

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8208130195 DOC. DATE: 82/08/06 NOTARIZED: NO DOCKET #
 FACIL: 50-220 Nine Mile Point Nuclear Station, Unit 1, Niagara Powe 05000220
 AUTH. NAME AUTHOR AFFILIATION
 LEMPGES, T.E. Niagara Mohawk Power Corp.
 RECIP. NAME RECIPIENT AFFILIATION
 EISENHUT, D.G. Division of Licensing

SUBJECT: Confirms previous verbal communication w/NRC re replacement of all 28-inch recirculation sys piping. Methodology being developed. Revised occupational dose estimate will be submitted w/next quarterly repair program status rept.

DISTRIBUTION CODE: A001S COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 11
 TITLE: General Distribution for after Issuance of Operating License

NOTES:

	RECIPIENT ID CODE/NAME		COPIES		RECIPIENT ID CODE/NAME		COPIES	
			LTR	ENCL			LTR	ENCL
	ORB #2 BC	01	7	7				
INTERNAL:	ELD/HDS3		1	0	NRR/DHFS DEPY08		1	1
	NRR/DL DIR		1	1	NRR/DL/ORAB		1	0
	NRR/DSI/RAB		1	1	<u>REG FILE</u> 04		1	1
	RGN1		1	1				
EXTERNAL:	ACRS	09	10	10	LPDR	03	1	1
	NRC PDR	02	1	1	NSIC	05	1	1
	NTIS		1	1				

43

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY
540 SOUTH EAST ASIAN AVENUE
CHICAGO, ILLINOIS 60607
TEL. (312) 937-1234

RECEIVED
JAN 10 1968

FROM: [Illegible]
TO: [Illegible]

DATE	INITIALS	DESCRIPTION	AMOUNT	CHECK NO.
1/10/68	[Illegible]	[Illegible]	[Illegible]	[Illegible]
1/10/68	[Illegible]	[Illegible]	[Illegible]	[Illegible]
1/10/68	[Illegible]	[Illegible]	[Illegible]	[Illegible]
1/10/68	[Illegible]	[Illegible]	[Illegible]	[Illegible]



August 6, 1982

Mr. Darrell G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Re: Nine Mile Point Unit 1
Docket No. 50-220
DPR-63

Dear Mr. Eisenhut:

On May 11, 1982, Niagara Mohawk provided information on the replacement of the recirculation safe ends at Nine Mile Point Unit 1. That letter was in response to your letter of April 21, 1982. The purpose of this letter is to confirm previous verbal communications with members of your staff that we plan to replace all the 28-inch recirculation system piping. The basis for Niagara Mohawk's decision to replace the recirculation piping is provided herein.

Chronology and Conclusions

On March 23, 1982, through wall cracks were detected in two of the ten recirculation safe ends. On March 26, 1982, ultrasonic examinations were performed on these two safe ends and one other. The results of those examinations confirmed crack indications. Based upon that information, Niagara Mohawk decided to replace all ten safe ends.

In mid-April, 1982, two boat samples were obtained from one of the safe ends in the vicinity of the through wall cracks. One each of these samples was sent to General Electric and Battelle Laboratories for evaluation. The results of those evaluations in mid-May confirmed the presence of intergranular stress corrosion cracking.

Prior to receiving the results of the evaluations from Battelle and General Electric, other phenomena were evaluated by Niagara Mohawk as potential mechanisms for crack initiation. These evaluations were used on a qualitative basis to determine high stress areas of the recirculation piping system under various operating scenarios (i.e. locked pump snubbers, etc.). Based on these evaluations, it was decided to examine by ultrasonic methods the pump discharge casting to riser elbow weld. Using normal ultrasonic methods, it was determined that two of the five welds had code reportable indications. When increased ultrasonic transducer gain was used, the remaining three welds exhibited indications.

8208130195 820806
PDR ADCK 05000220
P PDR

Aool

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice. This ensures transparency and allows for easy verification of the data.

In the second section, the author outlines the various methods used to collect and analyze the data. This includes both manual and automated techniques. The goal is to ensure that the information gathered is both reliable and comprehensive.

The third section provides a detailed breakdown of the results obtained from the analysis. It shows a clear trend over time, with a significant increase in activity during the latter half of the period. This suggests that the implemented measures are having a positive impact.

Finally, the document concludes with a series of recommendations for future work. It suggests that further research should be conducted to explore the long-term effects of the current strategies. Additionally, it recommends regular audits to ensure that the data remains accurate and up-to-date.

The two pump discharge casting to riser elbow welds with normal ultrasonic indications were later examined by dye penetrant methods on the inside diameter. The results of those examinations indicated the presence of cracks.

