APPENDIX H—CURVED PANEL WITH MSD CRACKS

This appendix contains the curved panel assembly drawings, strain gage locations, strain survey by pressure load, stress fringe plots, strain survey prediction and correlation, linkup stress prediction, and crack growth prediction as discussed in section 9.

Page No.	Description
H-2	Curved panel assembly drawings (figure H-1)
H-63	Curved panel strain gage locations (figure H-2)
H-81	Curved panel strain survey—pressure (tables H-1 to H-5)
H-83	Curved panel stress fringe plots (figures H-3 to H-22)
H-93	Curved panel strain survey prediction and correlation (figures H-23 to H-132)
H-148	Curved panel linkup stress prediction (figures H-133 to H-151)
H-159	Curved panel crack growth prediction (figures H-152 to H-153)

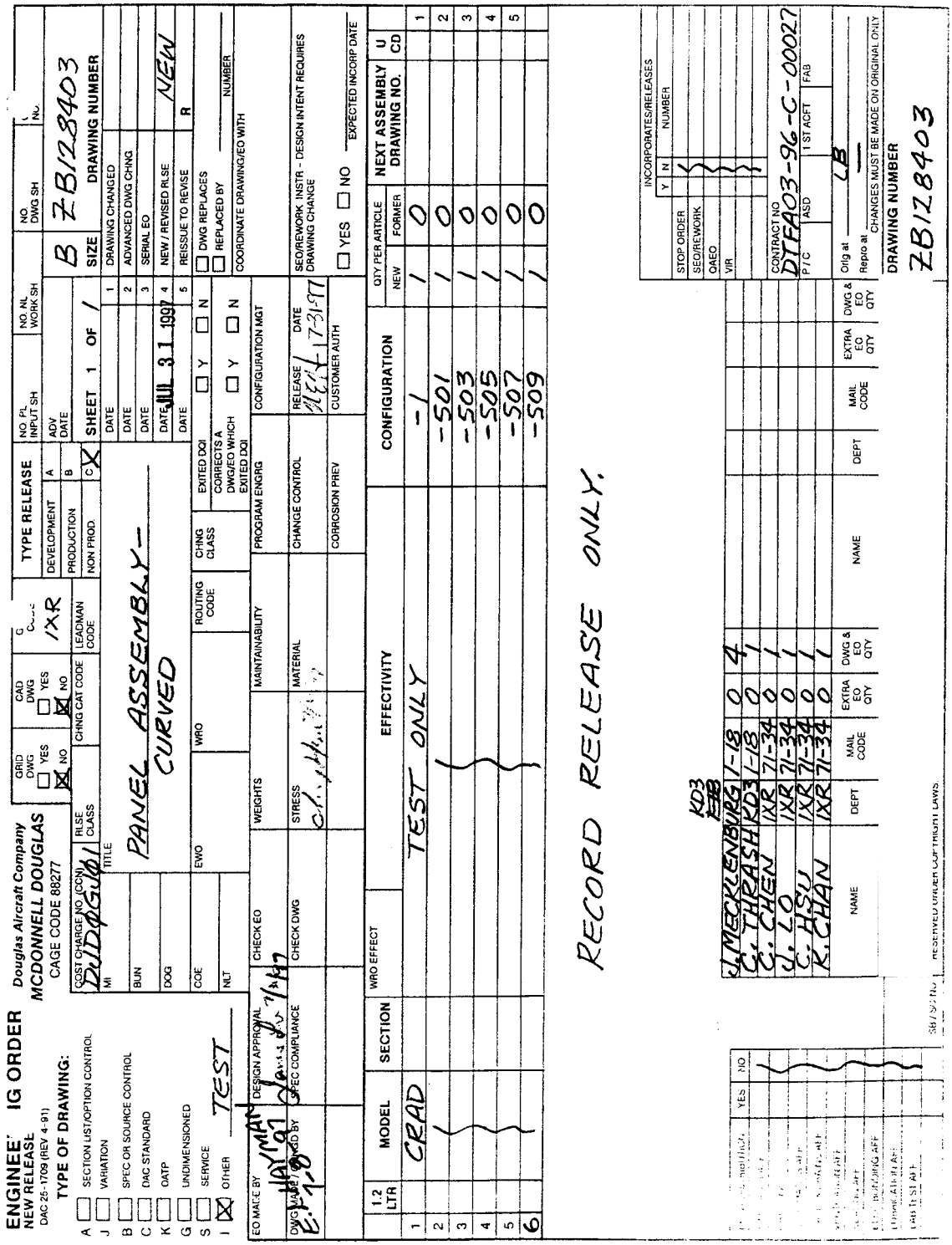

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS

ENGINEERING ORDER
DAC 25-1709K (REV 3-91)

Douglas Aircraft Company
MCDONNELL DOUGLAS
CAGE CODE 88277

HANDLING INSTRUCTIONS (HI)
0. INTERCHANGEABILITY NOT AFFECTED USAGE OF PRIOR CHANGE OPTIONAL
2. CONFORMANCE REQUIRED AT NOTED EFFECTIVITY
3. CONFORMANCE REQUIRED AT NOTED EFFECTIVITY OPTIONAL REPAIR INSTRUCTIONS ARE NOT TO BE INCORPORATED ON PRODUCTION DRAWING GRAPHICS
4. SCRAP
5. CONFORMANCE REQUIRED AT NOTED EFFECTIVITY UNLESS OTHERWISE NOTED
6. RETROFIT (DELIVERED ARTICLES)

GRID DWG	CAD DWG	GROUP CODE	TYPE RELEASE		NO. PL INPUT SH	NO. NL INPUT SH	NO.
☐ YES ☒ NO	☐ YES ☒ NO	IXR	DEVELOPMENT	A	ADV DATE		
			PRODUCTION	B			
			NON PROD.	C X	SHEET 1 OF 5	B SIZE	ZB128403 DRAWING NUMBER

COST CHARGE NO. (CCN)	RLSE CLASS	CHNG CAT CODE	LEADMAN CODE
DJDØGJØ1			

MI	TITLE: PANEL ASSEMBLY-CURVED	DATE JAN 21 1998	1 DRAWING CHANGED A
BUN		DATE	2 ADVANCED DWG CHNG
DOG		DATE	3 SERIAL EO
		DATE	4 NEW / REVISED RLSE
		DATE	5 REISSUE TO REVISE R
COE	EWO	WRO	ROUTING CODE / CHNG CLASS
NLT			

EXITED DQI ☐ Y ☐ N
CORRECTS A DWG/EO WHICH EXITED DQI ☐ Y ☐ N
☐ DWG REPLACES
☐ REPLACED BY _____ NUMBER
COORDINATE DRAWING/EO WITH

EO MADE BY	DESIGN APPROVAL	CHECK EO	WEIGHTS	MAINTAINABILITY	PROGRAM ENGRG	CONFIGURATION MGT
E. HAYMAN 1-19-98	James Ro 1-21-98	STOLLS				
DWG MADE / CHNGD BY	SPEC COMPLIANCE	CHECK DWG	STRESS	MATERIAL	CHANGE CONTROL	RELEASE / DATE
			Chyth 1/21/98			LB 1-21-98
					CORROSION PREV	CUSTOMER AUTH

SEO/REWORK INSTR - DESIGN INTENT REQUIRES DRAWING CHANGE
☐ YES ☐ NO _____ EXPECTED INCORP DATE

	1.2 LTR	MODEL	SECTION	HI NO.	WRO EFFECT	EFFECTIVITY	CONFIGURATION	QTY PER ARTICLE NEW	QTY PER ARTICLE FORMER	NEXT ASSEMBLY DRAWING NO.	U CD	
1		CRAD				TEST ONLY	-1	1	1			1
2							-501	1	1			2
3							-503	1	1			3
4							-505	1	1			4
5							-507	1	1			5
6							-509	1	1			6

EXPANDED "SHEET REVISION STATUS" ON SHEET 1.
CONTINUED ON SHEET 2

REASONS: TO CLARIFY DRAWING AND RESULTS OF DETAIL SKIN AND FRAME LOAD ANALYSIS.

INCORPORATES/RELEASES	Y	N	NUMBER
STOP ORDER			
SEO/REWORK			
QAEO			
VIR			
MII			
MIR			
PII			
PRR			

NAME	DEPT	MAIL CODE	EXTRA EO QTY	DWG & EO QTY
J. MECKLENBURG	KD3	1-18	0	4
C. THRASH	KD3	1-18	0	1
C. CHEN	IXR	71-34	0	1
J. LO	IXR	71-34	0	1
C. HSU	IXR	71-34	0	1
K. CHAN	IXR	71-34	0	1

PRINT DISTRIBUTION	YES	NO	PRINT DISTRIBUTION	YES	NO
SIMULATOR AFF			SEALING AFF		
OATP AFF			ELEC BONDING AFF		
SCHEMATICS AFF			LUBRICATION AFF		
DAMS & DRAINS AFF			LAB TEST AFF		
VENTILATION AFF					

SB / SC NO.

CONTRACT NO. DTFA03-96-C-00027
P/C | ASO | 1 ST ACFT | FAB
Orig at LB
Repro at —
CHANGES MUST BE MADE ON ORIGINAL ONLY

Y DRAWING NUMBER ZB128403

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

ENGINEERING ORDER

DAC 25-1709B (REV. 8-86)

DOUGLAS AIRCRAFT COMPANY
LONG BEACH, CALIFORNIA
MCDONNELL DOUGLAS CORPORATION
CODE IDENT NO. 88971

		SHEET 2	DRAWING NUMBER ZB128403
DATE JAN 21 1988	1/2	CHANGE LETTER	A
DATE	3	SERIAL EO	
DATE	4	NEW/REVISED RELEASE	
DATE	5	REISSUE TO REVISE	R

REVISE GENERAL NOTE ON SHEET 2;

IS NOW;= ADHESIVE BOND -33, -37, -43, -45, -47, -49, -69, -71 AND -73 DOUBLERS AND -35 FILLER WITH DMS 2169 PER DPS 1.950."

WAS; "METAL BOND -33, -37, -43, -45, -47, -49, -51, -53 DOUBLERS AND -35 FILLER ALSO -55, -57, -59 AND -61 SPACERS WITH DMS 2169 PER DPS 1.950."

ADDED ON SHEET 3;

DETAIL OF -63 DOUBLER TO SHOW LOCATIONS ONLY.

CHANGED ON SHEET 3;

RADIUS OF SKIN CURVATURE,

IS NOW; 65.81 R. (REF.) WAS; 66 R. (REF.)

ADDED TO VIEW A ON SHEET 4;

DETAIL OF -63 DOUBLER TO SHOW LOCATIONS ONLY.

CHANGED IN PROJECTION OF VIEW J-J ON SHEET 7;

9951791-3 INTERCOSTAL ALONG WITH RELATED DETAIL PARTS REDRAWN TO OPPOSITE FLANGE OF -13 LONGERON TO AGREE WITH VIEW F-F ON SHEET 10.

DRAWING NUMBER ZB128403

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

ENGINEERING ORDER

DAC 25-1709B (REV 8-86)

DOUGLAS AIRCRAFT COMPANY
LONG BEACH, CALIFORNIA
MCDONNELL DOUGLAS CORPORATION
CODE IDENT NO 99977

SHEET	DRAWING NUMBER
3	ZB128403

DATE JAN 21 1998	1/2	CHANGE LETTER	A
DATE	3	SERIAL EO	
DATE	4	NEW REVISED RELEASE	
DATE	5	REISSUE TO REVISE	R

CHANGED IN PROJECTION OF VIEW L-L
ON SHEET 9;

3913490-1 INTERCOSTAL ALONG WITH RELATED DETAIL PARTS
REDRAWN TO OPPOSITE FLANGE OF -9 LONGERON
TO AGREE WITH VIEW F-F ON SHEET 10.

ADDED TO VIEW F-F ON SHEET 10;

NOTATION, "℄ L4"

CHANGED IN PROJECTION OF VIEW G-G ON SHEET 12;

3913490-1 INTERCOSTAL ALONG WITH RELATED DETAIL PARTS
REDRAWN TO OPPOSITE FLANGE OF -9 LONGERON
TO AGREE WITH VIEW F-F ON SHEET 10.

REDESIGNED PANEL ASSEMBLY EDGE DOUBLERS IN VIEW D
AND EDGE PROJECTION ON SHEET 13.

CANCELLED -51 AND -53 DOUBLER ALSO -55, -57, -59 AND -61
SPACERS (REMOVED FROM F/D AND P/L).

ADDED -69, -71 AND -73 DOUBLERS (ADDED TO F/D AND P/L).

MODIFY VIEW D TO SHOW SHORTENED LENGTH OF -15 DOUBLER
AND FASTENER PATTERN IN -3 AND -5 SKIN AND -17 DOUBLER.
CHANGED FASTENERS IN THIS AREA;
IS NOW, LZ16F WAS, BJ16

DRAWING NUMBER
ZB128403

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

ENGINEERING ORDER

DAC 25-1709B (REV. 8-86)

DOUGLAS AIRCRAFT COMPANY
LONG BEACH, CALIFORNIA
MCDONNELL DOUGLAS CORPORATION
CODE IDENT NO. 80017

SHEET	DRAWING NUMBER
4	ZB128403

DATE JAN 21 1998	1/2	CHANGE LETTER	A
DATE	3	SERIAL EO	
DATE	4	NEW/REVISED RELEASE	
DATE	5	REISSUE TO REVISE	R

ADDED TO VIEW R ON SHEET 14;

-65 AND -67 DOUBLERS (ADDED TO F/D AND P/L).

CHANGED ON SHEET 15 (-3 SKIN), SHEET 16 (-5 SKIN), AND SHEET 17 (-7 SKIN);

RADIUS OF SKIN CURVATURE,

IS NOW;	WAS;
65.81 R.	66 R.

ADDED TO DETAIL OF -23 FRAME ASSEMBLY ON SHEET 23 AND 24;

-63 DOUBLER (ADDED TO F/D AND P/L)

-65 AND -67 (ADDED TO F/D)

NOTE: "ADHESIVE BOND PER DPS 1.950.
USE DPM 3279-3 ADHESIVE."

-5 (ADDED TO -23 ON SHEET 23)

-3 (ADDED TO -23 ON SHEET 24)

BJ/6 5 PLACES (ADDED TO -23 ON SHEET 23)
LOCATE FROM -29

BJ/6 5 PLACES (ADDED TO -23 ON SHEET 24)
LOCATE FROM -31

DRAWING NUMBER
ZB128403

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

ENGINEERING ORDER

DAC 25-1709B (REV. 8-86)

DOUGLAS AIRCRAFT COMPANY
LONG BEACH, CALIFORNIA
MCDONNELL DOUGLAS CORPORATION
CODE IDENT NO. 99977

SHEET	DRAWING NUMBER
5	ZB128403

DATE JAN 21 1998	1/2	CHANGE LETTER	A
DATE	3	SERIAL EO	
DATE	4	NEW/REVISED RELEASE	
DATE	5	REISSUE TO REVISE	R

ADDED TO DETAIL OF -25 FRAME ASSEMBLY ON SHEET 25 AND 26;

-63 AND -65 (ADDED TO F/D)

NOTE: "ADHESIVE BOND PER DPS 1.950. USE DPM 3279-3 ADHESIVE."

-7 (ADDED TO -25 ON SHEET 25 AND 26)

BJ/6 5 PLACES (ADDED TO -25 ON SHEET 25)
LOCATE FROM -39

BJ/6 5 PLACES (ADDED TO -25 ON SHEET 26)
LOCATE FROM -41

CHANGED ON -15 DOUBLER DETAIL ON SHEET 28;

LENGTH OF -15 DOUBLER,
IS NOW; 98.38 WAS; 120.00

DIMENSION FROM LAST FULL LOLLIPOP TO END OF PART,
IS NOW; 1.19 WAS; .75

ADDED SHEET 29 SHOWING DETAILS OF -63 DOUBLER, -65 DOUBLER AND -67 DOUBLER.

DRAWING NUMBER
ZB128403

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

ENGINEERING ORDER
DAC 25-1709K (REV. 5-91)

HANDLING INSTRUCTIONS (HI)

0. INTERCHANGEABILITY NOT AFFECTED. USAGE OF PRIOR CHANGE OPTIONAL.
2. CONFORMANCE REQUIRED AT NOTED EFFECTIVITY.
3. CONFORMANCE REQUIRED AT NOTED EFFECTIVITY. OPTIONAL REPAIR INSTRUCTIONS ARE NOT TO BE INCORPORATED ON PRODUCTION DRAWING GRAPHICS.
4. SCRAP.
5. CONFORMANCE REQUIRED AT NOTED EFFECTIVITY UNLESS OTHERWISE NOTED.
6. RETROFIT (DELIVERED ARTICLES).

Douglas Aircraft Company
MCDONNELL DOUGLAS
CAGE CODE 88277

GRID DWG	CAD DWG	CODE	TYPE RELEASE		NO. PL INPUT SH	NO. NL INPUT SH	NO.
☐ YES ☒ NO	☐ YES ☒ NO	1XR	DEVELOPMENT	A	ADV DATE		
			PRODUCTION	B			
			NON PROD.	C X	SHEET 1 OF 3	SIZE B	DRAWING NUMBER ZB128403

COST CHARGE NO. (CCN)	RLSE CLASS	CHNG CAT CODE	LEADMAN CODE
DJDØGJØ1			

MI
BUN
DOG
COE
NLT

TITLE: PANEL ASSEMBLY-CURVED

DATE NOV 11 1998	1	DRAWING CHANGED	B
DATE	2	ADVANCED DWG CHNG	
DATE	3	SERIAL EO	
DATE	4	NEW / REVISED RLSE	
DATE	5	REISSUE TO REVISE	R

EWO | WRO | ROUTING CODE | CHNG CLASS

EXITED DOI ☐ Y ☐ N
CORRECTS A DWG/EO WHICH EXITED DOI ☐ Y ☐ N

☐ DWG REPLACES
☐ REPLACED BY _____ NUMBER

COORDINATE DRAWING/EO WITH

EO MADE BY	DESIGN APPROVAL	CHECK EO	WEIGHTS	MAINTAINABILITY	PROGRAM ENGRG	CONFIGURATION MGT
E.L. HAYMAN 11-9-98	11-10-98	STOLLE 11-11-98				
DWG MADE BY / CHECKED BY	STRESS COMPLIANCE	CHECK DWG	STRESS	MATERIAL	CHANGE CONTROL	RELEASE / DATE
E.L. 11-9		STOLLE 11-11-98	Chen H 11-10-98			11-11-98
					CORROSION PREV	CUSTOMER AUTH

SEO/REWORK INSTR - DESIGN INTENT REQUIRES DRAWING CHANGE
☐ YES ☐ NO _____ EXPECTED INCORP DATE

	1.2 LTR	MODEL	SECTION	HI NO.	WRO EFFECT	EFFECTIVITY	CONFIGURATION	QTY PER ARTICLE NEW	QTY PER ARTICLE FORMER	NEXT ASSEMBLY DRAWING NO.	U CD	
1		CRAD				TEST ONLY	-1	0	1			1
2							-501	0	1			2
3							-503	0	1			3
4							-505	0	1			4
5							-507	0	1			5
6							-509	0	1			6

ADDED TO SHT. 23; VIEW U-U

REASON: TO PROVIDE CLEARANCE FOR LOAD LINKS, ALSO FOR ADDED GENERICICITY.

INCORPORATES/RELEASES	Y	N	NUMBER
STOP ORDER			
SEO/REWORK			
CAEO			
VIR			
MII			
MIR			
PII			
PRR			

PRINT DISTRIBUTION	YES	NO	PRINT DISTRIBUTION	YES	NO
SIMULATOR AFF			SEALING AFF		
OATP AFF			ELEC BONDING AFF		
SCHEMATICS AFF			LUBRICATION AFF		
DAMS & DRAINS AFF			LAB TEST AFF		
VENTILATION AFF					

SB / SC NO.

NAME	DEPT	MAIL CODE	EXTRA EO QTY	DWG & EO QTY
J. MECKLENBURG	KD3	L-18	3	—
C. CHEN	1XR	78-209	1	—
J. LO	1XR	78-209	1	—
C. HSU	1XR	78-209	1	—

CONTRACT NO DTFA03-96-C-00027

P/C	ASD	1 ST ACFT	FAB

Orig at LB
Repro at —

CHANGES MUST BE MADE ON ORIGINAL ONLY

DRAWING NUMBER ZB128403

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

ENGINEERING ORDER

DAC 25-1709B (REV. 8-86)

DOUGLAS AIRCRAFT COMPANY
LONG BEACH, CALIFORNIA
MCDONNELL DOUGLAS CORPORATION
CODE IDENT NO 88277

SHEET	DRAWING NUMBER
2	ZB128403

DATE NOV 11 1998	1/2	CHANGE LETTER	B
DATE	3	SERIAL EO	
DATE	4	NEW REVISED RELEASE	
DATE	5	REISSUE TO REVISE	R

REMOVED ON SHT. 23;

DIMENSION ".700 CONSTANT" FROM -23 FRAME ASSEMBLY

REMOVED ON SHT. 25;

DIMENSION ".700 CONSTANT" FROM -25 FRAME ASSEMBLY

REVIESED ON SHTS. 23, 24, 25 & 26;

ENDS OF -27 FRAME TO SHOW CUTOUT OF FLANGE

REVISED ON SHTS. 20 AND 21;

VIEW N TO ADD -75 DOUBLER

REPLACED ON SHT. 5;

LZ|6F RIVETS WITH ASS|6F RIVETS (ON ℄ LONGERON 4 ONLY)

REPLACED ON SHT. 6;

2 ROWS OF LZ|6F RIVETS WITH XES|6F HI-LOK PINS (ONE ROW EACH SIDE OF ℄ SYM.)

ADDED ON SHT. 11;

FASTENERS IN FRAME TO SHEAR CLIP ON RIGHT HAND PROJECTION OF VIEW C (FASTENERS PREVIOUSLY OMITTED).

DRAWING NUMBER ZB128403

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

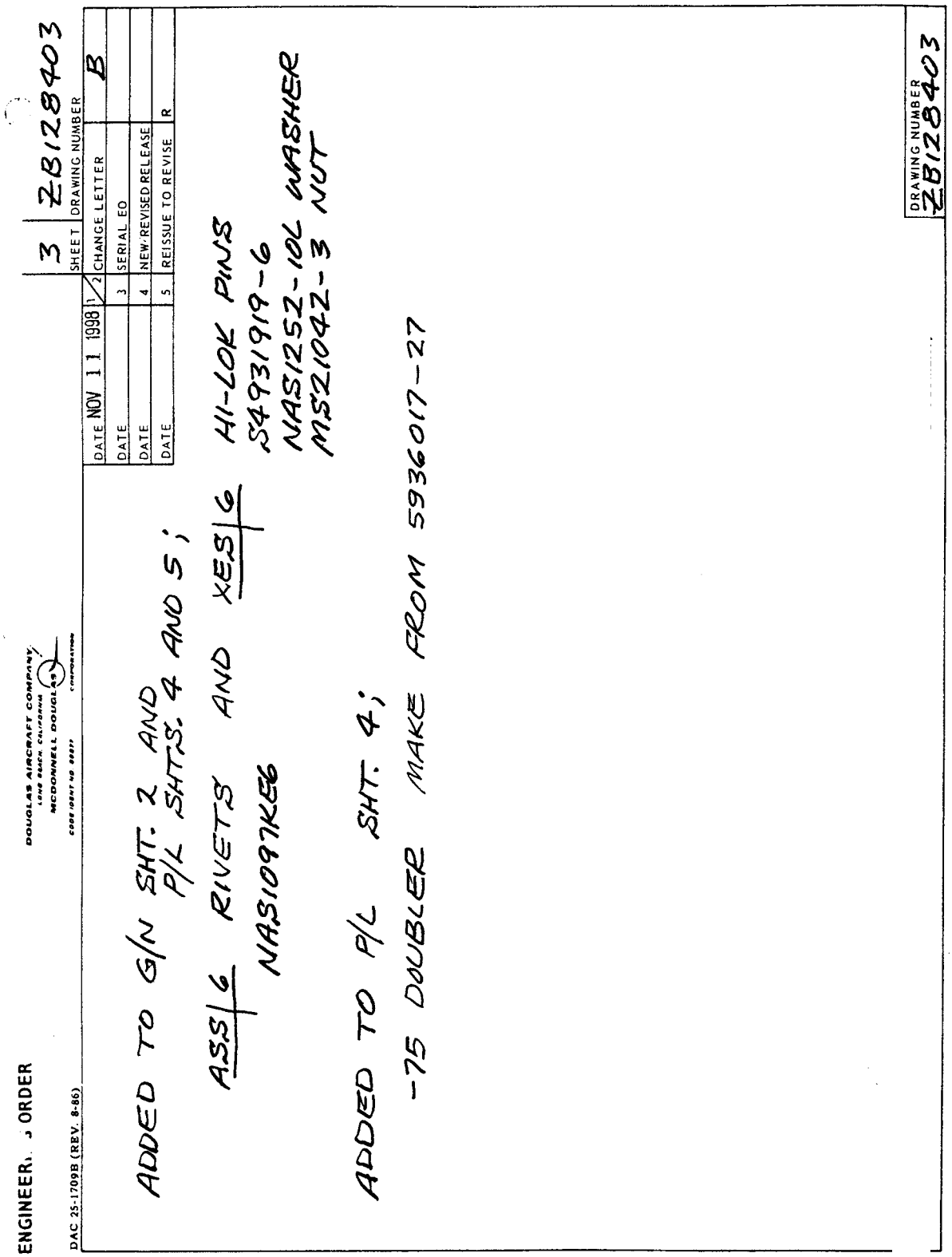

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

ENGINEERING ORDER
DAC 25-1709K (REV 3-91)

Douglas Aircraft Company
MCDONNELL DOUGLAS
CAGE CODE 88277

HANDLING INSTRUCTIONS (HI)

0. INTERCHANGEABILITY NOT AFFECTED. USAGE OF PRIOR CHANGE OPTIONAL.
2. CONFORMANCE REQUIRED AT NOTED EFFECTIVITY.
3. CONFORMANCE REQUIRED AT NOTED EFFECTIVITY. OPTIONAL REPAIR INSTRUCTIONS ARE NOT TO BE INCORPORATED ON PRODUCTION DRAWING GRAPHICS.
4. SCRAP.
5. CONFORMANCE REQUIRED AT NOTED EFFECTIVITY UNLESS OTHERWISE NOTED.
6. RETROFIT (DELIVERED ARTICLES).

GRID DWG	CAD DWG	CODE	TYPE RELEASE		NO. PL INPUT SH	NO. NL INPUT SH	NO
☐ YES ☒ NO	☐ YES ☒ NO	IXR	DEVELOPMENT	A	ADV DATE	B	ZB128403
			PRODUCTION	B		SIZE	DRAWING NUMBER
			NON PROD.	C X	SHEET 1 OF 2		

COST CHARGE NO. (CCN)	RLSE CLASS	CHNG CAT CODE	LEADMAN CODE
DUDØGUØ1			

MI
BUN
DOG
COE
NLT

TITLE: PANEL ASSEMBLY-CURVED

EWO | WRO | ROUTING CODE | CHNG CLASS

DATE	1	DRAWING CHANGED
DATE	2	ADVANCED DWG CHNG
DATE DEC 07 1998	3	SERIAL EO 001
DATE	4	NEW / REVISED RLSE
DATE	5	REISSUE TO REVISE R

EXITED DOI ☐ Y ☐ N
CORRECTS A DWG/EO WHICH EXITED DOI ☐ Y ☐ N

☐ DWG REPLACES
☐ REPLACED BY NUMBER

COORDINATE DRAWING/EO WITH

EO MADE BY	DESIGN APPROVAL	CHECK EO	WEIGHTS	MAINTAINABILITY	PROGRAM ENGRG	CONFIGURATION MGT
E.L. HAYMAN 11-11-98	JONES 11-10-98	STOLLS 12-7-98				
DWG MADE / CHNGD BY	ASSIC COMPLIANCE	CHECK DWG	STRESS	MATERIAL	CHANGE CONTROL	RELEASE DATE
			Chuy Hsu 12/2/98			MB 12/07
					CORROSION PREV	CUSTOMER AUTH

SEO/REWORK INSTR - DESIGN INTENT REQUIRES DRAWING CHANGE
☐ YES ☐ NO EXPECTED INCORP DATE

	1.2 LTR	MODEL	SECTION	HI NO.	WRO EFFECT	EFFECTIVITY	CONFIGURATION	QTY PER ARTICLE NEW	QTY PER ARTICLE FORMER	NEXT ASSEMBLY DRAWING NO.	U CD	
1		CRAD				TEST ONLY	-1-001	1	0			1
2		CRAD				TEST ONLY	-501-001	1	0			2
3												3
4												4
5												5

SEE SHT. 2

REASON: TO SIMULATE A SEVERED SHEAR CLIP ADJACENT TO LEAD CRACK.

INCORPORATES/RELEASES	Y	N	NUMBER
STOP ORDER			
SEO/REWORK			
QAEO			
VIR			
MII			
MIR			
PII			
PRR			

PRINT DISTRIBUTION	YES	NO	PRINT DISTRIBUTION	YES	NO
SIMULATOR AFF			SEALING AFF		
OATP AFF			ELEC BONDING AFF		
SCHEMATICS AFF			LUBRICATION AFF		
DAMS & DRAINS AFF			LAB TEST AFF		
VENTILATION AFF					

SB / SC NO.

NAME	DEPT	MAIL CODE	EXTRA EO QTY	DWG & EO QTY
J. MECKLENBURG	KD3	1-18	3	—
C. CHEN	IXR	78-209	1	—
J. LO	IXR	78-209	1	—
C. HSU	IXR	78-209	1	—

CONTRACT NO. DTFA03-96-C-00027

P / C	ASD	1 ST ACFT	FAB

Orig at LB
Repro at
CHANGES MUST BE MADE ON ORIGINAL ONLY

DRAWING NUMBER
ZB128403

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

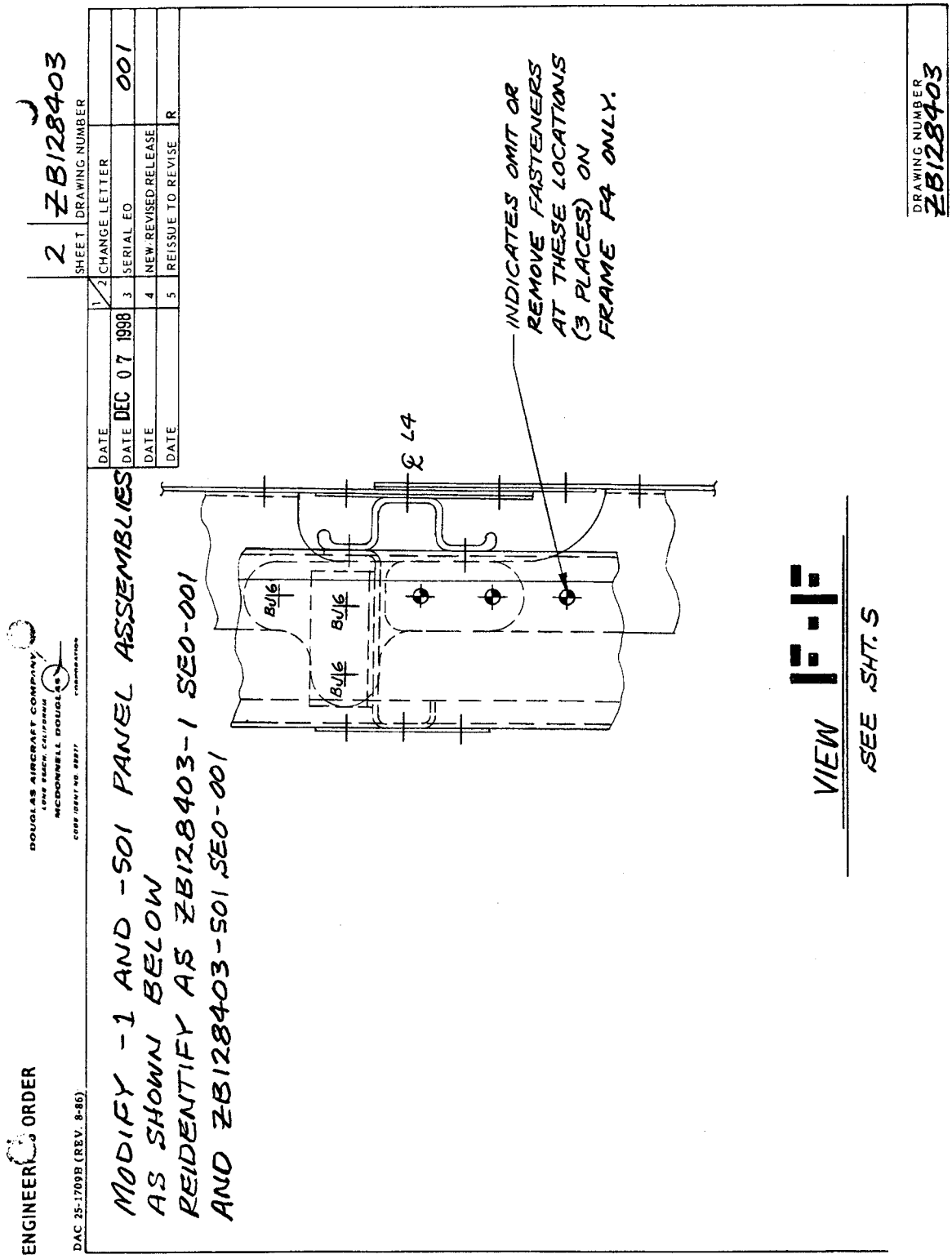

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

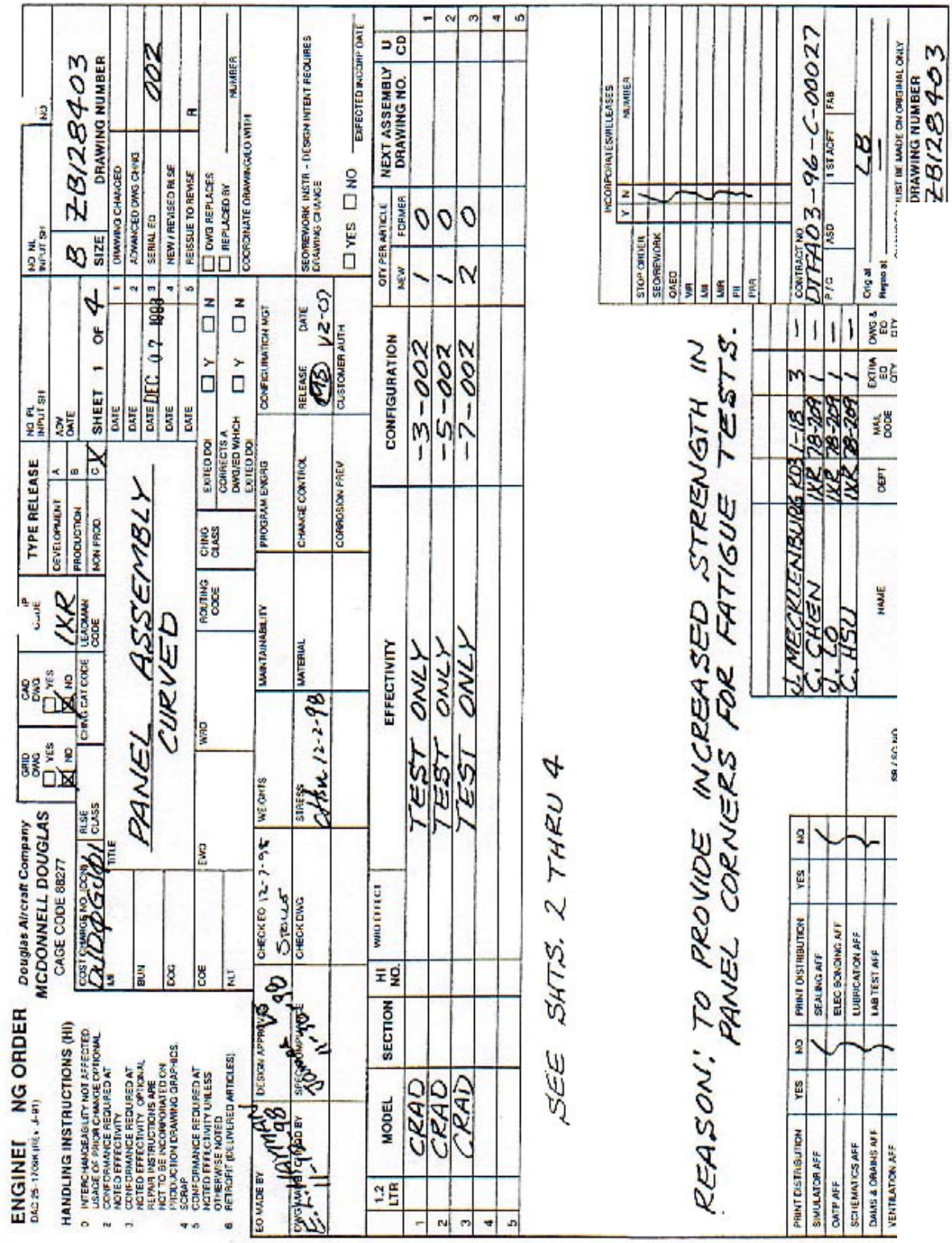

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

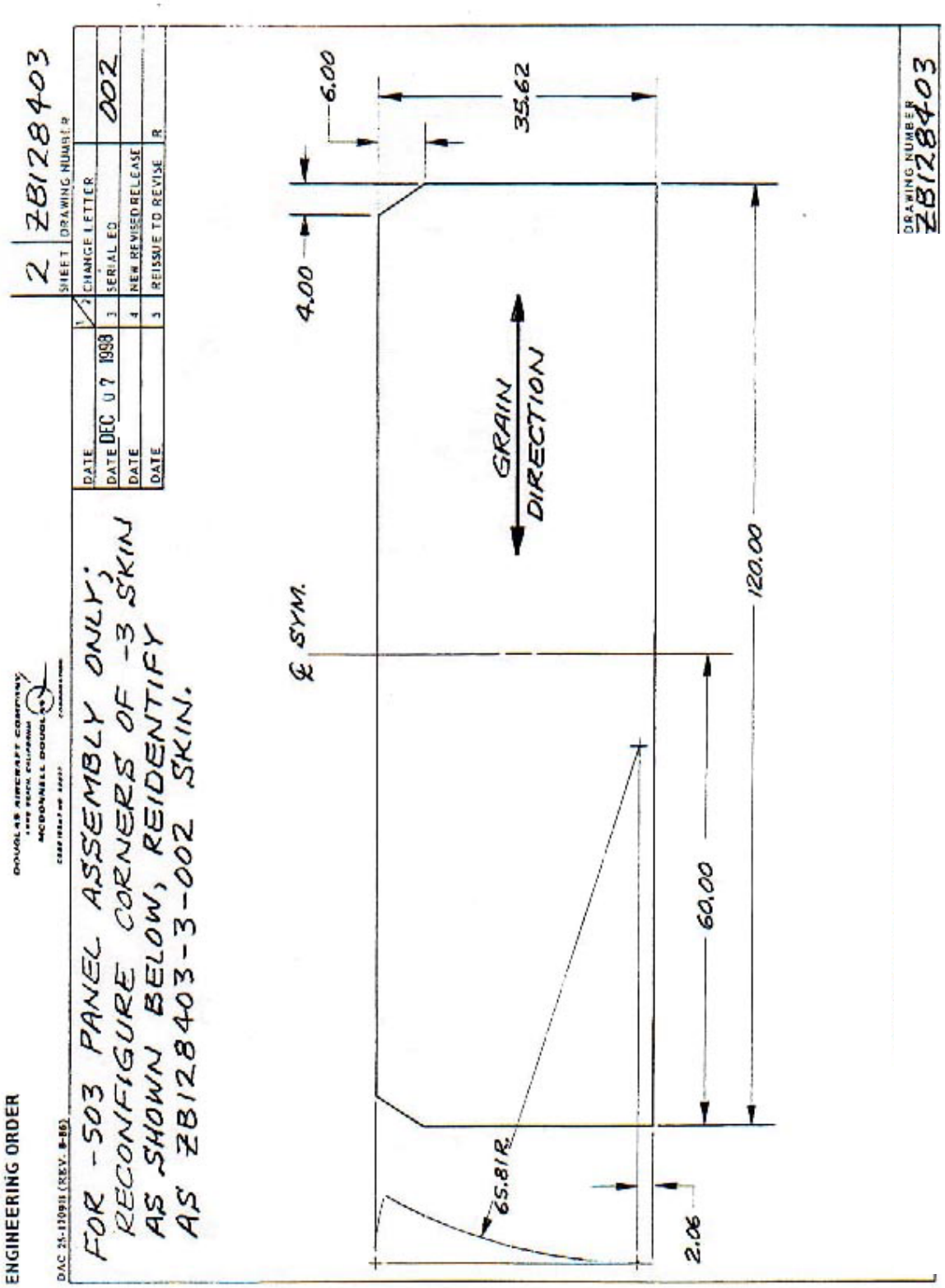

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

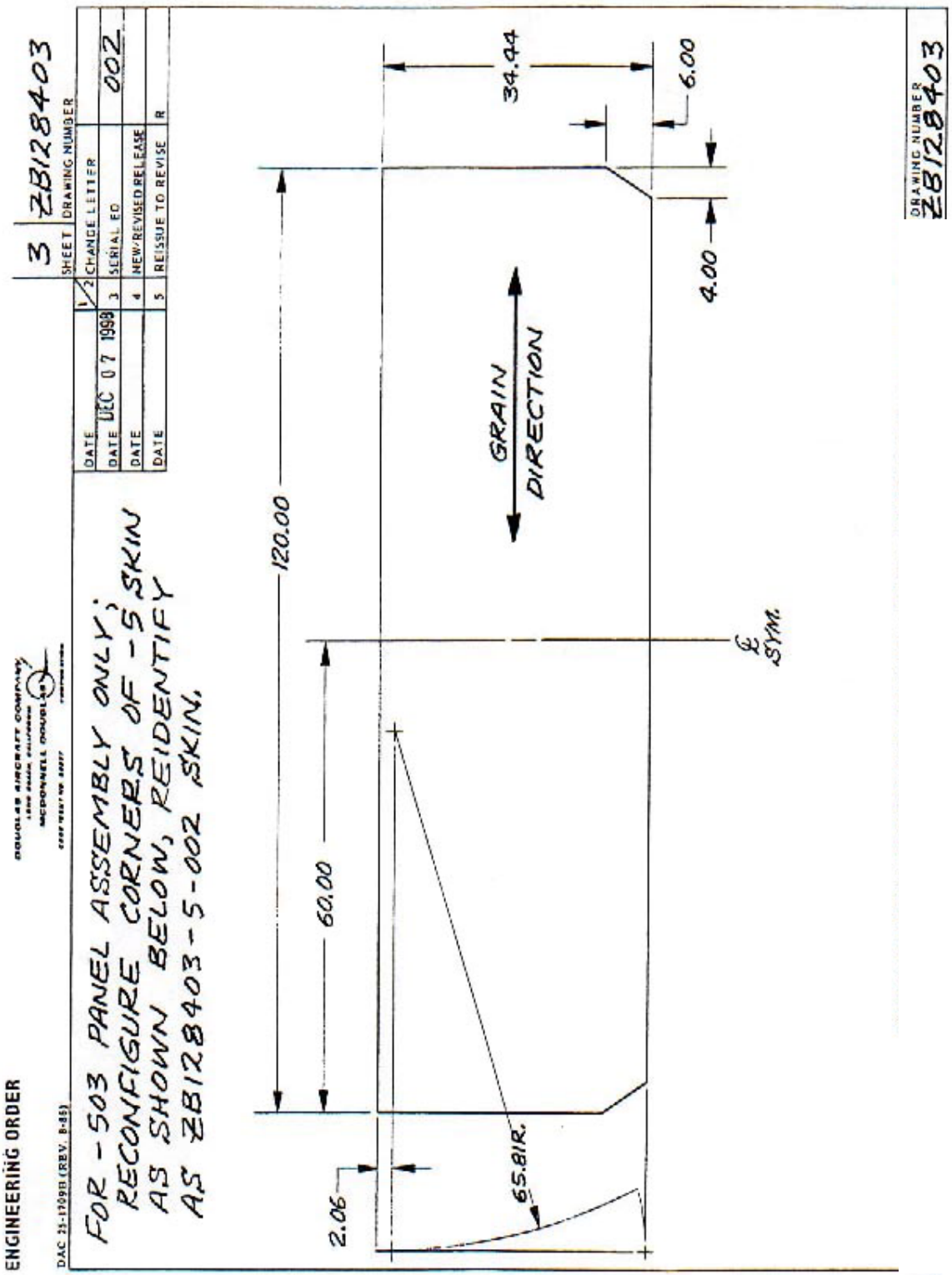

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

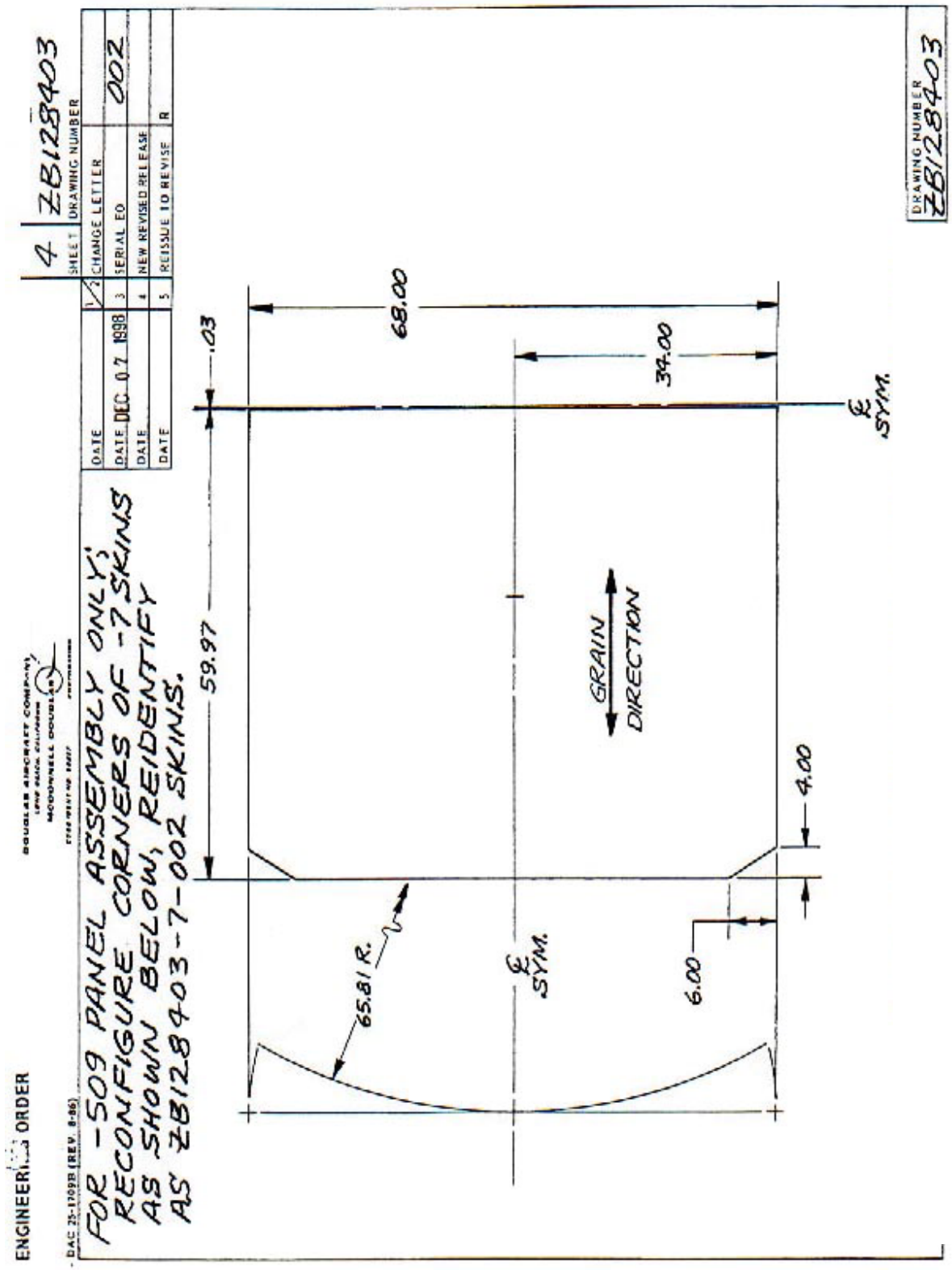

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

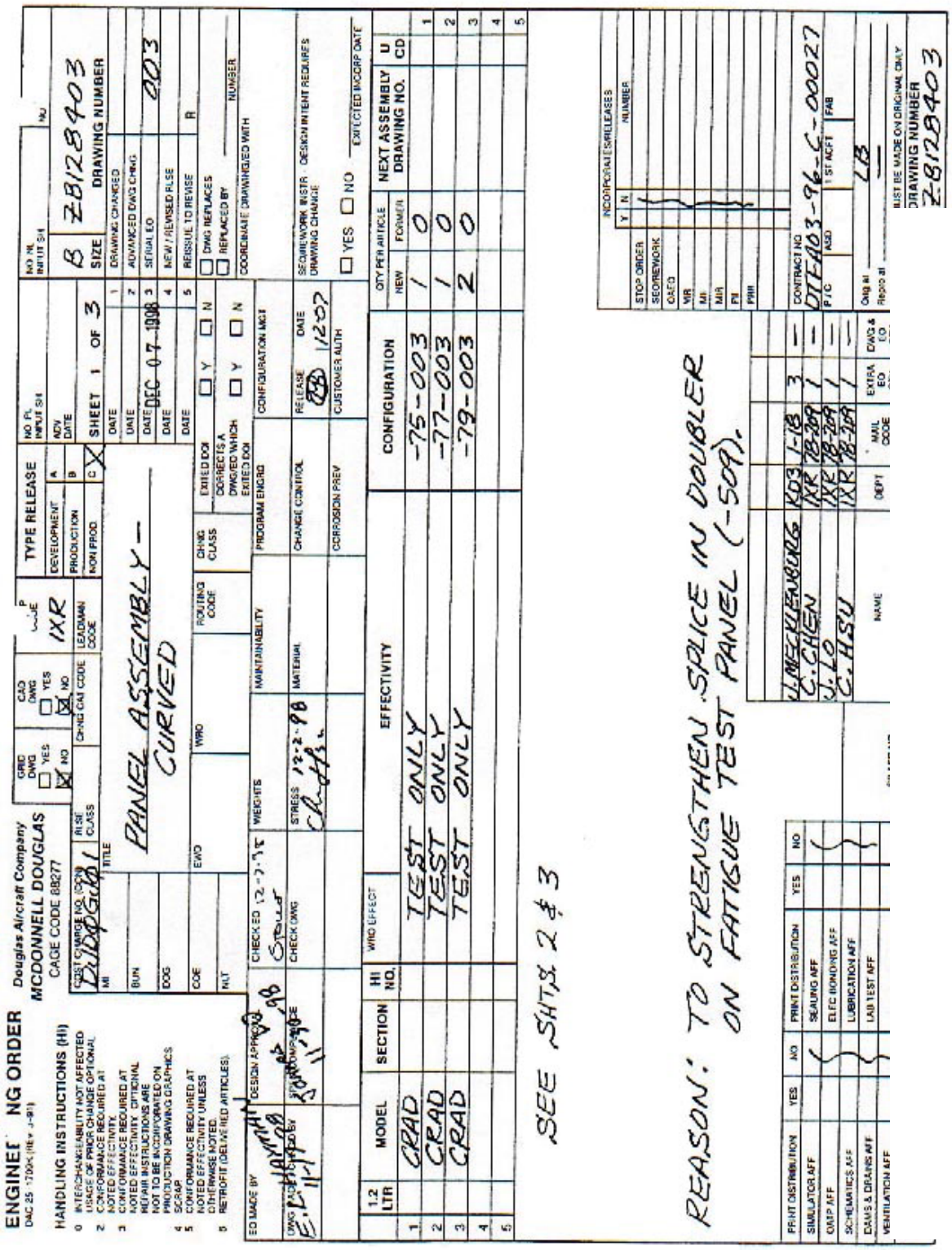

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

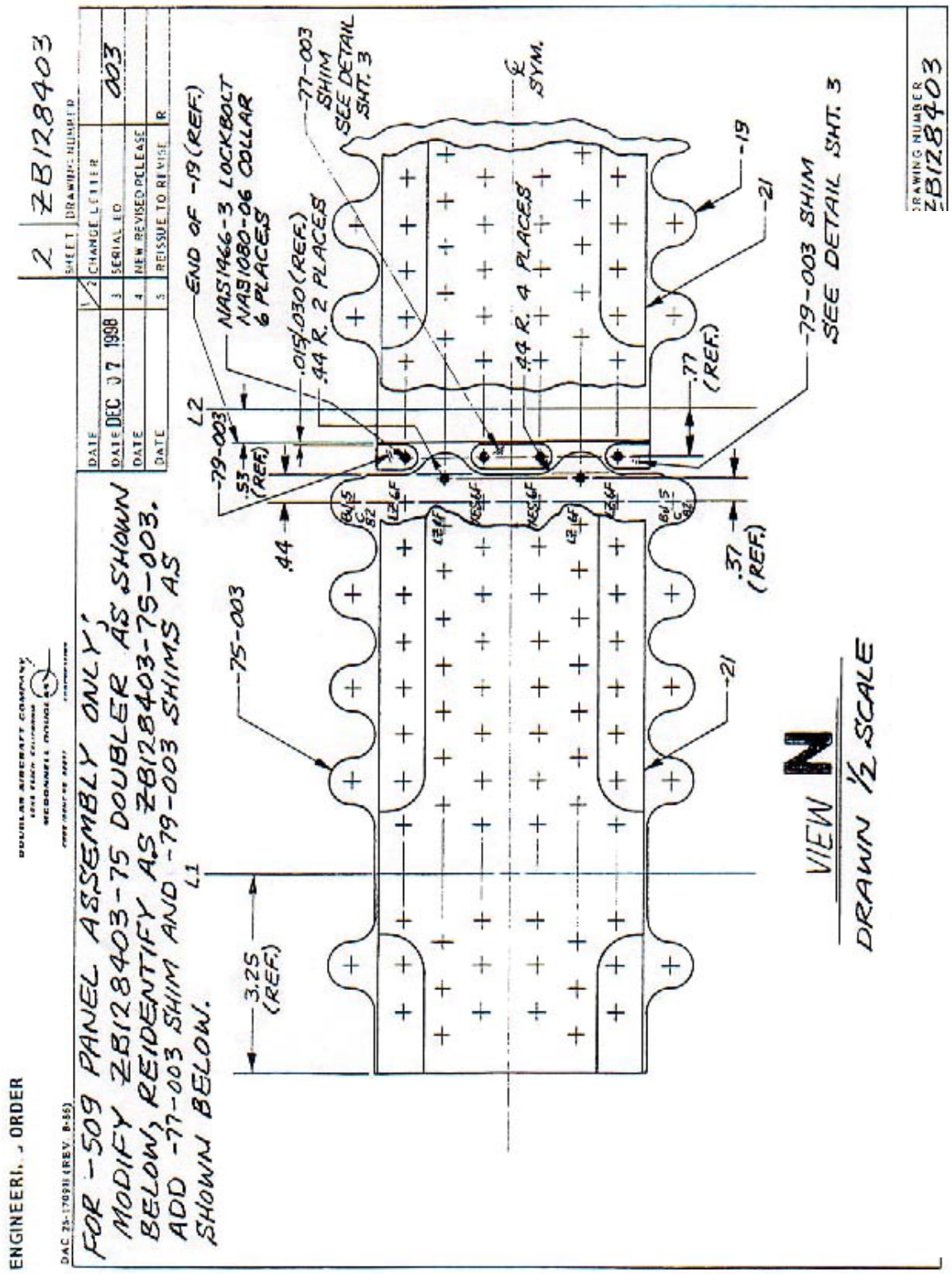

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

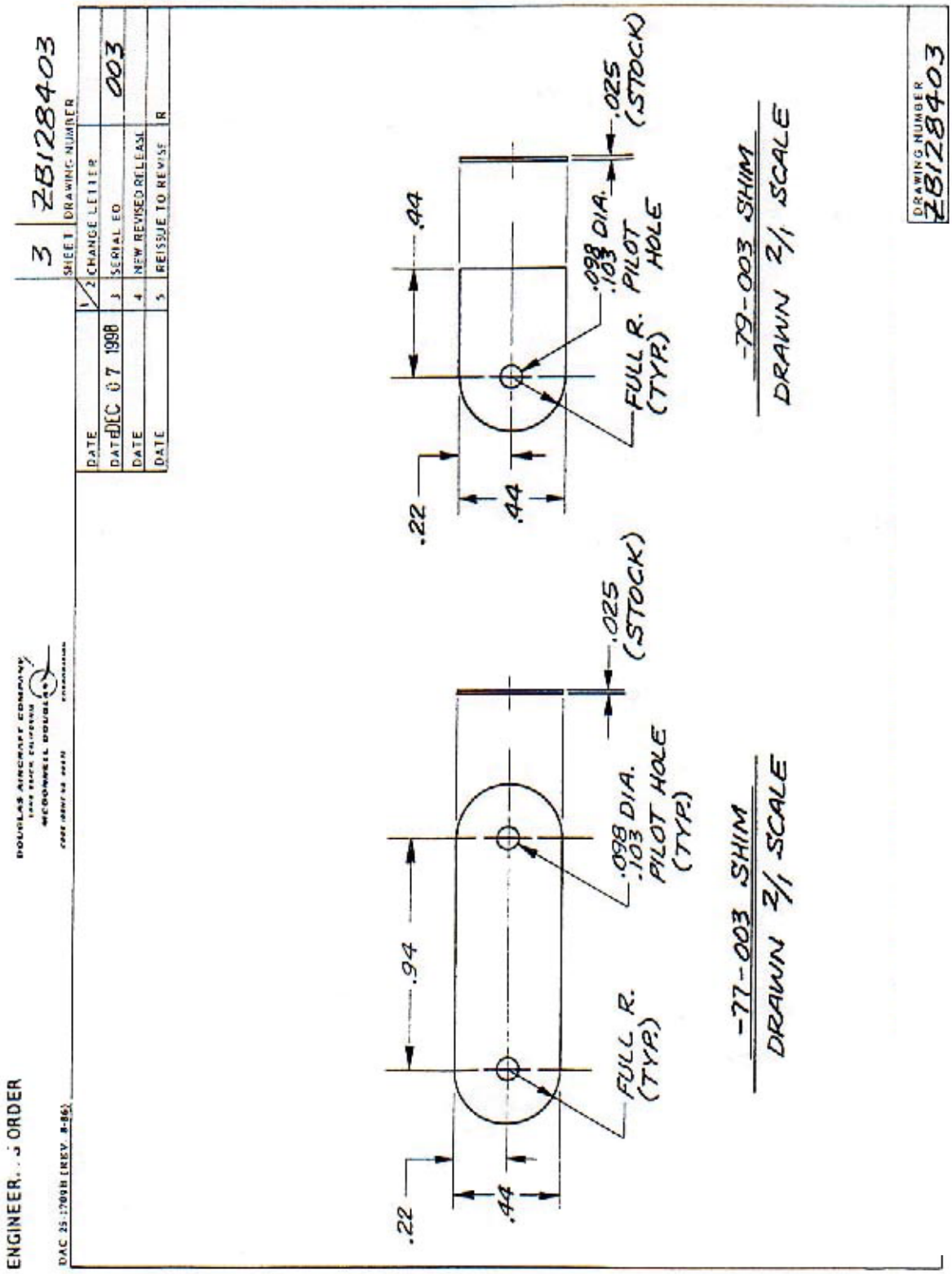

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

ENGINEER ORDER
PARTS LIST REVISION
DAC 25-1309D (REV. 11-80)

DOUGLAS AIRCRAFT COMPANY
MCDONNELL DOUGLAS
CODE IDENT NO. 88277

4 SHEET | ZB128403 DRAWING NUMBER

QUANTITY REQUIRED PER NOTED DASH NO.

