

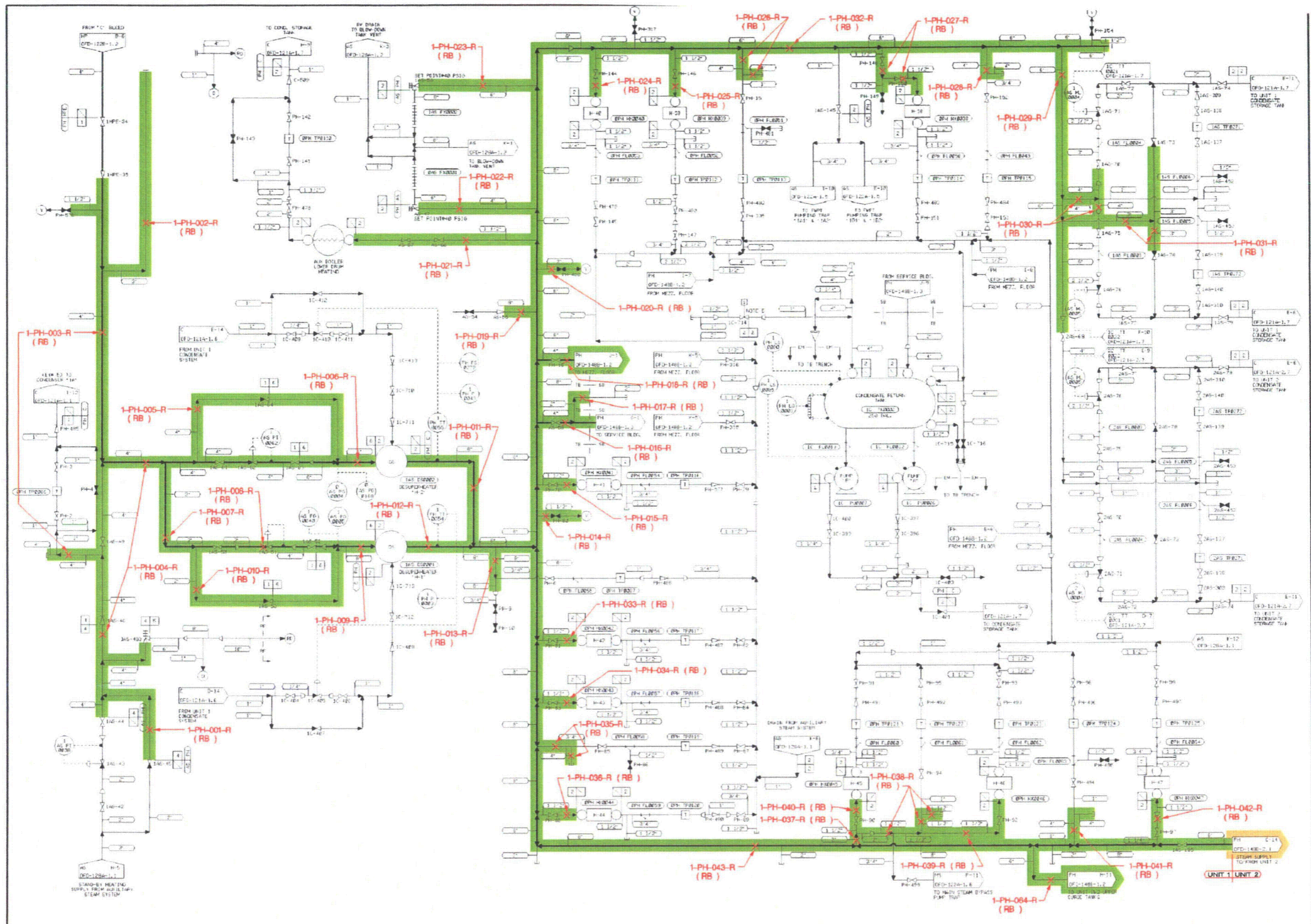
Break ID	Flow Diagram (OFD-)	Break Type	Pipe OD (in)	Pipe Thickness (in)	Building	Layout Drawing (O-)	Floor Elev.	Location (Room No. or Column Numbers)		Op Pres. (psig)	Op Temp. (°F)
1-PH-001-R	148B-1.1	RB	2.375	0.154	TB	403H	775'-0"	F-G	14-15	120	470
1-PH-002-R	148B-1.1	RB	3.500	0.216	TB	401M	796'-6"	F-G	14-15	120	470
1-PH-003-R	148B-1.1	RB	4.500	0.237	TB	401M 403C 403H	775'-0" 796'-6"	F-G	14-15	120	470
1-PH-004-R	148B-1.1	RB	4.500	0.237	TB	403H	775'-0"	F-G	14-15	120	470
1-PH-005-R	148B-1.1	RB	4.500	0.237	TB	403H	775'-0"	F-G	14-15	120	470
1-PH-006-R	148B-1.1	RB	6.625	0.280	TB	403H	775'-0"	F-G	14-15	120	470
1-PH-007-R	148B-1.1	RB	3.500	0.216	TB	403H	775'-0"	F-G	14-15	120	470
1-PH-008-R	148B-1.1	RB	2.375	0.154	TB	403H	775'-0"	F-G	14-15	120	470
1-PH-009-R	148B-1.1	RB	8.625	0.322	TB	403H	775'-0"	F-G	14-15	120	470
1-PH-010-R	148B-1.1	RB	2.375	0.154	TB	403H	775'-0"	F-G	14-15	120	470
1-PH-011-R	148B-1.1	RB	6.625	0.280	TB	403H	775'-0"	F-G	14-15	27	267
1-PH-012-R	148B-1.1	RB	8.625	0.322	TB	403A 403H 403J	775'-0"	F-J	13-15	27	267
1-PH-013-R	148B-1.1	RB	8.625	0.322	TB	403J	775'-0"	H-J	14	27	267
1-PH-014-R	148B-1.1	RB	1.900	0.200	TB	510A	775'-0"	E-F	13-14	27	267
1-PH-015-R	148B-1.1	RB	1.900	0.200	TB	510A	775'-0"	E-F	13-14	27	267
1-PH-016-R	148B-1.1	RB	4.500	0.237	TB	400A 400D 510C	775'-0"	D-E	13-14	27	267
1-PH-017-R	148B-1.1	RB	2.375	0.218	TB	400A 400D 510C	775'-0"	D-E	13-14	27	267
1-PH-018-R	148B-1.1 148B-1.2	RB	4.500	0.237	TB	510A 510B 510C	775'-0" 796'-6"	D-E	13-14	27	267
1-PH-020-R	148B-1.1	RB	2.375	0.218	TB	510A	775'-0"	C-D	15-16	27	267
1-PH-021-R	148B-1.1	RB	1.900	0.200	TB	400A 400Q	775'-0"	B-D	15-16	27	267
1-PH-022-R	148B-1.1	RB	4.500	0.237	TB	400A 400Q	775'-0"	C-D	15-16	27	267
1-PH-023-R	148B-1.1	RB	6.625	0.280	TB	400A 400Q	775'-0"	C-D	15-16	27	267
1-PH-024-R	148B-1.1	RB	1.900	0.200	TB	510A	775'-0"	C-D	16-17	27	267
1-PH-025-R	148B-1.1	RB	1.900	0.200	TB	510A	775'-0"	B-C	21-22	27	267
1-PH-026-R	148B-1.1	RB	4.500	0.237	TB	510A	775'-0"	C-D	22-23	27	267
1-PH-027-R	148B-1.1	RB	1.900	0.200	TB	510A	775'-0"	B-D	24-25	27	267
1-PH-028-R	148B-1.1	RB	4.500	0.237	TB	510A	775'-0"	C-E	24-26	27	267
1-PH-029-R	148B-1.1	RB	6.625	0.280	TB	400K 403A 403B	775'-0"	B-F	26-27	27	267
1-PH-030-R	148B-1.1	RB	4.500	0.237	TB	400B 400K	775'-0"	C-D	26-27	27	267
1-PH-031-R	148B-1.1	RB	3.500	0.216	TB	400B 400K	775'-0"	C-D	26-27	27	267
1-PH-032-R	148B-1.1	RB	6.625	0.280	TB	403A 403B 510A	775'-0"	B-F	15-27	27	267
1-PH-033-R	148B-1.1	RB	1.900	0.200	TB	510A	775'-0"	H-J	13-14	27	267
1-PH-034-R	148B-1.1	RB	1.900	0.200	TB	510A	775'-0"	L-M	13-14	27	267

Break ID	Flow Diagram (OFD-)	Break Type	Pipe OD (in)	Pipe Thickness (in)	Building	Layout Drawing (O-)	Floor Elev.	Location (Room No. or Column Numbers)		Op Pres. (psig)	Op Temp. (°F)
1-PH-035-R	148B-1.1	RB	4.500	0.237	TB	510A	775'-0"	L-M	13-14	27	267
1-PH-036-R	148B-1.1	RB	1.900	0.200	TB	510A	775'-0"	L-M	16-17	27	267
1-PH-037-R	148B-1.1	RB	2.375	0.218	TB	510A	775'-0"	L-M	21-22	27	267
1-PH-038-R	148B-1.1	RB	1.900	0.200	TB	510A	775'-0"	J-M	21-22	27	267
1-PH-039-R	148B-1.1	RB	1.900	0.200	TB	510A	775'-0"	J-K	21-23	27	267
1-PH-040-R	148B-1.1	RB	1.900	0.200	TB	510A	775'-0"	L-M	21-22	27	267
1-PH-041-R	148B-1.1	RB	4.500	0.237	TB	510A	775'-0"	L-M	23-24	27	267
1-PH-042-R	148B-1.1	RB	1.900	0.200	TB	510A	775'-0"	K-M	25-26	27	267
1-PH-043-R	148B-1.1	RB	8.625	0.322	TB	400A 403A 403B 510A	775'-0"	C-M	13-28	27	267
1-PH-044-R	148B-1.2	RB	1.900	0.200	TB	510B	796'-6"	B-C	25-27	27	267
1-PH-045-R	148B-1.2	RB	1.900	0.200	TB	510B	796'-6"	B-C	22-23	27	267
1-PH-046-R	148B-1.2	RB	1.900	0.200	TB	510B	796'-6"	B-C	18-19	27	267
1-PH-047-R	148B-1.2	RB	1.900	0.200	TB	510B	796'-6"	B-C	13-14	27	267
1-PH-048-R	148B-1.2	RB	1.900	0.200	TB	510B	796'-6"	D-E	13-14	27	267
1-PH-049-R	148B-1.2	RB	1.900	0.200	TB	510B	796'-6"	E-F	13-14	27	267
1-PH-050-R	148B-1.2	RB	3.500	0.216	TB	510B	796'-6"	G-H	13-14	27	267
1-PH-051-R	148B-1.2	RB	1.900	0.200	TB	510B	796'-6"	G-H	13-14	27	267
1-PH-052-R	148B-1.2	RB	1.900	0.200	TB	510B	796'-6"	J-K	13-14	27	267
1-PH-053-R	148B-1.2	RB	1.900	0.200	TB	510B	796'-6"	L-M	14-15	27	267
1-PH-054-R	148B-1.2	RB	2.875	0.203	TB	510B	796'-6"	L-M	15-16	27	267
1-PH-055-R	148B-1.2	RB	1.900	0.200	TB	510B	796'-6"	L-M	17-18	27	267
1-PH-057-R	148B-1.2	RB	1.900	0.200	TB	510B	796'-6"	B-C	22-26	27	267
1-PH-058-R	148B-1.2	RB	2.375	0.218	TB	510B	796'-6"	B-C	13-23	27	267
1-PH-059-R	148B-1.2	RB	2.875	0.203	TB	510B	796'-6"	B-E	13-14	27	267
1-PH-060-R	148B-1.2	RB	3.500	0.216	TB	510B	796'-6"	D-H	13-14	27	267
1-PH-061-R	148B-1.2	RB	2.875	0.203	TB	510B	796'-6"	G-M	13-16	27	267
1-PH-062-R	148B-1.2	RB	2.375	0.218	TB	510B	796'-6"	L-M	15-19	27	267
1-PH-063-R	148B-1.2	RB	1.900	0.200	TB	510B	796'-6"	L-M	18-24	27	267
1-PH-064-R	148B-1.1 148B-1.2	RB	6.625	0.280	TB	401B 402B 403J 510A	775'-0" 796'-0" 822'-0" 838'-0"	L-M	21-22	27	267
1-PH-065-R	148B-1.2	RB	3.500	0.216	AB	510N	822'-0"	505		27	267
1-PH-066-R	148B-1.2	RB	3.500	0.216	AB	510N	822'-0"	505		27	267
1-PH-067-R	148B-1.2	RB	3.500	0.216	TB	402A 402B 403T	822'-0"	L-N	19-22	27	267
1-PH-068-R	148B-1.2	RB	6.625	0.280	TB	402A	822'-0"	L-M	21-28	27	267
1-PH-069-R	148B-1.2	RB	2.875	0.203	TB	402A	822'-0"	L-M	24-25	27	267
1-PH-070-R	148B-1.2	RB	3.500	0.216	TB	402A 402B 510P	822'-0"	L-N	23-24	27	267

Break ID	Flow Diagram (OFD-)	Break Type	Pipe OD (in)	Pipe Thickness (in)	Building	Layout Drawing (O-)	Floor Elev.	Location (Room No. or Column Numbers)	Op Pres. (psig)	Op Temp. (°F)
1-PH-071-R	148B-1.2	RB	3.500	0.216	AB	510P	822'-0"	507	27	267
1-PH-072-R	148B-1.2	RB	3.500	0.216	AB	510P 510Q	822'-0" 838'-0"	508 600	27	267
1-PH-073-R	148B-1.2	RB	3.500	0.216	AB	510Q	838'-0"	601	27	267
1-PH-074-R	148B-1.2	RB	3.500	0.216	AB	510Q	838'-0"	603	27	267
1-PH-075-R	148B-1.2	RB	1.900	0.200	AB	485A 510Q	838'-0"	600	27	267
1-PH-076-R	148B-1.2	RB	2.375	0.218	AB	510Q 510R	838'-0"	603	27	267
1-PH-077-R	148B-1.2	RB	2.375	0.218	AB	510R	838'-0"	603	27	267
1-PH-078-R	148B-1.2	RB	2.875	0.203	AB	510Q 510R	838'-0"	603	27	267
1-PH-079-R	148B-1.2	RB	2.875	0.203	AB	510R	838'-0"	603	27	267
1-PH-080-R	148B-1.2	RB	2.375	0.218	AB	510R	838'-0"	603	27	267
1-PH-081-R	148B-1.2	RB	3.500	0.216	AB	510N	822'-0"	505	27	267
1-PH-082-R	148B-1.2	RB	2.875	0.203	AB	510N	822'-0"	505	27	267
1-PH-083-R	148B-1.2	RB	2.875	0.203	AB	510N	822'-0"	505	27	267
1-PH-084-R	148B-1.2	RB	2.875	0.203	AB	510N	822'-0"	505	27	267
1-PH-085-R	148B-2.2	RB	4.500	0.237	TB	510B	796'-6"	L-N 23-28	27	267
1-PH-086-R	148B-1.2	RB	4.500	0.237	AB	510M	809'-3"	401A	27	267
1-PH-087-R	148B-1.2	RB	4.500	0.237	AB	510M	809'-3"	402	27	267
1-PH-088-R	148B-1.2	RB	4.500	0.237	AB	510M	809'-3"	409	27	267
1-PH-089-R	148B-1.2	RB	4.500	0.237	AB	510Q	838'-0"	620	27	267
1-PH-090-R	148B-1.2	RB	3.500	0.216	AB	510R	838'-0"	620	27	267
1-PH-091-R	148B-1.2	RB	3.500	0.216	AB	510R	838'-0"	620	27	267
1-PH-092-R	148B-1.2	RB	3.500	0.216	AB	510R	838'-0"	620	27	267

Notes:

1. Break numbers may not be consecutive
2. Break type: RB – Running Break (Piping not analyzed for seismic), TE – Terminal End, IB – Intermediate Break
3. Building: TB – Turbine Building, AB – Auxiliary Building.
4. Each running break may contain one or more sub-breaks. For the Unit 1 Plant Heating System 92 Running Breaks were considered; 90 non-excluded Running Breaks are listed in this table.
5. For each Running Break the elevation of the floor or room that contains the Running Break is given.
6. Other Abbreviations: OD – Outer Diameter, in – inches, Op - operating



**LEGEND**

- High Energy Piping (Unit 1)
- High Energy Piping (Unit 2)
- High Energy Piping (Unit 3)
- X High Energy Line Break Location
- N-SYS-NNN (-N) Break Number
- TE Terminal End (Break)
- RB Running Break
- CR Critical Crack
- IB Intermediate Break
- P Running Break Boundary

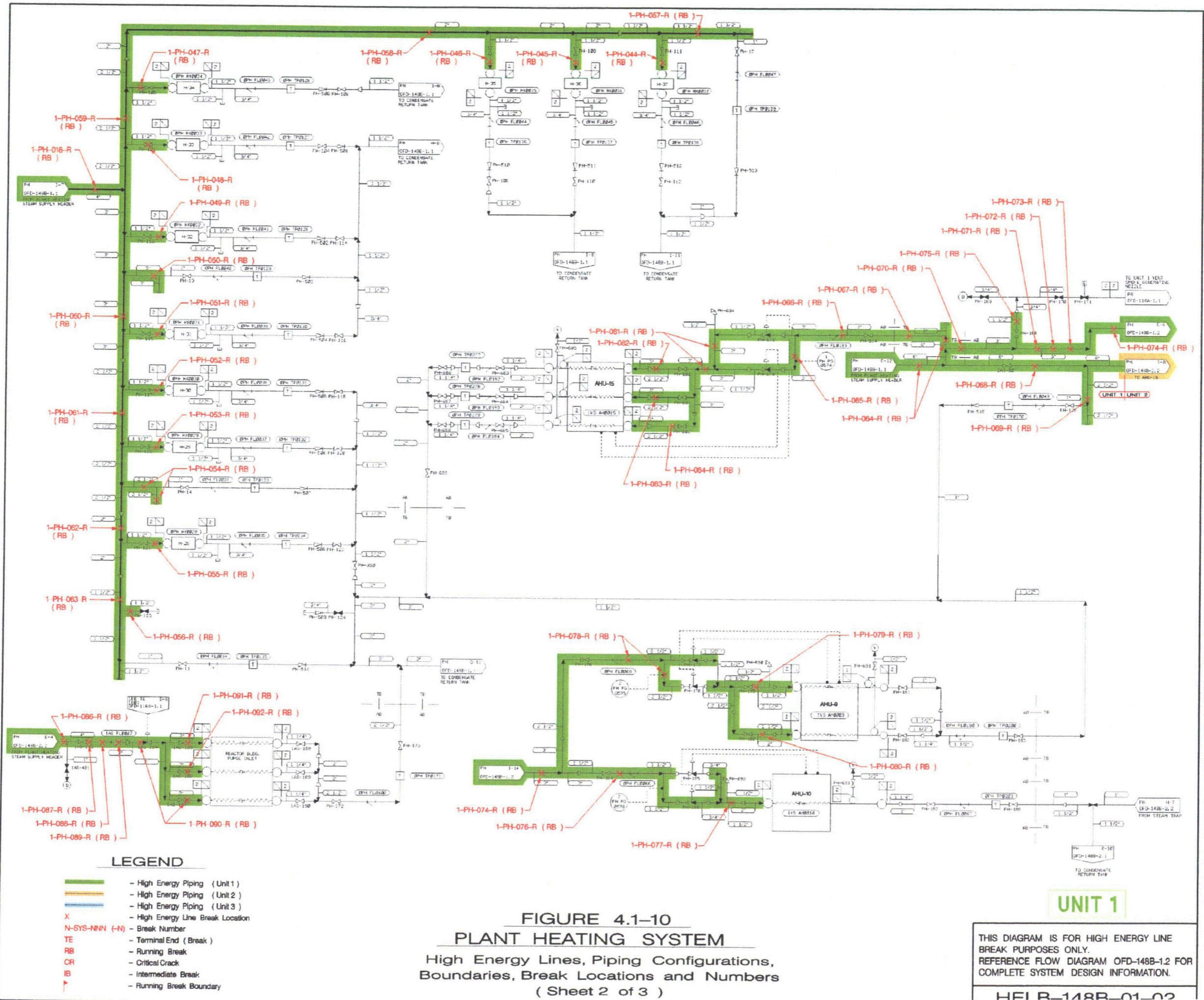
**FIGURE 4.1-10  
PLANT HEATING SYSTEM**

High Energy Lines, Piping Configurations,  
Boundaries, Break Locations and Numbers  
(Sheet 1 of 3)

**UNIT 1**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
BREAK PURPOSES ONLY.  
REFERENCE FLOW DIAGRAM OFD-148B-1.1 FOR  
COMPLETE SYSTEM DESIGN INFORMATION.

**HELB-148B-01-01**



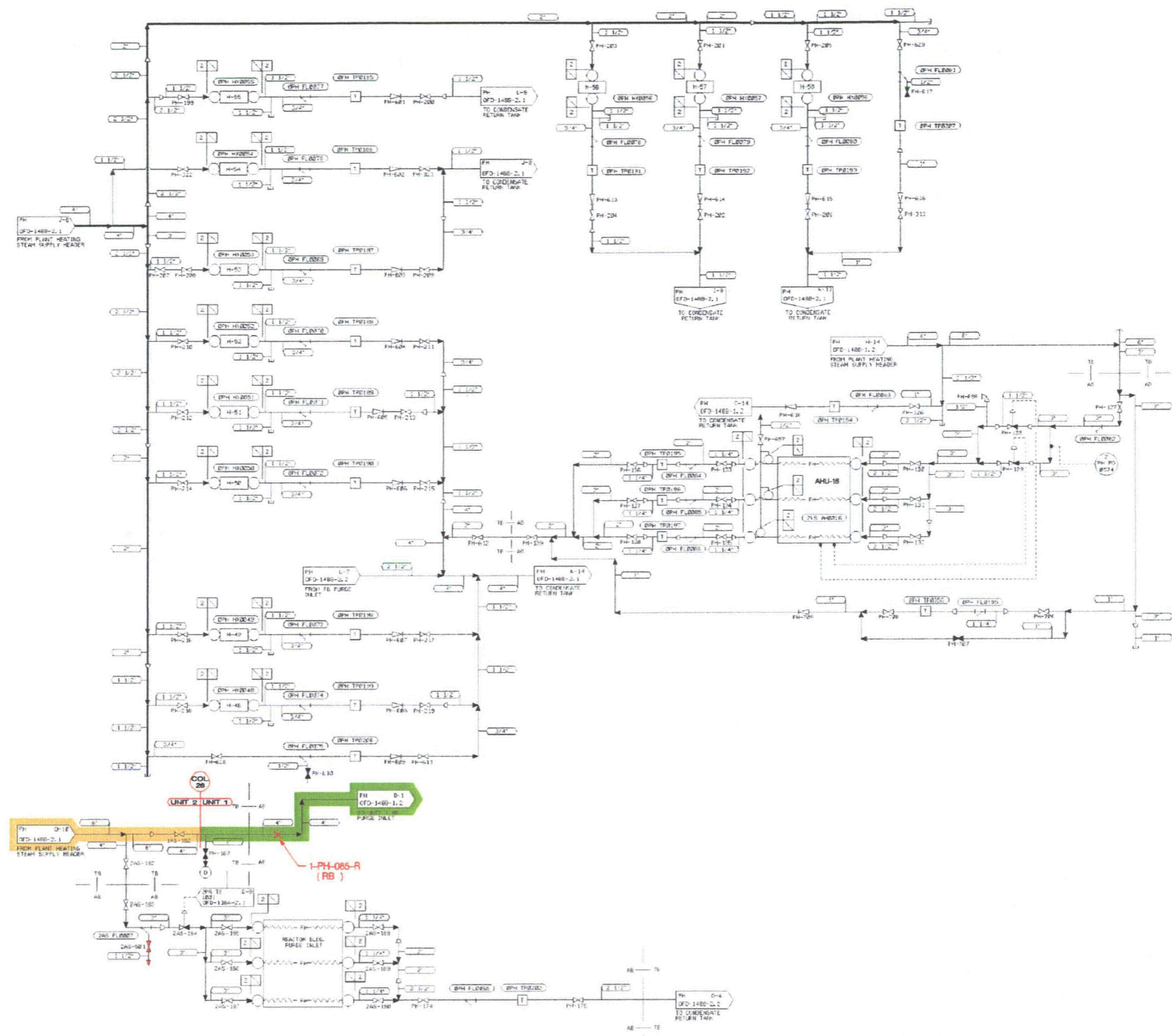
**LEGEND**

- - High Energy Piping (Unit 1)
- - High Energy Piping (Unit 2)
- - High Energy Piping (Unit 3)
- X - High Energy Line Break Location
- N-SYS-NNN (-N) - Break Number
- TE - Terminal End (Break)
- RB - Running Break
- CR - Critical Crack
- IB - Intermediate Break
- |— - Running Break Boundary

**FIGURE 4.1-10**  
**PLANT HEATING SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 (Sheet 2 of 3)

**UNIT 1**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-148B-1.2 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.



**LEGEND**

- High Energy Piping (Unit 1)
- High Energy Piping (Unit 2)
- High Energy Piping (Unit 3)
- X High Energy Line Break Location
- N-SYS-NNN (-N) Break Number
- TE Terminal End (Break)
- RB Running Break
- CR Critical Crack
- IB Intermediate Break
- Running Break Boundary

**FIGURE 4.1-10**  
**PLANT HEATING SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 3 of 3 )

**UNIT 1**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-148B-2.2 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.

HELB-148B-02-02

Table 4.1-11  
 Steam Drain System – High Energy Line Data – Unit 1

Break ID	Flow Diagram (OFD-)	Break Type	Pipe OD (in)	Pipe Thickness (in)	Building	Layout Drawing (O-)	Floor Elev. Or Break Elev. (See Note 6)	Location (Room No. or Column Numbers)		Op Pres. (psig)	Op Temp. (°F)
1-SD-001	122A-1.1	TE	6.625	0.432	TB	401A, 401H 411B	810'-6"	E-F	13-14	900	595
1-SD-002	122A-1.1	TE	6.625	0.432	TB	401A, 401C 411B	810'-6"	E-F	13-14	900	595
1-SD-003	122A-1.2	TE	2.375	0.218	TB	401A, 411B	805'-0"	M-L	16-17	900	595
1-SD-004	122A-1.2	TE	2.375	0.218	TB	401G, 411B	810'-4"	M-L	17-18	900	595
1-SD-005	122A-1.2	TE	2.375	0.218	TB	401, A 411B	805'-0"	M-L	18-19	900	595
1-SD-006	122A-1.4	TE	2.375	0.218	TB	403C, 411B	804'-6"	D-E	14-15	900	595
1-SD-007	122A-1.4	TE	2.375	0.154	TB	400A, 411B	785'-3"	C-D	19-20	310	507
1-SD-009-R	122A-1.2	RB	2.375	0.218	TB	403C, 411B	796'-6"	L-M	16-17	900	595
1-SD-010-R	122A-1.2	RB	2.375	0.218	TB	401G, 411B	796'-6"	L-M	18-19	900	595
1-SD-011-R	122A-1.2	RB	2.375	0.218	TB	401G, 411B	796'-6"	L-M	18-19	900	595
1-SD-012-R	122A-1.2	RB	2.375	0.218	TB	401G, 411B	796'-6"	L-M	19-20	900	595
1-SD-013-R	122A-1.2	RB	2.375	0.218	TB	401G, 411B	796'-6"	L-M	19-20	900	595
1-SD-022-R	122A-1.3	RB	2.375	0.218	TB	401A, 411B	796'-6"	B-C	17-18	900	595
1-SD-023	122A-1.3	TE	2.375	0.154	TB	401B, 411C	803'-0"	D-E	23-24	300	505
1-SD-024	122A-1.3	TE	2.375	0.154	TB	401B, 411C	797'-6"	D-E	23-24	300	505
1-SD-025	122A-1.3	TE	1.900	0.145	TB	401B, 401H 411B	804'-0"	G-H	23-24	300	505
1-SD-026-R	122A-1.3	RB	6.625	0.280	TB	400B, 400R	775'-0"	C-D	23-24	300	505
1-SD-027-R	122A-1.3	RB	6.625	0.280	TB	400B, 400R	775'-0"	C-D	25-26	300	505
1-SD-028-R	122A-1.3	RB	2.375	0.218	TB	400A, 400J 411B	775'-0"	D-E	17-18	900	595
1-SD-029-R	122A-1.3	RB	2.375	0.218	TB	401B, 401J 411B	796'-6"	B-C	24-25	900	595
1-SD-030-R	122A-1.3	RB	3.500	0.300	TB	401M, 411B	796'-6"	B-C	24-25	900	595
1-SD-031-R	122A-1.3	RB	3.500	0.300	TB	401F, 411B	796'-6"	F-G	26-27	900	595
1-SD-033-R	122B-1.2	RB	2.875	0.203	TB	401A, 411B	796'-6"	J-K	16-17	455	465
1-SD-034-R	122B-1.2	RB	2.875	0.203	TB	401A, 411B	796'-6"	F-G	16-17	275	420
1-SD-035-R	122B-1.2	RB	1.900	0.145	TB	401A, 411B	796'-6"	F-G	16-17	275	420
1-SD-036-R	122B-1.2	RB	1.900	0.145	TB	401A, 411B	796'-6"	F-G	16-17	275	420
1-SD-037-R	122B-1.2	RB	1.900	0.145	TB	401A, 411B	796'-6"	F-G	16-17	275	420
1-SD-038-R	122B-1.2	RB	2.875	0.203	TB	401A, 411B	796'-6"	F-G	15-16	165	375
1-SD-039-R	122B-1.3	RB	2.375	0.154	TB	401A, 411B	796'-6"	G-H	17-18	45	295
1-SD-040-R	122B-1.3	RB	2.375	0.154	TB	401A, 411B	796'-6"	G-H	18-19	45	295
1-SD-041-R	122B-1.3	RB	1.900	0.145	TB	401A, 411B	796'-6"	G-H	17-18	45	295
1-SD-042-R	122B-1.3	RB	1.900	0.145	TB	401A, 411B	796'-6"	G-H	18-19	45	295

Table 4.1-11  
 Steam Drain System – High Energy Line Data – Unit 1

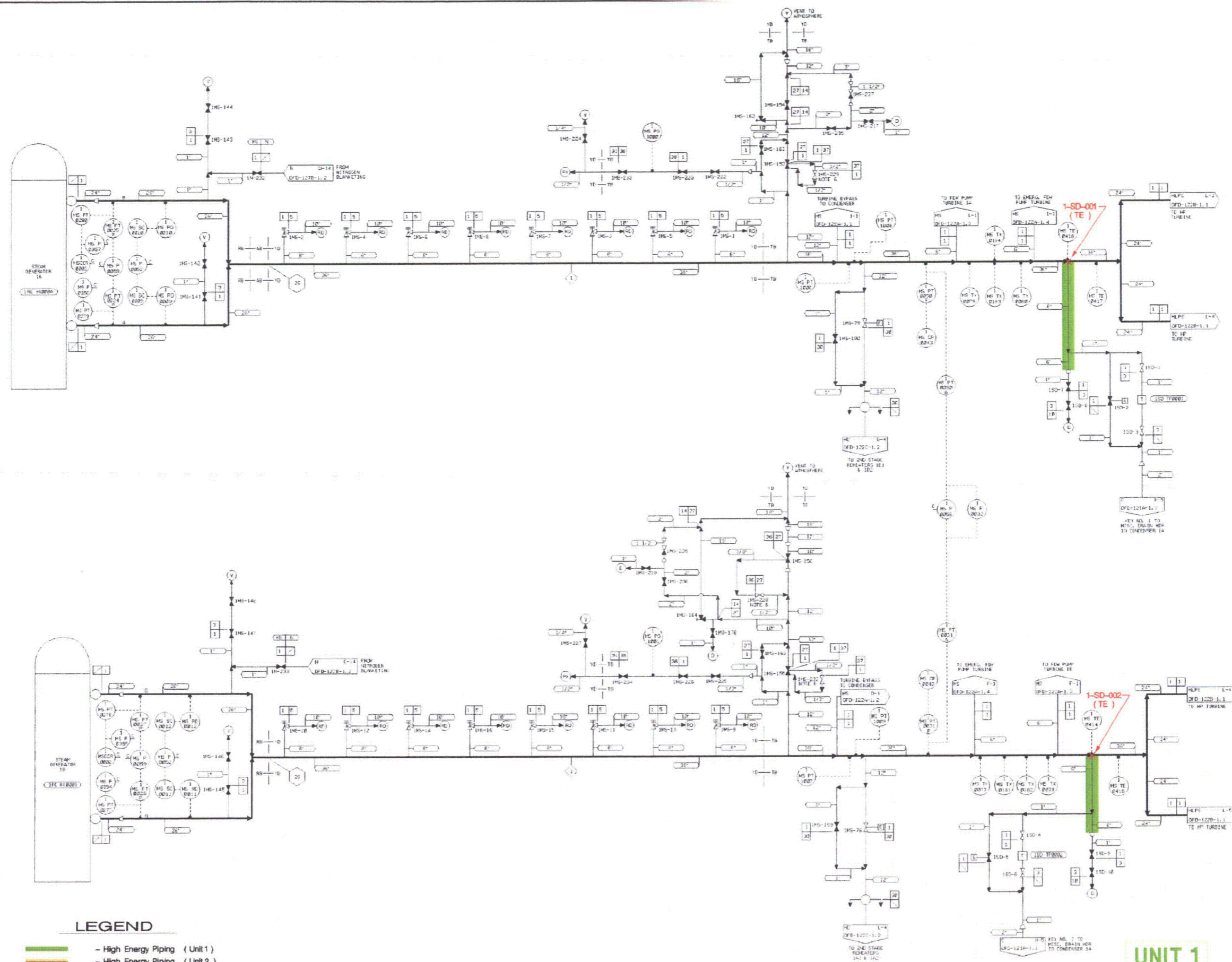
Break ID	Flow Diagram (OFD-)	Break Type	Pipe OD (in)	Pipe Thickness (in)	Building	Layout Drawing (O-)	Floor Elev. Or Break Elev. (See Note 6)	Location (Room No. or Column Numbers)		Op Pres. (psig)	Op Temp. (°F)
1-SD-046-R	122B-1.4	RB	2.375	0.154	TB	401A, 411B	796'-6"	G-H	19-20	45	295
1-SD-047-R	122B-1.4	RB	2.375	0.154	TB	401A, 411B	796'-6"	G-H	20-21	45	295
1-SD-048-R	122B-1.4	RB	1.900	0.145	TB	401A, 411B	796'-6"	G-H	19-20	45	295
1-SD-049-R	122B-1.4	RB	1.900	0.145	TB	401A, 411B	796'-6"	G-H	20-21	45	295
1-SD-053-R	122B-1.5	RB	2.375	0.154	TB	401B, 411B	796'-6"	G-H	21-22	45	295
1-SD-054-R	122B-1.5	RB	2.375	0.154	TB	401B, 411B	796'-6"	G-H	22-23	45	295
1-SD-055-R	122B-1.5	RB	1.900	0.145	TB	401B, 411B	796'-6"	G-H	21-22	45	295
1-SD-056-R	122B-1.5	RB	1.900	0.145	TB	401B, 411B	796'-6"	G-H	22-23	45	295
1-SD-060-R	122B-1.6	RB	2.875	0.203	TB	401A, 411B	796'-6"	J-K	21-22	455	465
1-SD-061-R	122B-1.6	RB	2.875	0.203	TB	401A, 411B	796'-6"	K-L	19-20	275	420
1-SD-062-R	122B-1.6	RB	2.875	0.203	TB	401A, 411B	796'-6"	J-K	18-19	275	420
1-SD-063-R	122B-1.6	RB	2.875	0.203	TB	401A, 401D 411B	796'-6"	K-L	19-20	275	420
1-SD-064-R	122B-1.7	RB	2.875	0.203	TB	401A, 411B	796'-6"	J-K	15-16	165	375
1-SD-065-R	122B-1.7	RB	2.875	0.203	TB	401A, 411B	796'-6"	J-K	15-16	165	375
1-SD-066-R	122B-1.7	RB	2.875	0.203	TB	401A, 411C	796'-6"	K-L	15-17	45	295
1-SD-067-R	122B-1.7	RB	1.900	0.145	TB	401A, 411C	796'-6"	K-L	15-17	45	295
1-SD-068-R	122B-1.7	RB	1.900	0.145	TB	401A, 411C	796'-6"	K-L	15-17	45	295
1-SD-069-R	122B-1.7	RB	2.875	0.203	TB	401A, 411C	796'-6"	K-L	15-16	45	295
1-SD-070-R	122B-1.7	RB	1.900	0.145	TB	401A, 411C	796'-6"	K-L	15-16	45	295
1-SD-071-R	122B-1.7	RB	1.900	0.145	TB	401A, 411C	796'-6"	K-L	15-16	45	295
1-SD-072-R	122B-1.7	RB	2.875	0.203	TB	401A, 411B	796'-6"	J-K	20-21	45	295
1-SD-087-R	122C-1.1	RB	2.875	0.203	TB	401A, 411B	796'-6"	C-D	13-14	460	480
1-SD-088-R	122C-1.2	RB	2.375	0.218	TB	401A 411B	796'-6"	C-D	13-14	900	595
1-SD-089-R	122C-1.2	RB	2.375	0.218	TB	401A 411B	796'-6"	G-H	13-14	900	595
1-SD-099	122A-1.4	IB	2.375	0.154	TB	403C 411B	803'-4"	D-E	14-15	900	595
1-SD-100-R	122C-1.1	RB	2.375	0.154	TB	401A 411B	796'-6"	G-H	13-14	460	480
1-SD-101-R	122A-1.3	RB	2.375	0.154	TB	401B 411C	796'-6"	D-Dd	23-24	300	505
1-SD-102-R	122A-1.3	RB	1.900	0.145	TB	401B 411B	796'-6"	G-H	23-24	300	505
1-SD-103-R	122A-1.3	RB	2.375	0.154	TB	401B 411C	796'-6"	D-Dd	23-25	300	505
1-SD-104-CR	122A-1.2	CR	2.375	0.218	TB	401A 411B	803'-8"	L-M	16-17	900	595



Break ID	Flow Diagram (OFD-)	Break Type	Pipe OD (in)	Pipe Thickness (in)	Building	Layout Drawing (O-)	Floor Elev. Or Break Elev. (See Note 6)	Location (Room No. or Column Numbers)		Op Pres. (psig)	Op Temp. (°F)
1-SD-105-CR	122A-1.2	CR	2.375	0.218	TB	401A 411B	805'-0"	L-M	18-19	900	595
1-SD-106-CR	122A-1.4	CR	2.375	0.218	TB	403C 411B	803'-0"	D-E	14-15	900	595
1-SD-107-CR	122A-1.4	CR	2.375	0.154	TB	400A 411B	784'-3"	C-D	19-20	310	507

Notes:

1. Break numbers may not be consecutive
2. Break type: RB – Running Break (Piping not analyzed for seismic), TE – Terminal End, IB – Intermediate Break
3. Building: TB – Turbine Building, AB – Auxiliary Building.
4. Each running break may contain one or more sub-breaks.
5. For the Unit 1 Steam Drain System ten (10) Terminal End Breaks, one Intermediate Break, four (4) Critical Cracks, and 90 Running Breaks were considered; the non-excluded breaks listed in this table include ten (10) Terminal End Breaks, 1 Intermediate Break, four (4) Critical Cracks, and 50 Running Breaks.
6. For Terminal End Break, Intermediate Break, or Critical Crack locations the elevation of the break location is given. For each Running Break the elevation of the floor or room that contains the Running Break is given.
7. Other Abbreviations: OD – Outer Diameter, in – inches, Op - operating



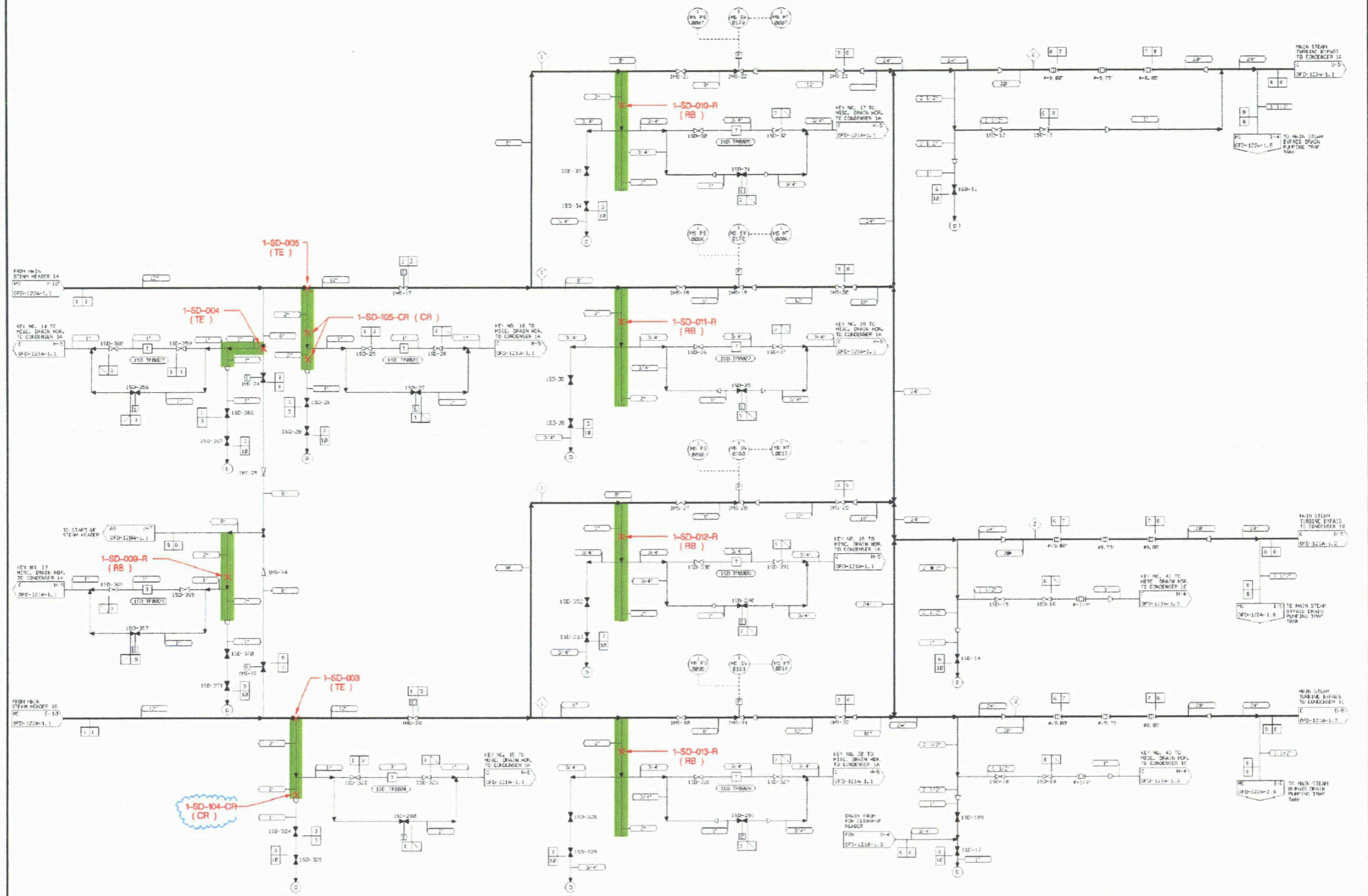
- LEGEND**
- █ - High Energy Piping (Unit 1)
  - █ - High Energy Piping (Unit 2)
  - █ - High Energy Piping (Unit 3)
  - X - High Energy Line Break Location
  - N-SYS-NNN (-N) - Break Number
  - TE - Terminal End (Break)
  - RB - Running Break
  - CR - Critical Crack
  - B - Intermediate Break
  - ▶ - Running Break Boundary

**FIGURE 4.1-11**  
**STEAM DRAIN SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 1 of 12 )

**UNIT 1**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-122A-1.1 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.

