MAY 30 '91 06:10 NRC TLR TMI UNIT 1 P01

P21 91068
Publicly Avaible
(1)

It was recently identified at TMI-1, that a number of Yarway Figure 5615B 1500# Class globe valves (CS and SST), purchased IAW the requirements of ASME III less 'N' stamp, had been tagged improperly by Yarway. The Pressure and Temperature ratings of the subject valves, as identified on the manufacturers nameplate (affixed to the valve bonnet), reflected the "Special Class" rating as identified in ANSI B16.34-1977. Discussions with Yarway representatives identified that incorrect nameplates had been installed on the subject valves. The ratings identified on the nameplates corresponded to the ratings specified in 1977 Ed. and earlier editions of ASME Sect. III and not to the ratings specified in ANSI B16.34-1977 as required by later editions of the code. Actions are under way with Yarway to have the proper tags installed on all applicable valves in TMI-1 stock.

The effect of the improper tagging information had no safety impact at TMI-1, but other end users who selected applications based directly on the manufacturers tagged Press./Temp. ratings may want to verify that the information is correct. It has been reported that Yarway is currently developing a program to notify their customers of this situation. Any inquiries relative to this issue should be directed to Yarway.

Material Nonconformance Report May 10, 1991
MNCR

Response to MNCR 912016 Page 1 of 12

1.0 BACKGROUND

1.1 As identified on MNCR 912016, the A182 F316L SST Yarway 5615B Class 1500globe valves received and accepted into TMI-1 under EER 90-1072, were found to be improperly tagged from the standpoint of their Pessure-Temperature (P-T) rating at 100 F, during the evaluation of several 1/2" valves for use in the MU system.

The subject SST valves were initially procured by Oyster Creek under P.O. OP-030084 to the requirements of GPUN Specification SP-9000-12-009 Rev. 2. The valves were purchased to comply with ASME Class 2 requirements - less the N stamp. During the technical evaluation of these valves for use in the modified MU seal injection piping system, Gilberts contacted Yarway to obtain information pertaining to the P/T rating of the valves.

The Yarway name plate information, affixed to the bonnet of the valves, indicates that the valves are rated for 3345 PSIG at 100 F which, per ANSI B16.34-1977, corresponds to the "special class" rating for the 316L material; unfortunately, as identified by Yarway personnal, the valves were not designed to meet the "special class" rating. An investigation by Yarway found that incorrect name plates had been installed on the subject valves.

1.2 In conjunction with the review of the subject SST Yarway valves, located in Stores, R.G. Stoehr performed a walkdown on several of the Yarway Fig. 5615B CS globe valve installations in the Turbine Building. As was the case with the SST valves, these CS Yarway valves were initially purchased by Oyster Creek under P.O. OP #030084 and evaluated for use in TMI applications under EER's 88-037-E and 89-199-M. An inspection of several of these valves found that they were also tagged improperly; actual name plate P/T 3750 PSIG @ 100 F versus 3705 PSIG @ 100 F as specified in ANSI B16.34-1977. Yarway confirmed that these name plates were also incorrect.

1.3 A follow up inspection was completed of the CS Yarway 5615B valves contained in the Warehouse, to determine if any of the O.C. valves remained in stock. All of the CS Yarway valves in stock appear to have been purchased under TMI P.O. TP-078501 to the requirements of GPUN Spec. SP-9000-12-009, unfortunately, the P/T ratings on these valves also reflect the improper "special class" rating.

(3)

MNCR 912016

Summation

As identified above, the response and evaluation presented herein has been expanded to encompass the CS Yarway 5615B valves installed in the plant as well as those in stock (ref. OC P.O. OP-030084 and TMI P.O. TP-078501). Each of these items will be addressed and evaluated separately.