ACTION CODE
A ADDED
C CANCELLED
D DELETED
R REVISED
S SUPERSEDED
T TECH CHANGE
X REINSTATE

C/C CONTROL CODE
B BULK MATL
C CUST FURN CUST INSTL
D CUST FURN DAC INSTL
F CUST FURN INSTL CHECK
G GOVT OR IND STANDARD
L COMML SHELF ITEM
M 'MAKE FROM' ITEM
M- 'MAKE FROM' DAC ITEM
P1 PURCH DAC PART-SUP MATL
P2 PURCH DAC PART-DAC MATL
R REWORK OR REPAIR PART
S DAC STANDARD PART
Y SUPPLIER ITEM-SPEC CONT
X PROCESS REQD BY SCN
Z REF DOCUMENT
- DAC DWG. NOT STD PART

DATE
DATE DEC 07 1998
DATE
DATE

1 CHANGE LETTER
2 SERIAL EO 003
4 NEW REVISED RELEASE
5 REISSUE TO REVISE R

IPRSX	1	2	3	4	5 -509	ACTE	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FSCM NO	C/C	STOCK SIZE	MATERIAL DESCRIPTION (OR PL CODE)	MATERIAL SPECIFICATION (AND/OR SUPPLIER)	ITEM FIND	ZONE	NOTES	IPRSX
1					1		-77-003	SHIM			.025x1x2 GR. OPT.	AL SHEET CLAD 7075-T6					1
2					2		-79-003	SHIM			.025x1x1 GR. OPT.	AL SHEET CLAD 7075-T6					2
3																	3
4																	4
5																	5
6					6		NAS1466-3	LOCKBOLT									6
7					6		NAS1080-06	COLLAR									7
8																	8
9																	9
10																	10

LWG NO. ZB128403

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

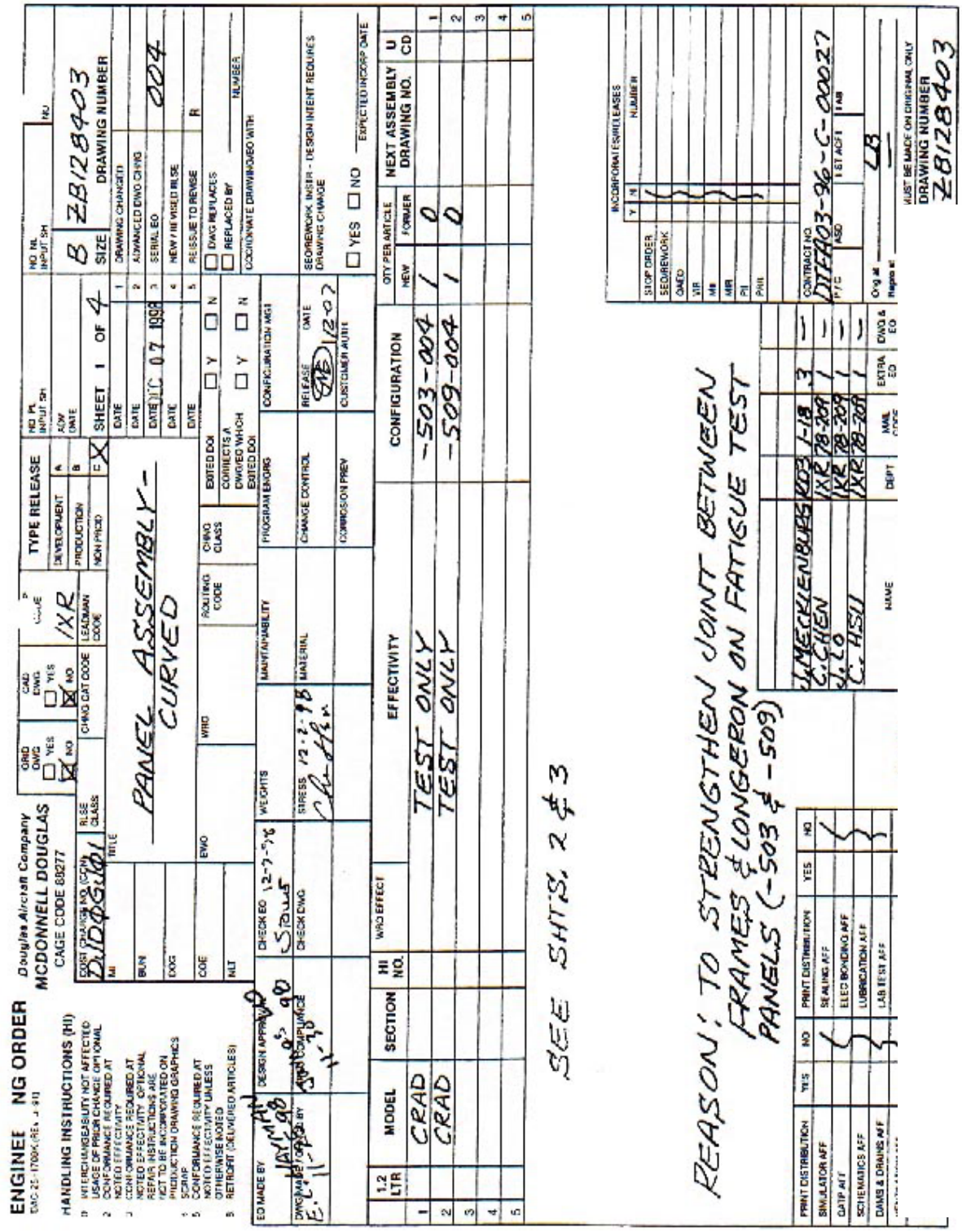

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

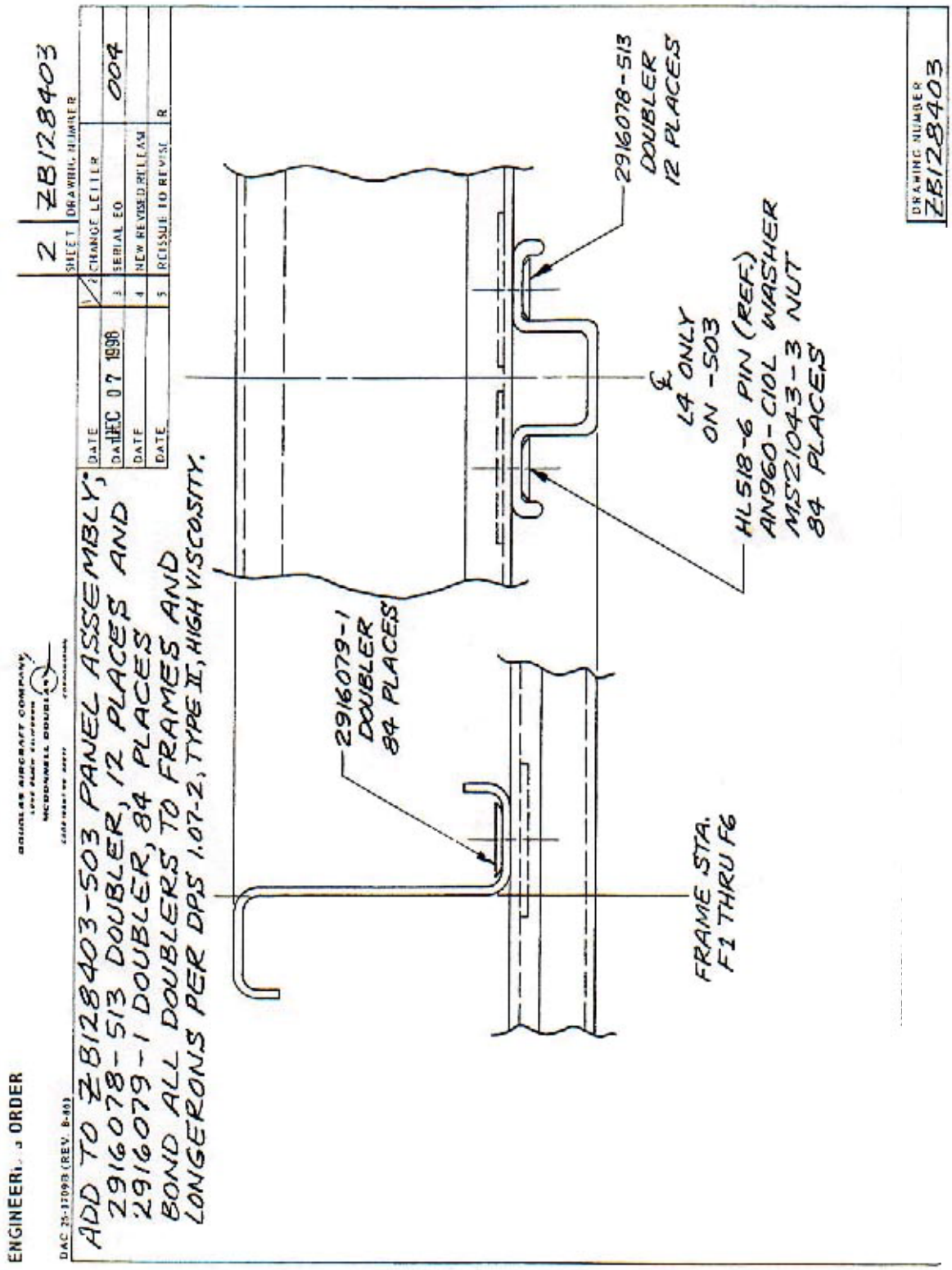

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

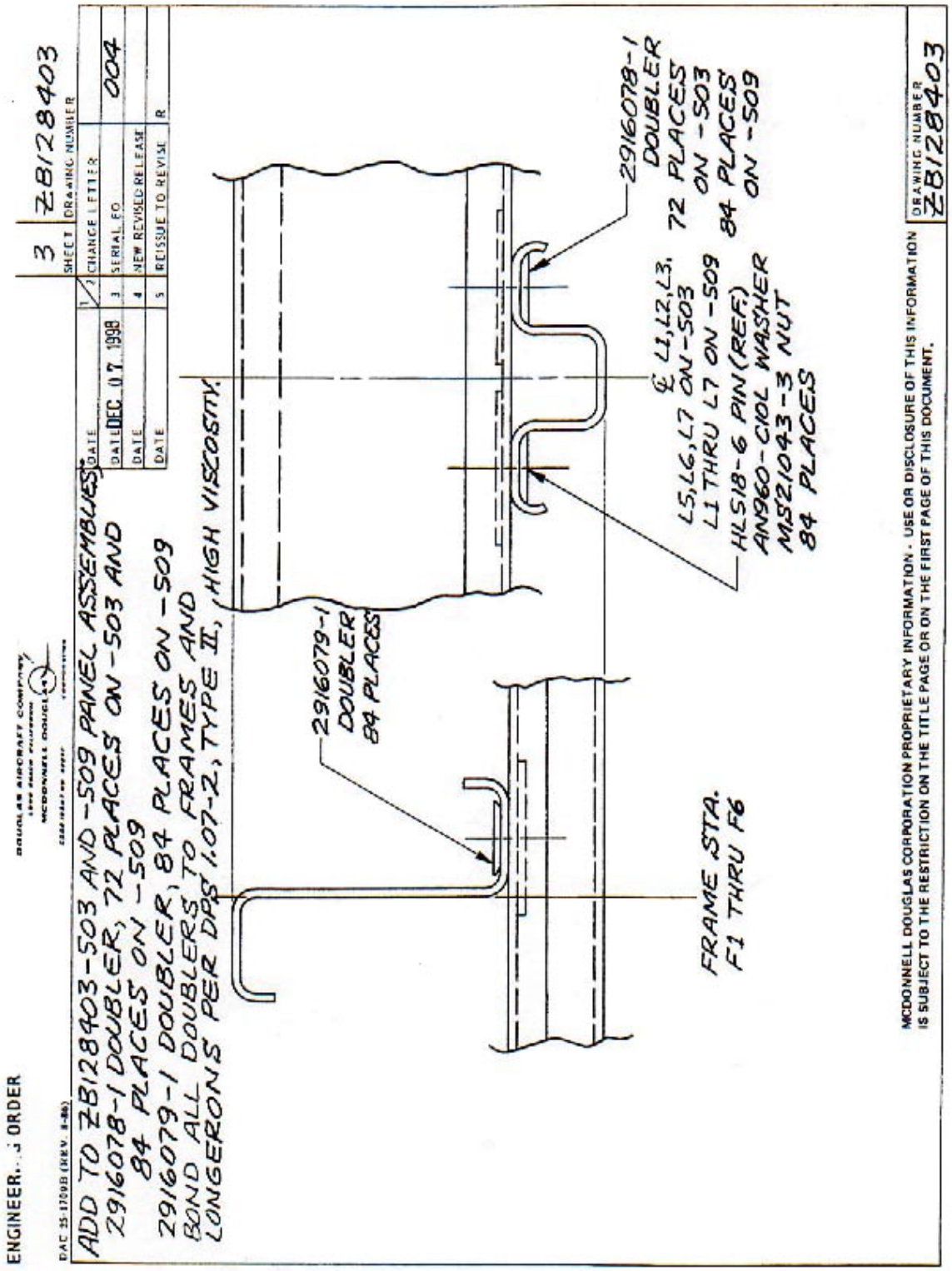

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

ENGINEERING ORDER
PARTS LIST REVISION
DAC 25-17090 (REV. 11-80)

DOUGLAS AIRCRAFT COMPANY
MCDONNELL DOUGLAS
CODE IDENT NO. 88277

SHEET 4 | DRAWING NUMBER ZB128403

QUANTITY REQUIRED PER NOTED DASH NO.

ACTION CODE
A ADDED
C CANCELLED
D DELETED
R REVISED
S SUPERSEDED
T TECH CHANGE
X REINSTATE

C/C CONTROL CODE
B BULK MATL
C CUST FURN CUST INSTL
D CUST FURN DAC INSTL
F CUST FURN INSTL CHECK
G GOVT OR IND STANDARD
L COMML SHELF ITEM
M "MAKE FROM" ITEM
M- "MAKE FROM" DAC ITEM
P1 PURCH DAC PART-SUP MATL
P2 PURCH DAC PART-DAC MATL
R REWORK OR REPAIR PART
S DAC STANDARD PART
V SUPPLIER ITEM-SPEC CONT
X PROCESS REQD BY SCN
Z REF DOCUMENT
– DAC DWG NOT STD PART

DATE	1/2 CHANGE LETTER
DATE DEC 07 1998	3 SERIAL CO 004
DATE	4 NEW/REVISED RELEASE
DATE	5 REISSUE TO REVISE R

	IPRSX 1	2	3	4	5	ACTE CODE	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FSCM NO	C/C	STOCK SIZE	MATERIAL DESCRIPTION (OR PL CODE)	MATERIAL SPECIFICATION (AND/OR SUPPLIER)	ITEM FIND	ZONE	NOTES	IPRSX
0				605-1	503-1												
1				84	72		2916078-1	DOUBLER									1
2					12		2916078-513	DOUBLER									2
3				84	84		2916079-1	DOUBLER									3
4																	4
5																	5
6																	6
7																	7
8																	8
9																	9
10																	10

DWG NO ZB128403

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

ENGINEERING ORDER
DAC 25-1709K (REV)

Douglas Aircraft Company
MCDONNELL DOUGLAS
CAGE CODE 88277

GRID DWG ☐ YES ☒ NO
CAD DWG ☐ YES ☒ NO
IXR

TYPE RELEASE: DEVELOPMENT A; PRODUCTION B; NON PROD X

NO. PL INPUT SH
NO. NL INPUT SH
ADV DATE
SHEET 1 OF 2
SIZE B
DRAWING NUMBER ZB128403

HANDLING INSTRUCTIONS (HI)
0. INTERCHANGEABILITY NOT AFFECTED. USAGE OF PRIOR CHANGE OPTIONAL.
2. CONFORMANCE REQUIRED AT NOTED EFFECTIVITY.
3. CONFORMANCE REQUIRED AT NOTED EFFECTIVITY. OPTIONAL REPAIR INSTRUCTIONS ARE NOT TO BE INCORPORATED ON PRODUCTION DRAWING GRAPHICS.
4. SCRAP
5. CONFORMANCE REQUIRED AT NOTED EFFECTIVITY UNLESS OTHERWISE NOTED.
6. RETROFIT (DELIVERED ARTICLES).

COST CHARGE NO (CCN): D1D0G501
RLSE CLASS
CHNG CAT CODE
LEADMAN CODE
MI
BUN
DOG
COE
NLT
TITLE: PANEL ASSEMBLY-CURVED
EWO
WRO
ROUTING CODE
CHNG CLASS
EXITED DQI ☐ Y ☐ N
CORRECTS A DWG/EO WHICH EXITED DQI ☐ Y ☐ N

DATE	1	DRAWING CHANGED
DATE	2	ADVANCED DWG CHNG
DATE JUN 03 1999	3	SERIAL EO 005
DATE	4	NEW / REVISED RLSE
DATE	5	REISSUE TO REVISE R

☐ DWG REPLACES
☐ REPLACED BY NUMBER
COORDINATE DRAWING/EO WITH

EO MADE BY	DESIGN APPROVAL	CHECK EO	WEIGHTS	MAINTAINABILITY	PROGRAM ENGRG	CONFIGURATION MGT
HAYMAN 5-28-99	James LO 5/28/99	6-3-99 Stolle				
DWG MADE / CHNGD BY	SPEC COMPLIANCE	CHECK DWG	STRESS	MATERIAL	CHANGE CONTROL	RELEASE DATE
E.L. 5-28-99		6-3-99 Stolle	CHSU 5/28/99			6-3-99
					CORROSION PREV	CUSTOMER AUTH

SEO/REWORK INSTR – DESIGN INTENT REQUIRES DRAWING CHANGE
☐ YES ☐ NO EXPECTED INCORP DATE

	1.2 LTR	MODEL	SECTION	HI NO.	WRO EFFECT	EFFECTIVITY	CONFIGURATION	QTY PER ARTICLE NEW	QTY PER ARTICLE FORMER	NEXT ASSEMBLY DRAWING NO.	U CD	
1		CRAD				TEST ONLY	-501-005	1	0			1
2							-503-005	1	0			2
3							-507-005	1	0			3
4		CRAD				TEST ONLY	-509-005	1	0			4
5												5

SEE SHT. 2

NOTE: PANEL ASSY. -1 AND -505 WAS MODIFIED BY CUSTOMER.

REASON: TO PROVIDE INCREASED CLEARANCE FOR FRAME LOADER LINKAGE.

INCORPORATES/RELEASES	Y	N	NUMBER
STOP ORDER			
SEO/REWORK			
QAEO			
VIR			
MII			
MIR			
PII			
PRR			

PRINT DISTRIBUTION	YES	NO	PRINT DISTRIBUTION	YES	NO
SIMULATOR AFF			SEALING AFF		
OATP AFF			ELEC BONDING AFF		
SCHEMATICS AFF			LUBRICATION AFF		
DAMS & DRAINS AFF			LAB TEST AFF		

NAME	DEPT	MAIL CODE	EXTRA EO	DWG & EO
J. MECKLENBURG	KD3	1-18	3	—
C. CHEN	IXR	78-209	1	—
J. LO	IXR	78-209	1	—
C. HSU	IXR	78-209	1	—

