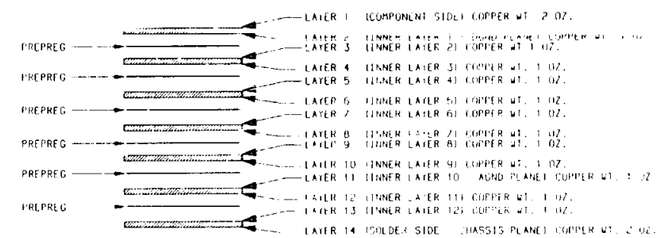
RELEASED
Date Rev Int
3 3 97 NC



LAYER STACKING
SCALE NONE

1. MARK AREA INDICATED WITH THE DATE CODE, TRACEBILITY CODE AND MANUFACTURERS CODE (FEDERAL SUPPLY CODE FOR MANUFACTURERS) WITH PERMANENT INK (NON CONDUCTIVE) OR IN COPPER ETCH.

NOTES-

17. ALL REFERENCED SPECIFICATIONS AND STANDARDS SHALL BE OF THE LATEST REVISION LEVEL OR AS SPECIFIED IN THE PROCUREMENT DOCUMENT. IN THE CASE OF CONFLICT, THE PROCUREMENT DOCUMENT SHALL TAKE PRECEDENCE.
16. LAYER TO LAYER MISREGISTRATION NOT TO EXCEED .005.
15. MIL-P-55110 QUALITY ASSURANCE PROVISIONS APPLY.
14. UNDIMENSIONED HOLES ARE LOCATED ON A .005 GRID.
13. UNLESS OTHERWISE SPECIFIED IN HOLE LEGEND, ALL HOLES ARE PLATED THRU AND SHALL BE THE SPECIFIED DIAMETER AFTER PLATING.
12. THIS DRAWING USED IN CONJUNCTION WITH SCHEMATIC SIG46115765.
11. VENDOR SHALL PROVIDE PRINTED WIRING BOARD COUPONS AS INDICATED.
10. ARTWORK DEPICTED ON THIS DRAWING IS FOR DOCUMENTATION ONLY.
9. ARTWORKS DEPICTED ON THIS DRAWING ARE PHOTO POSITIVES UNLESS OTHERWISE SPECIFIED, AND ARE VIEWED FROM COMPONENT SIDE.
8. SOLDER MASK (GREEN) BOTH SIDES.
7. SILKSCREEN WITH WHITE EPOXY INK PER MIL-I-43553, TYPE II (NON CONDUCTIVE).
6. TIN/LEAD PLATE EXTERNAL CONDUCTIVE PATTERNS PER MIL-P-81728.
5. BOARD MATERIAL TO BE EPOXY FIBERGLASS PER MIL-P-13949/4 TYPE GF, WITH EPOXY PREPREG PER MIL-P-13949/12, TYPE GF. STARTING COPPER WEIGHT SHALL BE 2 OZ. FOR LAYERS 1 AND 14, AND 1 OZ. FOR LAYERS 2 THRU 13. FINISHED LAMINATE MATERIAL THICKNESS SHALL BE .094+.008.
4. FABRICATE PRINTED WIRING BOARD PER MIL-P-55110 WITH ETCHBACK
3. THIS ITEM CONTAINS NO FRACTURE CRITICAL ELEMENTS.
2. ALL DIMENSIONS ARE IN INCHES.
1. INTERPRET PER JPG 8500.4.

NOTES: UNLESS OTHERWISE SPECIFIED

QTY	PART NUMBER	DESCRIPTION	MFR REF DES	SPECIFICATION	ITEM
-	SDG46115766-001	PWB.			-

DIMENSIONAL TOLERANCE UNLESS OTHERWISE SPECIFIED
.0 ± .1 .000 ± .010
.00 ± .1 ANGULAR ± .5 DEG.
SURFACE ± 1/2 DIM IN HUNDREDTHS
DIM UNLESS NOTED
NEXT ASSY SEG46115757

SIGNATURES		DATE
DR	Z. PALMER	12-01-97
ENG	L. Bendt	1-20-98
CH	J. Hawkins	1/19/98
APP	C. Chandler	1/21/98
QE	Jay Wilson SQE	2/16/98
MATL	Henry Kam	1/22/98
STRESS	[illegible]	1/26/98
AUTH		

NATIONAL AERONAUTICS & SPACE ADMINISTRATION
LYNDON B. JOHNSON SPACE CENTER HOUSTON, TEXAS

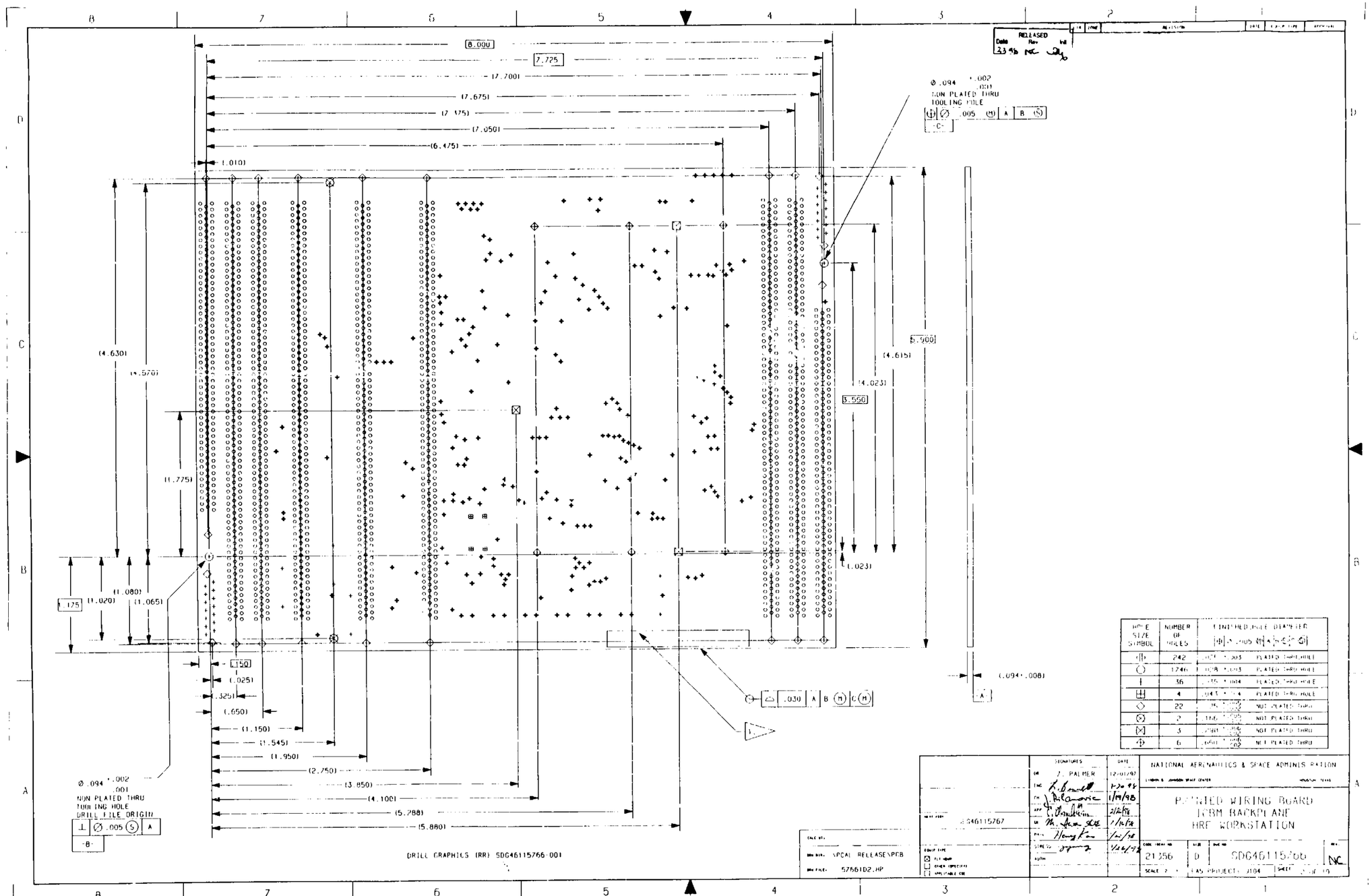
PRINTED WIRING BOARD
TCBM BACKPLANE
HRF WORKSTATION

CODE IDENT NO	SIZE	DWG NO	REV
21356	D	SDG46115766	NC

SCALE 2/1 DATE PRINTED 1/04 SHEET 1 OF 15

CHECK BY:
DWG NO: NPCAD\RELEASE\PCB
DRW FILE: 5766101.HP

296



HOLE SIZE SYMBOL	NUMBER OF HOLES	FINISHED HOLE DIAMETER
⊕	242	[illegible] PLATED THRU HOLE
○	1746	[illegible] PLATED THRU HOLE
⊥	36	[illegible] PLATED THRU HOLE
⊞	4	[illegible] PLATED THRU HOLE
◇	22	[illegible] NOT PLATED THRU
⊗	2	[illegible] NOT PLATED THRU
⊠	3	[illegible] NOT PLATED THRU
⊕	6	[illegible] NOT PLATED THRU