2.0 EVALUATION

2.1 Oyster Creek SST Yarway Valves

As identified earlier, there were a total of 54 various sized Yarway Fig. 5615B A182 F316L globe valves evaluated for use at TMI-1 under EER 90-1072. These valves were originally purchased for Oyster Creek under P.O. #OP-030084. A review of the subject P.O. found that the valves were initially order2XasASME III Class I components, but C/N 002 to the P.O. identifies that, due to the inability to obtain a thermal transient analysis, the valves would be designed to ASME III Class 2.

In accordance with the QA requirements, the latest edition or addenda of ASME III at the time of the order was to apply. Based on the 10/03/85 date of the original P.O. and a review of several of the subvendor certifications, it appears that the 1980 Ed. through the Winter 1983 Addenda of Section III was invoked. The reason for presenting this information is that it defines the basis for the Pressure and Temperature rating of the subject valves.

The P-T rating on the name plate of the A182 F316L valves is 3345 PSIG @ 100 F; this corresponds to the "special class" rating as defined in ANSI B16.34-1977. A review of Section NB-3531 "Pressure-Temperature Ratings and Hydrostatic Tests" of ASME III 1983 Ed., see Attachment I, identifies that valves designed IAW NB-3541 may be used IAW the P-T ratings in ANSI B16.34. Information provided by Debbie Knoble, Yarway Engineering (215-825-2100 X340), identified that the subject valves were not designed to comply with the "special class" ANSI rating and that the wrong manufacturers name plate tags had been installed.

Based on subsequent investigations and discussions with Yarway personnel, it appears that the wrong name plate drawing had been specified for these valves. Yarway apparently has two separate series of these drawings; Pre-1977 Ed. ASME III and Post-1977 Ed. ASME III. The difference being that the P-T ratings in the 1977 and earlier editions, which were contained directly in the body of the code, corresponded to the current "special class" ratings of ANSI B16.34 for the 316L material (see Attachments II), while the Summer 1977 Addenda of ASME

(4)

III was revised to refer to the P-T ratings contained in ANSI B16.34 (ref. Attachment III). Using the latter code, which is the correct for the subject 316L valves, the P-T rating would be 3000 PSIG @ 100 F.

→ Yarway has provided an assurance that there were no changes in the design or manufacture of their valves. The valves manufactured to the requirements of the 1977 Ed. of ASME III would have been physically identical to those constructed to the 1980 Ed. of ASME III - the only difference between the valves is their P-T rating.

In order to resolve the tagging issue on these SST Yarway valves, Plant Engineering recommended to Yarway QA Representative Frank Peszka (215-825-2100 X379) that Yarway personnel come to TMI-1 and install new name plates, with the correct P-T rating, on all of the subject SST valves that are in stock under the following SSN's:

-- 1/2"	SSN 000-429-0300-1	15 On Hand*
-- 3/4"	SSN 000-429-0318-1	14 On Hand*
-- 1"	SSN 000-429-0326-1	15 On Hand*
-- 1 1/2"	SSN 000-429-0334-1	5 On Hand*
-- 2"	SSN 000-434-8440-1	5 On Hand*

*Constitutes the entire quantity of SST Yarway 5615B valves received and accepted from O.C. under EER 90-1072; none of these valves were installed in any TMI-1 application.

2.2 Oyster Creek CS Yarway Valves

In addition to the SST Yarway valves identified above, TMI-1 Plant Engineering had previously, on two separate occasions, evaluated and accepted a number of ASTM A105 CS Yarway valves ordered under OC P.O. #OP-030084 as ASME Class 2 components (less 'N' Stamp) for TMI-1 use; 17 Yarway valves were evaluated under EER 88-037-E and 19 were evaluated under EER 89-199-M. These valves were used as replacements for a number of Hancock 5500W valves in various MS/FW applications; the installation of these valves was controlled and documented under CMR 88-039 and CMR 88-138.

After the issue with respect to the P-T rating on the manufacturers name plate was identified for the SST Yarway valves, a walkdown was performed on several of the CS Yarway installations completed under the aforementioned CMR's. The results of this walkdown identified that, like the SST valves, the P-T ratings on the manufacturers name plates affixed to the CS valves reflected the "special class" ANSI rating of 3750 PSIG @ 100 F versus the correct "standard class" rating of 3705 PSIG @ 100 F.