**HELB-122A-01-01**



**LEGEND**

- High Energy Piping (Unit 1)
- High Energy Piping (Unit 2)
- High Energy Piping (Unit 3)
- X High Energy Line Break Location
- N-SYS-NNN (-N) Break Number
- TE Terminal End (Break)
- RB Running Break
- CR Critical Crack
- IB Intermediate Break
- Running Break Boundary

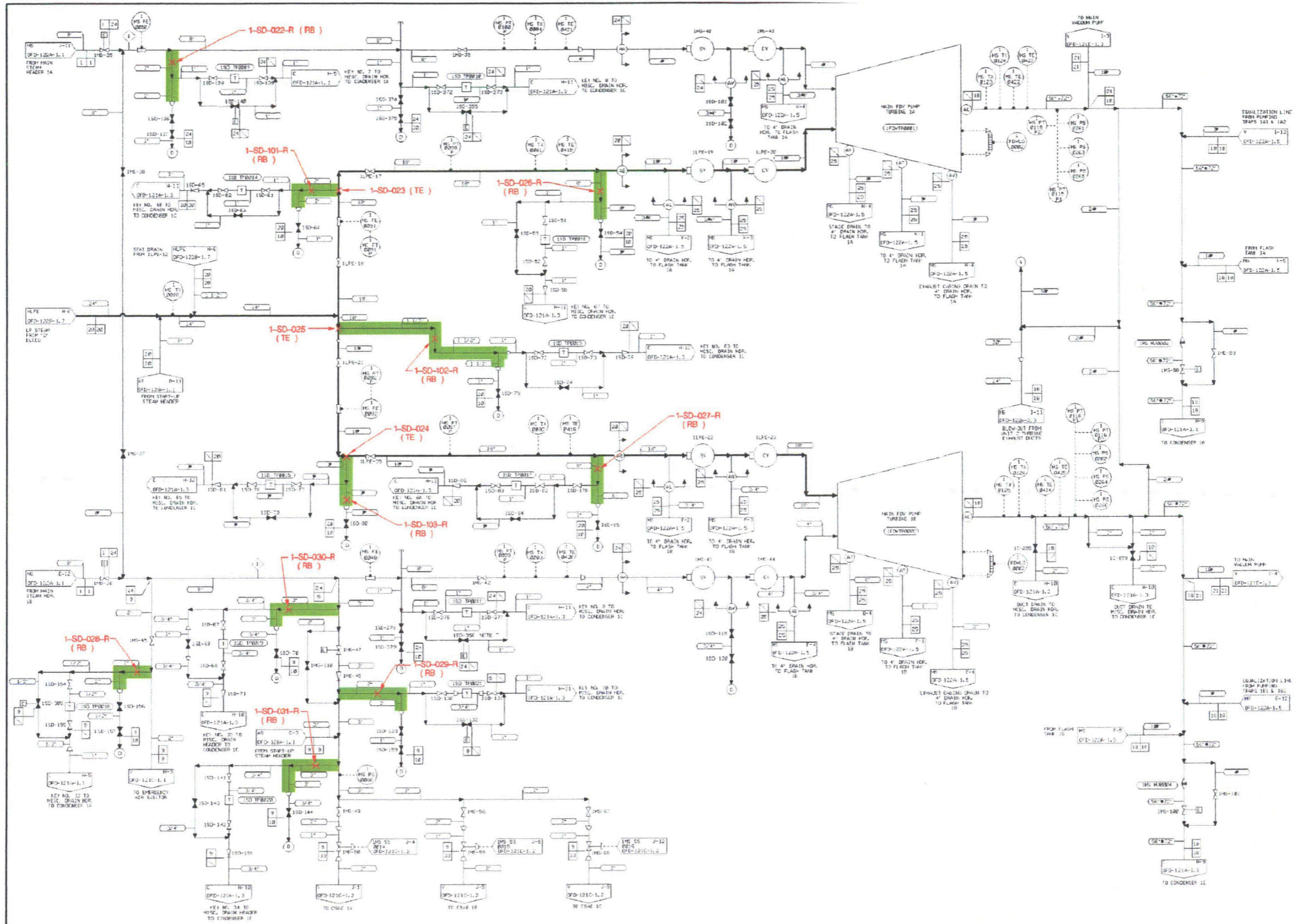
**FIGURE 4.1-11  
STEAM DRAIN SYSTEM**

High Energy Lines, Piping Configurations,  
Boundaries, Break Locations and Numbers  
( Sheet 2 of 12 )

**UNIT 1**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
BREAK PURPOSES ONLY.  
REFERENCE FLOW DIAGRAM OFD-122A-1.2 FOR  
COMPLETE SYSTEM DESIGN INFORMATION.

HELB-122A-01-02



**LEGEND**

- - High Energy Piping (Unit 1)
- - High Energy Piping (Unit 2)
- - High Energy Piping (Unit 3)
- X - High Energy Line Break Location
- N-SYS-NNN (-N) - Break Number
- TE - Terminal End (Break)
- RB - Running Break
- CR - Critical Crack
- IB - Intermediate Break
- |— - Running Break Boundary

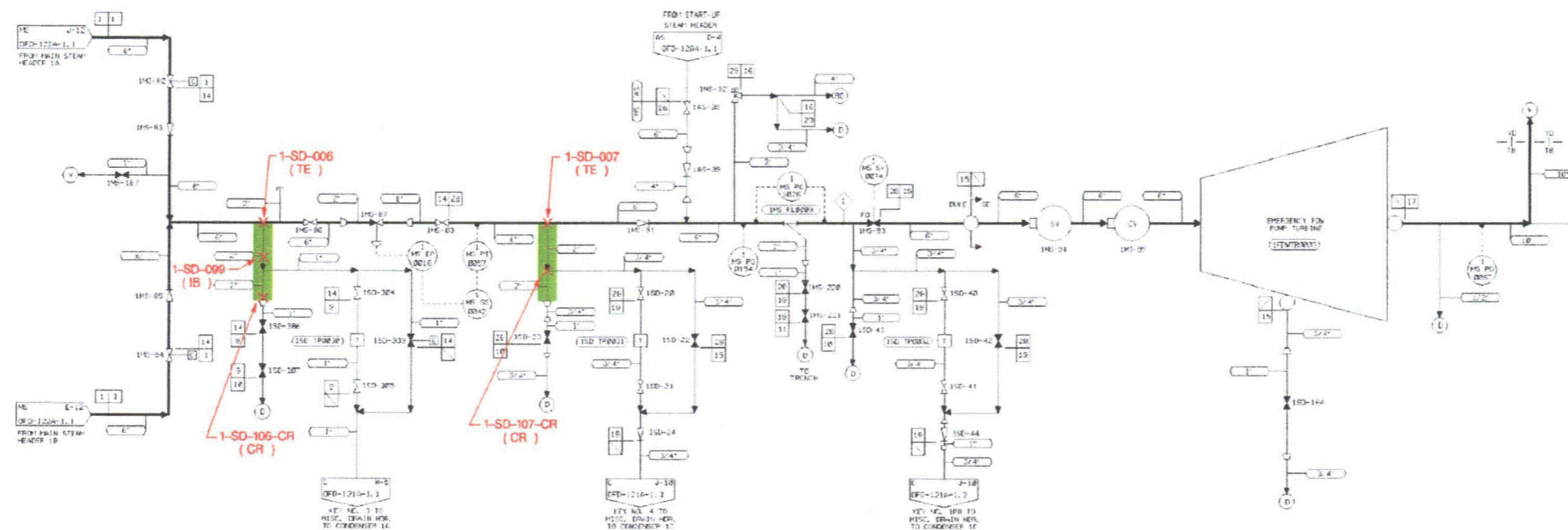
**FIGURE 4.1-11  
STEAM DRAIN SYSTEM**

High Energy Lines, Piping Configurations,  
Boundaries, Break Locations and Numbers  
(Sheet 3 of 12)

**UNIT 1**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
BREAK PURPOSES ONLY.  
REFERENCE FLOW DIAGRAM OFD-122A-1.3 FOR  
COMPLETE SYSTEM DESIGN INFORMATION.

HEL B-122A-01-03



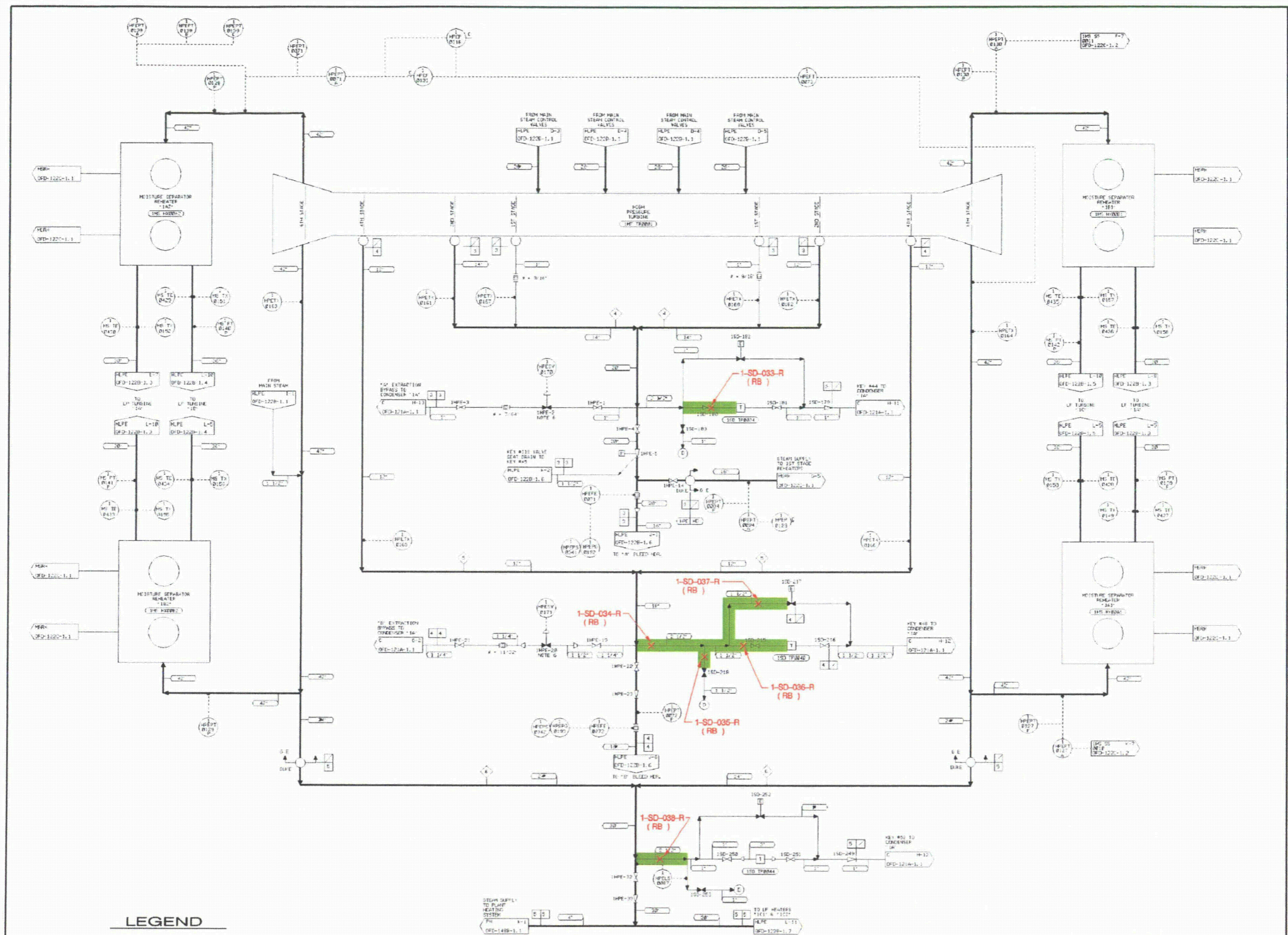
- LEGEND**
- █ - High Energy Piping (Unit 1)
  - █ - High Energy Piping (Unit 2)
  - █ - High Energy Piping (Unit 3)
  - X - High Energy Line Break Location
  - N-SYS-NNN (-N) - Break Number
  - TE - Terminal End (Break)
  - RB - Running Break
  - CR - Critical Crack
  - IB - Intermediate Break
  - ▶ - Running Break Boundary

**FIGURE 4.1-11**  
**STEAM DRAIN SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 4 of 12 )

**UNIT 1**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-122A-1.4 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.

HELB-122A-01-04



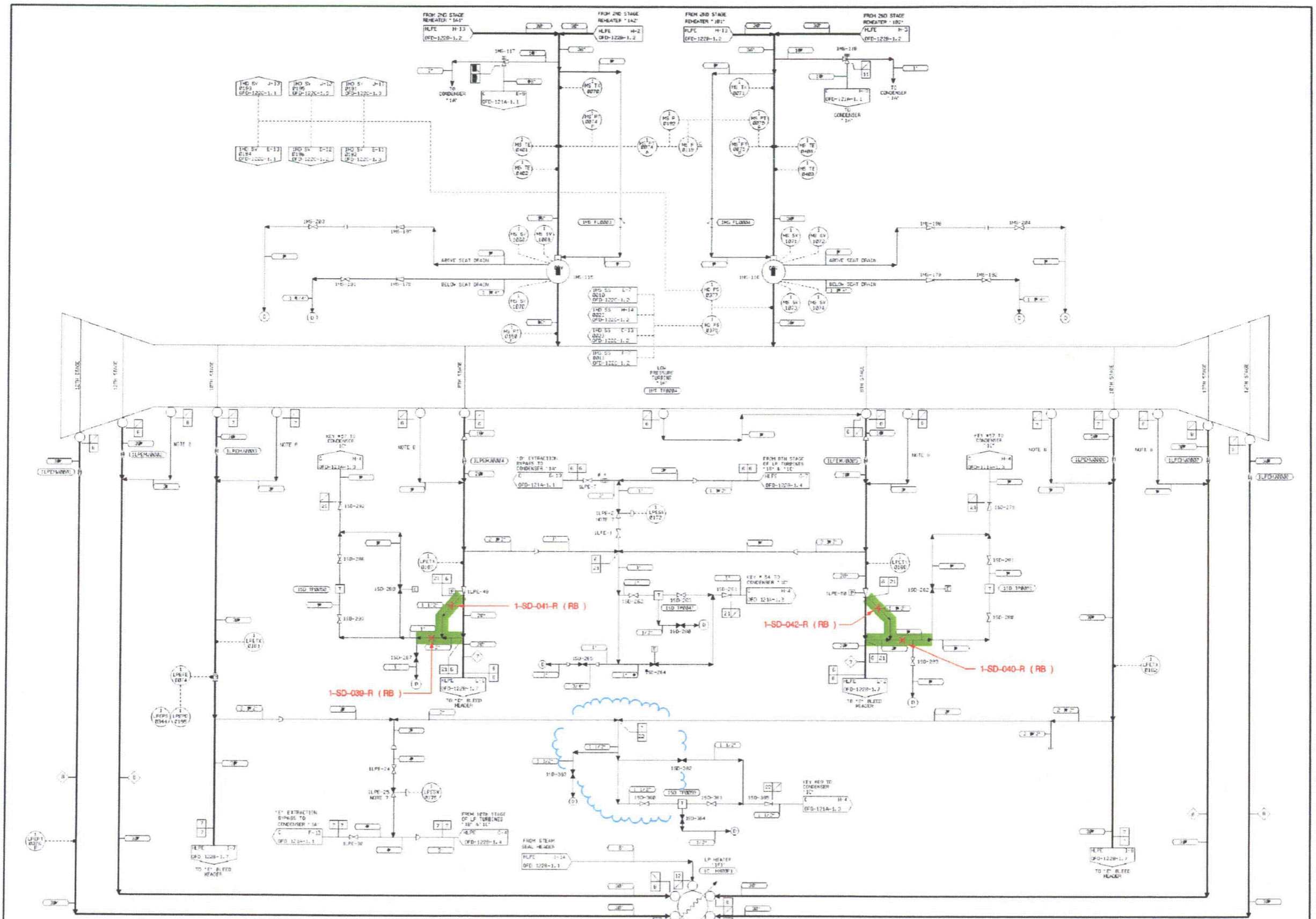
**LEGEND**

- - High Energy Piping (Unit 1)
- - High Energy Piping (Unit 2)
- - High Energy Piping (Unit 3)
- X - High Energy Line Break Location
- N-SYS-NNN (-N) - Break Number
- TE - Terminal End (Break)
- RB - Running Break
- CR - Critical Crack
- IB - Intermediate Break
- ▶ - Running Break Boundary

**FIGURE 4.1-11**  
**STEAM DRAIN SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 5 of 12 )

**UNIT 1**

THIS DIAGRAM IS FOR HIGH ENERGY LINE BREAK PURPOSES ONLY. REFERENCE FLOW DIAGRAM OFD-122B-1.2 FOR COMPLETE SYSTEM DESIGN INFORMATION.

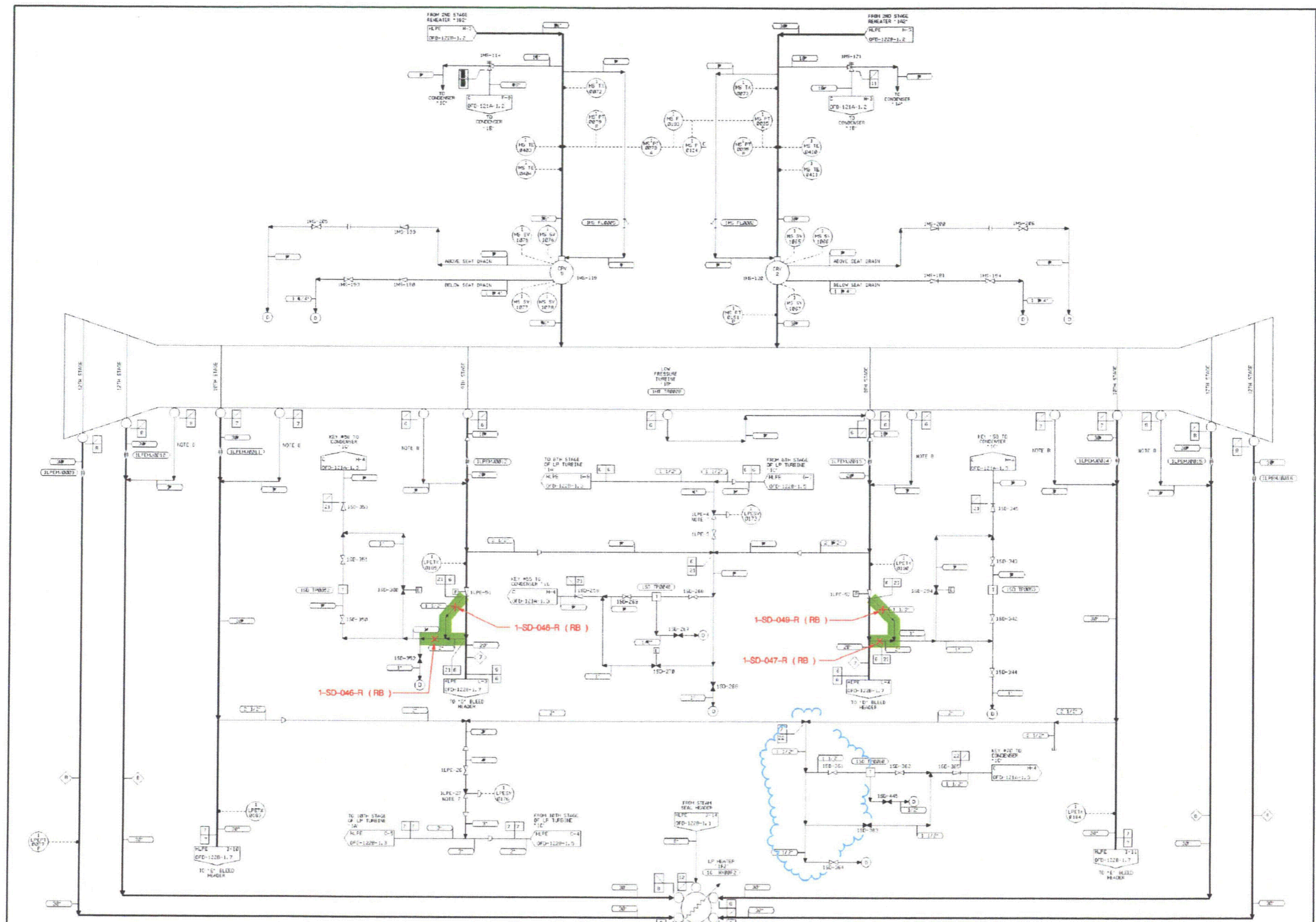


- LEGEND**
- - High Energy Piping (Unit 1)
  - - High Energy Piping (Unit 2)
  - - High Energy Piping (Unit 3)
  - X - High Energy Line Break Location
  - N-SYS-NNN (-N) - Break Number
  - TE - Terminal End (Break)
  - RB - Running Break
  - CR - Critical Crack
  - IB - Intermediate Break
  - ↑ - Running Break Boundary

**FIGURE 4.1-11**  
**STEAM DRAIN SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 6 of 12 )

**UNIT 1**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-122B-1.3 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.



**LEGEND**

- - High Energy Piping (Unit 1)
- - High Energy Piping (Unit 2)
- - High Energy Piping (Unit 3)
- X - High Energy Line Break Location
- N-SYS-NNN (-N) - Break Number
- TE - Terminal End (Break)
- RB - Running Break
- CR - Critical Crack
- IB - Intermediate Break
- ▶ - Running Break Boundary

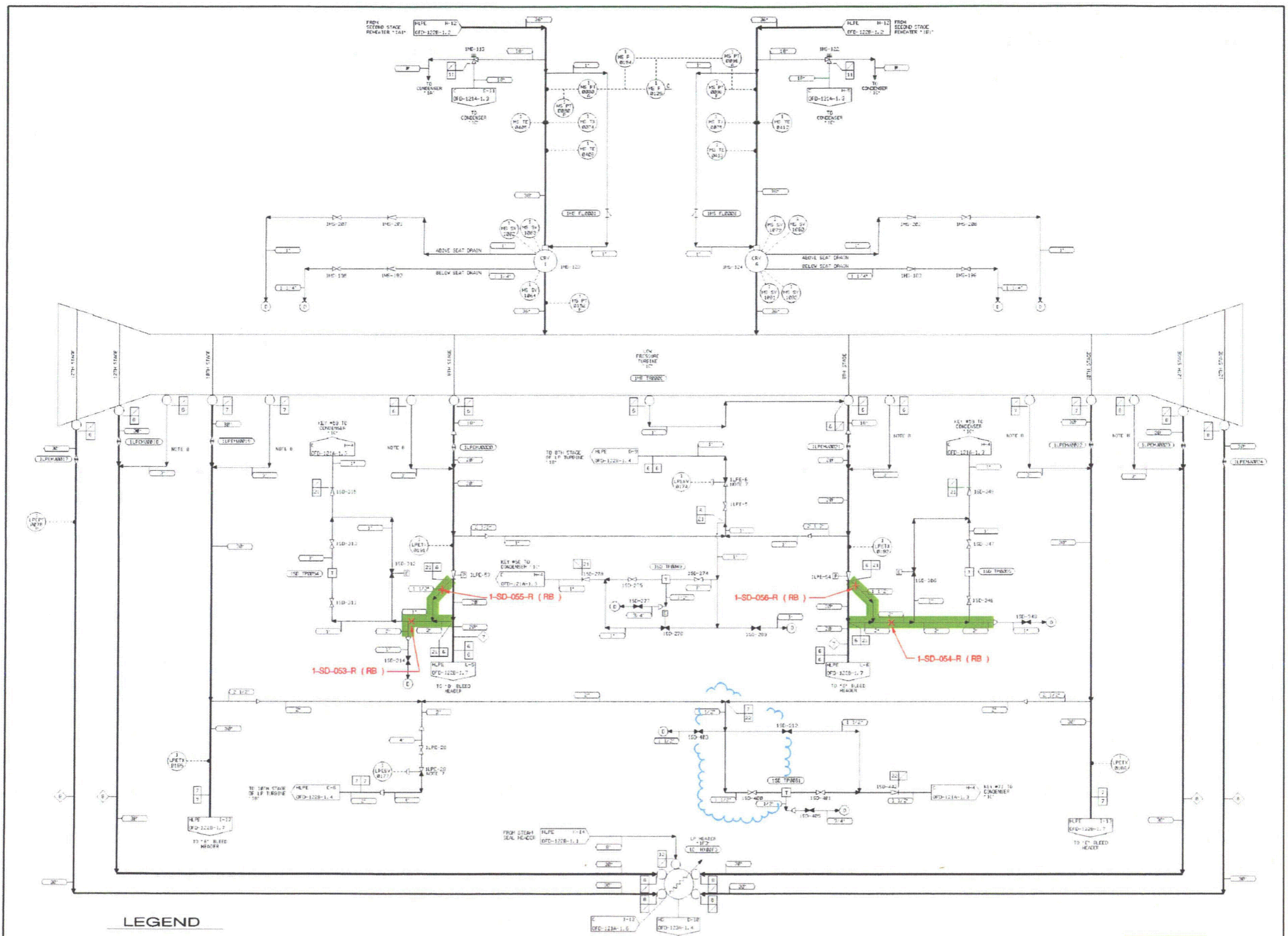
**FIGURE 4.1-11**  
**STEAM DRAIN SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 7 of 12 )

**UNIT 1**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-122B-1.4 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.

HELB-122B-01-04





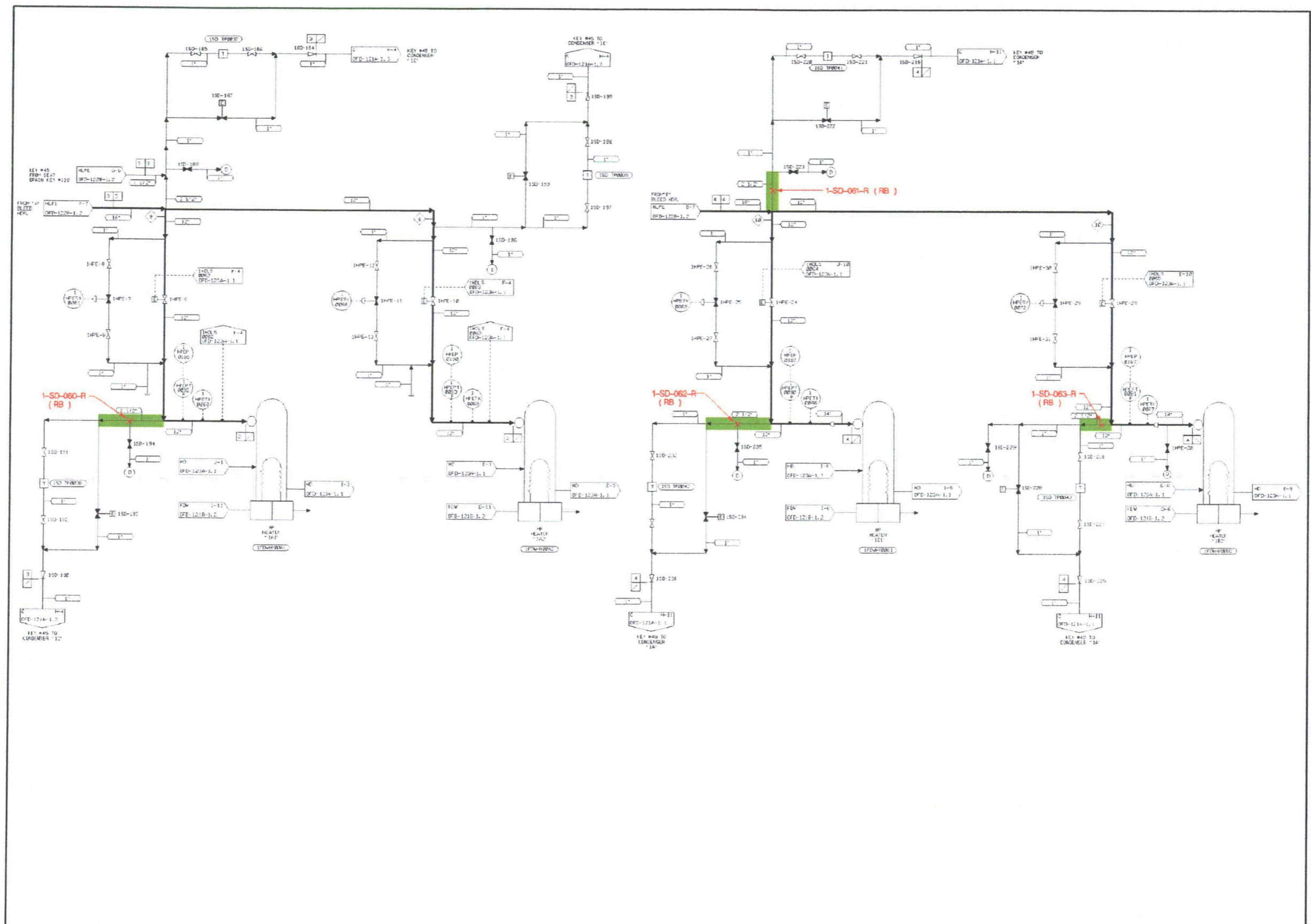
- LEGEND**
- - High Energy Piping (Unit 1)
  - - High Energy Piping (Unit 2)
  - - High Energy Piping (Unit 3)
  - X - High Energy Line Break Location
  - N-SYS-NNN (-N) - Break Number
  - TE - Terminal End (Break)
  - RB - Running Break
  - CR - Critical Crack
  - IB - Intermediate Break
  - |— - Running Break Boundary

**FIGURE 4.1-11**  
**STEAM DRAIN SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 8 of 12 )

**UNIT 1**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-122B-1.5 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.

HELB-122B-01-05



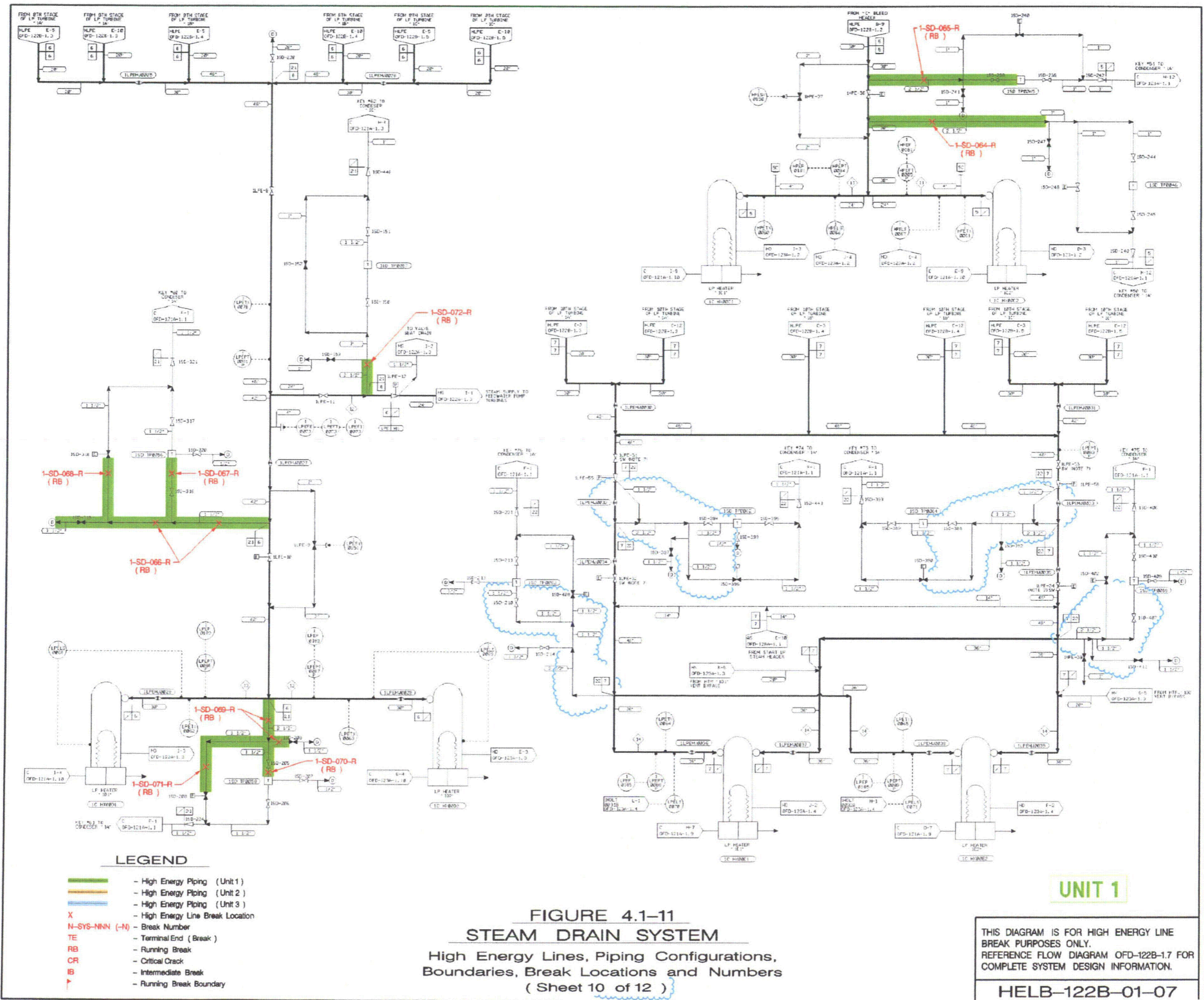
**LEGEND**

- █ - High Energy Piping (Unit 1)
- █ - High Energy Piping (Unit 2)
- █ - High Energy Piping (Unit 3)
- X - High Energy Line Break Location
- N SYS NNN (-N) - Break Number
- TE - Terminal End (Break)
- RB - Running Break
- CR - Critical Crack
- IB - Intermediate Break
- ▶ - Running Break Boundary

**FIGURE 4.1-11**  
**STEAM DRAIN SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 9 of 12 )

**UNIT 1**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-122B-1.6 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.



**LEGEND**

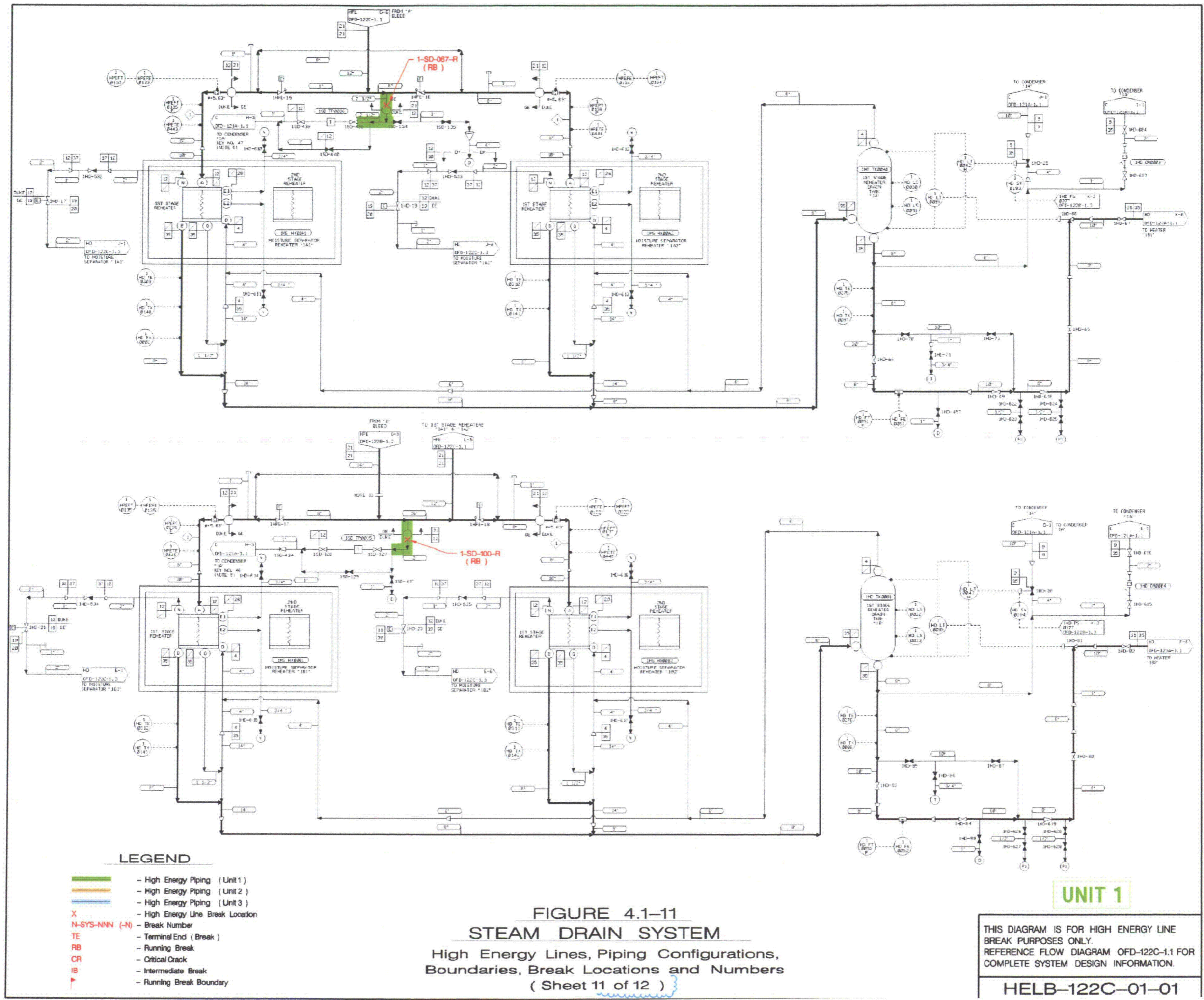
- - High Energy Piping (Unit 1)
- - High Energy Piping (Unit 2)
- - High Energy Piping (Unit 3)
- X - High Energy Line Break Location
- N-SYS-NNN (-N) - Break Number
- TE - Terminal End (Break)
- RB - Running Break
- CR - Critical Crack
- IB - Intermediate Break
- |— - Running Break Boundary

**FIGURE 4.1-11**  
**STEAM DRAIN SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 10 of 12 )

**UNIT 1**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-122B-1.7 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.

**HELB-122B-01-07**



**LEGEND**

- - High Energy Piping (Unit 1)
- - High Energy Piping (Unit 2)
- - High Energy Piping (Unit 3)
- X - High Energy Line Break Location
- N-SYS-ANN (-N) - Break Number
- TE - Terminal End (Break)
- RB - Running Break
- CR - Critical Crack
- IB - Intermediate Break
- ▶ - Running Break Boundary

**FIGURE 4.1-11  
STEAM DRAIN SYSTEM**

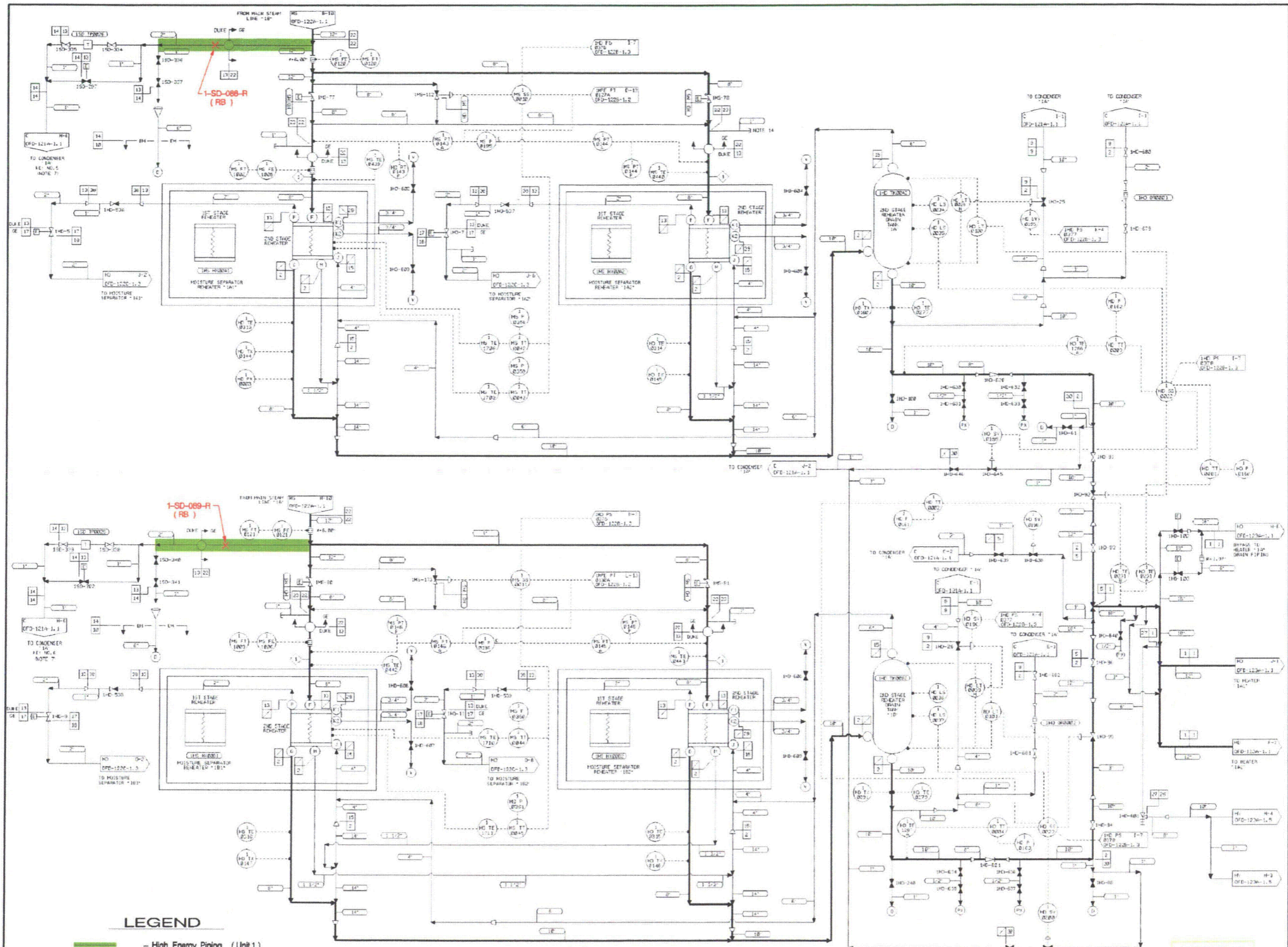
High Energy Lines, Piping Configurations,  
Boundaries, Break Locations and Numbers

( Sheet 11 of 12 )

**UNIT 1**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
BREAK PURPOSES ONLY.  
REFERENCE FLOW DIAGRAM OFD-122C-1.1 FOR  
COMPLETE SYSTEM DESIGN INFORMATION.