CONTRACT NO. DTFA03-96-C-00027
P/C | ASD | 1 ST ACFT | FAB
Orig at LB
Repro at

CHANGES MUST BE MADE ON ORIGINAL ONLY
DRAWING NUMBER ZB128403

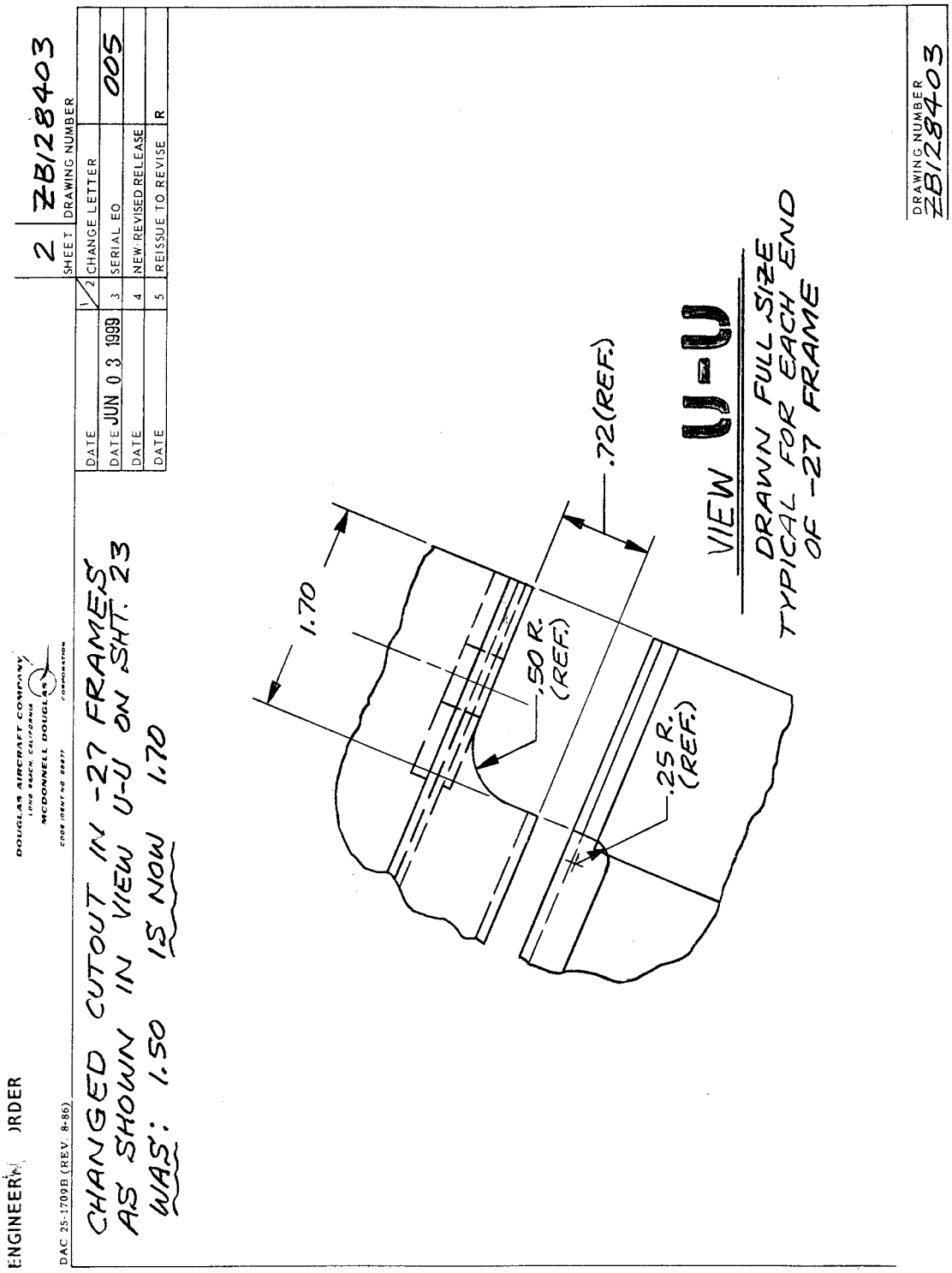

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

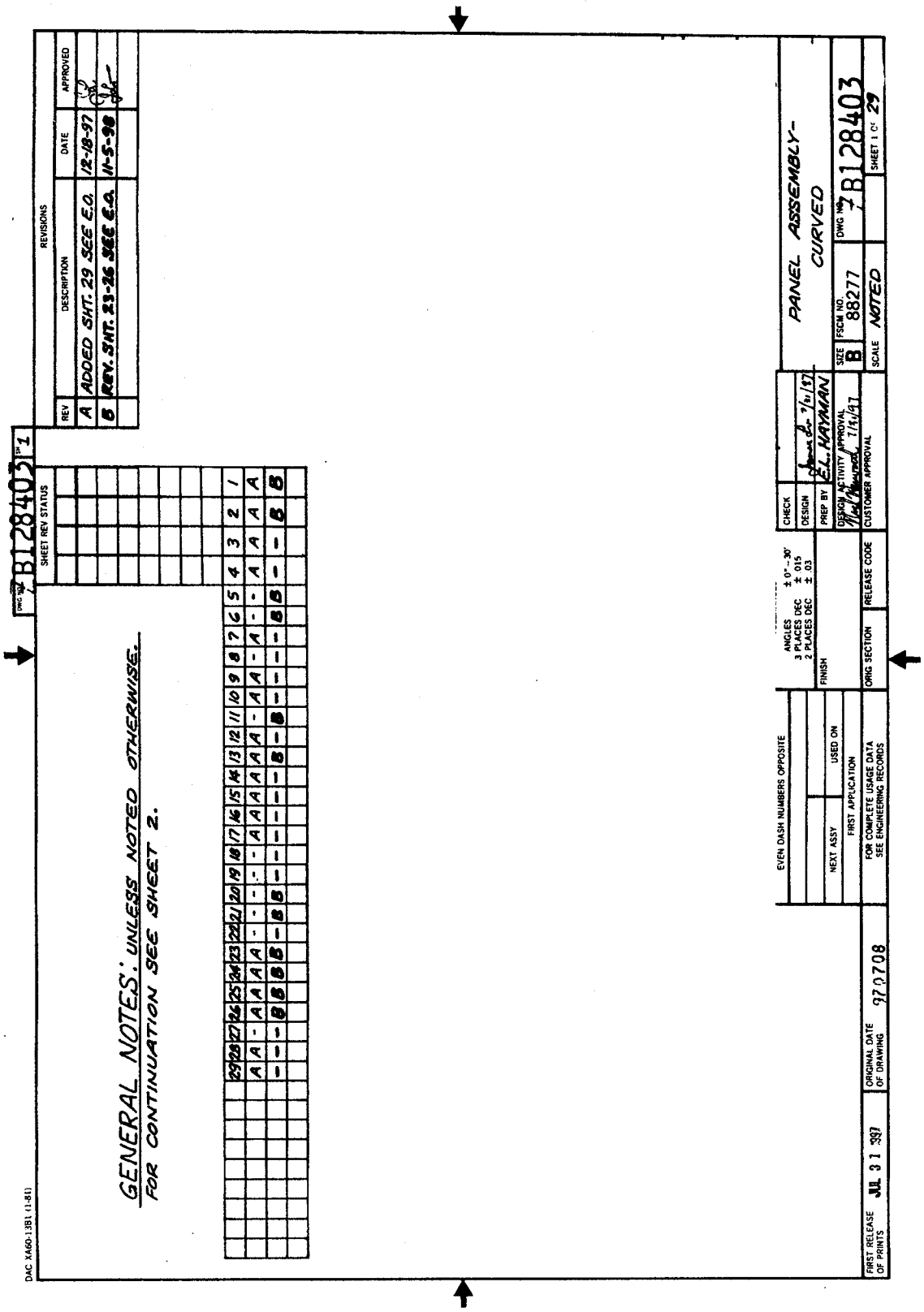

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

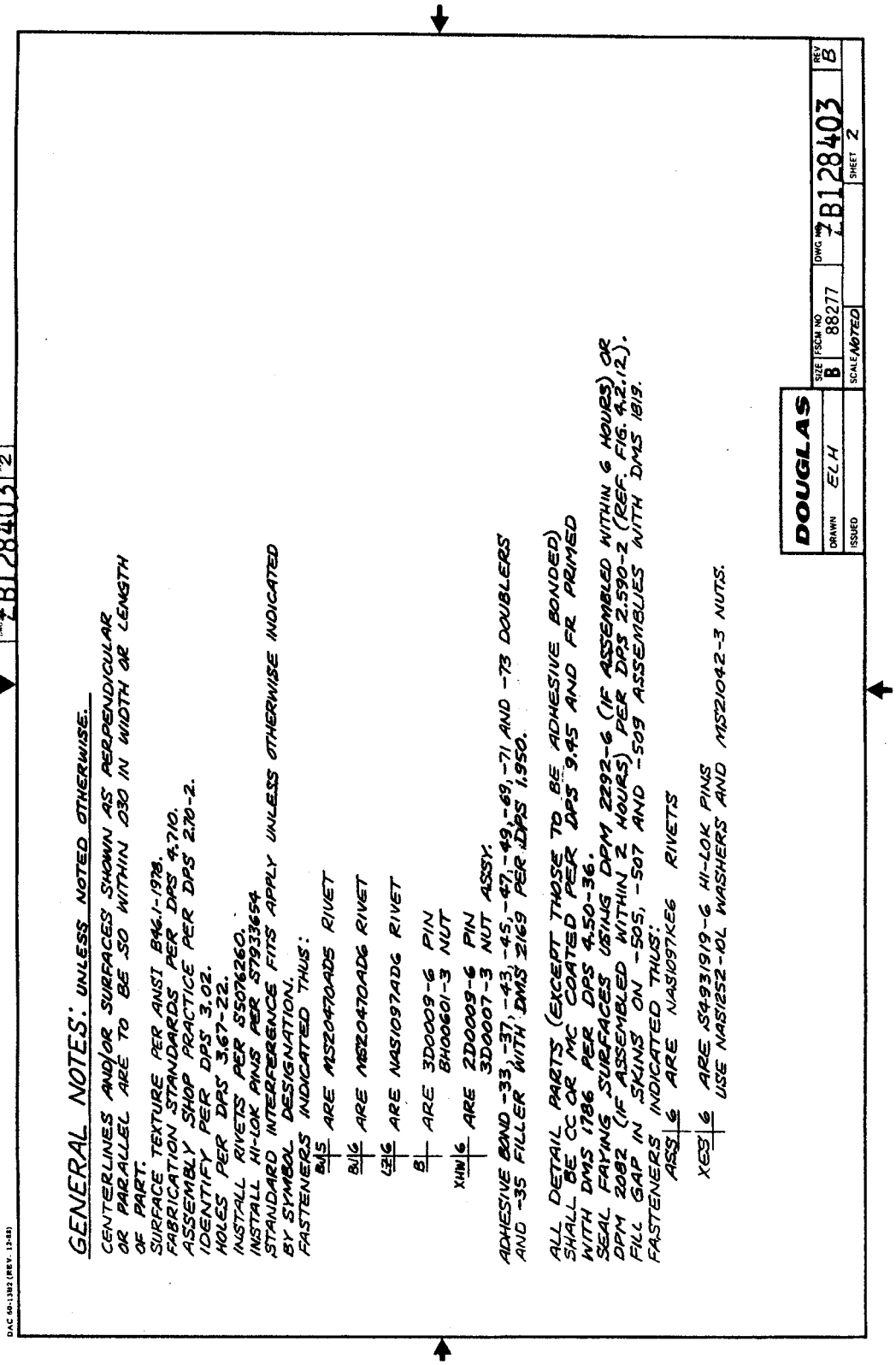

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

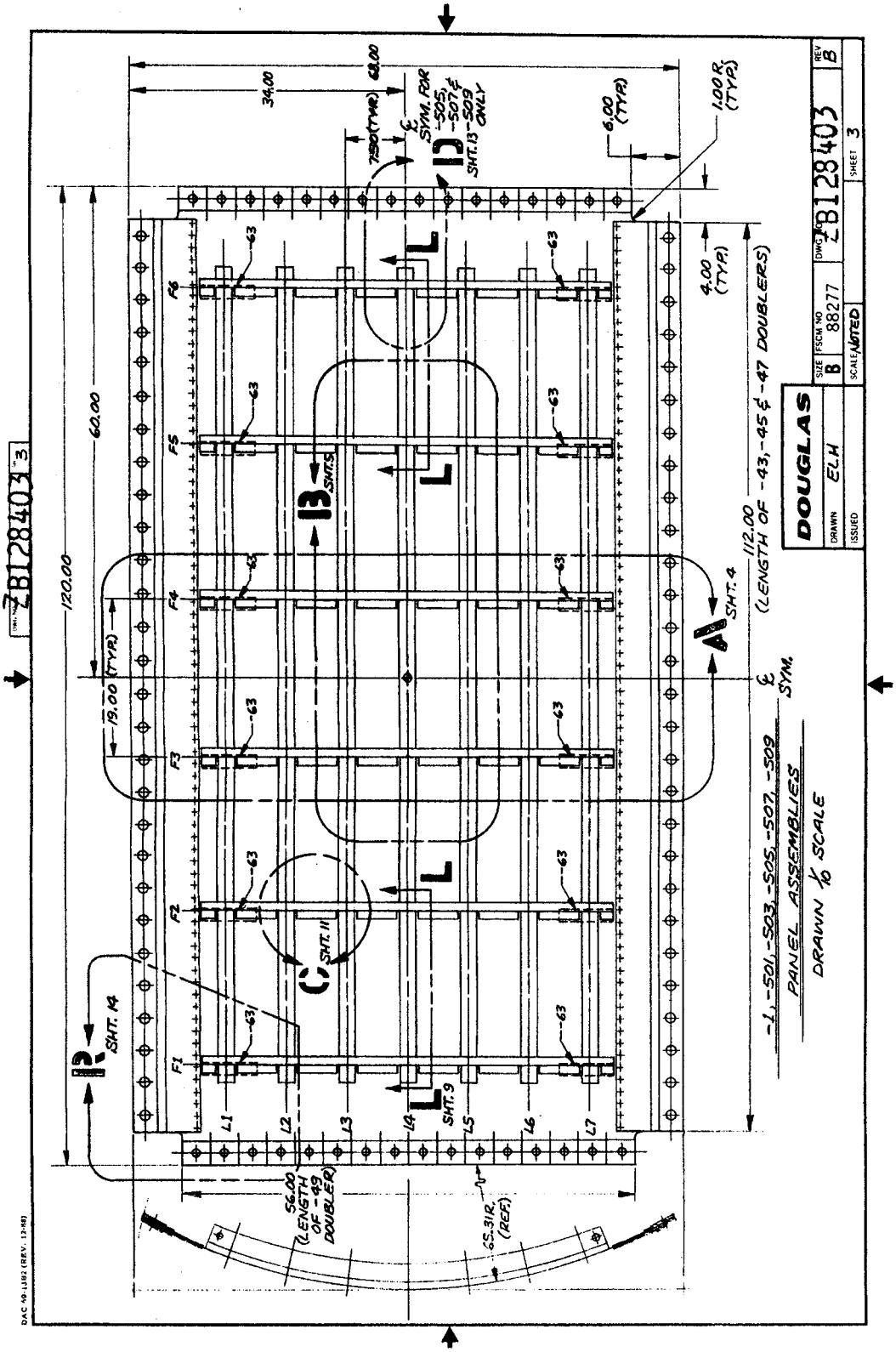

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

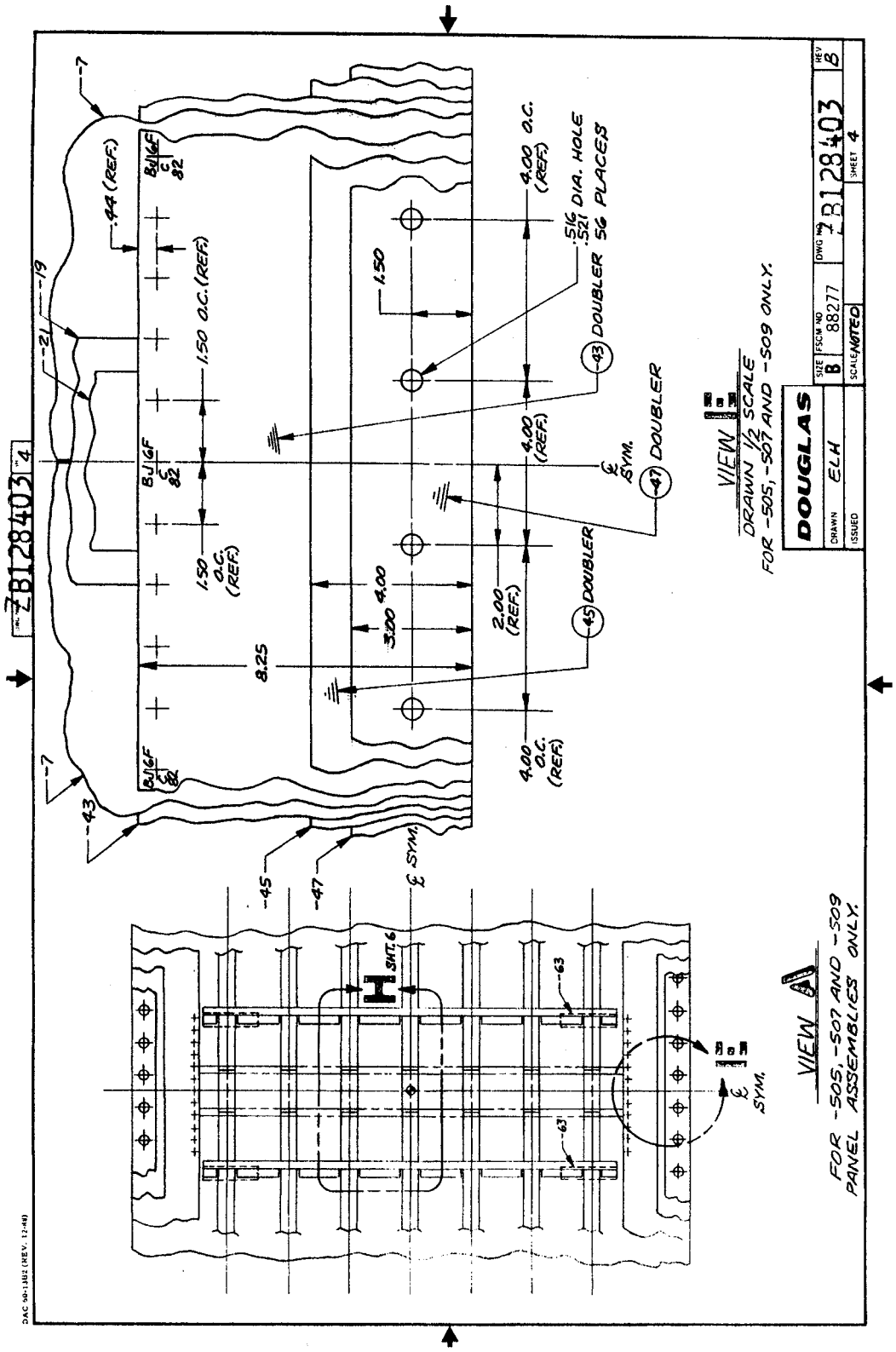

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

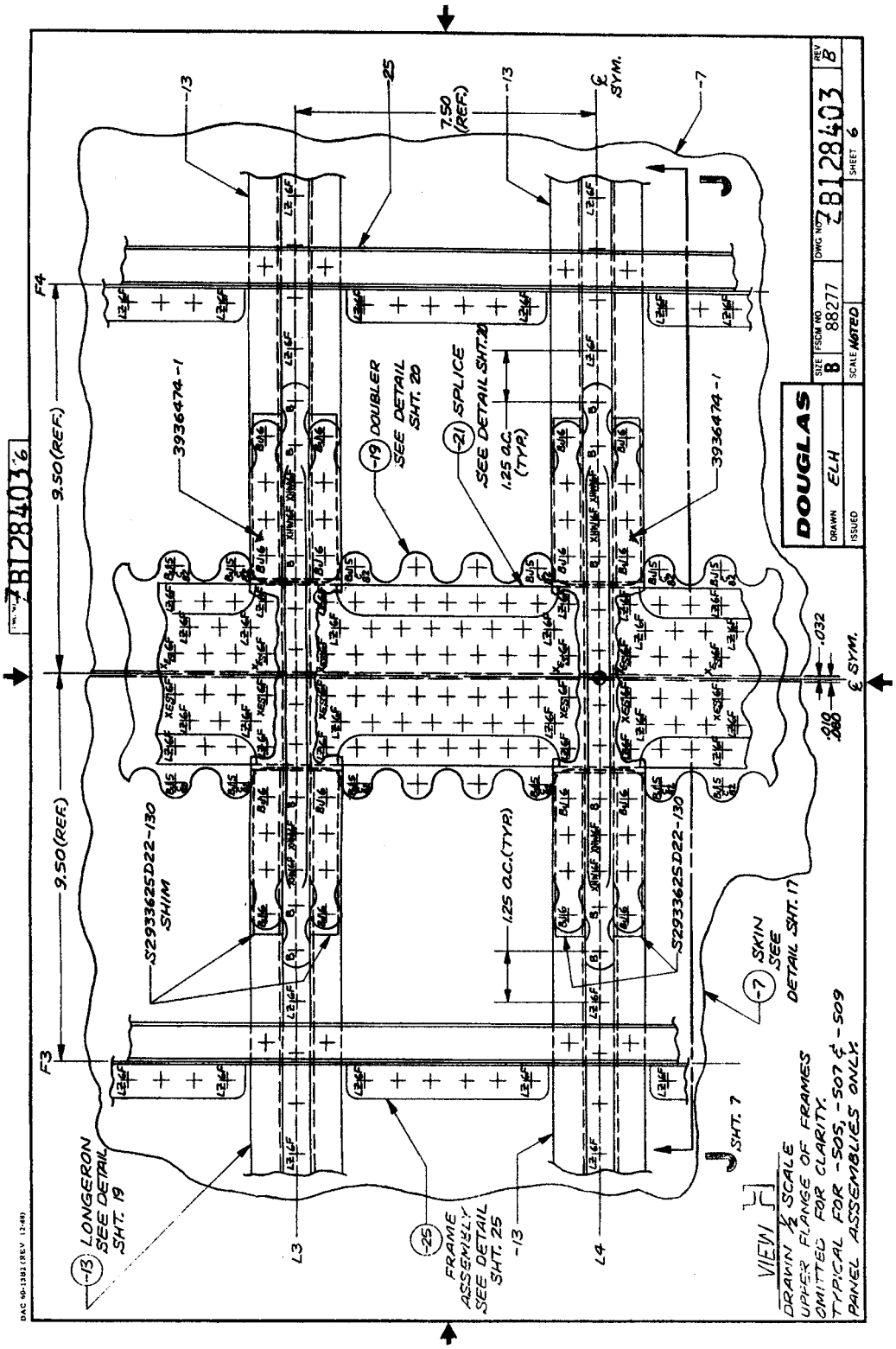

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

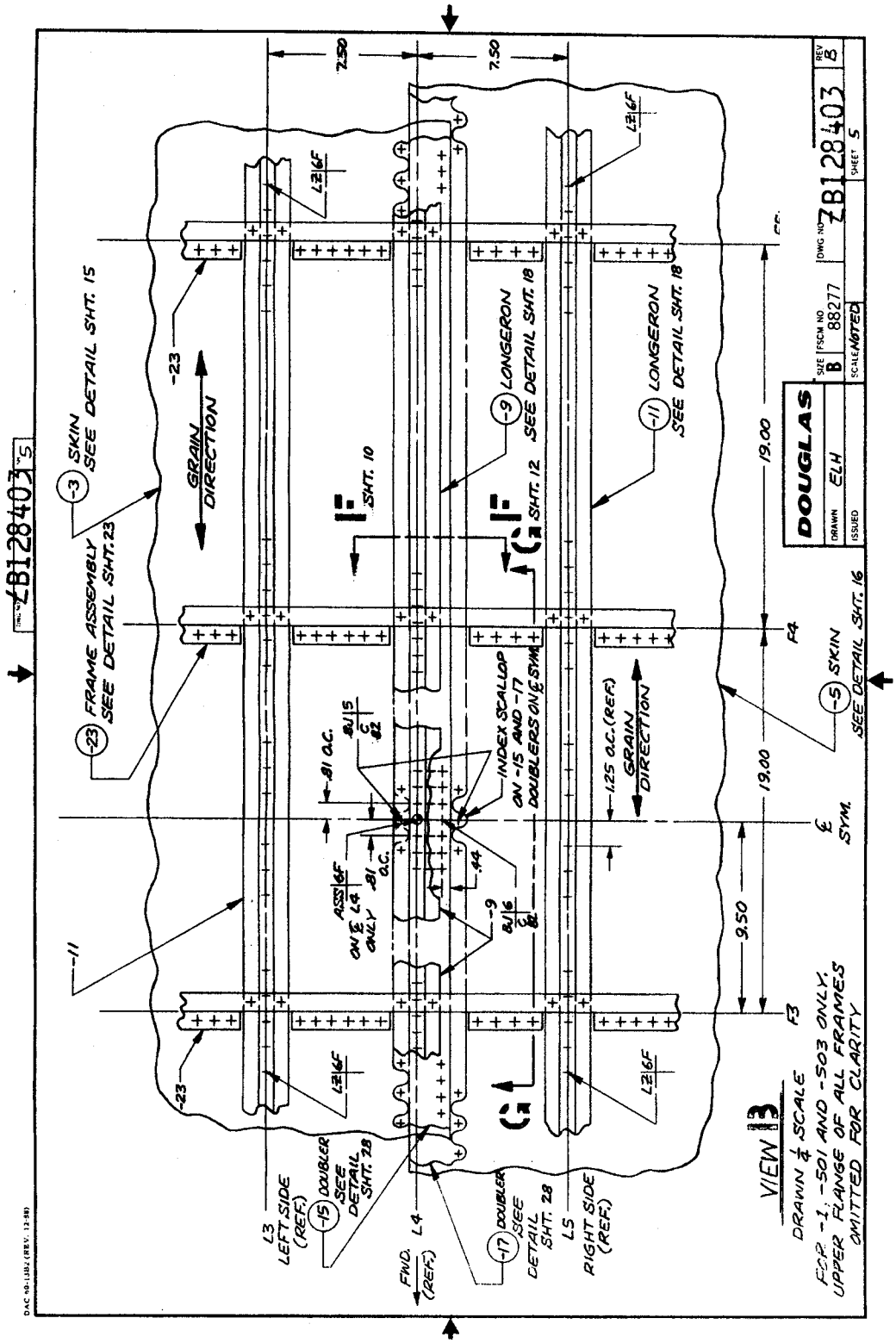

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

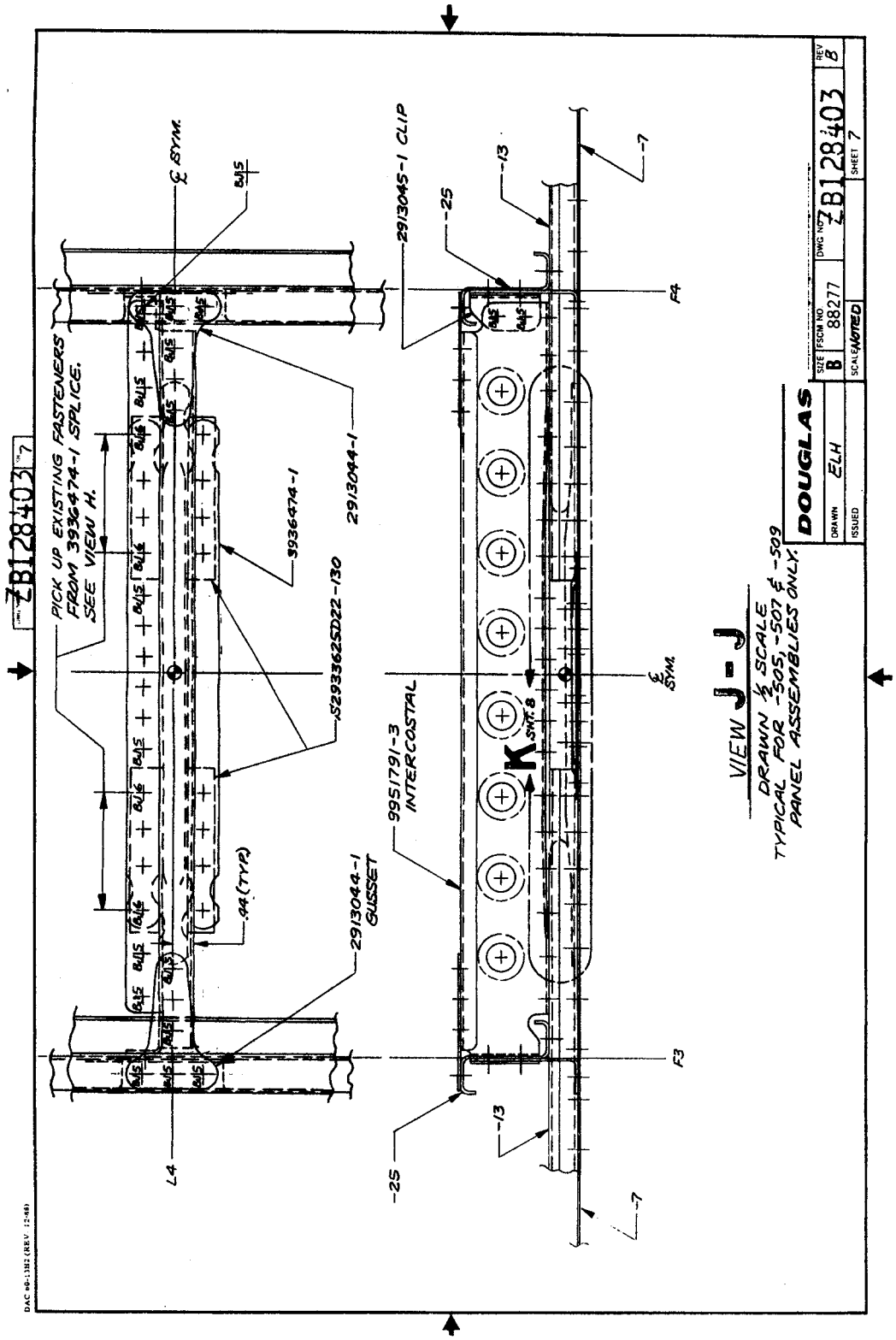

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

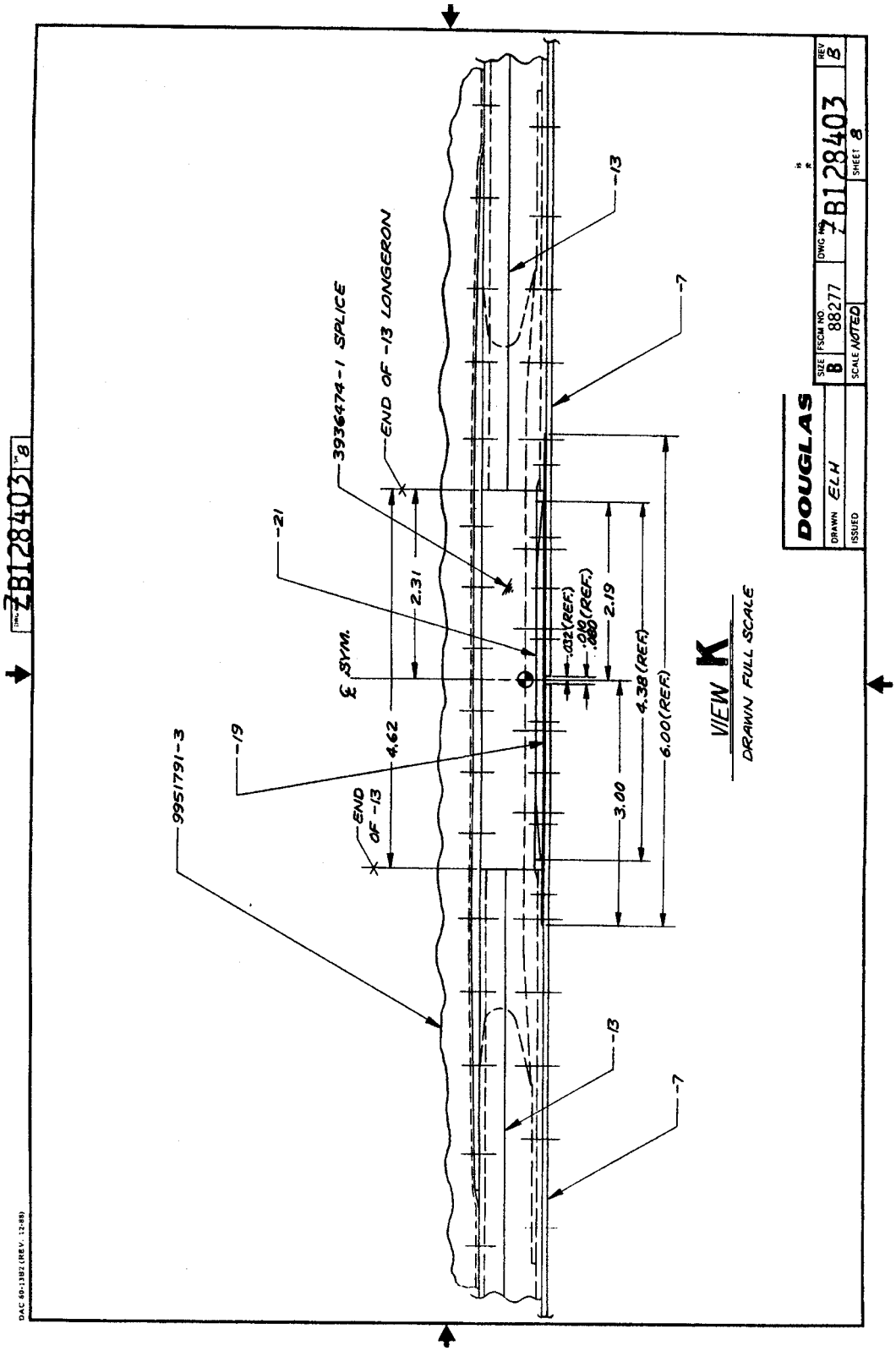

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

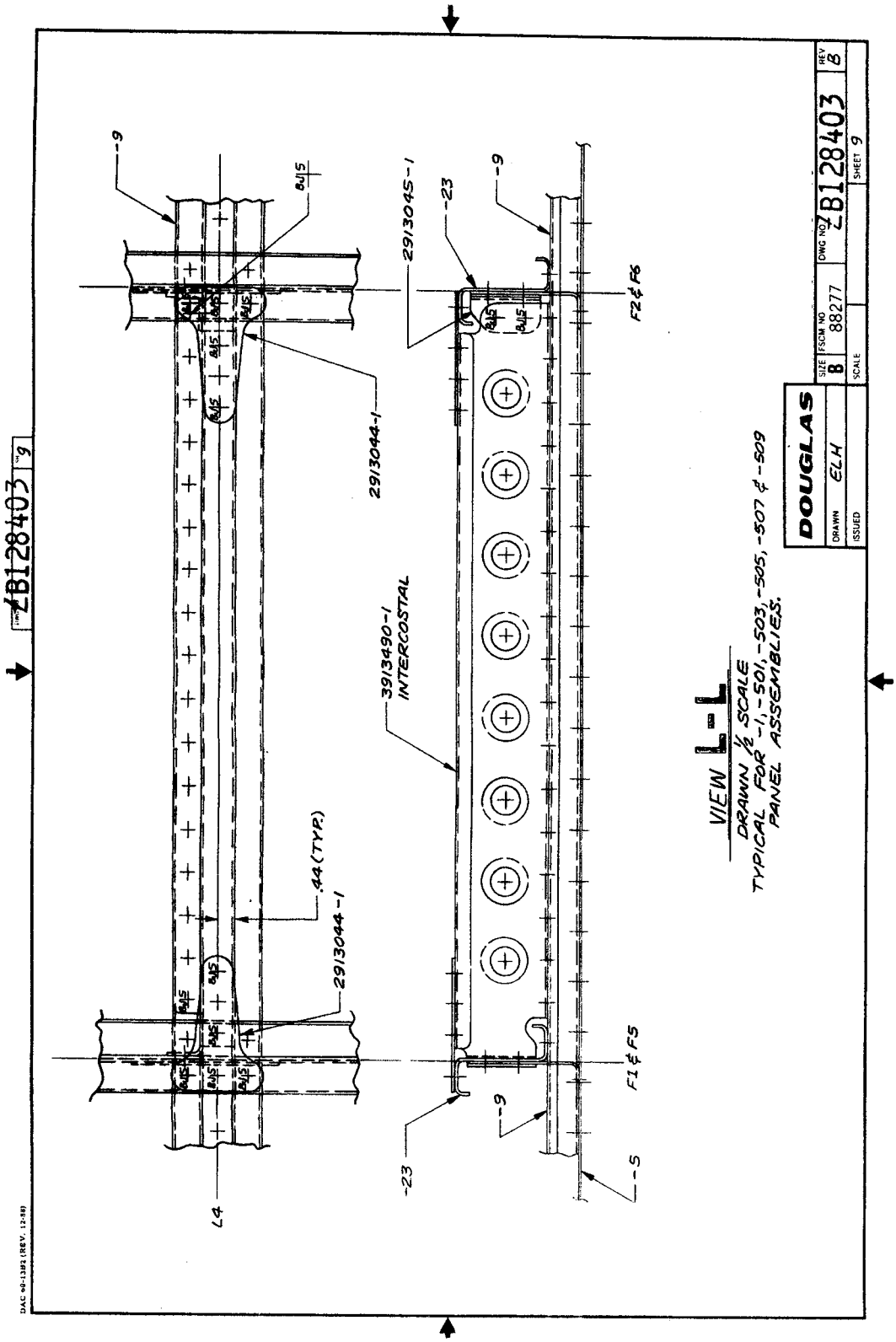

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

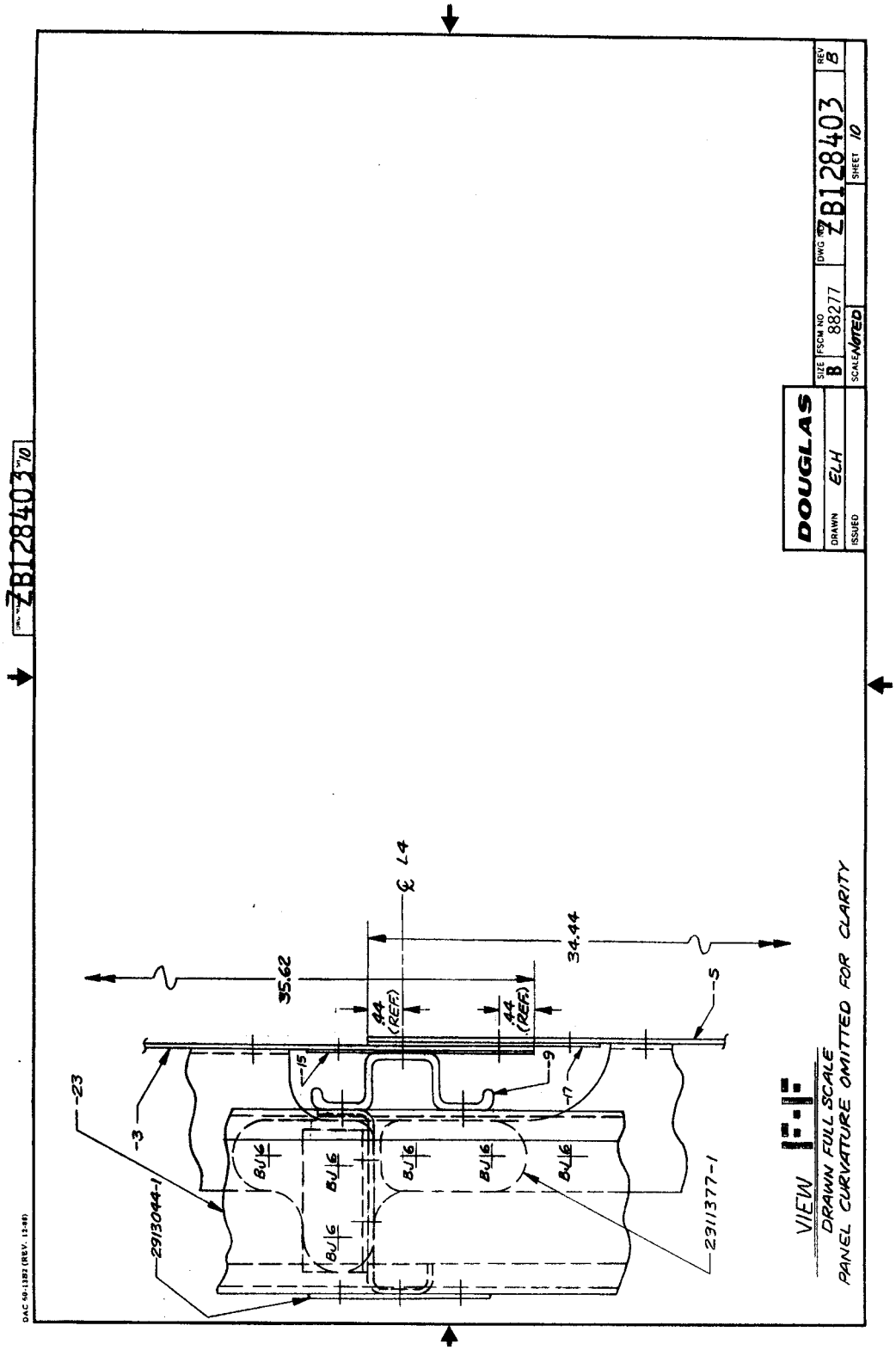

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

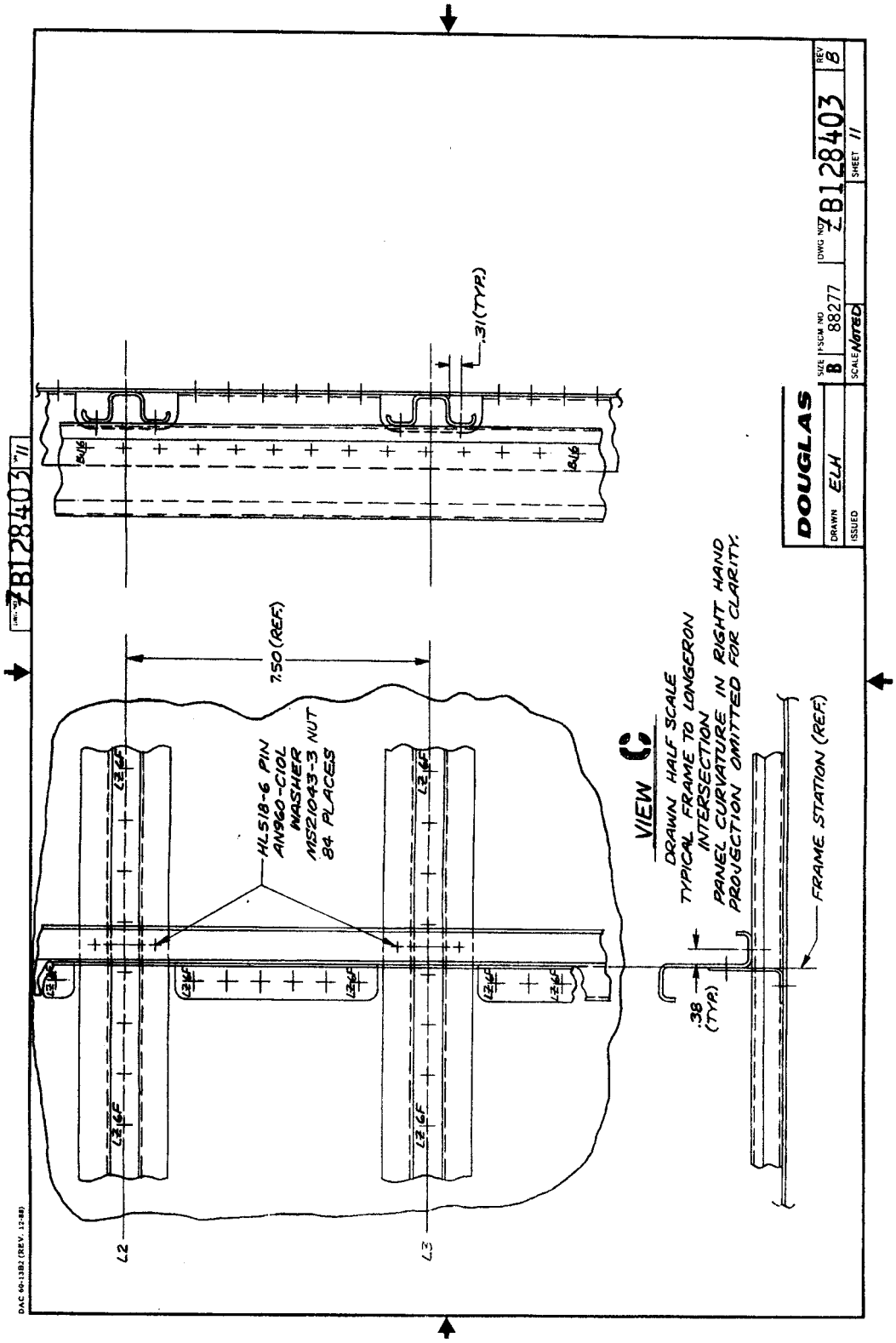

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

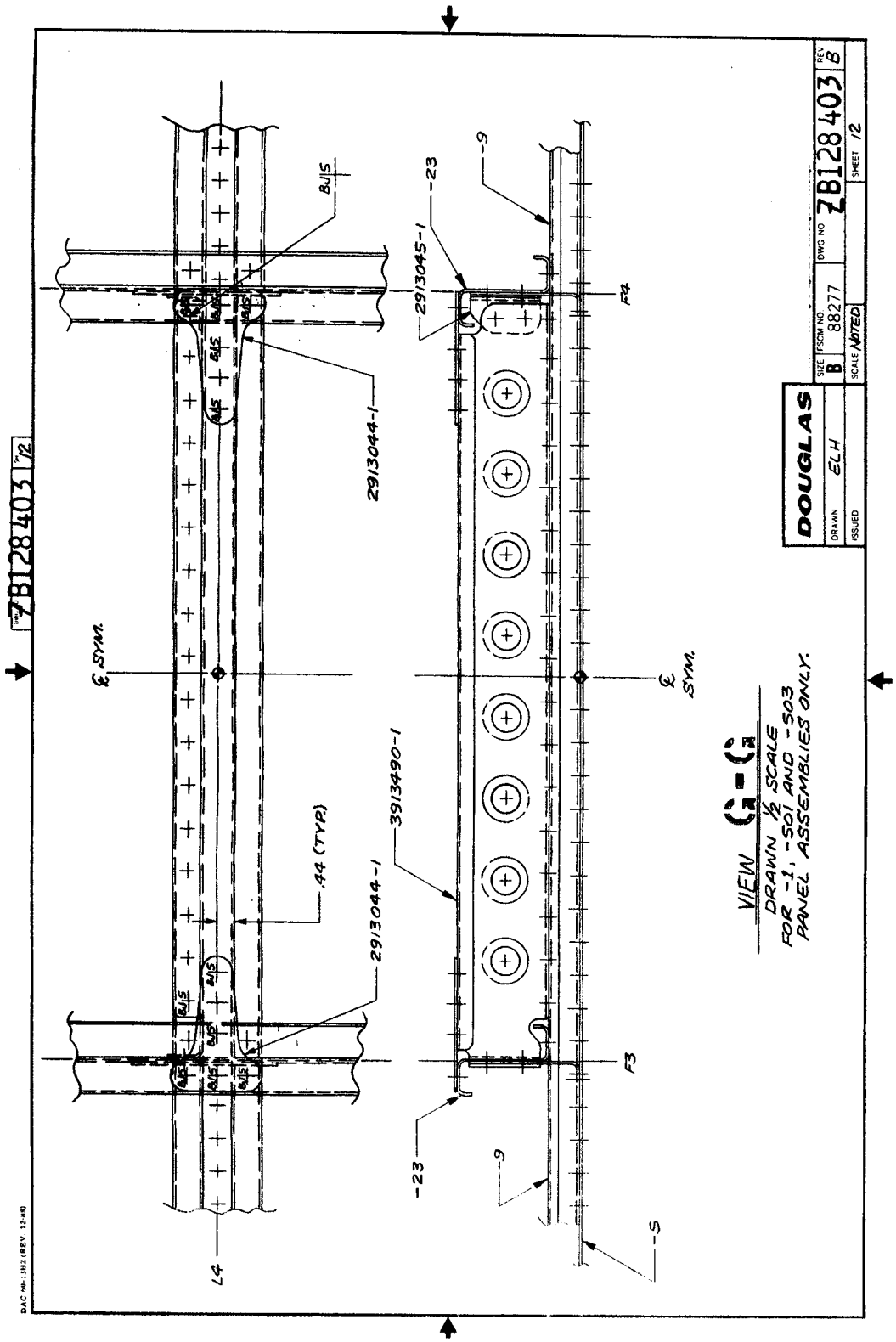

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

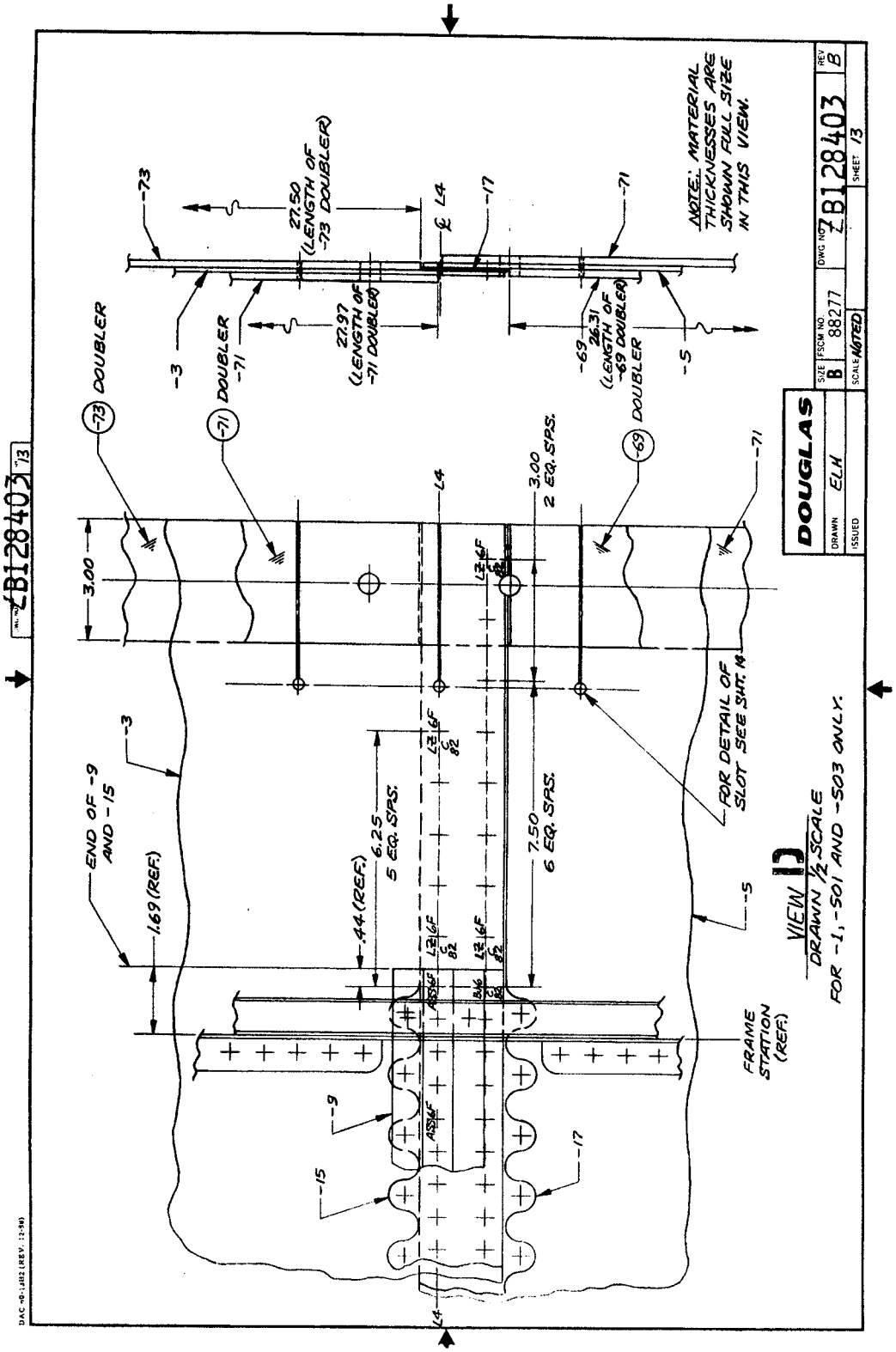

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

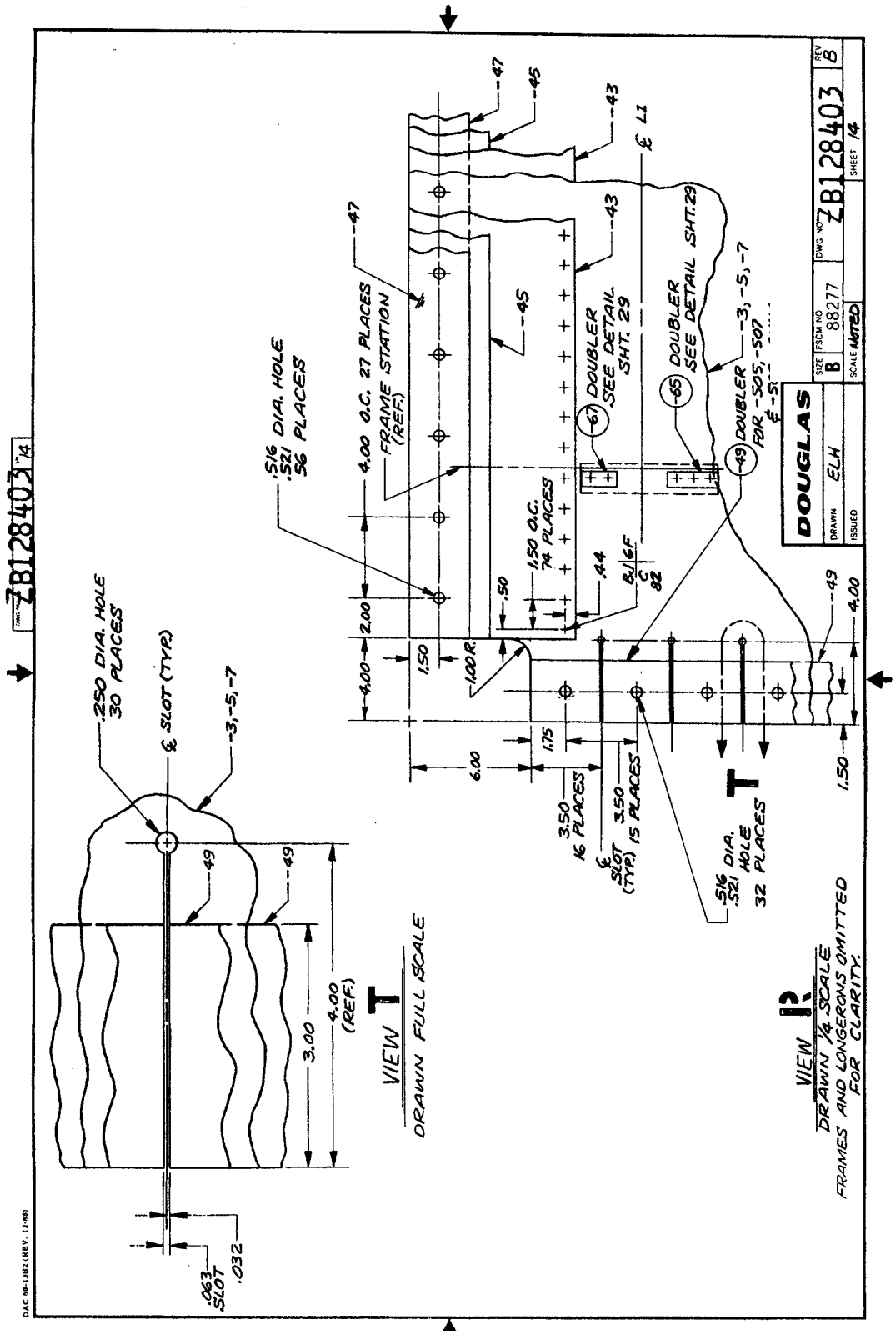

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

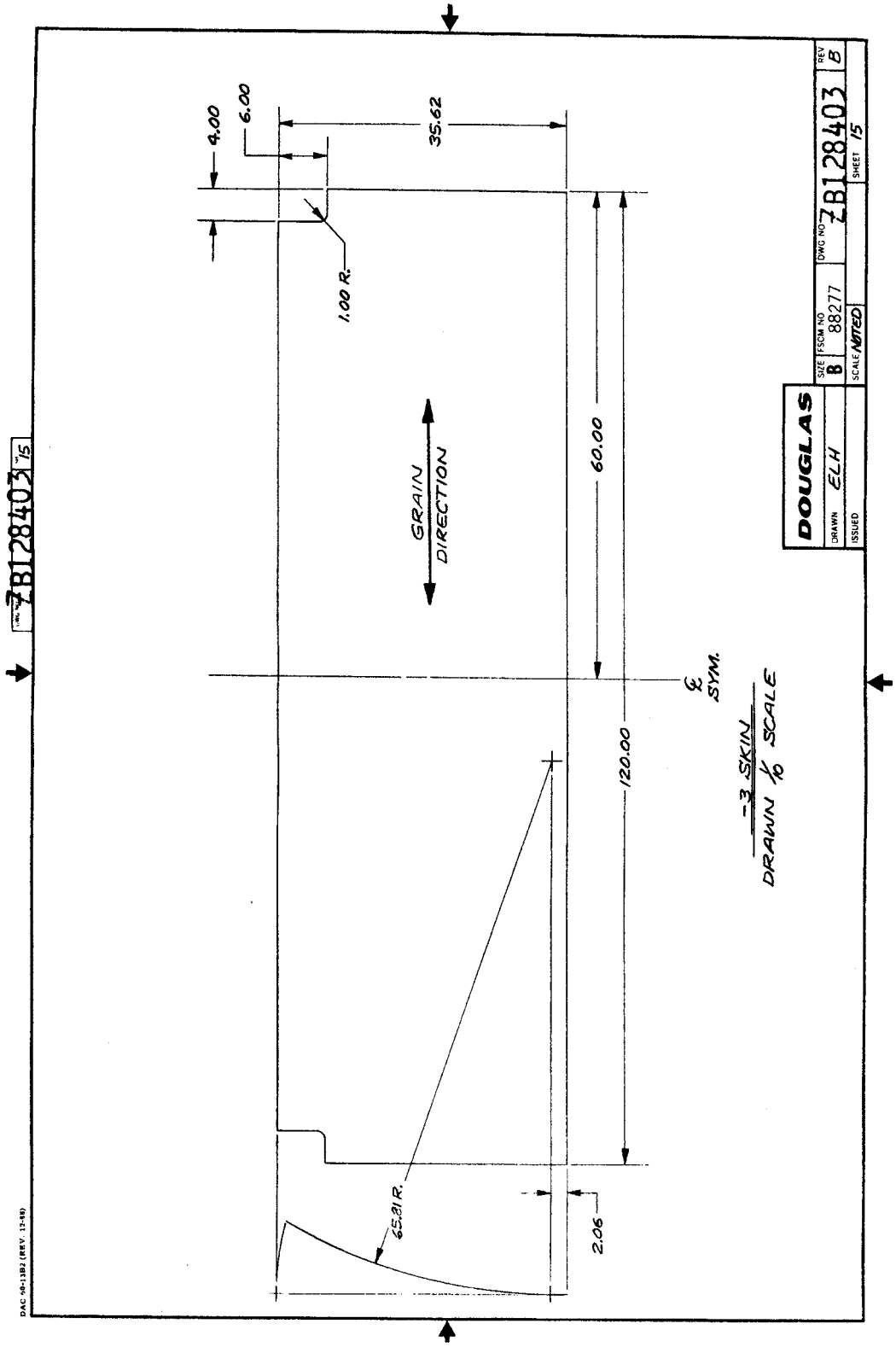

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

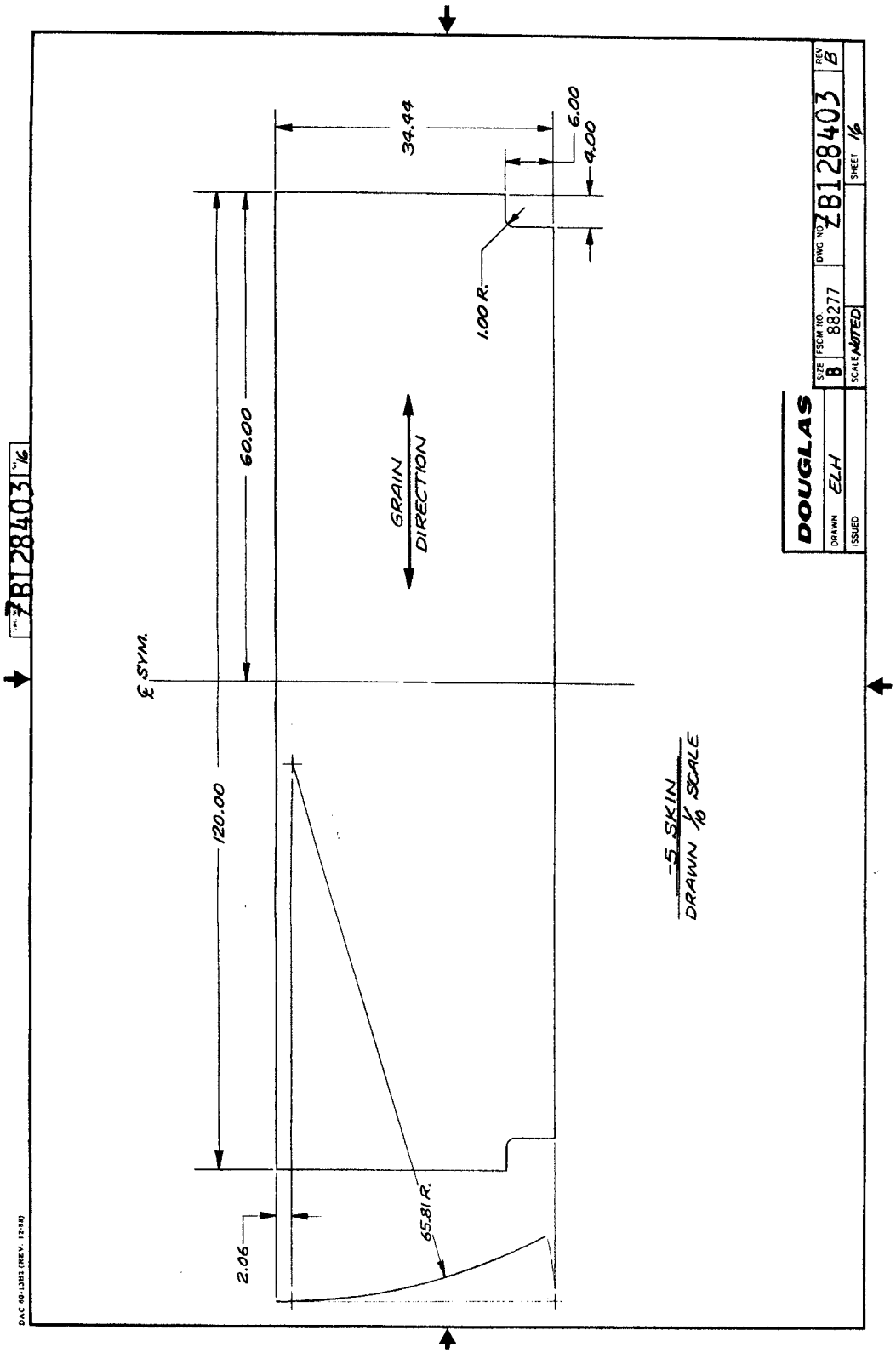

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

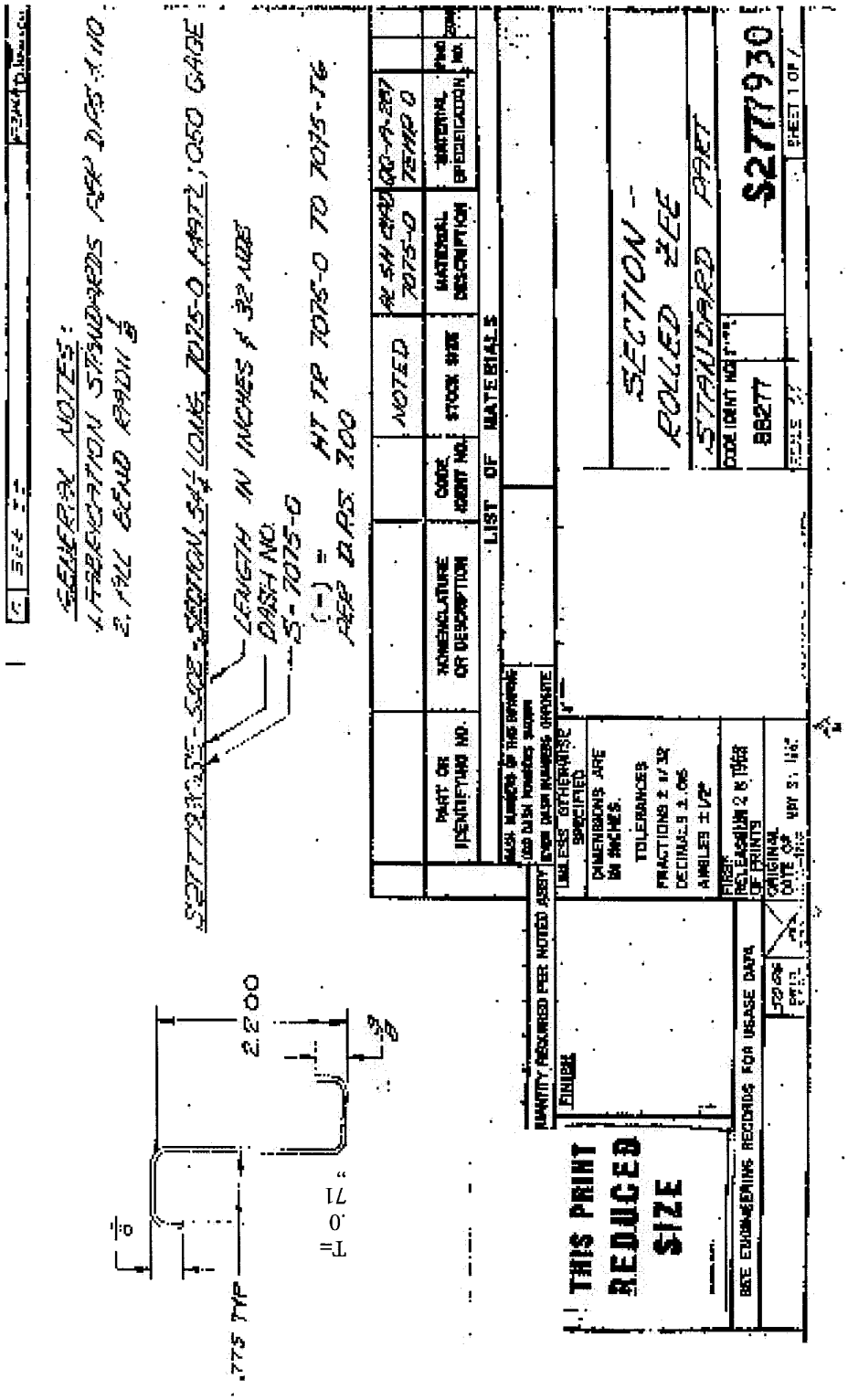

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

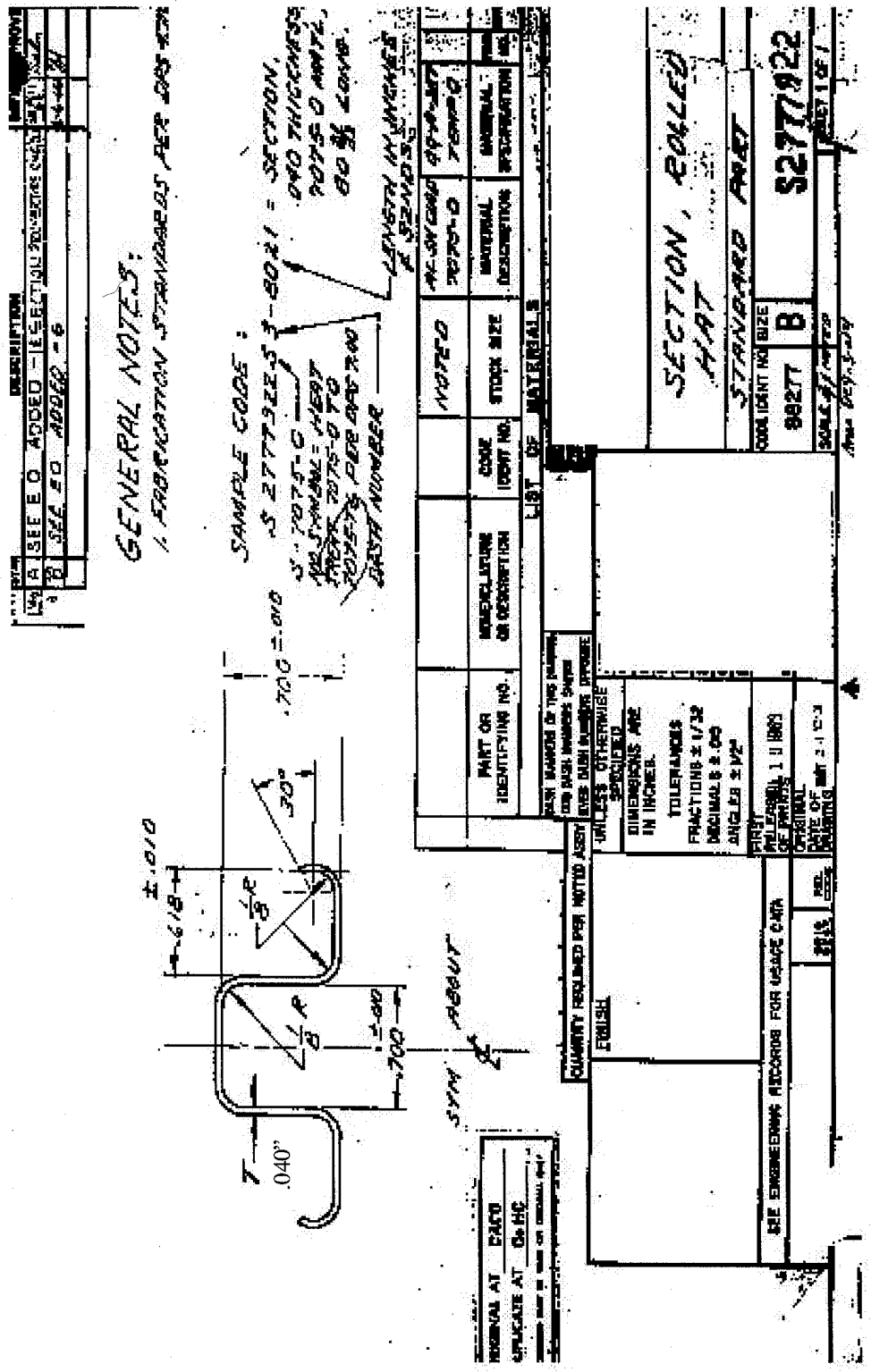

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

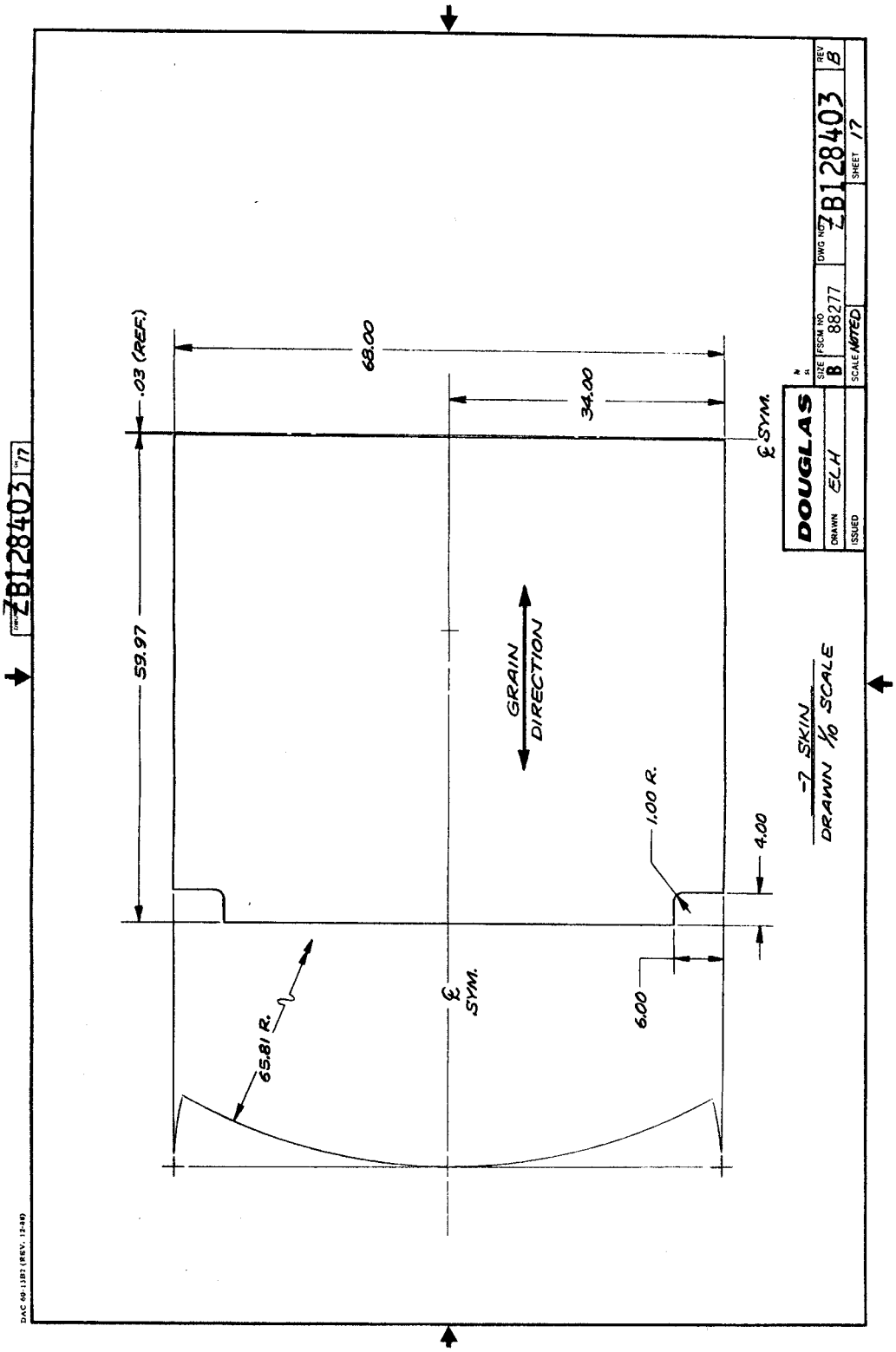

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

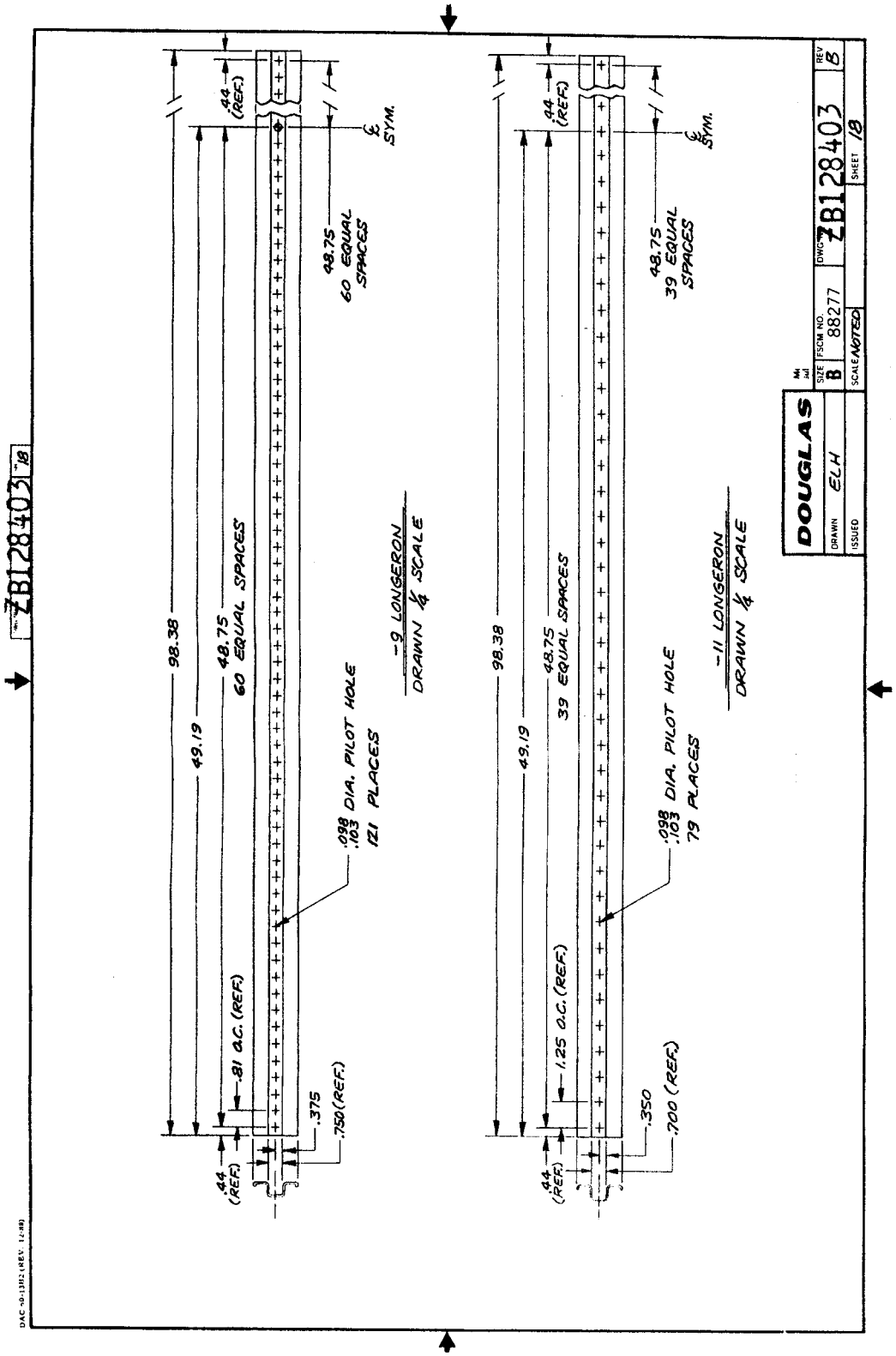

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

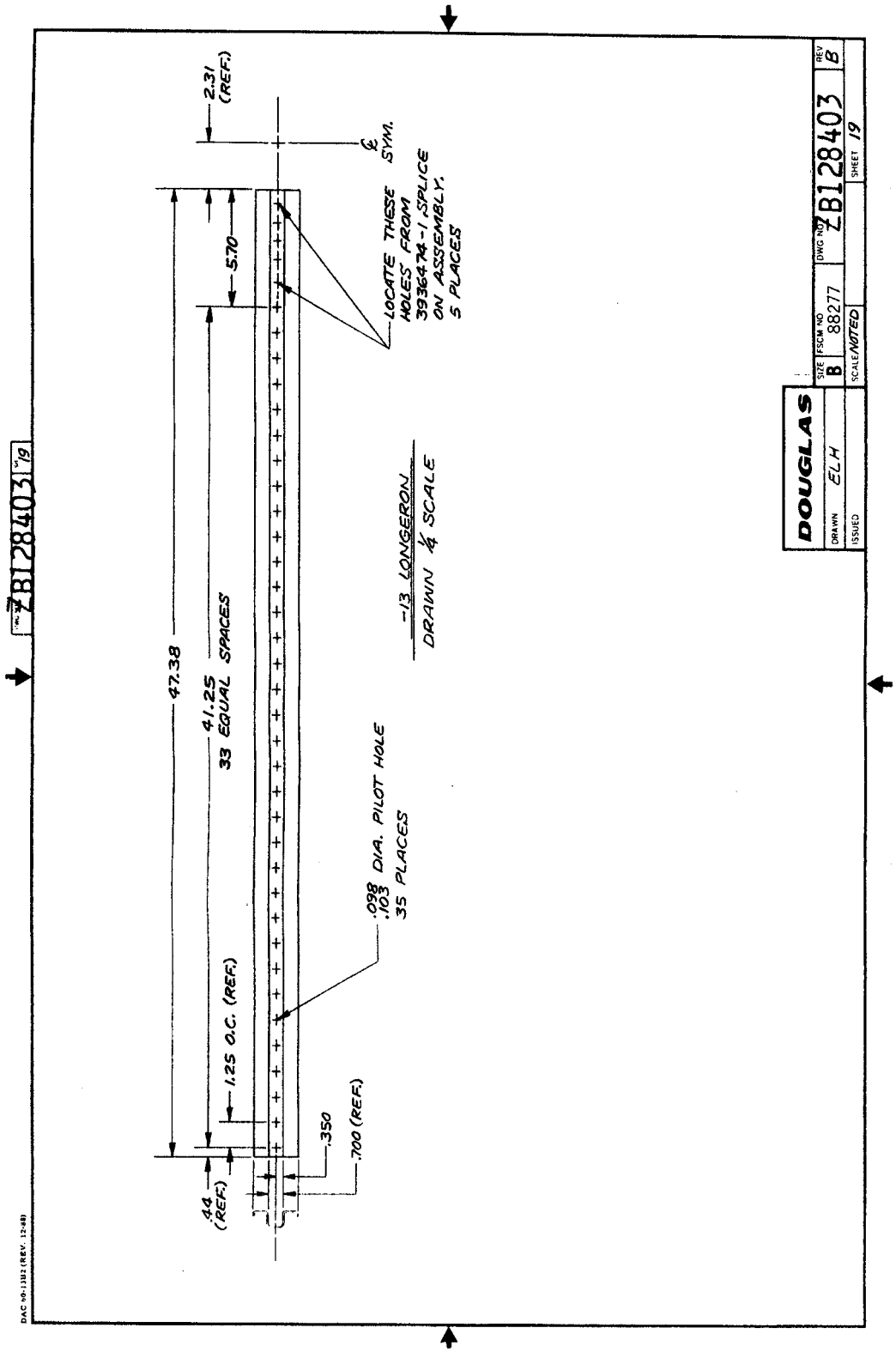

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

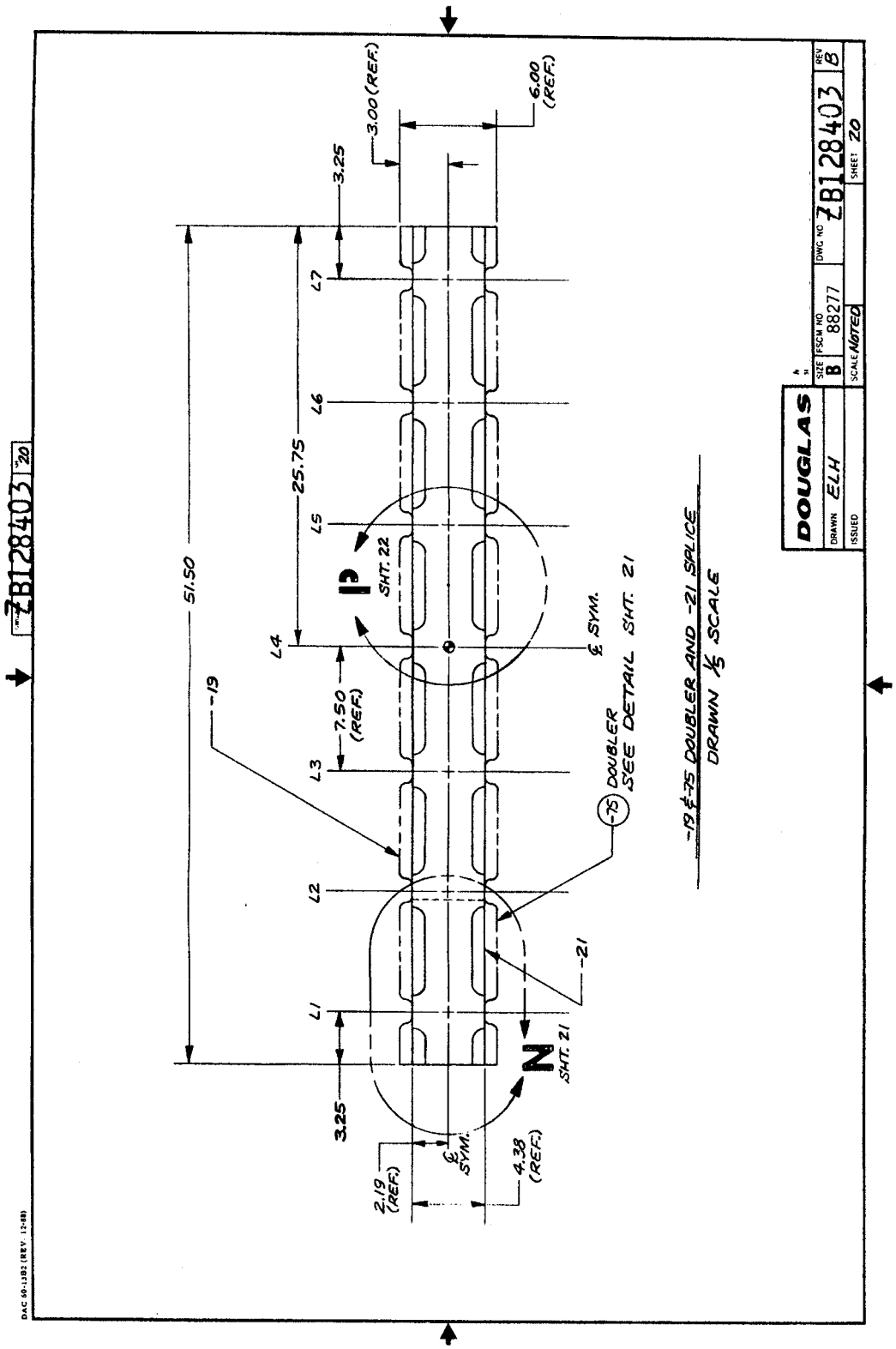

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

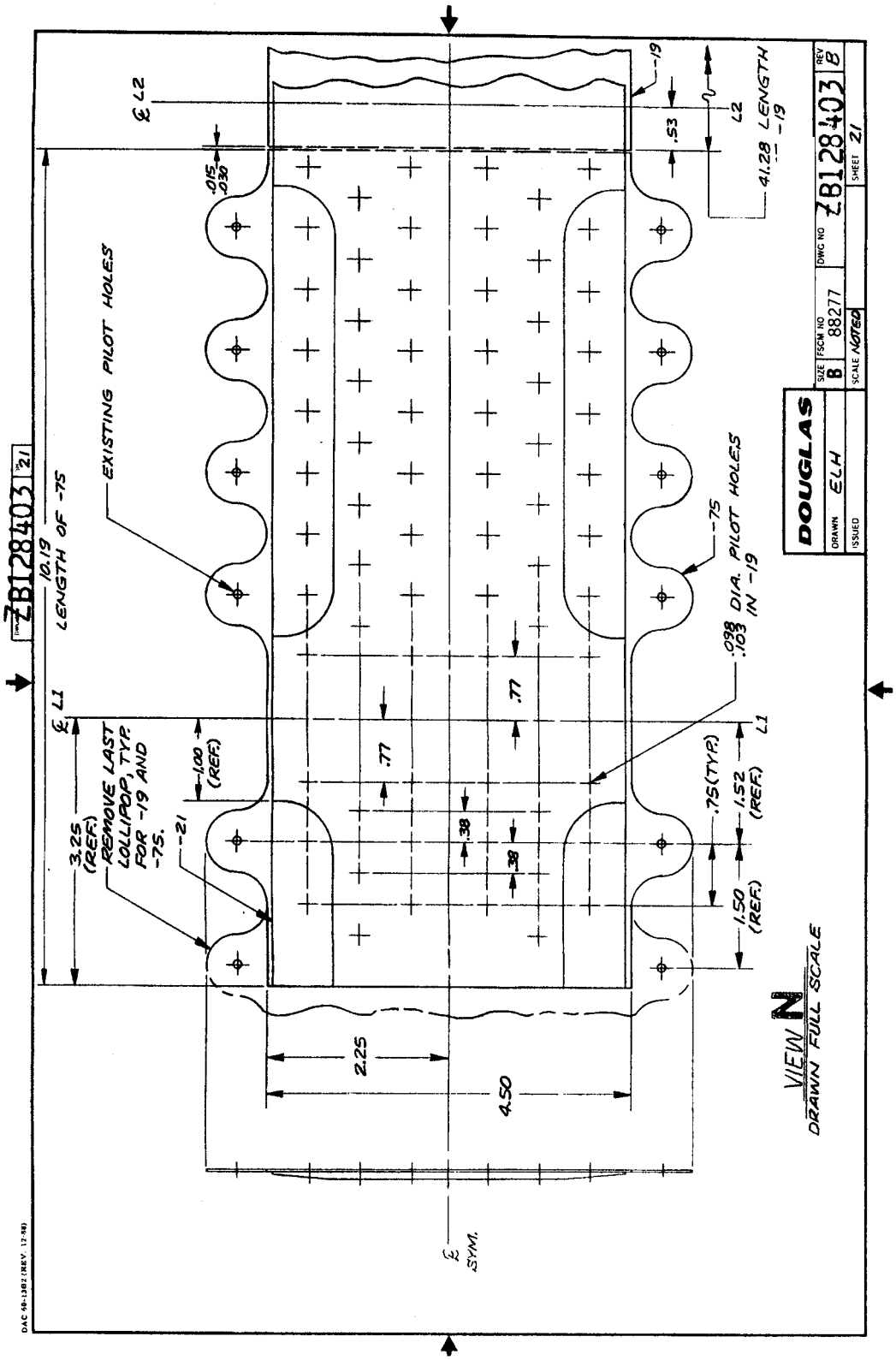

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

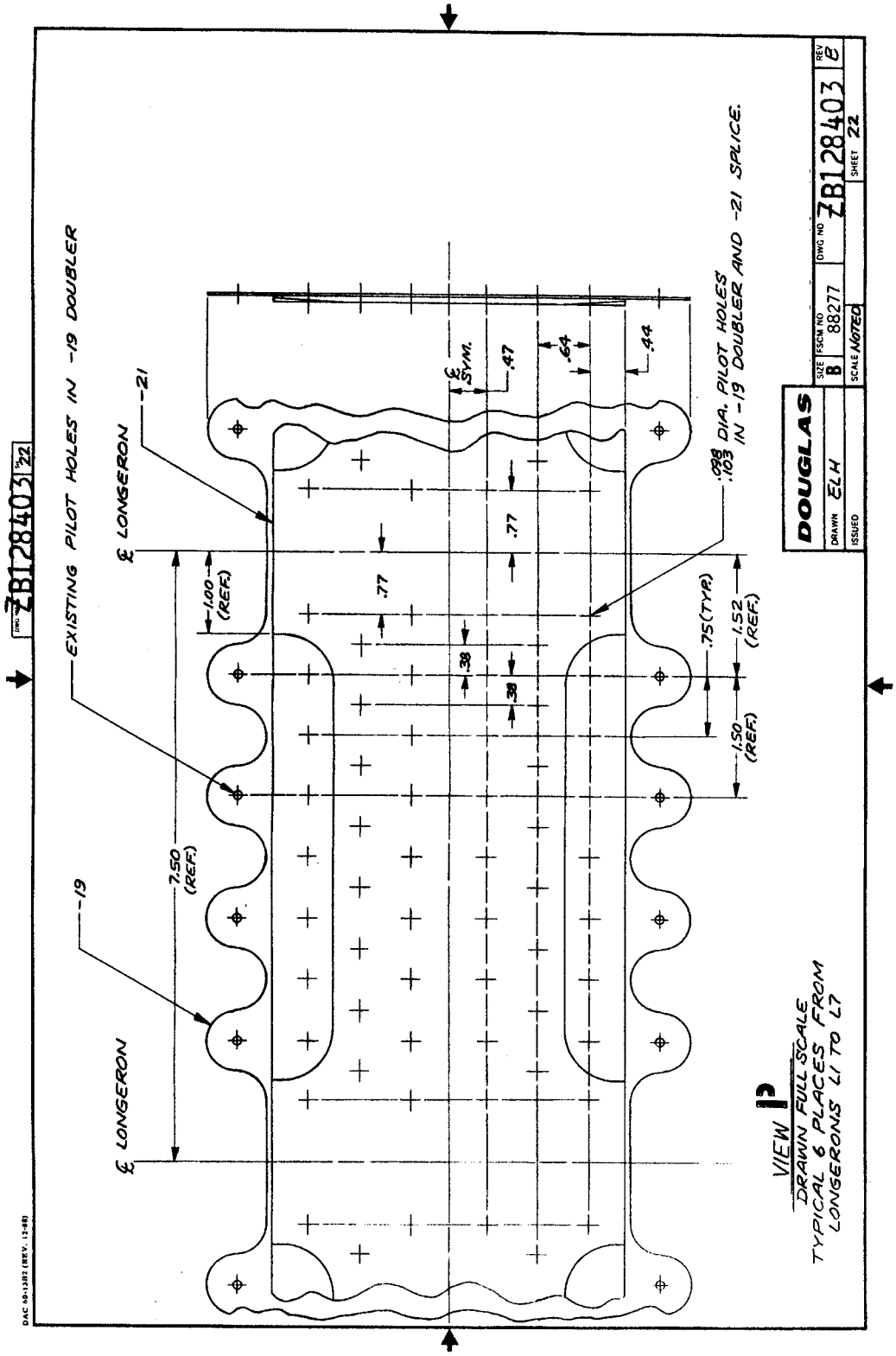

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

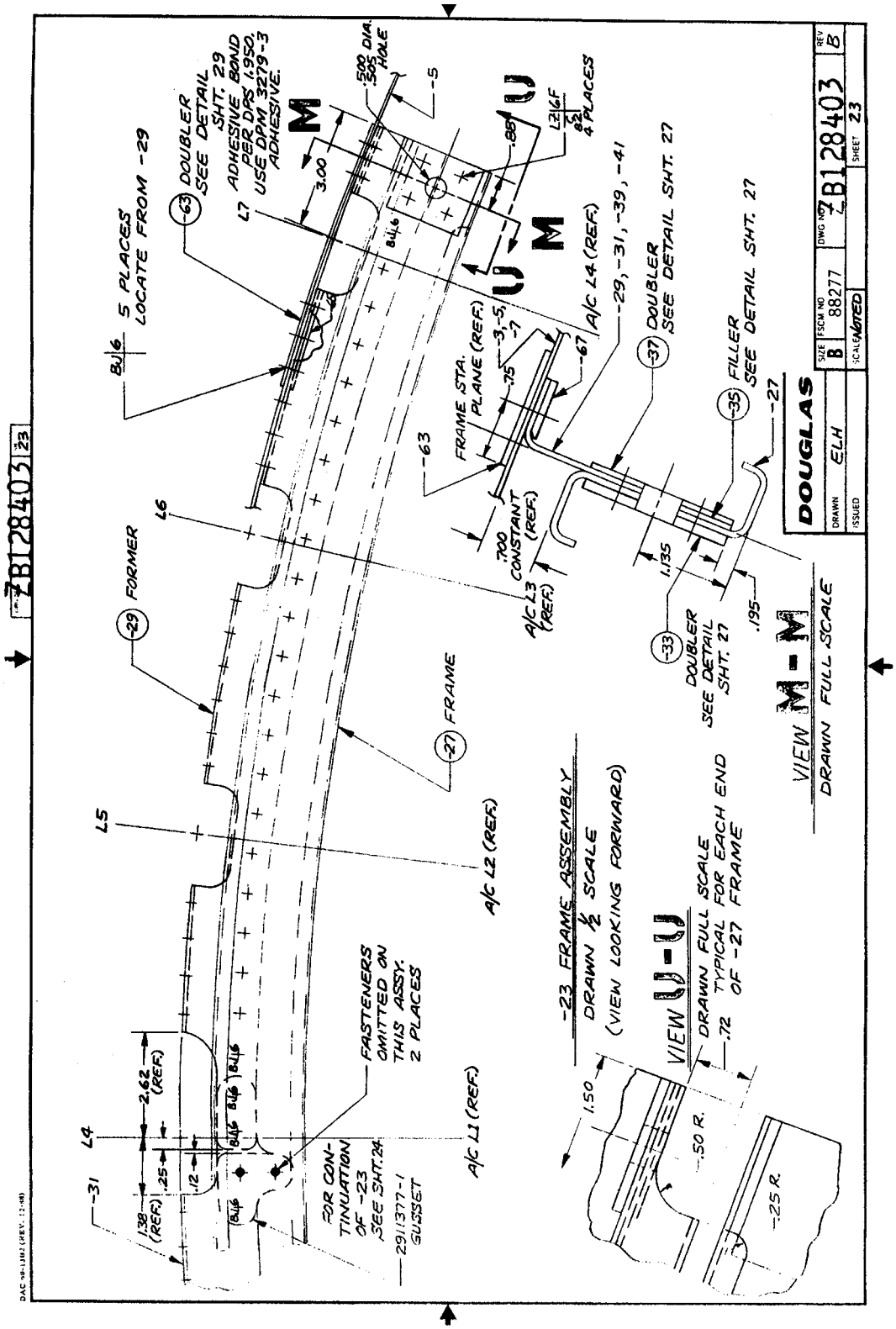

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

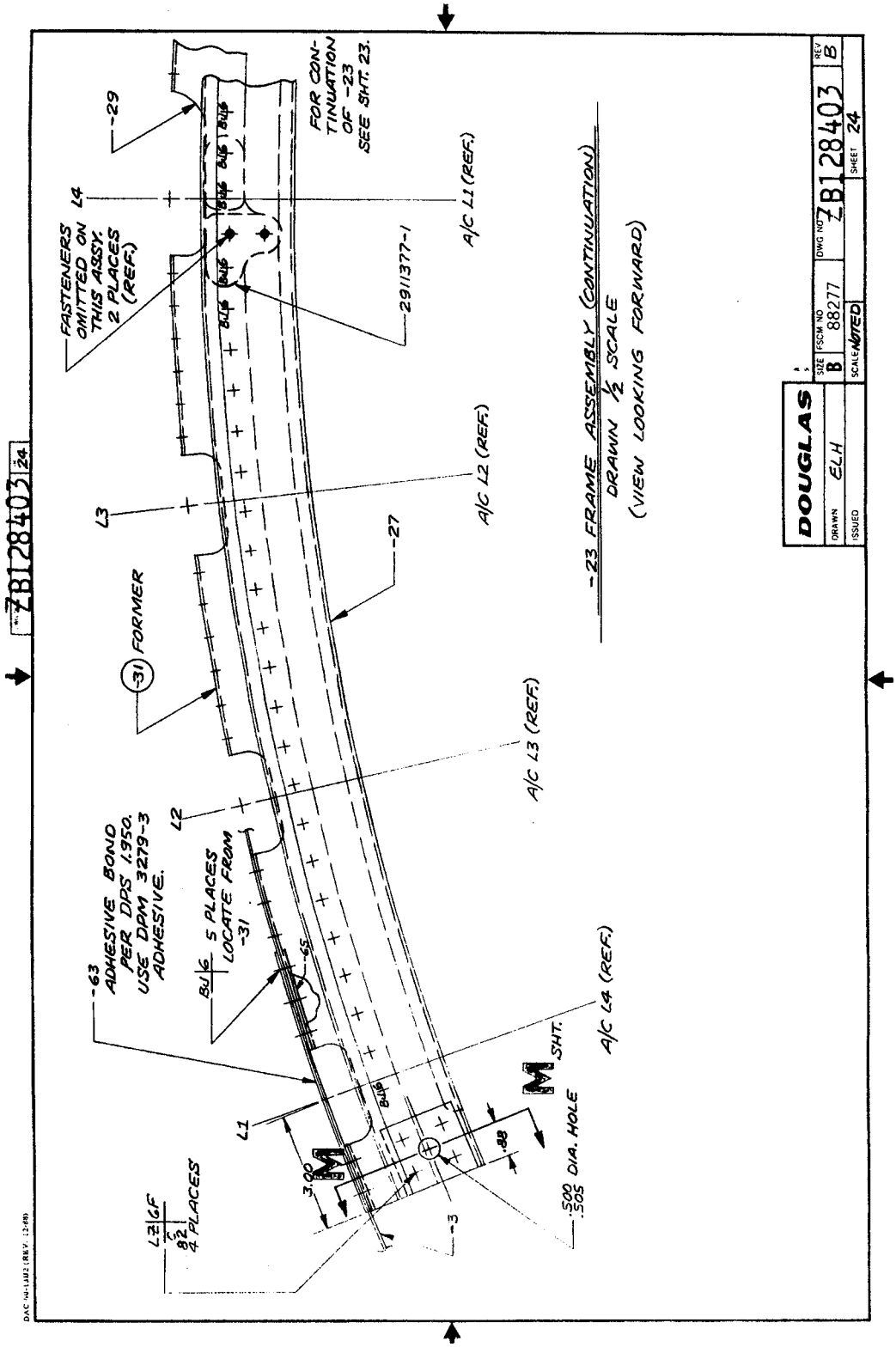

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

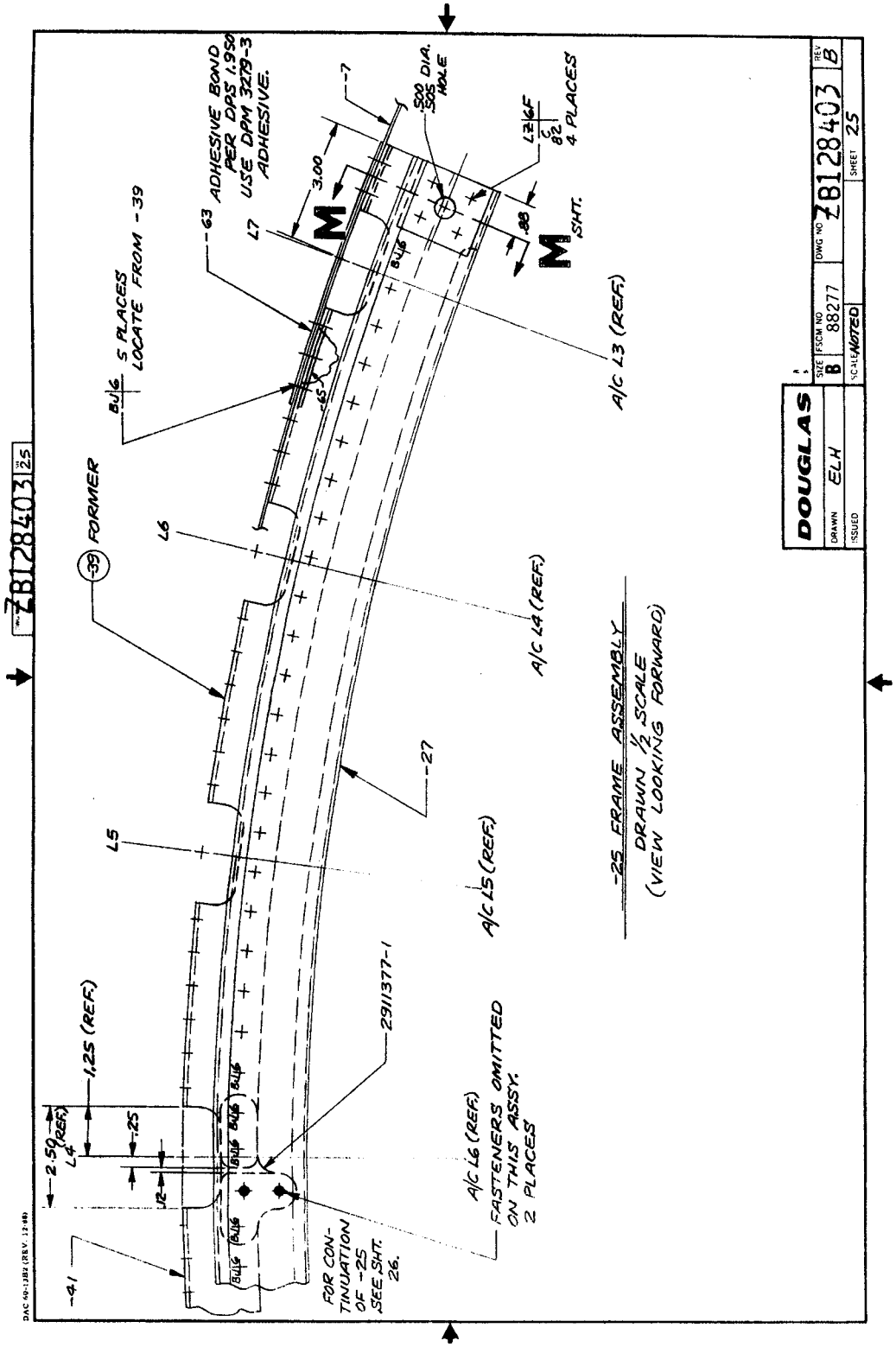

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

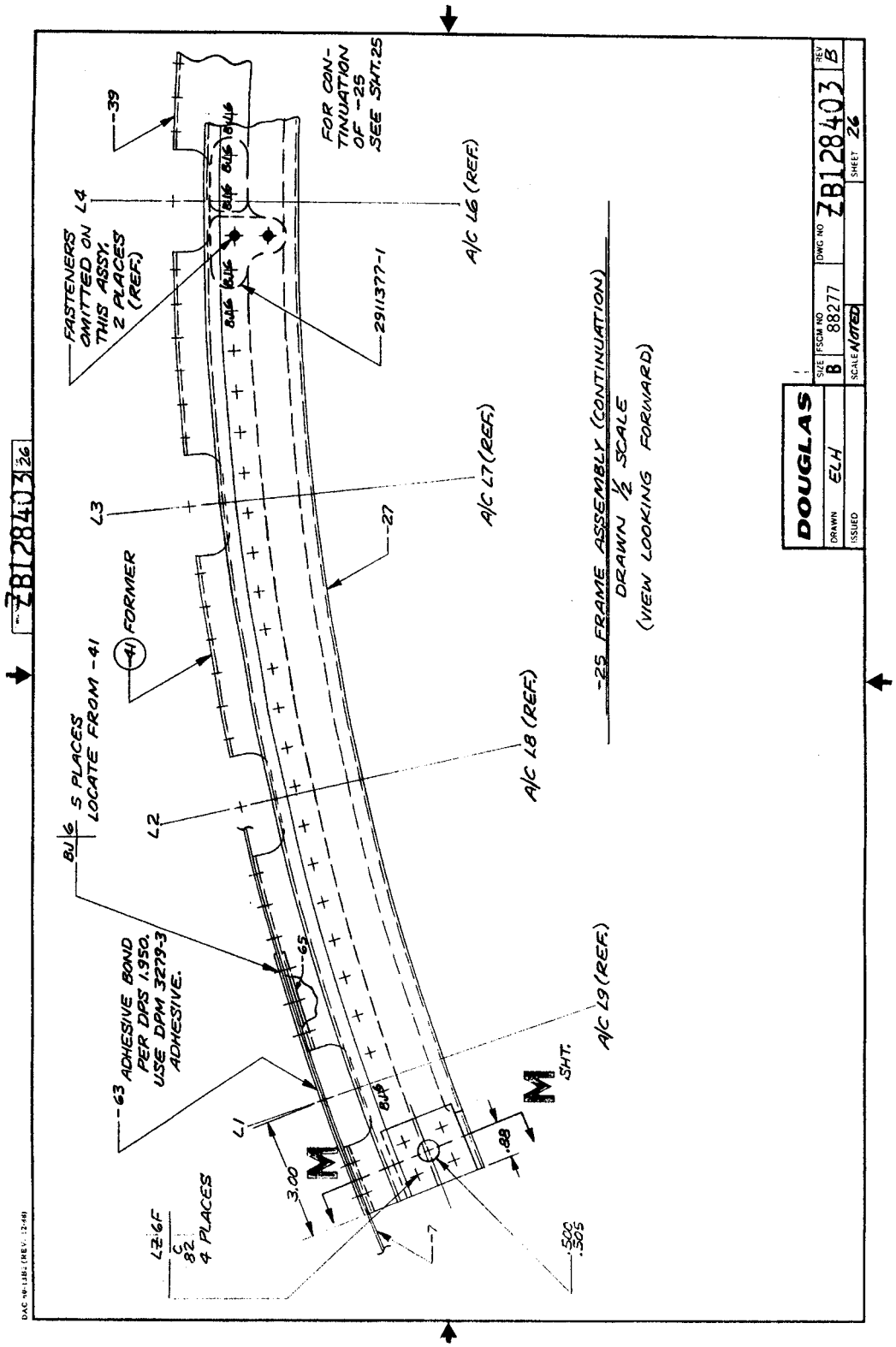

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

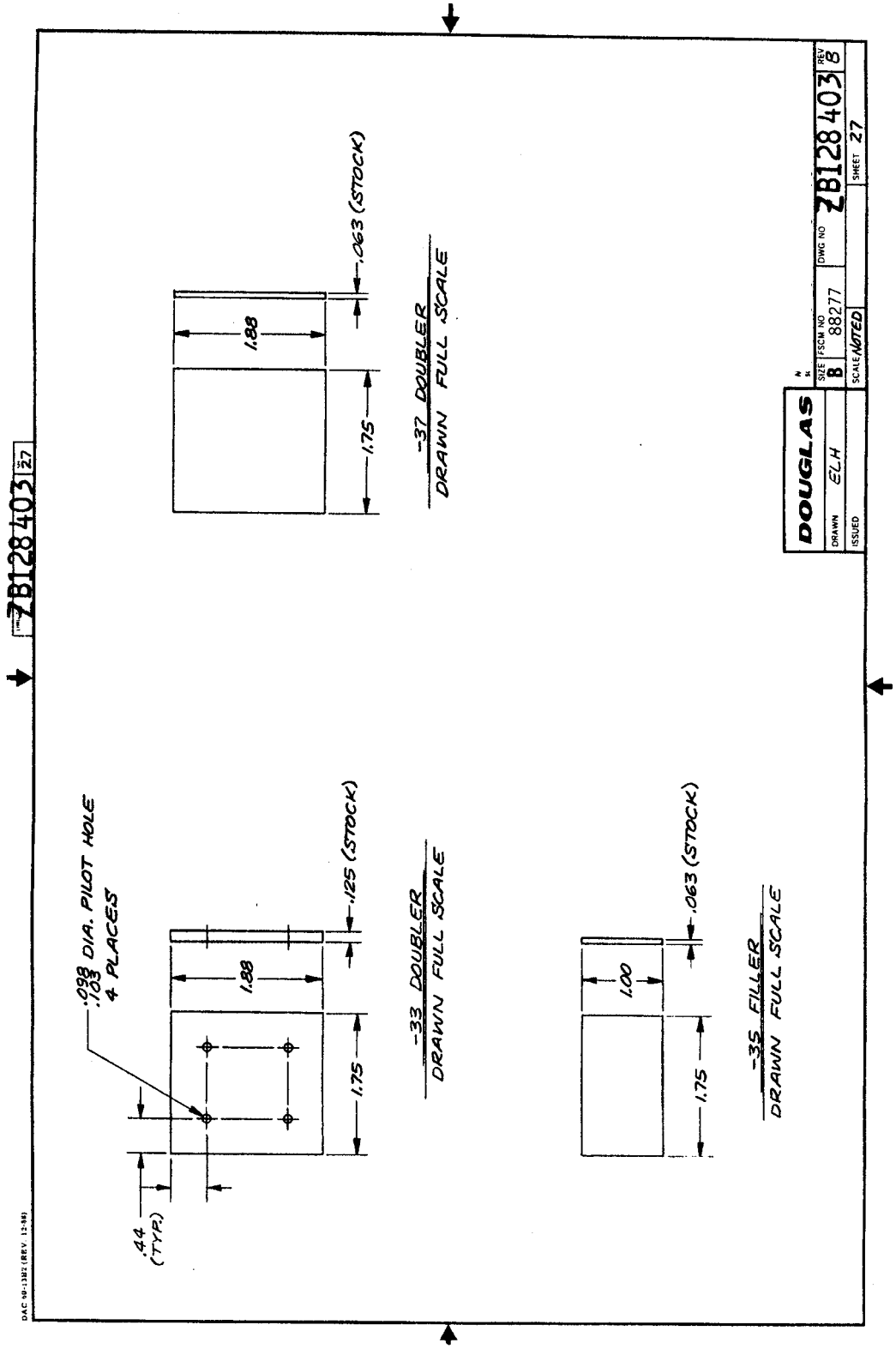

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

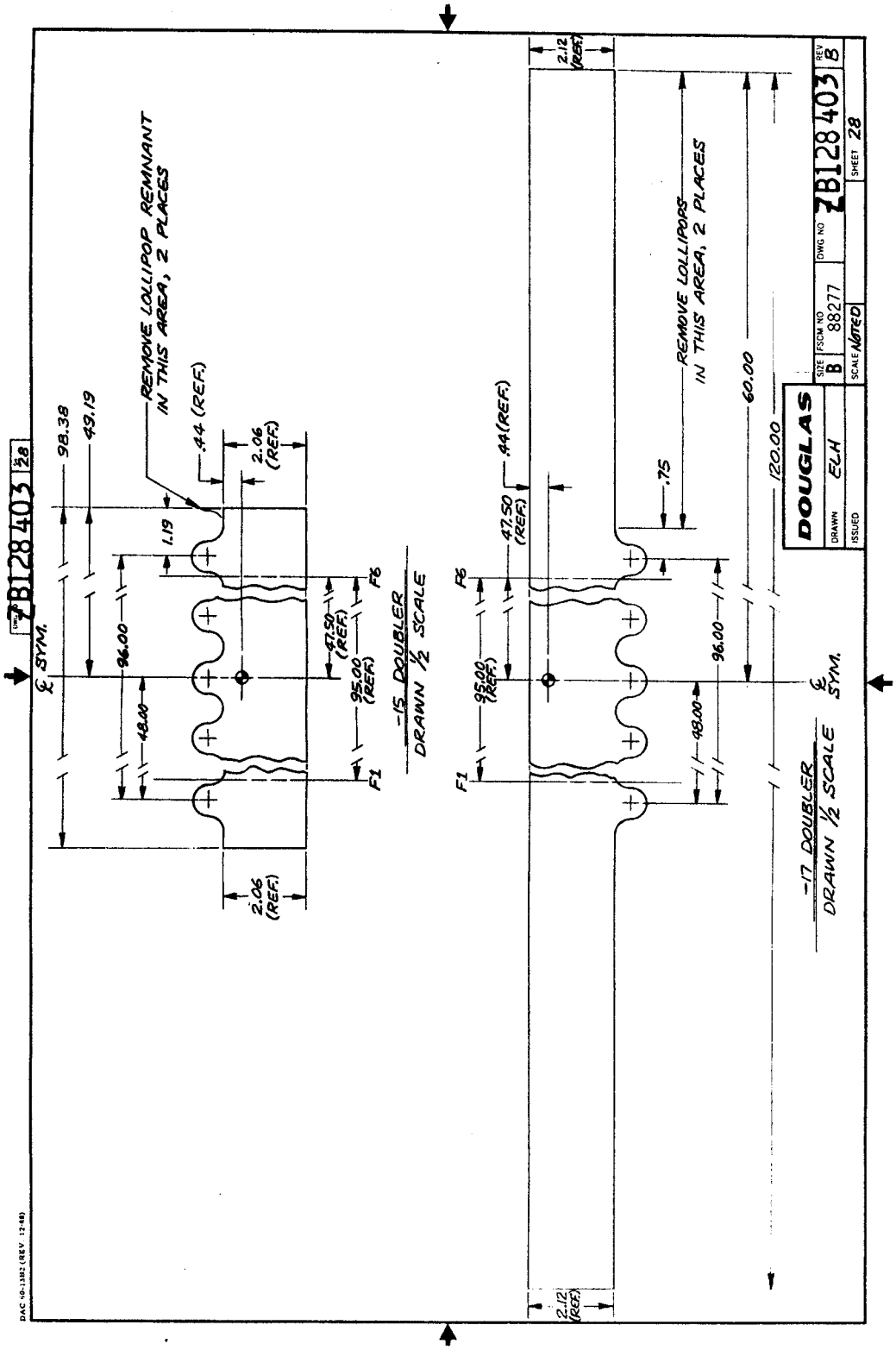

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

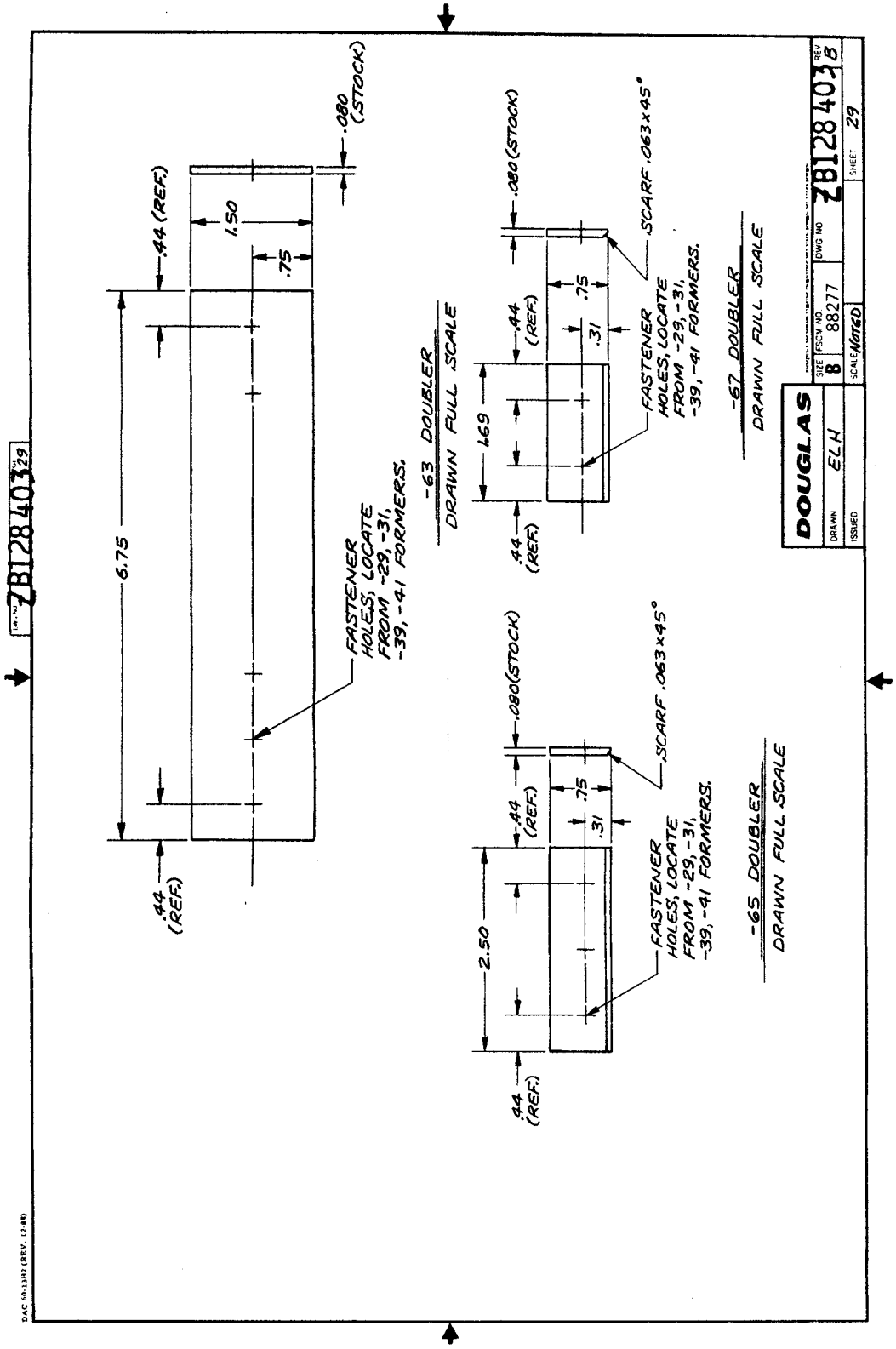

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

C/C CONTROL CODE

B	BULK MATL	P1	PURCH DAC PART–SUP MATL
C	CUST FURN CUST INSTL	P2	PURCH DAC PART–DAC MATL
D	CUST FURN DAC INSTL	R	REWORK OR REPAIR PART
F	CUST FURN INSTL CHECK	S	DAC STANDARD PART
G	GOVT OR IND STANDARD	V	SUPPLIER ITEM–SPEC CONT
L	COMM'L SHELF ITEM	X	PROCESS REQD BY SCN
M	'MAKE FROM' ITEM	Z	REF DOCUMENT
M–	'MAKE FROM' DAC ITEM	–	DAC DRAWING NOT STD PART