(5)

MNCR 912016

Unlike the SST valves that are still in the Warehouse, the CS valves that were obtained from O.C. are installed in various locations throughout TMI-1 in the MS, FW, EFW, HD and NI systems; however, the vast majority of these valves were installed in the MS and FW systems. The problem with these valves is that it would be extremely difficult and time consuming to install new manufacturers name plates having the correct P-T rating. And, based on the following justification, Plant Engineering does not feel that retagging of the installed valves is required.

-- The P-T rating of the CS Yarway valves is essentially the same regardless of whether or not they are "special class".
The applications in which the 1500 Class CS Yarway valves were installed, previously contained 600 Class bolted bonnet Hancock 5500W valves, hence the P-T rating of "standard class" Yarway valves easily envelopes the design conditions of the individual system applications.

MS	- 1050 PSIG @ 600 F	
FW	- 1700 PSIG @ 475 F	from FWP's to Control Valves
	- 1150 PSIG @ 400 F	for OTSG Skin Valves
EFW	- 1100 PSIG @ 110 F	
HD	- 890 PSIG @ 400 F	
NI	- 600 PSIG @ 500 F	2nd Stage Feed Htr. conditions

A comparison of the above conditions to the ANSI B16.34-1977 Ratings for the A105 material (see Attachment III), found that the subject valves, regardless of the deviation in the Yarway name plate rating, are well within their P-T design capabilities. In fact, there are no secondary plant applications at TMI-1 where the "standard class" rating of the 1500 Class CS Yarway valves would not be suitable.

2.3 <u>TMI-1 CS Yarway Valves</u>
In addition to the CS Yarway valves which were ordered under O.C. P.O. #OP- 030084 and evaluated for use at TMI-1 by EER's 88- 037-E and 89-199-M, a quantity of CS Yarway valves were ordered by TMI-1 under P.O. #TP-078501. Based on a review of the QA requirements associated with this P.O., these valves were purchased IAW SP-9000-12-009 and were to ASME Class 2 less the "N" stamp.

As was the case with the OC valves (SST and CS), an inspection of the Yarway valves in stock that were purchased under P.O. #TP-078501, found them to have the improper P-T rating on their name plates. From the

(6)

information contained in the original P.O. package, TP-078501 ordered the following quantities of A105 CS Yarway 5615B valves:

- 1/2"	SSN 000-395-6086-1;	10 valves purchased
- 3/4"	SSN 000-395-6101-1;	30 valves purchased (C/N 1)
- 1"	SSN 000-395-6440-1;	70 valves purchased (C/N 1)
- 1 1/2"	SSN 000-395-6474-1;	35 valves purchased (C/N 1)
- 2"	SSN 000-395-6482-1;	10 valves purchased

Of the original quantities that were ordered/received, the following is a tabulation of the valves that remain in the Warehouse:

- 1/2"	5 in stock
- 3/4"	12 in stock
- 1"	31 in stock
- 1 1/2"	22 in stock
- 2"	9 in stock

In order to correct the P-T rating of these valves, new manufacturers name plates will need to be installed prior to the use/release of any more of these valves. As in the case of the SST Yarway valves, Plant Engineering is working with Frank Peszka, Yarway QA, to have Yarway personnel come to TMI-1 to install new name plates having the correct 3705 PSIG @ 100 F rating.

The difference in quantities between those ordered and those remaining in stock constitutes the number of Yarway valves that were installed during the 8R Outage, either as direct replacements for installed plant components, as identified in Section 2.2, or as new plant components. Regardless of their end use, the subject A105 CS Yarway valves have an allowable "standard class" rating that would envelope any and all TMI-1 secondary plant applications. Based on the justification presented in Section 2.2, Plant Engineering does not feel that action to retag the installed valves, purchased under P.O. #TP-078501, is warranted.

