

PROPOSED TECHNICAL SPECIFICATIONS CHANGES

Page 3 Delete all of para. 5

add:

5.0 Secondary Cooling System

- 5.1 The secondary coolant system shall consist of piping, a cooling tower, pump, cold side of heat exchanger and a flow throttle valve.
- 5.2 The secondary cooling system shall be maintained at a higher pressure than the primary coolant system during reactor operation.
- 5.3 Secondary coolant water shall utilize corrosion and organic growth inhibitors.

Page 2 para. 4

change 4.1 to read:

- 4.1 The primary coolant system shall consist of piping, a storage tank, pump, hot side of heat exchanger, 2 core tanks and a dump valve, demineralized water shall be used as the primary coolant.

delete 4.3 change to read:

- 4.3 The components of the primary coolant system with the exception of the core tanks, heat exchanger and associated connecting pipes, shall be located in a process pit in the reactor room.
 - a. The process pit shall be large enough to contain the entire volume of primary coolant.
 - b. A drain into the process pit from beneath the core tanks shall be provided.
 - c. A sump pump which is normally shut off shall be the only means for draining the process pit.
 - d. A system of leakage control shall be employed to direct any potential leakage of primary coolant from the piping run to the heat exchanger to the process pit.

TABLE I - Safety System Functions

add one extra item #18

<u>Item</u>	<u>Sensor</u>	<u>Set Point</u>	<u>Action</u>	<u>Bypass Provision</u>
18. loss of secondary flow	Flow sensor, minimum of 1% accuracy, in secondary piping	Greater than 50 GPM	Annunciate	May be bypassed for operation under a power level less than 1 kW.



January 3, 1983

Virginia Polytechnic Institute and State University
Blacksburg, Virginia 24061

Attention:

POUGHKEEPSIE

Reference: Our AP-9971, 30100-60507
Your Order #A28737

Gentlemen:

For your files, we are enclosing duplicate copies of Form U-1 "Manufacturers' Data Report for Unfired Pressure Vessels," covering the Heat Exchanger(s) recently shipped on your Order Number referred to above.

Form U-1 certifies that the units were built in accordance with ASME Code Rules for the Construction of Unfired Pressure Vessels and inspected by a certified inspector.

Two copies of the data reports were forwarded to the National Board of Boiler and Pressure Vessel Inspectors in Columbus, Ohio, with instructions for them to approve one copy and forward same to:

Department of Labor & Industry
Boiler and Pressure Vessel Safety Division
Chief Inspector, Vernon E. Doss
Fourth and Grace Building, P. O. Box 12064
Richmond, Virginia 23241

Sincerely,

A handwritten signature in cursive script, appearing to read "A. Budding".

Quality Control Manager

fw
Enc.

FORM U-1 MANUFACTURERS' DATA REPORT FOR PRESSURE VESSELS
As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

1. Manufactured by Alfa-Laval, Inc. Thermal Supply Unit, Poughkeepsie, N. Y.
(Name and address of manufacturer)

2. Manufactured for Virginia Polytechnic Institute and State University, Blacksburg, Va. 24061
(Name and address of purchaser)

3. Location of installation Same as above
(Name and address)

4. Type Vert. Vessel No. 30100-60507 9783394641 315 Year Built 19
(Horiz. or vert. tank) (Mfg's Serial No.) (CRN) (Drawing) (Mat'l Bk No.)

5. The chemical and physical properties of all parts meet the requirements of material specifications of the ASME BOILER AND PRESSURE VESSEL CODE. The design, construction, and workmanship conform to ASME Rules, Section VIII, Division 1, 1980 (Year) and Addenda to S-182 and Code Case No. None. Special service per UG-120(d) None.
Manufacturers' Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the rec:

Items 6-11 incl. to be completed for single wall vessels, jackets of jacketed vessels, or sheets of heat exchangers (Name of part, item number, mfg's name and identifying)

6. ~~XXXX~~ SA 240-304 .024 NA 1' 7" 4' 1"
Plates Mat'l (Spec No. Grade) Nom. Thk. (in.) Corr. Allow. (in.) ~~XXXX~~ (in. & in.) Length (overall) (in.)

