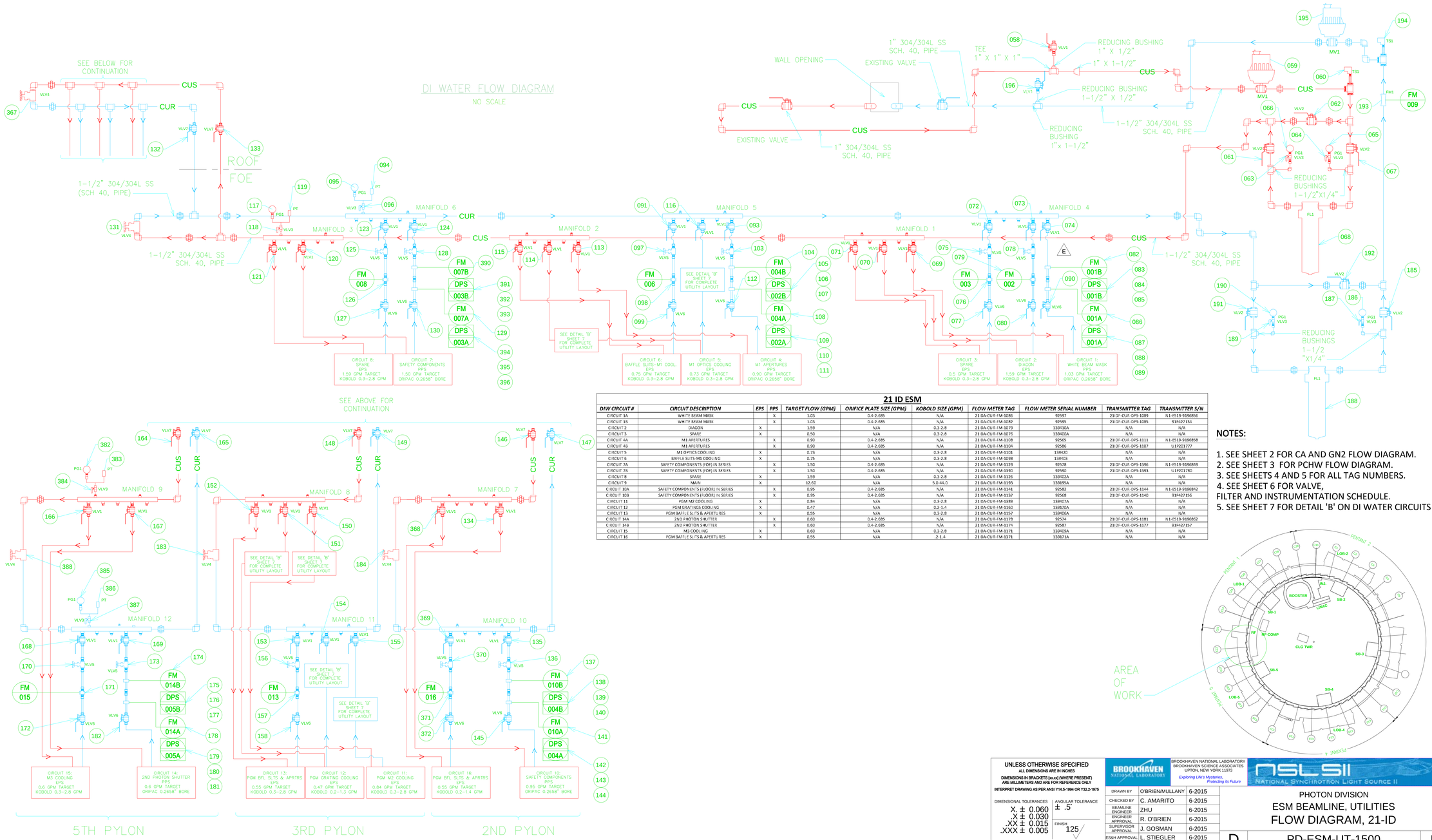
REVISION HISTORY					
REV	DESCRIPTION	DATE	DESIGNER	CHECKED BY	ENGINEER
A	RELEASE PER ECO-003266	6-2015	O'Brien/Mullany	C. Amarito	R. O'Brien
B	REVISED PER ECO-003681	11/2015	R.O./B.J.M.	C.A./C.S.	R. O'BRIEN
C	REVISED PER ECO-003939	06/2016	R.O./B.J.M.	C.A./C.S.	R. O'BRIEN
D	REVISED PER ECO-004430	9/2016	W.T./BJM	C.A./C.S.	R. O'BRIEN
E	REVISED PER ECO-004698	5/2017	BJM	C.A./M.L.	R. O'BRIEN



21 ID ESM

DIW CIRCUIT #	CIRCUIT DESCRIPTION	EPS	PPS	TARGET FLOW (GPM)	ORIFICE PLATE SIZE (GPM)	KOBOLD SIZE (GPM)	FLOW METER TAG	FLOW METER SERIAL NUMBER	TRANSMITTER TAG	TRANSMITTER S/N
CIRCUIT 1A	WHITE BEAM MASK		X	1.03	0.4-2.685	N/A	21IDA-CUR-FM-1086	92587	21IDF-CUR-DPS-1089	N1-I519-9196856
CIRCUIT 1B	WHITE BEAM MASK		X	1.03	0.4-2.685	N/A	21IDA-CUR-FM-1082	92595	21IDF-CUR-DPS-1085	91H427134
CIRCUIT 2	DIAGON	X		1.59	N/A	0.3-2.8	21IDA-CUR-FM-1079	139410A	N/A	N/A
CIRCUIT 3	SPARE	X		0.50	N/A	0.3-2.8	21IDA-CUR-FM-1076	139403A	N/A	N/A
CIRCUIT 4A	M1 APERTURES		X	0.90	0.4-2.685	N/A	21IDA-CUR-FM-1108	92565	21IDF-CUR-DPS-1111	N1-I519-9196858
CIRCUIT 4B	M1 APERTURES		X	0.90	0.4-2.685	N/A	21IDA-CUR-FM-1104	92586	21IDF-CUR-DPS-1107	U1F201777
CIRCUIT 5	M1 OPTICS COOLING	X		0.73	N/A	0.3-2.8	21IDA-CUR-FM-1101	139422	N/A	N/A
CIRCUIT 6	BAFFLE SLITS-M1 COOLING	X		0.75	N/A	0.3-2.8	21IDA-CUR-FM-1098	139423	N/A	N/A
CIRCUIT 7A	SAFETY COMPONENTS (FOE) IN SERIES		X	1.50	0.4-2.685	N/A	21IDA-CUR-FM-1129	92578	21IDF-CUR-DPS-1386	N1-I519-9196849
CIRCUIT 7B	SAFETY COMPONENTS (FOE) IN SERIES		X	1.50	0.4-2.685	N/A	21IDA-CUR-FM-1390	92580	21IDF-CUR-DPS-1393	U1F201780
CIRCUIT 8	SPARE	X		1.59	N/A	0.3-2.8	21IDA-CUR-FM-1126	139402A	N/A	N/A
CIRCUIT 9	MAIN	X		12.60	N/A	5.0-44.0	21IDA-CUR-FM-1193	139195A	N/A	N/A
CIRCUIT 10A	SAFETY COMPONENTS (FLOOR) IN SERIES		X	0.95	0.4-2.685	N/A	21IDA-CUR-FM-1141	92582	21IDF-CUR-DPS-1144	N1-I519-9196842
CIRCUIT 10B	SAFETY COMPONENTS (FLOOR) IN SERIES		X	0.95	0.4-2.685	N/A	21IDA-CUR-FM-1137	92568	21IDF-CUR-DPS-1140	91H427156
CIRCUIT 11	PGM M2 COOLING	X		0.84	N/A	0.3-2.8	21IDA-CUR-FM-1389	139407A	N/A	N/A
CIRCUIT 12	PGM GRATINGS COOLING	X		0.47	N/A	0.2-1.4	21IDA-CUR-FM-1160	139170A	N/A	N/A
CIRCUIT 13	PGM BAFFLE SLITS & APERTURES	X		0.55	N/A	0.3-2.8	21IDA-CUR-FM-1157	139405A	N/A	N/A
CIRCUIT 14A	2ND PHOTON SHUTTER		X	0.60	0.4-2.685	N/A	21IDA-CUR-FM-1178	92574	21IDF-CUR-DPS-1181	N1-I519-9196862
CIRCUIT 14B	2ND PHOTON SHUTTER		X	0.60	0.4-2.685	N/A	21IDA-CUR-FM-1174	92587	21IDF-CUR-DPS-1177	91H427157
CIRCUIT 15	M3 COOLING	X		0.60	N/A	0.3-2.8	21IDA-CUR-FM-1171	139429A	N/A	N/A
CIRCUIT 16	PGM BAFFLE SLITS & APERTURES	X		0.55	N/A	.2-1.4	21IDA-CUR-FM-1371	139171A	N/A	N/A