3.0 CONCLUSION

Plant Engineering concludes, based on the information presented herein, that all of the Yarway valves, traceable to either OC P.O. #OP-030084 or TMI P.O. #TP-078501, that remain in the Warehouse (54 SST valves and 79 CS valves) should have new manufacturers name plates installed to reflect their correct "standard class" P-T rating.

The removal and installation of new name plates, when scheduled, will be performed by Yarway personnel in the QA Receipt/Hold area of Warehouse I with QA/QC Receipt

(7)

Inspection witnessing the retagging and verifying that the new name plates are correct IAW ANSI B16.34 P-T ratings.

- material history
- paper work is correct
- VLV tagging is wrong
- QA receipt insp. will verify P.O. P.T rating

No follow up action is required to retag or provide any further evaluation for any of the CS Yarway 5615B globe valves, purchased under either of the above P.O.'s, that were installed in either the 7R or 8R Outages. The information presented herein provides sufficient justification and technical bases to allow these valves to remain installed in their respective applications.

10CFR21 REPORTABILITY DETERMINATION

The determination was made by Max Nelson and Courtney Smyth that, for the TMI-1 applications, the installation of manufacturers name plates having incorrect P-T rating information did not constitute a 10CFR21 reportable condition. The basis for this position included the following:

-- There was no physical change in the valve itself; the P-T rating change resulted from a revision to ASME III.
-- The subject valves were not degraded from a physical standpoint.
-- The SST Yarway valves were not installed in any TMI-1 application, and, as identified in the above text, the CS valves that were installed in the plant have been found to be fully suitable for the TMI-1 applications.

Based on the above information, it was determined that although the manufacturers nameplates affixed to the subject Yarway valves reflected the incorrect P-T rating, the valves themselves did not constitute a safety concern at TMI-1. And, as such, these discrepancies were determined not to be reportable under the criteria of 10CFR21.

Information Release Under Nuclear Network

Although the tagging of the Yarway valves was not reported under 10CFR21, Plant Engineering did prepare a summary of this issue for release under Nuclear Network. This summary was turned over to the Nuclear Network Coordinator on 5/16/91.

Supplier Corrective Action Request (SCAR) Release

In conjunction with the action completed by TMI personnel relative to this MNCR, Dennis Kierps, Surveillance & Control @ Technical Functions, has prepared a Supplier Corrective Action Request No. 91-002 that will be forwarded to Yarway through the Acquisitions Dept.. This request, which references MNCR 912016, requires that Yarway provide disposition, cause and corrective action responses relative

(8)

to the installation of the incorrect name plates. The SCAR also recommends that Yarway evaluate this nonconformance IAW their in-house 10CFR21 reportability procedures.

5.0 FOLLOW-UP ACTION REQUIRED

5.1 Retagging of the Subject Valves - Acquisitions/POA/Materials Mgmnt. Action

Acquisitions is requested to work with Yarway to schedule a date and work out the necessary details so that Yarway personnel can come on site to retag the subject SST and CS valves with name plates having the correct P-T rating. Procurement QA is requested to coordinate and oversee the retagging effort to ensure that the correct tags are installed on all of the affected valves. Until such time as these valves are retagged, a "freeze" should be placed on them so that they cannot be withdrawn from stock.

In the event of an emergency, an EER could be completed to authorize the use of one or more of these valves, however, at this point in time no such action is anticipated. It should be noted that a number of CS Yarway valves, with the correct P-T rating, were received under P.O. #TP-089750. Once these valves are turned over to stock they can be used to support plant activities without any prior engineering evaluation/approval.

5.2 Verification of Valve P-T Rating

As a result of this MNCR, Dennis Kierpa, Surveillance and Controls, indicated that action will be taken to make it a standard practice of verifying that valves are tagged with the proper P-T rating as required by the governing codes. Likewise, Joe Marsden, Procurement QA Manager, indicated that this is also a parameter that the QC Receipt Inspectors will be checking on future valves orders that come into TMI.

Joe Marsden will provide
1. Correction action
2. In Plant Tagging WLNS not req'd to close out N.C. problem
3. Mark Press in process
4.

accelerations acting at the centers of gravity of the extended masses.