In early May, 1982, a replication process (i.e., obtaining a negative of the crack with a piece of #11340 cellulose acetate tape) was implemented. The results of General Electric and Niagara Mohawk's review indicated the presence of intergranular stress corrosion cracking. A boat sample of that same region (taken on June 13, 1982) was evaluated by Sylvester Associates and confirmed the presence of intergranular stress corrosion cracking.

Based upon the confirmation of cracking at the safe ends and the pump discharge casting to riser elbow welds, it was decided to ultrasonically inspect all of the remaining welds, where the radiation fields permitted. The results of those examinations indicated cracking in a large number of welds. In most cases, these indications could only be obtained when using the increased gain ultrasonic technique procedure.

Attached Figures 1 through 5 outline the location of all welds in the recirculation loops. Table 1 summarizes the examinations and results of the examinations.

Based on the results of our examinations and investigations, it was decided to replace the 28-inch recirculation piping. Preliminarily, it appears that it will be advantageous to replace branch piping also. However, all of the technical issues have not yet been resolved. Therefore, no final decision has been made to replace this branch piping.

Replacement Program

All replacement material will be 316 NG or equivalent, with a carbon content of less than 0.02 percent. This material is of the grade which does not require augmented in service inspection per NUREG 0313, Revision 1. The replacement safe ends were manufactured in 1979 to the 1977 ASME Boiler and Pressure Vessel Code Section III (addenda through summer 1977). The remainder of the piping was ordered and is being manufactured to the 1980 code through winter 1980 Addenda.

The actual replacement will be accomplished in accordance with IWA4000 and IWB4000 of ASME Boiler and Pressure Vessel Code, Section XI, 1977 addition (addenda through summer 1978). All welding will be in accordance with Section IX, 1978). The fit up requirements will be in accordance with ANSI B31.1-1977 (with addenda through winter 79) code for pressure piping.

Since the configuration of the system will be the same as the original design, Niagara Mohawk does not intend to redo the existing stress analysis. The seismic design criteria are as specified in Section III of the Final Safety Analysis Report.



[The text in this section is extremely faint and illegible due to low contrast and noise. It appears to be a multi-paragraph document.]

Nondestructive examination requirements for field welds which are applicable to this replacement are as follows:

Radiographic and Dye Penetrant

Section III of ASME Boiler and Pressure Vessel
1977 Summer 1978 addenda

Ultrasonic

Section XI 1977 Summer 1978 addenda

The replacement methodology is in the process of being developed. Preliminarily, the method of replacement is to dismantle all of the piping in all five loops. The loop furthest from the equipment hatch would be rebuilt, from the pump up. The uppermost elbows would be used for the final closure and fit up, on both inlet and outlet sides of the loop. Rebuilding of the loops would continue until the final loop (closest to the equipment hatch) is completed.

A revised occupational dose estimate for the expanded scope of work will be included with the next quarterly repair program status as required by paragraphs 2.D.(6), c and d of our operating license.

Very truly yours,

NIAGARA MOHAWK POWER CORPORATION



T. E. Lempges

Vice President Nuclear Generation

GJG/kmb

THE UNITED STATES OF AMERICA

DEPARTMENT OF THE ARMY

HEADQUARTERS, ARMY AIR FORCE SCHOOL OF AVIATION

WHEELING, WEST VIRGINIA

OFFICE OF THE COMMANDANT

MEMORANDUM FOR THE COMMANDANT, ARMY AIR FORCE SCHOOL OF AVIATION, WHEELING, WEST VIRGINIA, FROM THE DIRECTOR, AIR FORCE OFFICE OF SPECIAL INVESTIGATION, WASHINGTON, D. C., SUBJECT: [Illegible]

Reference is made to the report of the Special Agent in Charge, [Illegible], dated [Illegible], and the report of the Special Agent in Charge, [Illegible], dated [Illegible].

It is recommended that [Illegible]

[Illegible]

[Illegible]