HELB-122C-01-01



- LEGEND**
- - High Energy Piping (Unit 1)
  - - High Energy Piping (Unit 2)
  - - High Energy Piping (Unit 3)
  - X - High Energy Line Break Location
  - N-SYS-NNN (-N) - Break Number
  - TE - Terminal End (Break)
  - RB - Running Break
  - CR - Critical Crack
  - IB - Intermediate Break
  - ▶ - Running Break Boundary

**FIGURE 4.1-11**  
**STEAM DRAIN SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 12 of 12 )

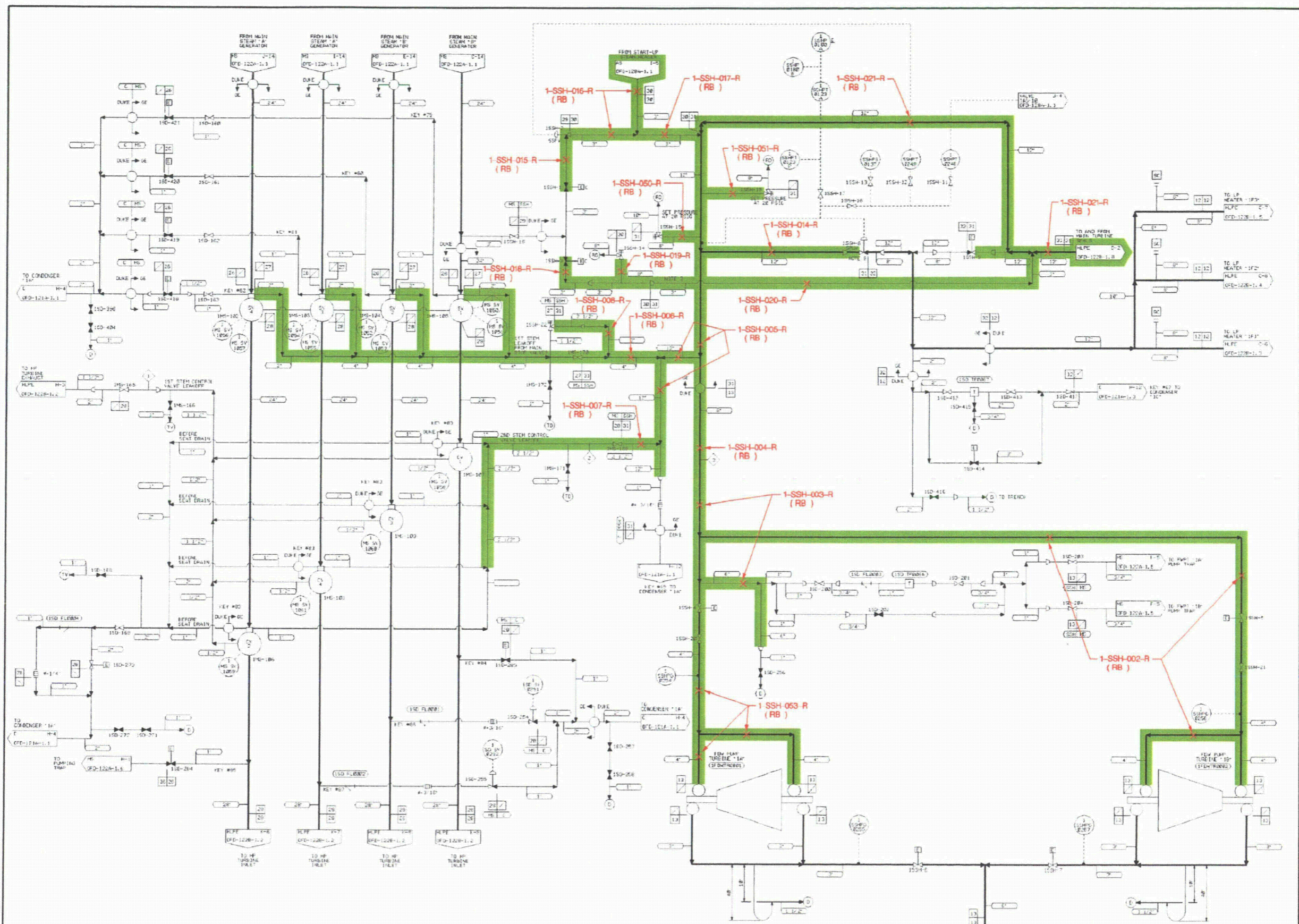
THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-122A-1.2 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.

**HELB-122C-01-02**

Break ID	Flow Diagram (OFD-)	Break Type	Pipe OD (in)	Pipe Thickness (in)	Building	Layout Drawing (O-) See Note 5	Floor Elev.	Location (Room No. or Column Numbers)		Op Pres. (psig)	Op Temp. (°F)
1-SSH-002-R	122B-1.1	RB	4.500	0.237	TB	400B 400E	775'-0"	B-C	25-26	10	440
1-SSH-003-R	122B-1.1	RB	6.625	0.280	TB	400E	775'-0"	B-C	25-26	10	440
1-SSH-004-R	122B-1.1	RB	6.625	0.280	TB	401A 401B 401M	796'-6"	B-E	15-26	10	440
1-SSH-005-R	122B-1.1	RB	12.750	0.406	TB	OM-200-95	796'-6"	D-E	15-16	10	440
1-SSH-006-R	122B-1.1	RB	4.500	0.237	TB	411C OM-200-96	796'-6"	D-E	14-16	10	440
1-SSH-007-R	122B-1.1	RB	2.875	0.203	TB	OM-200-96	796'-6"	D-F	15-16	10	440
1-SSH-008-R	122B-1.1	RB	3.500	0.216	TB	OM-200-96	796'-6"	D-F	14-15	10	440
1-SSH-014-R	122B-1.1	RB	12.750	0.406	TB	401M OM-200-94,95, -96	796'-6"	D-E	15-16	10	440
1-SSH-015-R	122B-1.1	RB	3.500	0.300	TB	OM-200-94	796'-6"	D-F	14-16	900	595
1-SSH-016-R	122B-1.1 128A-1.1	RB	3.500	0.300	TB	OM-200-94	796'-6"	D-E	15-16	10	440
1-SSH-017-R	122B-1.1	RB	3.500	0.300	TB	OM-200-94	796'-6"	D-E	14-16	10	440
1-SSH-018-R	122B-1.1	RB	3.500	0.300	TB	OM-200-94	796'-6"	D-E	15-16	10	440
1-SSH-019-R	122B-1.1	RB	8.625	0.500	TB	OM-200-94	796'-6"	D-E	15-16	10	440
1-SSH-020-R	122B-1.1	RB	3.500	0.216	TB	OM-200-94	796'-6"	C-E	15-16	10	440
1-SSH-021-R	122B-1.1 122B-1.8	RB	12.750	0.406	TB	OM-200-94,-96	796'-6"	D-E	15-19	10	440
1-SSH-022-R	122B-1.8	RB	10.750	0.365	TB	OM-200-94	796'-6"	D-E	18-21	10	440
1-SSH-023-R	122B-1.8	RB	5.563	0.258	TB	OM-200-94	796'-6"	D-F	20-23	10	440
1-SSH-024-R	122B-1.8	RB	8.625	0.322	TB	OM-200-94	796'-6"	D-F	15-17	10	440
1-SSH-025-R	122B-1.8	RB	8.625	0.322	TB	OM-200-94	796'-6"	D-F	16-17	10	440
1-SSH-026-R	122B-1.8	RB	5.563	0.258	TB	OM-200-94,-96	796'-6"	D-F	17-18	10	440
1-SSH-027-R	122B-1.8	RB	8.625	0.322	TB	OM-200-94	796'-6"	D-F	18-19	10	440
1-SSH-028-R	122B-1.8	RB	8.625	0.322	TB	OM-200-94	796'-6"	D-F	20-21	10	440
1-SSH-029-R	122B-1.8	RB	5.563	0.258	TB	OM-200-94	796'-6"	E-F	18-19	10	440
1-SSH-030-R	122B-1.8	RB	5.563	0.258	TB	OM-200-94	796'-6"	E-F	19-20	10	440
1-SSH-031-R	122B-1.8	RB	5.563	0.258	TB	OM-200-94	796'-6"	E-F	20-21	10	440
1-SSH-032-R	122B-1.8	RB	5.563	0.258	TB	OM-200-94	796'-6"	E-F	21-22	10	440
1-SSH-050-R	122B-1.1	RB	8.625	0.322	TB	OM-200-94	796'-6"	D-E	15-16	10	440
1-SSH-051-R	122B-1.1	RB	8.625	0.322	TB	OM-200-94	796'-6"	D-E	15-16	10	440
1-SSH-053-R	122B-1.1	RB	4.500	0.237	TB	400B 400E	775'-0"	B-C	23-26	10	440

Notes:

1. Break numbers may not be consecutive
2. Break type: RB – Running Break (Piping not analyzed for seismic), TE – Terminal End, IB – Intermediate Break
3. Building: TB – Turbine Building, AB – Auxiliary Building.
4. Each running break may contain one or more sub-breaks. For the Unit 1 Steam Seals System 53 Running Breaks were considered; 29 non-excluded, Running Breaks are listed in this table.
5. Layout of piping system may be shown on vendor supplied drawings (OM-).
6. For each Running Break the elevation of the floor or room that contains the Running Break is given.
7. Other Abbreviations: OD – Outer Diameter, in – inches, Op - operating



**LEGEND**

- - High Energy Piping ( Unit 1 )
- - High Energy Piping ( Unit 2 )
- - High Energy Piping ( Unit 3 )
- X - High Energy Line Break Location
- N-SYS-NM/N (-N) - Break Number
- TE - Terminal End ( Break )
- RB - Running Break
- CR - Critical Crack
- IB - Intermediate Break
- ▬ - Running Break Boundary

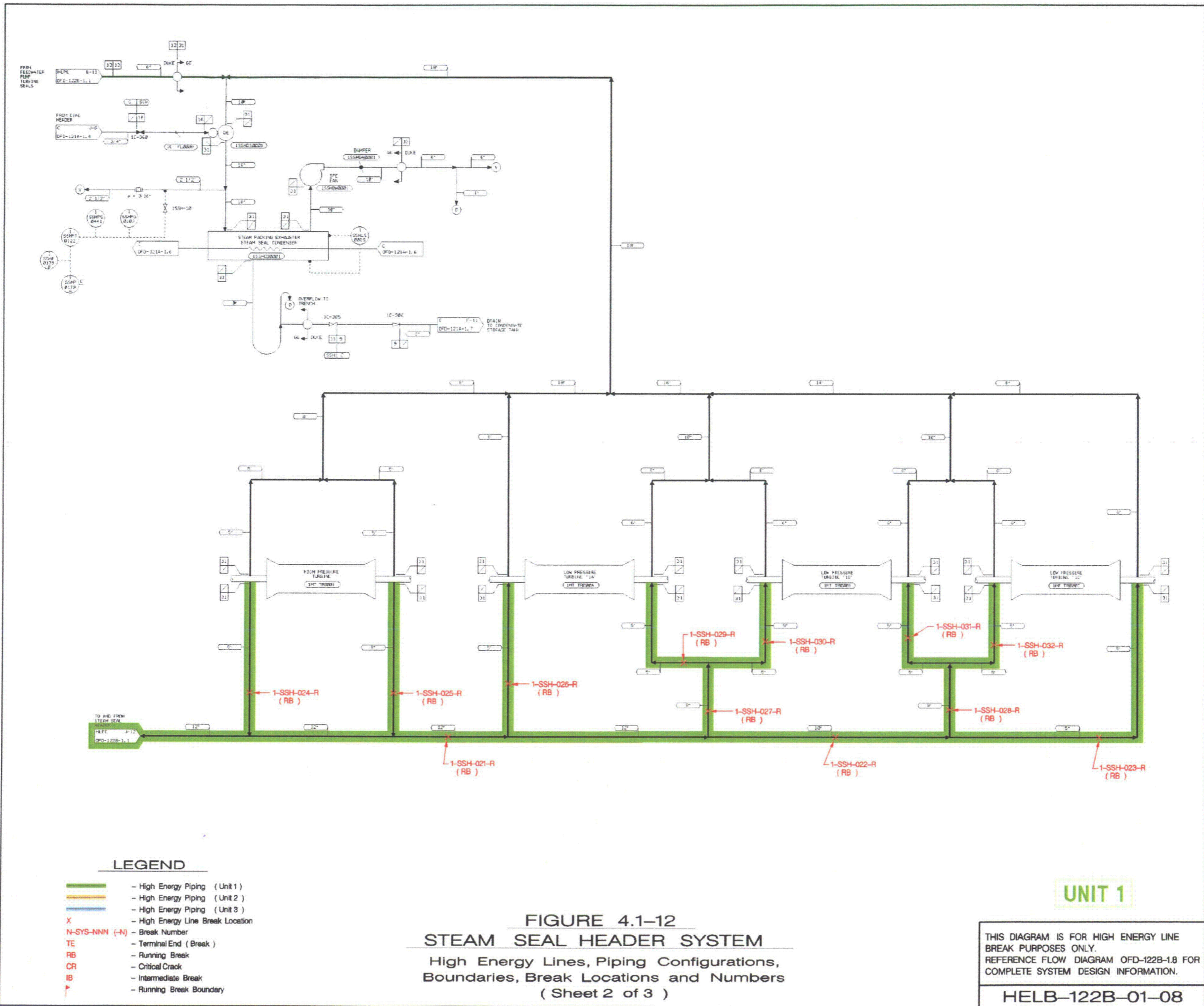
**FIGURE 4.1-12**  
**STEAM SEAL HEADER SYSTEM**

High Energy Lines, Piping Configurations,  
Boundaries, Break Locations and Numbers  
( Sheet 1 of 3 )

**UNIT 1**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
BREAK PURPOSES ONLY.  
REFERENCE FLOW DIAGRAM OFD-122B-1.1 FOR  
COMPLETE SYSTEM DESIGN INFORMATION.

**HELB-122B-01-01**



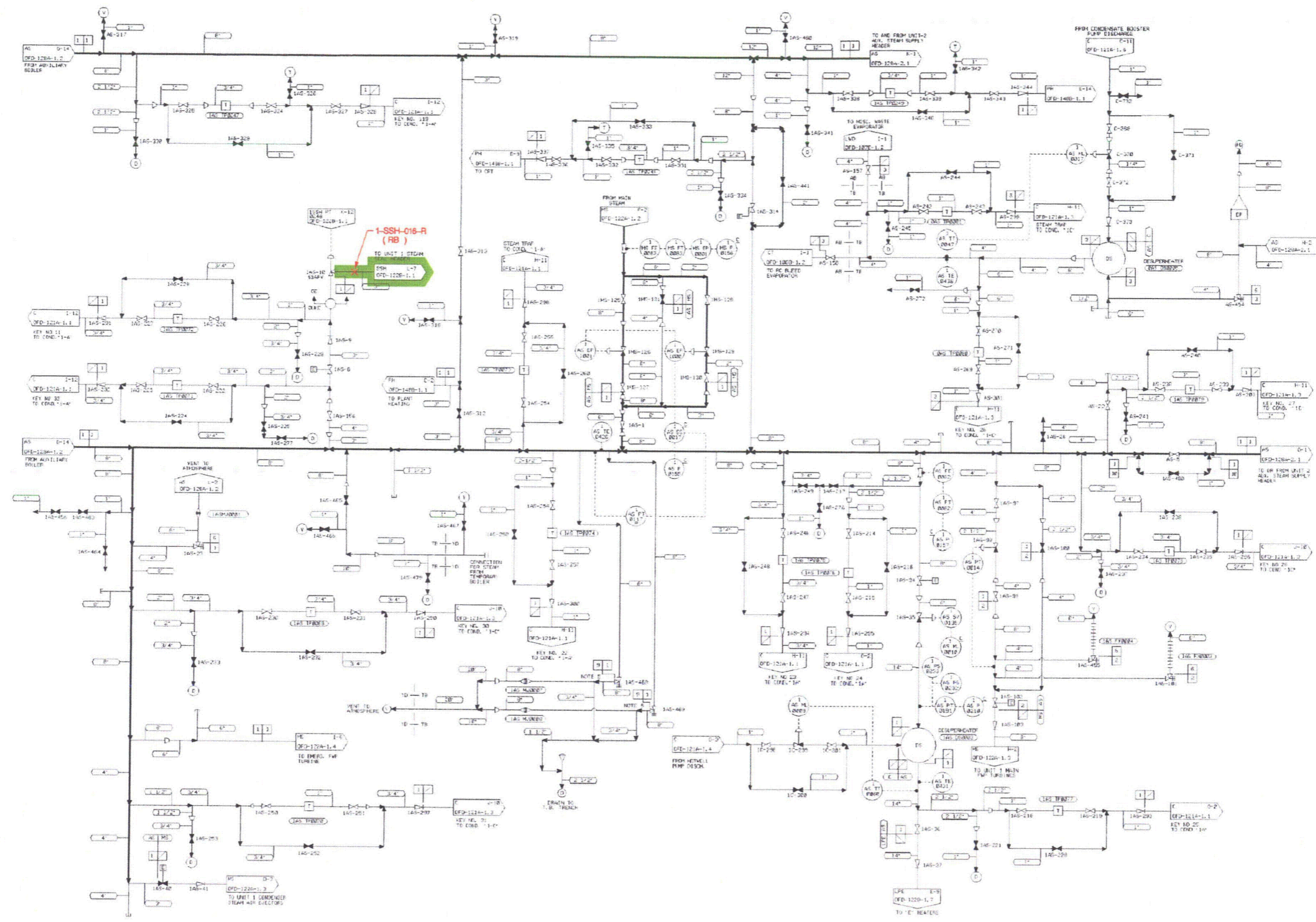
- LEGEND**
- High Energy Piping (Unit 1)
  - High Energy Piping (Unit 2)
  - High Energy Piping (Unit 3)
  - X High Energy Line Break Location
  - N-SYS-NNN (-N) Break Number
  - TE Terminal End (Break)
  - RB Running Break
  - CR Critical Crack
  - IB Intermediate Break
  - ▶ Running Break Boundary

**FIGURE 4.1-12**  
**STEAM SEAL HEADER SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 (Sheet 2 of 3)

**UNIT 1**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-122B-1.8 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.





**LEGEND**

- - High Energy Piping (Unit 1)
- - High Energy Piping (Unit 2)
- - High Energy Piping (Unit 3)
- X - High Energy Line Break Location
- N-SYS-NNN (-N) - Break Number
- TE - Terminal End (Break)
- RB - Running Break
- CR - Critical Crack
- IB - Intermediate Break
- |— - Running Break Boundary

**FIGURE 4.1-12**  
**STEAM SEAL HEADER SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 (Sheet 3 of 3)

**UNIT 1**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-128A-1.1 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.

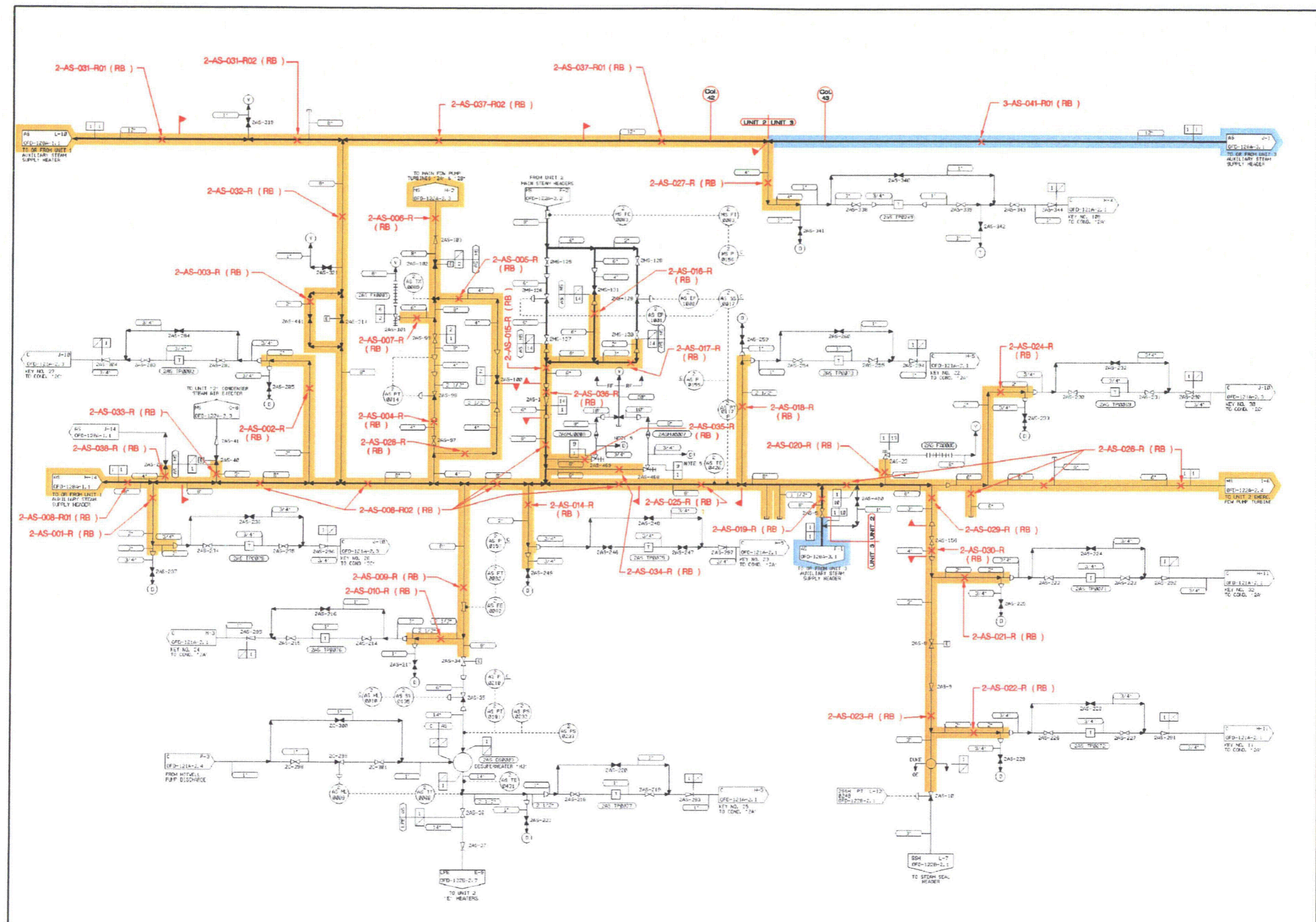
Table 5.1-1  
 Auxiliary Steam System – High Energy Line Data – Unit 2

Break ID	Flow Diagram (OFD-)	Break Type	Pipe OD (in.)	Pipe Thickness (in.)	Building	Layout Drawing (O-)	Floor Elev.	Location (Room No. or Column Numbers)		Op Pres. (psig)	Op Temp. (°F)
2-AS-001-R	128A-2.1	RB	2.375	0.154	TB	1403A, 1411B	775'-0"	H-J	29-30	300	500
2-AS-002-R	128A-2.1	RB	2.375	0.154	TB	1403C, 1411B	796'-6"	K-L	31-32	300	500
2-AS-003-R	128A-2.1	RB	2.375	0.154	TB	1403C, 1403K	796'-6"	L-M	34-35	300	500
2-AS-004-R	128A-2.1	RB	4.500	0.237	TB	1403C, 1403G	796'-6"	J-M	34-36	300	500
2-AS-005-R	128A-2.1	RB	4.500	0.237	TB	1403C, 1403G	796'-6"	J-K	33-35	39	450
2-AS-006-R	128A-2.1 122A-2.3	RB	8.625	0.322	TB	1403C, 1403G	796'-6"	J-K	33-35	39	450
2-AS-007-R	128A-2.1	RB	6.625	0.280	TB	1403C, 1403G	796'-6"	J-K	34-35	39	450
2-AS-008-R01	128A-2.1	RB	8.625	0.322	TB	1403A	775'-0"	H-J	29-30	300	500
2-AS-008-R02	128A-2.1	RB	8.625	0.322	TB	1403C, 1403D	796'-6"	H-M	29-42	300	500
2-AS-009-R	128A-2.1	RB	8.625	0.322	TB	1403D	796'-6"	K-M	36-37	300	500
2-AS-010-R	128A-2.1	RB	2.875	0.203	TB	1403D, 1411B	796'-6"	K-L	36-37	300	500
2-AS-014-R	128A-2.1	RB	2.375	0.154	TB	1403D	796'-6"	L-M	37-38	300	500
2-AS-015-R	128A-2.1	RB	8.625	0.322	TB	1403D, 1403K	796'-6"	L-M	40-41	300	500
2-AS-016-R	128A-2.1	RB	6.625	0.280	TB	1403D, 1403K	796'-6"	L-M	39-41	300	500
2-AS-017-R	128A-2.1	RB	3.500	0.216	TB	1403D, 1403K	796'-6"	L-M	39-40	300	500
2-AS-018-R	128A-2.1	RB	2.875	0.203	TB	1403B, 1411B	775'-0"	K-L	41-42	300	500
2-AS-019-R	128A-2.1	RB	8.625	0.322	TB	1403B	775'-0"	D-E	40-43	300	500
2-AS-020-R	128A-2.1	RB	4.500	0.237	TB	1403B, 1403H	775'-0"	D-E	40-41	300	500
2-AS-021-R	128A-2.1	RB	2.375	0.154	TB	1403B, 1411B	775'-0"	D-E	39-40	300	500
2-AS-022-R	128A-2.1	RB	2.375	0.154	TB	1403D, 1411B	796'-6"	D-E	39-40	300	500
2-AS-023-R	128A-2.1	RB	3.500	0.216	TB	1403B, 1403D	775'-0", 796'-6"	D-E	39-41	300	500
2-AS-024-R	128A-2.1	RB	2.375	0.154	TB	1403B, 1411B	775'-0"	C-D	36-37	300	500
2-AS-025-R	128A-2.1	RB	8.625	0.322	TB	1403B	775'-0"	D-L	39-42	300	500
2-AS-026-R	128A-2.1 122A-2.4	RB	6.625	0.280	TB	1403A, 1403B	775'-0"	B-E	34-40	300	500
2-AS-027-R	128A-2.1	RB	4.500	0.237	TB	1403B	775'-0"	L-M	42-43	300	500

Break ID	Flow Diagram (OFD-)	Break Type	Pipe OD (in.)	Pipe Thickness (in.)	Building	Layout Drawing (O-)	Floor Elev.	Location (Room No. or Column Numbers)		Op Pres. (psig)	Op Temp. (°F)
2-AS-028-R	128A-2.1	RB	4.500	0.237	TB	1403C 1403G	796'-6"	J-K	34-35	300	500
2-AS-029-R	128A-2.1	RB	3.500	0.216	TB	1403B	775'-0"	D-E	40-41	300	500
2-AS-030-R	128A-2.1	RB	4.500	0.237	TB	1403B	775'-0"	D-E	40-41	300	500
2-AS-031-R01	128A-2.1	RB	12.750	0.375	TB	1403A	775'-0"	H-K	29-31	300	500
2-AS-031-R02	128A-2.1	RB	12.750	0.375	TB	1403C	796'-6"	H-M	30-35	300	500
2-AS-032-R	128A-2.1	RB	8.625	0.322	TB	1403C, 1403K	796'-6"	L-M	34-35	300	500
2-AS-033-R	128A-2.1	RB	3.500	0.226	TB	1403C, 1403G	796'-6"	J-K	29-30	300	500
2-AS-034-R	128A-2.1	RB	6.625	0.280	TB	1403D, 1403K	796'-6"	L-M	40-41	300	500
2-AS-035-R	128A-2.1	RB	6.625	0.280	TB	1403D, 1403K	796'-6"	L-M	40-41	300	500
2-AS-036-R	128A-2.1	RB	6.625	0.280	TB	1403D, 1403K	796'-6"	L-M	40-41	300	500
2-AS-037-R01	128A-2.1	RB	12.750	0.375	TB	1403B	775'-0"	K-M	39-43	300	500
2-AS-037-R02	128A-2.1	RB	12.750	0.375	TB	1403C, 1403D	796'-6"	K-M	34-40	300	500
2-AS-038-R	128A-2.1	RB	4.500	0.237	TB	1403A	775'-0"	H-J	29-30	300	500

Notes:

1. Break numbers may not be consecutive
2. Break type: RB – Running Break (Piping not analyzed for seismic), TE – Terminal End, IB – Intermediate Break
3. Building: TB – Turbine Building, AB – Auxiliary Building.
4. Each running break may contain one or more sub-breaks.
5. For the Unit 2 Auxiliary Steam System 41 Running Breaks were considered; the 38 non-excluded, Running Breaks are listed in this table.
6. For each Running Break the elevation of the floor or room that contains the Running Break is given.
7. Other Abbreviations: OD – Outer Diameter, in – inches, Op - operating



**LEGEND**

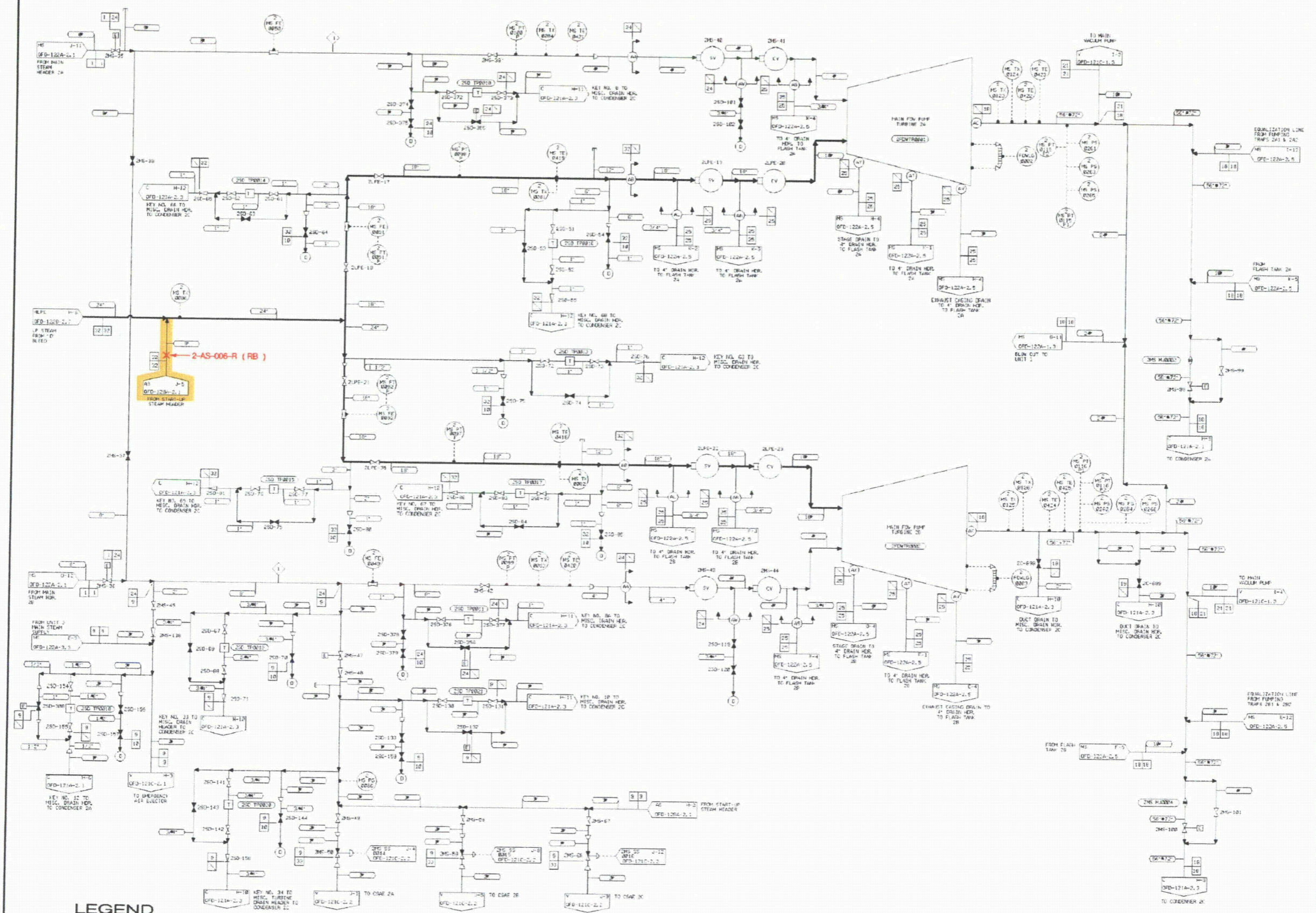
- High Energy Piping (Unit 1)
- High Energy Piping (Unit 2)
- High Energy Piping (Unit 3)
- X High Energy Line Break Location
- N-SYS-NNN (-N) Break Number
- TE Terminal End (Break)
- RB Running Break
- CR Critical Crack
- IB Intermediate Break
- P Running Break Boundary

**FIGURE 5.1-1**  
**AUXILIARY STEAM SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 1 of 3 )

**UNIT 2**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-128A-2.1 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.

**HELB-128A-02-01**

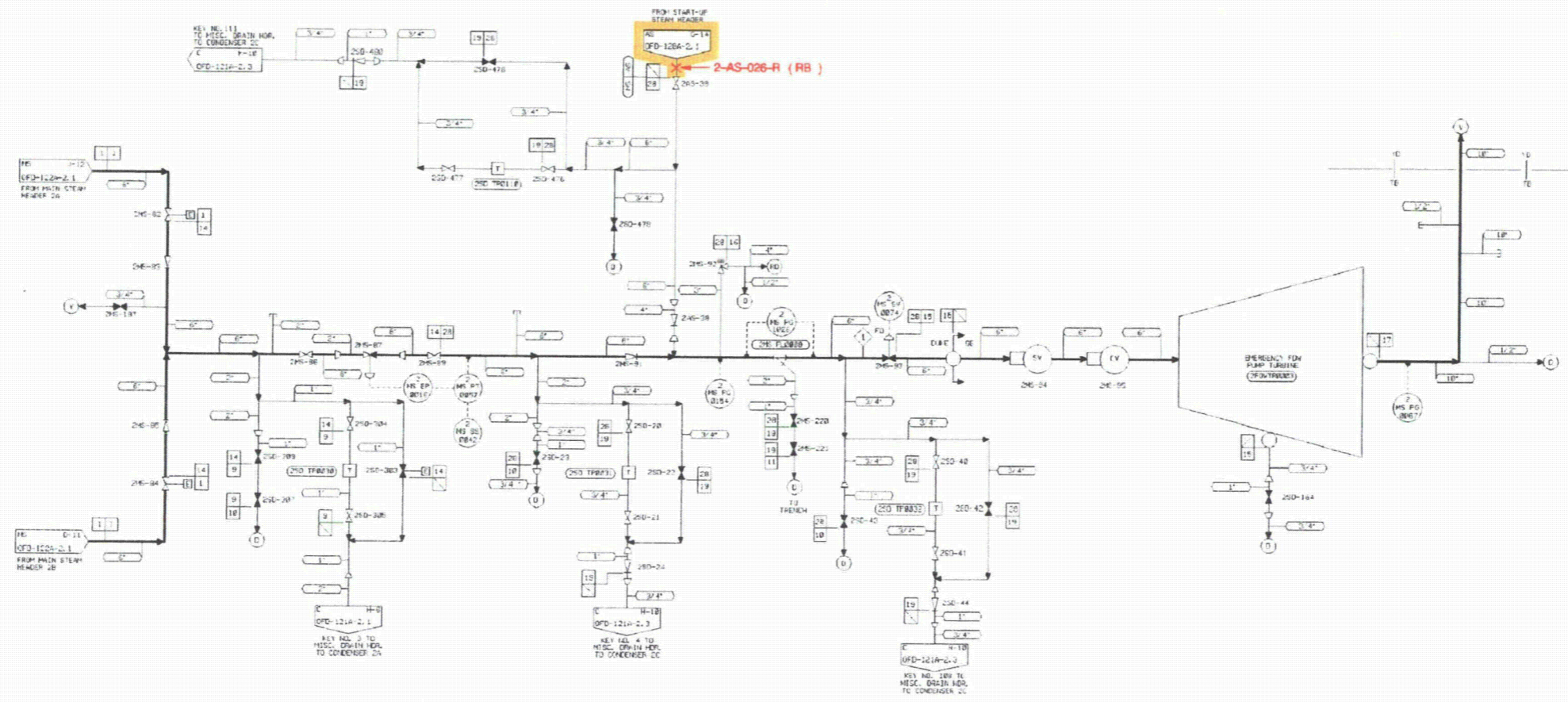


- LEGEND**
- High Energy Piping (Unit 1)
  - High Energy Piping (Unit 2)
  - High Energy Piping (Unit 3)
  - X High Energy Line Break Location
  - N-SYS-NNN (-N) Break Number
  - TE Terminal End (Break)
  - RB Running Break
  - CR Critical Crack
  - IB Intermediate Break
  - Running Break Boundary

**FIGURE 5.1-1**  
**AUXILIARY STEAM SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 2 of 3 )

**UNIT 2**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-122A-2.3 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.



**LEGEND**

- - High Energy Piping (Unit 1)
- - High Energy Piping (Unit 2)
- - High Energy Piping (Unit 3)
- X - High Energy Line Break Location
- N-SYS-NNN (-N) - Break Number
- TE - Terminal End (Break)
- RB - Running Break
- CR - Critical Crack
- IB - Intermediate Break
- P - Running Break Boundary

**FIGURE 5.1-1**  
**AUXILIARY STEAM SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 3 of 3 )

**UNIT 2**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-122A-2.4 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.