NB-3525 Level A and B Service Limits

The design rules of NB-3512 and NB-3513 apply to loadings for which Level A or B Limits are designated except that when evaluating Level B Limits during operation of relief or safety valves (a) and (b) below shall be met.

(a) The service pressure may exceed the Design Pressures defined by the pressure-temperature ratings of ANSI B16.34 by no more than 10%.

(b) The rules of NB-3540 apply using allowable stress intensity values of 110% of those listed in Appendix I.

NB-3526 Level C Service Limits

If the Design Specifications specify any loadings for which Level C Limits are designated, the rules used in evaluating these loadings shall be those of NB-3512 and NB-3513, except as modified by the following subparagraphs.

NB-3526.1 Pressure-Temperature Ratings. The pressure permissible for loadings for which Level C Limits are designated shall not exceed 120% of that permitted for Level A Limits.

NB-3526.2 Pipe Reaction Stress. Pipe reaction stresses shall be computed in accordance with the equations of NB-3545.2(b)(1), and the allowable value considered individually is $1.8S_m$ for the valve body material at 500°F. In performing these calculations, the value of S shall be taken as 1.2 times the yield strength at 500°F of the material of the connected pipe, or 36.0 ksi when the pipe material is not defined in the Design Specifications.

NB-3526.3 Primary Stress and Secondary Stress. The equation of NB-3545.2 shall be satisfied using C_p equal to 1.5, P_{st} computed in accordance with NB-3526.2, and Q_T equal to 0, and the calculated value shall be limited to $2.25S_m$.

NB-3526.4 Secondary and Peak Stresses. The requirements of NB-3545 and NB-3550 need not be met.

NB-3527 Level D Service Limits

If the Design Specifications specify any loadings for which Level D Limits are designated, the guidelines of Appendix F may be used in evaluating those loadings independently of other loadings.

NB-3530 GENERAL RULES

NB-3531 Pressure–Temperature Ratings and Hydrostatic Tests

NB-3531.1 Pressure–Temperature Ratings. A valve designed in accordance with NB-3541 may be used in accordance with the pressure–temperature ratings in ANSI B16.34, Tables 2-1.1A to 2-2.7A (Standard Class) for flanged end or welding end (including socket welding end) valves, and ANSI B16.34, Tables 2-1.1B to 2-2.7B (Special Class) for welding end (including socket welding end) valves, provided the Design Pressure and Design Temperature are used. When a single valve has a flanged and a welding end, the flanged end requirements shall be used. The materials[17] listed in ANSI B16.34, Table 1, may be used if listed in Tables I-1.0, subject to the temperature limitations therein, and as defined in NCA-1220.

NB-3531.2 Hydrostatic Tests

(a) Valves designed in accordance with NB-3541 shall be subjected to the shell hydrostatic test pressures required by ANSI B16.34 and in accordance with other appropriate rules of NB-6000. Valves with a primary pressure rating less than Class 150 shall be subjected to the required test pressure for Class 150 rated valves.

(b) The shell hydrostatic test shall be made with the valve in the partially open position. Stem leakage during this test is permissible. End closure seals for retaining fluid at test pressure in welding end valves may be positioned in the welding end transitions, as defined in NB-3544.8(b), in reasonable proximity to the end plane of the valve so as to ensure safe application of the test pressure.

(c) After the shell hydrostatic test, a valve closure test shall also be performed with the valve in the fully closed position with a test pressure across the valve disk no less than 110% of the 100°F pressure rating. For valves that are designed for Service Conditions that have the pressure differential across the closure member limited to values less than the 100°F pressure

[17] Special features such as wear surfaces or seating surfaces may demand special alloys or proprietary treatments. The absence of such materials from Tables I-1.0 shall not be construed to prohibit their use and such materials do not require approval under Appendix IV (NB-2121).

