PLATE AND FRAME HEAT EXCHANGER SCHEDULE

UNIT NO.	SERVICE	LOCATION	MBH	HOT SIDE			COLD SIDE			DIMENSIONS		CONNECTIONS	MAXIMUM P.D. FT. WG.	FOULING FACTOR	DESIGN PRESSURE PSIG	BASIS OF DESIGN	REMARKS
				GPM	ENT DEG F	LVG DEG F	GPM	ENT DEG F	LVG DEG F	WIDTH IN.	LENGTH IN.						
HX-CL-001	DI WATER COOL DOWN	DI EQUIPMENT RM- B1 BASEMENT	1500	200	102	87	300	82	92	24	60	4" FLANGED	20'	0.0005	150	TRANTER "SUPERCHANGER" TYPE UX OR ALFA LAVAL EQUAL	COUNTERFLOW TYPE, 316 SS PLATES, EPDM GASKETS, CS FRAME & TRAVELLER

AIR SEPARATOR SCHEDULE

UNIT NO.	LOCATION	SYSTEM	GPM	PIPE SIZE IN	MAXIMUM PRESSURE DROP FT. WG.	REMARKS
AS-CL-001	DI EQUIPMENT ROOM B1 BASEMENT LEVEL	DI WATER DISTRIBUTION	200	4	12'	STAINLESS STEEL CONSTRUCTION. WITH AUTO AIR VENT. BASIS GRISWOLD CONTROLS MODEL FLG-CS-4 (PH: 714-559-6088)

COMPRESSION/EXPANSION TANK SCHEDULE

UNIT NO.	SERVICE	LOCATION	TYPE	CAPACITY GALLONS		SIZE		DESIGN WORKING PRESSURE PSIG	BASIS OF DESIGN	REMARKS
				VOLUME	ACCEPTANCE	DIAMETER INCH	LENGTH INCH			
ET-CL-001	DI WATER SYSTEM	DI EQUIPMENT ROOM B1 BASEMENT LEVEL	VERTICAL FULL BLADDER	53 GAL	53 GAL	24	43	150#	AMTROL WX-200L	W/ FLOOR SUPPORT SKIRT. BLADDER TYPE (DIAPHRAGM NOT ACCEPTABLE)

DEIONIZATION RESIN BED TANK SCHEDULE

UNIT NO.	LOCATION	TYPE	SERVICE	RESIN TANK QTY & SIZE	RESIN VOLUME PER TANK	GPM EACH	BASIS	REMARKS
MBD-CL-001	DI EQUIMENT ROOM B1 BASEMENT LEVEL	MIXED BED DI RESIN	DI WATER	8 @ 14" DIAM x 50" (DUAL BANKS OF 4 EACH)	3.6 CF	5	AQUA SYSTEMS MBX-360 OR EQUAL US FILTER	POLYGLASS TANK HOUSING. ONE BANK STANDBY "EXCHANGE SERVICE" OPTION

UV STERILIZER LAMP SCHEDULE – WATER SERVICE

UNIT NO.	LOCATION	TYPE	WAVELENGTH	GPM	ELECTRICAL	BASIS	REMARKS
UV-CL-001	DI EQUIPMENT ROOM B1 BASEMENT LEVEL	SS SANITARY HOUSING SINGLE LAMP UNIT	254nM	5	115V/1PH/60HZ/0.6AMPS	ATS MODEL DWS-15 OR EQUAL AQUAFINE TYPE CLS	SS WETTED SURFACES. TRICLAMP OR FLANGED CONNECTIONS

DI FILTER HOUSING SCHEDULE

UNIT NO.	LOCATION	TYPE	SERVICE	MEDIA QTY & SIZE	REMOVAL RATING SIZE (MICRONS)	GPM	PRESSURE DROP (CLEAN)	BASIS	REMARKS
F-CL-001	DI EQUIPMENT ROOM B1 BASEMENT LEVEL	SS HOUSING RADIAL CART.	DI FILTER	3@10" LONG	5	5	2 FT	PALL MODEL MO-S-10-33 HOUSING PALL "PROFILE" R1F050 CARTRIDGES	FLANGED INLET & OUTLET, 2"