NOTES:

1. SEE SHEET 2 FOR CA AND GN2 FLOW DIAGRAM.
2. SEE SHEET 3 FOR PCHW FLOW DIAGRAM.
3. SEE SHEETS 4 AND 5 FOR ALL TAG NUMBERS.
4. SEE SHEET 6 FOR VALVE, FILTER AND INSTRUMENTATION SCHEDULE.
5. SEE SHEET 7 FOR DETAIL 'B' ON DI WATER CIRCUITS

UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE IN INCHES
DIMENSIONS IN BRACKETS [xx.xx] (WHERE PRESENT) ARE MILLIMETERS AND ARE FOR REFERENCE ONLY
INTERPRET DRAWING AS PER ANSI Y14.5-1994 OR Y32.2-1975

DIMENSIONAL TOLERANCES: X. ± 0.060, .X ± 0.030, .XX ± 0.015, .XXX ± 0.005
ANGULAR TOLERANCE: ± .5°
FINISH: 125
BREAK EDGES & SHARP CORNERS 0.005 MIN. TO 0.030 MAX
THIRD ANGLE PROJECTION
SCALE:

NEXT ASSY:
PROJECT:

BROOKHAVEN NATIONAL LABORATORY
BROOKHAVEN SCIENCE ASSOCIATES
UPTON, NEW YORK 11973
Exploring Life's Mysteries, Protecting its Future

NSLS II NATIONAL SYNCHROTRON LIGHT SOURCE II

DRAWN BY	O'BRIEN/MULLANY	6-2015
CHECKED BY	C. AMARITO	6-2015
BEAMLINE ENGINEER	ZHU	6-2015
ENGINEER APPROVAL	R. O'BRIEN	6-2015
SUPERVISOR APPROVAL	J. GOSMAN	6-2015
ES&H APPROVAL	L. STIEGLER	6-2015
QA APPROVAL	J. ZIPPER	6-2015

