

INSTALLATION DRAWING LIST

REV.	DWG. NUMBER	TITLE	REV.	DWG. NUMBER	TITLE	REV.	DWG. NUMBER	TITLE	REV.	DWG. NUMBER	TITLE
P&ID'S			SYSTEM ACCEPTANCE TEST PROCEDURES			ELECTRICAL DRAWINGS			MECHANICAL DRAWINGS		
2	V049-0-001	LEGEND/STATION DIAGRAMS (3 SHTS.)	1 *	V049-2-110	PORTABLE SOFT WALL CLEANROOMS	0	V049-4-091	80K PUMP RESERVOIR-SHORT LEFT (3 SHTS.)	4 *	V049-5-012	PIPING ARR'T, PLAN CORNER STA. WA (4 SHTS.)
2	V049-0-002	BEAM SPLITTER CHAMBER ALL BUT CORNER VERTEX ARMS	0	V049-2-111	SMALL VALVES	1	V049-4-092	80K PUMP RESERVOIR-LONG LEFT (3 SHTS.)	3 *	V049-5-013	PIPING ARR'T, ELEVATION, CORNER STA. WA
3	V049-0-003	BEAM SPLITTER CHAMBER CORNER VERTEX ARMS	0	V049-2-112	BAKEOUT SYSTEM BLANKETS AND CARTS	0	V049-4-093	80K PUMP RESERVOIR-LONG RIGHT (3 SHTS.)	4 *	V049-5-014	PIPING ARR'T, SECTIONS, CORNER STA. WA
3	V049-0-004	HORIZONTAL ACCESS MODULE	ELECTRICAL DRAWING LIST (2 SHTS.)			2	V049-4-094	80K PUMP RESERVOIR SUPPT, ASSY, SHORT (2 SHTS.)	3 *	V049-5-017	PIPING ARR'T, PLAN, RIGHT MID STA. WA (4 SHTS.)
2	V049-0-005	112cm & 122cm GATE VALVES	2 *	V049-2-113	CORNER STATIONS	2	V049-4-095	80K PUMP RESERVOIR SUPPT, ASSY, LONG (2 SHTS.)	3 *	V049-5-018	PIPING ARR'T, ELEVATION, RIGHT MID STA. WA (2 SHTS.)
6 *	V049-0-006	80K CRYOPUMP	2 *	V049-2-114	MID STATIONS	1	V049-4-096	72 1/4" ID FLANGE DETAIL (GROOVED)	3 *	V049-5-019	PIPING ARR'T, SECTIONS, RIGHT MID STA. WA
2 *	V049-0-007	CHAMBER PRESSURIZATION SYSTEM CARTS	2 *	V049-2-115	END STATIONS	1 *	V049-4-097	60 1/2" ID FLANGE DETAIL (FLAT FACED)	3 *	V049-5-021	PIPING ARR'T, RIGHT END STA. WA (2 SHTS.)
5 *	V049-0-010	WA LEFT END STATION	MECHANICAL DRAWING LIST (2 SHTS.)			2 *	V049-4-098	60 1/2" ID FLANGE DETAIL (FLAT/SLOTTED)	3 *	V049-5-022	PIPING ARR'T, ELEVATION, RIGHT END STA. WA
5 *	V049-0-011	WA LEFT MID STATION	4 *	V049-3-001	ELECTRICAL DRAWING LIST (2 SHTS.)	0	V049-4-099	72 1/4 ID FLANGE DETAIL (FLAT/SLOTTED)	3 *	V049-5-023	PIPING ARR'T, SECTIONS, RIGHT END STA. WA
5 *	V049-0-012	WA LEFT BEAM MANIFOLD	ELECTRICAL DRAWING LIST (2 SHTS.)			1	V049-4-101	BSC OVERALL ASSY.	3 *	V049-5-026	PIPING ARR'T, PLAN, LEFT MID STA. WA (4 SHTS.)
5 *	V049-0-013	WA VERTEX SECTION	4 *	V049-3-001	ELECTRICAL DRAWING LIST (2 SHTS.)	1 *	V049-4-106	25 L/S ANNULUS TUBING-44" G.V. TYPE III	3 *	V049-5-027	PIPING ARR'T, ELEVATION, LEFT MID STA. WA (2 SHTS.)
