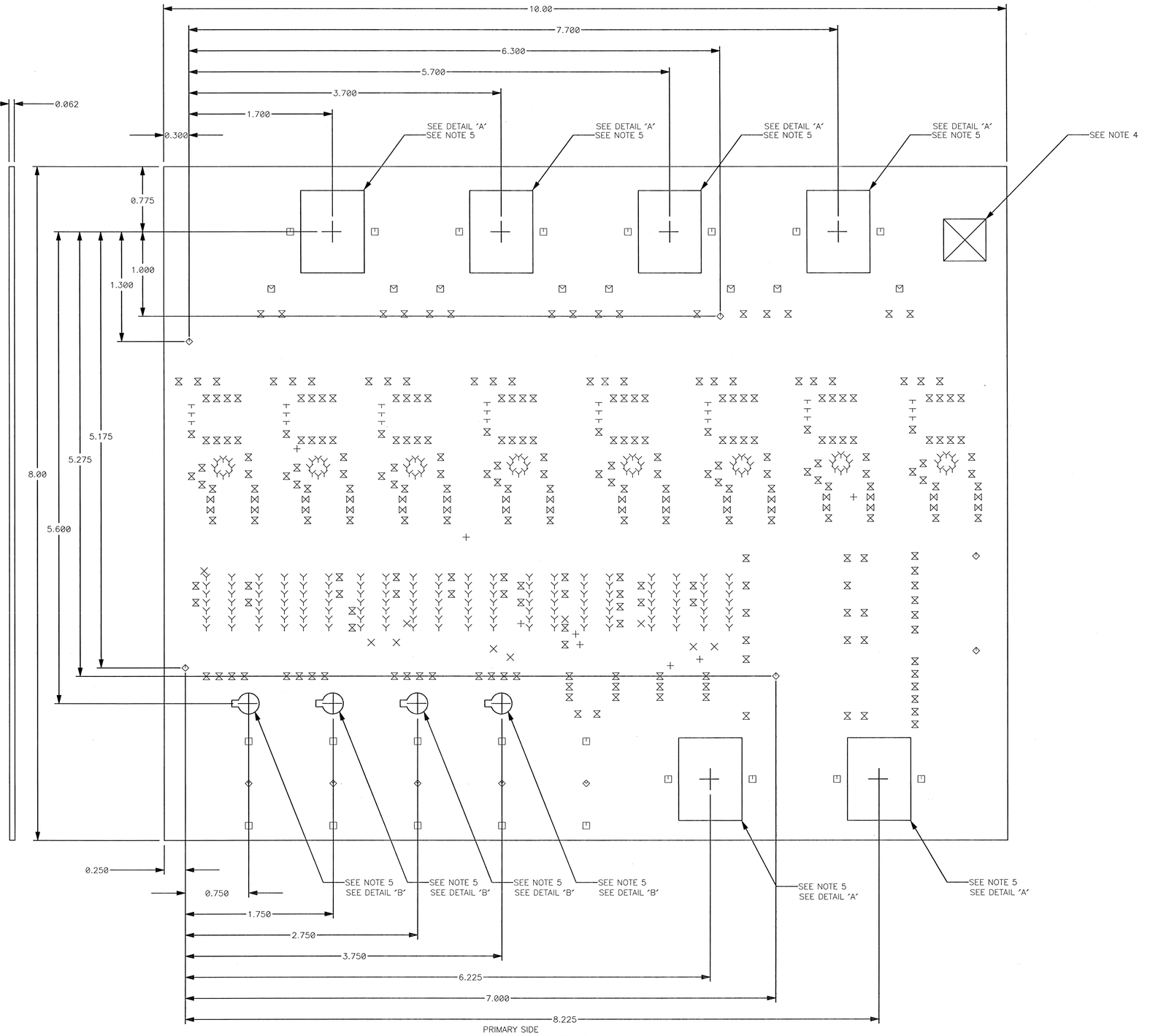
REVISIONS							
REV	ZONE	ECN NO.	DESCRIPTION	BY	DATE	CKR	APP
B			INITIAL RELEASE	TT	3/30		

NOTES:
1. ALL RESISTOR VALUES ARE IN MICROFARADS.
2. ON IC'S U2, U4, U5, U10, U14 AND U18 PIN 7 IS GROUND AND PIN 14 IS +5V.