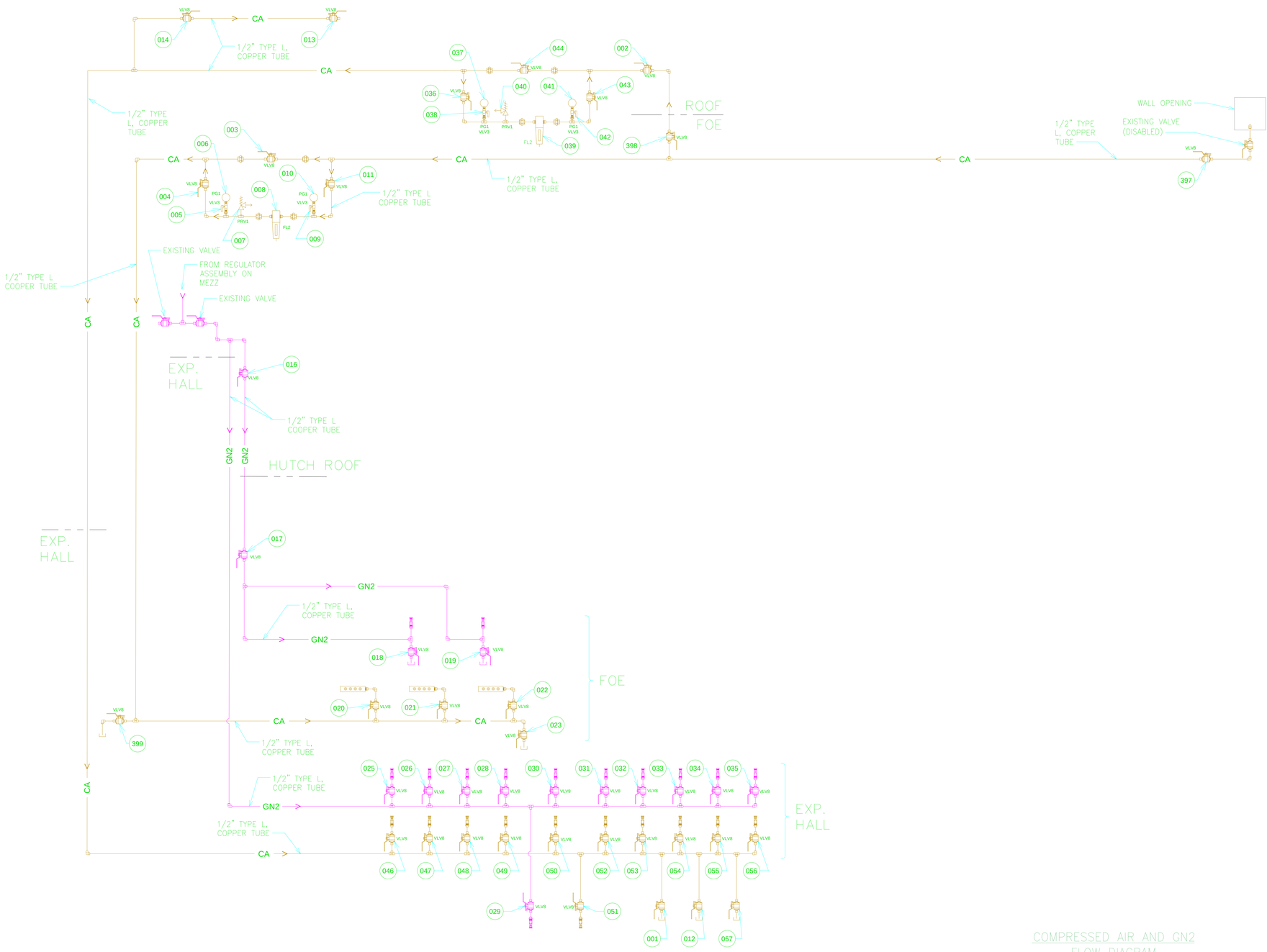
WBS# 2.03.01

PHOTON DIVISION
ESM BEAMLINE, UTILITIES
FLOW DIAGRAM, 21-ID

SHEET SIZE: D
DRAWING/PART NUMBER: PD-ESM-UT-1500
REVISION: E

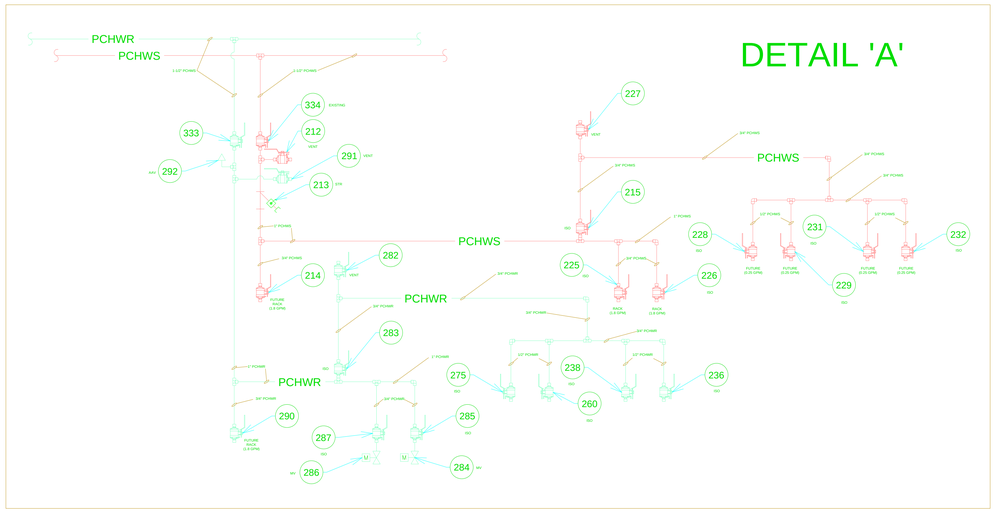
ES&H RISK LEVEL: A2
SHEET 1 OF 7

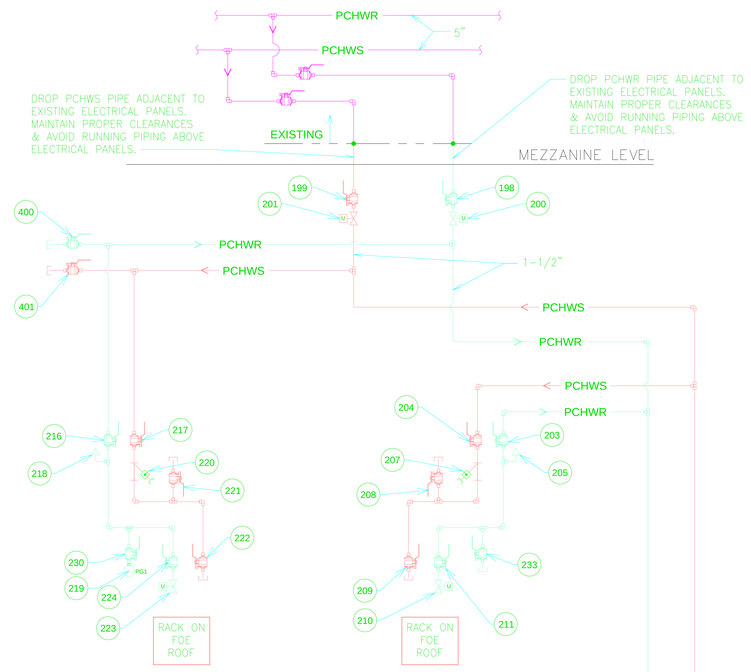
D:\MECH\ENGL\TPD\ESM\UT\PD-ESM-UT-1500.DWG