HELB-122A-02-04

Table 5.1-2  
 Condensate System – High Energy Line Data – Unit 2

Break ID	Flow Diagram (OFD-)	Break Type	Pipe OD (in)	Pipe Thickness (in)	Building	Layout Drawing (O-)	Floor Elev.	Location (Room No. or Column Numbers)		Op Pres. (psig)	Op Temp. (°F)
2-C-001-R	121A-2.6	RB	24.000	0.688	TB	1400A	775'-0"	F-J	32-36	520	120
2-C-002-R	121A-2.6	RB	12.750	0.375	TB	1400D	775'-0"	G-J	32-33	520	120
2-C-003-R	121A-2.6	RB	12.750	0.375	TB	1400D	775'-0"	G-J	33-34	520	120
2-C-004-R	121A-2.6	RB	12.750	0.375	TB	1400D	775'-0"	G-J	34-35	520	120
2-C-005-R	121A-2.6	RB	16.000	0.500	TB	1400D	775'-0"	G-J	32-34	520	120
2-C-006-R	121A-2.6	RB	16.000	0.500	TB	1400D	775'-0"	G-J	33-34	520	120
2-C-007-R	121A-2.6	RB	16.000	0.500	TB	1400D	775'-0"	G-J	34-35	520	120
2-C-008-R01	121A-2.6	RB	14.000	0.375	TB	1400A 1400B	775'-0"	F-G	35-37	520	120
2-C-008-R02	121A-2.6	RB	14.000	0.375	TB	1401H	796'-6"	F-G	37	520	120
2-C-009-R01	121A-2.6	RB	14.000	0.375	TB	1400A	775'-0"	F-G	35	520	120
2-C-009-R02	121A-2.6	RB	14.000	0.375	TB	1401H	796'-6"	F-G	35	520	120
2-C-010-R01	121A-2.6	RB	14.000	0.375	TB	1400A	775'-0"	F-G	33	520	120
2-C-010-R02	121A-2.6	RB	14.000	0.375	TB	1401H	796'-6"	F-G	33	520	120
2-C-011-R	121A-2.6 121B-2.4	RB	4.500	0.237	TB	1407A 1407F	775'-0"	C-H	31-33	520	120
2-C-012-R	121A-2.6	RB	3.500	0.216	TB	1403A	775'-0"	G-H	35-36	520	120
2-C-013-R01	121A-2.6	RB	14.000	0.375	TB	1400A 1400B	775'-0"	F-H	34-37	520	155
2-C-013-R02	121A-2.6	RB	14.000	0.375	TB	1401B	796'-6"	F-G	36-37	520	155
2-C-014-R01	121A-2.6	RB	14.000	0.375	TB	1400A	775'-0"	F-H	34-35	520	155
2-C-014-R02	121A-2.6	RB	14.000	0.375	TB	1401A	796'-6"	F-G	34-35	520	155
2-C-015-R01	121A-2.6	RB	14.000	0.375	TB	1400A	775'-0"	F-H	32-33	520	155
2-C-015-R02	121A-2.6	RB	14.000	0.375	TB	1401A	796'-6"	F-G	32-33	520	155
2-C-016-R	121A-2.9	RB	16.000	0.500	TB	1400B	775'-0"	J-L	36-38	520	155
2-C-017-R	121A-2.9	RB	16.000	0.500	TB	1400B	775'-0"	K-L	36-38	520	155
2-C-018-R	121A-2.6	RB	20.000	0.500	TB	1400A	775'-0"	F-G	33-36	520	120
2-C-019-R	121A-2.9	RB	24.000	0.688	TB	1400B	775'-0"	K-L	36-38	520	155
2-C-020-R	121A-2.9	RB	24.000	0.688	TB	1400B	775'-0"	K-L	37-38	520	215
2-C-021-R	121A-2.10	RB	18.000	0.500	TB	1400B	775'-0"	J-L	38-39	520	215
2-C-022-R	121A-2.10	RB	18.000	0.500	TB	1400B	775'-0"	K-L	38-39	520	215
2-C-023-R	121A-2.10	RB	18.000	0.500	TB	1400B	775'-0"	J-L	38-40	520	290
2-C-024-R	121A-2.10	RB	18.000	0.500	TB	1400B	775'-0"	K-L	38-40	520	290
2-C-025-R01	121A-2.10	RB	24.000	0.688	TB	1400B	775'-0"	J-L	39-40	520	290
2-C-025-R02	121A-2.10	RB	24.000	0.688	TB	1401B	796'-6"	J-K	39-41	520	290
2-C-026-R01	121A-2.10	RB	24.000	0.688	TB	1400B	775'-0"	K-L	39-40	520	290
2-C-026-R02	121A-2.10	RB	24.000	0.688	TB	1401B	796'-6"	K-L	39-41	520	290
2-C-027-R	121A-2.10	RB	24.000	0.688	TB	1400B	775'-0"	J-K	40-41	520	370
2-C-028-R	121A-2.10	RB	24.000	0.688	TB	1400B	775'-0"	K-L	40-41	520	370
2-C-029-R	121A-2.10	RB	24.000	0.688	TB	1400B	775'-0"	K-L	39-40	520	290

Table 5.1-2  
 Condensate System – High Energy Line Data – Unit 2

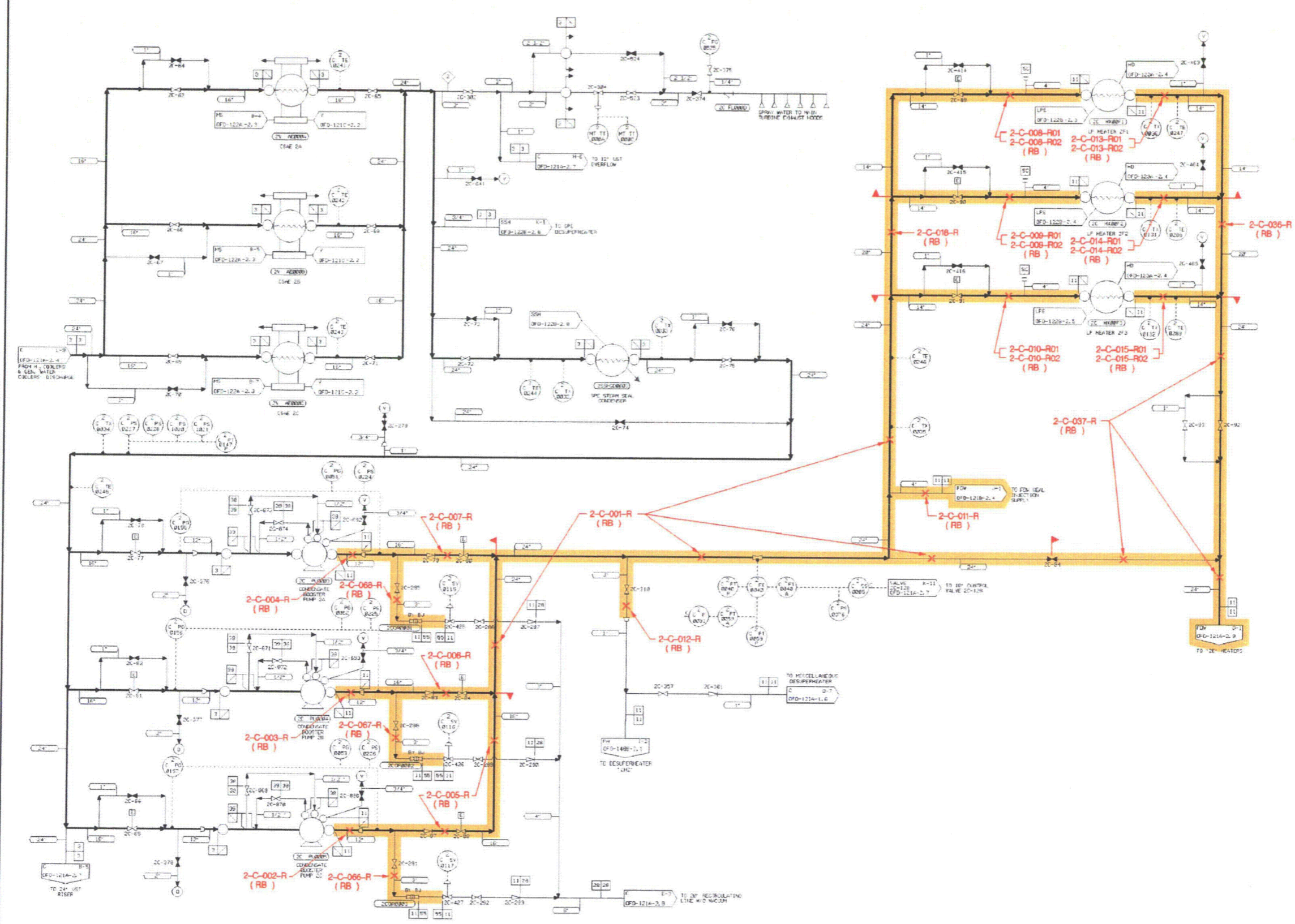
Break ID	Flow Diagram (OFD-)	Break Type	Pipe OD (in)	Pipe Thickness (in)	Building	Layout Drawing (O-)	Floor Elev.	Location (Room No. or Column Numbers)		Op Pres. (psig)	Op Temp. (°F)
2-C-030-R	121A-2.10	RB	30.000	0.689	TB	1400B	775'-0"	K-L	39-41	520	290
2-C-031-R	121A-2.10	RB	24.000	0.688	TB	1400B	775'-0"	J-L	40-42	520	370
2-C-032-R	121A-2.10	RB	24.000	0.688	TB	1400B	775'-0"	K-L	40-42	520	370
2-C-033-R01	121A-2.10 121B-2.1	RB	30.000	0.689	TB	1400B	775'-0"	E-L	41-42	520	370
2-C-033-R02	121A-2.10 121B-2.1	RB	30.000	0.689	TB	1401B	796'-6"	B-F	37-42	520	370
2-C-036-R	121A-2.6	RB	20.000	0.500	TB	1400A	775'-0"	G-H	32-35	520	155
2-C-037-R	121A-2.6 121A-2.9	RB	24.000	0.688	TB	1400A 1400B	775'-0"	G-L	32-38	520	155
2-C-039-R	121A-2.9	RB	16.000	0.500	TB	1400B	775'-0"	J-L	37-38	520	215
2-C-040-R	121A-2.9	RB	16.000	0.500	TB	1400B	775'-0"	K-L	37-38	520	215
2-C-041-R	121A-2.9 121A-2.10	RB	24.000	0.688	TB	1400B	775'-0"	K-L	37-39	520	215
2-C-042-R	121A-2.10	RB	24.000	0.688	TB	1400B	775'-0"	K-L	38-39	520	215
2-C-043-R	121A-2.10	RB	24.000	0.688	TB	1400B	775'-0"	K-L	38-40	520	290
2-C-044-R	121A-2.10	RB	30.000	0.689	TB	1400B	775'-0"	K-L	40-41	520	290
2-C-045-R	121A-2.10	RB	30.000	0.689	TB	1400B	775'-0"	K-L	40-42	520	370
2-C-046-R	121A-2.10	RB	30.000	0.689	TB	1400G	775'-0"	J-K	41-42	520	370
2-C-047-R	121A-2.10	RB	30.000	0.689	TB	1400G	775'-0"	F-G	41-42	520	370
2-C-052-R	121B-2.4	RB	2.375	0.154	TB	1407F	775'-0"	C-D	31-32	520	120
2-C-053-R	121B-2.4	RB	2.375	0.154	TB	1407F	775'-0"	C-D	31-32	520	120
2-C-058-R	121B-2.4	RB	2.375	0.154	TB	1407F	775'-0"	C-D	29-30	520	120
2-C-059-R	121B-2.4	RB	2.375	0.154	TB	1407F	775'-0"	C-D	29-30	520	120
2-C-065-R01	121A-2.10	RB	18.000	0.500	TB	1400B	775'-0"	J-K	40-42	520	370
2-C-065-R02	121A-2.10	RB	18.000	0.500	TB	1401B	796'-6"	J-K	39-41	520	370
2-C-066-R	121A-2.6	RB	3.500	0.216	TB	1403G	775'-0"	G-H	32-33	520	120
2-C-067-R	121A-2.6	RB	3.500	0.216	TB	1403G	775'-0"	G-H	33-34	520	120
2-C-068-R	121A-2.6	RB	3.500	0.216	TB	1403G	775'-0"	G-H	34-35	520	120
2-C-070-R	121B-2.4	RB	2.875	0.203	TB	1407F	775'-0"	C-D	30-31	520	120
2-C-071-R	121B-2.4	RB	2.875	0.203	TB	1407F	775'-0"	C-D	30-32	520	120
2-C-072-R	121B-2.4	RB	2.875	0.203	TB	1407F	775'-0"	C-D	30-32	520	120
2-C-073-R	121B-2.4	RB	4.500	0.237	TB	1407F	775'-0"	C-D	30-31	520	120
2-C-074-R	121B-2.4	RB	4.500	0.237	TB	1407F	775'-0"	C-D	30-31	520	120
2-C-075-R	121B-2.4	RB	4.500	0.237	TB	1407F	775'-0"	C-D	30-31	520	120
2-C-076-R	121B-2.4	RB	2.875	0.203	TB	1407F	775'-0"	C-D	30-32	520	120
2-C-077-R	121B-2.4	RB	2.875	0.203	TB	1407F	775'-0"	C-D	29-31	520	120
2-C-078-R	121B-2.4	RB	3.500	0.216	TB	1407F	775'-0"	C-D	30-31	520	120



Break ID	Flow Diagram (OFD-)	Break Type	Pipe OD (in)	Pipe Thickness (in)	Building	Layout Drawing (O-)	Floor Elev.	Location (Room No. or Column Numbers)		Op Pres. (psig)	Op Temp. (°F)
2-C-079-R	121B-2.4	RB	3.500	0.216	TB	1407F	775'-0"	C-D	30-31	520	120
2-C-080-R	121B-2.4	RB	2.875	0.203	TB	1407F	775'-0"	C-D	30-32	520	120
2-C-081-R	121B-2.4	RB	2.875	0.203	TB	1407F	775'-0"	C-D	29-31	520	120
2-C-082-R	121B-2.4	RB	1.900	0.145	TB	1407F	775'-0"	C-D	31-32	520	120
2-C-083-R	121B-2.4	RB	1.900	0.145	TB	1407F	775'-0"	C-D	31-32	520	120
2-C-084-R	121B-2.4	RB	1.900	0.145	TB	1407F	775'-0"	C-D	29-30	520	120
2-C-085-R	121B-2.4	RB	1.900	0.145	TB	1407F	775'-0"	C-D	29-30	520	120
2-C-086-R	121B-2.4	RB	2.875	0.203	TB	1407F	775'-0"	C-D	30-31	520	120
2-C-087-R01	121B-2.1	RB	24.000	0.688	TB	1400A	775'-0"	B-D	30-32	520	370
2-C-087-R02	121B-2.1	RB	24.000	0.688	TB	1401A 1401B	796'-6"	B-C	31-38	520	370
2-C-088-R01	121B-2.1	RB	24.000	0.688	TB	1400A	775'-0"	B-E	28-32	520	370
2-C-088-R02	121B-2.1	RB	24.000	0.688	TB	1401A 1401B	796'-6"	B-C	31-38	520	370
2-C-089-R	121B-2.1	RB	20.000	0.500	TB	1400C	775'-0"	C-D	31-32	520	370
2-C-090-R	121B-2.1	RB	20.000	0.500	TB	1400C	775'-0"	C-D	29-30	520	370
2-C-091-R	121B-2.4	RB	4.500	0.237	TB	1407F	775'-0"	C-D	30-32	520	120
2-C-092-R	121B-2.1	RB	1.900	0.145	TB	1403J	775'-0"	C-D	31-32	520	370
2-C-093-R	121B-2.1	RB	1.900	0.145	TB	1403J	775'-0"	C-D	29-30	520	370
2-C-094-R	121B-2.1	RB	1.900	0.145	TB	1400C	775'-0"	C-D	31-32	520	370
2-C-095-R	121B-2.1	RB	1.900	0.145	TB	1400C	775'-0"	C-D	29-30	520	370

Notes:

1. Break numbers may not be consecutive
2. Break type: RB – Running Break (Piping not analyzed for seismic), TE – Terminal End, IB – Intermediate Break
3. Building: TB – Turbine Building, AB – Auxiliary Building.
4. Each running break may contain one or more sub-breaks.
5. For the Unit 2 Condensate System 107 Running Breaks were considered; the 90 non-excluded, Running Breaks are listed in this table.
6. For each Running Break the elevation of the floor or room that contains the Running Break is given.
7. Other Abbreviations: OD – Outer Diameter, in – inches, Op - operating



**LEGEND**

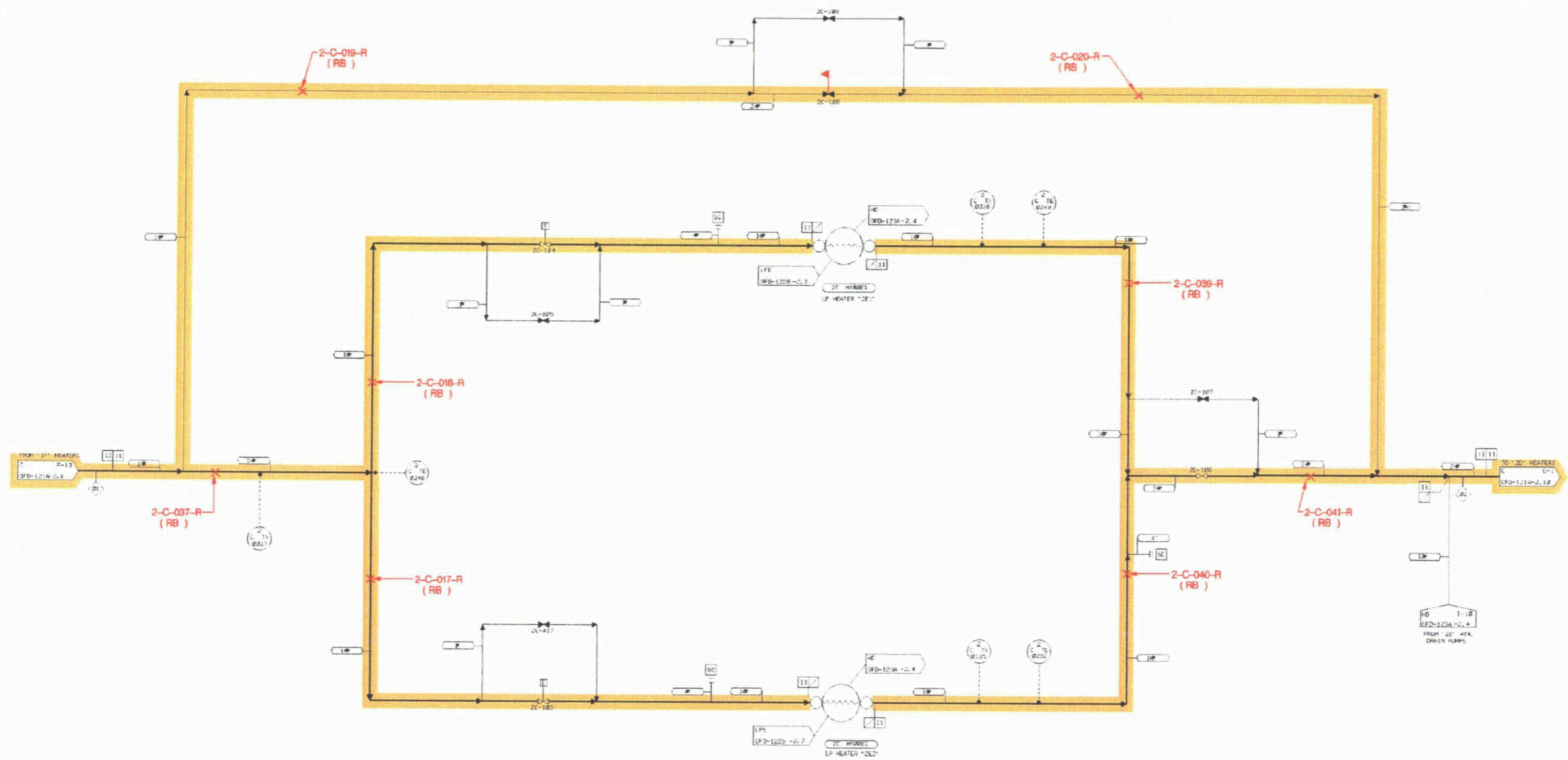
- - High Energy Piping (Unit 1)
- - High Energy Piping (Unit 2)
- - High Energy Piping (Unit 3)
- X - High Energy Line Break Location
- N-SYS-NNN (H) - Break Number
- TE - Terminal End (Break)
- RB - Running Break
- CR - Critical Crack
- IB - Intermediate Break
- ▶ - Running Break Boundary

**FIGURE 5.1-2  
CONDENSATE SYSTEM**

High Energy Lines, Piping Configurations,  
Boundaries, Break Locations and Numbers  
( Sheet 1 of 5 )

**UNIT 2**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
BREAK PURPOSES ONLY.  
REFERENCE FLOW DIAGRAM OFD-121A-2.6 FOR  
COMPLETE SYSTEM DESIGN INFORMATION.



**LEGEND**

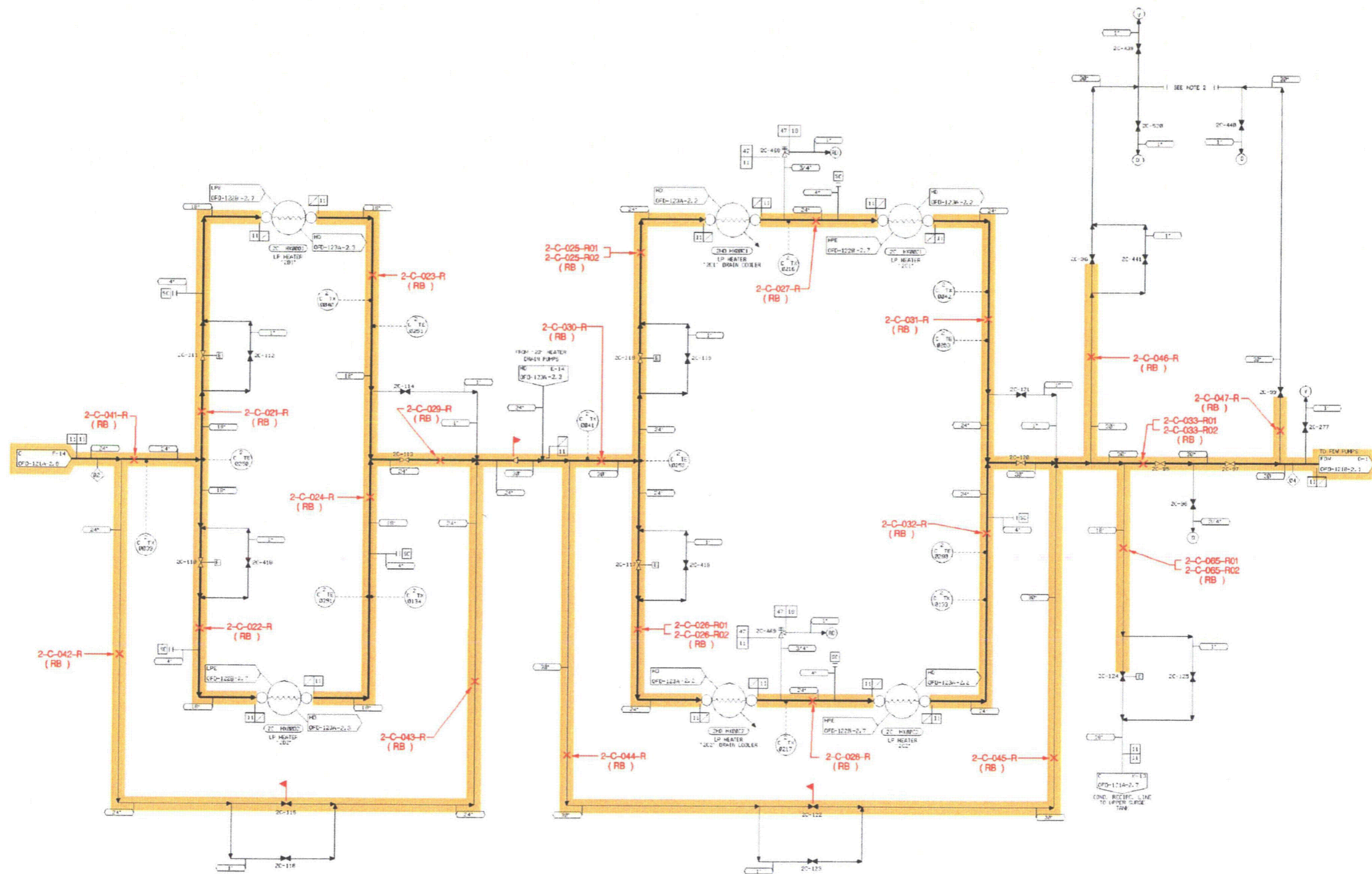
- - High Energy Piping (Unit 1)
- - High Energy Piping (Unit 2)
- - High Energy Piping (Unit 3)
- X - High Energy Line Break Location
- N-SYS-NNN (-N) - Break Number
- TE - Terminal End (Break)
- RB - Running Break
- CR - Critical Crack
- IB - Intermediate Break
- ▶ - Running Break Boundary

**FIGURE 5.1-2**  
**CONDENSATE SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 2 of 5 )

**UNIT 2**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-121A-2.9 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.

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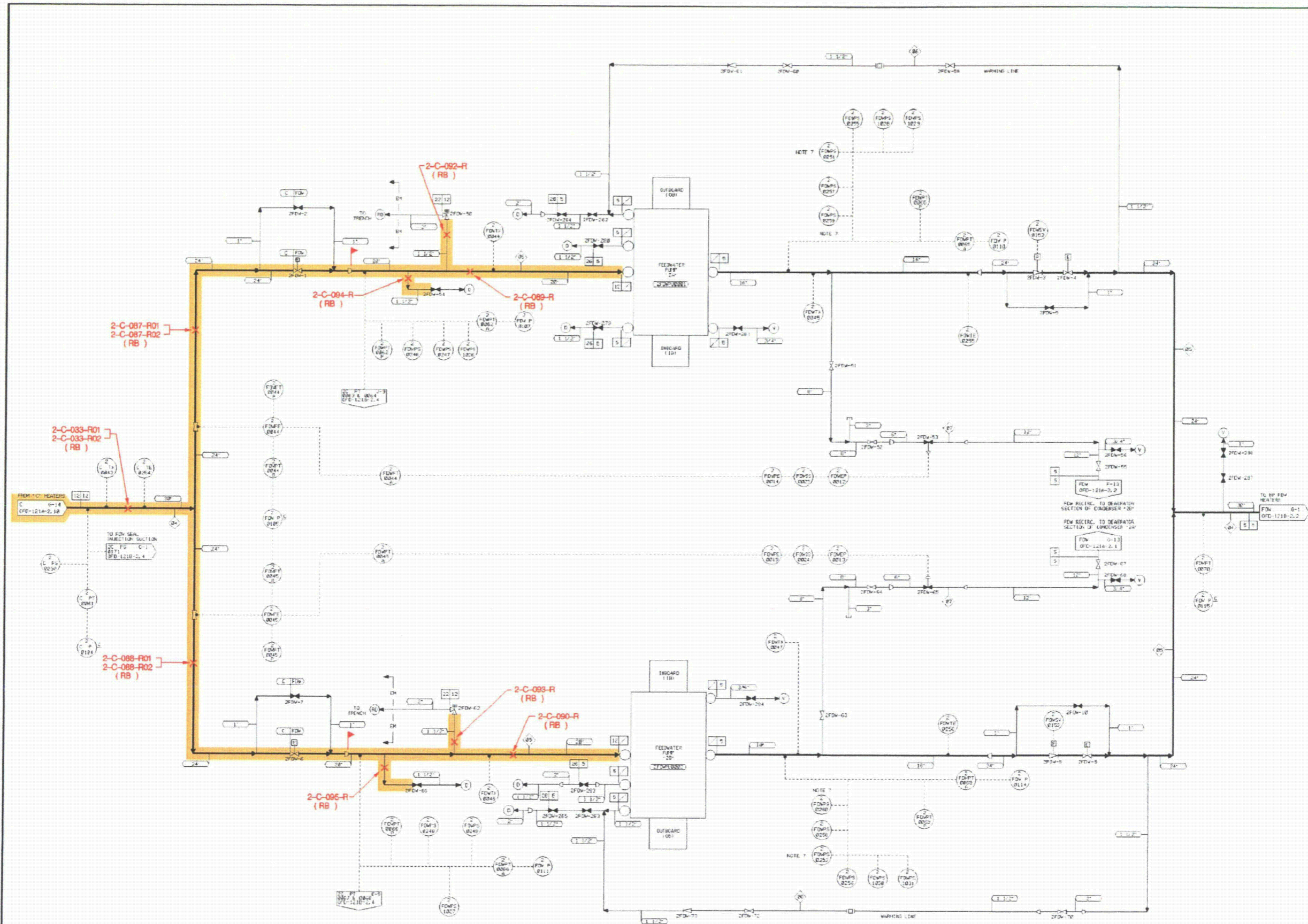
- LEGEND**
- - High Energy Piping (Unit 1)
  - - High Energy Piping (Unit 2)
  - - High Energy Piping (Unit 3)
  - X - High Energy Line Break Location
  - N-SYS-NNN (-N) - Break Number
  - TE - Terminal End (Break)
  - RB - Running Break
  - CR - Critical Crack
  - IB - Intermediate Break
  - ▬ - Running Break Boundary

**FIGURE 5.1-2**  
**CONDENSATE SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 (Sheet 3 of 5)

**UNIT 2**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-121A-2.10 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.

HELB-121A-02-10



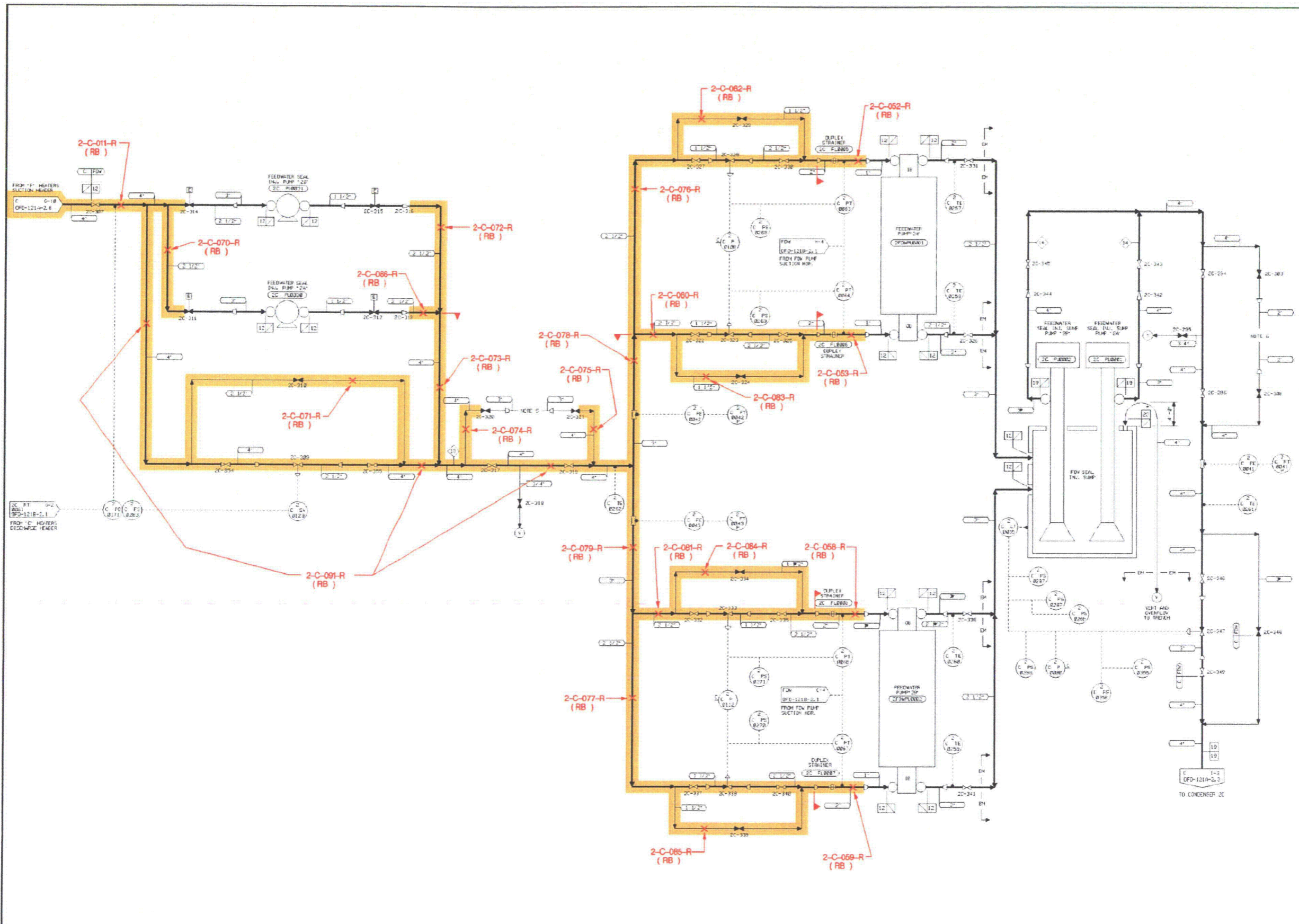
- LEGEND**
- - High Energy Piping (Unit 1)
  - - High Energy Piping (Unit 2)
  - - High Energy Piping (Unit 3)
  - X - High Energy Line Break Location
  - N-SYS-NNN (-N) - Break Number
  - TE - Terminal End (Break)
  - RB - Running Break
  - CR - Critical Crack
  - IB - Intermediate Break
  - P - Running Break Boundary

**UNIT 2**

**FIGURE 5.1-2**  
**CONDENSATE SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 4 of 5 )

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-121B-2.1 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.

HFI R-121B-02-01



- LEGEND**
- - High Energy Piping (Unit 1)
  - - High Energy Piping (Unit 2)
  - - High Energy Piping (Unit 3)
  - X - High Energy Line Break Location
  - N-SYS-NNN (-N) - Break Number
  - TE - Terminal End (Break)
  - RB - Running Break
  - CR - Critical Crack
  - IB - Intermediate Break
  - ↑ - Running Break Boundary

**FIGURE 5.1-2**  
**CONDENSATE SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 5 of 5 )

**UNIT 2**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-121B-2.4 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.

Break ID	Flow Diagram (OFD-)	Break Type	Pipe OD (in)	Pipe Thickness (in)	Building	Layout Drawing (O-) See Note 6	Floor Elev.	Location (Room No. or Column Numbers)		Op Pres. (psig)	Op Temp. (°F)
2-ES-001-R	122B-2.2	RB	14.000	0.375	TB	1401G	796'-6"	F-E	38-39	455	465
2-ES-002-R	122B-2.2	RB	16.000	0.375	TB	1401E	796'-6"	J-K	37-38	455	465
2-ES-003-R	122B-2.2	RB	20.000	0.500	TB	1401B	796'-6"	E-K	37-39	455	465
2-ES-004-R	122B-2.2 122C-2.1	RB	16.000	0.500	TB	1401B	796'-6"	G-K	37-42	460	480
2-ES-005-R	122B-2.2 122B-2.6	RB	1.900	0.145	TB	1401B	796'-6"	J-K	38-39	455	465
2-ES-006-R	122B-2.2	RB	12.750	0.375	TB	1401G	796'-6"	F-E	38-39	275	420
2-ES-007-R	122B-2.2 122B-2.6	RB	18.000	0.375	TB	1401A, 1401B	796'-6"	E-L	35-39	275	420
2-ES-008-R	122B-2.2	RB	1.660	0.140	TB	1403D	796'-6"	F-G	38-39	275	420
2-ES-009-R	122B-2.2	RB	1.900	0.145	TB	1403D	796'-6"	F-G	38-39	275	420
2-ES-010-R	122B-2.2	RB	42.000	0.625	TB	1401B	796'-6"	E-H	38-40	165	375
2-ES-011-R	122B-2.2	RB	24.000	0.375	TB	1401B	796'-6"	E-F	39-40	165	375
2-ES-012-R	122B-2.2 122B-2.7	RB	30.000	0.375	TB	1401B	796'-6"	E-K	39-42	165	375
2-ES-013-R	122B-2.2 148B-2.1	RB	4.500	0.237	TB	1403D	796'-6"	F-G	40-41	165	375
2-ES-014-R	122B-2.2	RB	42.000	0.625	TB	1401B	796'-6"	C-F	38-40	165	375
2-ES-015-R	122B-2.2	RB	42.000	0.625	TB	1401B	796'-6"	E-J	38-39	165	375
2-ES-016-R	122B-2.2 122B-2.3	RB	30.000	0.500	TB	1401B	796'-6"	C-D	39-41	155	510
2-ES-017-R	122B-2.2 122B-2.4	RB	36.000	0.500	TB	1401A, 1401B	796'-6"	C-E	35-40	155	510
2-ES-018-R	122B-2.2 122B-2.3	RB	30.000	0.500	TB	1401B	796'-6"	G-H	39-41	155	510
2-ES-019-R	122B-2.2 122B-2.4	RB	36.000	0.500	TB	1401A, 1401B	796'-6"	F-H	35-40	155	510
2-ES-020-R	122B-2.2 122B-2.5	RB	36.000	0.500	TB	1401A, 1401B	796'-6"	F-J	33-40	155	510
2-ES-021-R	122B-2.2 122B-2.3	RB	30.000	0.500	TB	1401B	796'-6"	G-J	39-41	155	510
2-ES-022-R	122B-2.2 122B-2.5	RB	36.000	0.500	TB	1401A, 1401B	796'-6"	B-E	33-40	155	510
2-ES-023-R	122B-2.2 122B-2.3	RB	30.000	0.500	TB	1401B	796'-6"	B-D	39-41	155	510
2-ES-024-R	122B-2.2	RB	42.000	0.625	TB	1401B	796'-6"	B-F	38-39	165	375
2-ES-025-R	122B-2.3	RB	18.000	0.375	TB	1200-4	796'-6"	F-G	37-38	155	510
2-ES-026-R	122B-2.3	RB	18.000	0.375	TB	1200-4	796'-6"	D-E	37-38	155	510
2-ES-027-R	122B-2.3	RB	36.000	0.500	TB	1401B	796'-6"	C-E	37-40	155	510
2-ES-028-R	122B-2.3	RB	36.000	0.500	TB	1401B	796'-6"	F-H	37-40	155	510

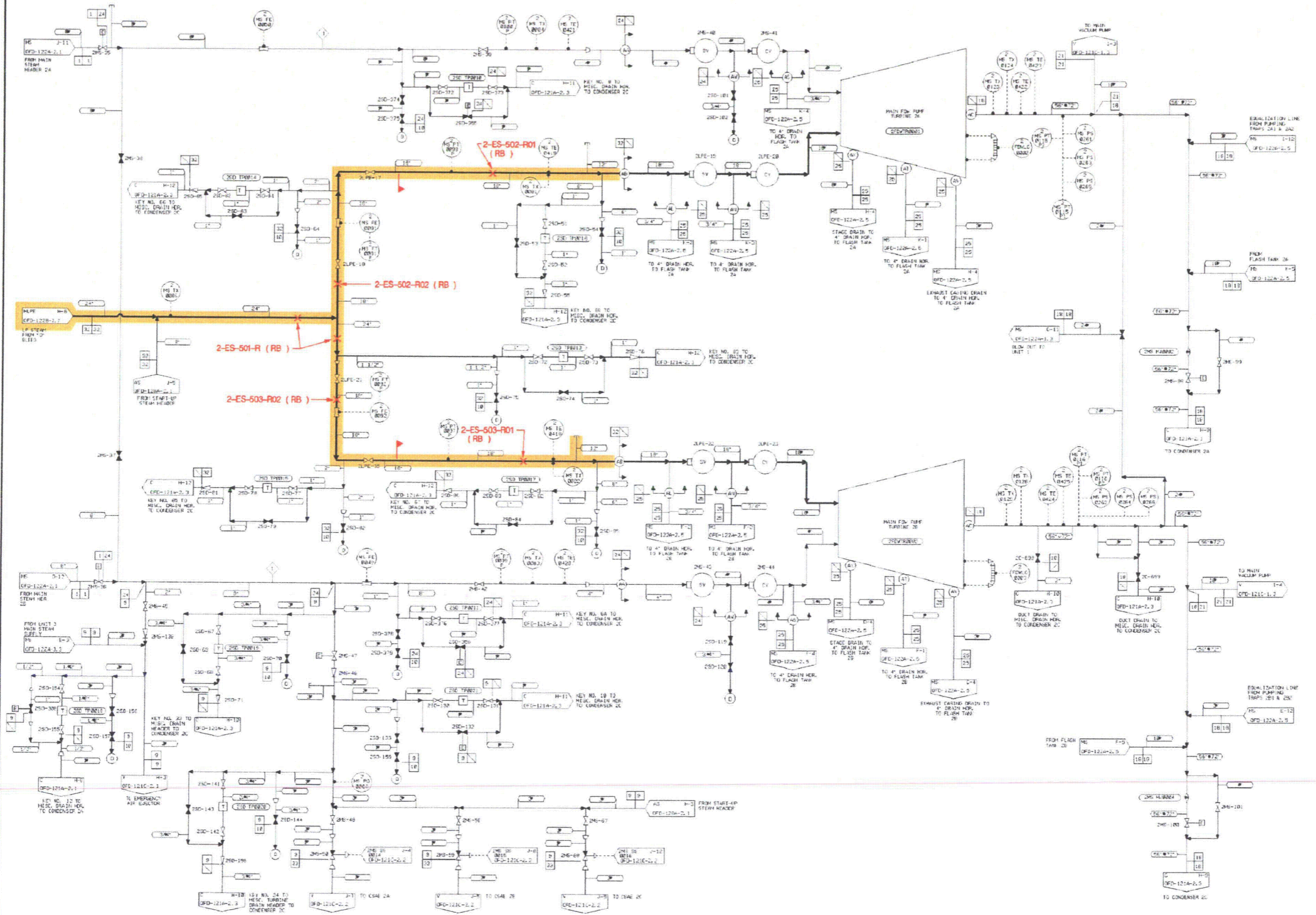
Break ID	Flow Diagram (OFD-)	Break Type	Pipe OD (in)	Pipe Thickness (in)	Building	Layout Drawing (O-) See Note 6	Floor Elev.	Location (Room No. or Column Numbers)		Op Pres. (psig)	Op Temp. (°F)
2-ES-029-R	122B-2.3	RB	18.000	0.375	TB	1401B	796'-6"	E-F	37-38	45	295
2-ES-030-R	122B-2.3	RB	18.000	0.375	TB	1401B	796'-6"	E-F	36-37	45	295
2-ES-031-R	122B-2.3 122B-2.7	RB	20.000	0.375	TB	1401B	796'-6"	E-H	36-38	45	295
2-ES-032-R	122B-2.3 122B-2.7	RB	20.000	0.375	TB	1401B	796'-6"	E-H	36-37	45	295
2-ES-033-R	122B-2.3	RB	2.875	0.203	TB	1401L	796'-6"	F-G	37-38	45	295
2-ES-034-R	122B-2.3	RB	2.875	0.203	TB	1401L	796'-6"	F-G	36-37	45	295
2-ES-041-R	122B-2.4	RB	18.000	0.375	TB	1200-4	796'-6"	D-E	35-36	155	510
2-ES-042-R	122B-2.4	RB	18.000	0.375	TB	1200-4	796'-6"	F-G	35-36	155	510
2-ES-043-R	122B-2.4	RB	18.000	0.375	TB	1401A	796'-6"	E-F	35-36	45	295
2-ES-044-R	122B-2.4	RB	18.000	0.375	TB	1401A	796'-6"	E-F	34-35	45	295
2-ES-045-R	122B-2.4 122B-2.7	RB	20.000	0.375	TB	1401A	796'-6"	E-H	35-36	45	295
2-ES-046-R	122B-2.4 122B-2.7	RB	20.000	0.375	TB	1401A	796'-6"	E-H	34-35	45	295
2-ES-047-R	122B-2.4	RB	2.875	0.203	TB	1401L	796'-6"	F-G	35-36	45	295
2-ES-048-R	122B-2.4	RB	2.875	0.203	TB	1401L	796'-6"	F-G	34-35	45	295
2-ES-055-R	122B-2.5	RB	18.000	0.375	TB	1200-4	796'-6"	F-G	33-34	155	510
2-ES-056-R	122B-2.5	RB	18.000	0.375	TB	1200-4	796'-6"	D-E	33-34	155	510
2-ES-057-R	122B-2.5	RB	18.000	0.375	TB	1401A	796'-6"	E-F	33-34	45	295
2-ES-058-R	122B-2.5	RB	18.000	0.375	TB	1401A	796'-6"	E-F	32-33	45	295
2-ES-059-R	122B-2.5 122B-2.7	RB	20.000	0.375	TB	1401A	796'-6"	E-H	33-34	45	295
2-ES-060-R	122B-2.5 122B-2.7	RB	20.000	0.375	TB	1401A	796'-6"	E-H	32-34	45	295
2-ES-061-R	122B-2.5	RB	2.875	0.203	TB	1401L	796'-6"	F-G	32-33	45	295
2-ES-062-R	122B-2.5	RB	2.875	0.203	TB	1401L	796'-6"	F-G	33-34	45	295
2-ES-073-R	122B-2.2 122B-2.6	RB	16.000	0.375	TB	1401A	796'-6"	H-L	34-38	455	465
2-ES-074-R	122B-2.6	RB	12.750	0.375	TB	1401A	796'-6"	J-L	33-35	455	465
2-ES-075-R	122B-2.6	RB	12.750	0.375	TB	1401A, 1401B	796'-6"	J-L	35-37	275	420
2-ES-076-R	122B-2.6	RB	14.000	0.375	TB	1401A	796'-6"	J-K	35-36	275	420
2-ES-077-R	122B-2.6	RB	14.000	0.375	TB	1401A	796'-6"	K-L	35-36	275	420
2-ES-078-R	122B-2.7	RB	30.000	0.375	TB	1401H	796'-6"	G-H	36-37	45	295
2-ES-079-R	122B-2.7	RB	30.000	0.375	TB	1401H	796'-6"	G-H	33-35	45	295
2-ES-080-R	122B-2.7	RB	48.000	0.375	TB	1401H	796'-6"	G-H	34-36	45	295
2-ES-081-R	122B-2.7	RB	48.000	0.375	TB	1401A	796'-6"	G-J	35-36	45	295