CONTRACT NUMBER DTFA03-96-C-00027 DWG SIZE B DWG NO. PL ZB128403 REV B

TITLE (NOUN PHRASE) PANEL ASSEMBLY SHEET 1 OF 5

ENGINEER/DRAFTSMAN E.L. HAYMAN DATE 7-8-97

DESIGN GROUP ATAS D&DT

PRSX	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17		PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	CAGE NO.	C/C	STOCK SIZE	PARTS LIST CODE OR (MATERIAL DESCRIPTION)	MATERIAL SPECIFICATION (AND/OR SUPPLIER)	NOTES	ITEM FIND NO.	SHT.	PRSX
										-25	-23	-509	-507	-505	-503	-501	-1												
															1	1	1	1	-3	SKIN			.063×36×120 GR. LONG.	AL SHEET CLAD 2024-T3	QQ-A-250/5 TEMP. T3			5	
															1	1	1	2	-5	SKIN			.063×35×120 GR. LONG.	AL SHEET CLAD 2024-T3	QQ-A-250/5 TEMP. T3			5	
												2	2	2				3	-7	SKIN			.063×60×68 GR. XWISE	AL SHEET CLAD 2024-T3	QQ-A-250/5 TEMP. T3			6	
															1	1	1	4	-9	LONGERON			MAKE FROM S00067-10000					5	
															6	6	6	5	-11	LONGERON			MAKE FROM S2777922-6-10000					5	
												14	14	14				6	-13	LONGERON			MAKE FROM S2777922-6-5000					6	
															1	1	1	7	-15	DOUBLER			MAKE FROM S00056-3-12000					5	
															1	1	1	8	-17	DOUBLER			MAKE FROM S00056-10-12000					5	
												1	1	1				9	-19	DOUBLER			MAKE FROM 5936017-27					6	
												1	1	1				10	-21	SPLICE			MAKE FROM 5936017-25					6	
															6	6	6	11	-23	FRAME ASSEMBLY								5	
												6	6	6				12	-25	FRAME ASSEMBLY								6	

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

S C CONTROL CODE

B BULK MATL
C CUST FURN CUST INSTL
D CUST FURN DAC INSTL
F CUST FURN INSTL CHECK
G GOVT DR IND STANDARD
L COMML SHELF ITEM
M MAKE FROM ITEM
M- MAKE FROM DAC ITEM

DTFA03-96-C-00027 DWG SIZE B DWG NO PL ZB128403 REV B

TITLE NOUN PHRASE PANEL ASSEMBLY

SHEET 2 OF 5

DRAFTSMAN EJH DATE 7-8-97
DESIGN SECTION D&DT

	10 -25	11 -23	12 -509	13 -507	14 -505	15 -503	16 -501	17 -1		PART OR IDENT FIND NO	NOMENCLATURE OR DESCRIPTION			STOCK SIZE	MATERIAL DESCRIPTION (OR PL CODE)	MATERIAL SPECIFICATION (AND OR SUPPLIER)		ITEM FIND NO	SHT.	
1	1	1							1	-27	FRAME			MAKE FROM 5911447-515					23	
2		1							2	-29	FORMER			MAKE FROM 9911528-11					23	
3		1							3	-31	FORMER			MAKE FROM 9911521-25					24	
4	2	2							4	-33	DOUBLER			.125×2×2	AL SHEET CLAD 2024-T3	QQ-A-250/5 TEMP. T3			23	
5	2	2							5	-35	FILLER			.063×1×2 GR. OPT.	AL SHEET CLAD 2024-T3	QQ-A-250/5 TEMP. T3			23	
6	2	2							6	-37	DOUBLER			.063×2×2	AL SHEET CLAD 2024-T3	QQ-A-250/5 TEMP. T3			23	
7	1								7	-39	FORMER			MAKE FROM 9911521-25					25	
8	1								8	-41	FORMER			MAKE FROM 9936513-5					26	
			4	4	4	4	4	4		-43	DOUBLER			.063×9×112 GR. LONG.	AL SHEET CLAD 2024-T3	QQ-A-250/5 TEMP. T3			4	
			4	4	4	4	4	4		-45	DOUBLER			.063×4×112 GR. LONG.	↕	↕			4	
			4	4	4	4	4	4		-47	DOUBLER			.063×3×112 GR. LONG.	↕	↕			4	
			4	4	4					-49	DOUBLER			.063×3×56 GR. LONG.	AL SHEET CLAD 2024-T3	QQ-A-250/5 TEMP. T3			14	

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

C/C CONTROL CODE

B	BULK MATL	P1	PURCH DAC PART-SUP MATL
C	CUST FURN CUST INSTL	P2	PURCH DAC PART-DAC MATL
D	CUST FURN DAC INSTL	R	REWORK OR REPAIR PART
F	CUST FURN INSTL CHECK	S	DAC STANDARD PART
G	GOVT OR IND STANDARD	V	SUPPLIER ITEM-SPEC CONT
L	COMML SHELF ITEM	X	PROCESS REQD BY SCN
M	'MAKE FROM' ITEM	Z	REF DOCUMENT
M-	'MAKE FROM' DAC ITEM	~	DAC DRAWING NOT STD PART

CONTRACT NUMBER DTFA03-96-C-00027 DWG SIZE B DWG NO. PL ZB128403 REV B

TITLE (NOUN PHRASE) PANEL ASSEMBLY SHEET 3 OF 5

ENGINEER/DRAFTSMAN E.L. HAYMAN DATE 7-8-97

DESIGN GROUP ATAS D&DT

IPRSX	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17		PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	CAGE NO.	C/C	STOCK SIZE	PARTS LIST CODE OR (MATERIAL DESCRIPTION)	MATERIAL SPECIFICATION (AND/OR SUPPLIER)	NOTES	ITEM FIND NO.	~~SEE~~ SHT.	IPRSX
										-25	-23	-509	-507	-505	-503	-501	-1												
																		1	-51	CANCELLED									
																		2	-53	CANCELLED									
																		3	-55	CANCELLED									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	4	-57	CANCELLED									
																		5	-59	CANCELLED									
																		6	-61	CANCELLED									
												12	12	12	12	12	12	7	-63	DOUBLER			.080×2×7 GR. LONG.	AL SHEET CLAD 2024-T3	QQ-A-250/5 TEMP. T3			23	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17												
												12	12	12	12	12	12	8	-65	DOUBLER			.080×1×3 GR. OPT.	↑	↑			14	
												12	12	12	12	12	12	9	-67	DOUBLER			.080×1×2 GR. OPT.					14	
															2	2	2	10	-69	DOUBLER			.080×3×27 GR. LONG.					13	
															4	4	4	11	-71	DOUBLER			.080×3×28 GR. LONG.	↓	↓			13	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17												
															2	2	2	12	-73	DOUBLER			.080×3×28 GR. LONG.	AL SHEET CLAD 2024-T3	QQ-A-250/5 TEMP. T3			13	

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

C/C CONTROL CODE

B	BULK MATL	P1	PURCH DAC PART–SUP MATL
C	CUST FURN CUST INSTL	P2	PURCH DAC PART–DAC MATL
D	CUST FURN DAC INSTL	R	REWORK OR REPAIR PART
F	CUST FURN INSTL CHECK	S	DAC STANDARD PART
G	GOVT OR IND STANDARD	V	SUPPLIER ITEM–SPEC CONT
L	COMML SHELF ITEM	X	PROCESS REQD BY SCN
M	'MAKE FROM' ITEM	Z	REF DOCUMENT
M–	'MAKE FROM' DAC ITEM	–	DAC DRAWING NOT STD PART

CONTRACT NUMBER DTFA03-96-C-00027 DWG SIZE B DWG NO. PLZB128403 REV B

TITLE (NOUN PHRASE) PANEL ASSEMBLY SHEET 4 OF 5

ENGINEER/DRAFTSMAN DATE 7-8-97

DESIGN GROUP ATAS D&DT

IPRSX	1	2	3	4	5	6	7	8	9	10 -25	11 -23	12 -509	13 -507	14 -505	15 -503	16 -501	17 -1		PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	CAGE NO.	C/C	STOCK SIZE	PARTS LIST CODE OR (MATERIAL DESCRIPTION)	MATERIAL SPECIFICATION (AND/OR SUPPLIER)	NOTES	ITEM FIND NO.	SHT.	IPRSX
										1	1							1	2911377-1	GUSSET								23	
												6	6	6	6	6	6	2	2913044-1	GUSSET								7	
												2	2	2	3	3	3	3	3913490-1	INTERCOSTAL								9	
												3	3	3	3	3	3	4	2913045-1	CLIP								7	
												1	1	1				5	9951791-3	INTERCOSTAL								7	
												7	7	7				6	3936474-1	SPLICE								8	
												28	28	28				7	S2933625 D22-130	SHIM								6	
																		8											
												1	1	1				9	-75	DOUBLER			MAKE FROM 5936017-27					20	
																		10											
												120	120	120				11	NAS1252-10L	WASHER									
												120	120	120				12	MS21042-3	NUT									

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

MY

C/C CONTROL CODE

B	BULK MATL	P1	PURCH DAC PART–SUP MATL
C	CUST FURN CUST INSTL	P2	PURCH DAC PART–DAC MATL
D	CUST FURN DAC INSTL	R	REWORK OR REPAIR PART
F	CUST FURN INSTL CHECK	S	DAC STANDARD PART
G	GOVT OR IND STANDARD	V	SUPPLIER ITEM–SPEC CONT
L	COMMA SHELF ITEM	X	PROCESS REQD BY SCN
M	'MAKE FROM' ITEM	Z	REF DOCUMENT
M–	'MAKE FROM' DAC ITEM	–	DAC DRAWING NOT STD PART

CONTRACT NUMBER DTFA03-96-C-00027 DWG SIZE B DWG NO. PL ZB128403 REV B

TITLE (NOUN PHRASE) PANEL ASSEMBLY SHEET 5 OF 5

ENGINEER/DRAFTSMAN E.L. HAYMAN DATE 7-8-97

DESIGN GROUP ATAS D&DT

PASX	1	2	3	4	5	6	7	8	9	10 -25	11 -23	12 -509	13 -507	14 -505	15 -503	16 -501	17 -1		PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	CAGE NO.	C/C	STOCK SIZE	PARTS LIST CODE OR (MATERIAL DESCRIPTION)	MATERIAL SPECIFICATION (AND/OR SUPPLIER)	NOTES	ITEM FIND NO.	ZONE	IPRSX
												A/R	A/R	A/R	A/R	A/R	A/R	1	MS20470AD5	RIVET			INDICATED	THUS	BJ 5				
										A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	2	MS20470AD6	RIVET			INDICATED	THUS	BJ 6				
										A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	3	NAS1097AD6	RIVET			INDICATED	THUS	LZ 6				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17													
											70	70	70					4	3D0009-6	PIN			INDICATED	THUS	B				
											28	28	28					5	2D0009-6	PIN			INDICATED	THUS	XHW 6				
											84	84	84	84	84	84		6	HL518-6	PIN									
											84	84	84	84	84	84		7	AN960-C10L	WASHER									
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17													
											84	84	84	84	84	84		8	MS21043-3	NUT									
											70	70	70					9	BH00601-3	NUT									
											28	28	28					10	3D0007-3	NUT ASSY.									
														A/R	A/R	A/R		11	NAS1097KE6	RIVET			INDICATED	THUS	ASS 6				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17													
											120	120	120					12	S4931919-6	PIN			INDICATED	THUS	XES 6				

FIGURE H-1. CURVED PANEL ASSEMBLY DRAWINGS (Continued)

ZB128403-1 (CVP-1) AND -501 (CVP-2) PANELS

Strain Gage No. (View)	Location	
	Name and P/N	Dimensional
1 (C)	Outside of Frame Flange F2, P/N ZB128403-27	Midway Between L3 & L4 (3.75), Center of Flange (0.46)
2 (C)	Inside of Frame Flange F2, P/N ZB128403-27	Midway Between L3 & L4 (3.75), Center of Flange (0.39)
3 (C)	Outside of Frame Flange F3, P/N ZB128403-27	Midway Between L3 & L4 (3.75), Center of Flange (0.46)
4 (C)	Inside of Frame Flange F3, P/N ZB128403-27	Midway Between L3 & L4 (3.75), Center of Flange (0.39)
5 (C)	Outside of Frame Flange F4, P/N ZB128403-27	Midway Between L3 & L4 (3.75), Center of Flange (0.46)
6 (C)	Inside of Frame Flange F4, P/N ZB128403-27	Midway Between L3 & L4 (3.75), Center of Flange (0.39)
7 (C)	Outside of Frame Flange F5, P/N ZB128403-27	Midway Between L3 & L4 (3.75), Center of Flange (0.46)
8 (C)	Inside of Frame Flange F5, P/N ZB128403-27	Midway Between L3 & L4 (3.75), Center of Flange (0.39)
9 (C)	Outside of Frame Flange F3, P/N ZB128403-27	Midway Between L4 & L5 (3.75), Center of Flange (0.46)
10 (C)	Inside of Frame Flange F3, P/N ZB128403-27	Midway Between L4 & L5 (3.75), Center of Flange (0.39)
11 (C)	Outside of Frame Flange F4, P/N ZB128403-27	Midway Between L4 & L5 (3.75), Center of Flange (0.46)
12 (C)	Inside of Frame Flange F4, P/N ZB128403-27	Midway Between L4 & L5 (3.75), Center of Flange (0.39)
13 (C)	Outside of Frame Flange F5, P/N ZB128403-27	Midway Between L4 & L5 (3.75), Center of Flange (0.46)
14 (C)	Inside of Frame Flange F5, P/N ZB128403-27	Midway Between L4 & L5 (3.75), Center of Flange (0.39)
15 (C)	Outside of Frame Flange F3, P/N ZB128403-27	Midway Between L6 & L7 (3.75), Center of Flange (0.46)
16 (C)	Inside of Frame Flange F3, P/N ZB128403-27	Midway Between L6 & L7 (3.75), Center of Flange (0.39)

FIGURE H-2. CURVED PANELS STRAIN GAGE LOCATIONS

ZB128403-1 (CVP-1) AND -501 (CVP-2) PANELS

Strain Gage No. (View)	Location	
	Name and P/N	Dimensional
17 (C)	Outside of Frame Flange F4, P/N ZB128403-27	Midway Between L6 & L7 (3.75), Center of Flange (0.46)
18 (C)	Inside of Frame Flange F4, P/N ZB128403-27	Midway Between L6 & L7 (3.75), Center of Flange (0.39)
19 (C)	Outside of Frame Flange F5, P/N ZB128403-27	Midway Between L6 & L7 (3.75), Center of Flange (0.46)
20 C)	Inside of Frame Flange F5, P/N ZB128403-27	Midway Between L6 & L7 (3.75), Center of Flange (0.39)
21 (D)	Outside of Longeron Flange L2, P/N ZB128403-11	Aft of Frame F3 (8.88), Center of Flange (0.37)
22 (D)	Inside of Longeron Hat L2, P/N ZB128403-11	Aft of Frame F3 (8.88), Center of Hat (0.35)
23 (D)	Outside of Longeron Flange L3, P/N ZB128403-11	Aft of Frame F3 (8.88), Center of Flange (0.37)
24 (D)	Inside of Longeron Hat L3, P/N ZB128403-11	Aft of Frame F3 (8.88), Center of Hat (0.35)
25 (D)	Outside of Longeron Flange L4, P/N ZB128403-9	Aft of Frame F3 (9.09), Center of Flange (0.37)
26 (D)	Inside of Longeron Hat L4, P/N ZB128403-9	Aft of Frame F3 (9.09), Center of Hat (0.38)
27 (D)	Outside of Longeron Flange L5, P/N ZB128403-11	Aft of Frame F3 (8.88), Center of Flange (0.37)
28 (D)	Inside of Longeron Hat L5, P/N ZB128403-11	Aft of Frame F3 (8.88), Center of Hat (0.35)
29L (E) 29-45, 29T	Exterior Surface of Skin, P/N ZB128403-3	Midway Between Frames F1 & F2 (9.50) and Longerons L3 & L4 (3.75)
30L (E) 30-45, 30T	Exterior Surface of Skin, P/N ZB128403-3	Midway Between Frames F2 & F3 (9.50) and Longerons L3 & L4 (3.75)

FIGURE H-2. CURVED PANELS STRAIN GAGE LOCATIONS (Continued)

ZB128403-1 (CVP-1) AND -501 (CVP-2) PANELS

Strain Gage No. (View)	Location	
	Name and P/N	Dimensional
31L (E) 31-45, 31T	Interior Surface of Skin, P/N ZB128403-3	Midway Between Frames F3 & F4 (9.50) and Longerons L3 & L4 (3.75)
32L (E) 32-45, 32T	Exterior Surface of Skin, P/N ZB128403-3	Midway Between Frames F3 & F4 (9.50) and Longerons L3 & L4 (3.75)
33L (E) 33-45, 33T	Exterior Surface of Skin, P/N ZB128403-3	Midway Between Frames F4 & F5 (9.50) and Longerons L3 & L4 (3.75)
34L (E) 34 - 45, 34T	Exterior Surface of Skin, P/N ZB128403-3	Midway Between Frames F5 & F6 (9.50) and Longerons L3 & L4 (3.75)
35L (E) 35-45, 35T	Exterior Surface of Skin, P/N ZB128403-5	Midway Between Frames F3 & F4 (9.50) and Longerons L4 & L5 (3.75)
36L (E) 36-45, 36T	Exterior Surface of Skin, P/N ZB128403-5	Midway Between Frames F3 & F4 (9.50) and Longerons L5 & L6 (3.75)

FIGURE H-2. CURVED PANELS STRAIN GAGE LOCATIONS (Continued)

ZB128403-505 (CVP-3) AND -507 (CVBP-4) PANELS

Strain Gage No. (View)	Location	
	Name and P/N	Dimensional
1 (F)	Outside of Frame Flange F3, P/N ZB128403-27	Midway Between L2 & L3 (3.75), Center of Flange (0.46)
2 (F)	Outside of Frame Flange F3, P/N ZB128403-27	Midway Between L3 & L4 (3.75), Center of Flange (0.46)
3 (F)	Outside of Frame Flange F1, P/N ZB128403-27	Midway Between L4 & L5 (3.75), Center of Flange (0.46)
4 (F)	Outside of Frame Flange F2, P/N ZB128403-27	Midway Between L4 & L5 (3.75), Center of Flange (0.46)
5 (F)	Outside of Frame Flange F3, P/N ZB128403-27	Midway Between L4 & L5 (3.75), Center of Flange (0.46)
6 (F)	Inside of Frame Flange F3, P/N ZB128403-27	Midway Between L4 & L5 (3.75), Center of Flange (0.39)
7 (F)	Outside of Frame Flange F4, P/N ZB128403-27	Midway Between L4 & L5 (3.75), Center of Flange (0.46)
8 (F)	Inside of Frame Flange F3, P/N ZB128403-27	Midway Between L5 & L6 (3.75), Center of Flange (0.39)
9 (F)	Outside of Frame Flange F3, P/N ZB128403-27	Midway Between L4 & L5 (3.75), Center of Flange (0.46)
10 (M)	Outside of Longeron Flange L1, P/N ZB128403-13	FWD. of F2 (8.87), on Center of Flange (0.37)
11 (G)	Outside of Splice Flange L2, P/N 3936474-1	FWD. of C_L SYM. (2.25), on Center of Flange (0.43)
12 (G)	Inside of Splice Hat L2, P/N 3936474-1	FWD. of C_L SYM. (2.25), on Center of Hat (0.26)
13 (H)	Outside of Longeron Flange L3, P/N ZB128403-13	FWD. of C_L SYM. (7.50), on Center of Flange (0.37)
14 (H)	Inside of Longeron Hat L3, P/N ZB128403-13	FWD. of C_L SYM. (7.50), on Center of Hat (0.35)
15 (G)	Outside of Splice Flange L3, P/N 3936474-1	FWD. of C_L SYM. (2.25), on Center of Flange (0.43)
16 (G)	Inside of Splice Hat L3, P/N 3936474-1	FWD. of C_L SYM. (2.25), on Center of Hat (0.26)

FIGURE H-2. CURVED PANELS STRAIN GAGE LOCATIONS (Continued)

FOR ZB128403-505 (CVP-3) AND -507 (CVBP-4) PANELS

Strain Gage No. (View)	Location	
	Name and P/N	Dimensional
17 (M)	Inside of Longeron Hat L4, P/N ZB128403-13	FWD. of F2 (8.87), on Center of Hat (0.35)
18 (M)	Outside of Longeron Flange L4, P/N ZB128403-13	FWD. of F2 (8.87), on Center of Flange (0.37)
19 (M)	Outside of Longeron Flange L4, P/N ZB128403-13	FWD. of F3 (9.12), on Center of Flange (0.37)
20 (M)	Inside of Longeron Hat L4, P/N ZB128403-13	FWD. of F3 (9.12), on Center of Hat (0.35)
21 (H)	Inside of Longeron Hat L4, P/N ZB128403-13	FWD. of C_L SYM. (7.50), on Center of Hat (0.35)
22 (H)	Outside of Longeron Flange L4, P/N ZB128403-13	FWD. of C_L SYM. (7.50), on Center of Flange (0.37)
23 (M)	Outside of Longeron Flange L4, P/N ZB128403-13	AFT of F4 (9.12), on Center of Flange (0.37)
24 (M)	Inside of Longeron Hat L4, P/N ZB128403-13	AFT of F4 (9.12), on Center of Hat (0.35)
25 (H)	Inside of Longeron Hat L5, P/N ZB128403-13	FWD. of C_L SYM. (7.50), on Center of Hat (0.35)
26 (H)	Outside of Longeron Flange L5, P/N ZB128403-13	FWD. of C_L SYM. (7.50), ON Center of Flange (0.37)
27 (G)	Inside of Splice Hat L5, P/N 3936474-1	FWD. of C_L SYM. (2.25), on Center of Flange (0.26)
28 (G)	Outside of Splice Flange L5, P/N 3936474-1	FWD. of C_L SYM. (2.25), on Center of Flange (0.43)
29 (G)	Inside of Splice Hat L6, P/N 3936474-1	FWD. of C_L SYM. (2.25), on Center of Hat (0.26)
30 (G)	Outside of Splice Flange L6, P/N 3936474-1	FWD. of C_L SYM. (2.25), on Center of Flange (0.43)
31 (M)	Outside of Longeron Flange L7, P/N ZB128403-13	FWD. of F2 (8.87), on Center of Flange (0.37)

FIGURE H-2. CURVED PANELS STRAIN GAGE LOCATIONS (Continued)

ZB128403-505 (CVP-3) AND -507 (CVBP-4) PANELS

Strain Gage No. (View)	Location	
	Name and P/N	Dimensional
32L (J) 32-45 32T	Exterior Surface of Skin, P/N ZB128403-7	FWD. of C_L SYM. (6.25), Midway Between LONGERONS L2 & L3 (3.75)
33L (J) 33-45 33T	Exterior Surface of Skin, P/N ZB128403-7	FWD. of C_L SYM. (6.25), Midway Between LONGERONS L3 & L4 (3.75)
34L (L) 34-45 34T	Exterior Surface of Skin, P/N ZB128403-7	Midway Between Frames F2 & F3 (9.50) And Longerons L4 & L5 (3.75)
35L (L) 35-45 35T	Interior Surface of Skin, P/N ZB128403-7	Midway Between Frames F2 & F3 (9.50) And Longerons L4 & L5 (3.75)
36L (K) 36-45 36T	Exterior Surface of Skin, P/N ZB128403-7	FWD. of C_L SYM. (6.25), Midway Between Longerons L4 & L5 (3.75)
37L (K) 37-45 37T	Interior Surface of Skin, P/N ZB128403-7	FWD. of C_L SYM. (6.25), Midway Between Longerons L4 & L5 (3.75)
38L (L) 38-45 38T	Exterior Surfaces of Skin, P/N ZB128403-7	Midway Between Frames F4 & F5 (9.50) and Longerons L4 & L5 (3.75)
39L (K) 39-45 39T	Exterior Surface of Skin, P/N ZB128403-7	FWD. of C_L SYM. (6.25), Midway Between Longerons L5 & L6 (3.75)
40L (K) 40-45 40T	Interior Surface of Skin, P/N ZB128403-7	FWD. of C_L SYM. (6.25), Midway Between Longerons L5 & L6 (3.75)

FIGURE H-2. CURVED PANELS STRAIN GAGE LOCATIONS (Continued)

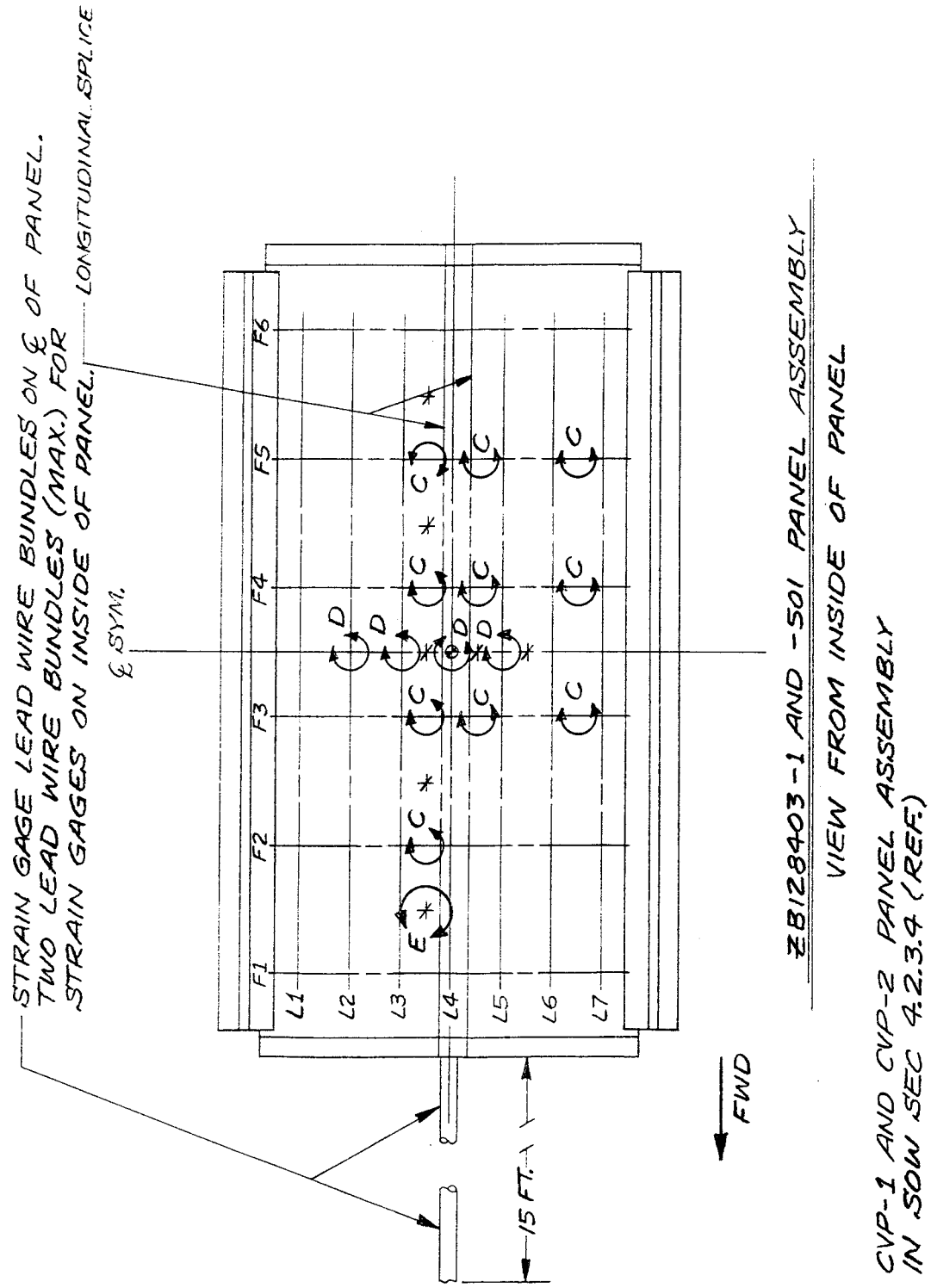

FIGURE H-2. CURVED PANELS STRAIN GAGE LOCATIONS (Continued)

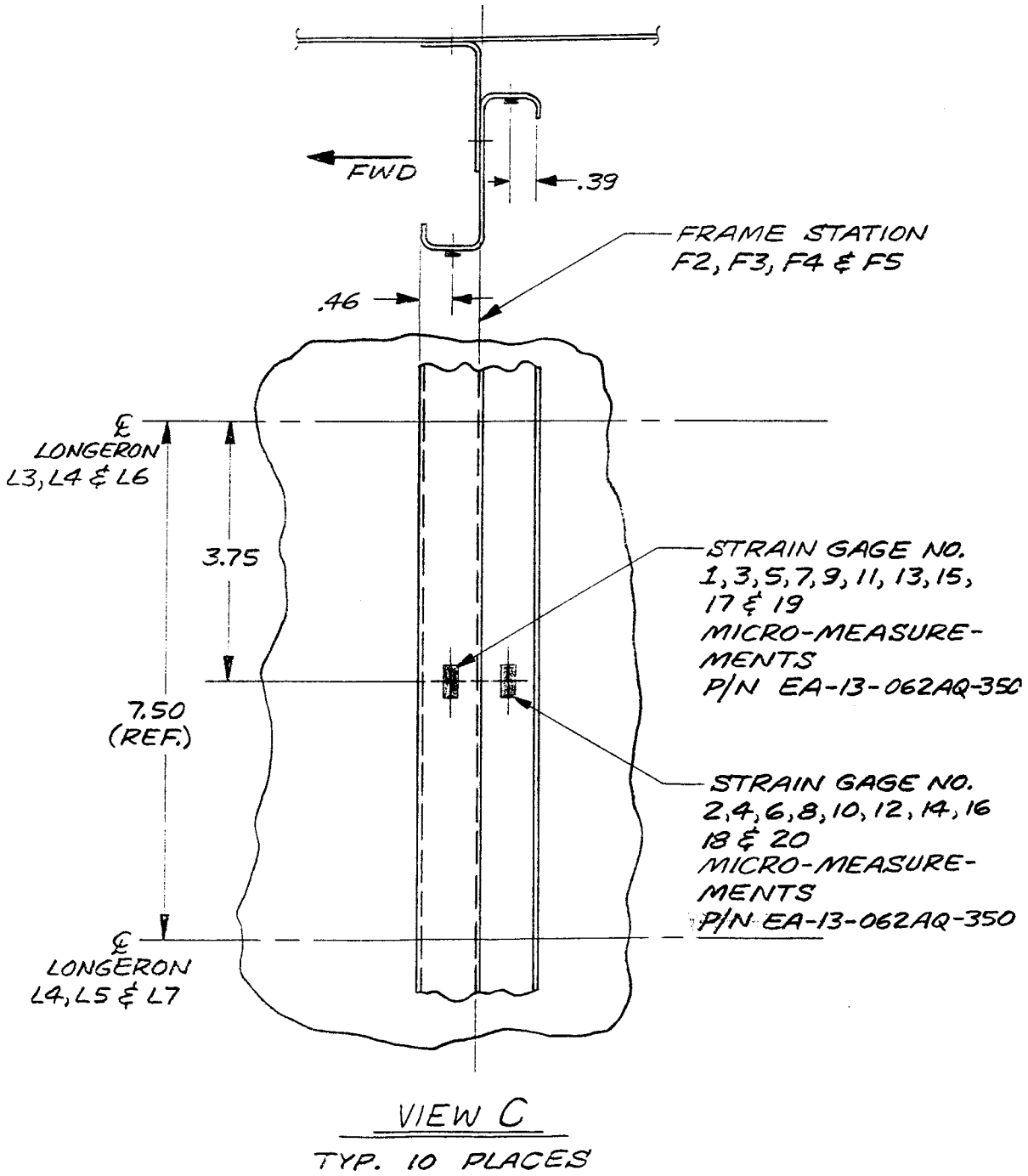

FIGURE H-2. CURVED PANELS STRAIN GAGE LOCATIONS (Continued)

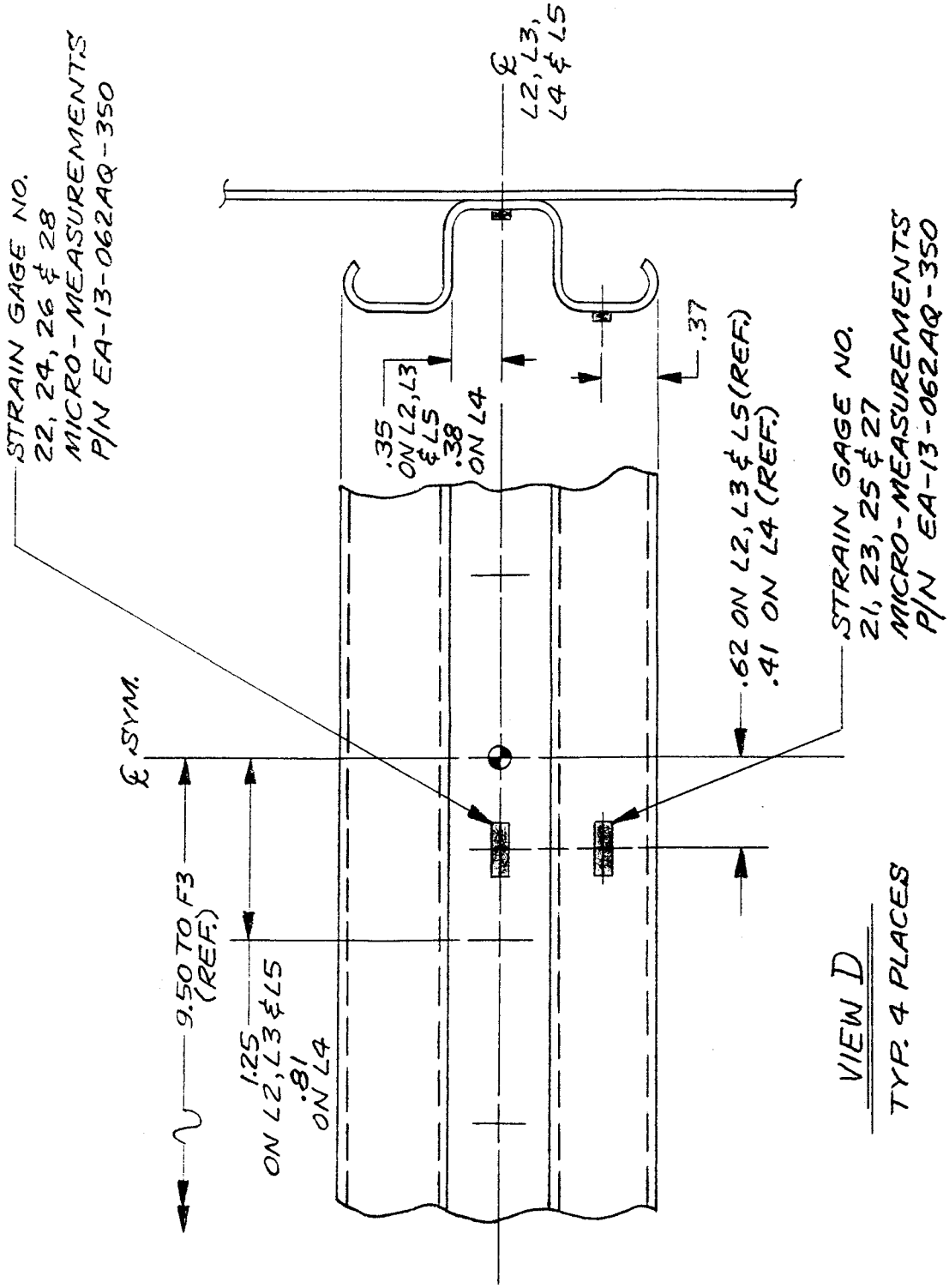

FIGURE H-2. CURVED PANELS STRAIN GAGE LOCATIONS (Continued)

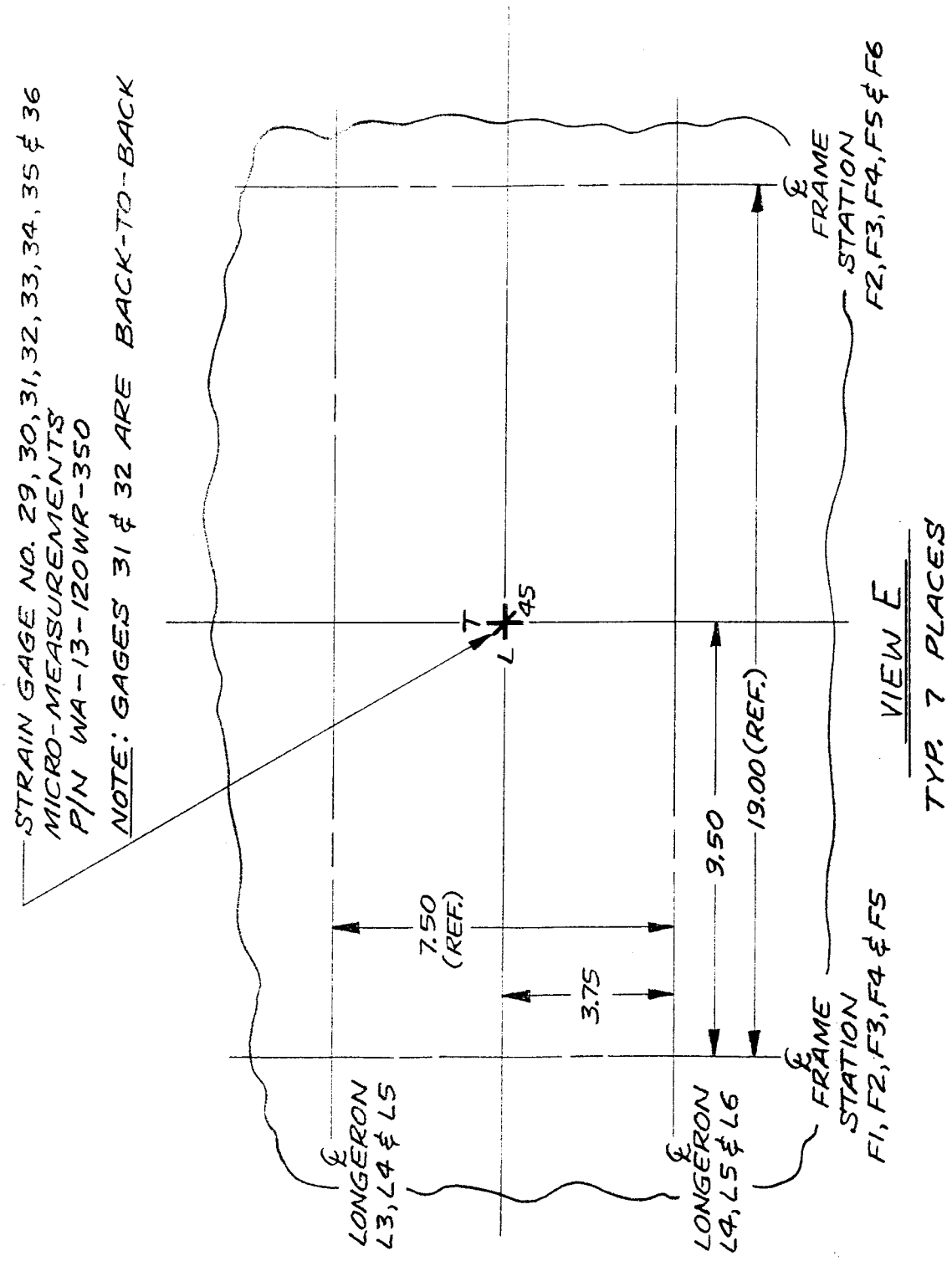

FIGURE H-2. CURVED PANELS STRAIN GAGE LOCATIONS (Continued)

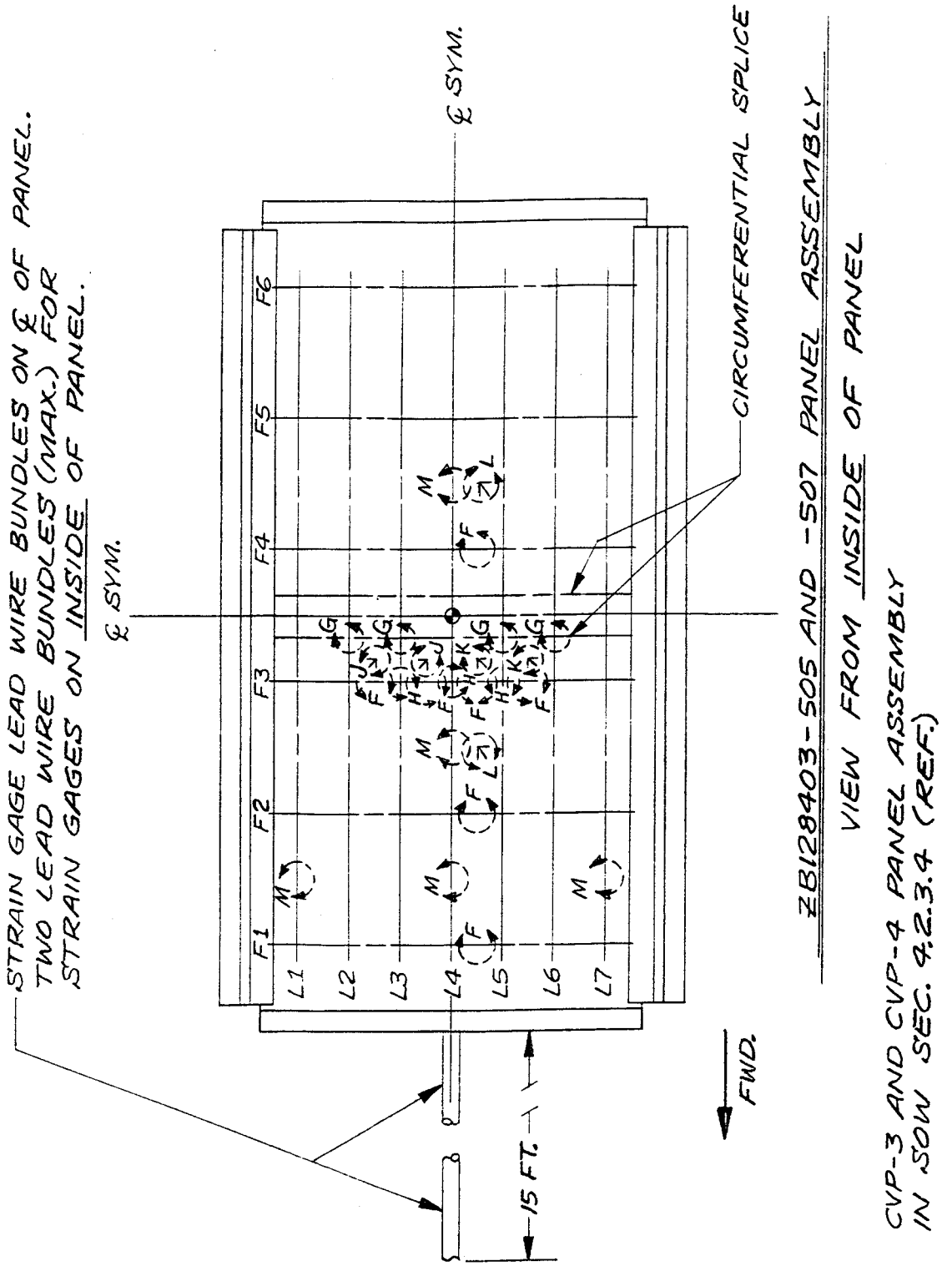

FIGURE H-2. CURVED PANELS STRAIN GAGE LOCATIONS (Continued)

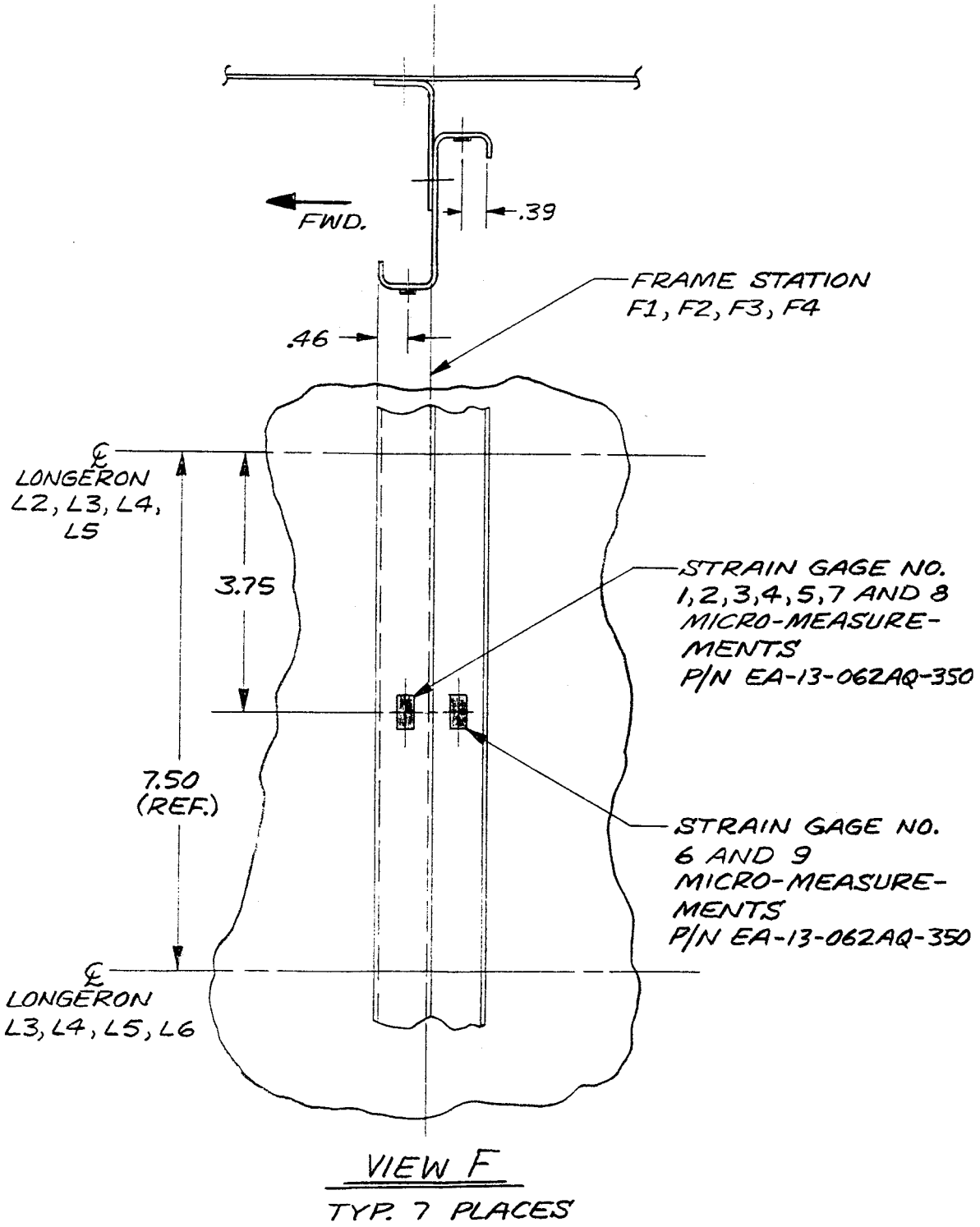

FIGURE H-2. CURVED PANELS STRAIN GAGE LOCATIONS (Continued)

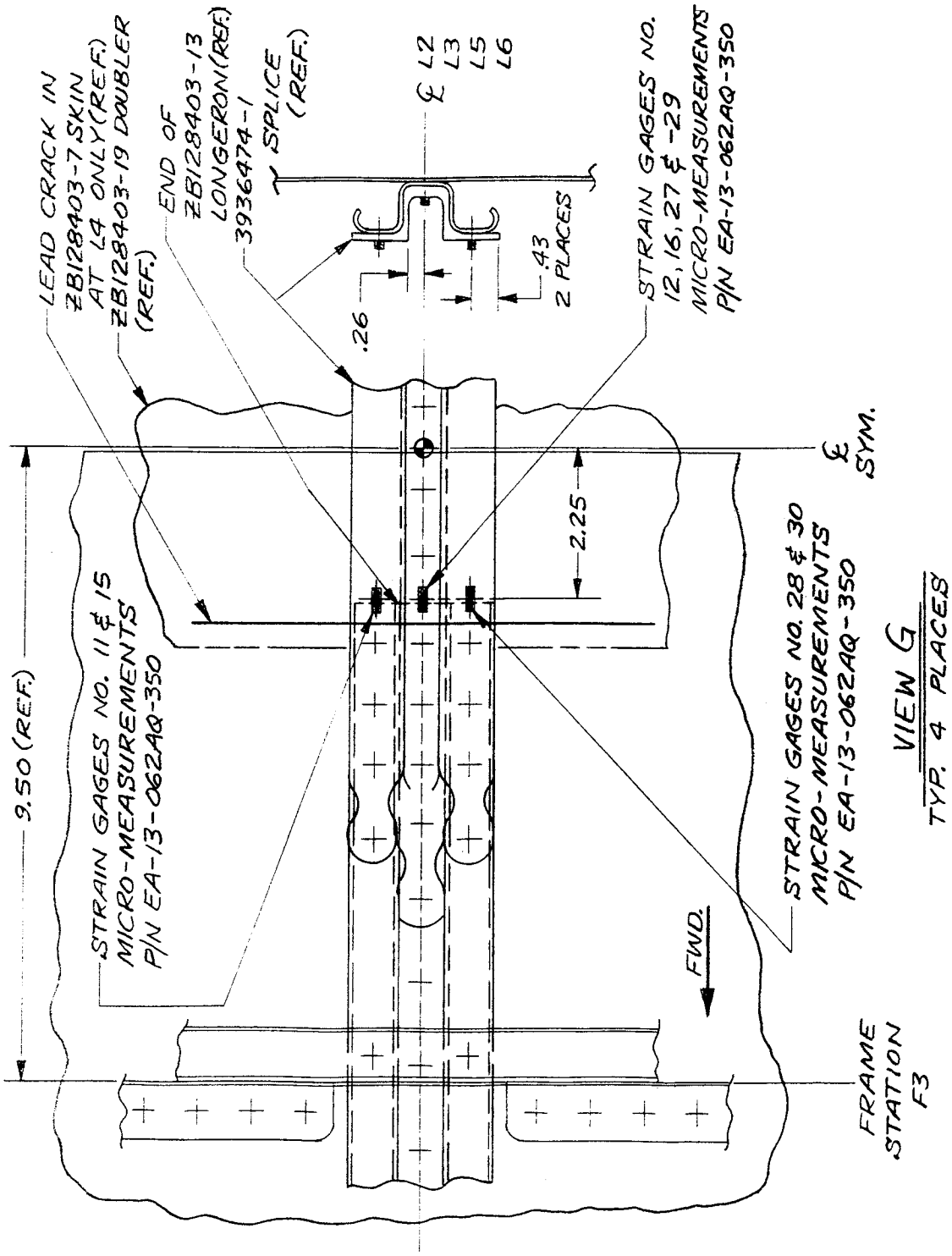

FIGURE H-2. CURVED PANELS STRAIN GAGE LOCATIONS (Continued)

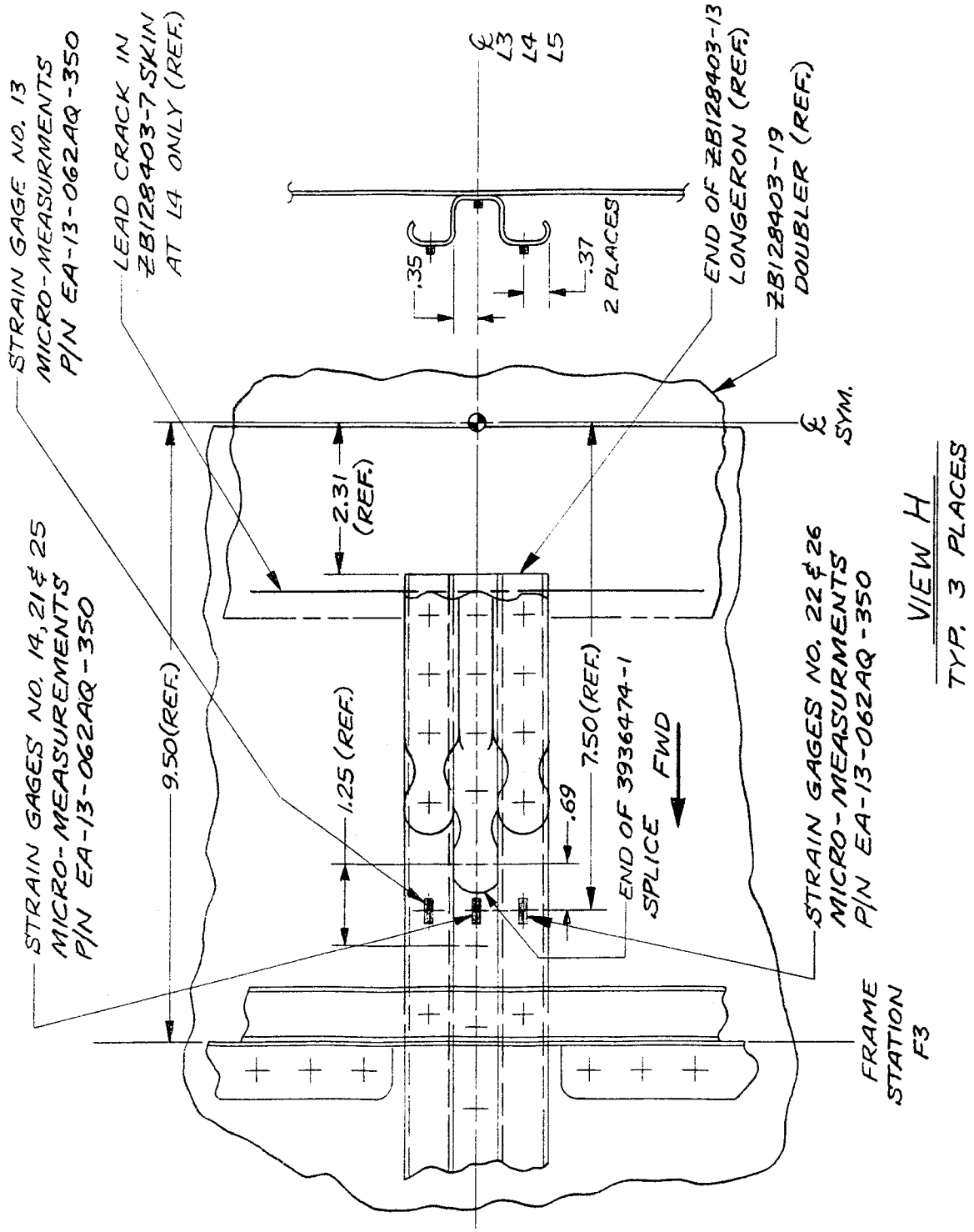

FIGURE H-2. CURVED PANELS STRAIN GAGE LOCATIONS (Continued)

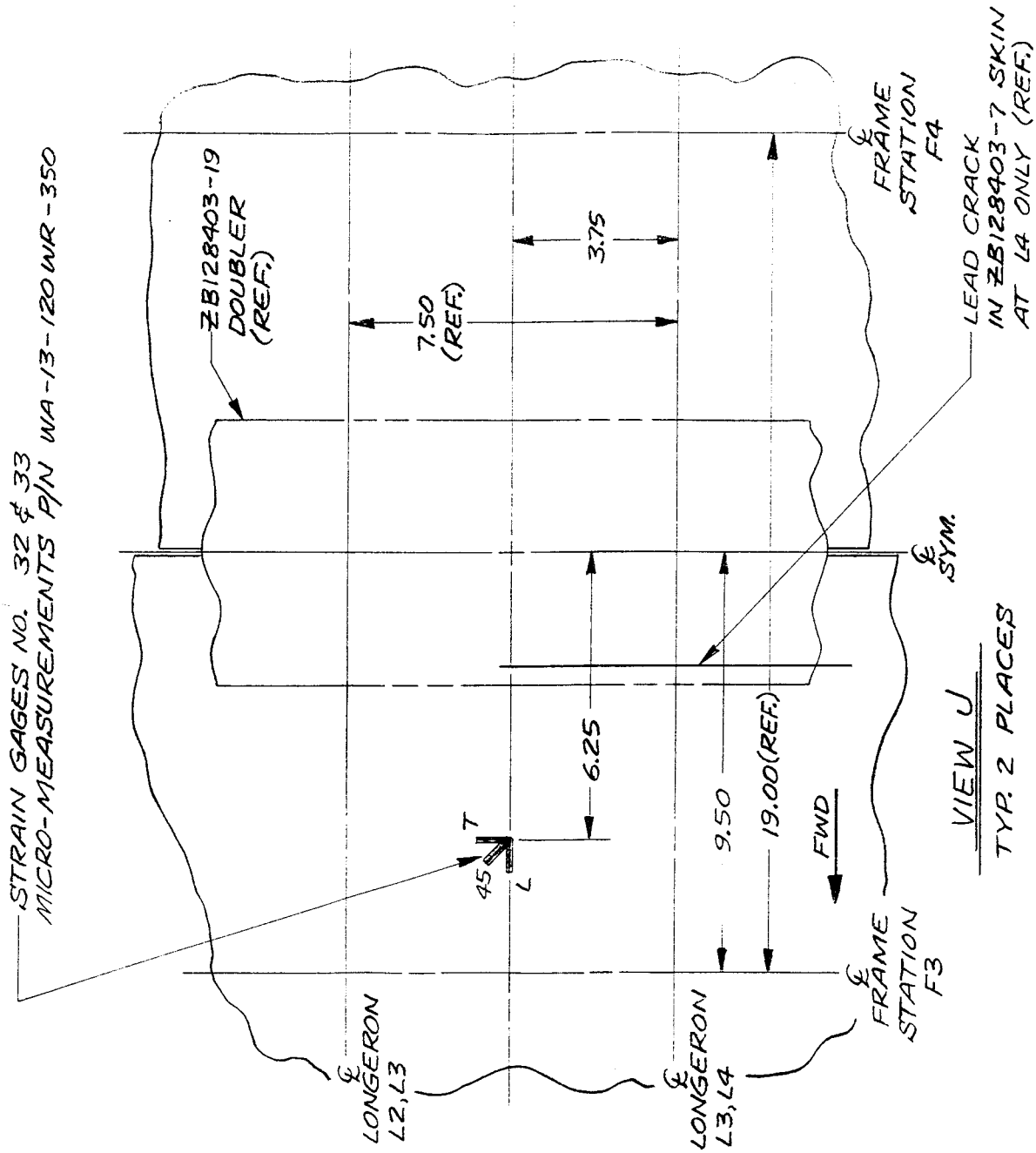

FIGURE H-2. CURVED PANELS STRAIN GAGE LOCATIONS (Continued)

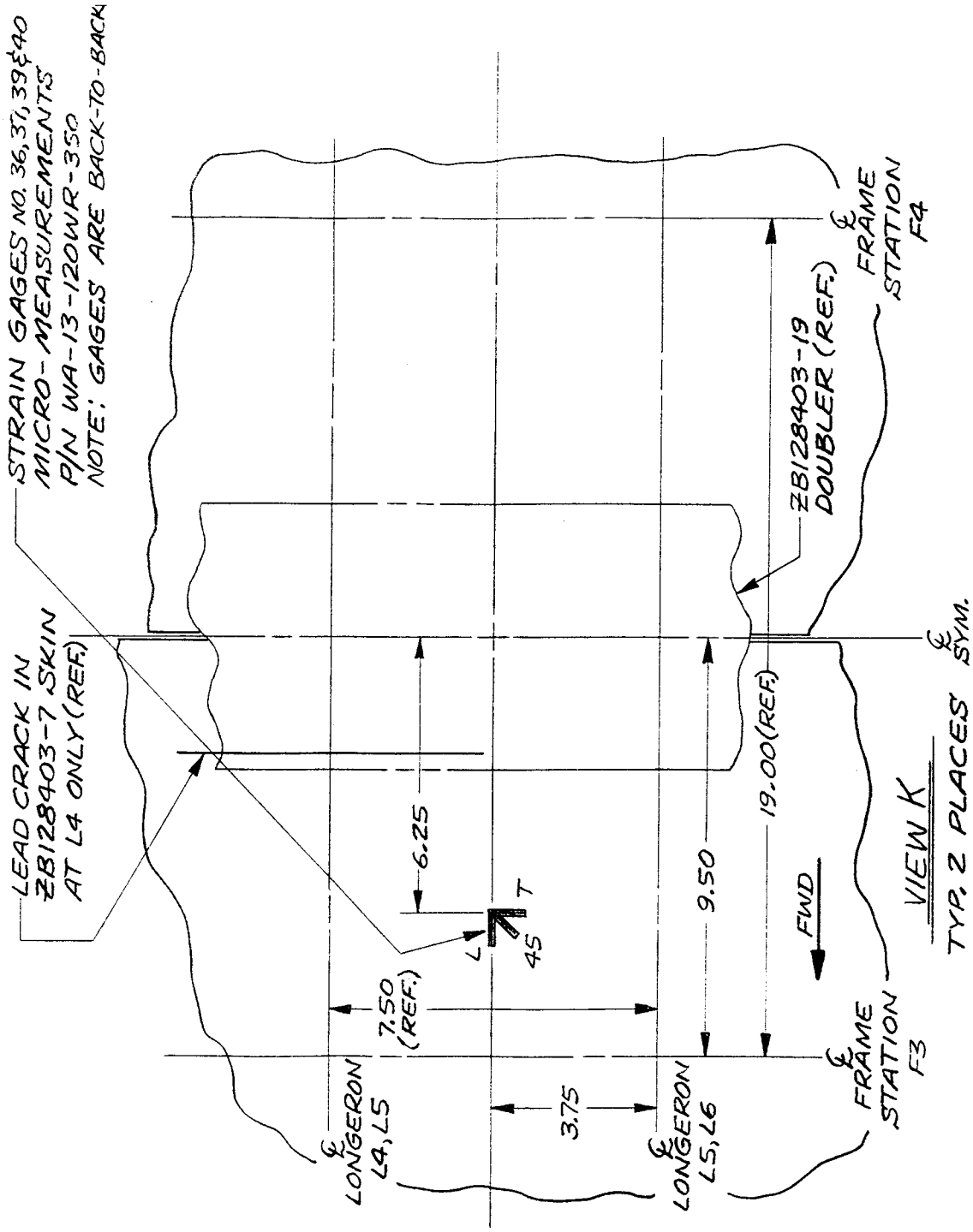

FIGURE H-2. CURVED PANELS STRAIN GAGE LOCATIONS (Continued)