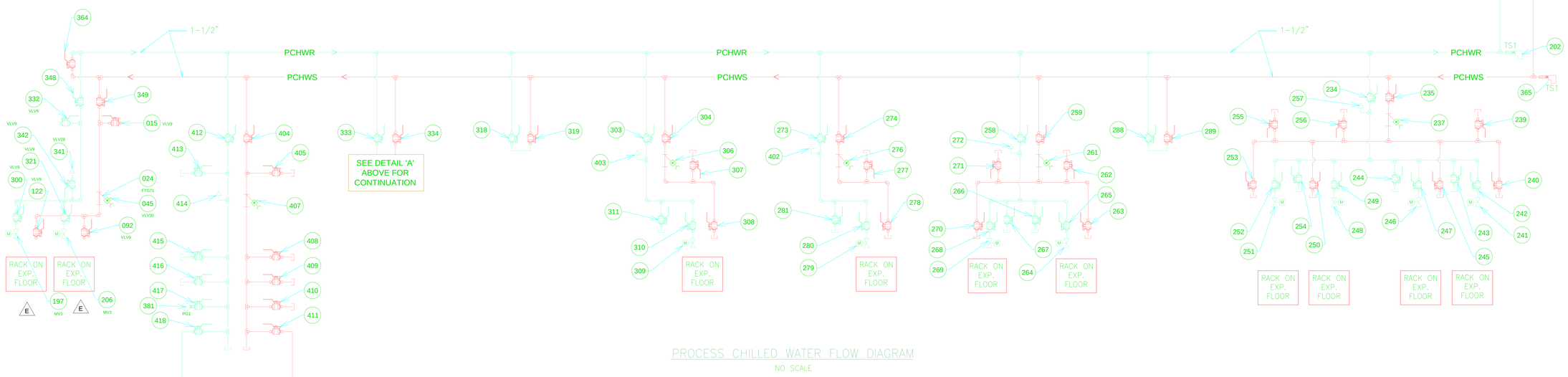


D	PD-ESM-UT-1500	E
SHEET SIZE	DRAWING/PART NUMBER	REVISION
ESH&Q RISK LEVEL A2		SHEET 2 OF 7

D:\MECH-ENG\LTP\DESM\UTPD-ESM-UT-1500.DWG







PROCESS CHILLED WATER FLOW DIAGRAM

NO SCALE

D	PD-ESM-UT-1500	E
SHEET SIZE	DRAWING/PART NUMBER	REVISION
ESH&Q RISK LEVEL A2		SHEET 3 OF 7

D:\MECH-ENG\LTP\DESM\UTPD-ESM-UT-1500.DWG

BEAMLINE ESM 21-ID MECHANICAL UTILITIES

DRAWING ID	DEVICE ID	COMMENT
1001	21ID A - CA - VLV - 1001	
1002	21ID A - CA - VLV - 1002	
1003	21ID A - CA - VLV - 1003	
1004	21ID A - CA - PG - 1004	
1005	21ID A - CA - VLV - 1005	
1006	21ID A - CA - PRG - 1006	
1007	21ID A - CA - PRV - 1007	
1008	21ID A - CA - PRG - 1008	
1009	21ID A - CA - VLV - 1009	
1010	21ID A - CA - PG - 1010	
1011	21ID A - CA - VLV - 1011	
1012	21ID F - CA - VLV - 1012	
1013	21ID R - CA - VLV - 1013	
1014	21ID R - CA - VLV - 1014	
1015	21ID F - PCHWS - VLV - 1015	E
1016	21ID R - GN2 - VLV - 1016	
1017	21ID A - GN2 - VLV - 1017	
1018	21ID A - GN2 - VLV - 1018	
1019	21ID A - GN2 - VLV - 1019	
1020	21ID A - CA - VLV - 1020	
1021	21ID A - CA - VLV - 1021	
1022	21ID A - CA - VLV - 1022	
1023	21ID A - CA - VLV - 1023	
1024	21ID F - PCHWS - STR - 1024	E
1025	21ID F - GN2 - VLV - 1025	
1026	21ID F - GN2 - VLV - 1026	
1027	21ID F - GN2 - VLV - 1027	
1028	21ID F - GN2 - VLV - 1028	
1029	21ID F - GN2 - VLV - 1029	
1030	21ID F - GN2 - VLV - 1030	
1031	21ID F - GN2 - VLV - 1031	
1032	21ID F - GN2 - VLV - 1032	
1033	21ID F - GN2 - VLV - 1033	
1034	21ID F - GN2 - VLV - 1034	
1035	21ID F - GN2 - VLV - 1035	
1036	21ID R - CA - VLV - 1036	
1037	21ID R - CA - PG - 1037	
1038	21ID R - CA - VLV - 1038	
1039	21ID R - CA - FL - 1039	
1040	21ID R - CA - PRV - 1040	
1041	21ID R - CA - PG - 1041	
1042	21ID R - CA - VLV - 1042	
1043	21ID R - CA - VLV - 1043	
1044	21ID R - CA - VLV - 1044	
1045	21ID F - PCHWS - VLV - 1045	E
1046	21ID F - CA - VLV - 1046	
1047	21ID F - CA - VLV - 1047	
1048	21ID F - CA - VLV - 1048	
1049	21ID F - CA - VLV - 1049	
1050	21ID F - CA - VLV - 1050	
1051	21ID F - CA - VLV - 1051	
1052	21ID F - CA - VLV - 1052	
1053	21ID F - CA - VLV - 1053	
1054	21ID F - CA - VLV - 1054	
1055	21ID F - CA - VLV - 1055	
1056	21ID F - CA - VLV - 1056	
1057	21ID F - CA - VLV - 1057	
1058	21ID A - CUS - VLV - 1058	
1059	21ID R - CUS - MV - 1059	
1060	21ID R - CUS - TS - 1060	
1061	21ID R - CUS - VLV - 1061	
1062	21ID R - CUS - VLV - 1062	
1063	21ID R - CUS - VLV - 1063	
1064	21ID R - CUS - VLV - 1064	
1065	21ID A - CUS - PG - 1065	
1066	21ID A - CUS - PG - 1066	
1067	21ID A - CUS - VLV - 1067	
1068	21ID A - CUS - FL - 1068	
1069	21ID A - CUS - VLV - 1069	
1070	21ID A - CUS - VLV - 1070	
1071	21ID A - CUS - VLV - 1071	
1072	21ID A - CUR - VLV - 1072	
1073	21ID A - CUR - VLV - 1073	
1074	21ID A - CUR - VLV - 1074	
1075	21ID A - CUR - VLV - 1075	
1076	21ID A - CUR - FM - 1076	
1077	21ID A - CUR - VLV - 1077	
1078	21ID A - CUR - VLV - 1078	
1079	21ID A - CUR - FM - 1079	
1080	21ID A - CUR - VLV - 1080	
1081	NOT USED 1081	E
1082	21ID A - CUR - FM - 1082	
1083	21ID R - CUR - VLV - 1083	
1084	21ID R - CUR - VLV - 1084	
1085	21ID R - CUR - DPS - 1085	
1086	21ID R - CUR - FM - 1086	
1087	21ID R - CUR - VLV - 1087	
1088	21ID R - CUR - VLV - 1088	
1089	21ID R - CUR - DPS - 1089	
1090	21ID A - CUR - VLV - 1090	
1091	21ID A - CUR - VLV - 1091	
1092	21ID F - PCHWS - VLV - 1092	E
1093	21ID A - CUR - VLV - 1093	
1094	21ID A - CUR - PT - 1094	
1095	21ID A - CUR - PG - 1095	
1096	21ID A - CUS - VLV - 1096	
1097	21ID A - CUR - VLV - 1097	
1098	21ID A - CUR - FM - 1098	
1099	21ID A - CUR - VLV - 1099	
1100	21ID A - CUR - VLV - 1100	
1101	21ID A - CUR - FM - 1101	
1102	21ID A - CUR - VLV - 1102	
1103	21ID A - CUR - VLV - 1103	
1104	21ID A - CUR - FM - 1104	
1105	21ID R - CUR - VLV - 1105	
1106	21ID R - CUR - VLV - 1106	
1107	21ID R - CUR - DPS - 1107	
1108	21ID A - CUR - FM - 1108	
1109	21ID R - CUR - VLV - 1109	
1110	21ID R - CUR - VLV - 1110	
1111	21ID R - CUR - DPS - 1111	
1112	21ID A - CUR - VLV - 1112	
1113	21ID A - CUS - VLV - 1113	
1114	21ID A - CUS - VLV - 1114	
1115	21ID A - CUS - VLV - 1115	
1116	21ID A - CUR - VLV - 1116	
1117	21ID A - CUS - PG - 1117	
1118	21ID A - CUS - VLV - 1118	
1119	21ID A - CUS - PT - 1119	
1120	21ID A - CUS - VLV - 1120	
1121	21ID A - CUS - VLV - 1121	
1122	21ID F - PCHWS - VLV - 1122	E
1123	21ID A - CUR - VLV - 1123	
1124	21ID A - CUR - VLV - 1124	
1125	21ID A - CUR - VLV - 1125	
1126	21ID A - CUR - FM - 1126	
1127	21ID A - CUR - VLV - 1127	
1128	21ID A - CUR - VLV - 1128	
1129	21ID A - CUR - FM - 1129	
1130	21ID A - CUR - VLV - 1130	
1131	21ID A - CUS - VLV - 1131	
1132	21ID R - CUR - VLV - 1132	
1133	21ID R - CUS - VLV - 1133	
1134	21ID F - CUS - VLV - 1134	
1135	21ID F - CUR - VLV - 1135	
1136	21ID F - CUR - VLV - 1136	
1137	21ID F - CUR - FM - 1137	
1138	21ID F - CUR - VLV - 1138	
1139	21ID F - CUR - VLV - 1139	
1140	21ID F - CUR - DPS - 1140	
1141	21ID F - CUR - FM - 1141	
1142	21ID F - CUR - VLV - 1142	
1143	21ID F - CUR - VLV - 1143	
1144	21ID F - CUR - DPS - 1144	
1145	21ID F - CUR - VLV - 1145	
1146	21ID F - CUS - VLV - 1146	
1147	21ID F - CUR - VLV - 1147	
1148	21ID F - CUS - VLV - 1148	
1149	21ID F - CUR - VLV - 1149	
1150	21ID F - CUS - VLV - 1150	
1151	21ID F - CUS - VLV - 1151	
1152	21ID F - CUS - VLV - 1152	
1153	21ID F - CUR - VLV - 1153	
1154	21ID F - CUR - VLV - 1154	
1155	21ID F - CUR - VLV - 1155	
1156	21ID F - CUR - VLV - 1156	
1157	21ID F - CUR - FM - 1157	
1158	21ID F - CUR - VLV - 1158	
1159	21ID F - CUR - VLV - 1159	
1160	21ID F - CUR - FM - 1160	
1161	21ID F - CUR - VLV - 1161	
1162	21ID F - CUR - VLV - 1162	
1163	21ID F - CUR - VLV - 1163	
1164	21ID F - CUR - VLV - 1164	
1165	21ID F - CUR - VLV - 1165	
1166	21ID F - CUS - VLV - 1166	
1167	21ID F - CUS - VLV - 1167	
1168	21ID F - CUR - VLV - 1168	
1169	21ID F - CUR - VLV - 1169	
1170	21ID F - CUR - VLV - 1170	
1171	21ID F - CUR - FM - 1171	
1172	21ID F - CUR - VLV - 1172	
1173	21ID F - CUR - VLV - 1173	
1174	21ID F - CUR - FM - 1174	
1175	21ID F - CUR - VLV - 1175	
1176	21ID F - CUR - VLV - 1176	
1177	21ID F - CUR - DPS - 1177	
1178	21ID F - CUR - FM - 1178	
1179	21ID F - CUR - VLV - 1179	
1180	21ID F - CUR - VLV - 1180	
1181	21ID F - CUR - DPS - 1181	
1182	21ID F - CUR - VLV - 1182	
1183	21ID F - CUS - VLV - 1183	
1184	21ID F - CUS - VLV - 1184	
