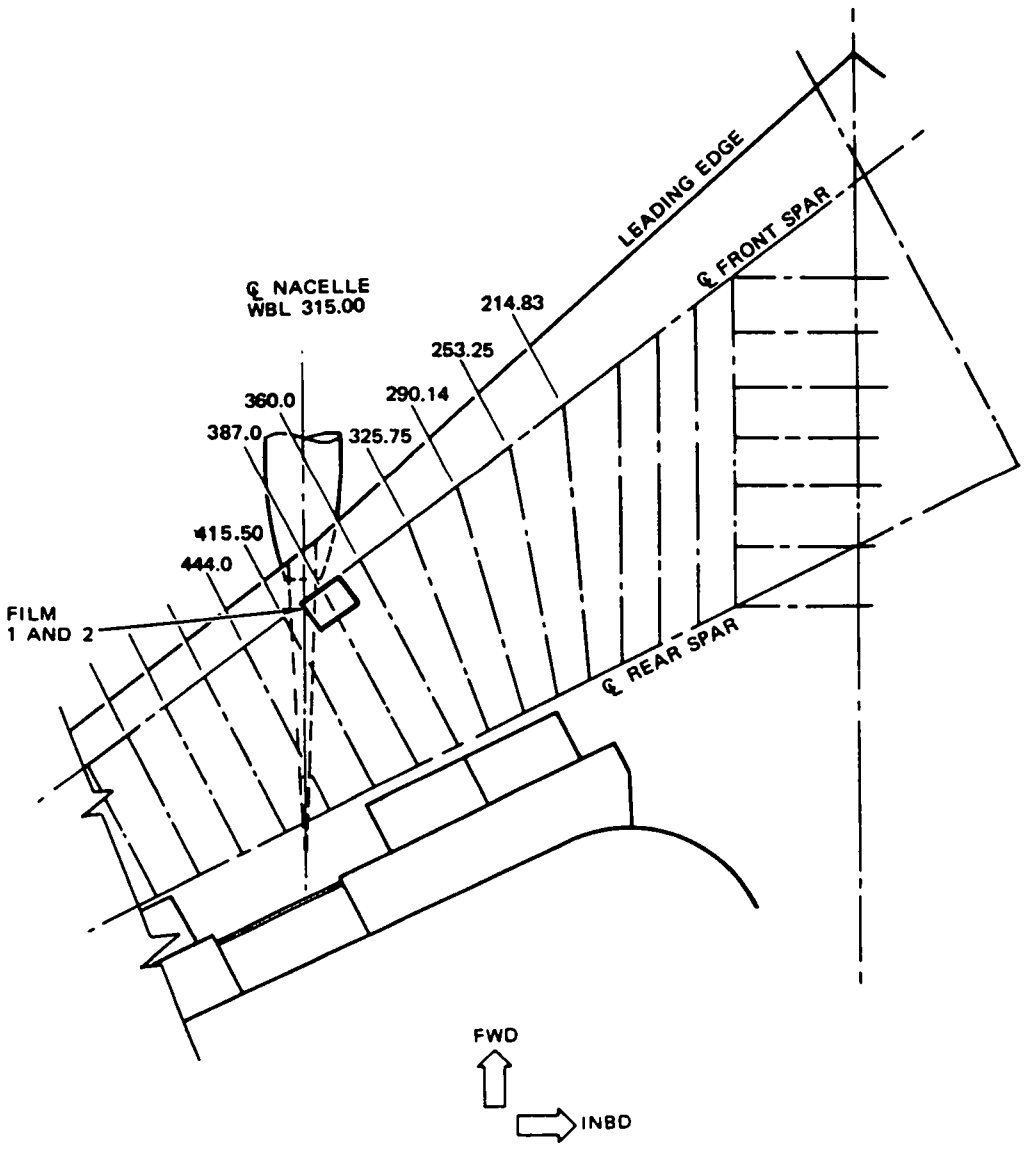
PART 2 - X-RAY

WINGS

1. Purpose

   A. To detect cracks in upper chord of front spar at WS 387.

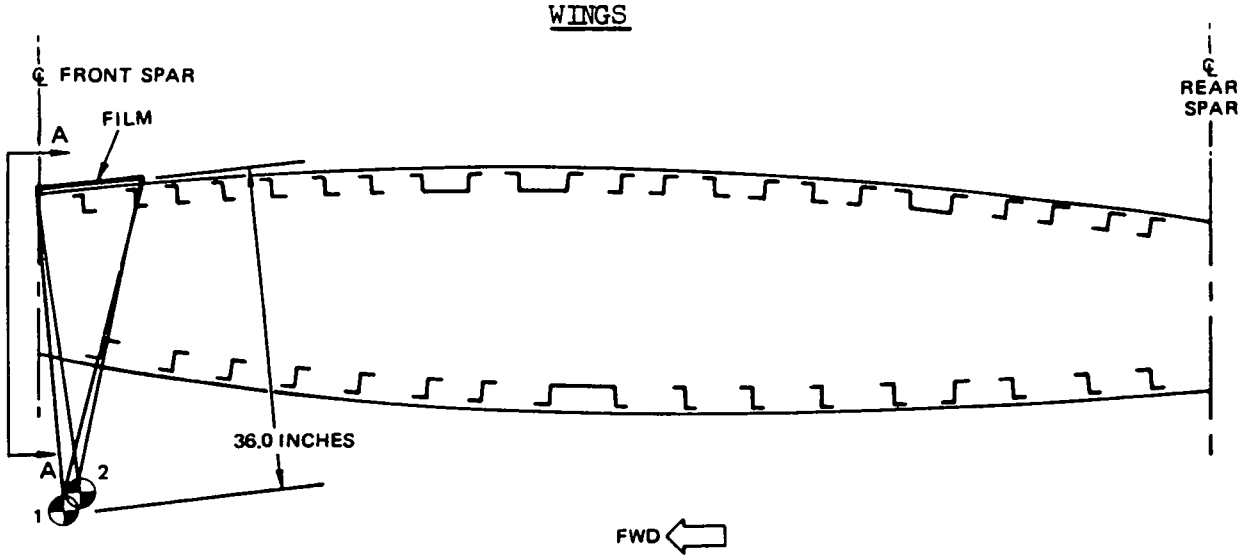


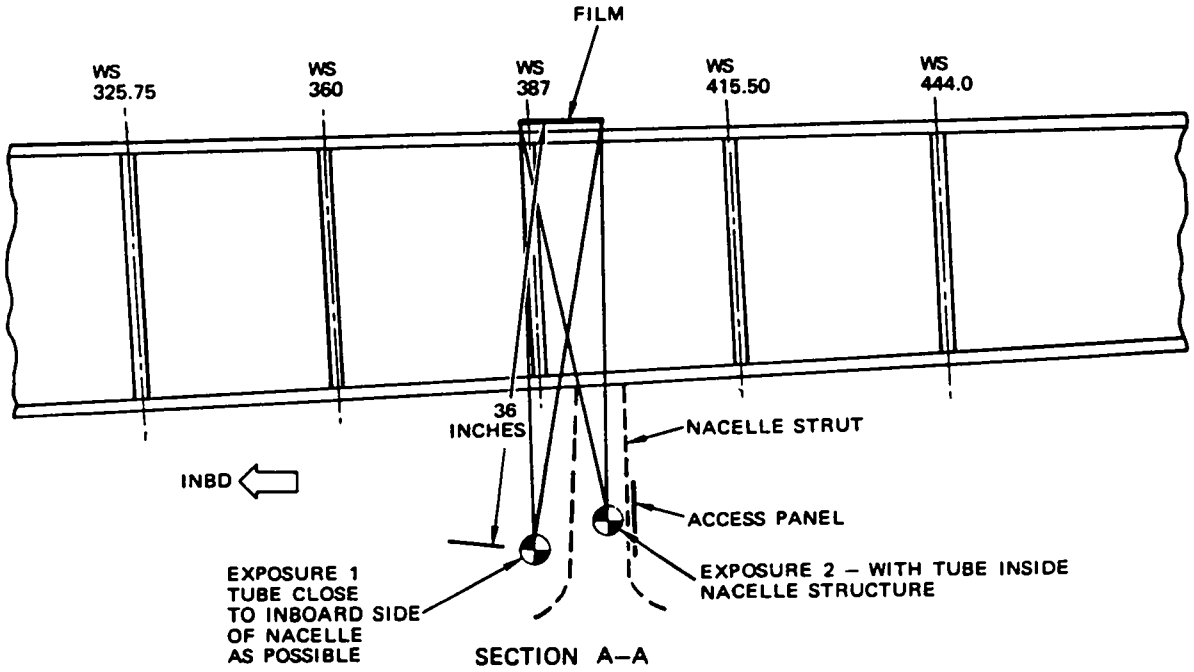
Upper Chord - Front Spar - WS 387
Figure 1 (Sheet 1)

NONDESTRUCTIVE TEST

PART 2 - X-RAY

WINGS





EXPOSURE NUMBER	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE		KV	MAS
1 AND 2	1 AND 2	I AND III [1]	8 X 10	36	120	900

[1] CLASS I AND III FILM LOADED IN EACH CASETTE BOTH EXPOSURES

Upper Chord - Front Spar WS 387
Figure 1 (Sheet 2)

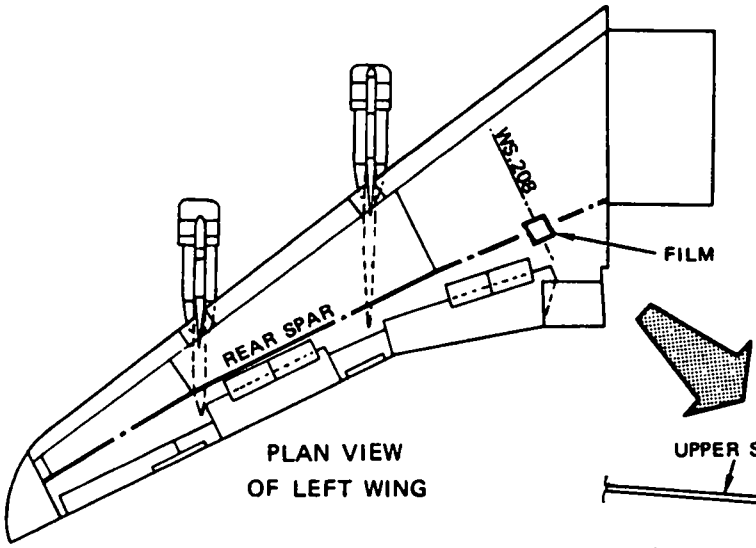
BOEING COMMERCIAL JET

NONDESTRUCTIVE TEST
PART 2 - X-RAY

WINGS

Purpose

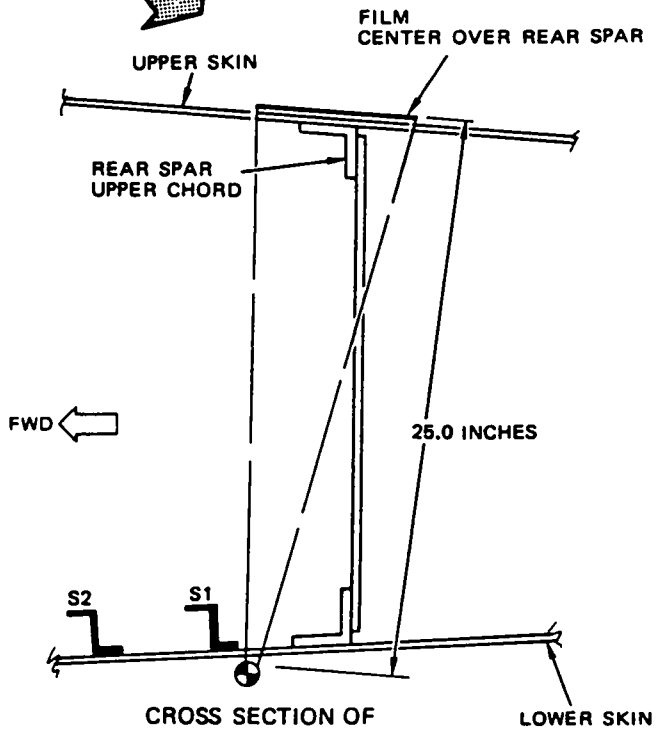
To detect cracks in upper chord of rear spar at WS 208.



PLAN VIEW
OF LEFT WING

NOTE

1. EMPTY FUEL TANK WITH BOOST PUMP AND DRAIN SUMP BEFORE INSPECTION
2. PLACE X-RAY SOURCE 1 INCH AFT OF STRINGER 1.
3. CENTER X-RAY BEAM ON HORIZONTAL LEG OF UPPER CHORD



CROSS SECTION OF
REAR SPAR AT WS208

EXPOSURE NUMBER	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE		KV	MAS
1	1	I AND III *[1]	15 x 17	25	150	900

*[1] CLASS I AND III LOADED IN SAME CASETTE

Upper Chord - Rear Spar-WS 208
Figure 2

EFFECTIVITY
MODEL: 707 STRATOLINER 720 SERVICE BULLETIN REFERENCE: 3168

BOEING COMMERCIAL JET

NONDESTRUCTIVE TEST

PART 2 - X-RAY

WINGS

1. Purpose

   A. This radiographic technique is for the detection of large cracks in the skin surfaces under the beavertail and in the lower stringer splices at WBL 129.

   B. Small cracks in the holes around fasteners may be detected by eddy current.

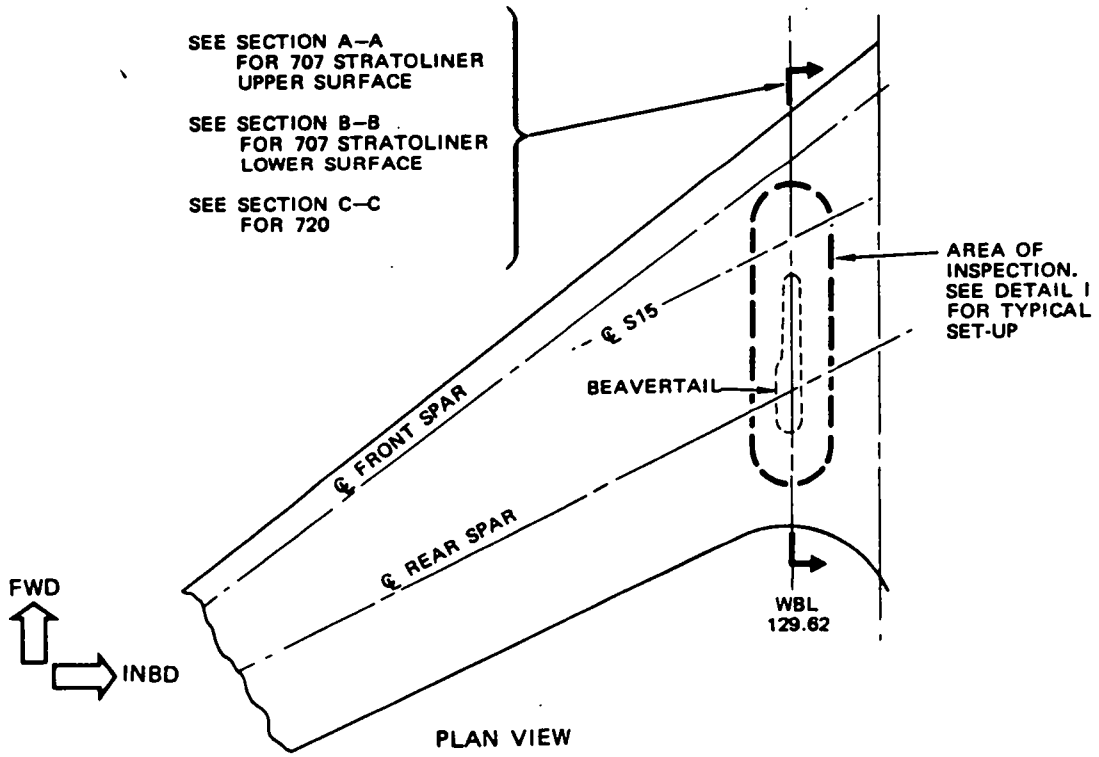
   C. For a similar procedure for 707-300 and 707-400 see Fig. 12.

2. Equipment

   A. Baltospot portable 300 kv, 35-degree side emission x-ray generator was used to develop this technique.

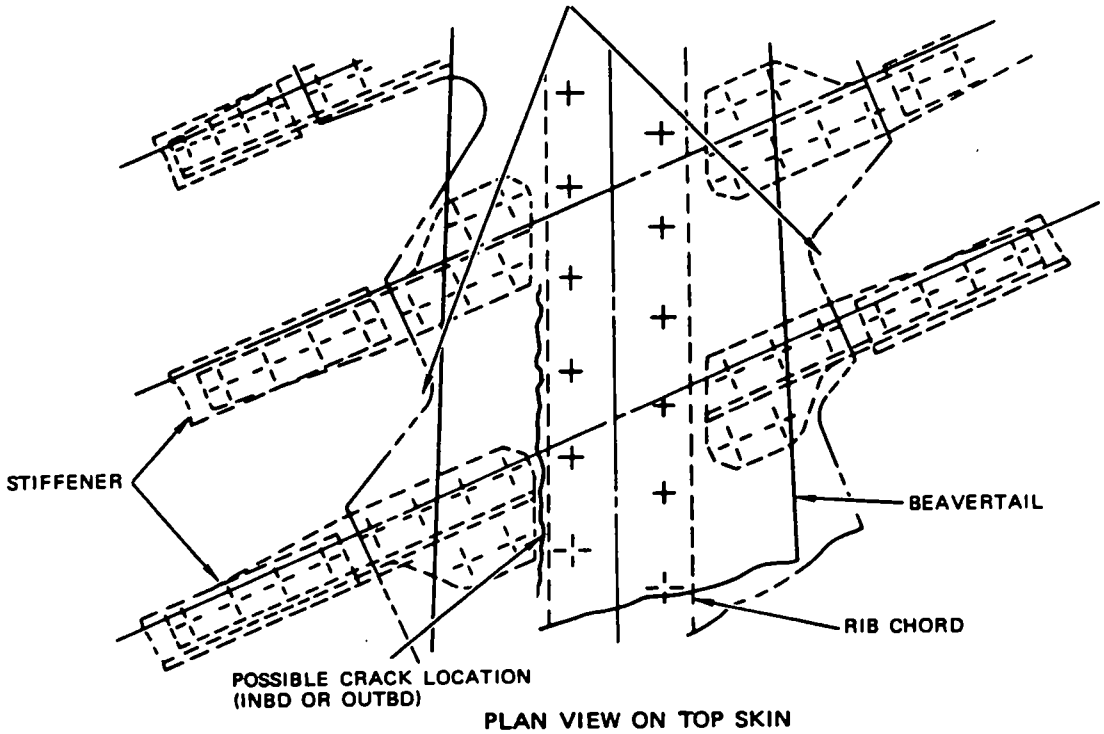
3. Preparation

   A. Defuel and drain the applicable wing fuel tank.

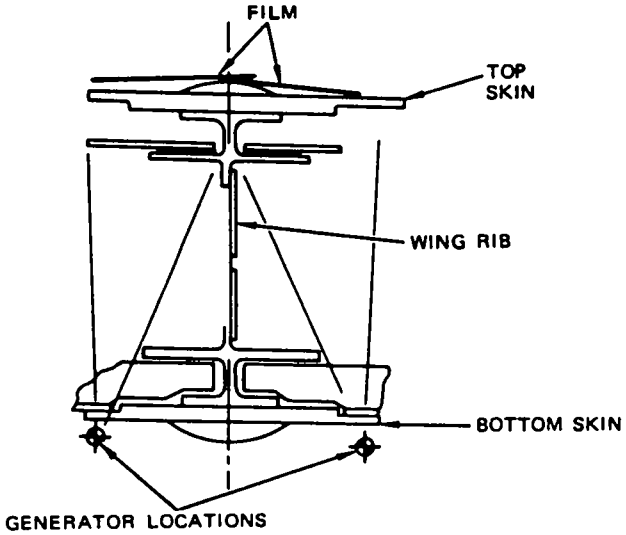


External Chord - Main Landing Gear Support Rib
Figure 3 (Sheet 1)

POSITION THE X-RAY GENERATOR SO THAT THE RADIATION WILL PENETRATE THROUGH THE MINIMUM SKIN THICKNESS, AND AS CLOSE TO THE SKIN SCULPTURE AS POSSIBLE. USE THE SKIN RIVET PATTERN TO AID IN POSITIONING GENERATOR.



PLAN VIEW ON TOP SKIN
(BOTTOM SKIN SIMILAR)



TYPICAL SECTION

TYPICAL INSPECTION SET-UP
DETAIL I

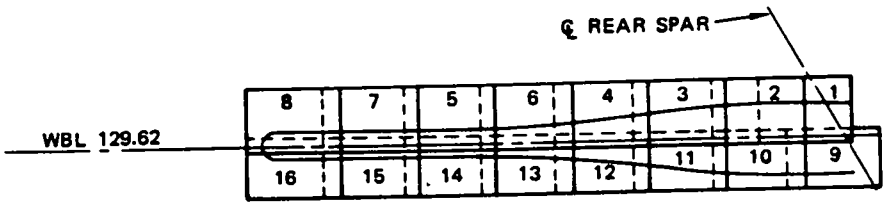
External Chord - Main Landing Gear Support Rib
Figure 3 (Sheet 2)

GENERATOR POSITION	UPPER SURFACE INSPECTION			LOWER SURFACE INSPECTION		
	DISTANCE FROM WBL 129		DISTANCE FWD OF REAR SPAR MEASURED ALONG SKIN	DISTANCE FROM WBL 129		DISTANCE FWD OF REAR SPAR MEASURED ALONG SKIN
	INBD	OUTBD		INBD	OUTBD	
1	7		11.0	6		14.0
2	6		18.0	5		27.0
3	5		28.0	5		38.0
4	4		49.0	4		50.0
5	3		57.0	4		66.0
6	3		67.0	4		80.0
7	3		81.0	4		93.0
8	3		87.0	4		109.0
9		8	11.0		10	14.0
10		7	18.0		8	27.0
11		6	28.0		7	38.0
12		5	49.0		5	50.0
13		3	57.0		4	60.0
14		3	67.0		4	80.0
15		3	81.0		3	93.0
16		3	87.0		3	109.0

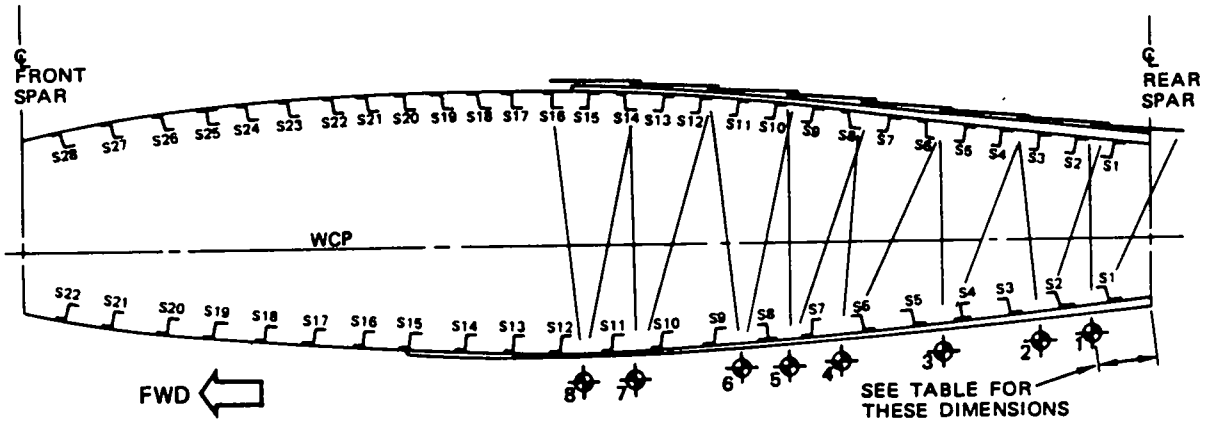
GENERATOR POSITIONS FOR INSPECTING TOP AND BOTTOM WING SURFACES

707-100, -200 (STRATOLINER) ONLY

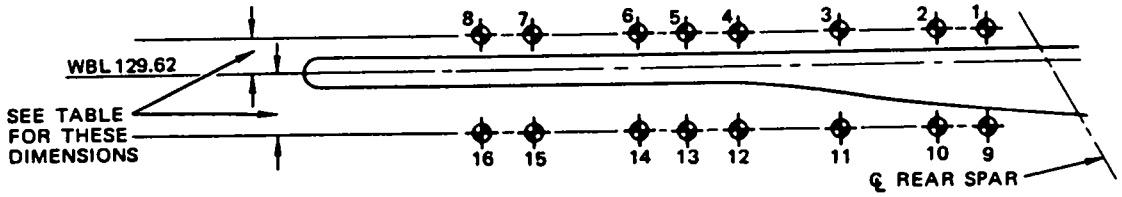
External Chord - Main Landing Gear Support Rib
Figure 3 (Sheet 3)



UPPER EXTERNAL RIB CHORD
TYPICAL FILM PLACEMENT



SECTION A–A (707-100, -200)

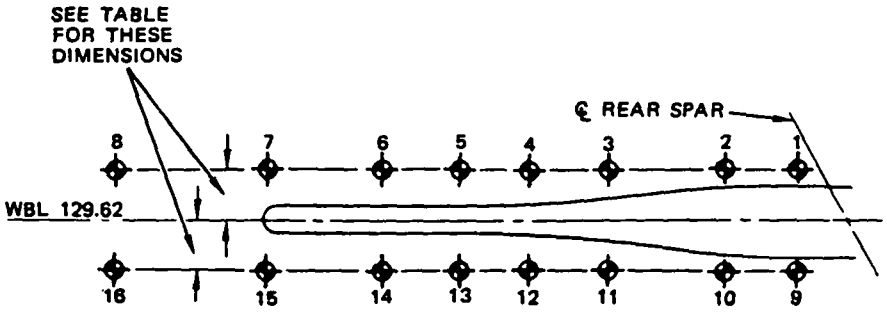


LOWER EXTERNAL RIB CHORD

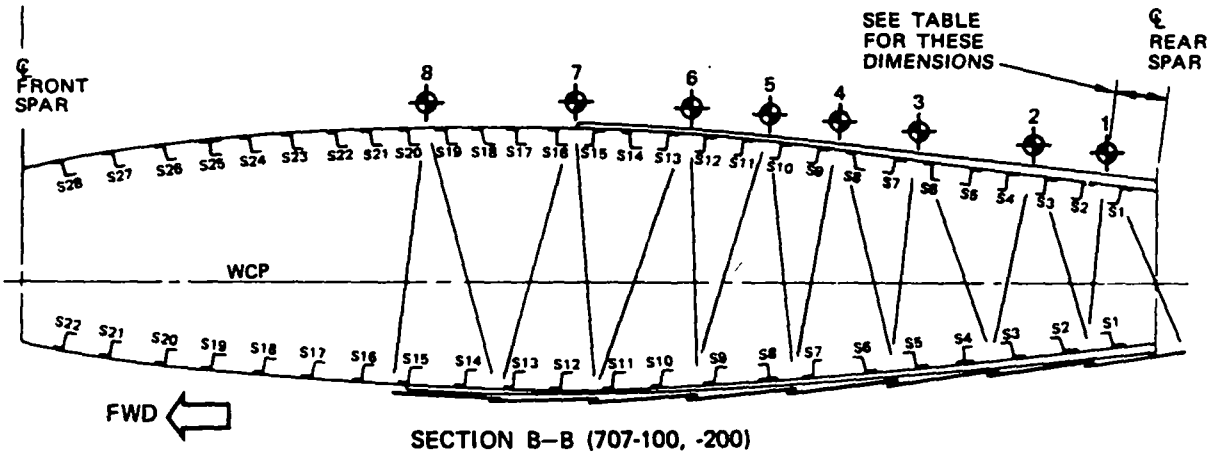
NOTE: ALL DIMENSIONS ARE IN INCHES *[1] SFD IS THICKNESS OF WING

EXPOSURE NUMBER	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE		KV	MAS
1 AND 9	1 AND 9	I & II	14 X 17	*[1]	190	1800
2 AND 10	2 AND 10	I & II	14 X 17		180	1800
3 AND 11	3 AND 11	I & II	14 X 17		150	1800
4 AND 12	4 AND 12	I & II	14 X 17		140	1620
5 AND 13	5 AND 13	I & II	14 X 17		130	1440
6 AND 14	6 AND 14	I & II	14 X 17		130	1440
7 AND 15	7 AND 15	I & II	14 X 17		130	1440
8 AND 16	8 AND 16	I & II	14 X 17		130	1260

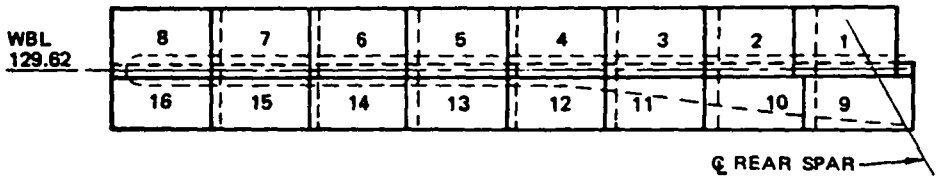
External Chord - Main Landing Gear Support Rib
Figure 3 (Sheet 4)



UPPER EXTERNAL RIB CHORD



SECTION B–B (707-100, -200)

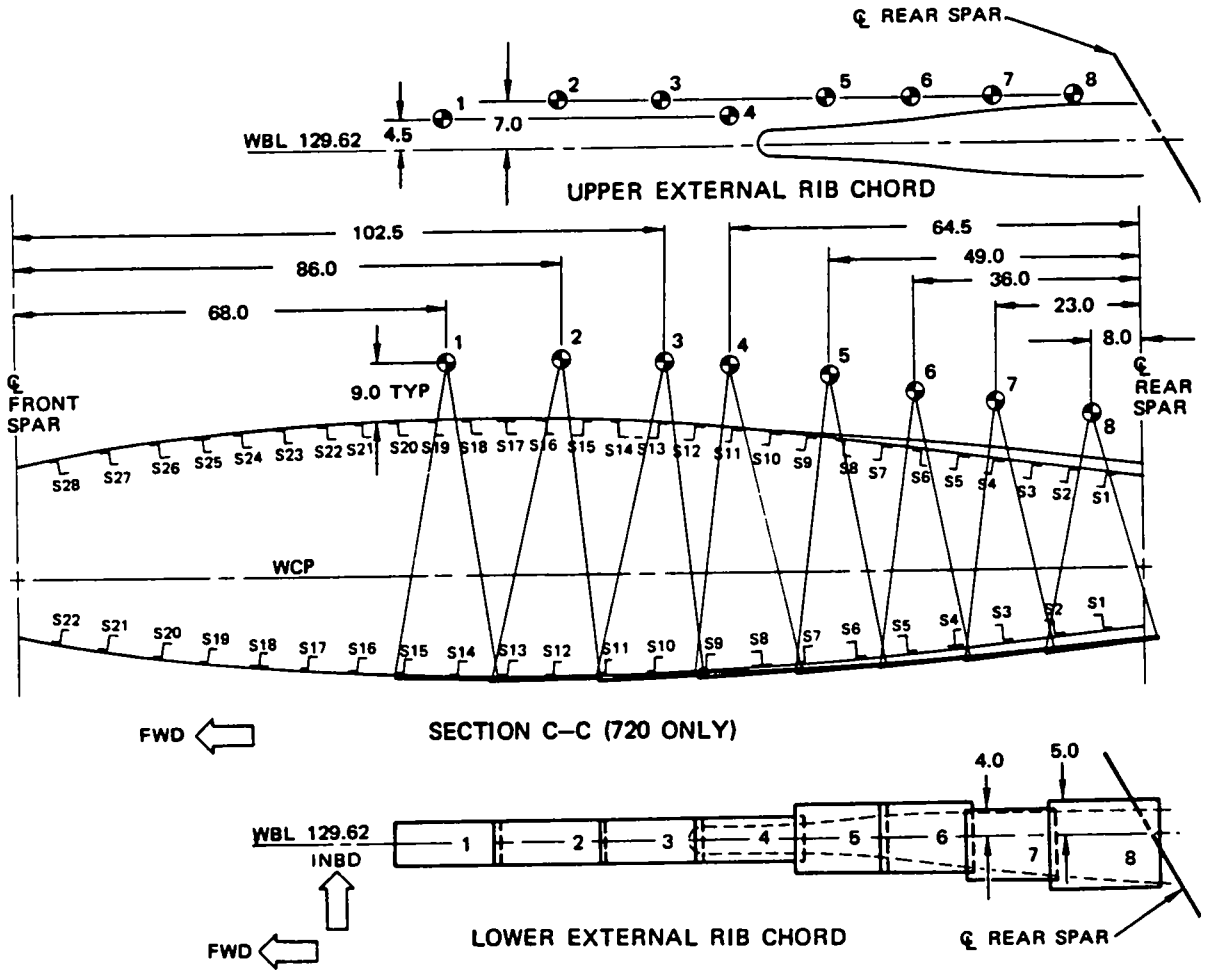


LOWER EXTERNAL RIB CHORD
TYPICAL FILM LOCATION

NOTE: ALL DIMENSIONS ARE IN INCHES *[1] SFD IS THICKNESS OF WING

EXPOSURE NUMBER	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE		KV	MAS
1 AND 9	1 AND 9	I & II	14 X 17	*[1]	190	1800
2 AND 10	2 AND 10	I & II	14 X 17		180	1260
3 AND 11	3 AND 11	I & II	14 X 17		160	1260
4 AND 12	4 AND 12	I & II	14 X 17		160	900
5 AND 13	5 AND 13	I & II	14 X 17		140	900
6 AND 14	6 AND 14	I & II	14 X 17		130	900
7 AND 15	7 AND 15	I & II	14 X 17		130	720
8 AND 16	8 AND 16	I & II	14 X 17		130	720

External Chord - Main Landing Gear Support Rib
Figure 3 (Sheet 5)



NOTE: ALL DIMENSIONS IN INCHES

EXPOSURE NUMBER	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE		KV	MAS
1 THRU 4	1 THRU 4	I	7 X 17	▷1	160	1800
5 THRU 7	5 THRU 7	I	11 X 14	▷1	160	1800
8	8	I	14 X 17	▷1	160	1800

▷1 SLIGHT VARIATION IN MAS MAY BE NECESSARY WITH VARIATION OF SFD. SOURCE OF X-RAY IS 9 INCHES ABOVE SKIN SURFACE IN ALL POSITIONS. MAS IS GIVEN FOR AVERAGE POSITION NO. 3

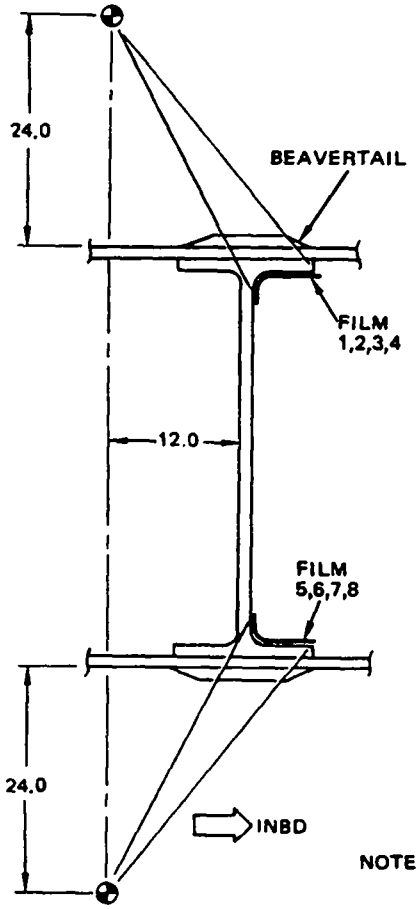
BOEING COMMERCIAL JET

NONDESTRUCTIVE TEST
PART 2 - X-RAY

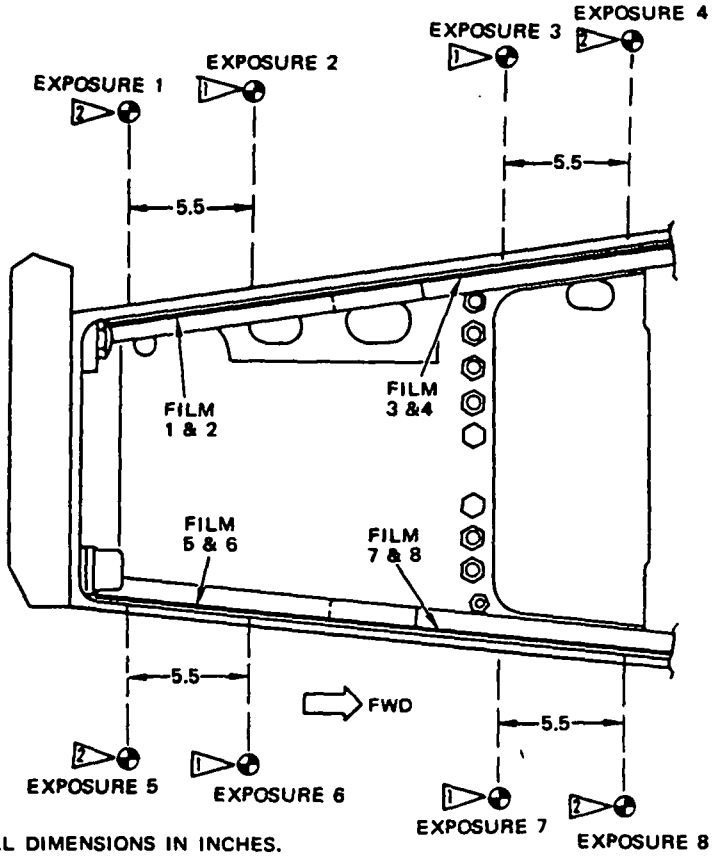
WINGS

Purpose

To detect cracks in upper and lower, inboard and outboard flanges of main landing gear trunnion.



CROSS SECTION
LOOKING FORWARD



NOTE: ALL DIMENSIONS IN INCHES.

UPPER AND LOWER INBOARD FLANGES OF TRUNNION
CROSS SECTION LOOKING OUTBOARD

1> SETUP FOR EXPOSURES ON INBOARD SIDE OF SPLICE

2> SETUP FOR EXPOSURES ON OUTBOARD SIDE OF SPLICE

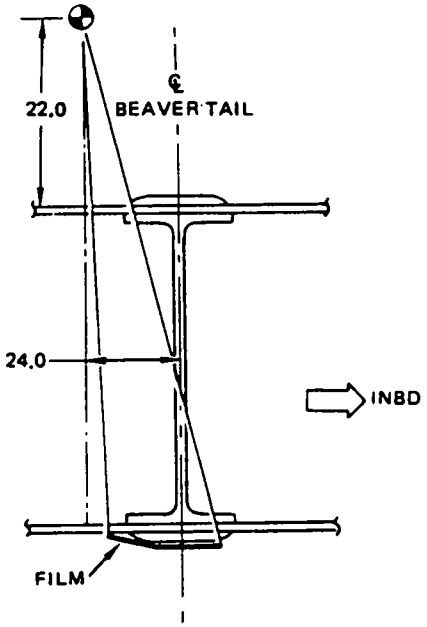
EXPOSURE NUMBER	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE		KV	MAS
1 THRU 8	1 THRU 8	I AND III 3>	4.5 x 17	27	190-210	2400

3> CLASS I AND III LOADED IN EACH CASETTE

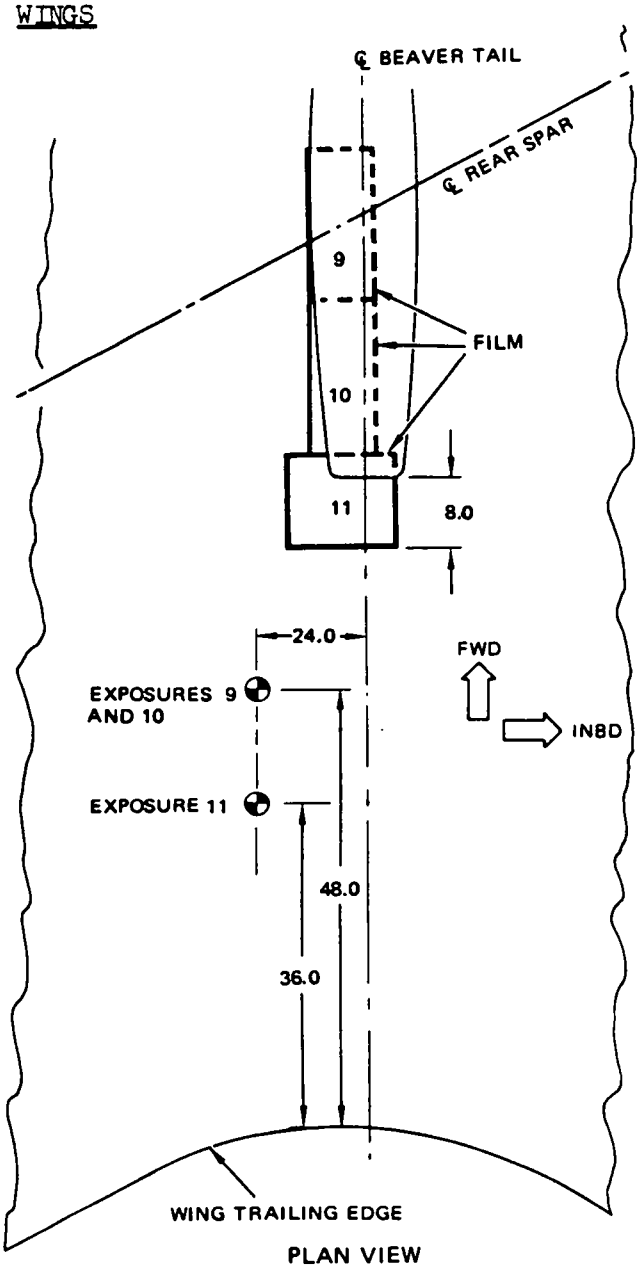
NONDESTRUCTIVE TEST

PART 2 - X-RAY

WINGS



CROSS SECTION
LOOKING FORWARD



PLAN VIEW

NOTE: ALL DIMENSIONS IN INCHES

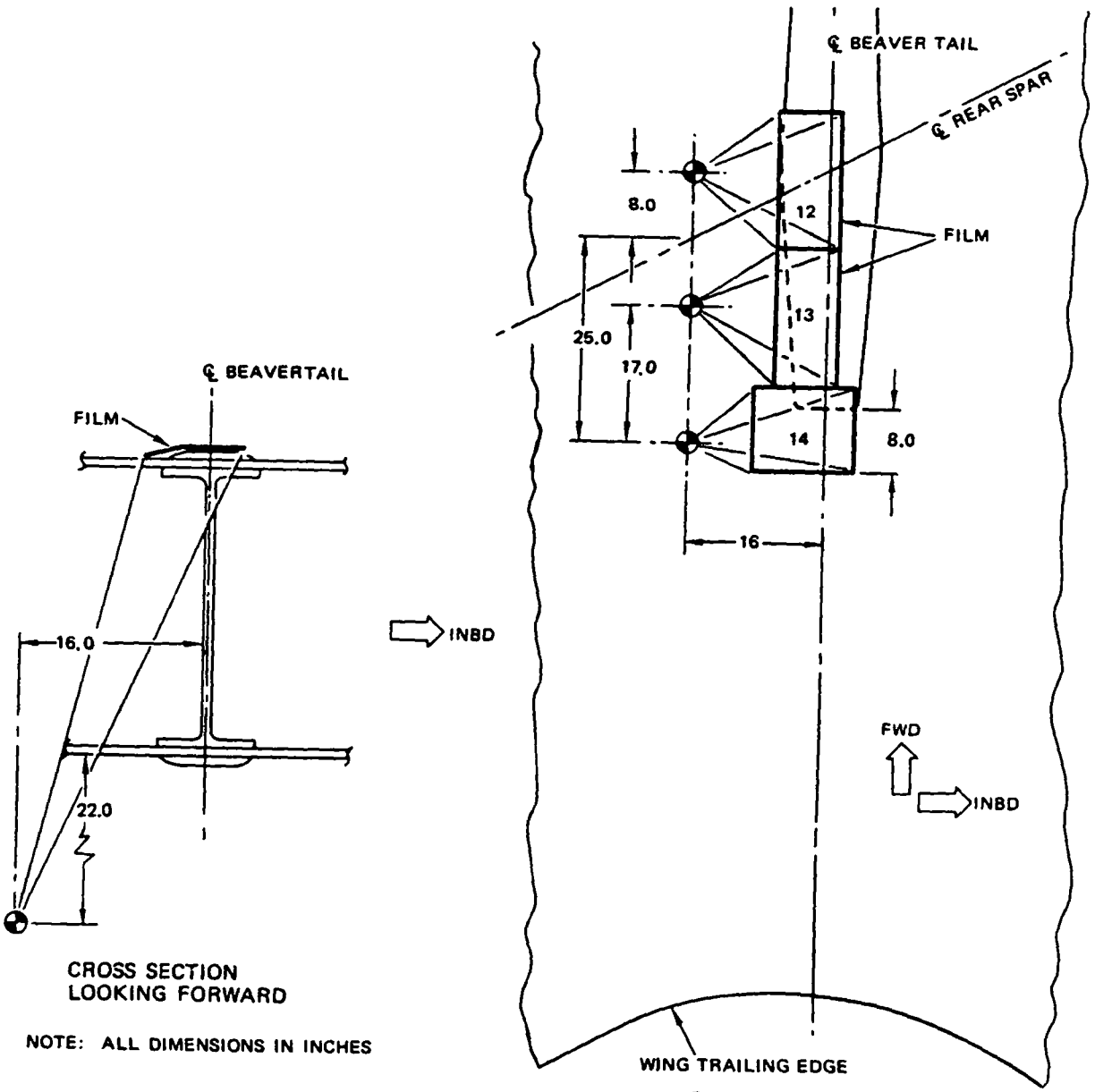
EXPOSURE NUMBER	FILM				GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE	SFD	KV	MAS
9 AND 10	9 AND 10	I AND III *[1]	7 x 17	AS NOTED	250	2400
11	11	I AND III *[1]	10 x 12	AS NOTED	250	2400

* [1] CLASS I AND III LOADED IN EACH CASETTE

BOEING COMMERCIAL JET

NONDESTRUCTIVE TEST
PART 2 - X-RAY

WINGS



NOTE: ALL DIMENSIONS IN INCHES

EXPOSURE NUMBER	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE		KV	MAS
12 AND 13	12 AND 13	I AND III *[1]	7 x 17	AS NOTED	220	3000
14	14	I AND III *[1]	10 x 12	AS NOTED	220	3000

* [1] CLASS I AND III LOADED IN EACH CASETTE

Trunnion Support Structure
Figure 4 (Sheet 3)

BOEING COMMERCIAL JET

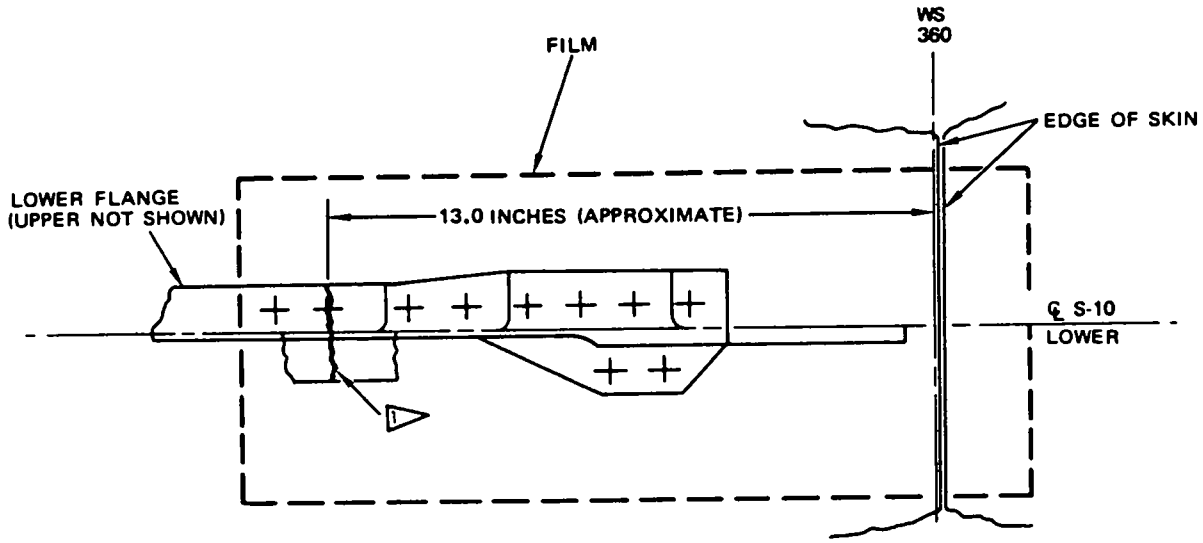
NONDESTRUCTIVE TEST

PART 2 - X-RAY

WINGS

Purpose

To detect cracks in lower stringers which tie into boost pump housing at WS360.



FWD

INBD

PLAN VIEW - BOOST PUMP AREA WS 360

STRATOLINER
INTERCONTINENTAL

1 FATIGUE TESTS INDICATE THAT FIRST CRACKS ARE MOST LIKELY TO OCCUR IN STIFFENER S10 AT THIS LOCATION.

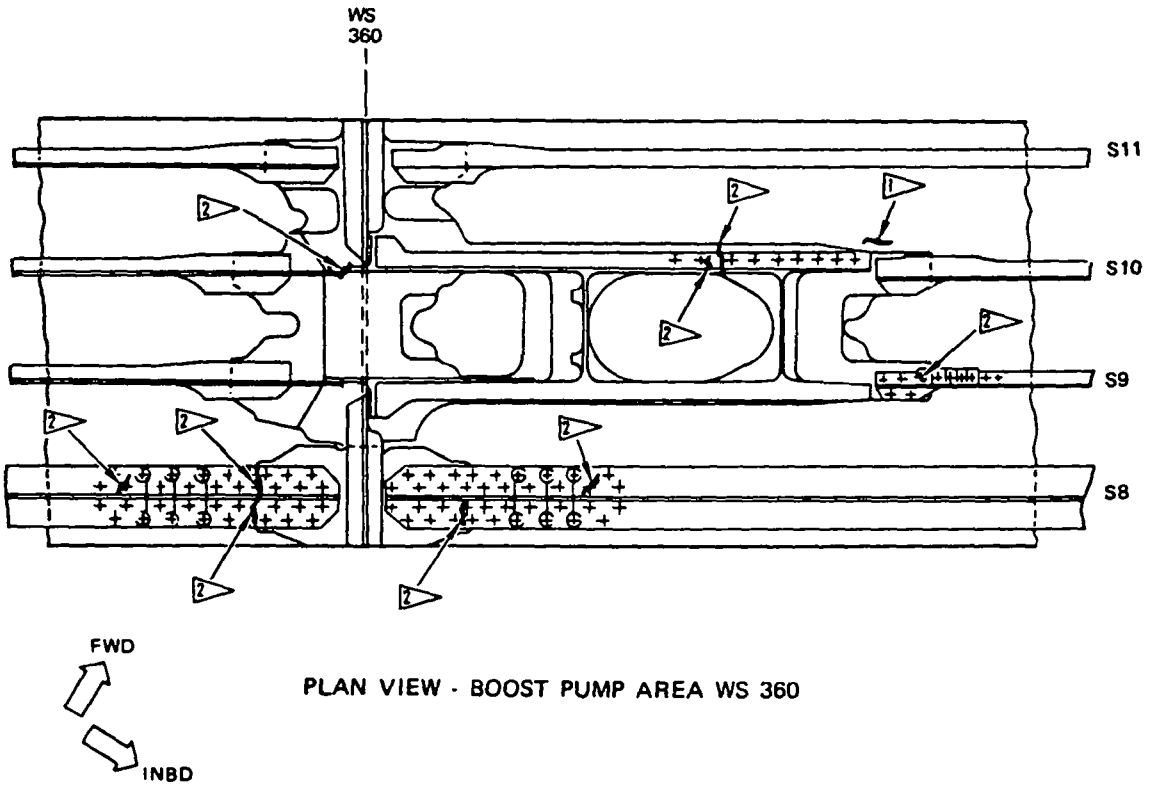
EXPOSURE NUMBER	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE		KV	MAS
1	1	I	7 x 17	36	100	1200

BOEING COMMERCIAL JET

NONDESTRUCTIVE TEST

PART 2 - X-RAY

WINGS



PLAN VIEW - BOOST PUMP AREA WS 360

1 FATIGUE TESTS INDICATE CRACKS MAY OCCUR IN SPLICE PLATE ON UPPER FLANGE OF BOOST PUMP FITTING AT STIFFENER S10 LOCATION.

2 ADDITIONAL CRACKS MAY DEVELOP AT THIS LOCATION.

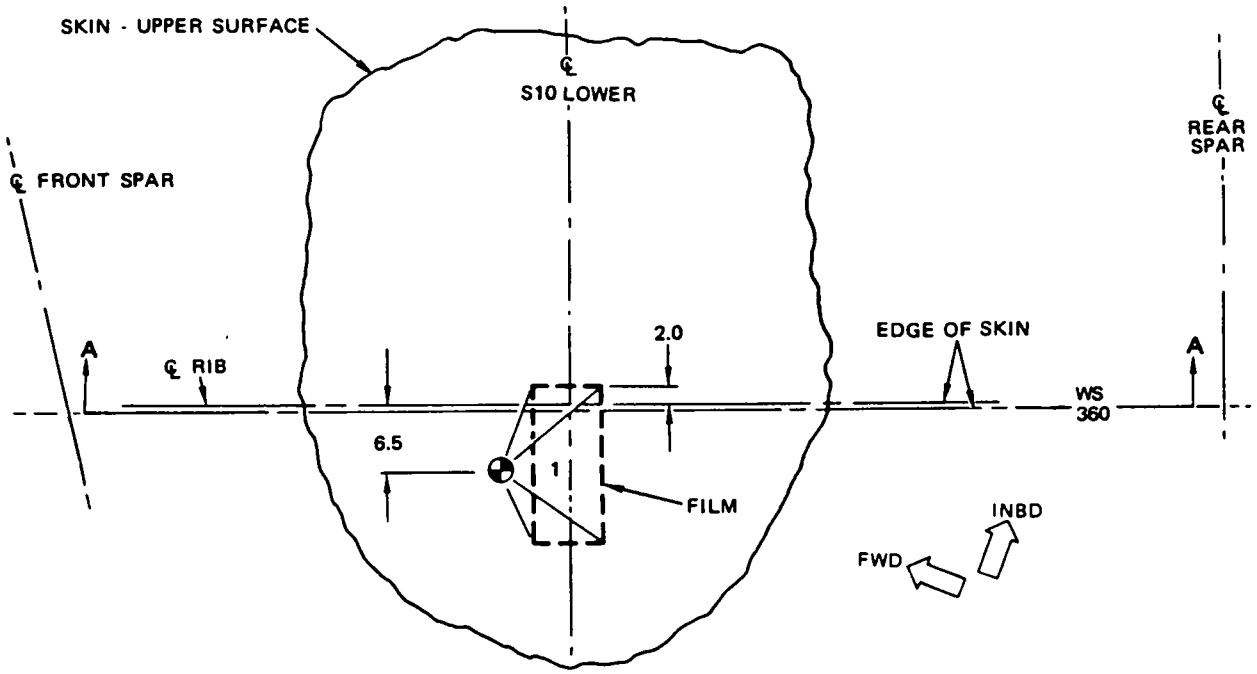
EXPOSURE NUMBER	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE		KV	MAS
2 AND 3	2 AND 3	I	14 x 17	36	100	1200
4 AND 5	4 AND 5	I	7 x 17	36	100	1200

BOEING COMMERCIAL JET

NONDESTRUCTIVE TEST

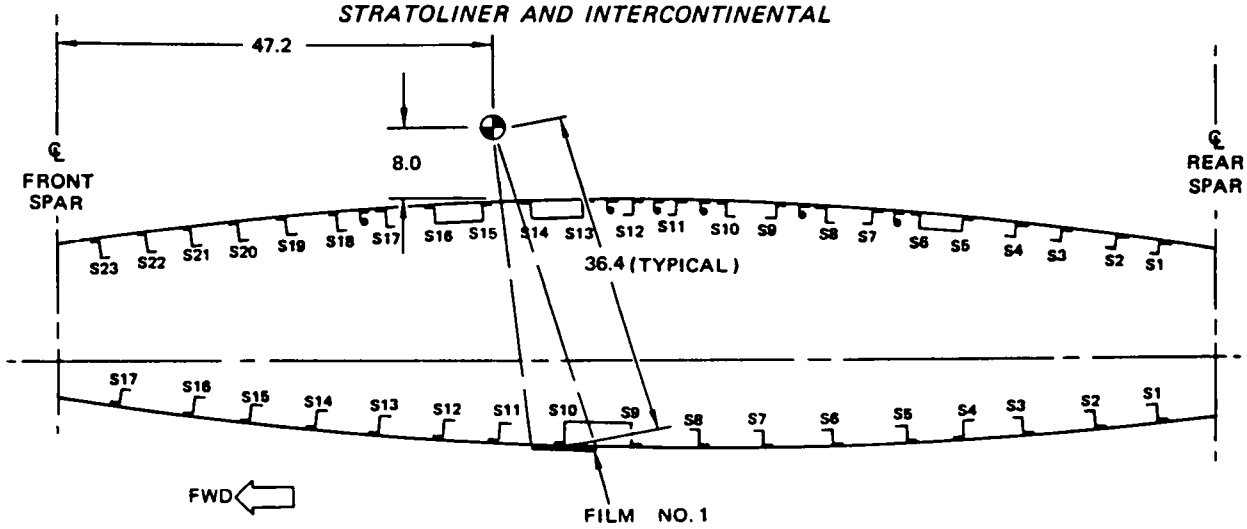
PART 2 - X-RAY

WINGS



PLAN VIEW

STRATOLINER AND INTERCONTINENTAL



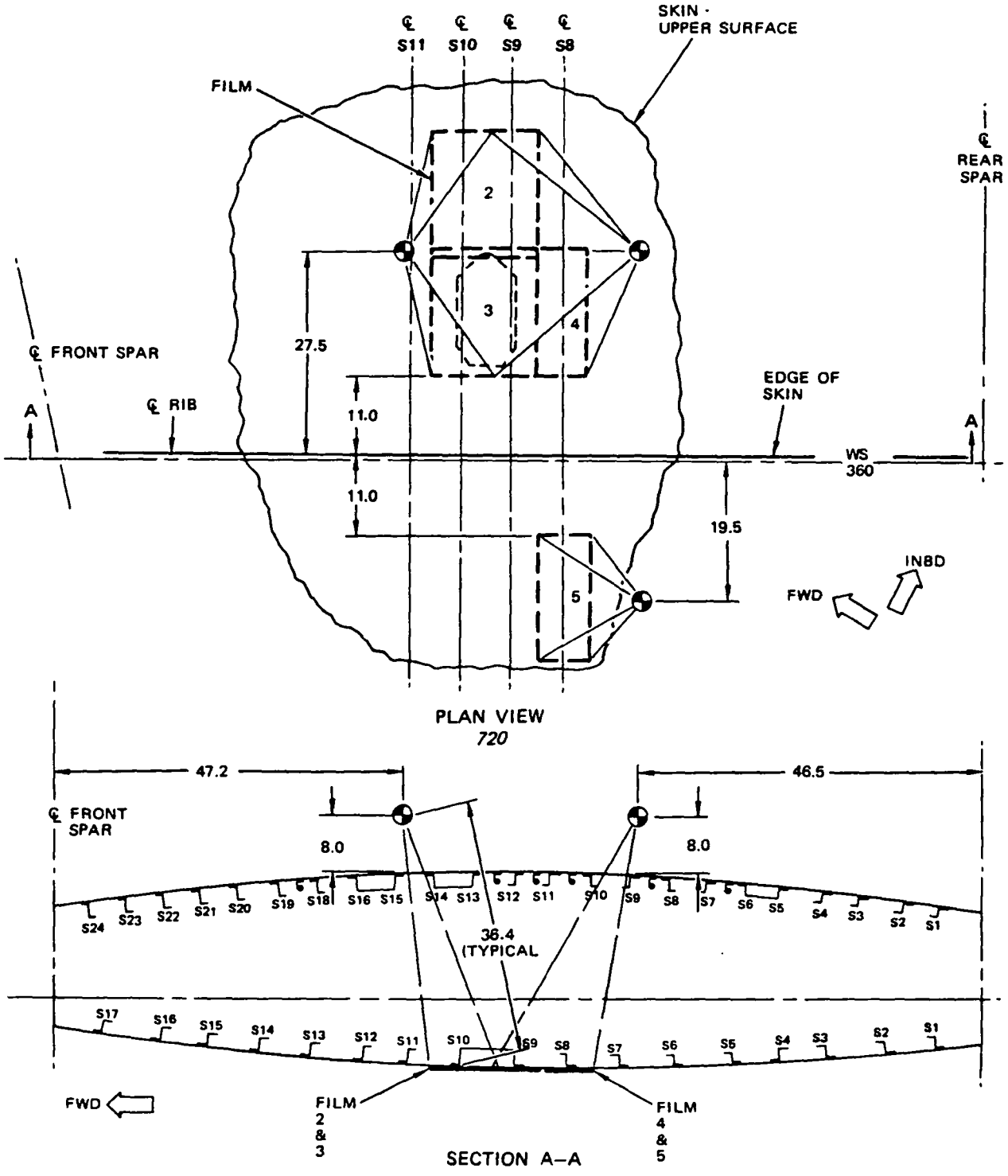
SECTION A–A

NOTE: ALL DIMENSIONS IN INCHES.

NONDESTRUCTIVE TEST

PART 2 - X-RAY

WINGS



NOTE: ALL DIMENSIONS IN INCHES

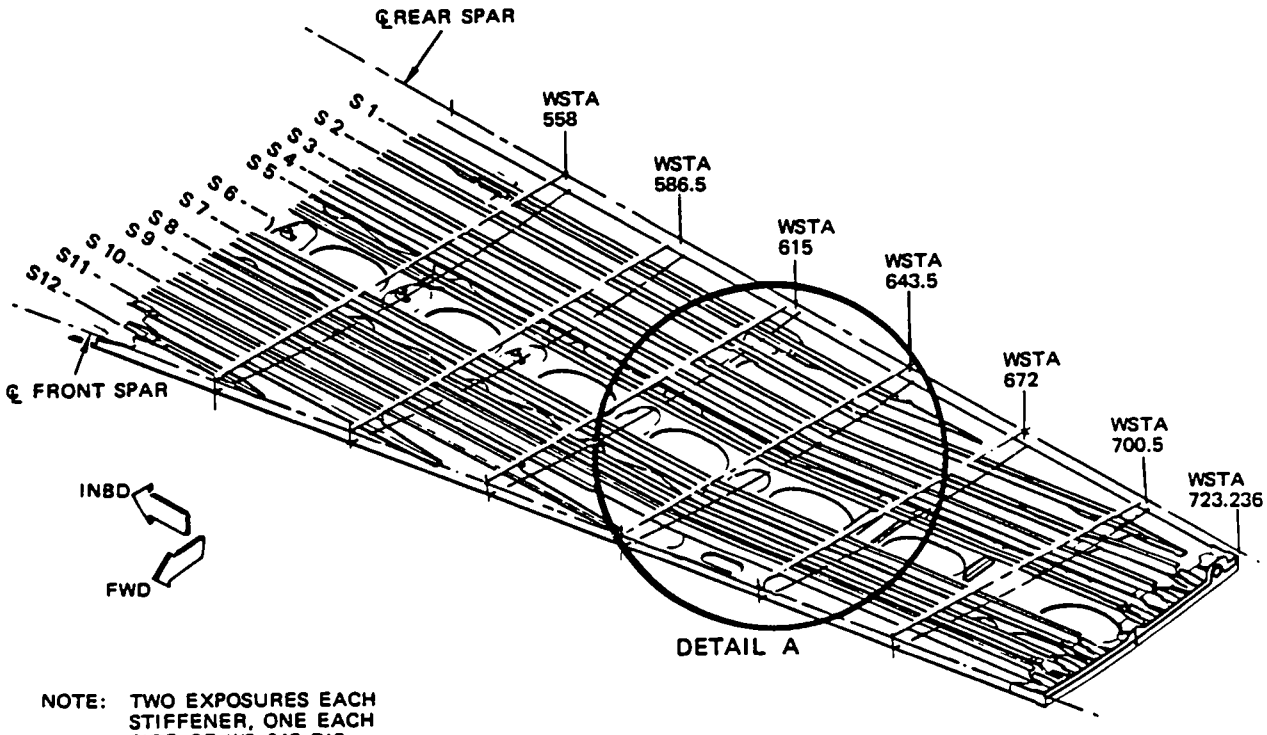
NONDESTRUCTIVE TEST

PART 2 - X-RAY

WINGS

Purpose

To detect cracks in lower stringers on each side of rib at WS643.



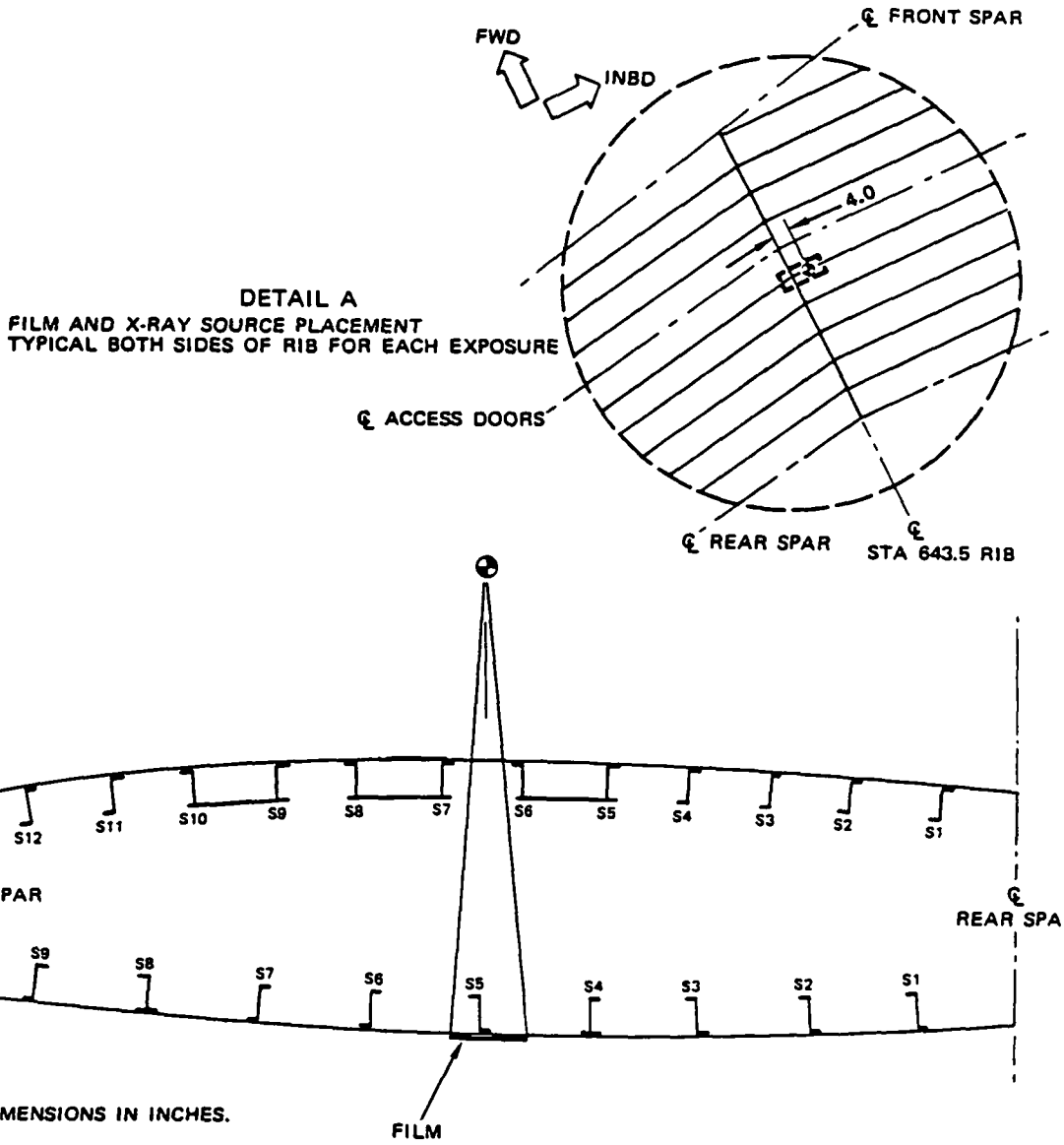
NOTE: TWO EXPOSURES EACH STIFFENER, ONE EACH SIDE OF WS 643 RIB

Stringers in Bend Area - WS643
Figure 6 (Sheet 1)

NONDESTRUCTIVE TEST

PART 2 - X-RAY

WINGS



SECTION THRU STA 643.5

EXPOSURE NUMBER	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE		KV	MAS
1 THRU 18 *[1]	1 THRU 18 *[1]	I	5 X 7	30	100	1200

*[1] USE AS MANY EXPOSURES AS REQUIRED TO COVER ALL STRINGERS.

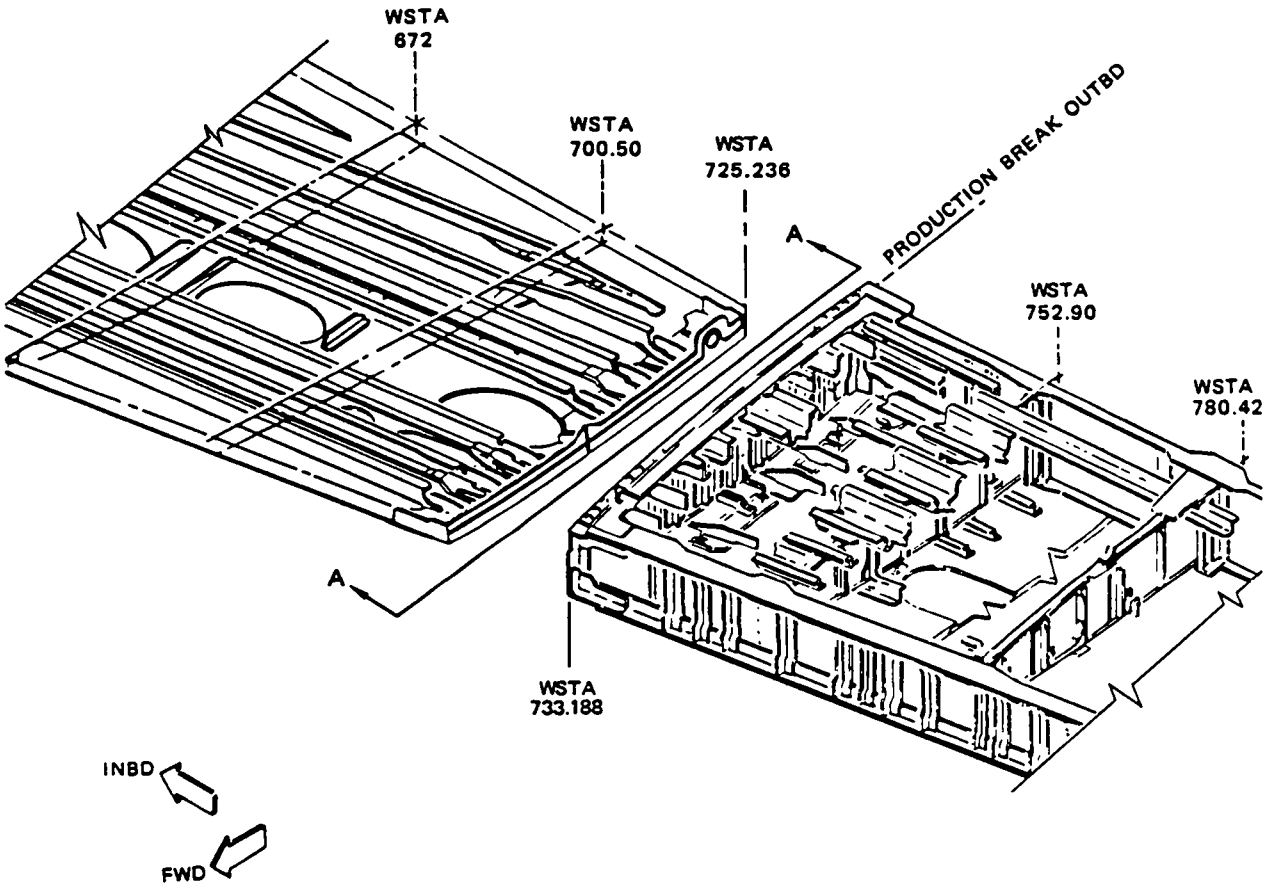
NONDESTRUCTIVE TEST

PART 2 - X-RAY

WINGS

Purpose

To detect cracks in stringers in area around production break.

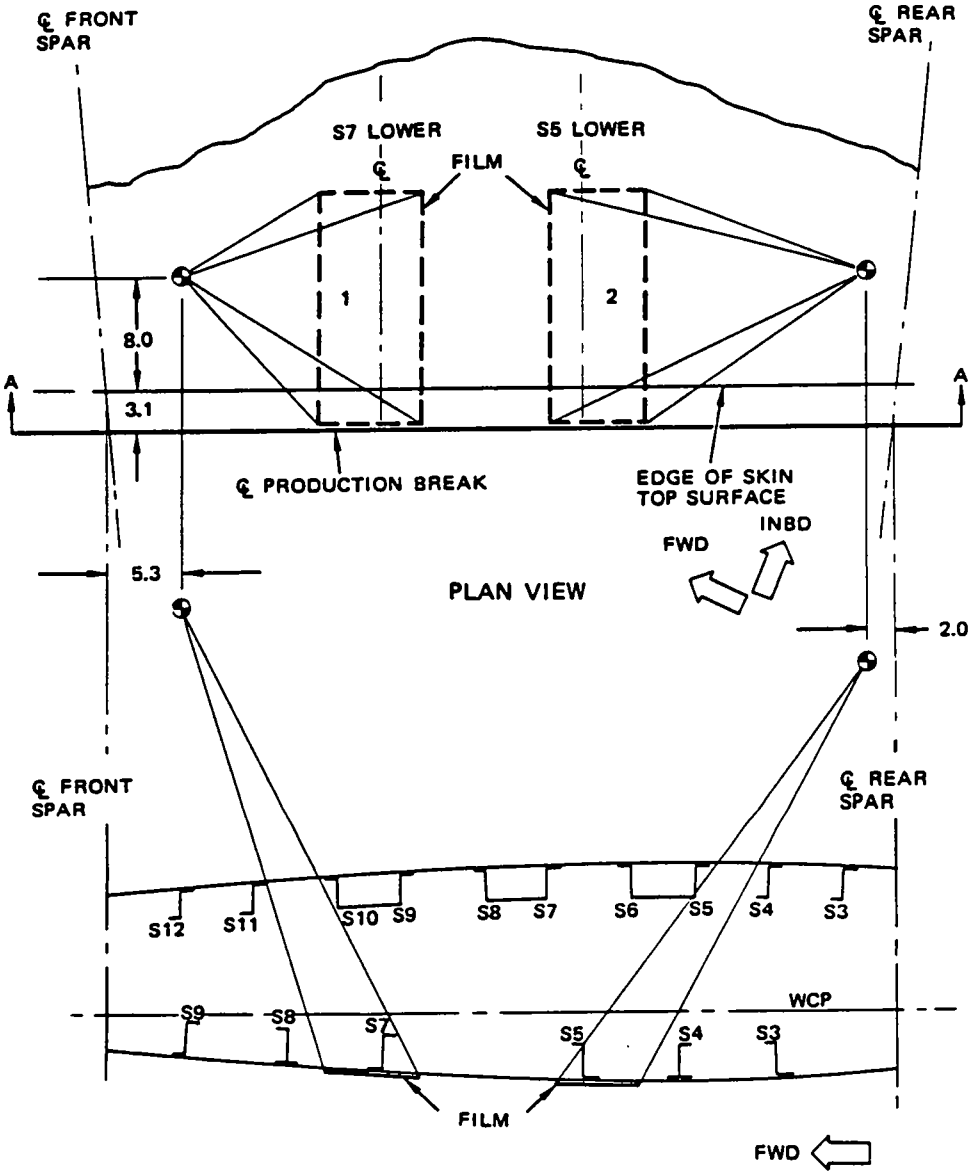


Lower Stringers at Production Break
Figure 7 (Sheet 1)

NONDESTRUCTIVE TEST

PART 2 - X-RAY

WINGS



NOTE: ALL DIMENSIONS IN INCHES

SECTION A–A

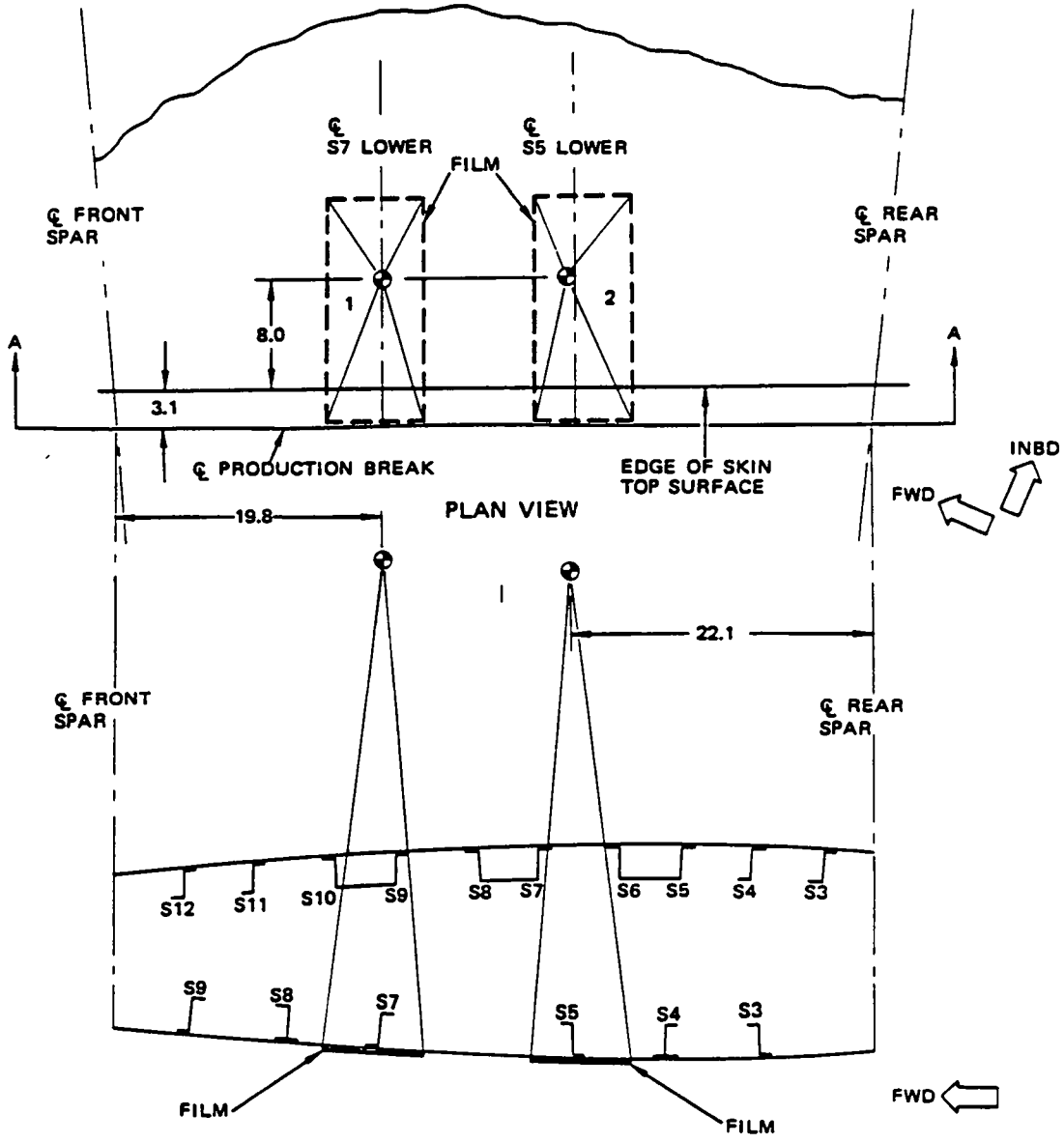
EXPOSURE NUMBER	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE		KV	MAS
1 AND 2	1 AND 2	I	4 X 17	36	100	1200

Lower Stringers at Production Break
Figure 7 (Sheet 2)

NONDESTRUCTIVE TEST

PART 2 - X-RAY

WINGS



NOTE: ALL DIMENSIONS IN INCHES

SECTION A–A

EXPOSURE NUMBER	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE		KV	MAS
1 AND 2	1 AND 2	I	4 X 17	36	100	1200

Lower Stringers at Production Break
Figure 7 (Sheet 3)

PART 2 - X-RAY

WINGS

1. Purpose

   A. This radiographic technique is for the detection of large cracks in stiffeners, skin and splice plates on both sides of joint at WS 360.

   B. Small cracks in the holes around the fasteners may be detected by eddy current.

   C. The upper surface splice plates at stringers 1 and 2 on the outboard side, and dry bay area stringers 20 thru 23 on the outboard side are impracticable to X-Ray due to interfering structure.

   NOTE: See Fig. 11 for 707-300 and 707-400.

2. Equipment

   A. Baltospot portable 150 KV, 35-degree, side emission X-Ray generator was used to develop this technique.

   NOTE: For this inspection do not exceed 160 KVP.