TABLE 1

<u>Weld No.</u>	<u>Ultrasonic Examination</u> <u>--(UT)--</u>	<u>Dye Penetrant Examination</u> <u>--(PT)--</u>	<u>Results⁽¹⁾</u>
<u>No. 11 Recirc. Loop</u>			
P32-FW-1-W		Not Inspected	
P32-SW-1-W		Not Inspected	
P32-SW-2-W	X	-	UT Indications (Increased Gain)
P32-FW-2-W	X	-	UT Indications (Increased Gain)
P32-FW-3-W	X	-	UT Indications (Increased Gain)
P32-SW-3-W	X	-	UT Indications (Increased Gain)
P32-FW-4-W	X	-	UT Indications (Increased Gain)
P32-FW-26-W	X	-	UT Indications (Increased Gain)
P32-SW-17-W		Not Inspected	
P32-FW-25-W		Not Inspected	
P32-SW-16-W		Not Inspected	
P32-SW-15-W		Not Inspected	
P32-FW-23-W		Not Inspected	
P32-FW-22-W		Not Inspected	
<u>No. 12 Recirc. Loop</u>			
P32-FW-5-W		Not Inspected	
P32-SW-4-W		Not Inspected	
P32-FW-6-W	X	-	UT Indications (Increased Gain)
P32-FW-7-W	X	-	UT Indications (Increased Gain)
P32-SW-5-W	X	-	UT Indications (Increased Gain)
P32-FW-8-W	X	-	UT Indications (Increased Gain)
P32-FW-31-W	X	-	UT Indications (Increased Gain)
P32-SW-20-W		Not Inspected	
P32-FW-30-W		Not Inspected	
P32-FW-29-W		Not Inspected	
P32-SW-19-W		Not Inspected	
P32-SW-18-W		Not Inspected	
P32-FW-28-W		Not Inspected	
P32-FW-27-W	X	-	Code UT Indications Plus Leaks

(1) Where increased gain is indicated, the normal code ultrasonic examination showed at least one recordable defect indication. However, using an increased gain, intermittent indications were observed along the circumference of the inside diameter.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

TABLE 1
(Continued)

<u>Weld No.</u>	<u>Ultrasonic Examination ... (UT) ...</u>	<u>Dye Penetrant Examination ... (PT) ...</u>	<u>Results⁽¹⁾</u>
<u>No. 13 Recirc. Loop</u>			
P32-FW-9-W	Not Inspected		
P32-SW-6-W	Not Inspected		
P32-SW-7-W	X	-	UT Indications (Increased Gain)
P32-FW-10-W	X	-	UT Indications (Increased Gain)
P32-FW-11-W	X	-	UT Indications (Increased Gain)
P32-SW-8-W	X	-	UT Indications (Increased Gain)
P32-FW-12-W	X	-	UT Indications (Increased Gain)
P32-FW-36-W	X	X	UT Indications (Increased Gain) PT Indications
P32-FW-35-W	Not Inspected		
P32-FW-34-W	Not Inspected		
P32-SW-22-W	Not Inspected		
P32-SW-21-W	Not Inspected		
P32-FW-33-W	Not Inspected		
P32-FW-32-W	X	-	Code UT Indications
<u>No. 14 Recirc. Loop</u>			
P32-FW-13-W	Not Inspected		
P32-SW-9-W	Not Inspected		
P32-SW-10-W	X	-	UT Indications (Increased Gain)
P32-FW-14-W	X	-	UT Indications (Increased Gain)
P32-FW-15-W	X	-	UT Indications (Increased Gain)
P32-FW-11-W	X	-	UT Indications (Increased Gain)
P32-FW-16-W	X	-	UT Indications (Increased Gain)
P32-FW-41-W	X	-	UT Indications (Increased Gain)
P32-SW-26-W	Not Inspected		
P32-FW-40-W	Not Inspected		
P32-FW-39-W	Not Inspected		
P32-SW-25-W	Not Inspected		
P32-SW-24-W	Not Inspected		
P32-FW-38-W	Not Inspected		
P32-FW-37-W	Not Inspected		



11
12
13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

29

30

31

32

33

34

35

36

37

38

39

40

41

42

43

44

45

46

47

48

49

50

51

52

53

54

55

TABLE 1
(Continued)

<u>Weld No.</u>	<u>Ultrasonic Examination</u> ... (UT) ...	<u>Dye Penetrant Examination</u> ... (PT) ...	<u>Results</u> ⁽¹⁾
<u>No. 15 Recirc. Loop</u>			
P32-FW-17-W		Not Inspected	
P32-SW-12-W	X		X
			UT Indications (Increased Gain) PT Verification After Removal
P32-SW-13-W	X		-
			UT Indications (Increased Gain)
P32-FW-18-W	X		-
			UT Indications (Increased Gain)
P32-FW-19-W	X		-
			UT Indications (Increased Gain)
P32-FW-20-W	X		-
			UT Indications (Increased Gain)
P32-SW-14-W	X		-
			UT Indications (Increased Gain)
P32-FW-21-W	X		-
			UT Indications (Increased Gain)
P32-FW-46-W	X		X
			Code UT Indications PT Indications
P32-SW-30-W		Not Inspected	
P32-FW-45-W		Not Inspected	
P32-FW-44-W		Not Inspected	
P32-SW-29-W		Not Inspected	
P32-SW-28-W		Not Inspected	
P32-FW-43-W		Not Inspected	
P32-SW-27-W		Not Inspected	
P32-FW-42-W		Not Inspected	
			Through Wall Crack (Leakage)

1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that this is crucial for ensuring the integrity of the financial statements and for providing a clear audit trail.