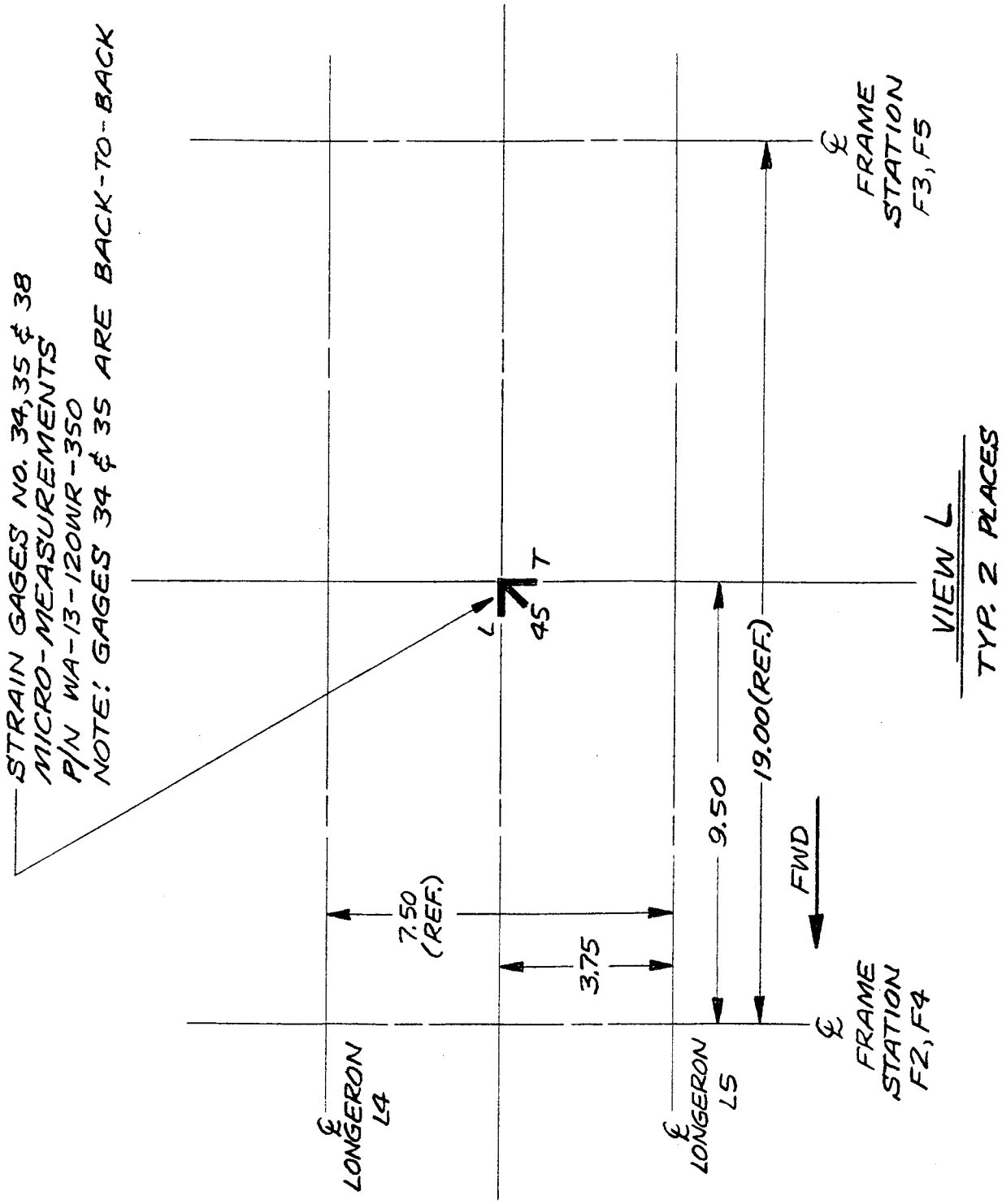

FIGURE H-2. CURVED PANELS STRAIN GAGE LOCATIONS (Continued)

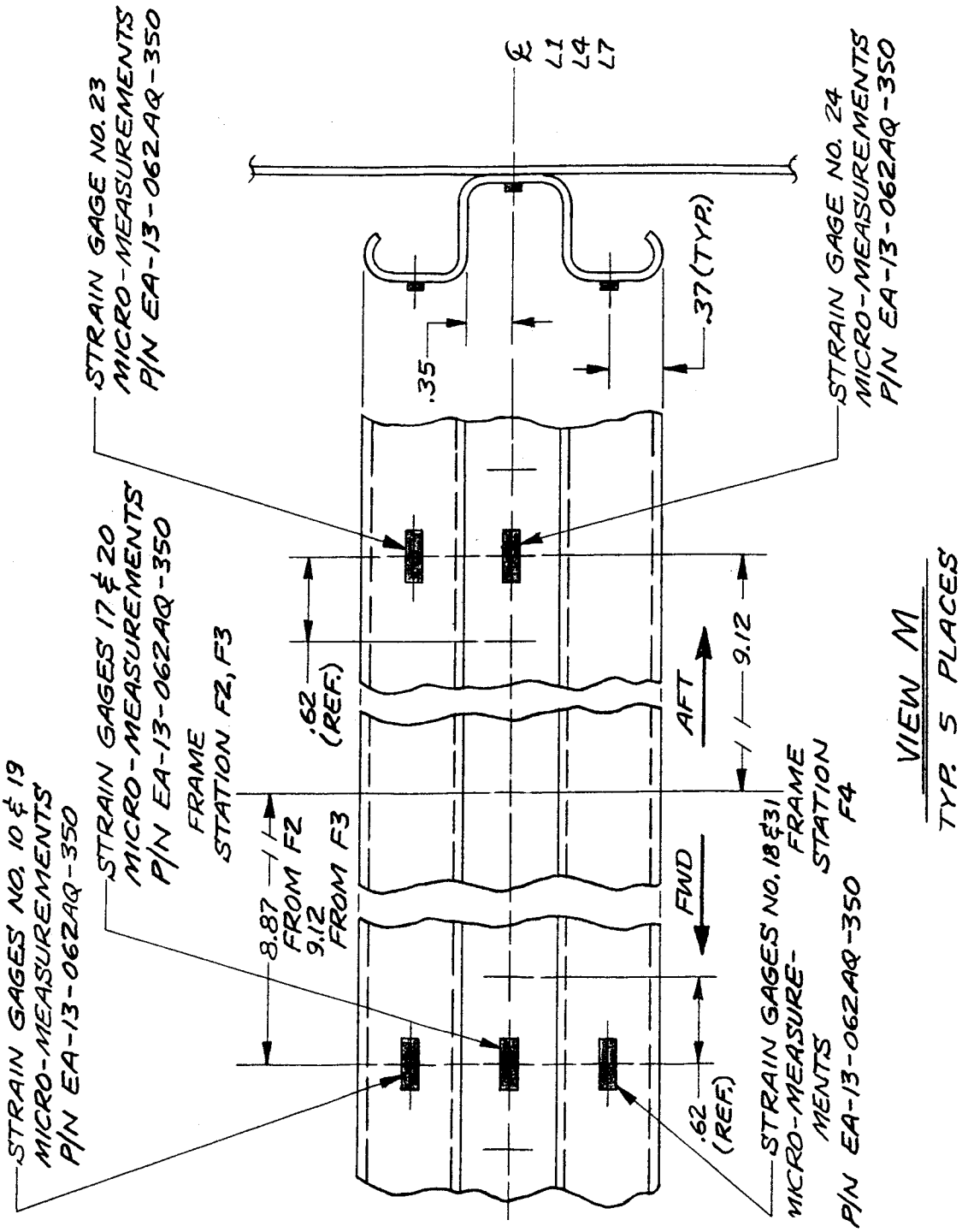

FIGURE H-2. CURVED PANELS STRAIN GAGE LOCATIONS (Continued)

TABLE H-1. STRAIN SURVEY, RUN 1

Pressure	FCL2	FCL3	FCU1	FCU2	FCU3	L4C	L4F	SK1A	SK1B	SK1C
0.00	0	0	0	0	0	0	0	0	0	0
1.02	50	47	29	31	31	24	10	66	46	21
1.99	104	98	63	68	69	51	19	130	90	41
3.00	163	154	100	107	110	79	30	199	134	57
3.99	216	204	136	146	150	104	37	269	181	77
4.99	272	256	171	184	190	129	44	341	228	97
6.00	324	305	205	221	229	155	51	415	279	123
6.99	384	361	242	262	271	185	63	488	326	140
7.77	431	405	271	293	304	207	72	546	362	153

TABLE H-2. STRAIN SURVEY, RUN 2

Press	FCL2	FCL3	FCU1	FCU2	FCU3	L4C	L4F	SK1A	SK1B	SK1C
0.00	0	0	0	0	0	0	0	0	0	0
1.00	58	55	33	35	36	24	10	64	42	15
2.01	113	107	70	75	76	49	17	131	87	34
3.00	168	159	108	116	118	75	25	202	133	53
4.01	225	212	145	155	160	99	32	273	179	72
5.01	280	264	183	196	201	125	38	346	227	91
6.01	335	316	220	236	243	152	46	419	275	111
7.00	393	369	258	276	287	179	54	492	322	130
7.77	437	411	287	308	319	199	62	549	359	144

TABLE H-3. STRAIN SURVEY, RUN 3

Press.	FCL2	FCL3	FCU1	FCU2	FCU3	L4C	L4F	SK1A	SK1B	SK1C
0.00	0	0	0	0	0	0	0	0	0	0
1.00	54	50	31	33	34	24	9	64	44	19
1.99	108	101	66	71	73	49	16	131	88	38
3.02	166	156	105	113	115	75	24	204	136	58
4.00	222	209	140	150	155	101	32	275	181	75
5.01	278	261	176	189	195	126	39	347	227	93
5.99	333	314	213	230	236	152	46	419	274	113
7.00	389	366	249	268	278	178	52	493	322	131
7.77	430	403	276	297	307	197	57	550	360	148

TABLE H-4. STRAIN SURVEY, AVERAGE OF RUNS 1 TO 3

Press	FCL2	FCL3	FCU1	FCU2	FCU3	L4C	L4F	SK1A	SK1B	SK1C
0.00	0	0	0	0	0	0	0	0	0	0
1.01	54	51	31	33	34	24	10	65	44	18
2.00	109	102	66	71	73	50	18	131	88	38
3.01	166	156	104	112	115	76	26	201	135	56
4.00	221	208	140	150	155	101	34	272	180	74
5.01	276	260	177	190	195	127	40	345	227	94
6.00	331	311	213	229	236	153	47	418	276	116
7.00	389	365	250	269	278	181	56	491	323	134
7.77	433	406	278	299	310	201	64	548	360	148

TABLE H-5. PREDICTED STRAIN USING GEOMETRIC NONLINEAR SOLUTION

Press	FCL2	FCL3	FCU1	FCU2	FCU3	L4C	L4F	SK1A	SK1B	SK1C
0.0	0	0	0	0	0	0	0	0	0	0
1.0	43	44	34	37	39	19	4	62	38	13
2.0	89	90	70	75	79	39	7	129	78	27
3.0	135	137	107	114	121	60	9	200	120	40
4.0	183	185	144	154	164	80	11	272	163	54
5.0	231	234	183	195	207	101	12	346	207	67
6.0	280	283	221	236	251	122	14	420	250	80
7.0	329	333	261	278	296	144	16	495	294	94
8.0	379	383	301	321	341	165	17	570	338	107
9.0	429	434	341	363	386	186	19	645	383	120
10.0	479	484	381	407	432	207	21	720	427	134

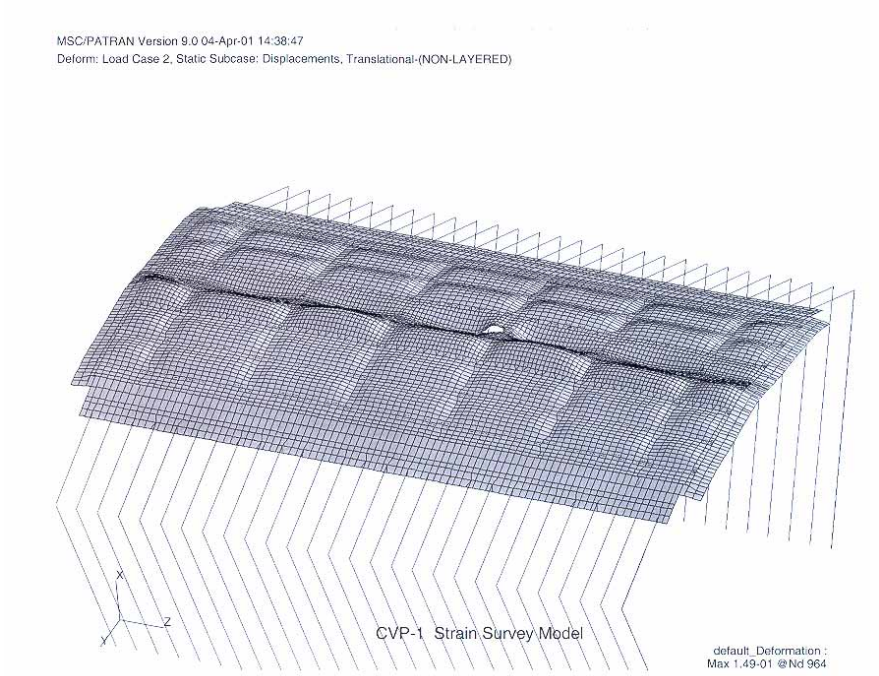

FIGURE H-3. DEFORMED SHAPE OF CVP-1 UNDER 10 psi INTERNAL PRESSURE (20X DEFORMATION)

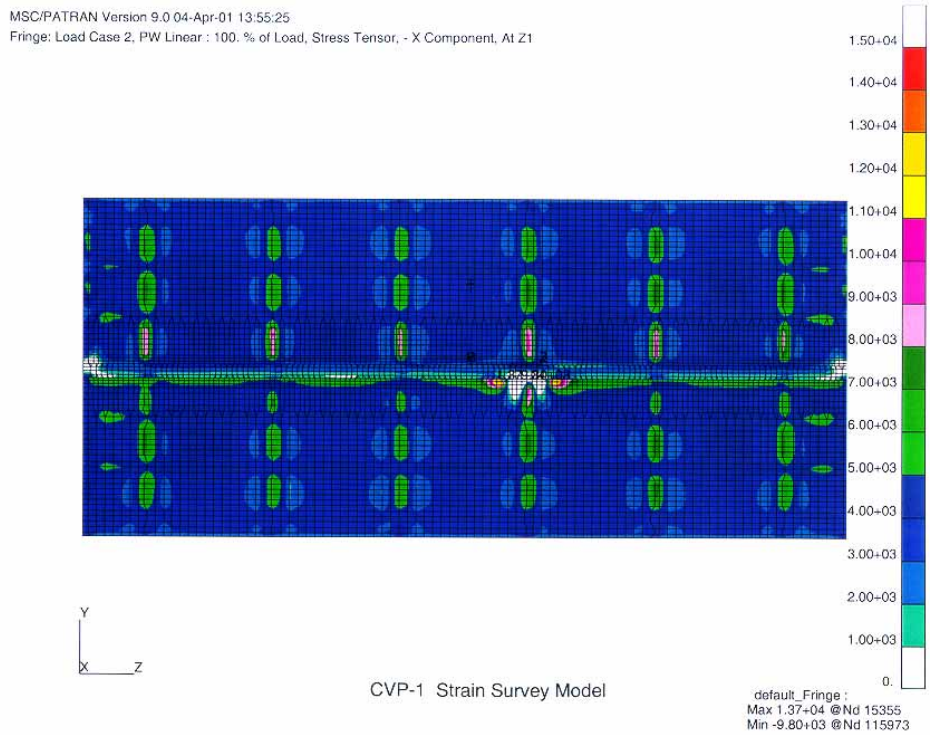

FIGURE H-4. STRESS DISTRIBUTION OF SKIN INNER SURFACE, LONGITUDINAL DIRECTION (10 psi INTERNAL PRESSURE)

FIGURE H-5. STRESS DISTRIBUTION OF SKIN INNER SURFACE, HOOP DIRECTION (10 psi INTERNAL PRESSURE)

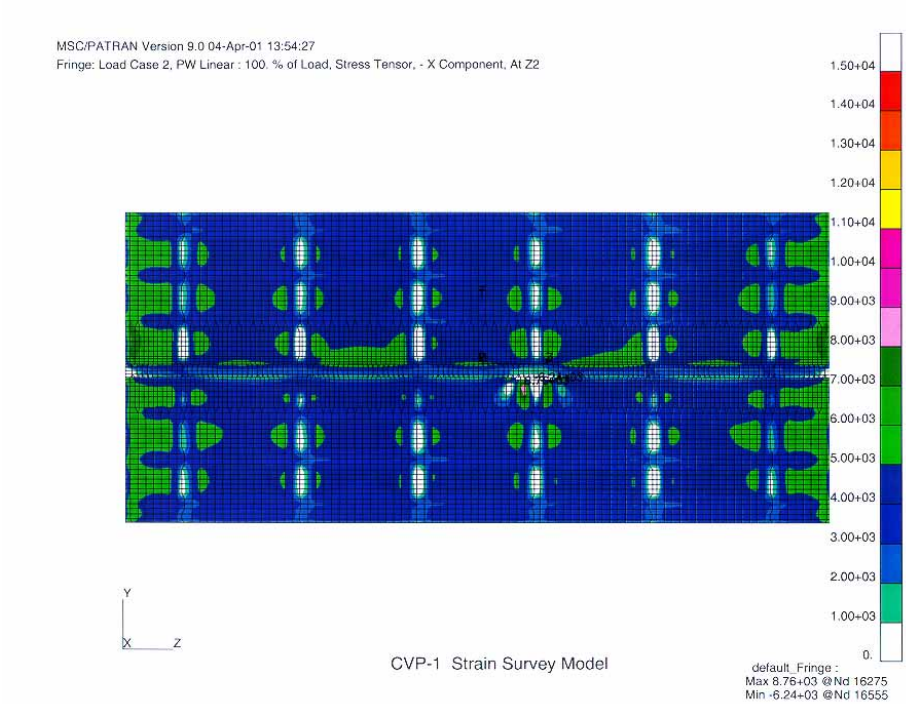

FIGURE H-6. STRESS DISTRIBUTION OF SKIN OUTER SURFACE, LONGITUDINAL DIRECTION (10 psi INTERNAL PRESSURE)

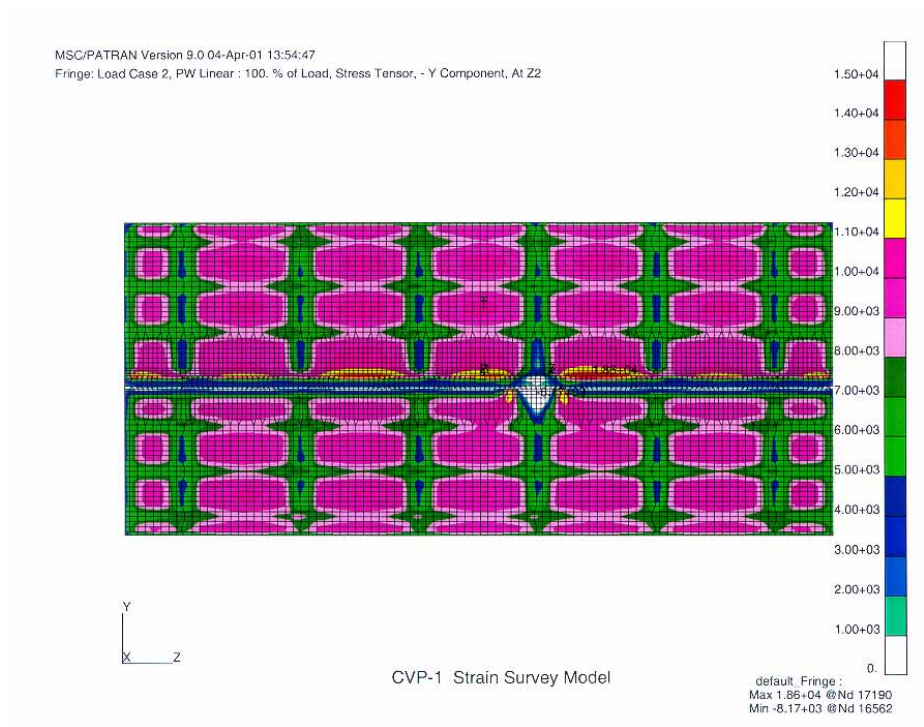

FIGURE H-7. STRESS DISTRIBUTION OF SKIN INNER SURFACE, HOOP DIRECTION (10 psi INTERNAL PRESSURE)

FIGURE H-8. STRESS DISTRIBUTION OF SKIN INNER SURFACE, MAXIMUM PRINCIPAL STRESS (10 psi INTERNAL PRESSURE)

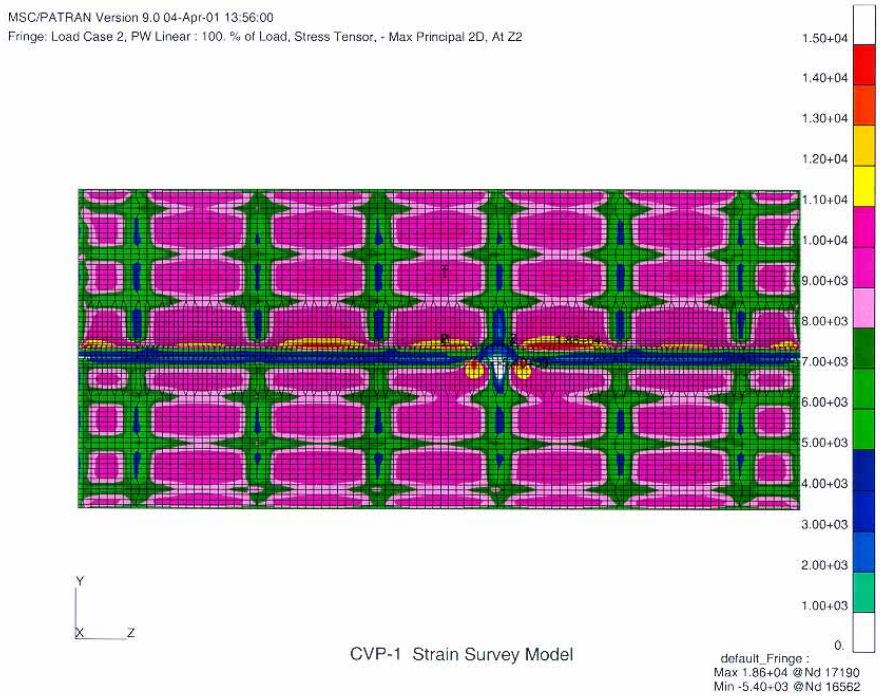

FIGURE H-9. STRESS DISTRIBUTION OF SKIN OUTER SURFACE, MAXIMUM PRINCIPAL STRESS (10 psi INTERNAL PRESSURE)

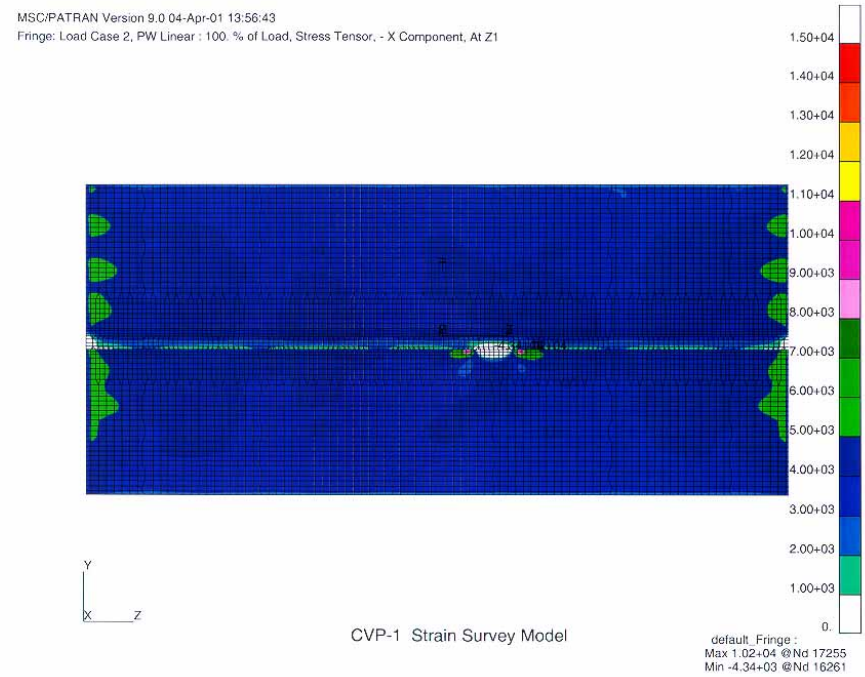

FIGURE H-10. STRESS DISTRIBUTION OF SKIN AVERAGE LONGITUDINAL STRESS (MEMBRANE) (10 psi INTERNAL PRESSURE)

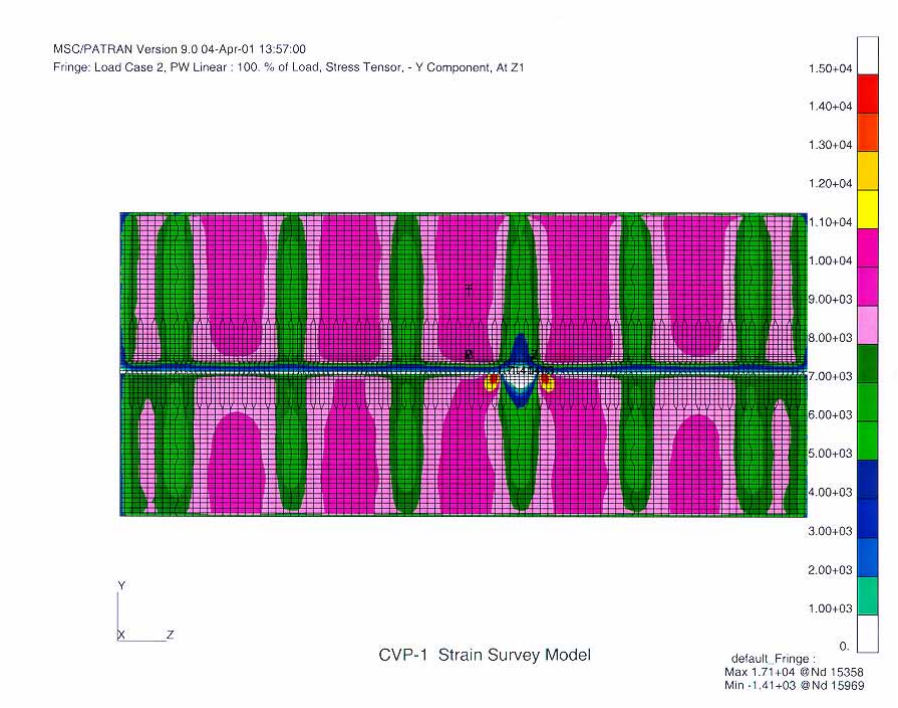

FIGURE H-11. STRESS DISTRIBUTION OF SKIN AVERAGE HOOP STRESS (MEMBRANE) (10 psi INTERNAL PRESSURE)

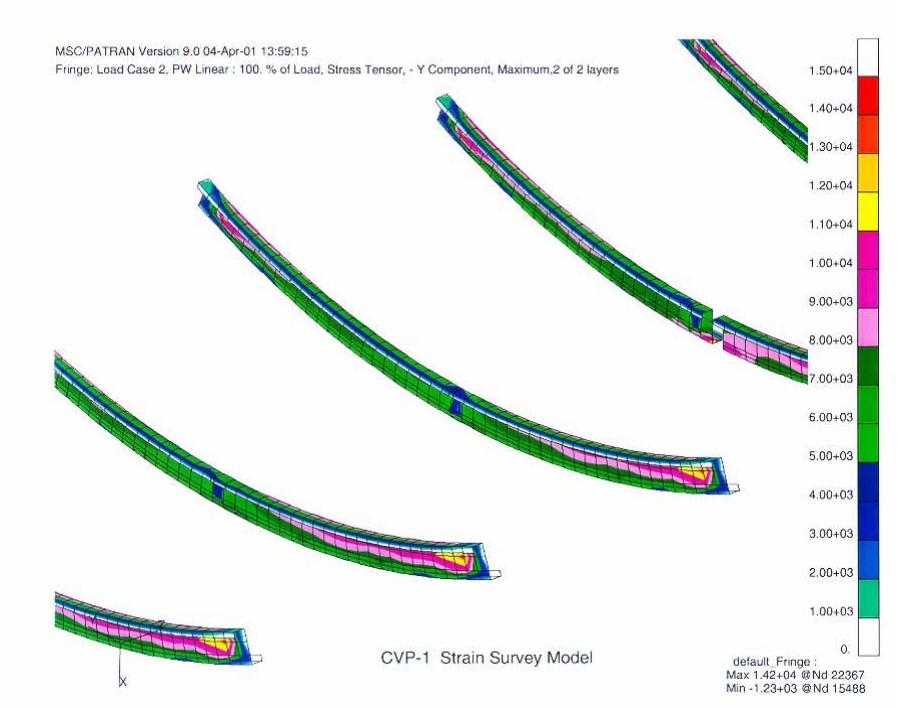

FIGURE H-12. STRESS DISTRIBUTION OF FRAME MAXIMUM STRESS, HOOP (10 psi INTERNAL PRESSURE)

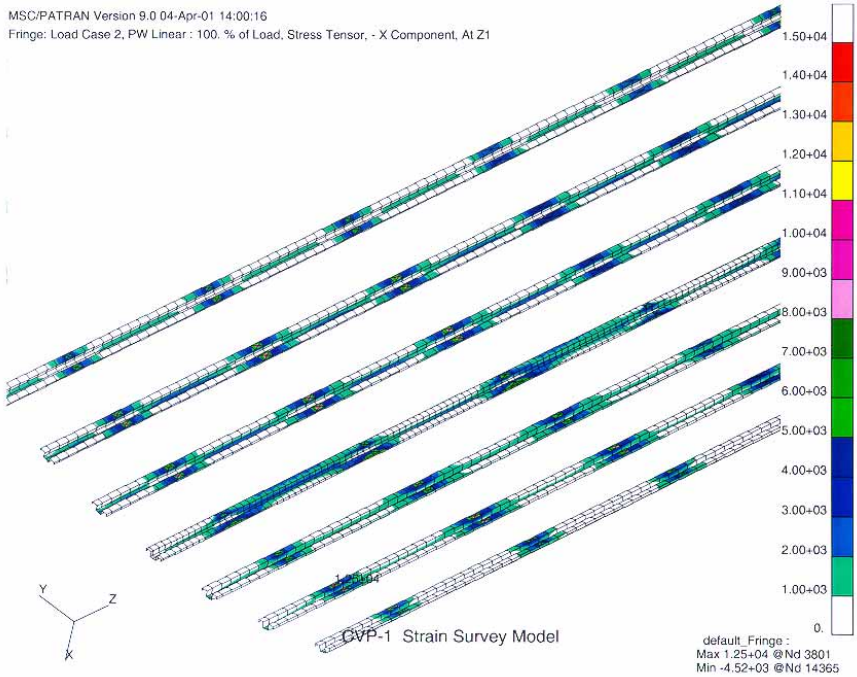

FIGURE H-13. STRESS DISTRIBUTION OF LONGERON MAXIMUM STRESS, LONGITUDINAL (10 psi INTERNAL PRESSURE)

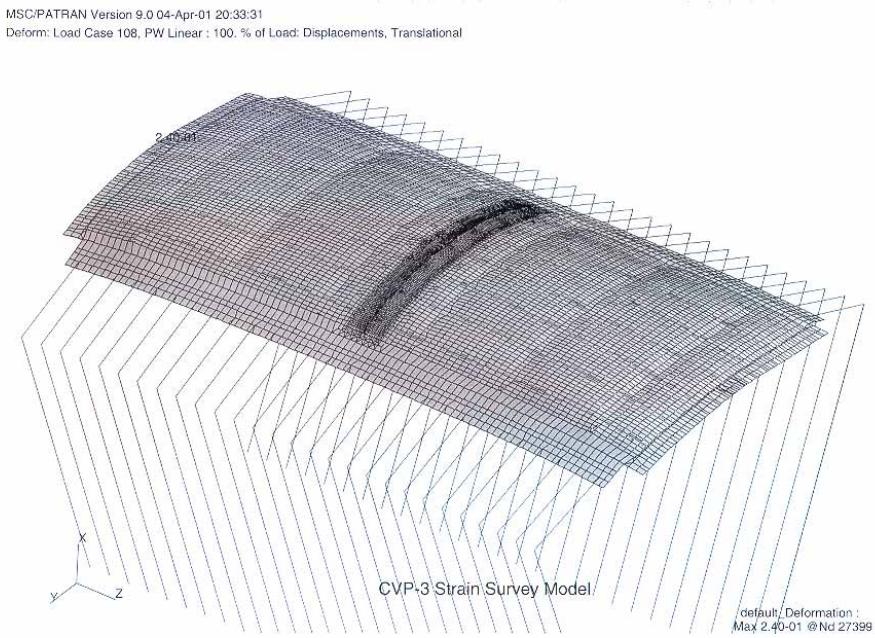

FIGURE H-14. DEFORMED SHAPE OF CVP-3 UNDER 10 psi INTERNAL PRESSURE AND 15.8 ksi LONGITUDINAL LOAD (20X DEFORMATION)

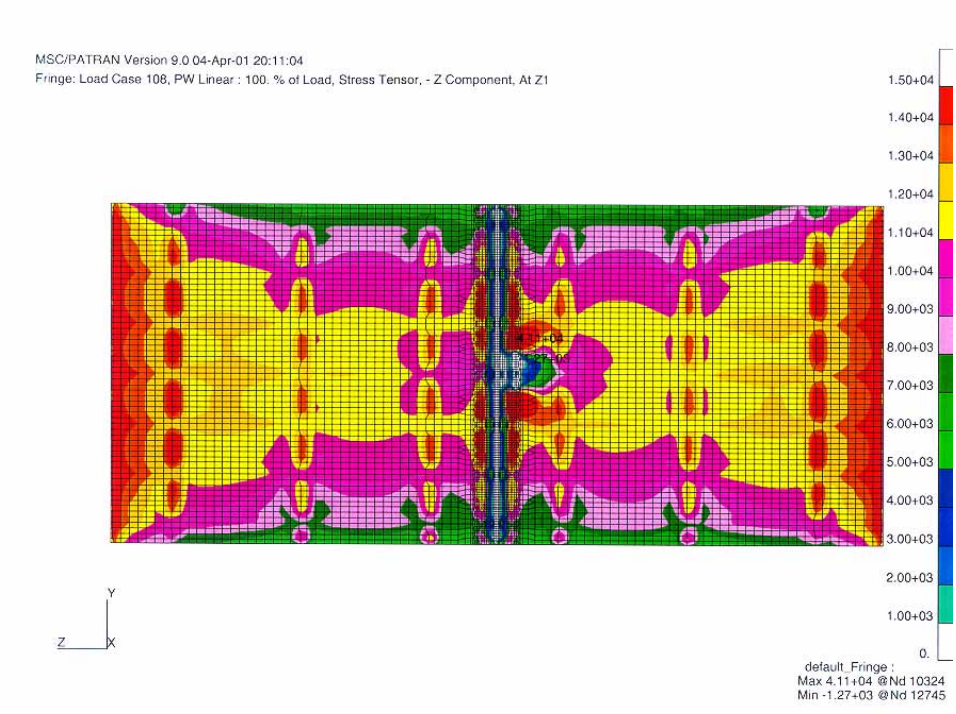

FIGURE H-15. CVP-3 SKIN LONGITUDINAL STRESS AT INNER SURFACE UNDER 10 psi INTERNAL PRESSURE AND 15.8 ksi LONGITUDINAL LOAD

FIGURE H-16. CVP-3 SKIN HOOP STRESS AT INNER SURFACE UNDER 10 psi INTERNAL PRESSURE AND 15.8 ksi LONGITUDINAL LOAD

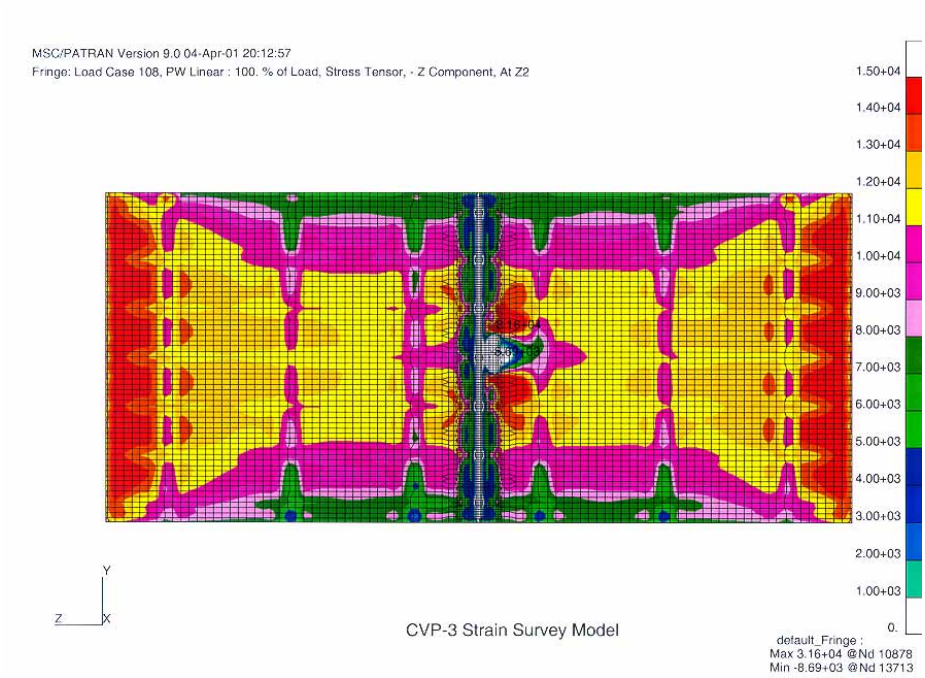

FIGURE H-17. CVP-3 SKIN LONGITUDINAL STRESS AT OUTER SURFACE UNDER 10 psi INTERNAL PRESSURE AND 15.8 ksi LONGITUDINAL LOAD

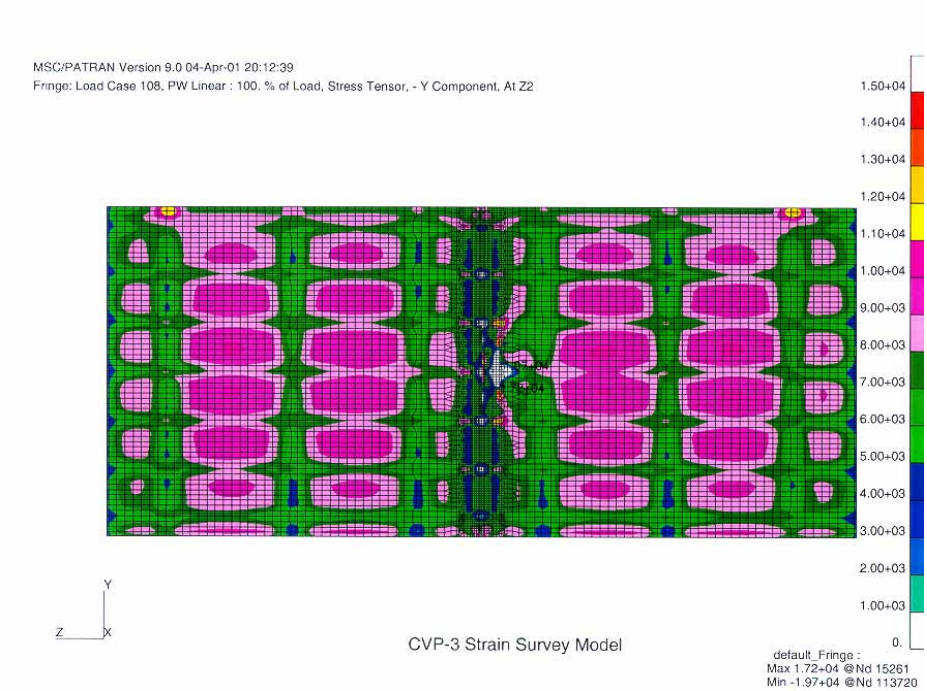

FIGURE H-18. CVP-3 SKIN HOOP STRESS AT OUTER SURFACE UNDER 10 psi INTERNAL PRESSURE AND 15.8 ksi LONGITUDINAL LOAD

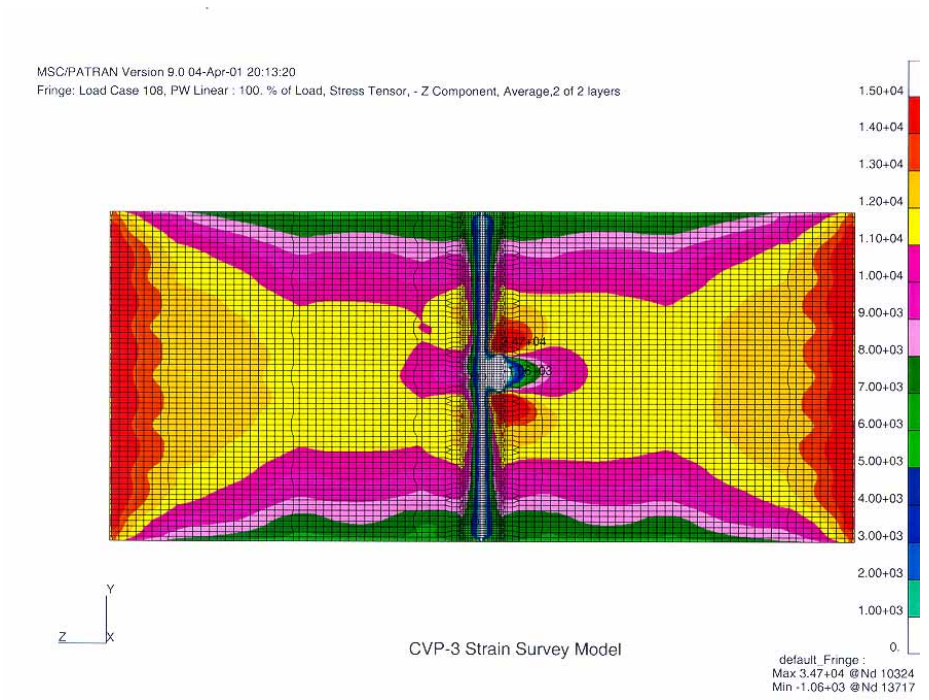

FIGURE H-19. CVP-3 SKIN LONGITUDINAL STRESS AT MID-PLANE UNDER 10 psi INTERNAL PRESSURE AND 15.8 ksi LONGITUDINAL LOAD

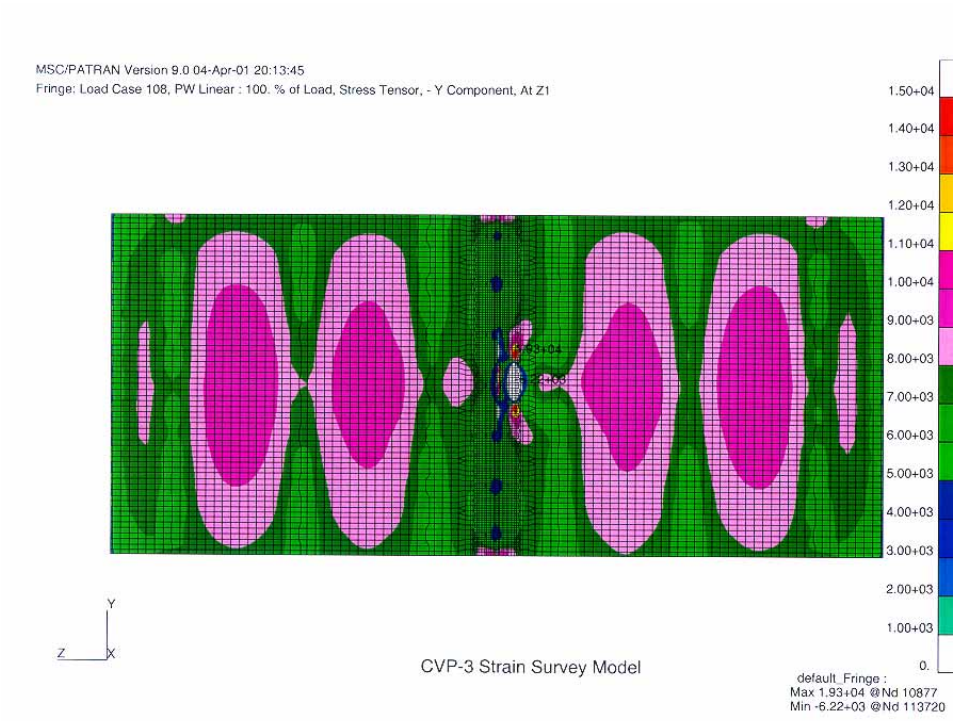

FIGURE H-20. CVP-3 SKIN HOOP STRESS AT MID-PLANE UNDER 10 psi INTERNAL PRESSURE AND 15.8 ksi LONGITUDINAL LOAD

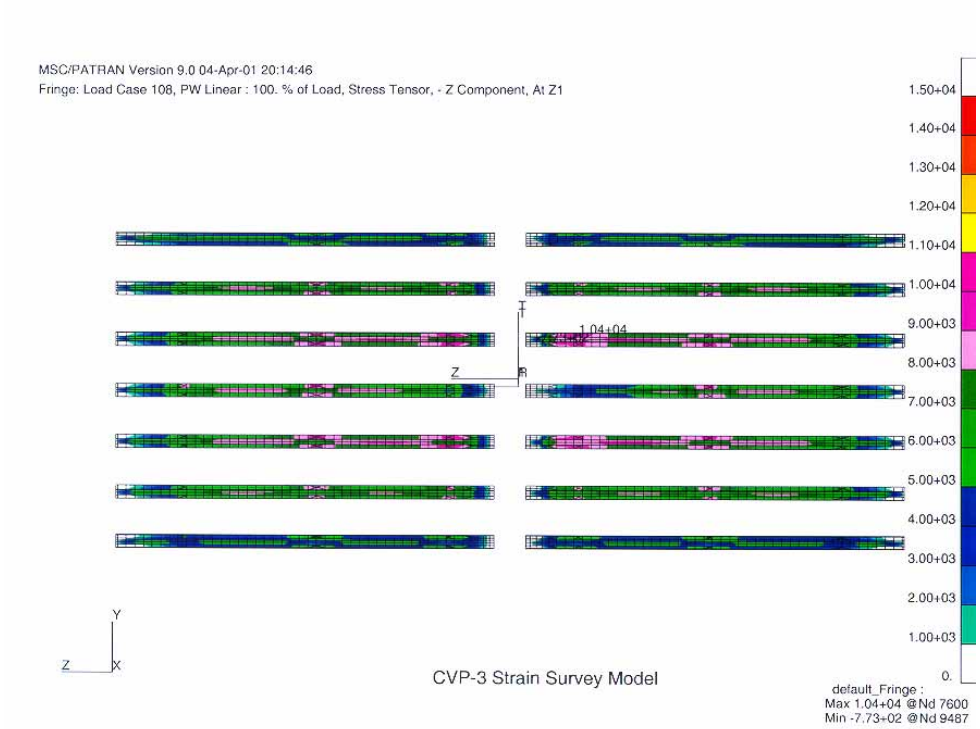

FIGURE H-21. CVP-3 LONGERON LONGITUDINAL STRESS AT MID-PLANE UNDER 10 psi INTERNAL PRESSURE AND 15.8 ksi LONGITUDINAL LOAD

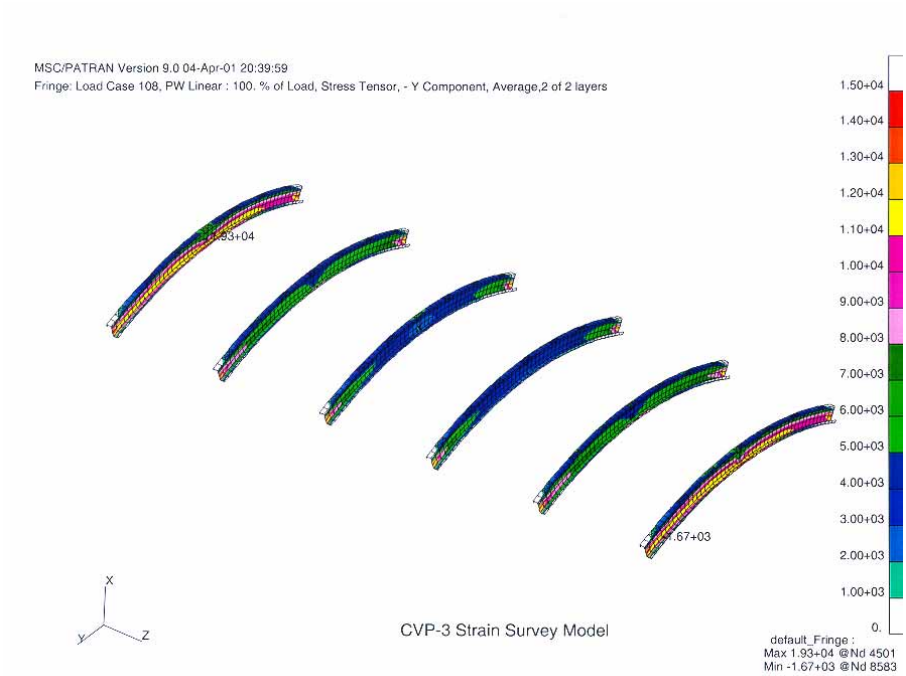

FIGURE H-22. CVP-3 FRAME HOOP STRESS AT MID-PLANE UNDER 10 psi INTERNAL PRESSURE AND 15.8 ksi LONGITUDINAL LOAD

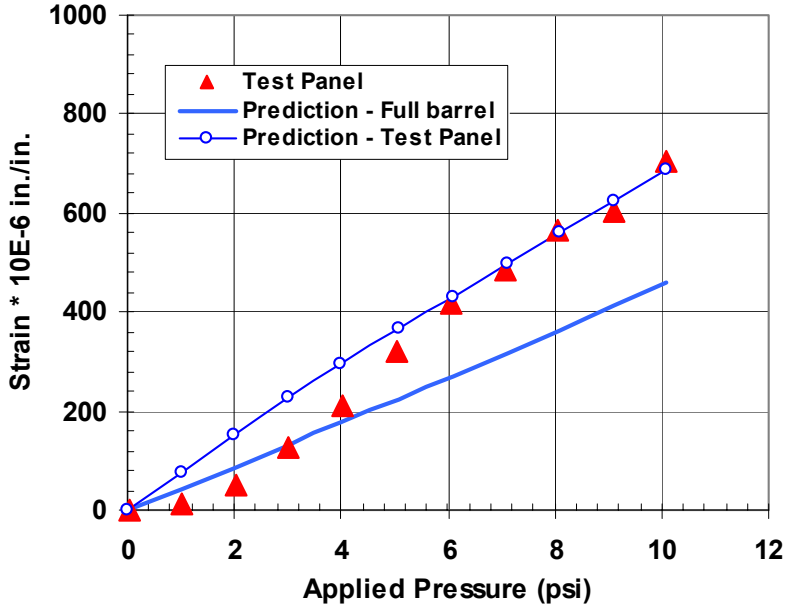

FIGURE H-23. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 1, INNER FRAME CAP

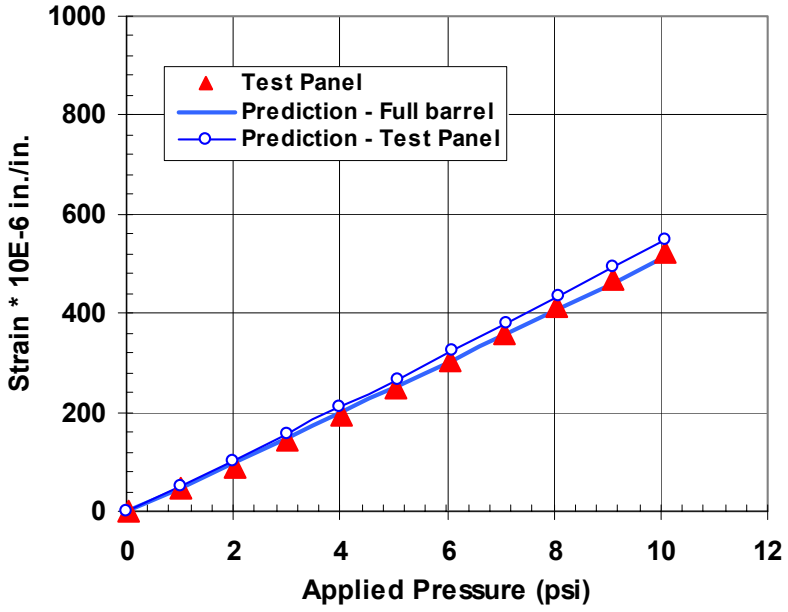

FIGURE H-24. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 2, OUTER FRAME CAP

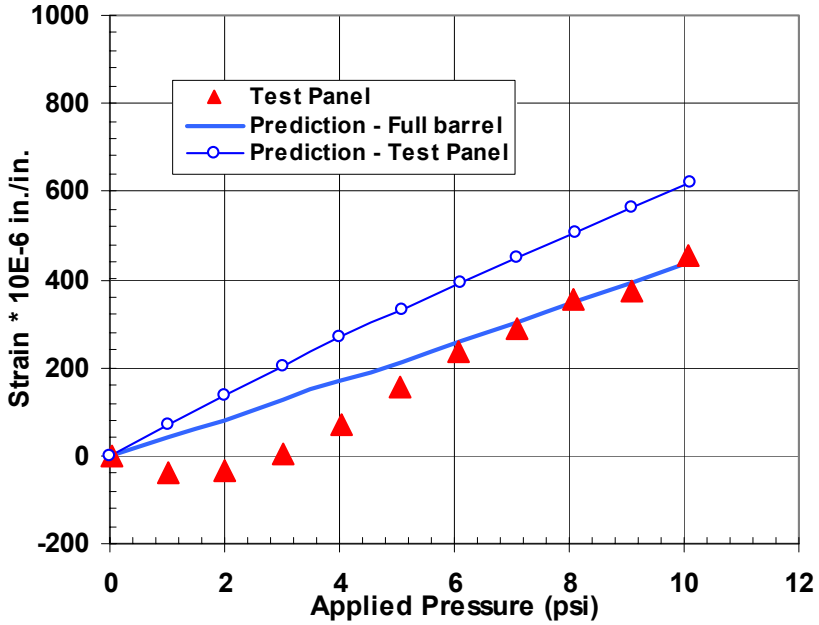

FIGURE H-25. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 3, INNER FRAME CAP

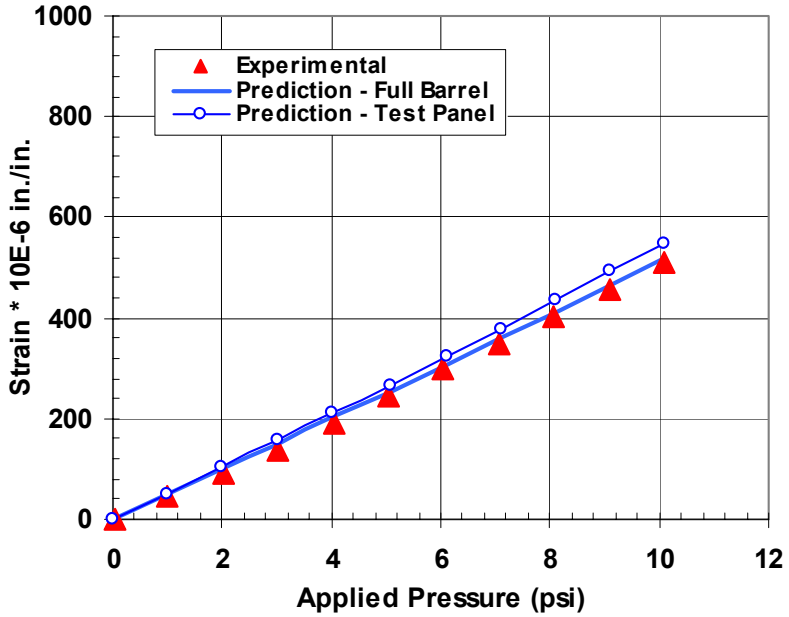

FIGURE H-26. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 4, OUTER FRAME CAP

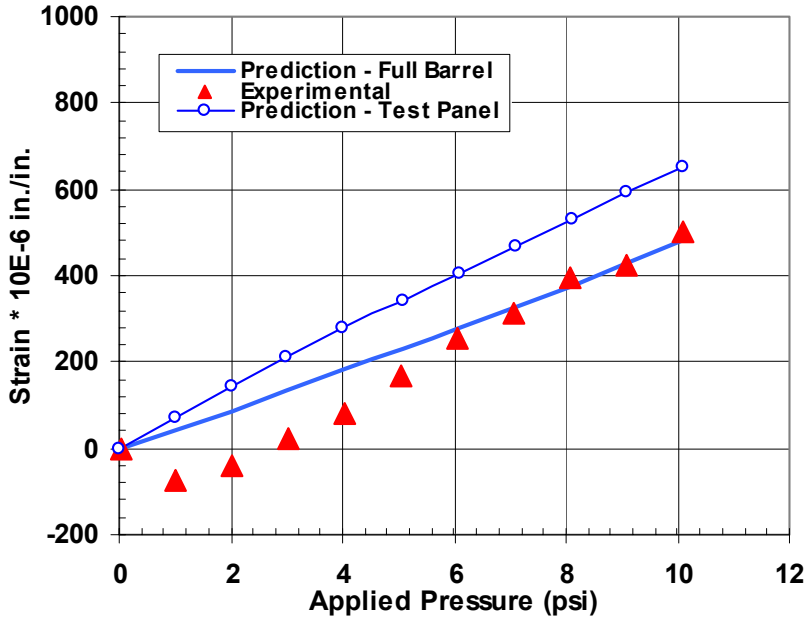

FIGURE H-27. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 5, INNER FRAME CAP

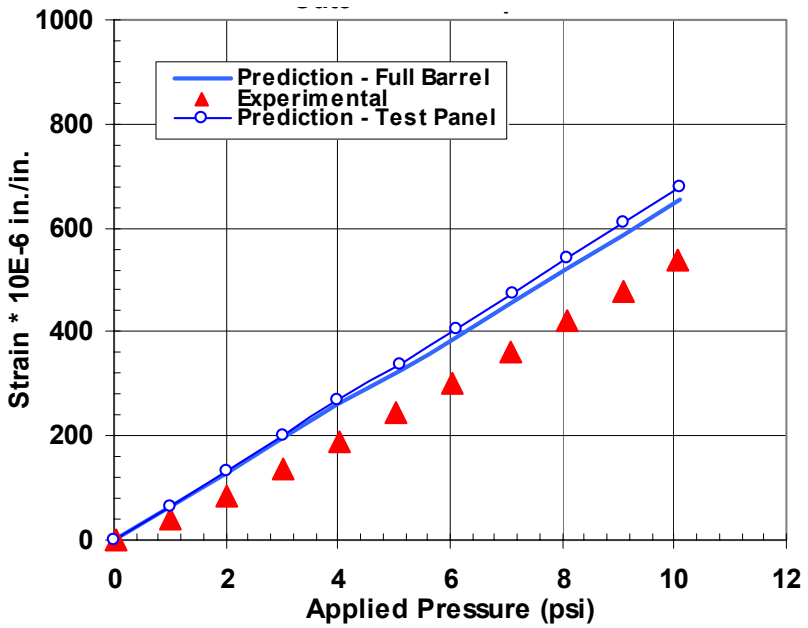

FIGURE H-28. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 6, OUTER FRAME CAP

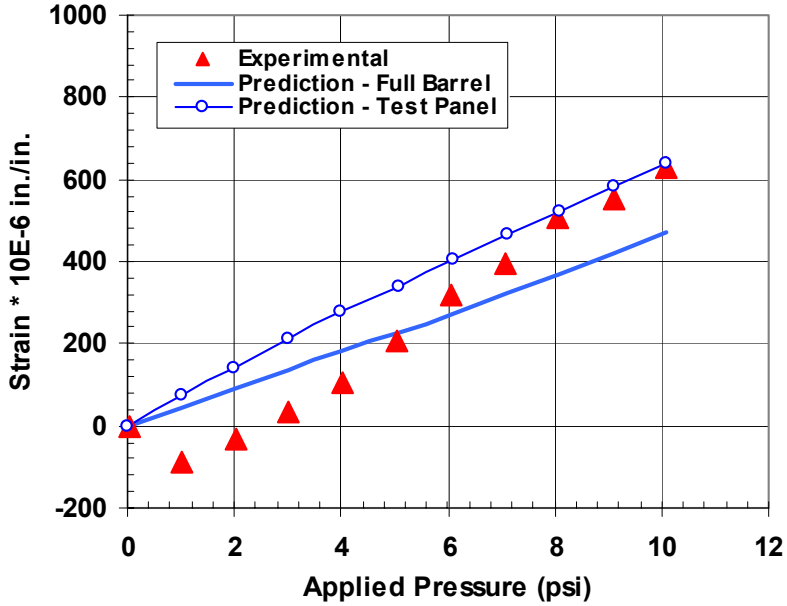

FIGURE H-29. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 7, INNER FRAME CAP

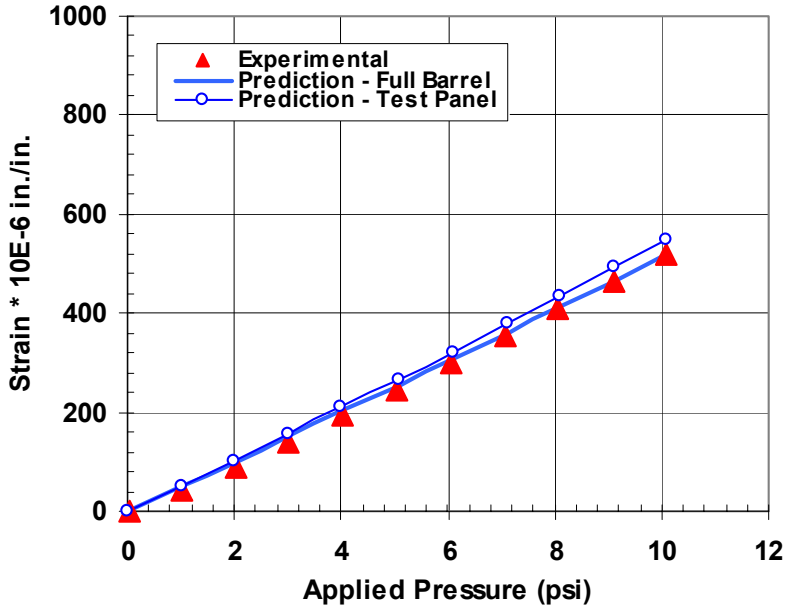

FIGURE H-30. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 8, OUTER FRAME CAP

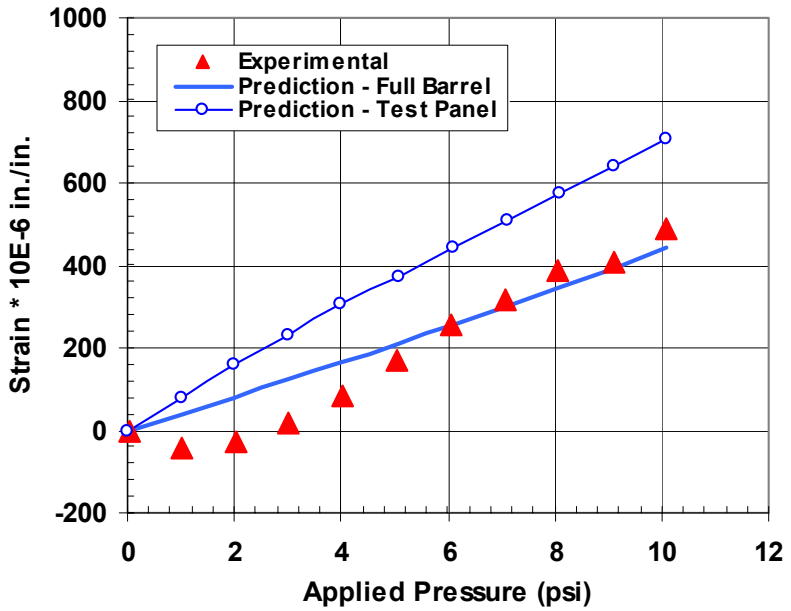

FIGURE H-31. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 9, INNER FRAME CAP