3. Preparation

   A. Defuel and drain applicable wing fuel tank.

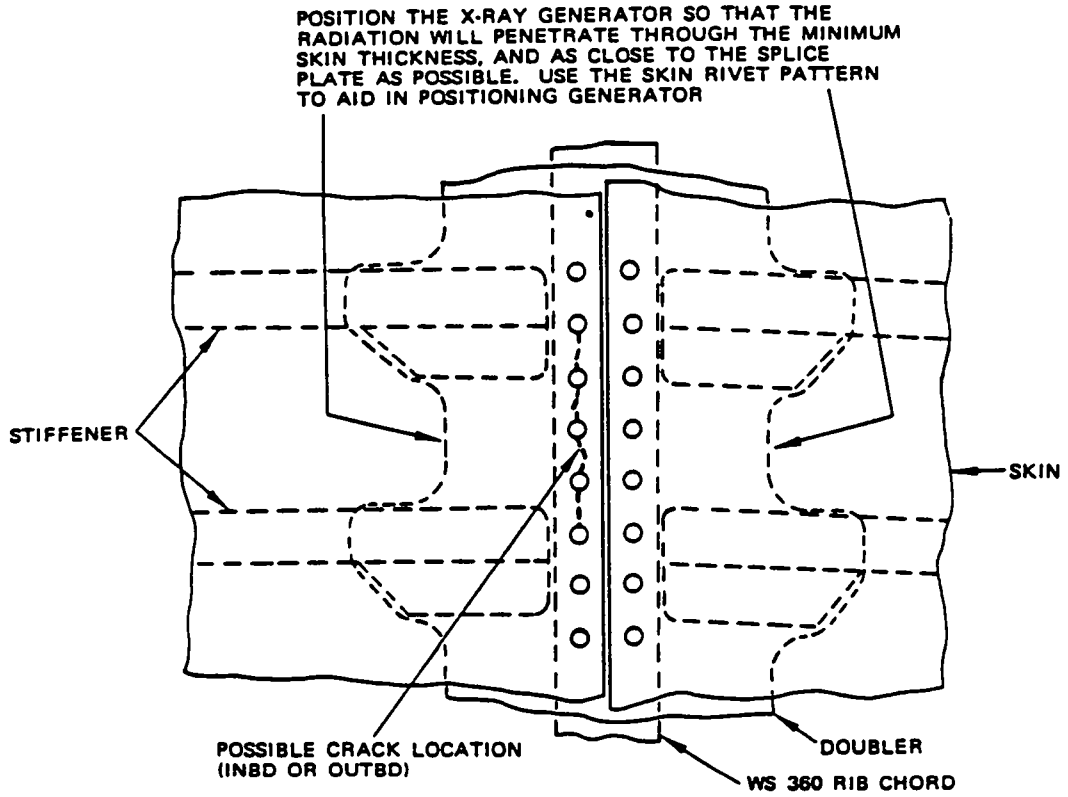
GENERATOR POSITION	UPPER SURFACE INSPECTION			LOWER SURFACE INSPECTION		
	DISTANCE FROM WS 360		DISTANCE FWD OF REAR SPAR MEASURED ALONG SKIN SURFACE	DISTANCE FROM WS 360		DISTANCE FWD OF REAR SPAR MEASURED ALONG SKIN SURFACE
	INBD	OUTBD		INBD	OUTBD	
1	5		9	10		8
2	7		17	10		18
3	5		32	10		29
4	5		38	11		45
5	5		50	10		56
6	5		56	3		70
7	5		73	8		88
8	5		80	5		97
9	5		94	4		114
10	5		100		10	8
11	5		116		10	18
12		7	17		10	29
13		5	32		11	45
14		5	38		10	56
15		5	50		3	70
16		5	56		8	88
17		5	73		5	97
18		5	80		4	114
19		5	94			
20		5	100			

GENERATOR POSITIONS FOR INSPECTING TOP AND BOTTOM WING SURFACES

NONDESTRUCTIVE TEST

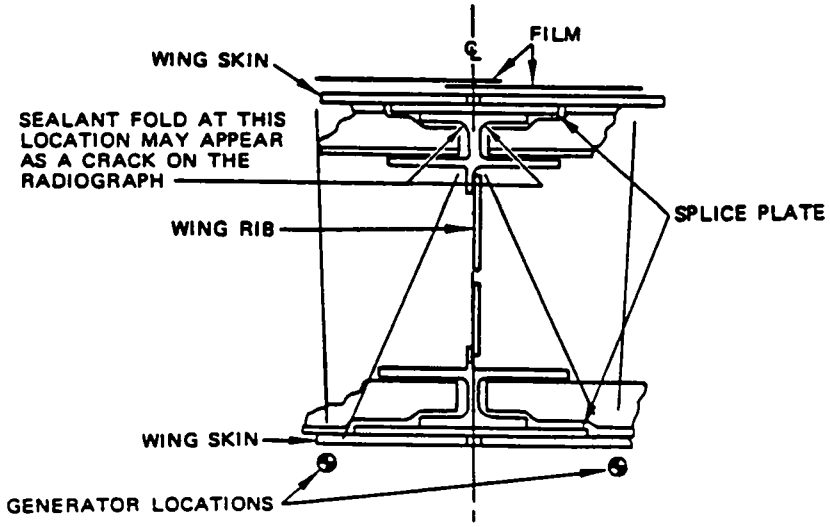
PART 2 - X-RAY

WINGS



PLAN VIEW ON TOP SKIN
(BOTTOM SKIN SIMILAR)

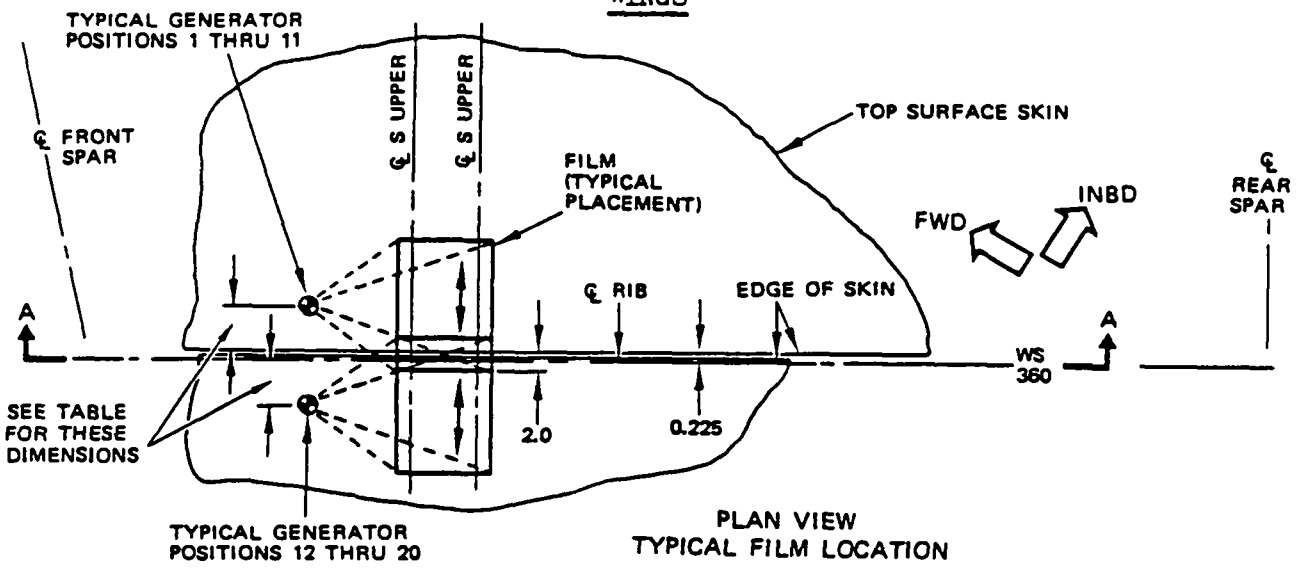
NOTE: FOR FURTHER STRUCTURAL DETAILS SEE STRUCTURAL REPAIR MANUAL

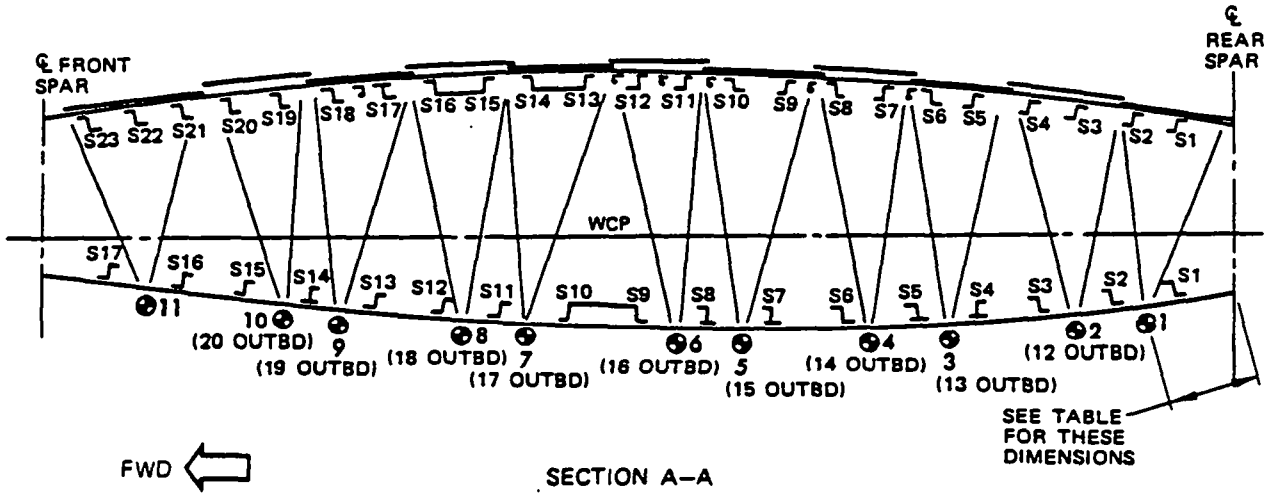


CROSS SECTION
LOOKING FORWARD

Structure at Joint, WS 360
Figure 8 (Sheet 2)

WINGS





NOTE: ALL DIMENSIONS ARE IN INCHES

*[1] SFD IS THICKNESS OF WING

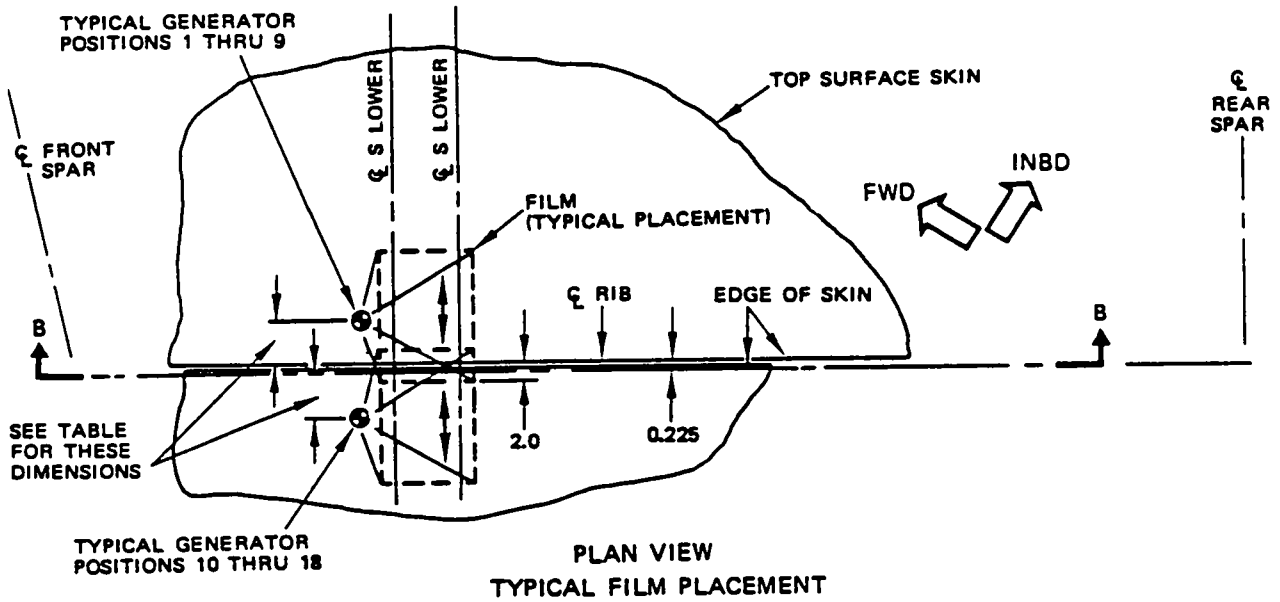
EXPOSURE NUMBER	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE		KV	MAS
1 THRU 3	1 THRU 3	I & II	14 X 17	*[1]	120	900
4 THRU 11	4 THRU 11	I & II	14 X 17		140	900
12 AND 13	12 AND 13	I & II	14 X 17		120	900
14 THRU 20	14 THRU 20	I & II	14 X 17		140	900

Structure at Joint, WS 360
Figure 8 (Sheet 3)

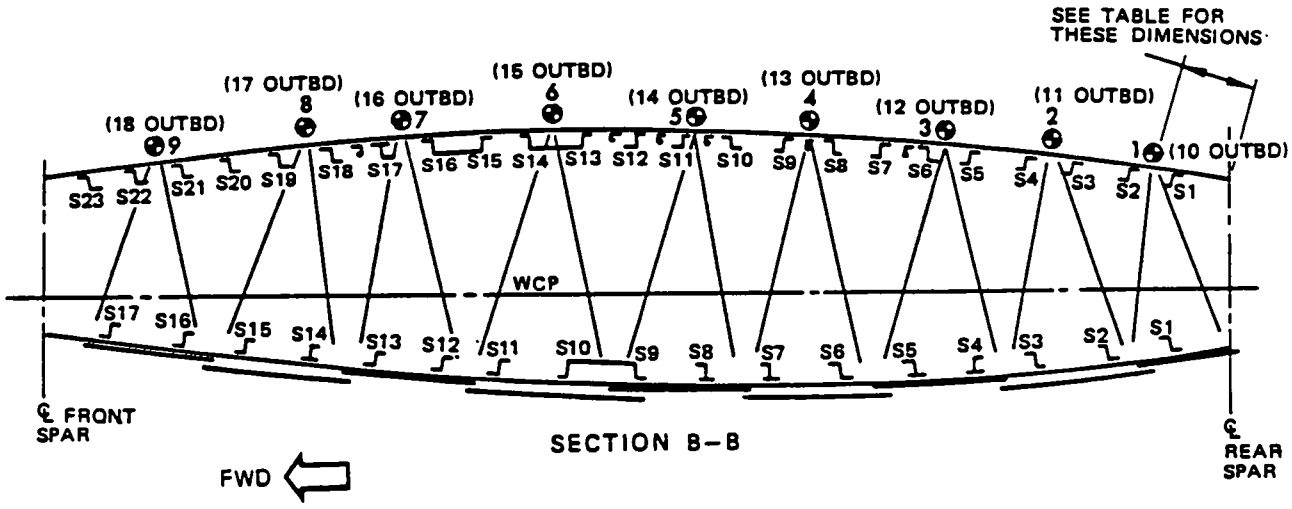
NONDESTRUCTIVE TEST

PART 2 - X-RAY

WINGS



PLAN VIEW
TYPICAL FILM PLACEMENT



SECTION B-B

NOTE: ALL DIMENSIONS ARE IN INCHES

EXPOSURE NUMBER	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE		KV	MAS
1 AND 2	1 AND 2	I & II	14 X 17	*[1]	130	900
3 THRU 5	3 THRU 5	I & II	14 X 17		150	900
6 THRU 9	6 THRU 9	I & II	14 X 17		130	900
10 AND 11	10 AND 11	I & II	14 X 17		130	900
12 THRU 14	12 THRU 14	I & II	14 X 17		150	900
15 THRU 18	15 THRU 18	I & II	14 X 17		130	900

Structure at Joint, WS 360
Figure 8 (Sheet 4)

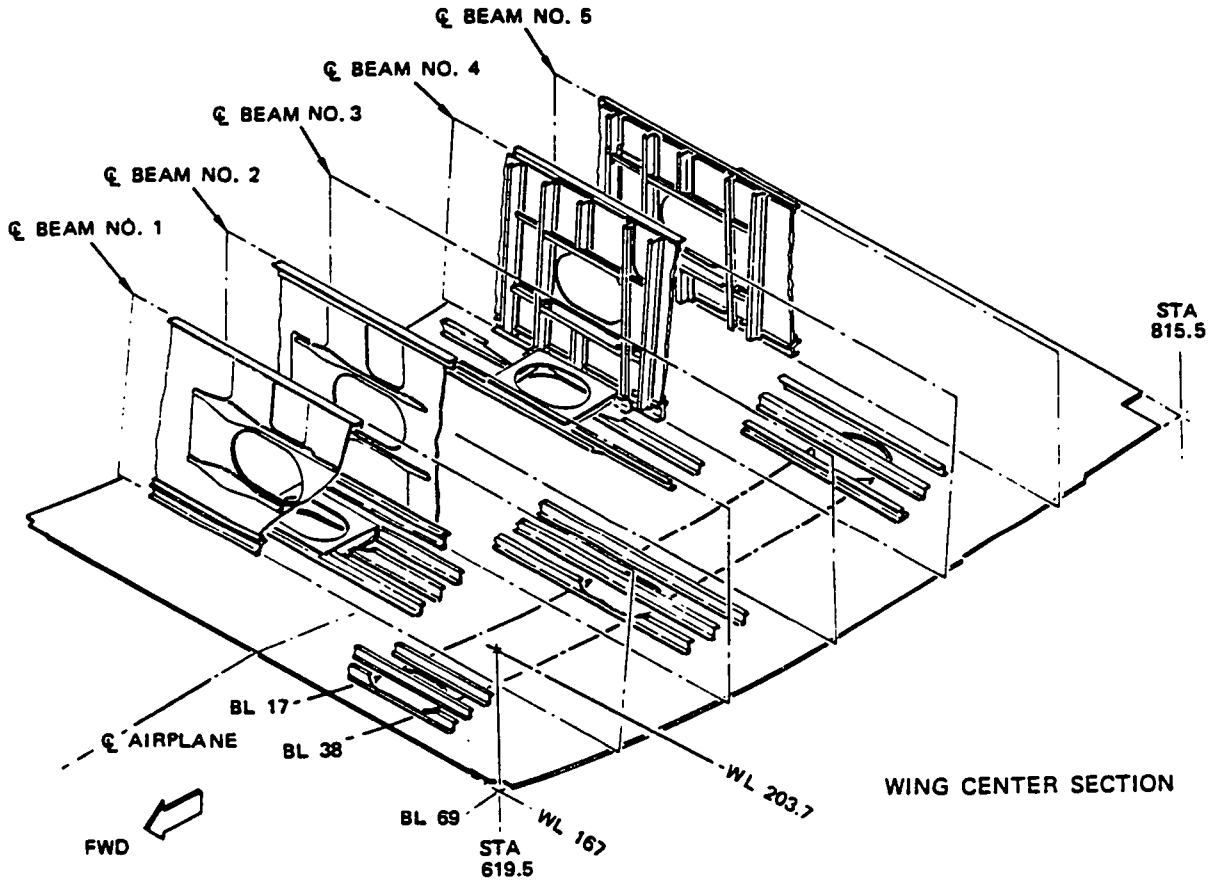
NONDESTRUCTIVE TEST

PART 2 - X-RAY

WINGS

Purpose

To detect cracks in stringers and skin around access doors. Fatigue tests indicate cracks liable to occur in stringers S6, S8, S14, S16, S22 and S24.



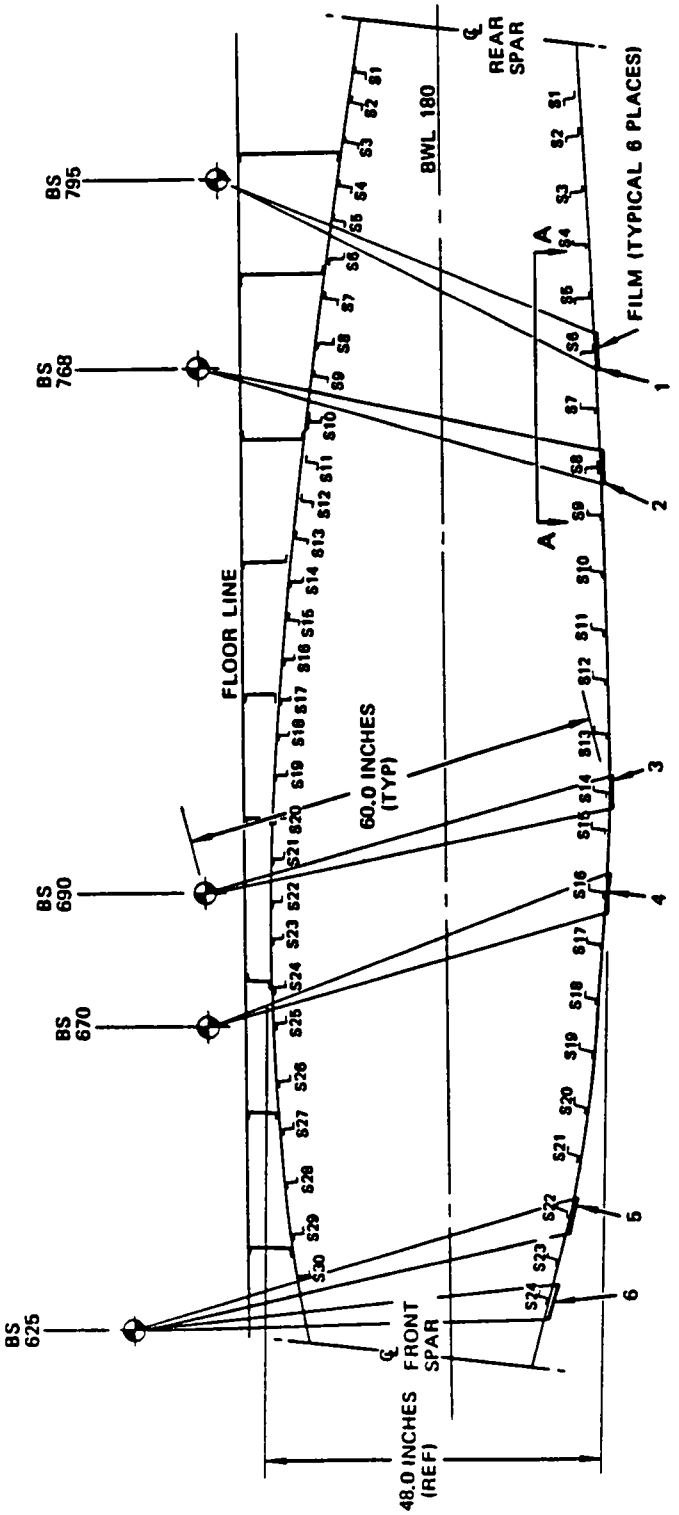
WING CENTER SECTION

NOTE: FOR FURTHER STRUCTURAL MATERIAL IDENTIFICATION SEE STRUCTURAL REPAIR AND MAINTENANCE MANUAL.

Access Door Areas - Center Section
Figure 9 (Sheet 1)

PART 2 - X-RAY

WINGS

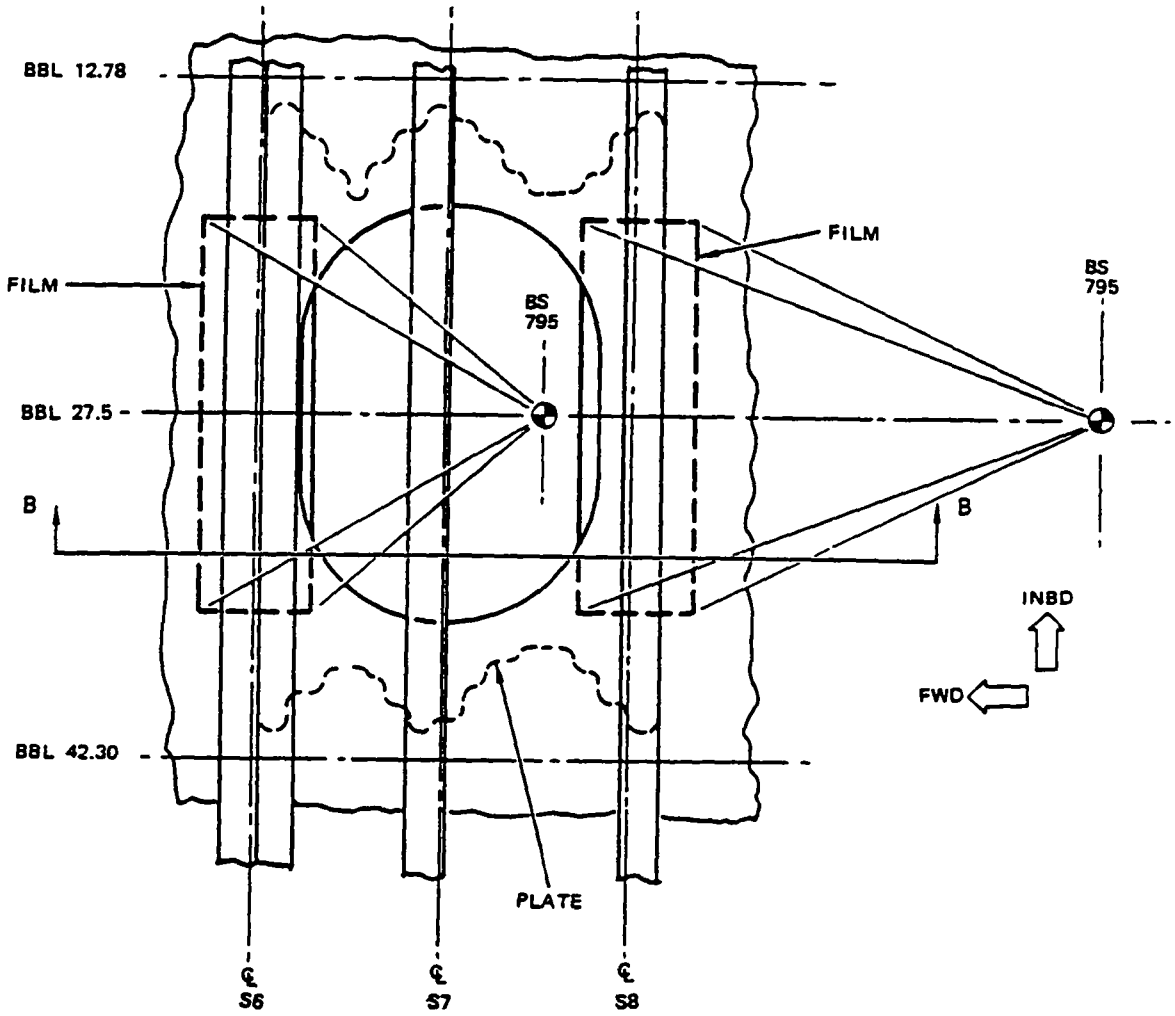


Access Door Areas - Center Section
Figure 9 (Sheet 2)

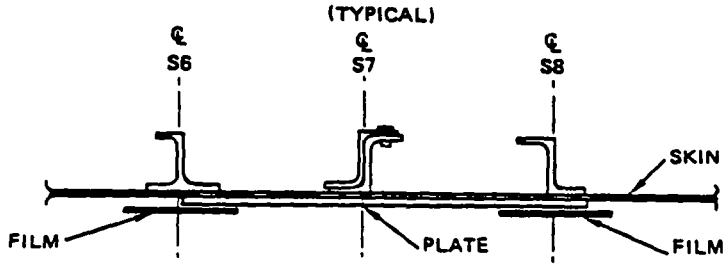
NONDESTRUCTIVE TEST

PART 2 - X-RAY

WINGS



VIEW A-A
(TYPICAL)



SECTION B–B

EXPOSURE NUMBER	FILM				GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE	SFD	KV	MAS
1 THRU 6	1 THRU 6	I	7 X 17	60	160	2400

Access Door Areas - Center Section
Figure 9 (Sheet 3)

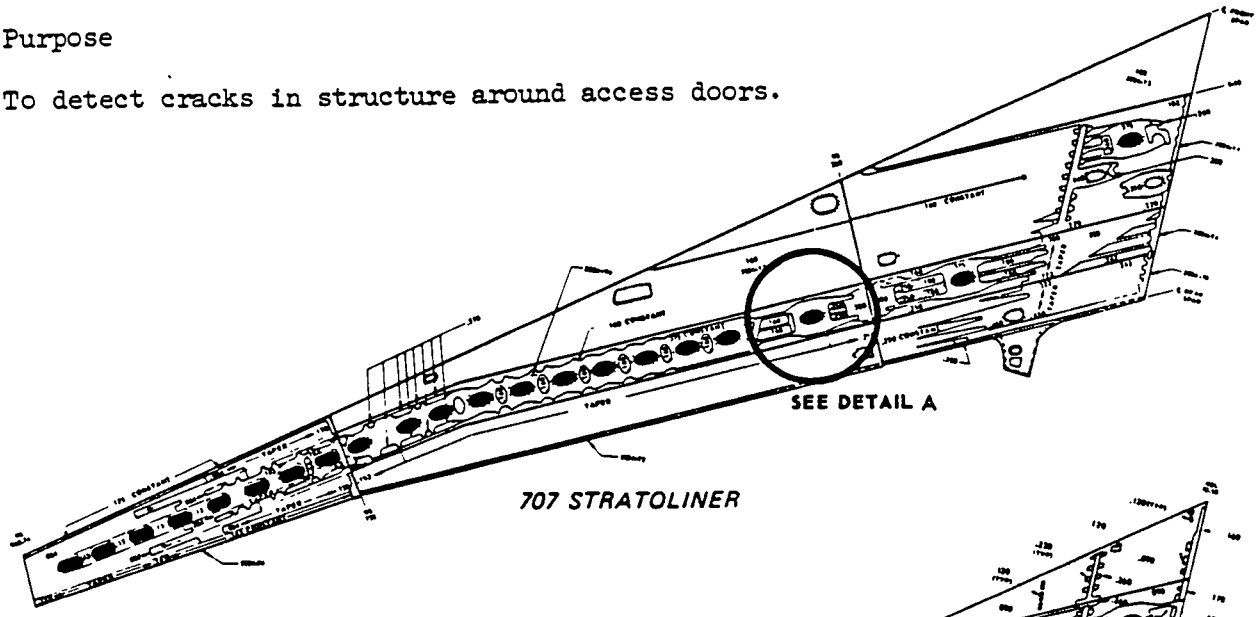
NONDESTRUCTIVE TEST

PART 2 - X-RAY

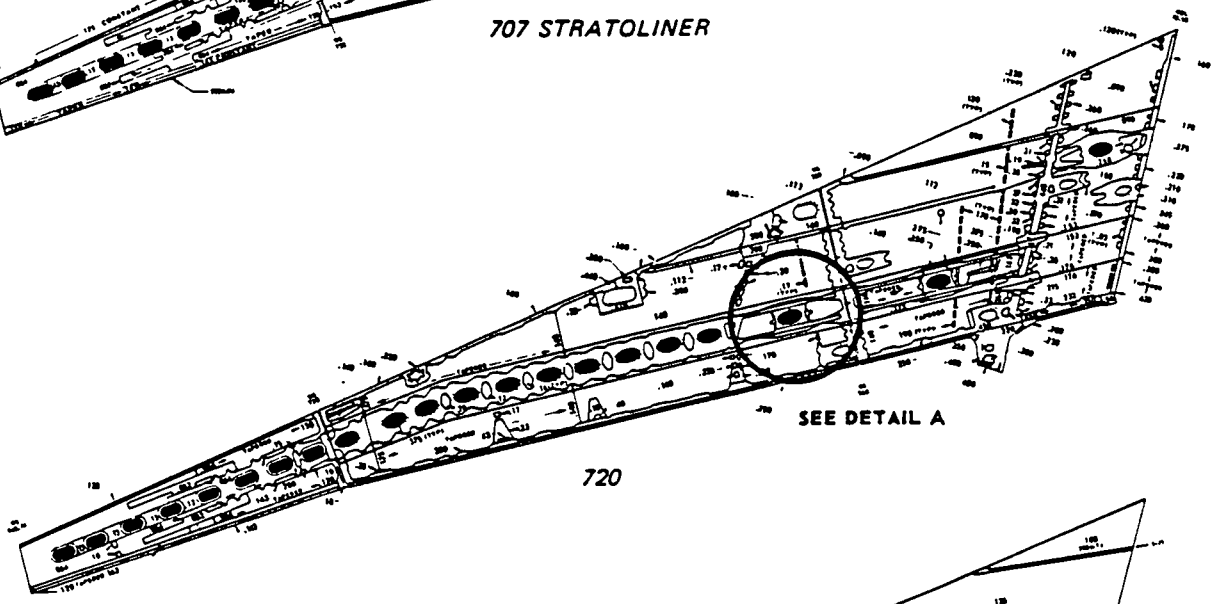
WINGS

Purpose

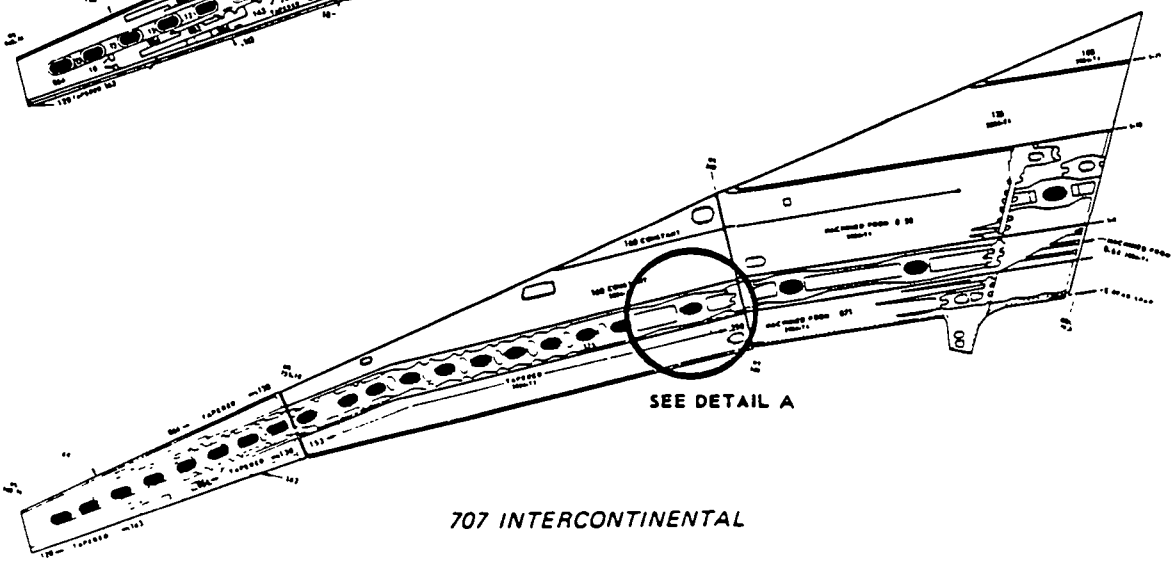
To detect cracks in structure around access doors.



707 STRATOLINER



720



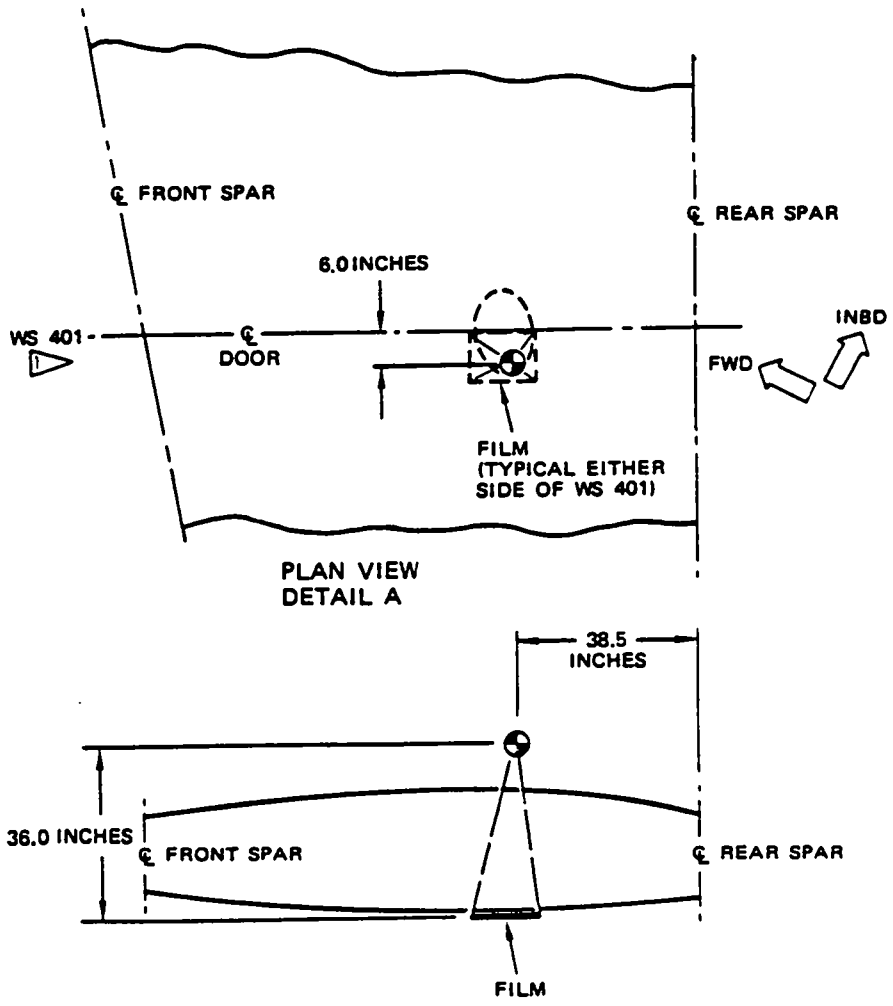
707 INTERCONTINENTAL

Access Door Areas - Main Wing and Outer Wing
Figure 10 (Sheet 1)

NONDESTRUCTIVE TEST

PART 2 - X-RAY

WINGS



1 SIMILAR TECHNIQUE APPLICABLE TO OTHER LOCATIONS

EXPOSURE NUMBER	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE		KV	MAS
1 AND 2 2	1	I	11 X 14	36	150	1500

2 2 EXPOSURES REQUIRED PER DOOR

PART 2 - X-RAY

WINGS

1. Purpose

A. This radiographic technique is for the detection of large cracks in stiffeners, skin and splice plates on both sides of joint at WS 360.

B. Small cracks in the holes around the fasteners may be detected by eddy current.

C. The upper surface splice plates at stringers 1 and 2 on the outboard side, and dry bay area stringers 20 thru 23 on the outboard side are impracticable to X-ray due to interfering structure.

NOTE: See Fig. 8 for 707-100, 707-200 and 720.

2. Equipment

A. Baltospot portable 150 KV, 35-degree, side emission X-Ray generator was used to develop this technique.

NOTE: For this inspection do not exceed 160 KVP.

3. Preparation

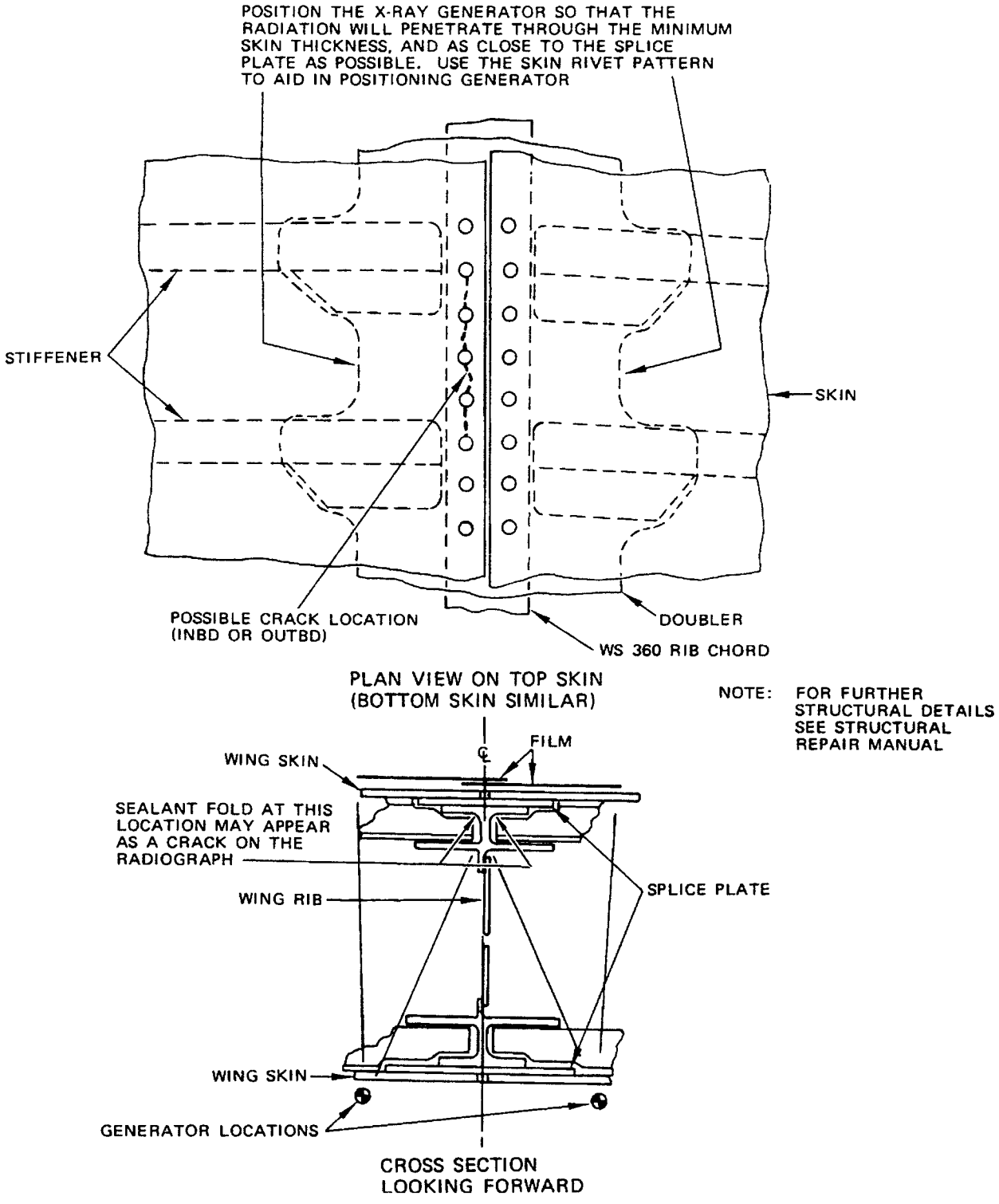
A. Defuel and drain applicable wing fuel tank.

GENERATOR POSITION	UPPER SURFACE INSPECTION			LOWER SURFACE INSPECTION		
	DISTANCE FROM WS 360		DISTANCE FWD OF REAR SPAR MEASURED ALONG SKIN	DISTANCE FROM WS 360		DISTANCE FWD OF REAR SPAR MEASURED ALONG SKIN
	INBD	OUTBD		INBD	OUTBD	
1	7.0		10.0	10.0		4.0
2	7.0		18.5	10.0		13.0
3	8.0		30.0	10.0		23.0
4	8.0		39.0	11.0		45.0
5	10.0		47.0	10.0		55.0
6	5.0		58.0	10.0		76.0
7	6.0		74.0	8.0		87.0
8	7.0		80.0	5.0		98.0
9	7.0		94.0	5.0		117.0
10	5.0		100.0		10.0	4.0
11	5.0		118.0		10.0	13.0
12		7.0	18.5		10.0	23.0
13		8.0	30.0		11.0	45.0
14		8.0	39.0		10.0	55.0
15		10.0	47.0		10.0	76.0
16		5.0	58.0		8.0	87.00
17		6.0	74.0		5.0	98.0
18		7.0	80.0		5.0	117.0
19		7.0	94.0			
20		5.0	100.0			

GENERATOR POSITIONS FOR INSPECTING TOP AND BOTTOM WING SURFACES
Structure at Joint, WS 360
Figure 11 (Sheet 1)

PART 2 - X-RAY

WINGS

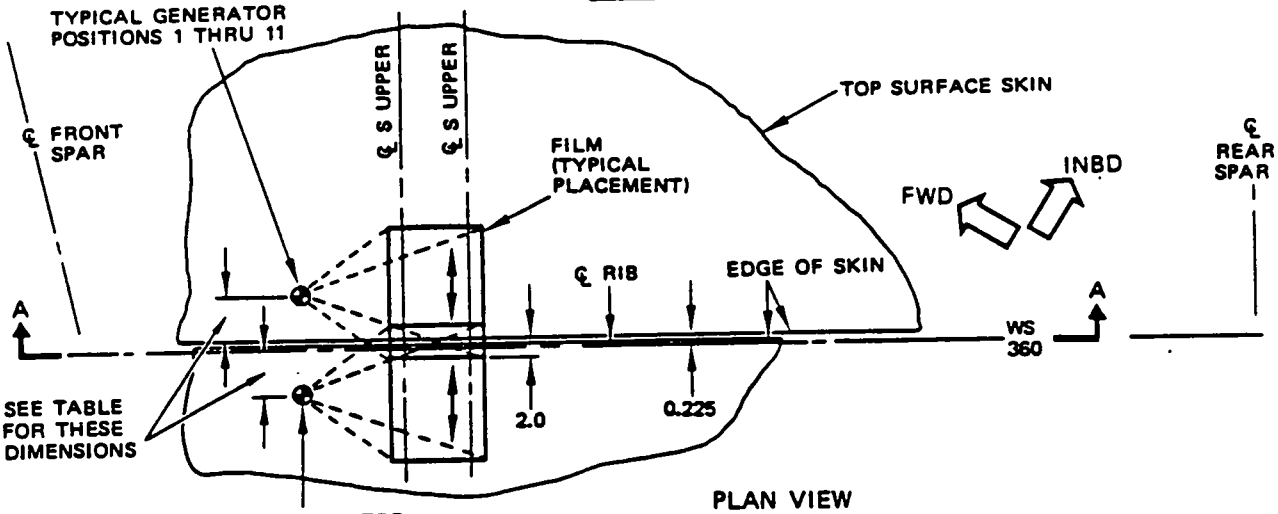


Structure at Joint, WS 360
Figure 11 (Sheet 2)

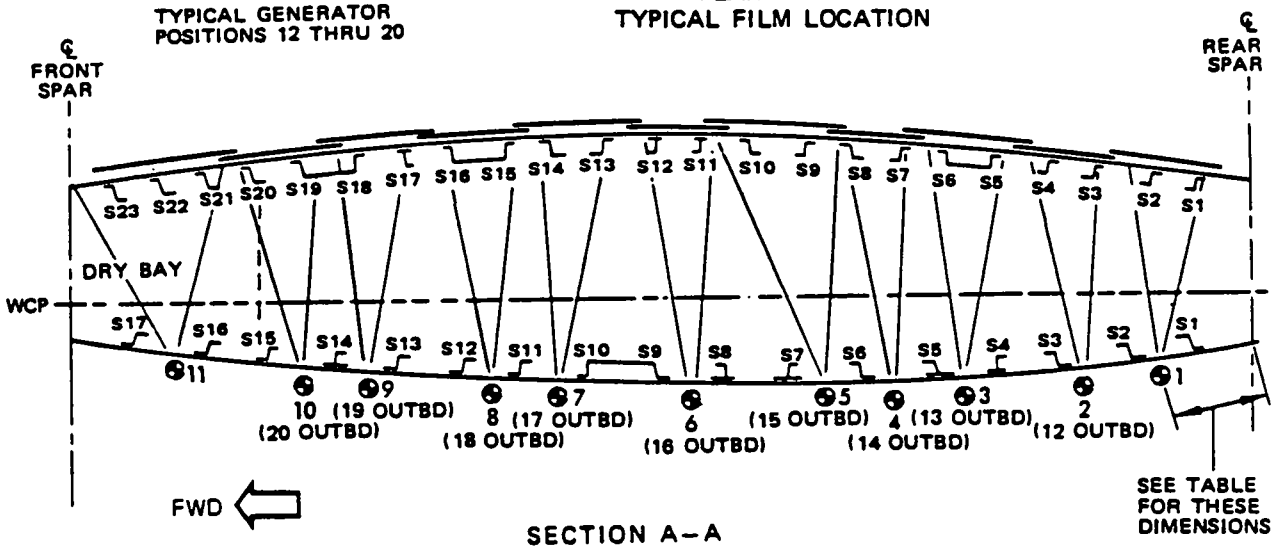
NONDESTRUCTIVE TEST

PART 2 - X-RAY

WINGS



PLAN VIEW
TYPICAL FILM LOCATION



SECTION A-A

NOTE: ALL DIMENSIONS ARE IN INCHES

*[1] SFD IS THICKNESS OF WING

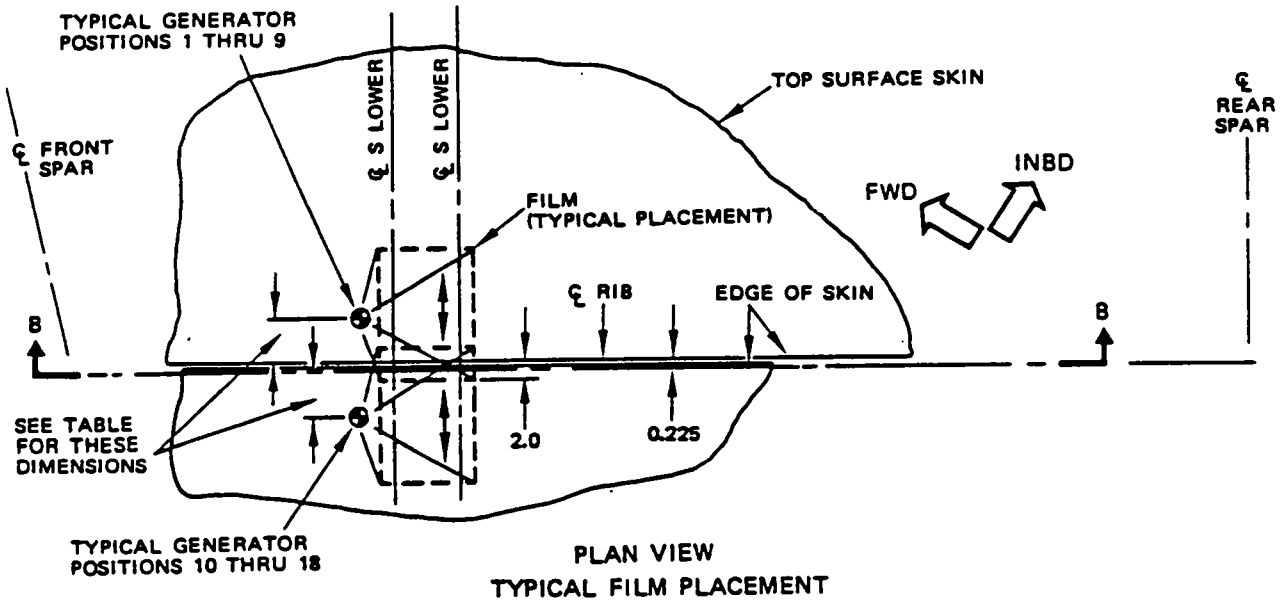
EXPOSURE NUMBER	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE		KV	MAS
1 THRU 3	1 THRU 3	I & II	14 X 17	*[1]	130	900
4 THRU 11	4 THRU 11	I & II	14 X 17		150	900
12 AND 13	12 AND 13	I & II	14 X 17		130	900
14 THRU 20	14 THRU 20	I & II	14 X 17		150	900

Structure at Joint, WS 360
Figure 11 (Sheet 3)

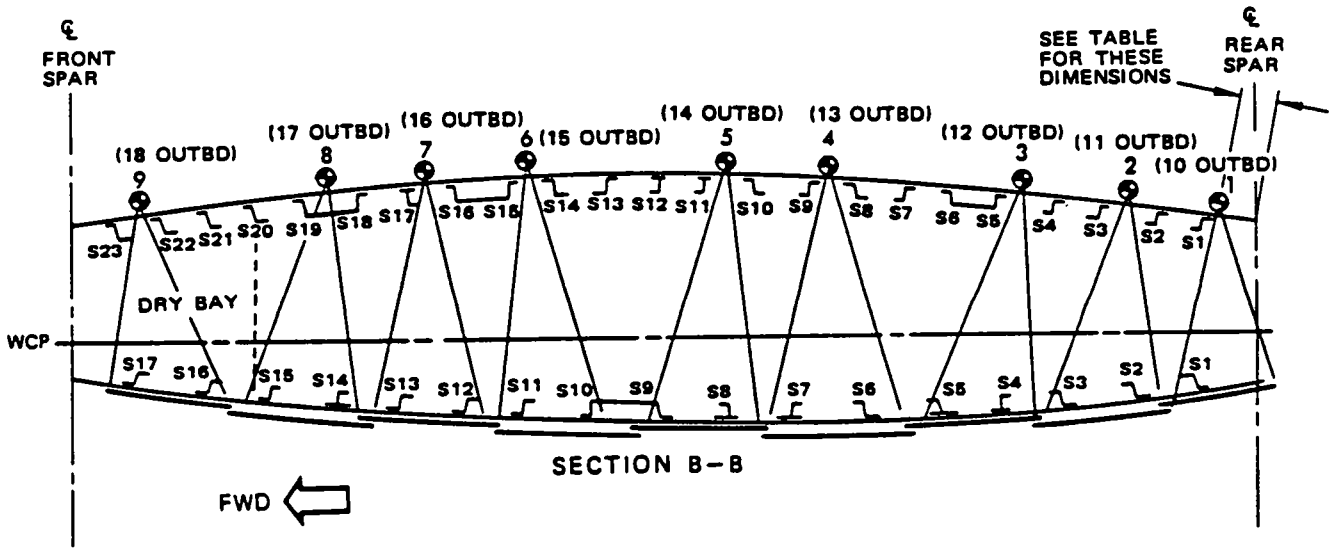
NONDESTRUCTIVE TEST

PART 2 - X-RAY

WINGS



PLAN VIEW
TYPICAL FILM PLACEMENT



NOTE: ALL DIMENSIONS ARE IN INCHES

EXPOSURE NUMBER	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE		KV	MAS
1 AND 2	1 AND 2	I & II	14 X 17	*[1]	130	900
3 THRU 5	3 THRU 5	I & II	14 X 17		150	900
6 THRU 9	6 THRU 9	I & II	14 X 17		130	900
10 AND 11	10 AND 11	I & II	14 X 17		130	900
12 THRU 14	12 THRU 14	I & II	14 X 17		150	900
15 THRU 18	15 THRU 18	I & II	14 X 17		130	900

Structure at Joint, WS 360
Figure 11 (Sheet 4)

EFFECTIVITY
MODEL: 707-300/400/ 300B/300C
SERVICE BULLETIN REFERENCE: 3168
SSI DOCUMENT REFERENCE (D6-44860)
SSD: 57-A25-08A
57-A25-21A
57-A35-08A
57-A35-21A
57-A45-08A
57-A45-21A

PART 2 - X-RAY

WINGS - MAIN FRAME

1. Purpose

   A. This radiographic technique is for the detection of large cracks in the skin surfaces under the upper beavertail, broken stringer splices at WBL 59.24, and large cracks in the upper rear spar chord from BBL 70.5 outboard to WS 197.

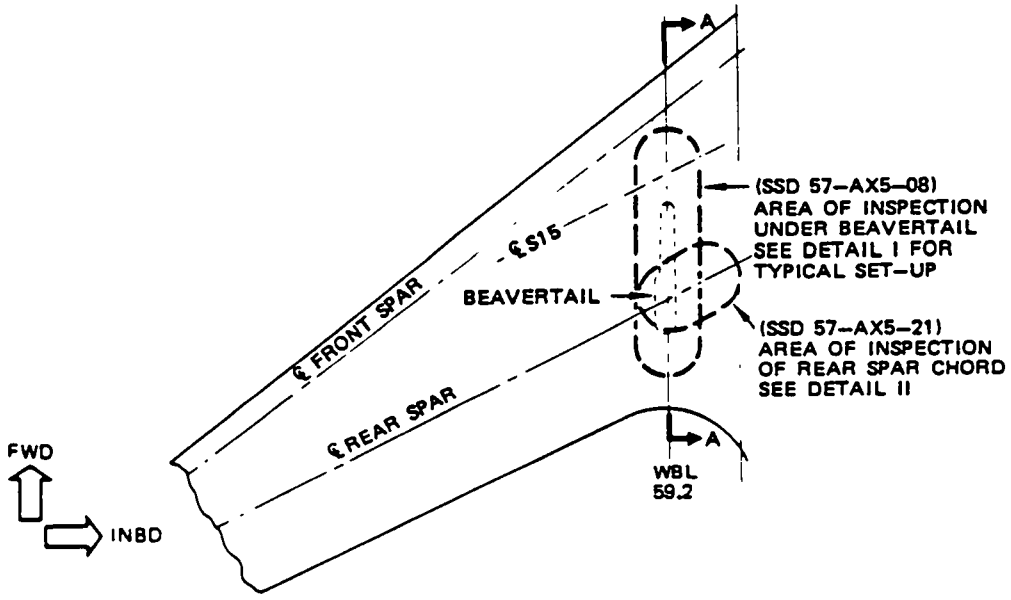
   B. For a similar procedure for the 707 Stratoliner and 720 see Fig. 3.

2. Equipment

   A. Baltospot portable 300 kv, 35-degree side emission x-ray generator was used to develop this technique.

3. Preparation

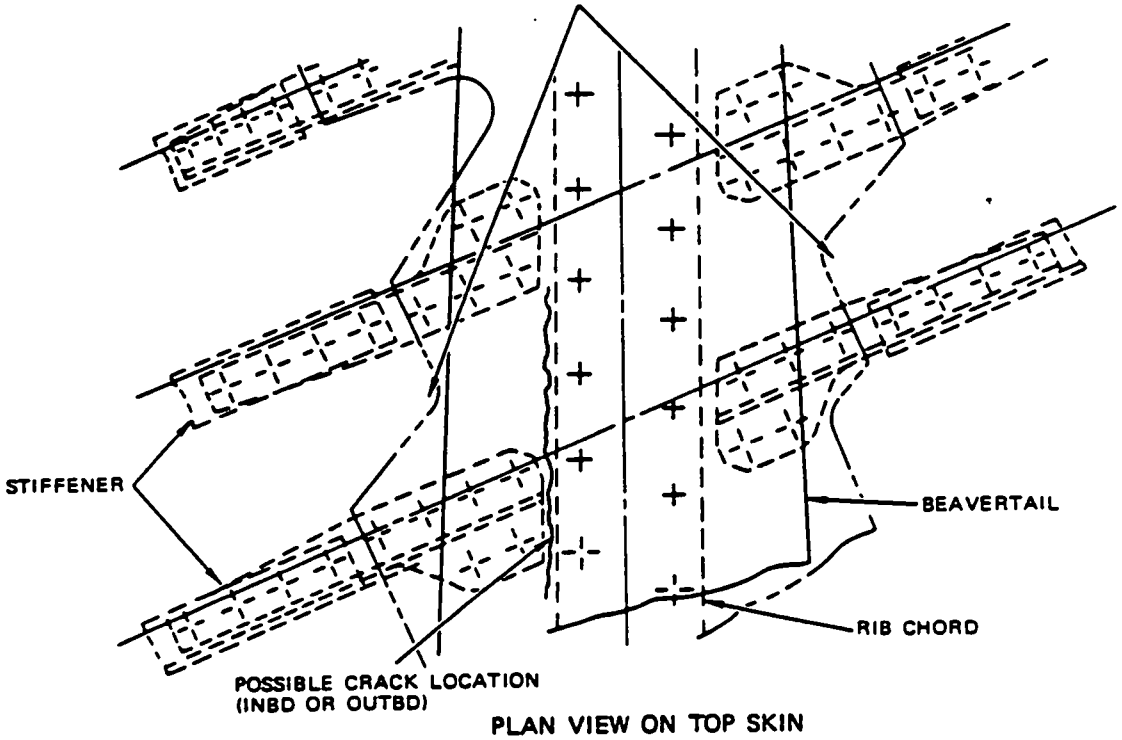
   A. Defuel and drain the applicable wing fuel tank.



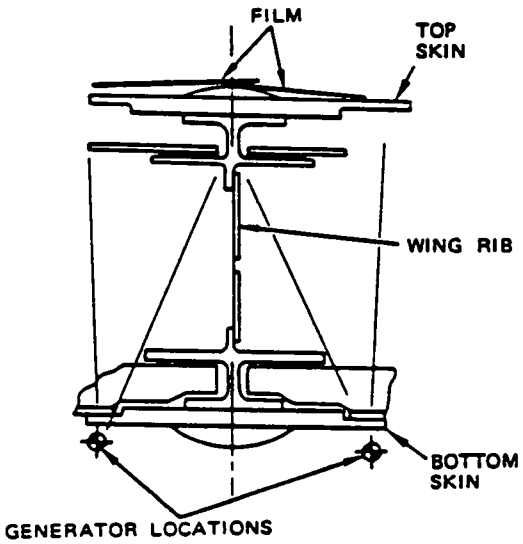
External Chord - Main Landing Gear Support Rib and Rear Spar
Outboard of BBL 70.5
Figure 12 (Sheet 1)

NONDESTRUCTIVE TEST

POSITION THE X-RAY GENERATOR SO THAT THE RADIATION WILL PENETRATE THROUGH THE MINIMUM SKIN THICKNESS, AND AS CLOSE TO THE SKIN SCULPTURE AS POSSIBLE. USE THE SKIN RIVET PATTERN TO AID IN POSITIONING GENERATOR.



PLAN VIEW ON TOP SKIN



TYPICAL SECTION

TYPICAL INSPECTION SET-UP FOR AREA UNDER BEAVERTAIL

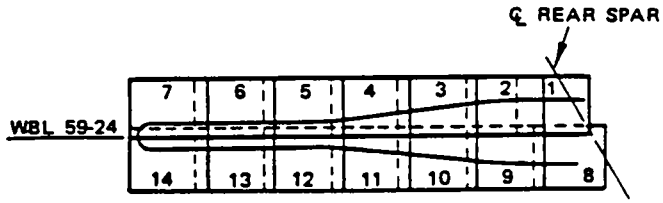
DETAIL I

GENERATOR POSITION	UPPER SURFACE INSPECTION		
	DISTANCE FROM WBL 59.24		DISTANCE FWD OF REAR SPAR MEASURED ALONG SKIN
	INBD	OUTBD	
1	4		12.0
2	4		35.5
3	4		49.5
4	4		65.0
5	4		80.0
6	4		86.0
7	4		96.0
8		8	19.0
9		6	34.0
10		6	50.5
11		4	67.0
12		4	82.0
13		4	88.0
14		4	95.0

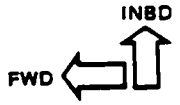
GENERATOR POSITIONS FOR INSPECTING SKIN UNDER BEAVERTAIL

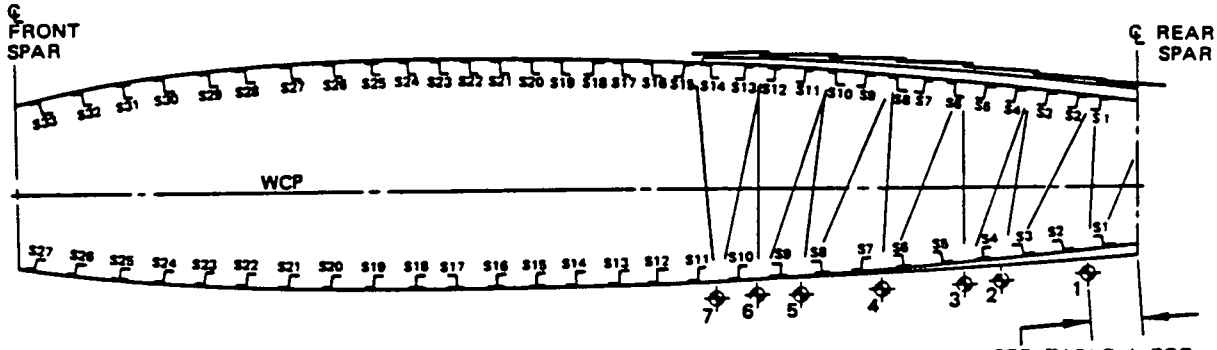
TABLE I

External Chord - Main Landing Gear Support Rib and Rear Outboard of BBL 70.5
Figure 12 (Sheet 2)

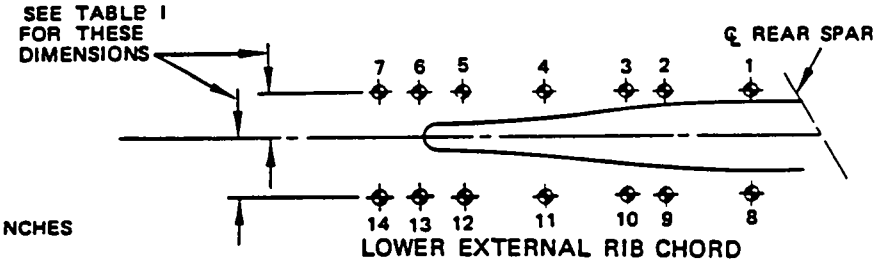


UPPER EXTERNAL RIB CHORD
TYPICAL FILM PLACEMENT





SECTION A–A



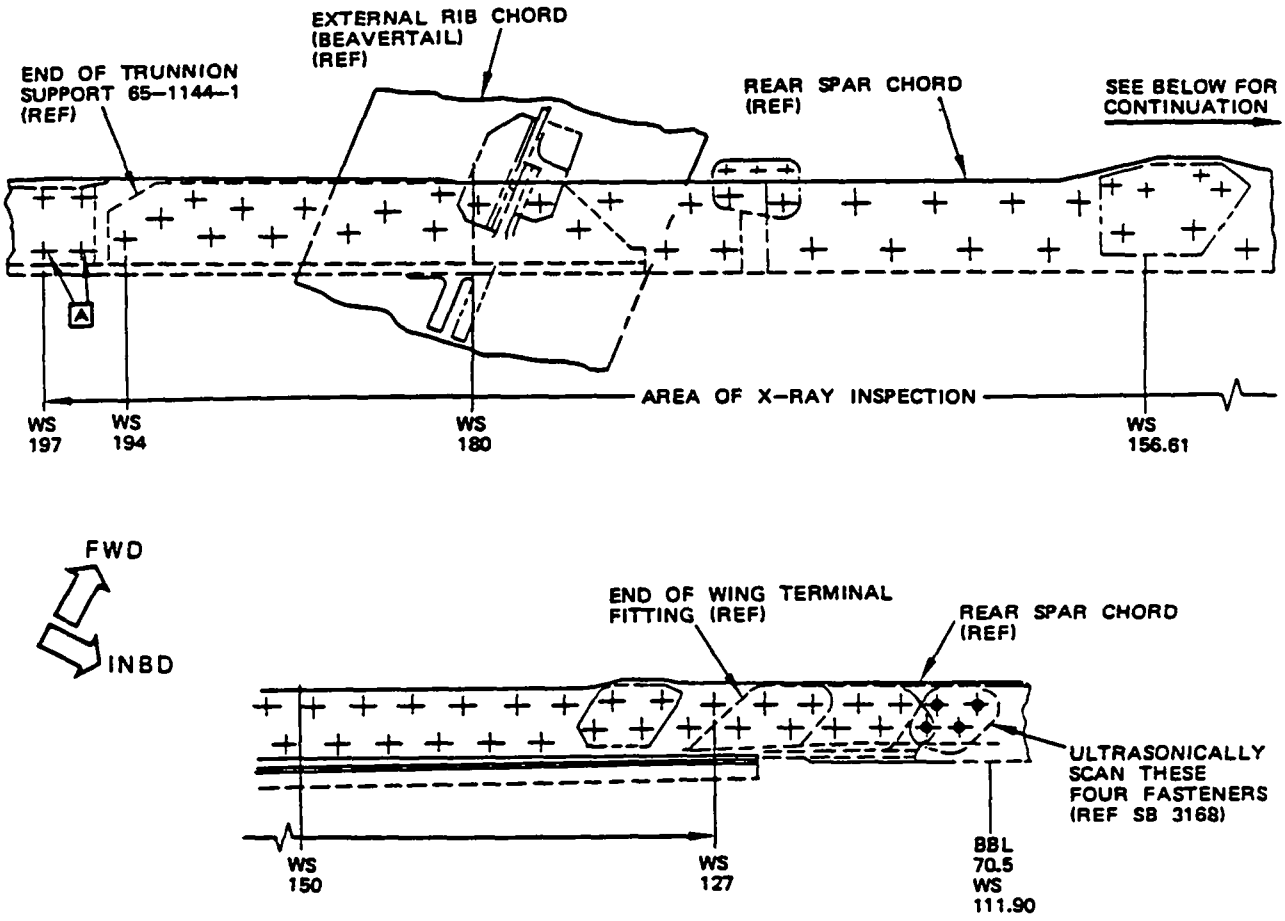
LOWER EXTERNAL RIB CHORD

NOTE:
ALL DIMENSIONS ARE IN INCHES

*[1] SFD IS THICKNESS OF WING

EXPOSURE NUMBER	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE		KV	MAS
1 AND 8	1 AND 8	I & II	14 X 17	*(1)	190	1800
2 AND 9	2 AND 9	I & II	14 X 17		180	1800
3 AND 10	3 AND 10	I & II	14 X 17		150	1800
4 AND 11	4 AND 11	I & II	14 X 17		140	1620
5 AND 12	5 AND 12	I & II	14 X 17		130	1440
6 AND 13	6 AND 13	I & II	14 X 17		130	1440
7 AND 14	7 AND 14	I & II	14 X 17		130	1440

External Chord - Main Landing Gear Support Rib and Rear Spar
Outboard of BBL 70.5
Figure 12 (Sheet 3)



NOTES

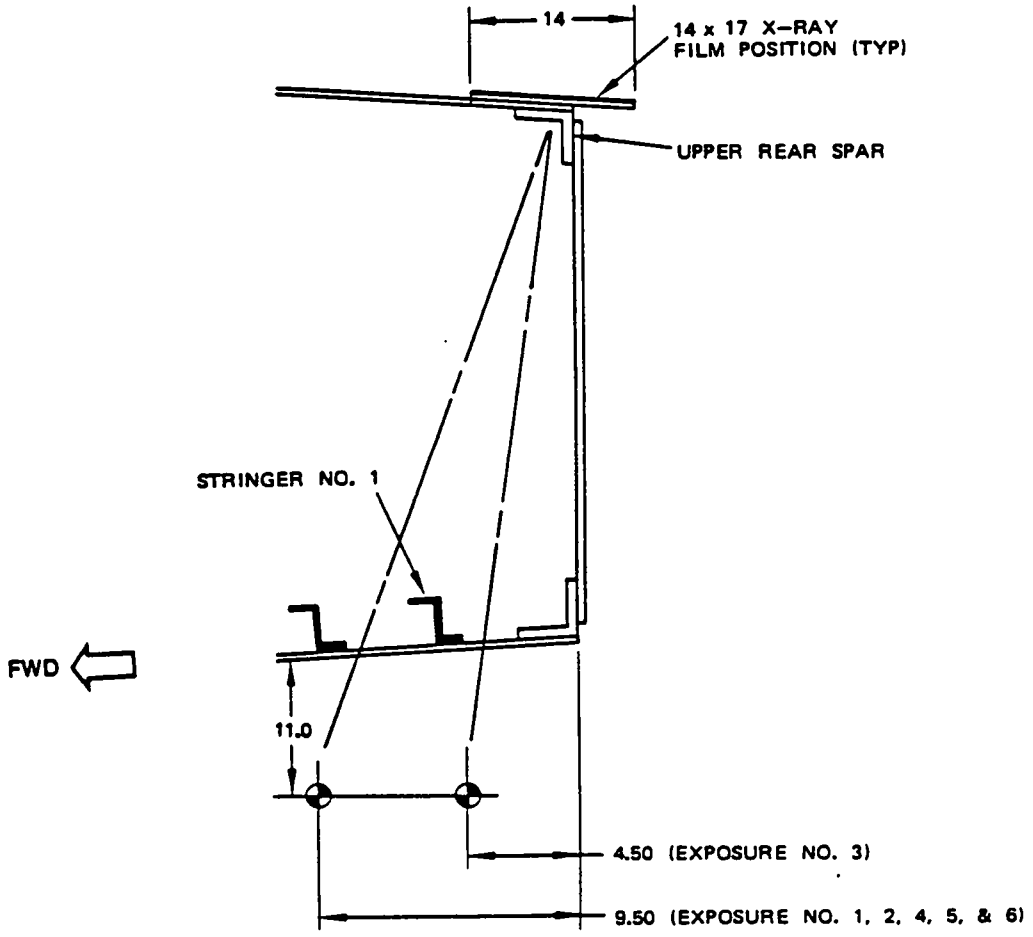
VISUALLY INSPECT ALL EXPOSED FASTENER HOLES FROM BBL 70.5 TO WS 197. X-RAY INSPECT ALL FASTENER HOLES FROM WS 127 TO WS 197 EXCEPT THOSE DENOTED [A]

AREA OF INSPECTION OF UPPER REAR SPAR CHORD

DETAIL II

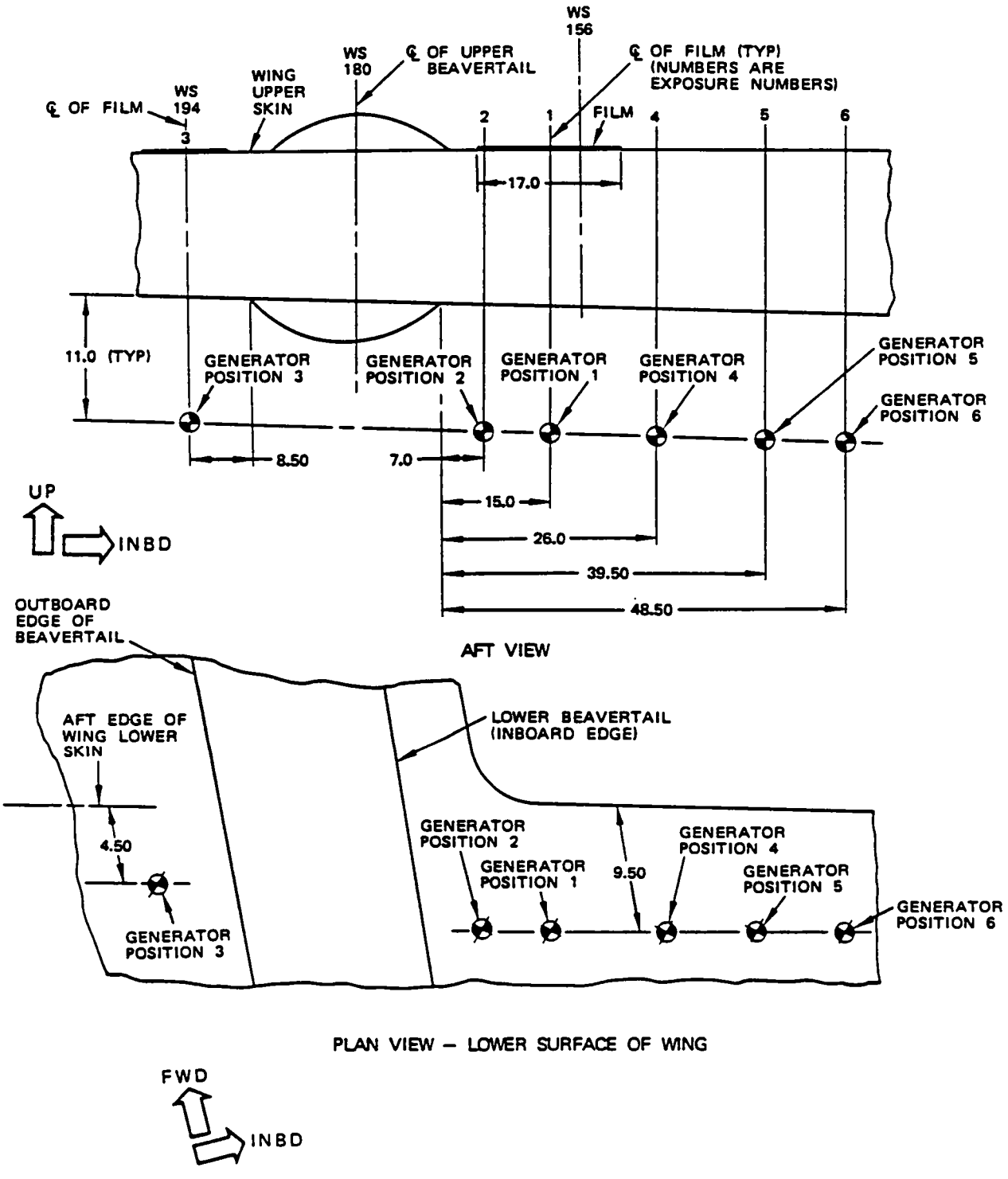
External Chord - Main Landing Gear Support Rib and Rear Spar
Outboard of BBL 70.5
Figure 12 (Sheet 4)

EXPOSURE NUMBER	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE		KV	MAS
1	1	I	14 X 17	SEE ILLUS	150	1800
2	2	I	14 X 17		150	1800
3	3	I	14 X 17		140	1350
4	4	I	14 X 17		150	1800
5	5	I	14 X 17		150	1800
6	6	I	14 X 17		150	1800



TYPICAL SECTION SHOWING
GENERATOR LOCATIONS FOR
INSPECTION OF REAR SPAR CHORD

External Chord - Main Landing Gear Support Rib and Rear Spar
Outboard of BBL 70.5
Figure 12 (Sheet 5)



External Chord - Main Landing Gear Support Rib and Rear Spar
Outboard of BBL 70.5
Figure 12 (Sheet 6)

PART 2 - X-RAY

WINGS

1. Purpose

   A. This radiographic technique is for the detection of large cracks in the skin surfaces under the lower beavertail and in the lower stringer splices at WBL 59.24.

   B. Small cracks in the holes around fasteners may be detected by eddy current.

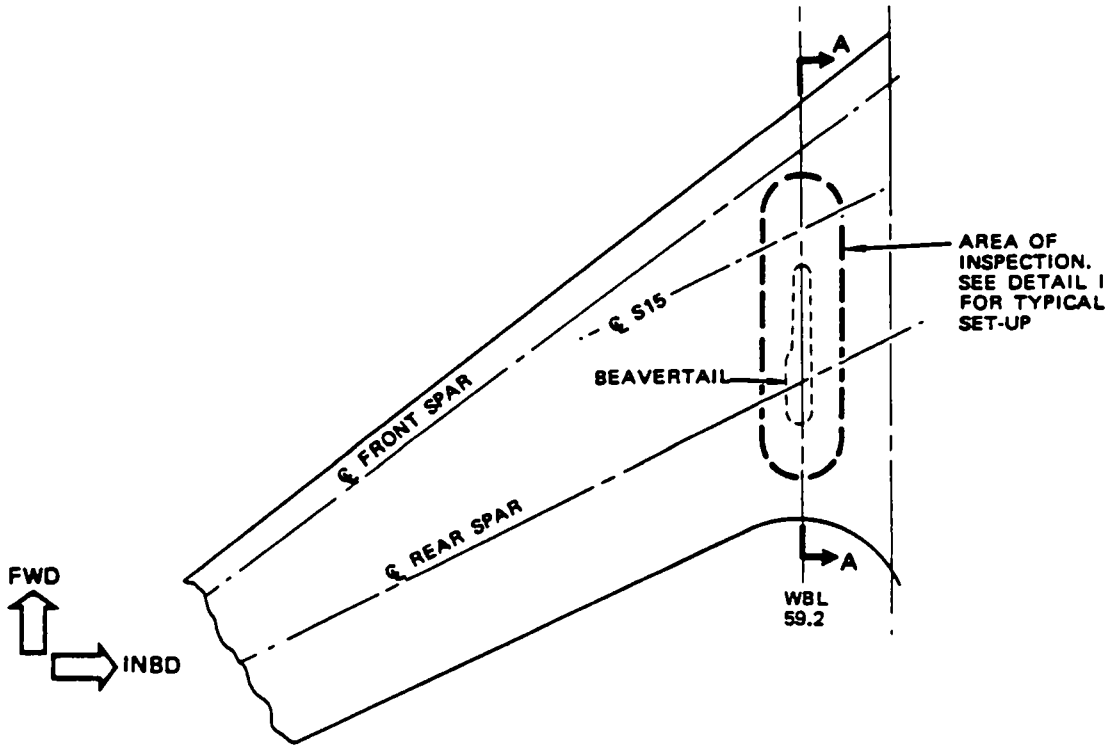
   C. For a similar procedure for the 707 Stratoliner and 720 see Fig. 3.

2. Equipment

   A. Baltospot portable 300 kv, 35-degree side emission x-ray generator was used to develop this technique.

3. Preparation

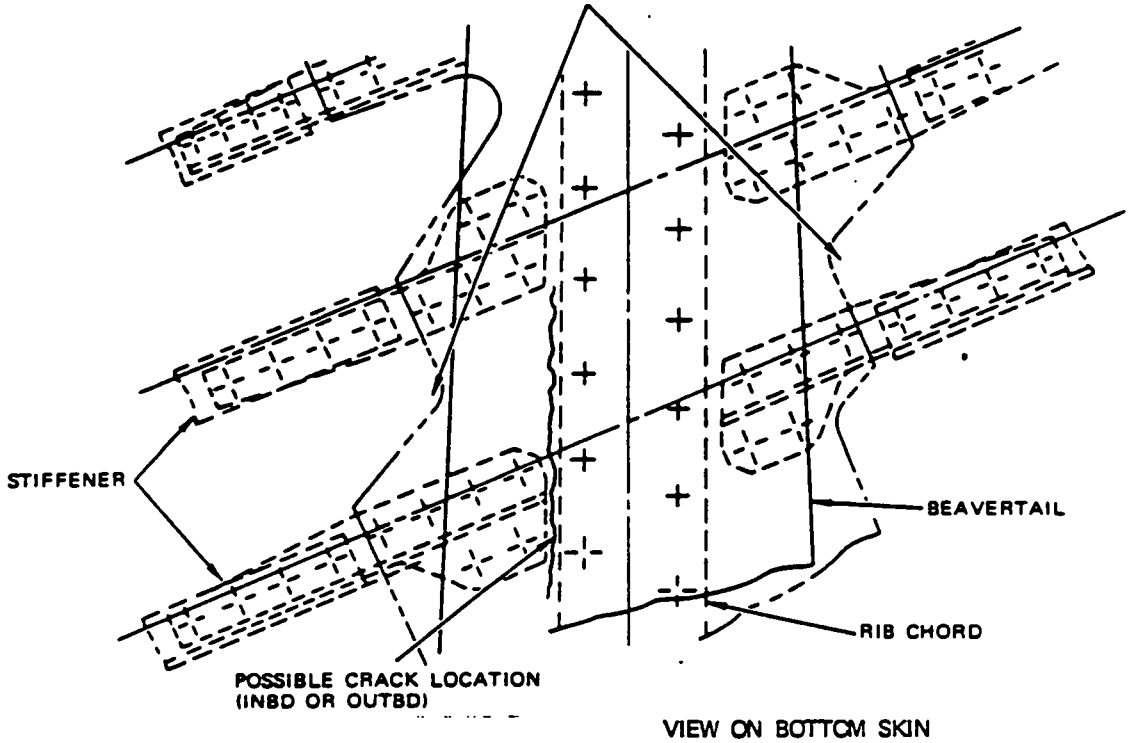
   A. Defuel and drain the applicable wing fuel tank.



Lower External Chord - Main Landing Gear Support Rib
Figure 13 (Sheet 1)

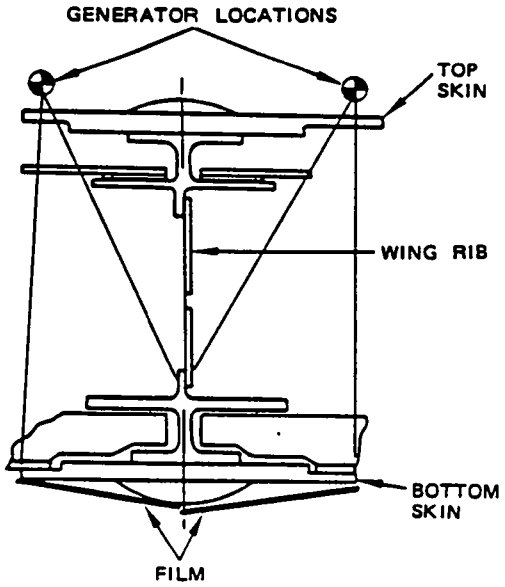
NONDESTRUCTIVE TEST

POSITION THE X-RAY GENERATOR SO THAT THE RADIATION WILL PENETRATE THROUGH THE MINIMUM SKIN THICKNESS, AND AS CLOSE TO THE SKIN SCULPTURE AS POSSIBLE. USE THE SKIN RIVET PATTERN TO AID IN POSITIONING GENERATOR.