7. Seams: No Welding
Long. (Wld. Dbl. Sngl. Lap. Buttl.) RT (Spot or Full) Eff. (%) W.T. Temp. (°F)

8. Heads: (a) Mat'l. SA 516-70 (b) Mat'l. SA 516-70
(Spec No. Grade) (Spec No. Grade)

Location (Top Bottom Ends)	Minimum Thickness	Corrosion Allowance	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	XXXXXXXXXX Radius	Flat Diameter	Side to Profile (Convex or Concave)
(a) Fixed	1 7/8"							53" x 23"	Flat
(b) Movable	1 7/8"							51" x 23"	Flat

If removable, bolts used (describe other fastenings): SA 193-B7, 1 1/8" Dia. (125,000) 6 Bolts
(Mat'l. Spec No. Gr. Size No.)

9. Type of Jacket _____ Proof Test _____

10. Jacket Closure _____ If bolted, describe or (Describe as open, welded, bolted, etc.)

11. Constr. for max. allow. working press. 100 psi at max. temp. 240 °F. Min. temp. (when less than -20° F) _____
Hydro. ~~XXXXXXX~~ test press. 150 psi.

Items 12 and 13 to be completed for tube sections

12. Tubesheets Stationary Mat'l (Spec No. Gr.) Diam. (in.) (Subst. or pressure) Nom. Thk. (in.) Corr. Allow. (in.) Attach (Welded or Bolted)

13. Tubes Mat'l (Spec No. Gr.) O.D. (in.) Nom. Thk. (in. or Gauge) Number Type (Straight or Curved)

Items 14-17 incl. to be completed for inner chambers of jacketed vessels or channels of heat exchangers

14. Shell Mat'l (Spec No. Grade) Nom. Thk. (in.) Corr. Allow. (in.) Diam. (in. & in.) Length (in. & in.)

15. Seams Long. (Wld. Dbl. Sngl. Lap. Buttl.) RT (Spot or Full) Eff. (%) W.T. Temp. (°F)

16. Heads: (a) Mat'l. _____ (b) Mat'l. _____
(Spec No. Grade) (Spec No. Grade)

Location (Top Bottom Ends)	Minimum Thickness	Corrosion Allowance	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Profile (Convex or Concave)
(a)									
(b)									

If removable, bolts used (describe other fastenings): _____
(Mat'l. Spec No. Gr. Size No.)

17. Max. allow. working press _____ psi at max. temp. _____ °F. Min. temp. (when less than -20° F) _____
Hydro. pneu. or comb. test press _____ psi.

(12/81) This form (E00108) may be obtained from the Order Dept., ASME, 345 E. 47th St., New York, N.Y.

Form U-1 (Back)

Items below to be completed for all vessels where applicable

18. Safety Valve Outlets: Number _____ Size _____ Location Elsewhere in System

Nozzles:						Flange	How
Purpose (Inlet, Outlet, Drain)	No.	Diam. or Size	Type	Matl.	Nom Thk.	Matl.	Attached
Inlet	2	4"	Studs	SA 193-B7	5/8"		
Outlet	2	4"	Studs	SA 193-B7	5/8"		

20. Inspection Openings:
 Manholes No. _____ Size _____ Location _____
 Handholes No. _____ Size _____ Location _____
 Threaded No. _____ Size _____ Location _____

21. Supports: Skirt _____ Lugs _____ Legs _____ Other _____ Feet _____ Attached _____ Bolted _____
(Yes or no) (No.) (No.) (No.) (Describe) (Where and how)

22. Remarks: Support Column

CERTIFICATE OF COMPLIANCE

We certify that the statements in this report are correct and that all details of design, material, construction, and workmanship of this vessel conform to the ASME Code for Pressure Vessels, Section VIII, Division 1.

Date 12/29/82 Signed Alfa-Laval, Inc. Thermal Supply Unit by R. Radden
(Manufacturer) (Representative)

"U" Certificate of Authorization No. 17,492 expires April 9, 1985

CERTIFICATE OF SHOP INSPECTION

Vessel made by Alfa-Laval, Inc. Thermal Supply Unit at Poughkeepsie, N. Y.

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State or Province of New York and employed by Commercial Union Insurance Company or Boston, Mass.

have inspected the pressure vessel described in this Manufacturers' Data Report on 12/28, 1982 and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME Code, Section VIII, Division 1. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in the Manufacturers' Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date 12/28/82 Signed [Signature] Commissions NB 7169
(Authorized Inspector) (National Board State Province and No.)

CERTIFICATE OF COMPLIANCE FOR FIELD WORK

We certify that the statements made in this report are correct and that all details of design, material, construction, and workmanship of this vessel conform to the ASME Code for Pressure Vessels, Section VIII, Division 1.