RELEASED
Date Rev Init
23 98

SIGNATURES		DATE
DR	J. PALMER	12/01/97
ENG	[illegible]	1-20-98
CH	J. Bilanovic	1/19/98
APP	[illegible]	2/12/98
DR	[illegible]	2/16/98
DATE	[illegible]	1/20/98
STRESS	[illegible]	1/26/98
AUTH		

NATIONAL AERONAUTICS & SPACE ADMINISTRATION
LYNDON B. JOHNSON SPACE CENTER HOUSTON, TEXAS

PRINTED WIRING BOARD
ICBM BACKPLANE
HRF WORKSTATION

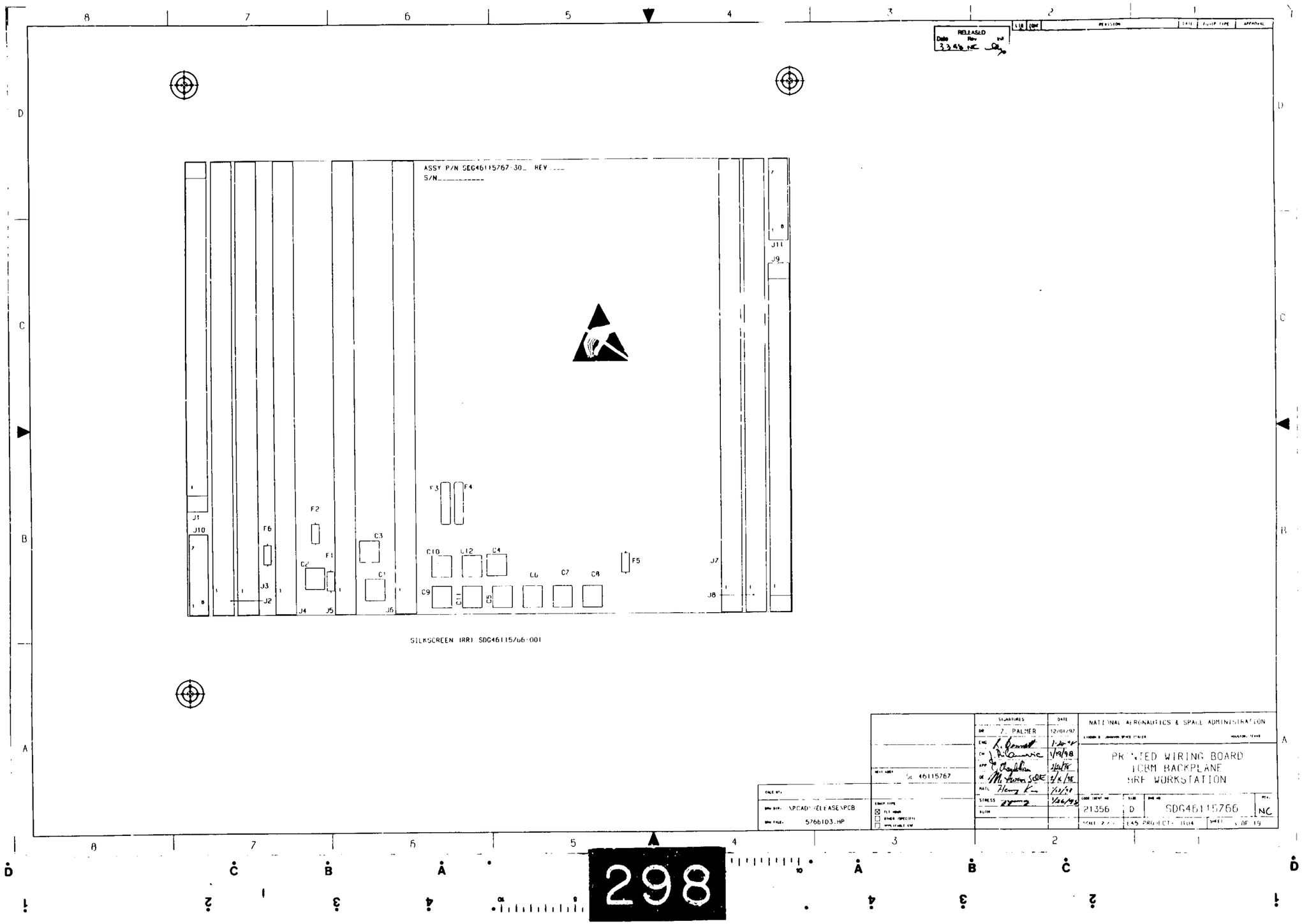
CALC WT:
DRW DIR: \PCAL RELEASE\PCB
DRW FILE: 57661D2.HP

NEXT ASSY: SDG46115767

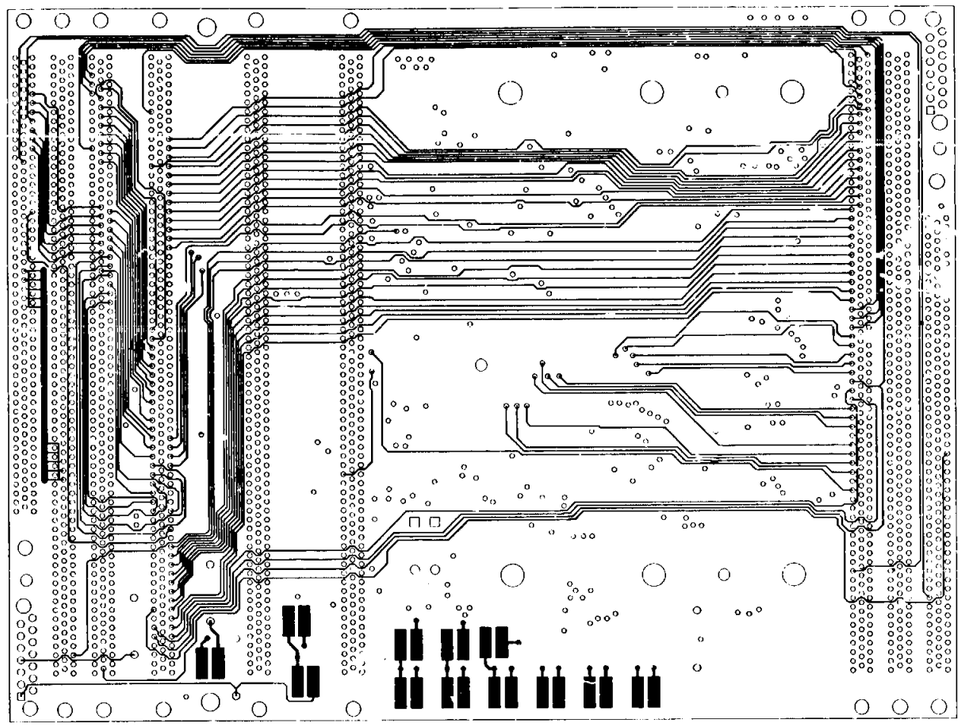
EQUIP TYPE
☒ FLT HDWR
☐ OTHER (SPECIFY)
☐ APPLICABLE CSE

CODE IDENT NO 21356 | SIZE D | DWG NO SDG46115766 | REV NC
SCALE 2 | EAS PROJECT: J104 | SHEET 2 OF 19

297



RELEASED
Date Rev Init
3 3 98 NC
ASSY P/N SEG46115767-30_ REV ___
S/N_____
J1
J10
J3
J2
J4
J5
J6
J7
J8
J9
J11
F1
F2
F3
F4
F5
F6
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
SILKSCREEN (RR) SDG46115766-001
SIGNATURES
DATE
DR Z. PALMER 12/01/97
ENG 1-24-98
CH 1/19/98
APP 2/21/98
QE 2/11/98
MATL 1/13/98
STRESS 1/26/98
AUTH
NATIONAL AERONAUTICS & SPACE ADMINISTRATION
PRINTED WIRING BOARD
TCBM BACKPLANE
BRF WORKSTATION
21356
D
SDG46115766
NC
SCALE 2/1
EAS PROJECT: 1104
SHEET 1 OF 19
SEG 46115767
DRW DIR: \PCAD\RELEASE\PCB
DRW FILE: 5766103.HP
298



LAYER 1 (COMPONENT SIDE-VIDEO SIGNALS) (RR) SDG46115766-001

DR	Z. PALMER	12/01/97
ENG	R. Bennett	1-20-98
CH	J. Mancuso	1/19/98
APP	C. Aughtman	2/26/98
QC	M. Hanson SQC	2/4/98
MATL	Henry Kao	1/20/98
STRESS	[illegible]	1/26/98
AUTH		