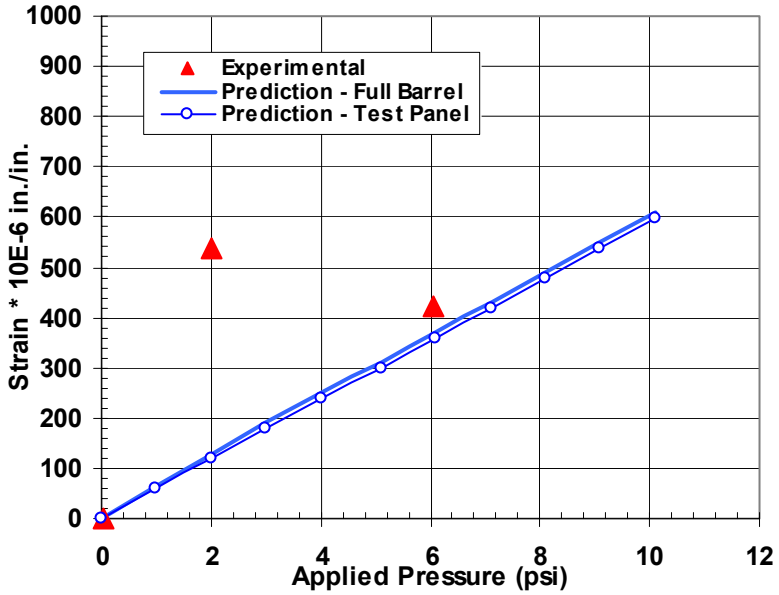

FIGURE H-32. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 10, OUTER FRAME CAP

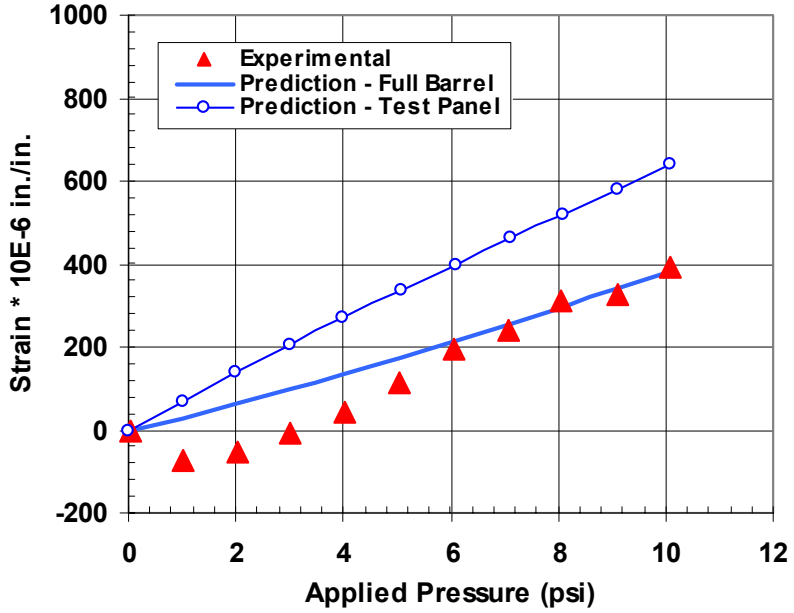

FIGURE H-33. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 11, INNER FRAME CAP

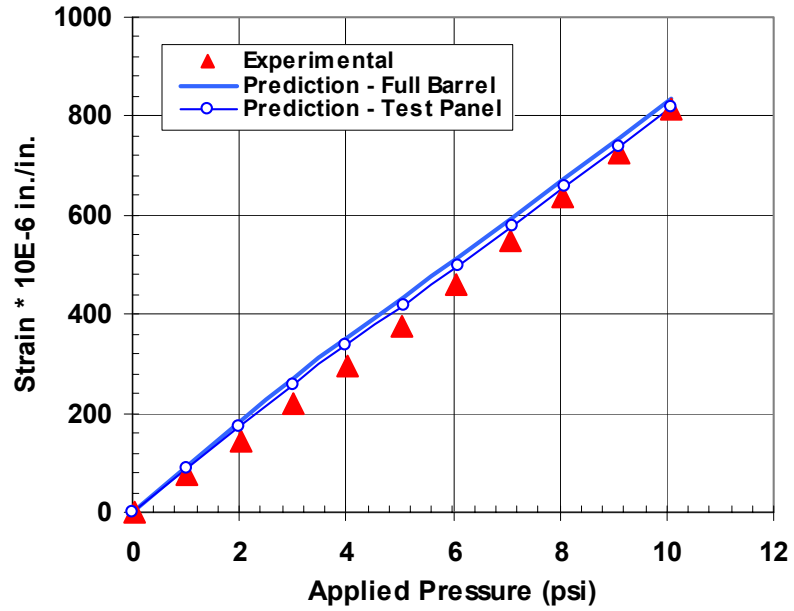

FIGURE H-34. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 12, OUTER FRAME CAP

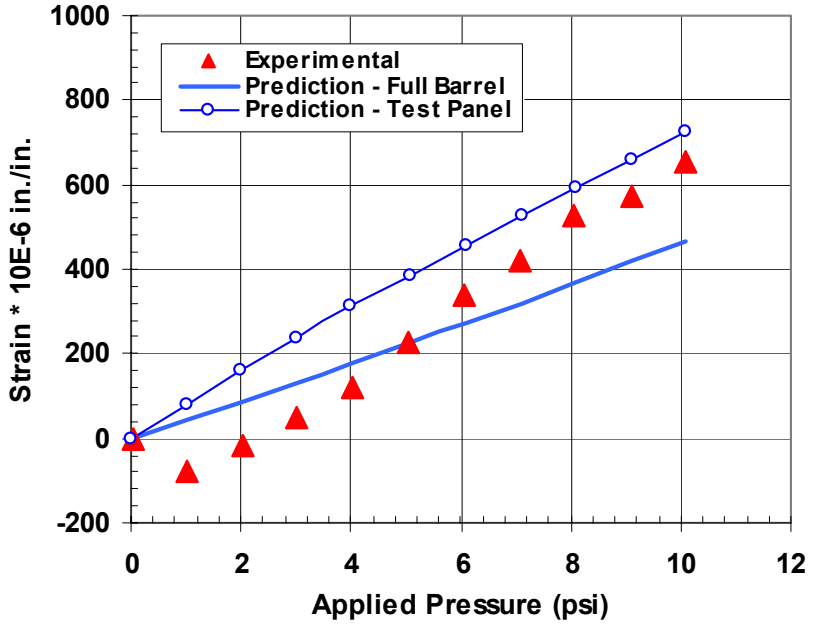

FIGURE H-35. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 13, INNER FRAME CAP

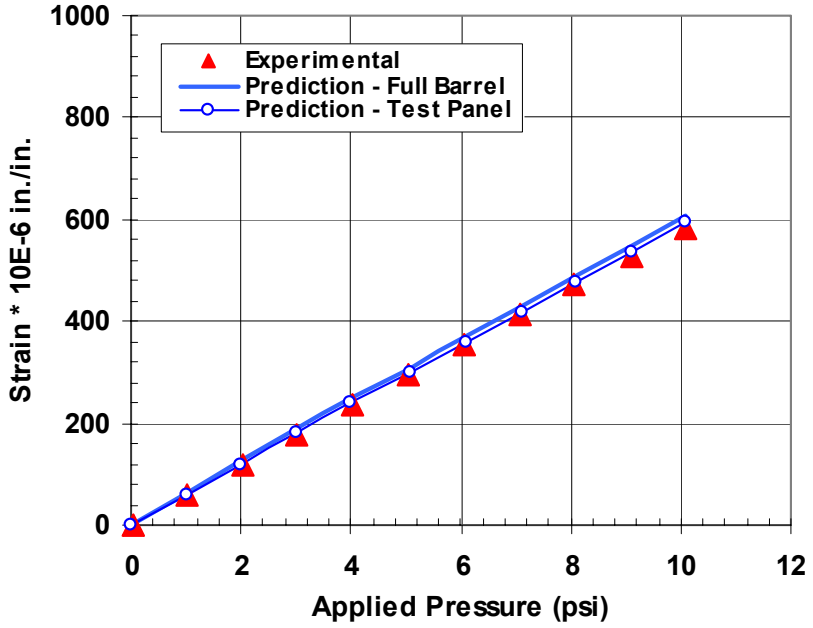

FIGURE H-36. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 14, OUTER FRAME CAP

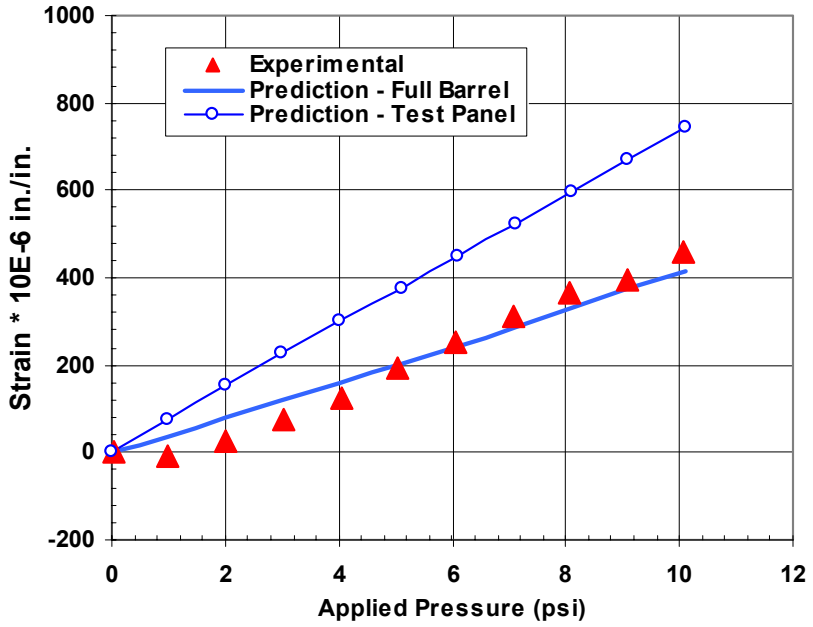

FIGURE H-37. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 15, INNER FRAME CAP

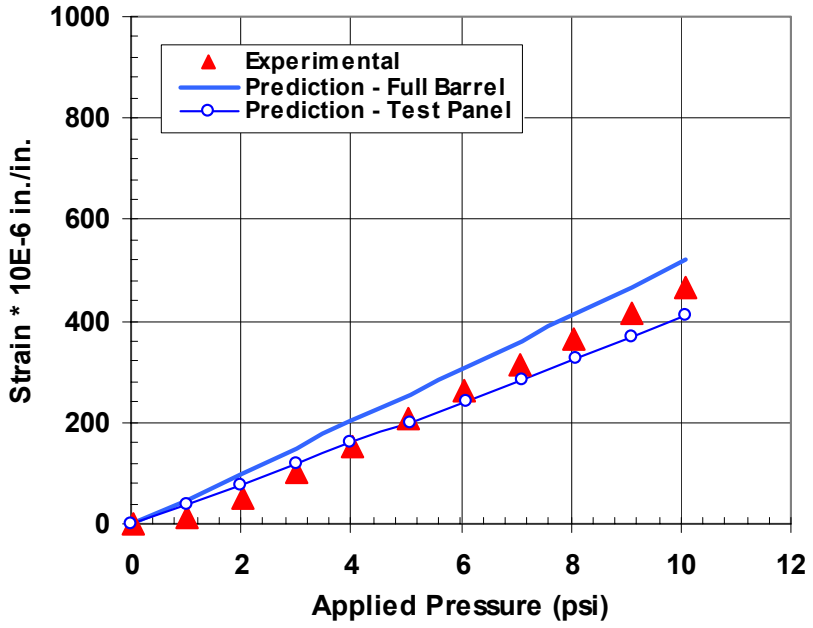

FIGURE H-38. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 16, OUTER FRAME CAP

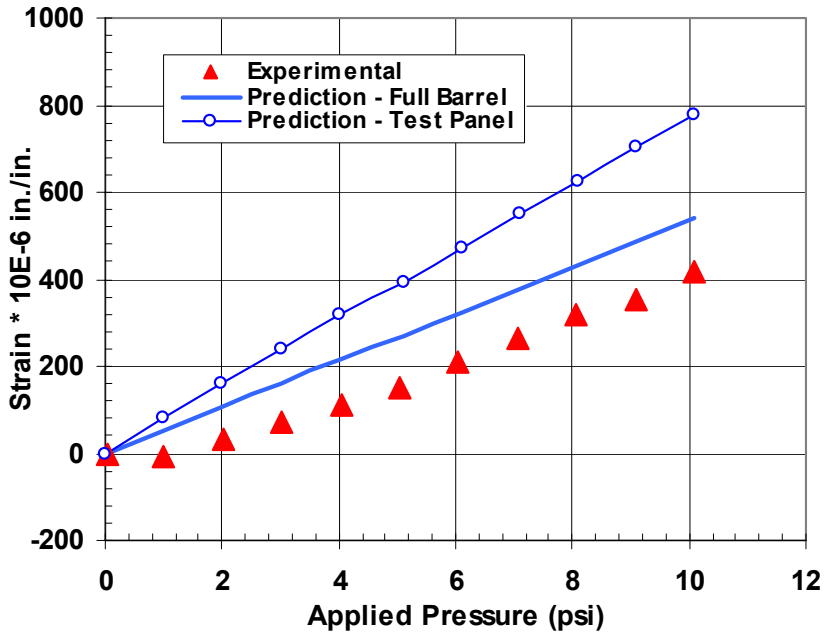

FIGURE H-39. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 17, INNER FRAME CAP

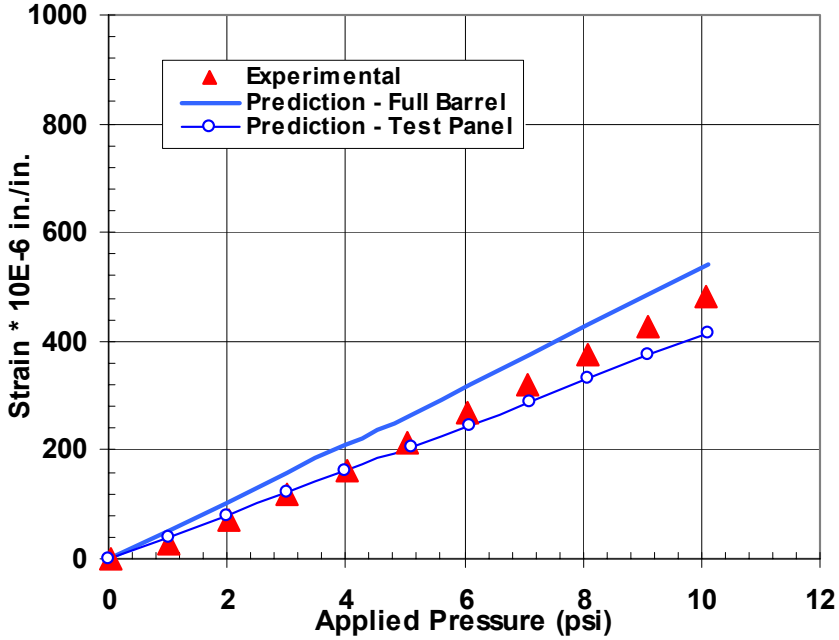

FIGURE H-40. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 18, OUTER FRAME CAP

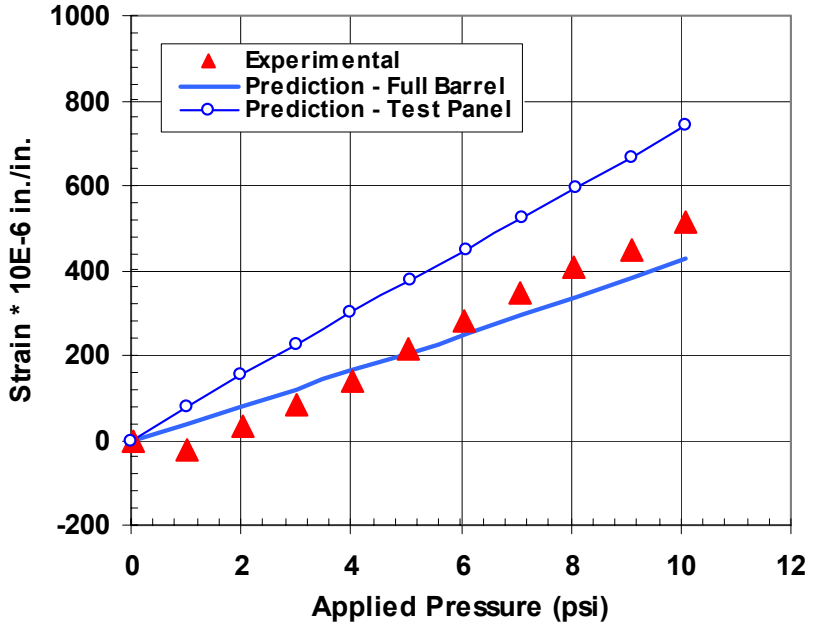

FIGURE H-41. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 19, INNER FRAME CAP

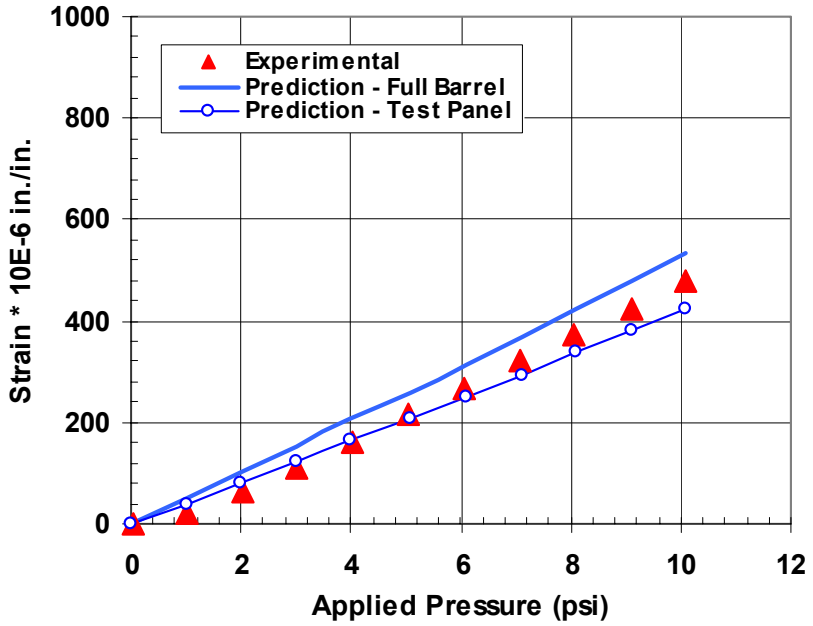

FIGURE H-42. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 20, OUTER FRAME CAP

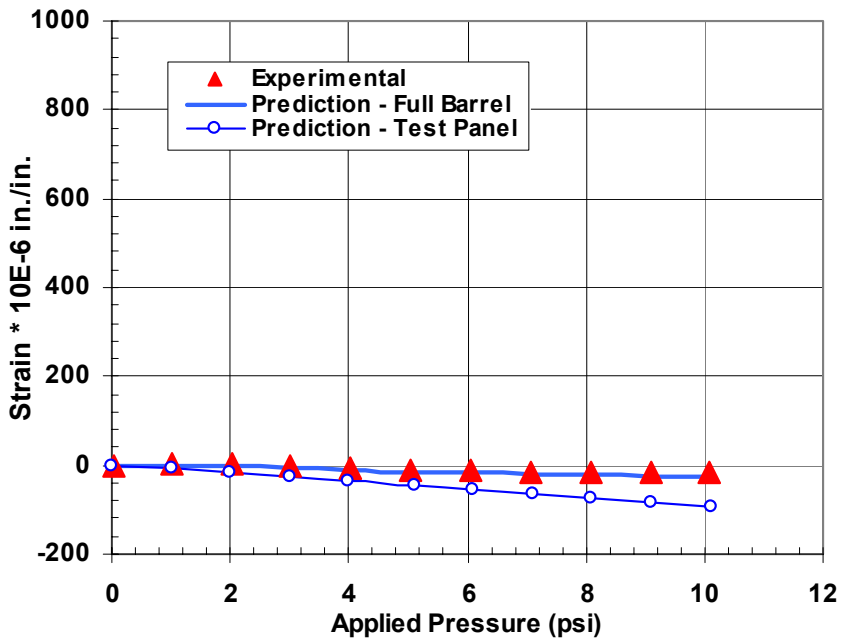

FIGURE H-43. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 21, LONGERON FLANGE

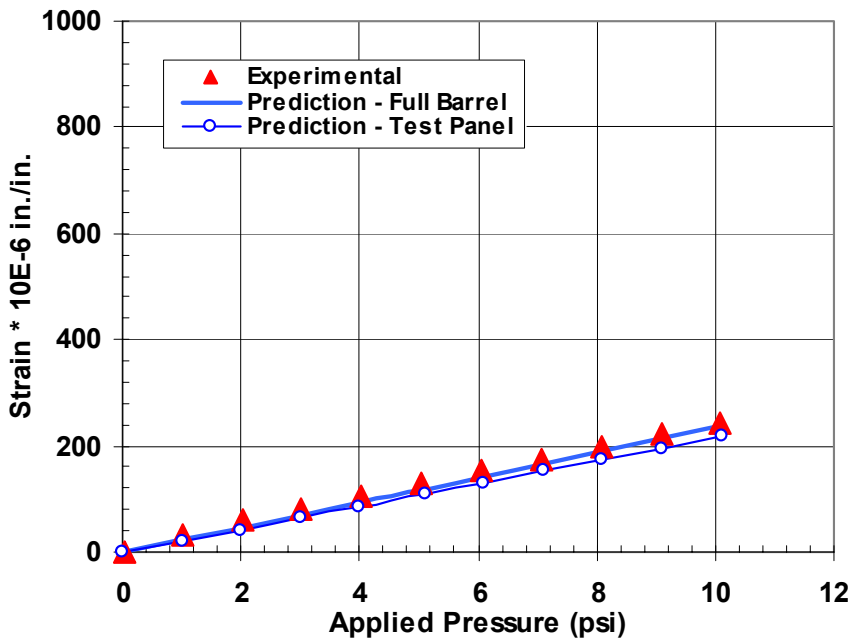

FIGURE H-44. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 22, LONGERON CAP

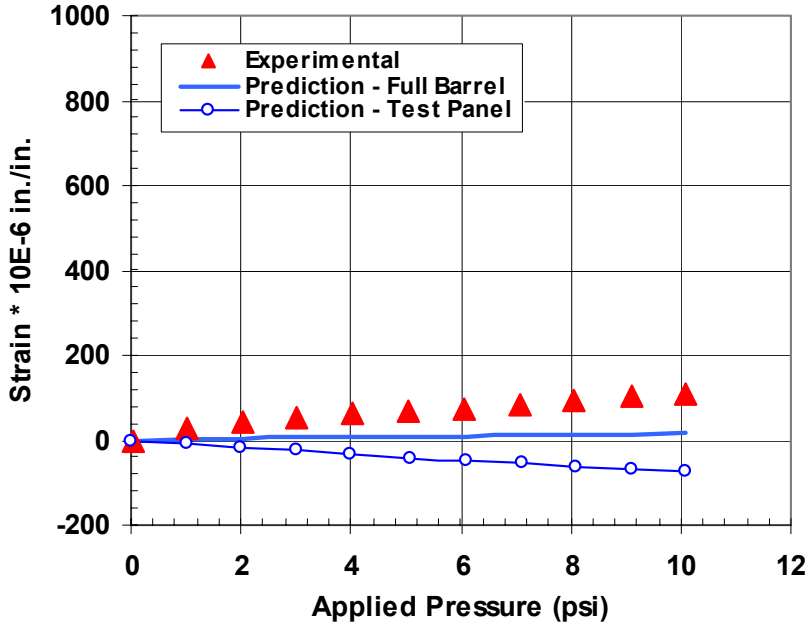

FIGURE H-45. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 23, LONGERON FLANGE

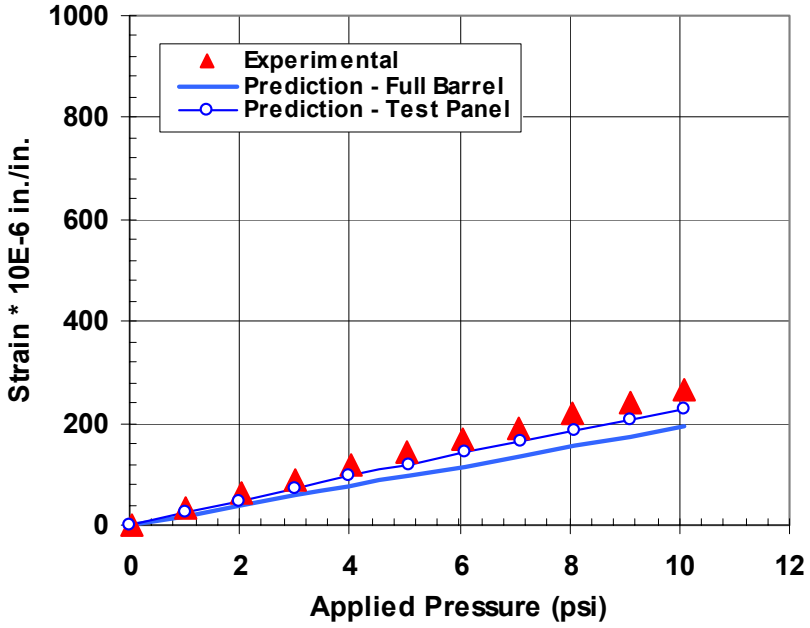

FIGURE H-46. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 24, LONGERON CAP

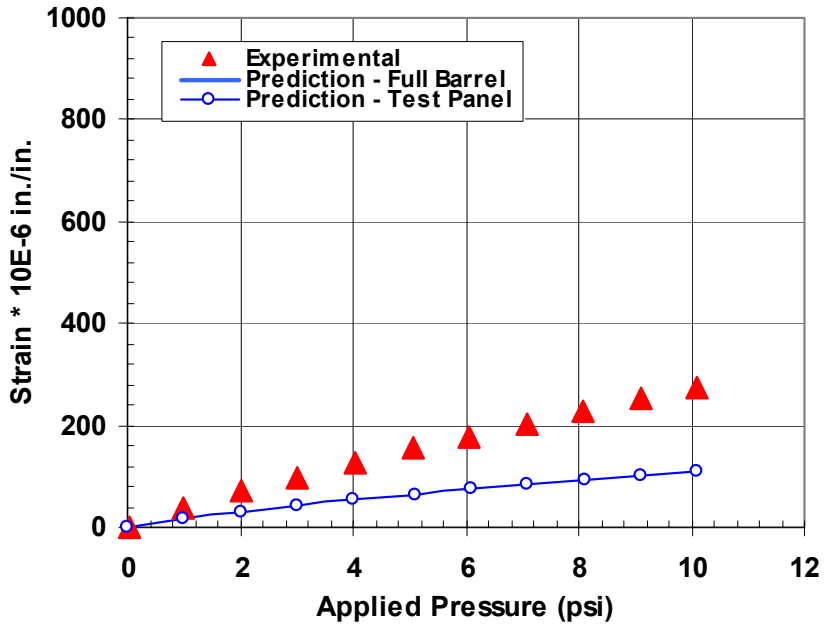

FIGURE H-47. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 25, LONGERON FLANGE

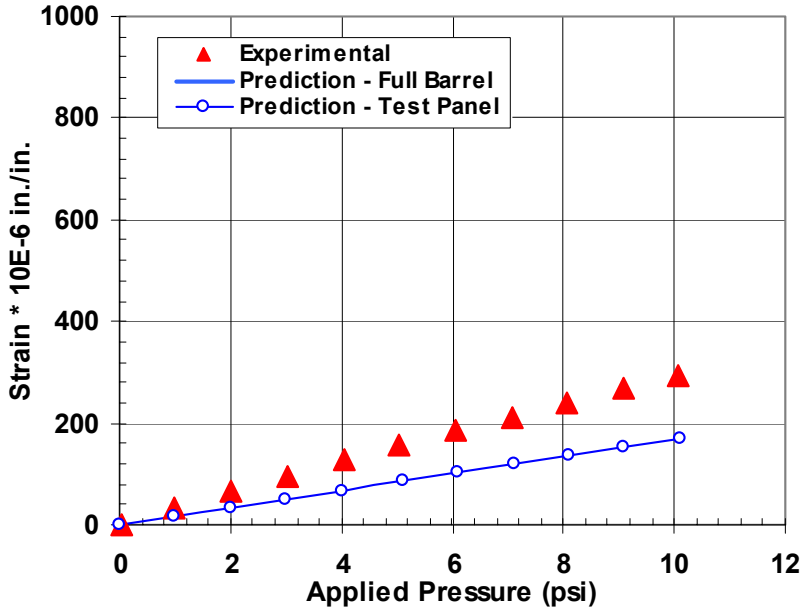

FIGURE H-48. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 26, LONGERON CAP

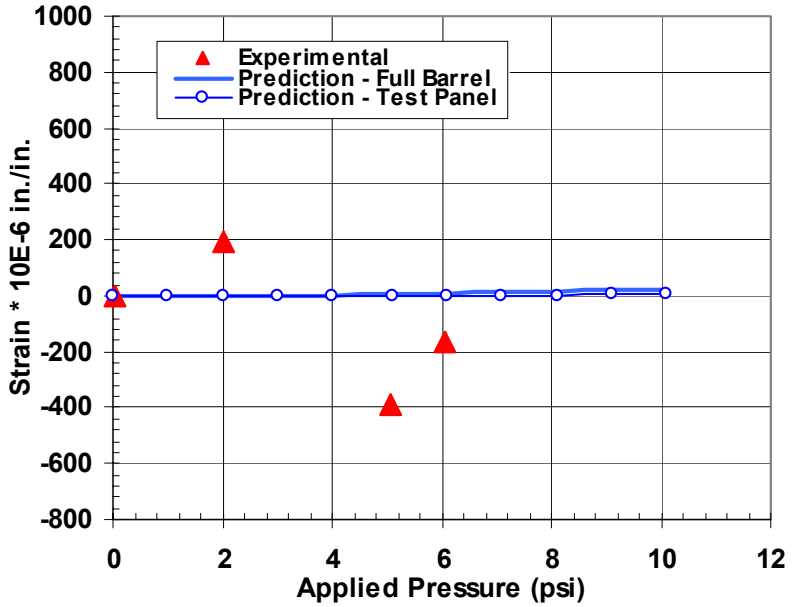

FIGURE H-49. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 27, LONGERON FLANGE

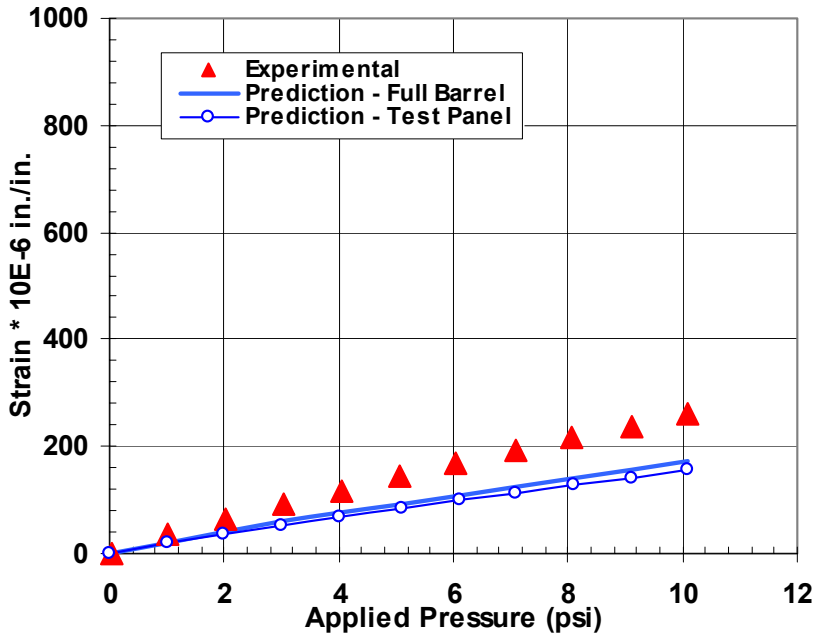

FIGURE H-50. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 28, LONGERON CAP

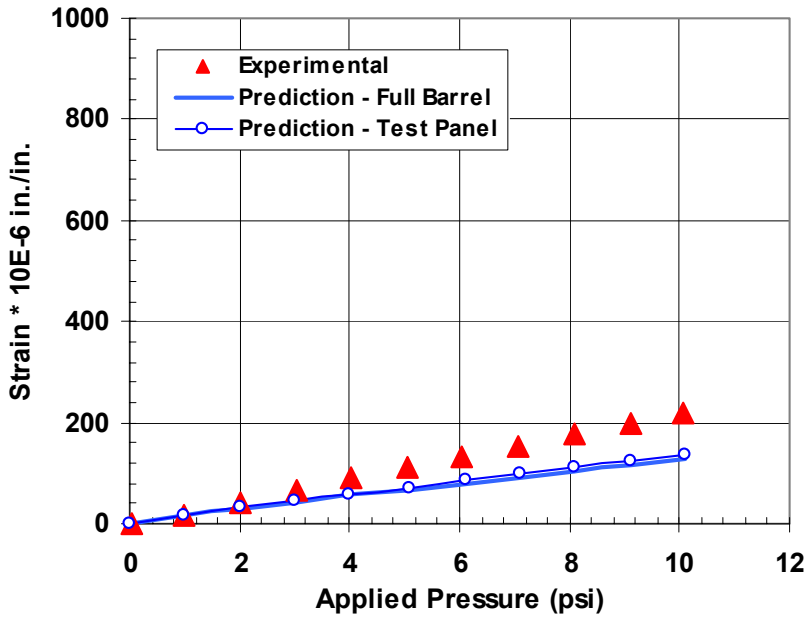

FIGURE H-51. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 29L, EXTERIOR SKIN GAGE

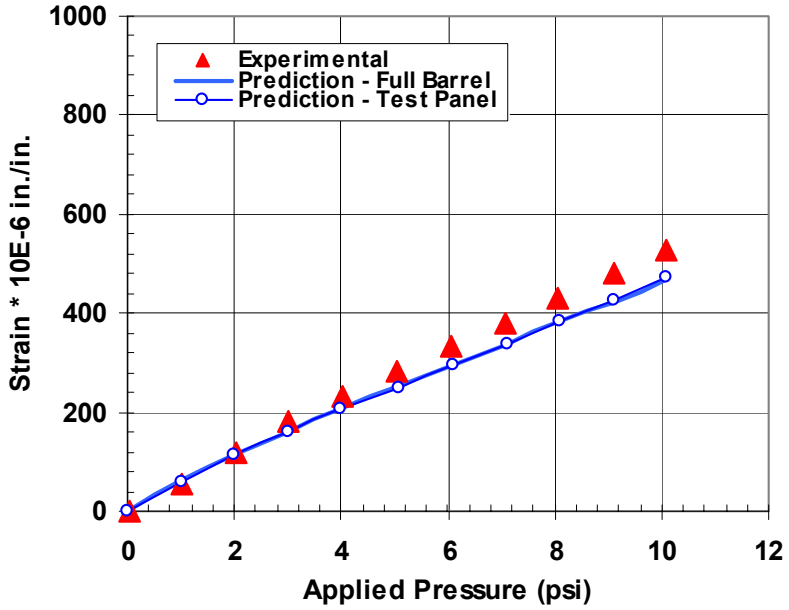

FIGURE H-52. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 29D, EXTERIOR SKIN GAGE

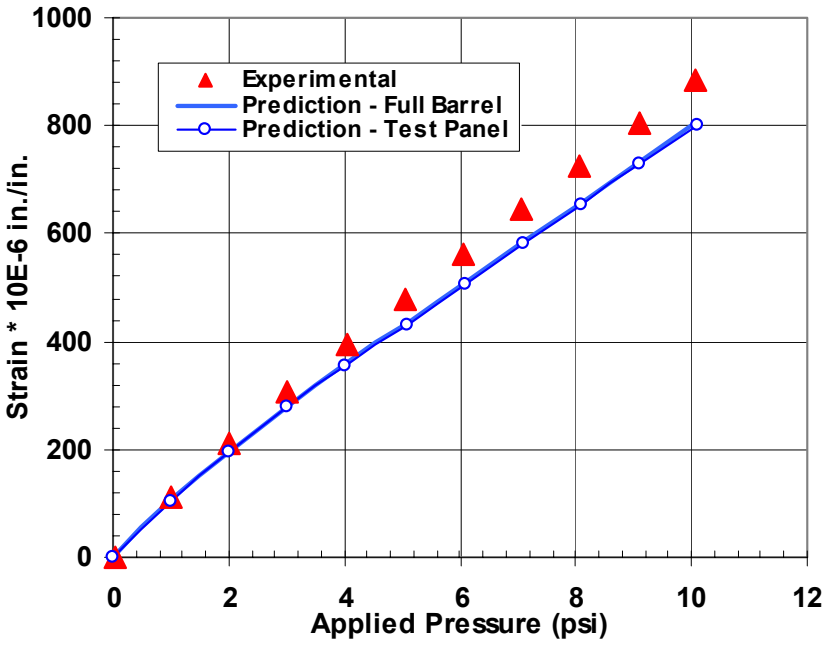

FIGURE H-53. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 29H, EXTERIOR SKIN GAGE

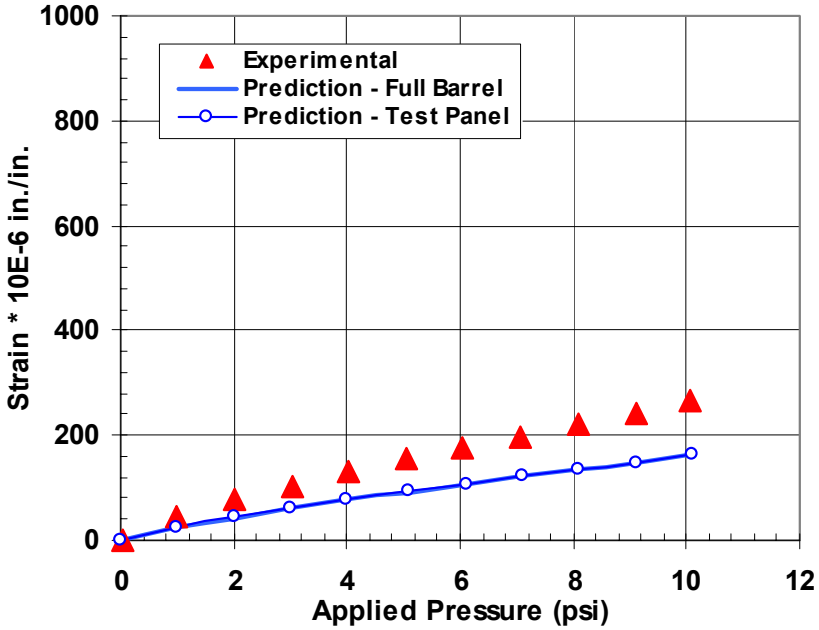

FIGURE H-54. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 30L, EXTERIOR SKIN GAGE

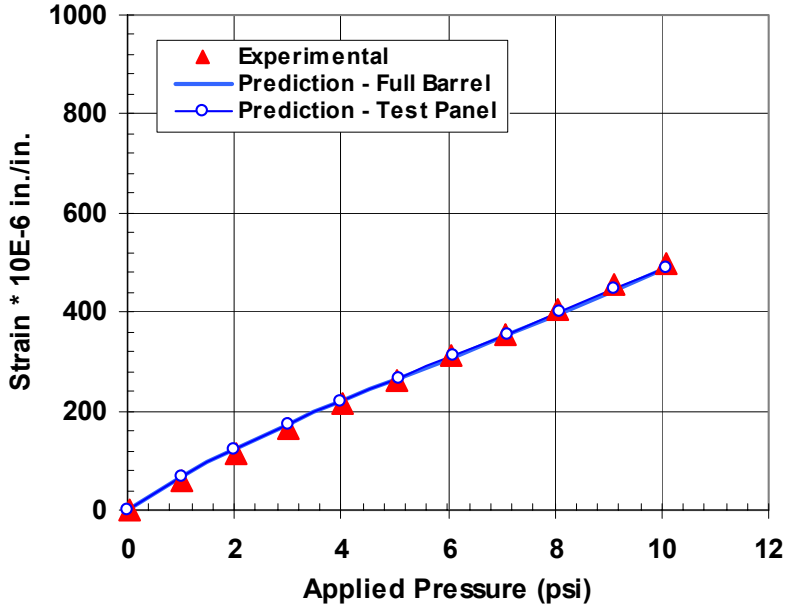

FIGURE H-55. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 30D, EXTERIOR SKIN GAGE

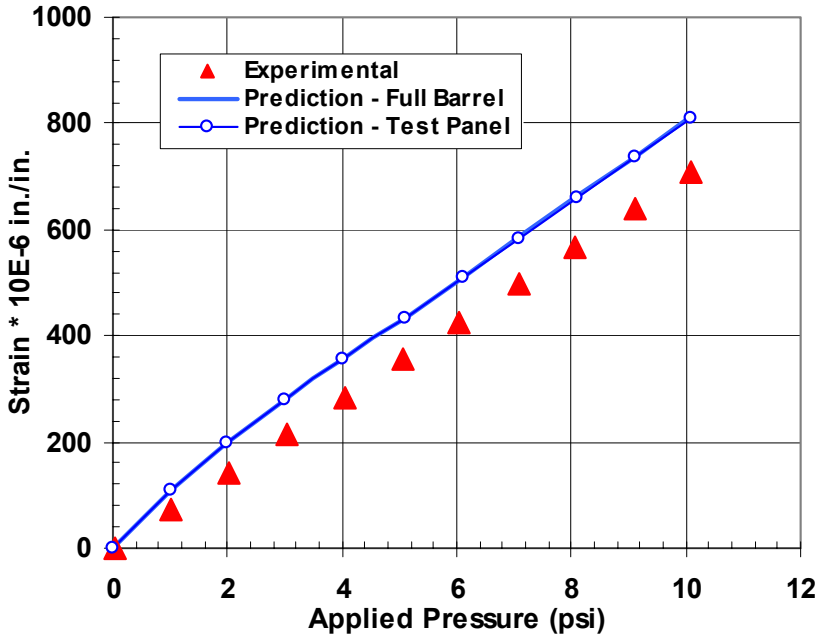

FIGURE H-56. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 30H, EXTERIOR SKIN GAGE

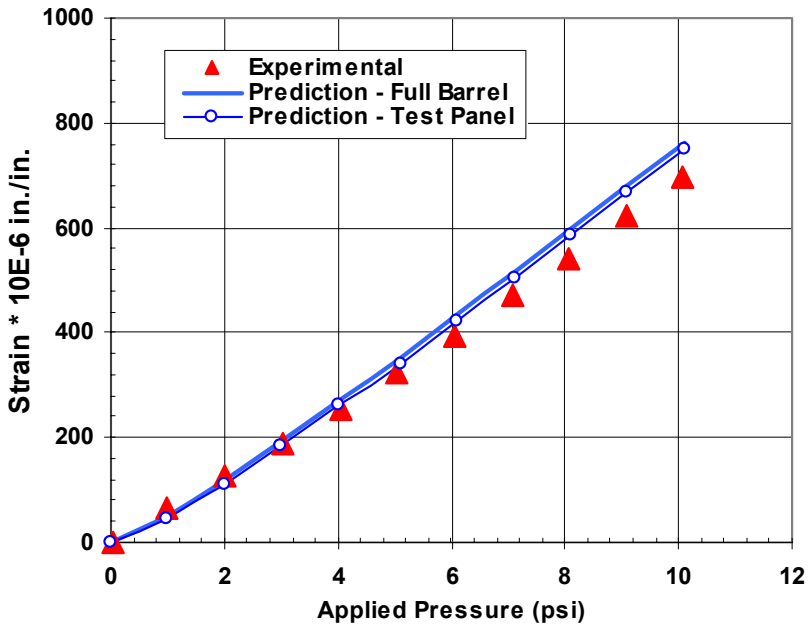

FIGURE H-57. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 31H, INTERIOR SKIN GAGE

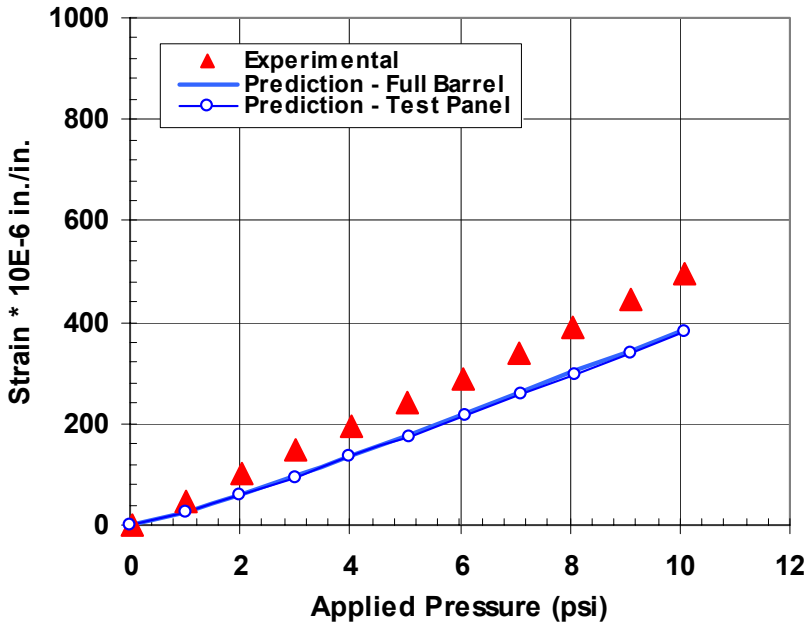

FIGURE H-58. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 31D, INTERIOR SKIN GAGE

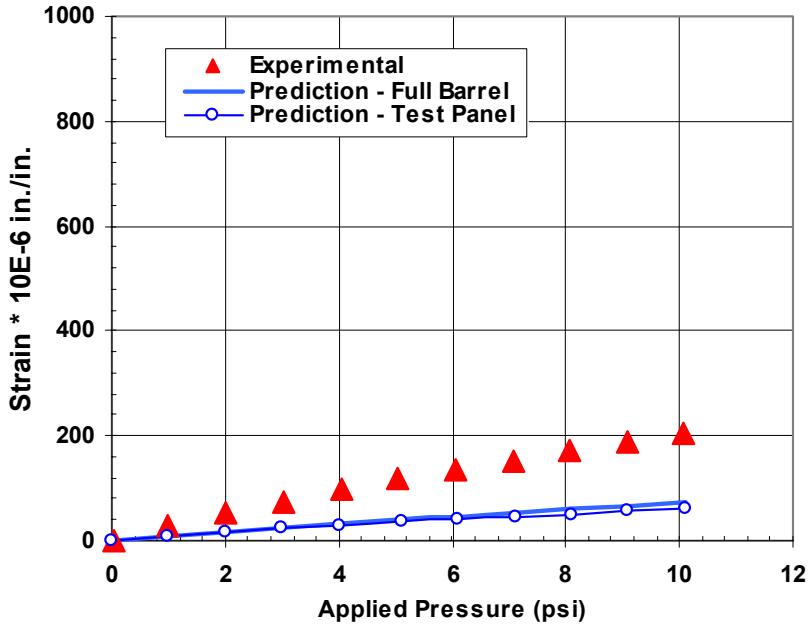

FIGURE H-59. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 31L, INTERIOR SKIN GAGE

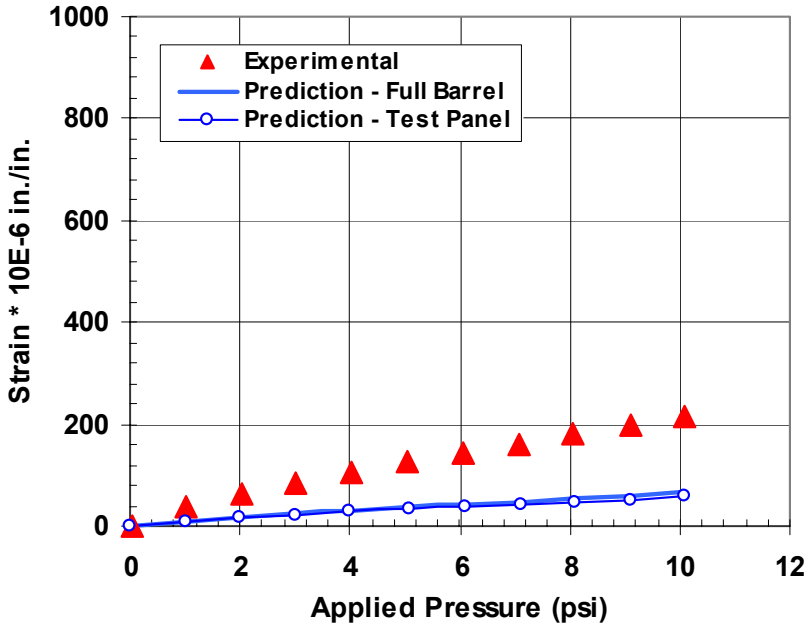

FIGURE H-60. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 32L, EXTERIOR SKIN GAGE

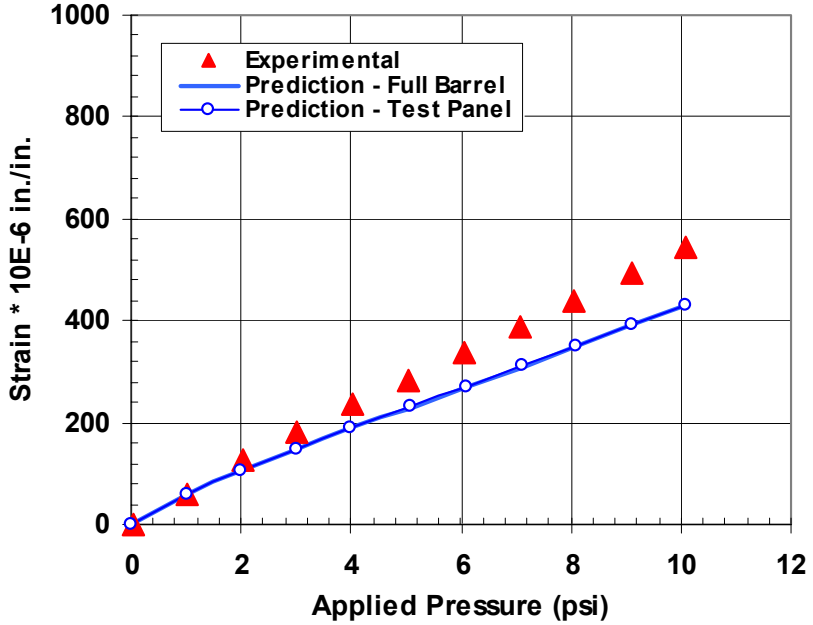

FIGURE H-61. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 32D, EXTERIOR SKIN GAGE

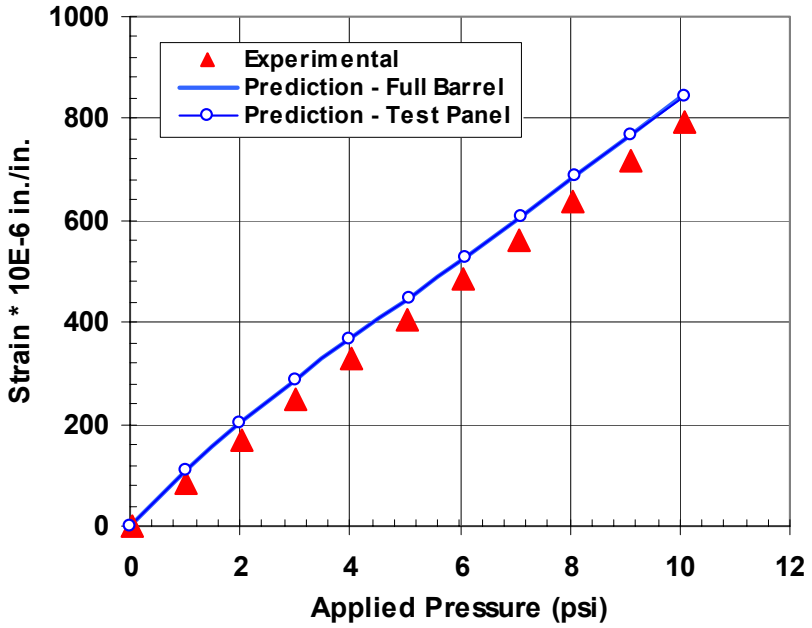

FIGURE H-62. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 32H, EXTERIOR SKIN GAGE

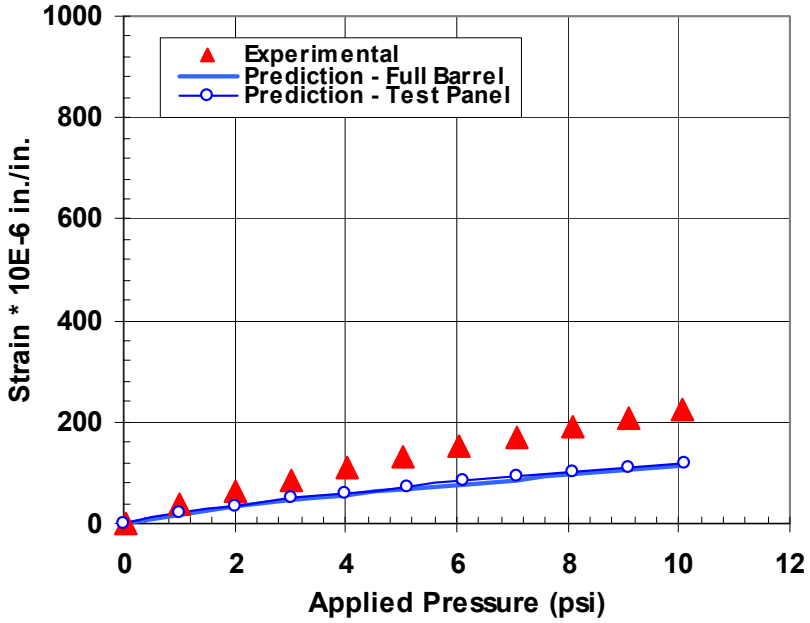

FIGURE H-63. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 33L, EXTERIOR SKIN GAGE

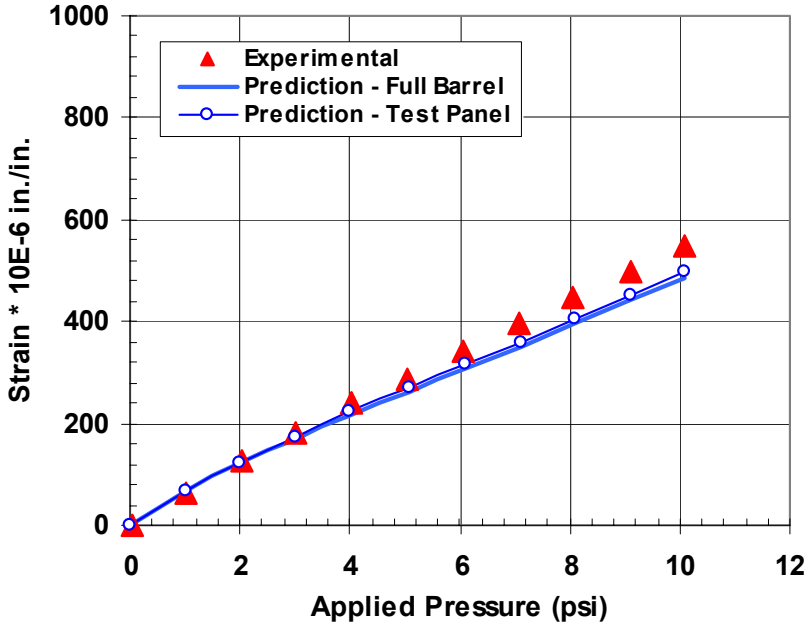

FIGURE H-64. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 33D, EXTERIOR SKIN GAGE

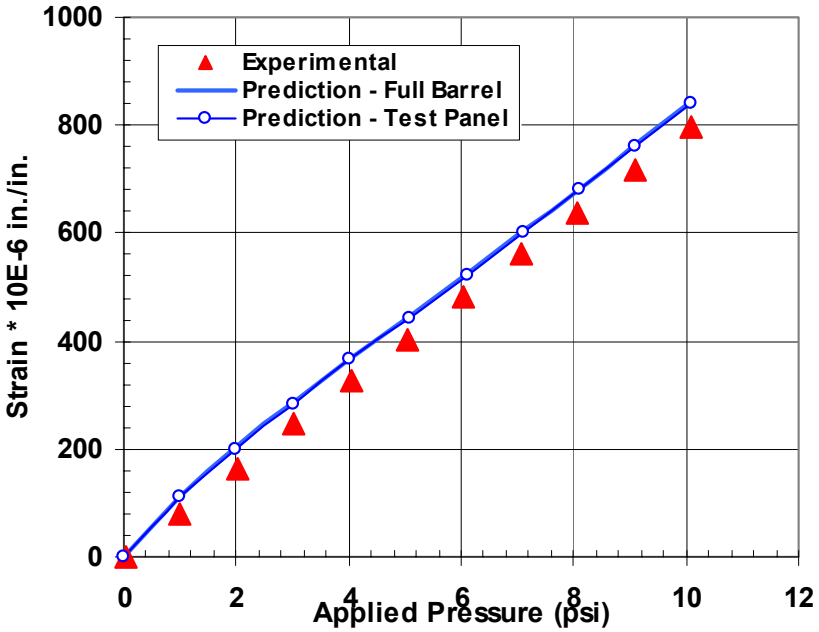

FIGURE H-65. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 33H, EXTERIOR SKIN GAGE

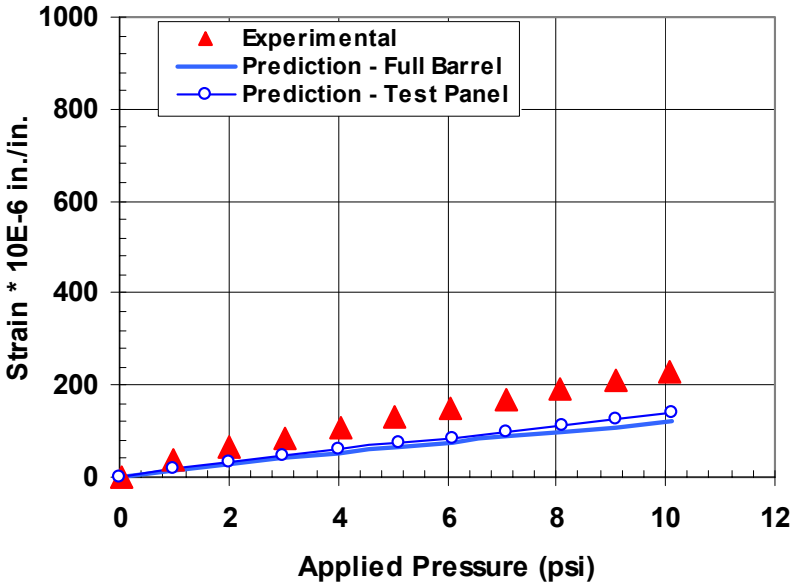

FIGURE H-66. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 34L, EXTERIOR SKIN GAGE

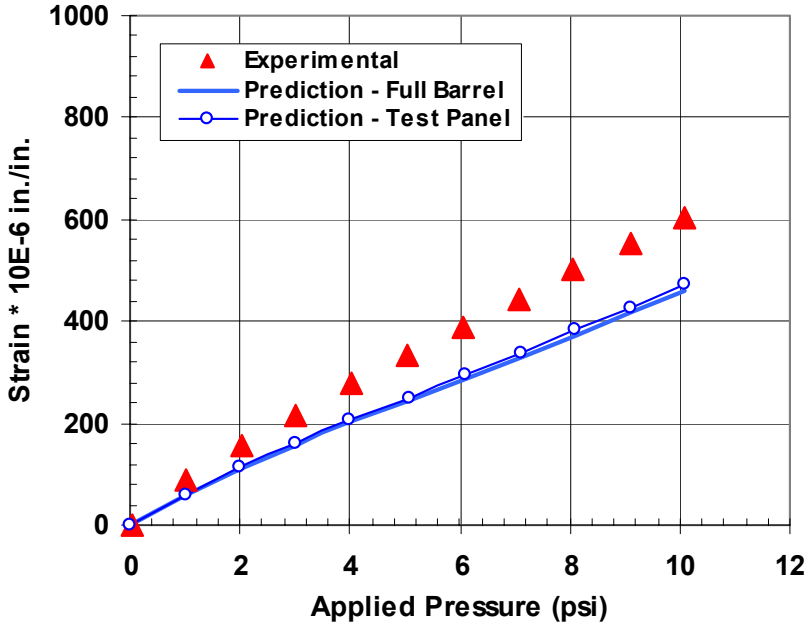

FIGURE H-67. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 34D, EXTERIOR SKIN GAGE

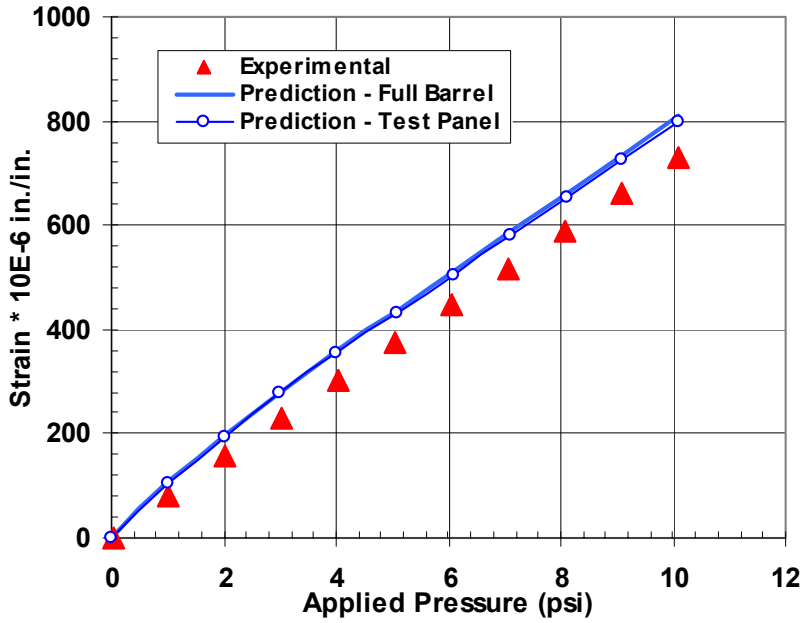

FIGURE H-68. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 34H, EXTERIOR SKIN GAGE