VIEW ON BOTTOM SKIN

TYPICAL INSPECTION SET-UP
DETAIL I



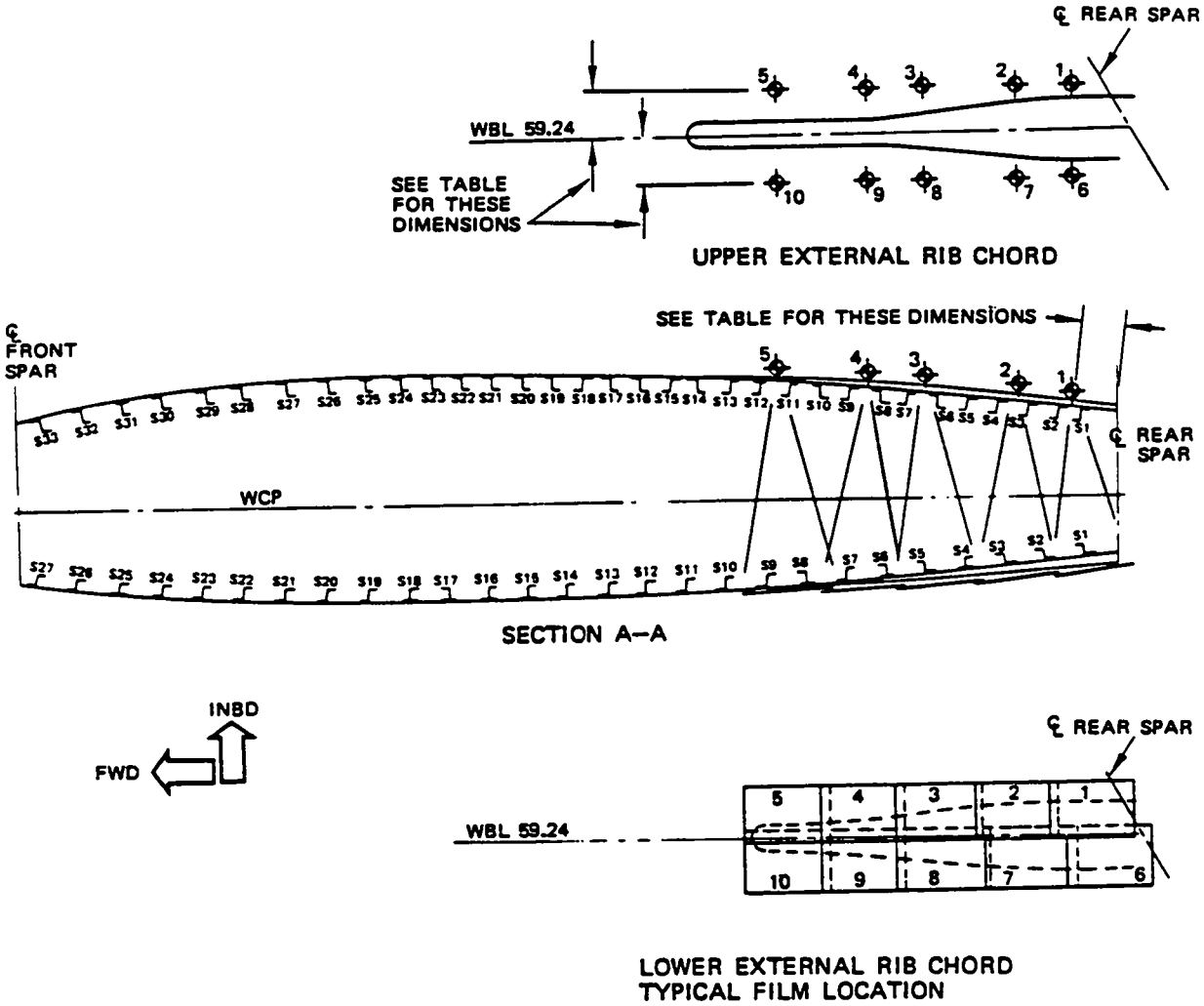
TYPICAL SECTION

Lower External Chord - Main Landing Gear Support Rib
Figure 13 (Sheet 2)

GENERATOR POSITION	LOWER SURFACE INSPECTION		
	DISTANCE FROM WBL 59.24		DISTANCE FWD OF REAR SPAR MEASURED ALONG SKIN
	INBD	OUTBD	
1	8		9.0
2	8		20.5
3	8		38.0
4	8		49.5
5	8		66.0
6		8	9.0
7		8	20.5
8		6	38.0
9		5	49.0
10		4	66.0
11			
12			
13			
14			

GENERATOR POSITIONS FOR INSPECTING BOTTOM WING SURFACE

Lower External Chord - Main Landing Gear Support Rib
Figure 13 (Sheet 3)



NOTES:

ALL DIMENSIONS ARE IN INCHES.

*[1] SFD IS THICKNESS OF WING

EXPOSURE NUMBER	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE		KV	MAS
1 AND 6	1 AND 6	I & II	14 X 17	*[1]	190	1800
2 AND 7	2 AND 7	I & II	14 X 17		180	1260
3 AND 8	3 AND 8	I & II	14 X 17		160	1260
4 AND 9	4 AND 9	I & II	14 X 17		160	900
5 AND 10	5 AND 10	I & II	14 X 17		140	900

Lower External Chord - Main Landing Gear Support Rib
Figure 13 (Sheet 4)

PART 2 - X-RAY

WINGS - MAIN FRAME

1. Purpose

   A. Detect large cracks in stringers 1 to 12 and upper wing skin between WBL 76 and 92.

2. Equipment

   A. Any radiographic equipment which satisfies the requirements of this procedure may be used. The following equipment has been used and found suitable.

      (1) 150 KV Baltospot X-ray Generator

3. Preparation for Inspection

   A. Defuel and drain applicable wing fuel tank.

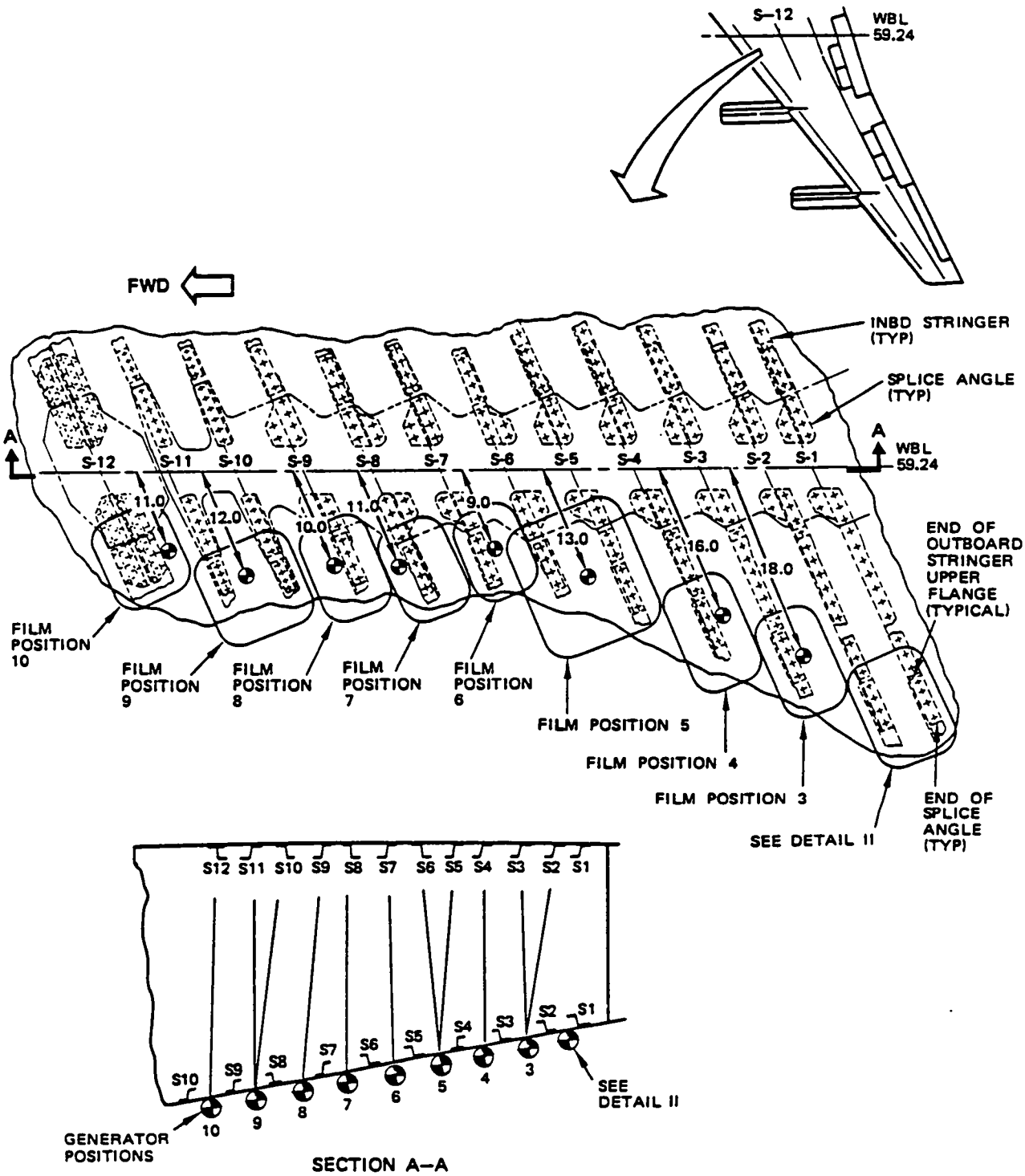
EXPOSURE NUMBER	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE		KV	MAS
1 THRU 10	1 THRU 10	I *[1]	14 X 17	*[2]	120 *[3]	900

*[1] WITH 0.005-INCH LEAD SCREENS ON BOTH SIDES OF FILM

*[2] SFD VARIES WITH WING THICKNESS, SEE ILLUSTRATION

*[3] INCREASE KV TO 130 IF ALUMINUM DOUBLERS ARE INSTALLED OVER THE INSPECTION AREA.

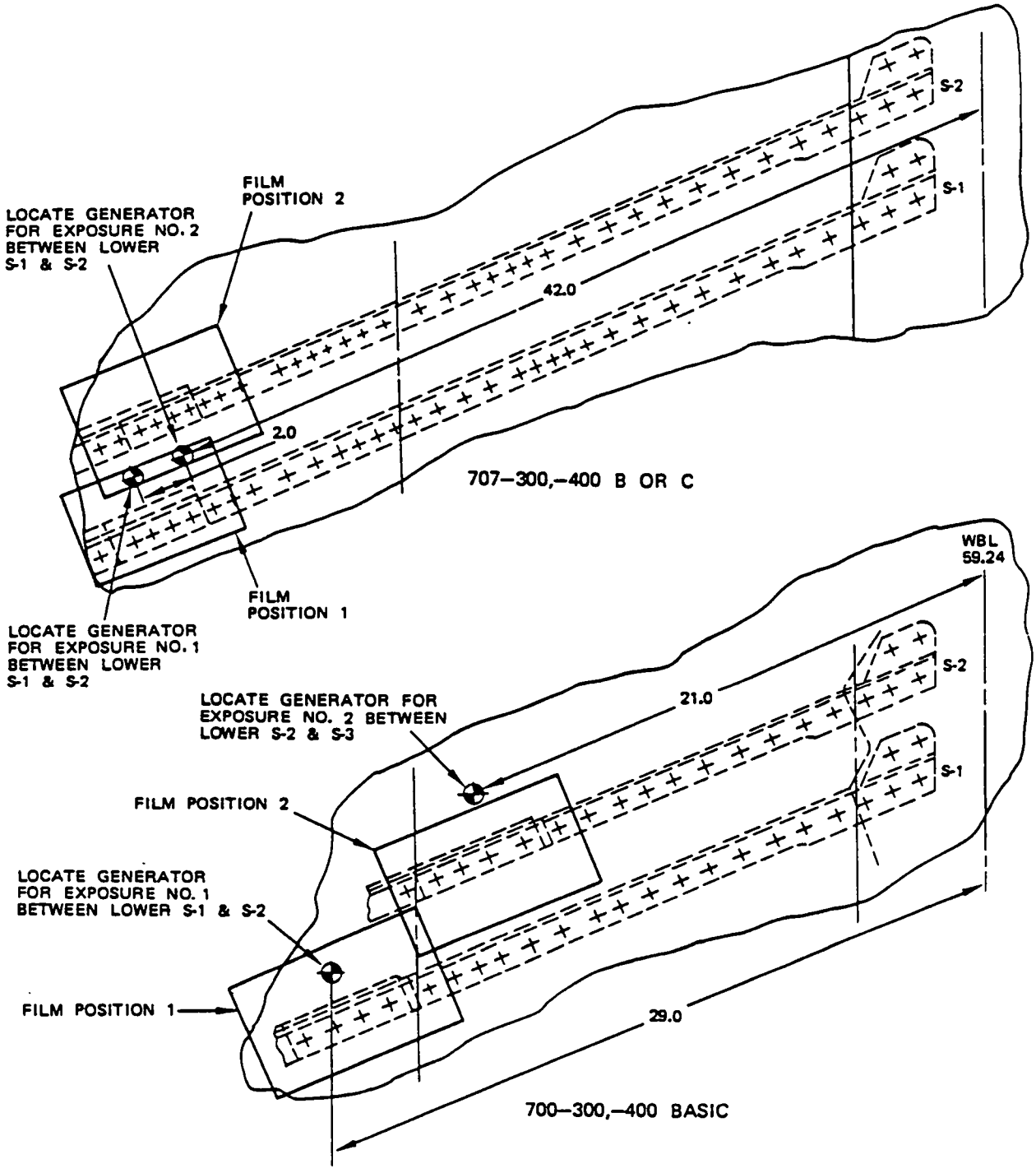
Stringers 1 thru 12 and Upper Wing Skin - WBL 76 to 92
Figure 14 (Sheet 1)



SECTION A–A

INSPECTION PROCEDURE
DETAIL I

Stringers 1 thru 12 and Upper Wing Skin - WBL 76 to 92
Figure 14 (Sheet 2)



INSPECTION AREA STRINGER 1 AND 2
PLAN VIEW
DETAIL II

Stringers 1 thru 12 and Upper Wing Skin - WBL 76 to 92
Figure 14 (Sheet 3)

EFFECTIVITY
MODEL: 707-300/400
SERVICE BULLETIN
REFERENCE: 3280
SSI DOCUMENT (D6-44860)
REFERENCE:
SSD 57-A25-21A
57-A35-21A
57-A45-21A

PART 2 - X-RAY

WINGS - MAIN FRAME

1. Purpose

   A. Detect large cracks in the upper rear spar chords between WS 196 and 270.

2. Equipment

   A. Any radiographic equipment which satisfies the requirements of this procedure may be used. The following equipment was used and found acceptable.

   (1) 150 KV Baltospot X-ray Generator

3. Preparation for Inspection

   A. Defuel and drain applicable wing fuel tanks.

EXPOSURE NUMBER	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE		KV	MAS
UNMODIFIED WING						
1	1	I, II *[1]	14 X 17	*[2]	150	1080
2	2	I, II *[1]	14 X 17		135	900
3	3	I, II *[1]	14 X 17		135	900
4	4	I, II *[1]	14 X 17		135	900
5	5	I	14 X 17		120	900
6	6	I	14 X 17		120	900
7	7	I	14 X 17		120	900
8	8	I	14 X 17		120	900
9	9	I	14 X 17		120	900
10	10	I	14 X 17		120	900

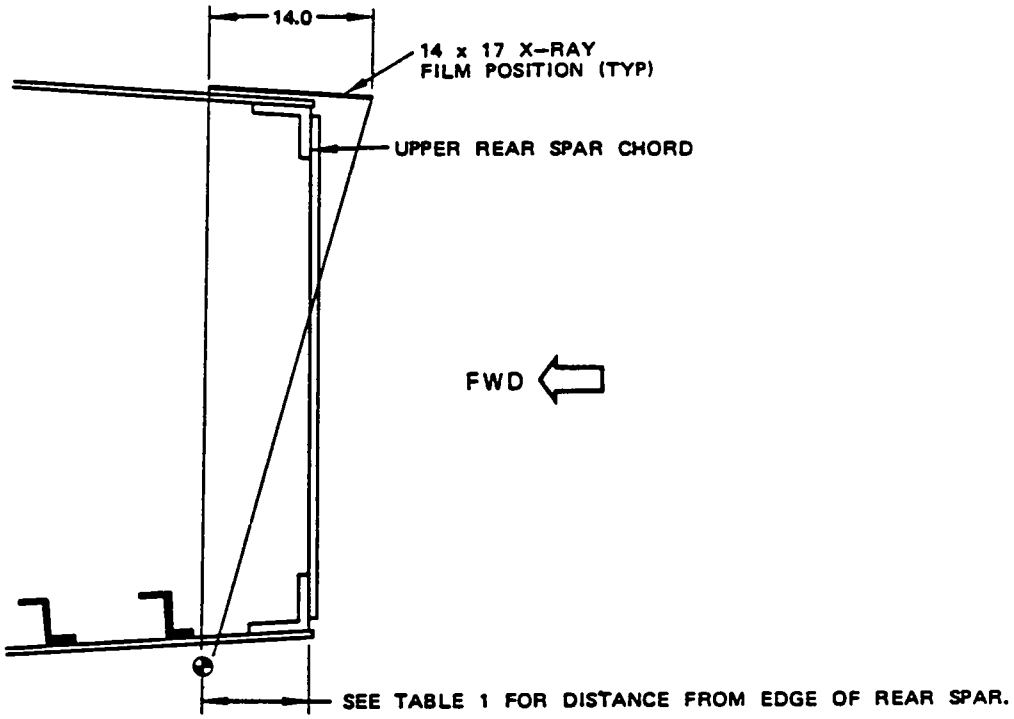
Upper Rear Spar Chords - WS 196 to 270
Figure 15 (Sheet 1)

EXPOSURE NUMBER	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE		KV	MAS
WING WITH ALUMINUM DOUBLERS						
1	1	I, II *[1]	14 X 17	*[2]	150	1350
2	2	I, II *[1]	14 X 17		150	900
3	3	I, II *[1]	14 X 17		150	900
4	4	I, II *[1]	14 X 17		150	900
5	5	I	14 X 17		135	900
6	6	I	14 X 17		135	900
7	7	I	14 X 17		120	900
8	8	I	14 X 17		120	900
9	9	I	14 X 17		120	900
10	10	I	14 X 17		120	900

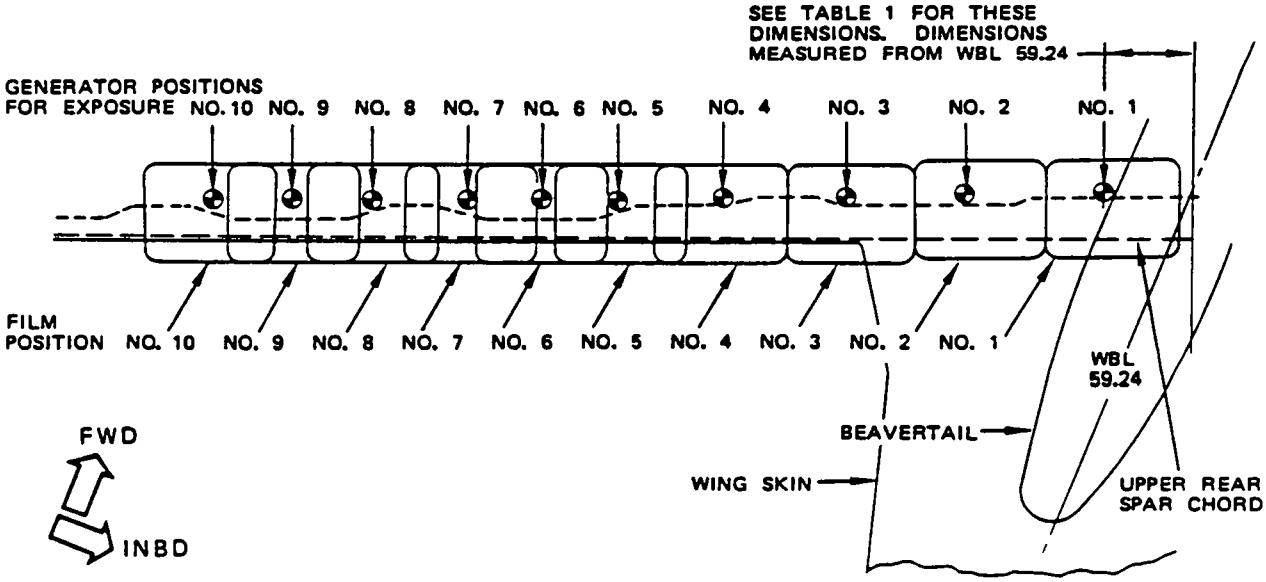
GENERATOR POSITION	DISTANCE FROM WBL 59.24	DISTANCE FWD OF *[3] REAR SPAR
1	11	4
2	20	4
3	31	4.5
4	43	4.5
5	52	4.5
6	60	4.5
7	68	4.5
8	76	4.5
9	84	4.5
10	92	4.5

GENERATOR POSITION
TABLE I

*[1] CLASS I & II FILM SUPERIMPOSED
*[2] SFD IS THICKNESS OF WING
*[3] DISTANCE MEASURED ALONG SKIN FROM EDGE OF REAR SPAR (DETAIL II). ALL DIMENSIONS IN INCHES.

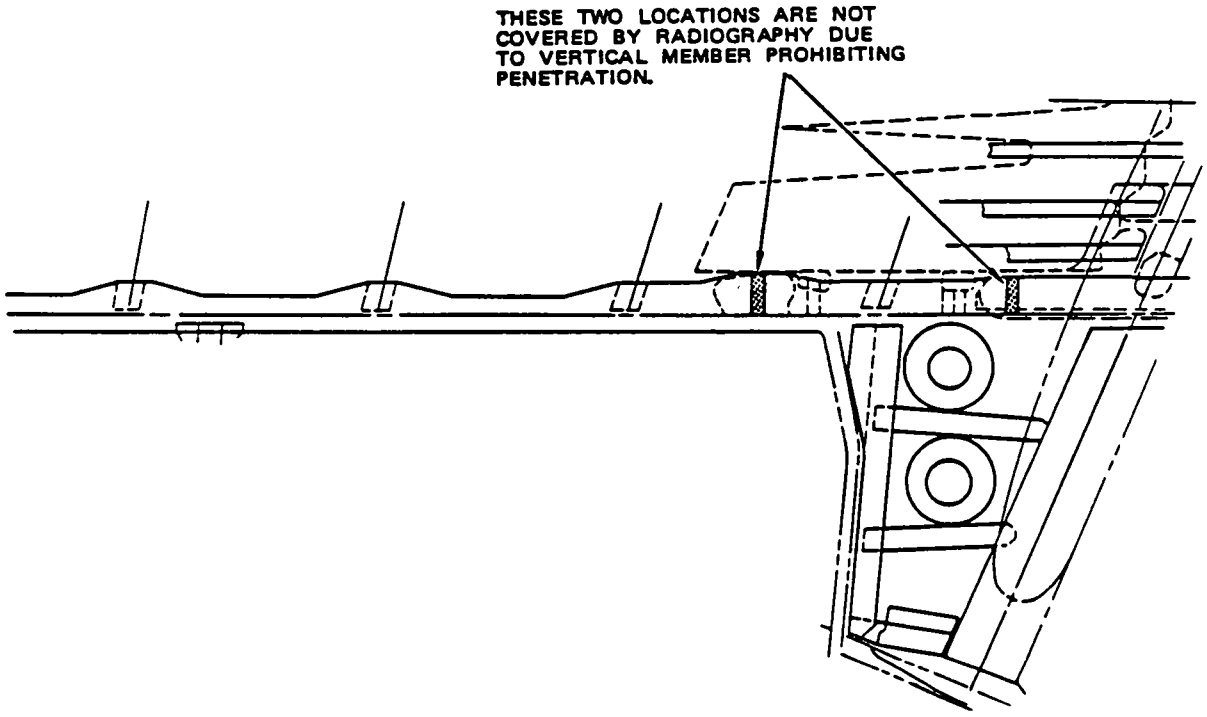


TYPICAL INSPECTION SET-UP
DETAIL I



INSPECTION AREA
DETAIL II

Upper Rear Spar Chords - WS 196 to 270
Figure 15 (Sheet 3)



AREAS WHERE RADIOGRAPHIC INSPECTION IS INADEQUATE
DETAIL III

Upper Rear Spar Chords - WS 196 to 270
Figure 15 (Sheet 4)

PART 2 - X-RAY

WINGS - MAIN FRAME

1. Purpose

   A. This radiographic technique is for the detection of cracks in the upper wing skin and in the upper rear spar chord from BBL 70.5 to WS 274, including the section beneath the beavertail.

2. Equipment

   A. A portable 160 KVP, 35-degree side emission X-ray generator was used to develop this technique.

3. Preparation

   A. Defuel and drain applicable wing fuel tanks.

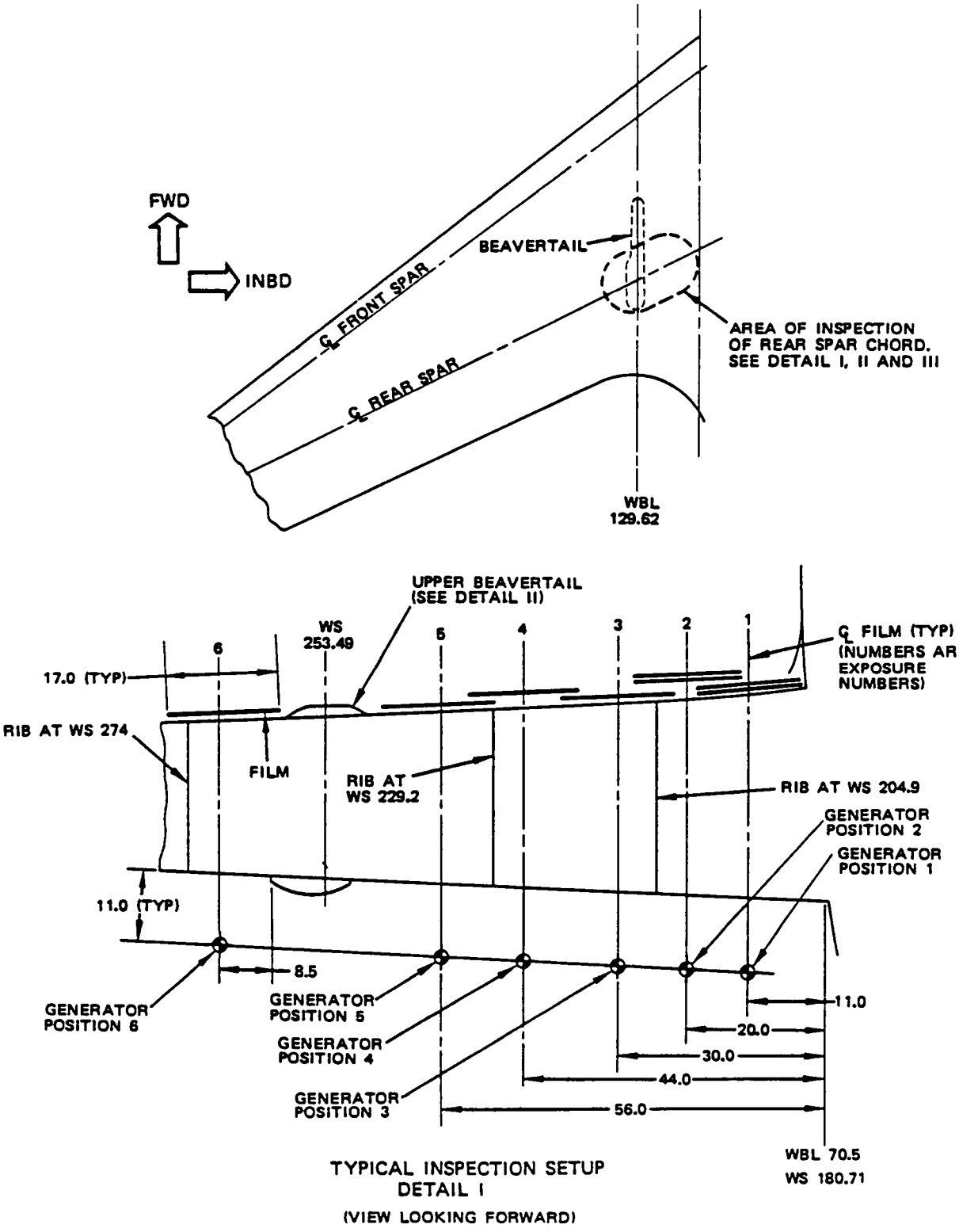
   B. Remove sufficient fasteners securing the wing-to-body fairing to the upper wing skin to permit the film cassettes for exposure number 1 to be positioned against the fuselage at BBL 70.5

4. Inspection

   A. Inspect as shown in details I, II and III.

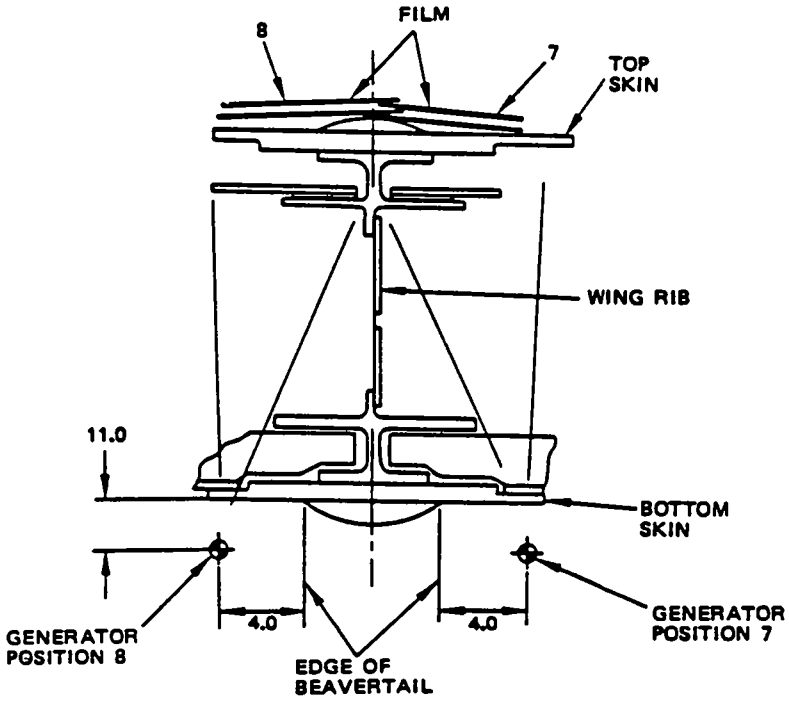
EXPOSURE NUMBER	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE		KV	MAS
1	1	I and II	7 X 17	36	160	900
2	2	I and II	7 X 17	36	160	900
3	3	I	7 X 17	36	160	1040
4	4	I	7 X 17	36	160	1040
5	5	I	7 X 17	36	160	1040
6	6	I	7 X 17	36	160	1040
7	7	I and II	8 X 10	36	160	2600
8	8	I and II	8 X 10	36	160	2600

Wing Rear Spar Chord and Upper Wing Skin at the Rear Spar, BBL 70.5 to WS 274
Figure 16 (Sheet 1)

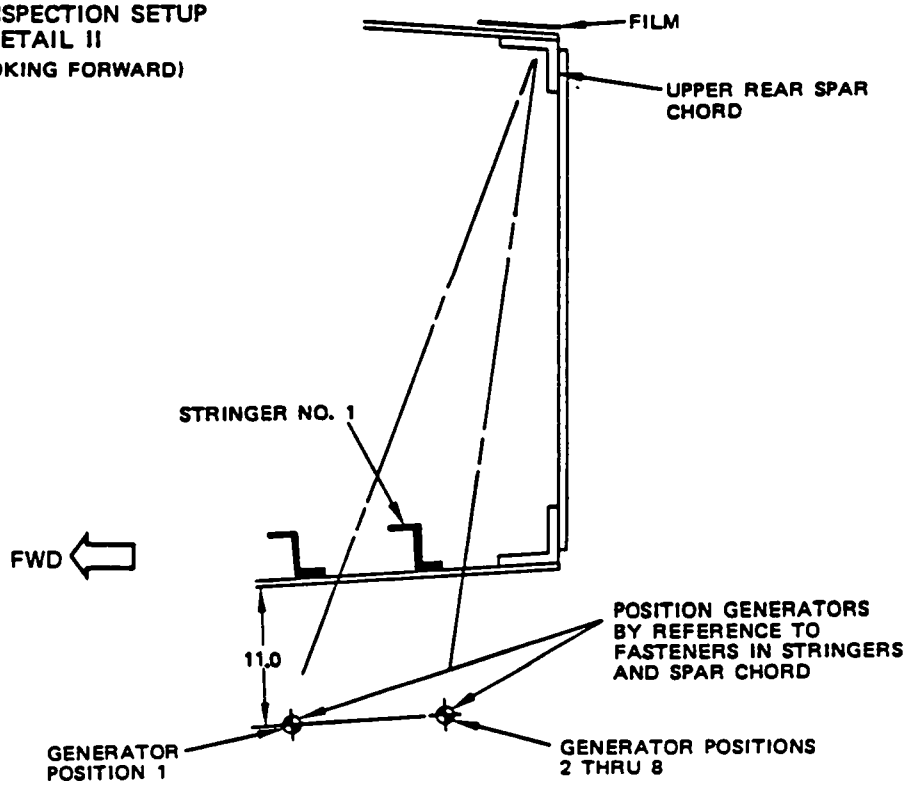


TYPICAL INSPECTION SETUP
DETAIL I
(VIEW LOOKING FORWARD)

Wing Rear Spar Chord and Upper Wing Skin at the Rear Spar, BBL 70.5 to WS 274
Figure 16 (Sheet 2)



TYPICAL INSPECTION SETUP
DETAIL II
(VIEW LOOKING FORWARD)



TYPICAL SECTION SHOWING GENERATOR
LOCATIONS FOR INSPECTION OF REAR SPAR CHORD
DETAIL III

Wing Rear Spar Chord and Upper Wing Skin at
the Rear Spar, BBL 70.5 to WS 274
Figure 16 (Sheet 3)

EFFECTIVITY
MODEL: 707/720
SSI DOCUMENT (D6-44860) REFERENCE:
SSD: 57-A05-13
SSD: 57-A15-13
SSD: 57-A25-13
SSD: 57-A35-13
SSD: 57-A45-13

PART 2 - X-RAY

WINGS - MAIN FRAME

1. Purpose

   A. To detect cracks initiating at specified fastener holes in the lower rear spar, vertical flange inboard and outboard of WS 733 production break. See Detail I.

   B. To detect cracks initiating at specified fastener holes in the lower wing skin and joint members common to the rear spar inboard and outboard of WS 733 production break. See Detail I.

   C. This inspection requires wing tank entry. Fuel tank must be drained and purged to a "health safe" condition (as defined by Chapter 28 of the Maintenance Manual) before entering.

      NOTE: Approval for operating x-ray generating equipment in a fuel tank with the conditions stated above must be obtained from local Airline/Airport fire department.

2. Equipment

   A. Refer to Part 1, 51-02-00, Par. 4.A.

   B. Film: Kodak type M or equivalent

   C. Lead shields to be placed behind film

Lower Rear Spar in the Vicinity of the WS 733 Production Break
Figure 17 (Sheet 1)

3. Preparation

A. Defuel and purge applicable fuel tanks.

B. Removals

NOTE: Refer to D6-44860 (Supplemental Structural Inspection Document) for panel numbers.

(1) 707-100/-200, remove outboard strut trailing edge fairing and lower wing surface access panels numbers 336, 337, 358, 359 and 360.

(2) 707/300/-400, remove outboard strut trailing edge fairing and lower wing surface access panels numbers 1263, 1337, 1338, 1366 and 1367.

(3) 720, remove outboard strut trailing edge fairing and lower wing surface access panels numbers 3244, 3245, 3278, 3279, and 3280.

4. Inspection

WARNING: PRECAUTIONS AND SAFETY PROCEDURES CONTAINED IN CHAPTER 28 OF THE MAINTENANCE MANUAL MUST BE FOLLOWED BY PERSONNEL ENTERING ANY TANK THAT HAS CONTAINED FUEL. POSSIBILITY OF EXPLOSION AND TOXIC DANGER EXISTS IN VICINITY OF FUEL TANKS WHICH HAVE CONTAINED FUEL.

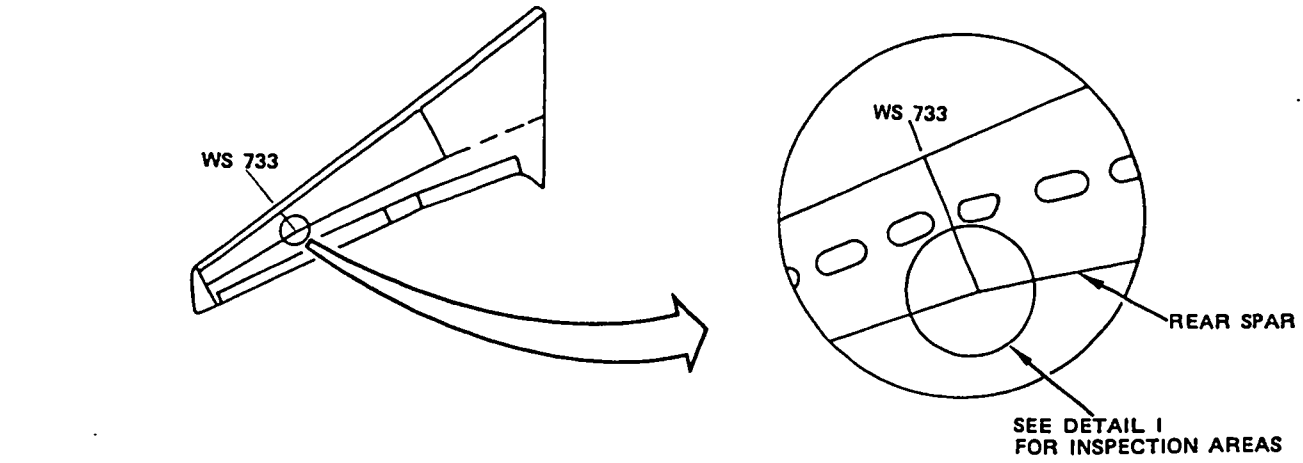
A. Make radiographic exposures to the requirements given in the table and Details II thru VII.

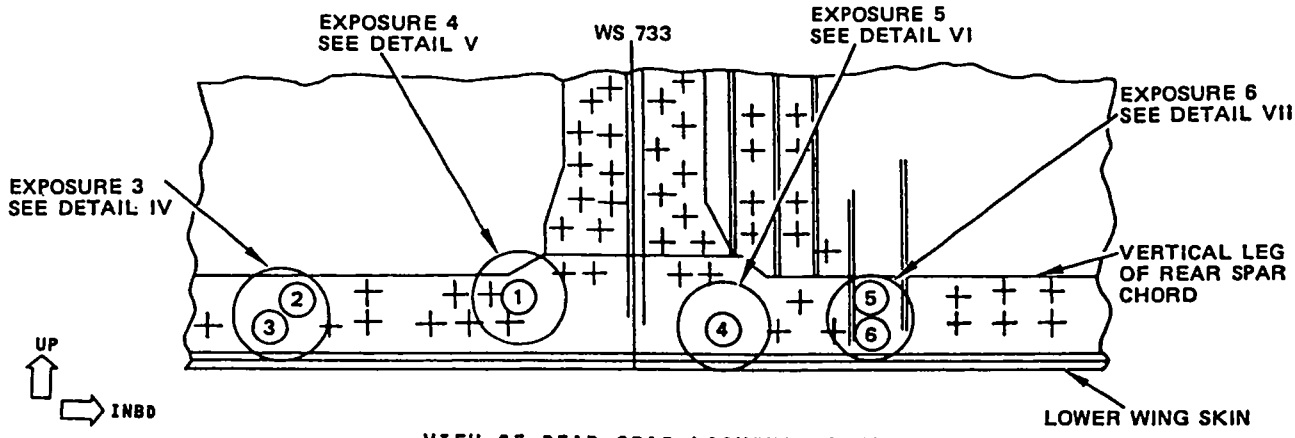
B. Pay particular attention for cracks in the area about the numbered fastener locations.

EXPOSURE NUMBER	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE		KV	MAS
1	1	I [1]	5x7	21	85-95	300
2	2	I [1]	5x7	21	85-95	300
3	3	I [1]	5x7	28	90-100	450
4	4	I [1]	5x7	33	95-105	390
5	5	I [1]	5x7	28	90-100	450
6	6	I [1]	1-3/8x5	28	95-105	1200

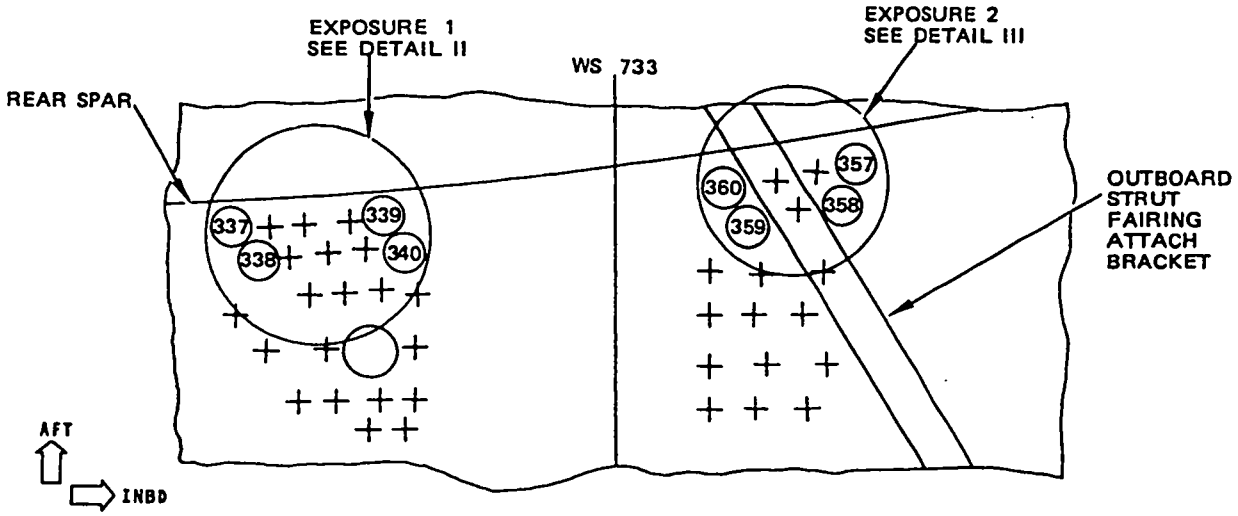
[1] Technique developed using Kodak Lead Pack Film

Lower Rear Spar in the Vicinity of the WS 733 Production Break
Figure 17 (Sheet 2)



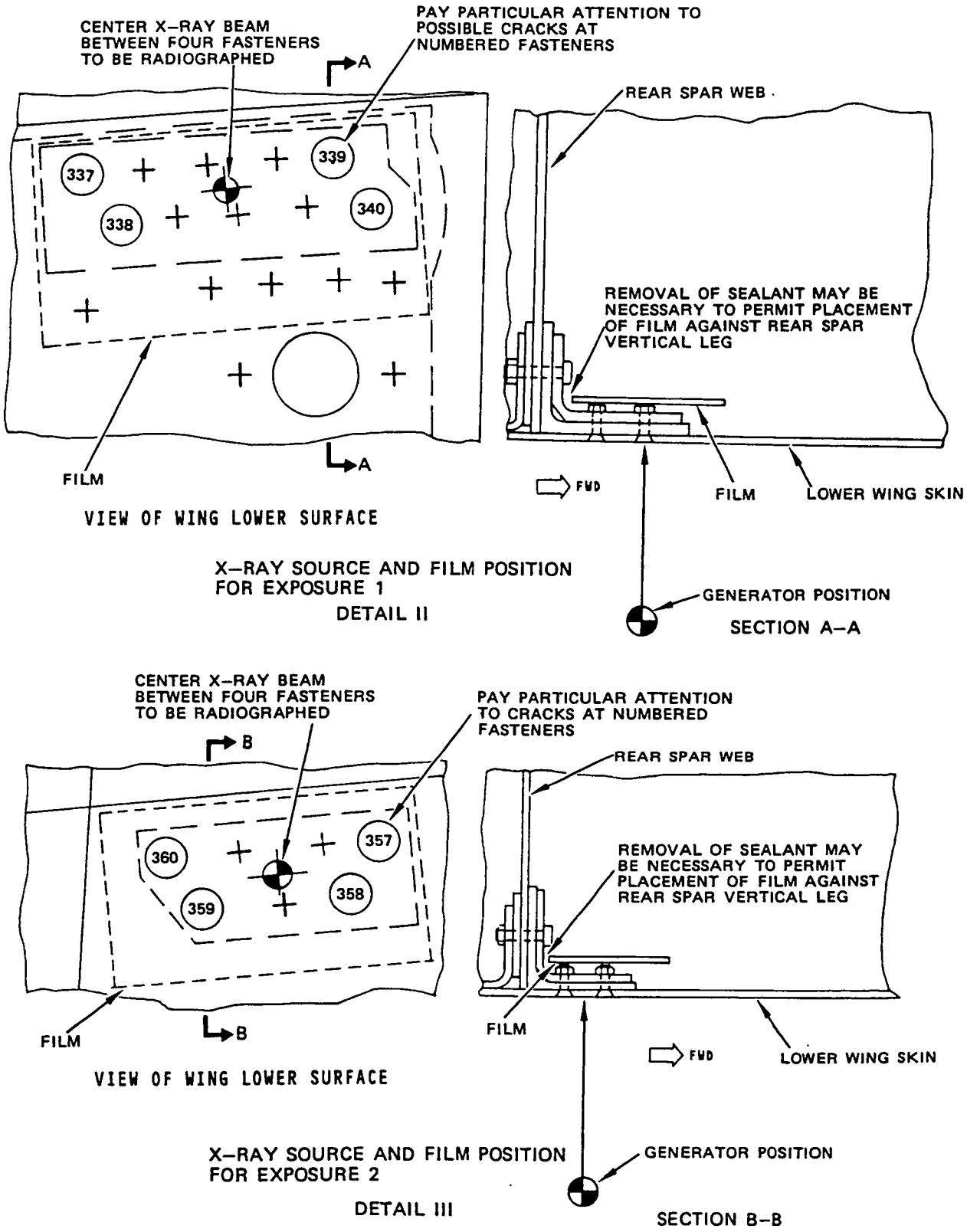


VIEW OF REAR SPAR LOOKING FORWARD

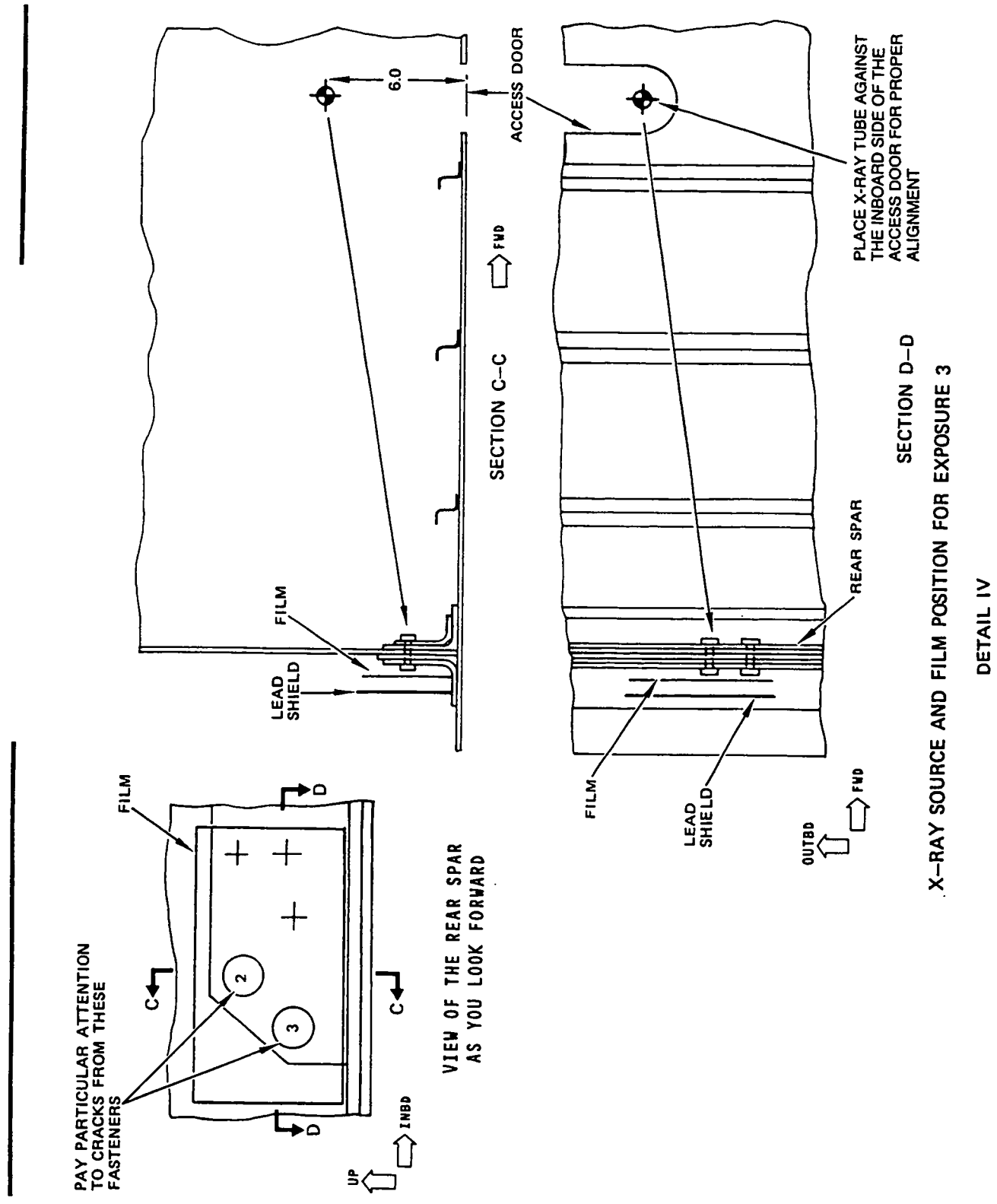


VIEW OF WING LOWER SURFACE
DETAIL I

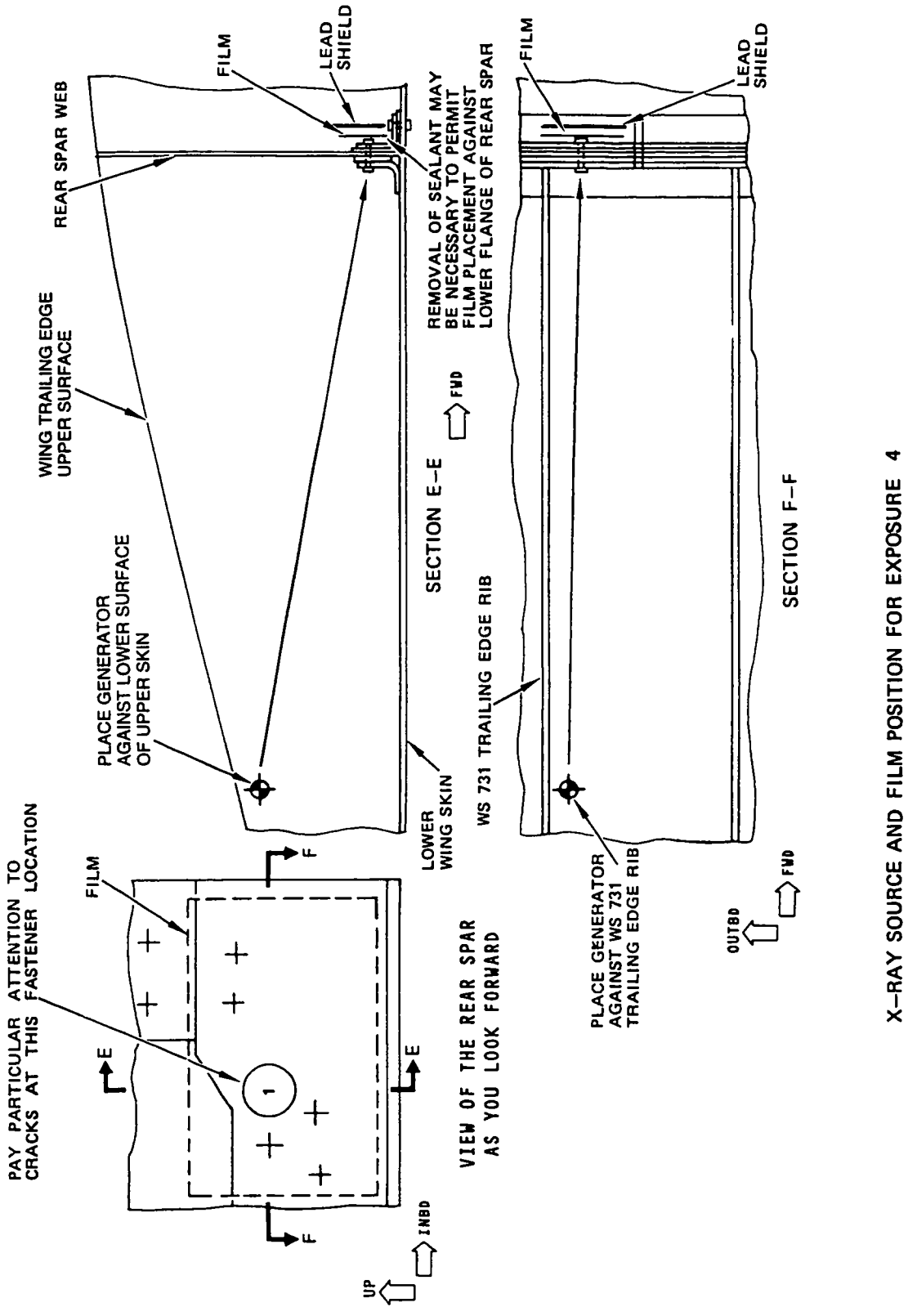
Lower Rear Spar in the Vicinity of the WS 733 Production Break
Figure 17 (Sheet 3)



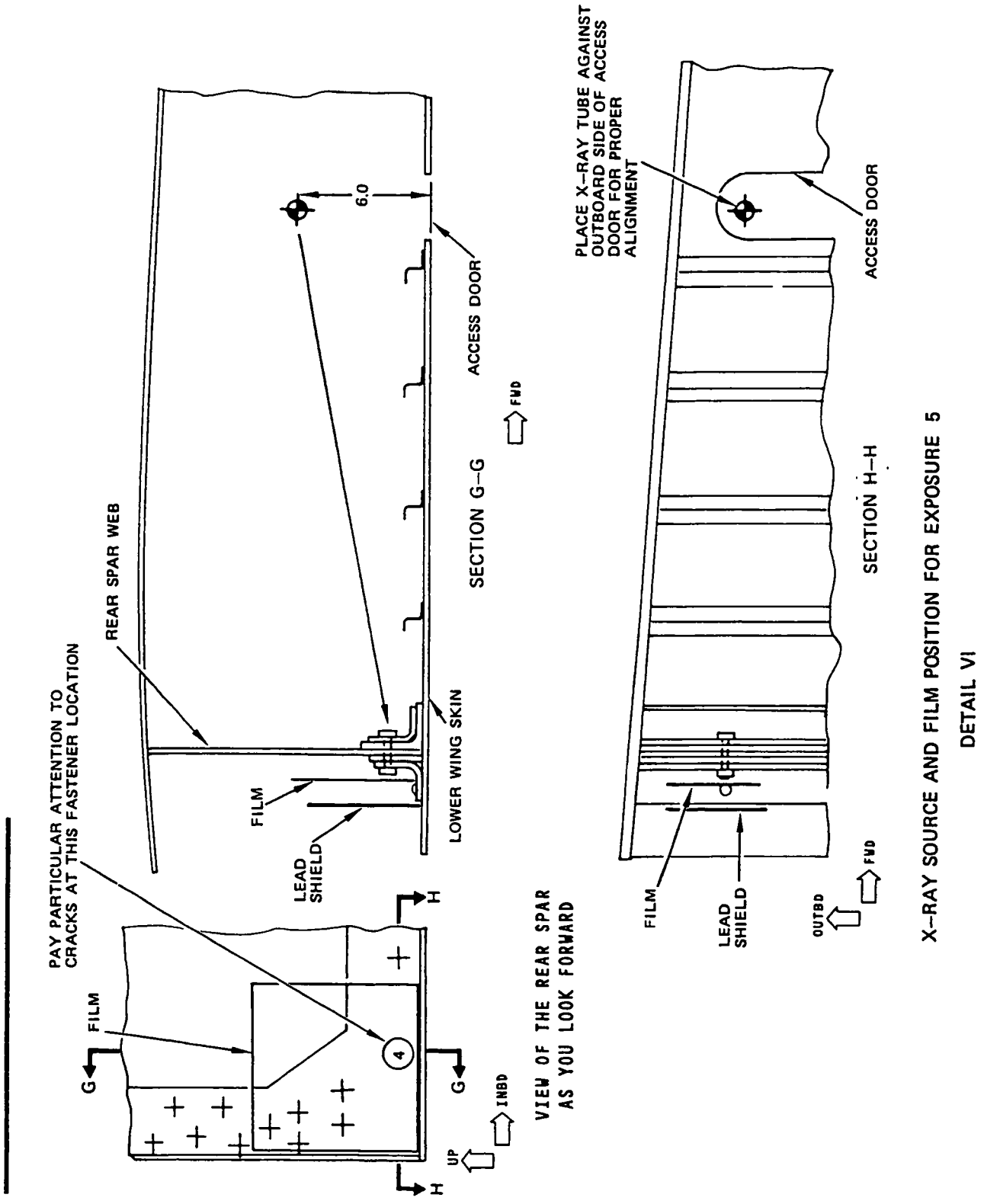
Lower Rear Spar in the Vicinity of the WS 733 Production Break
Figure 17 (Sheet 4)



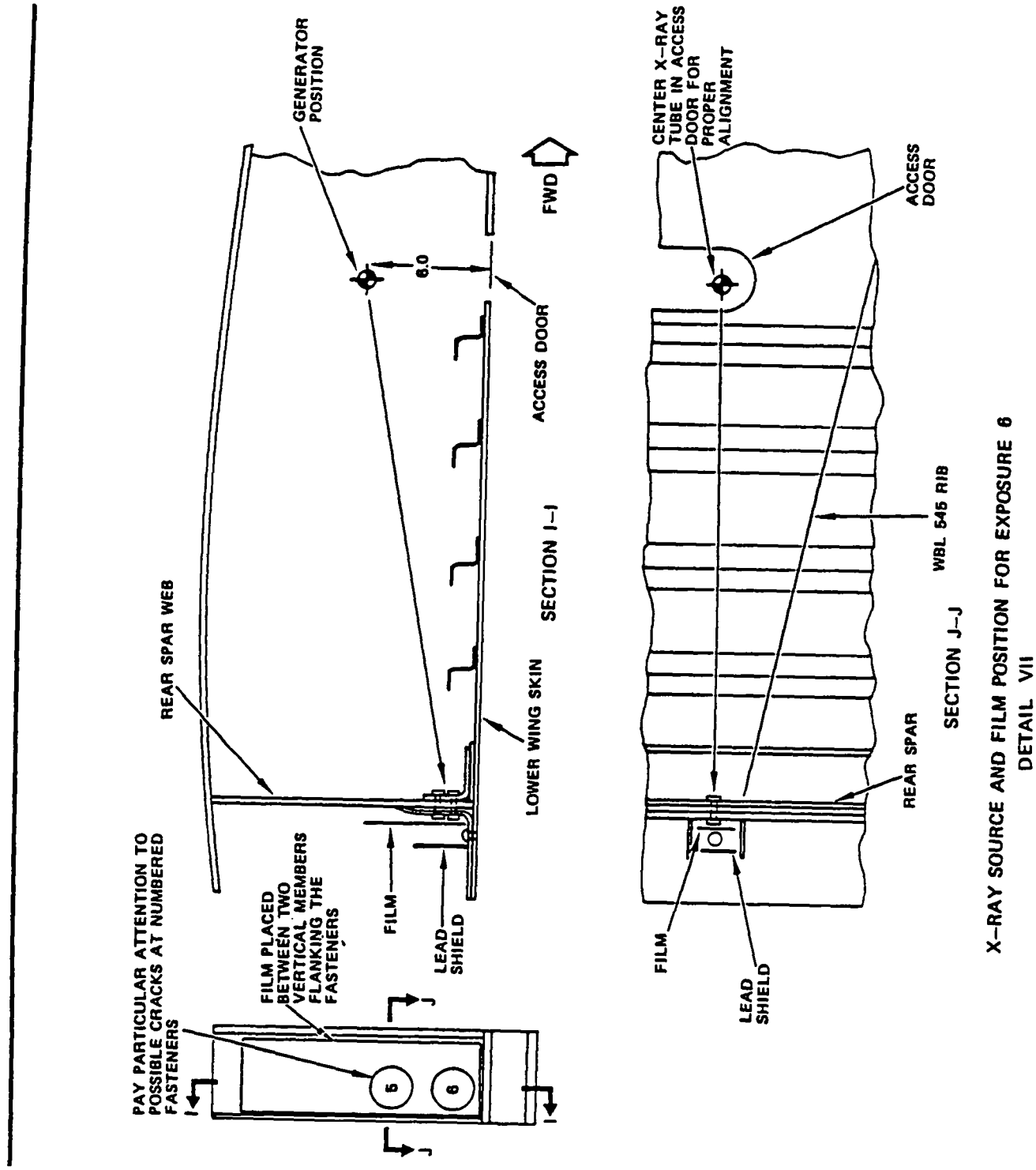
Lower Rear Spar in the Vicinity of the WS 733 Production Break
Figure 17 (Sheet 5)



Lower Rear Spar in the Vicinity of the WS 733 Production Break
Figure 17 (Sheet 6)



Lower Rear Spar in the Vicinity of the WS 733 Production Break
Figure 17 (Sheet 7)



Lower Rear Spar in the Vicinity of the WS 733 Production Break
Figure 17 (Sheet 8)

PART 2 - X-RAY

WINGS - MAIN FRAME

1. Purpose

   A. To detect cracks emanating from fastener holes common to upper wing skin, rib chord (both inboard and outboard flanges) and stringer tie fitting at BBL 70.5. For the inboard side of BBL 70.5, the inspection covers S-1 to S-3. For the outboard side, the inspection covers stringers S-1 thru S-10. See Details I and II.

   B. This inspection requires wing tank entry. Fuel tank must be drained and purged to a "health safe" condition (as defined by Chapter 28 of the Maintenance Manual) before entering.

2. Equipment

   A. The equipment used to develop this technique is as follows:

      (1) Sperry, Portable 160 KV, side emission X-ray generator

      (2) ASTM Class I (lead pack) Radiographic Film

      (3) Lead shield to be placed behind film, 0.030-inch or thicker

3. Preparation for Inspection

   A. Remove floor panel for access to inboard side of BBL 70.5 from upper center section Stringer S-1 thru S-3, right and left side.

   B. Remove side of body fairing for access to outboard side of BBL 70.5 from upper wing Stringers S-1 thru S-10, right and left side.

   C. Wing center section entry required for placement of X-ray film at upper BBL 70.5, Stringers S-1 thru S-3, left and right side of body.

   D. Wing tank entry required for X-ray film placement at outboard side of BBL 70.5, left and right side of body.

Wing Upper Rib Chord and Stringer Tie Fittings at BBL 70.5
Figure 18 (Sheet 1)

4. Inspection Procedure

A. Inspection from inside the body of upper wing center section inboard of BBL 70.5, Stringers S-1 thru S-3.

WARNING: PRECAUTIONS AND SAFETY PROCEDURES CONTAINED IN CHAPTER 28 OF THE MAINTENANCE MANUAL MUST BE FOLLOWED BY PERSONNEL ENTERING ANY TANK THAT HAS CONTAINED FUEL. POSSIBILITY OF EXPLOSION AND TOXIC DANGER EXISTS IN VICINITY OF FUEL TANKS WHICH HAVE CONTAINED FUEL.

(1) Position X-ray generator and film as shown in Detail I.

(2) Make radiographic exposure 1 and 2 using Table 1 exposure guide.

(3) Repeat items (1) and (2) on opposite side of body.

(4) Give particular attention to potential cracks out of fastener holes at end of stringer tie, see Detail I.

B. Inspection from outside the body of upper wing outboard of BBL 70.5, Stringers S-1 thru S-10.

(1) Position X-ray generator and film, as shown in Detail II.

(2) Make radiographic exposures 1 thru 5 using Table 2 exposure guide.

(3) Repeat items (1) and (2) on opposite side of body.

(4) Give particular attention to potential cracks out of fastener holes at end of stringer tie, see Detail II.

Wing Upper Rib Chord and Stringer Tie Fittings at BBL 70.5
Figure 18 (Sheet 2)

EXPOSURE NUMBER (2)	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	(1) SIZE		KV	MAS
1	1	I (3)	CUT TO FIT BETWEEN R/S & S-1	36	120	1800
1	2	I (3)	CUT TO FIT BETWEEN S-1 & S-2	36	120	1800
2	3	I	CUT TO FIT BETWEEN S-2 & S-3	36	120	1500
2	4	I	CUT TO FIT BETWEEN S-3 & S-4	36	120	1500

(1) PLACE FILM BETWEEN STRINGERS AND AGAINST BBL 70.5 WEB. FILM LENGTH APPROXIMATELY 4-INCHES, FILM WIDTH - CUT TO FIT.

(2) USE THE SAME X-RAY GENERATOR POSITION AND EXPOSURE SETTINGS FOR LEFT AND RIGHT SIDE OF BODY.

(3) LEAD PACKED

RADIOGRAPHIC SETTINGS FOR INSPECTING INBOARD SIDE OF BBL 70.5
TABLE 1

Wing Upper Rib Chord and Stringer Tie Fittings at BBL 70.5
Figure 18 (Sheet 3)

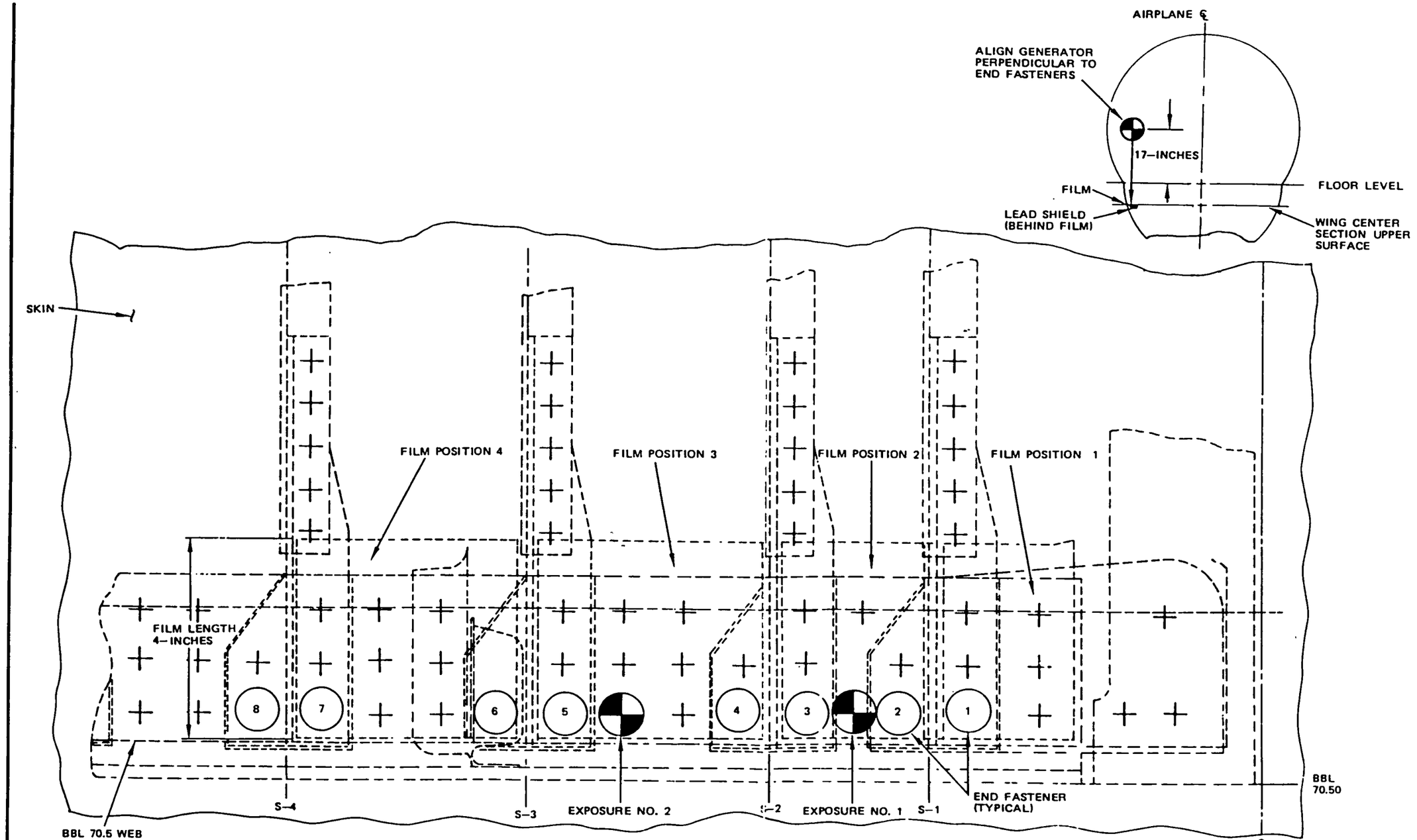
EXPOSURE NUMBER (2)	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	(1) SIZE		KV	MAS
1	1	I	CUT TO FIT BETWEEN R/S TO S-1	48	140	1685
1	2	I	CUT TO FIT BETWEEN S-1 TO S-2	48	140	1685
2	3	I	CUT TO FIT BETWEEN S-2 & S-3	48	140	1250
2	4	I	CUT TO FIT BETWEEN S-3 & S-4	48	140	1250
3	5	I	CUT TO FIT BETWEEN S-4 & S-5	48	140	1250
3	6	I	CUT TO FIT BETWEEN S-5 & S-6	48	140	1250
4	7	I	CUT TO FIT BETWEEN S-6 & S-7	48	140	1250
4	8	I	CUT TO FIT BETWEEN S-7 & S-8	48	140	1250
5	9	I	CUT TO FIT BETWEEN S-8 & S-9	48	140	1250
5	10	I	CUT TO FIT BETWEEN S-9 & S-10	48	140	1250

(1) PLACE FILM BETWEEN STRINGERS AND AGAINST BBL 70.5 WEB. FILM LENGTH APPROXIMATELY 4-INCHES, FILM WIDTH - CUT TO FIT.

(2) USE THE SAME X-RAY GENERATOR POSITION AND EXPOSURE SETTINGS FOR LEFT AND RIGHT RIGHT SIDE OF BODY.

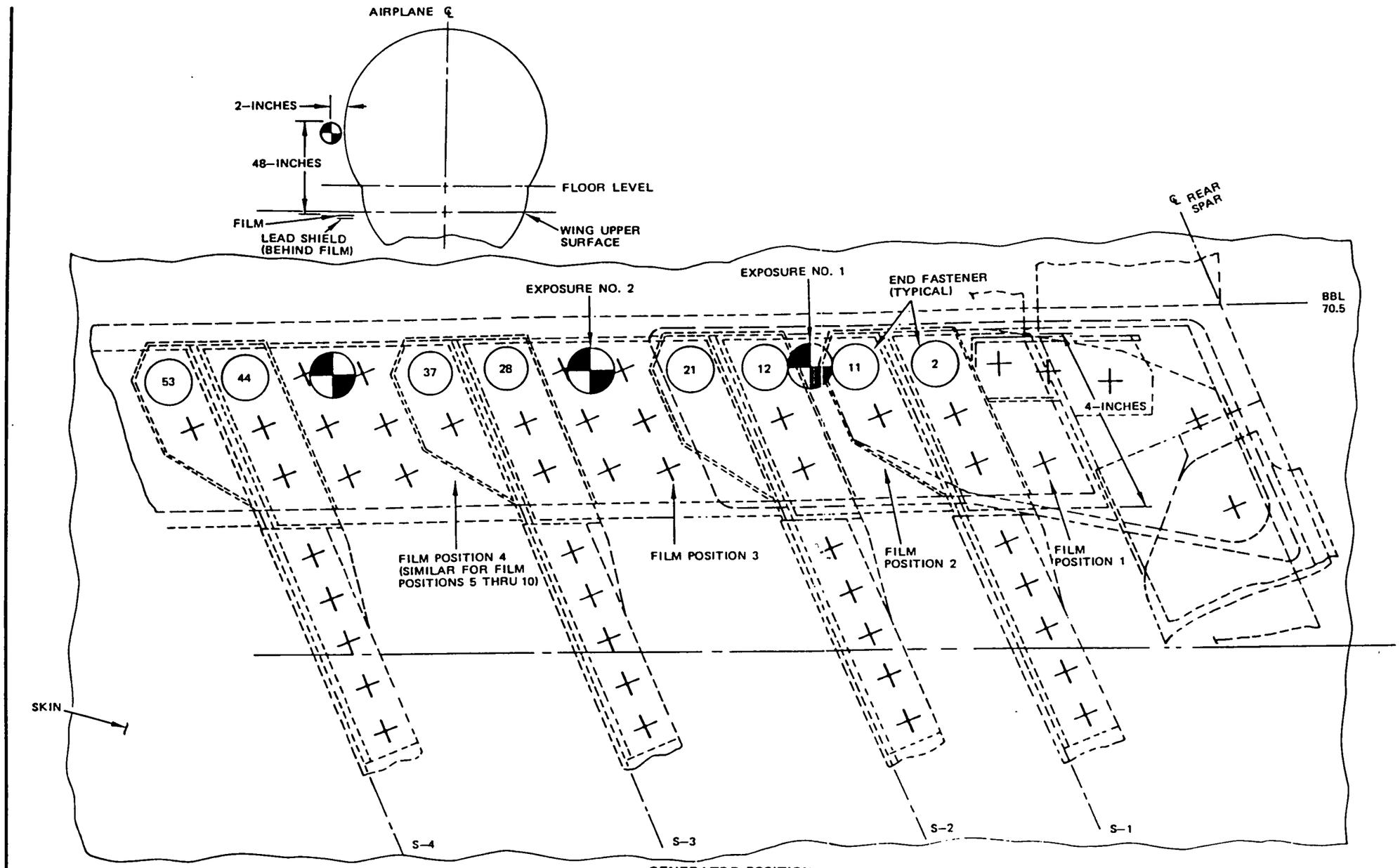
RADIOGRAPHIC SETTINGS FOR INSPECTING OUTBOARD SIDE OF BBL 70.5
TABLE 2

Wing Upper Rib Chord and Stringer Tie Fittings at BBL 70.5
Figure 18 (Sheet 3)



GENERATOR POSITION
(CENTER BETWEEN STRINGERS)
FILM PLACEMENT AND X–RAY GENERATOR POSITION
DETAIL I

Wing Upper Rib Chord and Stringer Tie Fittings at BBL 70.5
Figure 18 (Sheet 5)



GENERATOR POSITION
(TYPICAL EXPOSURE 1 THRU 5)
(CENTER BETWEEN STRINGERS)

FILM PLACEMENT AND X–RAY GENERATOR POSITION
DETAIL II

Wing Upper Rib Chord and Stringer Tie Fittings at BBL 70.5
Figure 18 (Sheet 6)

EFFECTIVITY
MODEL: 707-100/200
SERVICE BULLETIN
REFERENCE: 2583
SSI DOCUMENT (D6-44860)
REFERENCE:
SSD 57-A15-05
57-A15-06
57-A15-09
57-A15-12

PART 2 - X-RAY

WINGS - MAIN FRAME

1. Purpose

   A. To detect hole cracks in the horizontal flange of wing lower rear spar chord at selected fastener holes. See Details I thru IV.

   B. This inspection requires wing tank entry. Fuel tank must be drained and purged to a "health safe" condition (as defined by Chapter 28 of the Maintenance Manual) before entering.

2. Equipment

   A. Sperry, portable 160 kv, side emission X-ray generator

   B. ASTM CLASS I and II ready pack and lead pack film

   C. Lead screen 0.03 inch or thicker to be placed behind film.

3. Preparation for Inspection

   A. Drain and purge the appropriate fuel tanks to permit tank entry for film placement along the horizontal flange of the lower rear spar chord.

4. Inspection Procedure

   A. Exposure No. 1

      WARNING: PRECAUTIONS AND SAFETY PROCEDURES CONTAINED IN CHAPTER 28 OF THE MAINTENANCE MANUAL MUST BE FOLLOWED BY PERSONNEL ENTERING ANY TANK THAT HAS CONTAINED FUEL. POSSIBILITY OF EXPLOSION AND TOXIC DANGER EXISTS IN VICINITY OF FUEL TANKS WHICH HAVE CONTAINED FUEL.

      (1) Identify film ASTM CLASS and size from Table I.

      (2) Place film inside of wing on lower rear spar chord horizontal flange as shown in Detail III to provide for radiographic coverage around fasteners identified in Details I and II.

Wing - Lower Rear Spar Horizontal Flange
Figure 19 (Sheet 1)

(3) Allow approximately one inch of film overlap between exposures.

(4) Trim film as necessary to facilitate film placement for maximum coverage of chord flange.

(5) Place lead screens behind film to prevent excessive film fogging from backscattering.

(6) Position the X-ray generator so that the X-ray beam is perpendicular to the lower wing skin and centered over fasteners to be inspected. See Detail I, Exposure No. 1, and Detail III.

(7) Make the radiographic exposure using the Table I generator settings as a guide.

B. For Exposure No. 2 thru No. 21, except Exposure No. 17, repeat steps used for Exposure No. 1.

C. Exposure No. 17

(1) Select film from Table I.

(2) Place film externally against the lower wing skin and put X-ray generator above upper wing skin as depicted in Detail IV. See Detail I for exposure coverage.

(3) Make radiographic exposure using the Table I generator setting guide.

D. Review film with special attention given to the area around the fastener locations noted in Detail I and II.

Wing - Lower Rear Spar Horizontal Flange
Figure 19 (Sheet 2)

EXPOSURE NUMBER	FILM				GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE	SDF	KV	MAS
1	1	I, I [A] II [A]	5 x 10	48	140	2140
2	2	I, I [A] II	5 x 10	48	120	1070
3	3	I, I [A]	5 x 10	48	120	1070
4	4	I, I [A]	5 x 10	48	120	1070
5	5	I	5 x 10	48	120	1070
6	6	I, I [A]	5 x 10	48	120	1070
7	7	I, I [A]	5 x 10	48	120	1070
8	8	I	5 x 10	48	120	1070
9	9	I [A]	5 x 4	48	160	1600
10	10	II [A]	5 x 4	48	160	2670
11	11	I [A] II, II [A]	5 x 10	48	160	1600
12	12	II [A]	5 x 10	48	160	2670
13	13	I [A]	5 x 10	48	120	2140
14	14	I [A]	5 x 10	48	120	1070
15	15	I, I [A]	5 x 10	48	120	1070
16	16	I, I [A]	5 x 10	48	120	1070
17	17	I	5 x 10	48	120	1735
18	18	I, I [A]	5 x 10	48	120	1335
19	19	I	5 x 10	48	120	1870
20	20	I, II	5 x 10	48	100	1470
21	21	I	Two 4 x 3 [B]	48	120	1340

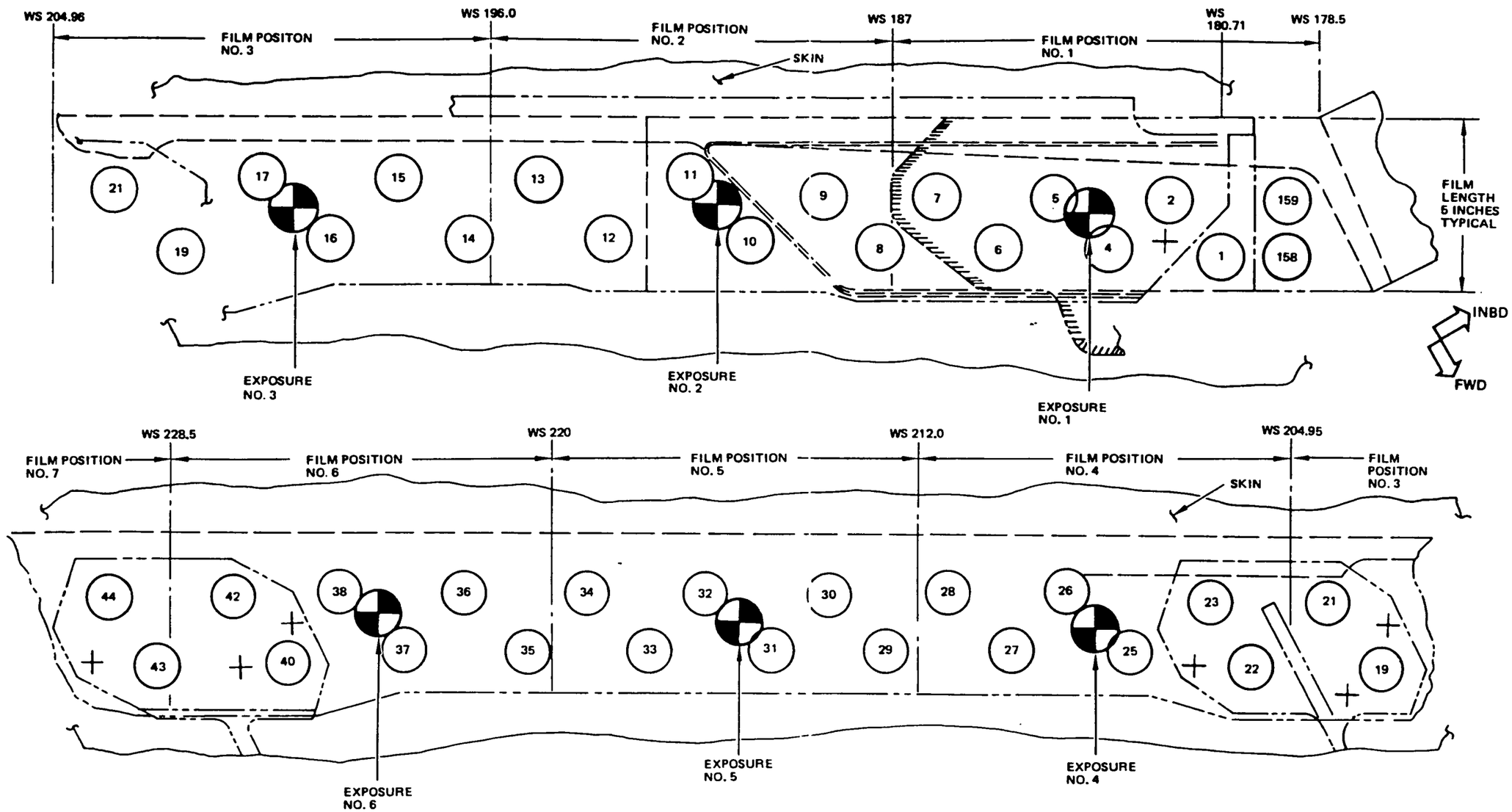
X-RAY PARAMETERS
TABLE I

NOTES:

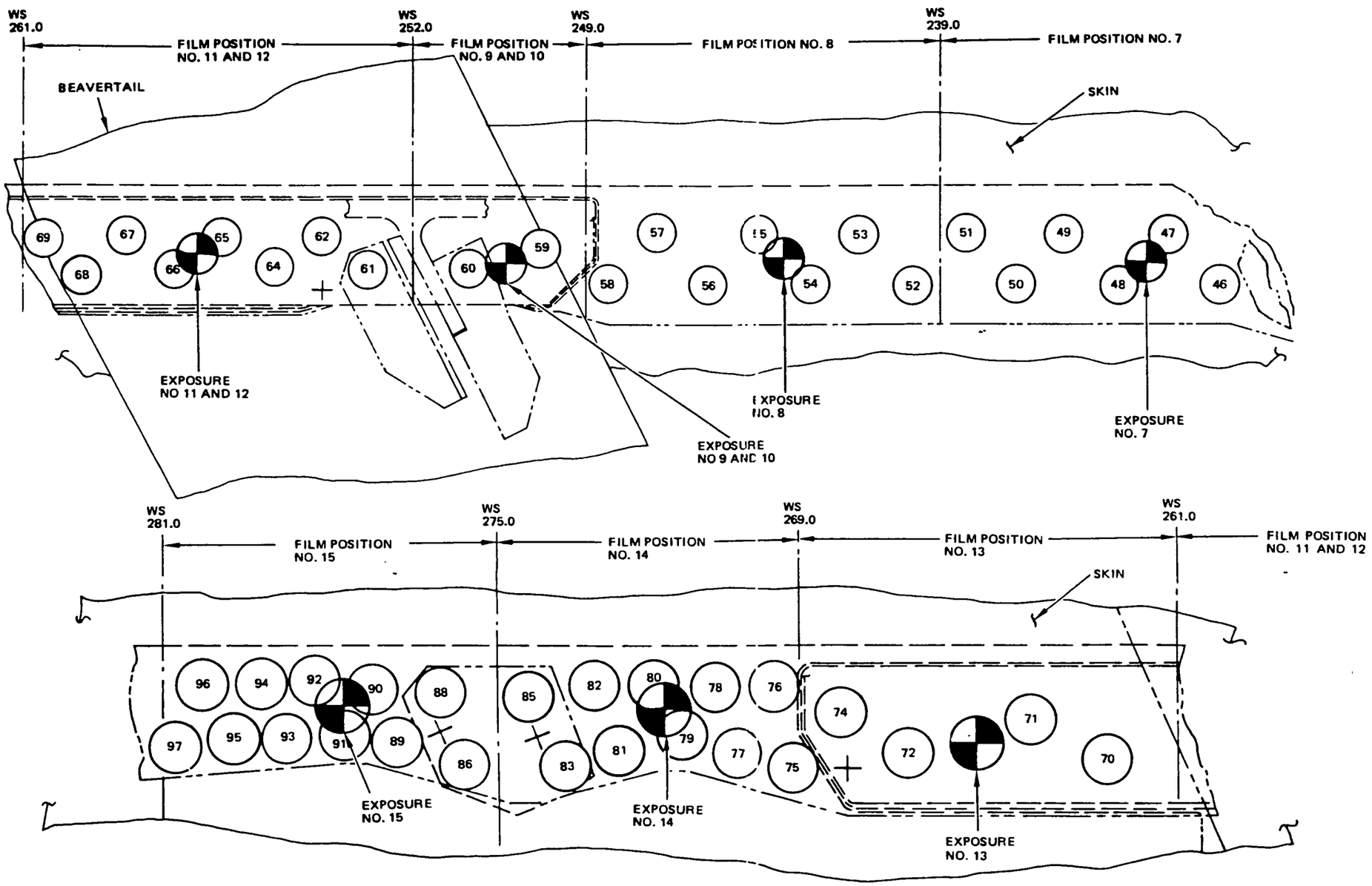
[A] Lead Pack

[B] Place one piece of film on each side of the web.