2. The second part of the document outlines the various methods used to collect and analyze data. It describes how different types of information are gathered and how they are processed to identify trends and anomalies.

3. The third part of the document focuses on the results of the analysis. It provides a detailed breakdown of the findings, highlighting areas where there are significant deviations from expected patterns.

4. The final part of the document offers conclusions and recommendations based on the analysis. It suggests ways to improve the data collection process and to address any identified issues.

1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that this is crucial for ensuring the integrity of the financial statements and for providing a clear audit trail.

1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that this is crucial for ensuring the integrity of the financial statements and for providing a clear audit trail.

2. The second part of the document outlines the various methods used to collect and analyze data. It describes how different types of information are gathered and how they are processed to identify trends and anomalies.

3. The third part of the document focuses on the results of the analysis. It provides a detailed breakdown of the findings, highlighting areas where there are significant deviations from expected patterns.

4. The final part of the document offers conclusions and recommendations based on the analysis. It suggests ways to improve the data collection process and to address any identified issues.

FIGURE 1
RECIRCULATION LOOP NO. II

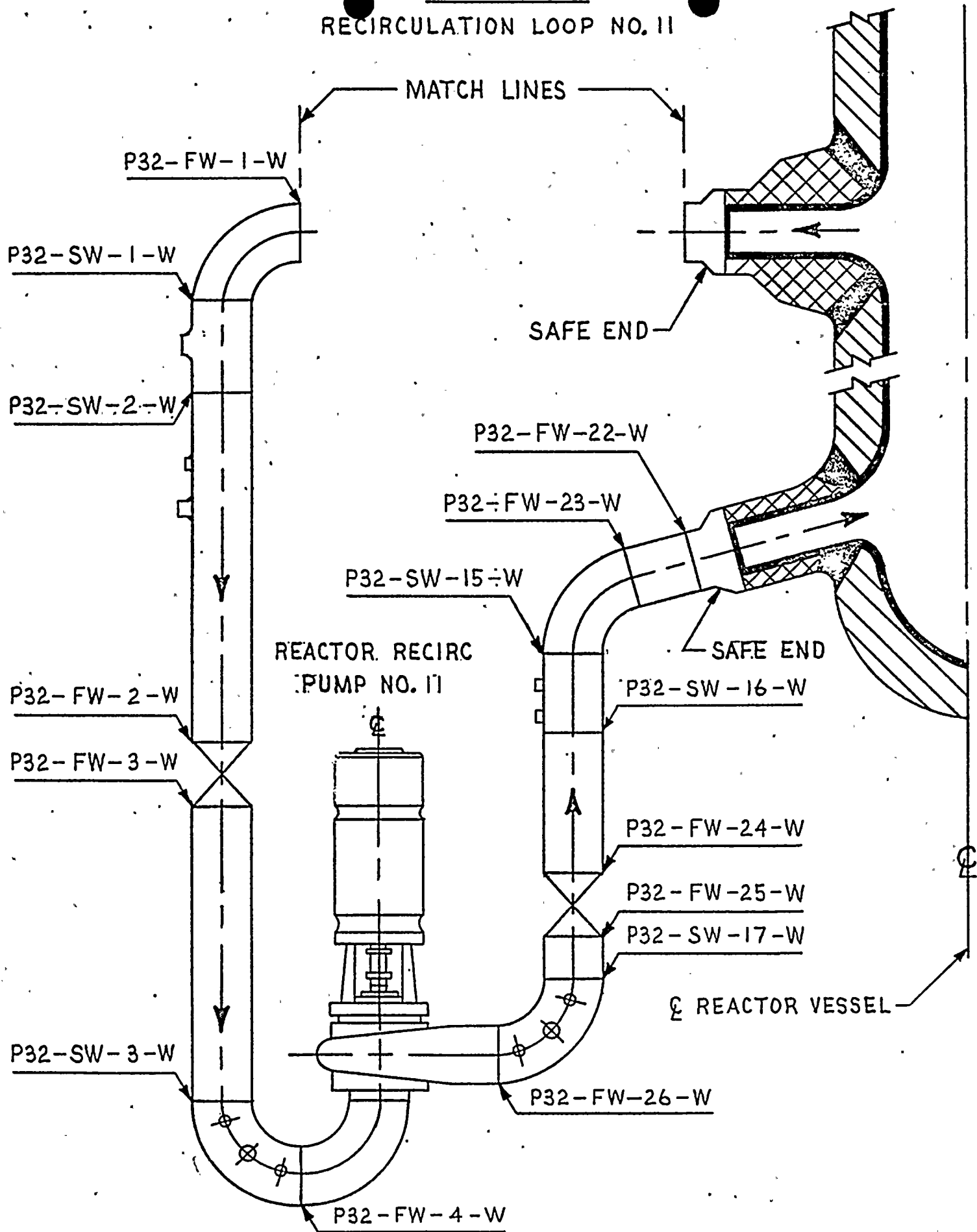
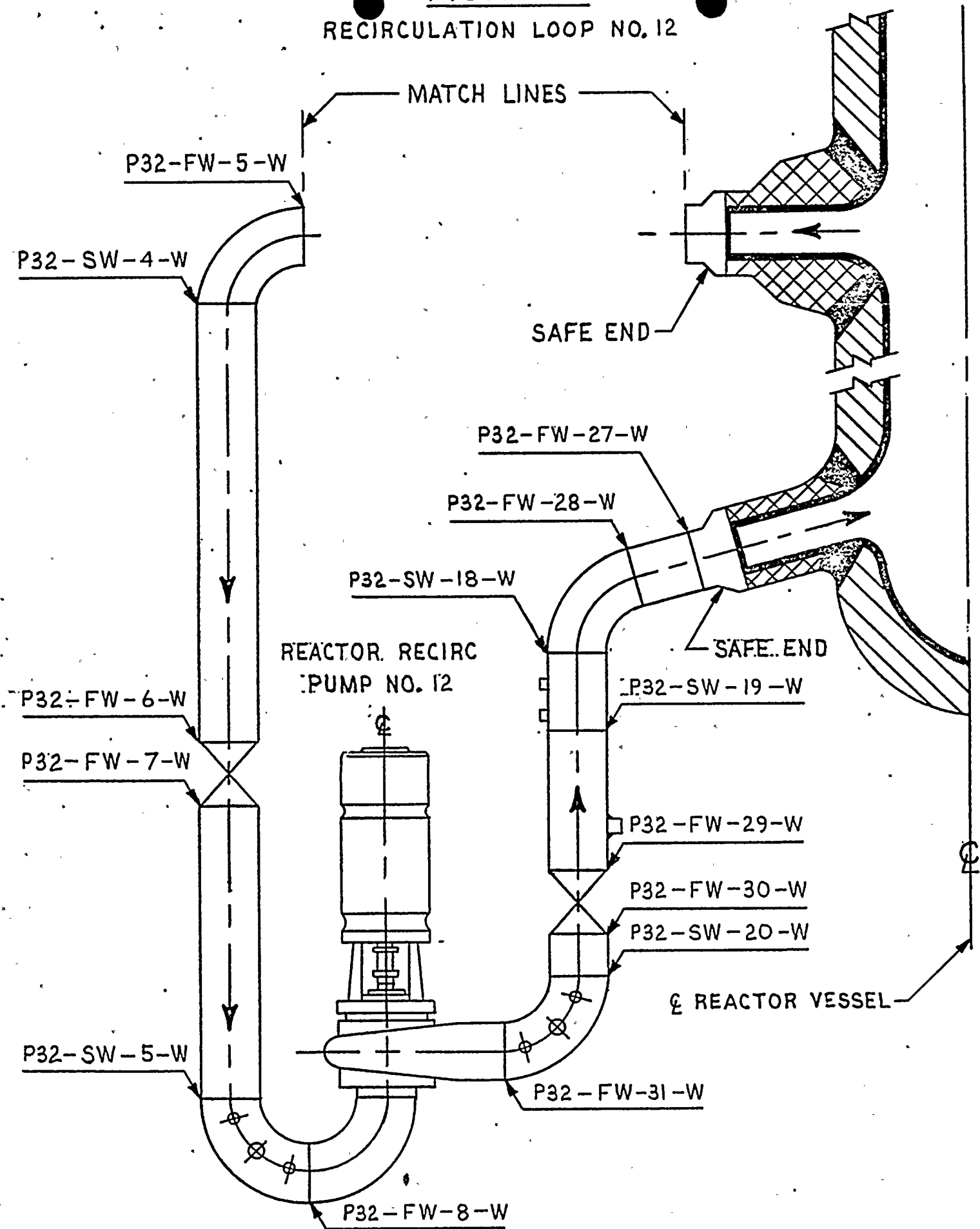