Break ID	Flow Diagram (OFD-)	Break Type	Pipe OD (in)	Pipe Thickness (in)	Building	Layout Drawing (O-) See Note 6	Floor Elev.	Location (Room No. or Column Numbers)		Op Pres. (psig)	Op Temp. (°F)
2-ES-082-R	122B-2.7	RB	42.000	0.375	TB	1401A, 1401B	796'-6"	H-L	35-40	45	295
2-ES-083-R	122B-2.7	RB	30.000	0.375	TB	1401B	796'-6"	J-L	38-40	45	295
2-ES-084-R	122B-2.6	RB	2.875	0.203	TB	1401A	796'-6"	K-L	34-35	455	465
2-ES-085-R	122B-2.7	RB	2.375	0.154	TB	1401B	796'-6"	K-L	38-40	45	295
2-ES-086-R	122B-2.7	RB	2.375	0.154	TB	1401B	796'-6"	J-K	39-40	165	375
2-ES-087-R	122B-2.7	RB	24.000	0.375	TB	1401B	796'-6"	K-L	39-41	165	375
2-ES-094-R	122C-2.1	RB	12.750	0.375	TB	1401B	796'-6"	C-H	41-42	460	480
2-ES-095-R	122C-2.1	RB	8.625	0.322	TB	1200-78	796'-6"	G-J	40-42	460	480
2-ES-096-R	122C-2.1	RB	10.750	0.365	TB	1200-78	796'-6"	H-J	40-41	460	480
2-ES-097-R	122C-2.1	RB	10.750	0.365	TB	1200-78	796'-6"	G-H	41-42	460	480
2-ES-098-R	122C-2.1	RB	8.625	0.322	TB	1200-79	796'-6"	B-D	40-42	460	480
2-ES-099-R	122C-2.1	RB	10.750	0.365	TB	1200-79	796'-6"	B-C	40-41	460	480
2-ES-100-R	122C-2.1	RB	10.750	0.365	TB	1200-79	796'-6"	C-D	41-42	460	480
2-ES-211-R	122B-2.2	RB	24.000	0.375	TB	1401B	796'-6"	E-F	38-40	165	375
2-ES-274-R	122B-2.6	RB	12.750	0.375	TB	1401A	796'-6"	K-M	33-35	455	465
2-ES-275-R	122B-2.6	RB	12.750	0.375	TB	1401A	796'-6"	K-M	35-37	275	420
2-ES-283-R	122B-2.7	RB	30.000	0.375	TB	1401B	796'-6"	K-L	38-40	45	295
2-ES-287-R	122B-2.7	RB	24.000	0.375	TB	1401B	796'-6"	K-L	39-41	165	375
2-ES-501-R	122B-2.7 122A-2.3	RB	24.000	0.375	TB	1401A, 1401H	796'-6"	G-K	31-36	45	295
2-ES-502-R01	122A-2.3	RB	18.000	0.375	TB	1400A, 1400C	775'-0"	B-Dd	31-32	45	295
2-ES-502-R02	122A-2.3	RB	18.000	0.375	TB	1401A	796'-6"	D-H	31-32	45	295
2-ES-503-R01	122A-2.3	RB	18.000	0.375	TB	1400A, 1400C	775'-0"	B-Dd	29-32	45	295
2-ES-503-R02	122A-2.3	RB	18.000	0.375	TB	1401A	796'-6"	D-H	31-32	45	295

Notes:

1. Break numbers may not be consecutive
2. Break type: RB – Running Break (Piping not analyzed for seismic), TE – Terminal End, IB – Intermediate Break
3. Building: TB – Turbine Building, AB – Auxiliary Building.
4. Each running break may contain one or more Sub-breaks.
5. For the Unit 2 Extraction Steam System 112 Running Breaks were considered; the 82 non-excluded, Running Breaks are listed in this table.
6. Layout of piping system may be shown on vendor supplied drawings (OM-)
7. For each Running Break the elevation of the floor or room that contains the Running Break is given.
8. Other Abbreviations: OD – Outer Diameter, in – inches, Op - operating



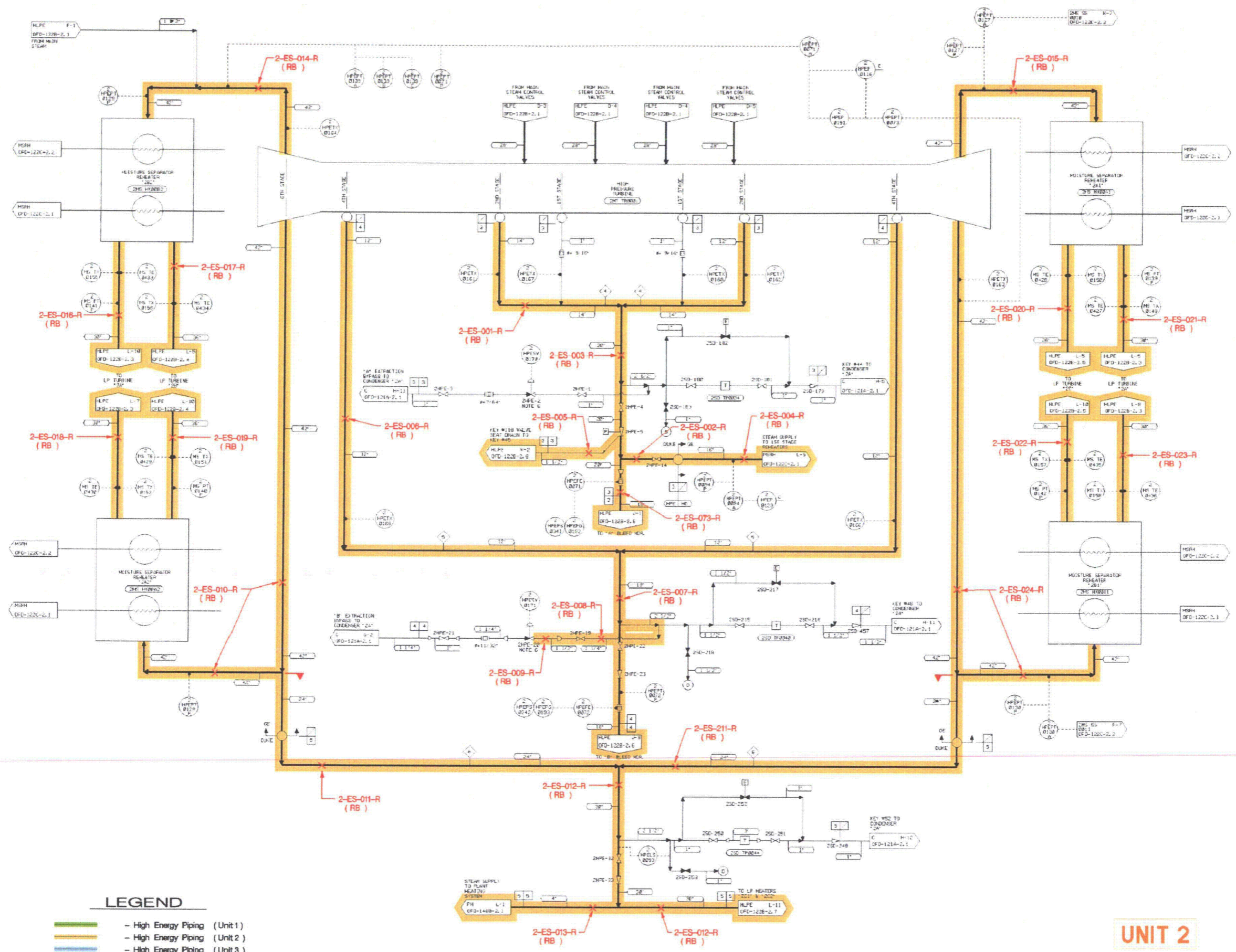
**LEGEND**

- High Energy Piping (Unit 1)
- High Energy Piping (Unit 2)
- High Energy Piping (Unit 3)
- X High Energy Line Break Location
- N-SYS-NNN (-N) Break Number
- TE Terminal End (Break)
- RB Running Break
- CR Critical Crack
- IB Intermediate Break
- ↑ Running Break Boundary

**FIGURE 5.1-3**  
**EXTRACTION STEAM SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 1 of 9 )

**UNIT 2**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-122A-2.3 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.

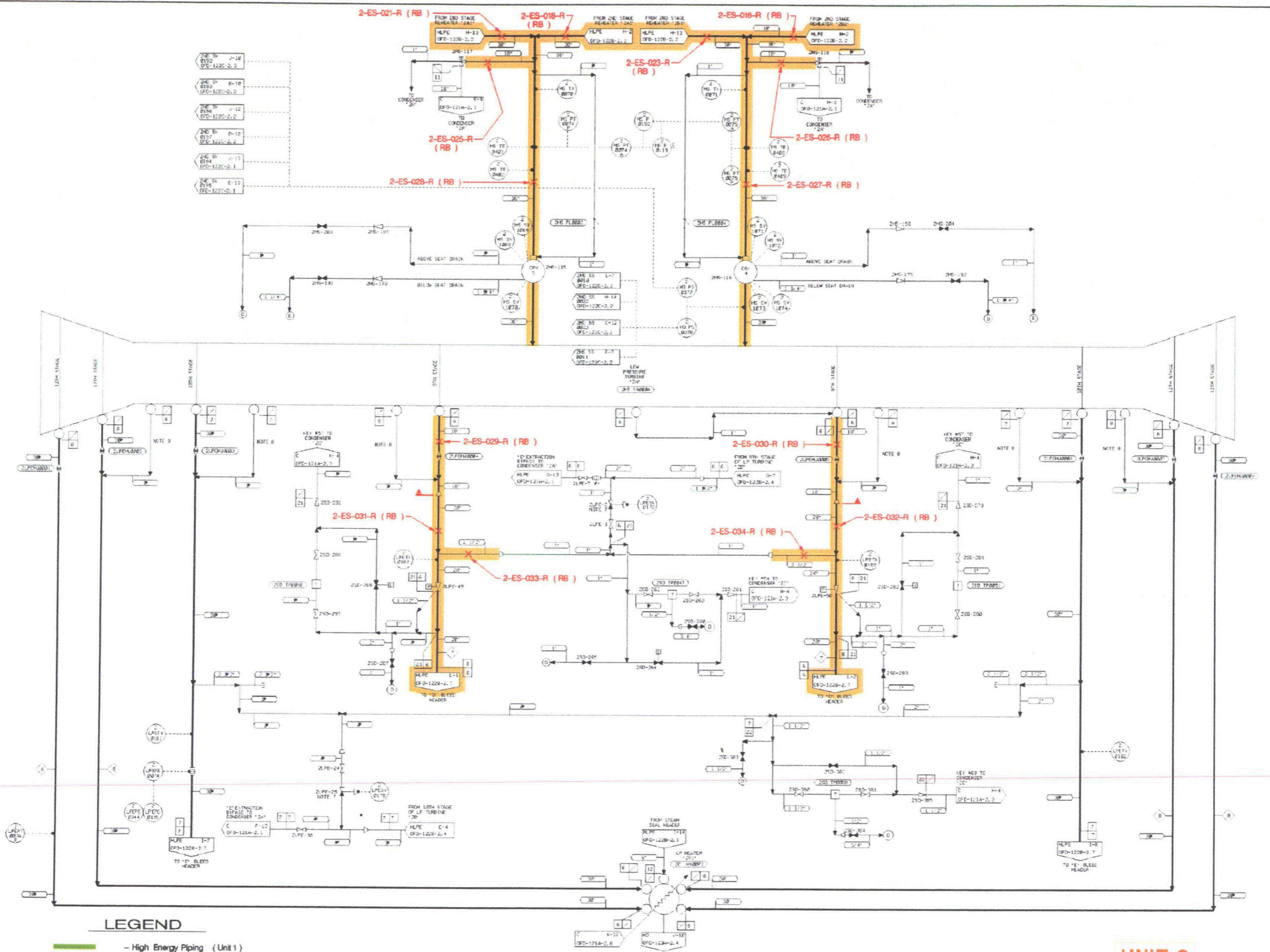


- LEGEND**
- - High Energy Piping (Unit 1)
  - - High Energy Piping (Unit 2)
  - - High Energy Piping (Unit 3)
  - X - High Energy Line Break Location
  - N-SYS-NNN (-N) - Break Number
  - TE - Terminal/End (Break)
  - RB - Running Break
  - CR - Critical Crack
  - IB - Intermediate Break
  - ↑ - Running Break Boundary

**FIGURE 5.1-3**  
**EXTRACTION STEAM SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 2 of 9 )

**UNIT 2**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-122B-2.2 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.



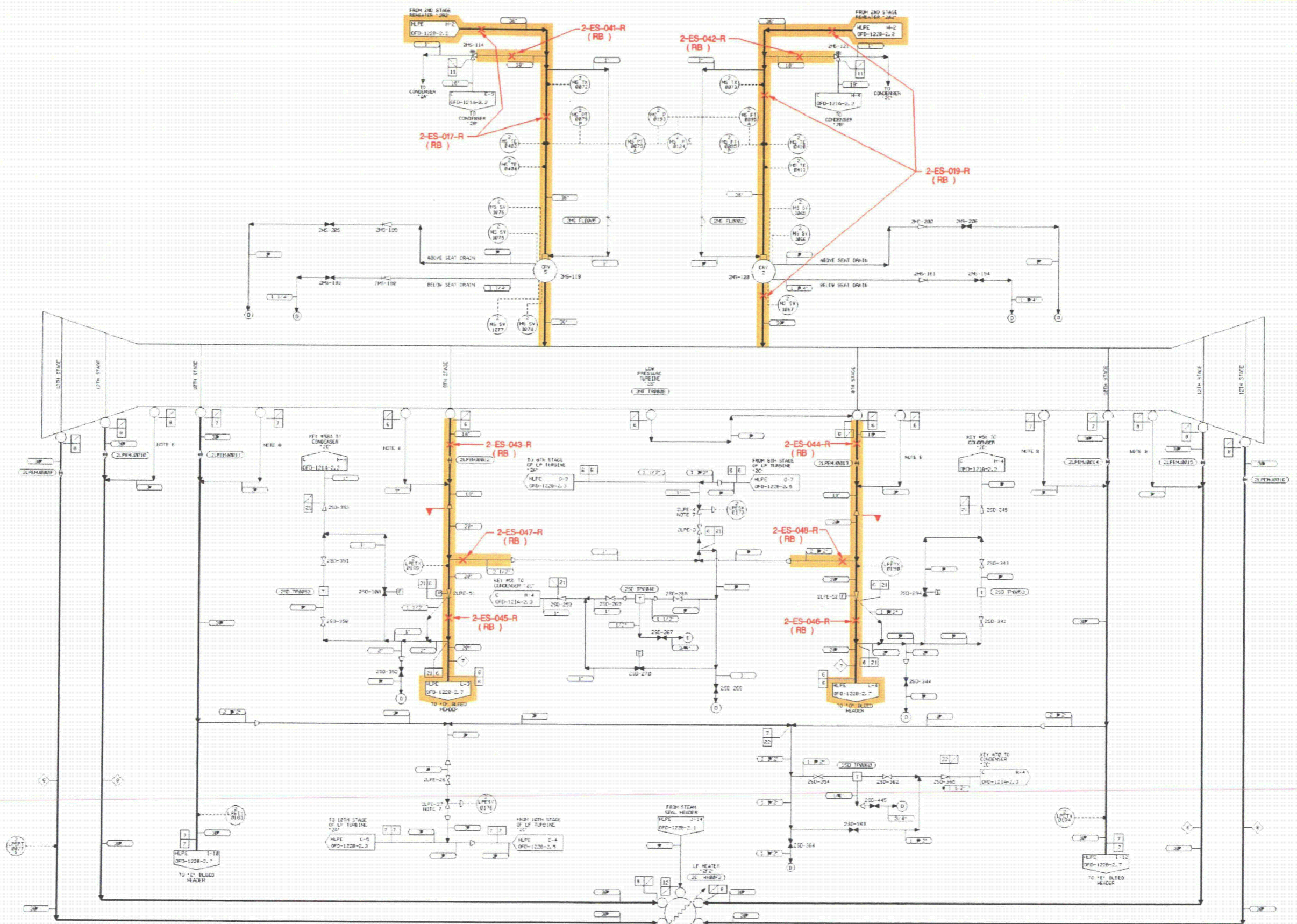
- LEGEND**
- - High Energy Piping (Unit 1)
  - - High Energy Piping (Unit 2)
  - - High Energy Piping (Unit 3)
  - X - High Energy Line Break Location
  - N-SYS-NNN (-N) - Break Number
  - TE - Terminal End (Break)
  - RB - Running Break
  - CR - Critical Crack
  - IB - Intermediate Break
  - P - Running Break Boundary

**FIGURE 5.1-3**  
**EXTRACTION STEAM SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 3 of 9 )

**UNIT 2**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-122B-2.3 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.

HFI R-122B-02-03



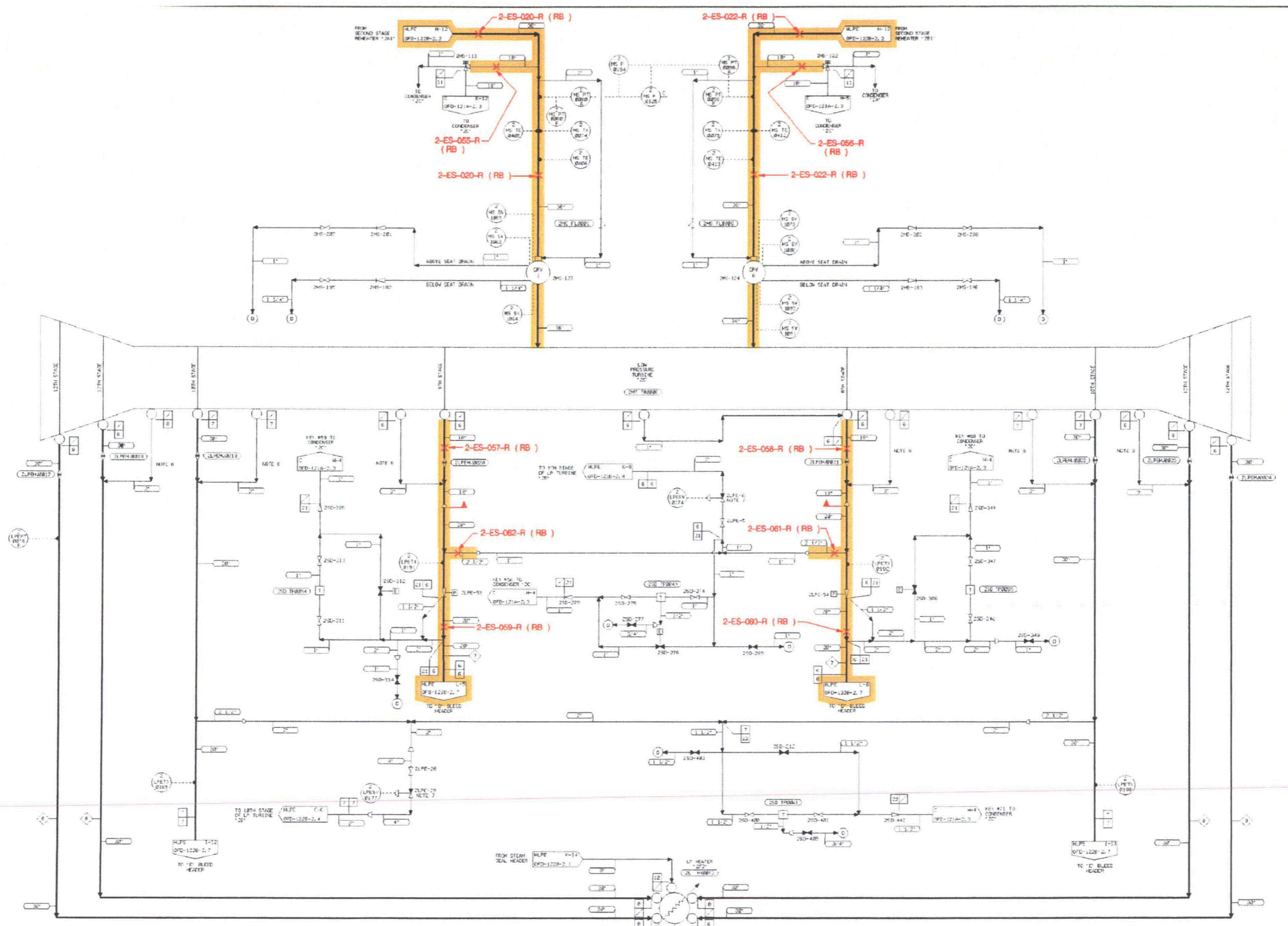
- LEGEND**
- - High Energy Piping (Unit 1)
  - - High Energy Piping (Unit 2)
  - - High Energy Piping (Unit 3)
  - X - High Energy Line Break Location
  - N-SYS-NNN (-N) - Break Number
  - TE - Terminal End (Break)
  - RB - Running Break
  - CR - Critical Crack
  - IB - Intermediate Break
  - ▶ - Running Break Boundary

**FIGURE 5.1-3**  
**EXTRACTION STEAM SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 4 of 9 )

**UNIT 2**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-122B-2.4 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.

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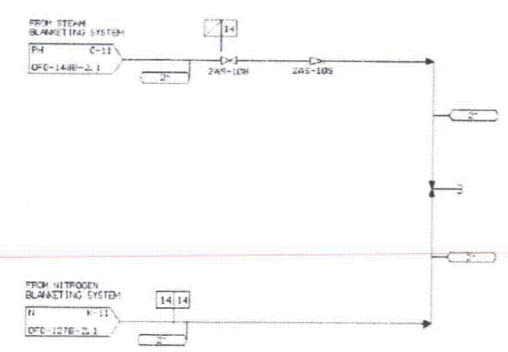
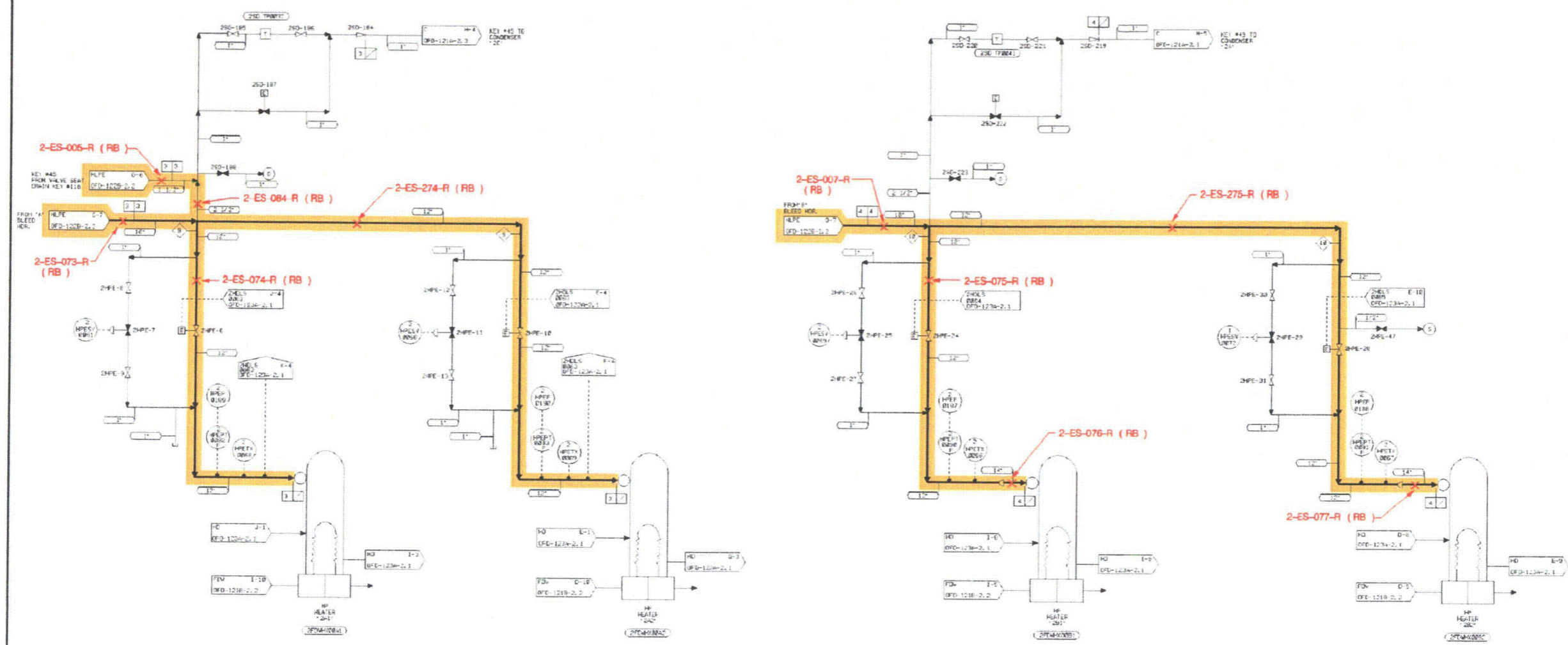
- LEGEND**
- - High Energy Piping (Unit 1)
  - - High Energy Piping (Unit 2)
  - - High Energy Piping (Unit 3)
  - X - High Energy Line Break Location
  - N-SYS-NNN (-N) - Break Number
  - TE - Terminal End (Break)
  - RB - Running Break
  - CR - Critical Crack
  - IB - Intermediate Break
  - ↑ - Running Break Boundary

**FIGURE 5.1-3**  
**EXTRACTION STEAM SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 5 of 9 )

**UNIT 2**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-122B-2.5 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.

**HELB-122B-02-05**



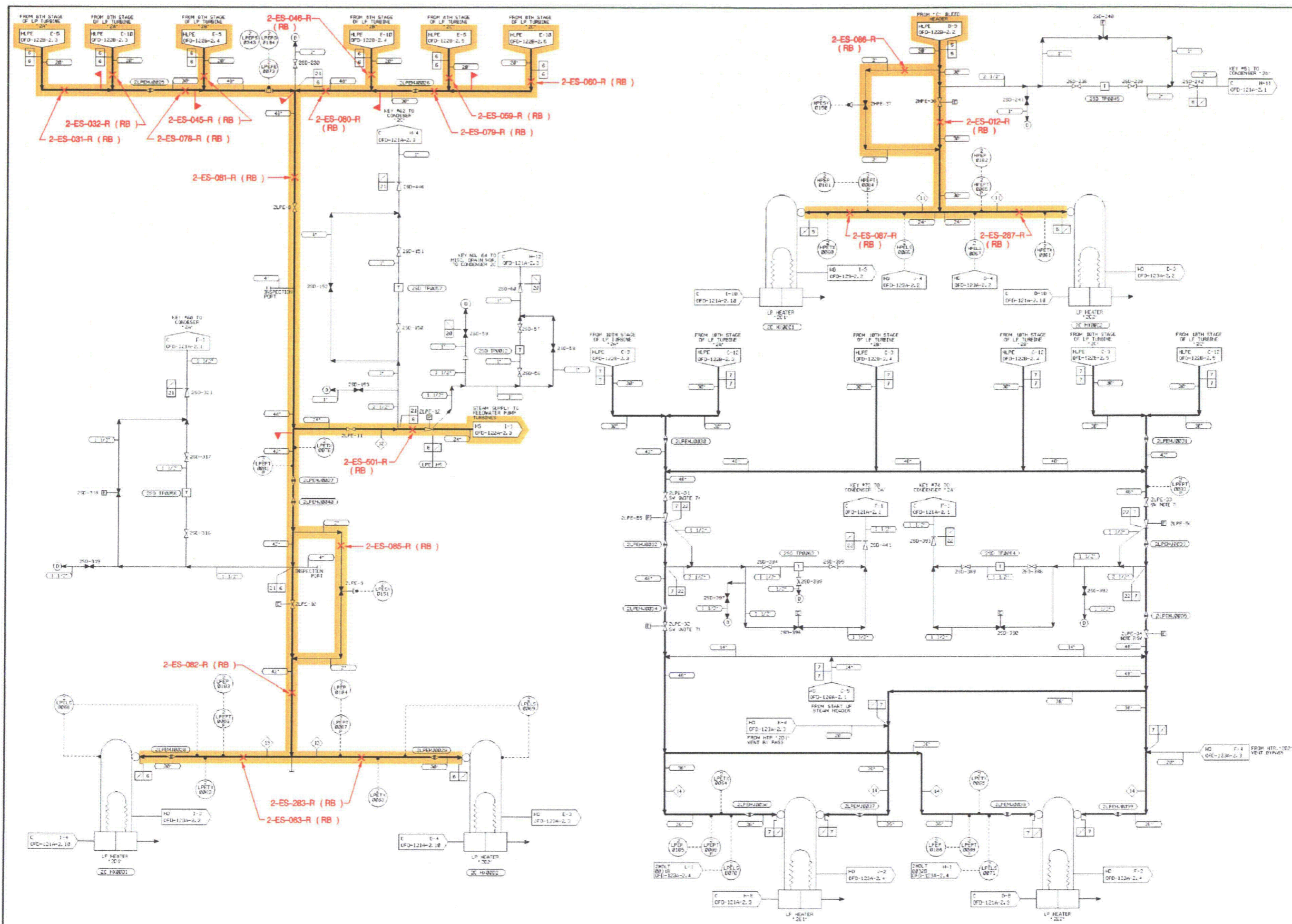
**LEGEND**

- - High Energy Piping (Unit 1)
- - High Energy Piping (Unit 2)
- - High Energy Piping (Unit 3)
- X - High Energy Line Break Location
- N-SYS-NNN (-N) - Break Number
- TE - Terminal End (Break)
- RB - Running Break
- CR - Critical Crack
- IB - Intermediate Break
- ▴ - Running Break Boundary

**FIGURE 5.1-3**  
**EXTRACTION STEAM SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 (Sheet 6 of 9)

**UNIT 2**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-122B-2.6 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.



- LEGEND**
- - High Energy Piping (Unit 1)
  - - High Energy Piping (Unit 2)
  - - High Energy Piping (Unit 3)
  - X - High Energy Line Break Location
  - N-SYS-NNN (-N) - Break Number
  - TE - Terminal End (Break)
  - RB - Running Break
  - CR - Critical Crack
  - IB - Intermediate Break
  - |— - Running Break Boundary

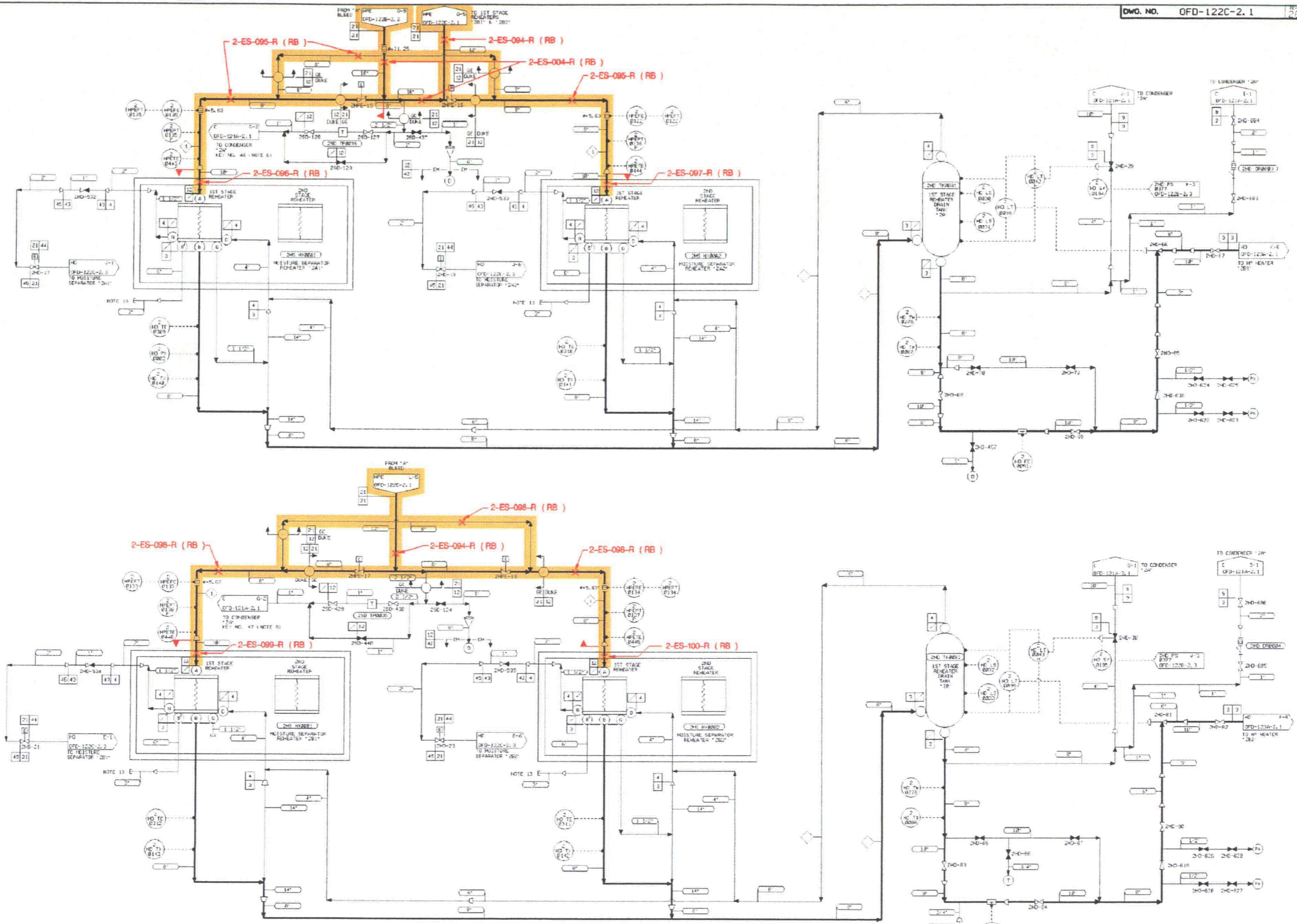
**FIGURE 5.1-3**  
**EXTRACTION STEAM SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 7 of 9 )

**UNIT 2**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-122B-2.7 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.

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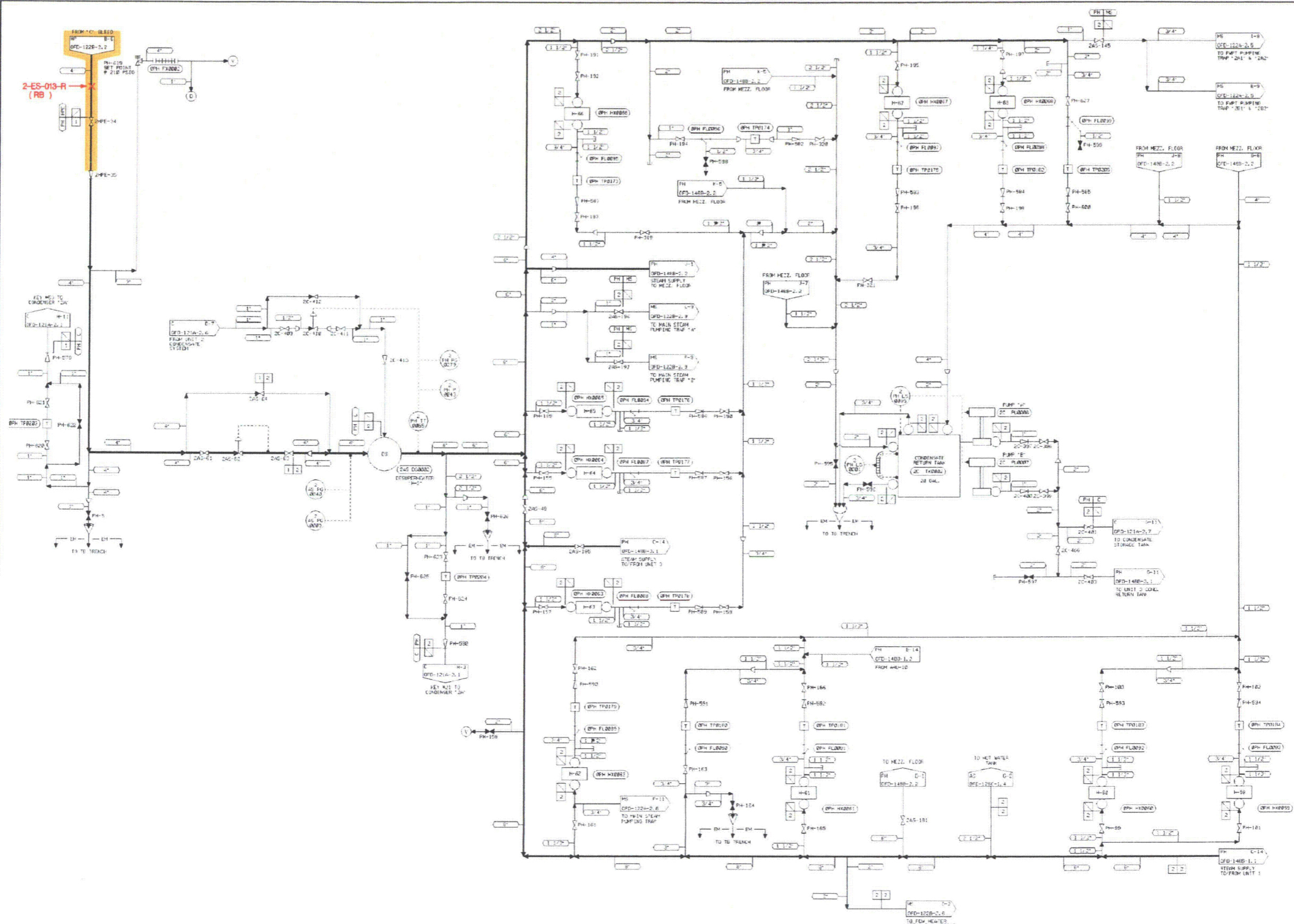


- LEGEND**
- - High Energy Piping (Unit 1)
  - - High Energy Piping (Unit 2)
  - - High Energy Piping (Unit 3)
  - X - High Energy Line Break Location
  - N-SYS-NNN (-N) - Break Number
  - TE - Terminal End (Break)
  - RB - Running Break
  - CR - Critical Crack
  - IB - Intermediate Break
  - |— - Running Break Boundary

**FIGURE 5.1-3**  
**EXTRACTION STEAM SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 8 of 9 )

**UNIT 2**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-122C-2.1 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.



- LEGEND**
- - High Energy Piping (Unit 1)
  - - High Energy Piping (Unit 2)
  - - High Energy Piping (Unit 3)
  - X - High Energy Line Break Location
  - N-SYS-NNN (-N) - Break Number
  - TE - Terminal End (Break)
  - RB - Running Break
  - CR - Critical Crack
  - IB - Intermediate Break
  - ▶ - Running Break Boundary

**FIGURE 5.1-3**  
**EXTRACTION STEAM SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 9 of 9 )

**UNIT 2**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-148B-2.1 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.