INTERPRET IN GENERAL ACCORDANCE WITH ASME Y14.24M-1989	AGS	COLLIDER ACCELERATOR DEPARTMENT BROOKHAVEN NATIONAL LABORATORY UPTON, N.Y. 11973	
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; DECIMAL TOLERANCES: .X ± .030, .XX ± .015, .XXX ± .005; ANGULAR TOLERANCE ± 1°	DRAWN BY: TONY TANZA 3/28/01; DESIGN APPROVAL: 4/5/01; CHECKED BY: 4/3/01; ENGINEER APPROVAL: 4/3/01; SUPERVISOR APPROVAL: 4/5/01; Q.A. APPROVAL; C.E.S. APPROVAL	TITLE: SCHEMATIC DIAGRAM ALARM CARD E949	
NA / FINISH; BREAK SHARP EDGES MAX. .03 MIN. .01		SIZE: E; DRAWING NUMBER: D14-E-405; REV: B	
D14-E-407 NEXT ASSEMBLY; OUTSTANDING ECN		Q.A. CATEGORY: A-3; SCALE: ——; WEIGHT: ——; SHEET 1 OF 1	

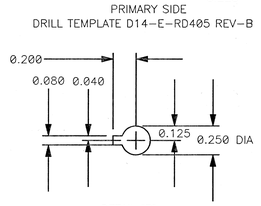
REVISIONS							
REV	ZONE	ECN NO.	DESCRIPTION	BY	DATE	CKR	APP
B			INITIAL RELEASE	TT	3/01		



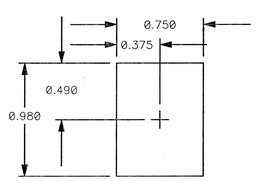
PRIMARY SIDE
DRILL TEMPLATE D14-E-RD405 REV-B

Drill Symbol Table +/-.003		
Hole Dia (inch)	Symbol	Quantity
0.012	+	8
0.018	X	10
0.031	◇	204
0.039	T	24
0.042	⧖	269
0.049	⊠	32
0.125	□	22
0.171	◈	6
0.275	⊡	8
0.700	◈	5

DO NOT PLATE



DETAIL "B"
4 PLACES



DETAIL "A"
6 PLACES

NOTES:
1. MATERIAL: PLASTIC SHEET LAMINATED COPPER-CLAD TYPE FL-GF062C1/1A1A.
2. ALL HOLE DIAMETERS SHOWN AFTER PLATING.
3. SILKSCREEN AND SOLDERMASK SUPPLIED BY BNL.
4. VENDER TO ADD IDENTIFICATION CODE TO AREA INDICATED ON SOLDER SIDE OF BOARD.
5. CUTOUT IN PRINTED CIRCUIT BOARD.

-3	-2	-1	REF DESIGNATOR	ITEM NO.	DESCRIPTION	MFG. / PART NO.	MATL DWG NO., BNL NO.
QTY REQD							

INTERPRET IN GENERAL ACCORDANCE WITH ASME Y14.24M-1989

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
DECIMAL TOLERANCES
.X +/- .50
.XX +/- .015
.XXX +/- .005
ANGULAR TOLERANCE +/-1°