Date _____ Signed _____ by _____
(Manufacturer) (Representative)

"U" Certificate of Authorization No. _____ expires _____, 19____

CERTIFICATE OF FIELD ASSEMBLY INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State or Province of _____ and employed by _____ of _____ have compared the statements in this Manufacturers' Data Report

with the described pressure vessel and state that parts referred to as data items _____, not included in the certificate of shop inspection, have been inspected by me and that, to the best of my knowledge and belief, the Manufacturer has constructed and assembled this pressure vessel in accordance with ASME Code, Section VIII, Division 1. The described vessel was inspected and subjected to a hydrostatic test of _____ psi. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturers' Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date _____ Signed _____ Commissions _____
(Authorized Inspector) (National Board State Province and No.)

FORM U-1 MANUFACTURERS' DATA REPORT FOR PRESSURE VESSELS
As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

1. Manufactured by Alfa-Laval, Inc. Thermal Supply Unit, Poughkeepsie, N. Y.
(Name and address of manufacturer)
2. Manufactured for Virginia Polytechnic Institute and State University, Blacksburg, Va. 24061
(Name and address of purchaser)
3. Location of installation Same as above
(Name and address)
4. Type Vert. Vessel No. 30100-60507 9783394641 315 Year Built 1980
(Horiz. or vert. tank) (Mfg's Serial No.) (CRN) (Drawing) (Mat'l B'd No.)
5. The chemical and physical properties of all parts meet the requirements of (material) specifications of the ASME BOILER AND PRESSURE VESSEL CODE. The design, construction, and workmanship conform to ASME Rules, Section VIII, Division 1, 1980 (Year) and Addenda to S-180 and Code Case No. None. Special service per UG-120(d) None.
Manufacturers' Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report:

Items 6-11 incl. to be completed for single wall vessels, jackets of jacketed vessels, or sheets of heat exchangers (Name of part, item number, mfg's name, and identifying size)

6. ~~XXXX~~ SA 240-304 .024 NA 1' 7" XXXX
Plates Mat'l (Spec No. Grade) Nom. Thk. (in.) Corr. Allow. (in.) Length (in. & in.)
7. Seams No Welding
Long (Wid. Dbl. Sngl. Lap. Butt) RT (Spot or Full) Eff. (%) H.T. Temp. (°F) Time (hr.) Girth (Wid. Dbl. Sngl. Lap. Butt) RT (Spot, Partial or Full) No. of Courses
8. Heads: (a) Mat'l SA 516-70 (b) Mat'l SA 516-70
(Spec No. Grade) (Spec No. Grade)

Location (Top Bottom Ends)	Minimum Thickness	Corrosion Allowance	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	XXXX XXXX	Flat Diameter	Side to Pressure (Convex or Concave)
Fixed	1 7/8"							53" x 23"	Flat
Movable	1 7/8"							51" x 23"	Flat

If removable, bolts used (describe other fastenings) SA 193-B7, 1 1/8" Dia. (125,000) 6 Bolts
(Mat'l Spec No. Gr. Size No.)

9. Type of Jacket _____ Prod. Test _____
10. Jacket Closure _____ If bar, give dimension: _____ If bolted, describe or sketch _____
(Describe as open & weld, bar, etc.)
11. Constr. for max. allow. working press. 100 psi at max. temp. 240 °F. Min. temp. (when less than -20° F) _____
Hydro. ~~XXXX~~ test press. 150 psi

Items 12 and 13 to be completed for tube sections

12. Tubesheets Stationary Mat'l (Spec No. Gr.) Diam. (in.) Subject to Pressure Nom. Thk. (in.) Corr. Allow. (in.) Attach (Welded Bolted)
Floating Mat'l (Spec No. Gr.) Diam. (in.) Nom. Thk. (in.) Corr. Allow. (in.) Attach
13. Tubes Mat'l (Spec No. Gr.) O.D. (in.) Nom. Thk. (in. or Gauge) Number Type (Straight or U)

Items 14-17 incl. to be completed for inner chambers of jacketed vessels or channels of heat exchangers

14. Shell: Mat'l (Spec No. Grade) Nom. Thk. (in.) Corr. Allow. (in.) Diam. (in. & in.) Length (in. & in.)
15. Seams Long (Wid. Dbl. Sngl. Lap. Butt) RT (Spot or Full) Eff. (%) H.T. Temp. (°F)
Time (hr.) Girth (Wid. Dbl. Sngl. Lap. Butt) RT (Spot, Partial or Full) No. of Courses
16. Heads: (a) Mat'l _____ (b) Mat'l _____
(Spec No. Grade) (Spec No. Grade)

Location (Top Bottom Ends)	Minimum Thickness	Corrosion Allowance	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure (Convex or Concave)

If removable, bolts used (describe other fastenings) _____
(Mat'l Spec No. Gr. Size No.)