HELB-148B-02-01

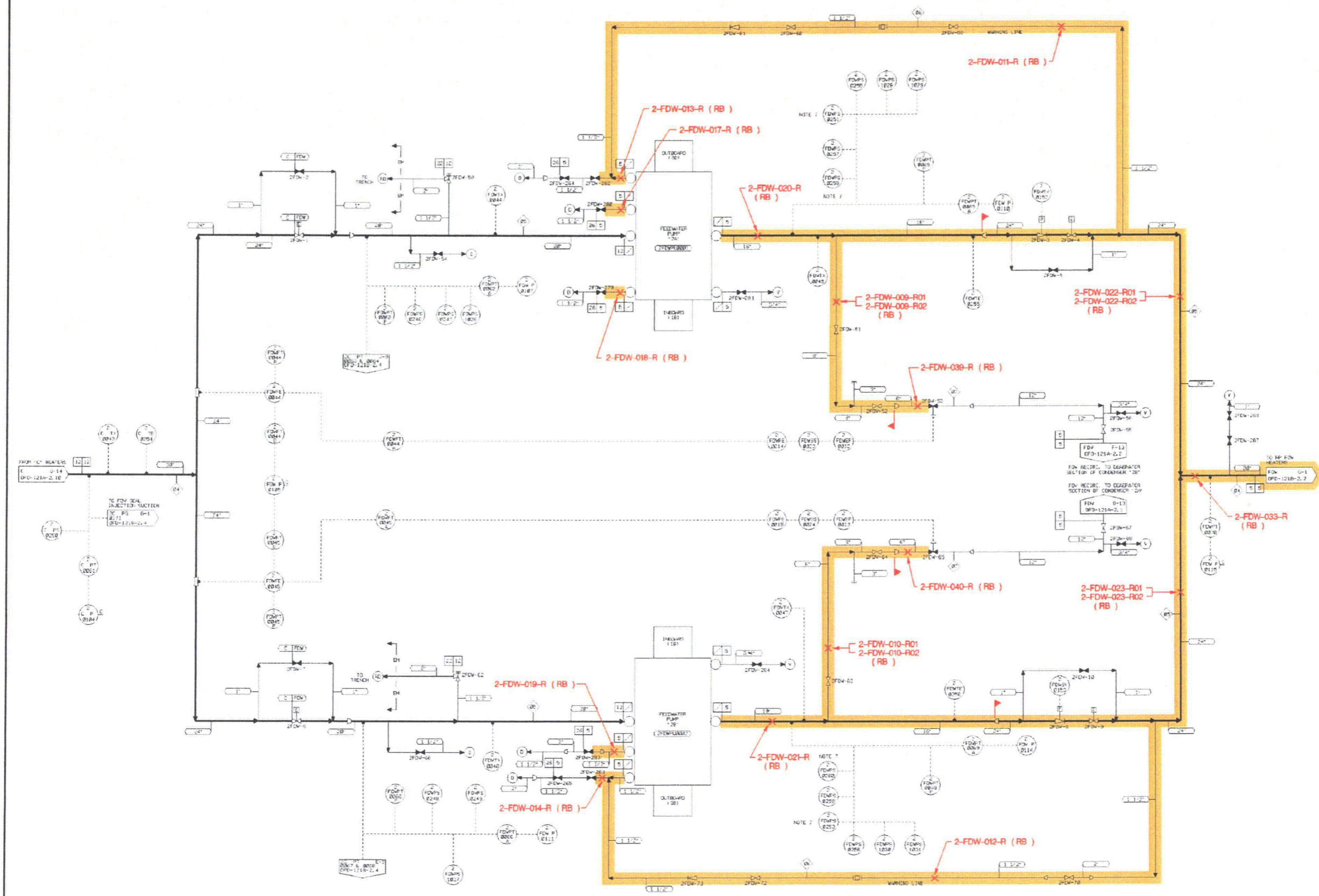
Break ID	Flow Diagram (OFD-)	Break Type	Pipe OD (in)	Pipe Thickness (in)	Building	Layout Drawing (O-)	Floor Elev. or Break Elev. (See Note 5)	Location (Room No. or Column Numbers)		Op Pres. (psig)	Op Temp. (°F)
2-FDW-001	121B-2.2	TE	24	1.219	TB	1400A	782'-0"	J-K	34-35	1020	454
2-FDW-002	121B-2.2	TE	24	1.219	TB	1400A	782'-0"	J-K	34-35	1020	408
2-FDW-003	121B-2.2	TE	24	1.219	TB	1400A	782'-0"	K-L	34-35	1020	454
2-FDW-004	121B-2.2	TE	24	1.219	TB	1400A	782'-0"	K-L	34-35	1020	408
2-FDW-005-R	121B-2.2	RB	24	1.219	TB	1400A	775'-0"	J-K	35-36	1020	365
2-FDW-006-R	121B-2.2	RB	24	1.219	TB	1400A	775'-0"	H-L	34-36	1020	408
2-FDW-007-R	121B-2.2	RB	24	1.219	TB	1400A	775'-0"	L-M	35-36	1020	365
2-FDW-008-R	121B-2.2	RB	24	1.219	TB	1400A	775'-0"	K-M	34-36	1020	408
2-FDW-009-R01	121B-2.1	RB	8.625	0.5	TB	1400A, 1400C	775'-0"	B-D	31-35	1020	365
2-FDW-009-R02	121B-2.1	RB	8.625	0.5	TB	1401A	796'-6"	B-Dd	34-36	1020	365
2-FDW-010-R01	121B-2.1	RB	8.625	0.5	TB	1400A, 1400C	775'-0"	B-D	29-35	1020	365
2-FDW-010-R02	121B-2.1	RB	8.625	0.5	TB	1401A, 1401B	796'-6"	B-Dd	34-38	1020	365
2-FDW-011-R	121B-2.1	RB	1.9	0.2	TB	1407A	775'-0"	B-D	30-32	1020	365
2-FDW-012-R	121B-2.1	RB	1.9	0.2	TB	1407A	775'-0"	C-E	29-30	1020	365
2-FDW-013-R	121B-2.1	RB	1.9	0.2	TB	1407G	775'-0"	C-D	31-32	1020	365
2-FDW-014-R	121B-2.1	RB	1.9	0.2	TB	1407G	775'-0"	C-D	29-30	1020	365
2-FDW-015-R	121B-2.3	RB	12.75	0.687	TB	1401C	796'-6"	K-M	32-33	1020	454
2-FDW-016-R	121B-2.3	RB	12.75	0.687	TB	1401C	796'-6"	K-L	33-34	1020	454
2-FDW-017-R	121B-2.1	RB	1.9	0.2	TB	1407G	775'-0"	C-D	31-32	1020	365
2-FDW-018-R	121B-2.1	RB	1.9	0.2	TB	1407G	775'-0"	C-D	31-32	1020	365
2-FDW-019-R	121B-2.1	RB	1.9	0.2	TB	1407G	775'-0"	C-D	29-30	1020	365
2-FDW-020-R	121B-2.1	RB	16	0.844	TB	1400C	775'-0"	C-D	31-32	1020	365
2-FDW-021-R	121B-2.1	RB	16	0.844	TB	1400C	775'-0"	C-D	29-30	1020	365
2-FDW-022-R01	121B-2.1	RB	24	1.218	TB	1400A	775'-0"	B-D	28-32	1020	365
2-FDW-022-R02	121B-2.1	RB	24	1.218	TB	1401A	796'-6"	C-E	29-31	1020	365
2-FDW-023-R01	121B-2.1	RB	24	1.218	TB	1400A	775'-0"	C-E	29-30	1020	365
2-FDW-023-R02	121B-2.1	RB	24	1.218	TB	1401A	796'-6"	D-E	29-31	1020	365
2-FDW-024-R	121B-2.2	RB	20	1.031	TB	1400A	775'-0"	H-K	35-36	1020	408
2-FDW-025-R	121B-2.2	RB	20	1.031	TB	1400A	775'-0"	L-M	35-36	1020	408
2-FDW-026	121B-2.3	TE	6.625	0.432	TB	1401A	805'-0"	K-L	33-34	1020	454
2-FDW-027	121B-2.3	TE	6.625	0.432	TB	1401A	812'-1"	L-M	33-34	1020	454
2-FDW-028	121B-2.3	TE	6.625	0.432	TB	1401A	805'-0"	K-L	32-33	1020	454
2-FDW-029	121B-2.3	TE	6.625	0.432	TB	1401A	816'-6"	L-M	32-33	1020	454

Break ID	Flow Diagram (OFD-)	Break Type	Pipe OD (in)	Pipe Thickness (in)	Building	Layout Drawing (O-)	Floor Elev. or Break Elev. (See Note 5)	Location (Room No. or Column Numbers)		Op Pres. (psig)	Op Temp. (°F)
2-FDW-030	121B-2.3	TE	24	1.218	AB	1439B	828'-6"	EPR	519	1020	454
2-FDW-031	121B-2.3	TE	24	1.218	AB	1439B	828'-6"	EPR	519	1020	454
2-FDW-032-R	121B-2.3	RB	2.375	0.218	TB	1401C	796'-6"	K-L	32-33	1020	454
2-FDW-033-R	121B-2.2 121B-2.1	RB	30	1.157	TB	1401A	796'-6"	D-L	30-36	1020	365
2-FDW-034-R01	121B-2.2	RB	24	1.218	TB	1400A	775'-0"	J-L	35-36	1020	365
2-FDW-034-R02	121B-2.2	RB	24	1.218	TB	1401D	796'-6"	K-L	35-36	1020	365
2-FDW-035-R01	121B-2.2	RB	24	1.218	TB	1400A	775'-0"	K-M	35-36	1020	365
2-FDW-035-R02	121B-2.2	RB	24	1.218	TB	1401D	See Note 7	K-L	35-36	1020	365
2-FDW-036	121B-2.3	IB	6.625	0.432	TB	1401A	812'-1"	L-M	33-34	1020	454
2-FDW-037	121B-2.3	IB	6.625	0.432	TB	1401A	812'-1"	L-M	33-34	1020	454
2-FDW-038	121B-2.3	IB	6.625	0.302	TB	1401A	812'-1"	L-M	33-34	1020	454
2-FDW-039-R	121B-2.1	RB	6.625	0.432	TB	1401A	796'-6"	D-E	35-36	1020	365
2-FDW-040-R	121B-2.1	RB	6.625	0.432	TB	1401B	796'-6"	D-E	37-38	1020	365
2-FDW-050-CR	121B-2.3	CR	24	1.218	AB	1439B	828'-6"	EPR	519	1020	454
2-FDW-051-CR	121B-2.3	CR	24	1.218	TB	1401A	805'-0"	K-L	33-34	1020	454
2-FDW-052-CR	121B-2.3	CR	30	1.157	TB	1401A	813'-0"	H-J	32-33	1020	454
2-FDW-053-CR	121B-2.3	CR	24	1.218	TB	1401A	805'-0"	K-M	32-33	1020	454
2-FDW-054-CR	121B-2.3	CR	16	0.843	TB	1401C	805'-0"	L-M	32-33	1020	454
2-FDW-055-CR	121B-2.3	CR	24	1.218	AB	1439A	819'-6"	EPR	407	1020	454
2-FDW-056-CR	121B-2.3	CR	24	1.218	AB	1439A	816'-6"	EPR	407	1020	454
2-FDW-057-CR	121B-2.3	CR	24	1.218	AB	1439B	828'-6"	EPR	519	1020	454
2-FDW-058-CR	121B-2.2	CR	30	1.157	TB	1401A	813'-0"	J-K	32-33	1020	454
2-FDW-059-CR	121B-2.2	CR	24	1.218	TB	1400E, 1400F	791'-0"	K-L	34-35	1020	454
2-FDW-060-CR	121B-2.2	CR	24	1.218	TB	1401A	813'-0"	K-L	32-33	1020	454
2-FDW-061-CR	121B-2.2	CR	24	1.218	TB	1400F	791'-0"	K-L	34-35	1020	454
2-FDW-062-CR	121B-2.2	CR	20	1.031	TB	1400F	791'-0"	K-L	34-35	1020	454
2-FDW-063-CR	121B-2.2	CR	20	1.031	TB	1400E, 1400F	791'-0"	K-L	34-35	1020	454
2-FDW-064-CR	121B-2.3	CR	6.625	0.432	TB	1401A	812'-1"	L-M	33-34	1020	454
2-FDW-065-CR	121B-2.3	CR	6.625	0.432	TB	1401A	812'-1"	L-M	33-34	1020	454
2-FDW-066-CR	121B-2.3	CR	6.625	0.432	TB	1401C	807'-9"	K-M	33-34	1020	454
2-FDW-067-CR	121B-2.3	CR	6.625	0.432	TB	1401C	807'-9"	K-L	33-34	1020	454
2-FDW-068-CR	121D-2.1	CR	6.625	0.432	TB	1401C	809'-6"	K-L	33-34	1020	454
2-FDW-069-CR	121B-2.3	CR	6.625	0.432	TB	1401A	812'-7"	L-M	32-33	1020	454

Break ID	Flow Diagram (OFD-)	Break Type	Pipe OD (in)	Pipe Thickness (in)	Building	Layout Drawing (O-)	Floor Elev. or Break Elev. (See Note 5)	Location (Room No. or Column Numbers)		Op Pres. (psig)	Op Temp. (°F)
2-FDW-070-CR	121B-2.3	CR	6.625	0.432	TB	1401C	809'-7"	L-M	32-33	1020	454
2-FDW-071-CR	121B-2.3	CR	6.625	0.432	TB	1401C	809'-7"	K-M	32-33	1020	454
2-FDW-072-CR	121B-2.3	CR	6.625	0.432	TB	1401C	812'-7"	L-M	32-33	1020	454
2-FDW-073-CR	121B-2.3	CR	6.625	0.432	TB	1401D	807'-9"	K-L	31-33	1020	454
2-FDW-074-CR	121B-2.3 121D-2.1	CR	6.625	0.432	TB	1401A, 1401D	810'-10"	K-L	32-33	1020	454
2-FDW-075-CR	121B-2.3	CR	24	1.218	AB	1439B	828'-6"	EPR	519	1020	454

Notes:

1. Break numbers may not be consecutive
2. Break type: RB – Running Break (Piping not analyzed for seismic), TE – Terminal End, IB – Intermediate Break, CR – Critical Cracks
3. Building: TB – Turbine Building, AB – Auxiliary Building, EPR – East Penetration Room.
4. Each Running Break may contain one or more sub-breaks. For the Unit 2 Main Feedwater System 10 Terminal End Breaks, 26 Critical Cracks, 3 Intermediate Breaks, and 33 Running Breaks were considered; the non-excluded breaks listed in this table include 10 Terminal End Breaks, 26 Critical Cracks, 3 Intermediate Breaks, and 33 Running Breaks.
5. For Terminal End and Intermediate Break locations the elevation of the break location is given. For Running Breaks the elevation of floor or room that contains Running Break is given. For Critical Cracks with a single break point or has all locations on the same elevation, the elevation is given, and for Critical Cracks with multiple elevations, the elevation of floor or room that contains Critical Crack is given.
6. Other Abbreviations: OD – Outer Diameter, in – inches, Op – operating
7. Although Running Break 2-FDW-035-R02 has a Turbine Building Mezzanine Level designation (R02), this Running Break is actually located below the Elevation 796'+6" floor of the Turbine Building (References 10.2.39 & 10.2.40).



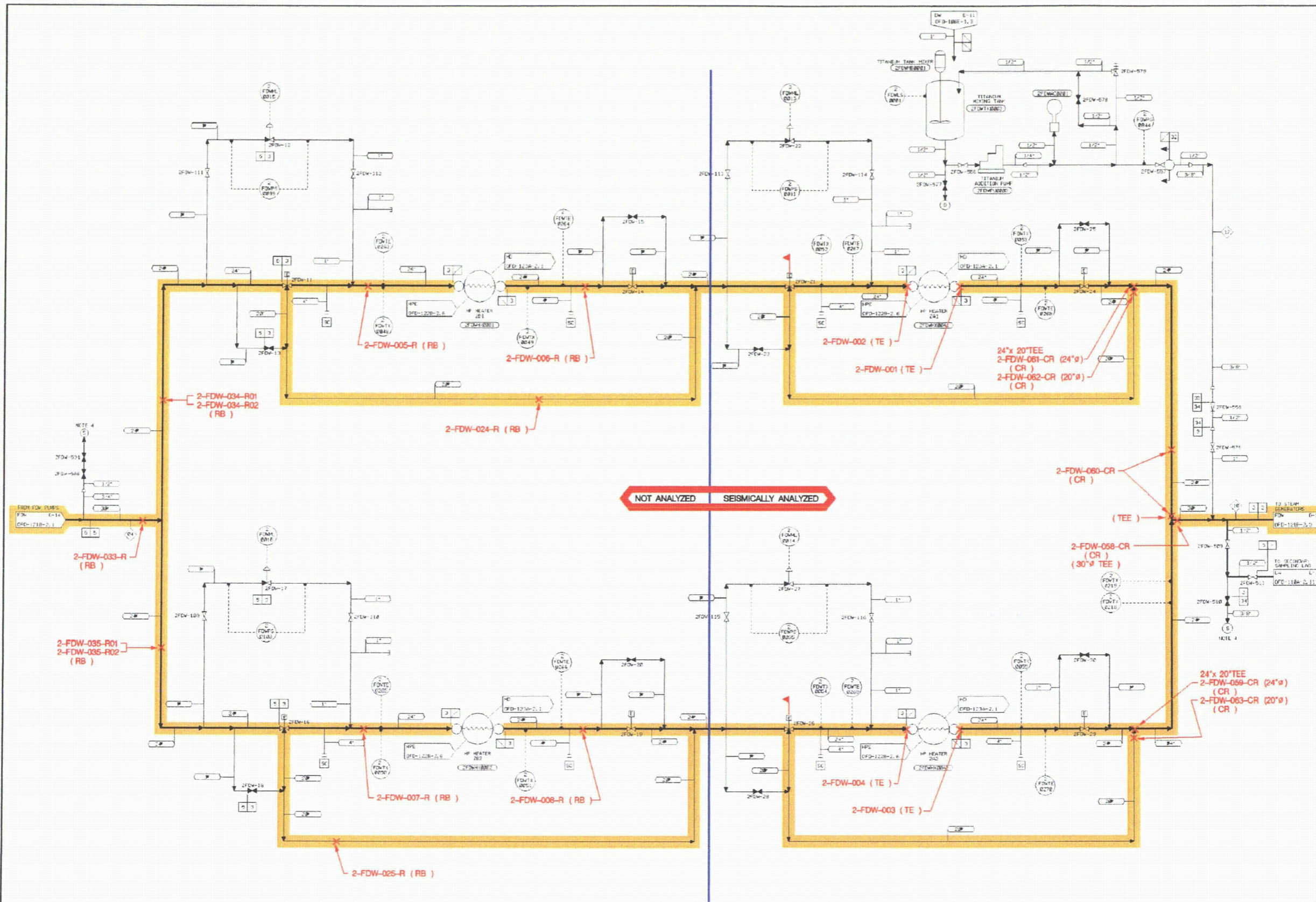
- LEGEND**
- - High Energy Piping (Unit 1)
  - - High Energy Piping (Unit 2)
  - - High Energy Piping (Unit 3)
  - X - High Energy Line Break Location
  - N-SYS-NNN (-N) - Break Number
  - TE - Terminal End (Break)
  - RB - Running Break
  - CR - Critical Crack
  - IB - Intermediate Break
  - |— - Running Break Boundary

**FIGURE 5.1-4**  
**MAIN FEEDWATER SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 1 of 4 )

**UNIT 2**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-121B-2.1 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.

**HELB-121B-02-01**



NOT ANALYZED SEISMICALLY ANALYZED

- LEGEND**
- - High Energy Piping (Unit 1)
  - - High Energy Piping (Unit 2)
  - - High Energy Piping (Unit 3)
  - X - High Energy Line Break Location
  - N-SYS-NNN (-N) - Break Number
  - TE - Terminal End (Break)
  - RB - Running Break
  - CR - Critical Crack
  - IB - Intermediate Break
  - P - Running Break Boundary

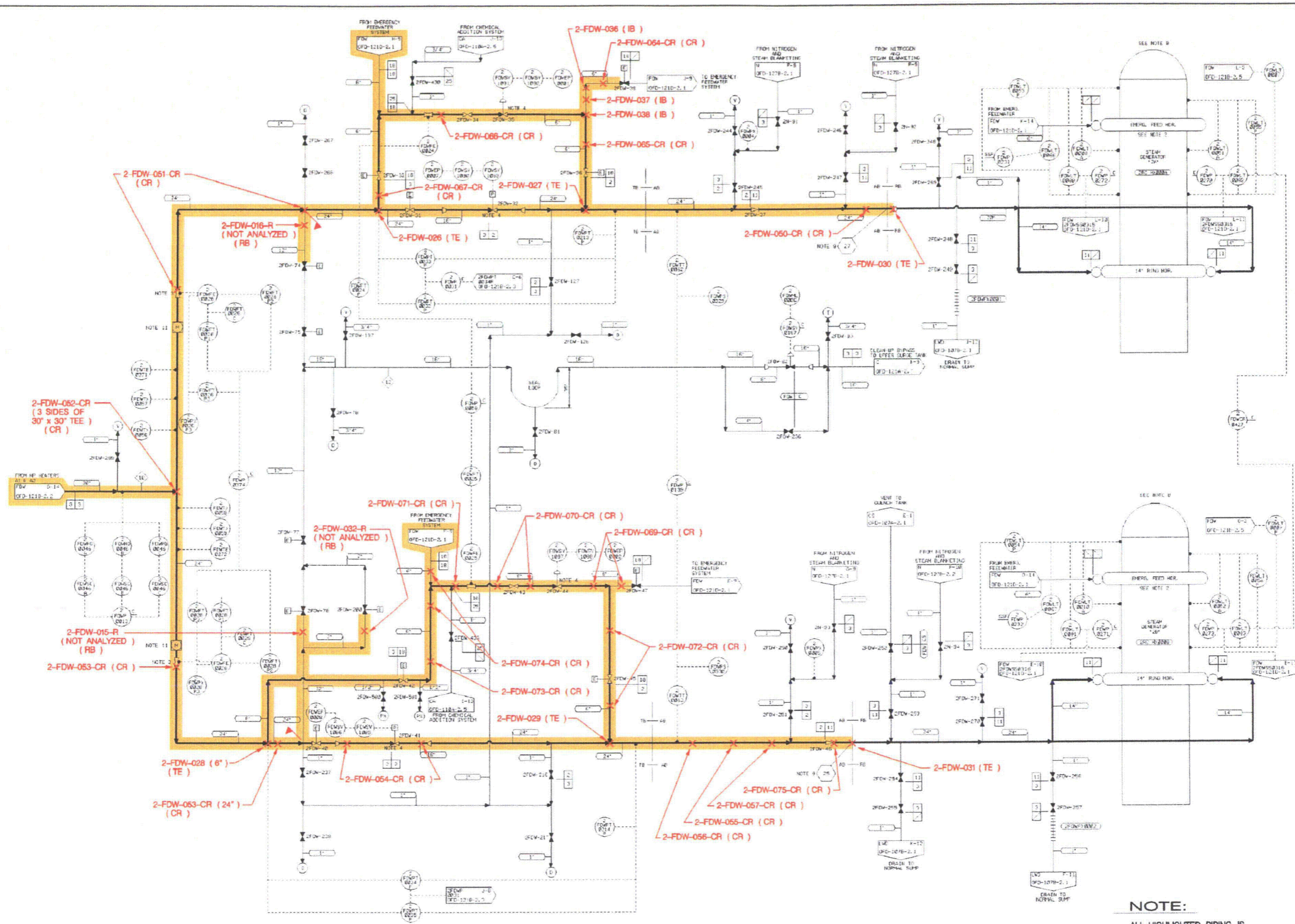
**NOTE:**  
ALL HIGHLIGHTED PIPING IS ANALYZED EXCEPT AS NOTED.

**UNIT 2**

**FIGURE 5.1-4**  
**MAIN FEEDWATER SYSTEM**  
High Energy Lines, Piping Configurations, Boundaries, Break Locations and Numbers  
( Sheet 2 of 4 )

THIS DIAGRAM IS FOR HIGH ENERGY LINE BREAK PURPOSES ONLY. REFERENCE FLOW DIAGRAM OFD-121B-2.2 FOR COMPLETE SYSTEM DESIGN INFORMATION.

HELB-121B-02-02



- LEGEND**
- High Energy Piping (Unit 1)
  - High Energy Piping (Unit 2)
  - High Energy Piping (Unit 3)
  - X High Energy Line Break Location
  - N-SYS-NNN (-N) Break Number
  - TE Terminal End (Break)
  - RB Running Break
  - CR Critical Crack
  - IB Intermediate Break
  - ▶ Running Break Boundary

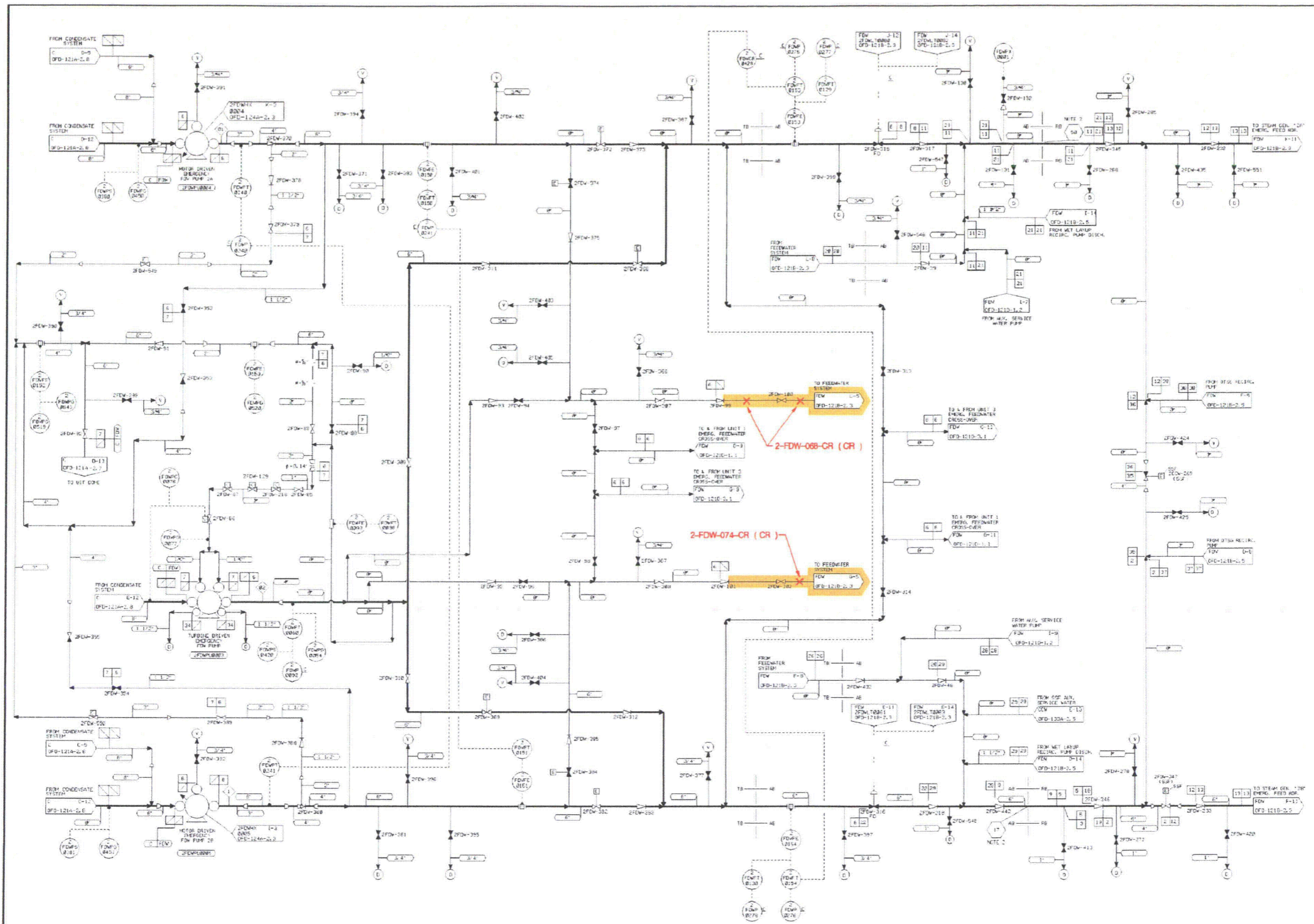
**NOTE:**  
ALL HIGHLIGHTED PIPING IS ANALYZED EXCEPT AS NOTED.

**UNIT 2**

**FIGURE 5.1-4**  
**MAIN FEEDWATER SYSTEM**  
High Energy Lines, Piping Configurations, Boundaries, Break Locations and Numbers  
( Sheet 3 of 4 )

THIS DIAGRAM IS FOR HIGH ENERGY LINE BREAK PURPOSES ONLY. REFERENCE FLOW DIAGRAM OFD-121B-2.3 FOR COMPLETE SYSTEM DESIGN INFORMATION.





- LEGEND**
- - High Energy Piping (Unit 1)
  - - High Energy Piping (Unit 2)
  - - High Energy Piping (Unit 3)
  - X - High Energy Line Break Location
  - N-SYS-NNN (-N) - Break Number
  - TE - Terminal End (Break)
  - RB - Running Break
  - CR - Critical Crack
  - IB - Intermediate Break
  - P - Running Break Boundary

**UNIT 2**

**FIGURE 5.1-4**  
**MAIN FEEDWATER SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 4 of 4 )

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-121D-2.1 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.

HELB-121D-02-01

Break ID	Flow Diagram (OFD-)	Break Type	Pipe OD (in)	Pipe Thickness (in)	Building	Layout Drawing (O-)	Floor Elev. Or Break Elev. (See Note 6)	Location (Room No. or Column Numbers)		Op Pres. (psig)	Op Temp. (°F)
2-HD-001-R	121A-2.9 123A-2.4	RB	12.750	0.375	TB	1410A	775'-0"	K-L	37-38	520	215
2-HD-002-R	123A-2.4	RB	8.625	0.322	TB	1410A, 1410C	775'-0"	J-L	36-38	520	215
2-HD-003-R	123A-2.4	RB	4.500	0.237	TB	1410A, 1410C	775'-0"	J-K	36-37	520	215
2-HD-004-R	123A-2.4	RB	4.500	0.237	TB	1410A, 1410C	775'-0"	J-K	36-37	625	190
2-HD-005-R	123A-2.4	RB	4.500	0.237	TB	1410A, 1410C	775'-0"	J-K	36-37	625	190
2-HD-006-R	123A-2.4	RB	8.625	0.322	TB	1410A, 1410C 1410E	775'-0"	H-K	36-38	625	190
2-HD-007-R	123A-2.4	RB	8.625	0.322	TB	1410A, 1410E	775'-0"	H-K	35-37	625	190
2-HD-008-R	123A-2.4	RB	8.625	0.322	TB	1410A, 1410E	775'-0"	H-J	37-38	625	190
2-HD-009-R	123A-2.4	RB	2.375	0.154	TB	1410A, 1410D	775'-0"	H-J	37-38	625	190
2-HD-010-R	123A-2.4	RB	2.375	0.154	TB	1410A	775'-0"	H-K	37-38	625	190
2-HD-011-R	123A-2.4	RB	8.625	0.322	TB	1410A, 1410C	775'-0"	K-L	36-38	520	215
2-HD-012-R	123A-2.4	RB	4.500	0.237	TB	1410A, 1410C	775'-0"	K-L	36-37	520	215
2-HD-013-R	123A-2.4	RB	4.500	0.237	TB	1410A, 1410C	775'-0"	K-M	36-37	625	190
2-HD-014-R	123A-2.4	RB	4.500	0.237	TB	1410A, 1410C	775'-0"	L-M	36-37	625	190
2-HD-015-R	123A-2.4	RB	8.625	0.322	TB	1410A, 1410G	775'-0"	L-M	36-38	625	190
2-HD-016-R	123A-2.4	RB	8.625	0.322	TB	1410A, 1410G	775'-0"	L-M	35-37	625	190
2-HD-017-R	123A-2.4	RB	8.625	0.322	TB	1410A, 1410G	775'-0"	L-M	37-38	625	190
2-HD-018-R	123A-2.4	RB	2.375	0.154	TB	1410A, 1410G	775'-0"	L-M	37-38	625	190
2-HD-019-R	123A-2.4	RB	2.375	0.154	TB	1410A	775'-0"	L-M	37-38	625	190
2-HD-020-R	121A-2.10 123A-2.3	RB	24.000	0.688	TB	1410A	775'-0"	K-L	38-40	520	290
2-HD-021-R	123A-2.3	RB	18.000	0.500	TB	1410A	775'-0"	J-L	37-39	520	290
2-HD-022-R	123A-2.3	RB	10.750	0.365	TB	1410A, 1410E	775'-0"	H-K	37-38	520	290
2-HD-023-R	123A-2.3	RB	10.750	0.365	TB	1410E	775'-0"	H-J	37-38	610	275
2-HD-024-R	123A-2.3	RB	10.750	0.365	TB	1410A	775'-0"	J-K	37-38	610	275
2-HD-025-R	123A-2.3	RB	18.000	0.500	TB	1410A	775'-0"	H-K	36-38	610	275
2-HD-026-R	123A-2.3	RB	6.625	0.280	TB	1410A	775'-0"	H-K	37-39	610	275
2-HD-027-R	123A-2.3	RB	4.500	0.237	TB	1410A	775'-0"	H-J	38-39	610	275
2-HD-028-R	123A-2.3	RB	4.500	0.237	TB	1410A	775'-0"	H-J	38-39	45	275
2-HD-029-R	123A-2.3	RB	6.625	0.280	TB	1410A	775'-0"	H-J	38-39	45	275
2-HD-030-R	123A-2.3	RB	18.000	0.375	TB	1410A, 1410E	775'-0"	J-K	37-39	45	275
2-HD-031-R	123A-2.3	RB	16.000	0.375	TB	1410A, 1410E	775'-0"	G-K	35-38	45	275
2-HD-032-R	123A-2.3	RB	18.000	0.500	TB	1410A	775'-0"	K-M	37-39	520	290

Break ID	Flow Diagram (OFD-)	Break Type	Pipe OD (in)	Pipe Thickness (in)	Building	Layout Drawing (O-)	Floor Elev. Or Break Elev. (See Note 6)	Location (Room No. or Column Numbers)		Op Pres. (psig)	Op Temp. (°F)
2-HD-033-R	123A-2.3	RB	10.750	0.365	TB	1410A	775'-0"	K-M	37-38	520	290
2-HD-034-R	123A-2.3	RB	10.750	0.365	TB	1410G	775'-0"	L-M	37-38	610	275
2-HD-035-R	123A-2.3	RB	10.750	0.365	TB	1410A	775'-0"	L-M	37-38	610	275
2-HD-036-R	123A-2.3	RB	18.000	0.500	TB	1410A	775'-0"	L-M	36-38	610	275
2-HD-037-R	123A-2.3	RB	6.625	0.280	TB	1410A	775'-0"	L-M	37-39	610	275
2-HD-038-R	123A-2.3	RB	4.500	0.237	TB	1410A	775'-0"	L-M	38-39	610	275
2-HD-039-R	123A-2.3	RB	4.500	0.237	TB	1410A	775'-0"	L-M	38-39	45	275
2-HD-040-R	123A-2.3	RB	6.625	0.280	TB	1410A	775'-0"	L-M	38-39	45	275
2-HD-041-R	123A-2.3	RB	18.000	0.375	TB	1410A	775'-0"	L-M	37-39	45	275
2-HD-042-R	123A-2.3	RB	16.000	0.375	TB	1410A	775'-0"	G-M	36-38	45	275
2-HD-043-R	123A-2.3	RB	12.750	0.375	TB	1410A	775'-0"	J-L	38-39	45	275
2-HD-044-R	123A-2.3	RB	12.750	0.375	TB	1410A	775'-0"	K-L	38-39	45	275
2-HD-045-R	123A-2.3	RB	20.000	0.375	TB	1410H, 1410I	796'-6"	J-K	38-40	45	275
2-HD-046-R	123A-2.3	RB	8.625	0.322	TB	1410E, 1410I	775'-0" 796'-6"	J-K	38-39	45	275
2-HD-047-R	123A-2.3	RB	20.000	0.375	TB	1410H, 1410I	796'-6"	K-M	38-40	45	275
2-HD-048-R	123A-2.3	RB	8.625	0.322	TB	1410G, 1410I	775'-0" 796'-6"	L-M	38-39	45	275
2-HD-049-R	123A-2.3	RB	30.000	0.375	TB	1410A	775'-0"	H-K	38-39	45	275
2-HD-050-R	123A-2.2 123A-2.3	RB	30.000	0.375	TB	1410A	775'-0"	J-K	38-40	45	275
2-HD-051-R	123A-2.2 123A-2.3	RB	30.000	0.375	TB	1410A, 1410G	775'-0"	L-M	38-40	45	275
2-HD-052-R	123A-2.3	RB	30.000	0.375	TB	1410A	775'-0"	L-M	38-39	45	275
2-HD-053-R	123A-2.2	RB	6.625	0.280	TB	1410G	775'-0"	L-M	39-40	45	275
2-HD-054-R	123A-2.2	RB	6.625	0.280	TB	1410G	775'-0"	L-M	39-40	160	295
2-HD-055-R	123A-2.2	RB	6.625	0.280	TB	1410A, 1410G	775'-0"	L-M	39-40	160	295
2-HD-056-R	123A-2.2	RB	16.000	0.375	TB	1410A, 1410E 1410G, 1410H	775'-0" 796'-6"	J-M	39-42	160	295
2-HD-057-R	123A-2.2	RB	16.000	0.375	TB	1410A, 1410C	775'-0"	L-M	41-42	160	295
2-HD-058-R	123A-2.2	RB	16.000	0.375	TB	1410A, 1410C	775'-0"	L-M	41-42	160	295
2-HD-059-R	123A-2.2	RB	6.625	0.280	TB	1410E	775'-0"	J-K	39-40	160	295
2-HD-060-R	123A-2.2	RB	6.625	0.280	TB	1410E	775'-0"	J-K	39-40	160	295
2-HD-061-R	123A-2.2	RB	6.625	0.280	TB	1410A	775'-0"	J-K	39-40	160	295
2-HD-062-R	123A-2.2	RB	16.000	0.375	TB	1410A, 1410E 1410H	775'-0" 796'-6"	G-K	39-42	160	295
2-HD-063-R	123A-2.2	RB	16.000	0.375	TB	1410A, 1410E	775'-0"	H-J	41-42	160	295

Table 5.1-5  
 Heater Drain System – High Energy Line Data – Unit 2

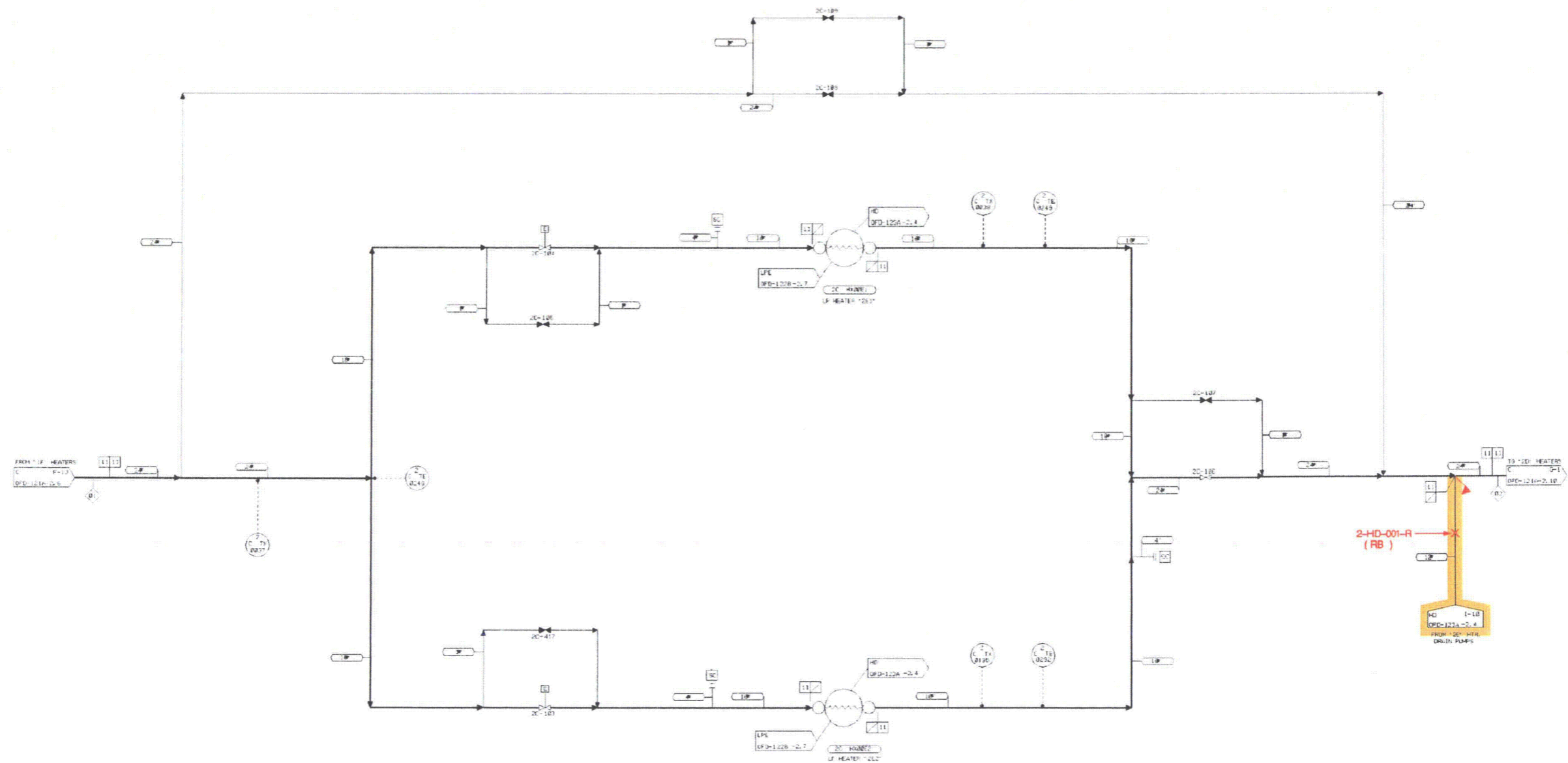
Break ID	Flow Diagram (OFD-)	Break Type	Pipe OD (in)	Pipe Thickness (in)	Building	Layout Drawing (O-)	Floor Elev. Or Break Elev. (See Note 6)	Location (Room No. or Column Numbers)		Op Pres. (psig)	Op Temp. (°F)
2-HD-064-R	123A-2.2	RB	16.000	0.375	TB	1410A, 1410E	775'-0"	J-K	41-42	160	295
2-HD-065-R	123A-2.2	RB	24.000	0.375	TB	1410A	775'-0"	K-M	40-41	160	365
2-HD-066-R	123A-2.2	RB	24.000	0.375	TB	1410A	775'-0"	H-K	40-41	160	365
2-HD-067-R	123A-2.2	RB	18.000	0.375	TB	1410A	775'-0"	K-M	40-42	160	365
2-HD-068-R	123A-2.2	RB	18.000	0.375	TB	1410A	775'-0"	H-K	40-42	160	365
2-HD-069-R	123A-2.2	RB	18.000	0.375	TB	1410H, 1410J	796'-6"	K-M	40-41	160	365
2-HD-070-R	123A-2.2	RB	18.000	0.375	TB	1410H, 1410J	796'-6"	H-K	40-41	160	365
2-HD-075-R01	123A-2.1	RB	16.000	0.375	TB	1410A, 1410C	775'-0"	K-M	36-40	280	380
2-HD-075-R02	123A-2.1	RB	16.000	0.375	TB	1410H, 1410I	796'-6"	K-L	36-37	280	415
2-HD-076-R	123A-2.1	RB	10.750	0.365	TB	1410A	775'-0"	L-M	36-37	280	380
2-HD-077-R	123A-2.1	RB	10.750	0.365	TB	1410A	775'-0"	K-M	36-37	280	380
2-HD-078-R	123A-2.1	RB	10.750	0.365	TB	1410A	775'-0"	K-M	36-37	280	380
2-HD-079-R	123A-2.1	RB	18.000	0.375	TB	1410A	775'-0"	K-L	35-36	280	380
2-HD-080-R01	123A-2.1	RB	16.000	0.375	TB	1410A, 1410C 1410F	775'-0"	H-K	36-40	280	380
2-HD-080-R02	123A-2.1	RB	16.000	0.375	TB	1410H, 1410I	796'-6"	J-K	36-37	280	415
2-HD-081-R	123A-2.1	RB	10.750	0.365	TB	1410A	775'-0"	H-K	36-37	280	380
2-HD-082-R	123A-2.1	RB	10.750	0.365	TB	1410A	775'-0"	J-K	36-37	280	380
2-HD-083-R	123A-2.1	RB	10.750	0.365	TB	1410A	775'-0"	H-L	36-37	280	380
2-HD-084-R	123A-2.1	RB	18.000	0.375	TB	1410A	775'-0"	J-K	35-36	280	380
2-HD-085-R	123A-2.2	RB	8.625	0.322	TB	1410H	796'-6"	J-K	40-41	160	365
2-HD-086-R01	123A-2.1	RB	10.750	0.365	TB	1410A, 1410C	775'-0"	K-M	34-37	470	425
2-HD-086-R02	123A-2.1	RB	10.750	0.365	TB	1410H, 1410I	796'-6"	K-L	36-37	470	425
2-HD-087-R	123A-2.1	RB	10.750	0.365	TB	1410A	775'-0"	K-M	34-35	470	425
2-HD-088-R	123A-2.1	RB	14.000	0.375	TB	1410A	775'-0"	K-L	34-35	470	425
2-HD-089-R	123A-2.2	RB	10.750	0.365	TB	1410E, 1410J	775'-0" 796'-6"	H-J	40-41	160	365
2-HD-090-R01	123A-2.1	RB	10.750	0.365	TB	1410A, 1410C	775'-0"	H-K	34-37	470	425
2-HD-090-R02	123A-2.1	RB	10.750	0.365	TB	1410H, 1410I	796'-6"	J-K	36-37	470	425
2-HD-091-R	123A-2.1	RB	10.750	0.365	TB	1410A	775'-0"	J-K	34-35	470	425
2-HD-092-R	123A-2.1	RB	14.00	0.375	TB	1410A	775'-0"	J-K	34-35	470	425
2-HD-093	123A-2.1	TE	18.00	0.375	TB	1410H	799'-6"	J-K	35-36	280	415
2-HD-094	123A-2.1	TE	18.00	0.375	TB	1410H	799'-6"	K-L	35-36	280	415
2-HD-095	123A-2.2	TE	24.00	0.375	TB	1410H	803'-3"	K-L	40-41	160	295
2-HD-096	123A-2.2	TE	24.00	0.375	TB	1410H	803'-3"	J-K	40-41	160	295
2-HD-097-R	123A-2.2	RB	8.625	0.322	TB	1410H	796'-6"	K-L	40-41	160	365