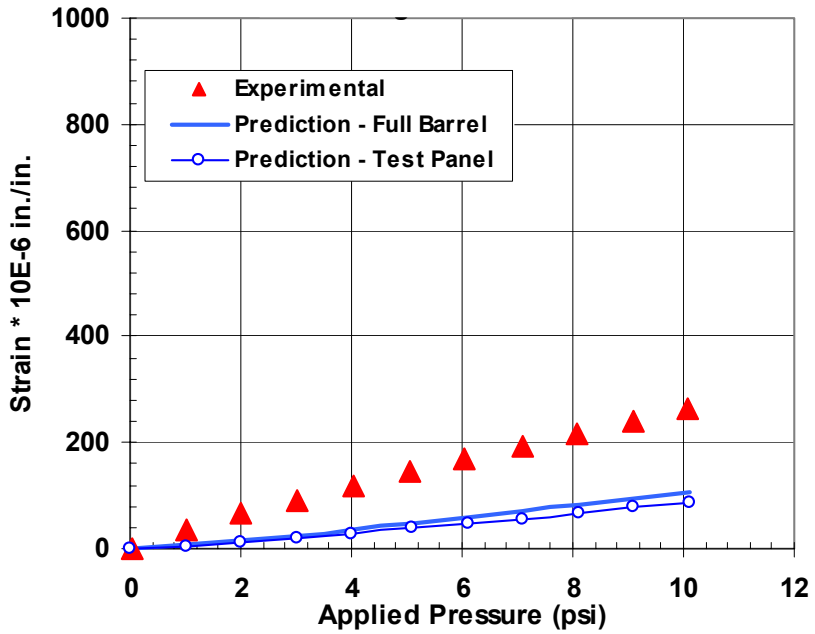

FIGURE H-69. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 35L

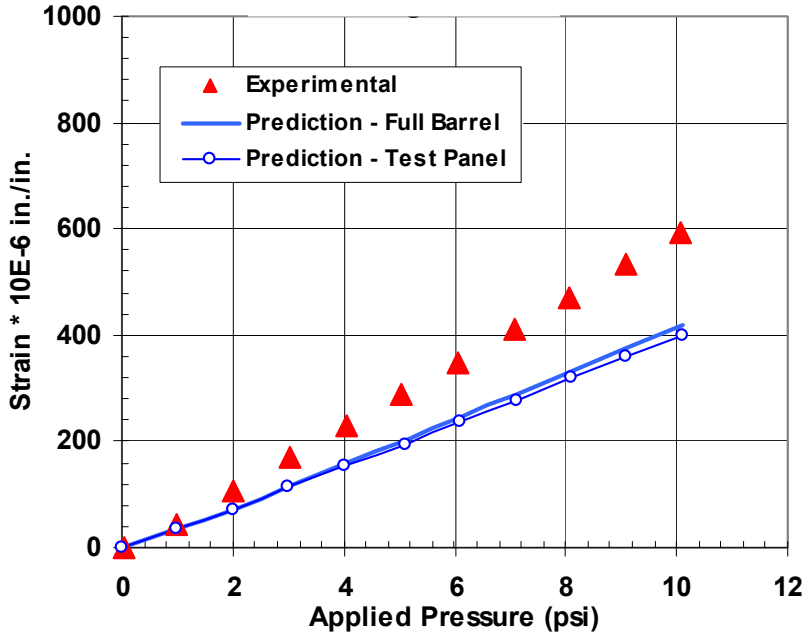

FIGURE H-70. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 35D

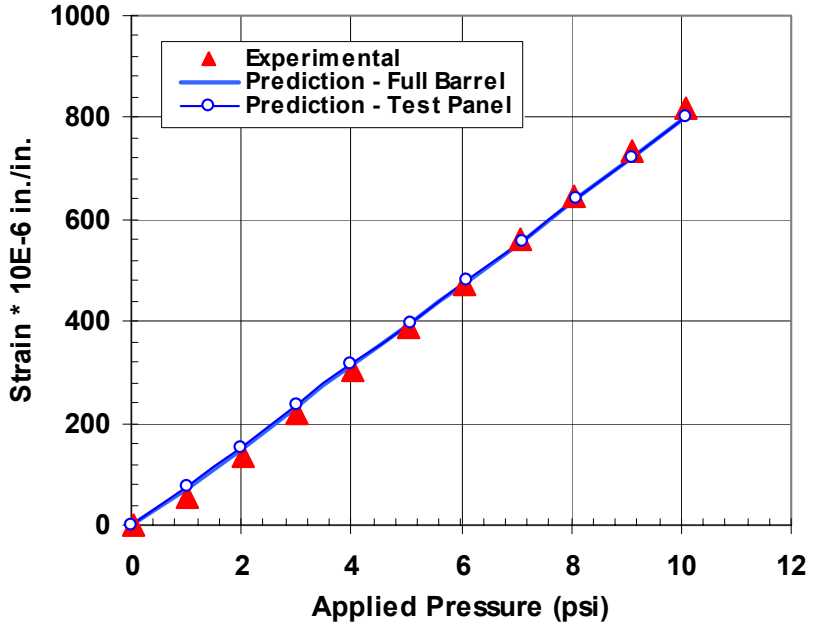

FIGURE H-71. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 35H

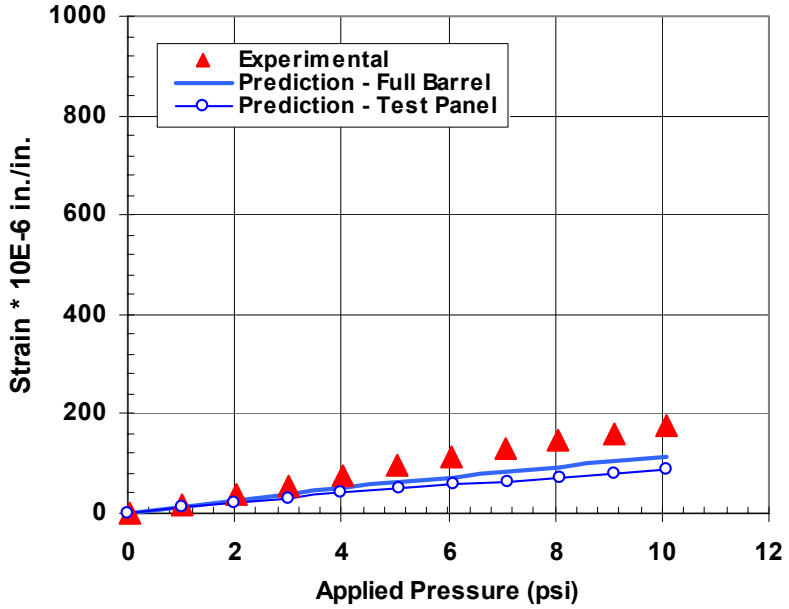

FIGURE H-72. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 36L

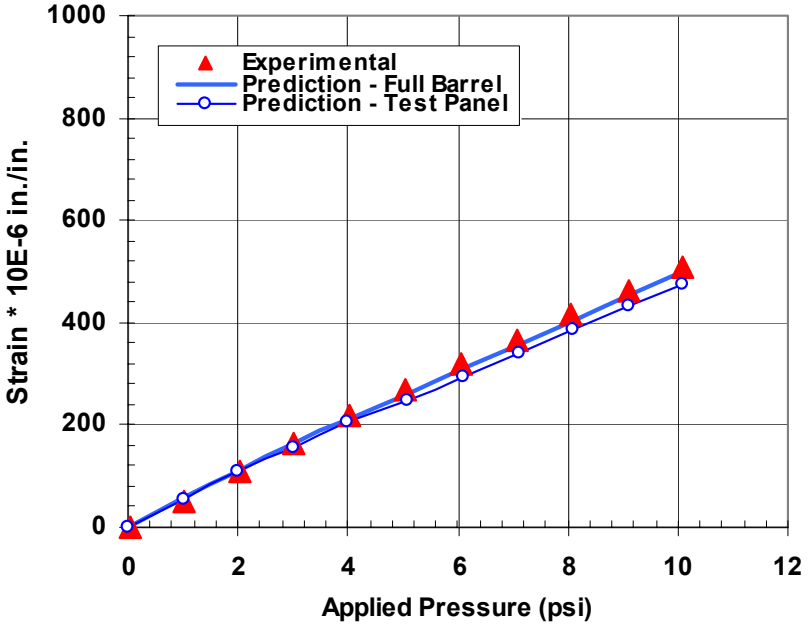

FIGURE H-73. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 36D

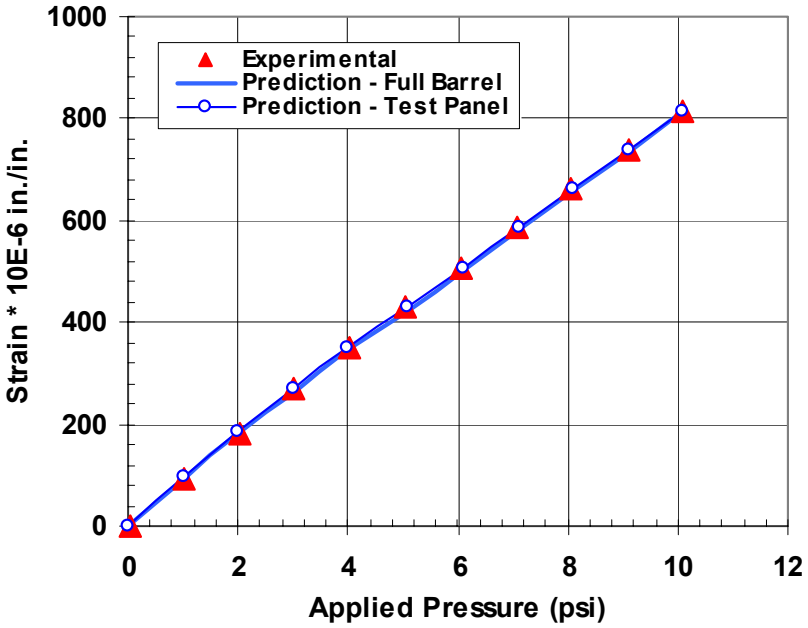

FIGURE H-74. STRAIN COMPARISON OF EXPERIMENTAL VS PREDICTED FOR CVP-1 GAGE NO. 36H

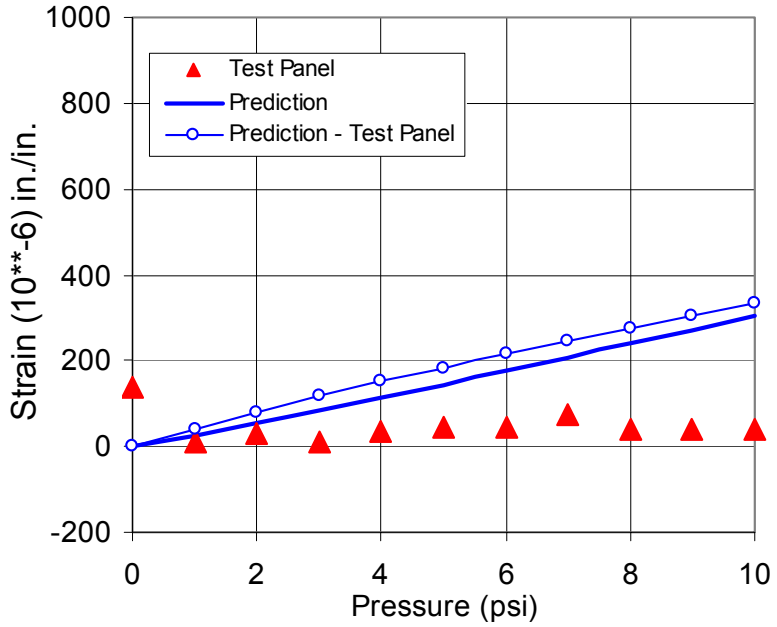

FIGURE H-75. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 1, INNER FRAME CAP

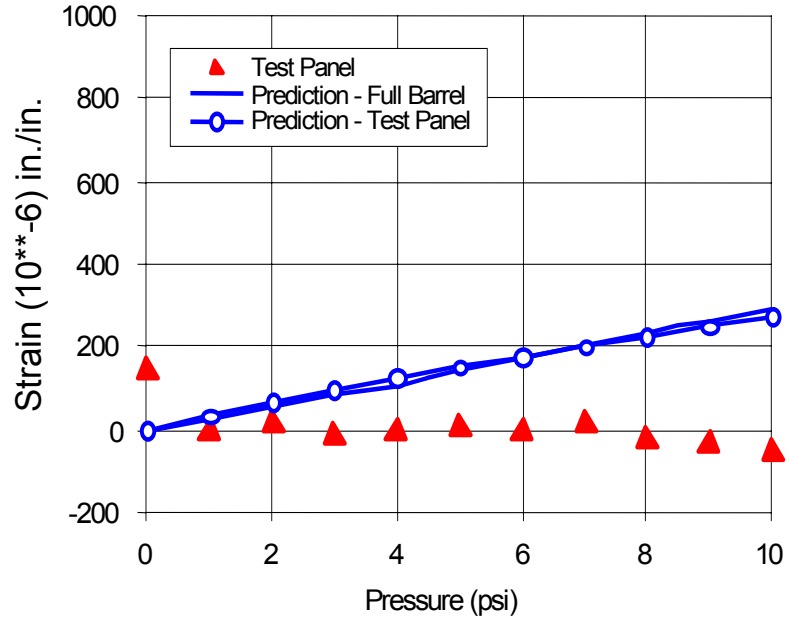

FIGURE H-76. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 2, INNER FRAME CAP

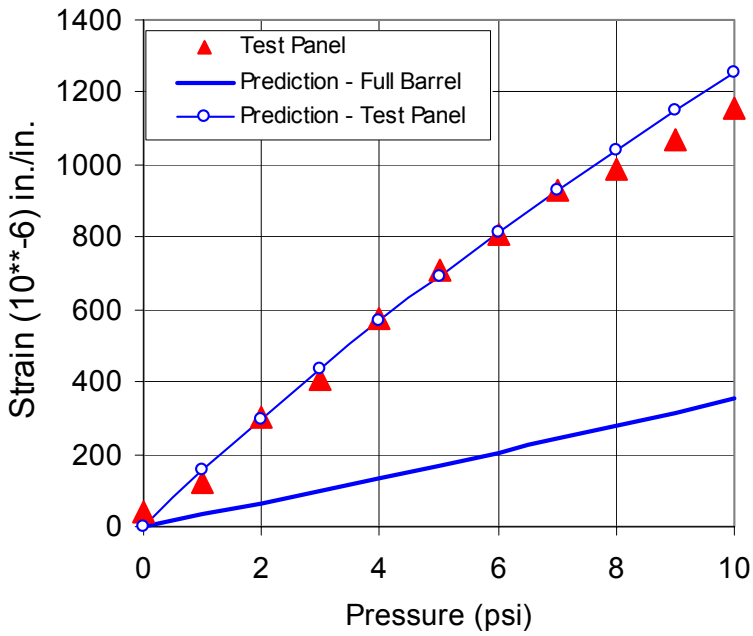

FIGURE H-77. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 3, INNER FRAME CAP

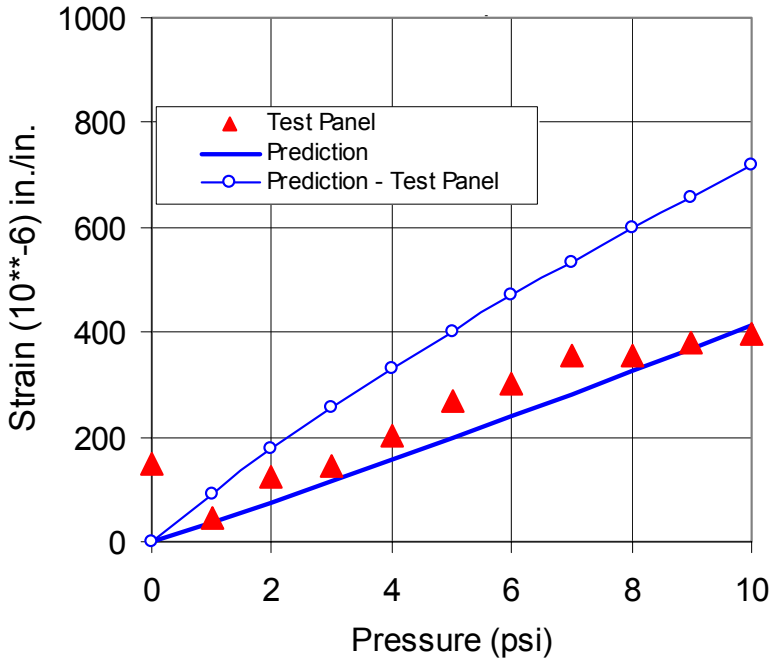

FIGURE H-78. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 4, INNER FRAME CAP

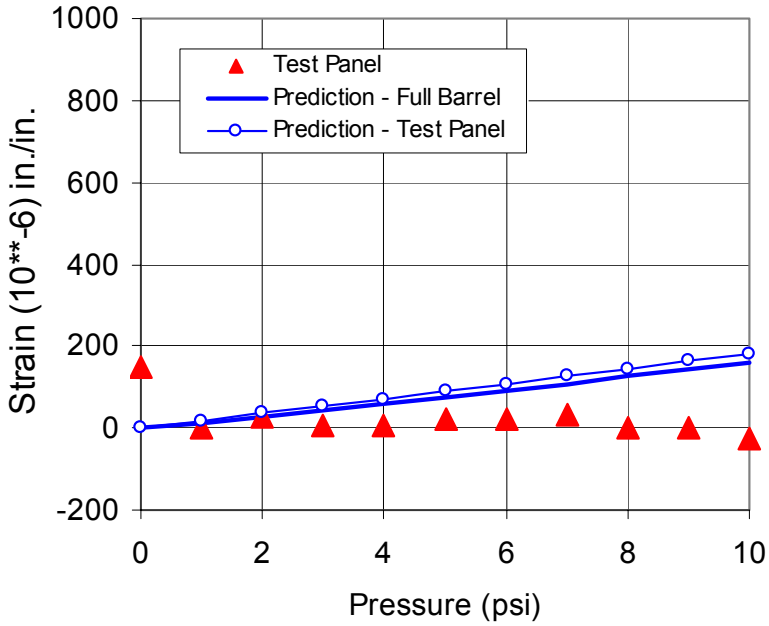

FIGURE H-79. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 5, INNER FRAME CAP

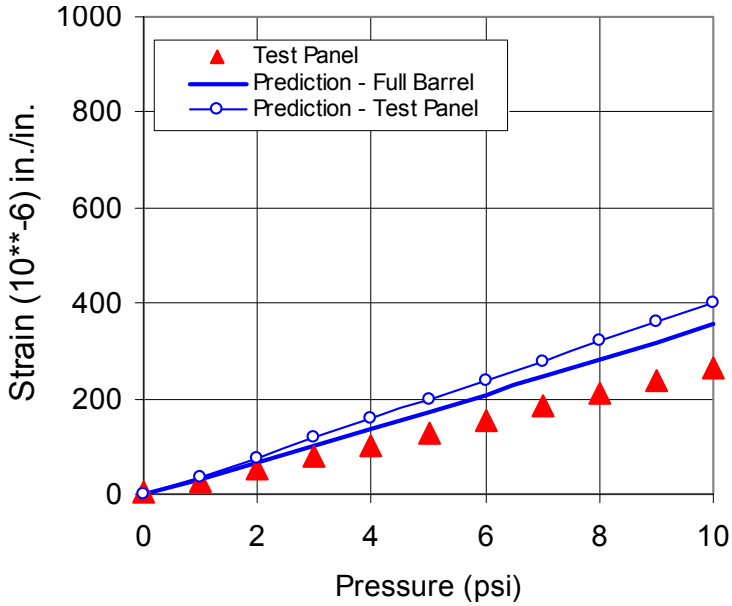

FIGURE H-80. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 6, OUTER FRAME CAP

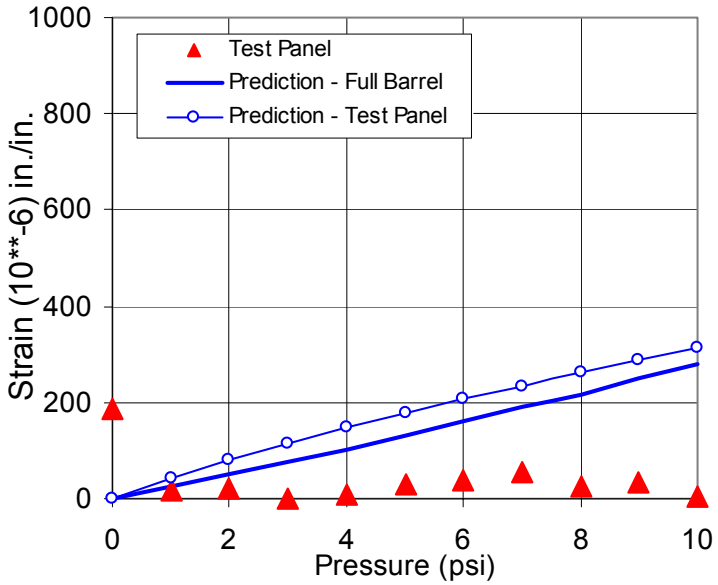

FIGURE H-81. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 7, INNER FRAME CAP

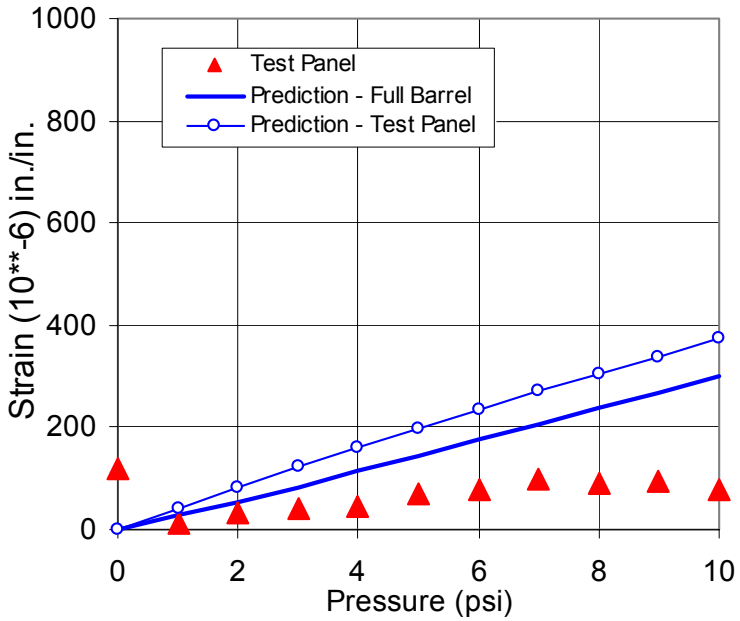

FIGURE H-82. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 8, INNER FRAME CAP

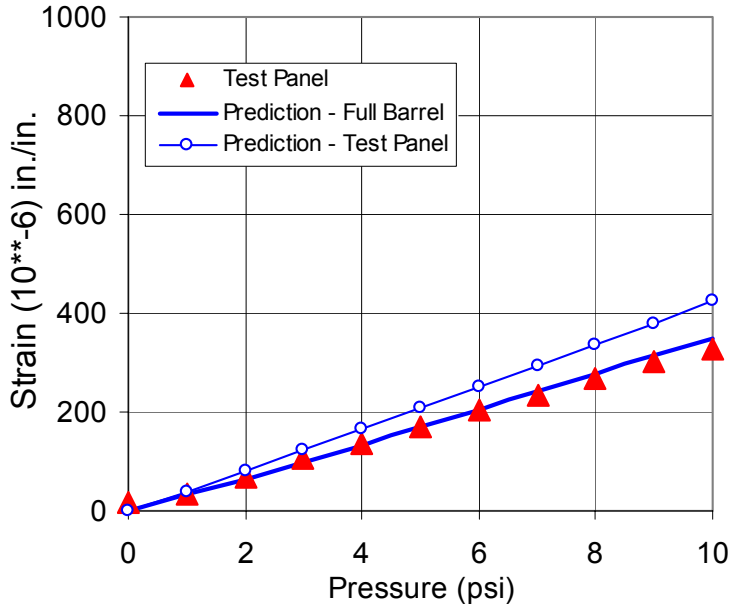

FIGURE H-83. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 9, OUTER FRAME CAP

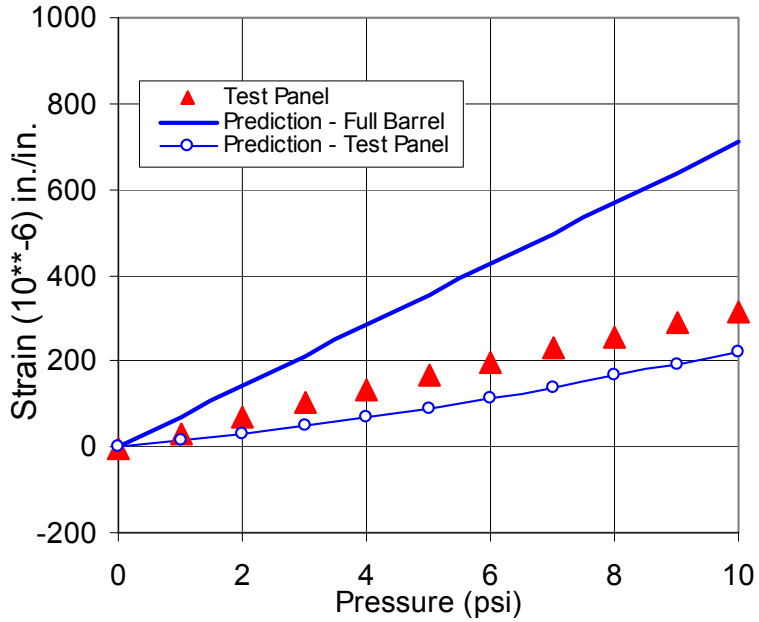

FIGURE H-84. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 10, LONGERON FLANGE

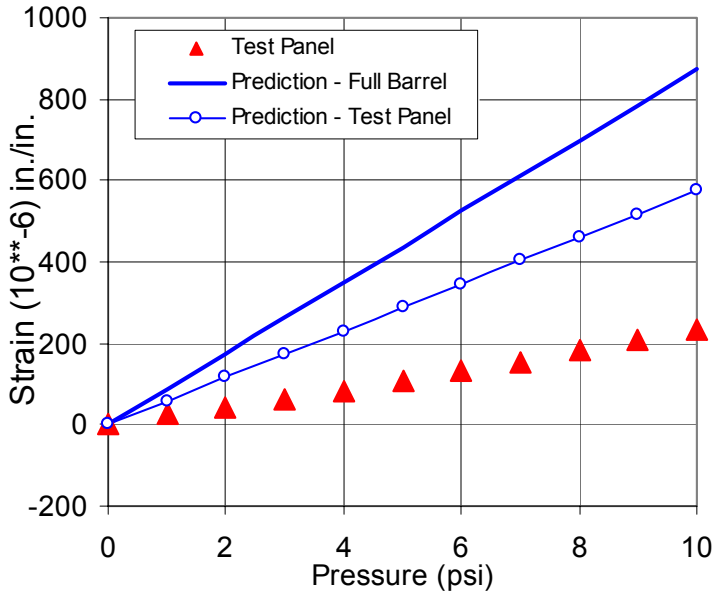

FIGURE H-85. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 11, LONGERON FLANGE

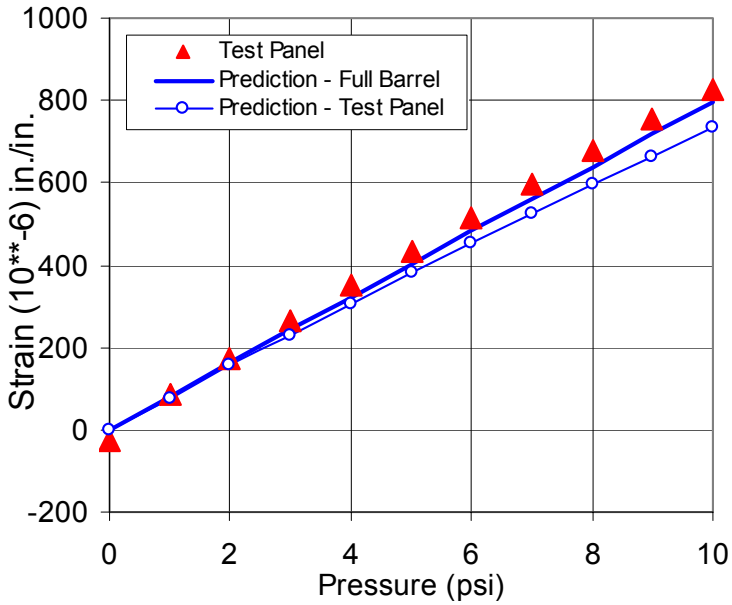

FIGURE H-86. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 12, LONGERON CAP

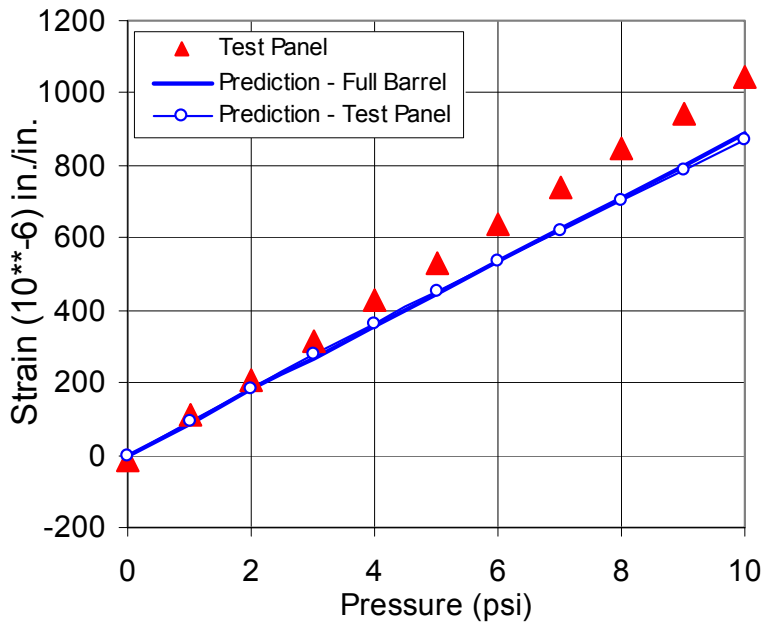

FIGURE H-87. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 13, LONGERON FLANGE

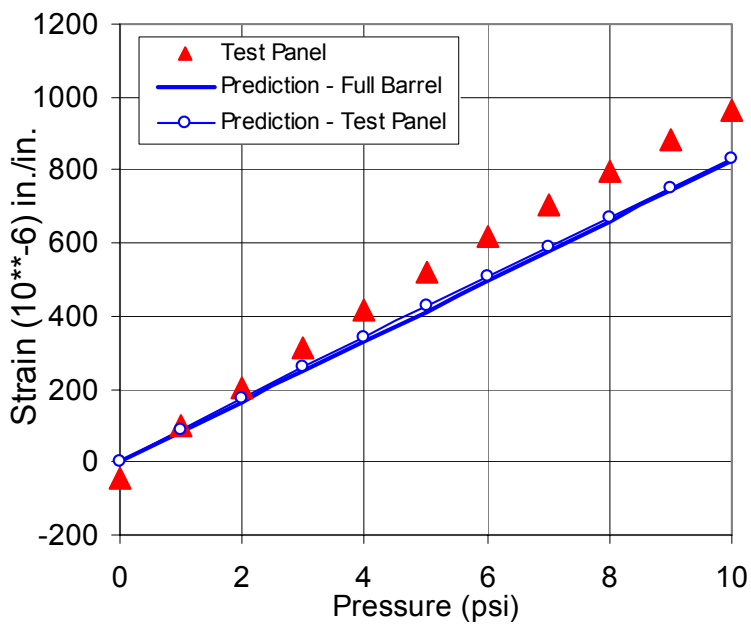

FIGURE H-88. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 14, LONGERON CAP

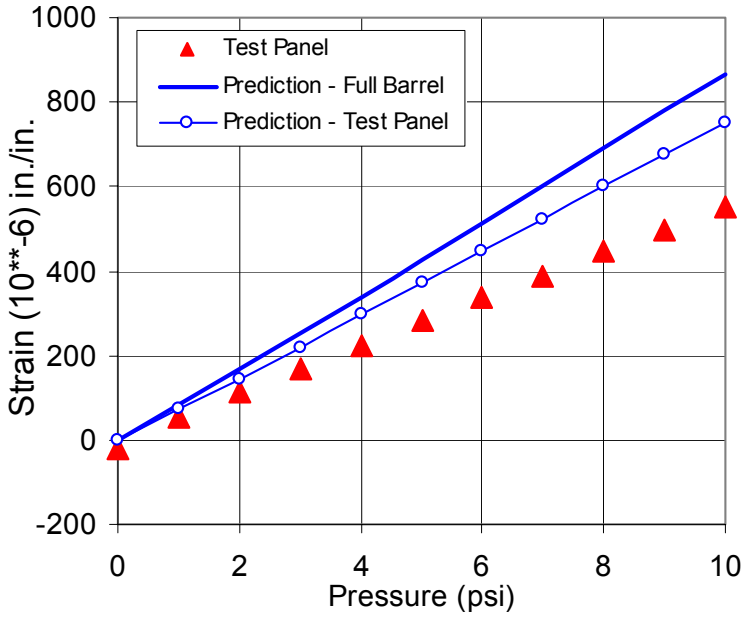

FIGURE H-89. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 15, LONGERON FLANGE

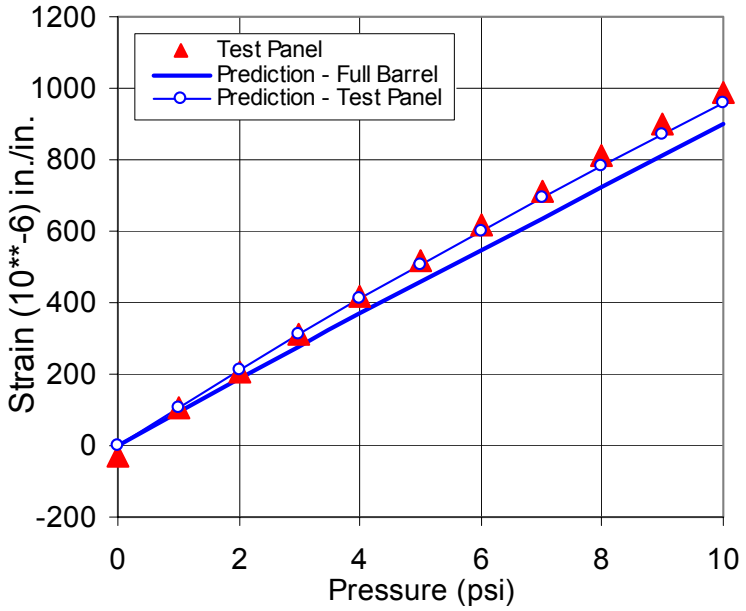

FIGURE H-90. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 16, LONGERON CAP

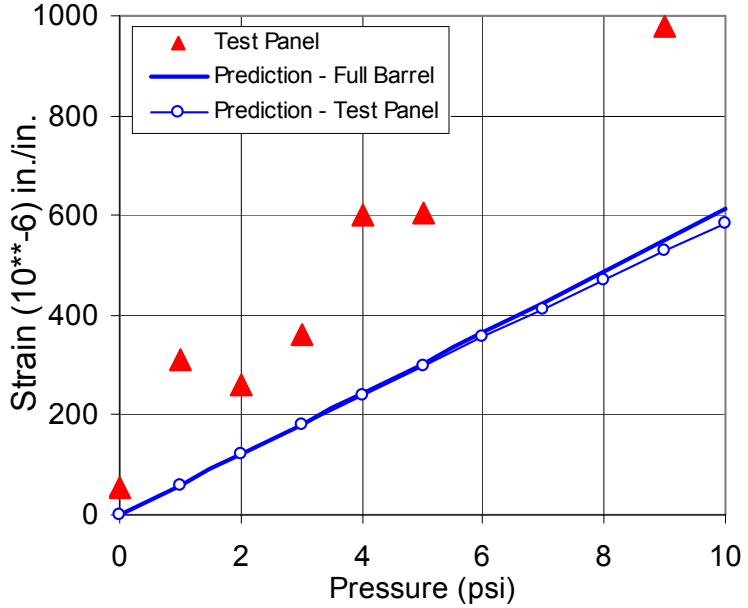

FIGURE H-91. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 17, LONGERON CAP

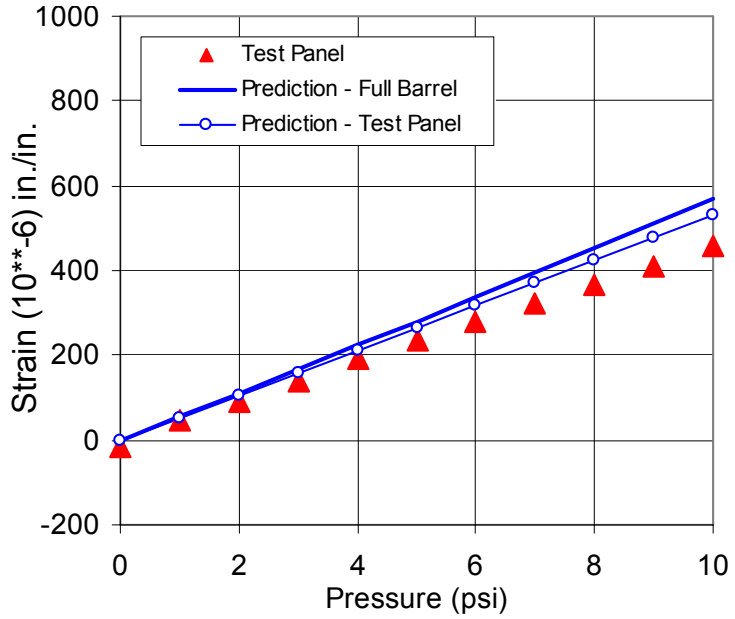

FIGURE H-92. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 18, LONGERON FLANGE

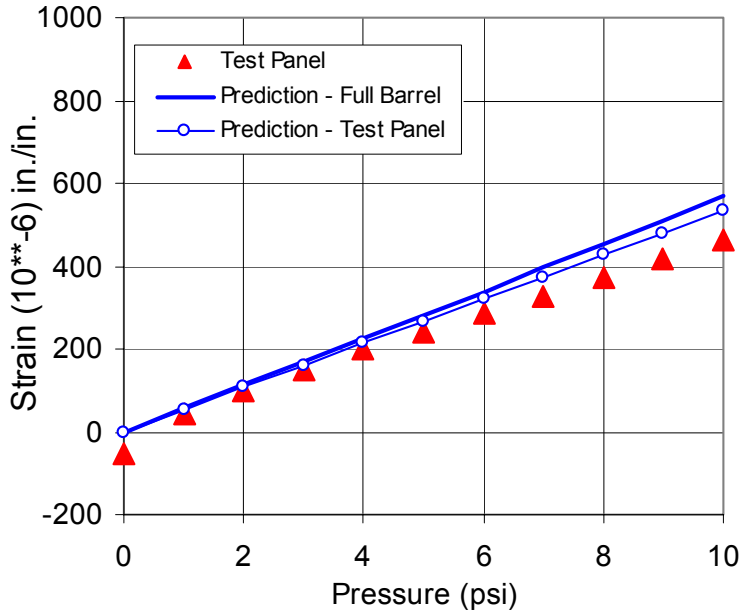

FIGURE H-93. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 19, LONGERON FLANGE

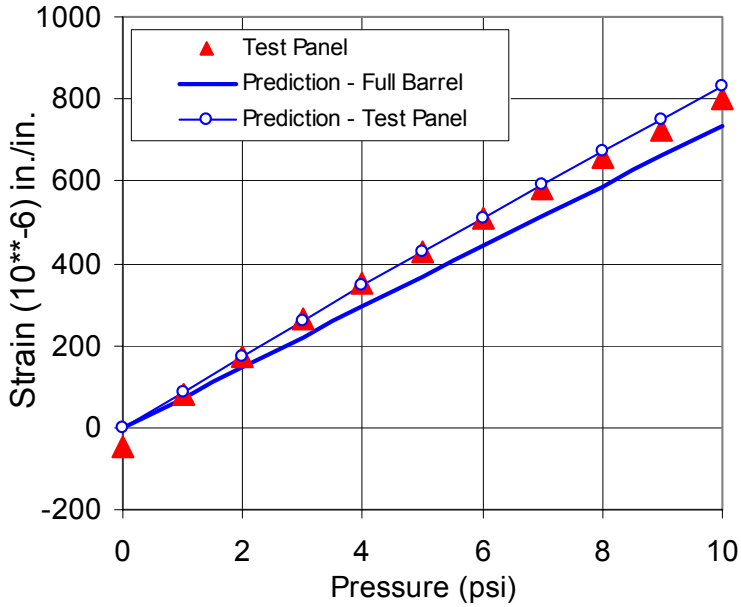

FIGURE H-94. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 20, LONGERON CAP

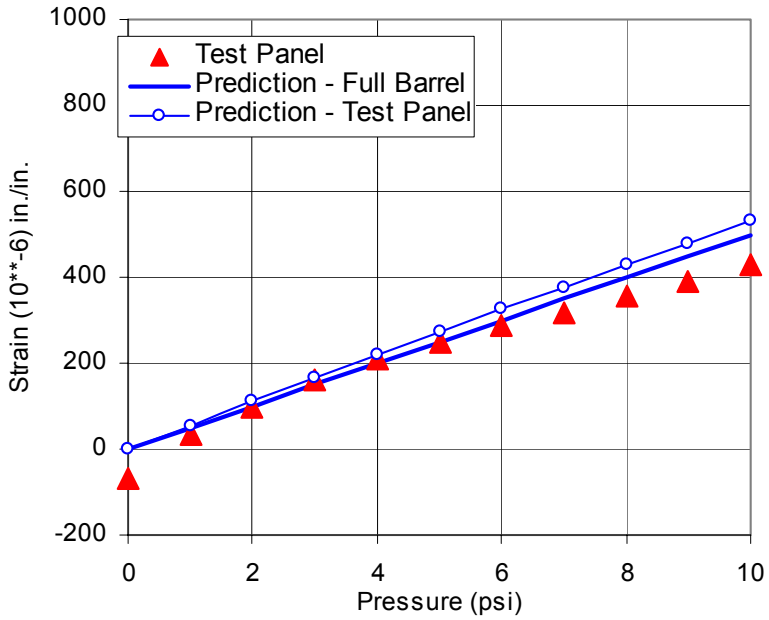

FIGURE H-95. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 21, LONGERON CAP

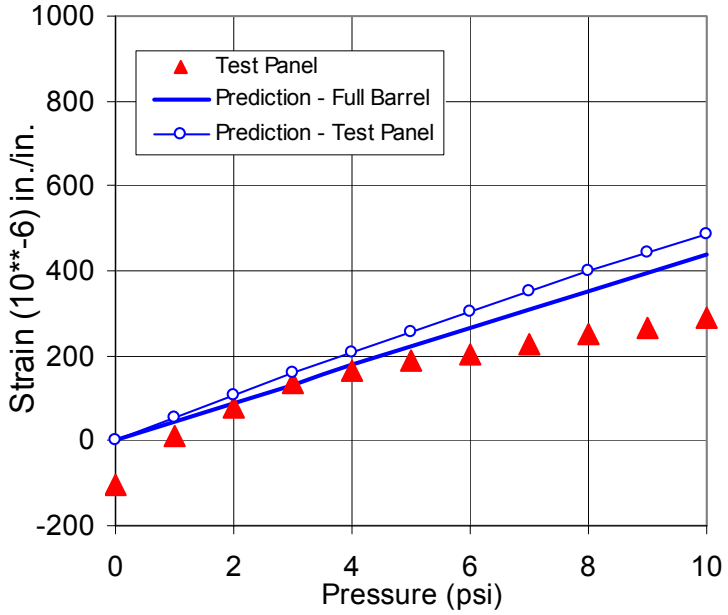

FIGURE H-96. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 22, LONGERON FLANGE

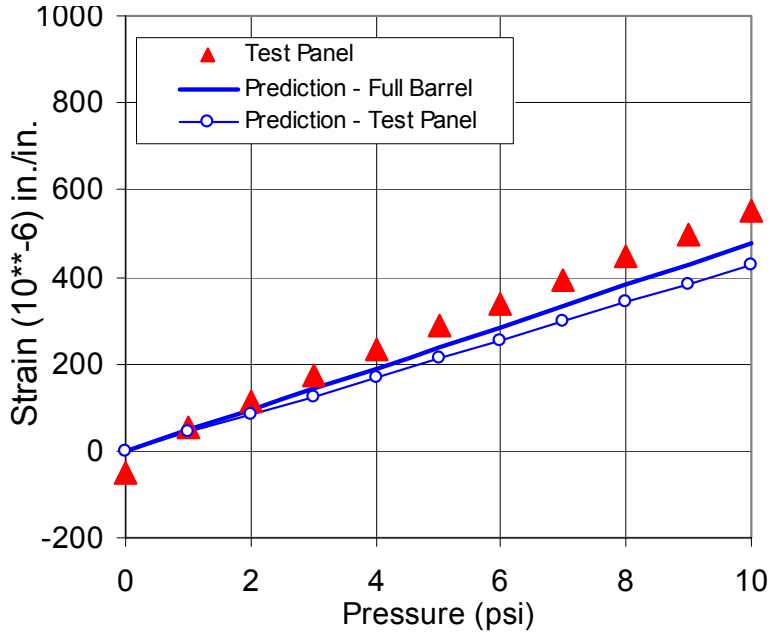

FIGURE H-97. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 23, LONGERON FLANGE

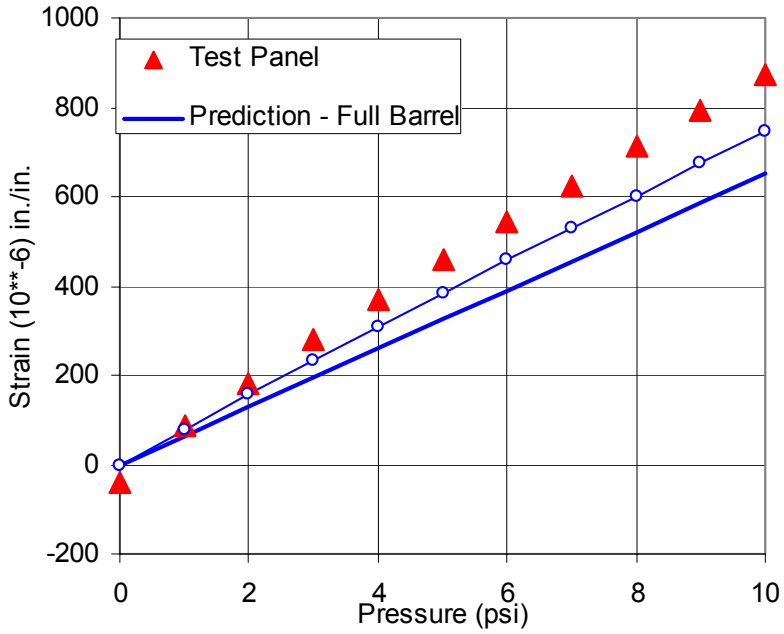

FIGURE H-98. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 24, LONGERON CAP

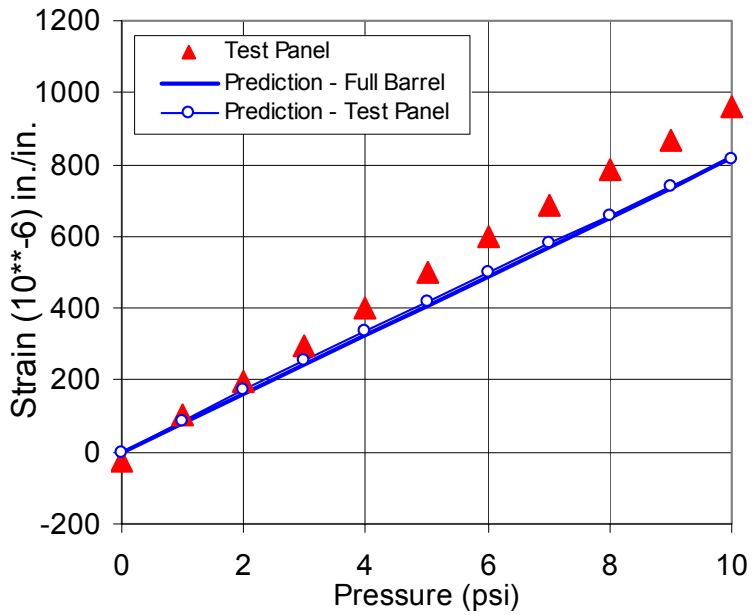

FIGURE H-99. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 25, LONGERON CAP

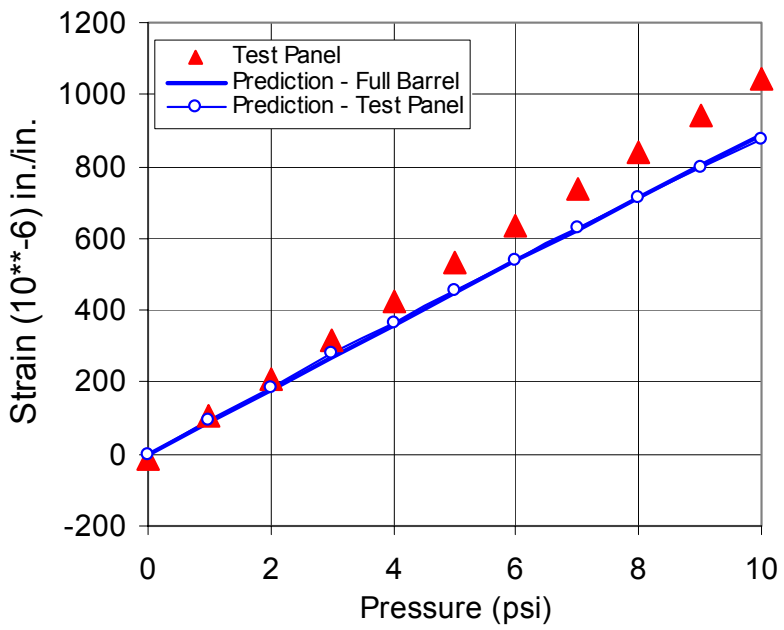

FIGURE H-100. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 26, LONGERON FLANGE

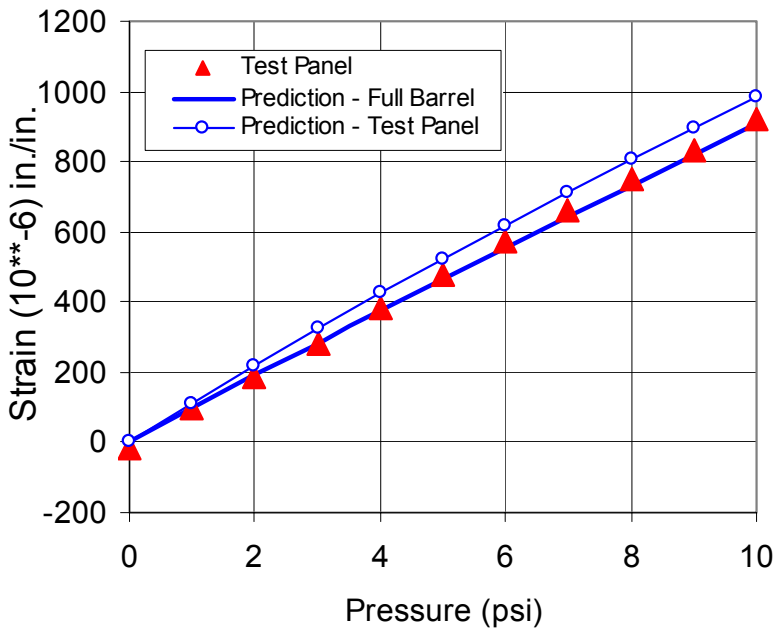

FIGURE H-101. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 27, LONGERON CAP

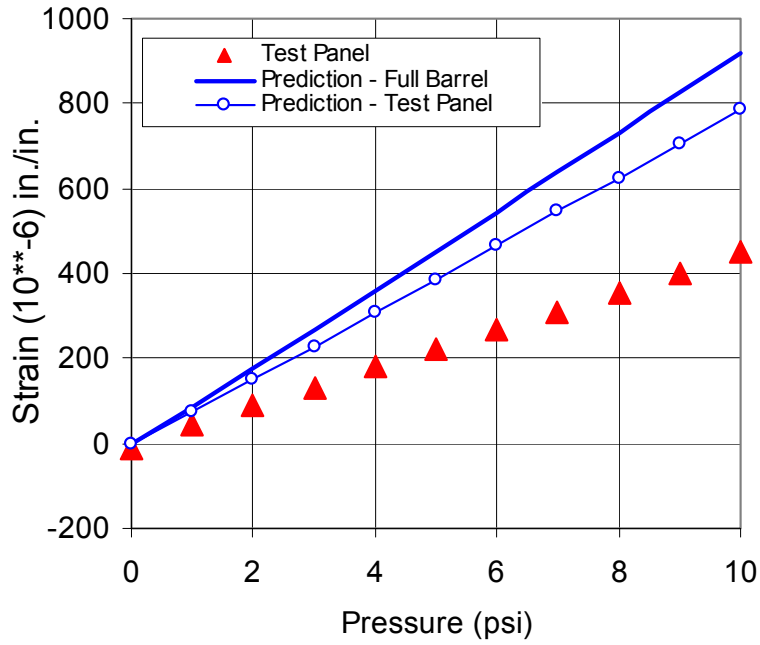

FIGURE H-102. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 28, LONGERON FLANGE

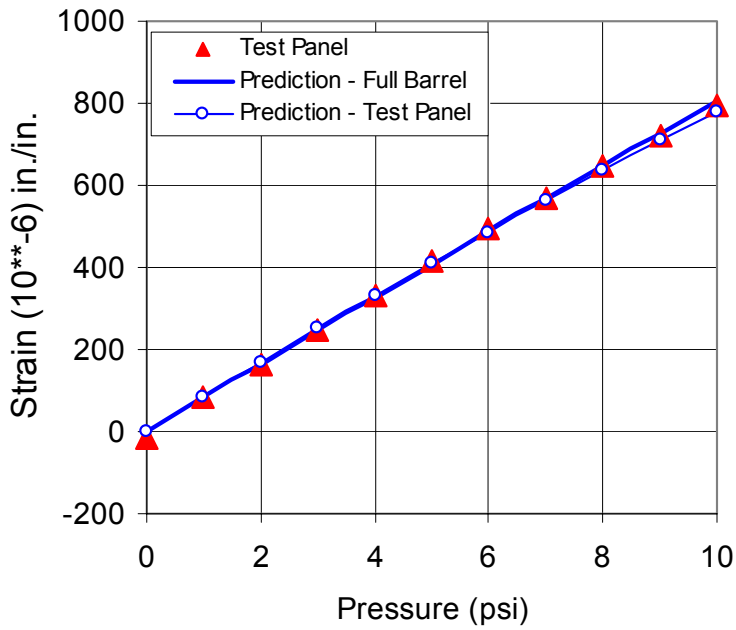

FIGURE H-103. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 29, LONGERON CAP

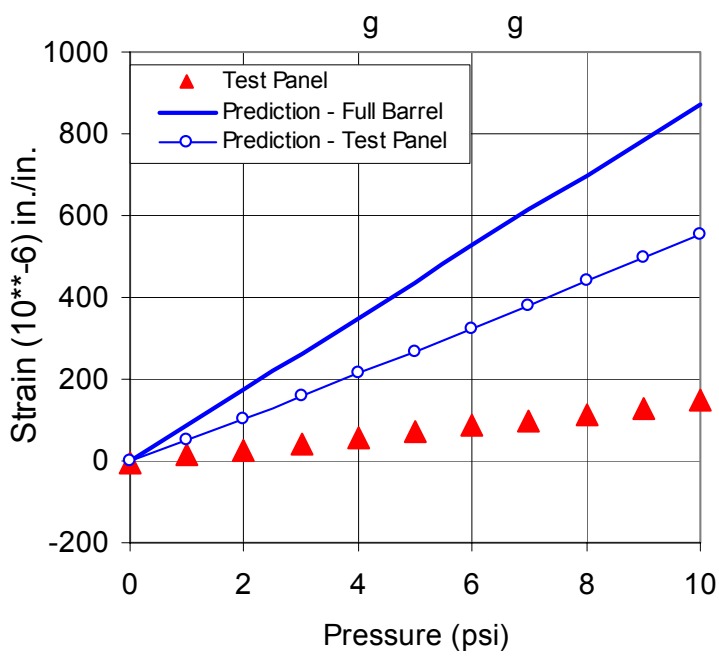

FIGURE H-104. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 30, LONGERON FLANGE

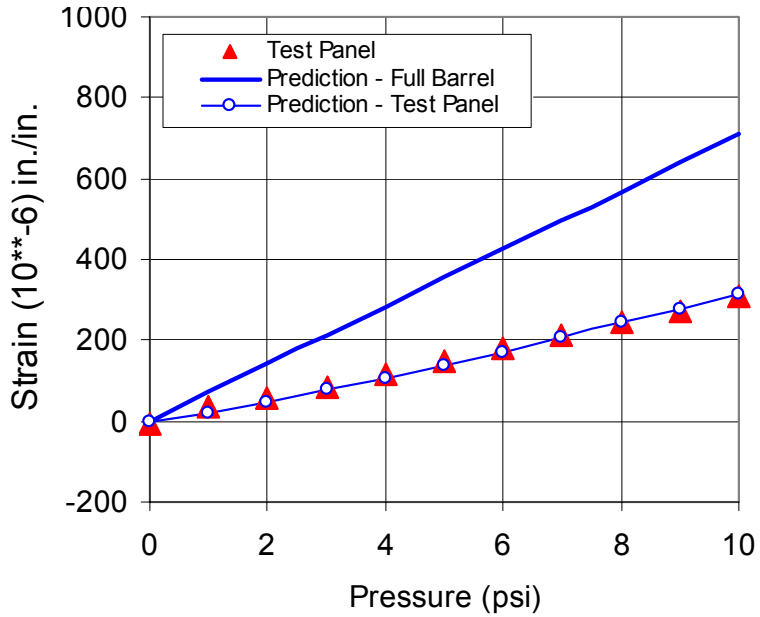

FIGURE H-105. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 31, LONGERON FLANGE

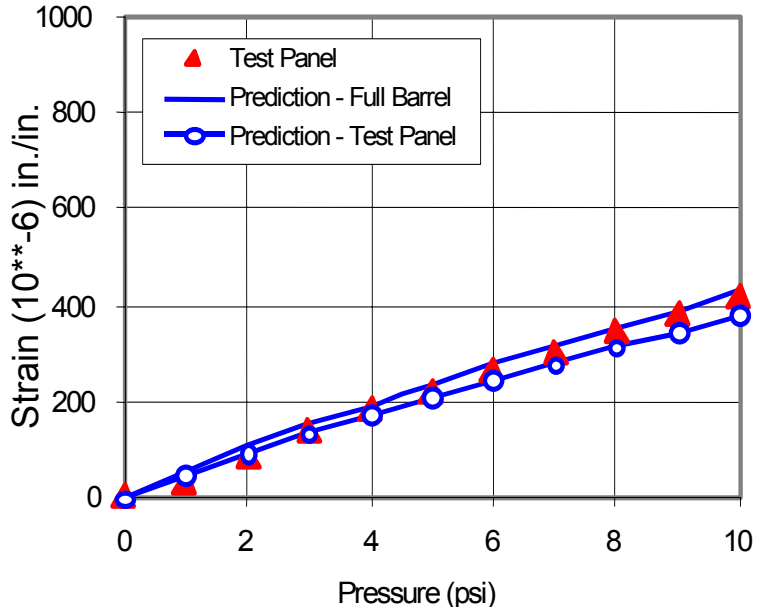

FIGURE H-106. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 32, HOOP

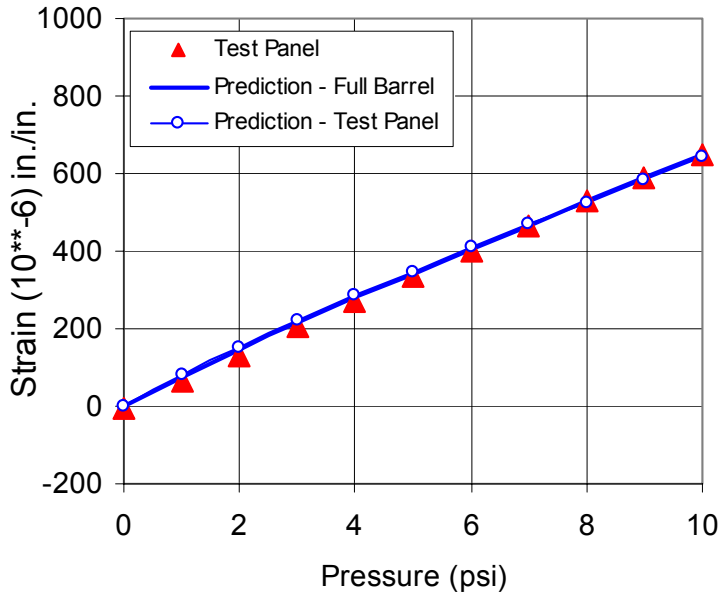

FIGURE H-107. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 32, DIAGONAL

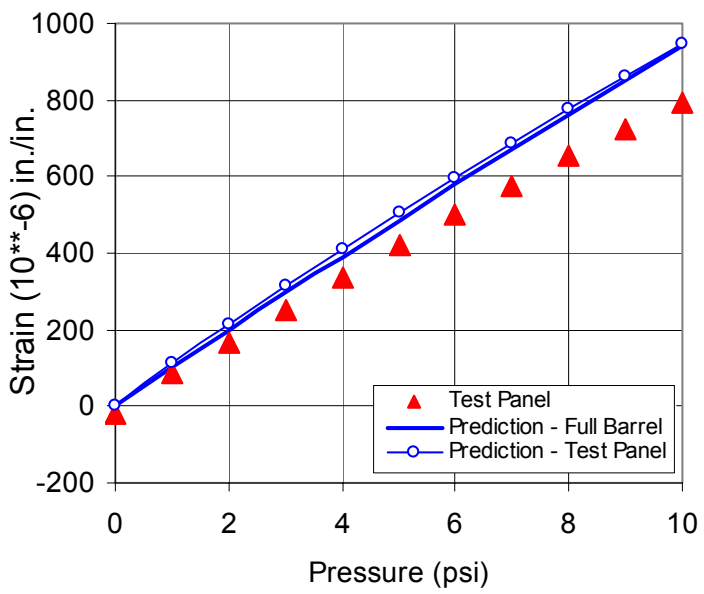

FIGURE H-108. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 32, LONGITUDINAL

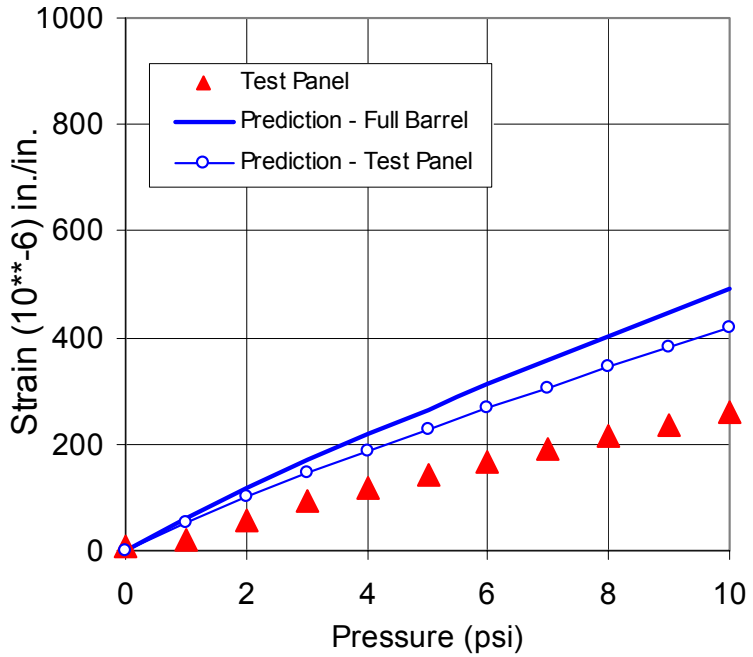

FIGURE H-109. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 33, HOOP

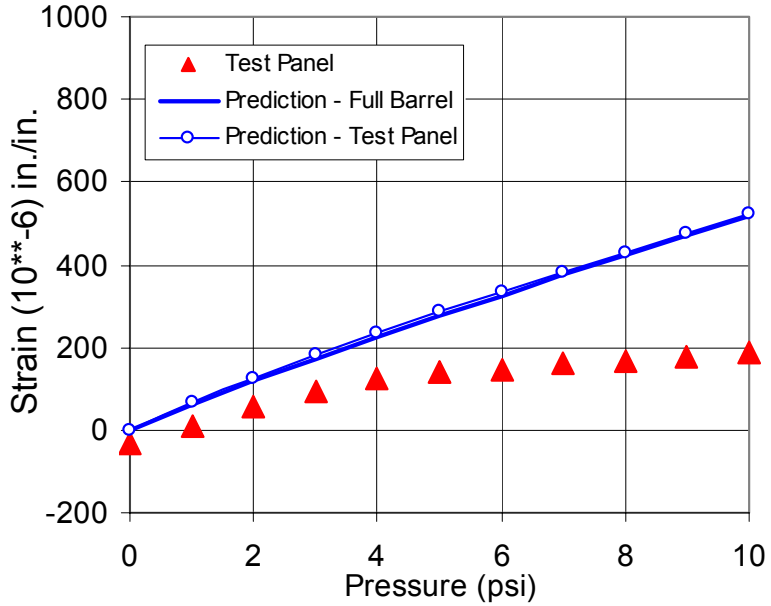

FIGURE H-110. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 33, DIAGONAL

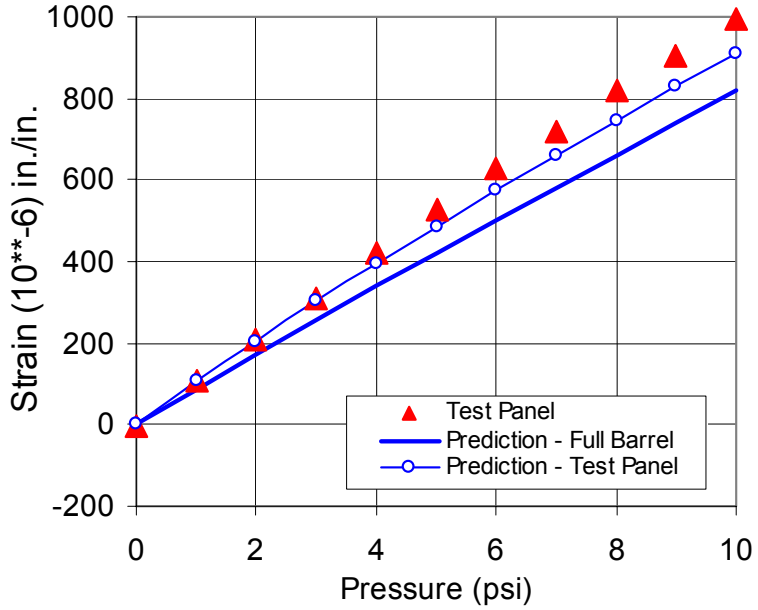

FIGURE H-111. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 33, LONGITUDINAL

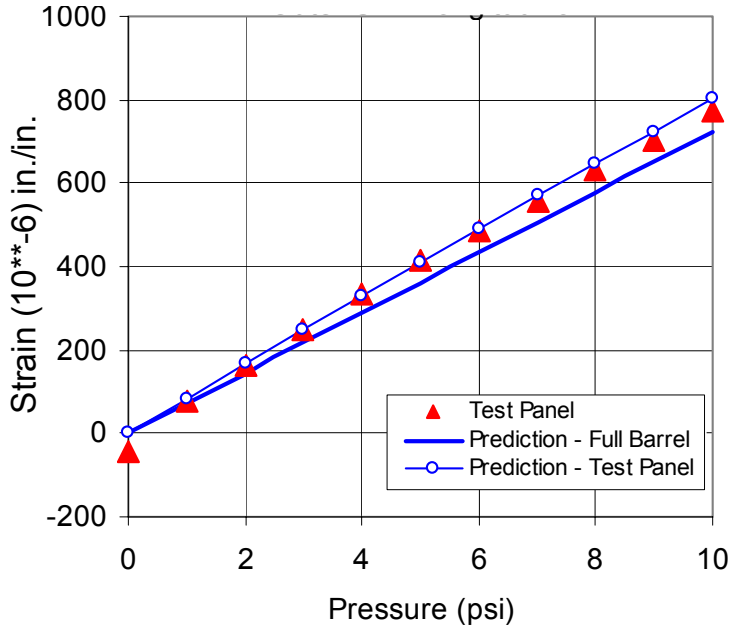

FIGURE H-112. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 34, LONGITUDINAL