1185	21ID A - CUR - VLV - 1185	
1186	21ID A - CUR - PG - 1186	
1187	21ID A - CUR - VLV - 1187	
1188	21ID A - CUR - FL - 1188	
1189	21ID A - CUR - VLV - 1189	
1190	21ID A - CUR - PG - 1190	
1191	21ID A - CUR - VLV - 1191	
1192	21ID A - CUR - VLV - 1192	
1193	21ID A - CUR - FM - 1193	
1194	21ID A - CUR - TS - 1194	
1195	21ID A - CUR - MV - 1195	
1196	21ID A - CUR - VLV - 1196	
1197	21ID F - PCHWR - MV - 1197	E
1198	21ID R - PCHWR - VLV - 1198	
1199	21ID R - PCHWS - VLV - 1199	
1200	21ID R - PCHWR - MV - 1200	
1201	21ID R - PCHWS - MV - 1201	
1202	21ID R - PCHWR - TS - 1202	
1203	21ID R - PCHWR - VLV - 1203	
1204	21ID R - PCHWS - VLV - 1204	
1205	21ID R - PCHWR - AV - 1205	
1206	21ID F - PCHWR - MV - 1206	E
1207	21ID R - PCHWS - STR - 1207	
1208	21ID R - PCHWS - VLV - 1208	
1209	21ID R - PCHWS - VLV - 1209	
1210	21ID R - PCHWR - MV - 1210	
1211	21ID R - PCHWR - VLV - 1211	
1212	21ID F - PCHWS - VLV - 1212	
1213	21ID F - PCHWS - VLV - 1213	
1214	21ID F - PCHWS - VLV - 1214	
1215	21ID F - PCHWS - VLV - 1215	
1216	21ID R - PCHWR - VLV - 1216	
1217	21ID R - PCHWS - VLV - 1217	
1218	21ID R - PCHWR - AV - 1218	
1219	21ID R - PCHWR - PG - 1219	
1220	21ID R - PCHWS - VLV - 1220	
1221	21ID R - PCHWS - VLV - 1221	
1222	21ID R - PCHWS - VLV - 1222	
1223	21ID R - PCHWR - MV - 1223	
1224	21ID R - PCHWR - VLV - 1224	
1225	21ID F - PCHWS - VLV - 1225	
1226	21ID F - PCHWS - VLV - 1226	
1227	21ID F - PCHWS - VLV - 1227	
1228	21ID F - PCHWS - VLV - 1228	
1229	21ID F - PCHWS - VLV - 1229	
1230	21ID R - PCHWR - VLV - 1230	
1231	21ID F - PCHWS - VLV - 1231	
1232	21ID F - PCHWS - VLV - 1232	
1233	21ID R - PCHWR - VLV - 1233	
1234	21ID F - PCHWR - VLV - 1234	
1235	21ID F - PCHWS - VLV - 1235	
1236	21ID F - PCHWR - VLV - 1236	
1237	21ID F - PCHWS - VLV - 1237	
1238	21ID F - PCHWR - VLV - 1238	
1239	21ID F - PCHWS - VLV - 1239	
1240	21ID F - PCHWS - VLV - 1240	
1241	21ID F - PCHWR - MV - 1241	
1242	21ID F - PCHWR - VLV - 1242	
1243	21ID F - PCHWR - VLV - 1243	
1244	21ID F - PCHWR - VLV - 1244	
1245	21ID F - PCHWS - VLV - 1245	
1246	21ID F - PCHWR - MV - 1246	
1247	21ID F - PCHWR - VLV - 1247	
1248	21ID F - PCHWR - MV - 1248	
1249	21ID F - PCHWR - VLV - 1249	
1250	21ID F - PCHWS - VLV - 1250	
1251	21ID F - PCHWR - MV - 1251	
1252	21ID F - PCHWR - VLV - 1252	
1253	21ID F - PCHWS - VLV - 1253	
1254	21ID F - PCHWR - VLV - 1254	
1255	21ID F - PCHWS - VLV - 1255	
1256	21ID F - PCHWS - VLV - 1256	
1257	21ID F - PCHWR - AV - 1257	
1258	21ID F - PCHWR - VLV - 1258	
1259	21ID F - PCHWS - VLV - 1259	
1260	21ID F - PCHWR - VLV - 1260	
1261	21ID F - PCHWS - VLV - 1261	
1262	21ID F - PCHWS - VLV - 1262	
1263	21ID F - PCHWS - VLV - 1263	
1264	21ID F - PCHWR - MV - 1264	
1265	21ID F - PCHWR - VLV - 1265	
1266	21ID F - PCHWR - VLV - 1266	
1267	21ID F - PCHWR - VLV - 1267	
1268	21ID F - PCHWR - VLV - 1268	
1269	21ID F - PCHWR - MV - 1269	
1270	21ID F - PCHWS - VLV - 1270	
1271	21ID F - PCHWS - VLV - 1271	
1272	21ID F - PCHWR - AV - 1272	
1273	21ID F - PCHWR - VLV - 1273	
1274	21ID F - PCHWS - VLV - 1274	
1275	21ID F - PCHWR - VLV - 1275	
1276	21ID F - PCHWS - VLV - 1276	
1277	21ID F - PCHWS - VLV - 1277	
1278	21ID F - PCHWS - VLV - 1278	
1279	21ID F - PCHWR - MV - 1279	
1280	21ID F - PCHWR - VLV - 1280	
1281	21ID F - PCHWR - VLV - 1281	
1282	21ID F - PCHWR - VLV - 1282	
1283	21ID F - PCHWR - VLV - 1283	
1284	21ID F - PCHWR - MV - 1284	
1285	21ID F - PCHWR - VLV - 1285	
1286	21ID F - PCHWR - MV - 1286	
1287	21ID F - PCHWR - VLV - 1287	
1288	21ID F - PCHWR - VLV - 1288	
1289	21ID F - PCHWS - VLV - 1289	
1290	21ID F - PCHWR - VLV - 1290	
1291	21ID F - PCHWR - VLV - 1291	
1292	21ID F - PCHWR - AV - 1292	
1293	21ID A - CUS - VLV - 1293	
1294	21ID A - CUS - PG - 1294	
1295	21ID A - CUS - PRG - 1295	
1296	21ID A - CUS - VLV - 1296	
1297	21ID A - CUS - PT - 1297	
1298	21ID A - CUS - PG - 1298	
1299	21ID A - CUS - HTR - 1299	
1300	21ID F - PCHWR - VLV - 1300	E
1301	21ID A - CUS - TS - 1301	
1302	21ID A - CUS - VLV - 1302	
1303	21ID F - PCHWR - VLV - 1303	
1304	21ID F - PCHWS - VLV - 1304	
1305	21ID A - CUR - TS - 1305	
1306	21ID F - PCHWS - VLV - 1306	
1307	21ID F - PCHWS - VLV - 1307	
1308	21ID F - PCHWS - VLV - 1308	
1309	21ID F - PCHWR - MV - 1309	
1310	21ID F - PCHWR - VLV - 1310	
1311	21ID F - PCHWR - VLV - 1311	
1312	21ID F - CUS - VLV - 1312	
1313	21ID F - CUS - PG - 1313	
1314	21ID F - CUS - PRG - 1314	
1315	21ID F - CUS - VLV - 1315	
1316	21ID F - CUS - PT - 1316	
1317	21ID F - CUS - PG - 1317	
1318	21ID F - PCHWR - VLV - 1318	
1319	21ID F - PCHWS - VLV - 1319	
1320	21ID F - CUS - VLV - 1320	
1321	21ID F - PCHWR - VLV - 1321	E
1322	21ID F - CUS - TS - 1322	
1323	21ID F - CUS - VLV - 1323	
1324	21ID F - CUS - TS - 1324	
1325	21ID F - CUS - VLV - 1325	
1326	21ID F - CUS - PG - 1326	
1327	21ID F - CUS - PRG - 1327	
1328	21ID F - CUS - VLV - 1328	
1329	21ID F - CUS - PT - 1329	
1330	21ID F - CUS - PG - 1330	
1331	21ID F - CUS - HTR - 1331	
1332	21ID F - PCHWR - VLV - 1332	E
1333	21ID F - PCHWR - VLV - 1333	
1334	21ID F - PCHWS - VLV - 1334	
1335	21ID F - CUS - TS - 1335	
1336	21ID F - CUS - VLV - 1336	
1337	21ID F - CUR - TS - 1337	
1338	21ID A - CUS - PRV - 1338	
1339	21ID F - CUS - PRV - 1339	
1340	21ID F - CUS - PRV - 1340	
1341	21ID F - PCHWR - AV - 1341	E
1342	21ID F - PCHWR - VLV - 1342	E
1343	NOT USED	
1344	NOT USED	
1345	NOT USED	
1346	NOT USED	
1347	NOT USED	
1348	21ID F - PCHWR - VLV - 1348	
1349	21ID F - PCHWS - VLV - 1349	
1350	NOT USED	
1351	NOT USED	
1352	NOT USED	
1353	NOT USED	
1354	NOT USED	
1355	NOT USED	
1356	NOT USED	
1357	NOT USED	
1358	NOT USED	
1359	NOT USED	
1360	NOT USED	
1361	NOT USED	
1362	NOT USED	
1363	NOT USED	
1364	21ID F - PCHWS - VLV - 1364	
1365	21ID F - PCHWS - TS - 1365	
1366	NOT USED	
1367	21ID F - CUS - VLV - 1367	
1368	21ID A - CUS - VLV - 1368	
1369	21ID A - CUR - VLV - 1369	
1370	21ID A - CUR - VLV - 1370	
1371	21ID A - CUR - FM - 1371	
1372	21ID A - CUR - VLV - 1372	
1373	NOT USED	
1374	NOT USED	
1375	NOT USED	
1376	NOT USED	
1377	NOT USED	
1378	NOT USED	
1379	NOT USED	
1380	NOT USED	
1381	21ID F - PCHWR - PG - 1381	
1382	21ID F - CUS - PG - 1382	
1383	21ID F - CUS - PT - 1383	
1384	21ID F - CUS - VLV - 1384	
1385	21ID F - CUR - PG - 1385	
1386	21ID F - CUR - PT - 1386	
1387	21ID F - CUR - VLV - 1387	
1388	21ID F - CUS - VLV - 1388	