Break ID	Flow Diagram (OFD-)	Break Type	Pipe OD (in)	Pipe Thickness (in)	Building	Layout Drawing (O-)	Floor Elev. Or Break Elev. (See Note 6)	Location (Room No. or Column Numbers)		Op Pres. (psig)	Op Temp. (°F)
2-HD-098-R	123A-2.2	RB	10.750	0.365	TB	1410C, 1410J	775'-0" 796'-6"	L-M	40-41	160	365
2-HD-099-R	123A-2.4	RB	4.500	0.237	TB	1410A, 1410E	775'-0"	H-J	37-38	625	190
2-HD-100-R	123A-2.4	RB	4.500	0.237	TB	1410A, 1410G	775'-0"	L-M	37-38	625	190
2-HD-103-R	123A-2.5	RB	1.900	0.200	TB	1410M	775'-0"	J-K	34-35	470	425
2-HD-104-R	123A-2.5	RB	2.375	0.218	TB	1410L, 1410W	775'-0"	K-L	34-35	470	425
2-HD-105-R	123A-2.5	RB	2.375	0.154	TB	1410X	775'-0"	J-K	35-36	280	410
2-HD-106-R	123A-2.5	RB	2.375	0.154	TB	1410X	775'-0"	J-K	35-36	280	410
2-HD-107-R	123A-2.5	RB	2.375	0.218	TB	1410X	775'-0"	J-K	35-36	280	410
2-HD-108-R	123A-2.5	RB	1.900	0.200	TB	1410X	775'-0"	J-K	35-36	280	410
2-HD-109-R	123A-2.5	RB	2.375	0.218	TB	1410X	775'-0"	J-K	35-36	280	410
2-HD-110-R	123A-2.5	RB	2.375	0.154	TB	1410X	775'-0"	K-L	35-36	280	410
2-HD-111-R	123A-2.5	RB	2.375	0.154	TB	1410X	775'-0"	K-L	35-36	280	410
2-HD-112-R	123A-2.5	RB	1.900	0.200	TB	1410X	775'-0"	K-L	35-36	280	410
2-HD-113-R	123A-2.5	RB	2.375	0.218	TB	1410X	775'-0"	K-L	35-36	280	410
2-HD-114-R	123A-2.5	RB	2.375	0.218	TB	1410X	775'-0"	K-L	35-36	280	410
2-HD-115-R	123A-2.1	RB	6.625	0.280	TB	1410A, 1410G	775'-0"	L-M	39-41	160	380
2-HD-116-R	123A-2.1	RB	10.750	0.365	TB	1410A, 1410G	775'-0"	L-M	39-40	280	380
2-HD-117-R	123A-2.1 123A-2.2	RB	16.000	0.375	TB	1410G	775'-0"	L-M	40-41	160	380
2-HD-119-R	123A-2.1	RB	16.000	0.375	TB	1410G	775'-0"	L-M	39-40	280	380
2-HD-120-R	123A-2.1 123A-2.2	RB	18.000	0.375	TB	1410A, 1410G	775'-0"	L-M	40-41	160	380
2-HD-121-R	123A-2.1 123A-2.2	RB	18.000	0.375	TB	1410A, 1410F	775'-0"	H-J	40-41	160	365
2-HD-122-R	123A-2.2 123A-2.3	RB	18.000	0.375	TB	1410A, 1410D	775'-0"	L-M	38-41	45	275
2-HD-123-R	123A-2.1 123A-2.2	RB	16.000	0.375	TB	1410F	775'-0"	H-J	40-41	160	365
2-HD-124-R	123A-2.1	RB	6.625	0.280	TB	1410F	775'-0"	H-J	39-41	280	380
2-HD-125-R	123A-2.1	RB	10.750	0.365	TB	1410F	775'-0"	H-J	39-40	280	380
2-HD-126-R	123A-2.1	RB	16.000	0.375	TB	1410F	775'-0"	H-J	39-40	280	380
2-HD-128-R	123A-2.2 123A-2.3	RB	18.000	0.375	TB	1410A, 1410F	775'-0"	H-K	38-41	45	275
2-HD-129-R	123A-2.5	RB	2.375	0.218	TB	1410L	775'-0"	J-K	34-35	470	425
2-HD-130-R	123A-2.1	RB	4.500	0.237	TB	1410H, 1410I	796'-6"	J-K	36-37	470	425
2-HD-131-R	123A-2.1	RB	16.000	0.375	TB	1410H, 1410I	796'-6"	J-K	36-37	280	415
2-HD-132-R	123A-2.1	RB	4.500	0.237	TB	1410H, 1410I	796'-6"	J-K	36-37	280	415

Break ID	Flow Diagram (OFD-)	Break Type	Pipe OD (in)	Pipe Thickness (in)	Building	Layout Drawing (O-)	Floor Elev. Or Break Elev. (See Note 6)	Location (Room No. or Column Numbers)		Op Pres. (psig)	Op Temp. (°F)
2-HD-133-R	123A-2.1	RB	4.500	0.237	TB	1410H, 1410I	796'-6"	K-L	36-37	470	425
2-HD-134-R	123A-2.1	RB	16.000	0.375	TB	1410H, 1410I	796'-6"	K-L	36-37	280	415
2-HD-135-R	123A-2.1	RB	4.500	0.237	TB	1410H, 1410I	796'-6"	K-L	36-37	280	415
2-HD-136-R	123A-2.1	RB	16.000	0.375	TB	1410H, 1410I	799'-6"	J-K	35-37	280	415
2-HD-137-R	123A-2.1	RB	16.000	0.375	TB	1410H, 1410I	799'-6"	K-L	35-37	280	415

Notes:

1. Break numbers may not be consecutive
2. Break type: RB – Running Break (Piping not analyzed for seismic), TE – Terminal End, IB – Intermediate Break
3. Building: TB – Turbine Building, AB – Auxiliary Building.
4. Each running break may contain one or more sub-breaks.
5. For the Unit 2 Heater Drain System 4 Terminal End Breaks and 129 Running Breaks were considered; the non-excluded breaks listed in this table include 4 Terminal End Breaks and 129 Running Breaks.
6. For Terminal End Break locations the elevation of the break location is given. For each Running Break the elevation of the floor or room that contains the Running Break is given.
7. Other Abbreviations: OD – Outer Diameter, in – inches, Op - operating



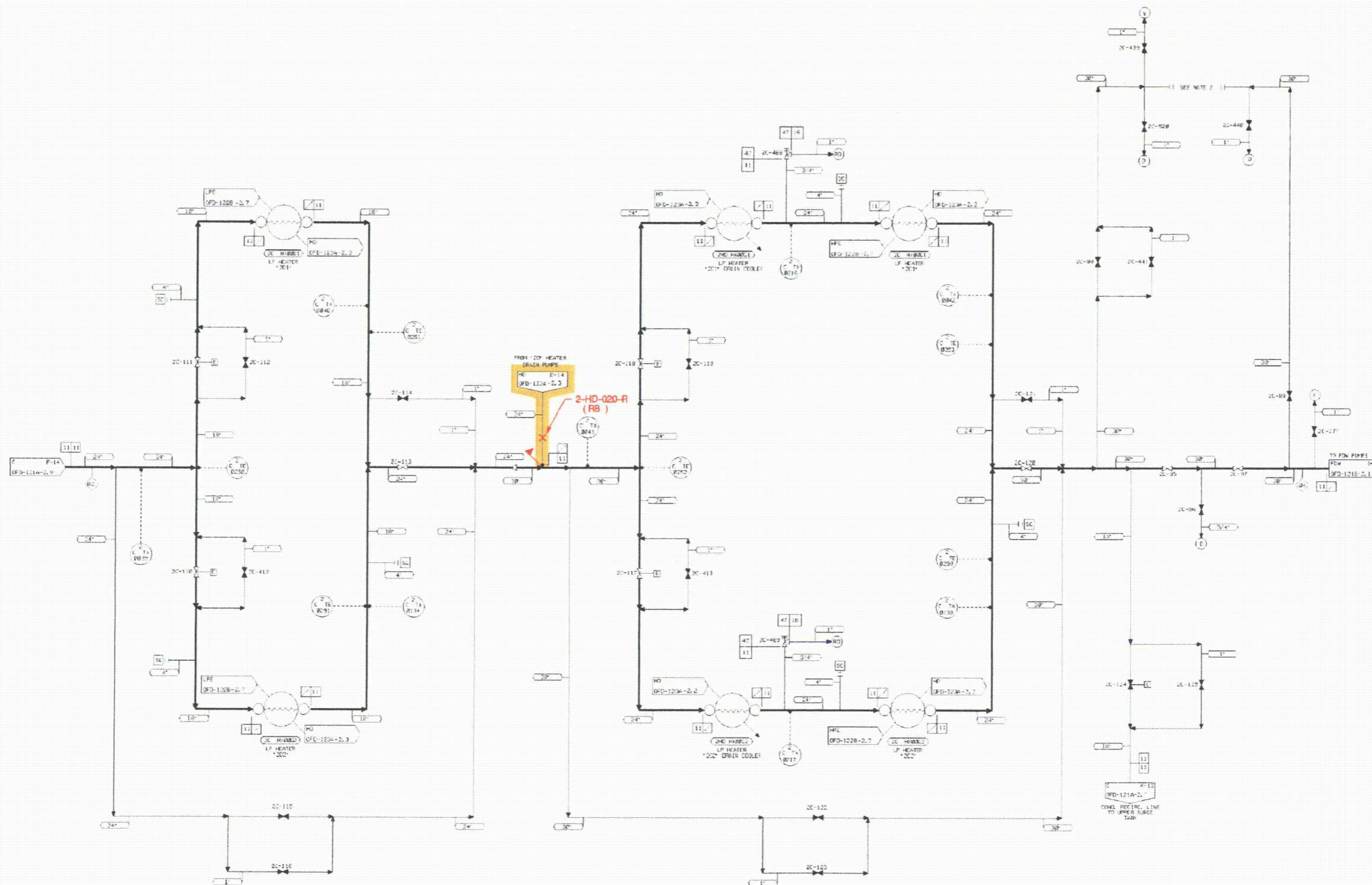
- LEGEND**
- - High Energy Piping (Unit 1)
  - - High Energy Piping (Unit 2)
  - - High Energy Piping (Unit 3)
  - X - High Energy Line Break Location
  - N-SYS-NNN (-N) - Break Number
  - TE - Terminal End (Break)
  - RB - Running Break
  - CR - Critical Crack
  - IB - Intermediate Break
  - ↑ - Running Break Boundary

**FIGURE 5.1-5**  
**HEATER DRAIN SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 1 of 7 )

**UNIT 2**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-121A-2.9 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.

HELB-121A-02-09



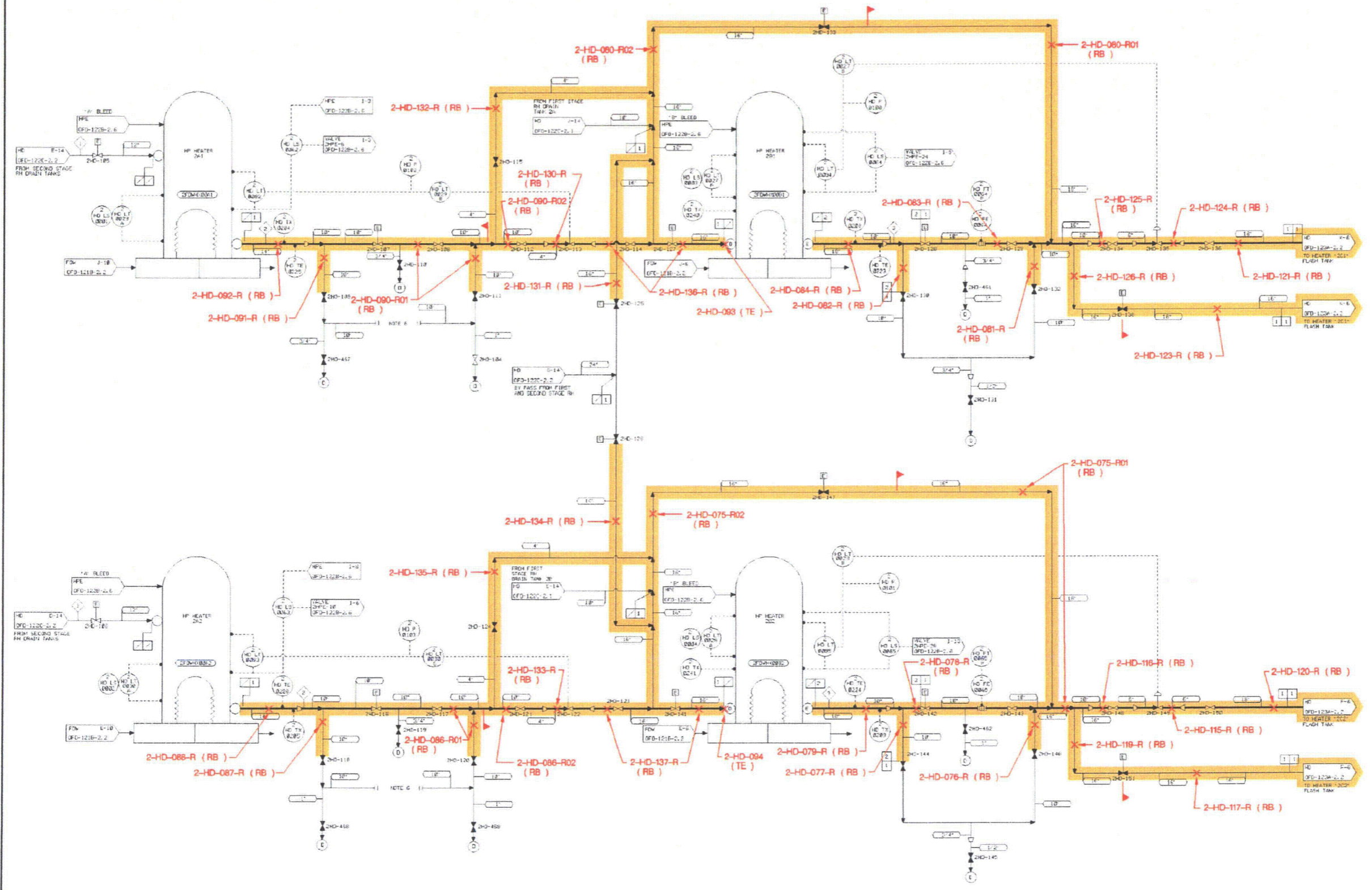
- LEGEND**
- - High Energy Piping (Unit 1)
  - - High Energy Piping (Unit 2)
  - - High Energy Piping (Unit 3)
  - X - High Energy Line Break Location
  - N-SYS-NNN (-N) - Break Number
  - TE - Terminal End (Break)
  - RB - Running Break
  - CR - Critical Crack
  - IB - Intermediate Break
  - ▶ - Running Break Boundary

**FIGURE 5.1-5**  
**HEATER DRAIN SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 2 of 7 )

**UNIT 2**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-121A-2.10 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.





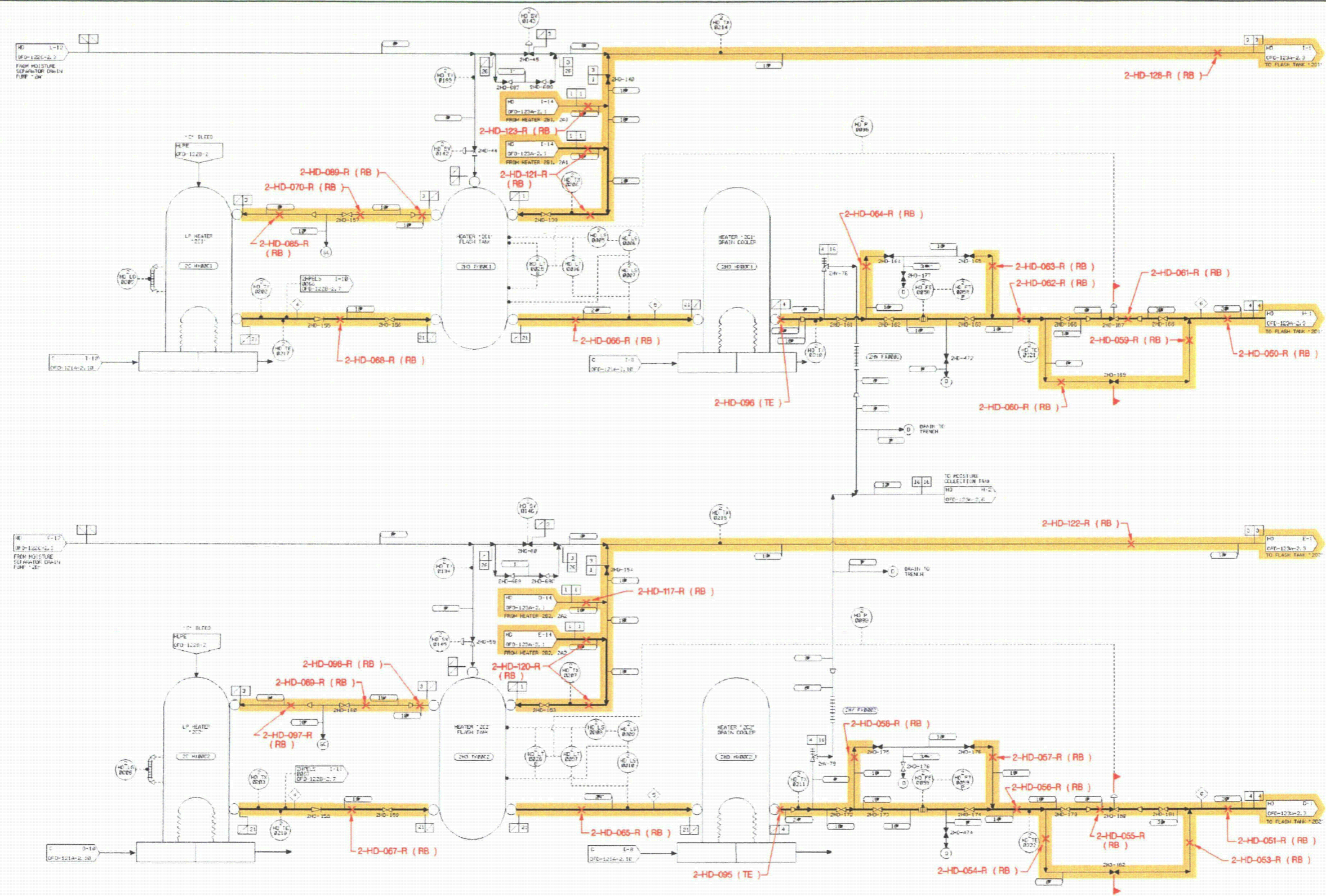
- LEGEND**
- - High Energy Piping (Unit 1)
  - - High Energy Piping (Unit 2)
  - - High Energy Piping (Unit 3)
  - X - High Energy Line Break Location
  - N-SYS-NNN (-N) - Break Number
  - TE - Terminal End (Break)
  - RB - Running Break
  - CR - Critical Crack
  - IB - Intermediate Break
  - ↑ - Running Break Boundary

**FIGURE 5.1-5**  
**HEATER DRAIN SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 3 of 7 )

**UNIT 2**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-123A-2.1 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.

**HELB-123A-02-01**



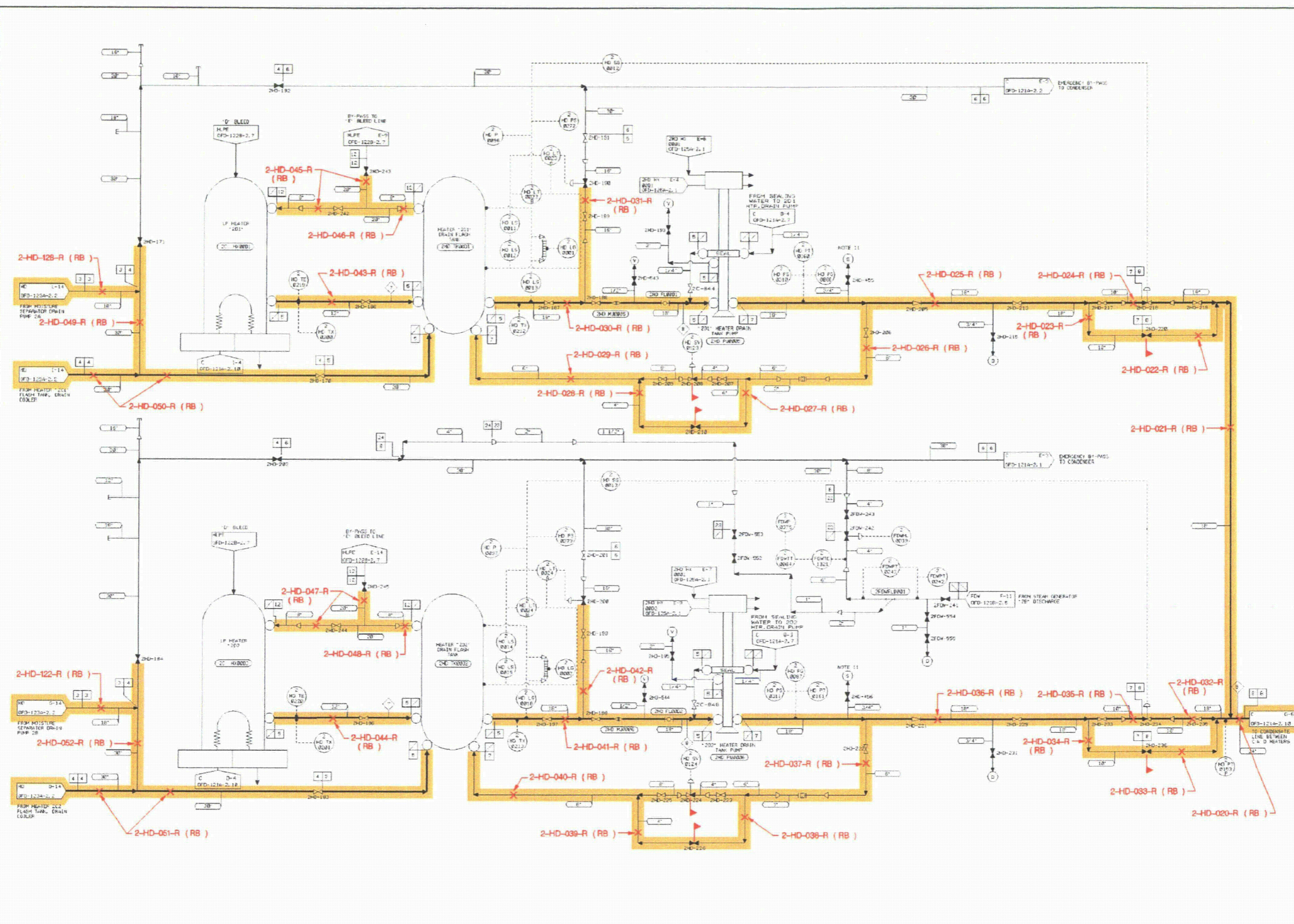
- LEGEND**
- - High Energy Piping (Unit 1)
  - - High Energy Piping (Unit 2)
  - - High Energy Piping (Unit 3)
  - X - High Energy Line Break Location
  - N-SYS-NNN (N) - Break Number
  - TE - Terminal End (Break)
  - RB - Running Break
  - CR - Critical Crack
  - IB - Intermediate Break
  - P - Running Break Boundary

**FIGURE 5.1-5**  
**HEATER DRAIN SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 4 of 7 )

**UNIT 2**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-123A-2.2 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.

HEI R-123A-02-02



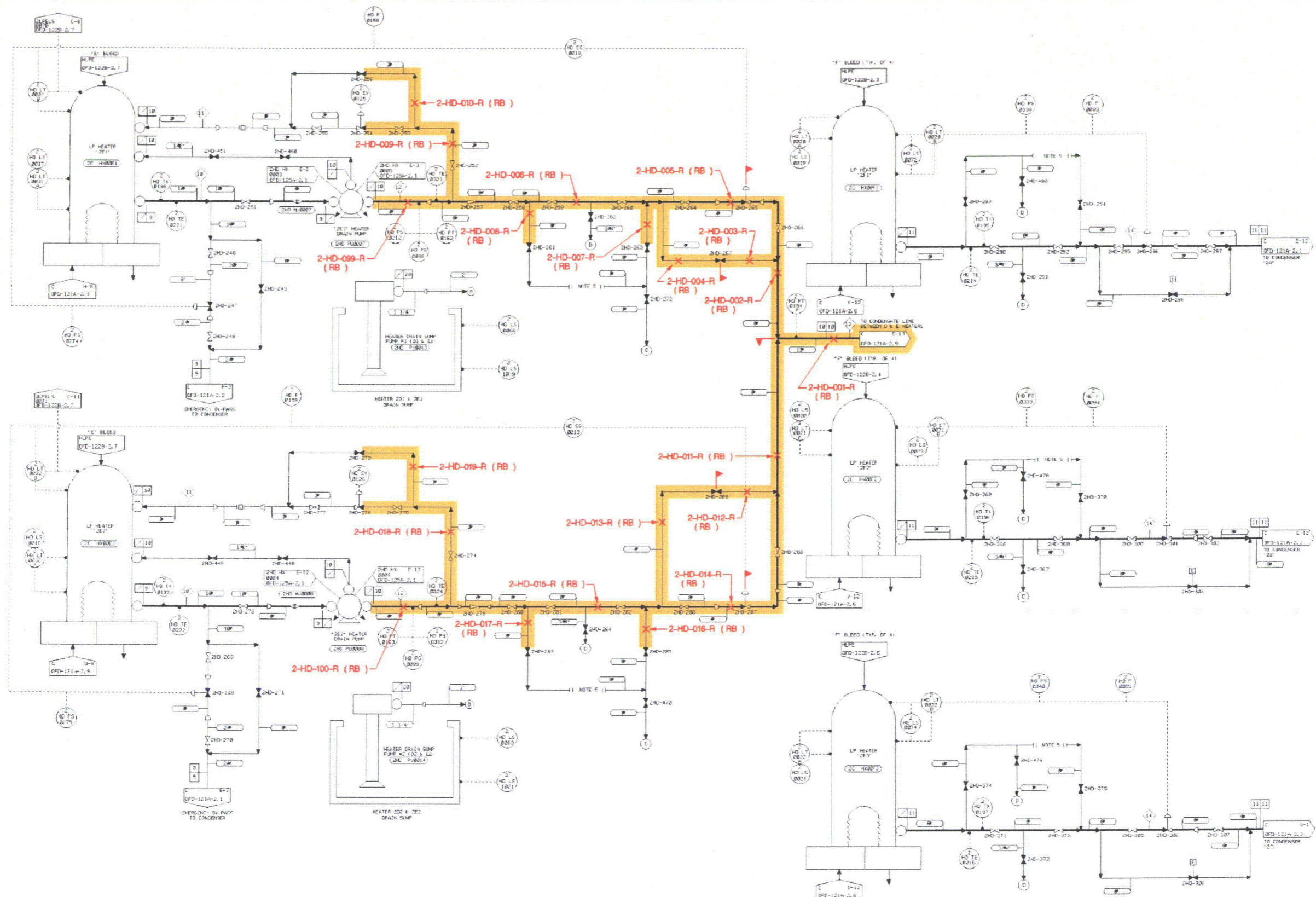
- LEGEND**
- - High Energy Piping (Unit 1)
  - - High Energy Piping (Unit 2)
  - - High Energy Piping (Unit 3)
  - X - High Energy Line Break Location
  - N-SYS-NNN (-N) - Break Number
  - TE - Terminal End (Break)
  - RB - Running Break
  - CR - Critical Crack
  - IB - Intermediate Break
  - ▶ - Running Break Boundary

**FIGURE 5.1-5**  
**HEATER DRAIN SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 5 of 7 )

**UNIT 2**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-123A-2.3 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.

**HELB-123A-02-03**



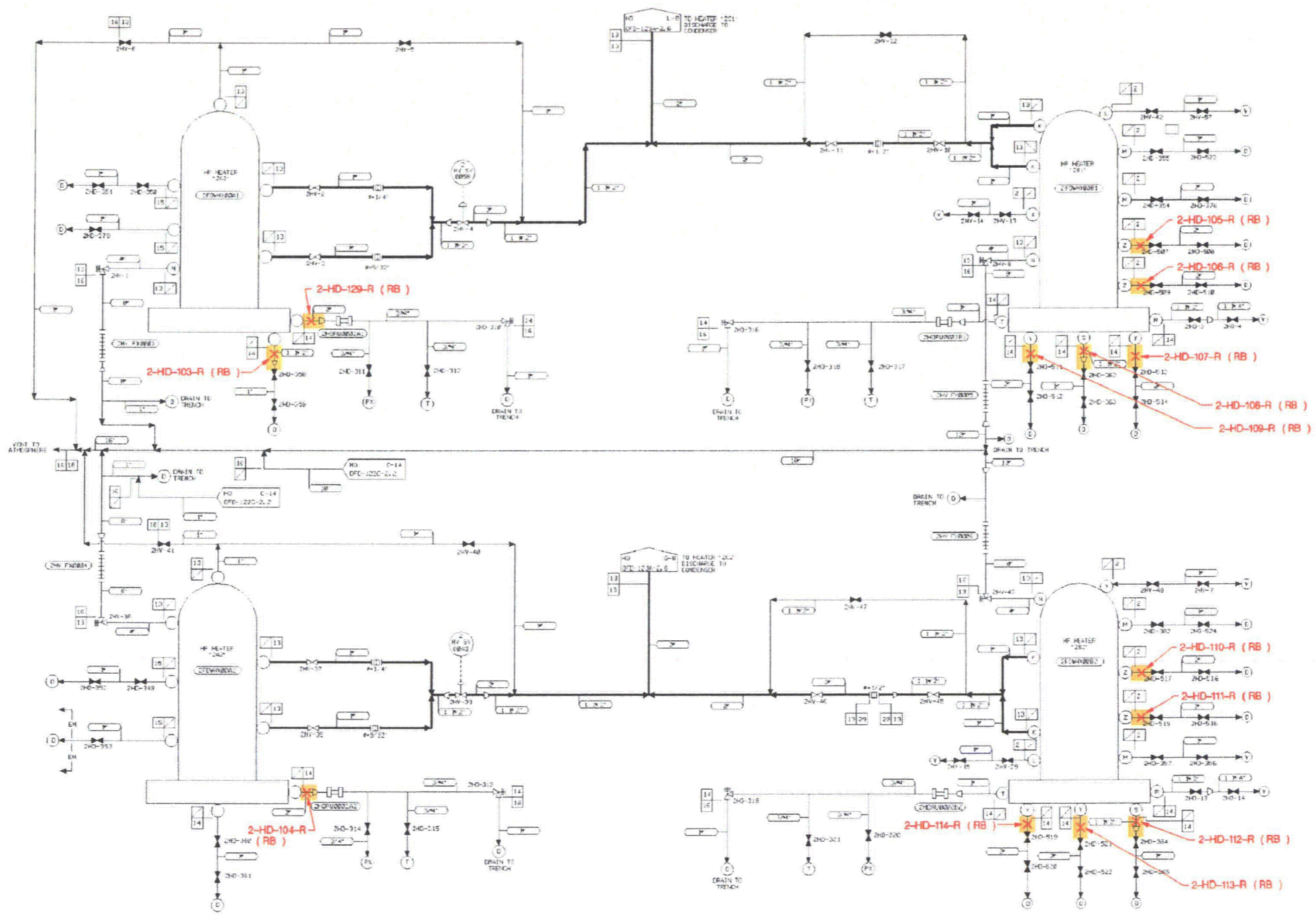
- LEGEND**
- - High Energy Piping (Unit 1)
  - - High Energy Piping (Unit 2)
  - - High Energy Piping (Unit 3)
  - X - High Energy Line Break Location
  - N-SYS-NNN (-N) - Break Number
  - TE - Terminal End (Break)
  - RB - Running Break
  - CR - Critical Crack
  - IB - Intermediate Break
  - ▶ - Running Break Boundary

**FIGURE 5.1-5**  
**HEATER DRAIN SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 6 of 7 )

**UNIT 2**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-123A-2.4 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.

HFI B-123A-02-04



- LEGEND**
- - High Energy Piping (Unit 1)
  - - High Energy Piping (Unit 2)
  - - High Energy Piping (Unit 3)
  - X - High Energy Line Break Location
  - N-SYS-NNN (-N) - Break Number
  - TE - Terminal End (Break)
  - RB - Running Break
  - CR - Critical Crack
  - IB - Intermediate Break
  - |— - Running Break Boundary

**FIGURE 5.1-5**  
**HEATER DRAIN SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 7 of 7 )

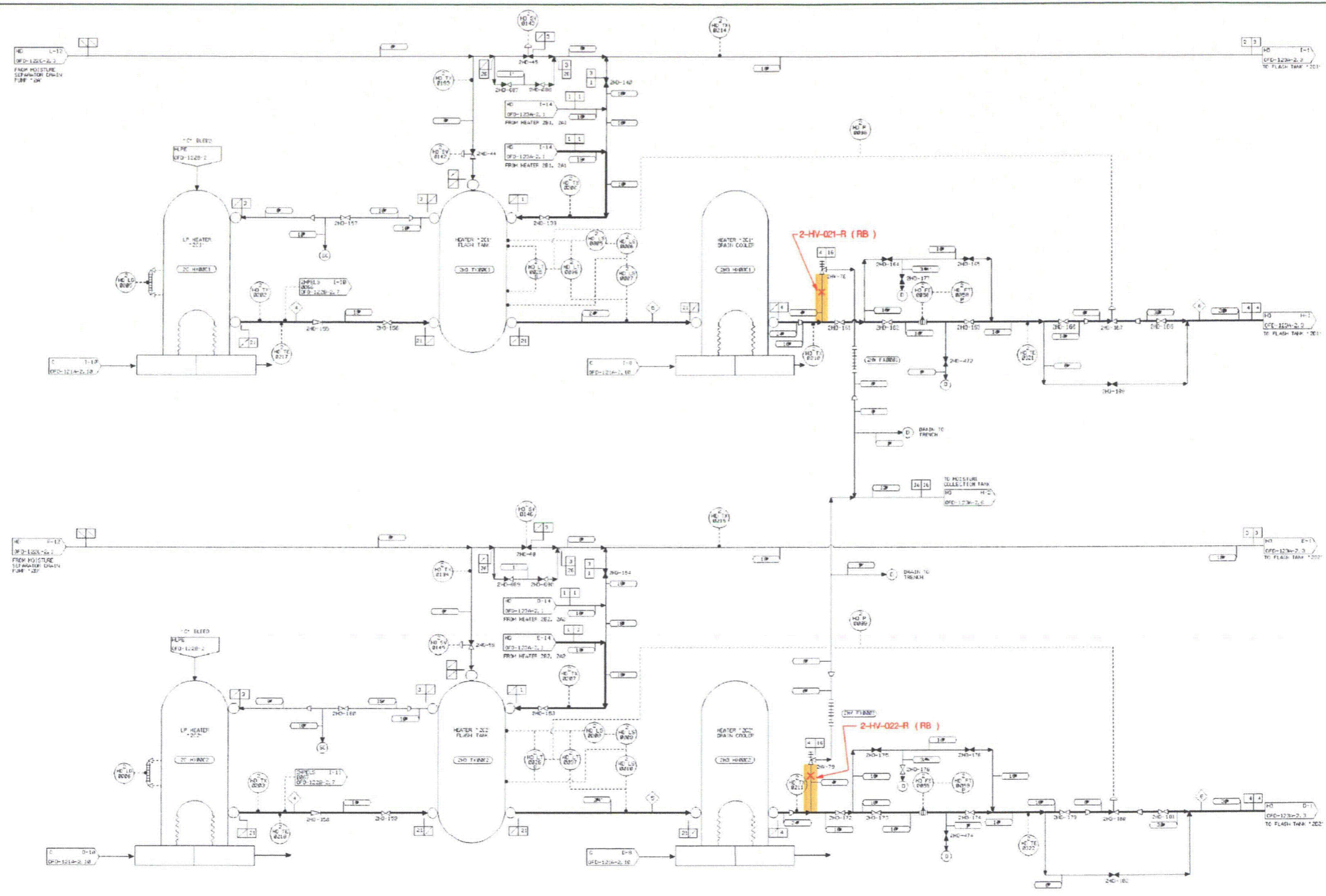
**UNIT 2**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-123A-2.5 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.

Break ID	Flow Diagram (OFD-)	Break Type	Pipe OD (in)	Pipe Thickness (in)	Building	Layout Drawing (O-)	Floor Elev.	Location (Room No. or Column Numbers)		Op Pres. (psig)	Op Temp. (°F)
2-HV-001-R	123A-2.5	RB	1.900	0.145	TB	1410L	796'-6"	J-K	35-36	280	410
2-HV-002-R	123A-2.5	RB	1.900	0.145	TB	1410L	796'-6"	J-K	35-36	280	410
2-HV-003-R	123A-2.5	RB	1.900	0.145	TB	1410L	796'-6"	L	35-36	280	410
2-HV-004-R	123A-2.5	RB	1.900	0.145	TB	1410L	796'-6"	L	35-36	280	410
2-HV-005-R	123A-2.5	RB	4.500	0.237	TB	1410H	796'-6"	J-K	35-36	280	410
2-HV-006-R	123A-2.5	RB	4.500	0.237	TB	1410H	796'-6"	K-L	35-36	280	410
2-HV-007-R	123A-2.5	RB	4.500	0.237	TB	1410H	796'-6"	J-K	34-35	470	425
2-HV-008-R	123A-2.5	RB	4.500	0.237	TB	1410H	796'-6"	K-L	34-35	470	425
2-HV-009-R	123A-2.6	RB	4.500	0.237	TB	1410H	796'-6"	J-K	40-41	160	365
2-HV-010-R	123A-2.6	RB	4.500	0.237	TB	1410H	796'-6"	K-L	40-41	160	365
2-HV-011-R	123A-2.6	RB	6.625	0.280	TB	1410H	796'-6"	J-K	38-39	45	275
2-HV-012-R	123A-2.6	RB	6.625	0.280	TB	1410H	796'-6"	K-L	38-39	45	275
2-HV-013-R	123A-2.6	RB	3.500	0.216	TB	1410L	796'-6"	J-K	40-41	160	365
2-HV-014-R01	123A-2.6	RB	3.500	0.216	TB	1410L	775'-0"	J-K	40-41	160	365
2-HV-014-R02	123A-2.6	RB	3.500	0.216	TB	1410L	796'-6"	J-K	40-41	160	365
2-HV-015-R	123A-2.6	RB	3.500	0.216	TB	1410L	796'-6"	J-K	38-39	45	275
2-HV-016-R01	123A-2.6	RB	3.500	0.216	TB	1410L	775'-0"	J-K	38-39	45	275
2-HV-016-R02	123A-2.6	RB	3.500	0.216	TB	1410L	796'-6"	J-K	38-39	45	275
2-HV-017-R	123A-2.6	RB	3.500	0.216	TB	1410W	796'-6"	K-L	40-41	160	365
2-HV-018-R01	123A-2.6	RB	3.500	0.216	TB	1410W	775'-0"	K-L	40-41	160	365
2-HV-018-R02	123A-2.6	RB	3.500	0.216	TB	1410W	796'-6"	K-L	40-41	160	365
2-HV-019-R	123A-2.6	RB	3.500	0.216	TB	1410W	796'-6"	K-L	38-39	45	275
2-HV-020-R01	123A-2.6	RB	3.500	0.216	TB	1410W	775'-0"	K-L	38-39	45	275
2-HV-020-R02	123A-2.6	RB	3.500	0.216	TB	1410W	796'-6"	K-L	38-39	45	275
2-HV-021-R	123A-2.2	RB	4.500	0.237	TB	1410H	796'-6"	J-K	40-41	160	295
2-HV-022-R	123A-2.2	RB	4.500	0.237	TB	1410H	796'-6"	L	40-41	160	295
2-HV-038-R	123A-2.5	RB	1.900	0.200	TB	1410L	775'-0"	J-K	35-36	280	410
2-HV-039-R	123A-2.5	RB	1.900	0.200	TB	1410W	775'-0"	K-L	35-36	280	410

Notes:

1. Break numbers may not be consecutive
2. Break type: RB – Running Break (Piping not analyzed for seismic), TE – Terminal End, IB – Intermediate Break
3. Building: TB – Turbine Building, AB – Auxiliary Building
4. Each running break may contain one or more sub-breaks. For the Unit 2 Heater Vent System 44 Running Breaks were considered; the 28 non-excluded, Running Breaks are listed in this table.
5. For each Running Break the elevation of the floor or room that contains the Running Break is given.
6. Other Abbreviations: OD – Outer Diameter, in – inches, Op - operating



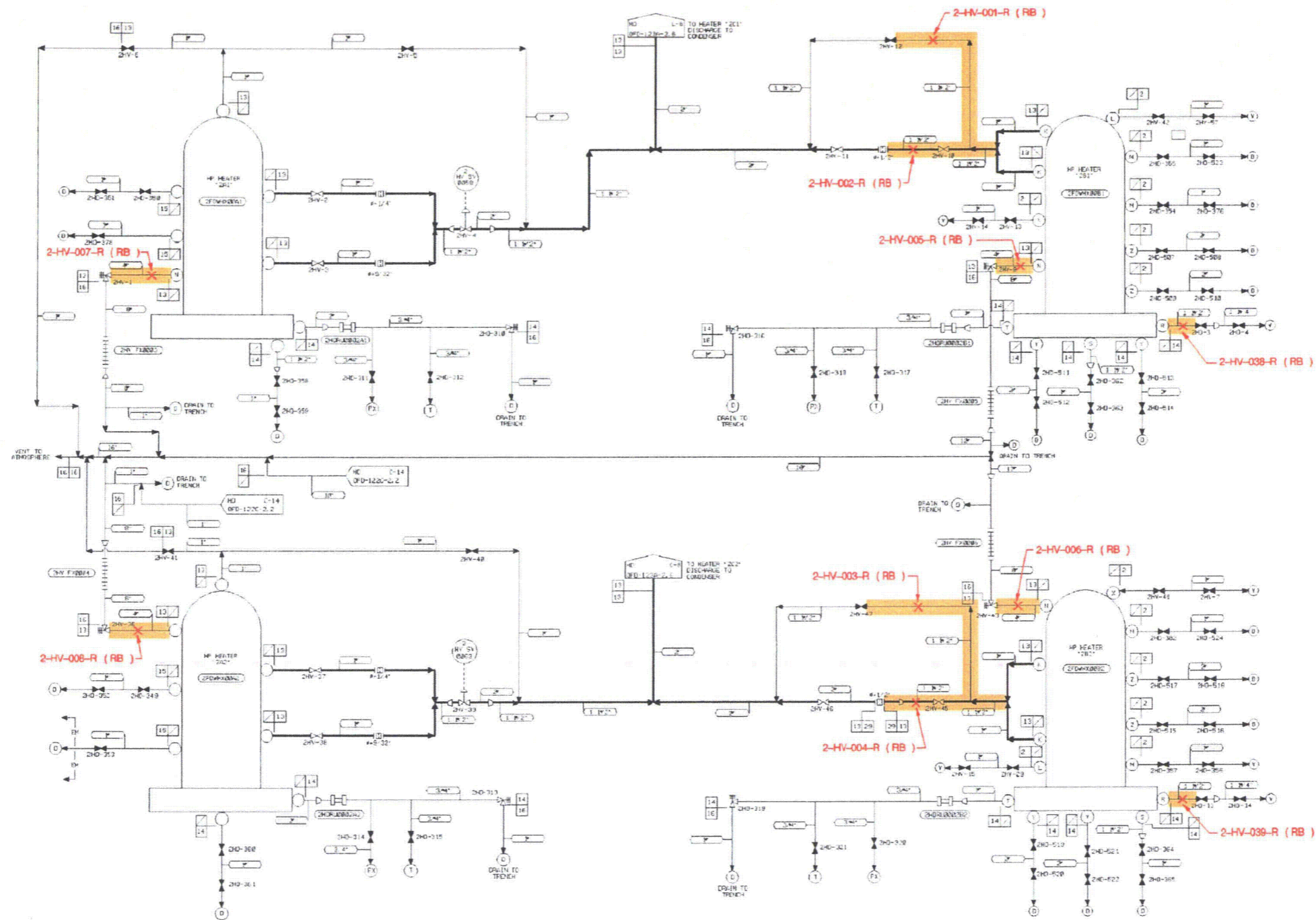
- LEGEND**
- - High Energy Piping (Unit 1)
  - - High Energy Piping (Unit 2)
  - - High Energy Piping (Unit 3)
  - X - High Energy Line Break Location
  - N-SYS-NNN (-N) - Break Number
  - TE - Terminal End (Break)
  - RB - Running Break
  - CR - Critical Crack
  - IB - Intermediate Break
  - |— - Running Break Boundary

**FIGURE 5.1-6**  
**HEATER VENT SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 (Sheet 1 of 3)

**UNIT 2**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-123A-2.2 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.