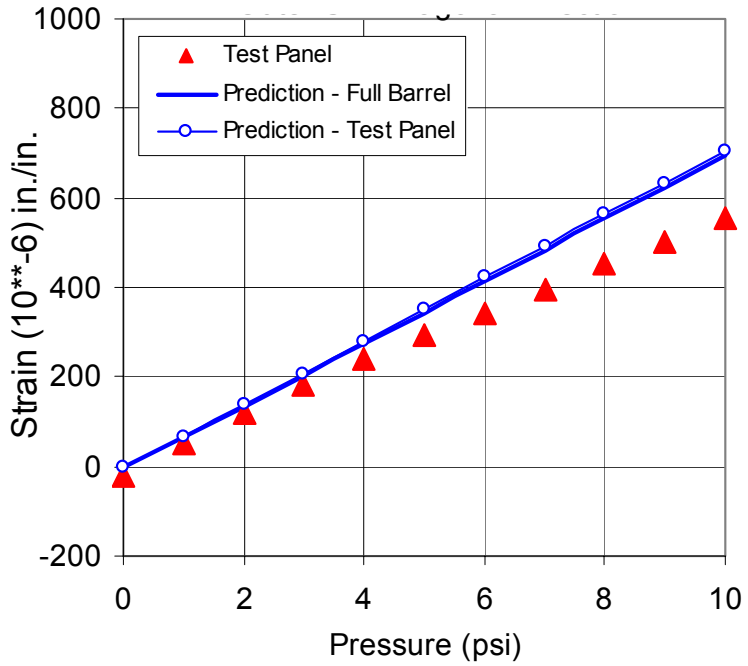

FIGURE H-113. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 34, DIAGONAL

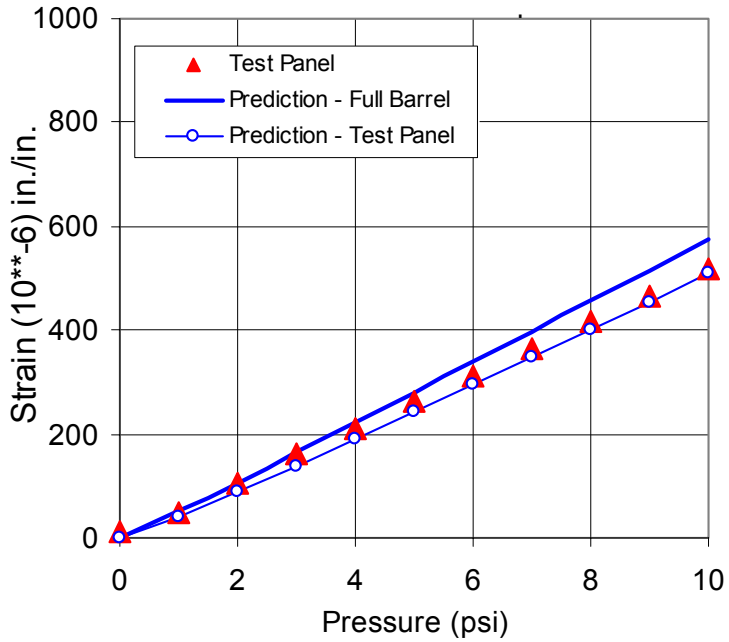

FIGURE H-114. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 34, HOOP

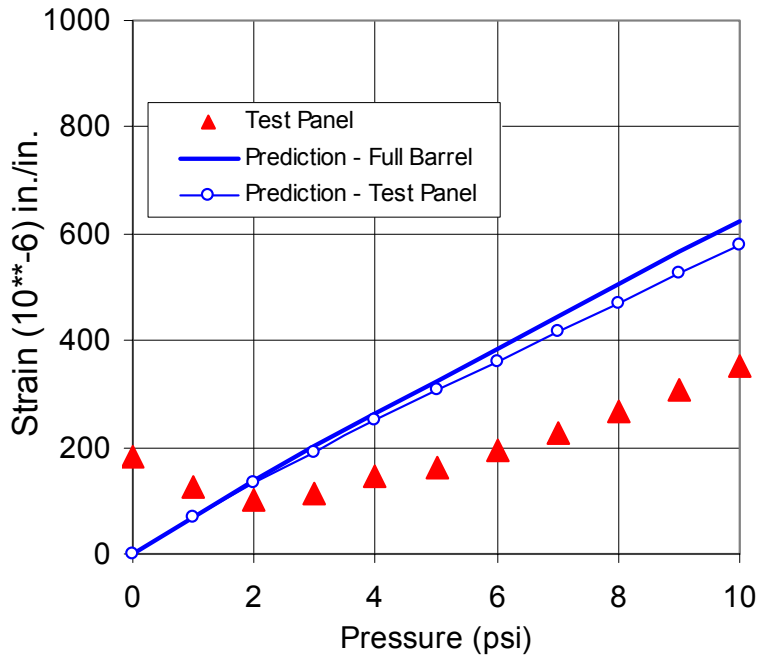

FIGURE H-115. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 35, HOOP

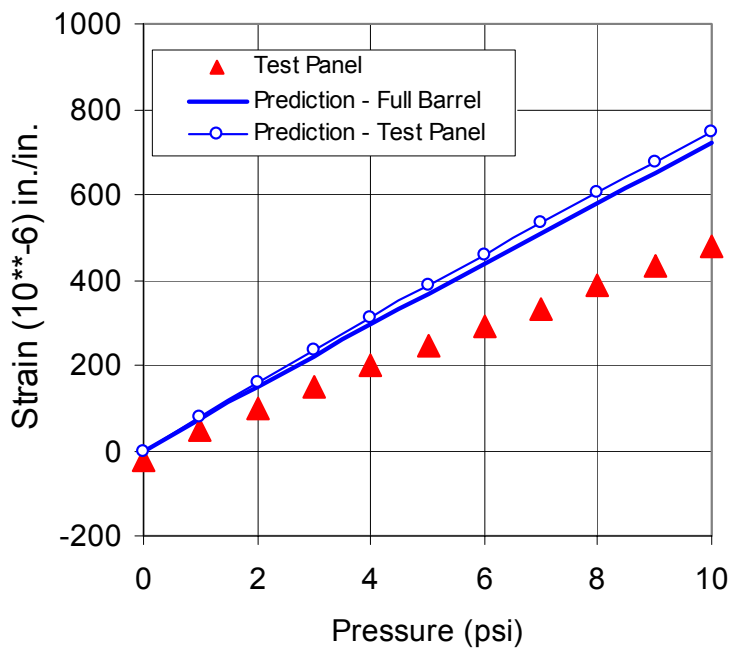

FIGURE H-116. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 35, DIAGONAL

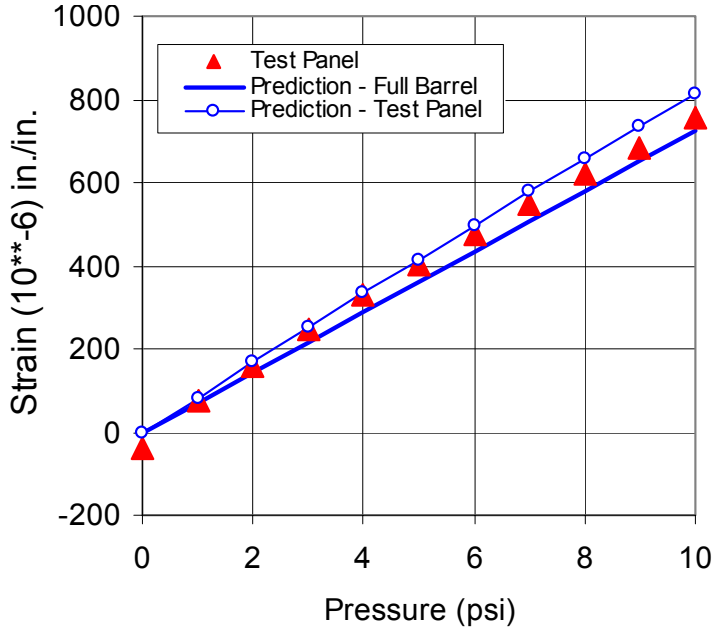

FIGURE H-117. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 35, LONGITUDINAL

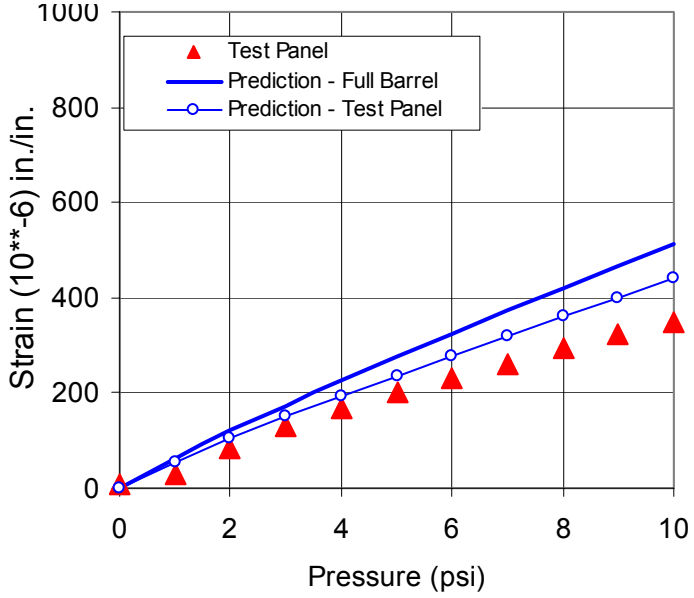

FIGURE H-118. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 36, HOOP

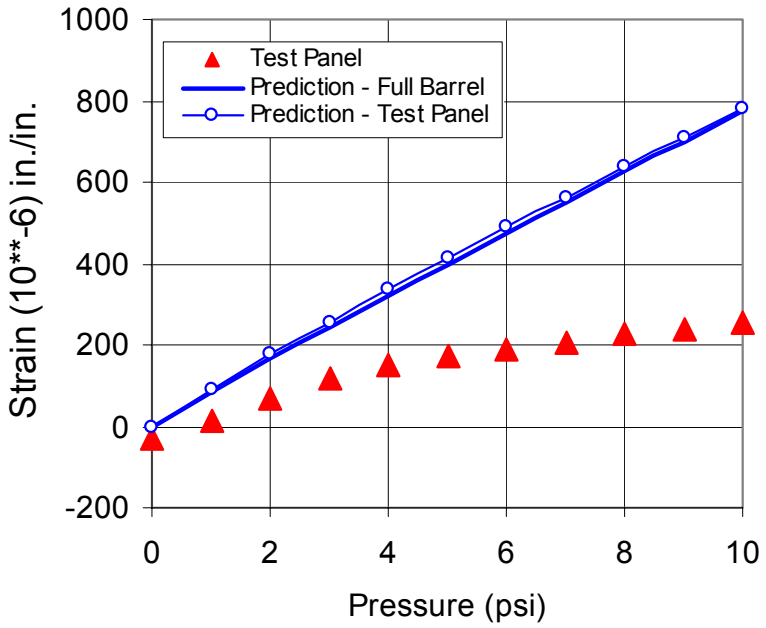

FIGURE H-119. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 36, DIAGONAL

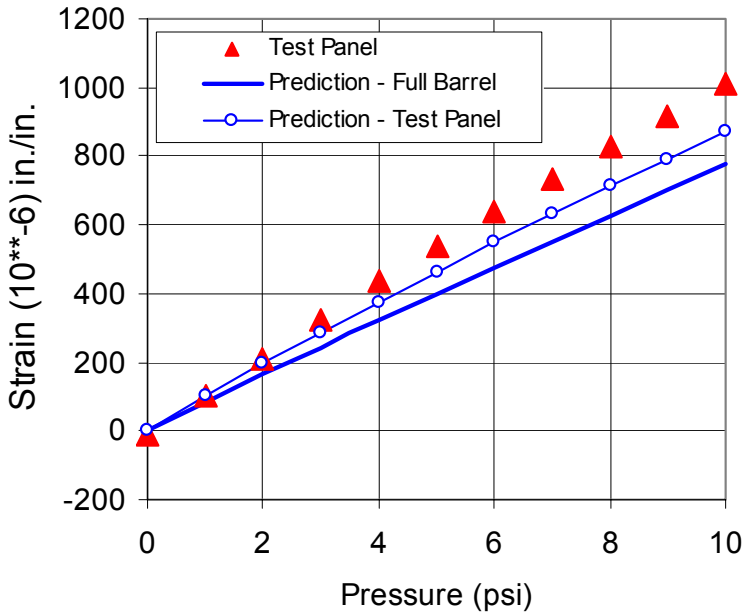

FIGURE H-120. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 36, LONGITUDINAL

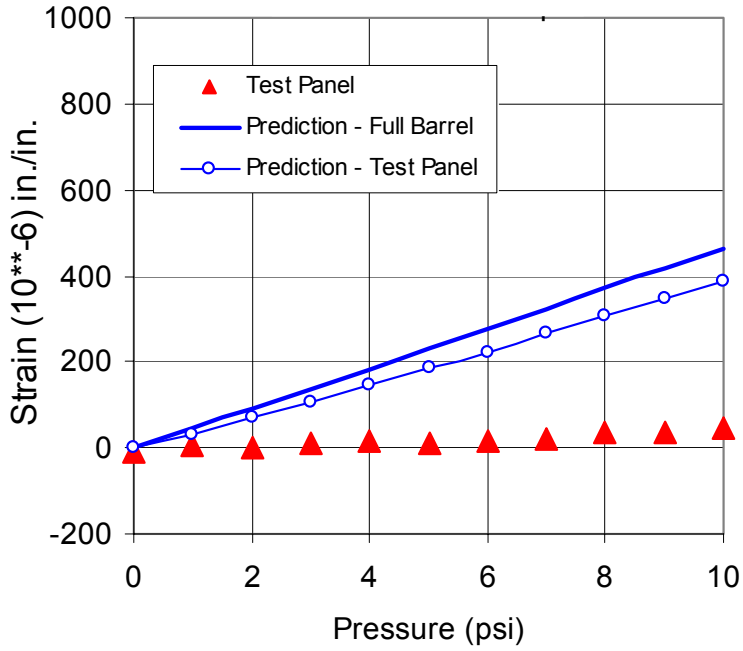

FIGURE H-121. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 37, HOOP

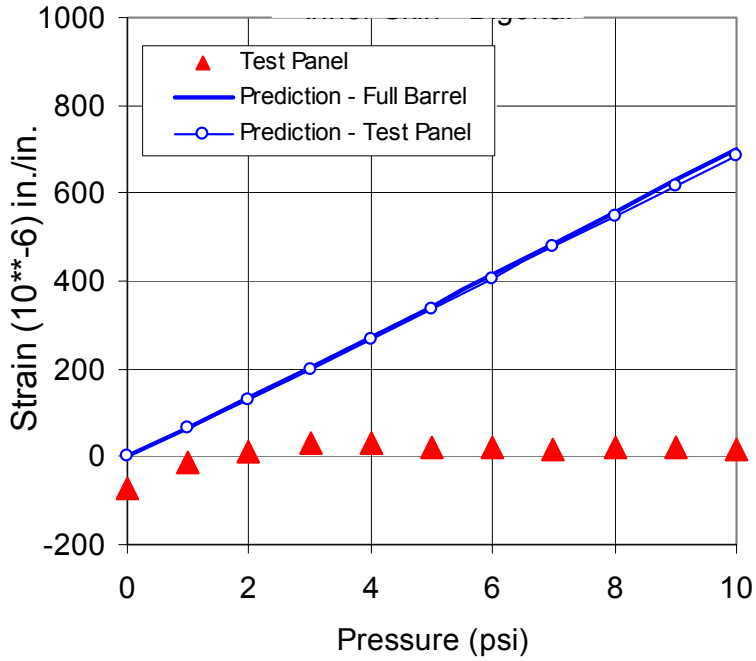

FIGURE H-122. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 37, DIAGONAL

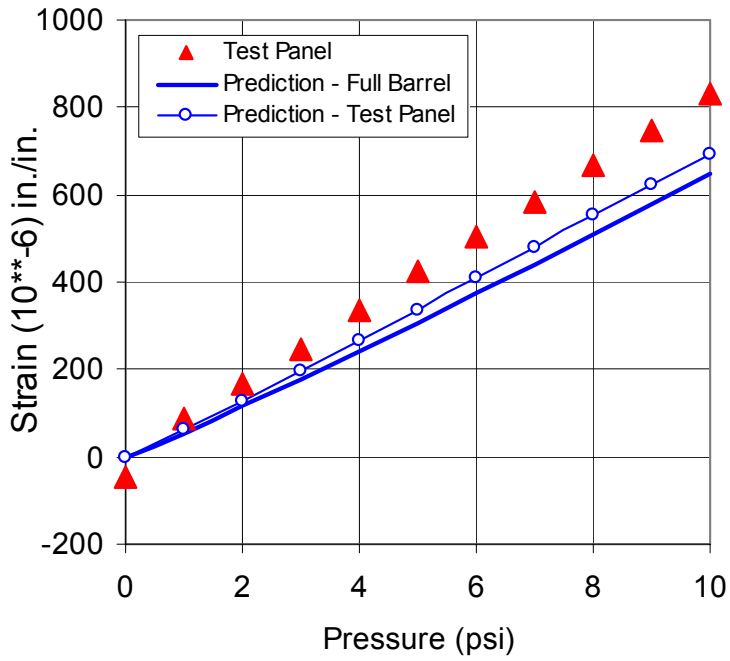

FIGURE H-123. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 37, LONGITUDINAL

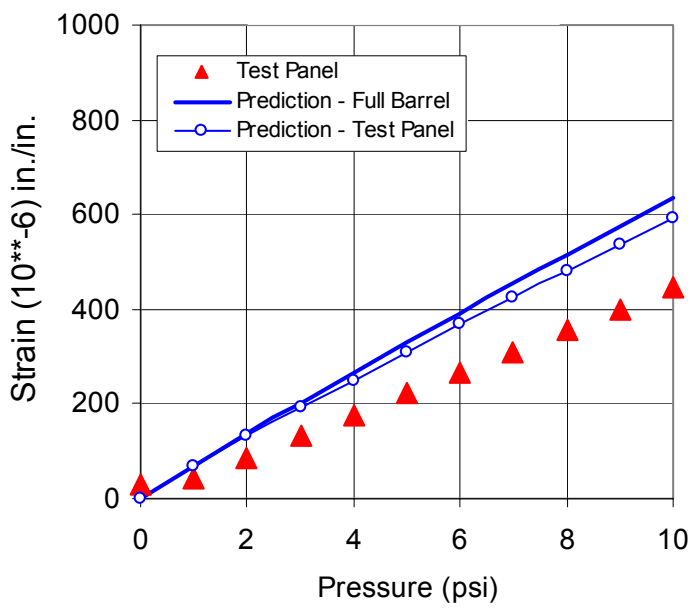

FIGURE H-124. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 38, HOOP

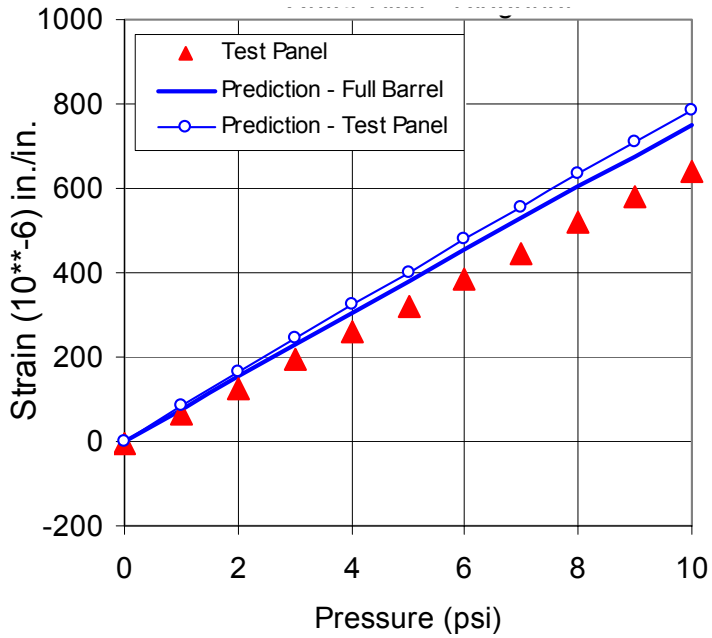

FIGURE H-125. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 38, DIAGONAL

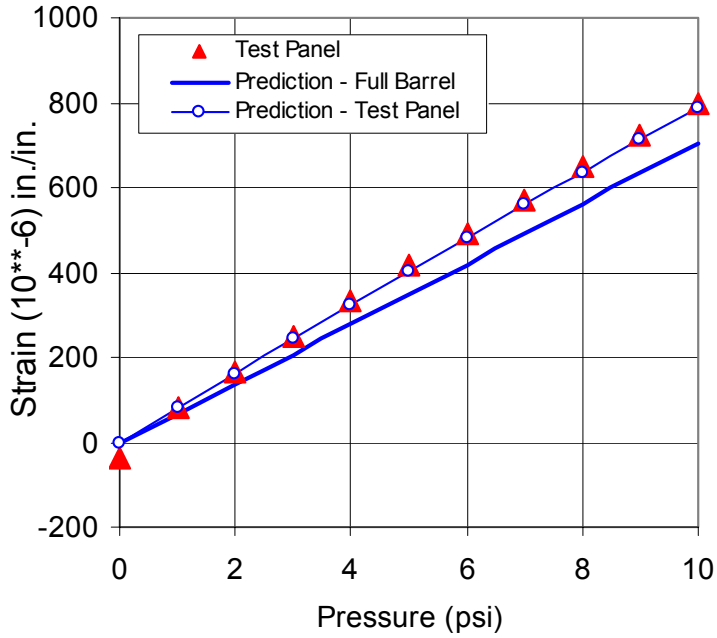

FIGURE H-126. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 38, LONGITUDINAL

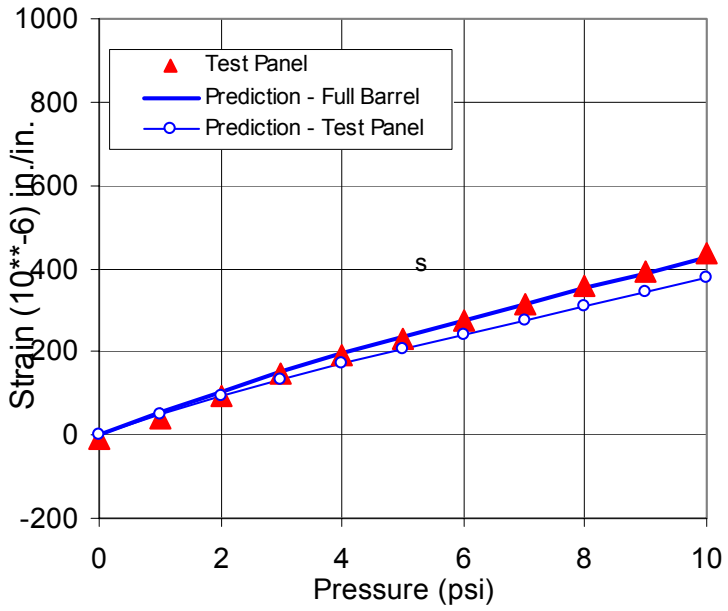

FIGURE H-127. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 39, HOOP

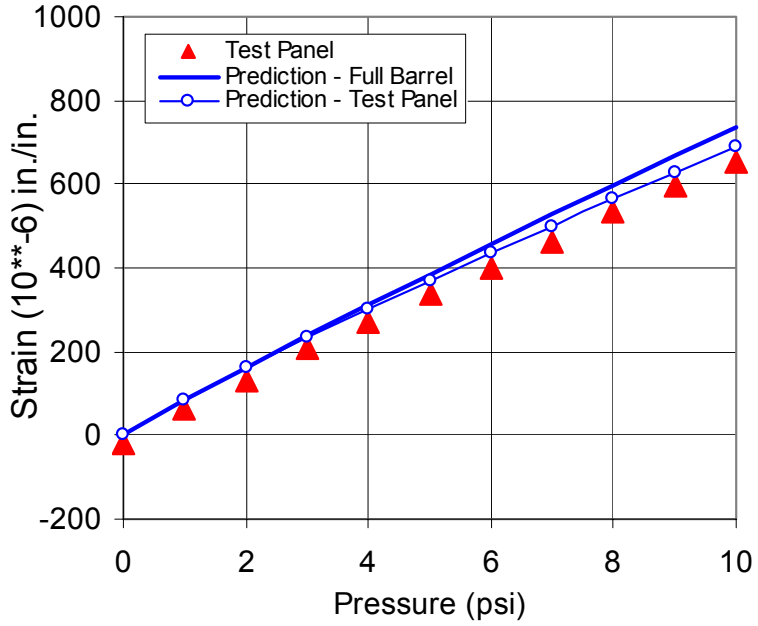

FIGURE H-128. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 39, DIAGONAL

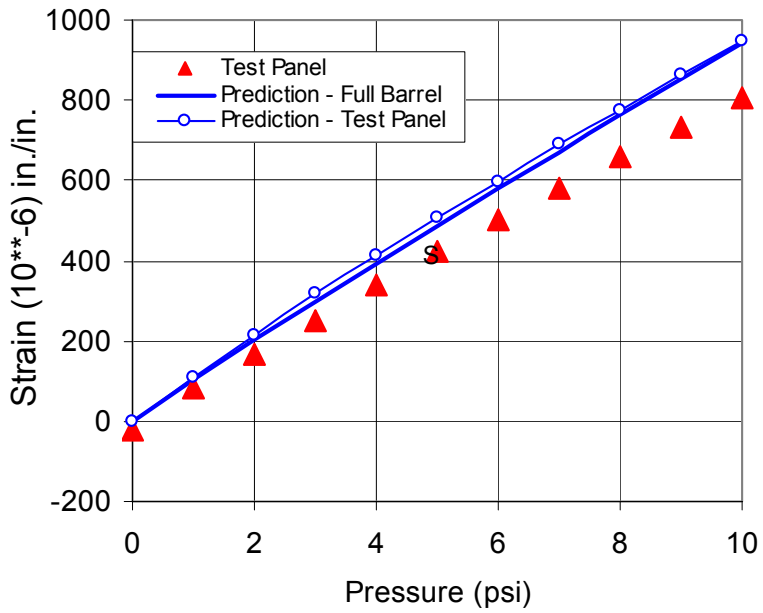

FIGURE H-129. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 39, LONGITUDINAL

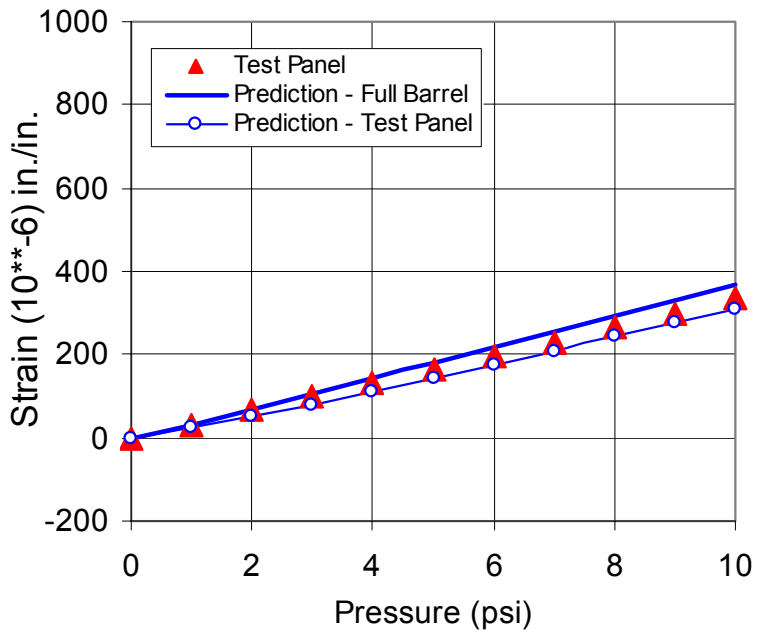

FIGURE H-130. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 40, HOOP

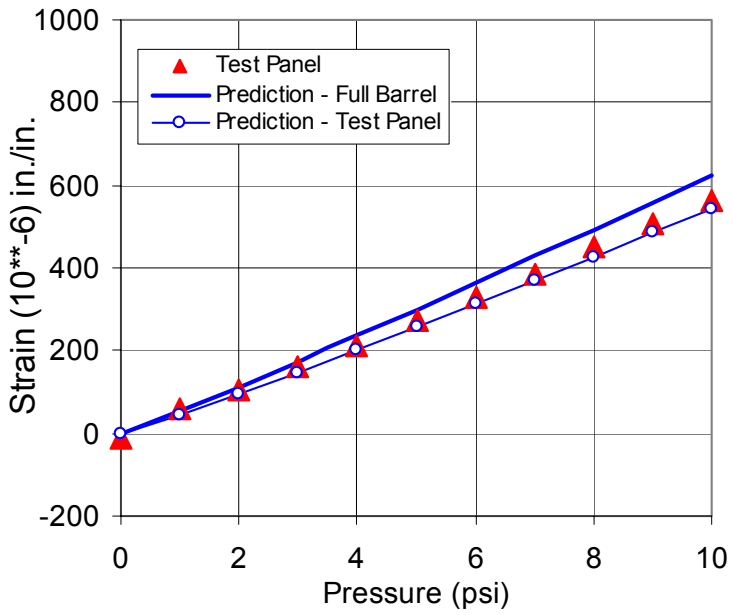

FIGURE H-131. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 40, DIAGONAL

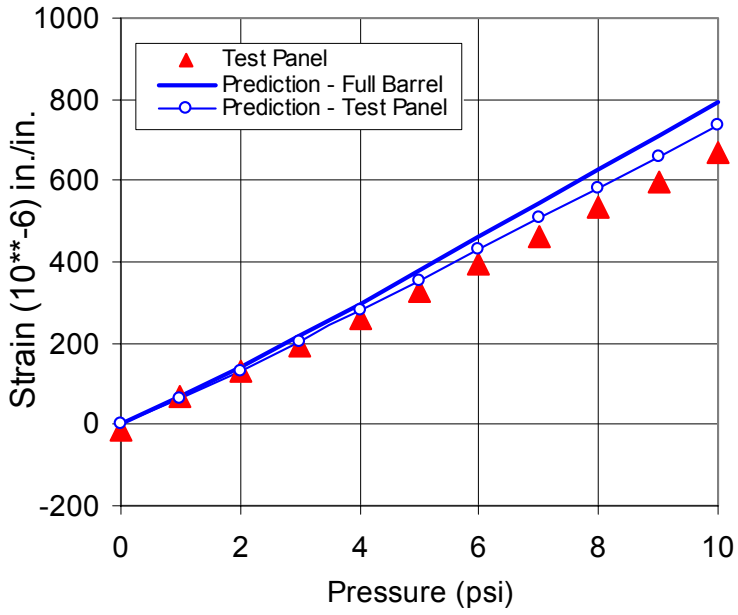

FIGURE H-132. STRAIN CVP-3, GAGE COMPARISON OF EXPERIMENTAL VS PREDICTION, GAGE NO. 40, LONGITUDINAL

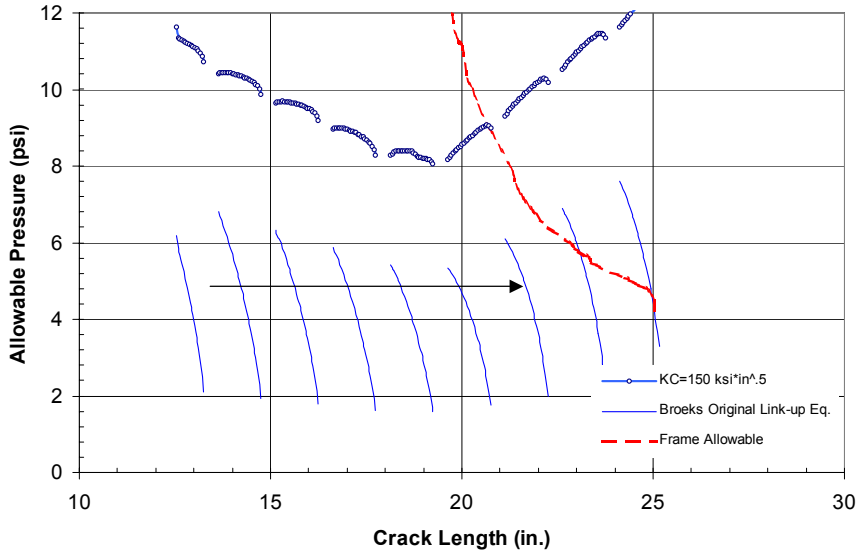

FIGURE H-133. RESIDUAL STRENGTH BASED ON ORIGINAL BROEK'S PLASTIC ZONE LINKUP, CVP-1

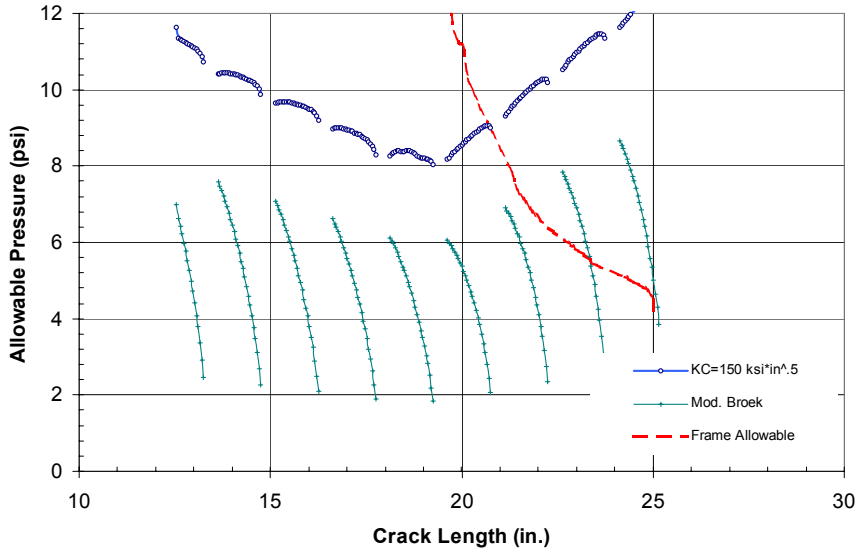

FIGURE H-134. RESIDUAL STRENGTH BASED ON MODIFIED BROEK'S PLASTIC ZONE LINKUP, CVP-1

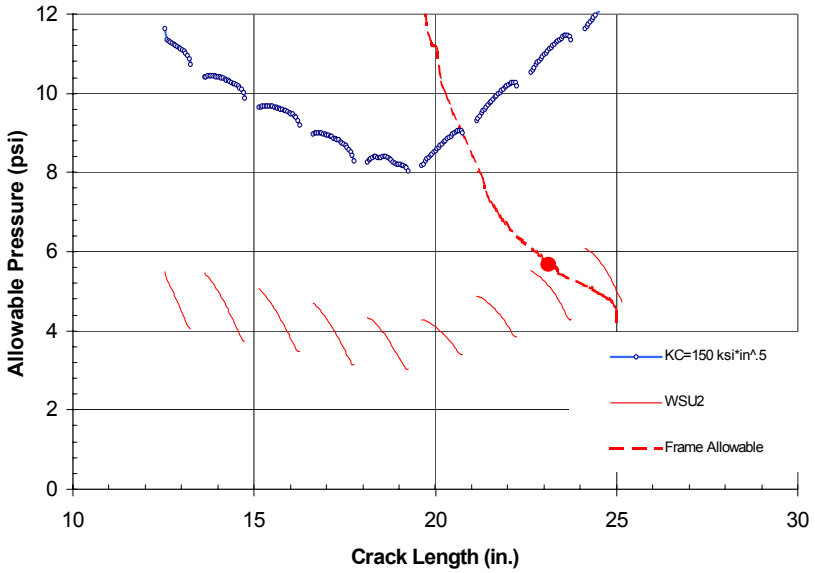

FIGURE H-135. RESIDUAL STRENGTH BASED ON WSU2 PLASTIC ZONE LINKUP, CVP-1

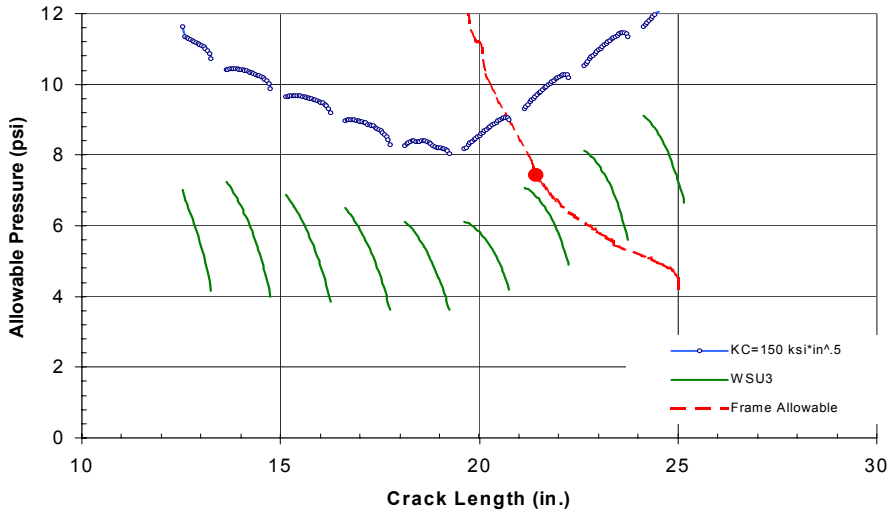

FIGURE H-136. RESIDUAL STRENGTH BASED ON WSU3 PLASTIC ZONE LINKUP, CVP-1

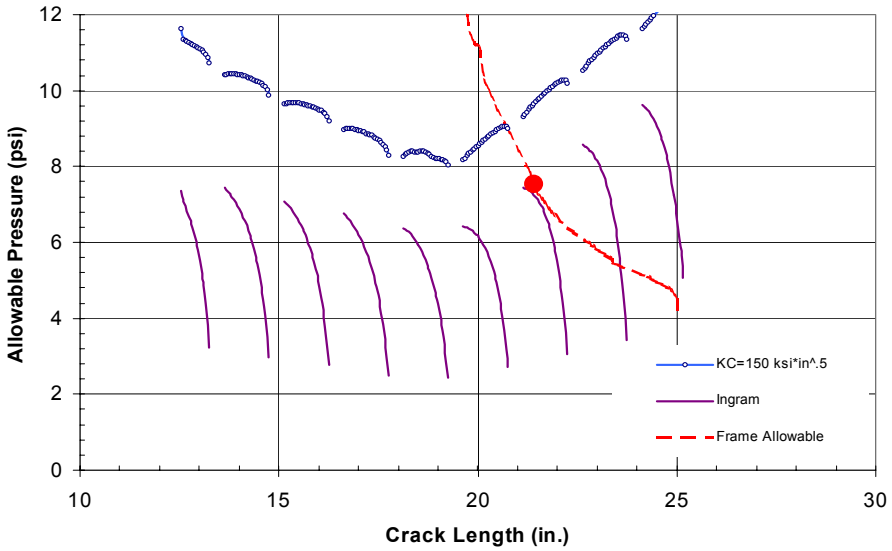

FIGURE H-137. RESIDUAL STRENGTH BASED ON INGRAM PLASTIC ZONE LINKUP, CVP-1

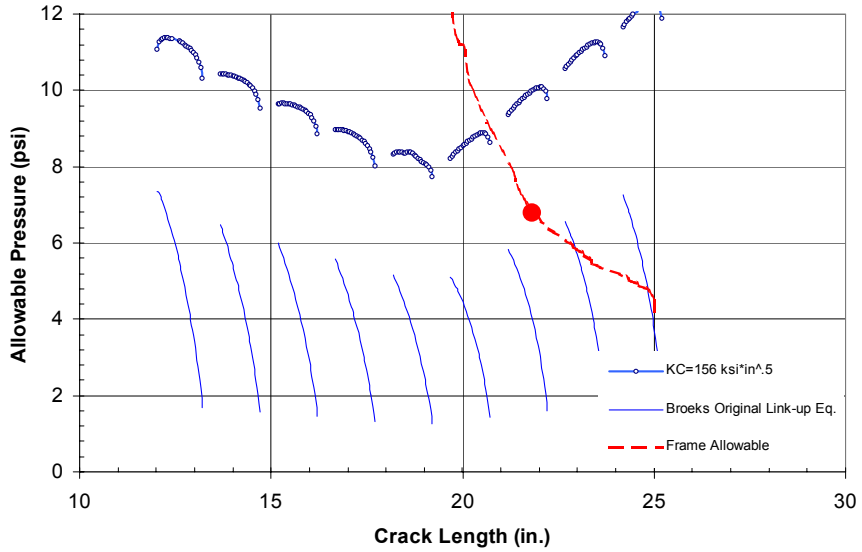

FIGURE H-138. RESIDUAL STRENGTH BASED ON ORIGINAL BROEK'S PLASTIC ZONE LINKUP, CVP-1

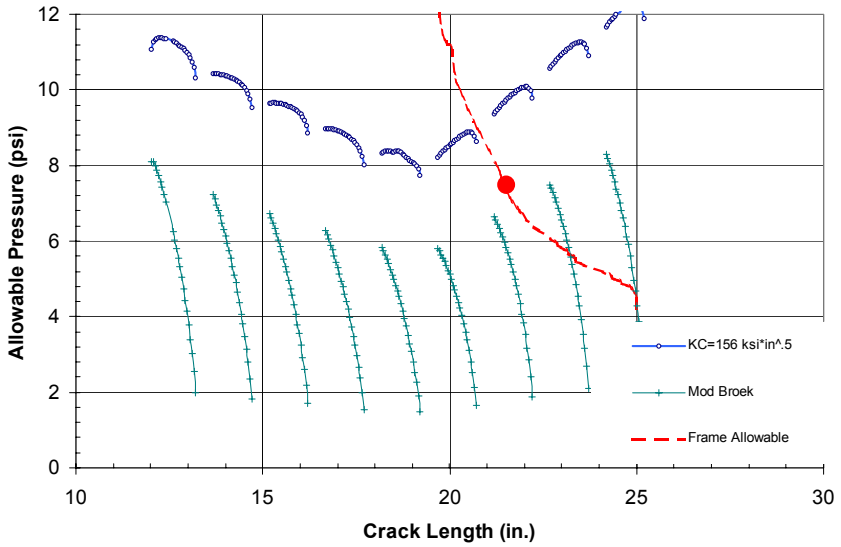

FIGURE H-139. RESIDUAL STRENGTH BASED ON MODIFIED BROEK'S PLASTIC ZONE LINKUP, CVP-2

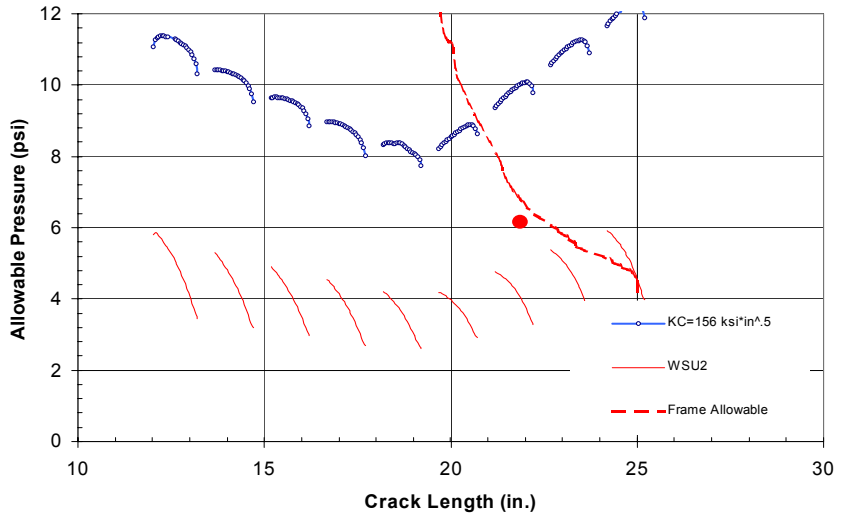

FIGURE H-140. RESIDUAL STRENGTH BASED ON WSU2 PLASTIC ZONE LINKUP, CVP-2

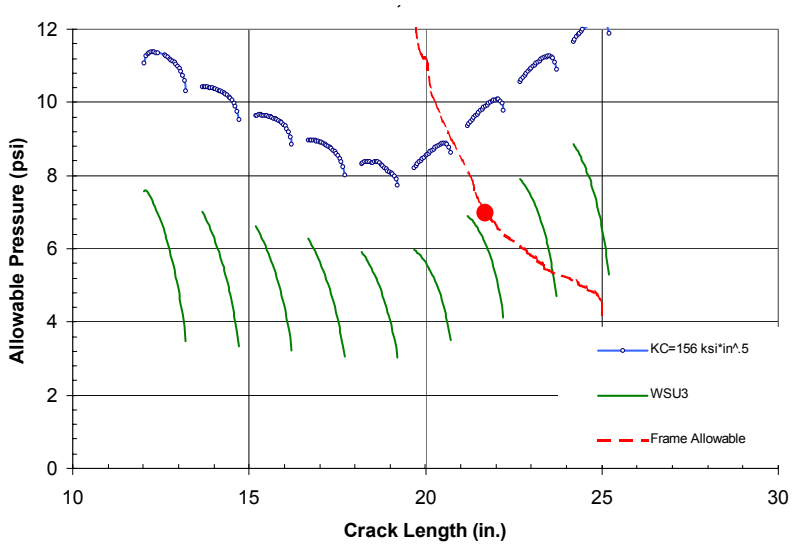

FIGURE H-141. RESIDUAL STRENGTH BASED ON WSU3 PLASTIC ZONE LINKUP, CVP-2

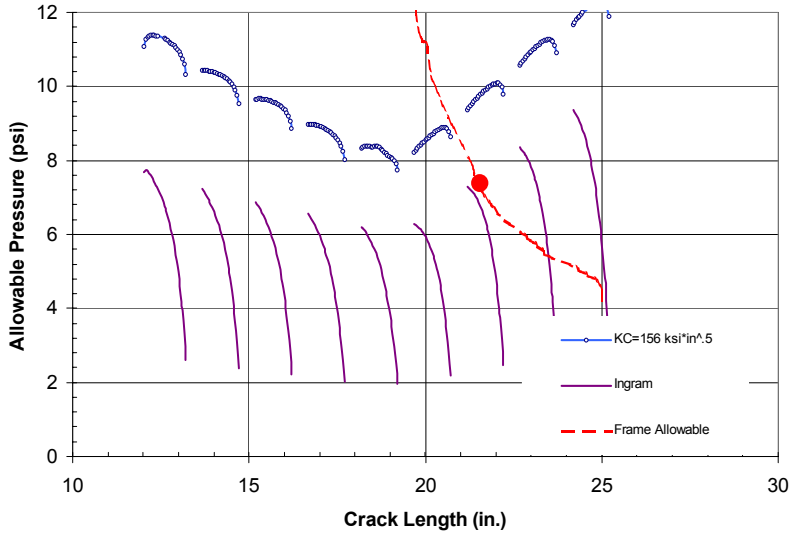

FIGURE H-142. RESIDUAL STRENGTH BASED ON INGRAM'S PLASTIC ZONE LINKUP, CVP-2

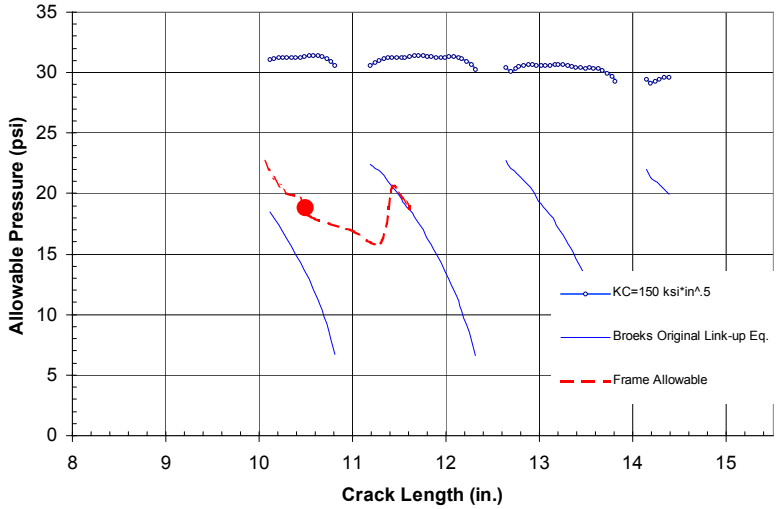

FIGURE H-143. RESIDUAL STRENGTH BASED ON ORIGINAL BROEK'S PLASTIC ZONE LINKUP, CVP-3

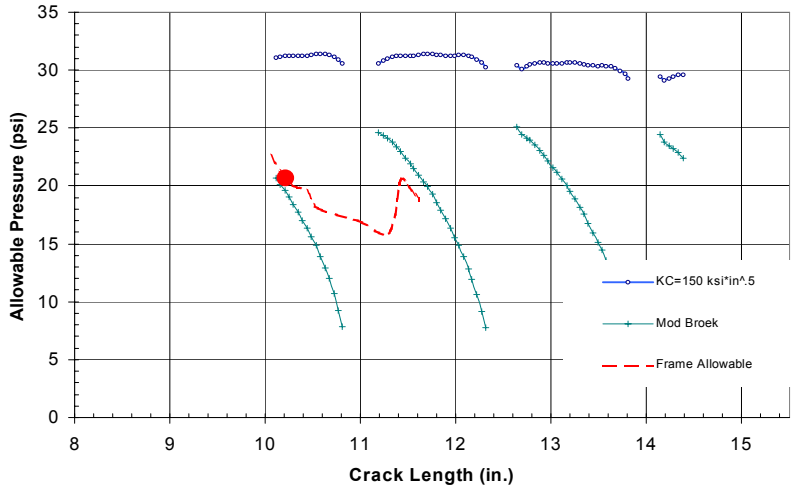

FIGURE H-144. RESIDUAL STRENGTH BASED ON MODIFIED BROEK'S PLASTIC ZONE LINKUP, CVP-3

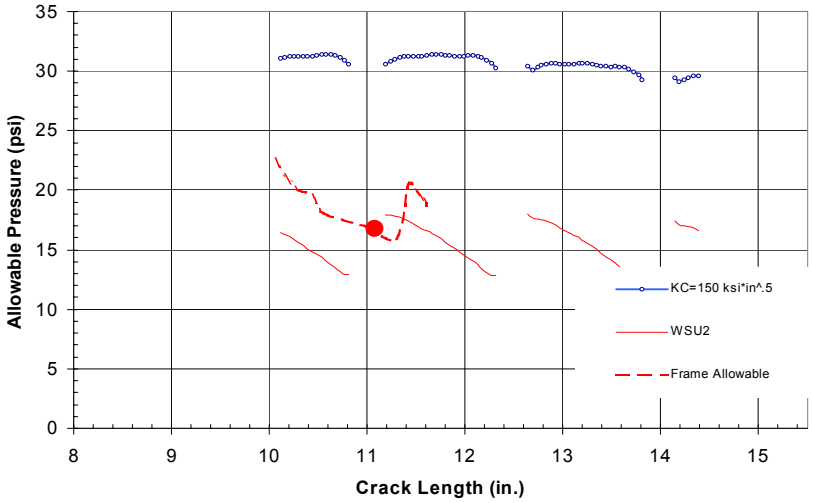

FIGURE H-145. RESIDUAL STRENGTH BASED ON WSU2 PLASTIC ZONE LINKUP, CVP-3

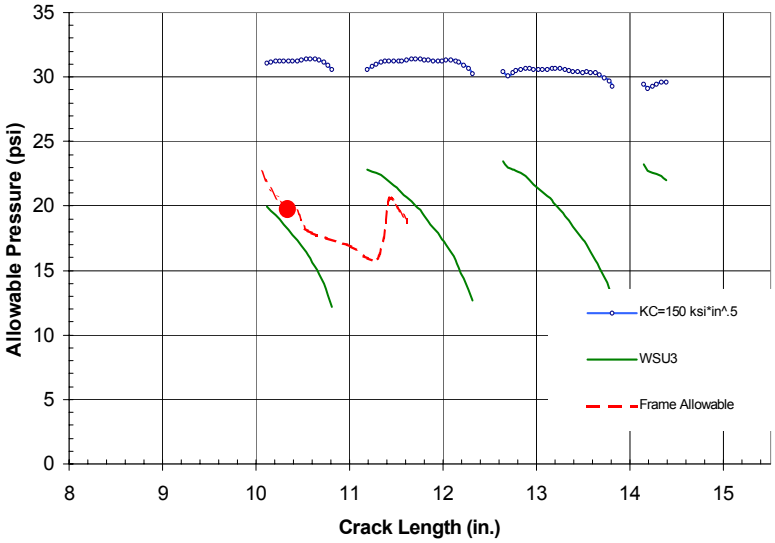

FIGURE H-146. RESIDUAL STRENGTH BASED ON WSU3 PLASTIC ZONE LINKUP, CVP-3

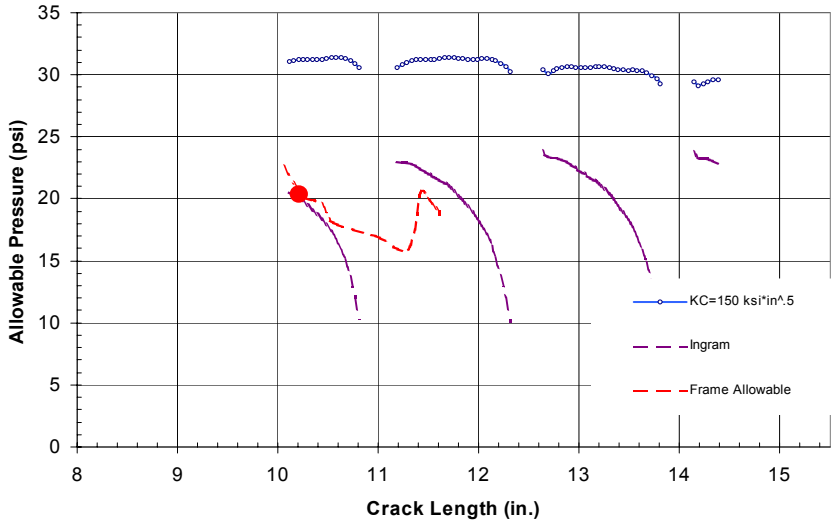

FIGURE H-147. RESIDUAL STRENGTH BASED ON INGRAM'S PLASTIC ZONE LINKUP, CVP-3

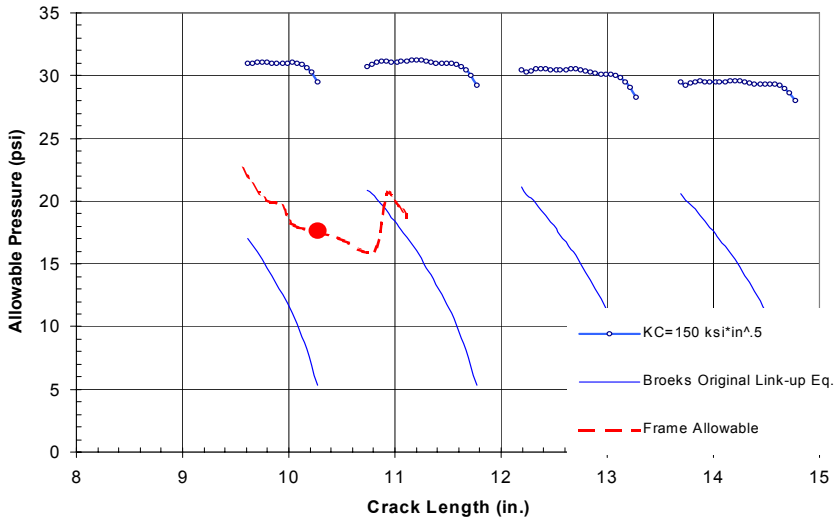

FIGURE H-148. RESIDUAL STRENGTH BASED ON ORIGINAL BROEK'S PLASTIC ZONE LINKUP, CVP-4

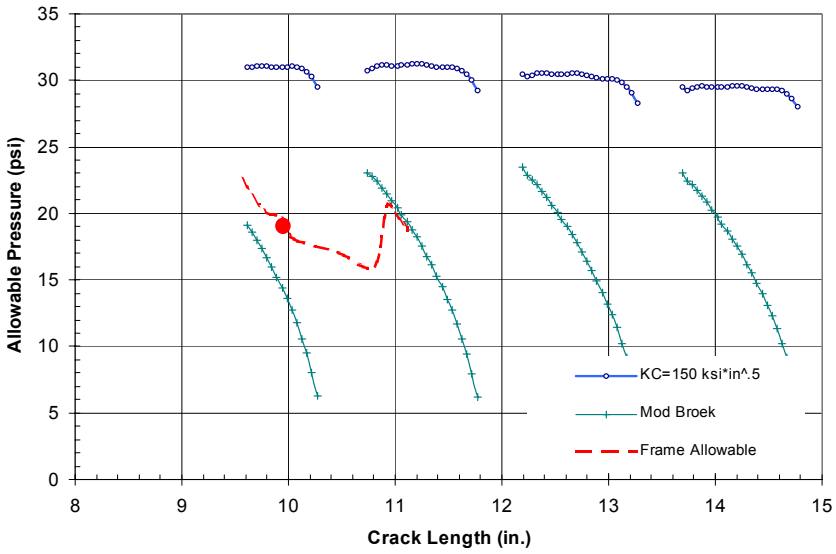

FIGURE H-149. RESIDUAL STRENGTH BASED ON MODIFIED BROEK'S PLASTIC ZONE LINKUP, CVP-4

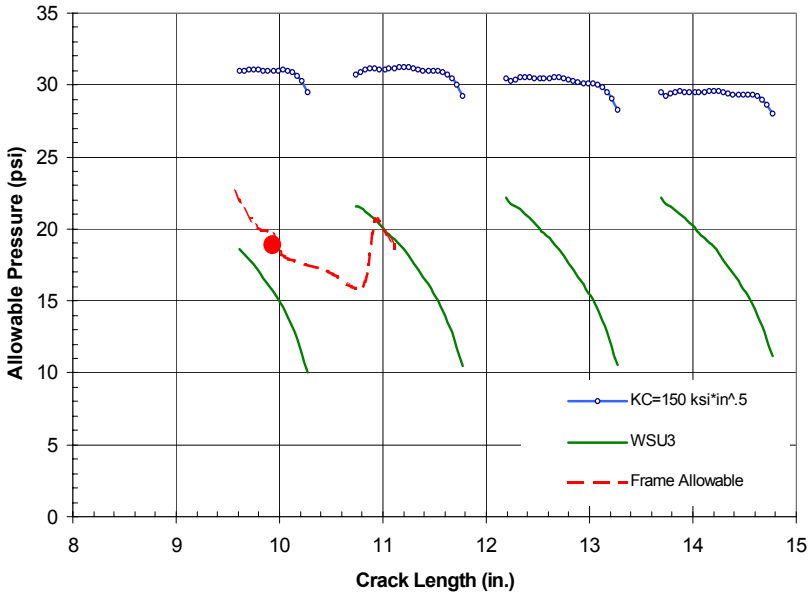

FIGURE H-150. RESIDUAL STRENGTH BASED ON WSU3 PLASTIC ZONE LINKUP, CVP-4

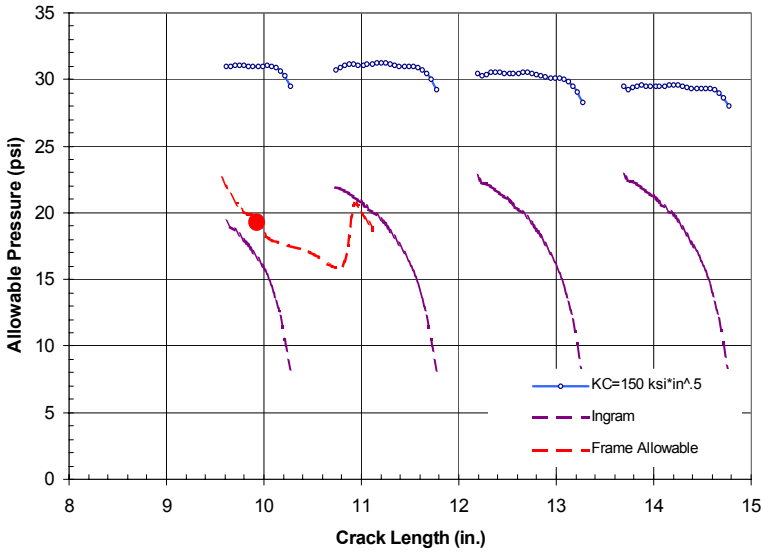

FIGURE H-151. RESIDUAL STRENGTH BASED ON INGRAM PLASTIC ZONE LINKUP, CVP-4

The following is the crack growth prediction for the growth of the curved panel CVP-1 through CVP-4. The crack growth history is estimated based on the equation shown below:

$$\Sigma N_i = \frac{\Delta a}{(da/dN)}$$

where Δa is set to a small increment of 0.10″

N_i is the number of cycles required for the crack to propagate an interval of Δa

ΔK incremental stress-intensity factor is expressed in psi(in)$^{1/2}$. The stress-intensity factors are obtained directly from the linear NASTRAN solution by adding a crack tip element (CRAK2D).

da/dN is the crack growth rate based on table lookup as a function of stress ratio(R), da/dN for 2024-T3 aluminum thin sheet for the LT and TL direction are shown below:

Crack Growth Rates in/cycle	Stress Ratio		
	R=0.05	R=0.4	R=0.80
1.00E-32	2559	2099	1549
1.00E-08	2560	2100	1550
4.00E-08	2600	2200	1570
5.00E-08	2650	2250	1580
7.00E-08	2830	2380	1675
8.00E-08	2900	2450	1725
1.00E-07	3160	2650	1900
2.00E-07	4300	3780	2600
3.00E-07	5000	4350	3100
6.00E-07	6200	5100	3750
1.00E-06	6800	5650	4300
3.00E-06	8700	7300	5600
6.00E-06	10500	8750	6750
1.00E-05	12500	10000	7700
4.00E-05	20200	15500	10250
1.00E-04	25100	19500	12350
3.00E-04	33000	25250	16000
8.00E-04	39000	30000	19000
1.00E-03	40800	31250	19500
4.00E-03	53200	39000	19501
2.00E-02	69800	52000	19502
2.00E-01	94000	56000	19503
1.00E+00	94001	56500	19504

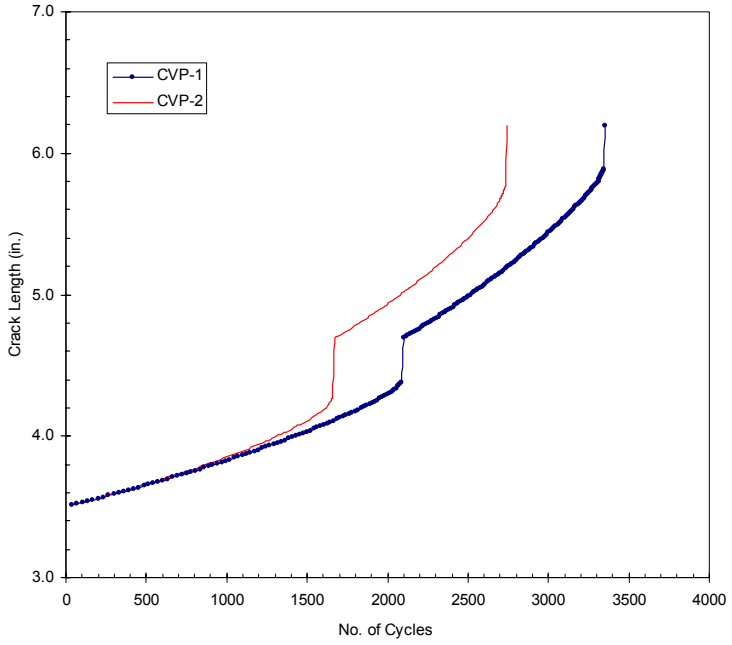

FIGURE H-152. CRACK GROWTH PREDICTION FOR CURVED PANELS CONTAINING LONGITUDINAL SPLICE JOINT

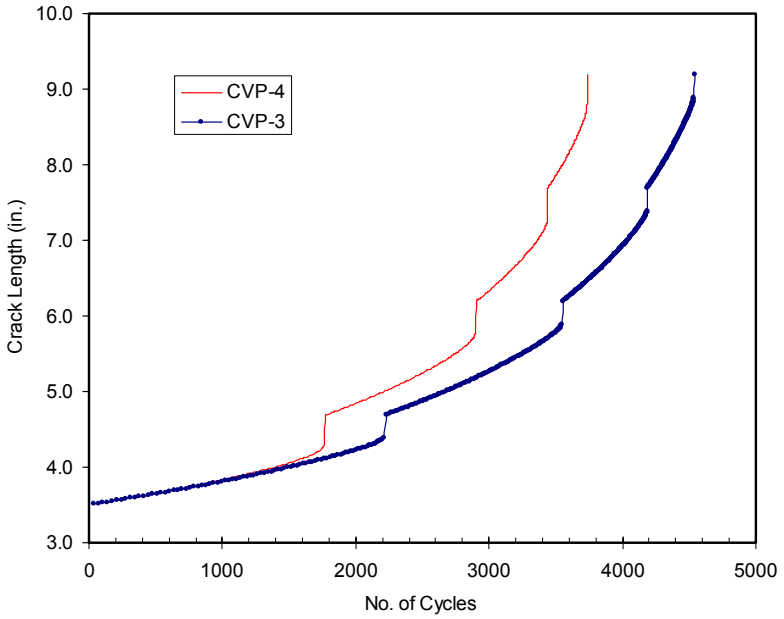

FIGURE H-153. CRACK GROWTH PREDICTION FOR CURVED PANELS CONTAINING CIRCUMFERENTIAL SPLICE JOINT