NB-3523 Severe Duty Applications

A severe duty application of a valve is one which does not satisfy the requirements of NB-3522 and it may therefore become necessary to apply the alternative rules of NB-3512.2.[15]

NB-3524 Earthquake

The rules of this Subarticle consider that under earthquake loadings the piping system, not the valve, will be limiting, and that the integrity of the valve pressure retaining body is adequately considered under the piping requirements of NB-3600. Where valves are provided with operators having extended structures and these structures are essential to maintaining pressure integrity, an analysis, when required by the Design Specifications, may be performed based on static forces resulting from equivalent earthquake accelerations acting at the centers of gravity of the extended masses.

NB-3525 Level A and B Service Limits

The design rules of NB-3512 and NB-3513 apply to loadings for which Level A or B Limits are designated except that when evaluating Level B Limits during operation of relief or safety valves (a) and (b) below shall be met.

(a) The service pressure may exceed the Design Pressures defined by the pressure-temperature ratings of Tables NB-3531-1 through NB-3531-7 by no more than 10%.

(b) The rules of NB-3540 apply using allowable stress intensity values of 110% of those listed in Appendix I.

NB-3526 Level C Service Limits

(a) If valve function is not required during any loading for which Level C Limits are designated in the Design Specifications, the rules used in evaluating these loadings shall be those of NB-3512 and NB-3513, except as modified by the following subparagraphs for valves having a piping connection larger than 4 in. nominal pipe size.

(b) If valve function must be assured during loading for which Level C Limits are designated, this requirement shall be included in the Design Specifications, and the specified Service Loadings shall be considered as though Level A Limits were designated for the valve.

NB-3526.1 Pressure-Temperature Ratings. The pressure permissible for loadings for which Level C Limits are designated shall not exceed 120% of that permitted for Level A Limits.

NB-3526.2 Pipe Reaction Stress. Pipe reaction stresses shall be computed in accordance with the equations of NB-3545.2(b)(1) and the allowable value considered individually is 1.8 S_m for the valve body material at 500 F (260 C). In performing these calculations, the value of S shall be taken as 1.2 times the yield strength of the material of the connected pipe or 36.0 ksi (248 MPa) when the pipe material is not defined in the Design Specifications.

NB-3526.3 Primary Stress and Secondary Stress. The equation of NB-3545.2 shall be satisfied using C_1 equal to 1.5. P_m computed in accordance with NB-3526.2. Q_1 equals 0, and the calculated value shall be limited to 2.25 S_m.

NB-3526.4 Secondary and Peak Stresses. The requirements of NB-3545 and NB-3550 need not be met.

NB-3527 Level D Service Limits

If the Design Specifications specify any loadings for which Level D Limits are designated the guidelines of Appendix F may be used in evaluating these loadings independently of other loadings. If valve function must be assured during loadings for which Level D Limits are designated, this requirement shall be included in the Design Specifications, and the specified loadings for which Level D Limits are designated shall be considered as though Level A Limits were designated for the valve.

NB-3530 SPECIAL DESIGN RULES

NB-3531 Pressure-Temperature Ratings and Hydrostatic Tests

NB-3531.1 Pressure-Temperature Ratings. A valve designed in accordance with NB-3541 may be applied in accordance with the pressure-temperature ratings of Tables NB-3531-1 to NB-3531-7 provided the Design Pressure and Design Temperature are used. The ratings for flanged end valves, larger than 4 in. nominal pipe size, are different from those for welding end valves. When such a single valve has a

[15]The severity and frequency of specified fluid temperature variations may be such that the period of calculated pressure integrity is less than plant design life. In such cases it is the responsibility of the Certificate Holder to state these conditions in the Design Report (NB-3560).

pre 1977

TABLE NB-3531-6
CLASS 1500 PRESSURE-TEMPERATURE RATINGS[1]
All Pressures are in Pounds per Square Inch Gage–psig