5 *	V049-0-014	WA DIAGONAL SECTION	MECHANICAL DRAWINGS			2 *	V049-4-107	25 L/S IDN PUMP VALVE SUPPORT (2 SHTS.)	3 *	V049-5-028	PIPING ARR'T, SECTIONS, LEFT MID STA. WA
5 *	V049-0-015	WA RIGHT BEAM MANIFOLD	4 *	V049-4-002	HORIZONTAL ACCESS MODULE (HAM)	1 *	V049-4-108	25 L/S ANNULUS TUBING 48" G.V. TYPE I	3 *	V049-5-030	PIPING ARR'T, PLAN, LEFT END STA. WA (2 SHTS.)
5 *	V049-0-016	WA RIGHT MID STATION	3	V049-4-003	BSC SHELL WELDMENT/MACHINING (4 SHEETS)	3 *	V049-4-109	ANNULUS TUBING & IDN PUMP ASSY. 44" G.V.	3 *	V049-5-031	PIPING ARR'T, ELEVATION, LEFT END STA. WA
5 *	V049-0-017	WA RIGHT END STATION	3 *	V049-4-004	80K CRYOPUMP, LONG LEFT HAND (2 SHEETS)	1 *	V049-4-110	25 L/S ANNULUS TUBING 48" G.V. TYPE II	3 *	V049-5-032	PIPING ARR'T, SECTIONS, LEFT END STA. WA
3 *	V049-0-018	WA CORNER STATION MECHANICAL ROOM	3 *	V049-4-005	80K CRYOPUMP, SHORT RIGHT (2 SHEETS)	4 *	V049-4-114	80K LONG-SHIELD ASSY. RH/LH (3 SHTS.)	0	V049-5-033	OVERALL FLANGE ARR'T, CORNER STA. WA
			3 *	V049-4-006	80K CRYOPUMP, LONG RIGHT HAND (2 SHEETS)	3 *	V049-4-117	80K SHORT-SHIELD ASSY. RH/LH (3 SHTS.)	0	V049-5-035	OVERALL FLANGE ARR'T, MID STA. WA
			3 *	V049-4-007	80K CRYOPUMP, SHORT LEFT HAND (2 SHEETS)	3	V049-4-118	80K LONG-VERTICAL WELDMENT LH (2 SHTS.)	0	V049-5-036	OVERALL FLANGE ARR'T, TYPICAL END STA. WA & LA
			3 *	V049-4-010	ROUGHING PUMP CART ARRANGEMENTS	2	V049-4-119	80K LONG-VESSEL WELDMENT RH (2 SHTS.)	0	V049-5-037	CLEAN ROOM WITH BSC ASSY.
			3 *	V049-4-011	TURBO PUMP CART ARRANGEMENTS	2	V049-4-120	80K SHORT-VESSEL WELDMENT LH (2 SHTS.)	0	V049-5-050	SURVEY-BENCHMARKS-CORNER STA. WA
			1	V049-4-012	BASE EXTENSION-TURBO PUMP CART	3	V049-4-121	80K SHORT VESSEL WELDMENT RH (2 SHTS.)	0	V049-5-051	SURVEY-BENCHMARKS- MID STA. WA & LA
			4 *	V049-4-014	COVER, BSC TYPE I	1 *	V049-4-122	75L IDN PUMP SUPPORT	0	V049-5-052	SURVEY-BENCHMARKS-END STA. WA & LA
1 *	V049-0-100	GENERAL PROJECT (SHT. 1 OF 3)	3	V049-4-017	44 1/4" I.D. FLANGE DETAIL (GROOVED)	1 *	V049-4-123	HAM 75L IDN PUMP SUPPORT	PSI ADAPTER & SPOOL DETAIL DRAWINGS		
1 *	V049-0-100	WASHINGTON SITE (SHT. 2 OF 3)	2	V049-4-018	48 1/4" I.D. FLANGE DETAIL (GROOVED)	0	V049-4-124	BELLOWS 1" DIA. TIE-ROD ASSY.	3 *	V049-4-A1	ADAPTER