NATIONAL AERONAUTICS & SPACE ADMINISTRATION

LYNDON B. JOHNSON SPACE CENTER — HOUSTON, TEXAS

PRINTED WIRING BOARD
ICBM BACKPLANE
HRF WORKSTATION

CODE IDENT NO	SIZE	DWG NO	REV
21356	D	SDG46115766	NC

SCALE 2:1 — EAS PROJECT: J104 — SHEET 4 OF 19

CALC WT:

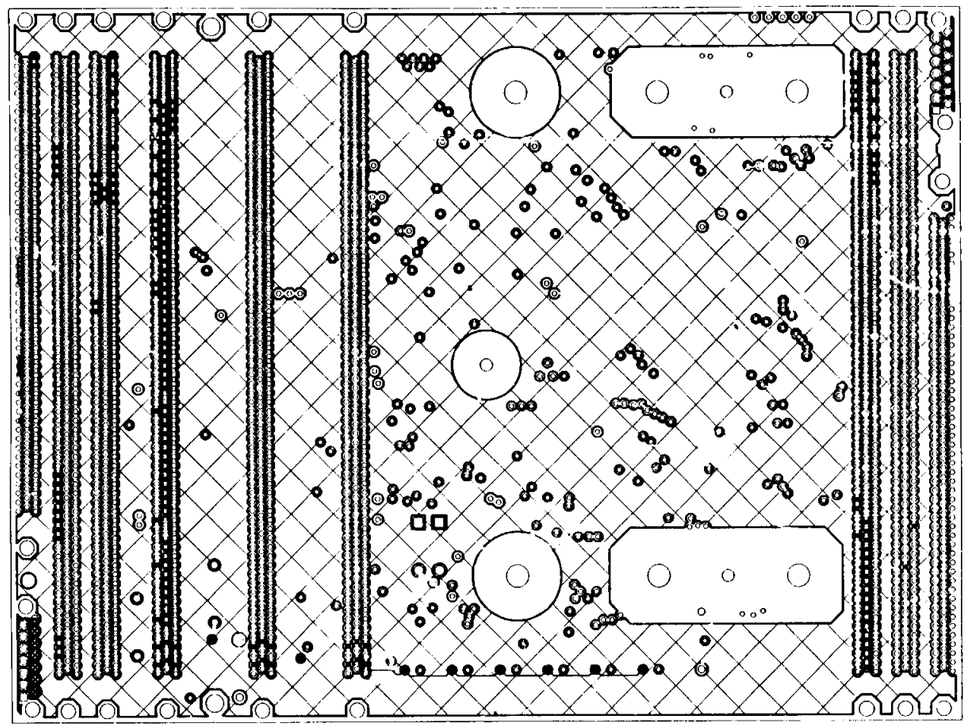
DRN DIR: \PCAD\RELEASE\PCB

DRN FILE: 5766104.HP

NEXT ASSY: SDG46115767

COMP TYPE: [X] FLT HOUR [ ] OTHER (SPECIFY) [ ] APPLICABLE USE

299



LAYER 2 (INNER LAYER 1 - DGND PLANE) (RR) SDG46115766-001

SIGNATURES		DATE	NATIONAL AERONAUTICS & SPACE ADMINISTRATION
DR	Z. PALMER	12/01/97	
ENG	L. Donell	1-22-98	PRINTE WIRING BOARD
CH	J. Alamovic	1/19/98	TCBM BACKPLANE
APP	[illegible]	1/26/98	HRF WORKSTATION
DE	M. [illegible] SCE	2/16/98	
MATL	Henry Kan	1/26/98	
STRESS	[illegible]	1/26/98	
AUTH			

NEXT ASSY: SEG46115767

CALC WT:

DRW DIR: \PCAD\RELEASE\PCB

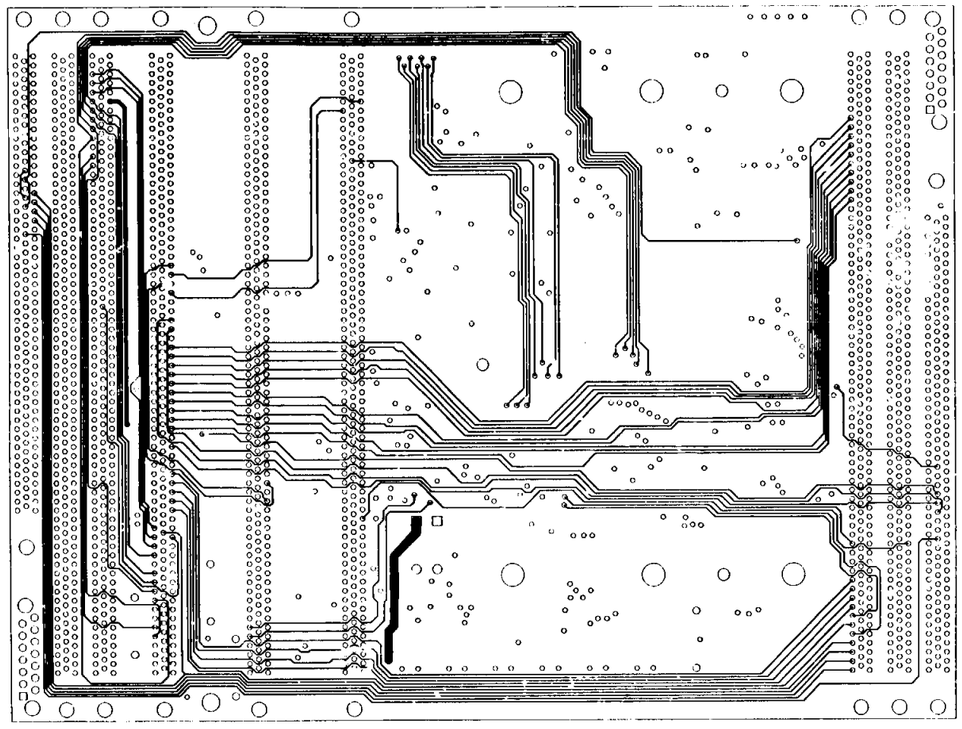
DRW FILE: 5766105.HP

EQUIP TYPE: ☒ FLT HDWR ☐ OTHER (SPECIFY) ☐ APPLICABLE DWG

CODE IDENT NO: 21756 | SIZE: D | DWG NO: SDG46115766 | REV: NC

SCALE: 2/1 | EAS PROJECT: J104 | SHEET: 5 OF 19

300



LAYER 3 (INNER LAYER 2 - VIDEO SIGNALS) (RR) SDG46115766 001

SIGNATURES		DATE
DR	Z. PALMER	12/01/97
ENG	[signature]	1-20-98
CH	[signature]	1/19/98
APP	[signature]	2/26/98
QC	[signature]	2/10/98
MATL	[signature]	1/20/98
STRESS	[signature]	1/26/98
AUTH		

NATIONAL AERONAUTICS & SPACE ADMINISTRATION

LYNDON B. JOHNSON SPACE CENTER — HOUSTON, TEXAS

PRINTED WIRING BOARD
ICBM BACKPLANE
HRF WORKSTATION

CODE IDENT NO	SIZE	DWG NO	REV
51356	D	SDG46115766	NC

SCALE 2/1 — EAS PROJECT: J104 — SHEET 6 OF 19

NEXT ASSY: SDG46115767

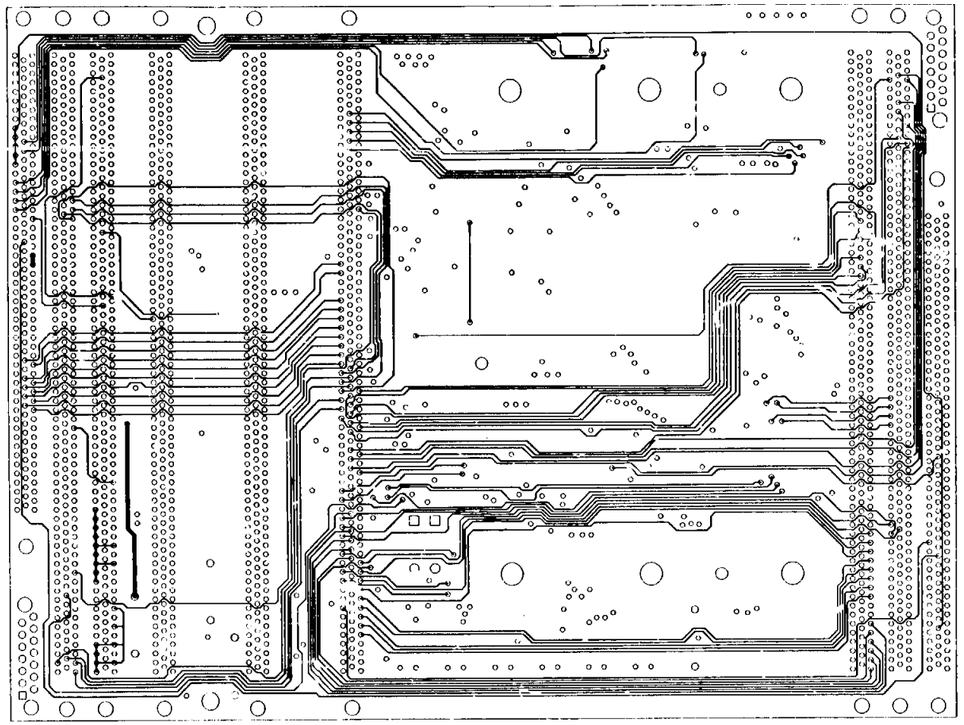
CALC WT.