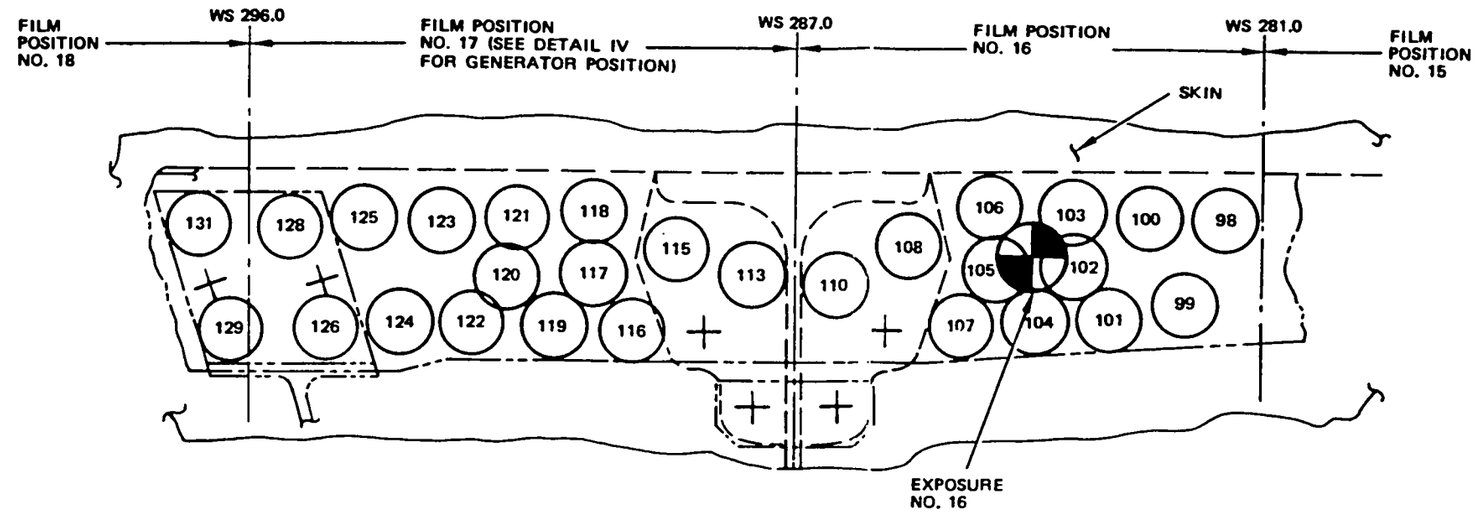
Wing - Lower Rear Spar Horizontal Flange
Figure 19 (Sheet 3)



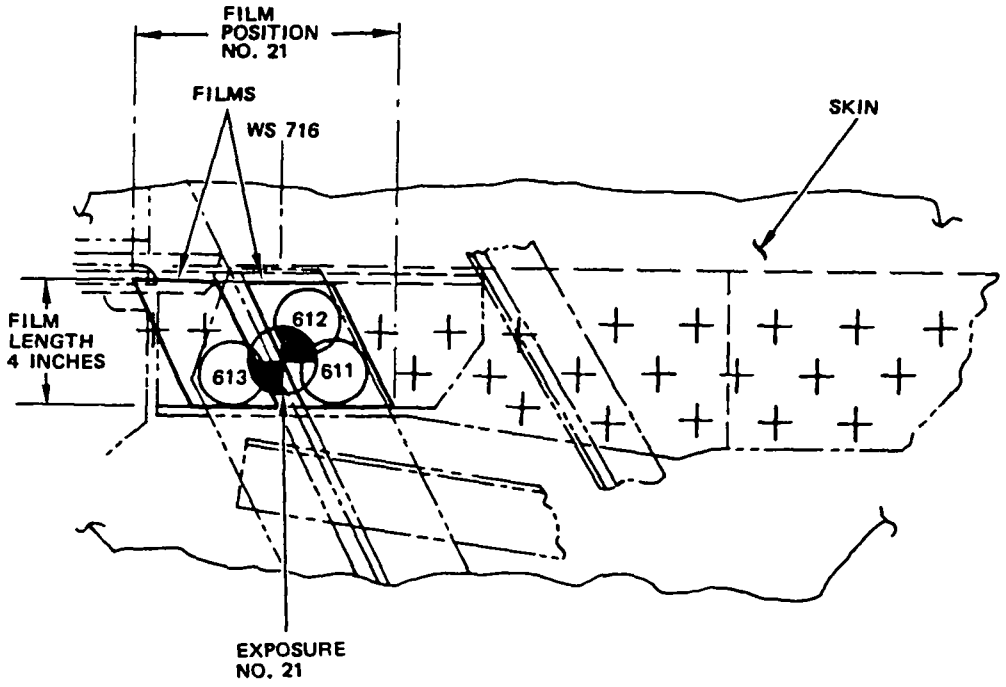
FASTENER HOLES IN HORIZONTAL FLANGE OF LOWER REAR SPAR CHORD TO BE INSPECTED
DETAIL I



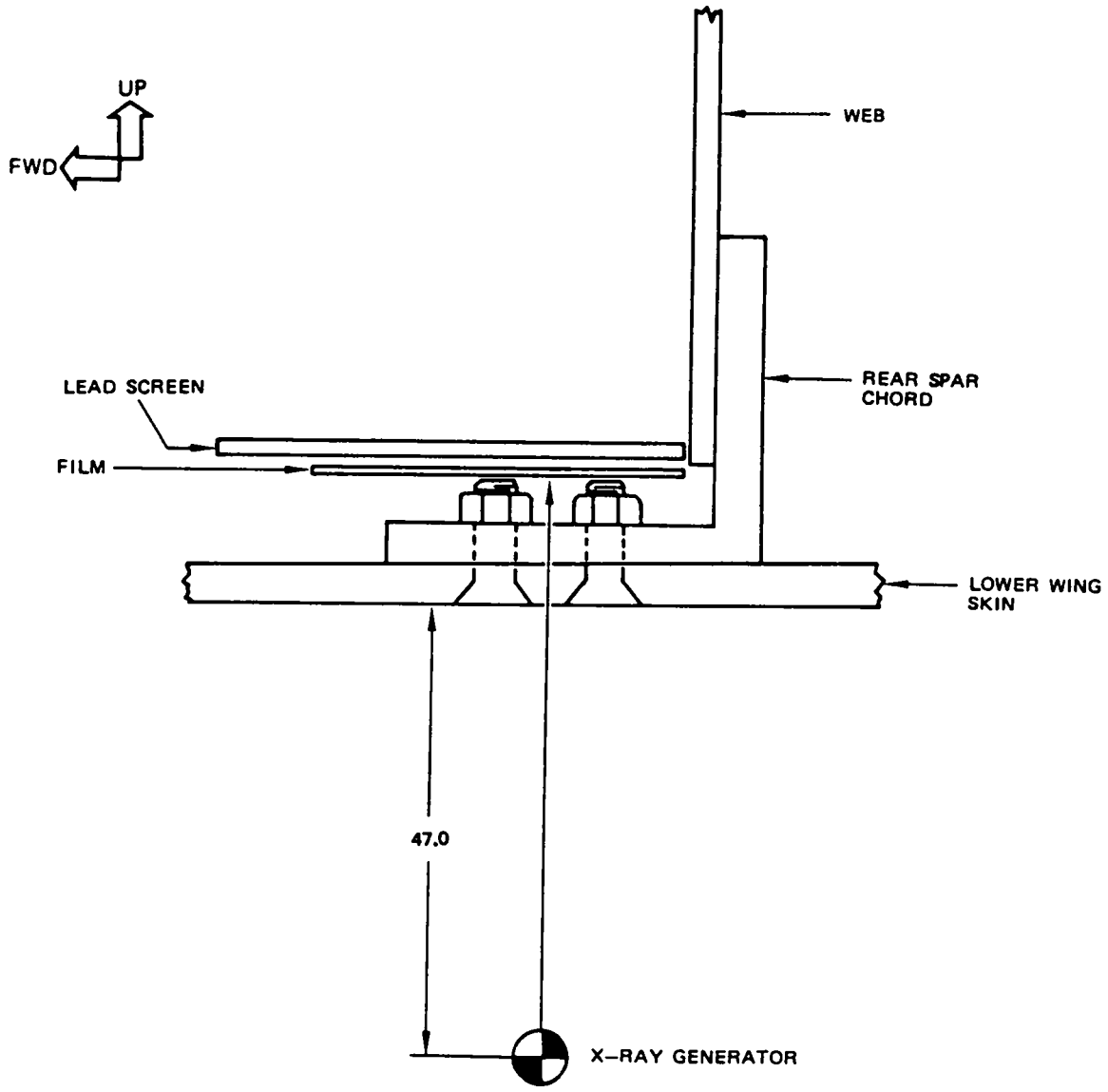
FASTENER HOLES IN HORIZONTAL FLANGE OF LOWER REAR SPAR CHORD TO BE INSPECTED DETAIL I (CONT)



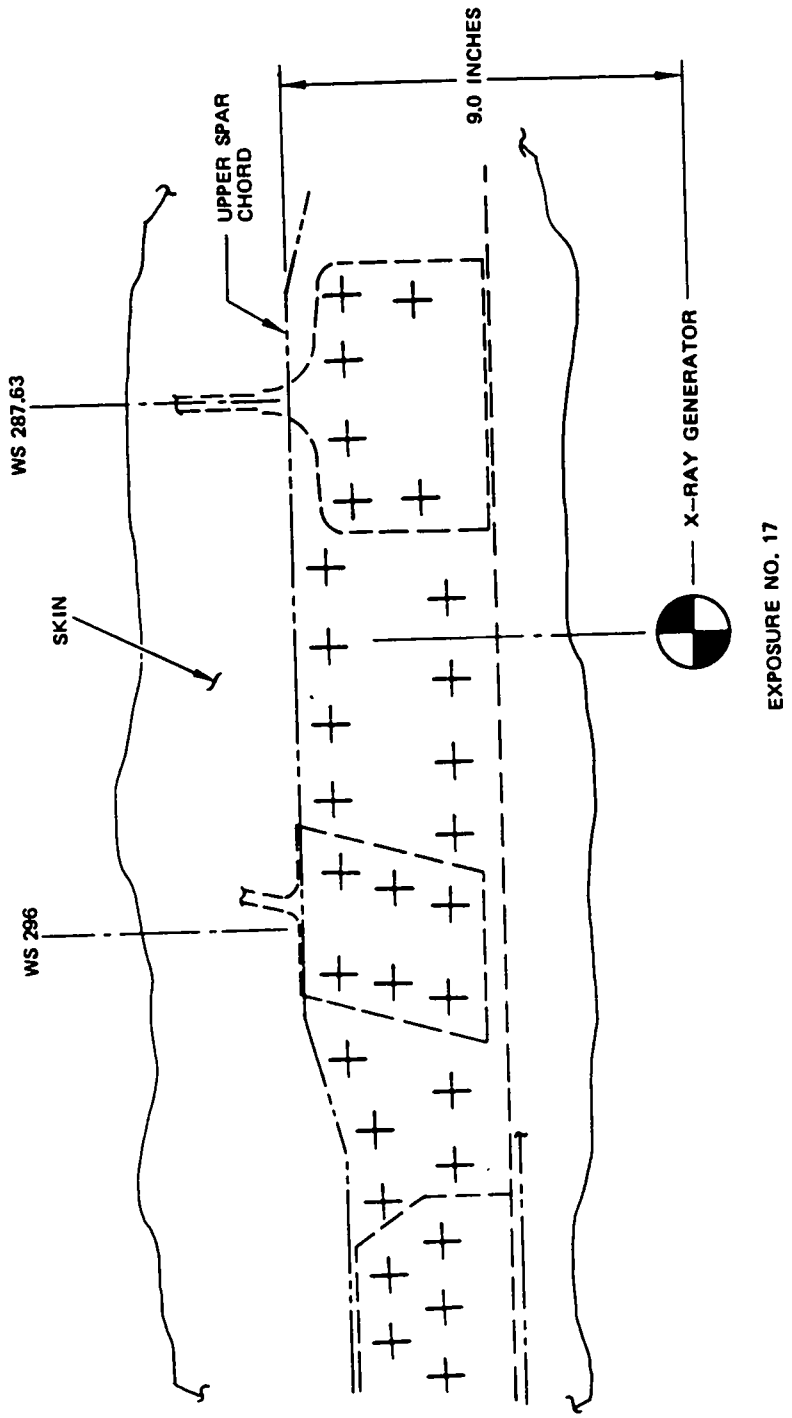
FASTENER HOLES IN HORIZONTAL FLANGE OF LOWER REAR SPAR CHORD TO BE INSPECTED
DETAIL I (CONT)



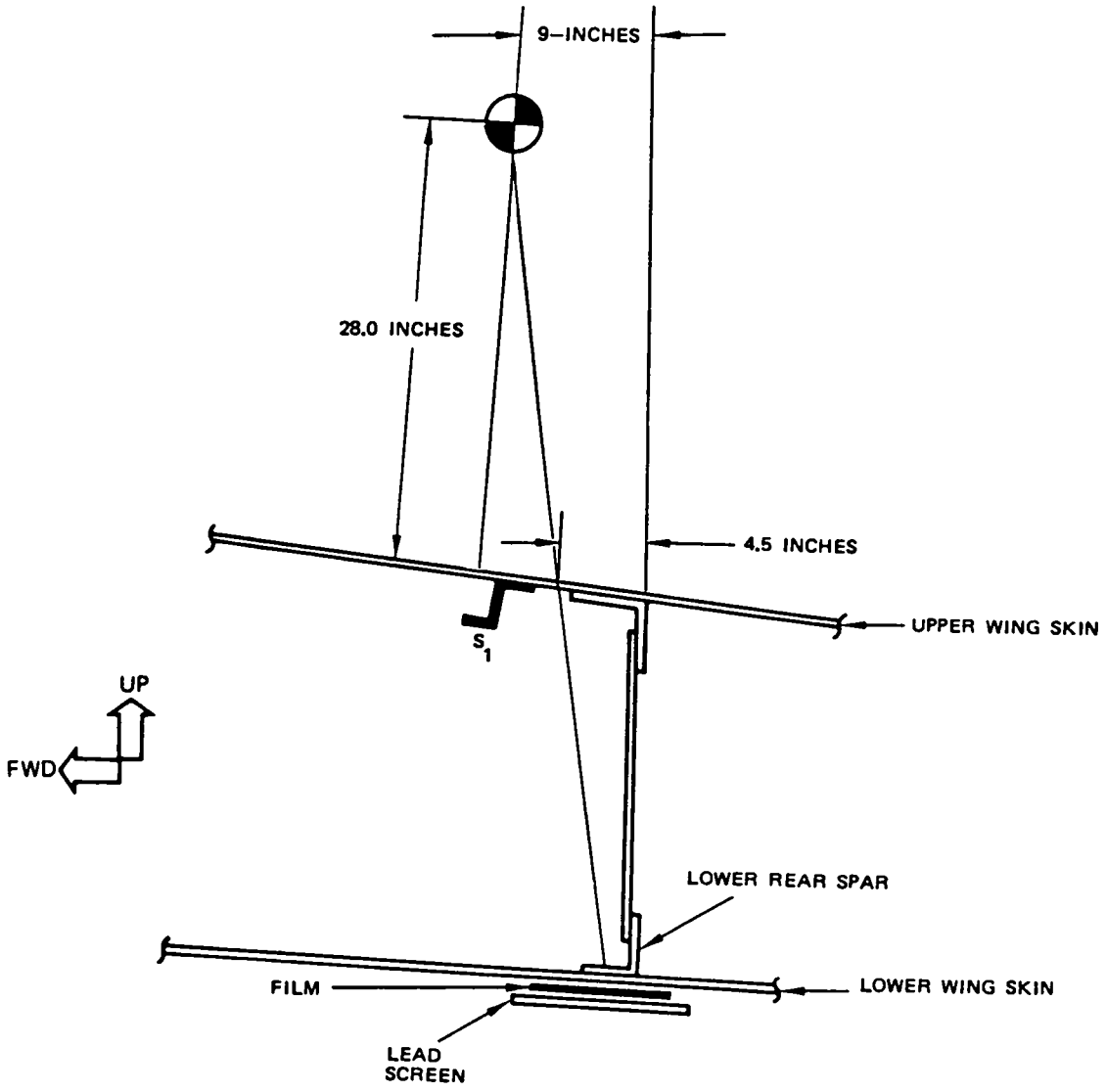
FASTENER HOLES IN HORIZONTAL FLANGE OF LOWER REAR SPAR CHORD TO BE INSPECTED
DETAIL II



TYPICAL FILM AND GENERATOR ARRANGEMENT
EXPOSURE NO. 1 THRU 21 EXCEPT NO. 17
DETAIL III



FILM AND X-RAY GENERATOR ARRANGEMENT
FOR EXPOSURE NO. 17
DETAIL IV



FILM AND X–RAY GENERATOR ARRANGEMENT
FOR EXPOSURE NO. 17

DETAIL IV (CONT)

PART 2 - X-RAY

WINGS - MAIN FRAME

1. Purpose

   A. To detect hole cracks in the horizontal flange of wing lower rear spar chord at selected fastener holes. See Details II and III.

   B. This inspection requires wing tank entry. Fuel tank must be drained and purged to a "health safe" condition (as defined by Chapter 28 of the Maintenance Manual) before entering.

2. Equipment

   A. The equipment used to develop this technique is as follows:

      (1) Sperry, portable 160 KV, side emission X-ray generator

      (2) ASTM Class I and II ready pack and lead pack film

      (3) Lead screen 0.03 inch or thicker to be placed behind film.

3. Preparation for Inspection

   A. Drain and purge the appropriate fuel tanks to permit tank entry for film placement along the horizontal flange of the lower rear spar chord.

4. Inspection Procedure

   A. Exposure No. 1

      WARNING: PRECAUTIONS AND SAFETY PROCEDURES CONTAINED IN CHAPTER 28 OF THE MAINTENANCE MANUAL MUST BE FOLLOWED BY PERSONNEL ENTERING ANY TANK THAT HAS CONTAINED FUEL. POSSIBILITY OF EXPLOSION AND TOXIC DANGER EXISTS IN VICINITY OF FUEL TANKS WHICH HAVE CONTAINED FUEL.

      (1) Identify film type and size from Table I.

Wing Lower Rear Spar Horizontal Flange
Figure 20 (Sheet 1)

(2) Place film on inside of wing against lower rear spar chord horizontal flange as shown in Detail I to provide for radiographic coverage around fasteners identified in Details II and III.

NOTE: 1) Allow approximately 1 inch of film between exposures.

2) Trim film as necessary to facilitate film placement for maximum coverage of chord flange.

(3) Place lead screen behind films to prevent excessive film fogging from backscatter. See Detail I.

(4) Position the X-ray generator so that the X-ray beam is perpendicular to the lower wing skin and centered over fasteners to be inspected. See Detail III, Exposure No. 1, and Detail I.

(5) Make the radiographic exposure using the Table I generator settings as a guide. Film density in the area to be inspected should be between 2.0 and 3.0

B. For Exposure No. 2 thru 21, repeat steps used for Exposure No. 1.

C. Review the film with special attention given to the area around fastener locations noted in Details V and III.

Wing Lower Rear Spar Horizontal Flange
Figure 20 (Sheet 2)

EXPOSURE NUMBER	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE		KV	MAS
1	1	II [A]	5X10	24	160	1340
2	2	II	5X10	36	160	900
3	3	I	5X10	48	120	1600
4	4	I	5X10	48	120	1600
5	5	I	5X10	48	120	1600
6	6	I	5X10	48	100	1600
7	7	I AND II	5X10	48	100	1600
8	8	I AND II	5X10	48	100	1600
9	9	I AND I [A]	5X10	48	120	1070
10	10	I	5X10	48	120	1800
11	11	II AND II [A]	5X10	48	160	1870
12	12	I [A] , II, AND II [A]	5X10	48	160	1070
13	13	I [A] AND II [A]	5X10	48	120	1070
14	14	I AND II	5X10	48	100	1600
15	15	I AND II	5X10	48	100	1600
16	16	I, I [A] , AND II [A]	5X10	48	100	1870
17	17	I AND I [A]	5X10	48	100	1070
18	18	I	5X10	48	120	1800
19	19	I	5X10	48	120	1800
20	20	I	5X10	48	100	1600
21	21	I	▷ TWO 5X4	48	120	1800

X-RAY PARAMETERS
TABLE I

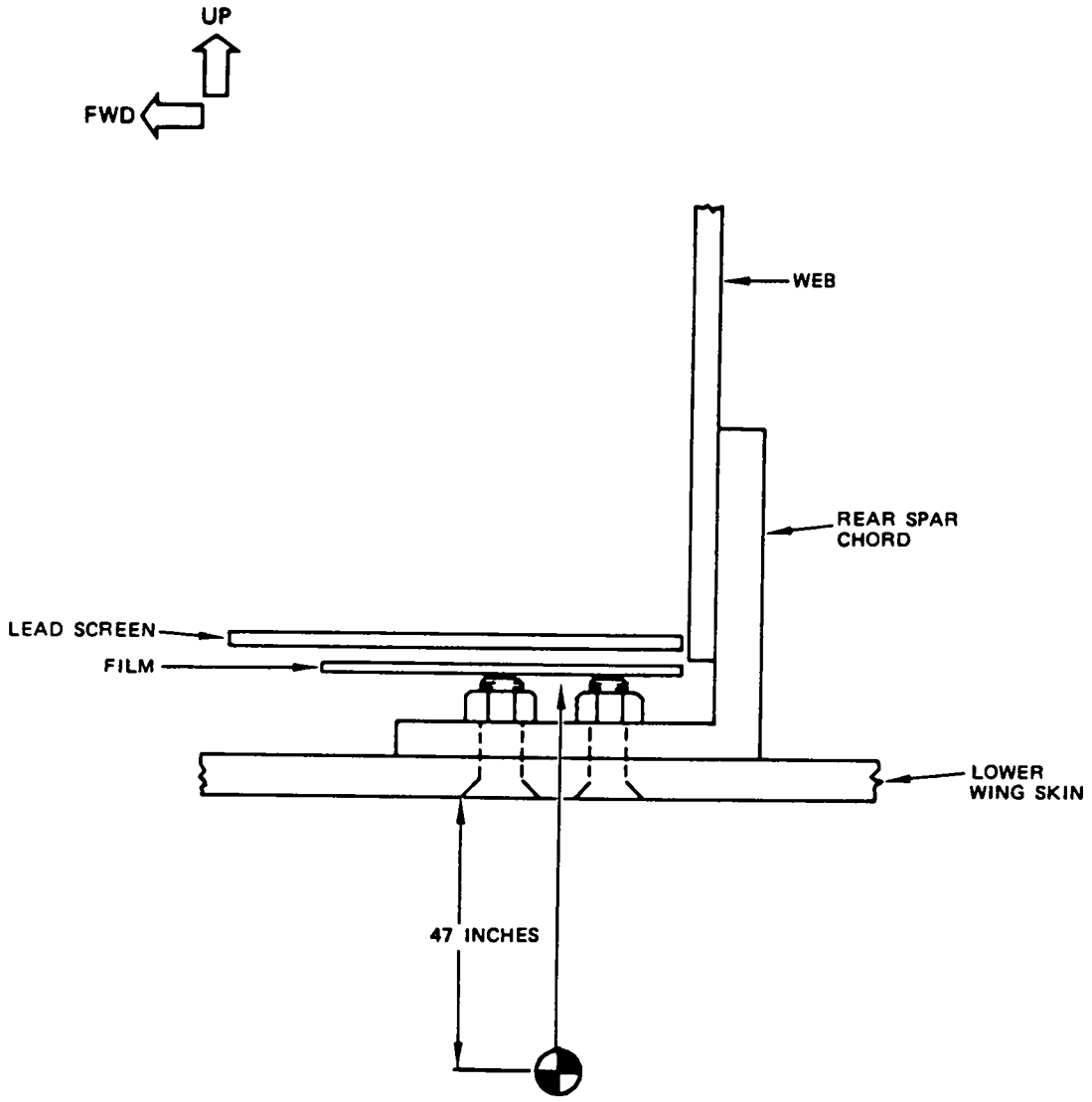
NOTES:

ALL DIMENSIONS ARE IN INCHES.

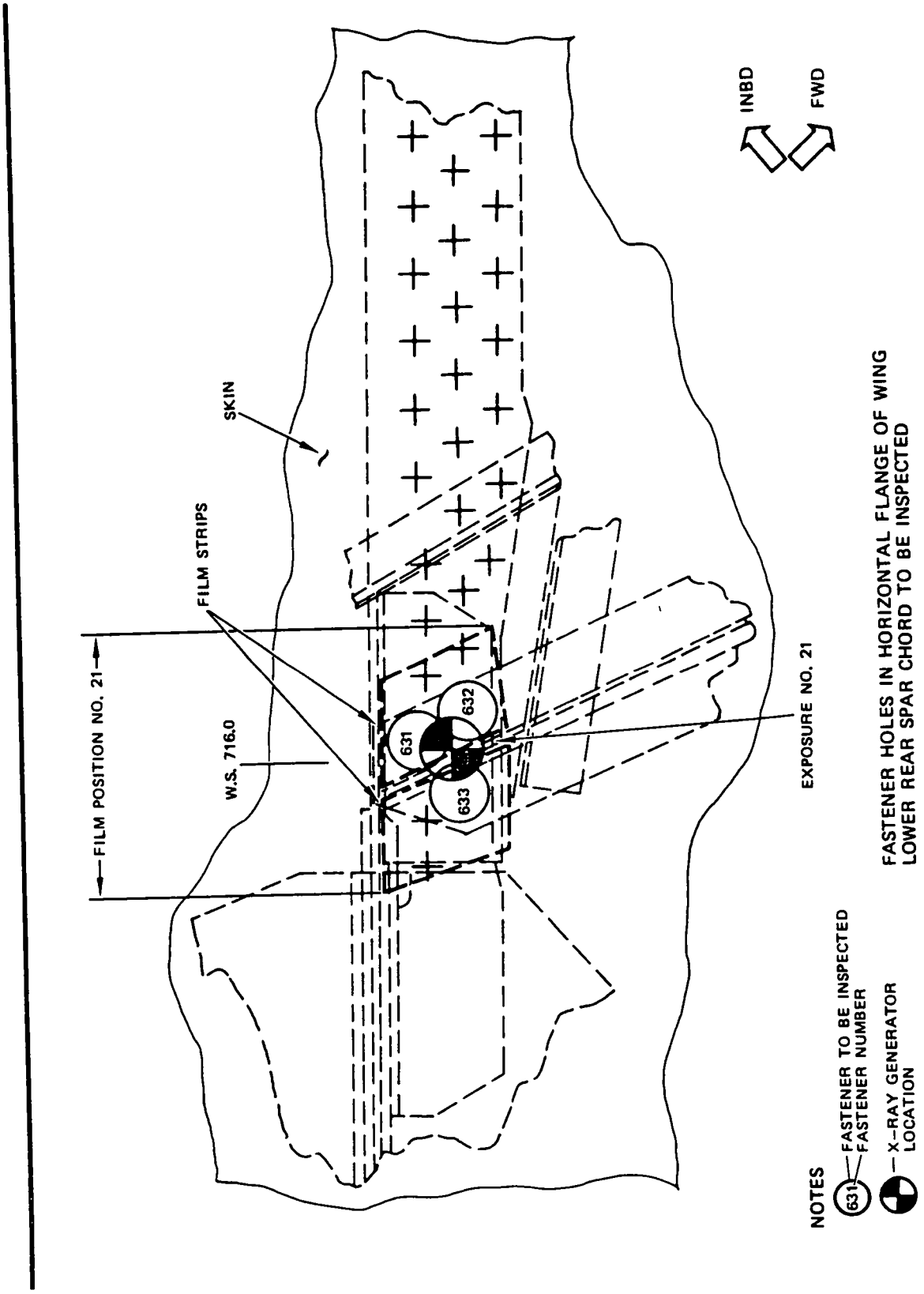
A SATISFACTORY RADIOGRAPH MAY BE OBTAINED WITHOUT THE USE OF LEAD SCREENS BY MAKING A SEPARATE EXPOSURE USING THE SAME FILM CLASS AND INCREASING THE MAS VALUE IN THE TABLE BY A FACTOR OF 1.7.

[A] LEAD PACK

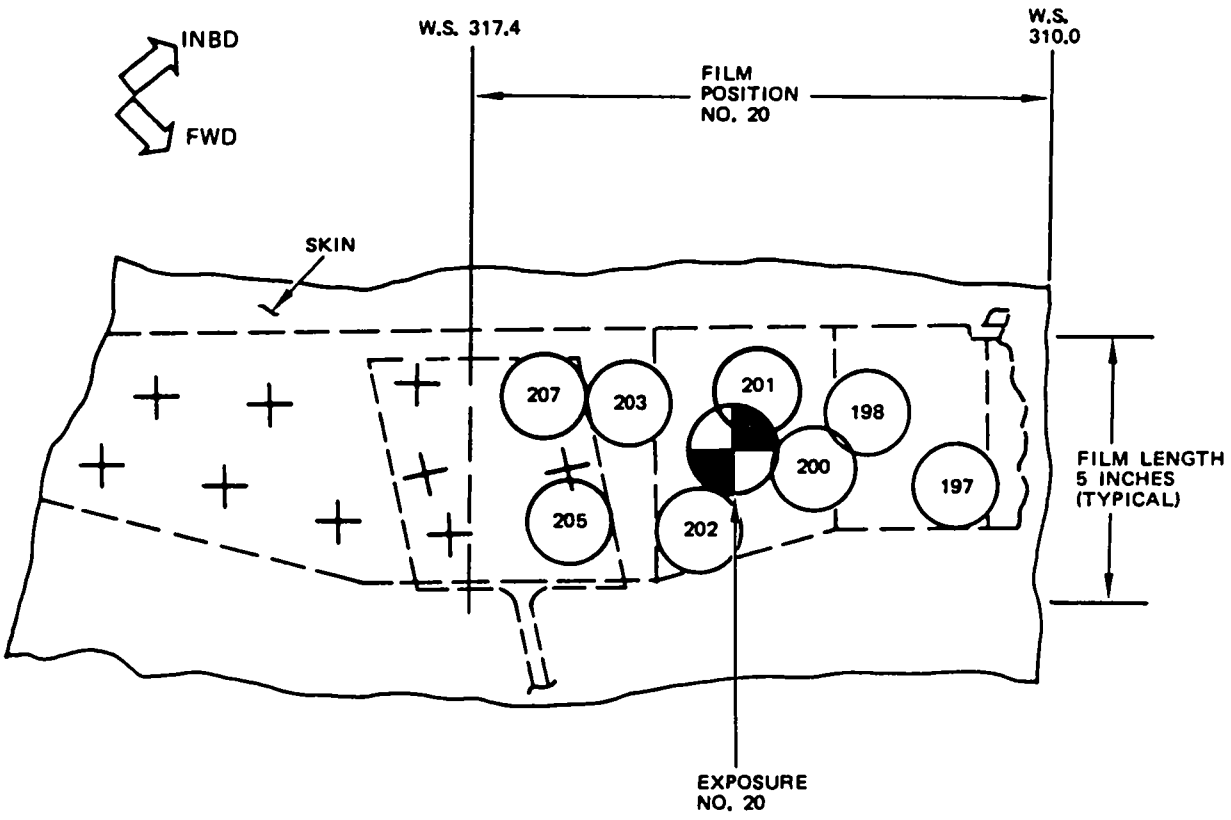
▷ PLACE ONE PIECE OF FILM ON EACH SIDE OF THE WEB (DETAIL III).



TYPICAL FILM AND GENERATOR ARRANGEMENT
DETAIL I



Wing-Lower Rear Spar Horizontal Flange
Figure 20 (Sheet 5)



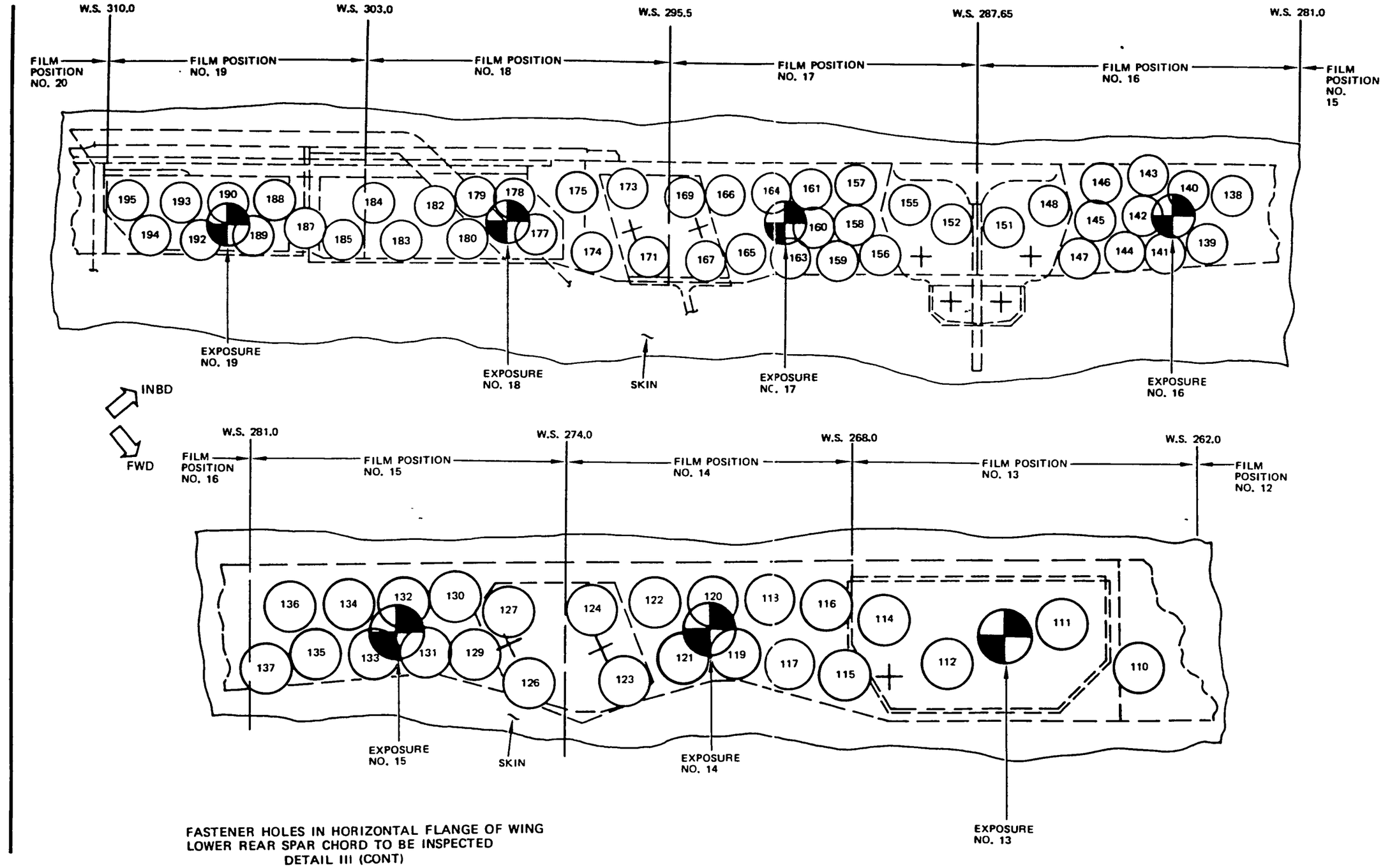
NOTES

207 — FASTENER TO BE INSPECTED
FASTENER NUMBER

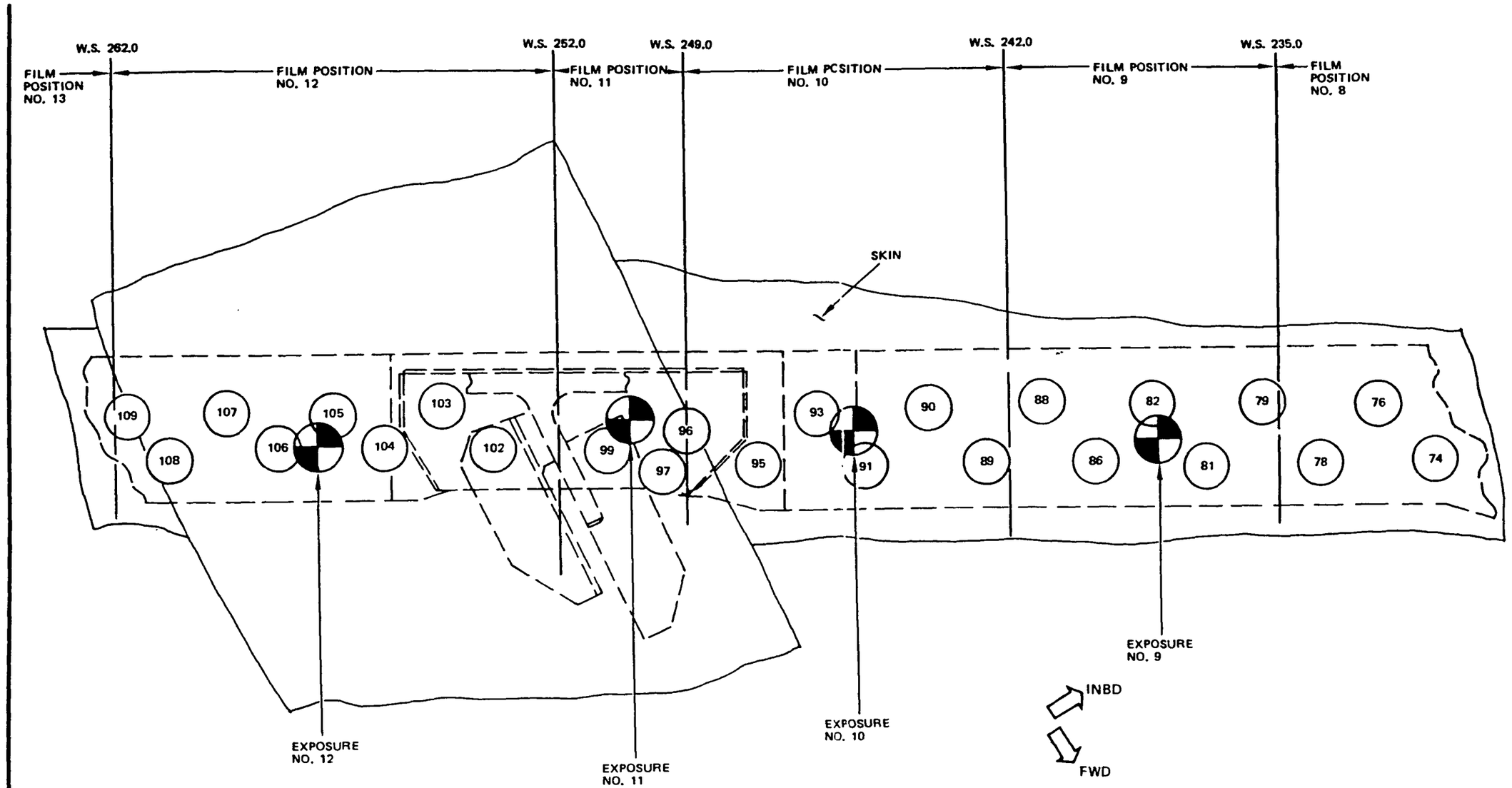
— X-RAY GENERATOR LOCATION

FASTENER HOLES IN HORIZONTAL FLANGE OF WING LOWER REAR SPAR CHORD TO BE INSPECTED

DETAIL III

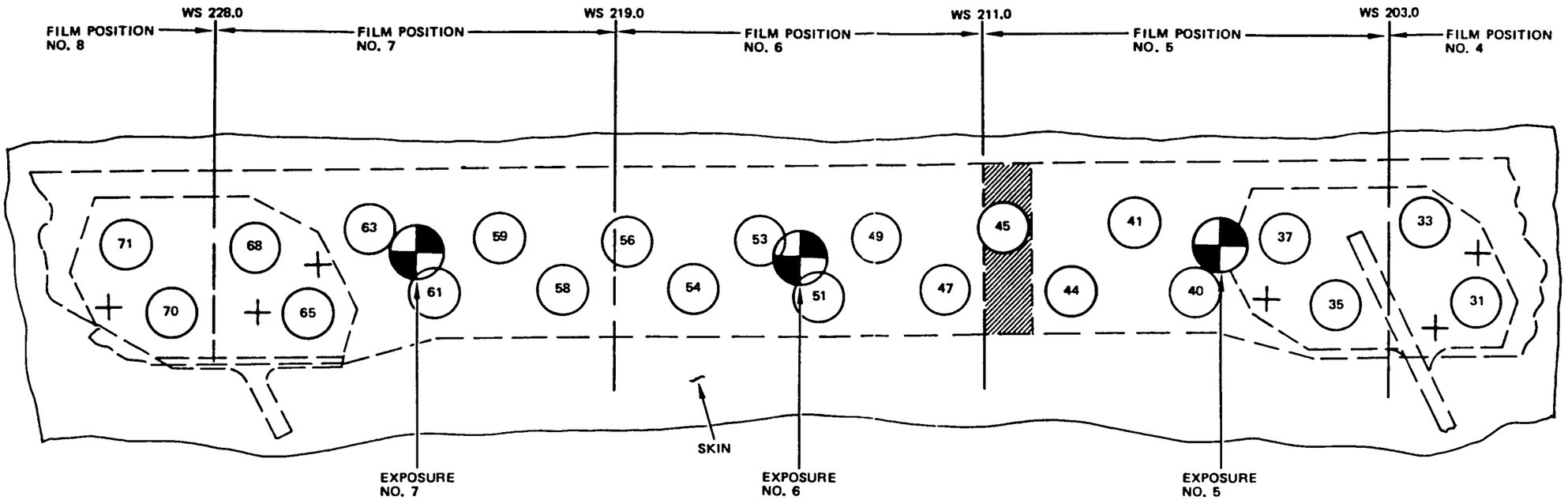


FASTENER HOLES IN HORIZONTAL FLANGE OF WING LOWER REAR SPAR CHORD TO BE INSPECTED
DETAIL III (CONT)



FASTENER HOLES IN HORIZONTAL FLANGE OF WING LOWER REAR SPAR CHORD TO BE INSPECTED

DETAIL III (CONT)



FASTENER HOLES IN HORIZONTAL FLANGE OF WING LOWER REAR SPAR CHORD TO BE INSPECTED

DETAIL III (CONT)

EFFECTIVITY
MODEL: 707-300/300B/ 300C/400
SERVICE BULLETIN REFERENCE: 2570,2605
SSI DOCUMENT (D6-44860) REFERENCE:
SSI 57-A25-05
57-A25-06
57-A25-09
57-A25-12
57-A35-05
57-A35-06
57-A35-09
57-A35-12
57-A45-05
57-A45-06
57-A45-09
57-A45-12

PART 2 - X-RAY

WINGS - MAIN FRAME

1. Purpose

   A. To detect hole cracks in the horizontal flange of wing lower rear spar chord at selected fastener holes. See Details II thru IV.

   B. This inspection requires wing tank entry. Fuel tank must be drained and purged to a "health safe" condition (as defined by Chapter 28 of the Maintenance Manual) before entering.

2. Equipment

   A. The equipment used to develop this technique is as follows:

      (1) Sperry, portable 160 KV, side emission X-ray generator

      (2) ASTM Class I and II ready pack and lead pack film

      (3) Lead screen 0.03 inch or thicker to be placed behind film

3. Preparation for Inspection

   A. Drain and purge the appropriate fuel tanks to permit tank entry for film placement along the horizontal flange of the lower rear spar chord.

Wing Lower Rear Spar Horizontal Flange
Figure 21 (Sheet 1)

4. Inspection Procedure

A. Exposure No. 1

WARNING: PRECAUTIONS AND SAFETY PROCEDURES CONTAINED IN CHAPTER 28 OF THE MAINTENANCE MANUAL MUST BE FOLLOWED BY PERSONNEL ENTERING ANY TANK THAT HAS CONTAINED FUEL. POSSIBILITY OF EXPLOSION AND TOXIC DANGER EXISTS IN VICINITY OF FUEL TANKS WHICH HAVE CONTAINED FUEL.

(1) Identify film type and size from Table I, Table II, or Table III.

(2) Place film on inside of wing against lower rear spar chord horizontal flange as shown in Detail I to provide for radiographic coverage around fasteners identified in Details II thru III.

NOTE: 1) Allow approximately 1 inch of film overlap between exposures.

2) Trim film as necessary to facilitate film placement for maximum coverage of chord flange.

(3) Place lead screen behind films to prevent excessive film fogging from backscatter (detail I).

(4) Position the X-ray generator so that the X-ray beam is perpendicular to the lower wing skin and centered over fasteners to be inspected. See Detail II, Exposure No. 1, and Detail I.

(5) Make the radiographic exposure using the Table I, Table II, or Table III generator settings as a guide. Film density in the area to be inspected should be between 2.0 and 3.0.

B. For Exposure No. 2 through last exposure, repeat steps used for Exposure No. 1.

C. Review the film with special attention given to the area around fastener locations noted in Details II thru III for the particular exposure.

Wing Lower Rear Spar Horizontal Flange
Figure 21 (Sheet 2)

EXPOSURE NUMBER	FILM				GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE	SFD	KV	MAS
1	1	II	5X10	48	160	1600
2	2	II	5X10	48	140	1340
3	3	I	5X10	48	120	1070
4	4	I	5X10	48	120	1070
5	5	I	5X10	48	120	1070
6	6	I	5X10	48	120	1070
7	7	I	5X10	48	120	1070
8	8	I	5X10	48	120	1070
9	9	I	5X10	48	120	1070
10	10	I [A] AND II [A]	5X10	48	160	2140
11	11	I, II, II [A]	5X10	48	160	2400
12	12	I	5X10	48	140	1600
13	13	I	5X10	48	120	1070
14	14	I	5X10	48	120	1070
15	15	I	5X10	48	140	1340
16	16	I	5X10	48	140	1340
17	17	I	5X10	48	120	1070
18	18	I	5X10	48	100	1600
19	19	I	5X12	60	120	2500
20	20	I	5X12	60	120	2500
21	21	I	5X12	60	120	2500

X - RAY PARAMETERS FOR DETAIL II
TABLE I [1]

NOTES

- SEE DETAIL II FOR A/P CONFIGURATION
- ALL DIMENSIONS ARE IN INCHES

[A] LEAD PACK

[1] FOR CUM LINE NUMBERS 13, 20, 35, 58, 61, 62, 68 and 70

EXPOSURE NUMBER	FILM ASTM CLASS				GENERATOR SETTINGS	
	POSITION		SIZE	SFD	KV	MAS
1	1	II AND II [A]	5X10	48	140	1600
2	2	II AND II [A]	5X10	48	140	1870
3	3	I	5X12	57	120	2250
4 [3]	4	I	5X10	48	120	1070
5 [3]	5	I	5X10	48	120	1070
6 [3]	6	I	5X10	48	120	1070
7 [3]	7	I	5X10	48	120	1070
8 [3]	8	I	5X10	48	120	1070
9 [3]	9	I	5X10	48	120	1070
10 [3]	10	I [A] AND II [A]	5X10	48	160	2140
11 [3]	11	I, II II [A]	5X10	48	160	2400
12 [3]	12	I	5X10	48	140	1600
13 [3]	13	I	5X10	48	120	1070
14 [3]	14	I	5X10	48	120	1070
15 [3]	15	I	5X10	48	140	1340
16 [3]	16	I	5X10	48	140	1340
17 [3]	17	I	5X10	48	120	1070
18 [3]	18	I AND I [A]	5X10	48	100	1600
19 [3]	19	I AND I [A]	5X12	60	120	2500
20 [3]	20	I AND I [A]	5X12	60	120	2500
21 [3]	21	I AND I [A]	5X12	60	120	2500
22 [4]	22	I	5X10	48	120	1600

X RAY PARAMETERS FOR DETAIL III
TABLE II [2]

NOTES

- SEE DETAIL III FOR A/P CONFIGURATION
- ALL DIMENSIONS ARE IN INCHES

[A] LEAD PACK

Wing Lower Rear Spar Horizontal Flange
Figure 21 (Sheet 4)

(2) FOR CUM LINE NUMBERS:
71, 73 THRU 76, 78 THRU 84, 86, 88 THRU 94, 98 THRU 101, 103 THRU 107, 110 THRU 18, 121 THRU 129, 133 THRU 139, 144, 145, 151 THRU 155, 159 THRU 164, 167 THRU 171, 175, 176, 192, 200, 205, 209, 216, 217, 264, 266, 268 THRU 272, 274 THRU 276, 282, 283, 287, 292, 293, 302, 303, 305, 320, 323, 325 THRU 336, 341 THRU 346, 348 THRU 350, 352 THRU 360, 362 THRU 373, 375 THRU 379, 383, 386 THRU 389
394, 397 THRU 409, 411 THRU 413, 415 THRU 419, 421, 423 THRU 425, 428, 430, 431, 434 THRU 469, 471, 472, 475 THRU 480, 482 THRU 485, 487, 488, 494 THRU 505, 507 THRU 511, 513, 515 THRU 525, 527 THRU 529, 531, 532, 534, 536 THRU 538, 540 THRU 557, 559 THRU 561, 563, 566, 569, 570, 572, 574, 576, 578, 580, 582, 584, 585, 587, 588, 590, 592, 594, 596, 599, 601, 603, 605, 607 THRU 614, 616 THRU 620, 625 THRU 668, 670 THRU 679, 681, 683 THRU 747, 749 THRU 761, 764 THRU 770, 772 THRU 776, 778 THRU 786, 788 THRU 793, 795 THRU 800, 802 THRU 812, 814, 815, 817 THRU 827, 829 THRU 897, 899, 900, 903, 905, 906, 908, 910, 911, 912, 914 THRU 919, 922, 923, 925, 928, 929, 936, 938, 951 and on

(3) See Detail II for Exposures No. 4 thru 21.

(4) For (2) 707-320B/320C airplanes only.

EXPOSURE NUMBER	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE		KV	MAS
1	1	II AND II[A]	5X10	48	160	1600
2	2	I AND II	5X10	48	120	2140
3	3	I	5X10	48	120	1335
4	4	I	5X10	48	120	1335
5	5	I	5X10	48	120	1070
6	6	I	5X10	48	120	1870
7	7	I	5X10	48	120	1870
8	8	I	5X10	48	120	1870
9	9	I	5X10	48	120	1870
10	10	II AND II[A]	5X5	48	160	1600
11	11	I[A] , II, AND II[A]	5X10	48	160	3740
12	12	I[A]	5X10	48	140	1335
13	13	I	5X10	48	140	1600
14	14	I	5X10	48	140	1600
15	15	I	5X10	48	140	1600
16	16	I	5X10	48	140	1470
17	17	I	5X10	48	120	1070
18	18	I	5X10	48	120	1070
19	19	I	5X10	48	120	1070
20	20	I	TWO 5X4 [6]	48	120	1600
21	21	I	5X12	60	120	2500
22	22	I AND II	5X12	60	100	2500

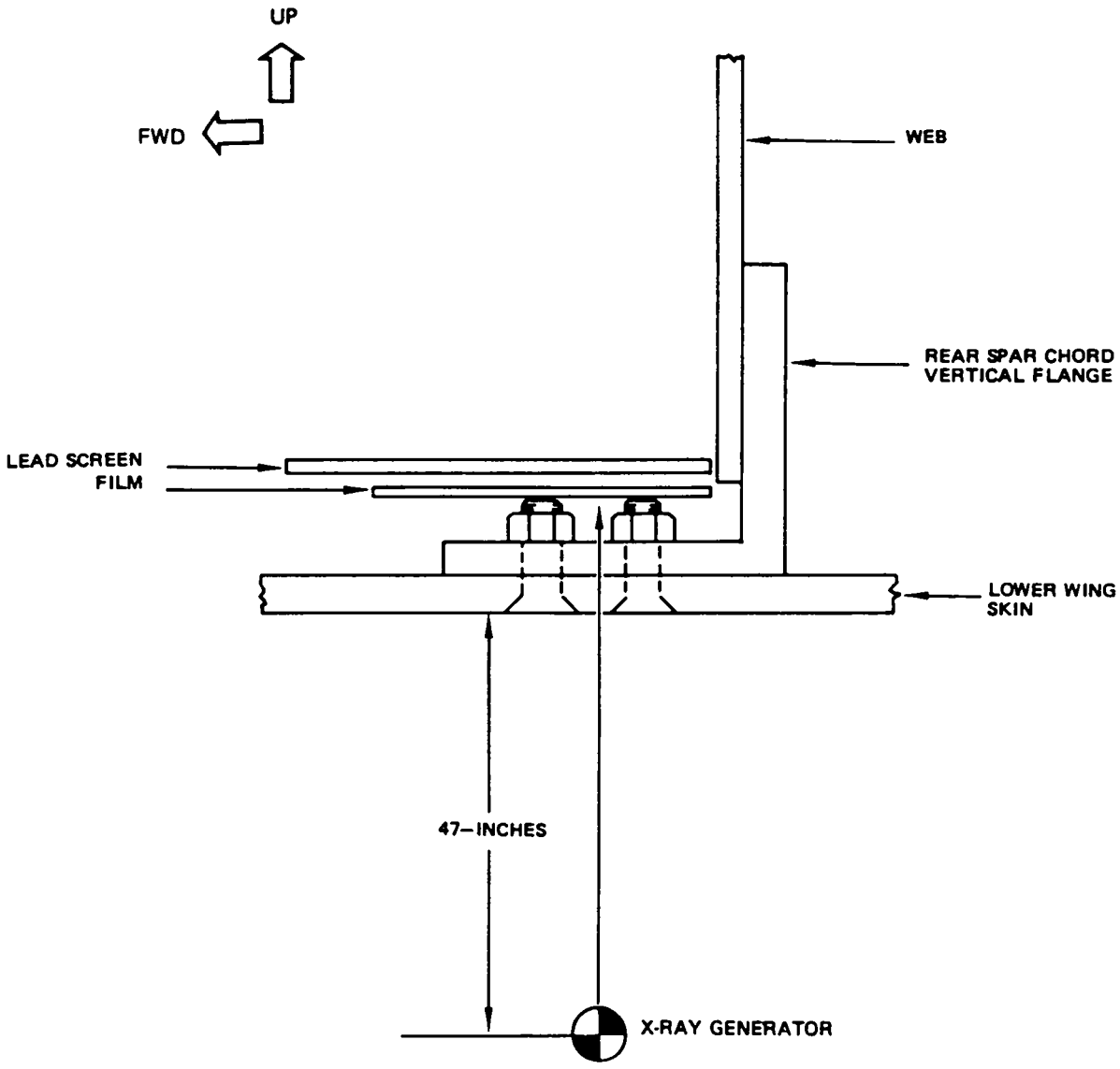
X - RAY PARAMETERS FOR DETAIL IV
TABLE III [5]

NOTES

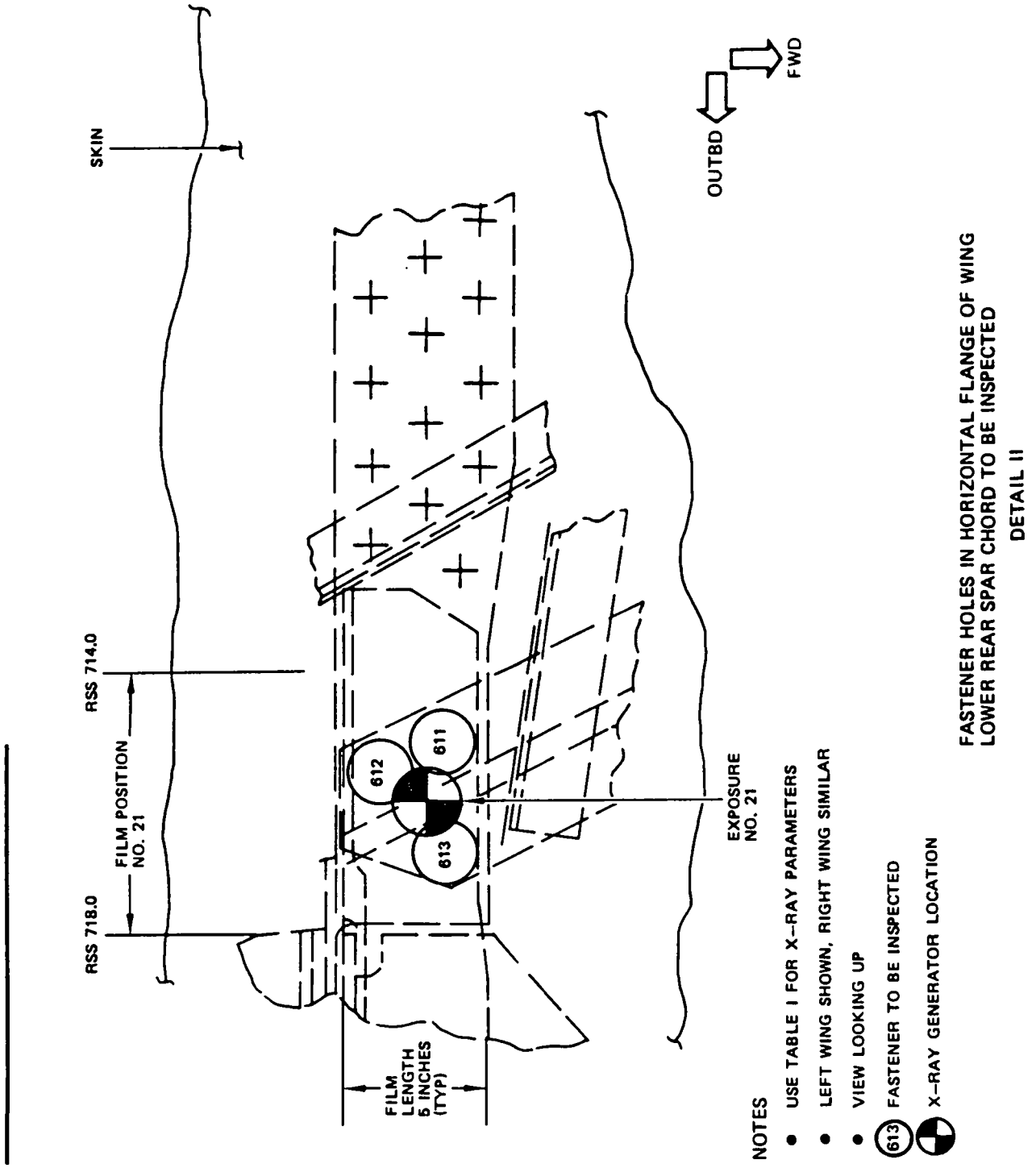
- SEE DETAIL IV FOR A/P CONFIGURATION
- ALL DIMENSIONS ARE IN INCHES
- LEAD PACK

[5] FOR CUM LINE NUMBERS
744 THRU 770, 772 THRU 776, 778 THRU 786, 788 THRU 793, 795 THRU 800, 802 THRU 897, 899, 900,. 903, 905, 906, 908, 910 THRU 912, 914 THRU 919, 922, 923, 925, 9028, 929, 936, 938, 951 and on

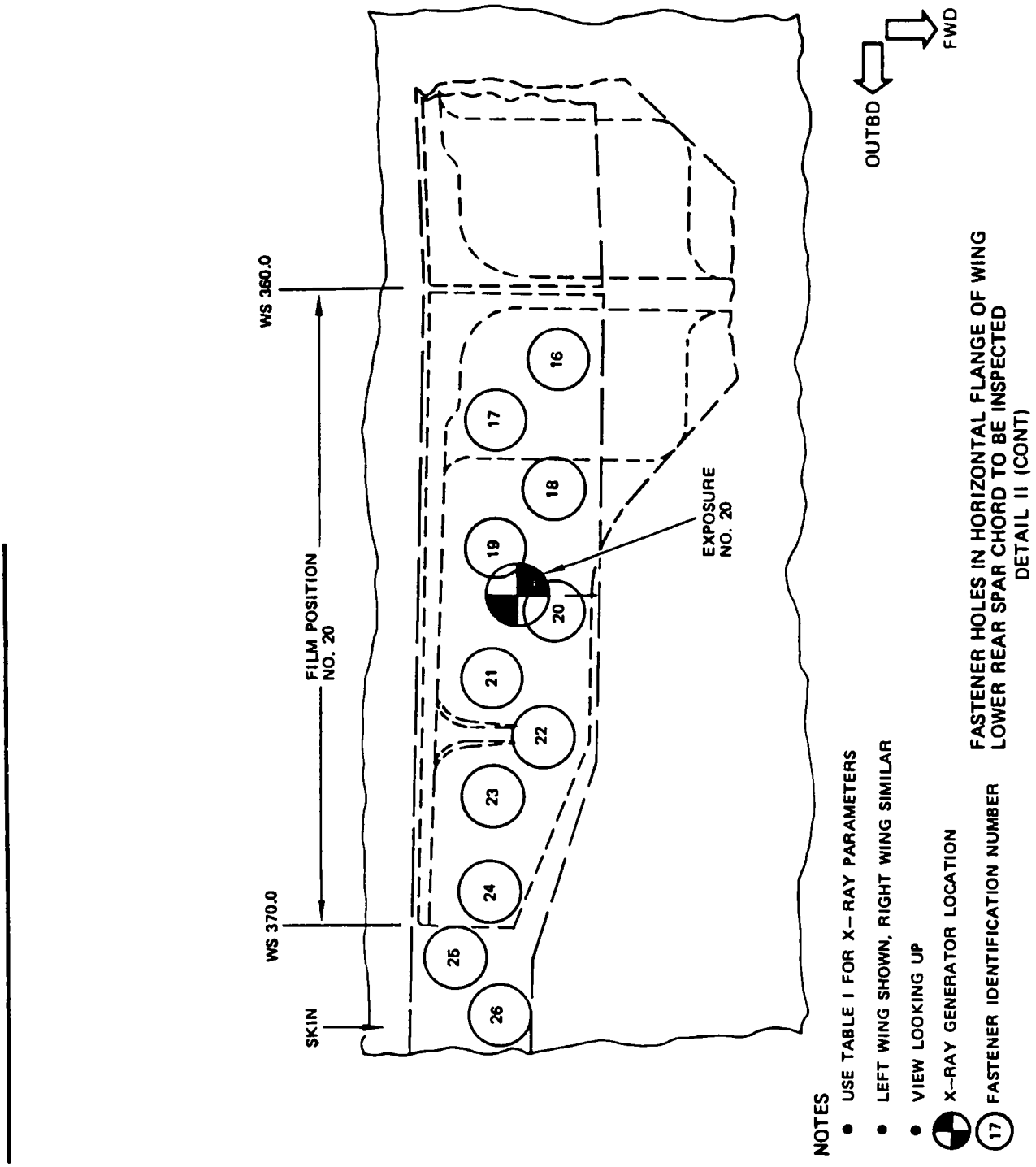
[6] PUT ONE PIECE OF FILM ON EACH SIDE OF WEB



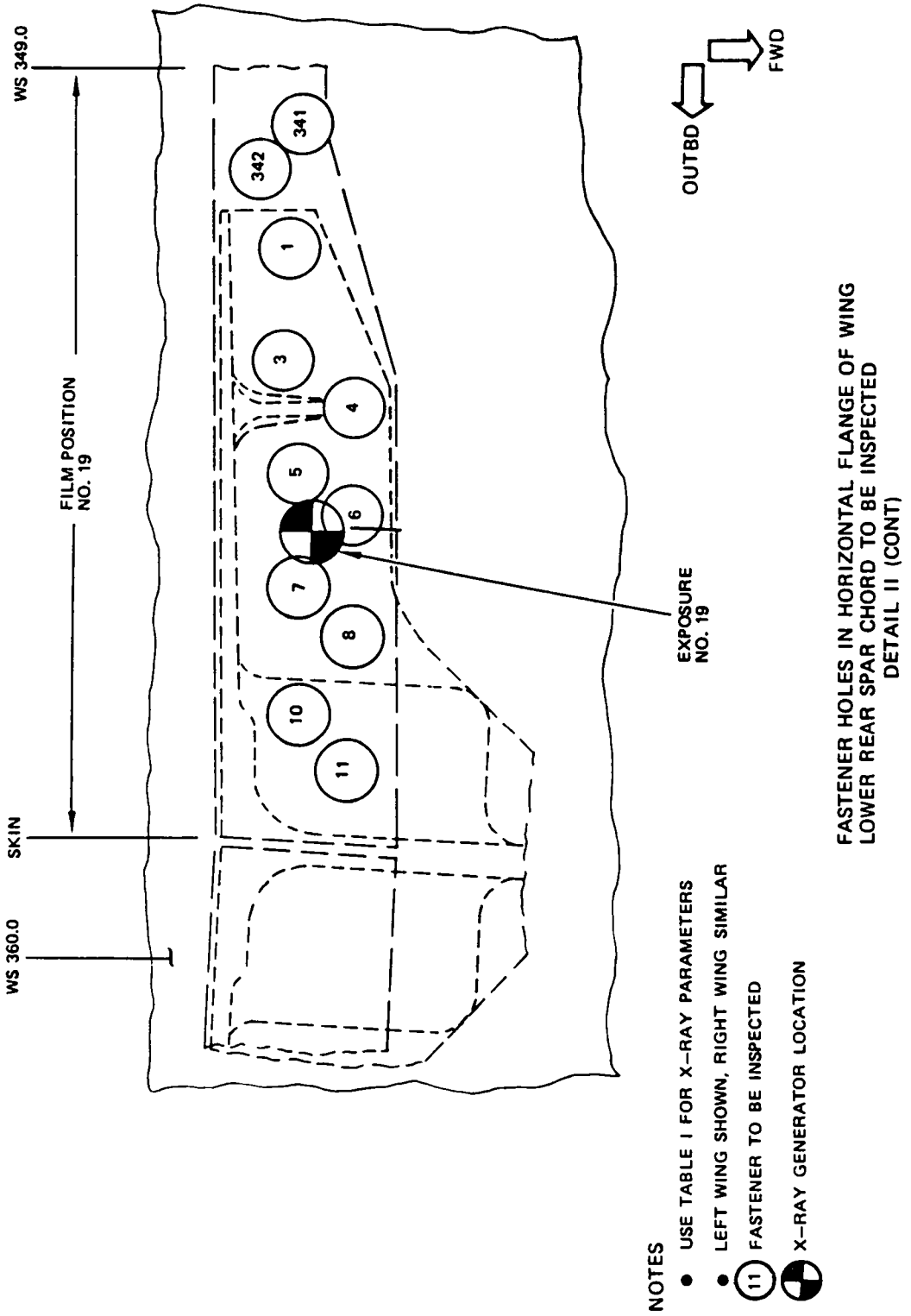
TYPICAL FILM AND GENERATOR ARRANGEMENT
DETAIL I



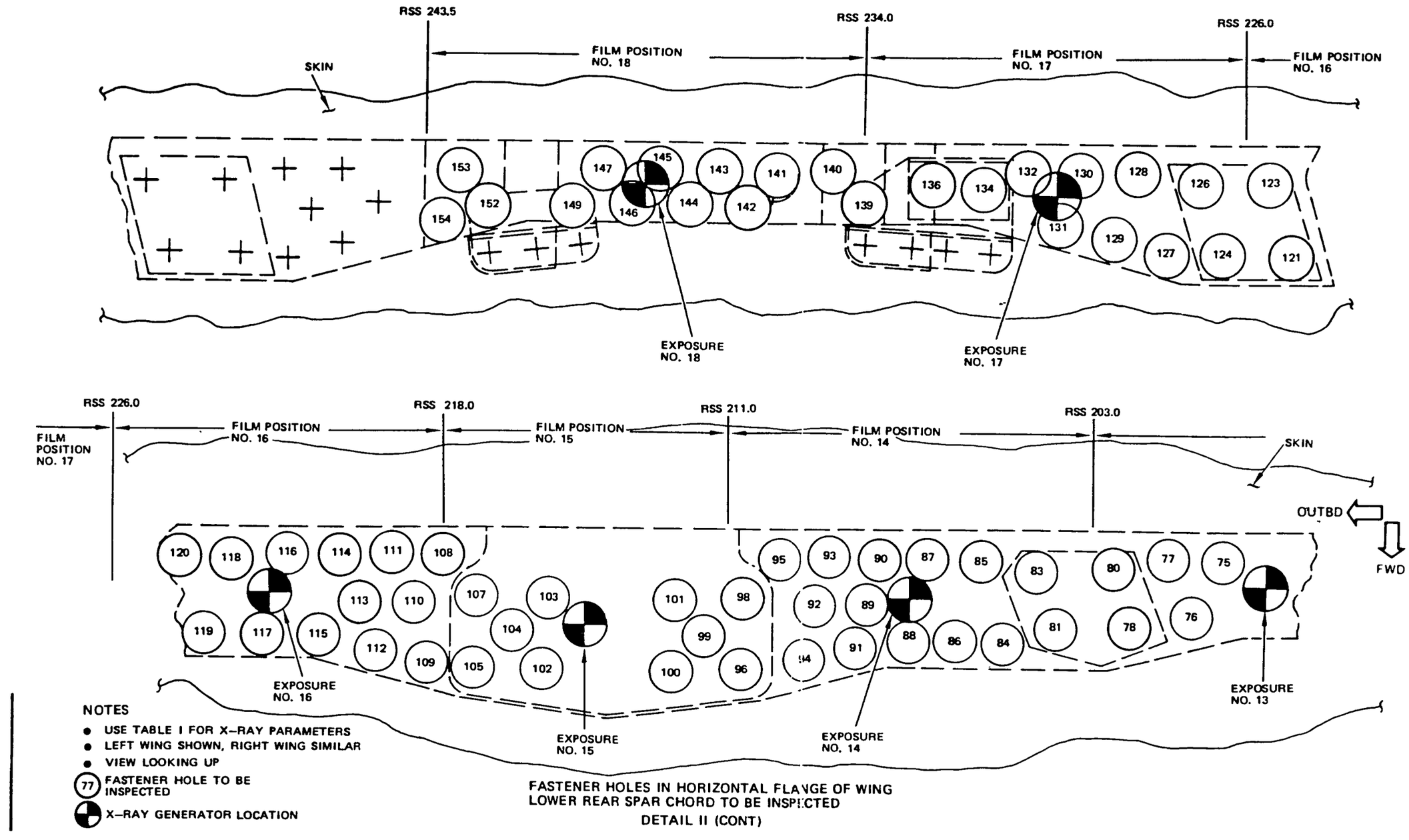
Wing Lower Rear Spar Horizontal Flange
Figure 21 (Sheet 8)



Wing Lower Rear Spar Horizontal Flange
Figure 21 (Sheet 9)

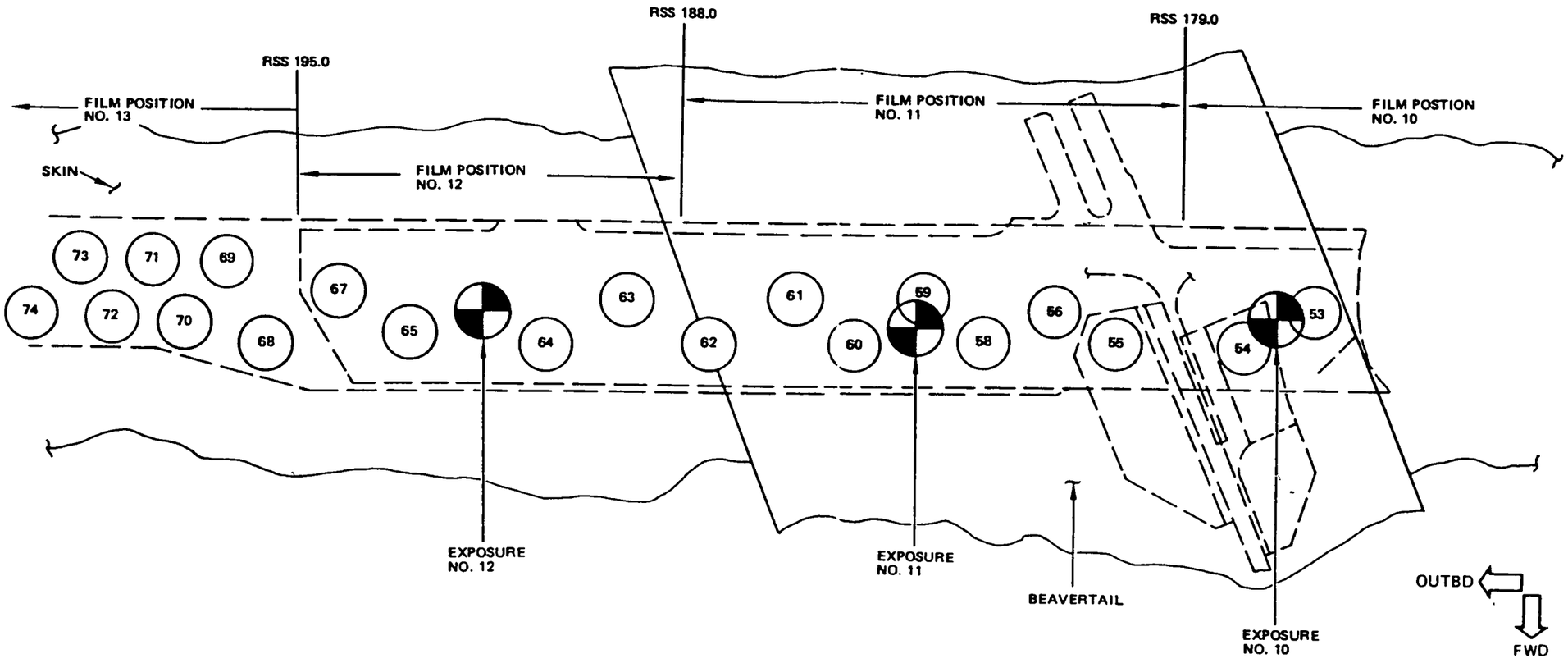


Wing Lower Rear Spar Horizontal Flange
Figure 21 (Sheet 10)



FASTENER HOLES IN HORIZONTAL FLANGE OF WING LOWER REAR SPAR CHORD TO BE INSPECTED
DETAIL II (CONT)

Wing Lower Rear Spar Horizontal Flange
Figure 21 (Sheet 11)



NOTES

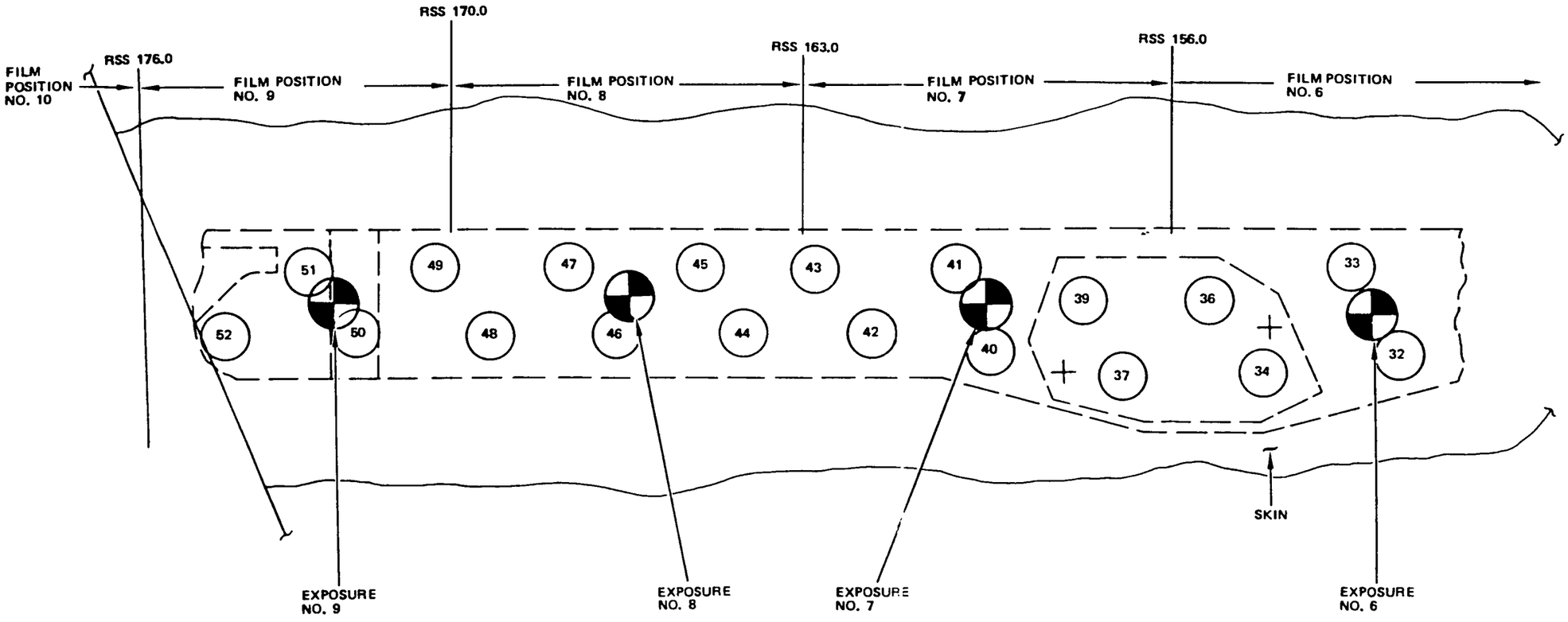
- USE TABLE I FOR X-RAY PARAMETERS
- LEFT WING SHOWN, RIGHT WING SIMILAR
- VIEW LOOKING UP

(70) FASTENER HOLES TO BE INSPECTED

X-RAY GENERATOR LOCATION

FASTENER HOLES IN HORIZONTAL FLANGE OF WING LOWER REAR SPAR CHORD TO BE INSPECTED
DETAIL II (CONT)

Wing Lower Rear Spar Horizontal Flange
Figure 21 (Sheet 12)



NOTES

- USE TABLE I FOR X-RAY PARAMETERS
- LEFT WING SHOWN, RIGHT WING SIMILAR
- VIEW LOOKING UP

(52) FASTENER LOCATION TO BE INSPECTED

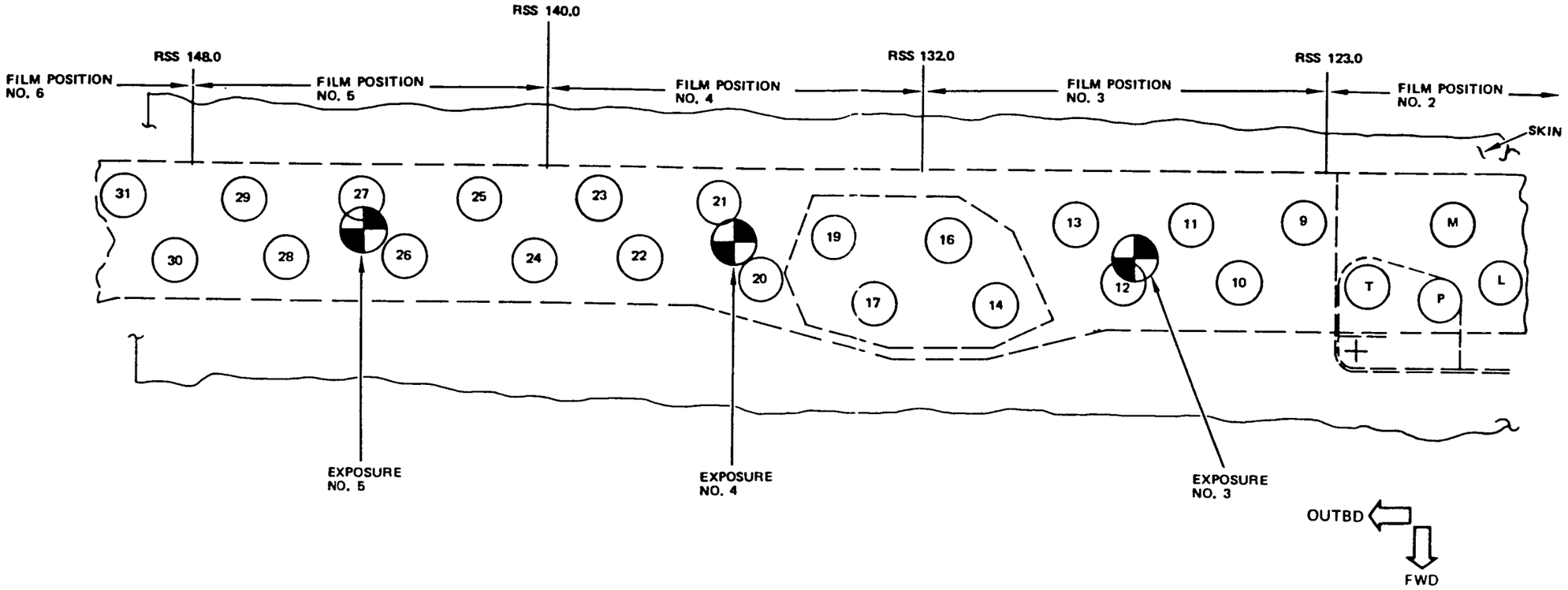
X-RAY GENERATOR LOCATION

OUTBD

FWD

FASTENER HOLES IN HORIZONTAL FLANGE OF WING LOWER REAR SPAR CHORD TO BE INSPECTED
DETAIL II (CONT)

Wing Lower Rear Spar Horizontal Flange
Figure 21 (Sheet 13)