1 *	V049-0-100	LOUISIANA SITE (SHT. 3 OF 3)	4	V049-4-019	60 1/2" I.D. BSC FLANGE DETAIL (GROOVED)	4 *	V049-4-127	84 1/4" ID ACCESS COVER-HAM	3 *	V049-4-A3	ADAPTER
			2	V049-4-020	72 1/4" I.D. FLANGE DETAIL (GROOVED)	3	V049-4-128	HAM SHELL WELDMENT ASSY. 'D' (3 SHTS.)	7 *	V049-4-A4	60" HAM END COVER, GROOVED, TYPE A4
			3	V049-4-021	84 1/4" I.D. FLANGE DETAIL (GROOVED)	0	V049-4-129	HAM ANNULUS FLEX HOSE	3 *	V049-4-A6	ADAPTER
			5	V049-4-022	104 1/2" I.D. FLANGE DETAIL (GROOVED)	1	V049-4-132	44 5/8" ID FLANGE DETAIL (GROOVED)	3 *	V049-4-A7A	ADAPTER
2 *	V049-1-101	ANCHOR BOLT INSTALLATION PROCEDURE	4	V049-4-023	BSC SUPPORT ASSY.	4 *	V049-4-133	BSC CLEAN ROOM ASSY-STYLE 1 & 3	3 *	V049-4-A7B	ADAPTER
2 *	V049-2-014	LEAK CHECK PROCEDURE	4 *	V049-4-025	BSC ANNULUS PIPING	3 *	V049-4-134	BSC CLEAN ROOM WELDMENT STYLE 1 & 3	2 *	V049-4-A7B	ADAPTER
2 *	V049-2-015	CLEANING PROCEDURE	4 *	V049-4-025	BSC ANNULUS PIPING	3 *	V049-4-135	BSC CLEAN ROOM ASSY. STYLE 2	5 *	V049-4-A11	BSC END COVER, 60", TYPE A11
4 *	V049-2-021	INSTALLATION/COMMISSIONING SPEC.	1	V049-4-028	72 1/4" I.D. FLANGE DETAIL (FLAT FACED)	2 *	V049-4-136	CLEAN ROOM ASSY.- HAM	3 *	V049-4-A12	ADAPTER
2 *	V049-2-022	ELECTRICAL AND INSTRUMENT CONSTRUCTION SPEC.	1	V049-4-029	48 1/4" I.D. FLANGE DETAIL (FLAT FACED)	2 *	V049-4-137	CLEAN ROOM STRUCTURE WELDMENT - HAM	3 *	V049-4-A13	ADAPTER
1	V049-2-023	PROJECT SAFETY PLAN	5	V049-4-031	60 1/2" I.D. HAM FLANGE DETAIL (GROOVED/SLOTTED)	3 *	V049-4-138	BSC CLEAN ROOM WELDMENT	3 *	V049-4-A14	ADAPTER
1	V049-2-029	PROJECT Q.A. PLAN	3	V049-4-032	60 1/2" I.D. HAM FLANGE DETAIL (FLAT FACED)	0	V049-4-140	80K LONG-LEG ASSY.	4 *	V049-4-A15	ADAPTER
5 *	V049-2-037	PIPING DESIGN AND MATERIAL SPECIFICATION	1	V049-4-033	44" GATE VALVE SUPPORT FRAME	0	V049-4-141	80K SHORT-LEG ASSY.	3 *	V049-4-BE2	SPOOL
1 *	V049-2-059	SPEC FOR SMALL VACUUM VALVES	1	V049-4-034	48" GATE VALVE SUPPORT FRAME	2	V049-4-142	16 1/2" OD CONFLAT REDUCING FLANGES	4 *	V049-4-BE3	SPOOL
2 *	V049-2-060	SPEC FOR CLEAN QUATER TURN VALVES	1	V049-4-036	BSC INTERNAL PLATFORM DETAILS	0	V049-4-144	60 1/2" ID FLANGE DETAIL BE-3A (FLAT FACED)	6 *	V049-4-BE3A	SPOOL