D SHEET SIZE	PD-ESM-UT-1500 DRAWING/PART NUMBER	E REVISION
ESH&Q RISK LEVEL A2		SHEET 4 OF 7

D:\MECH-ENG\UTPD\ESM\UTPD-ESM-UT-1500.DWG

1389	21ID F - CUR - FM - 1389	
1390	21ID A - CUR - FM - 1390	
1391	21ID R - CUR - VLV - 1391	
1392	21ID R - CUR - VLV - 1392	
1393	21ID R - CUR - DPS - 1393	
1394	21ID R - CUR - VLV - 1394	
1395	21ID R - CUR - VLV - 1395	
1396	21ID R - CUR - DPS - 1396	
1397	21ID A - CA - VLV - 1397	
1398	21ID A - CA - VLV - 1398	
1399	21ID A - CA - VLV - 1399	
1400	21ID R - PCHWR - VLV - 1400	
1401	21ID R - PCHWS - VLV - 1401	
1402	21ID F - PCHWR - AV - 1402	
1403	21ID F - PCHWR - AV - 1403	
1404	21ID F - PCHWS - VLV - 1404	
1405	21ID F - PCHWS - VLV - 1405	
1406	NOT USED	
1407	21ID F - PCHWS - VLV - 1407	
1408	21ID F - PCHWS - VLV - 1408	
1409	21ID F - PCHWS - VLV - 1409	
1410	21ID F - PCHWS - VLV - 1410	
1411	21ID F - PCHWS - VLV - 1411	
1412	21ID F - PCHWR - VLV - 1412	
1413	21ID F - PCHWR - VLV - 1413	
1414	21ID F - PCHWR - AV - 1414	
1415	21ID F - PCHWR - VLV - 1415	
1416	21ID F - PCHWR - VLV - 1416	
1417	21ID F - PCHWR - VLV - 1417	
1418	21ID F - PCHWR - VLV - 1418	