17. Max. allow. working press. _____ psi at max. temp. _____ °F. Min. temp. (when less than -20° F) _____
Hydro., pneu., or comb. test press _____ psi

Items below to be completed for all vessels where applicable

18. Safety Valve Outlets: Number _____ Size _____ Location Elsewhere in System

19. Nozzles:

Purpose (Inlet, Outlet, Drain)	No.	Diam. or Size	Type	Matl.	Nom. Thk.	Flange XXXXXXXXXX Matl.	How Attached
Inlet	2	4"	Studs	SA 193-B7	5/8"		
Outlet	2	4"	Studs	SA 193-B7	5/8"		

20. Inspection Openings:

Manholes No. _____ Size _____ Location _____
 Handholes No. _____ Size _____ Location _____
 Threads No. _____ Size _____ Location _____

21. Support Skirt _____ Lugs _____ Legs _____ Other _____ Feet _____ Attached Bolted _____
(Yes or no) (No) (No) (Describe) (Where and how)

22. Remarks: Support Column

CERTIFICATE OF COMPLIANCE

We certify that the statements in this report are correct and that all details of design, material, construction, and workmanship of this vessel conform to the ASME Code for Pressure Vessels, Section VIII, Division 1.

Date 11/20/82 Signed Alfa-Laval, Inc. Thermal Supply Unit by [Signature]
(Manufacturer) (Representative)

"U" Certificate of Authorization No. 17,492 expires April 9, 1985

CERTIFICATE OF SHOP INSPECTION

Vessel made by Alfa-Laval, Inc. Thermal Supply Unit at Poughkeepsie, N. Y.

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State or Province of New York and employed by Commercial Union Insurance Company of Boston, Mass. have inspected the pressure vessel described in this Manufacturers' Data Report on 12/28, 1982 and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME Code, Section VIII, Division 1. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in the Manufacturers' Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date 12/28/82 Signed [Signature] Commissions NB 7169
(Authorized Inspector) (National Board, State, Province and No.)

CERTIFICATE OF COMPLIANCE FOR FIELD WORK

We certify that the statements made in this report are correct and that all details of design, material, construction, and workmanship of this vessel conform to the ASME Code for Pressure Vessels, Section VIII, Division 1.

Date _____ Signed _____ by _____
(Manufacturer) (Representative)

"U" Certificate of Authorization No. _____ expires _____, 19____

CERTIFICATE OF FIELD ASSEMBLY INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State or Province of _____ and employed by _____ of _____ have compared the statements in this Manufacturers' Data Report with the described pressure vessel and state that parts referred to as data items _____, not included in the certificate of shop inspection, have been inspected by me and that, to the best of my knowledge and belief, the Manufacturer has constructed and assembled this pressure vessel in accordance with ASME Code, Section VIII, Division 1. The described vessel was inspected and subjected to a hydrostatic test of _____ psi. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturers' Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date _____ Signed _____ Commissions _____
(Authorized Inspector) (National Board, State, Province and No.)

NATIONAL BOARD NO

315

ALFA-LAVALLING THERMAL SUPPLY UNIT
350 DUTCHESS TURNPIKE POUGHKEEPSIE, N.Y. 12502

AMERICAN HEAT EXCHANGER TYPE A 10

MODEL NO 30100-60507 YEAR 1982

MAX ALLOWABLE WORKING PRESSURE 100 P.S.I.