DRW DIR. \PCAD\RELEASE\PCB

DRW FILE: 5766106.HP

EQUIP TYPE: ☒ FLT HDW ☐ OTHER (SPECIFY) ☐ APPLICABLE SIZE

301



LAYER 4 (INNER LAYER 3 - DIGITAL SIGNALS) (RR) SDG46115766-001

NEXT ASSY: SEG46115767	SIGNATURES	DATE	NATIONAL AERONAUTICS & SPACE ADMINISTRATION
	DR: Z. PALMER	12/01/97	LYNDON B. JOHNSON SPACE CENTER HOUSTON TEXAS
	ENG: L. Barnett	1-20-98	PRINTED WIRING BOARD
	CH: J. Milanovic	1/19/98	ICBM BACKPLANE
	APP: C. Chapman	2/16/98	HRF WORKSTATION
	QE: M. Jones SDC	2/16/98	
	MATL: Hong Kan	1/20/98	
	STRESS: [illegible]	1/26/98	CODE IDENT NO: 21355 · SIZE: D · DWG NO: SDG46115766 · REV: NC
	AUTH:		SCALE: 2/1 · EAS PROJECT: J104 · SHEET 7 OF 19

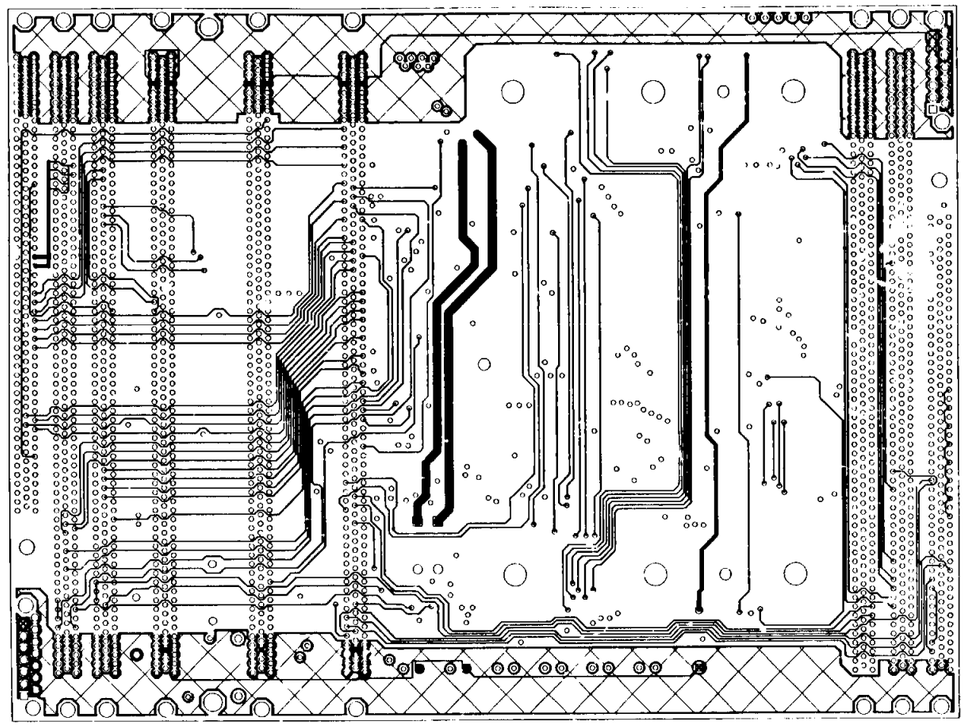
CALC BY:

DRN DIR: PCAD\RELEASE\PCB

DRN FILE: 5766107.HP

UNIT TYPE: ☒ FLT HDWR ☐ OTHER (SPECIFY) ☐ APPLICABLE ONE

302



LAYER 5 (INNER LAYER 4 - DIGITAL. 12V PWR. -15VOUT) (RR) SDG46115766-001

SIGNATURES		DATE
DR	Z. PALMER	12/01/97
ENG	R. Bennett	1-20-98
CH	J. Milanovic	1/19/98
APP	C. Chaughlan	2/26/98
QE	[illegible]	2/26/98
MATL	Henry Kim	1/26/98
STRESS	[illegible]	1/26/98
AUTH		

NATIONAL AERONAUTICS & SPACE ADMINISTRATION

LYNDON B. JOHNSON SPACE CENTER — HOUSTON, TEXAS

PRINTED WIRING BOARD
ICBM BACKPLANE
HRF WORKSTATION

CODE IDENT NO	SIZE	DWG NO	REV
21356	D	SDG46115766	NC

SCALE 2/1 | EAS PROJECT: J104 | SHEET 8 OF 19

NEXT ASSY: SEG46115767

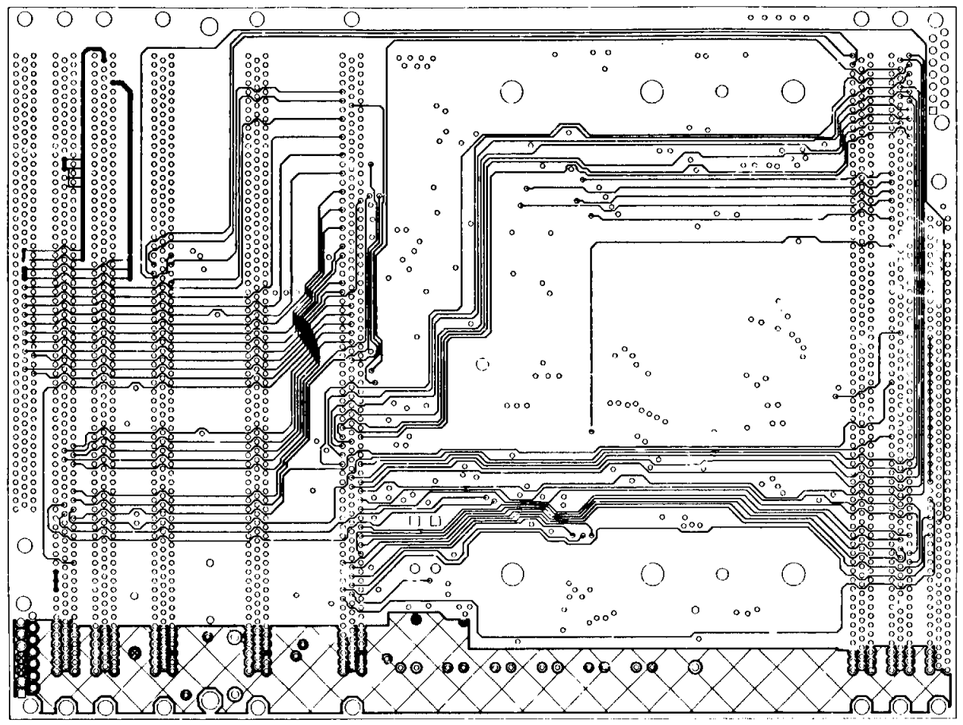
CALC WT:

DRN DIR: \PCAD\RE_CASE\PCB

DRN FILE: 5766108.HP

EQUIP TYPE
- ☒ FLT HDWR
- ☐ OTHER (SPECIFY)
- ☐ APPLICABLE SOC

303



LAYER 6 (INNER LAYER 5 - DIGITAL, 5V PWR) SDG46115766-001

SIGNATURES		DATE
DR	Z. PALMER	12/01/97
ENG	[signature]	1-20-98
CH	[signature]	1/19/98
APP	[signature]	2/26/98
QE	[signature]	1/26/98
MATL	[signature]	1/26/98
STRESS	[signature]	1/26/98
AUTH		

NATIONAL AERONAUTICS & SPACE ADMINISTRATION

LYNDON B. JOHNSON SPACE CENTER — HOUSTON, TEXAS

PRINTED WIRING BOARD
ICBM BACKPLANE
HRF WORKSTATION

NEXT ASSY: SEC46115767

CALC WT:

DRW DIR: \PCAD\RELEASE\PCB

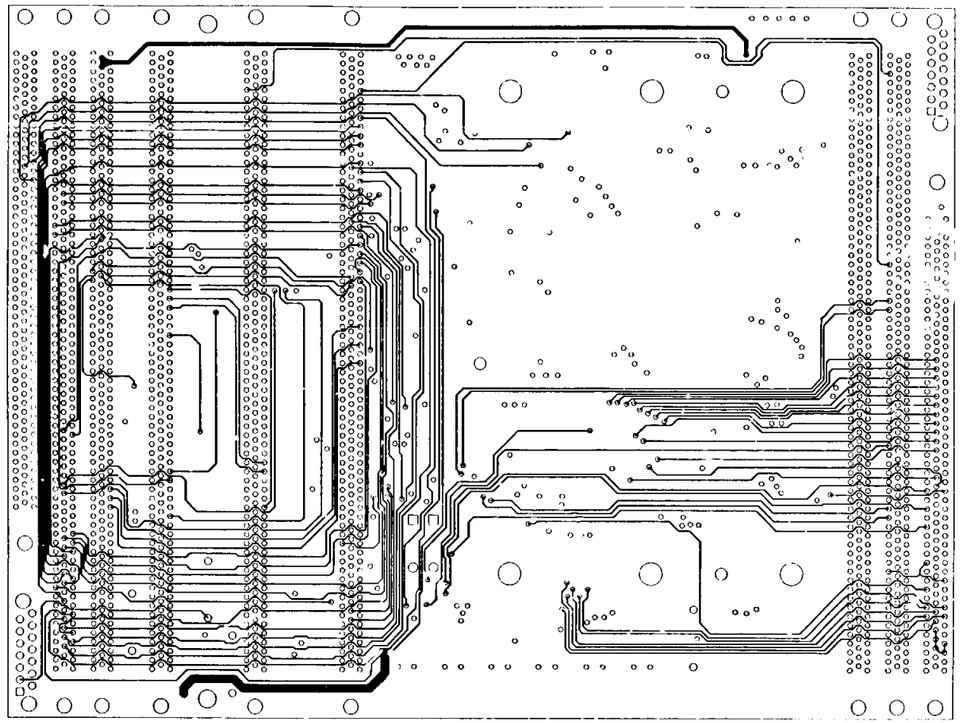
DRW FILE: 5766109.HP

EQUIP TYPE: ☒ FLT HDWR ☐ OTHER (SPECIFY) ☐ APPLICABLE SEE

CODE IDENT NO: 21356 | SIZE: D | DWG NO: SDG46115766 | REV: NC

SCALE: 2/1 | LAS PROJECT: J104 | SHEET 9 OF 19

304



LAYER : (INNER LAYER 6 - DIGITAL SIGNALS) SDG46115766-001

SIGNATURES		DATE
DR	Z. PALMER	12/01/97
ENG	R. Bennett	1-20-98
CH	J. Alanovic	1/19/98
APP	C. Aigaldillan	2/26/98
QE	M. Ivan SDE	2/16/98
MATL	Henry Kao	1/22/98
STRESS	[illegible]	1/26/98
AUTH		

NATIONAL AERONAUTICS & SPACE ADMINISTRATION

LYNDON B. JOHNSON SPACE CENTER HOUSTON, TX 77

PRINTED WIRING BOARD
ICBM BACKPLANE
HRF WORKSTATION

CODE IDENT NO	SIZE	DWG NO	REV
21356	D	SDG46115766	NC
SCALE 2/	EAS PROJECT: J104	SHEET 10 OF 15	

NEXT ASSY: SEG46115767

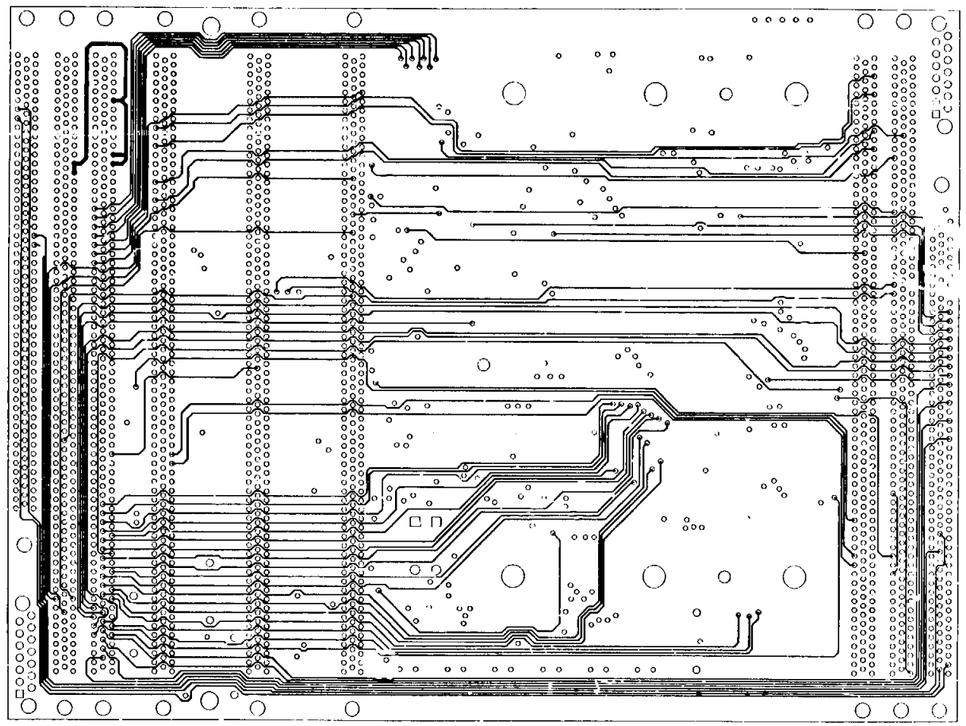
CALC WT:

DRW SIZE: \PCAD\RELEASE .PCB

DRW FILE: 57661D10.HP

EQUIP TYPE
☒ FLT HDWR
☐ OTHER (SPECIFY)
☐ APPLICABLE WIRE

305



LAYER 8 (INNER LAYER 7) (RR) SDG46115766-001

SIGNATURES		DATE	NATIONAL AERONAUTICS & SPACE ADMINISTRATION
DR	Z. PALMER	12/01/97	
ENG	R. Bennett	1-30-98	
CH	J. R. Lawrence	1/19/98	PRINTED WIRING BOARD
APP	C. Chandler	2/4/98	IOBM BACKPLANE
SE	M. Hoo, SDE	2/6/98	HRF WORKSTATION
MATL	Hong Kim	1/20/98	
STRESS	[illegible]	1/26/98	
AUTH			

NEXT ASSY: SEG46115767

CALC WT:

DRW DIR: \PCAD\RELEASE.PCB

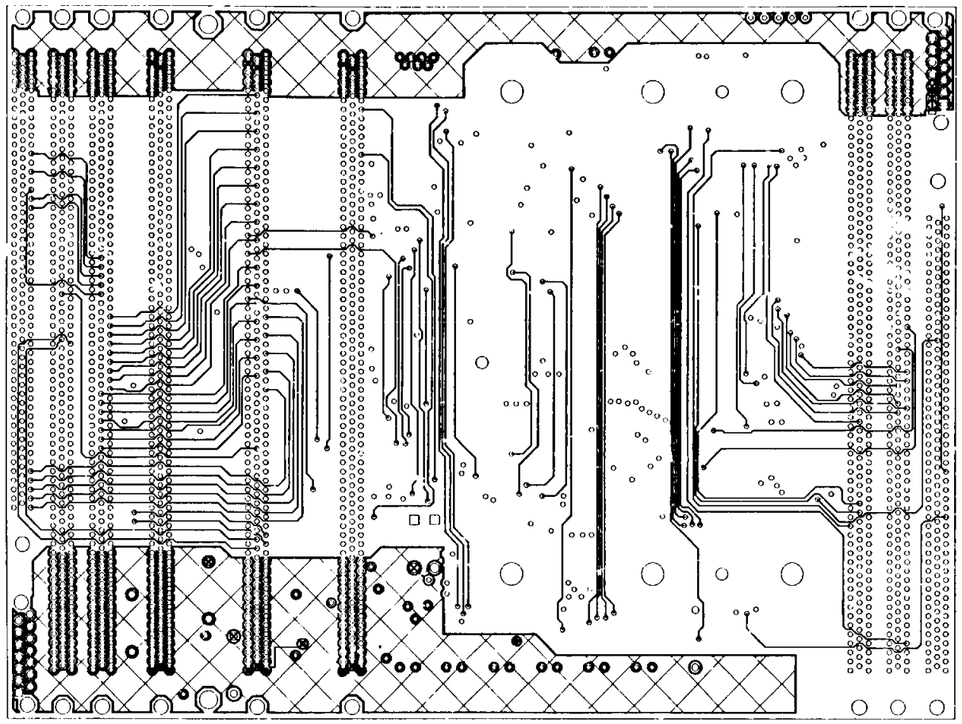
DRW FILE: 57661011.HP

EQUIP TYPE: ☒ FLT HDWR ☐ OTHER (SPECIFY) ☐ APPLICABLE DOC

CODE IDENT NO.	SIZE	DWG NO.	REV
23350	D	SDG46115766	NC

SCALE 2/1 | EAS PROJECT: J104 | SHEET 11 OF 19

306



LAYER 9 (INNER LAYER 8 - ANALOG SIGNALS, VCC(+), -5VDCOUT) (RR) SDG46115766-001

SIGNATURES		DATE	NATIONAL AERONAUTICS & SPACE ADMINISTRATION
DR	Z. PALMER	12/01/97	
ENG	R. Bonett	1-20-98	PRINTED WIRING BOARD
CH	J. Milanovic	1/19/98	ICBM BACKPLANE
APP	C. Chandler	2/26/98	HRF WORKSTATION
QE	M. Lucas Sills	2/16/98	
MATL	Henry Kao	1/22/98	
STRESS	[illegible]	1/26/98	
AUTH			