0	V049-2-070	WELDING PROCEDURES	5	V049-4-040	HAM TIE ROD ASSY.	0	V049-4-145	LN2 TANK BASE TEMPLATE	4 *	V049-4-BE4	SPOOL
2	V049-2-071	WELDING PROCEDURES	2	V049-4-041	104 1/2" I.D. FLANGE DETAIL (FLAT FACED)	1	V049-4-146	80K HEAD/NOZZLE ASSY.	5 *	V049-4-BE5	SPOOL
2	V049-2-072	WELDING PROCEDURES	1	V049-4-042	44 5/8" I.D. FLANGE DETAIL (FLAT FACED)	1	V049-4-147	80K HEAD/NOZZLE ASSY.	5 *	V049-4-BE6	SPOOL
0	V049-2-073	WELDING PROCEDURES	1	V049-4-043	PIPE BRIDGE-CORNER STATION	1	V049-4-148	80K SHIELD SUPPORT LUG	4 *	V049-4-B1	SPOOL
0	V049-2-074	MATERIAL/WELDING REPAIR SCHEDULE	1	V049-4-045	BSC RGA/AUX. TURBO CONN. ASSY.	0	V049-4-158	BELLOWS 1 1/4" DIA. TIE-ROD ASSY.	4 *	V049-4-B2A	SPOOL
0	V049-2-116	ISOLATABLE SECTION BAKEOUT PROCEDURE	2 *	V049-4-046	BSC RGA/AUX TURBO/GAUGE PAIR ASSY.	0 *	V049-4-159	LIFTING LUG	5 *	V049-4-B2B	SPOOL
0	V049-2-018	CLEAN ROOM ACTIVITIES	1	V049-4-047	44 5/8" ID x 80" OD FLANGE DETAIL (FLAT FACED)	0 *	V049-4-161	80K PUMP 2" JACKETED LINE	4 *	V049-4-B3A	SPOOL
1	V049-2-119	CONTAMINATION CONTROL PLAN	3	V049-4-052	VESSEL SUPPORT (HAM)	0	V049-4-163	GATE VALVE FIN CLAMP	4 *	V049-4-B4	SPOOL
0	V049-2-120	RAW MATERIAL HANDLING PROCEDURE	1	V049-4-053	EXPANSION JOINT (HAM)	1 *	V049-4-164	25 L/S ANNULUS TUBING-44" G.V. TYPE I	5 *	V049-4-B5A	SPOOL
1 *	V049-2-123	SPEC. COMPONENT PACKING, HANDLING, & SHIPPING	5 *	V049-4-054	HAM ANNULUS PIPING	1 *	V049-4-165	ANNULUS TUBING & IDN PUMP ASSY. 48" G.V.	6 *	V049-4-B6	SPOOL
0	V049-2-124	CONTROL OF NON-CONFORMANCE	2	V049-4-055	60 1/2" ID RING DETAIL REDUCING UNION	1 *	V049-4-166	25 L/S ANNULUS TUBING-44" G.V. TYPE II	5 *	V049-4-B7	SPOOL
1	V049-2-128	VISUAL INSPECTION PROCEDURE	1	V049-4-056	30 1/2" ID x 68 1/4" OD FLANGE DETAIL (FLAT FACED)	1 *	V049-4-168	ASSEMBLY BACK TO AIR CART, 50 CFM	3 *	V049-4-B8	SPOOL
0	V049-2-130	BLACK LIGHT TEST PROCEDURE	3	V049-4-057	30 1/2" ID x 68 1/4" OD FLANGE DETAIL (GROOVED)	1 *	V049-4-175	ASSEMBLY BACK TO AIR CART, 200 CFM	4 *	V049-4-B9	SPOOL
1	V049-2-131	SITE PIPING CLEANING PROCEDURE	1	V049-4-058	44 5/8" ID x 60 1/2" ID FLANGE DETAIL	1 *	V049-4-176	14KW REGEN HEATER ASS'Y.			
0	V049-2-132	SITE VACUUM SURFACE RE-CLEANING PROCEDURE	4 *	V049-4-059	SHIPPING COVER WITH FILTER UNITS	1 *	V049-4-177	28KW REGEN HEATER ASS'Y.			