AT DESIGN TEMP 240 F

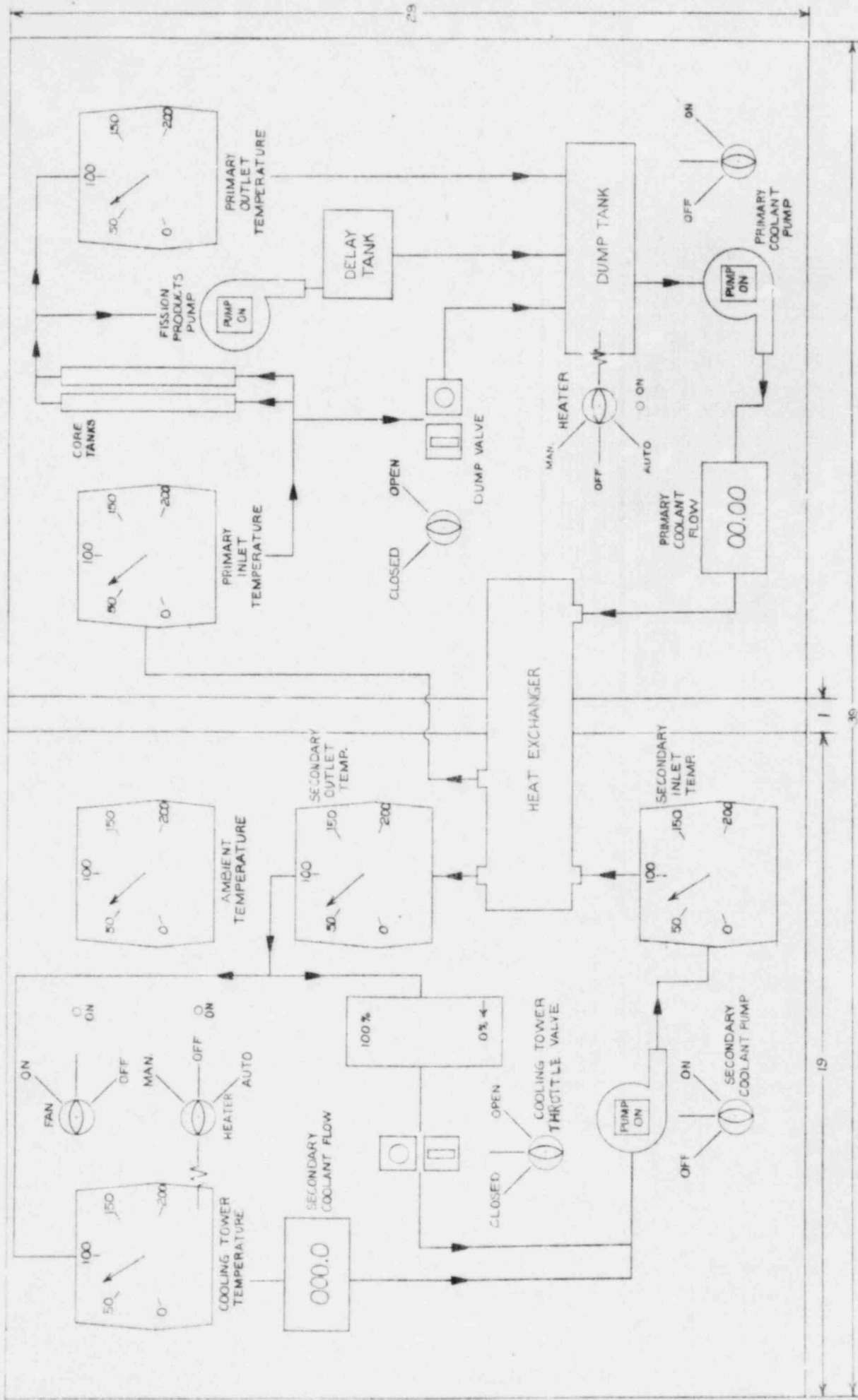
MEDIUM

SURFACE AREA

HOT SIDE H₂O

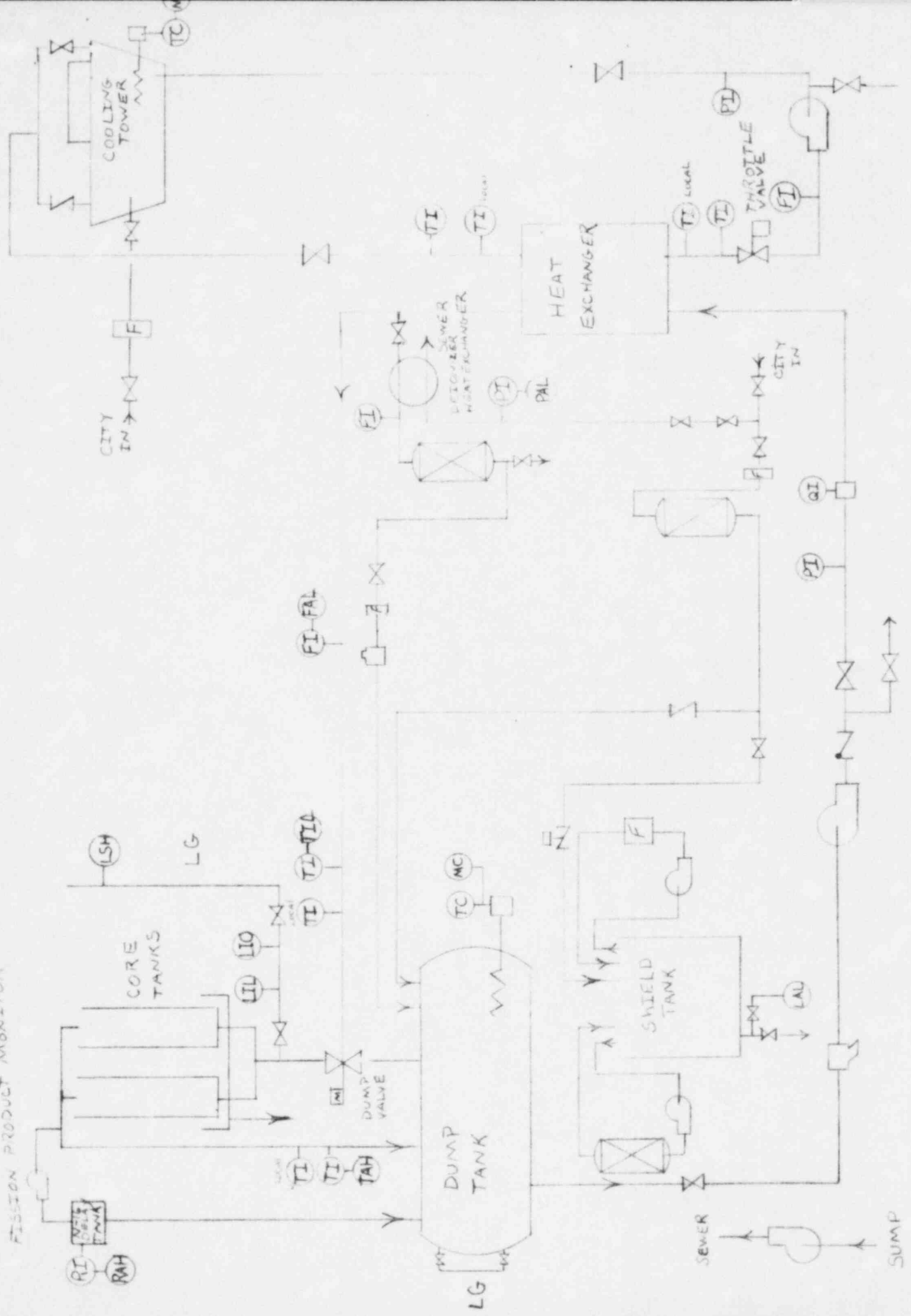
101.83 S.F.

COLD SIDE H₂O



PROPOSED INSTRUMENT PANEL ADDITION

FISSION PRODUCT MONITOR



PROPOSED NEW PIPING DIAGRAM

December 17, 1982

SAFETY ANALYSIS

RE: License No. R-62, Docket No. 50-124

SUBJECT: Proposed Change to Technical Specifications

TYPE: Administrative

EFFECTS: We propose to change the current wording used in the Technical Specifications sections 8.1, 8.2, 8.3, 8.4, 9.2.1 and Table I - Safety System Functions to read "Reactor Safety Committee" instead of "Radiation Safety Committee" wherever the latter appears. In 1979 the Radiation Safety Committee formed two separate subcommittees to more effectively perform their respective functions. One, the Radioisotope subcommittee was chiefly responsible for controlling, administering, etc. usage of radioisotopes on campus. The other subcommittee, (Reactor Safety) oversaw and effectively performed the functions as outlined in Technical Specifications. A joint meeting of the two subcommittee's was held annually termed-Radiation Safety Committee.

Technical Specifications were not changed at the time to reflect this.

SUMMARY: Since the Reactor Safety subcommittee has been effectively performing all the listed functions administratively in the Technical Specifications this change will more accurately attribute accountability to the committee and eliminate the confusion with regards to separate subcommittees.

No other requirements for the overseeing of the reactor will change hence no safety questions exist.

Please note that no changes are necessary in our proposed Technical Specifications (for license renewal) as the Reactor Safety Committee is already used throughout the document.