FIGURE 2
RECIRCULATION LOOP NO. 12



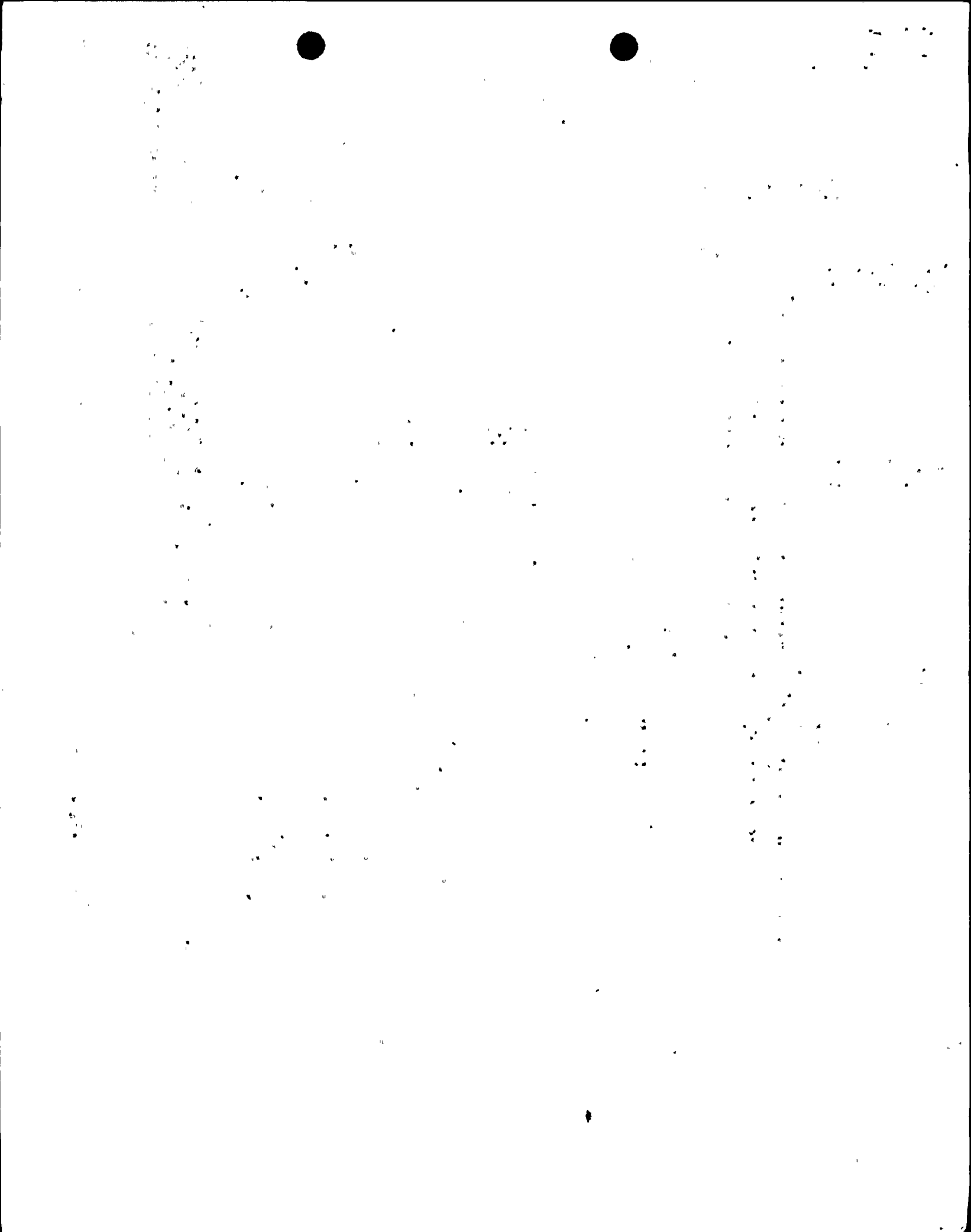


FIGURE 3