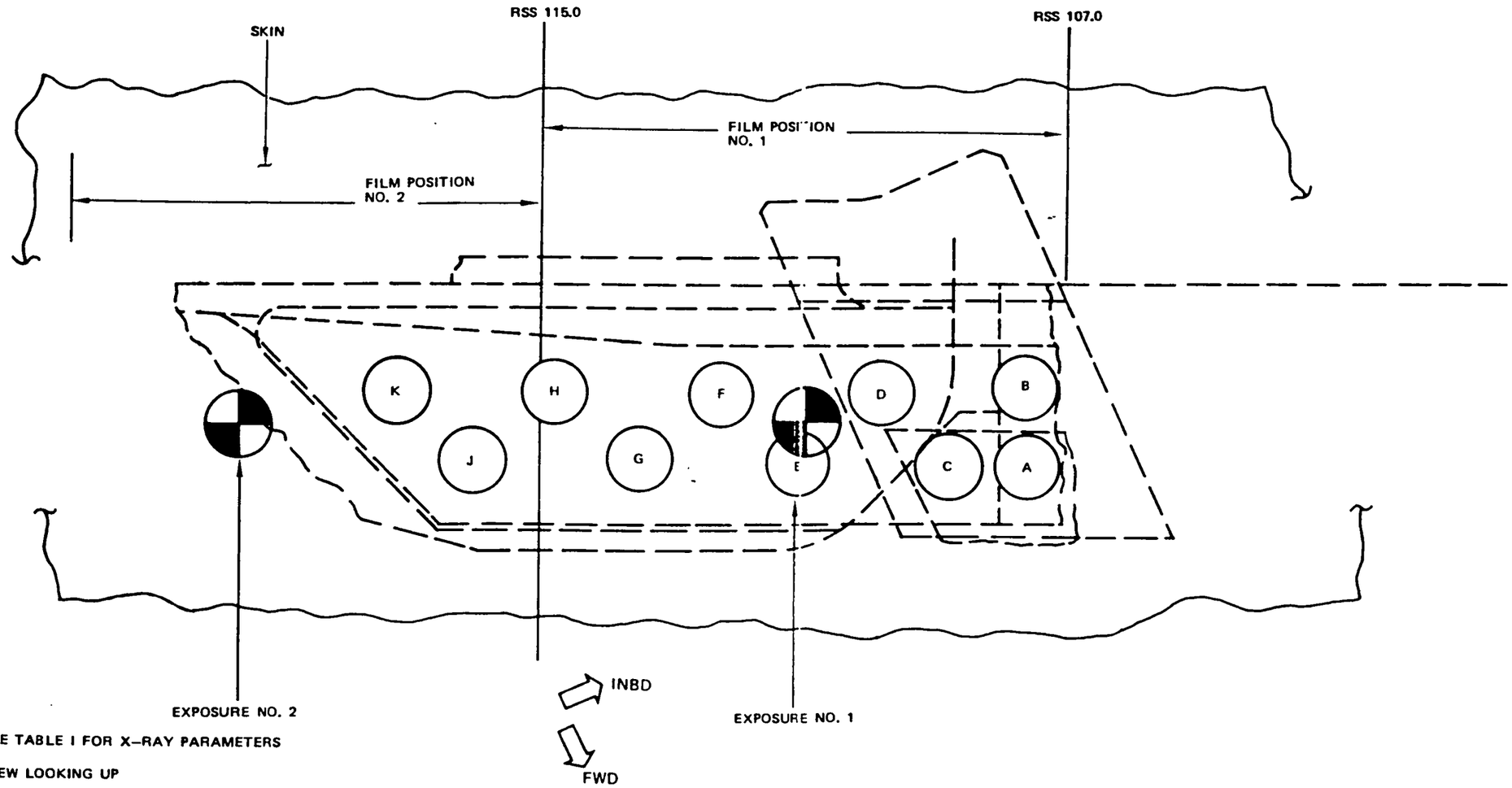
NOTES

- USE TABLE I FOR X-RAY PARAMETERS
- LEFT WING SHOWN, RIGHT WING SIMILAR
- VIEW LOOKING UP

(30) FASTENER HOLE TO BE INSPECTED

X-RAY GENERATOR LOCATION

FASTENER HOLES IN HORIZONTAL FLANGE OF WING LOWER REAR SPAR CHORD TO BE INSPECTED
DETAIL II (CONT)



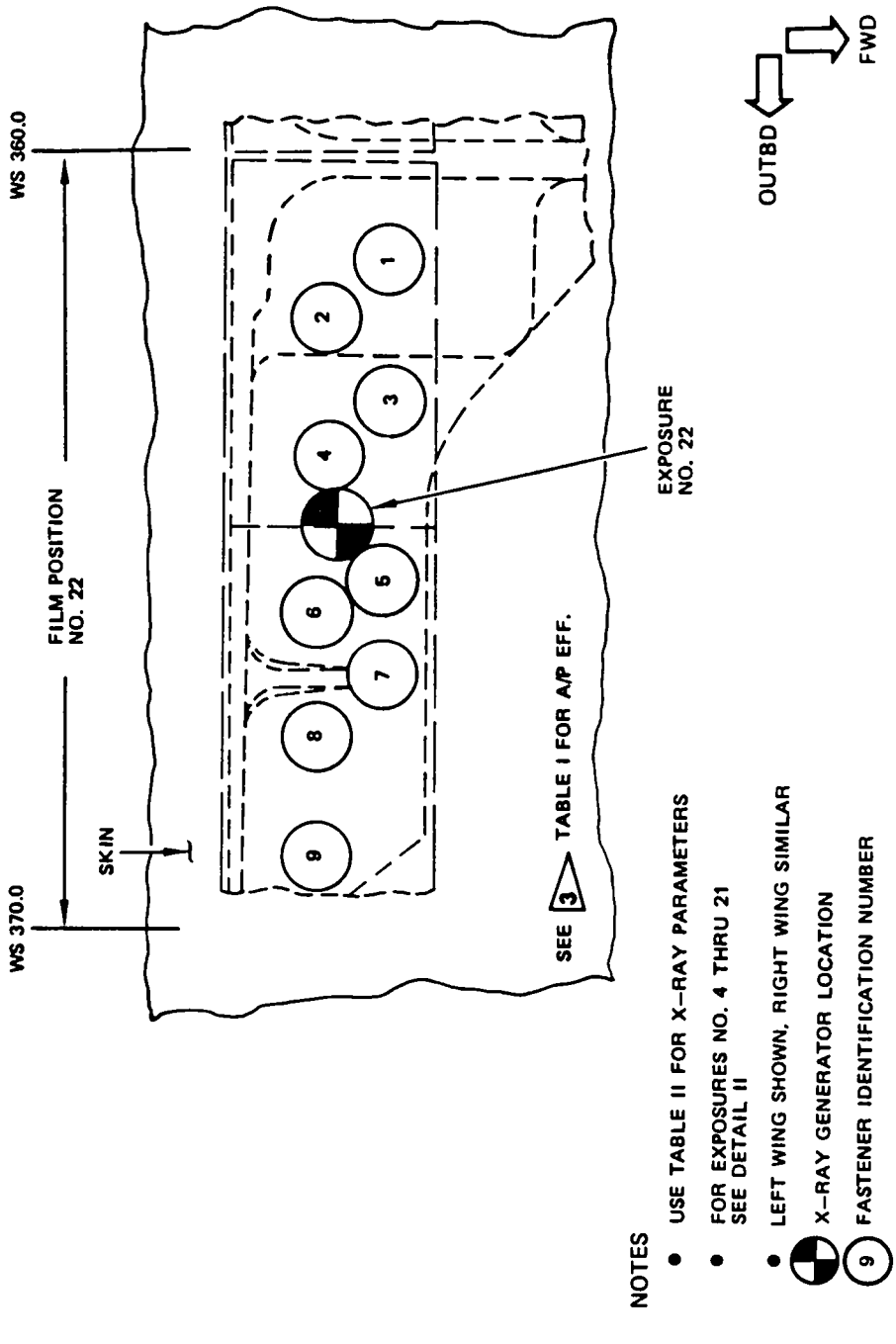
NOTES

- USE TABLE I FOR X-RAY PARAMETERS
- VIEW LOOKING UP
- LEFT WING SHOWN, RIGHT WING SIMILAR
- (K) FASTENER HOLE TO BE INSPECTED
- X-RAY GENERATOR LOCATION

FASTENER HOLES IN HORIZONTAL FLANGE OF WING LOWER REAR SPAR CHORD TO BE INSPECTED

DETAIL II (CONT)

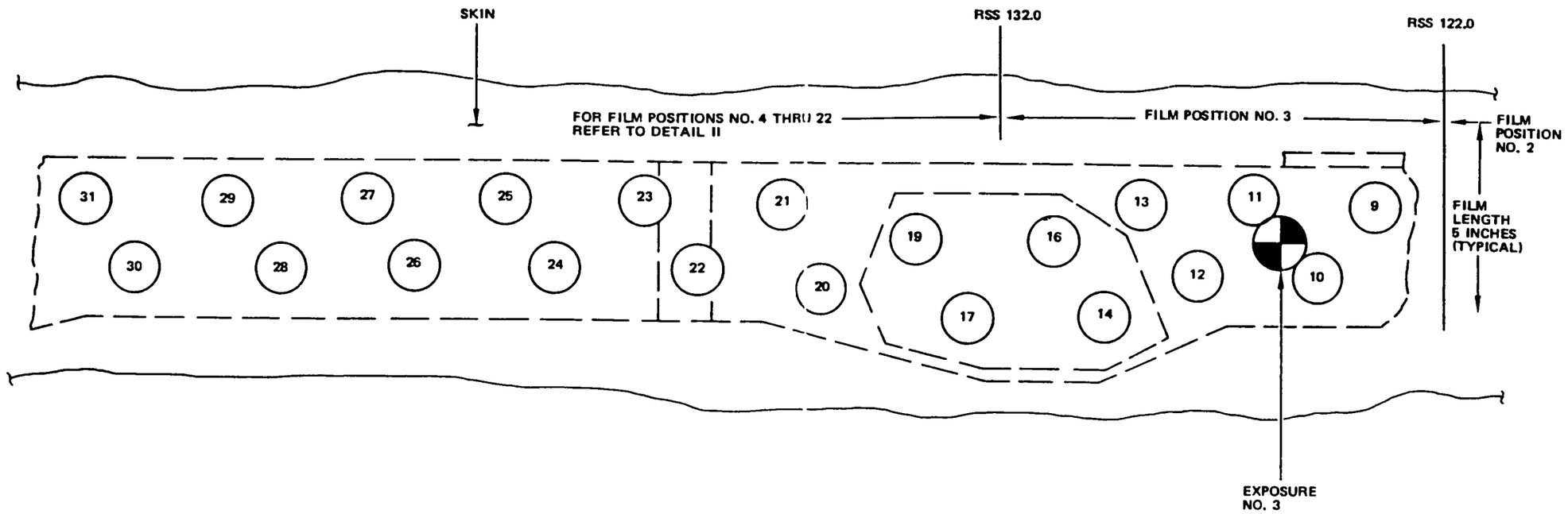
Wing Lower Rear Spar Horizontal Flange
Figure 21 (Sheet 15)



FASTENER HOLES IN HORIZONTAL FLANGE OF WING LOWER REAR SPAR CHORD TO BE INSPECTED

DETAIL III

Wing Lower Rear Spar Horizontal Flange
Figure 21 (Sheet 16)



NOTES

- USE TABLE II FOR X-RAY PARAMETERS
- FOR EXPOSURES NO. 4 THRU 21, SEE DETAIL II
- LEFT WING SHOWN, RIGHT WING SIMILAR

(31) FASTENER TO BE INSPECTED

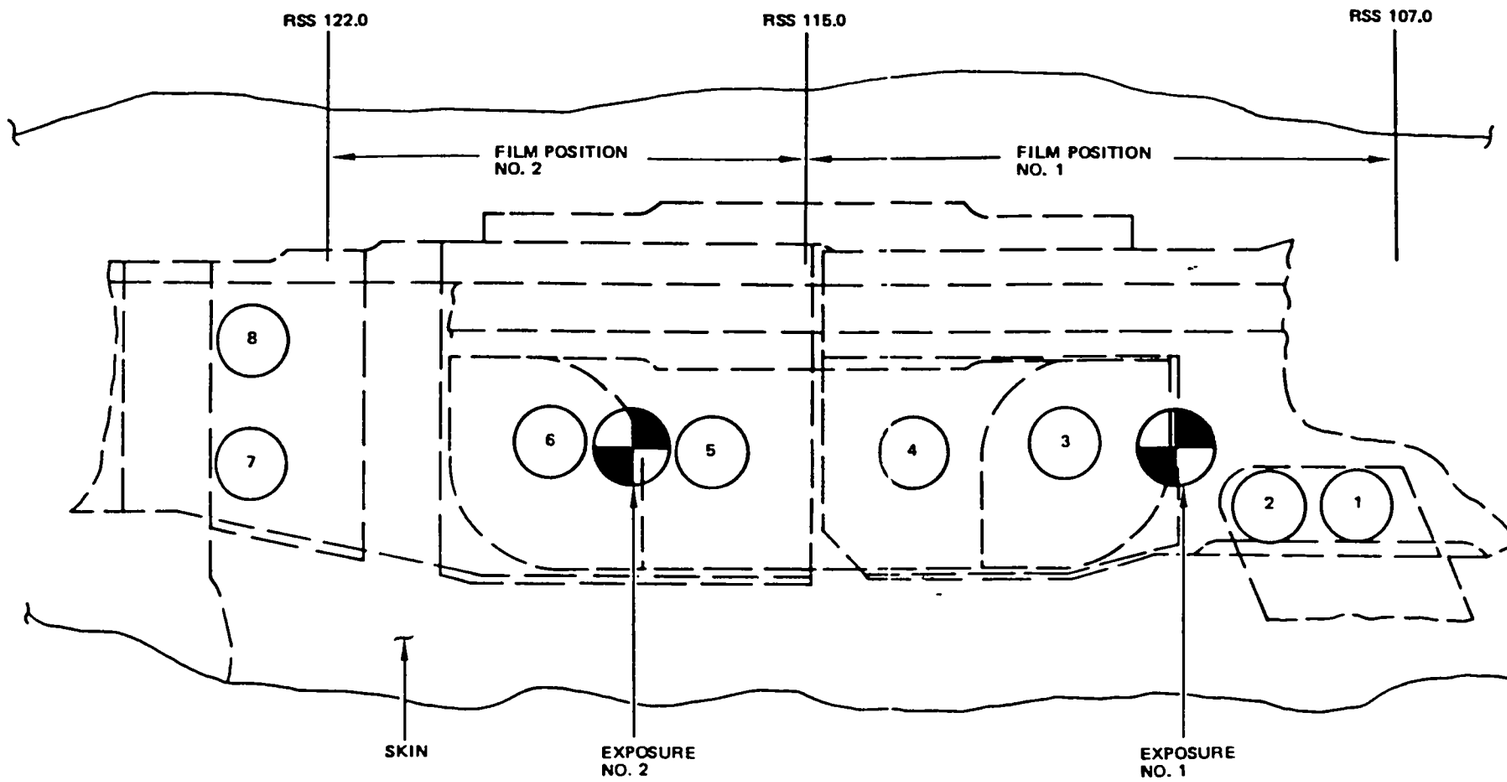
X-RAY GENERATOR LOCATION

OUTBD

FWD

FASTENER HOLES IN HORIZONTAL FLANGE OF WING LOWER REAR SPAR TO BE INSPECTED
DETAIL III (CONT)

Wing Lower Rear Spar Horizontal Flange
Figure 21 (Sheet 17)



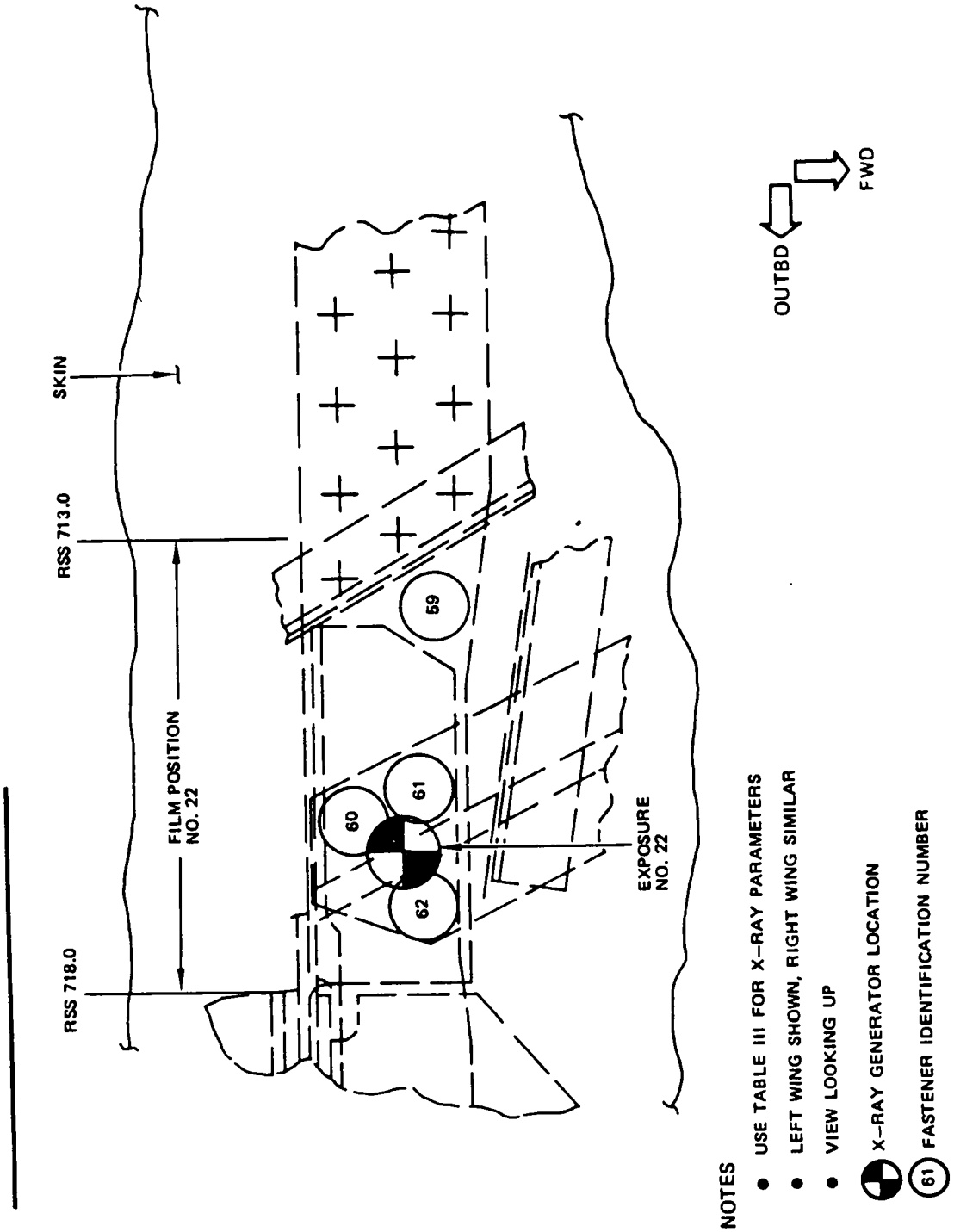
NOTES

- USE TABLE II FOR X-RAY PARAMETERS
- LEFT WING SHOWN, RIGHT WING SIMILAR
- VIEW LOOKING UP
- (8) FASTENER TO BE INSPECTED
- X-RAY GENERATOR LOCATION

OUTBD
FWD

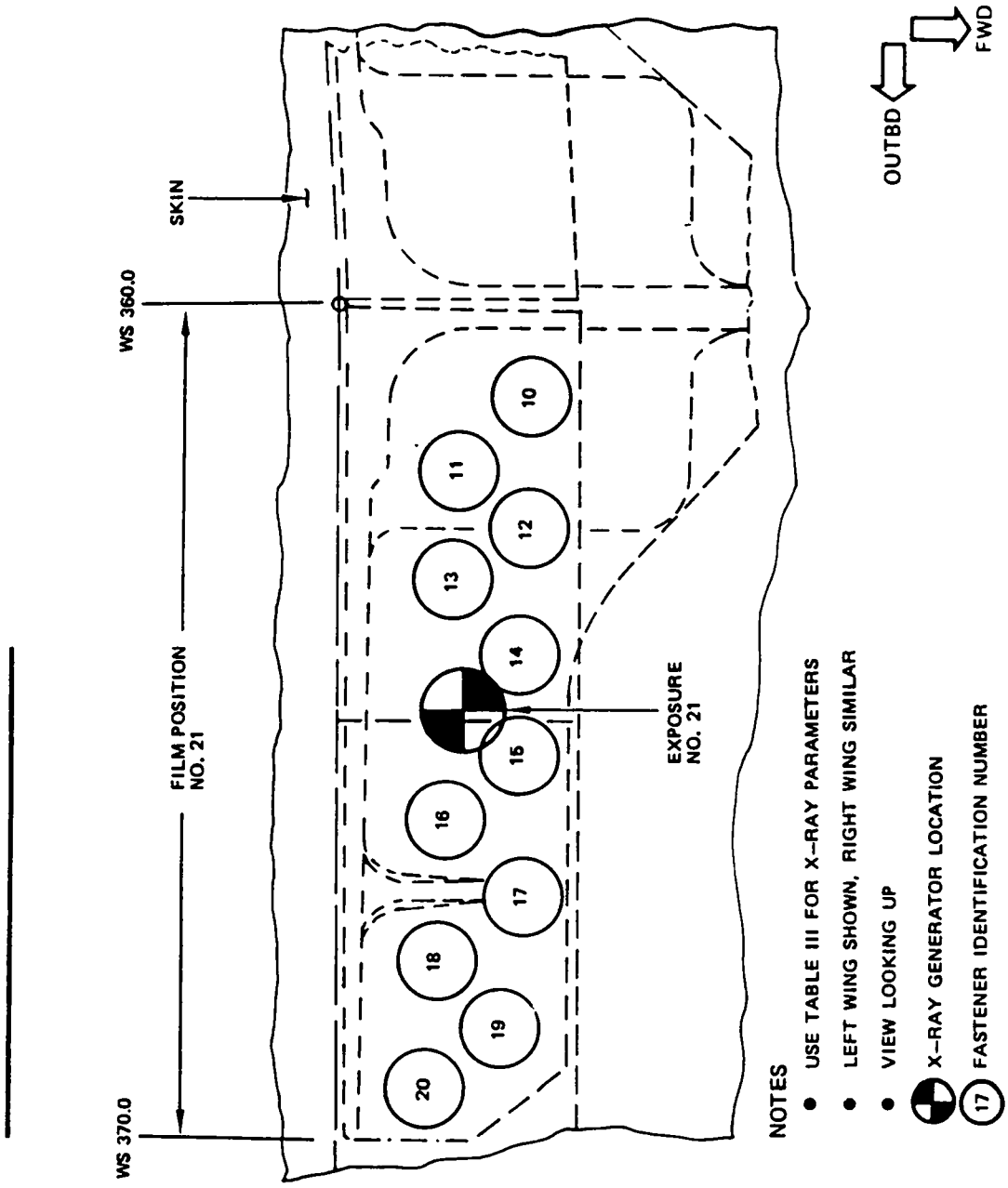
FASTENER HOLES IN HORIZONTAL FLANGE OF WING LOWER REAR SPAR TO BE INSPECTED
DETAIL III (CONT)

Wing Lower Rear Spar Horizontal Flange
Figure 21 (Sheet 18)

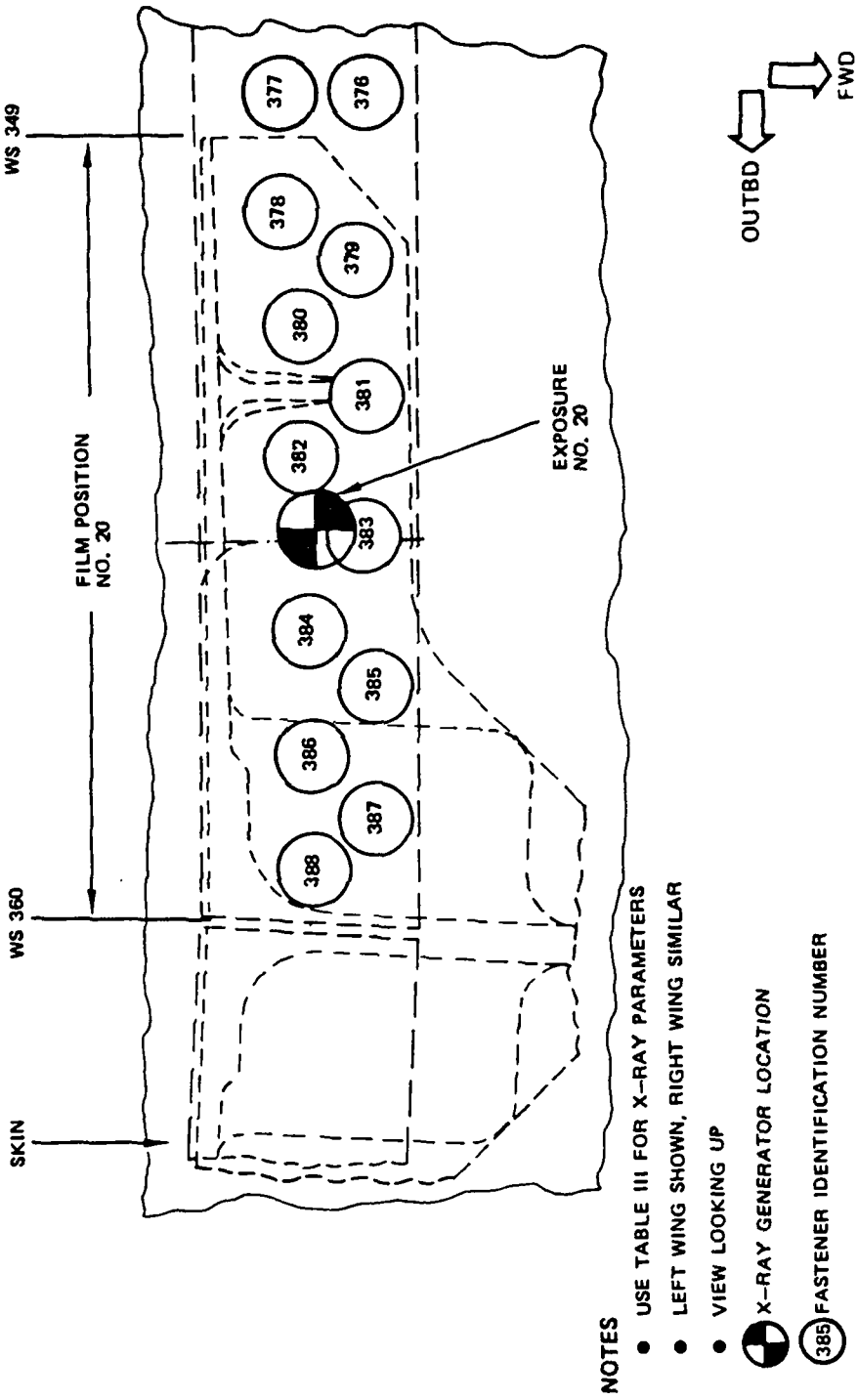


FASTENER HOLES IN HORIZONTAL FLANGE OF WING
LOWER REAR SPAR CHORD TO BE INSPECTED
DETAIL IV

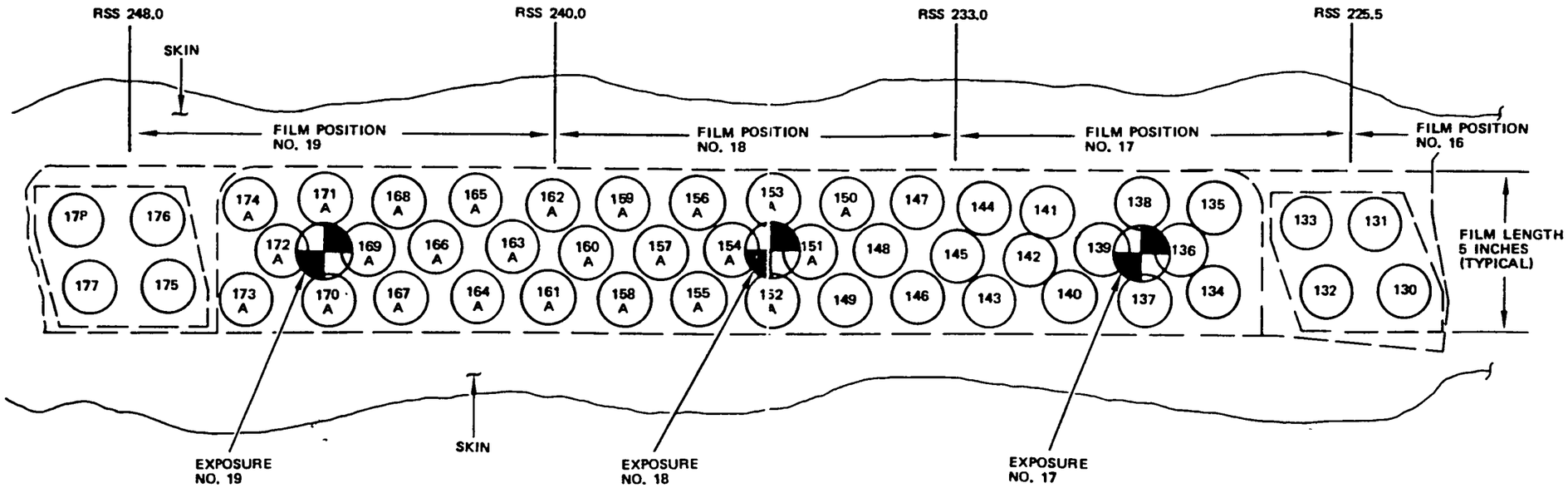
Wing Lower Rear Spar Horizontal Flange
Figure 21 (Sheet 19)



Wing Lower Rear Spar Horizontal Flange
Figure 21 (Sheet 20)



Wing Lower Rear Spar Horizontal Flange
Figure 21 (Sheet 21)



NOTES

- USE TABLE III FOR X-RAY PARAMETERS
- VIEW LOOKING UP
- LEFT WING SHOWN, RIGHT WING SIMILAR

X-RAY GENERATOR POSITION

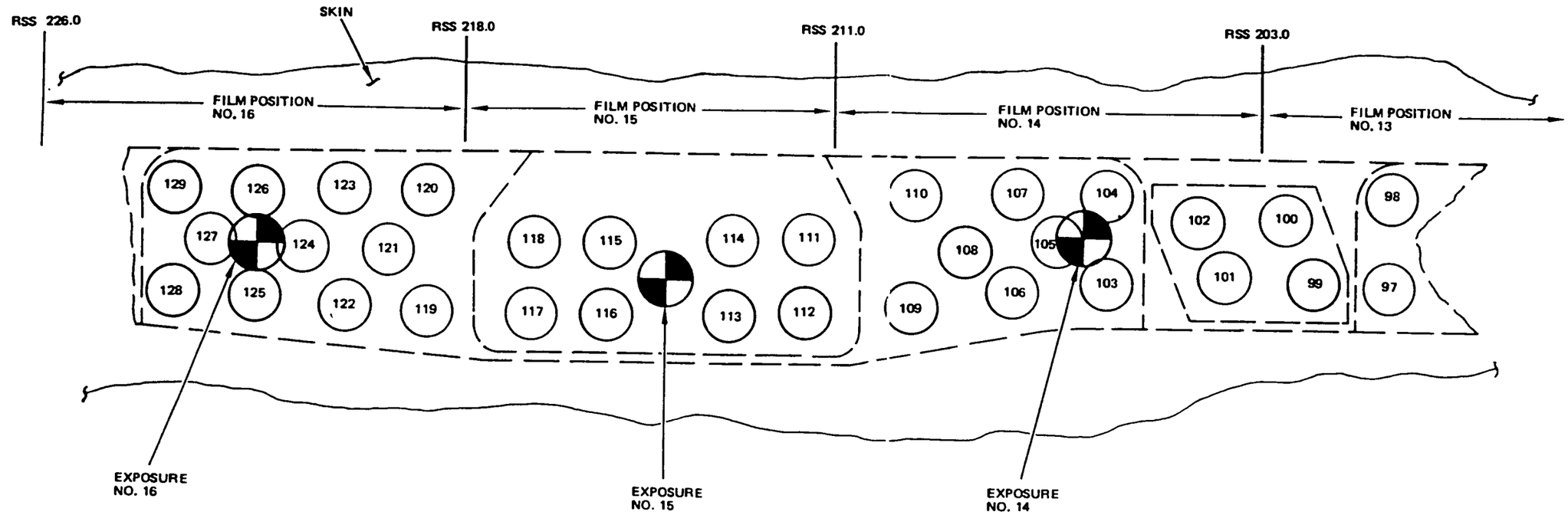
173 A — FASTENER IDENTIFICATION NUMBER / FASTENER CODE

OUTBD

FWD

FASTENER HOLES IN HOFIZONTAL FLANGE OF WING LOWER REAR SPAR CHORD TO BE INSPECTED
DETAIL IV (CONT)

Wing Lower Rear Spar Horizontal Flange
Figure 21 (Sheet 22)



NOTES
- USE TABLE III FOR X-RAY PARAMETERS
- VIEW LOOKING UP
- LEFT WING SHOWN, RIGHT WING SIMILAR

X-RAY GENERATOR LOCATION

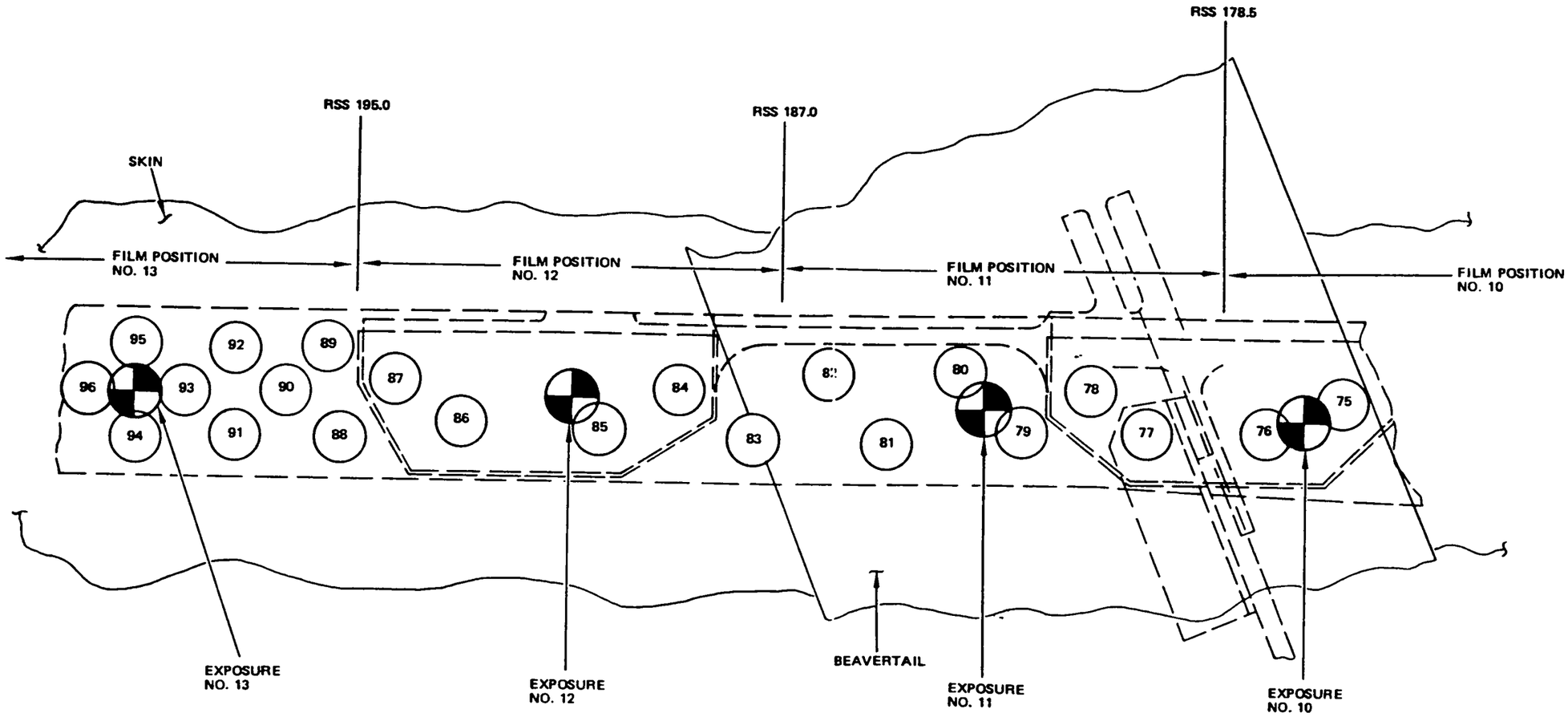
(97) FASTENER IDENTIFICATION NUMBER

OUTBD

FWD

FASTENER HOLES IN HORIZONTAL FLANGE OF WING LOWER REAR SPAR CHORD TO BE INSPECTED
DETAIL IV (CONT)

Wing Lower Rear Spar Horizontal Flange
Figure 21 (Sheet 23)



NOTES
- USE TABLE III FOR X–RAY PARAMETERS
- VIEW LOOKING UP
- LEFT WING SHOWN, RIGHT WING SIMILAR

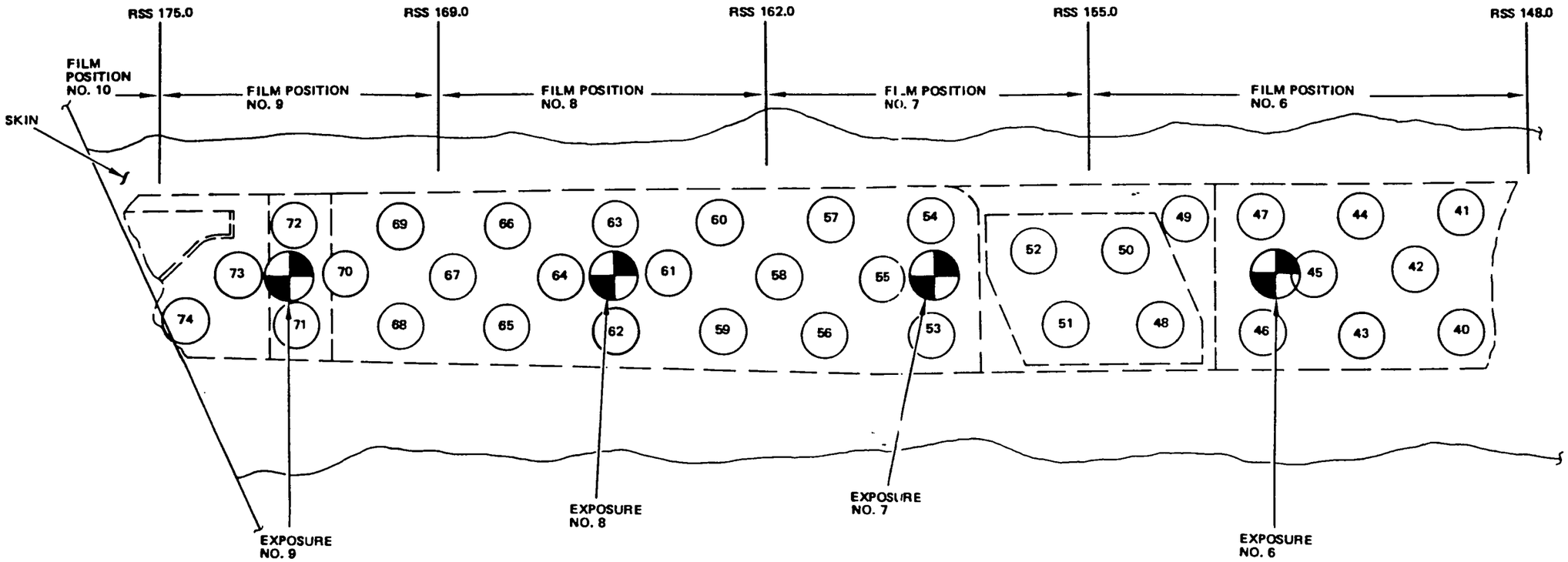
X–RAY GENERATOR LOCATION

(77) FASTENER IDENTIFICATION NUMBER

FASTENER HOLES IN HORIZONTAL FLANGE OF WING LOWER REAR SPAR CHORD TO BE INSPECTED
DETAIL IV (CONT)

OUTBD
FWD

Wing Lower Rear Spar Horizontal Flange
Figure 21 (Sheet 24)



NOTES

- USE TABLE III FOR X-RAY PARAMETERS
- LEFT WING SHOWN' RIGHT WING SIMILAR
- VIEW LOOKING UP

X-RAY GENERATOR LOCATION

(66) FASTENER IDENTIFICATION NUMBER

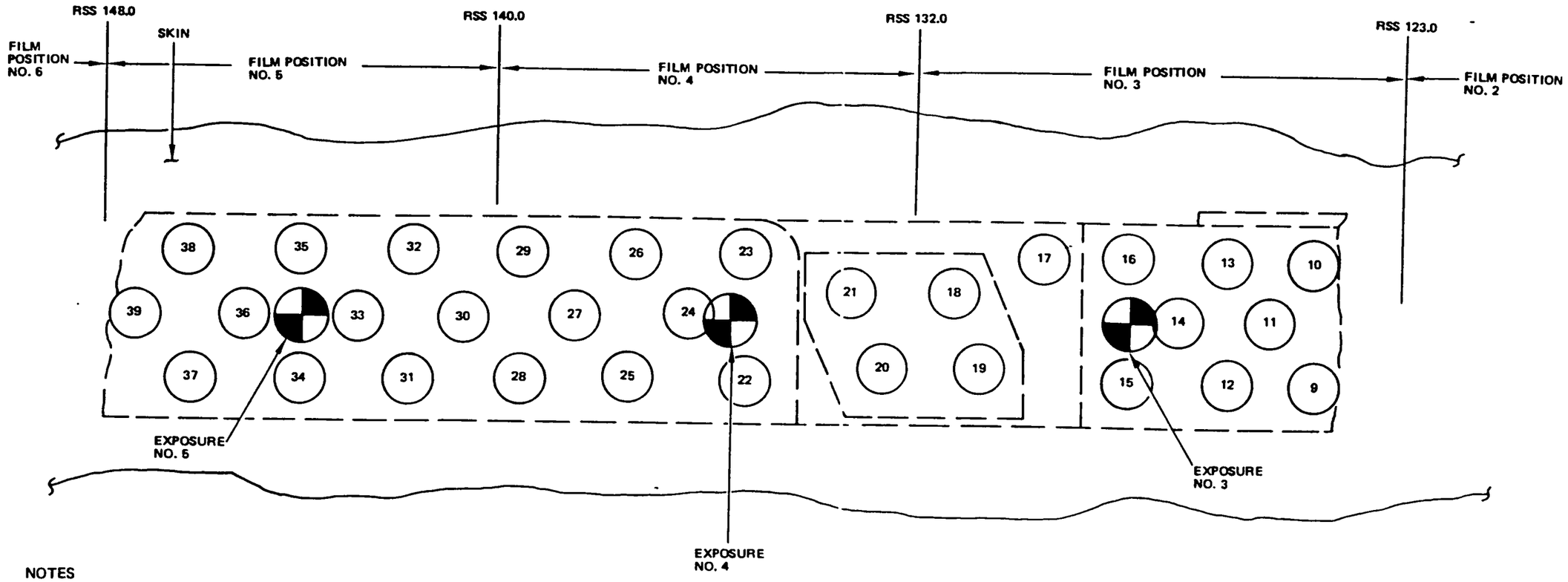
OUTBD

FWD

FASTENER HOLES IN HORIZONTAL FLANGE OF WING LOWER REAR SPAR CHORD TO BE INSPECTED

DETAIL IV (CONT)

Wing Lower Rear Spar Horizontal Flange
Figure 21 (Sheet 25)



NOTES

- USE TABLE III FOR X-RAY PARAMETERS
- VIEW LOOKING UP
- LEFT WING SHOWN, RIGHT WING SIMILAR

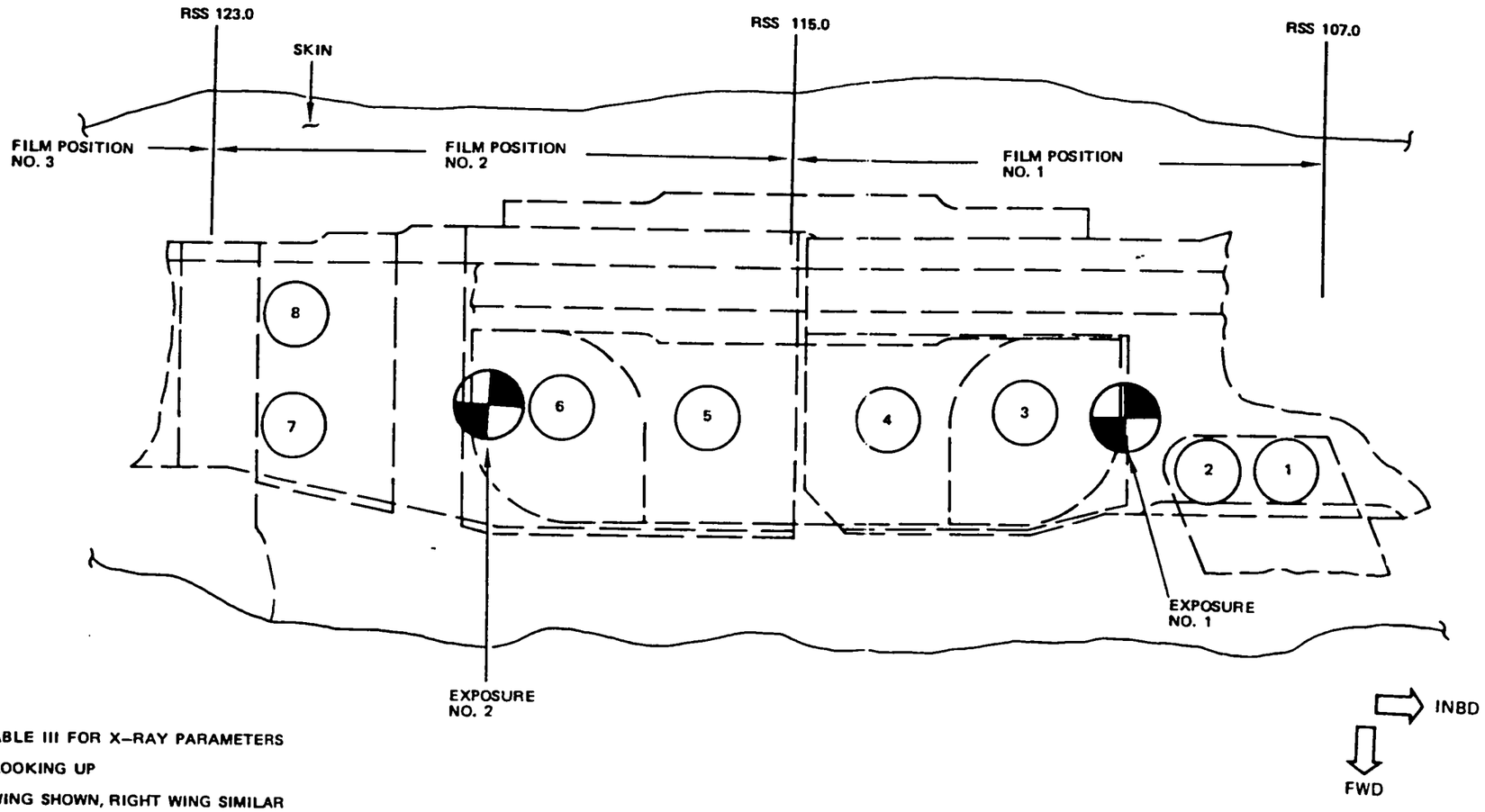
X-RAY GENERATOR LOCATION

(34) FASTENER IDENTIFICATION NUMBER

FASTENER HOLES IN HORIZONTAL FLANGE OF WING LOWER REAR SPAR CHORD TO BE INSPECTED
DETAIL IV (CONT)

OUTBD
FWD

Wing Lower Rear Spar Horizontal Flange
Figure 21 (Sheet 26)



NOTES

- USE TABLE III FOR X-RAY PARAMETERS
- VIEW LOOKING UP
- LEFT WING SHOWN, RIGHT WING SIMILAR

(5) FASTENER IDENTIFICATION NUMBER

FASTENER HOLES IN HORIZONTAL FLANGE OF WING LOWER REAR SPAR TO BE INSPECTED
DETAIL IV

Wing Lower Rear Spar Horizontal Flange
Figure 21 (Sheet 27)

PART 2 - X-RAY

WINGS - MAIN FRAME

1. Purpose

   A. To detect hole cracks in the horizontal flange of wing upper rear spar chord at selected fastener holes. See Detail II.

   B. This inspection requires wing tank entry. Fuel tank must be drained and purged to a "health safe" condition (as defined by Chapter 28 of the Maintenance Manual) before entering.

2. Equipment

   A. The equipment used to develop this technique is as follows:

      (1) Sperry, portable 160 KV, side emission X-ray generator

      (2) ASTM Class I and II ready pack and lead pack film

      (3) Lead screen 0.03 inch or thicker to be placed behind film.

3. Preparation for Inspection

   A. Drain and purge the appropriate fuel tanks to permit tank entry for film placement along the horizontal flange of the upper rear spar chord.

4. Inspection Procedure

   A. Exposure No. 1 thru 28

      WARNING: PRECAUTIONS AND SAFETY PROCEDURES CONTAINED IN CHAPTER 28 OF THE MAINTENANCE MANUAL MUST BE FOLLOWED BY PERSONNEL ENTERING ANY TANK THAT HAS CONTAINED FUEL. POSSIBILITY OF EXPLOSION AND TOXIC DANGER EXISTS IN VICINITY OF FUEL TANKS WHICH HAVE CONTAINED FUEL.

      (1) Identify ASTM class and size from Table I.

Horizontal Flange of Wing Upper Rear Spar Chord
Figure 22 (Sheet 1)

(2) Place film inside of wing on upper rear spar chord horizontal flange to provide for radiographic coverage around fasteners identified in Detail II.

NOTE: (1) Allow approximately one inch of film overlap between exposures.

(2) Trim film as necessary to facilitate film placement for maximum coverage of chord flange.

(3) Place lead screens behind film to prevent excessive film fogging from backscattering.

(4) Position the X-ray generator so that the X-ray beam is perpendicular to the upper wing skin and centered over fasteners to be inspected. See Detail II, Exposure No. 1 and Detail I.

(5) Make the radiographic exposure using the Table I generator settings as a guide.

B. For Exposure No. 2 thru 28 repeat steps used for Exposure No. 1.

C. Review film with special attention given to the areas around the fastener locations noted in Detail II.

EXPOSURE	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE		KV	MAS
1	1	I [A], II	5X10	48	140	2140
2	2	I	5X10	48	120	1600
3	3	I, I [A]	5X10	48	100	1340
4	4	I, I [A]	5X10	48	100	1340
5	5	I, I [A]	5X10	48	100	1340
6	6	I, I [A]	5X10	48	100	1340
7	7	I, I [A]	5X10	48	100	1340
8	8	I, I [A]	5X10	48	100	1340
9	9	I, II [A]	5X10	48	160	1600
10	10	I, II [A]	5X10	48	160	2670
11	11	I, II [A]	5X10	48	160	2670
12	12	II, II [A]	5X10	48	160	1870

X-RAY PARAMETERS
TABLE I

Horizontal Flange of Wing Upper Rear Spar Chord
Figure 22 (Sheet 2)

EXPOSURE	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE		KV	MAS
13	13	I [A]	5X10	48	140	1870
14	14	I, I [A]	5X10	48	100	1340
15	15	I, I [A]	5X10	48	100	1340
16	16	I, I [A]	5X10	48	100	1340
17	17	I, I [A]	5X10	48	100	1340
18	18 [1]	I, II	5X10	48	100	1600
19	19 [2]	I, II	5X10	48	120	1340
20	20 [3]	I, I [A]	5X10	48	100	1340
21	21 [1]	I	5X10	48	120	1740
22	22 [2]	I	5X10	48	160	1600
23	23 [3]	I	5X10	48	100	1340
24	24 [1]	I, II	5X10	48	100	1600
25	25 [2]	I, II	5X10	48	100	1740
26	26 [3]	I, I [A]	5X10	48	100	1340
27	27	I	5X10	48	120	1470
28	28	I	5X10	48	120	1470

X-RAY PARAMETERS
TABLE I (CONT)

NOTES:

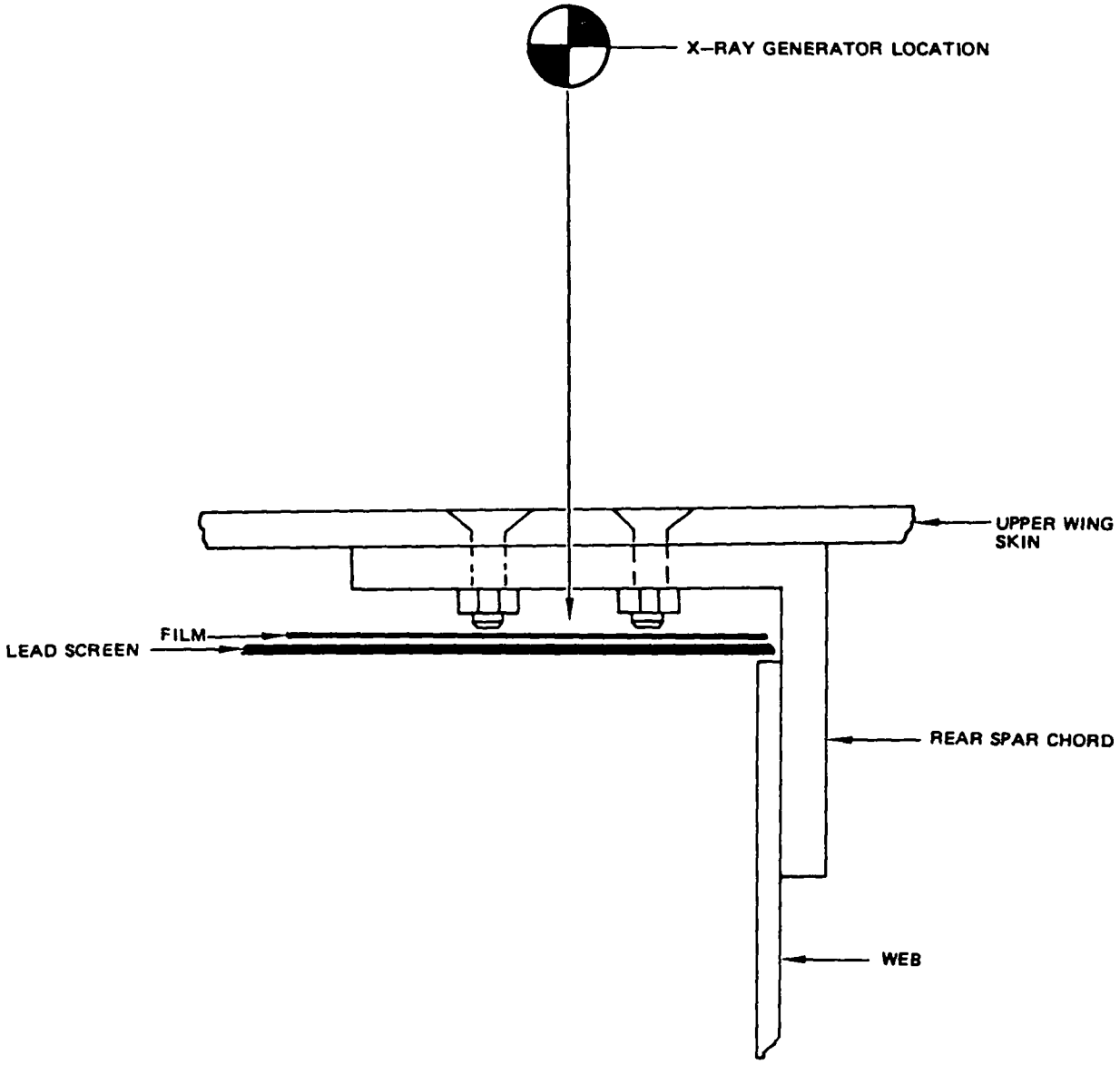
[1] FOR CUM LINE NUMBERS: 1 THRU 12, 14 THRU 19, 21 THRU 34, 36 THRU 57, 59, 60, 63, 64, 66, 67, 72, 77, 87, 96, 97, 102, 108 119, 140, 201, 227, 228, 229, 277, 286, 291, 294, 296, 299, 301, 306, 308, 309, 311 THRU 313, 315 THRU 318, 385, 388, 391 THRU 393, 395, 396, 420, 422, 426, 432

[2] FOR CUM LINE NUMBERS: 479, 486, 489 THRU 493, 506, 526, 530, 533, 535, 539, 558

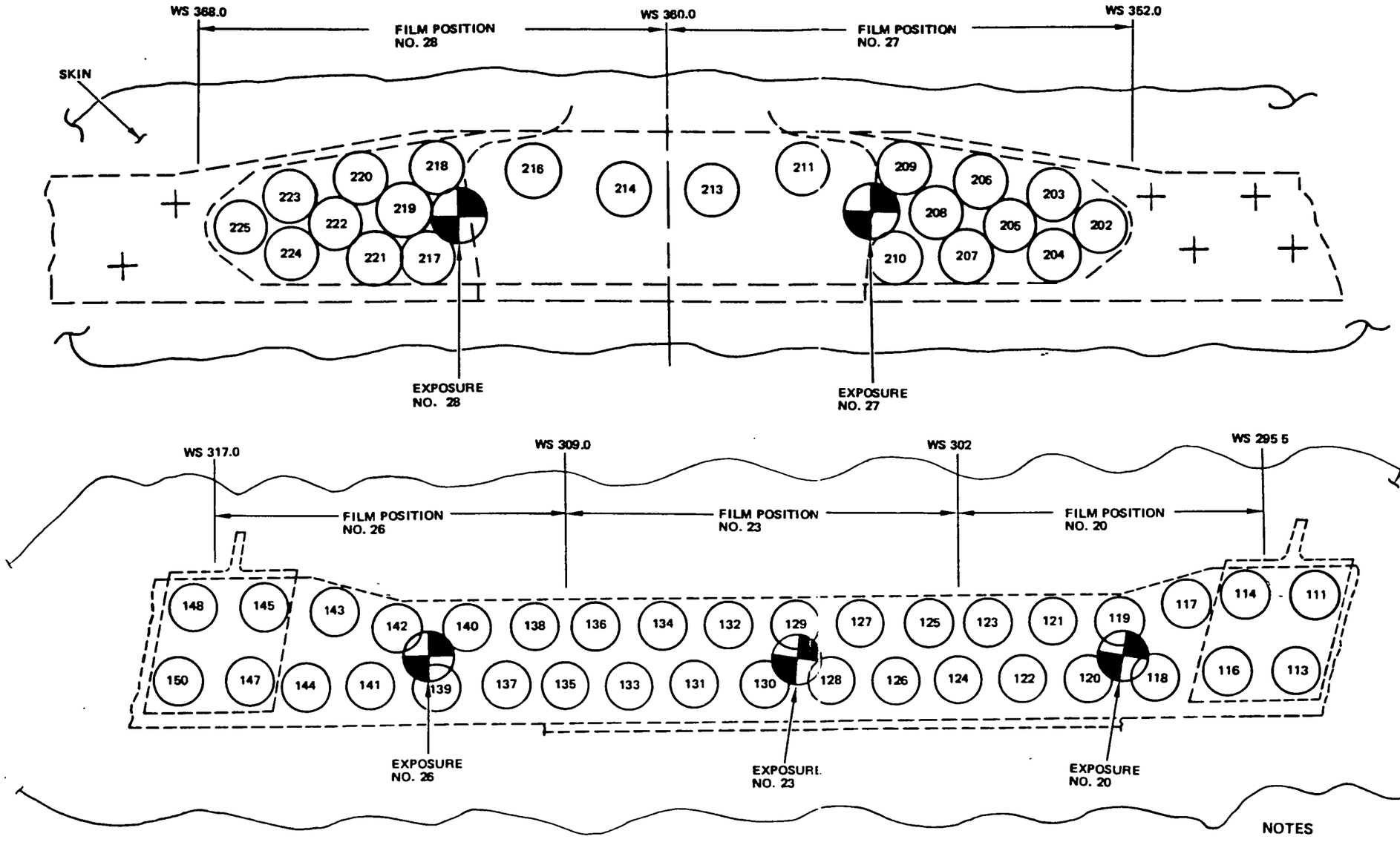
[3] FOR CUM LINE NUMBERS: 562, 564, 565, 567, 569, 571, 573, 575, 577, 579, 583, 586, 589, 591, 593, 595, 598, 600, 602, 604, 606, 622, 669, 680, 682, 771, 777, 787, 794, 801

[A] LEAD PACK FLIM

- ALL DIMENSIONS ARE IN INCHES



TYPICAL FILM AND GENERATOR ARRANGEMENT
DETAIL I

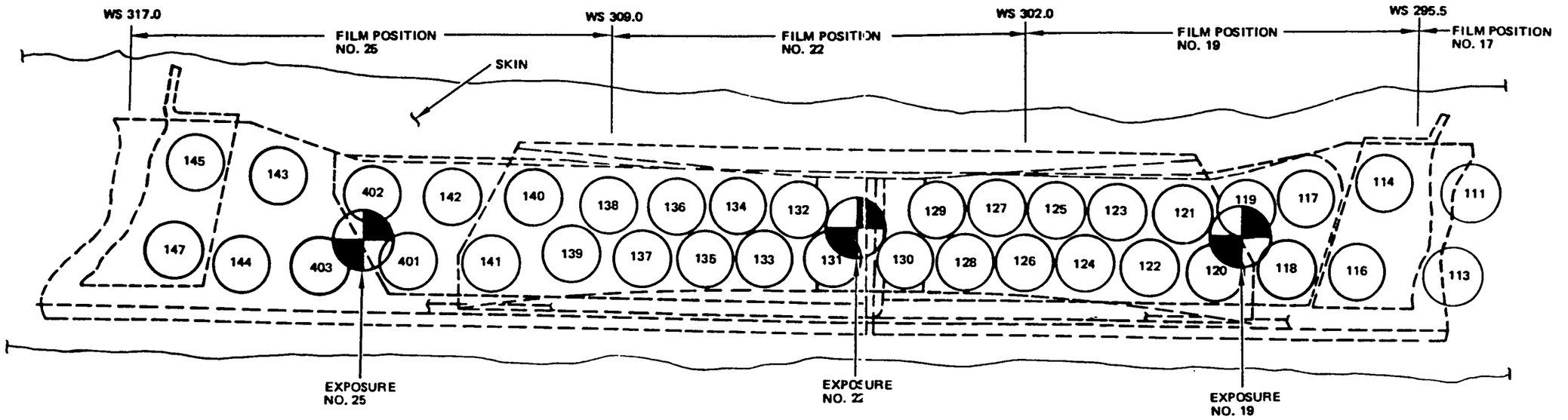


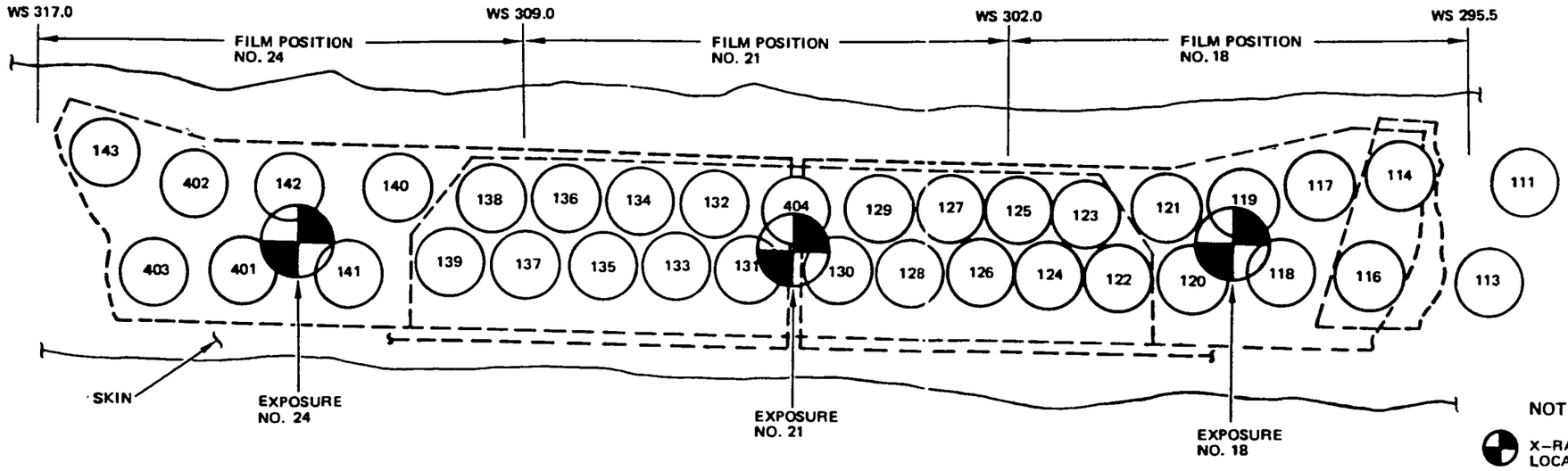
NOTES

X–RAY GENERATOR LOCATION

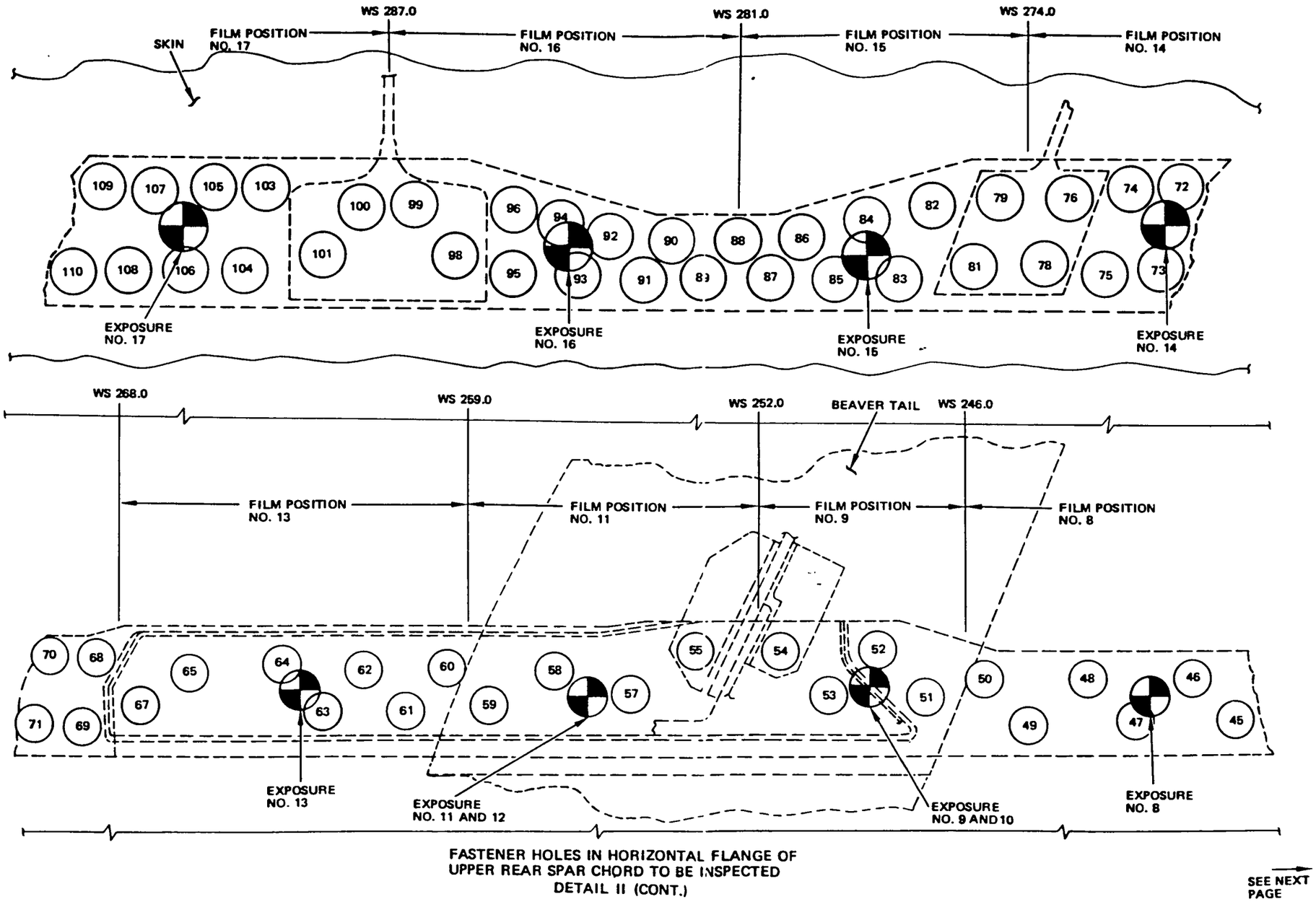
(131) FASTENER TO BE INSPECTED FASTENER NUMBER

FASTENER HOLES IN HORIZONTAL FLANGE OF UPPER REAR SPAR CHORD TO BE INSPECTED
DETAIL II (CONT)



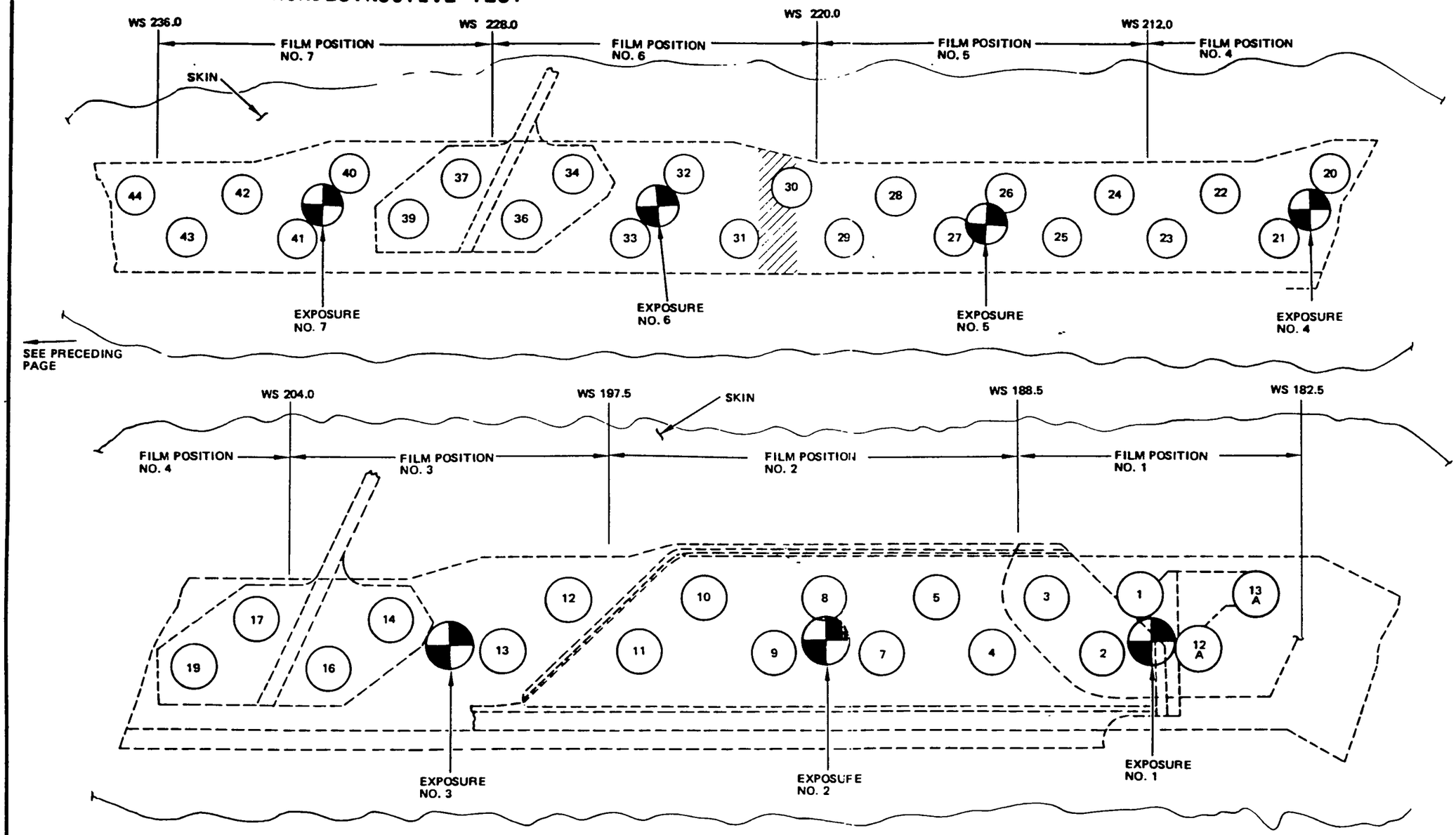


FASTENER HOLES IN HORIZONTAL FLANGE OF UPPER REAR SPAR CHORD TO BE INSPECTED
DETAIL II (CONT)



FASTENER HOLES IN HORIZONTAL FLANGE OF UPPER REAR SPAR CHORD TO BE INSPECTED
DETAIL II (CONT.)

SEE NEXT PAGE



FASTENER HOLES IN HORIZONTAL FLANGE OF UPPER REAR SPAR CHORD TO BE INSPECTED
DETAIL II (CONT)

PART 2 - X-RAY

WINGS - MAIN FRAME

1. Purpose

   A. To detect hole cracks in the horizontal flange of wing upper rear spar chord at selected fastener holes (see table I for effectivities of Details II and III.

   B. This inspection requires wing tank entry. Fuel tank must be drained and purged to a "health safe" condition (as defined by Chapter 28 of the Maintenance Manual) before entering.

2. Equipment

   A. The equipment used to develop this technique is as follows:

      (1) Sperry, portable 160 KV, side emission X-ray generator

      (2) ASTM CLASS I and CLASS II ready pack and lead pack film

      (3) Lead screen 0.03 inch or thicker to be placed behind film

3. Preparation for Inspection

   A. Drain and purge the appropriate fuel tanks to permit tank entry for film placement along the horizontal flange of the upper rear spar chord.

4. Inspection Procedure

   A. Exposure No. 1 thru 16 (Table I) or 1 thru 14 (Table II)

      WARNING: PRECAUTIONS AND SAFETY PROCEDURES CONTAINED IN CHAPTER 28 OF THE MAINTENANCE MANUAL MUST BE FOLLOWED BY PERSONNEL ENTERING ANY TANK THAT HAS CONTAINED FUEL. POSSIBILITY OF EXPLOSION AND TOXIC DANGER EXISTS IN VICINITY OF FUEL TANKS WHICH HAVE CONTAINED FUEL.

      (1) Identify film type and size from Tables II or III depending on airplane effectivity.

Wing Upper Rear Spar Chord - Horizontal Flange
Figure 23 (Sheet 1)

(2) Place film on inside of wing against upper rear spar chord horizontal flange as shown in Detail I to provide for radiographic coverage around fasteners identified in Details II or III.

(3) Allow approximately 1 inch of film overlap between exposures.

(4) Trim film as necessry to facilitate film placement for maximum coverage of chord flange.

(5) Place lead screen behind film to prevent excessive film fogging from backscatter. See Detail I.

(6) Position the X-ray generator so that the X-ray beam is perpendicular to the upper wing skin and centered over fasteners to be inspected. See Detail I.

(7) Make the radiographic exposure using the Table II or Table III generator settings as a guide. Film density in the area to be inspected should be between 2.0 and 3.0

B. Review the film with special attention given to the area around fastener locations noted in Details II and III.

A/P EFFECTIVITY	INSPECTION AREA DETAIL NOS.
1	II
2	III

EFFECTIVITY TABLE
TABLE I

NOTES

1 CUM LINE NUMBERS
581, 597, 615, 621, 624

2 FOR ALL 720 AIRPLANES NOT LISTED IN 1

Wing Upper Rear Spar Chord - Horizontal Flange
Figure 23 (Sheet 2)

EXPOSURE NUMBER	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE		KV	MAS
1	1	II and I [A]	5 x 10	48	120	1060
2	2	I and II [A]	5 x 10	48	100	1600
3	3	I and I [A]	5 x 10	48	100	1870
4	4	I [A]	5 x 10	48	100	2130
5	5	I	5 x 10	48	120	1330
6	6	I [A]	5 x 10	48	100	1600
7	7	I [A] and II	5 x 10	48	140	1600
8	8	I [A] and II	5 x 10	48	140	2130
9	9	I and II	5 x 10	48	120	1070
10	10	I [A] and II	5 x 10	48	120	1070
11	11	I and I [A]	5 x 10	48	120	1070
12	12	I and I [A]	5 x 10	48	100	2130
13	13	I and I [A]	5 x 10	48	120	1070
14	14	I	5 x 10	48	120	1330
15	15	I	5 x 10	48	100	1330
16	16	I	5 x 10	48	120	2130

X-Ray Parameters
Table II

NOTES:

- ALL dimensions are in inches
- A satisfactory radiograph may be obtained without the use of lead screens by making a separate exposure using the same film class and increasing the MAS value given in the table by a factor of 1.7.

[A] Lead pack

- For effectivity see Table I [1]

Wing Upper Rear Spar Chord - Horizontal Flange
Figure 23 (Sheet 3)

EXPOSURE NUMBER	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE		KV	MAS
1	1	I [A]	5 x 10	48	140	1600
2	2	I, II, and II [A]	5 x 10	48	100	1870
3	3	I	5 x 10	48	100	1600
4	4	I	5 x 10	48	100	1600
5	5	I	5 x 10	48	120	1600
6	6	I	5 x 10	48	100	1600
7	7	I [A] and II [A]	5 x 10	48	140	1600
8	8	I [A] and II [A]	5 x 10	48	140	1600
9	9	I and II [A]	5 x 10	48	100	1870
10	10	I [A] , II, and II [A]	5 x 10	48	100	1600
11	11	I [A] and II	5 x 10	48	100	1350
12	12	I [A] and II	5 x 10	48	100	1350
13	13	I [A]	5 x 10	48	100	1350
14	14	II	5 x 10	48	100	1600

X-Ray Parameters
Table III

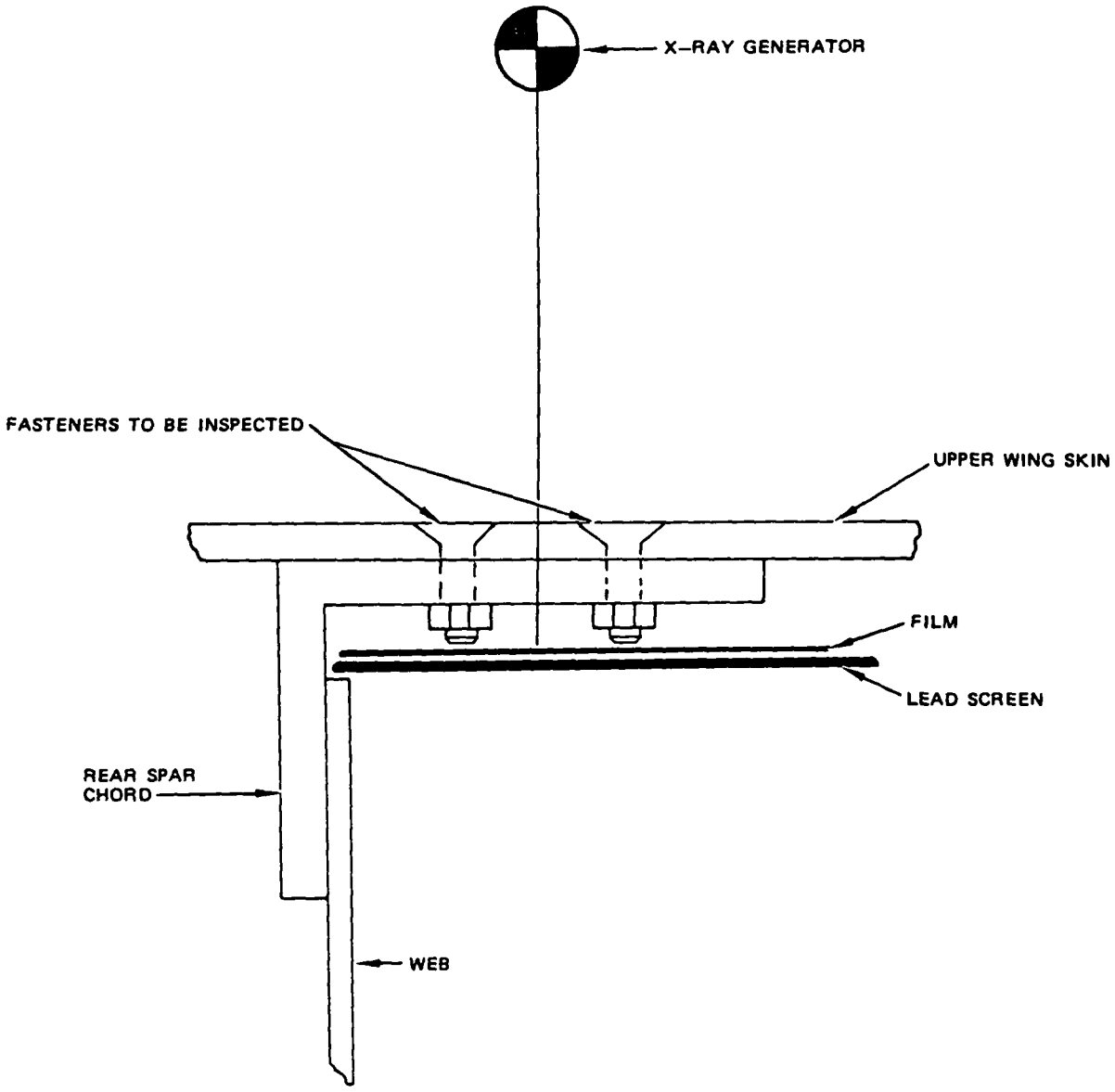
NOTES:

- All dimensions are in inches
- A satisfactory radiograph may be obtained without the use of lead screens by making a separate exposure using the same film class and increasing the MAS value given in the table by a factor of 1.7.