0	V049-2-137	RGA CALIBRATION	4	V049-4-060	44 1/4" ID FLANGE DETAIL (GROOVED/SLOTTED)	0 *	V049-4-194	12" DD CONFLAT BLANK x 2 3/4 DD CONFLAT			
2 *	V049-2-139	STRUCTURAL CARBON STEEL FABRICATION AND PAINTING	0	V049-4-061	3/4" DD ELBOW x 2 3/4" C.F. FLG. ANNULUS CONN.	0 *	V049-4-195	12" DD CONFLAT BLANK x 25 KF			
3 *	V049-2-144	SOFTWALL CLEAN ROOM PANELS - HAM	1	V049-4-064	60 1/2" ID x 68 1/2" DD BE-3A FLANGE (FLAT)	0 *	V049-4-196	8" DD CONFLAT BLANK x 25 KF			
3 *	V049-2-145	SOFTWALL CLEAN ROOM PANELS - BSC	2 *	V049-4-066	60 1/2" ID x 72 1/4" DD OFFSET FLANGE (BE3A)	0 *	V049-4-197	10" DD TUBE BELLOWS-TURBO PUMP			
1	V049-2-157	PORTABLE SOFTWALL CLEAN ROOMS	3 *	V049-4-067	61.31" ID x 72 1/4" DD BE-3A FLANGE (GROOVED)	2 *	V049-4-199	BSC SHIPPING SKID			
1	V049-2-163	THERMAL INSULATION-PIPING	2 *	V049-4-068	48 1/4" ID x 60 1/2" ID OFFSET FLANGE	0 *	V049-4-203	BSC-ANNULUS TUBE SUPPORT			
1	V049-2-164	80K PUMP RELIEF VALVE SPEC.	1 *	V049-4-070	48.81 ID x 68 1/4" DD FLANGE DETAIL (FLAT FACED)	0 *	V049-4-204	BSC AIR FILTER ASSY.			
0	V049-2-168	CONFLAT FLANGE ASSEMBLY PROCEDURE	0	V049-4-071	48.81 ID x 80 DD FLANGE DETAIL (FLAT FACED)	0 *	V049-4-206	HAM ANNULUS TUBING SHIPPING SUPPORT			
0	V049-2-169	O-RING INSTALLATION AND FLANGE ASSEMBLY PROCEDURE	1	V049-4-072	PS-1 PIPE SUPPORT TEE POST (LN2 PIPING)	0	V049-4-302	BSC TEST/SHIP ASSY (TWO DOORS)			
1 *	V049-2-174	COMPONENT ALIGNMENT PROCEDURE	2 *	V049-4-073	PS-2 PIPE SUPPORT	0	V049-4-303	BSC TEST/SHIP ASSY (THREE DOORS)			
0	V049-2-175	VACUUM PUMP FIELD INSTALLATION PROCEDURE	1	V049-4-074	PS-3 PIPE SUPPORT TEE POST	0	V049-4-304	BSC TEST/SHIP ASSY (NO DOORS)			
1 *	V049-2-178	SPEC. PREFABRICATED VACUUM AND CL 100 AIR PIPING	2 *	V049-4-075	PS-4 PIPE/ELECTRICAL SUPPORT	0	V049-4-305	BSC TEST/SHIP ASSY (ONE DOOR)			
			0 *	V049-4-076	PS-5 PIPE SUPPORT @ 80K LONG PUMP	4 *	V049-5-001	EQUIPMENT ARR'T. PLAN, CORNER STA. WA (SHT 1 OF 2)			
			3 *	V049-4-077	75 L/S IDN PUMP/MANIFOLDS	4 *	V049-5-001	EQUIPMENT ARR'T. ELEVATION, (SHT. 2 OF 2)			
			2 *	V049-4-078	25 L/S IDN PUMP/MANIFOLDS	1	V049-5-002	EQUIPMENT ARR'T. ISO, CORNER STA, WA			
0	V049-2-102	80K PUMPS	1	V049-4-079	48 1/4" ID x 68 1/4" DD FLANGE DETAIL	4 *	V049-5-004	EQUIPMENT ARR'T. RIGHT MID STA., WA			
0	V049-2-104	ROUGHING PUMPS	1 *	V049-4-080	SHIPPING COVER ASSY.- WITHOUT FILTER ASSY.	4 *	V049-5-005	EQUIPMENT ARR'T. RIGHT END STA, WA			