21 ID ESM VALVE SCHEDULE						
MV1	ELECTRIC ON/OFF	1-1/2""	FNPT	WORCESTER	4466U-SE/2075WM2	SERIES 44, 3 PIECE VALVE WITH UHMWPE SEATS AND BODY SEALS, 75 SERIES ELECTRIC ACTUATOR IN 24 VDC, WITH SIDE MOUNTED MANUAL OVERRIDE, PERPENDICULAR LOW PROFILE MOUNTING, AND LOCK IN LAST POSITION, IN PLACE FAIL ACTION, 2 LIMIT SWITCHES
VLV1	MANUAL BALL	1/2"	FNPT X COMPRESSION	SWAGELOK	SS-63ES8-F8-JL	3 PIECE, LEVER LOCKING HANDLE, UHMWPE SEATS & BODY SEALS
VLV2	MANUAL BALL	1-1/2"	FEMALE NPT	SWAGELOK	SS-67EF24-JL	3 PIECE, LEVER LOCKING HANDLE, UHMWPE SEATS & BODY SEALS
VLV3	INSTRUMENTATION	1/4"	FNPT	SWAGELOK	SS-43GEF4-LL	3 PIECE, LEVER LOCKING HANDLE, UHMWPE SEATS & BODY SEALS
VLV4	MANUAL GLOBE	1"	FNPT	APOLLO	60A-705-09-24	LOCKABLE TEE HANDLE WITH GRAPHOIL PACKING
VLV5	MANUAL GLOBE	1/2"	FNPT	APOLLO	60A-703-07-09-24	LOCKABLE TEE HANDLE WITH GRAPHOIL PACKING
VLV6	MANUAL BALL	1/2"	COMPRESSION	SWAGELOK	SS-63ES8-JL	3 PIECE, LEVER LOCKING HANDLE, UHMWPE SEATS & BODY SEALS
VLV7	MANUAL BALL	1"	FNPT	SWAGELOK	SS-65EF16-JL	3 PIECE, LEVER LOCKING HANDLE, UHMWPE SEATS & BODY SEALS
VLV8	MANUAL BALL	1/2"	SWEAT	WORCESTER	1/2" K4411UUTE	3 PIECE, LEVER LOCKING HANDLE, UHMWPE SEATS & BODY SEALS

21 ID ESM INSTRUMENTATION SCHEDULE						
ID	TYPE	SERVICE	SIZE	MAKE	MODEL	DESCRIPTION
PG1	PRESSURE GAUGE	WATER, AIR, & GAS	1/4" FNPT	MCMASTER	3902K11	2.5" DIAL WITH BOTTOM PORT
TS1	TEMPERATURE SENSOR	DI WATER	1/2" MNPT	ROSEMOUNT	0078-D-21-N-00-A-030-T44-A-X8-Q4	PLATINUM IEC CLASS A SENSOR
FM1	FLOW METER	DI WATER	1/2" TUBE	LAMBDA SQUARE	0.2658" BORE	
FM2	FLOW METER	DI WATER	1/2" FNPT	KOBOLD	0.3-2.8 GPM	RCD-1292GN4C34P
FM3	FLOW METER	DI WATER	1/2" FNPT	KOBOLD	0.3-2.8 GPM	RCD-1292GN4C34P
FM4	FLOW METER	DI WATER	1/2" TUBE	LAMBDA SQUARE	0.2658" BORE	
FM5	FLOW METER	DI WATER	1/2" FNPT	KOBOLD	0.3-2.8 GPM	RCD-1292GN4C34P
FM6	FLOW METER	DI WATER	1/2" FNPT	KOBOLD	0.3-2.8 GPM	RCD-1292GN4C34P
FM7	FLOW METER	DI WATER	1/2" TUBE	LAMBDA SQUARE	0.2658" BORE	
FM8	FLOW METER	DI WATER	1/2" FNPT	KOBOLD	0.3-2.8 GPM	RCD-1292GN4C34P
FM9	FLOW METER	DI WATER	1-1/2" FNPT	KOBOLD	5.0-44.0 GPM	RCD-1230GN8C34P
FM10	FLOW METER	DI WATER	1/2" TUBE	LAMBDA SQUARE	0.2658" BORE	
FM11	FLOW METER	DI WATER	1/2" FNPT	KOBOLD	0.3-2.8 GPM	RCD-1292GN4C34P
FM12	FLOW METER	DI WATER	1/2" FNPT	KOBOLD	0.2 - 1.3 GPM	RCD-1290GN4C34P
FM13	FLOW METER	DI WATER	1/2" FNPT	KOBOLD	0.3-2.8 GPM	RCD-1292GN4C34P
FM14	FLOW METER	DI WATER	1/2" TUBE	LAMBDA SQUARE	0.2658" BORE	
FM15	FLOW METER	DI WATER	1/2" FNPT	KOBOLD	0.3-2.8 GPM	RCD-1292GN4C34P
FM16	FLOW METER	DI WATER	1/2" FNPT	KOBOLD	0.2-1.4 GPM	RCD-1290GN4C34PDR1845
DPSA	DP TRANSMITTER	DI WATER	1/4" FNPT	SIEMENS	DP TRANS II	100 INH20 URL; PPS CIRCUITS 1 - 5
DPSB	DP TRANSMITTER	DI WATER	1/4" FNPT	YOKOGAWA	EJA110E	400 INH20 URL; PPS CIRCUITS 1 - 5
PT1	GAUGE TRANSMITTER	DI WATER	1/4" MNPT	SETRA	3100B150PG02B	4-20 MA SIGNAL
PRV1	RELIEF VALVE	COMPRESSED AIR	1/4" MNPT	MCMASTER	9889K25	85 PSIG POP
FL1	WATER FILTER	DI WATER	1-1/2" FNPT	FILTERSOURCE	OMG-20C-1.5	FM-BB-20-1A 1 MICRON CARTRIDGE

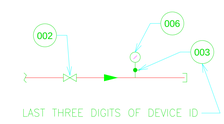
TAG LEGEND	
BEAMLINE LOCATION	
BEAMLINE NO.	1BM/11D THROUGH 30BM/30ID
HUTCH DESIGNATION	A = HUTCH A (FOE) B = HUTCH B C = HUTCH C D = HUTCH D F = FLOOR MOUNTED R = HUTCH ROOF MOUNTED FOR PCHWS & PCHWR DEVICES SERVING EQUIPMENT RACKS
DEVICE TYPE	
ABBREVIATION	DEVICE
AV	AIR VENT
DPS	DIFFERENTIAL SENSOR
FL	FILTER
FM	FLOW METER
PG	PRESSURE GAUGE
PRV	PRESSURE RELIEF VALVE
PT	PRESSURE TRANSMITTER
MV	MOTORIZED VALVE
STR	STRAINER
TS	TEMPERATURE SENSOR
VLV	MANUAL VALVE
SYSTEM DESIGNATION	
ABBREVIATION	SYSTEM
CA	COMPRESSED AIR
PCHWS	PROCESS CHILLED WATER SUPPLY
PCHWR	PROCESS CHILLED WATER RETURN
CUS	COPPER SKID DE-IONIZED WATER SUPPLY
CUR	COPPER SKID DE-IONIZED WATER RETURN
GN2	GASEOUS NITROGEN