[A] Lead pack

- For effectivity see Table I [2]

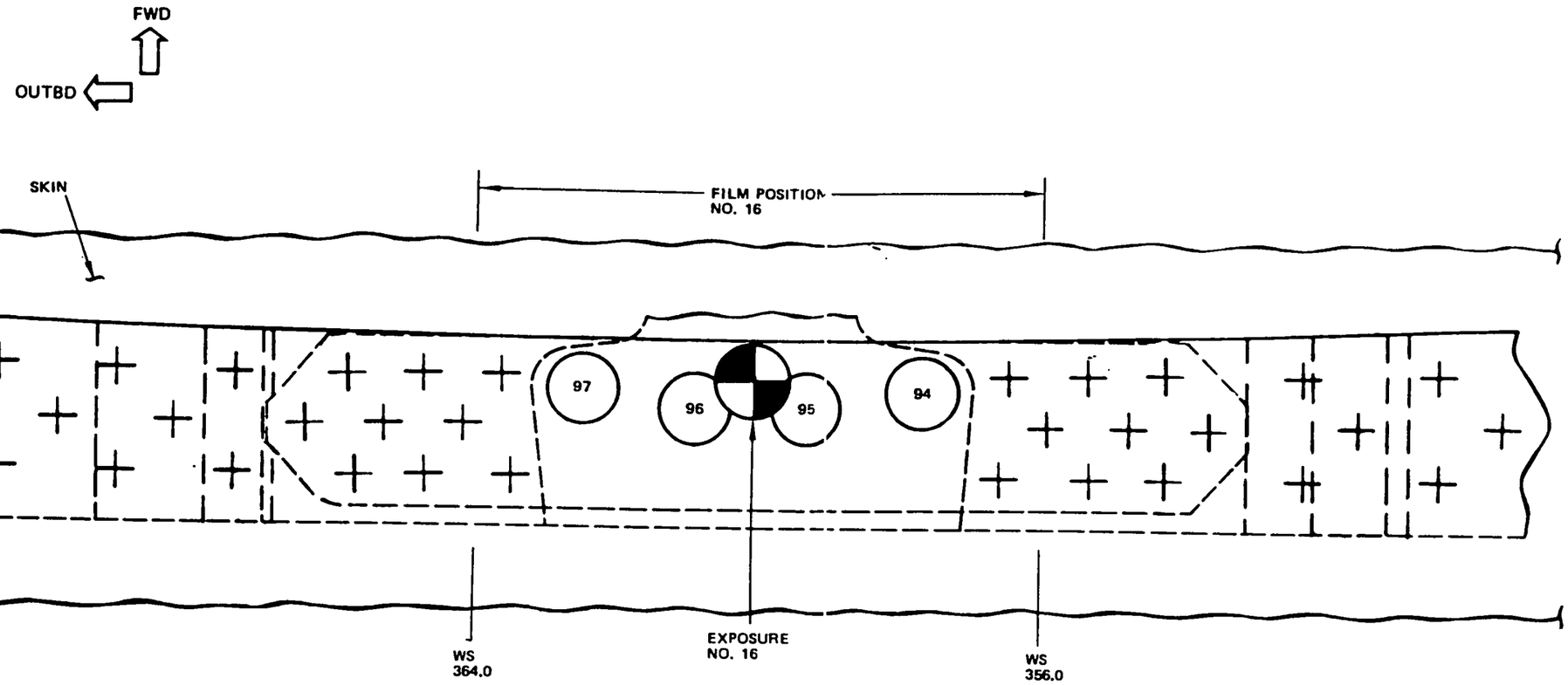
Wing Upper Rear Spar Chord - Horizontal Flange
Figure 23 (Sheet 4)



TYPICAL FILM AND GENERATOR ARRANGEMENT

DETAIL I

Wing Upper Rear Spar Chord - Horizontal Flange
Figure 23 (Sheet 5)



NOTES

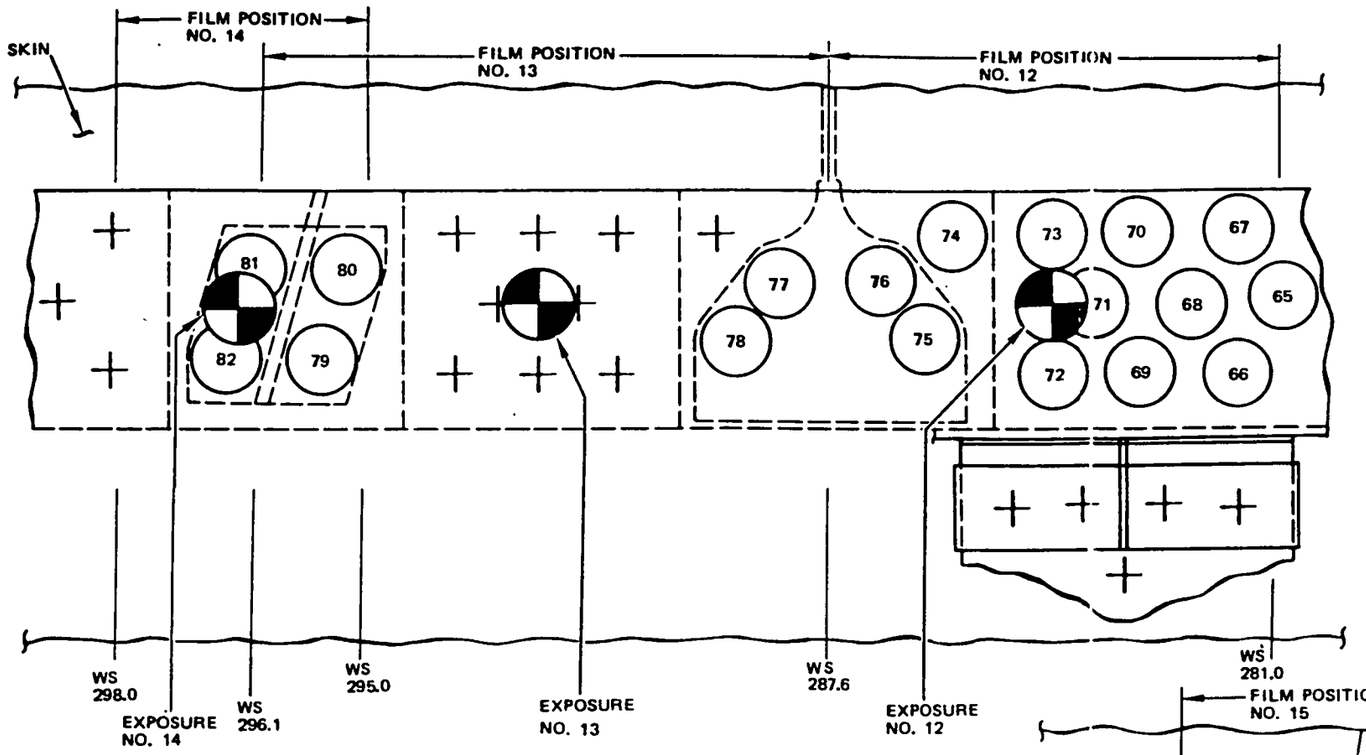
(97) FASTENER AREA REQUIRING X-RAY INSPECTION
FASTENER NUMBER

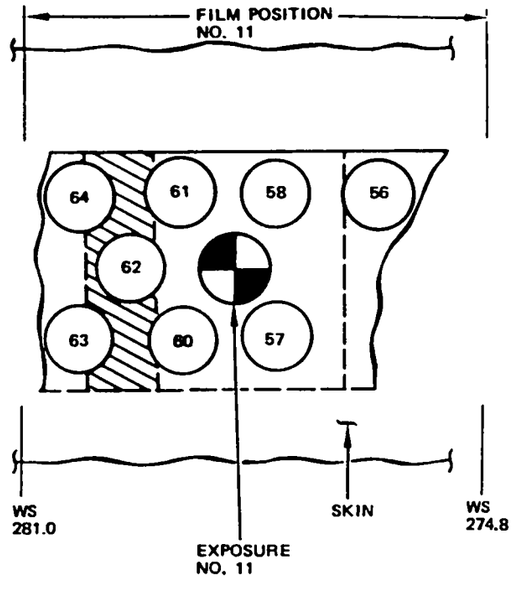
X-RAY GENERATOR LOCATION

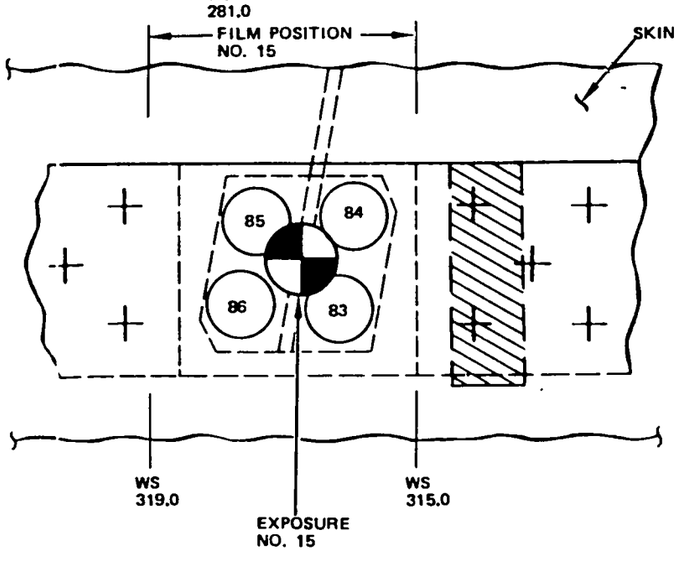
- LEFT WING SHOWN, RIGHT WING SIMILAR
- VIEW LOOKING DOWN

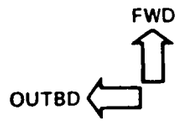
FASTENER HOLES IN HORIZONTAL FLANGE OF UPPER REAR SPAR CHORD TO BE INSPECTED

DETAIL II (CONT)









NOTES

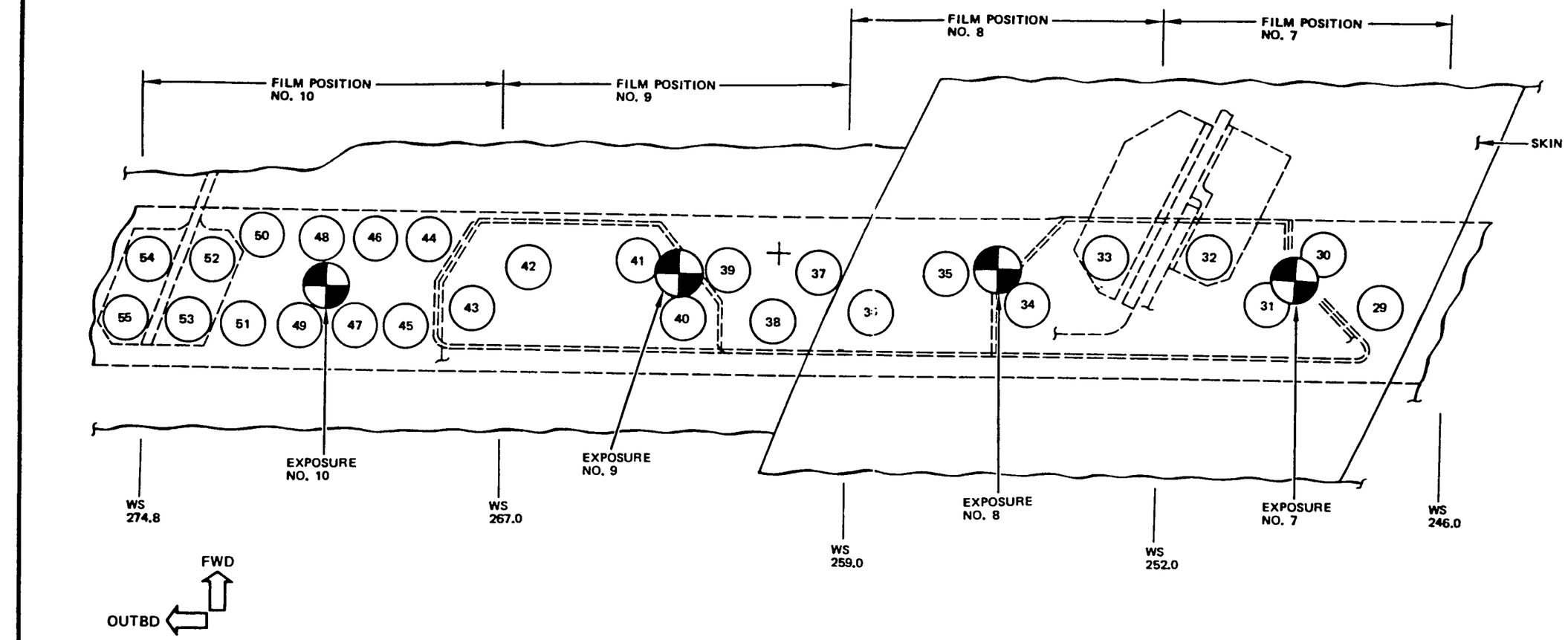
(76) FASTENER AREA REQUIRING INSPECTION
FASTENER NUMBER

X-RAY GENERATOR LOCATION

● LEFT WING SHOWN
RIGHT WING SIMILAR

FASTENER HOLES IN HORIZONTAL FLANGE OF UPPER REAR SPAR CHORD TO BE INSPECTED

DETAIL II (CONT)



NOTES

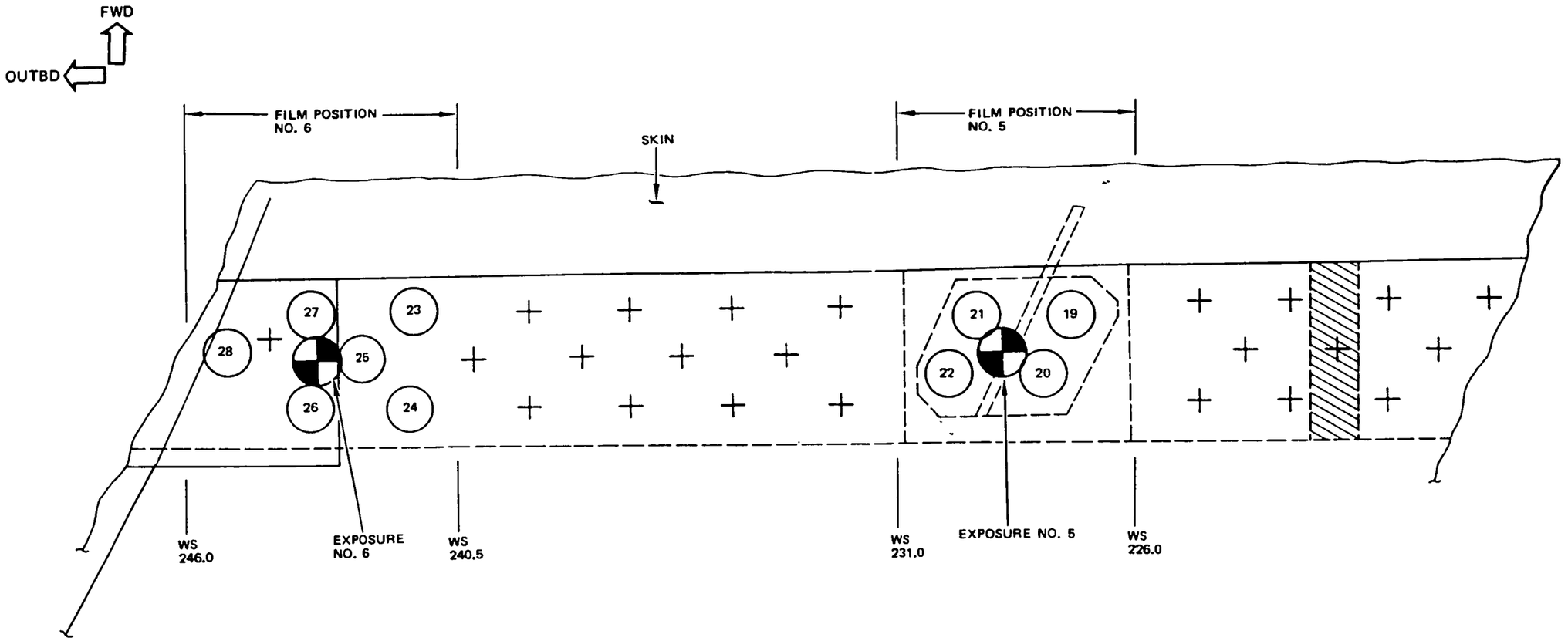
(34) FASTENER AREA REQUIRING X-RAY INSPECTION
FASTENER NUMBER

X-RAY GENERATOR LOCATION

- LEFT WING SHOWN
  RIGHT WING OPPOSITE
- VIEW LOOKING DOWN

FASTENER HOLES IN HORIZONTAL FLANGE OF UPPER REAR SPAR CHORD TO BE INSPECTED

DETAIL II (CONT)



NOTES

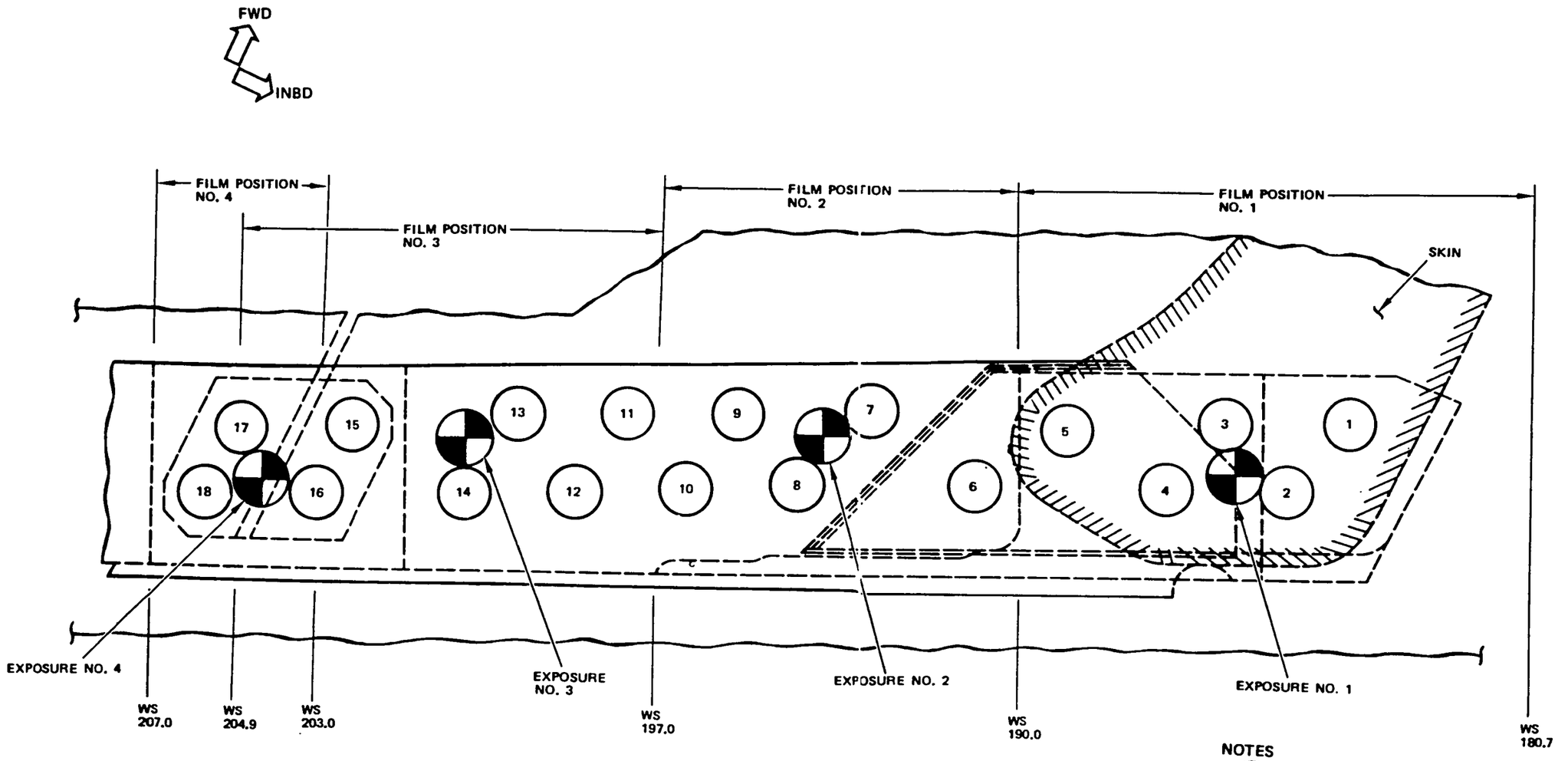
(28) FASTENER AREA REQUIRING X-RAY INSPECTION
FASTENER NUMBER

X-RAY GENERATOR LOCATION

• LEFT WING SHOWN, RIGHT WING SIMILAR

FASTENER HOLES IN HORIZONTAL FLANGE OF UPPER REAR SPAR CHORD TO BE INSPECTED

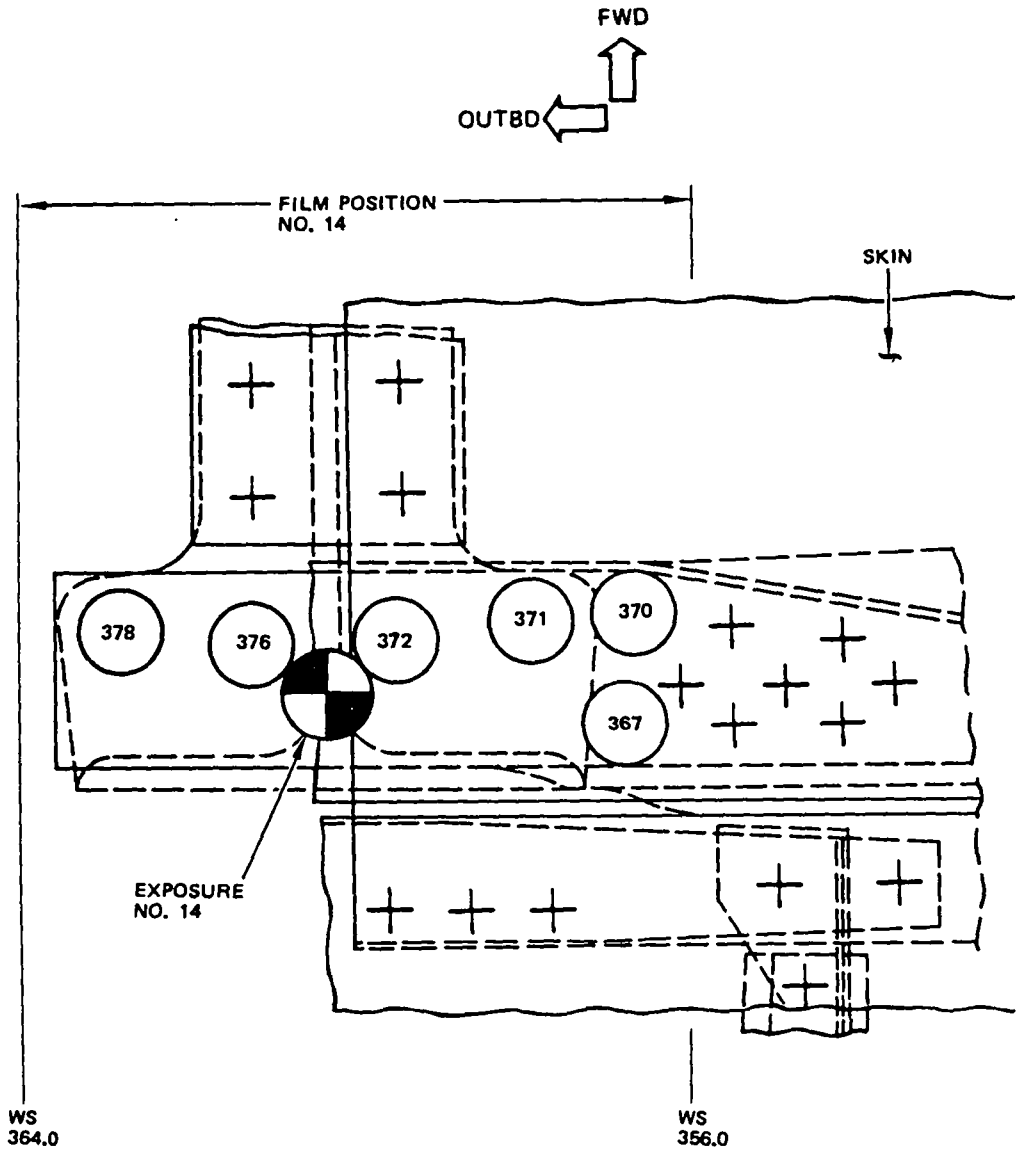
DETAIL II (CONT)



FASTENER HOLES IN HORIZONTAL FLANGE OF UPPER REAR SPAR TO BE INSPECTED

DETAIL II

Wing Upper Rear Spar Chord - Horizontal Flange
Figure 23 (Sheet 10)



NOTES

(372) FASTENER AREA REQUIRING INSPECTION

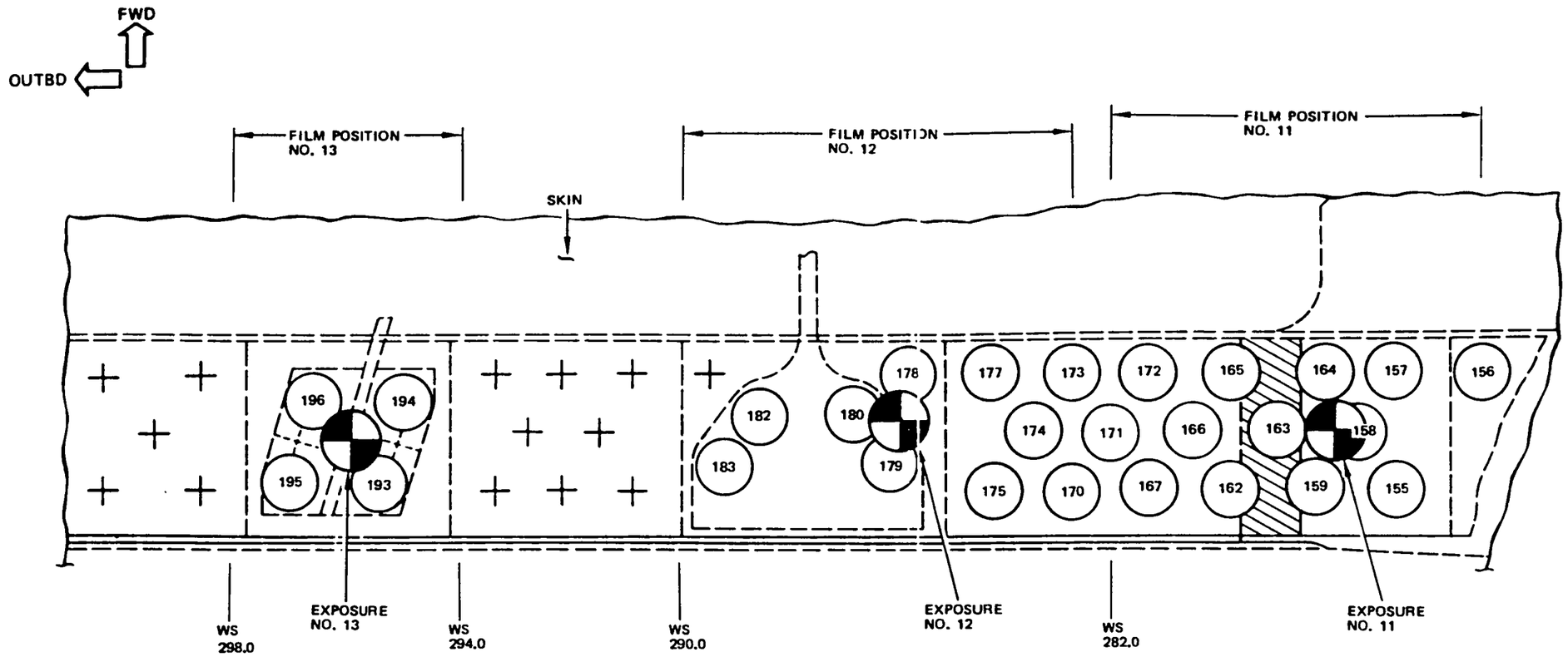
X-RAY GENERATOR LOCATION

- LEFT WING SHOWN RIGHT WING SIMILAR
- VIEW LOOKING DOWN

FASTENER HOLES IN HORIZONTAL FLANGE OF UPPER REAR SPAR CHORD TO BE INSPECTED

DETAIL III (CONT)

Wing Upper Rear Spar Chord - Horizontal Flange
Figure 23 (Sheet 11)



NOTES

(173) FASTENER AREA REQUIRING X-RAY INSPECTION
FASTENER NUMBER

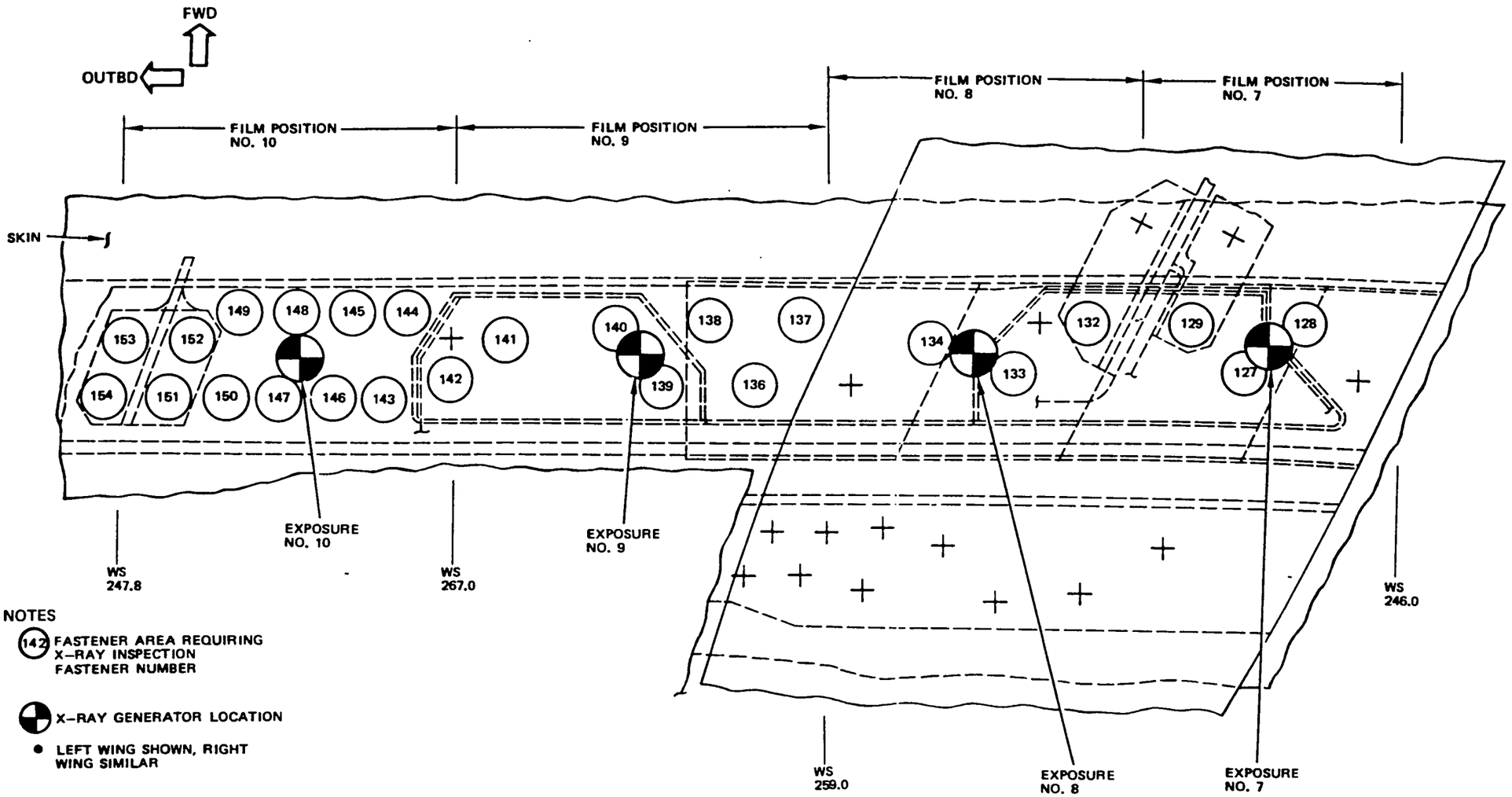
X-RAY GENERATOR LOCATION

● LEFT WING SHOWN, RIGHT WING SIMILAR

FASTENER HOLES IN HORIZONTAL FLANGE OF UPPER REAR SPAR CHORD TO BE INSPECTED

DETAIL III (CONT)

Wing Upper Rear Spar Chord - Horizontal Flange
Figure 23 (Sheet 12)



NOTES

(142) FASTENER AREA REQUIRING X-RAY INSPECTION FASTENER NUMBER

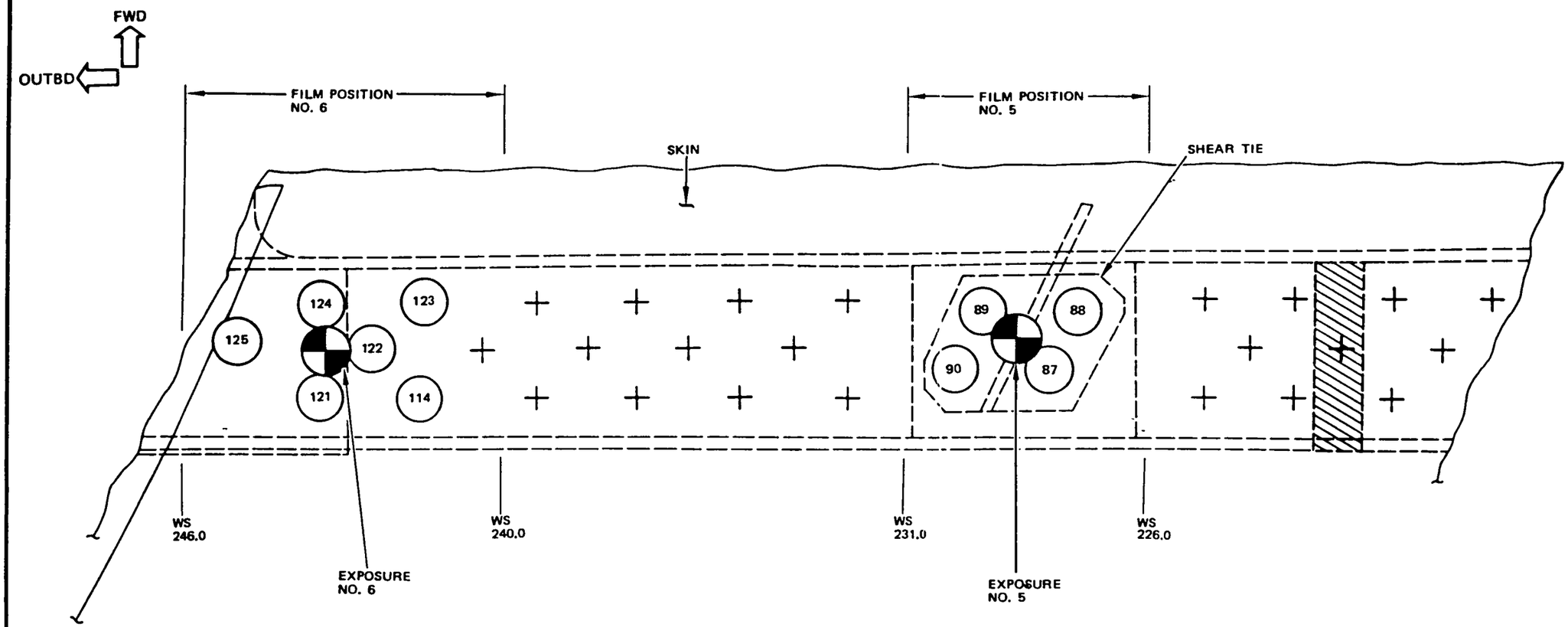
X-RAY GENERATOR LOCATION

● LEFT WING SHOWN, RIGHT WING SIMILAR

FASTENER HOLES IN HORIZONTAL FLANGE OF UPPER REAR SPAR TO BE INSPECTED

DETAIL XIII (CONT)

Wing Upper Rear Spar Chord - Horizontal Flange
Figure 23 (Sheet 13)



NOTES

(123) FASTENER AREA REQUIRING INSPECTION

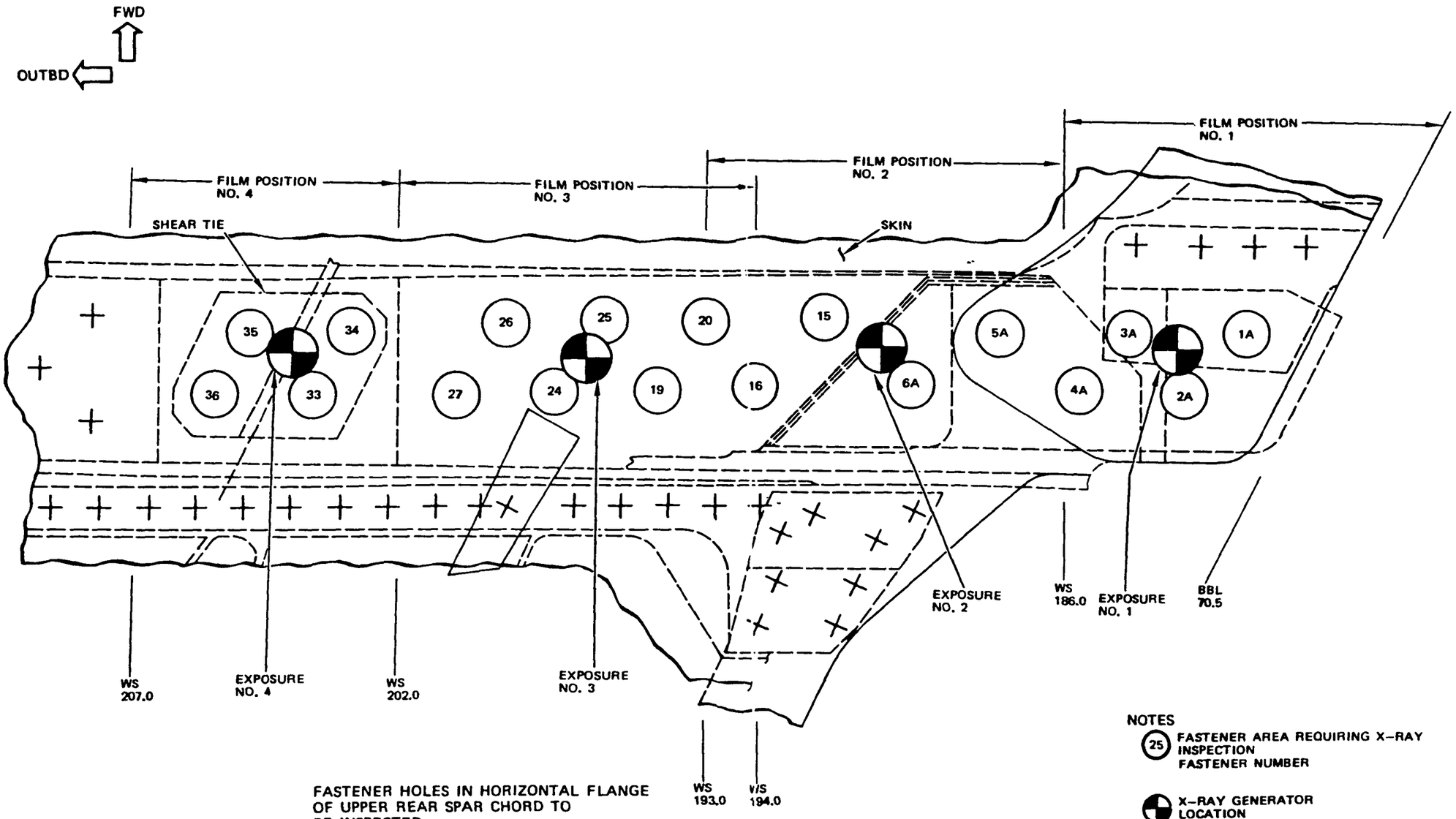
X-RAY GENERATOR LOCATION

● LEFT WING SHOWN RIGHT WING SIMILAR

FASTENER HOLES IN HORIZONTAL FLANGE OF UPPER REAR SPAR CHORD TO BE INSPECTED

DETAIL III (CONT)

Wing Upper Rear Spar Chord - Horizontal Flange
Figure 23 (Sheet 14)



FASTENER HOLES IN HORIZONTAL FLANGE OF UPPER REAR SPAR CHORD TO BE INSPECTED

DETAIL III

PART 2 - X-RAY

WINGS - MAIN FRAME

1. Purpose

   A. To detect hole cracks in the horizontal flange of wing upper rear spar chord at selected fastener holes from WS 360 to production break.

   B. This inspection requires wing tank entry. Fuel tank must be drained and purged to a "health safe" condition (as defined by Chapter 28 of the Maintenance Manual) before entering.

2. Equipment

   A. The equipment used to develop this technique is as follows:

      (1) Sperry, portable 160 KV, side emission X-ray generator

      (2) Kodak AA and M ready pack and lead pack film

      (3) Lead screen 0.03 inch or thicker to be placed behind film.

3. Prepare for Inspection

   A. Drain and purge the appropriate fuel tanks to permit tank entry for film placement along the horizontal flange of the upper rear spar chord.

4. Inspection Procedure

   A. Identify film type and size from Table II according to the airplane effectivity. See Table I for airplane effectivity.

      WARNING: PRECAUTIONS AND SAFETY PROCEDURES CONTAINED IN CHAPTER 28 OF THE MAINTENANCE MANUAL MUST BE FOLLOWED BY PERSONNEL ENTERING ANY TANK THAT HAS CONTAINED FUEL. USE ONLY BATTERY-OPERATED, EXPLOSIONPROOF LIGHTS IN VICINITY OF OPEN FUEL TANKS. POSSIBILITY OF EXPLOSION AND TOXIC DANGER EXISTS IN VICINITY OF FUEL TANKS WHICH HAVE CONTAINED FUEL.

   B. Place film inside of wing on upper rear spar chord horizontal flange as shown in Detail I to provide for radiographic coverage around fasteners identified in Detail II or III.

Wing - Upper Rear Spar Chord - Horizontal Flange
Figure 24 (Sheet 1)

C. Allow approximately 1 inch of film overlap between exposures.

D. Trim film as necessary to facilitate film placement for maximum coverage of chord flange.

E. Place lead screen behind film to prevent excessive film fogging from backscattering. See Detail I.

F. Position X-ray generator so that X-ray beam is perpendicular to upper wing skin and centered over fasteners to be inspected. See Details I thru III.

G. Make radiographic exposure using the Table II generator settings as a guide. Film density in the area to be inspected should be between 2.0 and 3.0

H. Review the film with special attention given to the areas around fastener locations noted in Detail II or III.

A/P EFFECTIVITY	INSPECTION AREA DETAIL NO.
707-300B/300C	II
ALL EXCEPT 707-300B/300C	III

EFFECTIVITY TABLE
TABLE I

EXPOSURE NUMBER	POSITION NO.	FILM TYPE	SIZE	SFD	GEN.SETTING FILM DENSITY OBJECTIVE 2 to 3	
					KV	MAS
1	1	I & I [A]	5 x 12	60	120	2500
2	2	I, I [A], II	5 x 12	60	120	2300

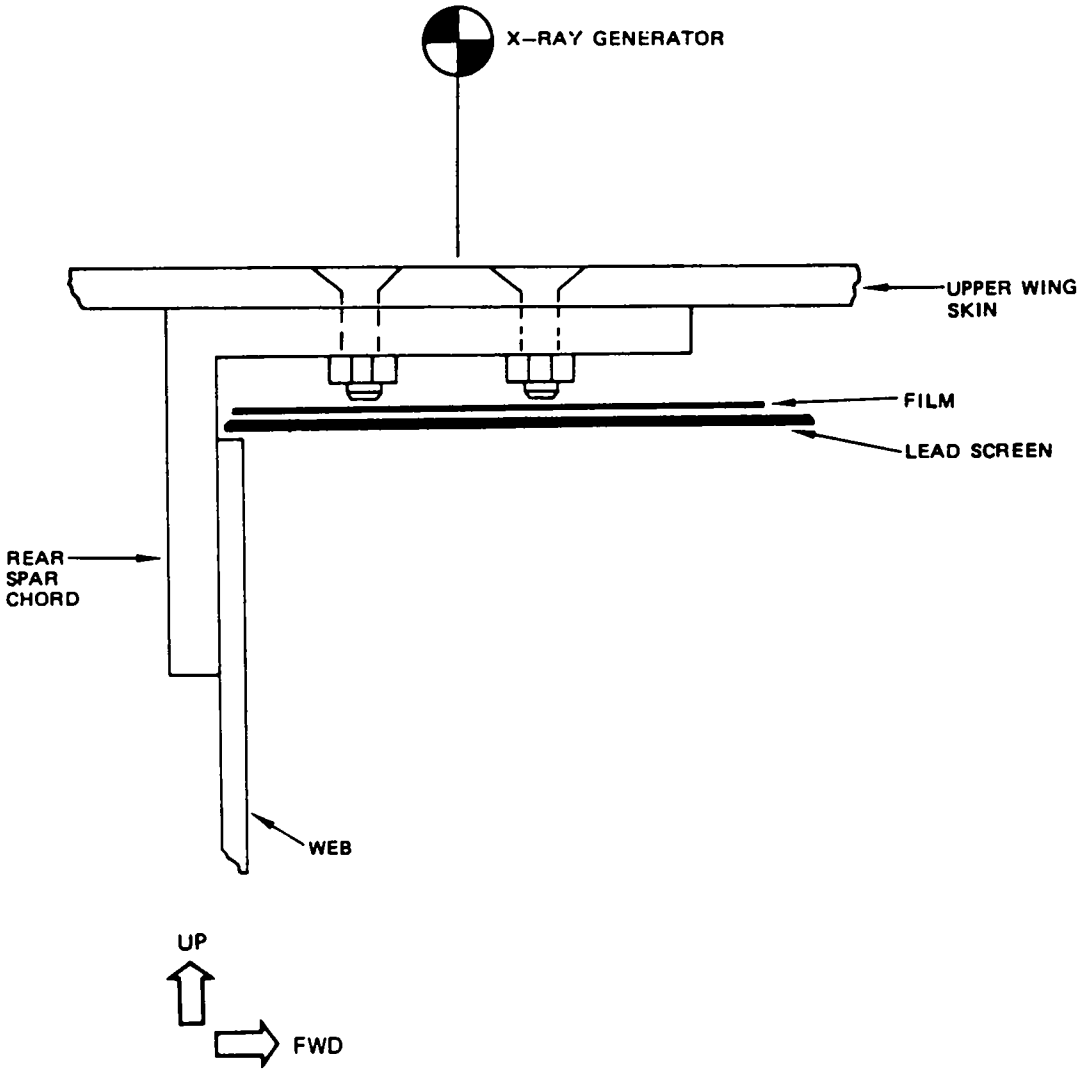
X-RAY PARAMETERS
TABLE II

NOTES

- ALL DIMENSIONS ARE IN INCHES

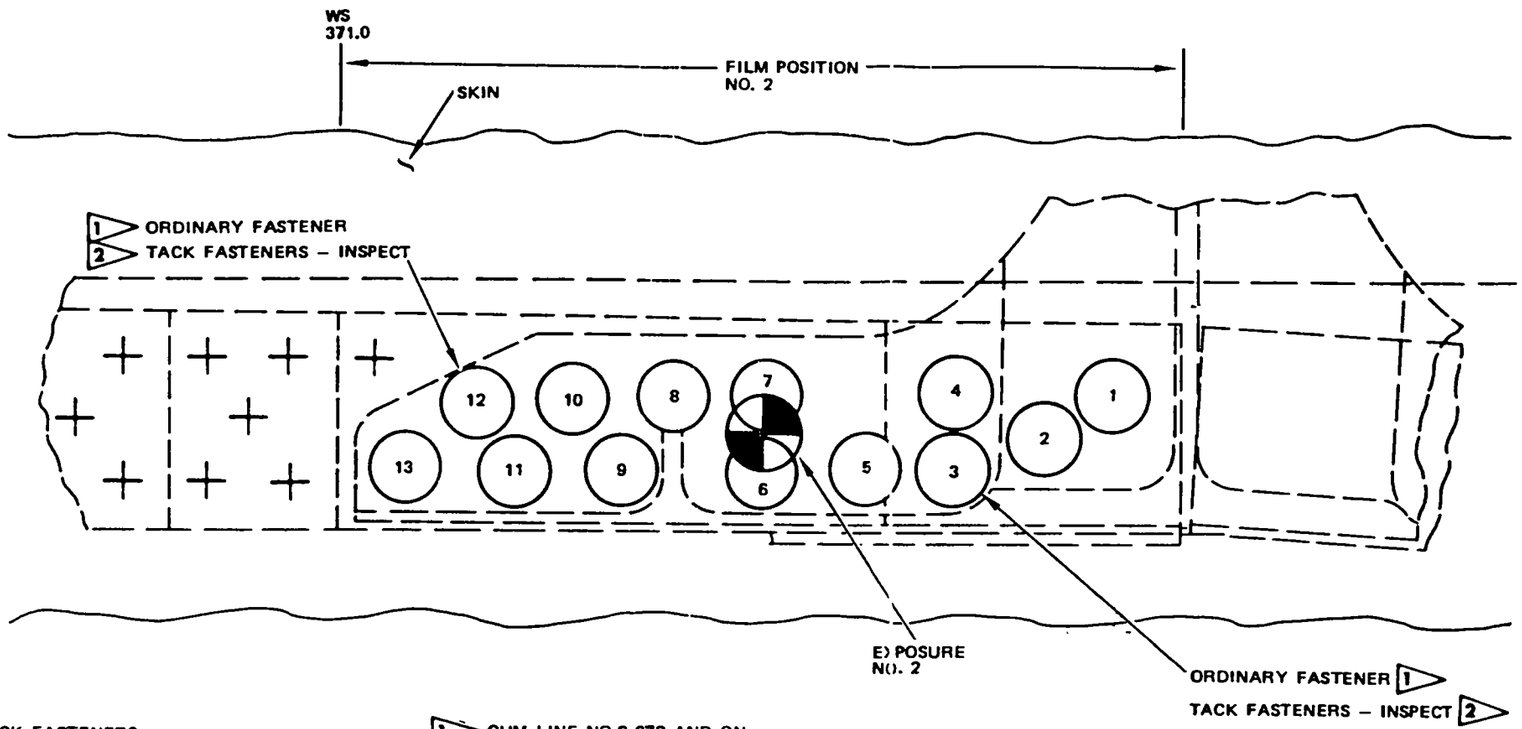
[A] LEAD PACK

Wing - Upper Rear Spar Chord - Horizontal Flange
Figure 24 (Sheet 2)



TYPICAL FILM AND GENERATOR ARRANGEMENT

DETAIL I



NOTES

- TACK FASTENERS ARE NOT COMMON TO THE SKIN

(6) FASTENER AREA REQUIRING X-RAY INSPECTION

X-RAY GENERATOR LOCATION

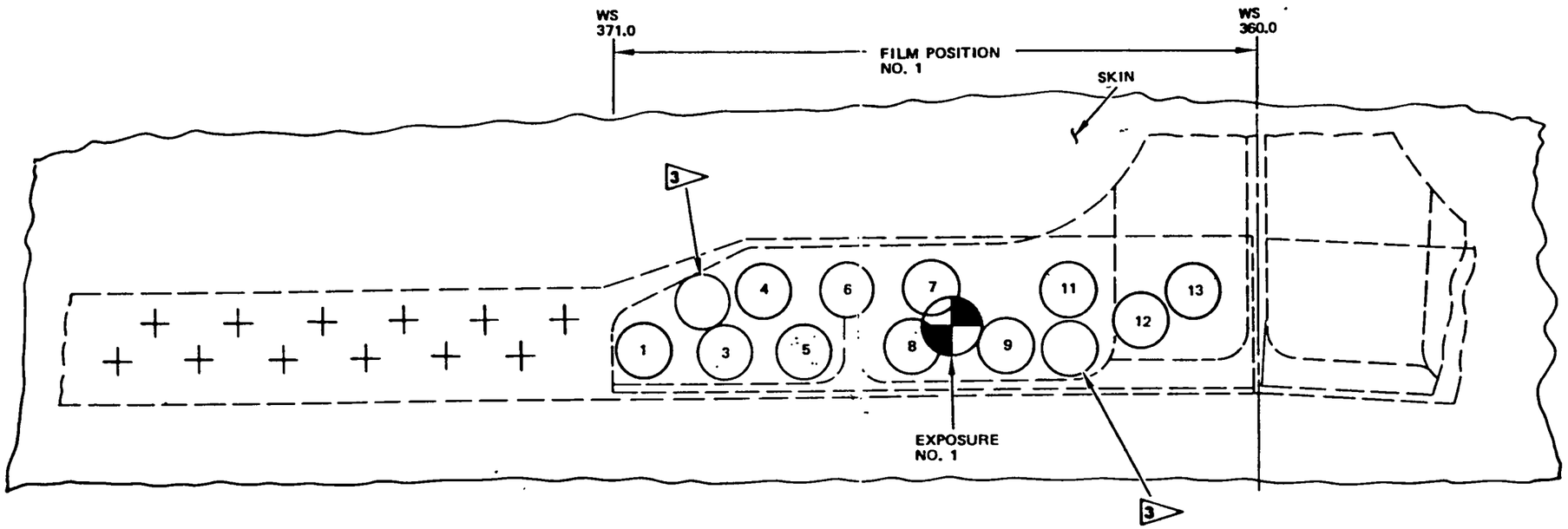
1 CUM LINE NO.S 672 AND ON

2 CUM LINE NO.S 268, 270, 276, 287, 292, 303, 305, 320, 323, 325, 326, 327, 329, 331, 332, 333, 335, 336, 34 THRU 346, 348, 349, 350, 352, 354 THRU 360, 362 THRU 373, 375 THRU 379, 383, 386, 387, 389, 394, 397 THRU 400, 402 THRU 409, 411, 412, 413, 415 THRU 419, 421, 424, 425, 428, 430, 431, 434, THRU 441, 443 THRU 447, 449, 450, 451, 453 THRU 469, 471, 472, 475 THRU 478, 480, 482 THRU 485, 487, 488, 495 THRU 505, 507 THRU 511, 513, 515 THRU 525, 527, 528, 529, 531, 534, 536, 537, 538, 540 THRU 557, 559, 560, 561, 563, 566, 568, 570, 572, 574, 576, 578, 580, 582, 584, 585, 587, 588, 590, 592, 594, 596, 599, 601, 603, 605, 607 THRU 6 6, 618, 619, 620, 623, 625 THRU 668, 670 AND 671.

FASTENER HOLES IN HORIZONTAL FLANGE OF UPPER REAR SPAR CHORD TO BE INSPECTED

DETAIL II

Wing - Upper Rear Spar Chord - Horizontal Flange
Figure 24 (Sheet 4)



NOTES

7 FASTENER AREA REQUIRING X-RAY INSPECTION

X-RAY GENERATOR LOCATION

3 TACK FASTENER REQUIRING X-RAY INSPECTION TACK FASTENERS ARE NOT COMMON TO SKIN

FASTENER HOLES IN HORIZONTAL OF UPPER REAR SPAR CHORD TO BE INSPECTED
DETAIL III

Wing - Upper Rear Spar Chord - Horizontal Flange
Figure 24 (Sheet 5)

PART 2 X RAY

WINGS - MAIN FRAME

1. Purpose

A. To detect large stress corrosion cracks (running in an inboard-outboard direction) in the upper and lower horizontal flanges of the left and right wing front spar terminal fittings.

B. This inspection may require wing tank entry. Fuel tank must be drained and purged to a "health safe" condition (as defined by Chapter 28 of the Maintenance Manual) before entering.

2. Equipment

A. Portable side emission X-ray unit, 140-160 Kv. Small tube head is desirable to permit positioning of X-ray source close to side of body.

B. ASTM Class I film and Class 1 [A] lead pack film screen.

3. Preparation For Inspection

A. Defuel forward center wing tank and No. 2 and 3 main tanks.

B. Remove upper wing side of body fairing for access to upper front spar.

C. Remove floor plate at side of body for access to center section upper front spar at side of body.

D. Remove lower wing panels for visual access to wing front spar fitting.

NOTE: Inspection may be accomplished without removal of these panels.

4. Inspection Procedure

WARNING: PRECAUTIONS AND SAFETY PROCEDURES CONTAINED IN CHAPTER 28 OF THE MAINTENANCE MANUAL MUST BE FOLLOWED BY PERSONNEL ENTERING ANY TANK THAT HAS CONTAINED FUEL. USE ONLY BATTERY-OPERATED, EXPLOSIONPROOF LIGHTS IN VICINITY OF OPEN FUEL TANKS. POSSIBILITY OF EXPLOSION AND TOXIC DANGER EXISTS IN VICINITY OF FUEL TANKS WHICH HAVE CONTAINED FUEL.

A. Make radiographic exposures to requirements given in Table I.

B. Place film in position per Details I, II, or III.

Upper and Lower Horizontal Flanges of Left and Right
Wing Front Spar Terminal Fittings
Figure 25 (Sheet 1)

C. Position X-ray source per Details I, IV or V.

D. Look for cracks in horizontal flange of wing front spar, side-of-body fitting. Give particular attention to potential stress corrosion cracks running in the inboard-outboard direction. See Detail I.

EXPOSURE NO.	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE		KV	MAS
1L or 1R	1	I	8X10	52	140	1020
2L or 2R	2A	I	8X10	58	140	1800
	2B	I				
3L or 3R	3	I	4 1/2	52	160	540
4L or 4R	4A	I	8X10	58	160	1080
	4B					

X-RAY PARAMETERS
TABLE I

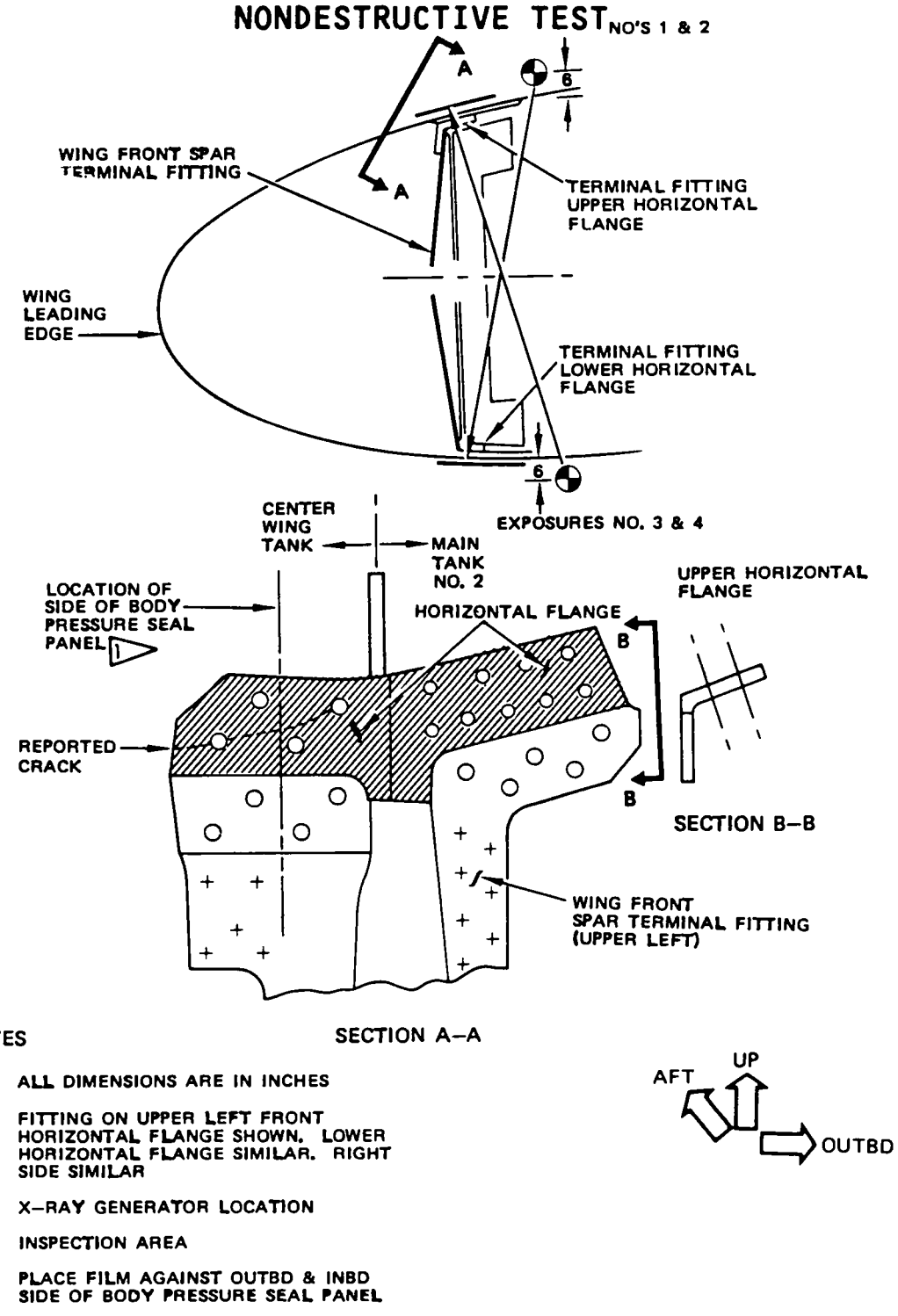
NOTES:

- ALL DIMENSIONS ARE IN INCHES

[A] LEAD PACK FILM. AS AN ALTERNATE, A SEPARATE EXPOSURE MAY BE MADE OF FILM POSITION 2B USING CLASS 1 FILM WITH APPROXIMATELY A ONE-THIRD INCREASE IN MAS

[1] SETUP DETAILS FOR INSPECTION OF LEFT AND RIGHT HAND WING FRONT SPAR TERMINAL FITTINGS ARE IDENTICAL

Upper and Lower Horizontal Flanges of
Left and Right Wing Front Spar Terminal Fittings
Figure 25 (Sheet 2)



NOTES

- ALL DIMENSIONS ARE IN INCHES
- FITTING ON UPPER LEFT FRONT HORIZONTAL FLANGE SHOWN. LOWER HORIZONTAL FLANGE SIMILAR. RIGHT SIDE SIMILAR

X-RAY GENERATOR LOCATION

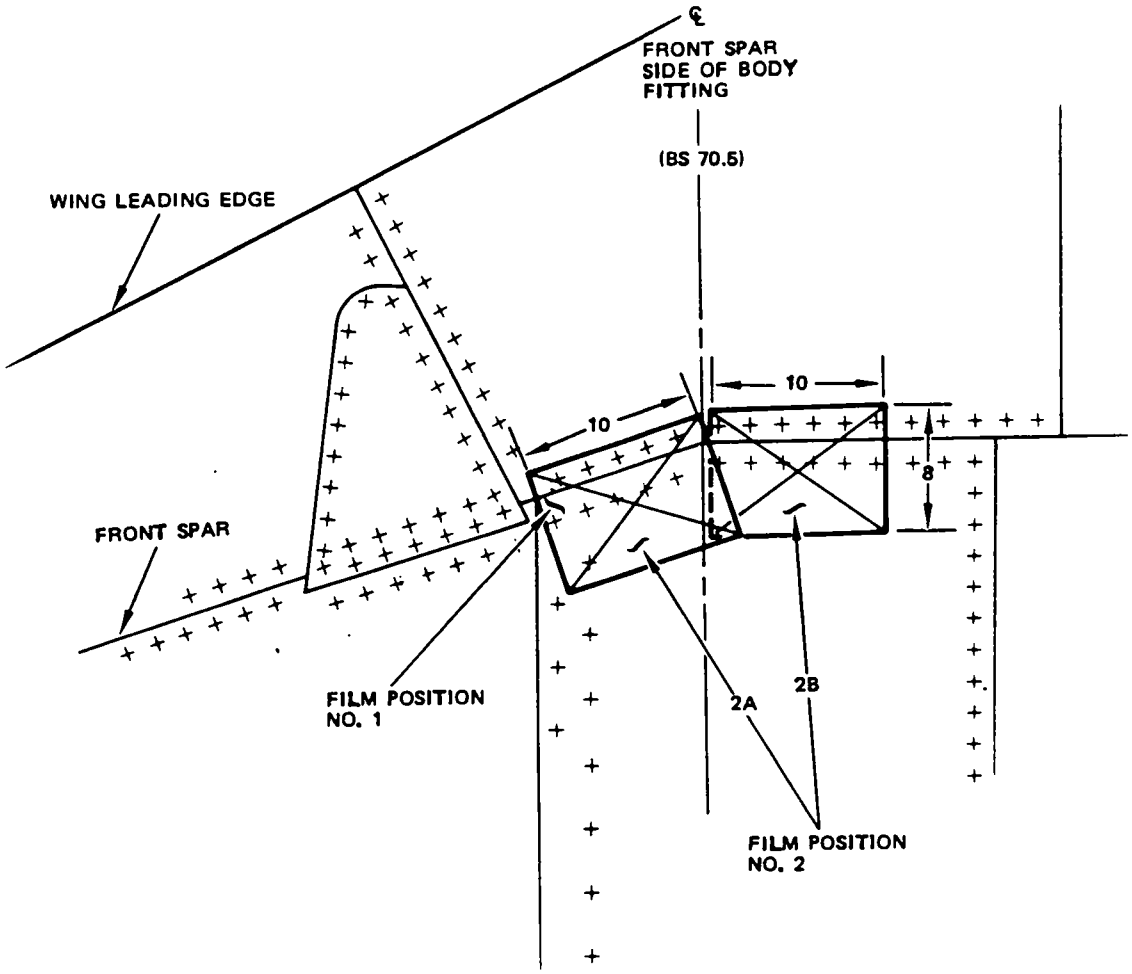
INSPECTION AREA

1 PLACE FILM AGAINST OUTBD & INBD SIDE OF BODY PRESSURE SEAL PANEL

WING FRONT SPAR TERMINAL FITTINGS

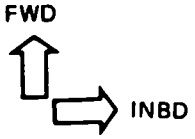
DETAIL I

Upper and Lower Horizontal Flanges of
Left and Right Wing Front Spar Terminal Fittings
Figure 25 (Sheet 3)



NOTES

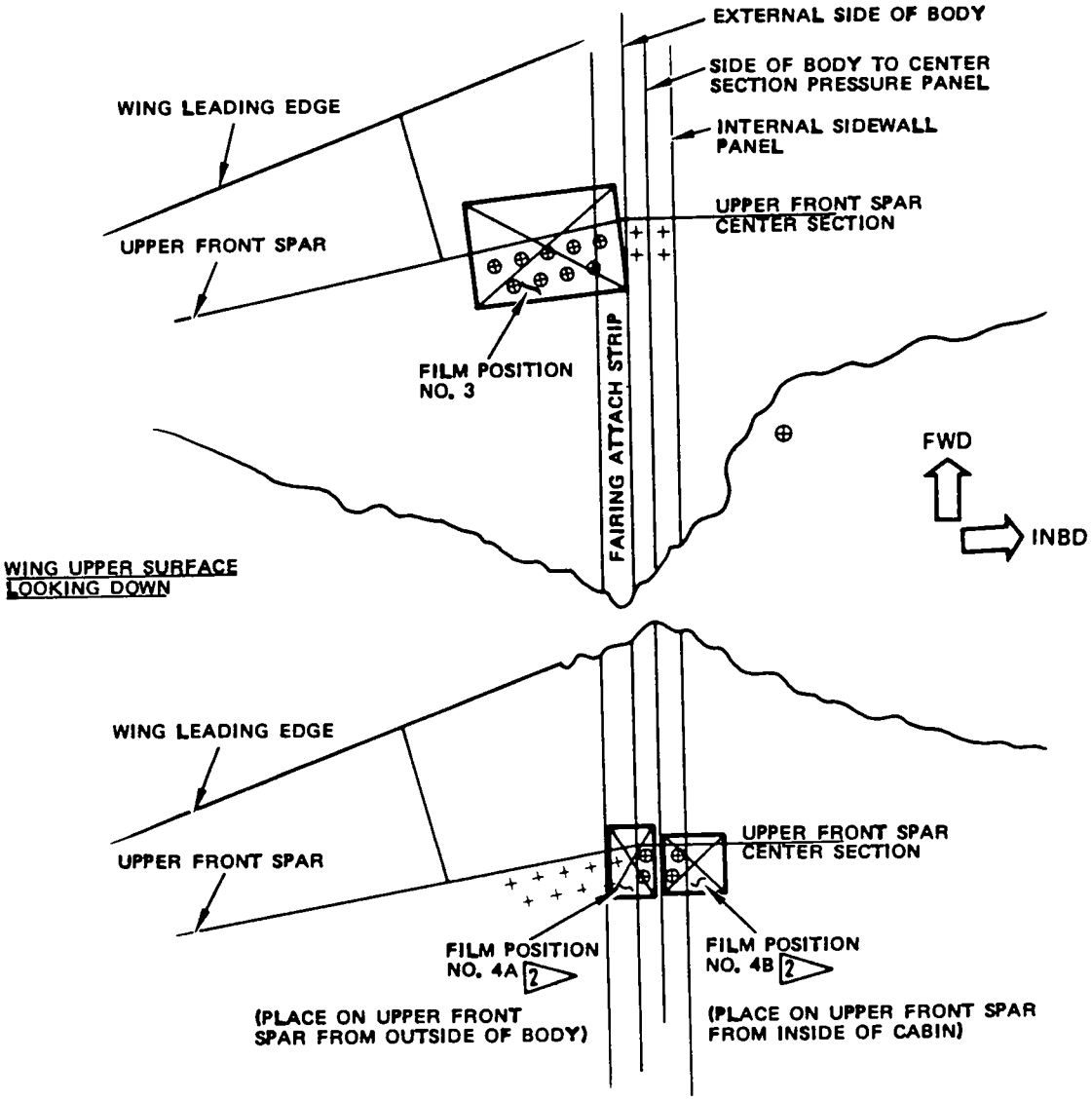
- WING LOWER SURFACE LOOKING UP
- RIGHT WING SHOWN, LEFT WING SIMILAR
- ALL DIMENSIONS ARE IN INCHES



FILM POSITION FOR INSPECTION OF WING FRONT SPAR SIDE OF BODY FITTING LOWER HORIZONTAL FLANGE

DETAIL II

Upper and Lower Horizontal Flanges of Left and Right Wing Front Spar Terminal Fittings
Figure 25 (Sheet 4)



NOTES

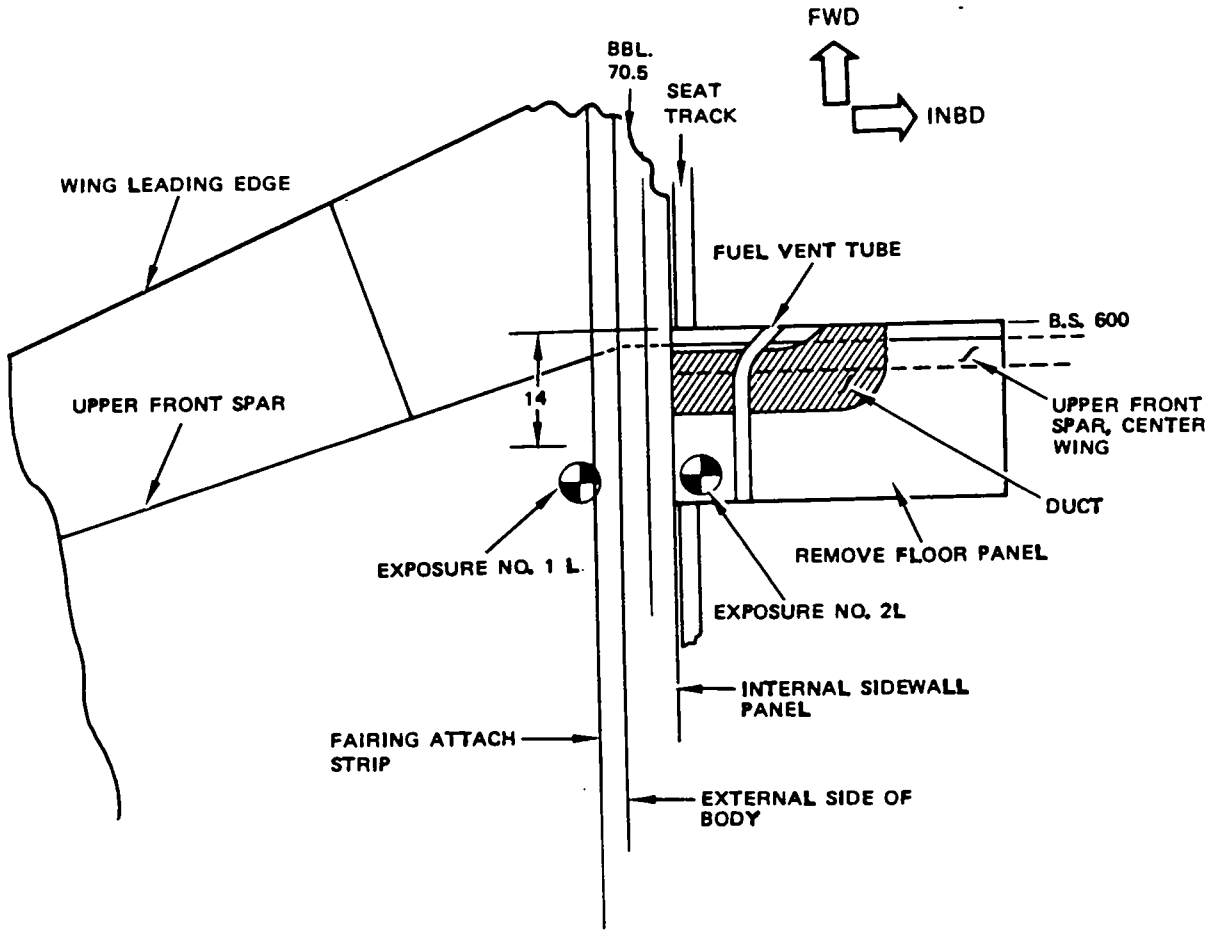
- LEFT WING SHOWN, RIGHT WING SIMILAR

FASTENERS TO BE INSPECTED

2 FILM EDGE SHOULD CONTACT SIDE OF BODY PRESSURE PANEL AT FILM POSITIONS 4A & 4B

FILM POSITION FOR INSPECTION OF WING FRONT SPAR SIDE OF BODY FITTING UPPER HORIZONTAL FLANGE
DETAIL III

Upper and Lower Horizontal Flanges of
Left and Right Wing Front Spar Terminal Fittings
Figure 25 (Sheet 5)



WING UPPER SURFACE LOOKING DOWN

NOTES

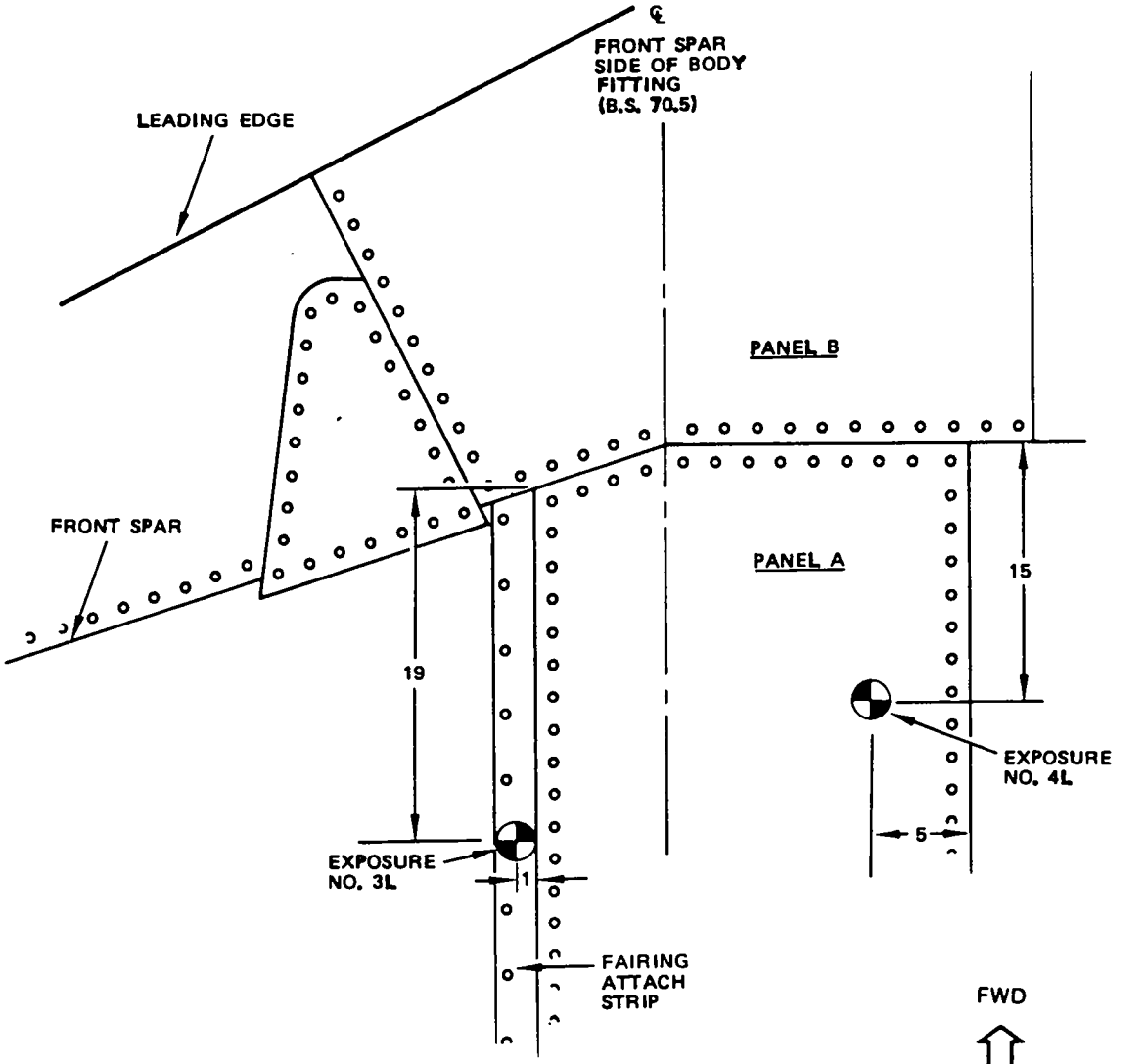
- LEFT SIDE SHOWN, RIGHT SIDE SIMILAR

X-RAY GENERATOR, (POSITION AS CLOSE TO SIDE OF BODY AS POSSIBLE)

X-RAY GENERATOR LOCATION FOR
RADIOGRAPHIC INSPECTION OF WING FRONT SPAR
TERMINAL FITTING LOWER HORIZONTAL FLANGE

DETAIL IV

Upper and Lower Horizontal Flanges of
Left and Right Wing Front Spar Terminal Fittings
Figure 25 (Sheet 6)



NOTES

- ALL DIMENSIONS ARE IN INCHES
- RIGHT WING SHOWN, LEFT WING SIMILAR

X-RAY GENERATOR

X-RAY GENERATOR LOCATION FOR
RADIOGRAPHIC INSPECTION OF WING FRONT SPAR
TERMINAL FITTING UPPER HORIZONTAL FLANGE
DETAIL V

Upper and Lower Horizontal Flanges of
Left and Right Wing Front Spar Terminal Fittings
Figure 25 (Sheet 7)

PART 2 - X-RAY

WING

1. Purpose

   A. To detect cracks in the wing upper rear spar chord horizontal flange of the wing between side of beavertail and Rear Spar Station 170.

2. Equipment

   A. Automation Industries, Sperry 160 KV portable X-ray generator was used to develop this technique.

3. Preparation

   A. Defuel and drain the applicable fuel tank in the wing.

Exposure No. No.	Film				Generator Settings	
	Position	ASTM Class	Size	SFD	KV	MAS
1	1 [1]	I [A]	8X10	36	120	1200

X-RAY PARAMETERS
TABLE I

NOTES:

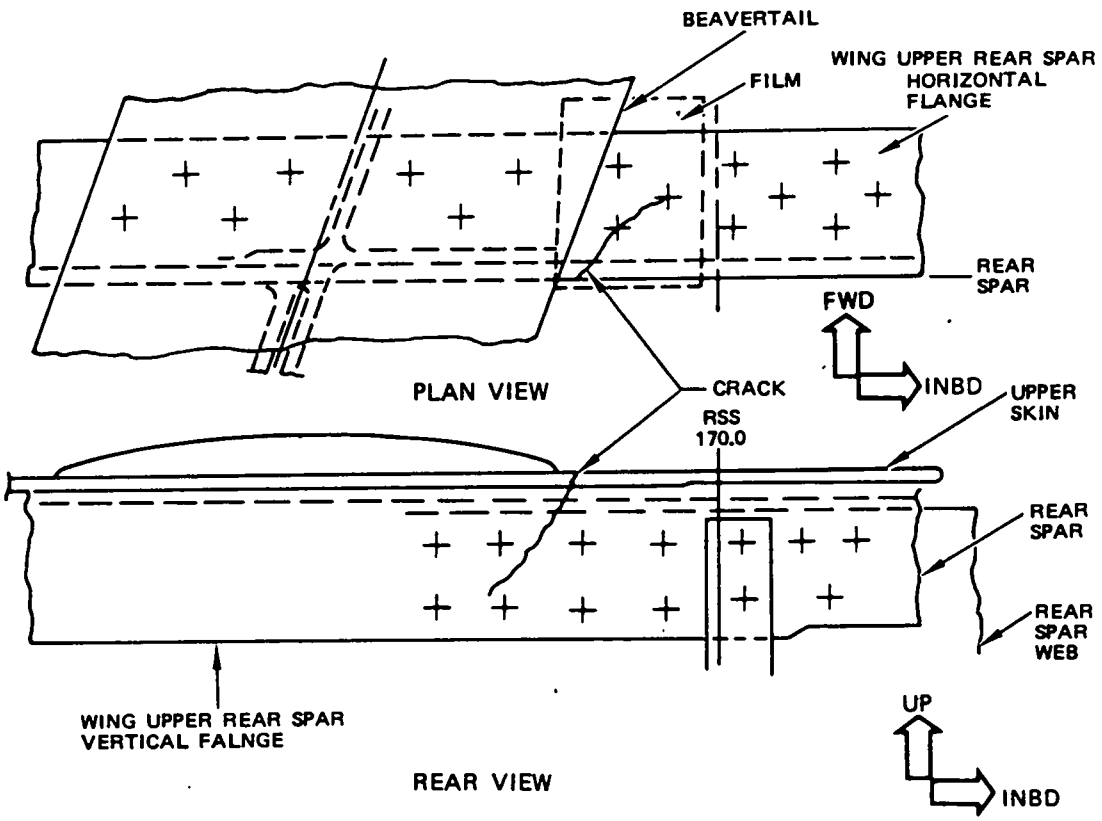
- All dimensions are in inches.

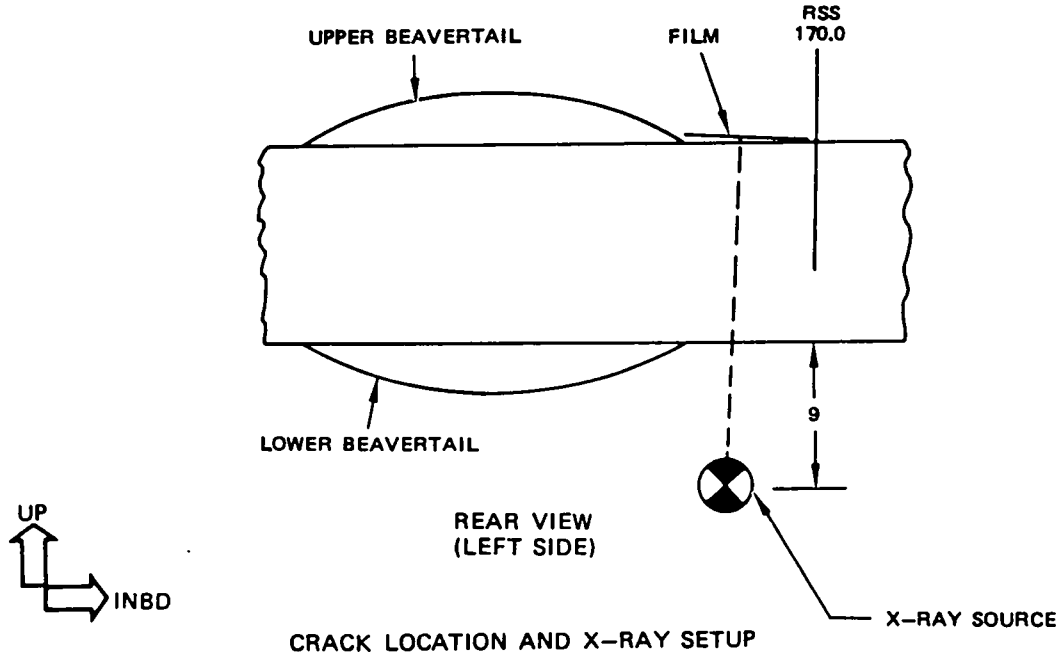
[A] Lead Pack

[1] The entry point of the X-ray beam on the lower skin surface is located between stringer no. 1 and rear spar and approximately 1.0 inch inboard of beavertail. See Detail II.