DOMESTIC WATER HEATER SCHEDULE

UNIT NO.	LOCATION	STORAGE CAPACITY GALLONS	ELECTRICAL				BTU INPUT	BTU OUTPUT	RECOVERY RATE AT 100 DEG F TEMP. RISE	BASIS OF DESIGN	REMARKS	
			HP	VOLTS	PHASE	NO. OF ELEMENTS						
WH-CL-001	KITCHEN UTILITY B1 LEVEL	125	1/3	115	1	N/A	720MBH	600MBH	720	PVI INDUSTRIES MODEL 72P-125A-MX	①②③④⑤⑥	ALTERNATE #1C
WH-CL-002	KITCHEN UTILITY B1 LEVEL	125	1/3	115	1	N/A	720MBH	600MBH	720	PVI INDUSTRIES MODEL 72P-125A-MX	①②③④⑤⑥	ALTERNATE #1C
WH-CL-501	5TH FLOOR BOILER ROOM	250	1/3	115	1	N/A	720MBH	600MBH	720	PVI INDUSTRIES MODEL 72P-250A-MX	①②③④⑤⑥	
WH-CL-502	5TH FLOOR BOILER ROOM	250	1/3	115	1	N/A	720MBH	600MBH	720	PVI INDUSTRIES MODEL 72P-250A-MX	①②③④⑤⑥	

KEY TO REMARKS

1. VERTICAL STORAGE TYPE, NATURAL GAS FIRED, 140 DEG F.
2. FAN ASSISTED ATMOSPHERIC BURNER
3. SPARK IGNITION BURNER, UL SAFETIES & UL LISTED, INTEGRAL DRAFT HOOD
4. WITH ASME P&T RELIEF VALVE & GAS PRESSURE REGULATING VAVLE FOR 2 PSIG INLET GAS PRESSURE
5. ASHRAE 90.1 INSLUATED VERTICAL STORAGE TANK, ANTI-CORROSION INTERNAL LINING.
6. 10" FLUE VENT OUTLET

PUMP SCHEDULE

UNIT NO.	SERVICE	LOCATION	TYPE	GPM	HEAD FT. WG.	ELECTRICAL					BASIS OF DESIGN	REMARKS	
						HP	VOLT	PH	HZ	RPM			
SP-CL-001	SEWAGE EJECTOR SUMP PUMP	MECHANICAL ROOM B2 LEVEL	DUPLEX VERTICAL CENTRIFUGAL	50 EACH	20	2@1HP	460	3	60	1150	WIEL SERIES 2108 SIZES 3x7	①②③④⑤⑥	
CP-CL-001	CIRCULATION PUMP POTABLE HOT WATER	KITCHEN UTILITY B1 LEVEL	INLINE CENTRIFUGAL	5	10	1/12	115	1	60	3500	BELL & GOSSETT MODEL PL-30	⑩	ALTERNATE #1C
CP-CL-501	CIRCULATION PUMP POTABLE HOT WATER	BOILER ROOM 5TH FLOOR	INLINE CENTRIFUGAL	15	20	1/6	115	1	60	3500	BELL & GOSSETT MODEL PL-36	⑩	
P-CL-001	WATER CIRCULATION DI SYSTEM	DI EQUIP ROOM B1 LEVEL	SS CENTRIFUGAL END-SUCTION	220	150'	15	460	3	60	3500	TRICLOVER MODEL 3285	⑪	
P-CL-002	WATER CIRCULATION DI SYSTEM	DI EQUIP ROOM B1 LEVEL	SS CENTRIFUGAL END-SUCTION	220	150'	15	460	3	60	3500	TRICLOVER MODEL 3285	⑪	
LWP-CL-001	LAB WASTE LIFT STATION	MECHANICAL ROOM B2 LEVEL	DUPLEX VERTICAL CENTRIFUGAL	45 EACH	20'	2@1-1/2	460	3	60	1750	VANTON PUMP SGH-500	①⑦⑧⑨	
BP-CL-001	BOOSTER PUMP	SECTOR 63 B1 LEVEL	DUPLEX VERTICAL CENTRIFUGAL	180 EACH	22	2@5 HP	460	3	60	3500	METROPOLITAN VES-CS-55D-PH-22B		

KEY TO REMARKS

1. VERTICAL EJECTOR PUMP, SUBMERGED PUMP & EXTERNAL MOTOR.
2. 54" SHAFT LENGTH (BASIN COVER TO SUCTION)
3. FIBER BASIN – 30" DIAMETER x 60" DEEP.
4. CAST IRON BASIN COVER WITH INSPECTION COVER & 2" VENT FLANGE.
5. FLOAT LEVEL CONTROL WITH MECHANICAL ALTERNATOR
6. STARTER-CONTROL PANEL
7. DUPLEX VERTICAL PUMPS WITH 120 GALLON VENTED SUMP TANK
8. POLYPROPYLENE SUMP & PUMP WETTED PARTS
9. FLOAT CONTROL FOR EACH PUMP
10. BRONZE CASING AND IMPELLER
11. 316 S'STL CASING, IMPELLER AND TRIM. WETTED SURFACES