RECIRCULATION LOOP NO. 13

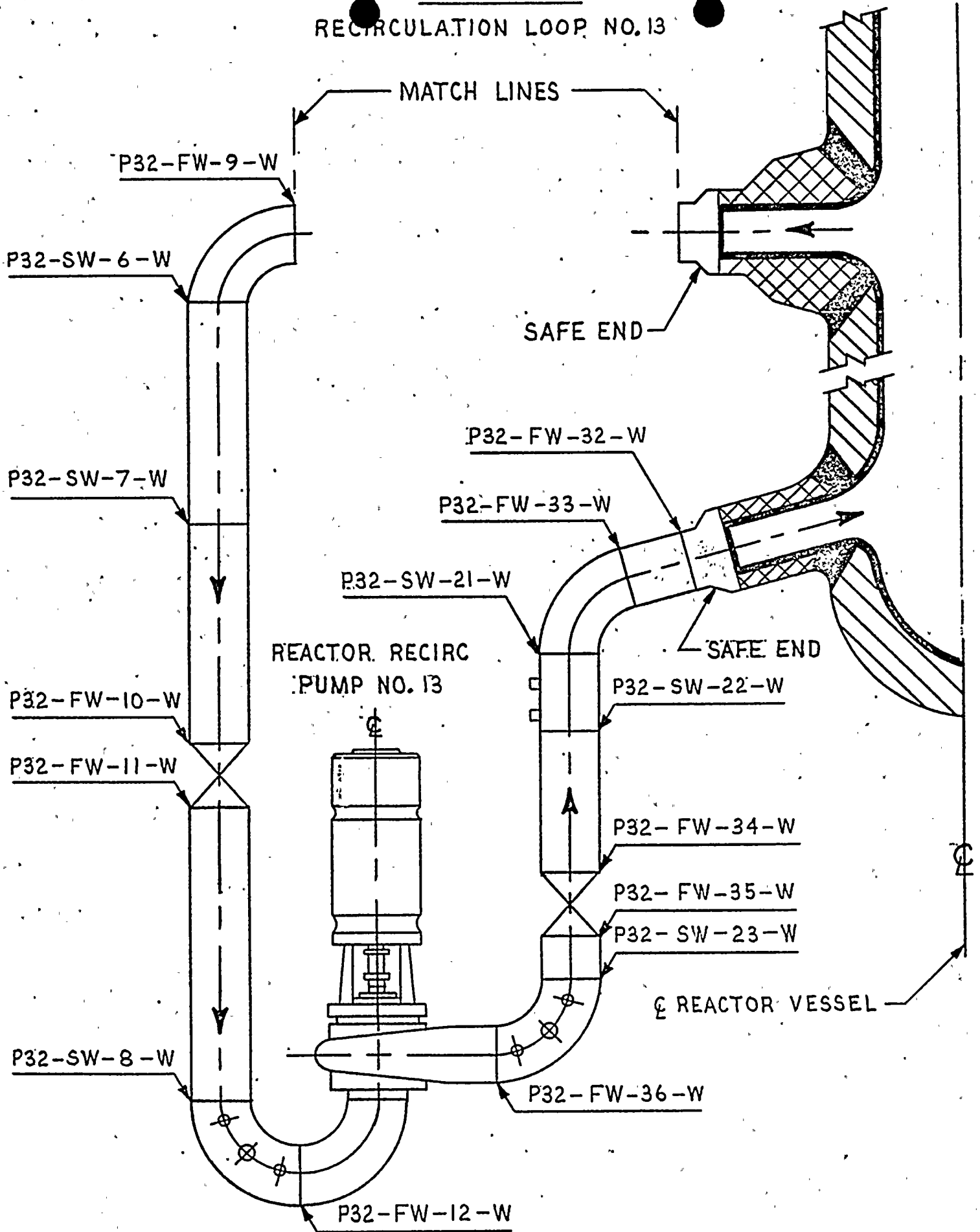
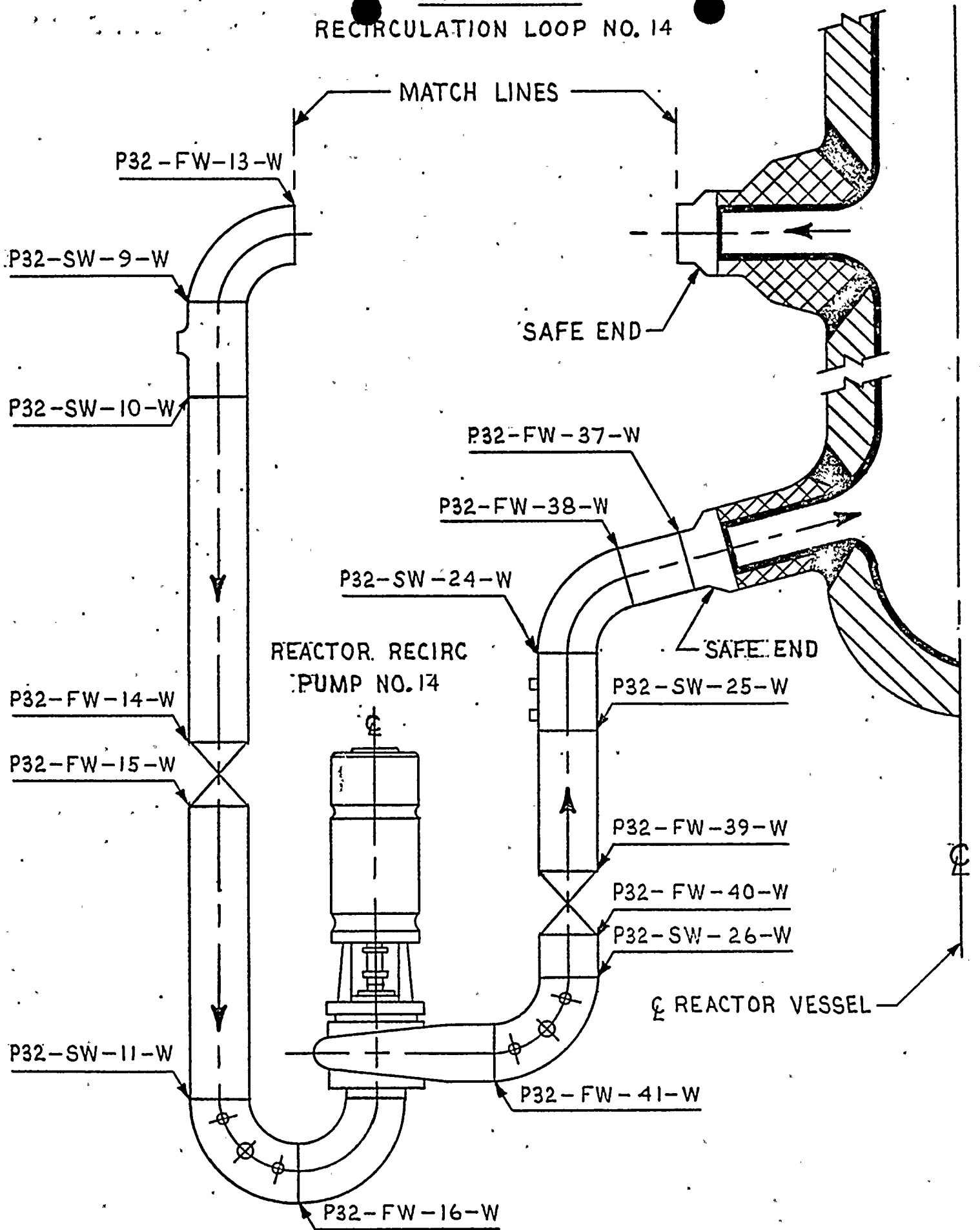