NEXT ASSY: SEG46115767

CALC BY:

DRW DIR: \PCAD\RELEASE\PCB

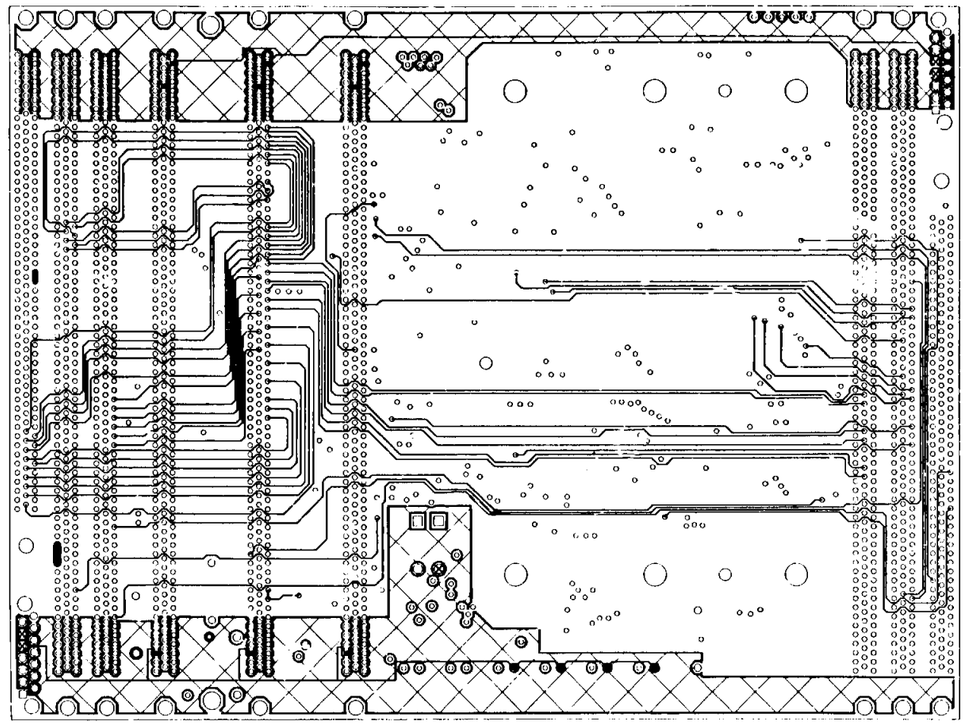
DRW FILE: 57661D12.HP

GROUP TYPE: ☒ FLT HDW ☐ OTHER (SPECIFY) ☐ APPLICABLE DOC

CODE IDENT NO	SIZE	DWG NO	REV
21356	D	SDG46115766	NC

SCALE 2/1 | EAS PROJECT: J104 | SHEET 12 OF 19

307



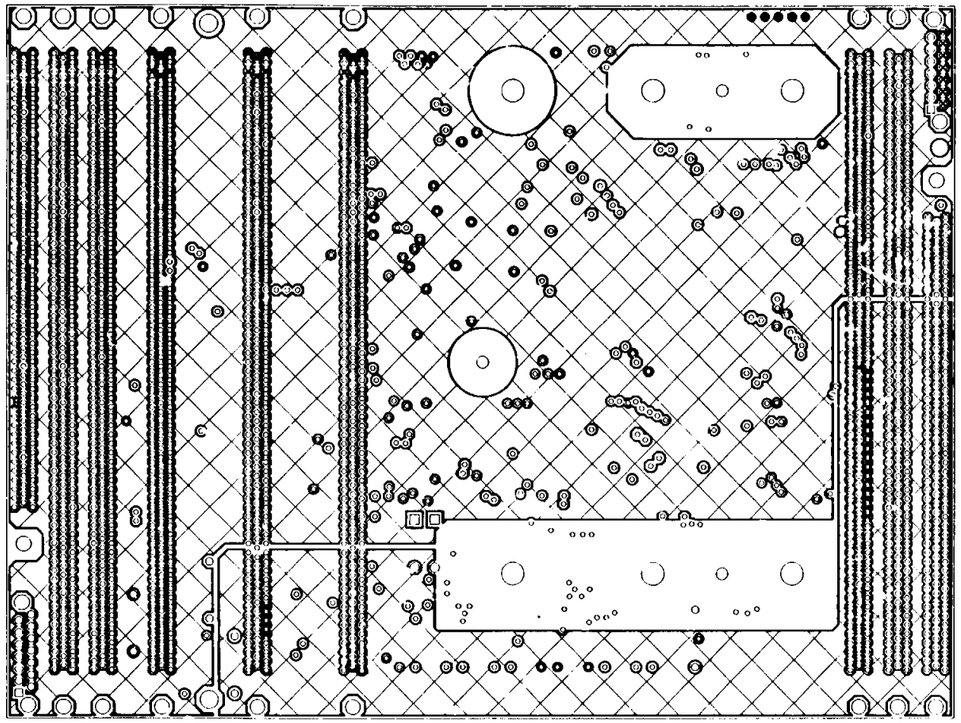
LAYER 10 (INNER LAYER 9 - ANALOG SIGNALS, +15VOUT, +12V PWR) (RR) SDG46115766-001

SIGNATURES		DATE	NATIONAL AERONAUTICS & SPACE ADMINISTRATION
DR	Z. PALMER	12/01/97	
ENG	[signature]	1-20-98	PRINTED WIRING BOARD
CH	[signature]	1/19/98	ICBM BACKPLANE
APP	[signature]	2/6/98	HRF WORKSTATION
QE	[signature]	2/12/98	
MATL	[signature]	1/28/98	
STRESS	[signature]	1/26/98	
AUTH			

NEXT ASSY	SEG46115767		
CALC WT.			
DRW DIR.	\PCAD\RELEASE\PCB		
DRW FILE	57661013.HP		
EQUIP TYPE	☒ FLT HDWR ☐ OTHER (SPECIFY) ☐ APPLICABLE DOC		

21356	D	SDG46115766	NC
SCALE 2:1	EAS PROJECT: 1104	SHEET 13 OF 19	

308



LAYER 11 (INNER LAYER 10 - AGND PLANE, DSPAGND PLANE) (RIC) SDG46115766-001

SIGNATURES		DATE	NATIONAL AERONAUTICS & SPACE ADMINISTRATION
DR	Z. PALMER	12/01/97	
ENG	R. Bennett	1-5-98	PRINTED WIRING BOARD
CH	J. McCarrie	1/19/98	ICBM BACKPLANE
APP	C. Chambellan	2/25/98	HRF WORKSTATION
DE	M. Lyon SGK	2/16/98	
PATL	Henry Kao	1/20/98	
STRESS	[illegible]	1/26/98	CODE IDENT NO. 21356 · SIZE D · DWG NO. SDG46115766 · REV NC
MATH			SCALE 2/1 · EAS PROJECT: 3104 · SHEET 14 OF 19

NEXT ASSY: SEG46115767

CALC WT:

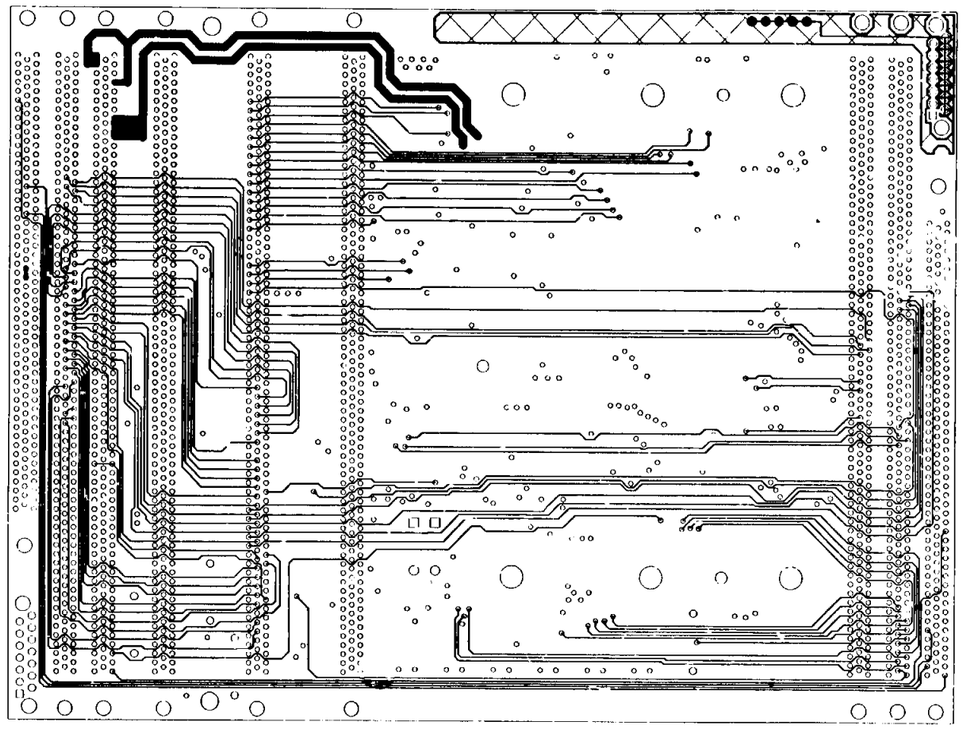
DRN DIR: \PCAD\RELEASE\PCB

DRN FILE: 57661D14.HP

COMP TYPE: ☑ FLT HDWR ☐ OTHER (SPECIFY) ☐ APPLICABLE DOC

RELEASED Date Rev

309



LAYER 12 (INNER LAYER 11 ANALOG SIGNALS) (RR) SDG46115766-001

SIGNATURES		DATE
DR	Z. PALMER	12/01/97
ENG	[signature]	1-20-98
CH	[signature]	1/19/98
APP	[signature]	2/4/98
QE	[signature]	2/12/98
MATL	[signature]	1/20/98
STRESS	[signature]	1/26/98
AUTH		

NATIONAL AERONAUTICS & SPACE ADMINISTRATION
LYNDON B. JOHNSON SPACE CENTER HOUSTON, TEXAS

PRINTED WIRING BOARD
ICBM BACKPLANE
HRF WORKSTATION

CODE IDENT NO.	SIZE	DWG NO.	REV
21356	D	SDG46115766	NC

SCALE 2/1 | EA5 PROJECT: J104 | SHEET 15 OF 19

NEXT ASSY: SEG46115767

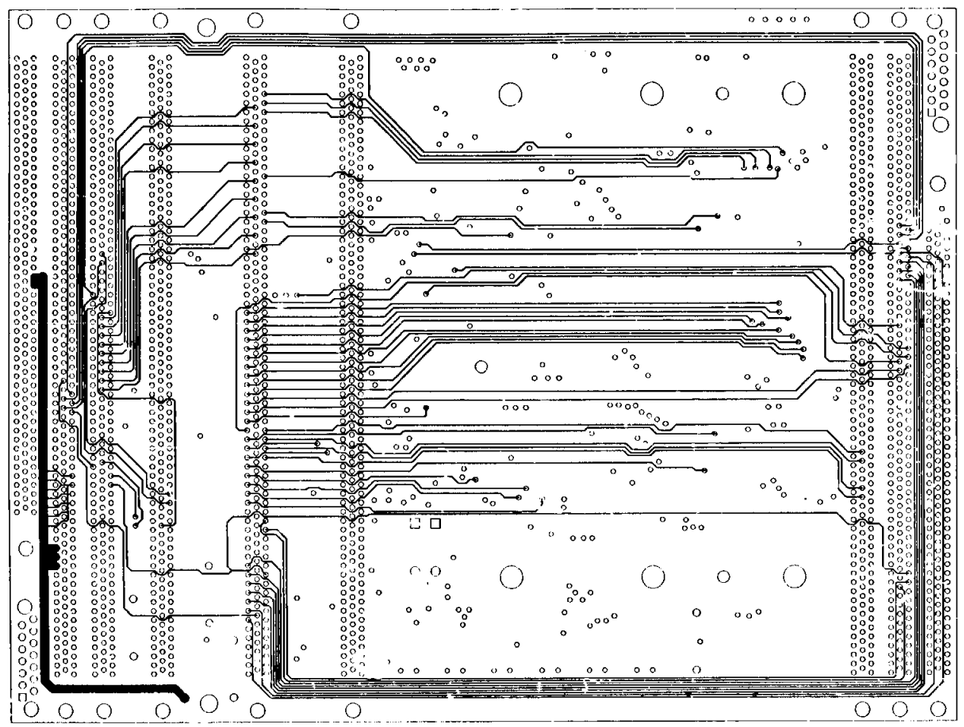
CALC WT:

DRW DIR: \PCAD\RELEASE PCB

DRW FILE: 57661015.HP

EQUIP TYPE: ☒ FLT HDWR ☐ OTHER (SPECIFY) ☐ APPLICABLE DWG

310



LAYER 13 (INNER LAYER 12 - ANALOG SIGNALS) (RR) SDG46115766-001

SIGNATURES		DATE
DR	Z. PALMER	12/01/97
ENG	[signature]	1-20-98
CH	[signature]	1/19/98
APP	[signature]	2/26/98
CK	[signature] SDE	2/16/98
MATL	Henry Kao	1/28/98
S-ELSE	[signature]	1/26/98
AUTH		

NATIONAL AERONAUTICS & SPACE ADMINISTRATION

LYNDON B. JOHNSON SPACE CENTER — HOUSTON, TEXAS

PRINTED WIRING BOARD
ICBM BACKPLANE
HRF WORKSTATION

NEXT ASSY: SEG46115767

CALC WT:

DRN DIR: \PCAD\RELEASE\PCB

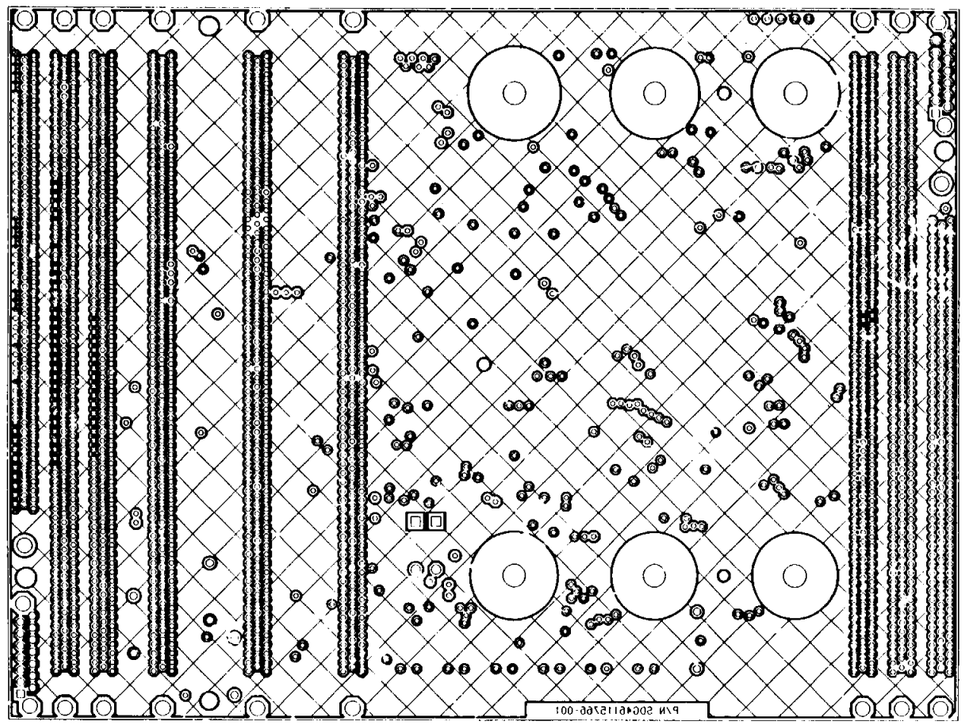
DRN FILE: 57661D16.HP

EQUIP TYPE: ☒ FLY HOME ☐ OTHER (SPECIFY) ☐ APPLY HOLE NO

CODE IDENT NO: 21356 | SIZE: D | DWG NO: SDG46115766 | REV: NC

SCALE: 2/1 | EAS PROJECT: 0104 | SHEET: 16 OF 19

311



LAYER 14 (SOLDER SIDE-CHASSIS PLANE) (RR) SDG46115766-001

SIGNATURES		DATE
DR	Z. PALMER	12/01/97
ENG	R. Bennett	1-20-98
CH	J. Lawrence	1/19/98
APP	C. Clayton Allen	1/26/98
DE	M. Harris SDE	2/16/98
MATL	Henry Kao	1/20/98
STRESS	[illegible]	1/26/98
AUTH		