	Service Temp. F	Material: Ferritic Steel — Carbon Steel	Carbon Steel (Low Temp)	Carbon Moly	1 Cr-½ Mo	1¼ Cr-½ Mo	2¼ Cr-1 Mo	Austenitic Steel — Types: 321	304	347	316	310	304L	316L
Welding End Valves	100	3750	3215	3470	3750	3750	3750	3750	3750	3750	3750	3750	3345	3345
	200	3750	3215	3470	3750	3750	3750	3400	3300	3365	3405	3430	2850	2825
	300	3750	3215	3470	3750	3750	3750	3020	2935	3170	3045	3280	2590	2550
	400	3750	3215	3470	3750	3750	3750	2760	2615	3065	2850	3170	2335	2305
	500	3750	3215	3470	3750	3750	3750	2560	2435	2895	2655	3015	2185	2130
	600	3560	2975	3470	3750	3750	3750	2420	2315	2745	2520	2850	2075	2010
	650	3495	2920	3470	3600	3600	3750	2380	2270	2680	2465	2785	2035	1950
	700	3470	2895	3470	3450	3450	3750	2335	2250	2610	2420	2720	1995	1905
	750							2315	2225	2570	2380	2680	1970	1865
	800							2295	2185	2545	2355	2595	1930	1835
Flanged End Valves	100	3600	3215	3470	3600	3600	3600	3600	3085	3600	3600	3600	2570	2570
	200	3500	3215	3470	3500	3500	3500	3400	2740	3365	3405	3430	2520	2570
	300	3415	3215	3415	3415	3415	3415	3020	2670	3170	3045	3280	2195	2365
	400	3330	3215	3330	3330	3330	3330	2760	2545	3065	2850	3170	1810	1975
	500	3125	3125	3125	3125	3125	3125	2560	2035	2885	2655	3000	1600	1810
	600	2770	2770	2770	2770	2770	2770	2420	1910	2730	2520	2770	1500	1670
	650	2580	2580	2580	2580	2580	2580	2380	1845	2580	2465	2580	1440	1615
	700	2350	2350	2350	2350	2350	2350	2335	1775	2465	2420	2455	1400	1555
	750							2315	1710	2355	2395	2325	1365	1500
	800							2240	1645	2240	2240	2200	1335	1450

NOTE:
(1) The primary pressure rating of 1500, on the basis of which this nominal pressure class is designated, applies to service temperatures (primary rating temperatures, dependent on the material under consideration) which are in excess of the temperatures permitted by this Subsection for most of the materials listed in this table.

Attachment III
(Pg. 1 of 2)

(12)

AMERICAN NATIONAL STANDARD
STEEL VALVES, FLANGED AND BUTTWELDING END

ANSI B16.34-1977

TABLE 2-2.3 RATINGS FOR GROUP 2.3 MATERIALS

A182-F316L / A182-F304L — A240-316L / A240-304L (f) — A479-316L / A479-304L (f) — A312-TP316L / A312-TP304L (f)

make the system P = 3050 design

TABLE 2-2.3A STANDARD CLASS VALVES, FLANGED AND BUTTWELDING END

STANDARD CLASS

TEMPERATURE IN °F	WORKING PRESSURE IN psig BY CLASSES							
	150	300	400	600	900	1500	2500	4500
−20 TO 100	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3000	5000	9000
200	195	505	675	1015	1520	2530	4220	7595
300	175	455	605	910	1360	2270	3780	6805
400	160	415	550	825	1240	2065	3440	6190
500	145	380	510	765	1145	1910	3180	5725
600	140	360	480	720	1080	1800	3000	5400
650	125	350	470	700	1050	1750	2920	5255
700	110	345	460	685	1030	1715	2860	5150
750	95	335	450	670	1010	1680	2800	5040
800	80	330	440	660	985	1645	2740	4930
850	65	320	430	645	965	1610	2680	4825

316
3600# @ ...
3750# @ ...