NA FINISH
BREAK SHARP EDGES
MAX .03 MIN .01

D14-E-407
NEXT ASSEMBLY
OUTSTANDING ECN

AGS

COLLIDER-ACCELERATOR DEPARTMENT
BROOKHAVEN NATIONAL LABORATORY
UPTON, NEW YORK, 11973

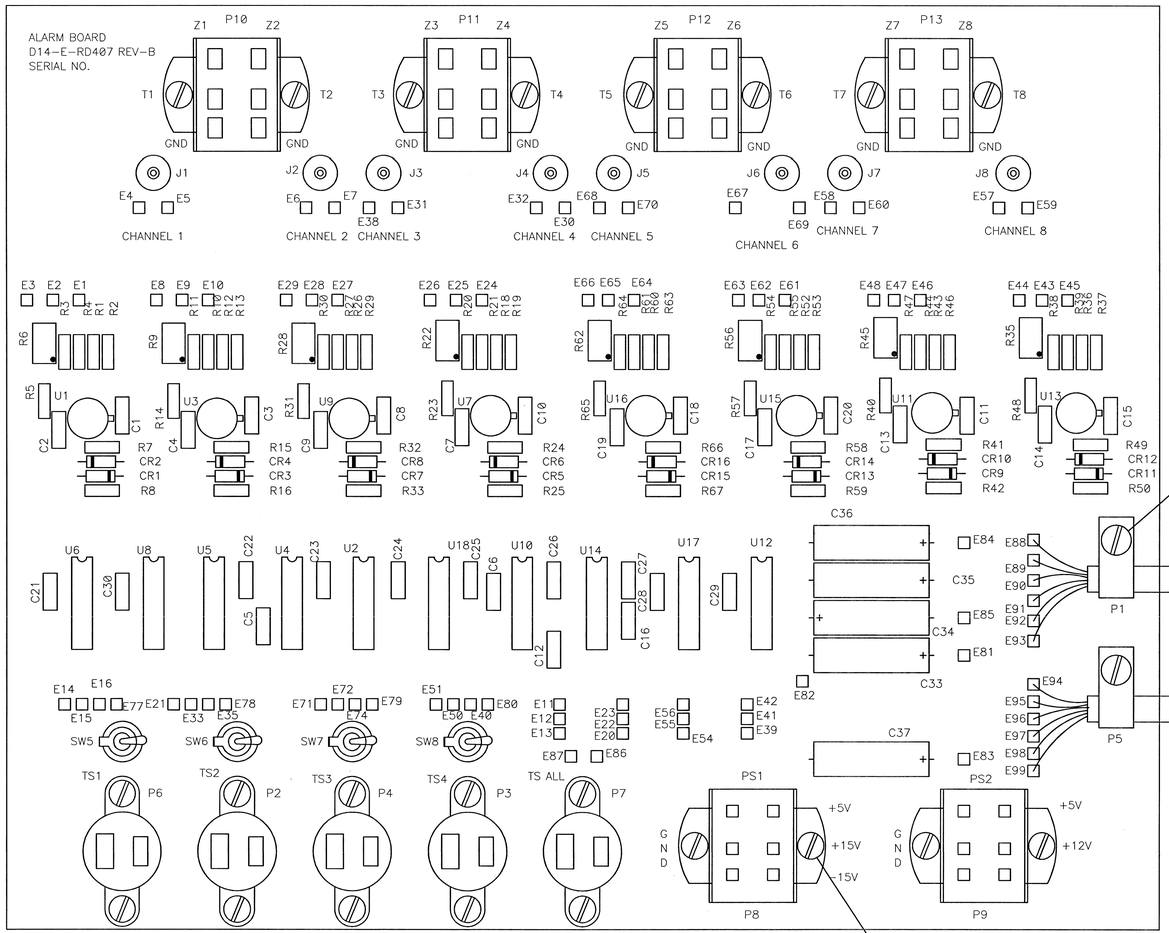
DRAWN BY	TONY TANZA	3/28/01
DESIGN APPROVAL	D Clarke	4/5/01
CHECKED APPROVAL	A Stillman	4/5/01
ENGINEER APPROVAL	A Stillman	4/5/01
SUPERVISOR APPROVAL	L Ben	4/5/01
Q.A. APPROVAL		
C.E.E. APPROVAL		