PIPE IDENTIFICATION LABEL FORMAT			
SYSTEM	LABEL TEXT	LABEL FIELD COLOR	COLOR OF LETTERS
COMPRESSED AIR	COMPRESSED AIR	BLUE	WHITE
PROCESS CHILLED WATER	PROCESS CHILLED WATER SUPPLY PROCESS CHILLED WATER RETURN	GREEN	WHITE
PRIMARY CHILLED WATER	PRIMARY CHILLED WATER SUPPLY PRIMARY CHILLED WATER RETURN	GREEN	WHITE
INSTRUMENT WATER	INSTRUMENT WATER SUPPLY INSTRUMENT WATER RETURN	GREEN	WHITE
COPPER SKID DE-IONIZED WATER	COPPER DI SUP COPPER DI RET	GREEN	WHITE
GASEOUS NITROGEN	GASEOUS NITROGEN	PURPLE	WHITE

TAG FORMAT

10IDA-PCHWS-VLV-1001

- 4-DIGIT SEQUENTIAL NUMBER STARTING AT 1001
- DEVICE TAG ABBREVIATION (SEE LEGEND)
- SYSTEM ABBREVIATION (SEE LEGEND)
- HUTCH DESIGNATION
- 4-DIGIT BEAMLINE IDENTIFICATION

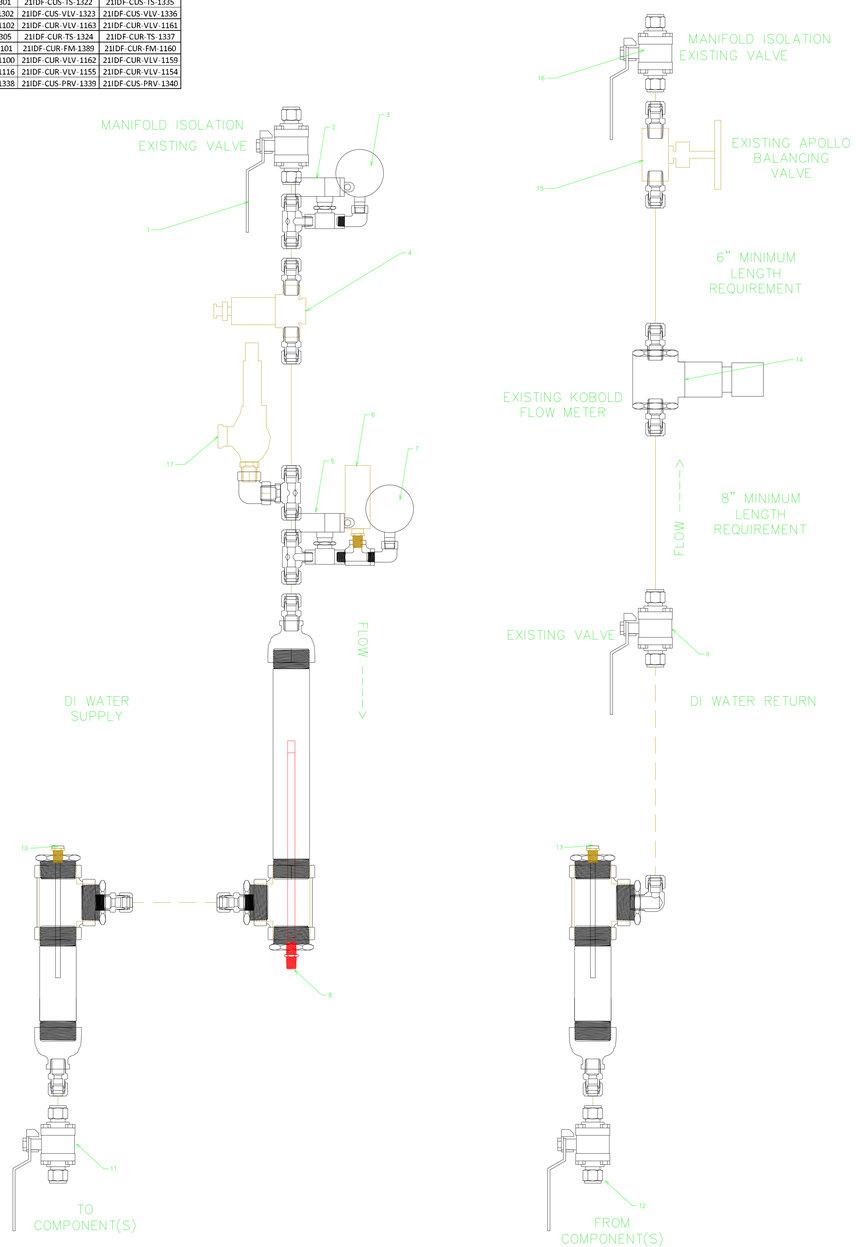


D	PD-ESM-UT-1500	E
SHEET SIZE	DRAWING/PART NUMBER	REVISION
ESH&Q RISK LEVEL A2		SHEET 6 OF 7

D:\MECH-ENG\UTPD\ESM\UTPD-ESM-UT-1500.DWG

DRAWING ID	M1	M2	GRATINGS
1	21IDA-CUS-VLV-1114	21IDF-CUS-VLV-1150	21IDF-CUS-VLV-1151
2	21IDA-CUS-VLV-1293	21IDF-CUS-VLV-1312	21IDF-CUS-VLV-1325
3	21IDA-CUS-PG-1294	21IDF-CUS-PG-1313	21IDF-CUS-PG-1326
4	21IDA-CUS-PRG-1295	21IDF-CUS-PRG-1314	21IDF-CUS-PRG-1327
5	21IDA-CUS-VLV-1296	21IDF-CUS-VLV-1315	21IDF-CUS-VLV-1328
6	21IDA-CUS-PT-1297	21IDF-CUS-PT-1316	21IDF-CUS-PT-1329
7	21IDA-CUS-PG-1298	21IDF-CUS-PG-1317	21IDF-CUS-PG-1330
8	21IDA-CUS-HTR-1299	21IDF-CUS-HTR-1320	21IDF-CUS-HTR-1331
9	21IDA-CUR-VLV-1300	21IDF-CUR-VLV-1321	21IDF-CUR-VLV-1332
10	21IDA-CUS-TS-1301	21IDF-CUS-TS-1322	21IDF-CUS-TS-1335
11	21IDA-CUS-VLV-1302	21IDF-CUS-VLV-1323	21IDF-CUS-VLV-1336
12	21IDA-CUR-VLV-1102	21IDF-CUR-VLV-1163	21IDF-CUR-VLV-1161
13	21IDA-CUR-TS-1305	21IDF-CUR-TS-1324	21IDF-CUR-TS-1337
14	21IDA-CUR-FM-1101	21IDF-CUR-FM-1389	21IDF-CUR-FM-1160
15	21IDA-CUR-VLV-1100	21IDF-CUR-VLV-1162	21IDF-CUR-VLV-1159
16	21IDA-CUR-VLV-1116	21IDF-CUR-VLV-1155	21IDF-CUR-VLV-1154
17	21IDA-CUS-PRV-1338	21IDF-CUS-PRV-1339	21IDF-CUS-PRV-1340

DETAIL 'B'



D	PD-ESM-UT-1500	E
SHEET SIZE	DRAWING/PART NUMBER	REVISION
ESH&Q RISK LEVEL A2		SHEET 7 OF 7

D:\MECH-ENG\LTPD\ESM\UT\PD-ESM-UT-1500.DWG