**HELB-123A-02-02**



- LEGEND**
- - High Energy Piping (Unit 1)
  - - High Energy Piping (Unit 2)
  - - High Energy Piping (Unit 3)
  - X - High Energy Line Break Location
  - N-SYS-NNN (-N) - Break Number
  - TE - Terminal End (Break)
  - RB - Running Break
  - CR - Critical Crack
  - IB - Intermediate Break
  - ▬ - Running Break Boundary

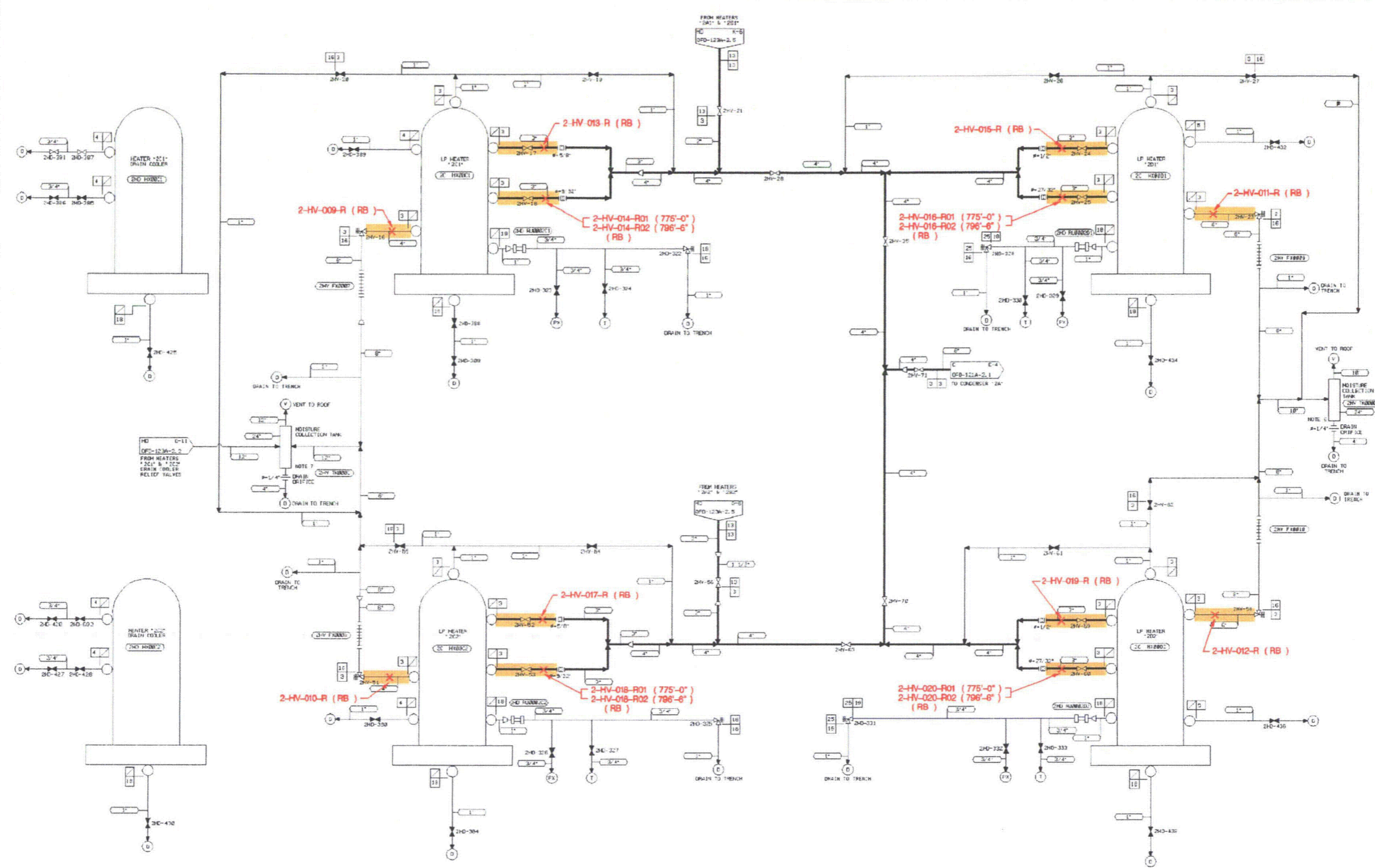
**FIGURE 5.1-6**  
**HEATER VENT SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 2 of 3 )

**UNIT 2**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-123A-2.5 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.

HFI R-123A-02-05





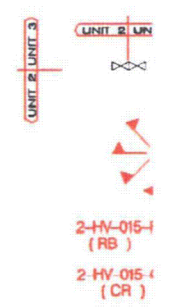
- LEGEND**
- - High Energy Piping (Unit 1)
  - - High Energy Piping (Unit 2)
  - - High Energy Piping (Unit 3)
  - X - High Energy Line Break Location
  - N-SYS-NNN (-N) - Break Number
  - TE - Terminal End (Break)
  - RB - Running Break
  - CR - Critical Crack
  - IB - Intermediate Break
  - ↑ - Running Break Boundary

**FIGURE 5.1-6**  
**HEATER VENT SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 3 of 3 )

**UNIT 2**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-123A-2.6 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.

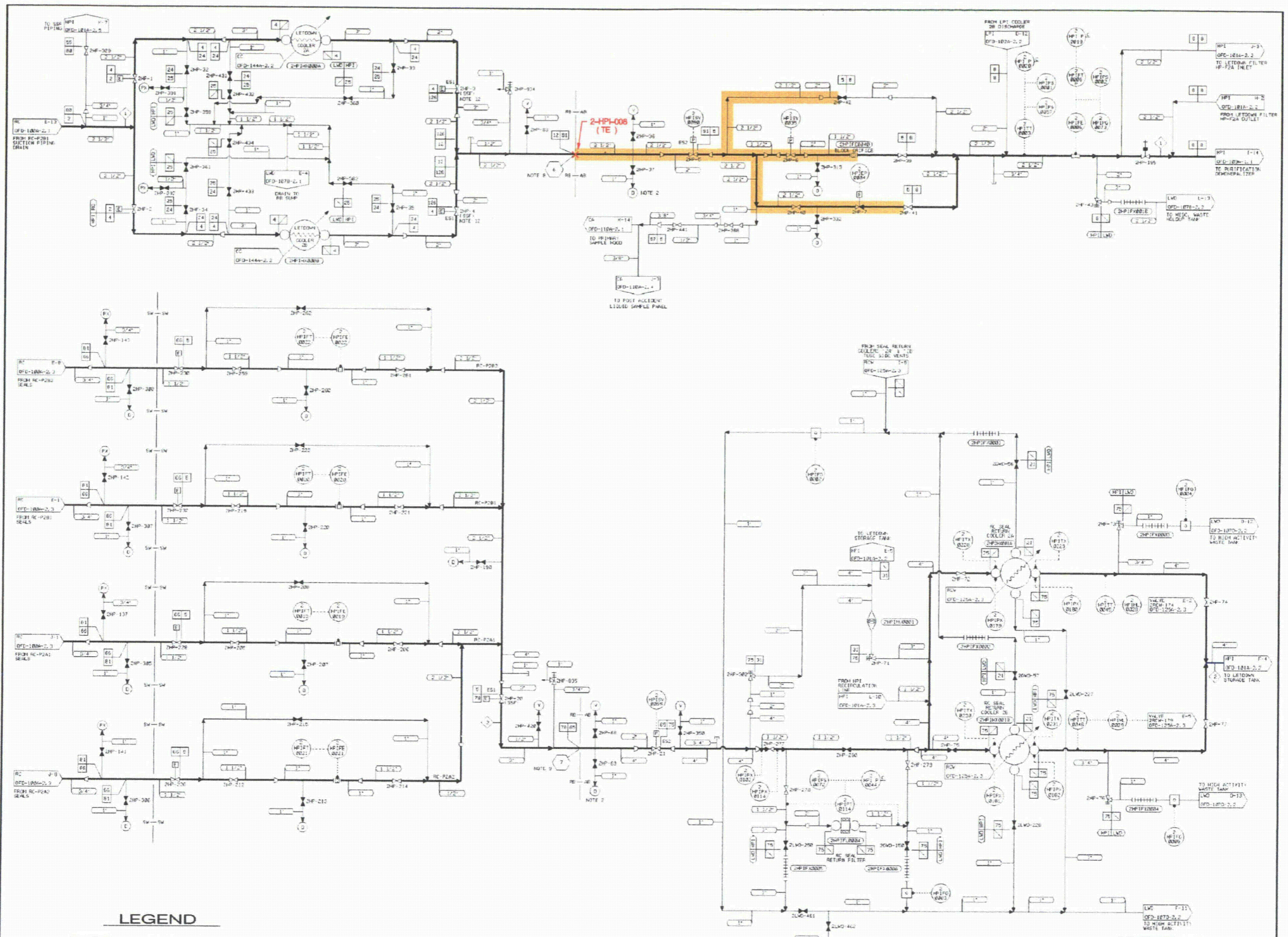
**HELB-123A-02-06**



Break ID	Flow Diagram (OFD-)	Break Type	Pipe OD (in.)	Pipe Thickness (in.)	Building	Layout Drawing (O-)	Floor Elev. Or Break Elev. (See Note 5)	Location (Room No.)	Op Pres. (psig)	Op Temp. (°F)
2-HPI-001	101A-2.3	TE	3.5	.438	AB	435D	760'-2"	58	3028	150
2-HPI-002	101A-2.3	TE	3.5	.438	AB	435D	760'-2"	58	3028	150
2-HPI-003	101A-2.4	TE	1.9	.4	AB	1439D	816'-0"	407	3028	150
2-HPI-004	101A-2.4	TE	1.9	.4	AB	1439C	812'-0"	410	3028	150
2-HPI-005	101A-2.4	TE	1.9	.4	AB	1439C	812'-0"	410	3028	150
2-HPI-006	101A-2.4	TE	1.9	.4	AB	1439D	816'-0"	407	3028	150
2-HPI-007	101A-2.4	TE	4.5	.674	AB	1439D	812'-0"	407	3028	150
2-HPI-008	101A-2.1	TE	2.875	.552	AB	1439D	812'-0"	407	2263	142
2-HPI-015-R	101A-2.3	RB	1.9	.281	AB	435D	758'-0"	58	3028	150
2-HPI-016-R	101A-2.3	RB	1.9	.281	AB	435D	758'-0"	58	3028	150

Notes:

1. Break numbers may not be consecutive
2. Break type: RB – Running Break (Piping not analyzed for seismic), TE – Terminal End, IB – Intermediate Break, CR – Critical Crack
3. Building: TB – Turbine Building, AB – Auxiliary Building.
4. Each running break may contain one or more sub-breaks. For the Unit 2 High Pressure Injection System the eight (8) non-excluded, Terminal End Breaks and the two (2) non-excluded, Running Breaks are listed in this table.
5. For Terminal End Break locations the elevation of the break location is given. For each Running Break the elevation of the floor or room that contains the Running Break is given.
6. Other Abbreviations: OD – Outer Diameter, in – inches, Op - operating



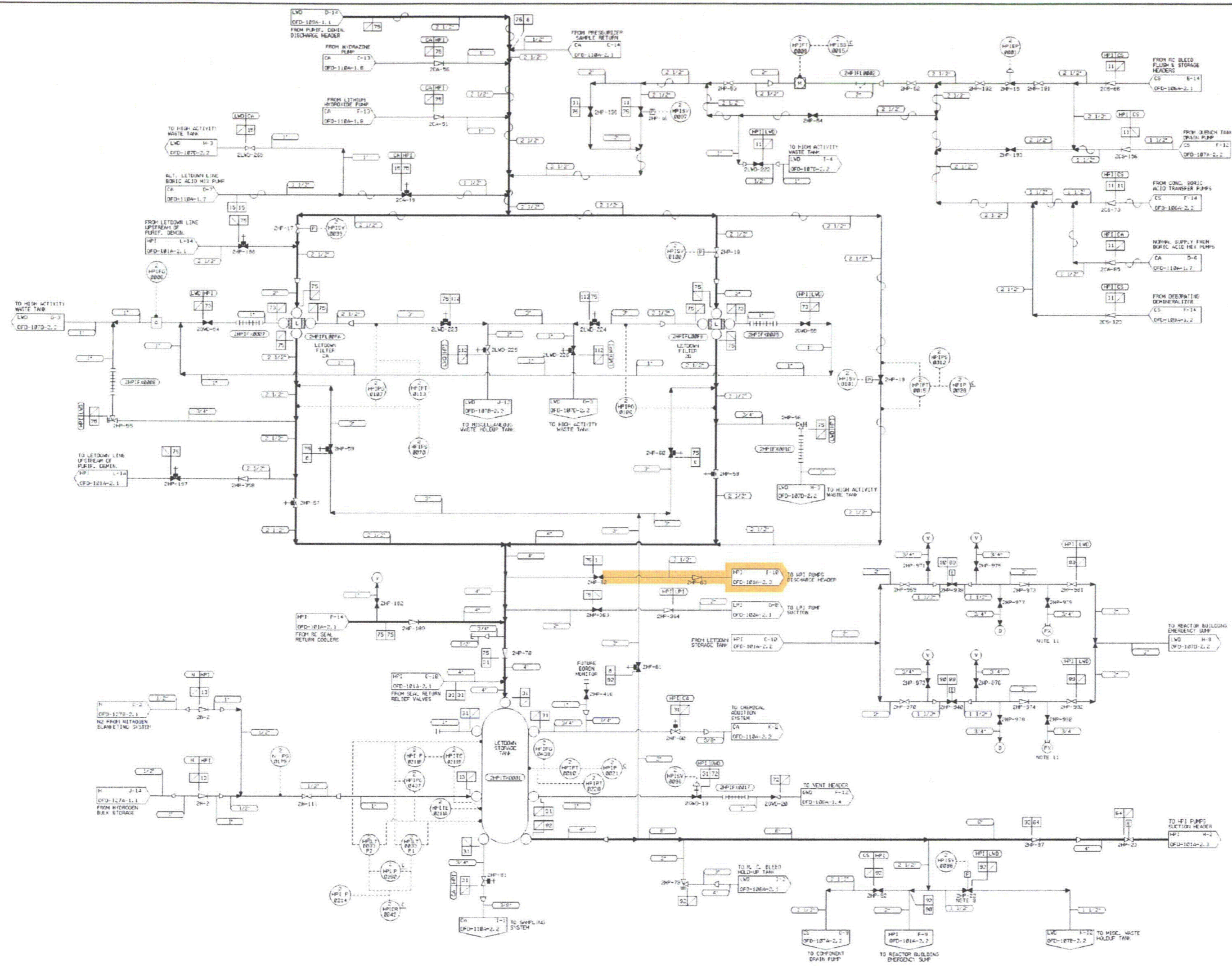
- LEGEND**
- High Energy Piping (Unit 1)
  - High Energy Piping (Unit 2)
  - High Energy Piping (Unit 3)
  - X** High Energy Line Break Location
  - N-SYS-NNN (-N)** Break Number
  - TE** Terminal End (Break)
  - RB** Running Break
  - CR** Critical Crack
  - IB** Intermediate Break
  - ▶** Running Break Boundary

**FIGURE 5.1-7**  
**HIGH PRESSURE INJECTION SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 1 of 4 )

**UNIT 2**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-101A-2.1 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.

**HEI B-101A-02-01**



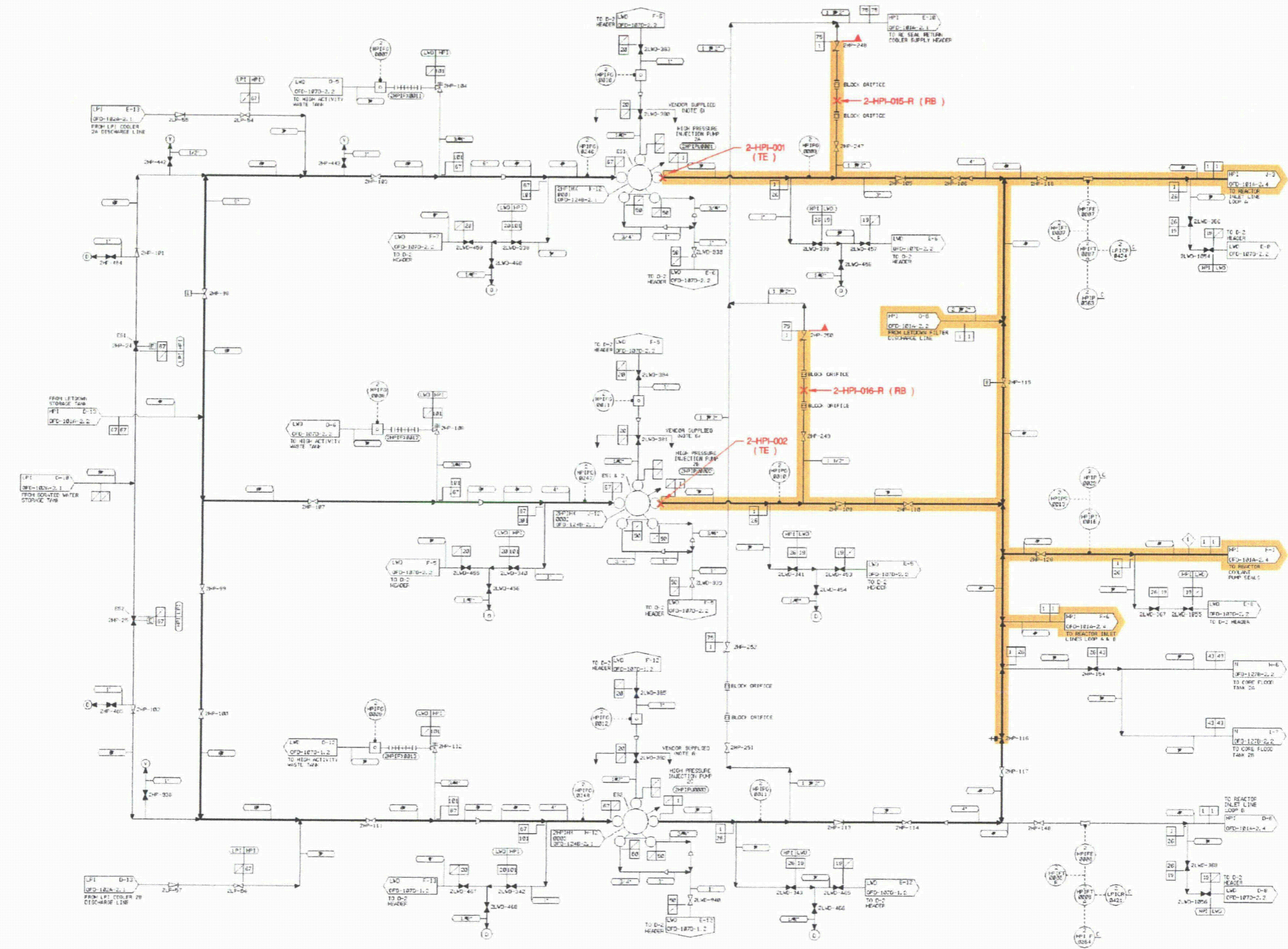
- LEGEND**
- - High Energy Piping (Unit 1)
  - - High Energy Piping (Unit 2)
  - - High Energy Piping (Unit 3)
  - X - High Energy Line Break Location
  - N-SYS-NNN (-N) - Break Number
  - TE - Terminal End (Break)
  - RB - Running Break
  - CR - Critical Crack
  - IB - Intermediate Break
  - ↑ - Running Break Boundary

**FIGURE 5.1-7**  
**HIGH PRESSURE INJECTION SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 2 of 4 )

**UNIT 2**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-101A-2.2 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.

HFI R-101A-02-02



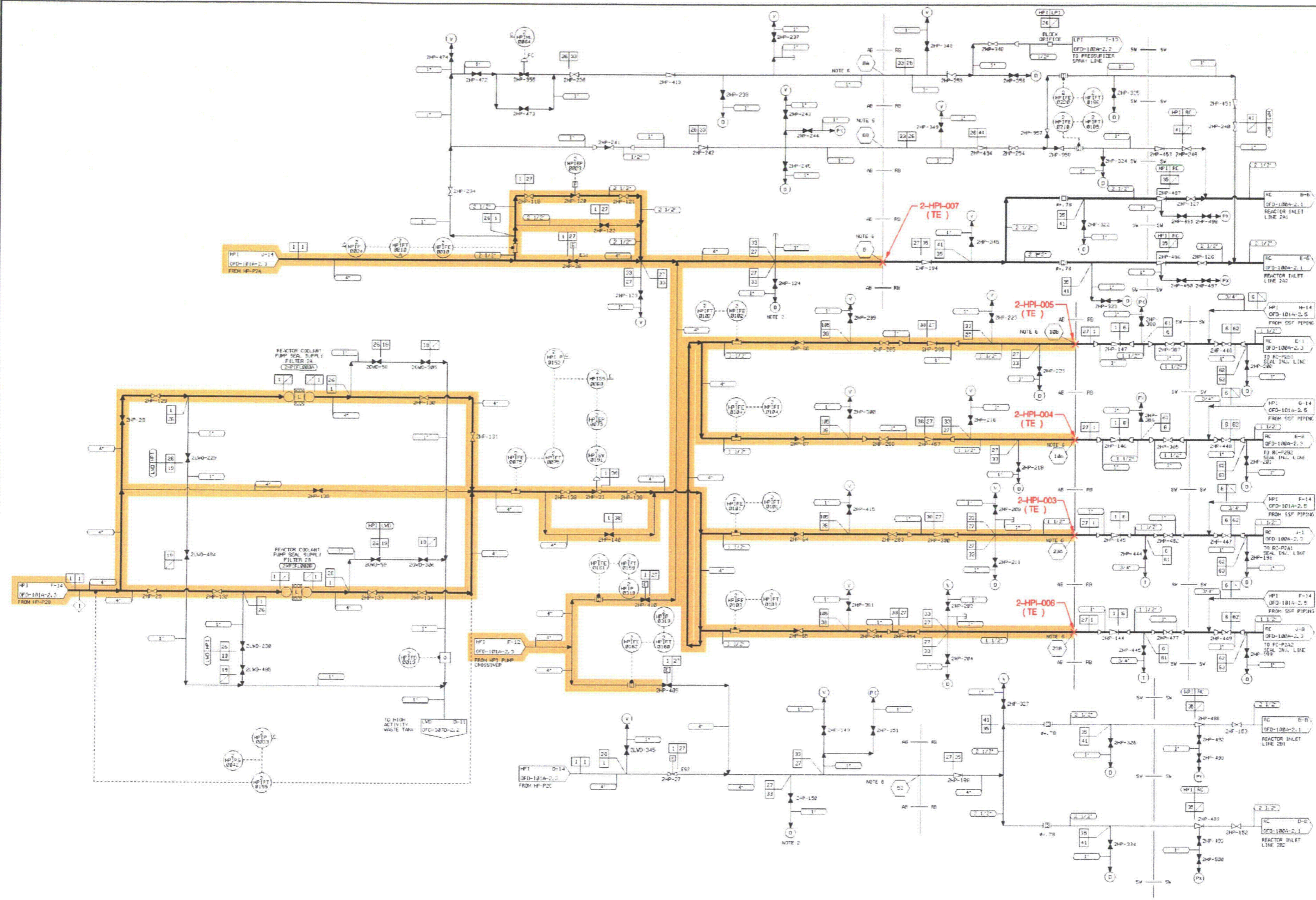
- LEGEND**
- - High Energy Piping (Unit 1)
  - - High Energy Piping (Unit 2)
  - - High Energy Piping (Unit 3)
  - X - High Energy Line Break Location
  - N-SYS-NNN (-N) - Break Number
  - TE - Terminal End (Break)
  - RB - Running Break
  - CR - Critical Crack
  - IB - Intermediate Break
  - ▶ - Running Break Boundary

**FIGURE 5.1-7**  
**HIGH PRESSURE INJECTION SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 (Sheet 3 of 4)

**UNIT 2**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-101A-2.3 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.

HELB-101A-02-03



- LEGEND**
- - High Energy Piping (Unit 1)
  - - High Energy Piping (Unit 2)
  - - High Energy Piping (Unit 3)
  - X - High Energy Line Break Location
  - N-SYS-NNN (-N) - Break Number
  - TE - Terminal End (Break)
  - RB - Running Break
  - CR - Critical Crack
  - IB - Intermediate Break
  - |— - Running Break Boundary

**FIGURE 5.1-7**  
**HIGH PRESSURE INJECTION SYSTEM**  
 High Energy Lines, Piping Configurations,  
 Boundaries, Break Locations and Numbers  
 ( Sheet 4 of 4 )

**UNIT 2**

THIS DIAGRAM IS FOR HIGH ENERGY LINE  
 BREAK PURPOSES ONLY.  
 REFERENCE FLOW DIAGRAM OFD-101A-2.4 FOR  
 COMPLETE SYSTEM DESIGN INFORMATION.

**HELB-101A-02-04**

Table 5.1-8  
 Main Steam System – High Energy Line Data – Unit 2

Break ID	Flow Diagram (OFD-)	Break Type	Pipe OD (in)	Pipe Thickness (in)	Building	Layout Drawing (O-) See Note 7	Floor Elev. or Break Elev. (See Note 6)	Location (Room No. or Column Numbers)		Op Pres. (psig)	Op Temp. (°F)
2-MS-001	122B-2.2	TE	28.00	1.400	TB	1401B OM-1200-86	831'-1"	E-F	38-39	900	595
2-MS-002	122B-2.2	TE	28.00	1.400	TB	1401B OM-1200-37	820'-9"	E-F	38-39	900	595
2-MS-003	122B-2.2	TE	28.00	1.400	TB	1401B OM-1200-86	831'-1"	E-F	38-39	900	595
2-MS-004	122B-2.2	TE	28.00	1.400	TB	1401B OM-1200-37	820'-9"	E-F	38-39	900	595
2-MS-008	122A-2.1	TE	12.750	0.562	TB	1401B	813'-0"	L-M	37-38	900	595
2-MS-009	122A-2.1	TE	12.750	0.562	TB	1401B	813'-0"	L-M	38-39	900	595
2-MS-010	122C-2.2	TE	8.625	0.500	TB	1410U	805'-6"	B-C	40-41	900	595
2-MS-011	122C-2.2	TE	8.625	0.500	TB	1410U	805'-6"	C-D	41-42	900	595
2-MS-012	122A-2.1	TE	12.750	0.562	TB	1401G	812'-0"	F-G	41-42	900	595
2-MS-013	122C-2.2	TE	8.625	0.500	TB	1410U	805'-6"	H-J	40-41	900	595
2-MS-014	122C-2.2	TE	8.625	0.500	TB	1410U	805'-6"	G-H	41-42	900	595
2-MS-015	122A-2.1	TE	12.750	0.562	TB	1401G	812'-0"	E-F	41-42	900	595
2-MS-016	122A-2.4	TE	6.625	0.280	TB	1400H	777'-6"	C-D	35-36	310	507
2-MS-017	122A-2.1	TE	6.625	0.432	TB	1403H	812'-0"	E-F	41-42	900	595
2-MS-018	122A-2.1	TE	6.625	0.432	TB	1403H	812'-0"	E-F	41-42	900	595
2-MS-019	122A-2.1	TE	8.625	0.500	TB	1403D	812'-0"	F-G	41-42	900	595
2-MS-020	122A-2.1	TE	8.625	0.500	TB	1403D	812'-0"	E-F	41-42	900	595
2-MS-021	122A-2.3	TE	4.500	0.337	TB	1403A	782'-0"	B-C	31-32	900	595
2-MS-022	122A-2.3	TE	4.500	0.337	TB	1403A	782'-0"	C-D	29-30	900	595
2-MS-023	122A-2.1	TE	12.750	0.562	TB	1441	827'-0"	L-M	37-38	900	595
2-MS-024	122A-2.1	TE	12.750	0.562	TB	1441	827'-1"	M-N	38-39	900	595
2-MS-037-R	122A-2.3	RB	2.375	0.218	TB	1403D 1403K	796'-6"	B-D	36-38	900	595
2-MS-038-R	122A-2.3	RB	3.500	0.300	TB	1403K, 1403G 1403C	796'-6"	B-C	30-32	900	595
2-MS-063	122A-2.1	TE	36.500	1.125	Yard	1441	853'-9"	V-W	81	900	595
2-MS-064	122A-2.1	TE	36.500	1.125	AB	1441	835'-0"	East Penetration Room No. 519		900	595
2-MS-080-R	122A-2.3 128A-2.1	RB	3.500	0.300	TB	1403C 1403G	796'-6"	B-K	29-31	900	595
2-MS-084-R	121C-2.2	RB	2.375	0.218	TB	1403G	796'-6"	F-G	29-30	300	505
2-MS-085-R	121C-2.2	RB	2.375	0.218	TB	1403G	796'-6"	G-H	29-30	300	505
2-MS-086-R	121C-2.2	RB	2.375	0.218	TB	1403G	796'-6"	G-H	29-30	300	505
2-MS-087-R	121C-2.2	RB	2.375	0.218	TB	1403C OM-202-9	796'-6"	F-G	29-30	300	505
2-MS-088-R	121C-2.2	RB	2.375	0.218	TB	1403C OM-202-9	796'-6"	F-G	29-30	300	505

Break ID	Flow Diagram (OFD-)	Break Type	Pipe OD (in)	Pipe Thickness (in)	Building	Layout Drawing (O-) See Note 7	Floor Elev. or Break Elev. (See Note 6)	Location (Room No. or Column Numbers)		Op Pres. (psig)	Op Temp. (°F)
2-MS-089-R	121C-2.2	RB	2.375	0.218	TB	1403C OM-202-9	796'-6"	G-H	29-30	300	505
2-MS-090-R	121C-2.2	RB	2.375	0.218	TB	1403C OM-202-9	796'-6"	G-H	29-30	300	505
2-MS-091-R	121C-2.2	RB	2.375	0.218	TB	1403C OM-202-9	796'-6"	G-H	29-30	300	505
2-MS-092-R	121C-2.2	RB	2.375	0.218	TB	1403C OM-202-9	796'-6"	G-H	29-30	300	505
2-MS-094-R	122A-2.2 128A-2.1	RB	8.625	0.500	TB	1403D	796'-6"	L-M	38-40	900	595
2-MS-095-R	128A-2.1	RB	6.625	0.432	TB	1403D	796'-6"	L-M	39-40	900	595
2-MS-096-R	128A-2.1	RB	6.625	0.432	TB	1403D	796'-6"	L-M	39-40	900	595
2-MS-097-R	128A-2.1	RB	2.375	0.218	TB	1403D	796'-6"	L-M	39-40	900	595
2-MS-101-R	122A-2.3 122A-3.3	RB	2.375	0.218	TB	1403D	796'-6"	C-E	37-43	900	595
2-MS-137-R	121C-2.1	RB	2.375	0.218	TB	1403B, 1403G	775'-0"	C-D	36-37	900	595
2-MS-200	122A-2.3	IB	8.625	0.500	TB	1403H	786'-2"	B-C	29-30	900	595
2-MS-201	122A-2.1	IB	24.00	0.968	TB	1401B	812'-0"	E-F	41-42	900	595
2-MS-202	122A-2.2	IB	6.625	0.432	TB	1403K	813'-0"	L-M	37-38	900	595
2-MS-203	122A-2.2	IB	6.625	0.432	TB	1403K	807'-0"	L-M	37-38	900	595
2-MS-204	122A-2.2	IB	6.625	0.432	TB	1403D	805'-0"	L-M	38-39	900	595
2-MS-205	122A-2.2	IB	6.625	0.432	TB	1403D	805'-0"	L-M	38-39	900	595
2-MS-207	122A-2.2	IB	8.625	0.500	TB	1401D	805'-0"	L-M	35-36	900	595
2-MS-208	122C-2.2	IB	8.625	0.500	TB	1410U	804'-6"	C-D	41-42	900	595
2-MS-209	122C-2.2	IB	8.625	0.500	TB	1410U	804'-6"	C-D	41-42	900	595
2-MS-210	122A-2.1	IB	24.00	0.968	TB	1401B	812'-0"	E-F	41-42	900	595
2-MS-211-R	122A-2.3	RB	2.375	0.218	TB	1403C, 1403G	796'-6"	F-G	29-30	900	595
2-MS-212-R	122A-2.3 121C-2.2	RB	2.375	0.218	TB	1403G OM-202-9	796'-6"	F-G	29-30	300	505
2-MS-213-R	121C-2.2	RB	2.875	0.203	TB	OM-202-9	796'-6"	F-G	29-30	300	505
2-MS-214-R	122A-2.3	RB	2.375	0.218	TB	1403C, 1403G	796'-6"	G-H	29-30	900	595
2-MS-215-R	122A-2.3 121C-2.2	RB	2.375	0.218	TB	1403G OM-202-9	796'-6"	G-H	29-30	300	505
2-MS-216-R	121C-2.2	RB	2.875	0.203	TB	OM-202-9	796'-6"	G-H	29-30	300	505
2-MS-217-R	122A-2.3	RB	2.375	0.218	TB	1403G	796'-6"	G-H	29-30	900	595
2-MS-218-R	122A-2.3 121C-2.2	RB	2.375	0.218	TB	1403G OM-202-9	796'-6"	G-H	29-30	300	505
2-MS-219-R	121C-2.2	RB	2.875	0.203	TB	OM-202-9	796'-6"	G-H	29-30	300	505
2-MS-220-R	122B-2.1	RB	3.50	0.300	TB	OM-1200-36	812'-0"	E-F	40-41	900	595
2-MS-221-R	122B-2.1	RB	4.50	0.337	TB	OM-1200-36	813'-0"	D-F	39-41	900	595
2-MS-222-R	122B-2.1	RB	3.50	0.300	TB	OM-1200-36	813'-0"	D-E	39-40	900	595



Table 5.1-8  
 Main Steam System – High Energy Line Data – Unit 2

Break ID	Flow Diagram (OFD-)	Break Type	Pipe OD (in)	Pipe Thickness (in)	Building	Layout Drawing (O-) See Note 7	Floor Elev. or Break Elev. (See Note 6)	Location (Room No. or Column Numbers)		Op Pres. (psig)	Op Temp. (°F)
2-MS-230-CR	122A-2.1	CR	36.5	1.125	Yard	1441	827'-0"	N-P	82-83	900	595
2-MS-231-CR	122A-2.1	CR	36.5	1.125	TB	1401E, 1401B 1441	813'-0" 827'-0"	L-M	37-38	900	595
2-MS-232-CR	122A-2.1	CR	36.5	1.125	TB	1401B	812'-0"	E-F	41-42	900	595
2-MS-233-CR	122B-2.1	CR	24.00	0.968	TB	1401B	812'-0"	E-F	40-42	900	595
2-MS-234-CR	122A-2.1	CR	36.5	1.125	Yard	1441	827'-0"	N-Q	83-84	900	595
2-MS-235-CR	122A-2.1	CR	36.5	1.125	TB	1441, 1401B 1401C, 1401F	813'-0" 827'-0"	L-N	38-39	900	595
2-MS-236-CR	122A-2.1	CR	36.5	1.125	TB	1401B	812'-8"	L-M	41-42	900	595
2-MS-237-CR	122A-2.1 122B-2.1	CR	24.0	0.968	TB	1401B	812'-0"	E-F	40-42	900	595
2-MS-238-CR	122B-2.1	CR	24.0	0.968	TB	1401B	812'-0"	E-F	40-42	900	595
2-MS-239-CR	122A-2.2	CR	12.75	0.562	TB	1401B, 1401F 1401C	796'-6"	L-M	38-39	900	595
2-MS-240-CR	122A-2.2	CR	12.750	0.562	TB	1401D	805'-0"	L-M	35-36	900	595
2-MS-241-CR	122A-2.2	CR	8.625	0.500	TB	1401D	799'-0"	L-M	35-36	900	595
2-MS-242-CR	122A-2.2	CR	8.625	0.500	TB	1401D	801'-0"	L-M	36-37	900	595
2-MS-243-CR	122A-2.2	CR	12.750	0.562	TB	1401B, 1401C 1401E	813'-0"	L-M	37-38	900	595
2-MS-244-CR	122A-2.2	CR	12.750	0.562	TB	1401C, 1401E	807'-0"	L-M	36-38	900	595
2-MS-245-CR	122A-2.2	CR	8.625	0.500	TB	1401C, 1401E	798'-0" 805'-0"	L-M	36-37	900	595
2-MS-246-CR	122A-2.2	CR	8.625	0.500	TB	1401C, 1401E	798'-0" 813'-9"	L-M	36-37	900	595
2-MS-247-CR	122A-2.2	CR	6.625	0.432	TB	1403D, 1403K	796'-6"	L-M	37-38	900	595
2-MS-248-CR	122A-2.2	CR	6.625	0.432	TB	1403D	805'-0"	L-M	38-39	900	595
2-MS-249-CR	122A-2.1	CR	12.750	0.562	TB	1401B, 1401G OM-1200-78	817'-6"	F-G	41-42	900	595
2-MS-250-CR	122C-2.2	CR	8.625	0.500	TB	OM-1200-78	817'-6"	H-J	41-42	900	595
2-MS-251-CR	122C-2.2	CR	8.625	0.500	TB	OM-1200-78	807'-2"	H-J	40-41	900	595
2-MS-252-CR	122C-2.2	CR	6.625	0.432	TB	OM-1200-78	817'-6"	F-G	41-42	900	595
2-MS-253-CR	122C-2.2	CR	8.625	0.500	TB	OM-1200-78	796'-6"	G-H	41-42	900	595
2-MS-254-CR	122A-2.1	CR	12.750	0.562	TB	1401B, 1401G OM-1200-79	817'-0"	E-F	41-42	900	595
2-MS-255-CR	122A-2.1	CR	12.750	0.562	TB	1401B, 1401G	817'-0"	D-E	41-42	900	595
2-MS-256-CR	122C-2.2	CR	8.625	0.500	TB	OM-1200-79	817'-0"	B-C	41-42	900	595
2-MS-257-CR	122C-2.2	CR	8.625	0.500	TB	OM-1200-79	796'-6"	B-C	40-41	900	595
2-MS-258-CR	122C-2.2	CR	6.625	0.432	TB	OM-1200-79	817'-1"	C-D	41-42	900	595
2-MS-259-CR	122C-2.2	CR	8.625	0.500	TB	OM-1200-79	796'-6"	C-D	41-42	900	595
2-MS-260-CR	122C-2.2	CR	8.625	0.500	TB	OM-1200-79	817'-0"	B-C	41-42	900	595

Break ID	Flow Diagram (OFD-)	Break Type	Pipe OD (in)	Pipe Thickness (in)	Building	Layout Drawing (O-) See Note 7	Floor Elev. or Break Elev. (See Note 6)	Location (Room No. or Column Numbers)		Op Pres. (psig)	Op Temp. (°F)
2-MS-261-CR	122A-2.4	CR	6.625	0.432	TB	1403D, 1403H	817'-4"	E-F	41-42	900	595
2-MS-262-CR	122A-2.4	CR	2.375	0.218	TB	1403K	804'-6"	B-C	37-38	900	595
2-MS-263-CR	122A-2.4	CR	6.625	0.280	TB	1403D, 1403K	804'-6"	C-D	37-38	310	500
2-MS-264-CR	122A-2.4	CR	6.625	0.280	TB	1403C, 1403G	799'-10"	C-D	35-36	310	500
2-MS-265-CR	122A-2.4	CR	6.625	0.280	TB	1400H	782'-0"	C-D	35-36	310	500
2-MS-266-CR	122A-2.3	CR	8.625	0.500	TB	1403C	804'-6"	B-C	32-33	900	595
2-MS-267-CR	122A-2.3	CR	8.625	0.500	TB	1403H	785'-10"	B-C	31-32	900	595
2-MS-268-CR	122A-2.3	CR	8.625	0.500	TB	1403C	808'-10½"	B-C	29-30	900	595
2-MS-269-CR	122A-2.3	CR	8.625	0.500	TB	1403H	782'-0"	B-C	29-30	900	595
2-MS-270-CR	122A-2.1	CR	12.750	0.562	TB	1441	832'-10"	L-M	37-38	900	595
2-MS-271-CR	122A-2.1	CR	12.750	0.562	TB	1441	831'-1"	L-N	38-39	900	595
2-MS-272-CR	122A-2.3	CR	8.625	0.500	TB	1403C	808'-10"	B-C	30-31	900	595

Notes:

1. Break numbers may not be consecutive
2. Break type: RB – Running Break (Piping not analyzed for seismic), TE – Terminal End, IB – Intermediate Break, CR – Critical Cracks
3. Building: TB – Turbine Building, AB – Auxiliary Building, EPR – East Penetration Room, Yard.
4. Each running break may contain one or more sub-breaks.
5. For the Unit 2 Main Steam System 26 Terminal End Breaks, 11 Intermediate Breaks, 43 Critical Cracks, and 30 Running Breaks were considered; the non-excluded breaks listed in this table include 23 Terminal End Breaks, 10 Intermediate Breaks, 43 Critical Cracks, and 30 Running Breaks.
6. For Terminal End and Intermediate Break locations the elevation of the break location is given. For Running Breaks the elevation of floor or room that contains running break is given. For Critical Cracks with a single elevation, the elevation of the CR is given. For Critical Cracks with multiple elevations, the elevation of the floor or room containing the CR is given.
7. Layout of piping system may be shown on vendor supplied drawings (OM-)
8. Other Abbreviations: OD – Outer Diameter, in – inches, Op - operating