Wing Upper Rear Spar Chord Horizontal Flange Between Side of Beavertail and Rear Spar Station 170.0
Figure 26 (Sheet 1)

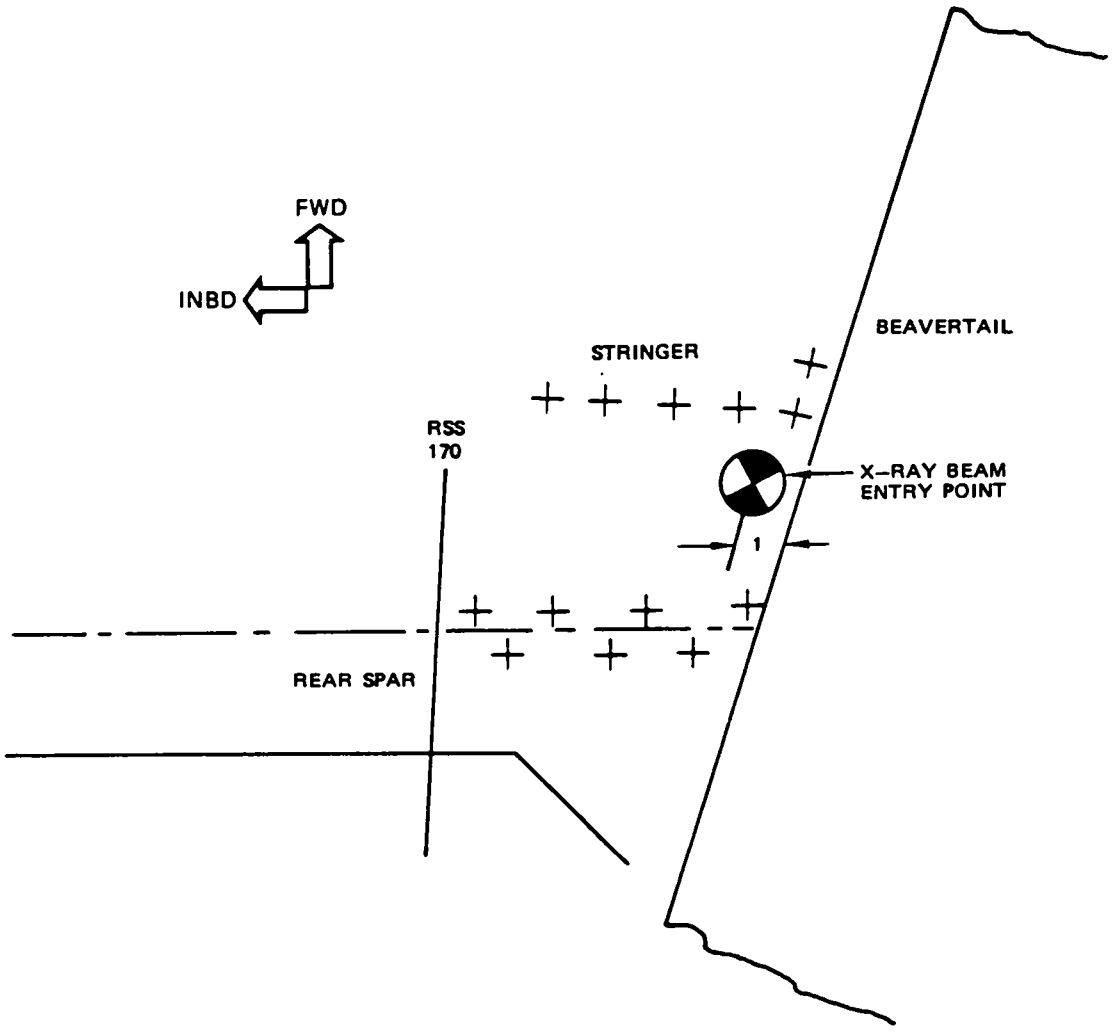
57-10-861





CRACK LOCATION AND X-RAY SETUP
DETAIL I

Wing Upper Rear Spar Chord Horizontal Flange
Between Side of Beavertail and Rear Spar Station 170.0
Figure 26 (Sheet 2)



WING LOWER SURFACE BOTTOM VIEW
X-RAY BEAM ENTRY POINT
DETAIL II

Wing Upper Rear Spar Chord Horizontal Flange
Between Side of Beavertail and Rear Spar Station 170.0
Figure 26 (Sheet 3)

EFFECTIVITY
MODEL: 707-300/400, 300B,300C A/P'S LINE NO. 672 AND ON. CUM LINE NO'S 13 THRU 671 WITH ANY ONE OF THE REFERENCE SB'S INCORPORATED SERVICE BULLETIN REFERENCE: 2427, 2606, 2607, 2731 SSI DOCUMENT (D6-44860) REFERENCE: SSD 57-A25-21 57-A35-21 57-A45-21

PART 2 - X-RAY

WINGS - MAIN FRAME

1. Purpose

   A. To detect hole cracks in the horizontal flange of wing upper rear spar chord at selected fastener holes from side of body to WS 360.0.

   B. This inspection requires wing tank entry. Fuel tank must be drained and purged to a "health safe" condition (as defined by Chapter 28 of the Maintenance Manual) before entering.

2. Equipment

   A. The equipment used to develop this technique is as follows:

      (1) Sperry, portable 160 KV, side emission X-ray generator

      (2) ASTM CLASS I and CLASS II ready pack and lead pack film

      (3) Lead screen 0.03 inch or thicker to be placed behind film.

3. Prepare for Inspection

   A. Drain and purge the appropriate fuel tanks to permit tank entry for film placement along the horizontal flange of the upper rear spar chord.

Wing Upper Rear Spar Chord Horizontal Flange Side of Body to WS 360.0
Figure 27 (Sheet 1)

4. Inspection Procedure

A. Identify film type and size from Table II, III, IV, V or VI according to the airplane effectivity. See Table I for airplane effectivity.

WARNING: PRECAUTIONS AND SAFETY PROCEDURES CONTAINED IN CHAPTER 28 OF THE MAINTENANCE MANUAL MUST BE FOLLOWED BY PERSONNEL ENTERING ANY TANK THAT HAS CONTAINED FUEL. POSSIBILITY OF EXPLOSION AND TOXIC DANGER EXISTS IN VICINITY OF FUEL TANKS WHICH HAVE CONTAINED FUEL.

B. Place film inside of wing on upper rear spar chord horizontal flange as shown in Detail I to provide for radiographic coverage around fasteners identified in Detail II, III, IV, V, or VI.

C. Allow approximately 1 inch of film overlap between exposures.

D. Trim film as necessary to facilitate film placement for maximum coverage of chord flange.

E. Place lead screen behind film to prevent excessive film fogging from backscattering. See Detail I.

F. Position the X-ray generator so that the X-ray beam is perpendicular to the upper wing skin and centered over fasteners to be inspected. See Details I thru VI.

G. Make radiographic exposures No. 1 thru 16 or 22 using the Table II, III, IV, V, or VI generator settings as a guide. Film density in the area to be inspected should be between 2.0 and 3.0

H. Review the film with special attention given to the areas around fastener locations noted in Details II, III, IV or V, or VI.

Wing Upper Rear Spar Chord Horizontal Flange Side of Body to WS 360.0
Figure 27 (Sheet 2)

A/P EFFECTIVITY	INSPECTION AREA DETAIL NO.S
1	II
2	III
3	IV
4	V
5	VI

EFFECTIVITY TABLE
TABLE I

NOTES

1 CUM LINE NUMBERS 672 AND ON

2 CUM LINE NUMBERS 13 THRU 671 WITH FASTENER OVERSIZING ACCOMPLISHED PER SB'S 2731 and 2606

3 CUM LINE NUBERS 13 THRU 671 WITH 3 EXTERNAL DOUBLERS INSTALLED PER SB 2427 PART XA. SEE DETAIL VII FOR EXTERNAL DOUBLER CONFIGURATION.

4 CUM LINE NUMBERS 13 THRU 671 WITH NEW SKIN AND CHORD AND 3 EXTERNAL DOUBLERS INSTALLED PER SB 2607. SEE DETAIL VIII FOR EXTERNAL DOUBLER CONFIGURATION.

5 CUM LINE NUMBERS 13 THRU 671 WITH NEW SKIN AND INTEGRALLY MACHINED PAD AND NEW CHORD INSTALLED PER SB 2607. SEE DETAIL IX FOR INTEGRAL PAD CONFIGURATION.

NONDESTRUCTIVE TEST

EXPOSURE NUMBER	FILM			SFD	GEN.SETTING FILM DENSITY OBJECTIVE 2 to 3	
	POSITION NO.	TYPE	SIZE		KV	MAS
1	1	I and I [A]	6 x 10	48	160	1600
2	2	I and I [A]	6 x 10	48	140	1340
3	3	I and II	6 x 10	48	100	1600
4	4	I and I [A]	6 x 10	48	120	1600
5	5	I	6 x 10	48	120	1600
6	6	I and I [A]	6 x 10	48	120	1600
7	7	I	6 x 10	48	120	1600
8	8	I	6 x 10	48	120	1600
9	9	I [A] and II	6 x 10	48	160	1340
9A	9	I and II [A]	6 x 10	48	160	1340
10	10	I and II	6 x 10	48	160	1740
11	11	I and I [A]	6 x 10	48	120	1600
12	12	I	6 x 10	48	120	1600
13	13	I	6 x 10	48	120	1600
14	14	I and I [A]	6 x 10	48	120	1600
15	15	I	6 x 10	48	120	1600
16	16	I	6 x 10	48	120	1340
17	17	I	6 x 10	48	120	1340
18	18	I	6 x 10	48	120	1340
19	19	I	6 x 10	48	120	1340
20	20	I	6 x 10	48	120	1070
21	21	I and I [A]	6 x 12	60	120	2500

X-RAY PARAMETERS
TABLE II

NOTES

- ALL DIMENSIONS ARE IN INCHES
- FOR EFFECTIVITY SEE TABLE I
- CUT FILM TO FIT. SEE DETAIL I
- [A] LEAD PACK

Wing Upper Rear Spar Chord Horizontal Flange Side of Body To WS 360.0
Figure 27 (Sheet 3)

EXPOSURE NUMBER	FILM			SFD	GEN.SETTING FILM DENSITY OBJECTIVE 2 to 3	
	POSITION NO.	ASTM CLASS	SIZE		KV	MAS
1	1	I	6 x 10	48	160	1740
2	2	I	6 x 10	48	160	1600
3	3	I	6 x 10	48	120	1070
4	4	I	6 x 10	48	120	1070
5	5	I	6 x 10	48	120	1070
6	6	I	6 x 10	48	120	1070
7	7	I	6 x 10	48	120	1070
8	8	I	6 x 10	48	120	1070
9	9	I, I [A] and II	6 x 10	48	160	1600
10	10	I, I [A] and II	6 x 10	48	160	1600
11	11	I	6 x 10	48	120	1600
12	12	I	6 x 10	48	100	1870
13	13	I	6 x 10	48	100	1870
14	14	I	10 x 6	48	120	1335
15	15	I	10 x 6	48	100	1335
16	16	I	10 x 6	48	100	1335
17	17	I	10 x 6	48	100	1070
18	18	I	10 x 6	48	100	1335
19	19	I	10 x 6	48	100	1335
20	20	I	10 x 6	48	100	1070
21	21	I	10 x 6	48	100	1335
22	22	I	10 x 6	48	100	1335
23	23	I	10 x 6	48	100	1070
24	24	I,I [A]	10 x 6	48	100	1600
25	25	I,I [A]	10 x 6	48	100	1600
26	26	I	20 x 6	48	100	1070
27	27	I	10 x 6	48	200	1335
28	28	I	10 x 6	48	100	1335
29	29	I	10 x 6	48	100	1070
30	30	I	10 x 6	48	100	1335
31	31	I	10 x 6	48	100	1335
32	32	I	10 x 6	48	100	1335
33	33	I,I [A]	10 x 6	48	120	1070

X-RAY PARAMETERS
Table III

NOTES

- FOR EFFECTIVITY, SEE TABLE I
- CUT FILM TO FIT. SEE DETAIL I
- ALL DIMENSIONS ARE IN INCHES

[A] LEAD PACK

Wing Upper Rear Spar Chord Horizontal Flange Side of Body to WS 360.0
Figure 27 (Sheet 4)

EXPOSURE NUMBER	FILM			SFD	GEN. SETTING FILM DENSITY OBJECTIVE 2 to 3	
	POSITION NO.	ASTM CLASS	SIZE		KV	MAS
1	1	I	6 x 10	48	160	1600
2	2	I	6 x 10	48	160	1600
3	3	I	6 x 10	48	120	1070
4	4	I	6 x 10	48	120	1335
5	5	I	6 x 10	48	120	1335
6	6	I	6 x 10	48	120	1600
7	7	I	6 x 10	48	230	1600
8	8	I	6 x 10	48	120	1335
9	9	I, I [A] and II	6 x 10	48	160	1870
10	10	I, I [A] and II	6 x 10	48	160	1870
11	11	I	6 x 10	48	120	1870
12	12	I	6 x 10	48	120	1870
13	13	I	6 x 10	48	120	1870
14	14	I	6 x 10	48	140	2665
15	15	I	6 x 10	48	140	1335
16	16	I	6 x 10	48	140	1065
17	17	I	6 x 10	48	120	1335
18	18	I	6 x 10	48	120	1335
19	19	I	6 x 10	48	120	1200
20	20	I	6 x 10	48	120	1065
21	21	I	6 x 10	48	120	1200
22	22	I	6 x 10	48	120	1200
23	23	I	6 x 10	48	120	1065
24	24	I and II	6 x 10	48	100	1600
25	25	I and II	6 x 10	48	100	1600
26	26	I	6 x 10	48	120	1065
27	27	I	6 x 10	48	120	1065
28	28	I	6 x 10	48	120	1065
29	29	I	6 x 10	48	120	1065
30	30	I	6 x 10	48	120	1065
31	31	I	6 x 10	48	120	1865
32	32	I	6 x 10	48	100	1600
33	33	I and II	6 x 10	48	100	2135

X-RAY PARAMETERS
TABLE IV

NOTES

- FOR EFFECTIVITY, SEE TABLE I
- CUT FILM TO FIT. SEE DETAIL I
- ALL DIMENSIONS ARE IN INCHES

[A] LEAD PACK

Wing Upper Rear Spar Chord Horizontal Flange Side of Body to WS 360.0
Figure 27 (Sheet 5)

EXPOSURE NUMBER	FILM			SFD	GEN. SETTING FILM DENSITY OBJECTIVE 2 to 3	
	POSITION NO.	ASTM CLASS	SIZE		KV	MAS
1	1	I and I [A]	6 x 10	48	160	2130
2	2	I	6 x 10	48	160	1870
3	3	I	6 x 10	48	120	1070
4	4	I	6 x 10	48	120	1335
5	5	I	6 x 10	48	120	1335
6	6	I	6 x 10	48	120	1600
7	7	I	6 x 10	48	120	1600
8	8	I	6 x 10	48	120	1335
9	9	I,II and I [A]	6 x 10	48	160	1340
9A	9	I and II [A]	6 x 10	48	160	1740
10	10	I and II	6 x 10	48	160	1340
11	11	I and I [A]	6 x 10	48	120	1600
12	12	I	6 x 10	48	120	1335
13	13	I	6 x 10	48	120	1335
14	14	I	6 x 10	48	140	1335
15	15	I	6 x 10	48	120	1065
16	16	I	6 x 10	48	120	1065
17	17	I	6 x 10	48	120	1065
18	18	I	6 x 10	48	100	2135
19	19	I and II [A]	6 x 10	48	100	1600
20	20	I	6 x 10	48	100	1600
21	21	I	6 x 10	48	100	1335
22	22	I	6 x 10	48	100	1335
23	23	I	6 x 10	48	120	1070
24	24	I and I [A]	6 x 10	48	100	1600
25	25	I and I [A]	6 x 10	48	100	1600
26	26	I	6 x 10	48	100	1070
27	27	I	6 x 10	48	100	1335
28	28	I	6 x 10	48	100	1335
29	29	I	6 x 10	48	100	1070
30	30	I	6 x 10	48	100	1335
31	31	I	6 x 10	48	100	1335
32	32	I	6 x 10	48	100	1335
33	33	I and I [A]	6 x 10	48	120	1070

X-RAY PARAMETERS
TABLE V

NOTES

- FOR EFFECTIVITY, SEE TABLE I
- CUT FILM TO FIT. SEE DETAIL I
- ALL DIMENSIONS ARE IN INCHES

[A] LEAD PACK

Wing Upper Rear Spar Chord Horizontal Flange Side of Body to WS 360.0
Figure 27 (Sheet 6)

EXPOSURE NUMBER	FILM			SFD	GEN.SETTING FILM DENSITY OBJECTIVE 2 to 3	
	POSITION NO.	ASTM CLASS	SIZE		KV	MAS
1	1	I and I [A]	10 x 6	48	160	1600
2	2	I [A]	10 x 6	48	160	1200
3	3	I [A]	10 x 6	48	100	1600
4	4	I [A]	10 x 6	48	100	1600
5	5	I [A]	10 x 6	48	100	1335
6	6	I	10 x 6	48	120	1468
7	7	I	10 x 6	48	120	1600
8	8	I	10 x 6	48	120	1335
9	9	I,I [A] , II	10 x 6	48	160	1340
9A	9	I,II [A]	10 x 6	48	160	1340
10	10	I, II	10 x 6	48	160	1740
11	11	I, I [A]	10 x 6	48	120	1600
12	12	I	10 x 6	48	120	1600
13	13	I	10 x 6	48	120	1600
14	14	I	10 x 6	48	120	1335
15	15	I	10 x 6	48	140	1070
16	16	I	10 x 6	48	120	1070
17	17	I [A]	10 x 6	48	100	1600
18	18	I	10 x 6	48	100	1070
19	19	I, II [A]	10 x 6	48	100	1335
20	20	I	10 x 6	48	100	1335
21	21	I	10 x 6	48	100	1070
22	22	I	10 x 6	48	100	1335
23	23	I	10 x 6	48	100	1335
24	24	I	10 x 6	48	100	1070
25	25	I, I [A]	10 x 6	48	100	1600
26	26	I, I [A]	10 x 6	48	100	1600
27	27	I	10 x 6	48	100	1070
28	28	I	10 x 6	48	100	1335
29	29	I	10 x 6	48	100	1335
30	30	I	10 x 6	48	100	1070
31	31	I	10 x 6	48	100	1335
32	32	I	10 x 6	48	100	1335
33	33	I	10 x 6	48	100	1335
34	34	I,I [A]	10 x 6	48	120	1070

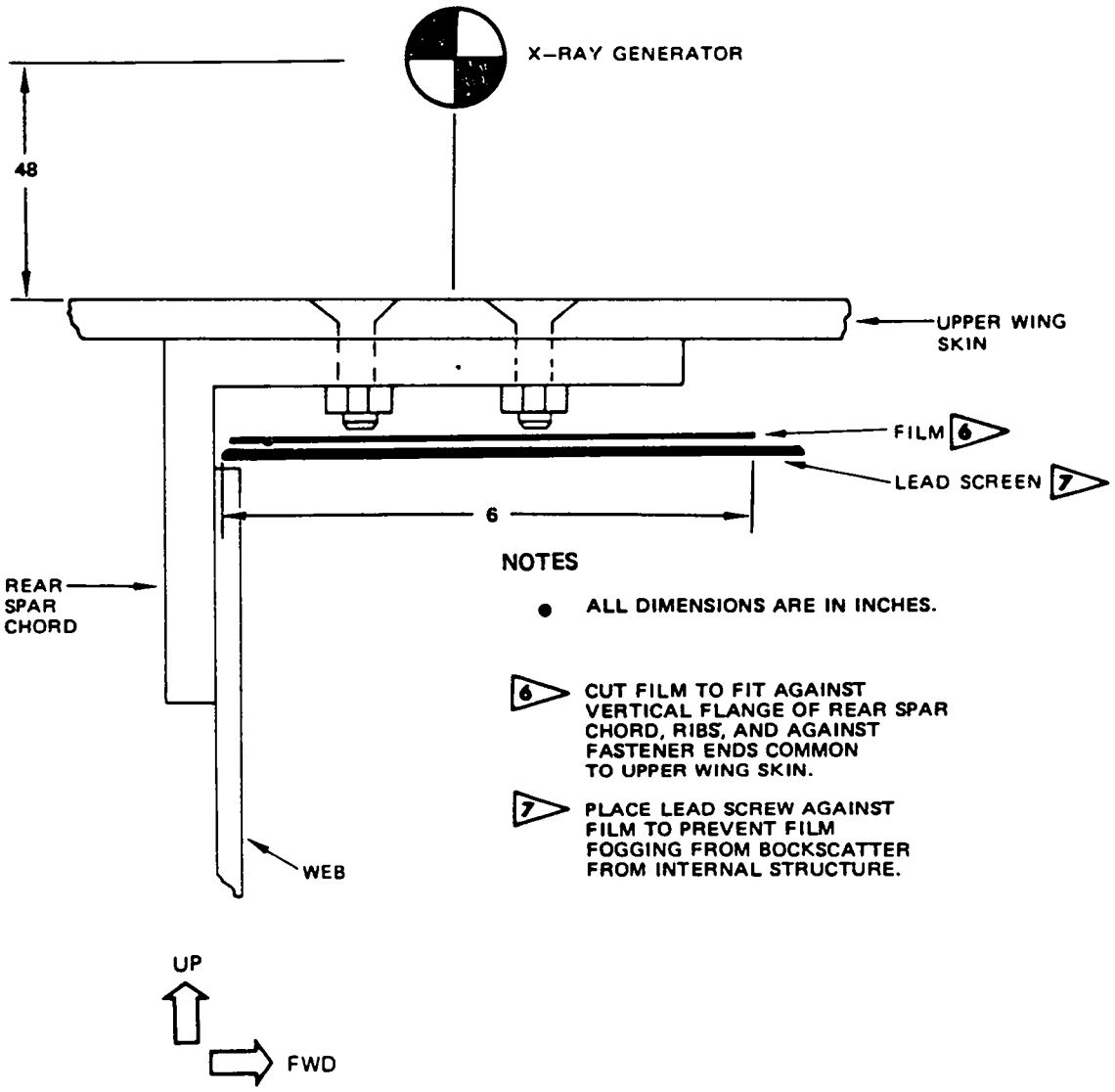
X-RAY PARAMETERS
TABLE VI

NOTES

- FOR EFFECTIVITY, SEE TABLE I
- CUT FILM TO FIT. SEE DETAIL I
- ALL DIMENSIONS ARE INCHES

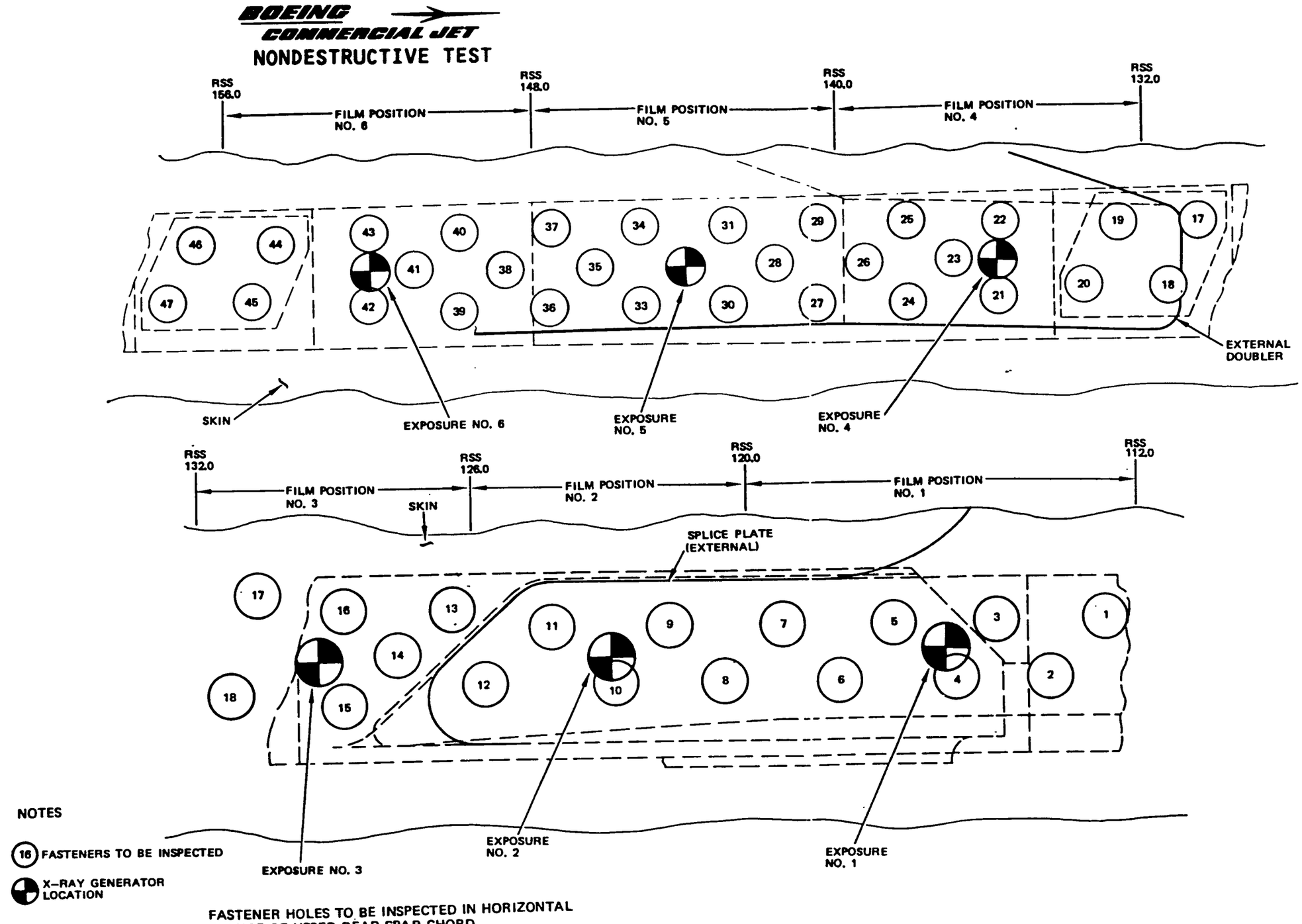
[A] LEAD PACK

Wing Upper Rear Spar Chord Horizontal Flange Side of Body to WS 360.0
Figure 27 (Sheet 7)



TYPICAL FILM AND GENERATOR ARRANGEMENT
DETAIL I

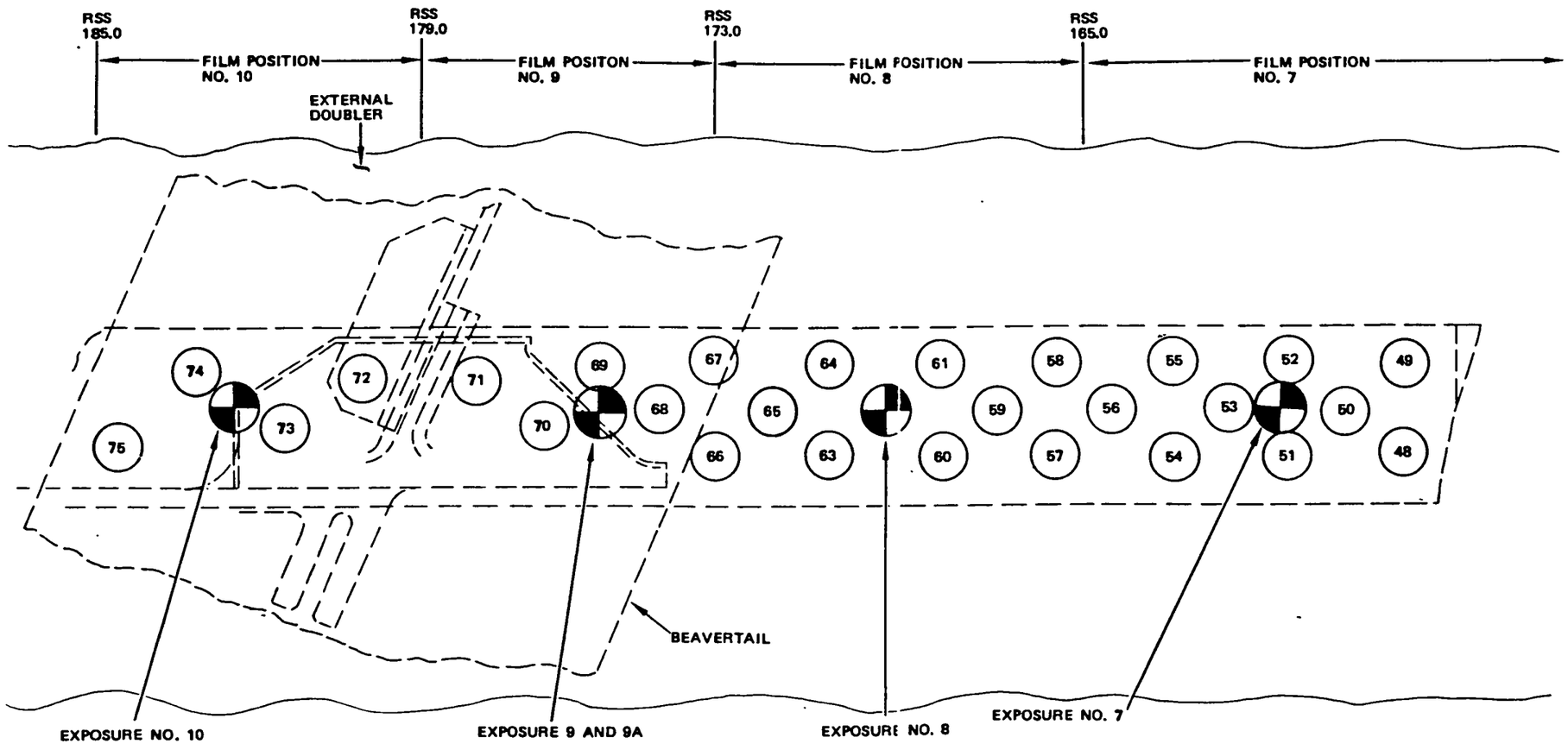
Wing Upper Rear Spar Chord Horizontal Flange Side of Body to WS 360.0
Figure 27 (Sheet 8)



FASTENER HOLES TO BE INSPECTED IN HORIZONTAL FLANGE OF UPPER REAR SPAR CHORD

DETAIL II

Wing Upper Rear Spar Chord Horizontal Flange Side of Body to WS 360.0
Figure 27 (Sheet 9)



NOTES

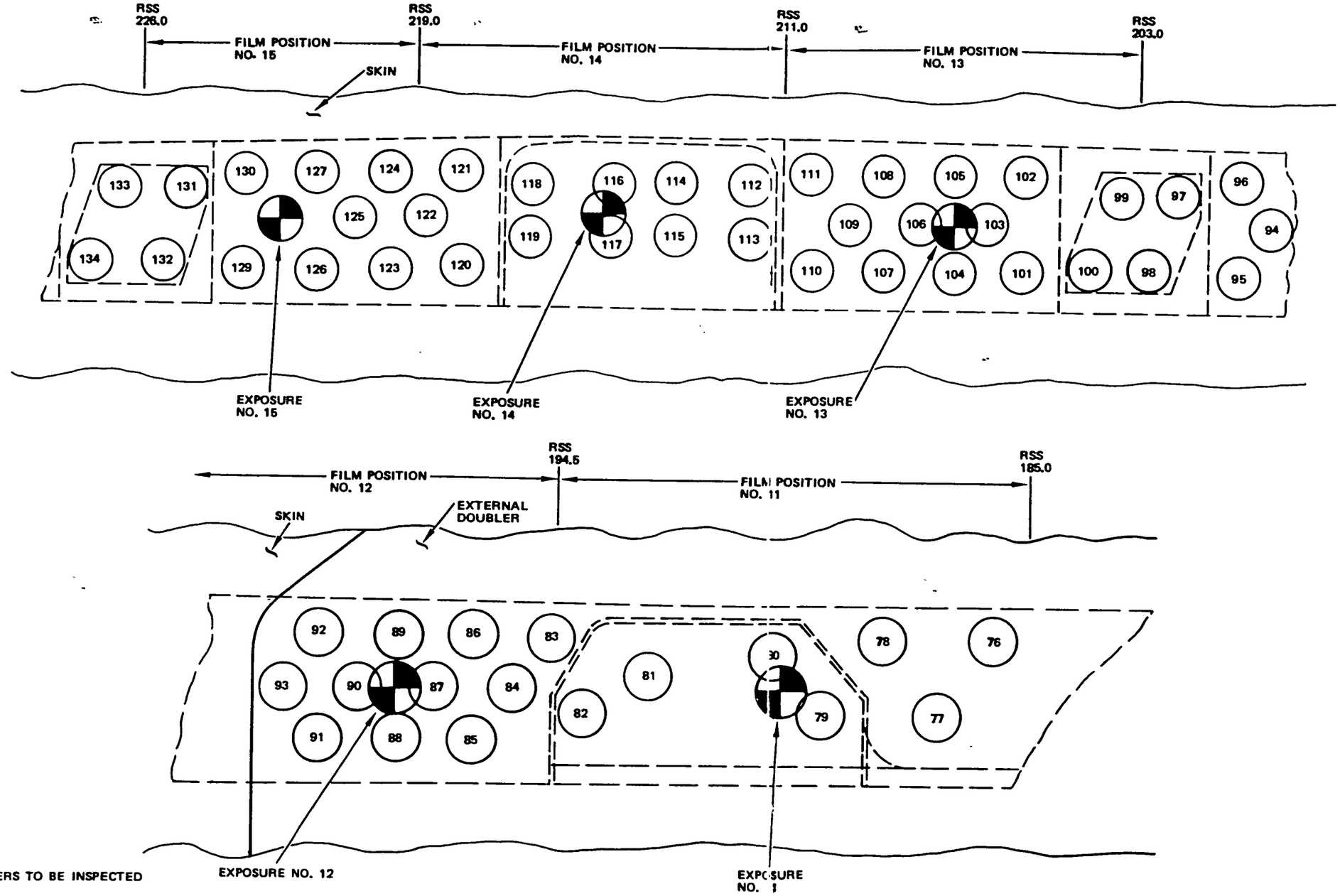
(58) FASTENERS TO BE INSPECTED

X-RAY GENERATOR LOCATION

FASTENER HOLES TO BE INSPECTED IN HORIZONTAL FLANGE OF UPPER REAR SPAR CHORD

DETAIL II (CONT)

Wing Upper Rear Spar Chord Horizontal Flange Side of Body to WS 360.0
Figure 27 (Sheet 10)



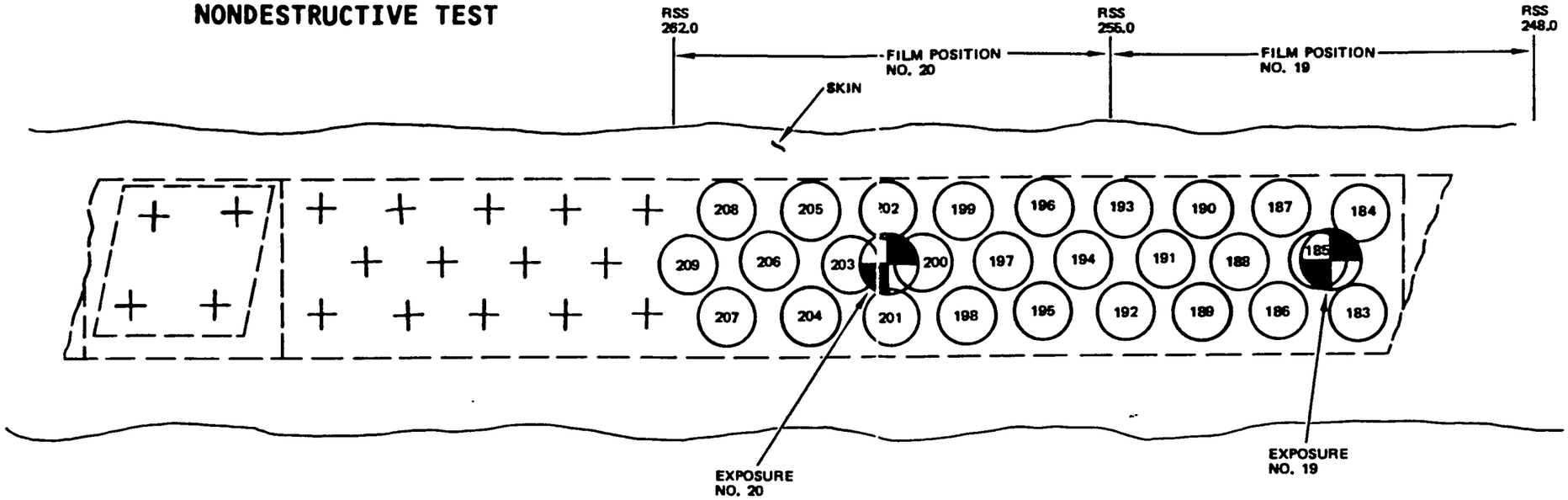
NOTES

(89) FASTENERS TO BE INSPECTED

X-RAY GENERATOR LOCATION

FASTENER HOLES TO BE INSPECTED IN
HORIZONTAL FLANGE OF UPPER REAR SPAR CHORD
DETAIL II (CONT)

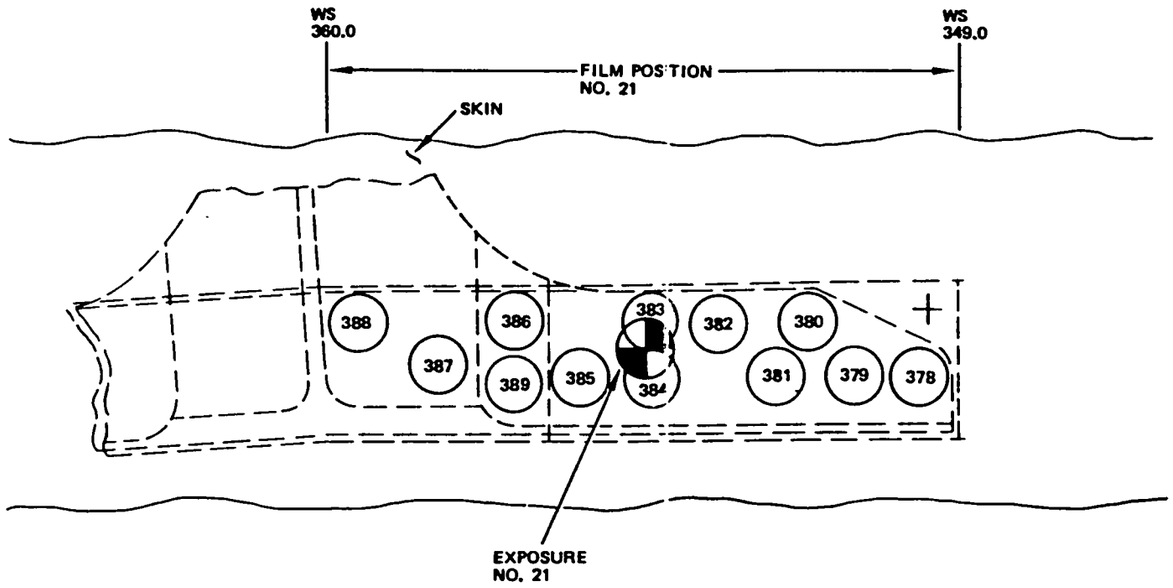
Wing Upper Rear Spar Chord Horizontal Flange Side of Body to WS 360.0
Figure 27 (Sheet 11)



FASTENER HOLES TO BE INSPECTED IN
HORIZONTAL FLANGE OF UPPER REAR SPAR CHORD

DETAIL II (CONT)

Wing Upper Rear Spar Chord Horizontal Flange Side of Body to WS 360.0
Figure 27 (Sheet 12)



NOTES

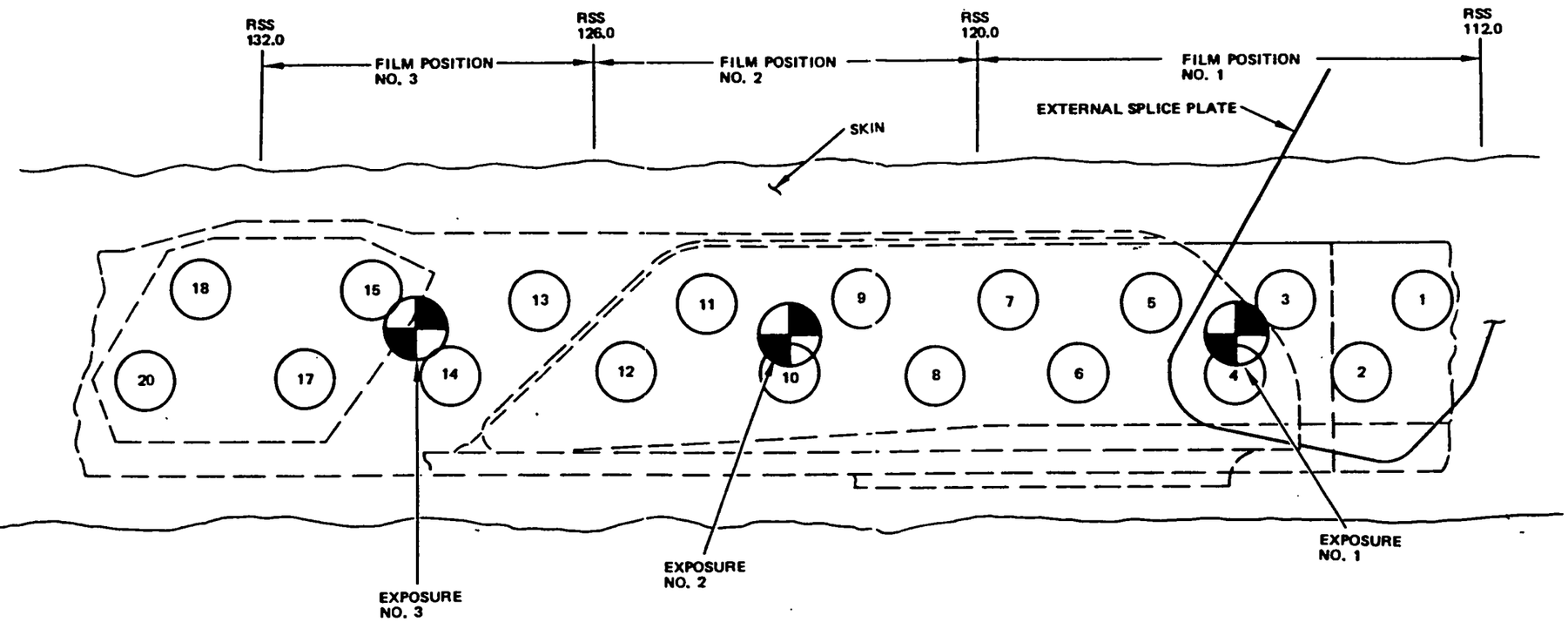
(386) FASTENERS TO BE INSPECTED

X-RAY GENERATOR LOCATION

FASTENER HOLES TO BE INSPECTED IN HORIZONTAL FLANGE OF UPPER REAR SPAR CHORD

DETAIL II (CONT)

Wing Upper Rear Spar Chord Horizontal Flange Side of Body to WS 360.0
Figure 27 (Sheet 13)

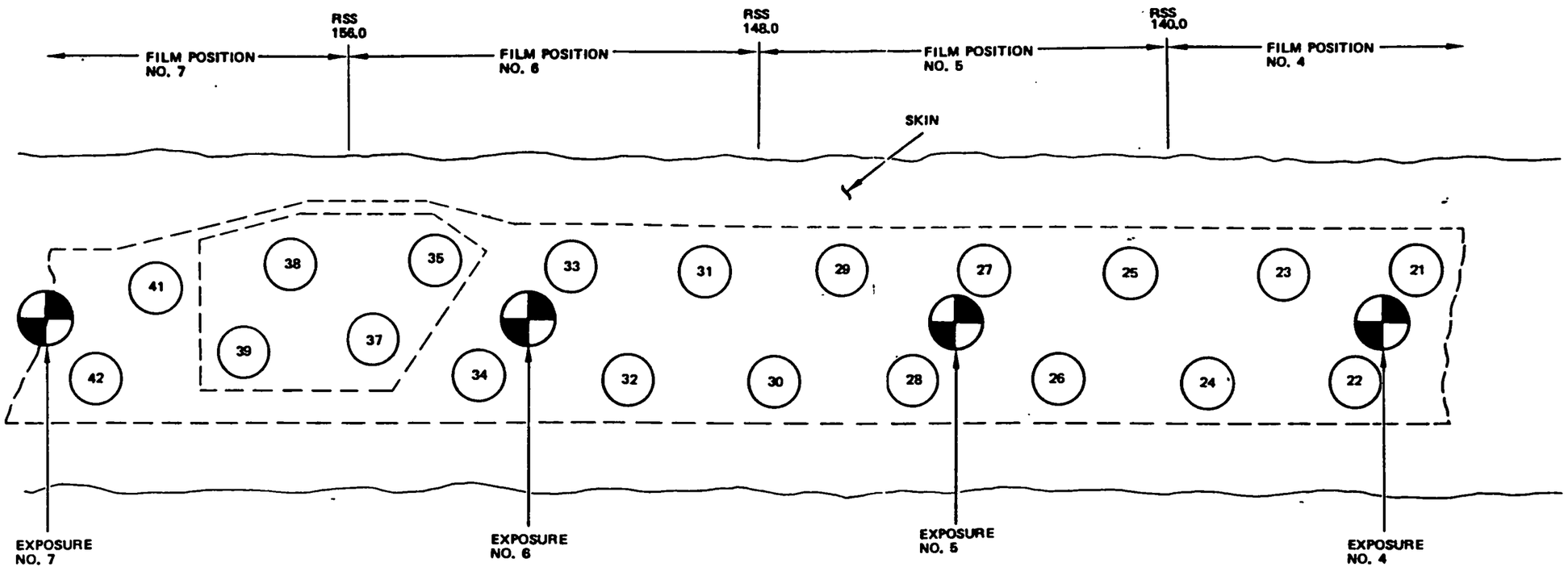


NOTES

(17) FASTENERS TO BE INSPECTED

X-RAY GENERATOR LOCATION

FASTENER HOLES TO BE INSPECTED IN
HORIZONTAL FLANGE OF UPPER REAR SPAR CHORD
DETAIL III

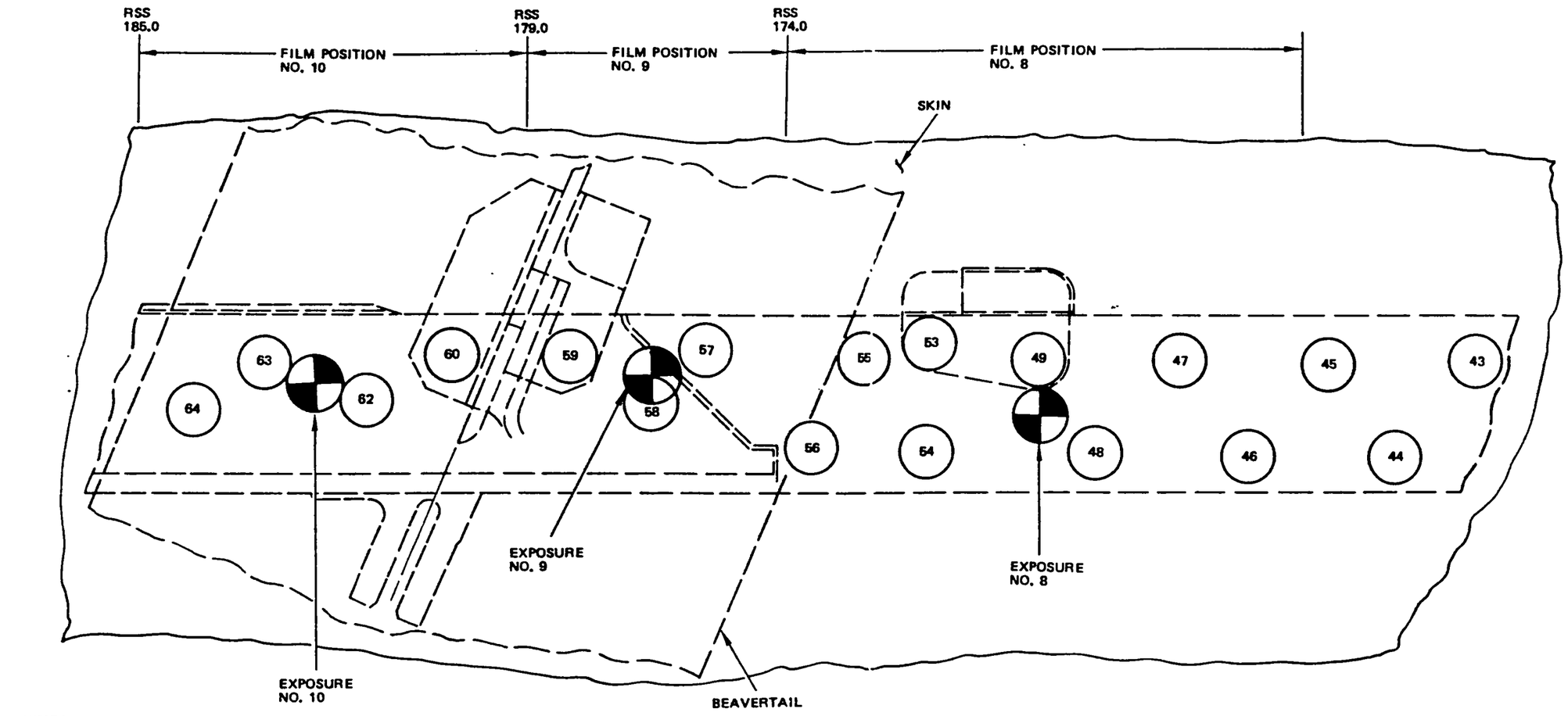


NOTES

(35) FASTENERS TO BE INSPECTED

X-RAY GENERATOR LOCATION

FASTENER HOLES TO BE INSPECTED IN HORIZONTAL FLANGE OF UPPER REAR SPAR CHORD
DETAIL III (CONT)



NOTES

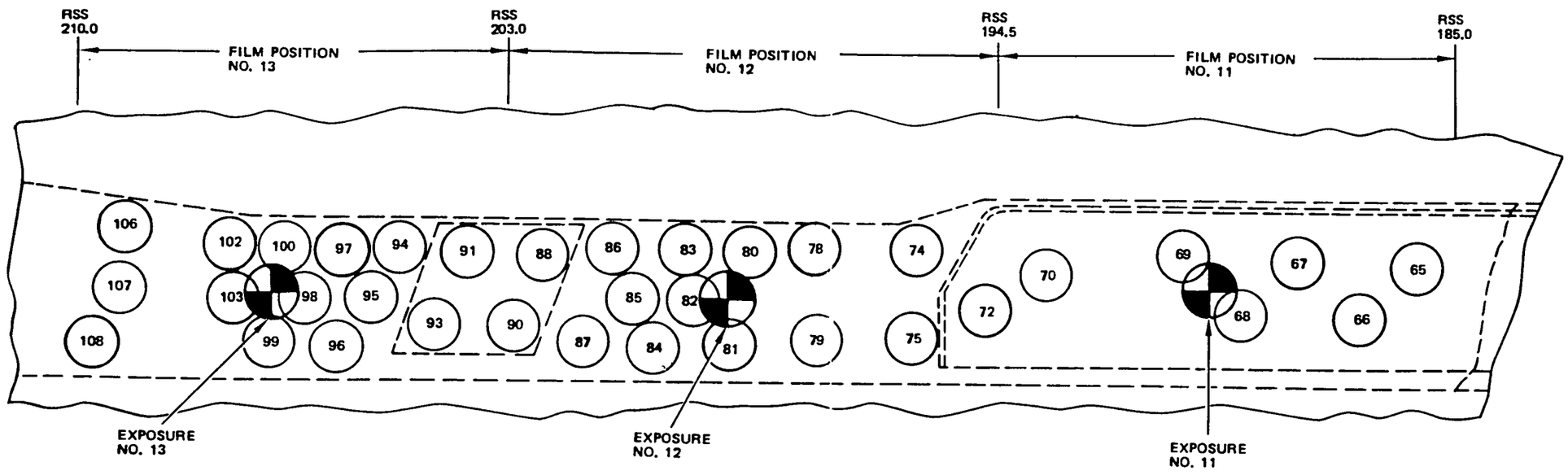
(57) FASTENERS TO BE INSPECTED

X-RAY GENERATOR LOCATION

FASTENER HOLES TO BE INSPECTED IN HORIZONTAL FLANGE OF UPPER REAR SPAR CHORD.

DETAIL III (CONT)

Wing Upper Rear Spar Chord Horizontal Flange Side of Body to WS 360.0
Figure 27 (Sheet 16)



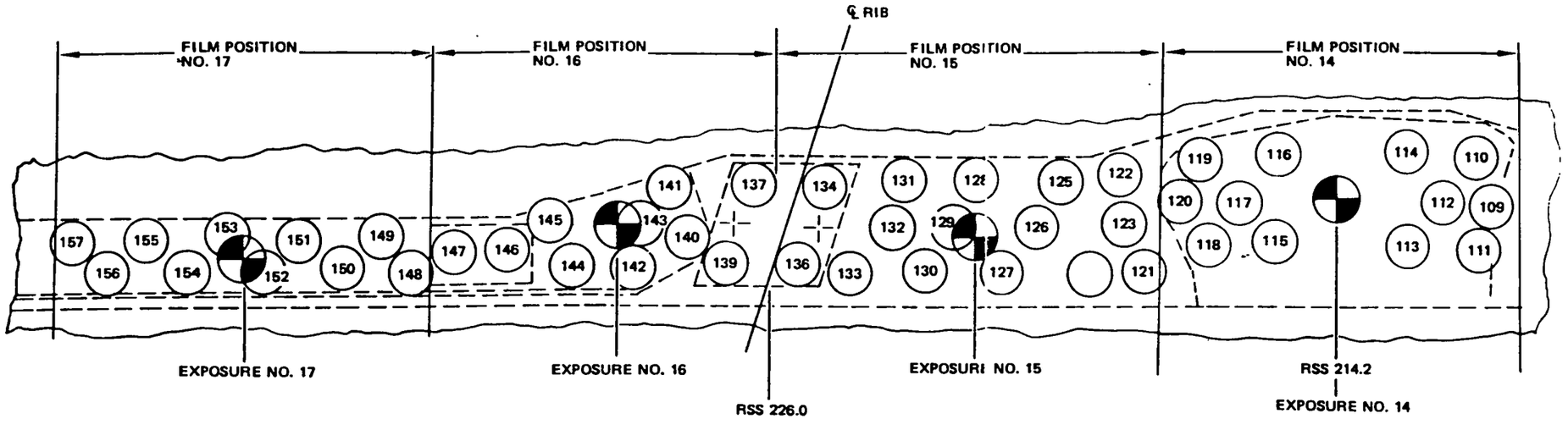
NOTES

(78) FASTENERS TO BE INSPECTED

X-RAY GENERATOR LOCATION

FASTENER HOLES TO BE INSPECTED IN HORIZONTAL FLANGE OF UPPER REAR SPAR CHORD
DETAIL III (CONT)

Wing Upper Rear Spar Chord Horizontal Flange Side of Body to WS 360.0
Figure 27 (Sheet 17)



NOTES

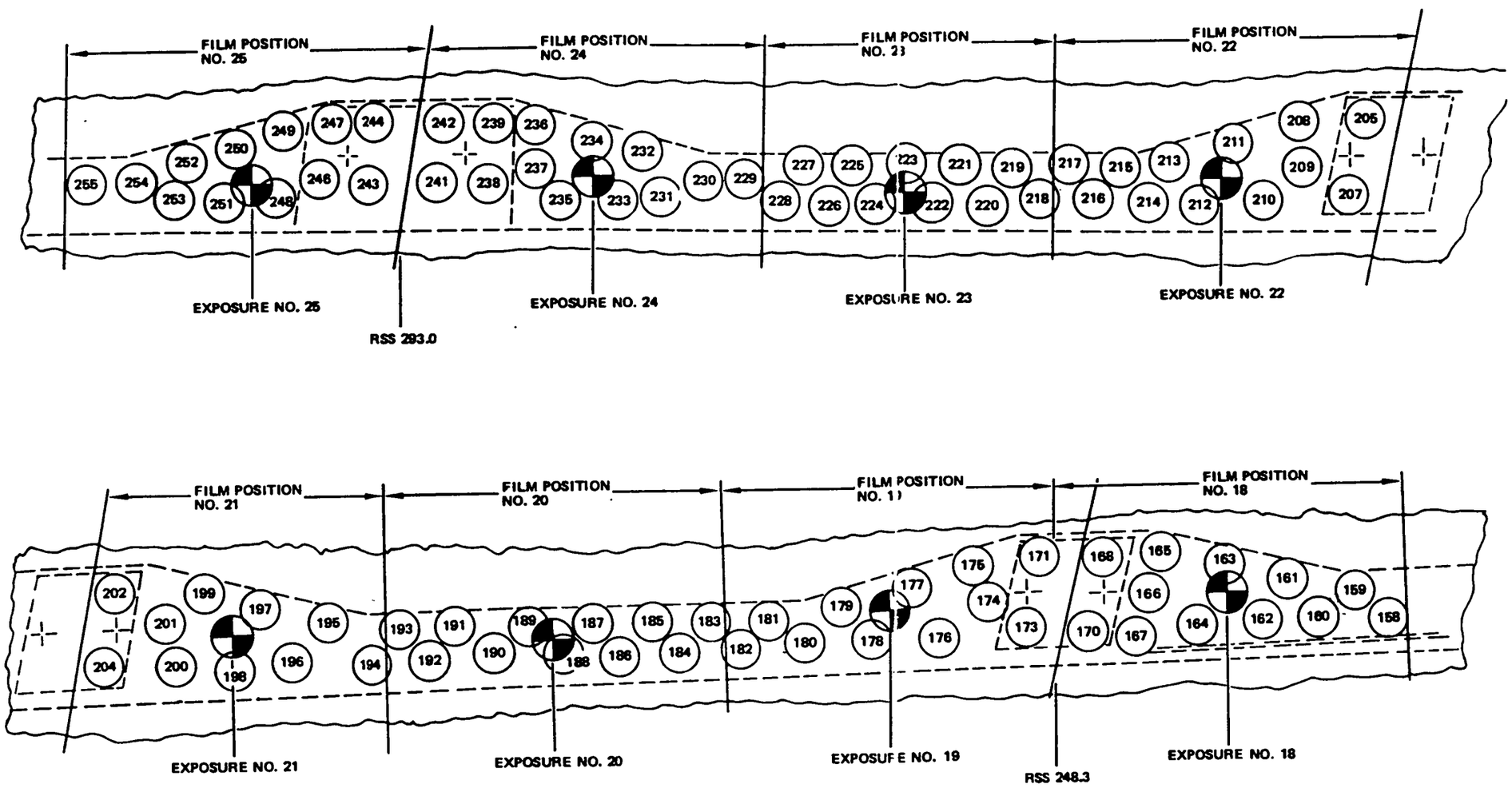
- LEFT WING SHOWN, RIGHT WING SIMILAR

(115) FASTENERS TO BE INSPECTED

X-RAY GENERATOR LOCATION

DETAIL III (CONT)

Wing Upper Rear Spar Chord Horizontal Flange Side of Body to WS 360.0
Figure 27 (Sheet 18)

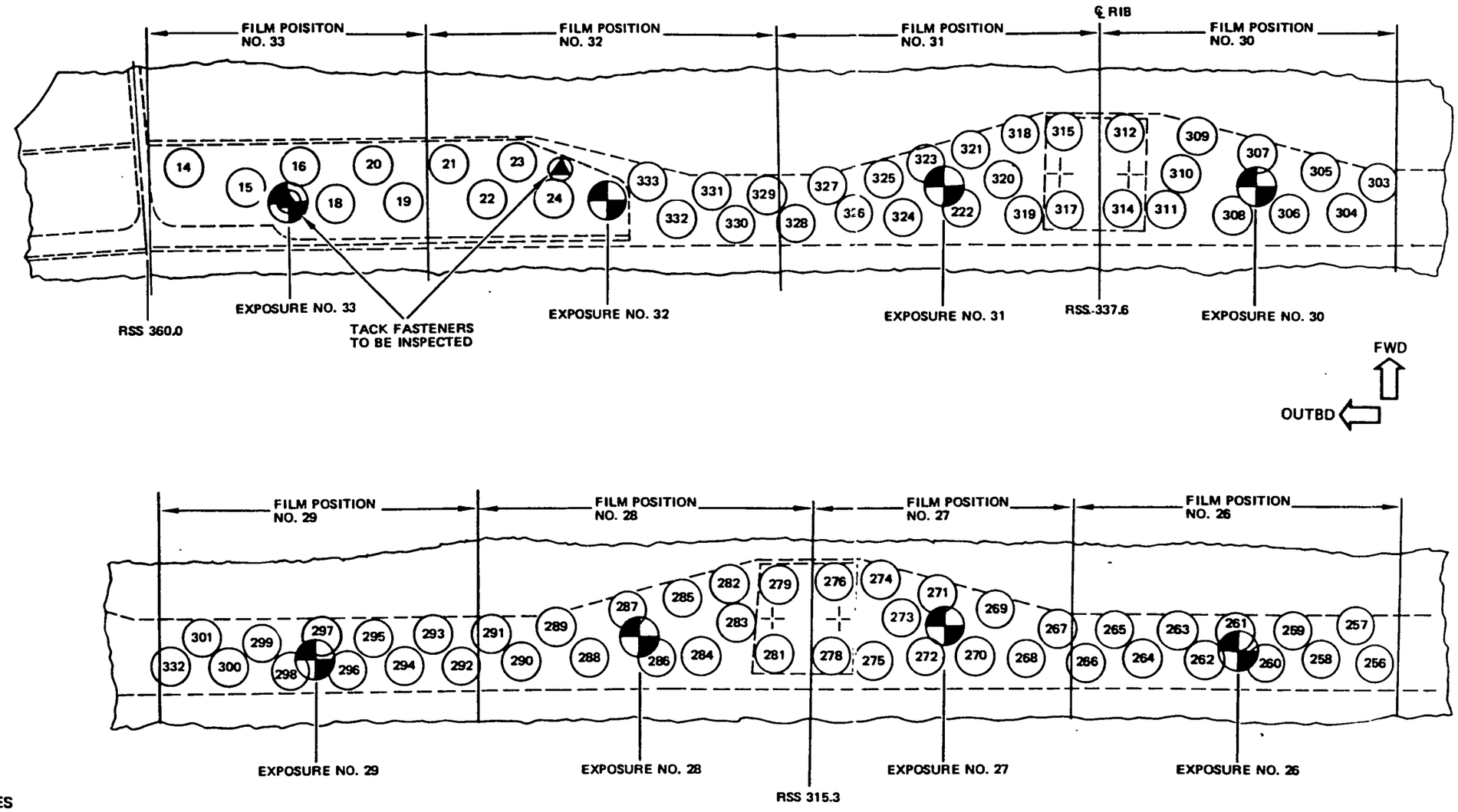


NOTES

- LEFT WING SHOWN, RIGHT WING SIMILAR
- (238) FASTENERS TO BE INSPECTED
- X-RAY GENERATOR LOCATIONS

DETAIL III (CONT)

Wing Upper Rear Spar Chord Horizontal Flange Side of Body to WS 360.0
Figure 27 (Sheet 19)

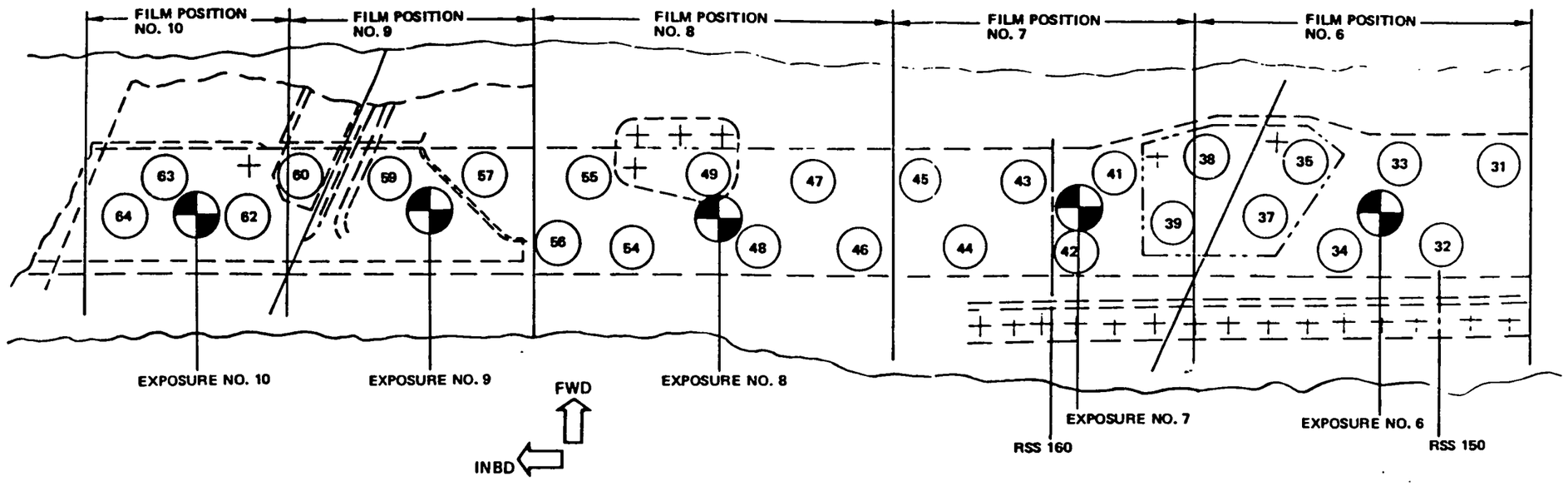


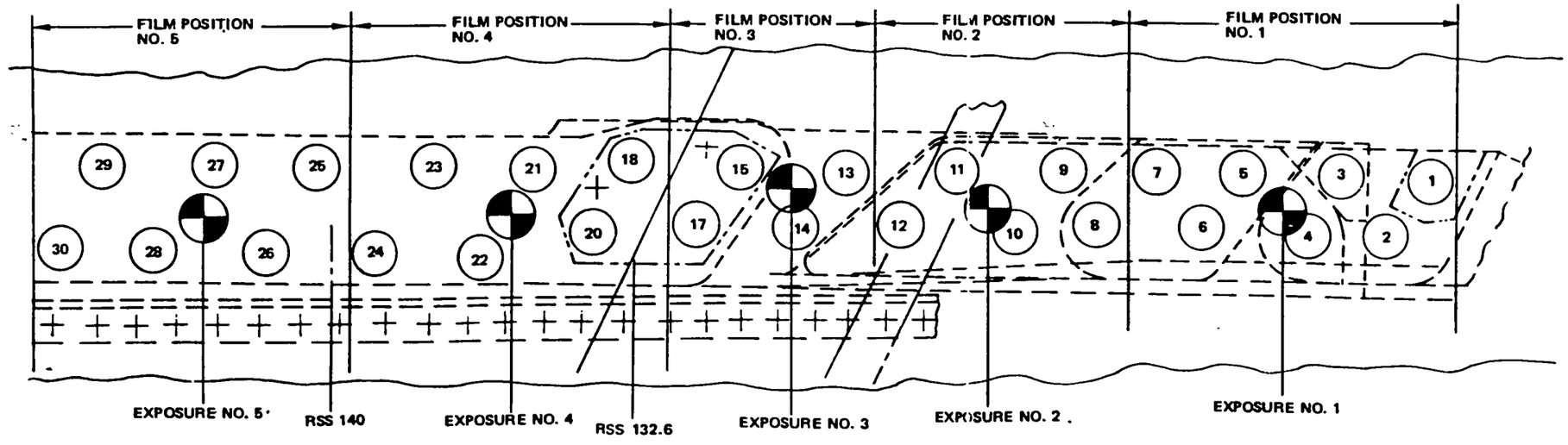
NOTES

- LEFT WING SHOWN, RIGHT WING SIMILAR
- (301) FASTENERS TO BE INSPECTED
- X-RAY GENERATOR LOCATION

DETAIL III (CONT)

Wing Upper Rear Spar Chord Horizontal Flange Side of Body to WS 360.0
Figure 27 (Sheet 20)



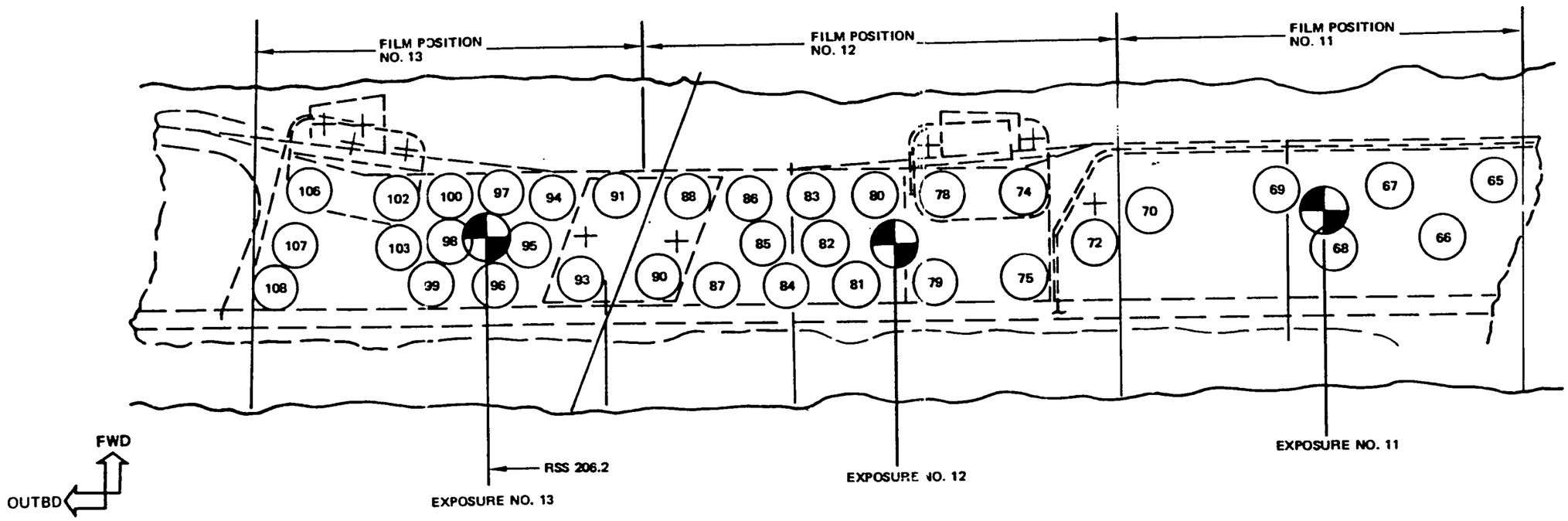


NOTES
- LEFT WING SHOWN, RIGHT WING SIMILAR
- (6) FASTENERS TO BE INSPECTED
- X-RAY GENERATOR LOCATION

UPPER REAR SPAR CHORD HORIZONTAL FLANGE FASTENERS

DETAIL IV

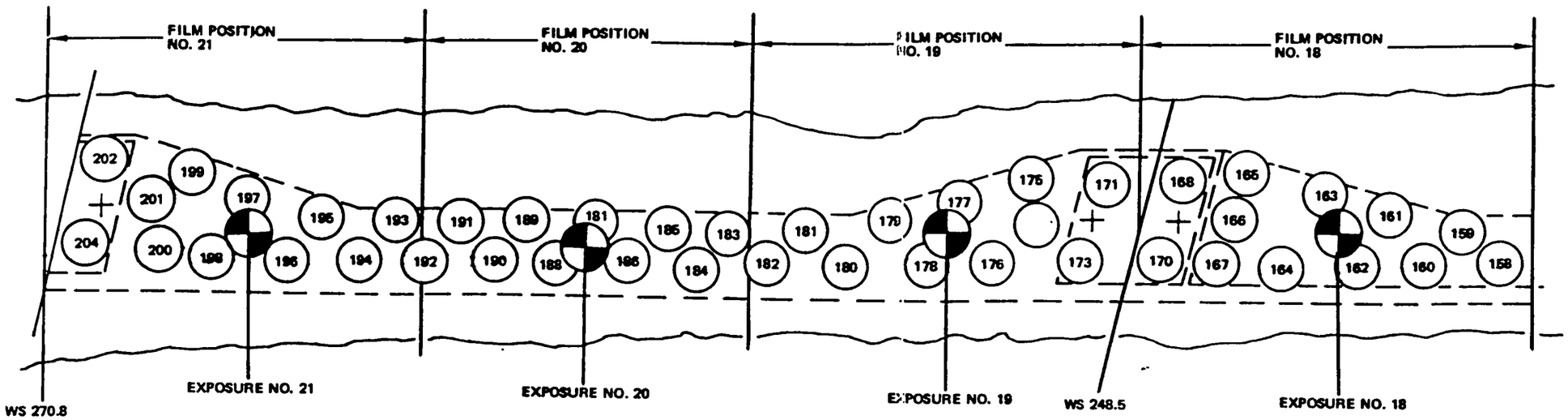
Wing Upper Rear Spar Chord Horizontal Flange Side of Body to WS 360.0
Figure 27 (Sheet 21)

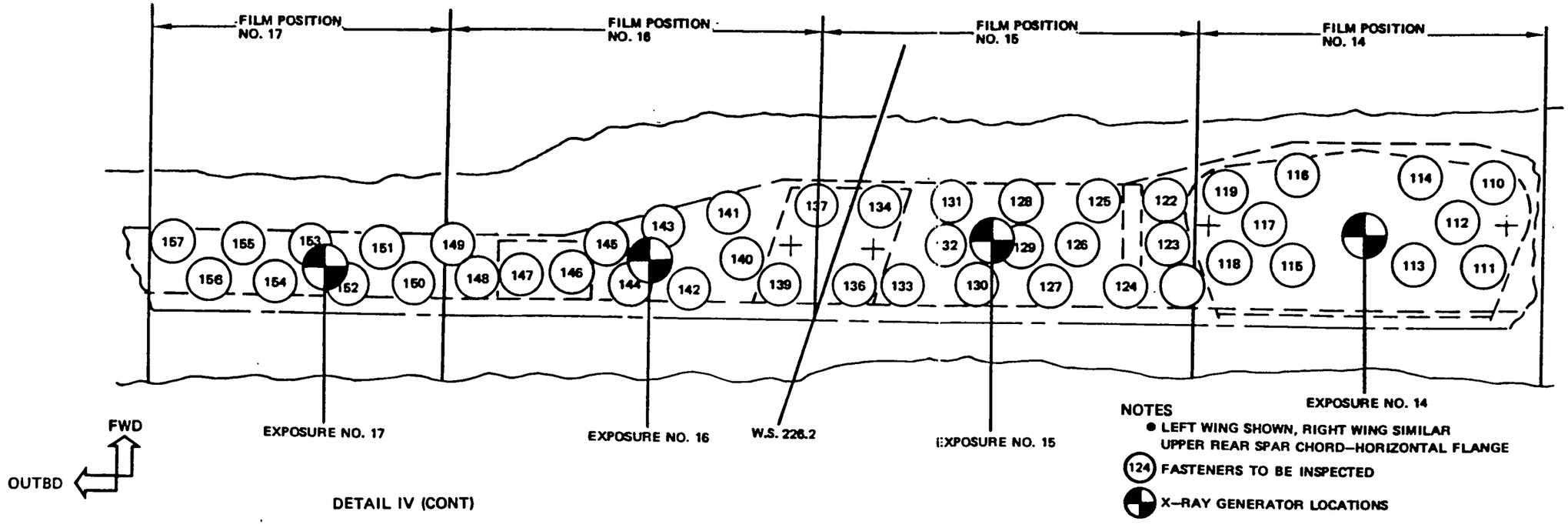


NOTES
- LEFT WING SHOWN, RIGHT WING SIMILAR
- (103) FASTENERS TO BE INSPECTED
- X-RAY GENERATOR LOCATION

DETAIL IV (CONT)

Wing Upper Rear Spar Chord Horizontal Flange Side of Body to WS 360.0
Figure 27 (Sheet 22)



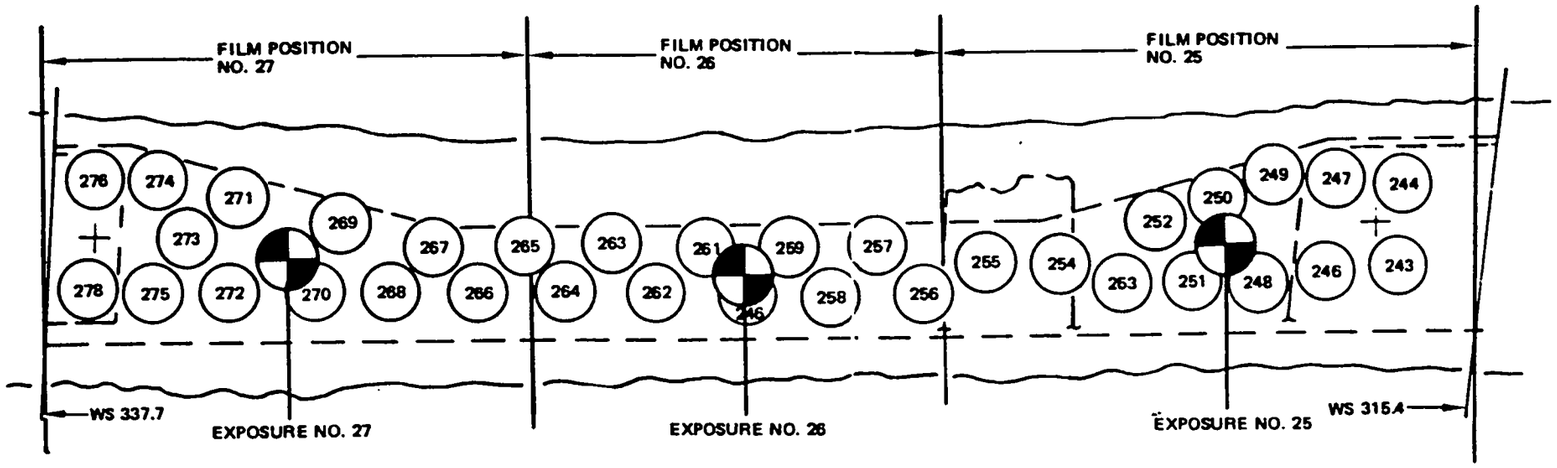


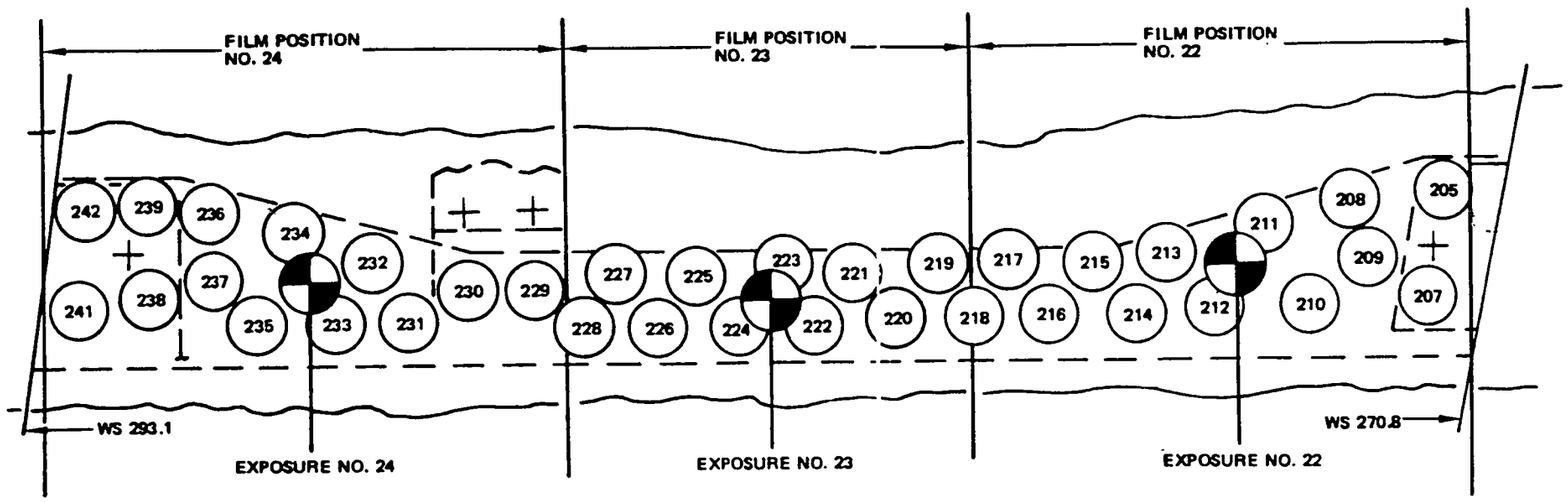
DETAIL IV (CONT)

Wing Upper Rear Spar Chord Horizontal Flange Side of Body to WS 360.0
Figure 27 (Sheet 23)

BOEING COMMERCIAL JET

NONDESTRUCTIVE TEST



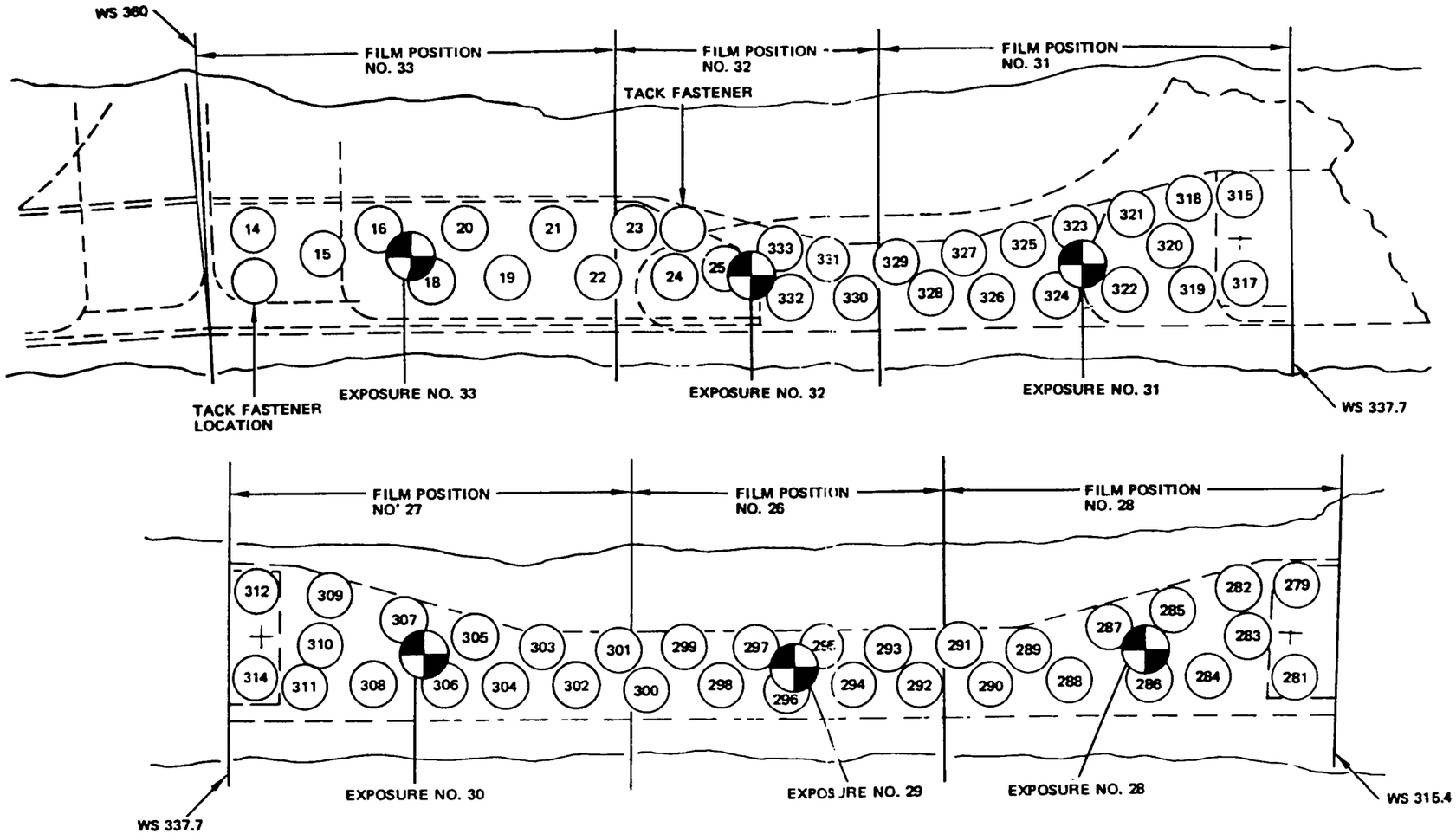


NOTES

- LEFT WING SHOWN, RIGHT WING SIMILAR
- (218) FASTENERS TO BE INSPECTED
- TWO HEAD LOCATIONS

DETAIL IV (CONT)