TABLE 2-2.3B SPECIAL CLASS BUTTWELDING END VALVES ONLY

SPECIAL CLASS

TEMPERATURE IN °F	WORKING PRESSURE IN psig BY CLASSES							
	150	300	400	600	900	1500	2500	4500
−20 TO 100	265	670	890	1340	2005	3345	5570	10030
200	215	565	755	1130	1695	2825	4710	8480
300	195	505	675	1010	1520	2530	4215	7585
400	175	460	615	920	1385	2305	3840	6910
500	165	425	570	850	1280	2130	3550	6390
600	155	400	535	805	1205	2010	3350	6025
650	150	390	520	780	1170	1950	3250	5850
700	145	380	510	765	1145	1910	3180	5720
750	145	375	500	745	1120	1865	3110	5595
800	140	365	490	735	1100	1835	3060	5505
850	140	360	480	720	1075	1795	2990	5385

Notes:
(f) not to be used over 800°F.

→ only 2 orders for Yarways
- DXPS Purchasing System
- Find out purchase orders for yarway. From these orders look up end nos

3050# @ 200°F

Hancock @ 316
↓
The modification looked at purchase order that said 316 L but "L" doesn't meet design.

This sourced material
SA-182 316 SS ... 316L

... system does it use 316 L (lower press rating) or 316 (higher press rating)

If it uses 316 and we installed 316 L valve ... we are not conservative
remember the computer says 316 (higher rating) but the valves really were 316 L
Different problem?

post 1977

TABLE 2-1.1 RATINGS FOR GROUP 1.1 MATERIALS

A105(a)
A216WCB(a)
A675-70

A515-70(a)
A516-70(a)(g)

A155-KC70(a)
A185-KCF70(a)

A350-LF2(a)
A537 Cl.1(a)

TABLE 2-1.1A STANDARD CLASS VALVES, FLANGED AND BUTTWELDING END

STANDARD CLASS	TEMPERATURE IN °F	WORKING PRESSURE IN psig BY CLASSES							
		150	300	400	600	900	1500	2500	4500
	−20 TO 100	~~285~~	~~740~~	~~990~~	~~1480~~	~~2220~~	3705	6170	11110
	200	260	675	900	1350	2025	3375	5625	10120
	300	230	655	878	1315	1970	3280	5470	9845
	400	200	635	845	1270	1900	3170	5280	9505
	500	170	600	800	1200	1795	2995	4990	8980
	600	140	560	730	1095	1640	2735	4560	8210
	650	125	535	715	1075	1610	2685	4475	8055
	700	110	535	710	1065	1600	2665	4440	7990
	750	95	505	670	1010	1510	2520	4200	7560
	800	80	410	550	825	1235	2060	3430	6170
	850	65	270	365	535	805	1340	2230	4010
	900	50	170	230	345	515	860	1430	2570
	950	35	105	140	205	310	515	860	1545
	1000	20	50	70	105	155	260	430	770

TABLE 2-1.1B SPECIAL CLASS BUTTWELDING END VALVES ONLY

SPECIAL CLASS	TEMPERATURE IN °F	WORKING PRESSURE IN psig BY CLASSES							
		150	300	400	600	900	1500	2500	4500
	−20 TO 100	290	750	1000	1500	2250	3750	6250	11250
	200	290	750	1000	1500	2250	3750	6250	11250
	300	290	750	1000	1500	2250	3750	6250	11250
	400	290	750	1000	1500	2250	3750	6250	11250
	500	290	750	1000	1500	2250	3750	6250	11250
	600	275	715	950	1425	2140	3565	5940	10690
	650	270	700	935	1400	2100	3495	5825	10485
	700	265	695	925	1390	2080	3470	5780	10405
	750	240	620	840	1260	1890	3150	5250	9450
	800	200	515	685	1030	1545	2570	4285	7715
	850	130	335	445	670	1005	1670	2785	5015
	900	85	215	285	430	645	1070	1785	3215
	950	50	130	170	260	385	645	1070	1930
	1000	35	85	85	130	195	320	535	965

Notes:
(a) — permissible, but not recommended for prolonged usage above about 800° F.
(d) — not to be used over 650° F.
(g) — not to be used over 750° F.
(q) — not to be used over 850° F.

Joseph Marsden
Kenneth Eichenlaub