TITLE: PRINTED WIRING BOARD DRILLING
ALARM BOARD E949

SIZE: E | DRAWING NUMBER: D14-E-406 | REV: B

QA CATEGORY: A-3 | SCALE: 2:1 | WEIGHT: ——— | SHEET 1 OF 1

REVISIONS							
REV	ZONE	ECN NO.	DESCRIPTION	BY	DATE	CKR	APP
B			INITIAL RELEASE	TT	3/01	CKR	CKR



SILKSCREEN D14-E-RD405 REV-B

				57			
				56			
				55			
				54			
				53			
				52			
				51			
				50			
				49			
				48			
				47			
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				45			
				44			
				43			
				42			
				41			
				40			
				39			
				38			
				37			
		2	XP1,5	36	CLAMP,		A-59800
		2	XP1,5	35	NUT,PLAIN,HEXAGON,SS,#6 -32 NC		T-81108
		2	XP1,5	34	SCREW,MACHINE,SS,SLOTTED ROUND HEAD,#6 -32 NC X 1/4		T-58308
		22	XP2,3,4,6,7,10, 11,12,13	33	NUT,PLAIN,HEXAGON,SS,#5 -40 NC		T-81100
		22	XP2,3,4,6,7,10, 11,12,13	32	SCREW,MACHINE,SS,SLOTTED ROUND HEAD,#5 -40 NC X 1/4		T-58236
				31			
				30			
		8	R6,9,22,28, 35,45,56,62	29	RESISTOR-VAR,10K OHMS,1/2W,10%,RTR24	MIL-R-39015/3	A-11274
		8	R5,14,23,31, 40,48,57,65	28	RESISTOR,1 MEG OHM,1/4W,2%,RL07S105G	MIL-R-39008/1	A-00286
		8	R7,15,24,32, 41,49,58,66	27	RESISTOR,3.9K OHMS,1/4W,2%,RL07S392G	MIL-R-39008/1	A-00064
		8	R4,10,21,27, 39,44,55,61	26	RESISTOR,68 OHMS,1/4W,2%,RL07S680G	MIL-R-39008/1	A-00022
		8	R2,12,19,29, 37,46,53,63	25	RESISTOR,1.2K OHMS,1/4W,2%,RL07S122G	MIL-R-39008/1	A-00052
		8	R8,16,25,33, 42,50,59,67	24	RESISTOR,2.4K OHMS,1/4W,2%,RL07S242G	MIL-R-39008/1	A-00059
		8	R3,11,20,30, 38,47,54,64	23	RESISTOR,18K OHMS,1/4W,2%,RLL07S183G	MIL-R-39008/1	A-00080
		8	R1,13,18,26, 36,43,52,60	22	RESISTOR,300 OHMS,1/4W,2%,RL07S301G	MIL-R-39008/1	A-00037
		REF		21	SCHEMATIC DIAGRAM		D14-E-405
				20			
		87	E1-16,20-33,35, 38-48,50,51,54- 72,74,77-99	19	TERMINAL,WIREWRAP,AMPHENOL	842-800-272-005	A-42625
				18			
				17			
		16	CR1 - 16	16	DIODE,1N461	MIL-S-19500/	
				15			
				14			
		4	C5,6,12,16	13	CAPACITOR,.1UF,100V,10%,CK06BX104K	MIL-C-39014/2	A-18270
		5	C33,34,35,36,37	12	CAPACITOR,47UF,35V,10%,	MIL-C-39003/01-2072	A-23455
		26	C1,2,3,4,7,8,9,10, 11,13,14,15,17,18, 19,20,21,22,23,24, 25,26,27,28,29,30	11	CAPACITOR,.01UF,200V,10%,CK06BX103K	MIL-C-39014/2	A-18264
				10			
				9			
		4	U6,8,12,17	8	IC, RELSPDT,MAGNECRAFT	W172 DIP 31	
		1	U5	7	IC, HEX INVERTERS OPEN-COLLECTOR	7406	A-36276
		3	U4,10,14	6	IC, QUAD 2 - INPUT NOR GATES	7402	A-36296
		2	U2,18	5	IC,QUAD 2 - INPUT OR GATES	7432	A-36289
		8	U1,3,7,9,11,13,15,16	4	IC,	LM301	
				3			
				2			
		1		1	PRINTED WIRING BOARD		D14-E-406
-3	-2	-1	REF DESIGNATOR	ITEM NO.	DESCRIPTION	MFG. / PART NO.	MATL DWG NO., BNL NO.
QTY REQD							

NOTE: 1. ALL ITEMS LISTED WITH PART NUMBER AND MANUFACTURER CAN BE SUBSTITUTED WITH A BNL APPROVED EQUIVALENT PART.

INTERPRET IN GENERAL ACCORDANCE WITH ASME Y14.24M-1989

UNLESS OTHERWISE SPECIFIED

DIMENSIONS ARE IN INCHES
DECIMAL TOLERANCES
.X +/- .030
.XX +/- .015
.XXX +/- .005
ANGULAR TOLERANCE +/-1°

BREAK SHARP EDGES MAX. .03 MIN. .01

FINISH: NA

NEXT ASSEMBLY

OUTSTANDING ECN

AGS

DRAWN BY	TONY TANZA	3/28/01
DESIGN APPROVAL	T. Clarke	4/5/01
CHECKED APPROVAL	A. Stillman	4/5/01
ENGINEER APPROVAL	A. Stillman	4/5/01
SUPERVISOR APPROVAL		4/5/01
Q.C. APPROVAL		
C.E.E. APPROVAL		

COLLIDER-ACCELERATOR DEPARTMENT
BROOKHAVEN NATIONAL LABORATORY
UPTON, NEW YORK, 11973

TITLE: PRINTED WIRING BOARD ASSEMBLY
ALARM BOARD E949

SIZE: E | DRAWING NUMBER: D14-E-407 | REV: B

QA CATEGORY: A-3 | SCALE: 2:1 | WEIGHT: ——— | SHEET 1 OF 1