LAB WASTE NEUTRALIZATION SCHEDULE

UNIT NO.	LOCATION	TYPE	CHEMICAL FEED TANKS QTY & SIZE	INJECTATE PUMPS		NEUTRALIZATION TANKS QTY & SIZE	BASIS	REMARKS
				TYPE	ELECTRICAL			
CHEM-CL-001	MECHANICAL ROOM B2 LEVEL	ACID & CAUSTIC INJECTION FOR pH NEUTRALIZATION	2 @ 45 GALLONS CARBOY TYPE – HDPE MATL	2 @ 15 GPH CHEM METERING TYPE	115V/1PH/1AMP	2 @ 350 GALLONS VERT DOME TOP- HDPE MATL	CHEMINDUSTRIAL SYSTEMS (PH: 414-375-8570)	①②③④⑤

KEY TO REMARKS

1. INDEPENDENT ACID AND BASE ADJUSTMENT
2. CONTROL SYSTEM WITH pH SENSOR-INDICATOR-CONTROLLER, INJECTION PUMP TIMERS/SPEED CONTROL, LOW LEVEL CUTOFF.
3. NEUTRALIZATION TANK AGITATORS VIA ELECTRIC MIXERS OR LIQUID RECIRC.
4. INJECTION SYSTEMS TO INCLUDE: FLOWMETER, MANUAL SET VALVE, CHECK VALVE, STRAINER.
5. SET CONTROLS TO MAINTAIN pH 7 EFFLUENT

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SECTION AND DETAIL KEY: NUMBER OF SECTION OR DETAIL / DRAWING ON WHICH SECTION OR DETAIL IS SHOWN OR TAKEN

THIS DOCUMENT CONTROLLED BY CHANGE CONTROL SYSTEM 4
ENGINEERING PROCEDURE SNS-ENG-G001

REV	CHANGE TYPE	CHANGE CONTROL SYSTEM	CHANGE REQUEST NUMBER	DESCRIPTION	DSN	CHK	DEPT	DATE	PE	DATE	PJ	DATE	REQ	DATE	UTB	DATE	RPE	RPE NO	DATE	ST	CV	EC	EE	EM	IE	M	PD	SE	AR
1				CERTIFIED FOR CONSTRUCTION – 12/20/01	EB	KJH			[signature]	12/01	[signature]	12/01			[signature]	12/26/01	BWJ	105869	12/20/01	RW	AW	BWJ	PD	BWJ	BWJ	--	BWJ	--	ED
0				CERTIFIED FOR CONSTRUCTION – MAY 15, 2001	EB	KJH			CLG	9/6/01	JS	8/21/01			JRL	9/25/01	BWJ	105869	5/15/01	SC	AW	WRS	RL	WRS	BWJ	--	WRS	--	WAS

REVISION OR ISSUE PURPOSE — REVISION APPROVALS — SQUAD CHECK

RPE: BRUCE W. JOHNSON, REGISTERED ENGINEER, AGRICULTURE, COMMERCE, No. 00106[illegible], STATE OF TENNESSEE — REV. 1, DATE 12/20/01

DRAWING APPROVALS		
DSN	M. WITHROW	05/15/01
DRW	T. WHITE JR.	05/15/01
CHK	B. JOHNSON	05/15/01
DEPT		
PE	C.L. GARREN	9/6/01
PJ	J. STELLERN	08/21/01
REQ		
UTB	J.R. LAWSON	09/25/01

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KNIGHT — Knight Advanced Technology, 549 West Randolph Street, Chicago, IL 60661
UT-BATTELLE — Oak Ridge National Laboratory, managed for the DEPARTMENT OF ENERGY under U.S. GOVERNMENT contract DE-AC05-00OR22725, UT-BATTELLE, LLC, Oak Ridge, Tennessee

PROJECT NAME: SPALLATION NEUTRON SOURCE

CENTRAL LAB AND OFFICE BUILDING SCHEDULES

1	48	49	50	PLANT	BLDG	FL	SH.	OF	TYPE	CLASS
3	P	X	X	8	8600		1	1	S	U
51 NC	52 NA			53	WBS 1.8.3.14		P9.10.40		REV 1	

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Date: 12/13/2001 Time: 18:24:18 Username: WATSONRT CHI-F_VOL2:PROJECTS\7000\700_CADD\TASK_28\740_PLOT\P9-10-40.DWG