0	V049-2-105	TURBOMOLECULAR PUMPS	1	V049-4-081	48 1/4" ID FLANGE DETAIL (GROOVED/SLOTTED)	4 *	V049-5-006	EQUIPMENT ARR'T. LEFT MID STA, WA			
0	V049-2-106	IDN PUMPS	0 *	V049-4-082	PS-6 PIPE SUPPORTS @ BACKING PUMPS	4 *	V049-5-007	EQUIPMENT ARR'T. LEFT END STA, WA			
0	V049-2-107	LARGE GATE VALVES	0	V049-4-087	60 1/2" ID x 80" DD FLANGE DETAIL (FLAT FACED)	1	V049-5-010	EQUIPMENT ARR'T. ISO, RIGHT MID STA, WA			
0	V049-2-108	6", 10", 14" GATE VALVES	2	V049-4-090	80K PUMP RESERVOIR-SHORT RIGHT (3 SHTS.)	1	V049-5-011	EQUIPMENT ARR'T. ISO, RIGHT END STA, WA			
1	V049-2-109	CLEAN AIR SUPPLIES									

* = DRAWINGS ADDED/REVISED SINCE MARCH 1997

0970330-03-V

<p>PROPRIETARY AND CONFIDENTIAL</p> <p>THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO PROCESS SYSTEMS INTERNATIONAL, INC. OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED, NOR SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF PROCESS SYSTEMS INTERNATIONAL, INC. AND SHALL BE RETURNED UPON REQUEST.</p>	<p>UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES</p> <p>TOLERANCES:</p> <p>FRACTIONAL ±</p> <p>ANGULAR/ARCS ±0°-30' BEND ±2°</p> <p>TVD PLACE DECIMAL ±.01</p> <p>THREE PLACE DECIMAL ±.005</p> <p>FINISHED SURFACE RMS</p> <p>BREAK CORNERS IN OUT:</p> <p>DO NOT SCALE THIS DRAWING</p> <p>USED ON:</p> <p>NEXT ASS'Y:</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>REV</th> <th>DESCRIPTION</th> <th>ISSUE DESCRIPTION</th> </tr> <tr> <td>3</td> <td>REISSUED FOR FDR UPDATE/ CONSTRUCTION</td> <td></td> </tr> <tr> <td>2</td> <td>REISSUED FOR FDR UPDATE/ CONSTRUCTION</td> <td></td> </tr> <tr> <td>1</td> <td>REISSUED FOR FDR UPDATE/ CONSTRUCTION</td> <td></td> </tr> <tr> <td>0</td> <td>ISSUED FOR FDR UPDATE/ CONSTRUCTION</td> <td></td> </tr> </table>	REV	DESCRIPTION	ISSUE DESCRIPTION	3	REISSUED FOR FDR UPDATE/ CONSTRUCTION		2	REISSUED FOR FDR UPDATE/ CONSTRUCTION		1	REISSUED FOR FDR UPDATE/ CONSTRUCTION		0	ISSUED FOR FDR UPDATE/ CONSTRUCTION		<p>PROCESS SYSTEMS INTERNATIONAL, INC.</p> <p>20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA</p> <p>INSTALLATION DOCUMENT LIST</p> <p>WASHINGTON SITE</p> <p>LIGO VACUUM EQUIPMENT</p> <p>CAD FILE: V0490000</p> <p>SIZE: D</p> <p>DWG. NO: V04</p>
REV	DESCRIPTION	ISSUE DESCRIPTION																
3	REISSUED FOR FDR UPDATE/ CONSTRUCTION																	
2	REISSUED FOR FDR UPDATE/ CONSTRUCTION																	
1	REISSUED FOR FDR UPDATE/ CONSTRUCTION																	
0	ISSUED FOR FDR UPDATE/ CONSTRUCTION																	