB POWER	WPPSS Unit 3	4	77HH-005	2000	125	High	NP3-3AF-VQ0175A NP3-3AF-VQ0185B	
WASH. PUB POWER	WPPSS Unit 3	2 1/2	77HH-006	2735	200	High	NP3-2CH-VQ040SABR	
WASH. PUB POWER	WPPSS Unit 3	2 1/2	77HH-008	2735	200	High	NP3-2CH-VQ060SABR	
WASH. PUB POWER	WPPSS Unit 3	3	77HH-009	2735	200	High	NP3-3CH-VQ061SABR	
WASH. PUB POWER	WPPSS Unit 5	3	77HH-004	2050	400	High	NP5-2CS-VQ005SAR	
WASH. PUB POWER	WPPSS Unit 5	4	77HH-005	2000	125	High	NP5-3AF-VQ0175A NP5-3AF-VQ0185B	
WASH. PUB POWER	WPPSS Unit 5	2 1/2	77HH-006	2735	200	High	NP5-2CH-VQ040SABR	
WASH. PUB POWER	WPPSS Unit 5	2 1/2	77HH-008	2735	200	High	NP5-2CH-VQ060SABR	
WASH. PUB POWER	WPPSS Unit 5	3	77HH-009	2735	200	High	NP5-3CH-VQ061SABR	
TVA	Watts Bar	3/4	75AA-001	175	150	Low	(12 valves - No tag #)	

TABLE 1

UTILITY	PLANT SITE	VALVE SIZE (ins. dia.)	TRC MODEL	DESIGN PRESS. DIFFERENTIAL (psi)	MAX. TEMP. OF	RANGE OF FORCE LEVEL	VALVE TAG #'s	COMMENTS
ARKANSAS	AND 1 Unit 2	2	71J-002	2485	650	High	S1-616-2CV-5036 S1-617-2CV-5035 S1-626-2CV-5016 S1-677-2CV-5015 S1-636-2CV-5056 S1-377-2CV-5055 S1-646-2CV-5076 S1-647-2CV-5075	
ARKANSAS	AND 1 Unit 2	6	71J-006	500	350	Low	S1-615-2CV-5037 S1-625-2CV-5017 S1-635-2CV-5057 S1-645-2CV-5077	
LOUISIANA	Waterford Unit 3	2	71L-002	2485	650	High	S1-616 S1-617 S1-626 S1-627 S1-636 S1-637 S1-646 S1-647	
LOUISIANA	Waterford Unit 3	6	71L-006	500	350	Low	S1-615 S1-625 S1-635 S1-645	
SO CAL ED	San Onofre Unit 2	2	74R-002	2485	650	High	S1-616 S1-617 S1-626 S1-627 S1-636 S1-637 S1-646 S1-647	
SO CAL ED	San Onofre Unit 2	3	74R-003	2485	650	High	S1-390 S1-391	
SO CAL ED	San Onofre Unit 2	8	74R-008	--	650	None	S1-615 S1-625 S1-635 S1-645	
SO CAL ED	San Onofre Unit 3	2	74R-002	2485	650	High	S1-616 S1-617	
SO CAL ED	San Onofre Unit 3	3	74R-003	2485	650	High	S1-390 S1-391	
SO CAL ED	San Onofre Unit 3	8	74R-008	--	650	None	S1-615 S1-625 S1-635 S1-645	
FL P & L	St. Lucie Unit 2	2	75C-002	2485	650	High	HCV-3616 HCV-3617 HCV-3626 HCV-3627 HCV-3636 HCV-3637 HCV-3646 HCV-3647	
FL P & L	St. Lucie Unit 2	3	75C-003	2485	650	High	V-3523 V-3540	
FL P & L	St. Lucie Unit 2	4	75C-004	500	350	None	V-3536 V-3539	
FL P & L	St. Lucie Unit 2	6	75C-006	--	650	None	HCV-3615 HCV-3625 HCV-3635 HCV-3645	