FIGURE 4
RECIRCULATION LOOP NO. 14





1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100

101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200

201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300

301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400

401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500

501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549
550
551
552
553
554
555
556
557
558
559
560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579
580
581
582
583
584
585
586
587
588
589
590
591
592
593
594
595
596
597
598
599
600

601
602
603
604
605
606
607
608
609
610
611
612
613
614
615
616
617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650
651
652
653
654
655
656
657
658
659
660
661
662
663
664
665
666
667
668
669
670
671
672
673
674
675
676
677
678
679
680
681
682
683
684
685
686
687
688
689
690
691
692
693
694
695
696
697
698
699
700

701
702
703
704
705
706
707
708
709
710
711
712
713
714
715
716
717
718
719
720
721
722
723
724
725
726
727
728
729
730
731
732
733
734
735
736
737
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752
753
754
755
756
757
758
759
760
761
762
763
764
765
766
767
768
769
770
771
772
773
774
775
776
777
778
779
780
781
782
783
784
785
786
787
788
789
790
791
792
793
794
795
796
797
798
799
800

801
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816
817
818
819
820
821
822
823
824
825
826
827
828
829
830
831
832
833
834
835
836
837
838
839
840
841
842
843
844
845
846
847
848
849
850
851
852
853
854
855
856
857
858
859
860
861
862
863
864
865
866
867
868
869
870
871
872
873
874
875
876
877
878
879
880
881
882
883
884
885
886
887
888
889
890
891
892
893
894
895
896
897
898
899
900

901
902
903
904
905
906
907
908
909
910
911
912
913
914
915
916
917
918
919
920
921
922
923
924
925
926
927
928
929
930
931
932
933
934
935
936
937
938
939
940
941
942
943
944
945
946
947
948
949
950
951
952
953
954
955
956
957
958
959
960
961
962
963
964
965
966
967
968
969
970
971
972
973
974
975
976
977
978
979
980
981
982
983
984
985
986
987
988
989
990
991
992
993
994
995
996
997
998
999
1000

FIGURE 5
RECIRCULATION LOOP NO. 15