NATIONAL AERONAUTICS & SPACE ADMINISTRATION

PRINTED WIRING BOARD
ICBM BACKPLANE
HRF WORKSTATION

21356	D	SDG46115766	NC
SCALE 2:1	EAS PROJECT: 0104	SHEET 17 OF 19	

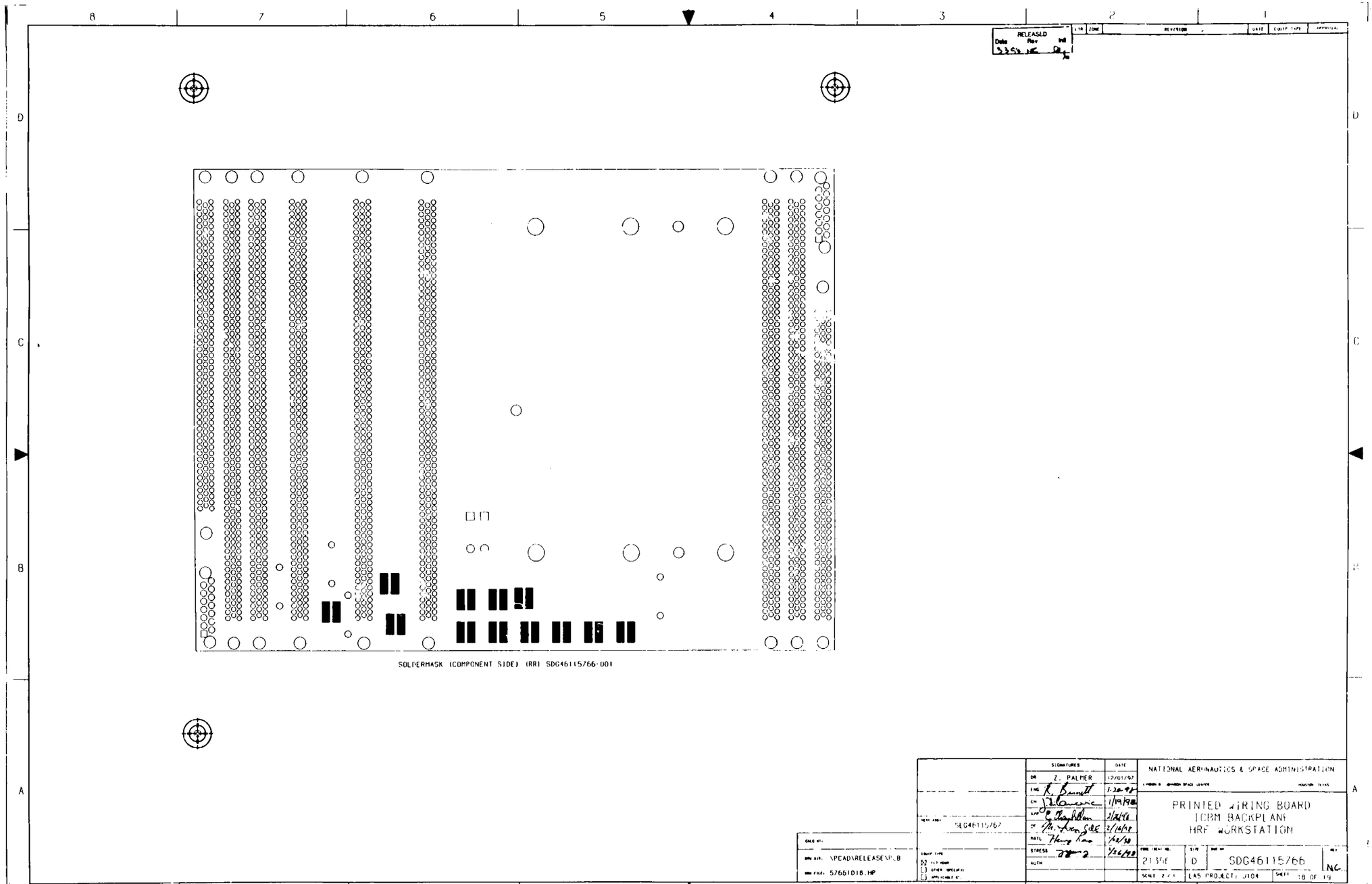
SEC46115767

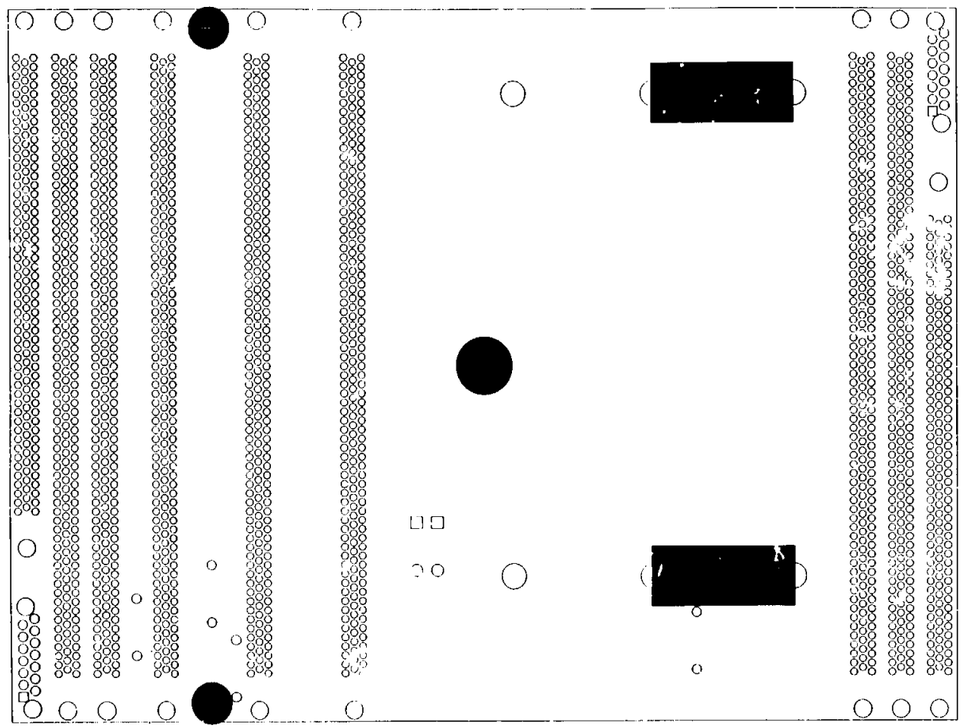
CALC WT:

DRW DIR: \PCAD\RELEA C\PCB

DRW FILE: 57661D17.HP

312


SOLDERMASK (COMPONENT SIDE) (RR) SDG46115766-001
RELEASED
Date Rev Init
LTR ZONE REVISION DATE EQUIP TYPE APPROVAL
SIGNATURES DATE
DR Z. PALMER 12/01/97
ENG 1-20-98
CH 1/19/98
APP 2/2/98
OF 2/16/98
MATL 1/28/98
STRESS 2/26/98
AUTH
NATIONAL AERONAUTICS & SPACE ADMINISTRATION
PRINTED WIRING BOARD
ICBM BACKPLANE
HRF WORKSTATION
SDG46115766
D
NC
SCALE 2/1
LAS PROJECT: J104
SHEET 18 OF 19
SDG46115767
\PCAD\RELEASE\PCB
57661018.HP
313



SOLDERMASK (SOLDER SIDE) (RR) SDG46115766-001

SIGNATURES		DATE	NATIONAL AERONAUTICS & SPACE ADMINISTRATION
DR	Z. PALMER	12/01/97	
ENG	[signature]	1-20-98	
CH	[signature]	1/19/98	PRINTED WIRING BOARD
APP	[signature]	2/26/98	ICBM BACKPLANE
QE	[signature]	2/16/98	HRF WORKSTATION
MATL	[signature]	1/22/98	
STRESS	[signature]	1/26/98	
AUTH			

NEXT ASSY: SEG46115767

CALC BY:

DRW DIR: \PCAD\RELEASE\PCB

DRW FILE: 57661D19.HP

EQUIP TYPE: ☒ FLT HDWR ☐ OTHER (SPECIFY) ☐ APPLICABLE SEE

CODE IDENT NO. 21356 | SIZE D | DWG NO. SDG46115765 | REV. NC

SCALE 2/1 | EA5 PROJECT: J104 | SHEET 19 OF 19

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