Wing Upper Rear Spar Chord Horizontal Flange Side of Body to WS 360.0
Figure 27 (Sheet 24)



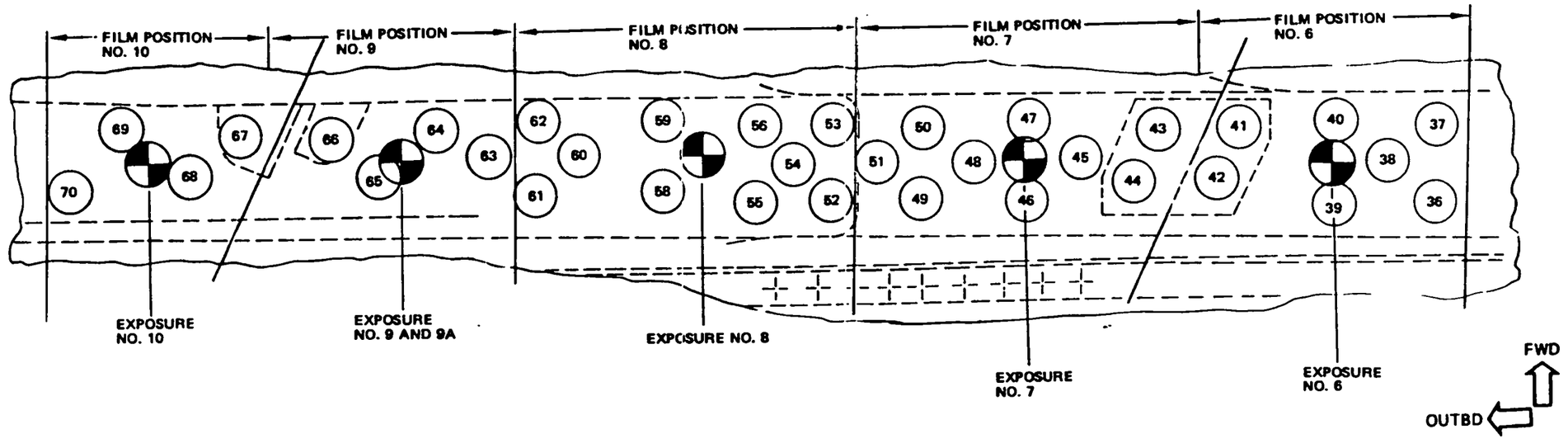
NOTES

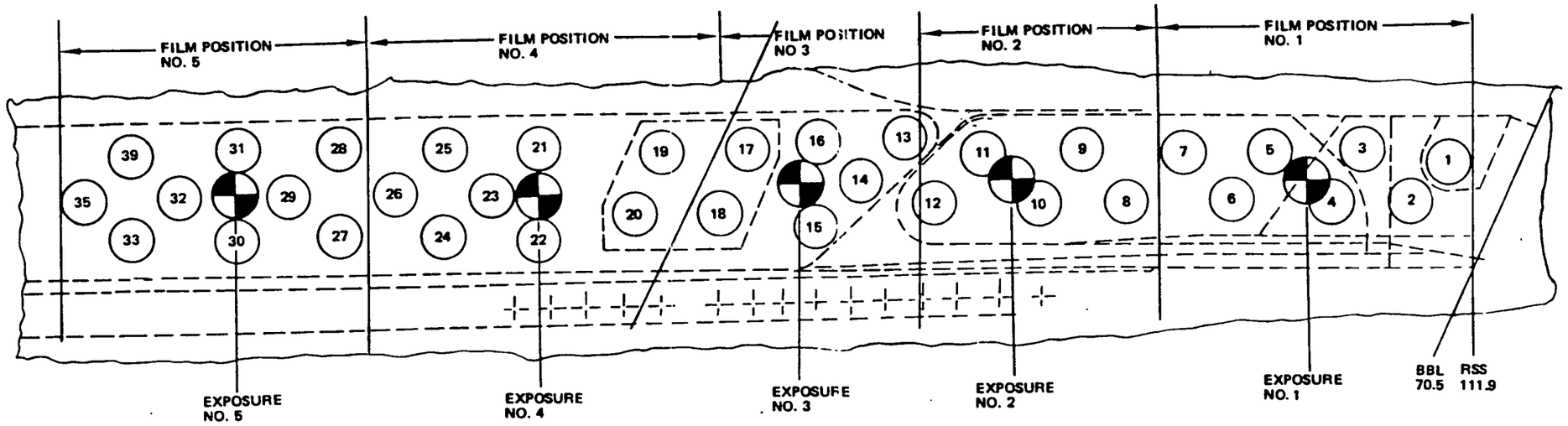
- ● LEFT WING SHOWN, RIGHT WING SIMILAR
- (314) FASTENERS TO BE INSPECTED
- X-RAY GENERATOR LOCATIONS

FWD
INBD

DETAIL IV (CONT)

Wing Upper Rear Spar Chord Horizontal Flange Side of Body to WS 360.0
Figure 27 (Sheet 25)





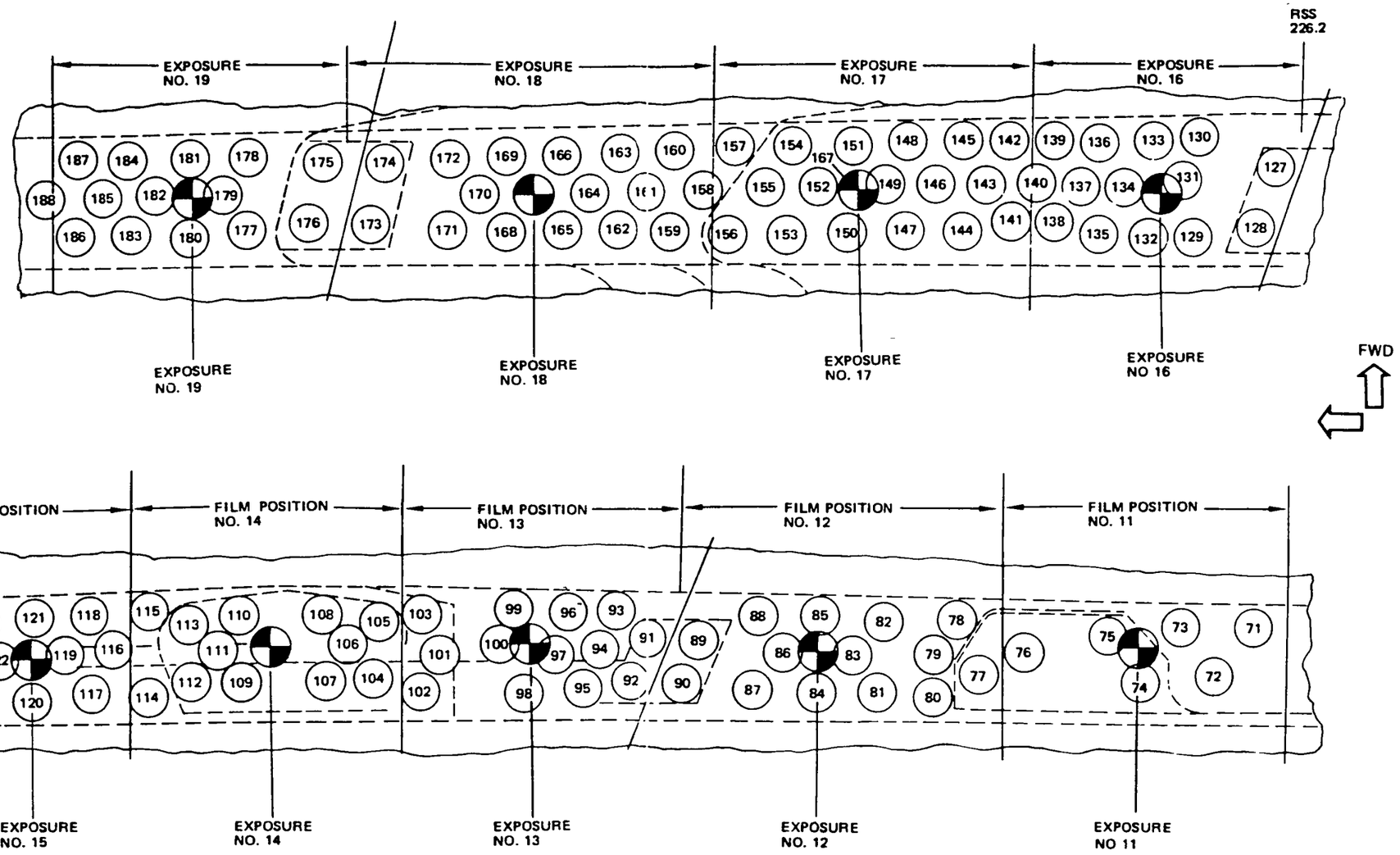
NOTES

- ● LEFT WING SHOWN, RIGHT WING SIMILAR
- (11) FASTENERS TO BE INSPECTED
- X-RAY GENERATOR LOCATION

FASTENER HOLES IN HORIZONTAL FLANGE OF UPPER REAR SPAR CHORD

DETAIL V

Wing Upper Rear Spar Chord Horizontal Flange Side of Body to WS 360.0
Figure 27 (Sheet 26)

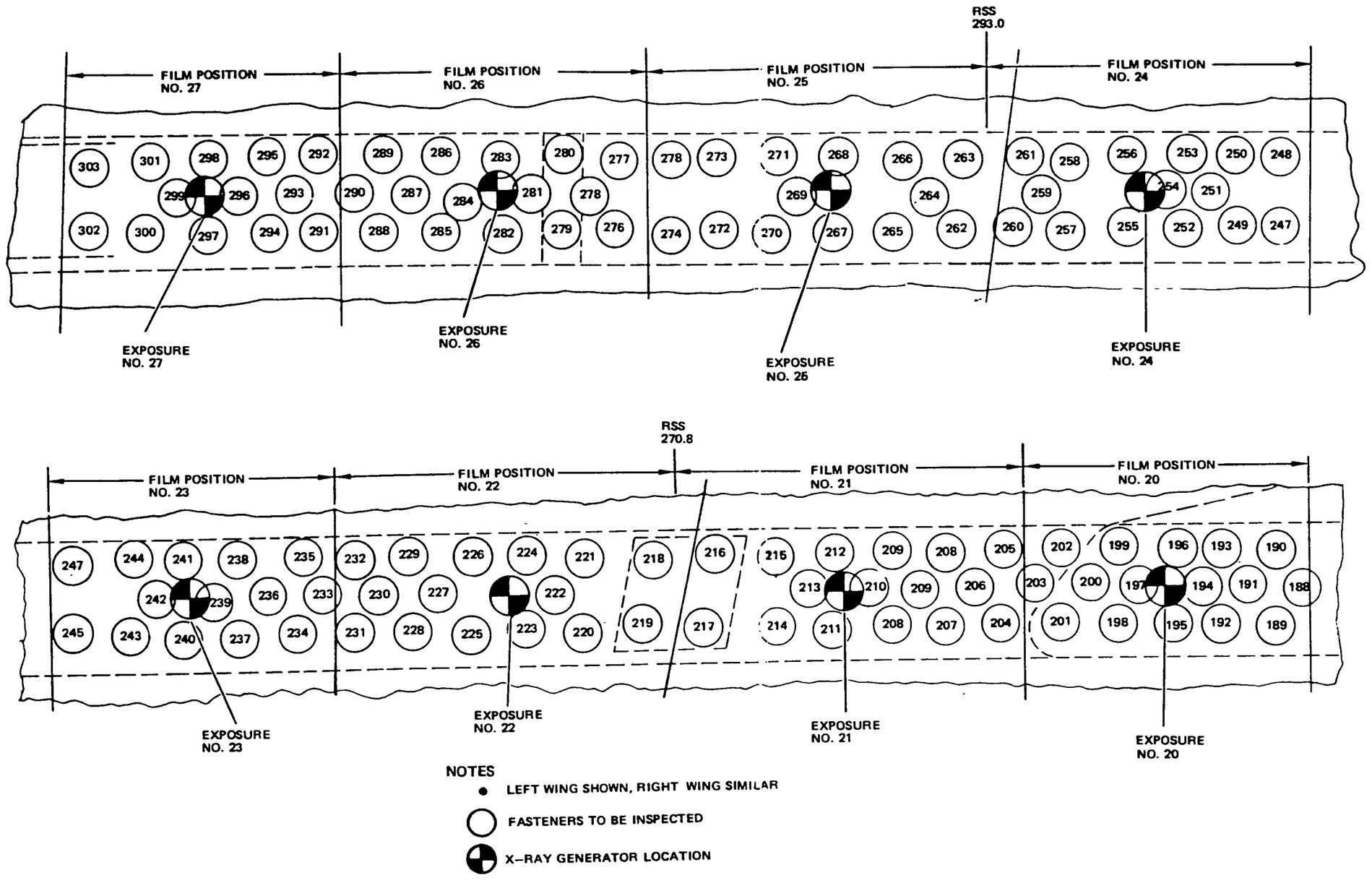


NOTES

- ● LEFT WING SHOWN, RIGHT WING SIMILAR
- (172) FASTENERS TO BE INSPECTED
- ⊕ X-RAY GENERATOR LOCATION

DETAIL V (CONT)

Wing Upper Rear Spar Chord Horizontal Flange Side of Body to WS 360.0
Figure 27 (Sheet 27)

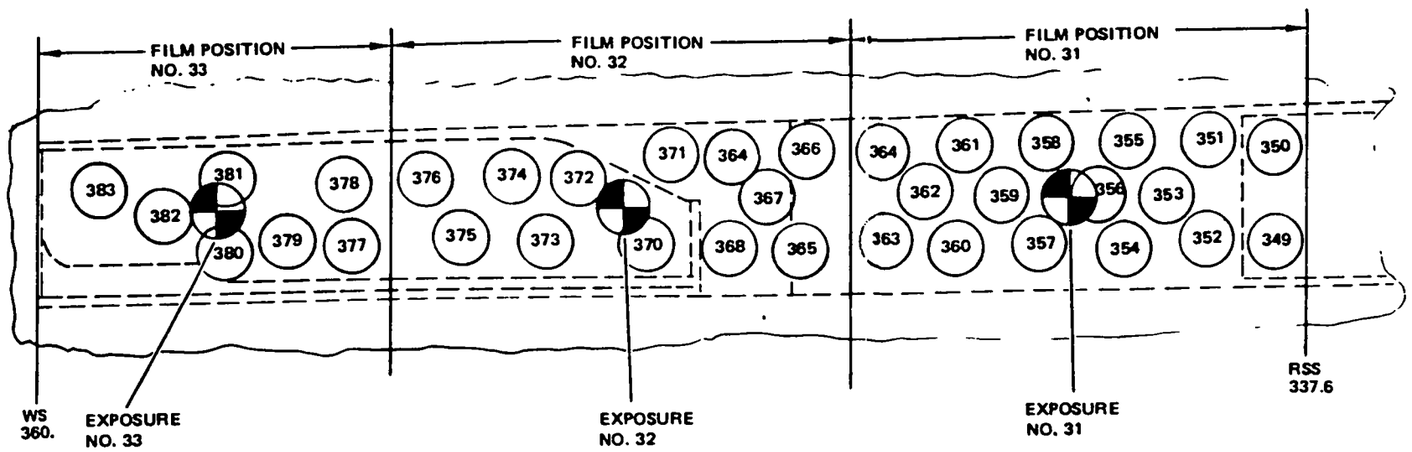


NOTES

- LEFT WING SHOWN, RIGHT WING SIMILAR
- FASTENERS TO BE INSPECTED
- X-RAY GENERATOR LOCATION

DETAIL V (CONT)

Wing Upper Rear Spar Chord Horizontal Flange Side of Body to WS 360.0
Figure 27 (Sheet 28)

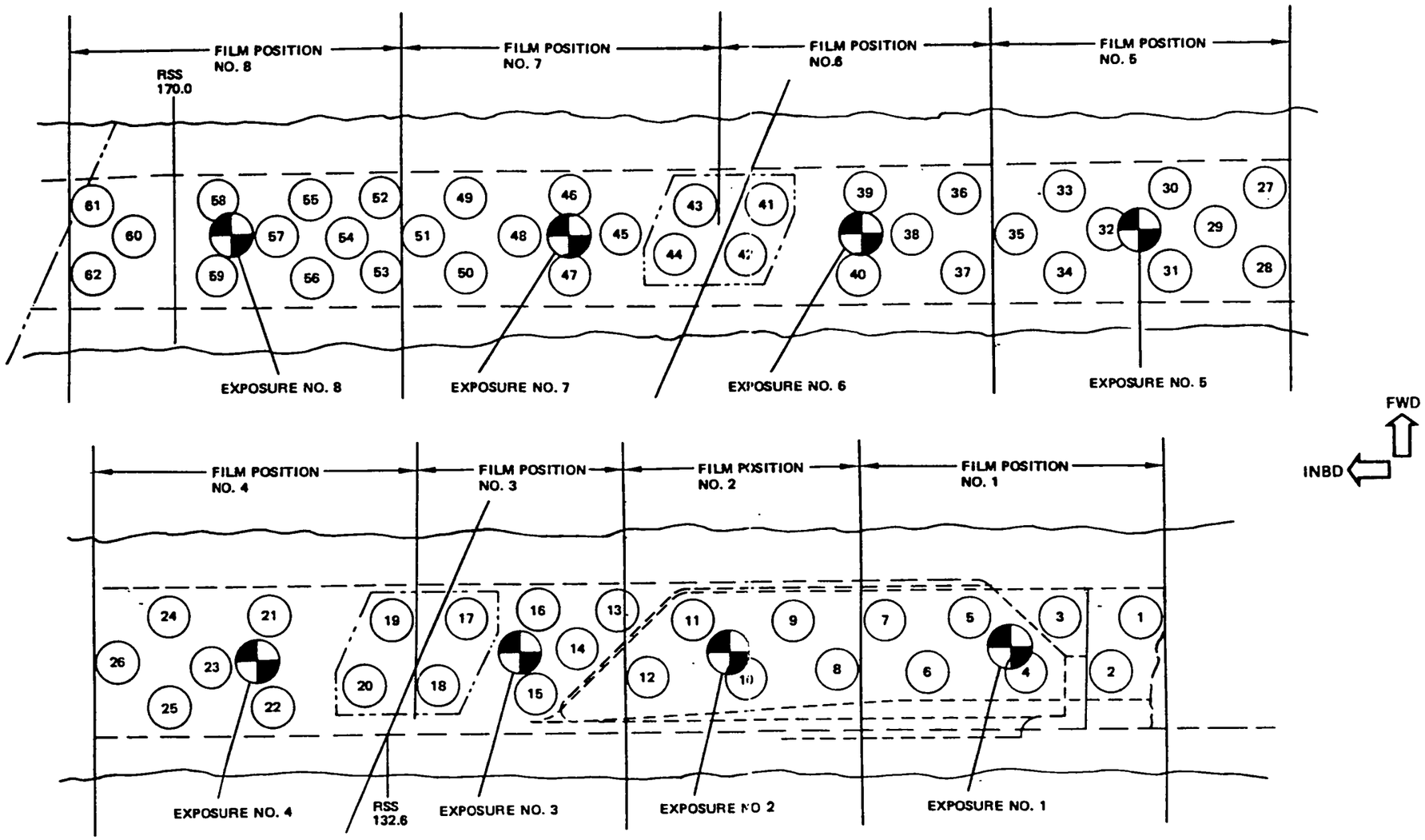


NOTES

- LEFT WING SHOWN, RIGHT WING SIMILAR
- (316) FASTENERS TO BE INSPECTED
- X-RAY GENERATOR LOCATION

DETAIL V (CONT)

Wing Upper Rear Spar Chord Horizontal Flange Side of Body to WS 360.0
Figure 27 (Sheet 29)



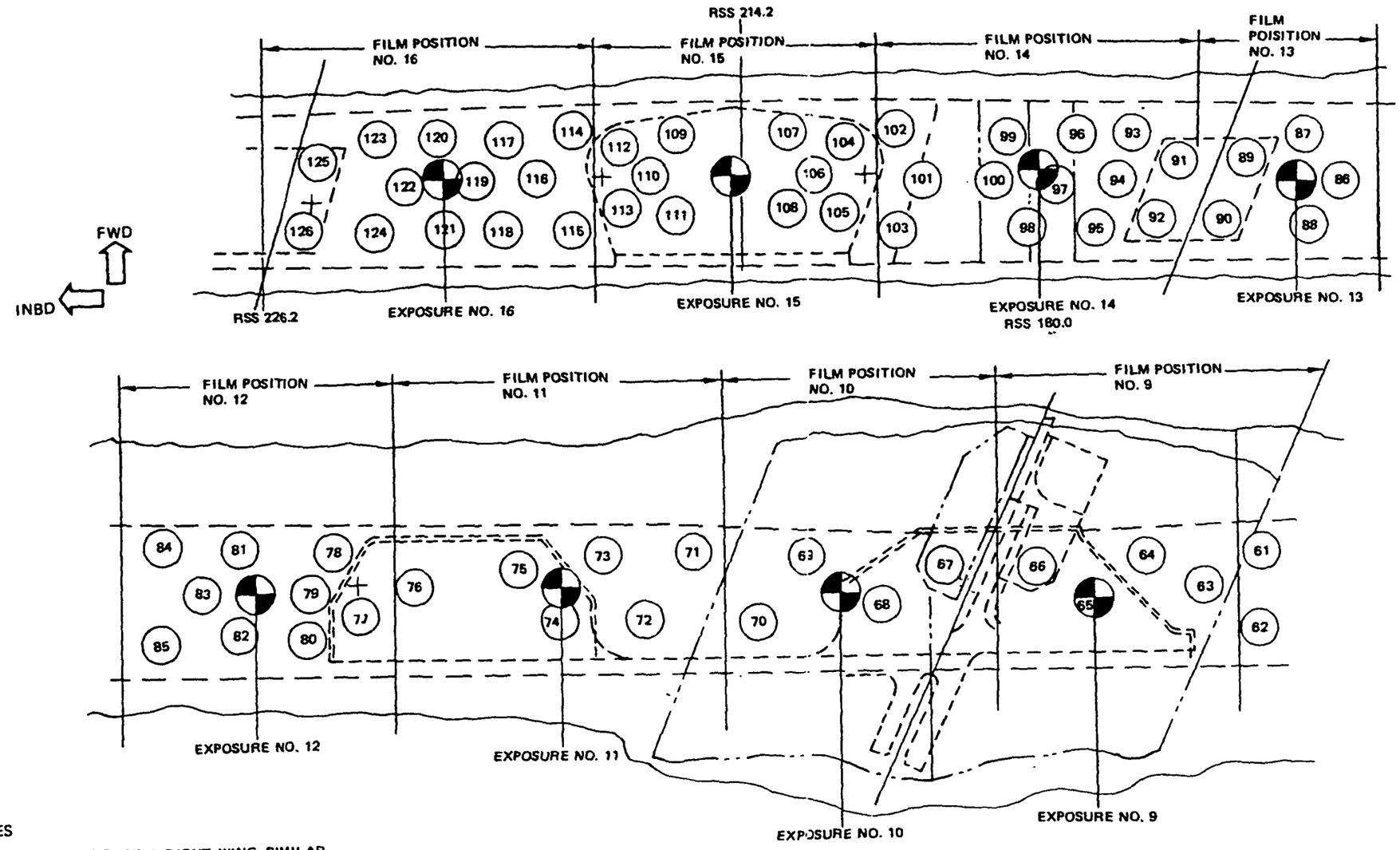
NOTES

- ● LEFT WING SHOWN, RIGHT WING SIMILAR
- (14) FASTENERS TO BE INSPECTED
- X-RAY GENERATOR LOCATION

UPPER REAR SPAR HORIZONTAL FLANGE FASTENERS

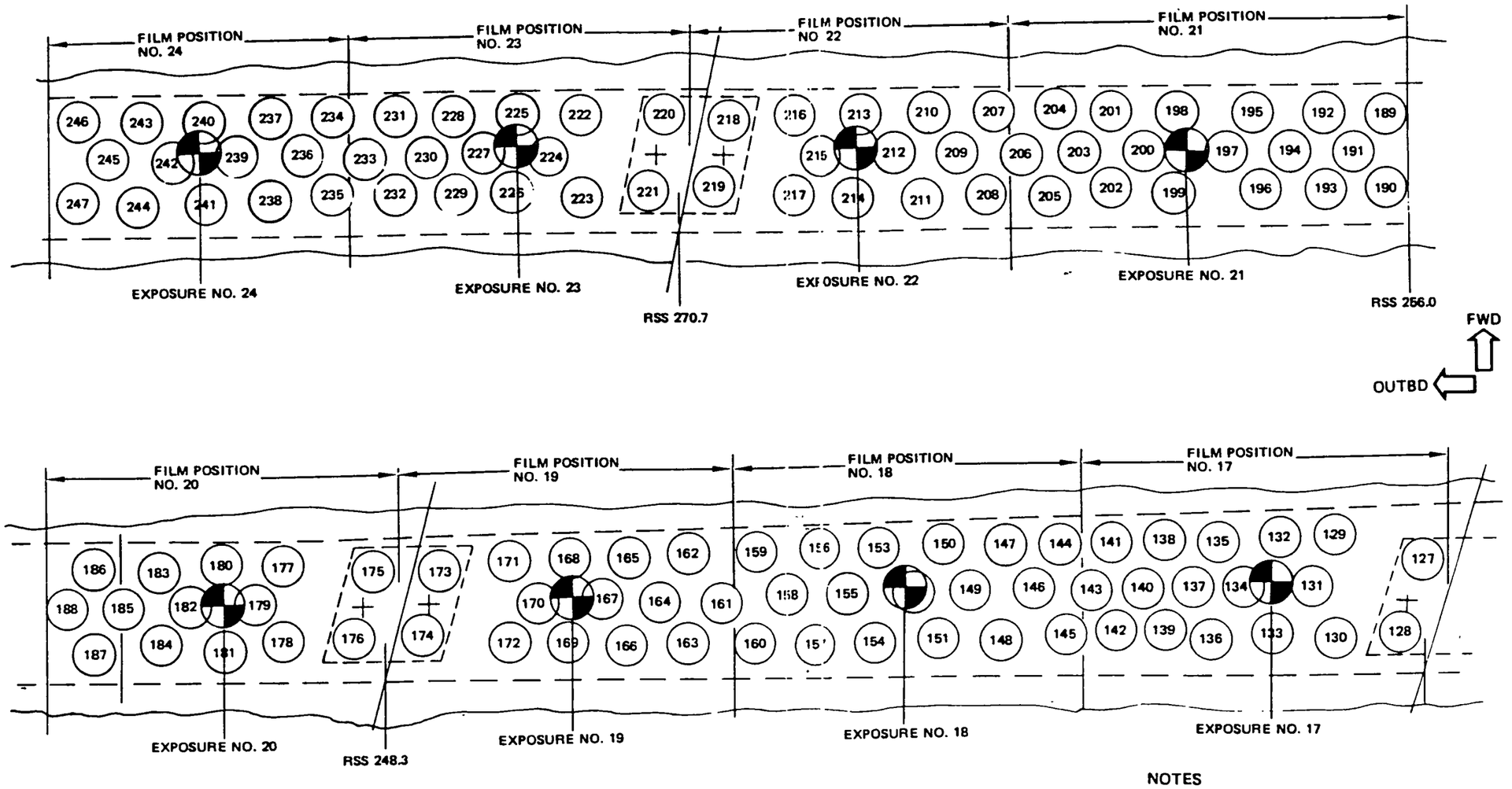
DETAIL VI

Wing Upper Rear Spar Chord Horizontal Flange Side of Body to WS 360.0
Figure 27 (Sheet 30)



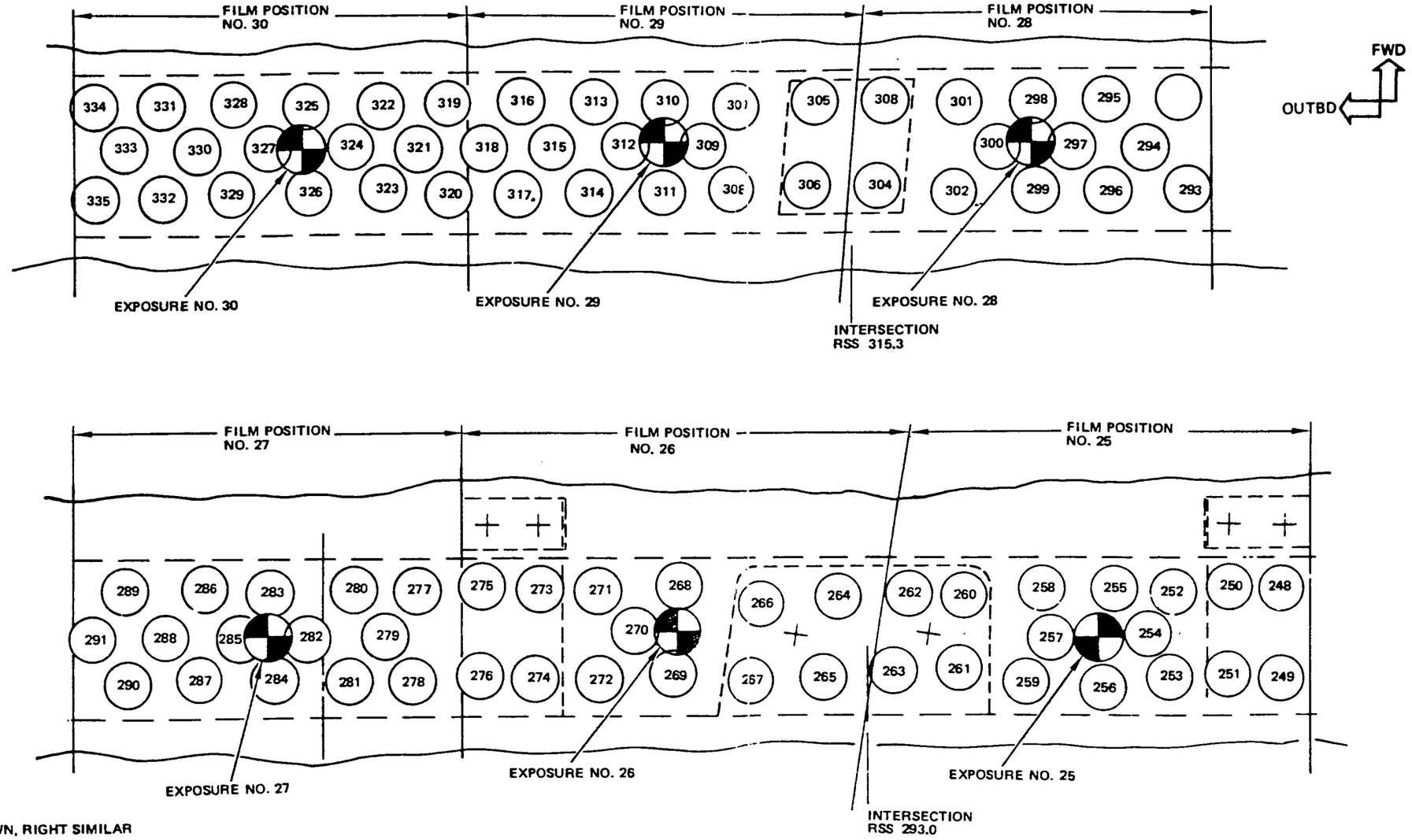
DETAIL VI (CONT)

Wing Upper Rear Spar Chord Horizontal Flange Side of Body to WS 360.0
Figure 27 (Sheet 31)



DETAIL VI (CONT)

Wing Upper Rear Spar Chord Horizontal Flange Side of Body to WS 360.0
Figure 27 (Sheet 32)

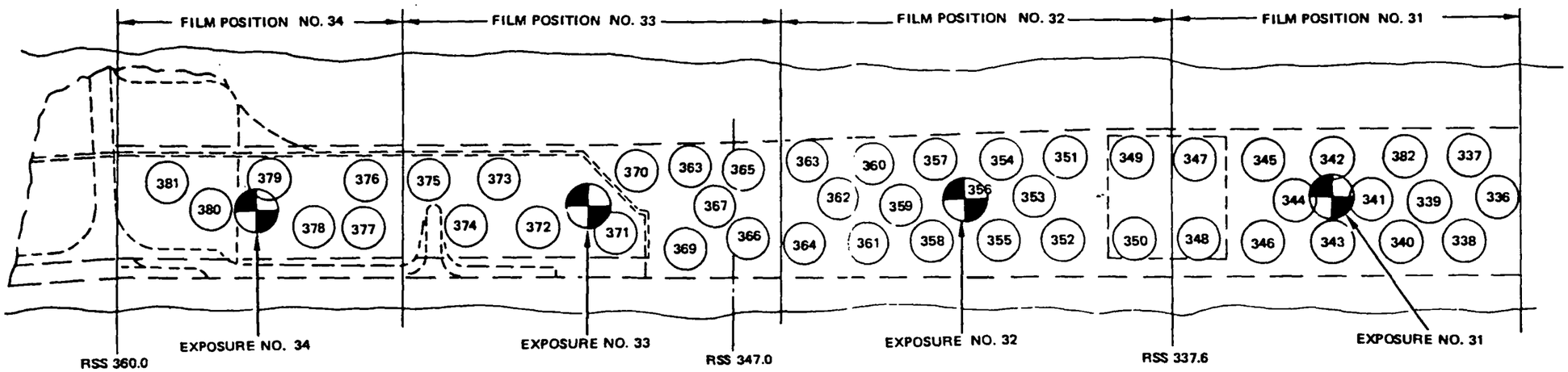


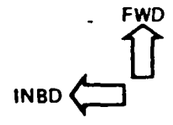
NOTES

- ● LEFT WING SHOWN, RIGHT SIMILAR
- (260) FASTENERS TO BE INSPECTED
- X-RAY GENERATOR LOCATION

DETAIL VI (CONT)

Wing Upper Rear Spar Chord Horizontal Flange Side of Body to WS 360.0
Figure 27 (Sheet 33)



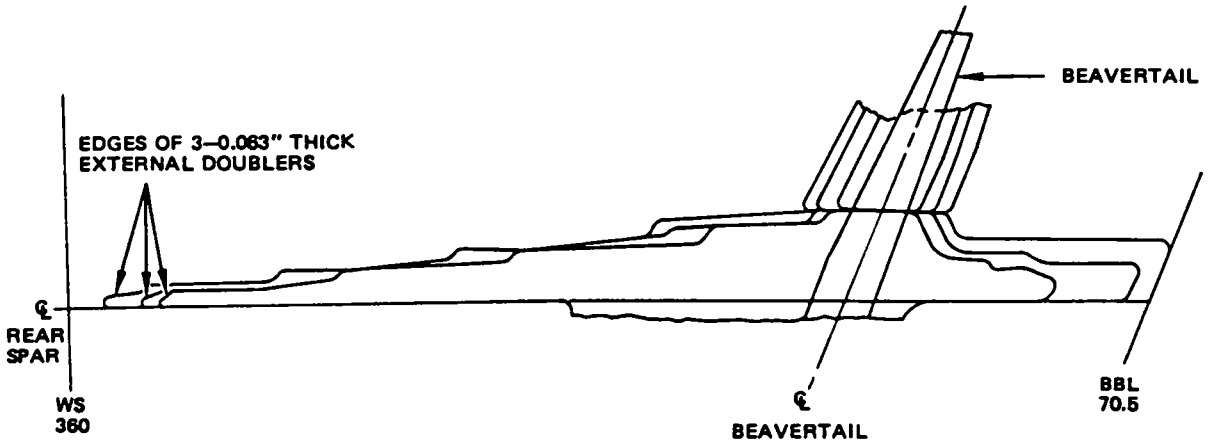


NOTES

- LEFT WING SHOWN, RIGHT WING SIMILAR
- (348) FASTENERS TO BE INSPECTED
- X-RAY GENERATOR LOCATION

DETAIL VI (CONT)

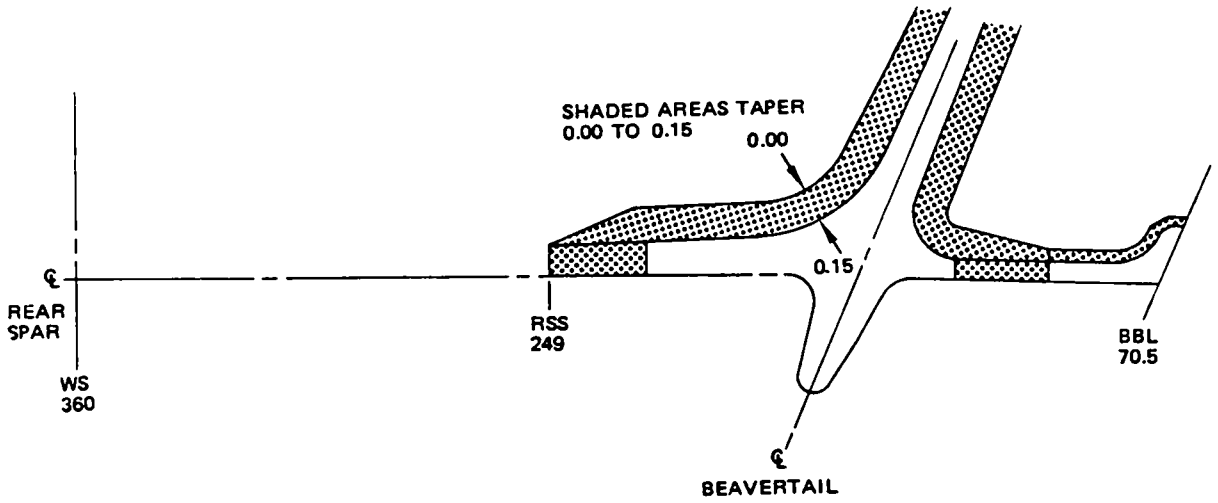
Wing Upper Rear Spar Chord Horizontal Flange Side of Body to WS 360.0
Figure 27 (Sheet 34)



EXTERNAL DOUBLER CONFIGURATION
PER SB 2427, PART X

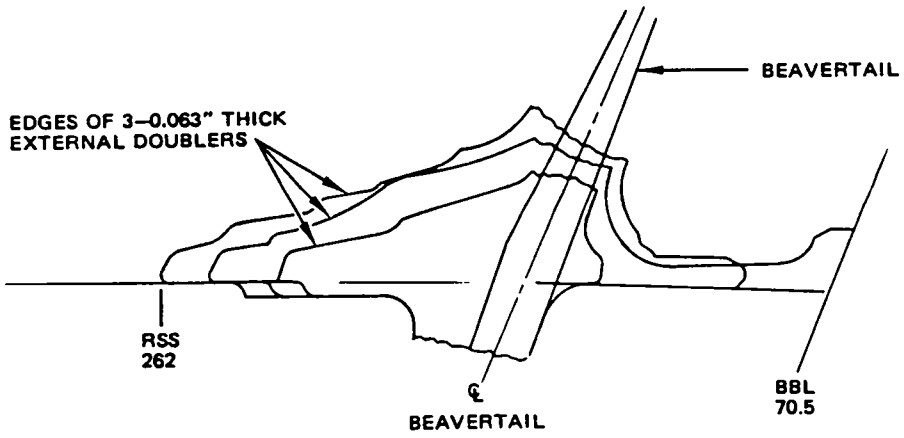
DETAIL VII

Wing Upper Rear Spar Chord Horizontal Flange Side of Body to WS 360.0
Figure 27 (Sheet 35)



NEW SKIN, EXTERNAL INTEGRALLY MACHINED
PAD AND NEW CHORD CONFIGURATION PER SB 2607

DETAIL IX



EXTERNAL DOUBLER WITH NEW SKIN
AND CHORD CONFIGURATION PER SB 2607

DETAIL VIII

Wing Upper Rear Spar Chord Horizontal Flange Side of Body to WS 360.0
Figure 27 (Sheet 36)

PART 2 - X-RAY

WINGS

1. Purpose

   A. To detect surface cracks in the horizontal flange of wing upper rear spar chord at selected fastener holes between side of body and WS 304.9, and at the 360 splice.

2. Equipment

   A. The equipment used to develop this technique is as follows:

      (1) Sperry, portable 160 KV, side emission X-ray generator

      (2) AA and M film.

3. Preparation For Inspection

   A. Drain fuel from tanks in area of X-ray exposure.

4. Inspection Procedure

   A. Exposure Nos. 1 thru 3.

      (1) Identify ASTM film class and size from Table 1.

      (2) Place the combined Class I and Class II films on outside of wing and position X-ray generator below wing per Detail 2.

      (3) Make the radiographic exposure using the Table 1 generator settings as a guide.

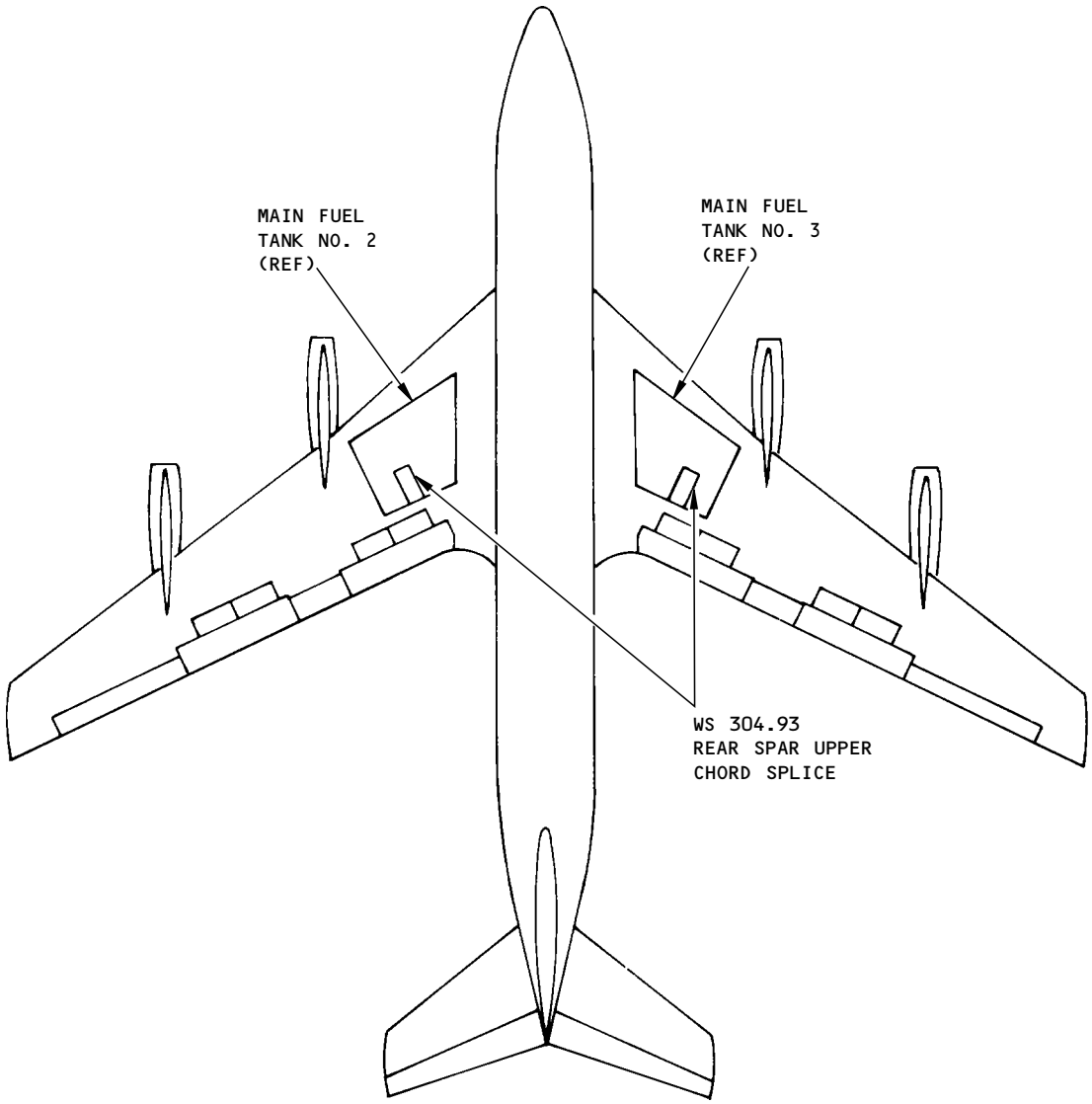
      (4) Review film paying particular attention to cracks running forward and aft in the chord splice angle and chord members at the upper chord splice area.

Exposure	Film			SFD	Generator Settings	
	Position	ASTM Class	Size		KV	MAS
1	1	I & II	8X10	36	140	750
2	2	I & II	8X10	36	140	750
3	3	I & II	8X10	36	140	750

X-Ray Parameters

TABLE I

Wing Upper Rear Spar Chord Splice Angle
Figure 28 (Sheet 1)

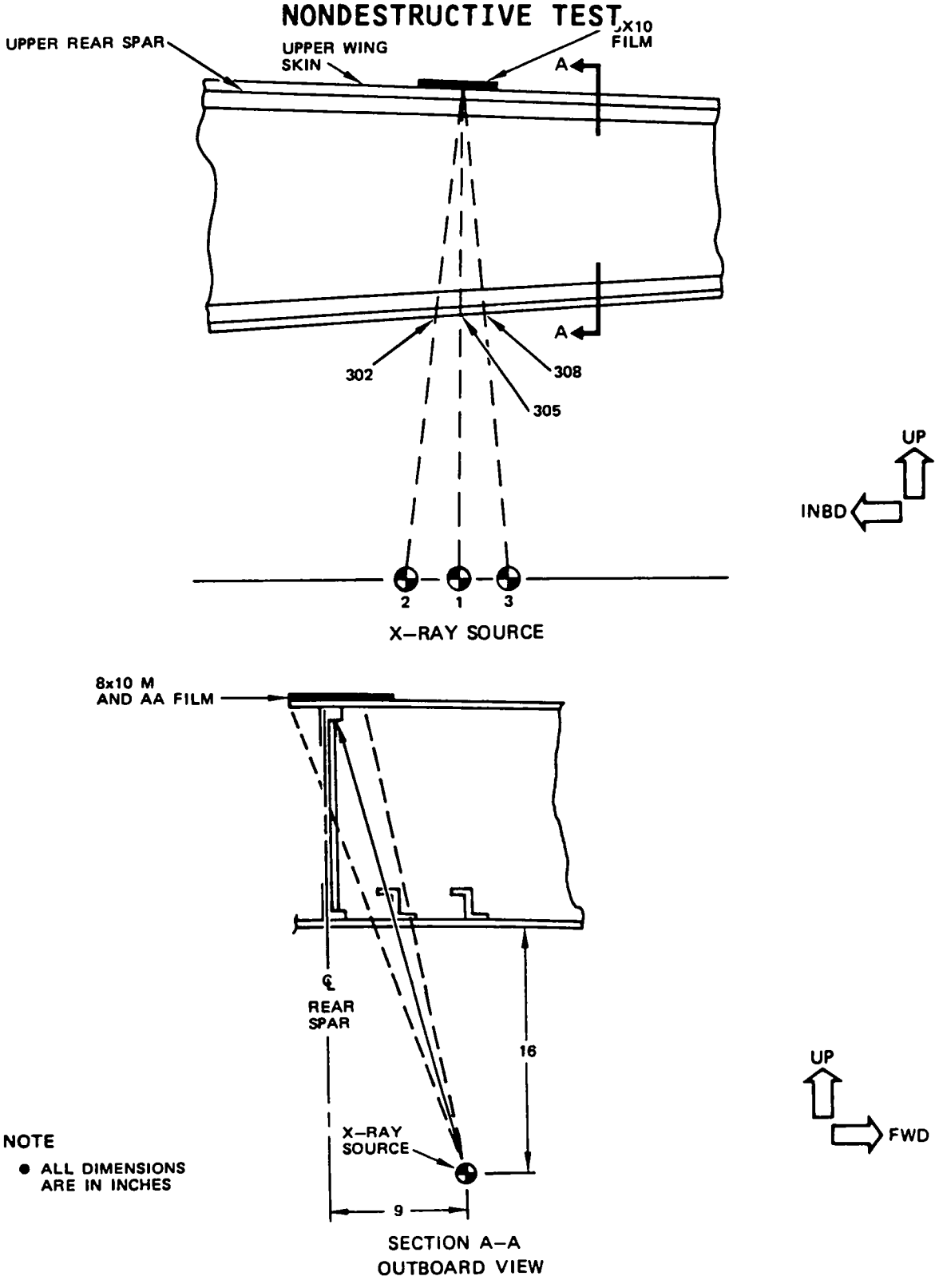


REAR SPAR UPPER CHORD SPLICE ANGLE
MODIFICATION

DETAIL I

Wing Upper Rear Spar Chord Splice
Figure 28 (Sheet 2)

NONDESTRUCTIVE TEST



X-RAY SOURCE AND FILM PLACEMENT
DETAIL II

Wing Upper Rear Spar Chord Splice
Figure 28 (Sheet 3)

EFFECTIVITY
MODEL: 707-100/200
WITH DOUBLER INSTALLED
PER A3304 OR TAPER LOKS
INSTALLED PER SB 2577
SERVICE BULLETIN
REFERENCE: 2577,
A3304
SSI DOCUMENT (D6-44860)
REFERENCE:
SSD 57-A15-21B

PART 2 - X-RAY

WINGS - MAIN FRAME

1. Purpose

   A. To detect surface cracks in the horizontal flange of wing upper rear spar chord at selected fastener holes between side of body and WS 317, and at the 360 splice. See Details II and III.

2. Equipment

   A. The equipment used to develop this technique is as follows:

      (1) Sperry, portable 160 kv, side emission X-ray generator

      (2) ASTM Class I and II ready pack and lead pack film

      (3) Lead screen 0.03 inch or thicker to be placed behind film.

3. Preparation for Inspection

   A. Exposure No. 1 thru 28

      NOTE: Table I and Detail I identify x-ray parameters for airplanes having the original configuration. Table II and Detail II identify x-ray parameters for rear spar areas modified by the addition of external doublers.

      (1) Identify film ASTM class and size from Table I or II.

      (2) Place film inside of wing on upper rear spar chord horizontal flange to provide for radiographic coverage around fasteners identified in Detail III.

         NOTE: (1) Allow approximately one inch of film overlap between exposures.

               (2) Trim film as necessary to facilitate film placement for maximum coverage of chord flange.

      (3) Place lead screens behind film to prevent excessive film fogging from backscattering.

Horizontal Flange Of Wing Upper Rear Spar Chord
Figure 29 (Sheet 1)

(4) Position the X-ray generator so that the X-ray beam is perpendicular to the upper wing skin and centered over fasteners to be inspected. See Detail II, Exposure No. 1 and Detail I.

(5) Make the radiographic exposure using the Table I or II generator settings.

B. For Exposure No. 2 through No. 22 repeat steps used for Exposure No. 1.

C. Review film with special attention given to the areas around the fastener locations noted in Details I or II.

Horizontal Flange of Wing Upper Rear Spar Chord
Figure 29 (Sheet 2)

EXPOSURE	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE ▷1◁		KV	MAS
1	1	I [A] , II	6X10	48	140	2140
2	2	I	6X10	48	120	1600
3	3	I, I [A]	6X10	48	100	1340
4	4	I, I [A]	6X10	48	100	1340
5	5	I, I [A]	6X10	48	100	1340
6	6	I, I [A]	6X10	48	100	1340
7	7	I, I [A]	6X10	48	100	1340
8	8	I, I [A]	6X10	48	100	1340
9	9	I, II [A]	6X10	48	160	1600
10	9	I, II [A]	6X10	48	160	2670
11	11	I, II [A]	6X10	48	160	2670
12	11	II, II [A]	6X10	48	160	1870
13	13	I [A]	6X10	48	140	1870
14	14	I, I [A]	6X10	48	100	1340
15	15	I, I [A]	6X10	48	100	1340
16	16	I, I [A]	6X10	48	100	1340
17	17	I, I [A]	6X10	48	100	1340
18	18	I, I [A]	6X10	48	100	1340
19	19	I	6X10	48	100	1340
20	20	I, I [A]	6X10	48	100	1340
21	21	I	6X10	48	120	1470
22	22	I	6X10	48	120	1470

X-RAY PARAMETERS FOR AREAS WITHOUT EXTERNAL DOUBLERS
TABLE I

NOTES:

- ALL DIMENSIONS ARE IN INCHES
- FOR X-RAY AREAS WITH EXTERNAL DOUBLERS USE TABLE II

[A] LEAD PACK FILM

▷1◁ TRIM FILM AS NECESSARY TO FACILITATE FILM PLACEMENT FOR MAXIMUM COVERAGE OF CHORD FLANGE AT ALL INSPECTION FASTENERS.

Horizontal Flange Of Wing Upper Rear Spar Chord
Figure 29 (Sheet 3)

EXPOSURE	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE [1]		KV	MAS
2A [2]	2	I [A]	6X10	48	120	1600
3A [2]	3	I, I [A]	6X10	48	120	1100
4A [2]	4	I, I [A]	6X10	48	120	1100
5A [2]	5	I, I [A]	6X10	48	120	1100
6A [2]	6	I, I [A]	6X10	48	120	1100
7A [2]	7	I, I [A]	6X10	48	120	1100
8A [2]	8	I, I [A]	6X10	48	120	1100
15A1 [2]	15	I	6X10	48	120	1340
15A2 [2]	15	I, I [A]	6X10	48	140	1600
16A [2]	16	I, I [A]	6X10	48	140	1340
17A [2]	17	I, I [A]	6X10	48	120	1060
18A [3]	18	I, II	6X10	48	120	1340
19A [3]	19	I	6X10	48	160	1600
20A [3]	20	I, II	6X10	48	100	1740
18B [3]	18	I, I [A]	6X10	48	120	1340
19B [3]	19	I, I [A], II	6X10	48	140	2130
20B [3]	20	I, I [A]	6X10	48	120	1340
21A [2]	21	I, I [A], II	6X10	48	120	1060
22A [2]	22	I, I [A], II	6X10	48	120	1060

TABLE II
X-RAY PARAMETERS WITH DOUBLERS INSTALLED

NOTES

[1] TRIM FILM AS NECESSARY TO FACILITATE FILM PLACEMENT FOR MAXIMUM COVERAGE OF CHORD FLANGE AT ALL INSPECTION FASTENERS.

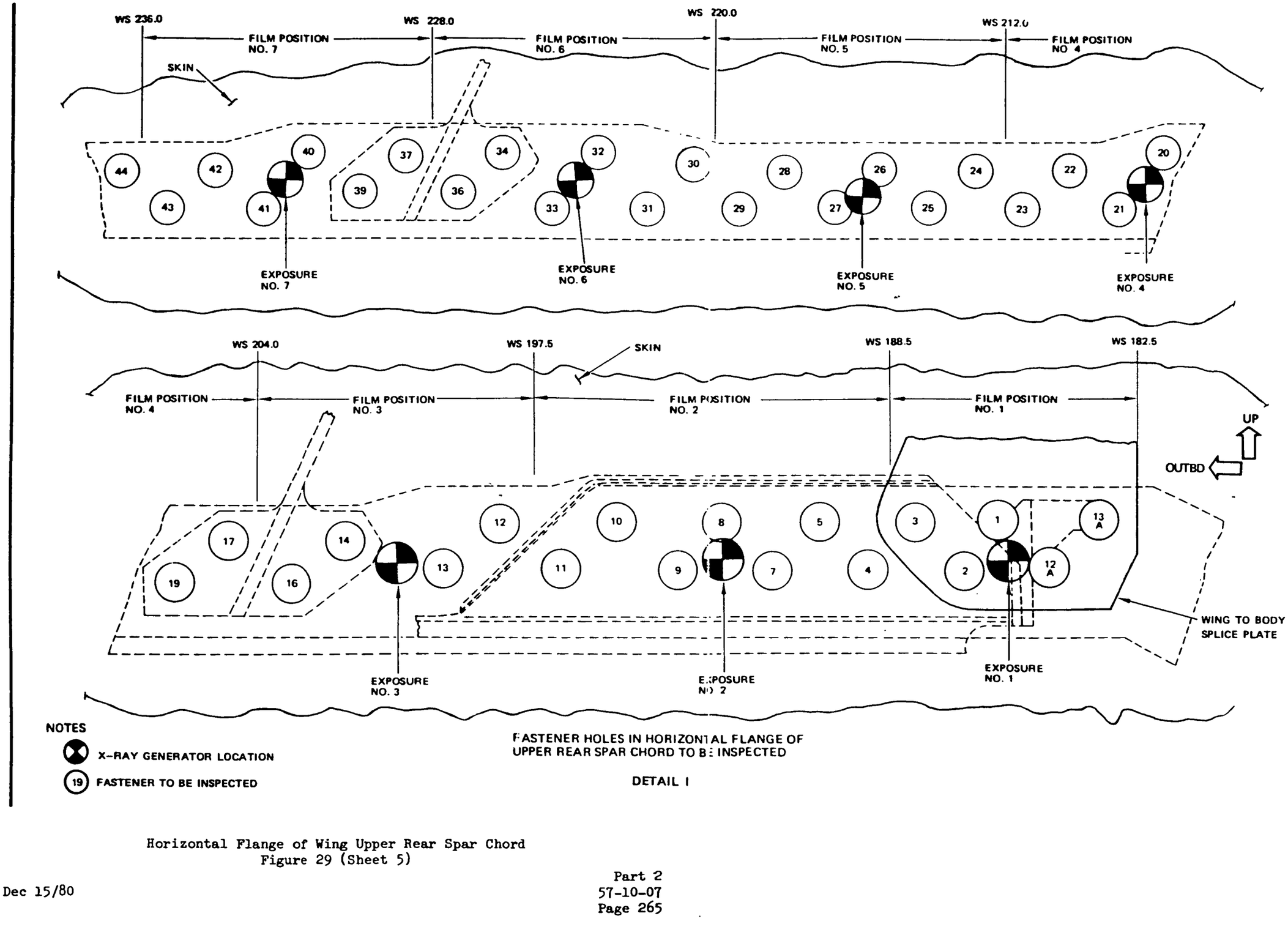
[2] SEE DETAIL II FOR LOCATION OF DOUBLER AND DETAIL I FOR SPECIFIC FASTENER LOCATIONS AND FILM AND GENERATOR POSITIONS.

[3] SEE DETAIL II FOR DOUBLER COFIGURATION, FASTENER LOCATIONS AND FILM AND GENERATOR POSITIONS.

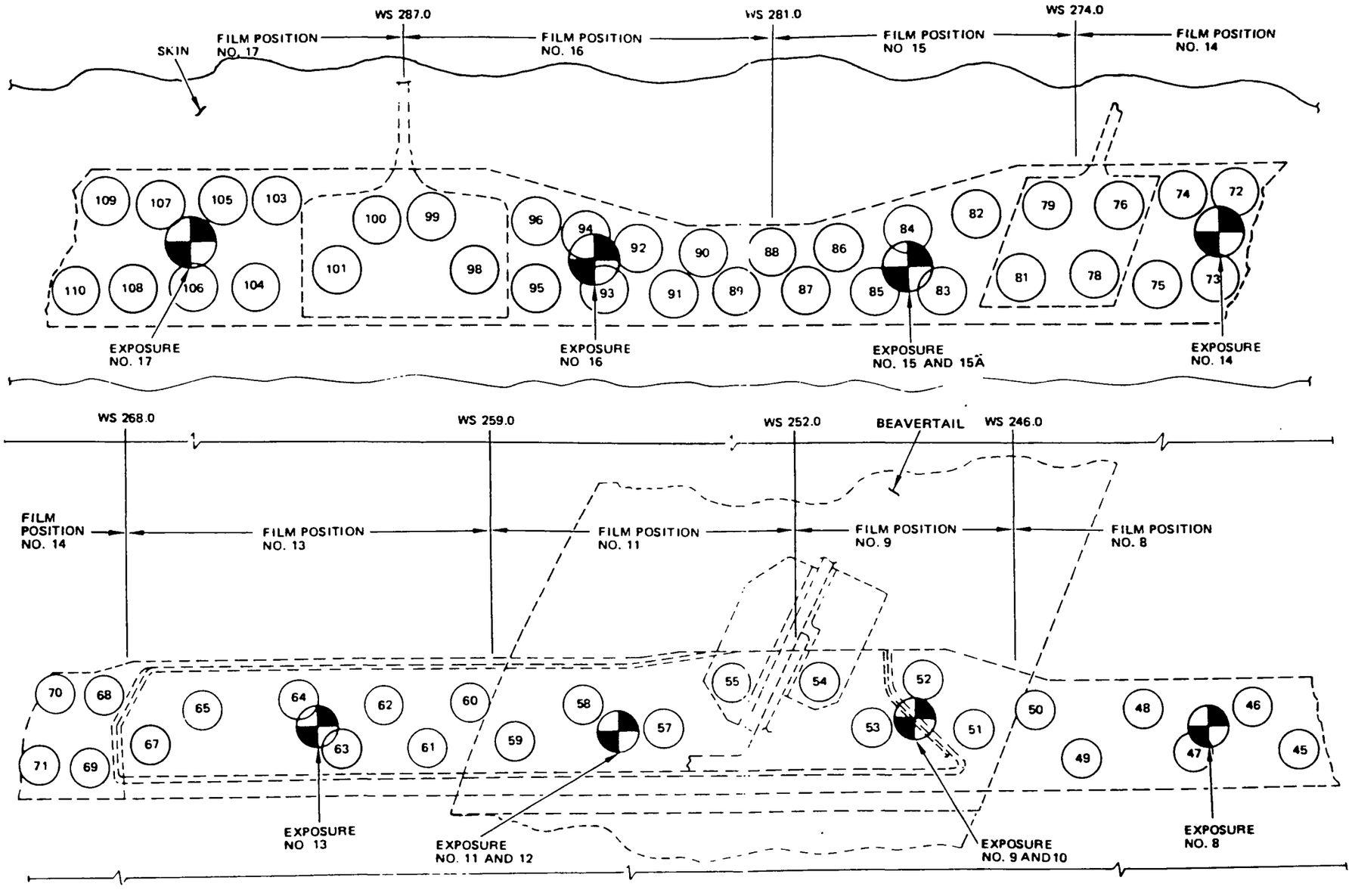
[A] LEAD PACK FILM.

- FOR REAR SPAR AREAS WITHOUT DOUBLERS USE TABLE I

Horizontal Flange of Wing Upper Rear Spar Chord
Figure 29 (Sheet 4)



Horizontal Flange of Wing Upper Rear Spar Chord
Figure 29 (Sheet 5)



NOTES

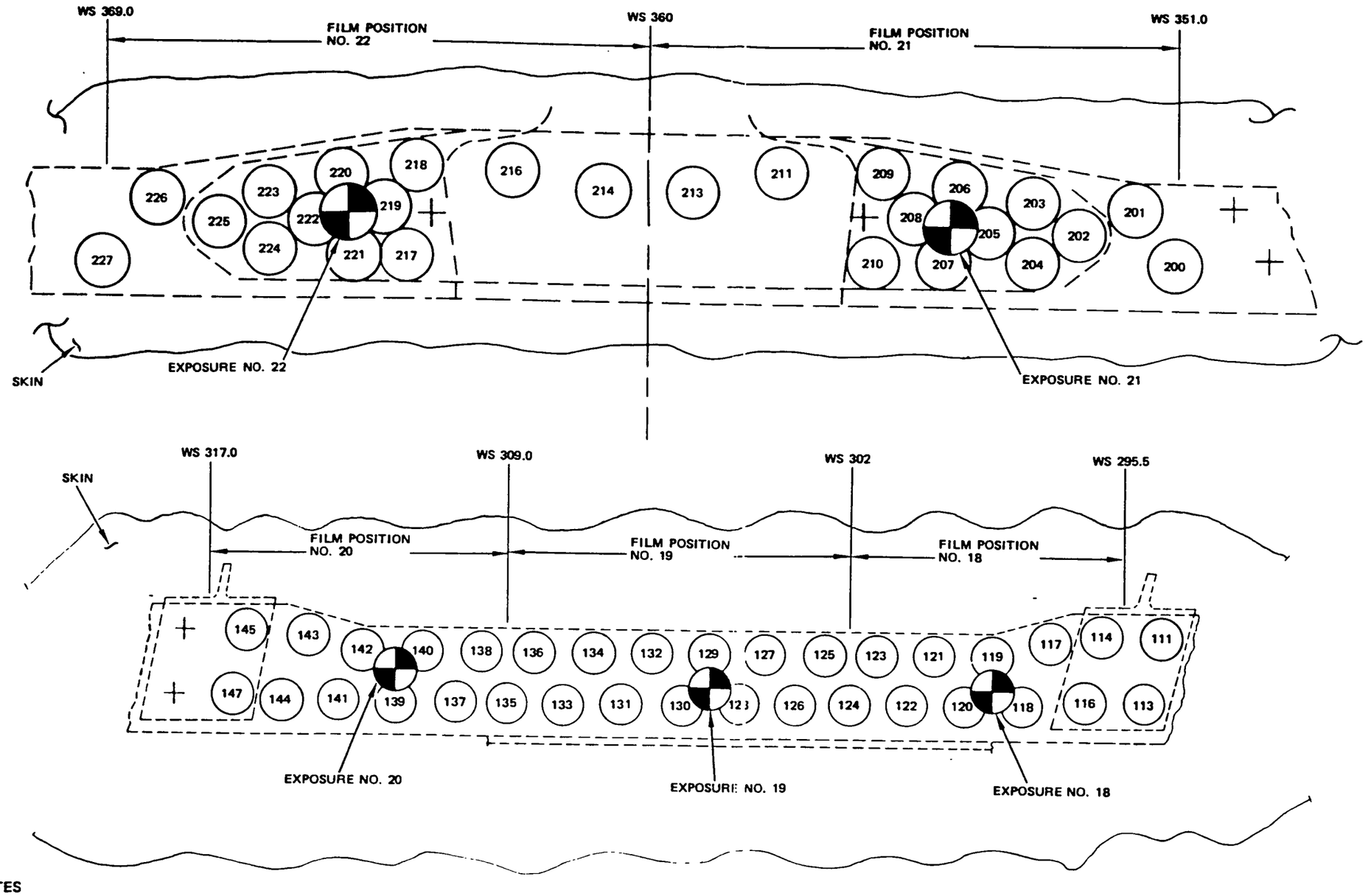
X-RAY GENERATOR LOCATION

64 FASTENER TO BE INSPECTED

FASTENER HOLES IN HORIZONTAL FLANGE OF UPPER REAR SPAR CHORD TO BE INSPECTED

DETAIL I (CONT)

Horizontal Flange of Wing Upper Rear Spar Chord
Figure 29 (Sheet 6)

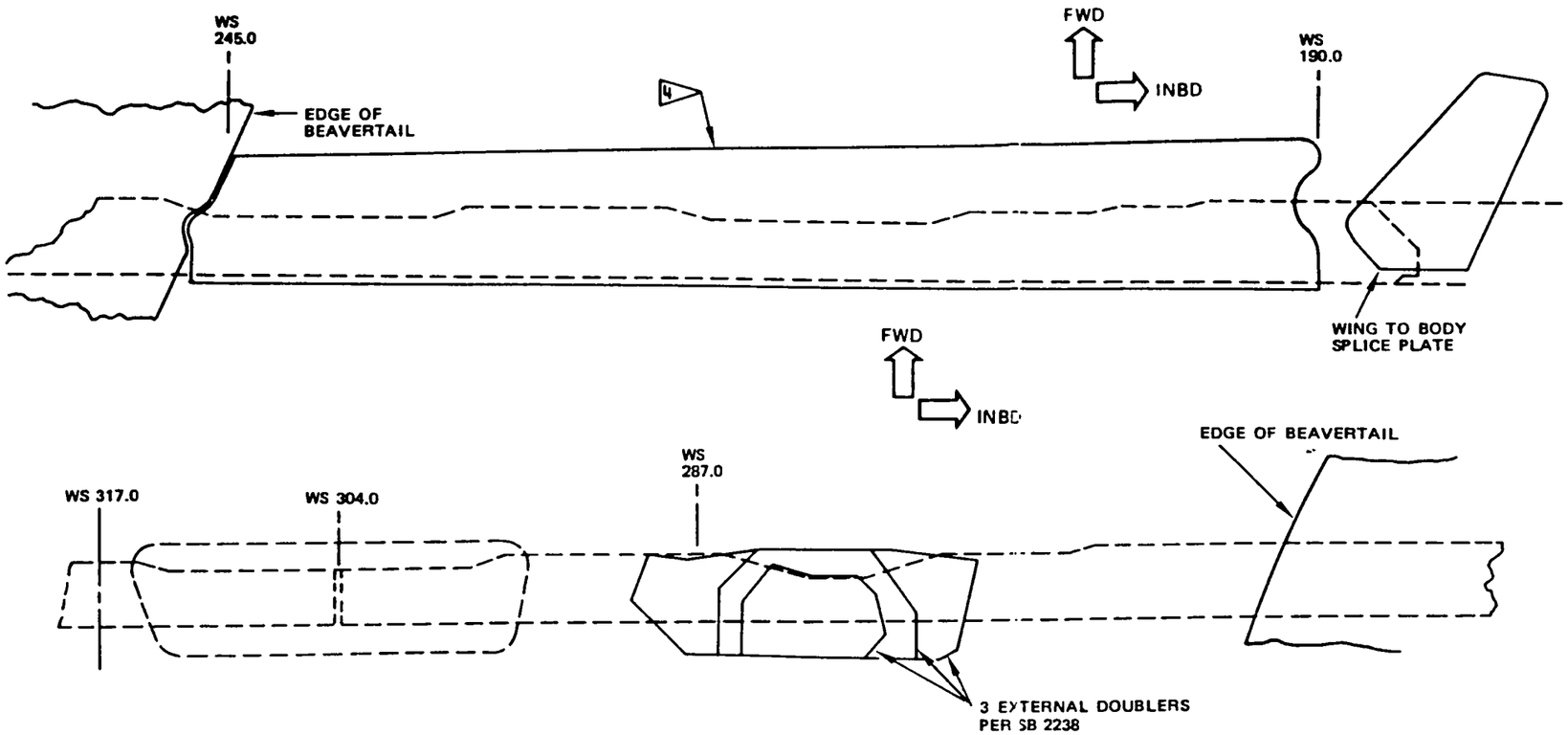


NOTES

- LEFT WING SHOWN, RIGHT WING SIMILAR
- X-RAY GENERATOR LOCATION
- (131) FASTENER TO BE INSPECTED

HORIZONTAL FLANGE OF UPPER REAR SPAR CHORD
DETAIL I (CONT)

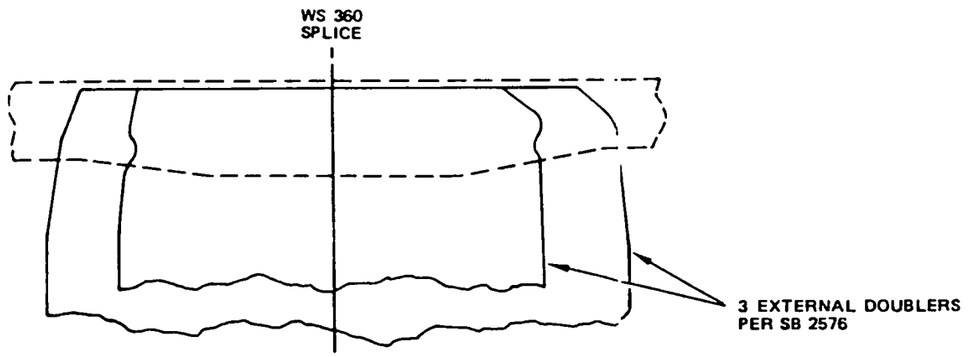
Horizontal Flange of Wing Upper Rear Spar Chord
Figure 29 (Sheet 7)



NOTES:

- LEFT WING SHOWN, RIGHT WING SIMILAR
- FOR X–RAY PARAMETERS SEE TABLE II

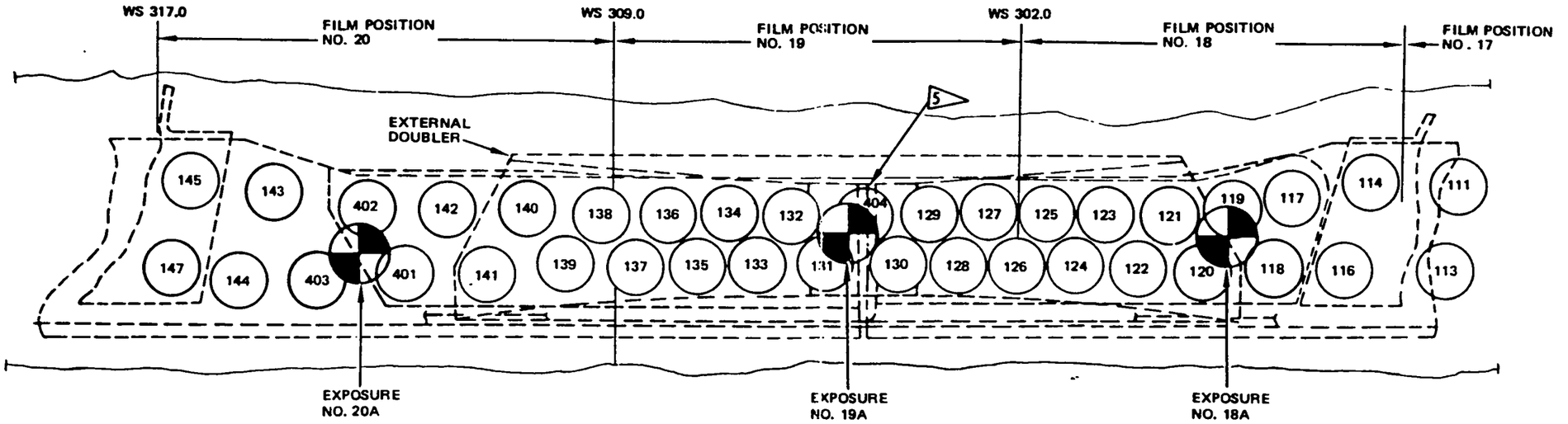
4 EXTERNAL DOUBLER PER SB A3304. FOR INSPECTION FASTENER CODE NUMBERS AND LOCATION, AND FILM AND X–RAY GENERATOR POSITIONS, SEE DETAIL I FOR X–RAY PARAMETERS, SEE TABLE II

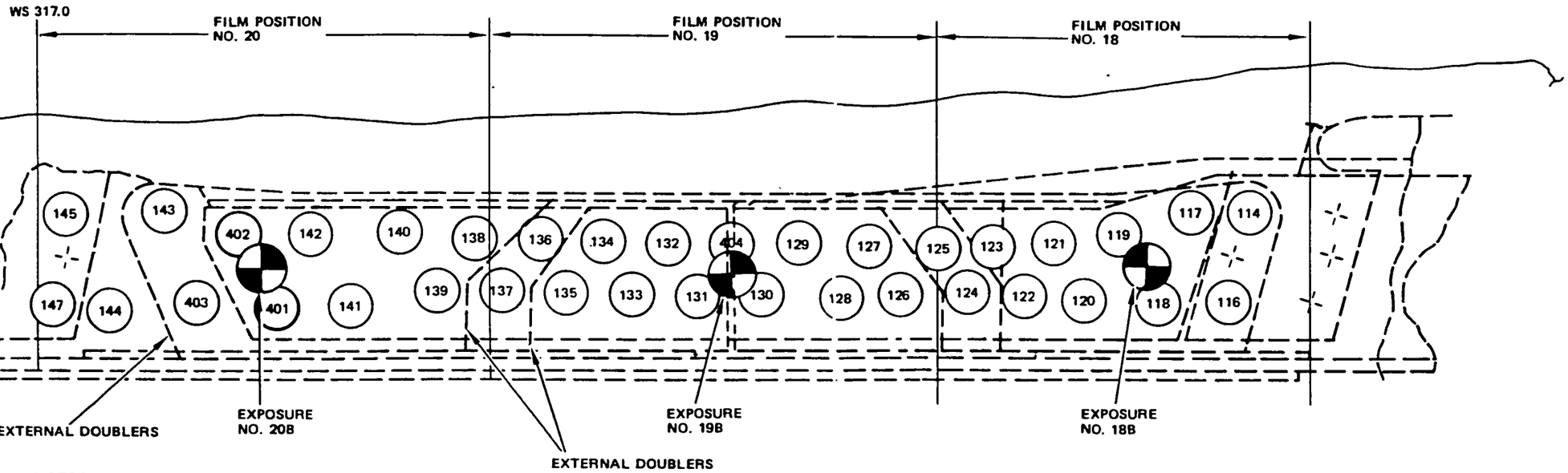


EXTERNAL DOUBLERS ON HORIZONTAL FLANGE OF UPPER REAR SPAR CHORD

DETAIL II

Horizontal Flange of Wing Upper Rear Spar Chord
Figure 29 (Sheet 8)





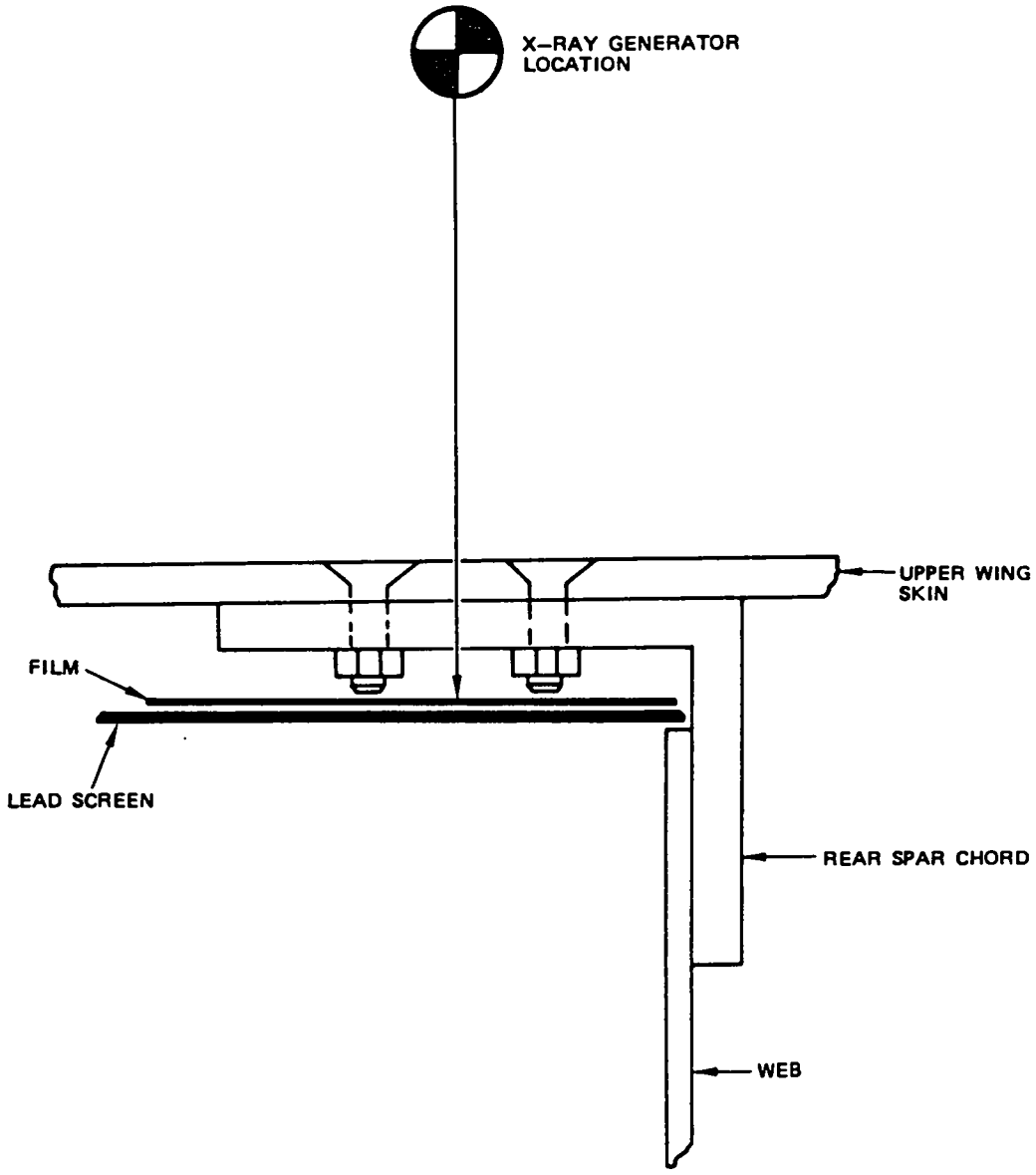
NOTES

- LEFT WING SHOWN RIGHT WING SIMILAR
- X-RAY GENERATOR LOCATION
- (116) FASTENER TO BE INSPECTED
- (5) ON CUM LINE NO. 1 THRU 432 ONLY

EXTERNAL DOUBLERS ON HORIZONTAL FLANGE OF UPPER REAR SPAR CHORD

DETAIL II (CONT)

Horizontal Flange of Wing Upper Rear Spar Chord
Figure 29 (Sheet 9)



TYPICAL FILM AND GENERATOR ARRANGEMENT

DETAIL III

Horizontal Flange of Wing Upper Rear Spar Chord
Figure 29 (Sheet 10)

EFFECTIVITY
MODEL: ALL SERVICE BULLETIN REFERENCE: 2592, 2496,2852 SSI DOCUMENT (D6-44860) REFERENCE: 57-A05-10B 57-A15-10B 57-A25-10B 57-A35-10B 57-A45-10B 57-A25-10B

PART 2 X-RAY

WINGS - MAIN FRAME

1. Purpose

   A. To perform a radiographic inspection of the wing lower skin and stringers 1 through 14 outer flange beneath external doublers. The inspection is for cracks initiating from specified fastener holes common to external doubler, skin and stringers inboard and outboard of WS 360.

   B . This inspection requires wing tank entry. Fuel tank must be drained and purged to a "health safe" condition (as defined by Chapter 28 of the Maintenance Manual) before entering.

2. Equipment

   A. The equipment used to develop this technique is as follows:

      (1) Sperry Portable 160-KV, Side Emission X-Ray Generator

      (2) Manual Film Processor

      (3) ASTM Class I and II Film

3. Preparation for Inspection

   A. Internal

      (1) Defuel and purge applicable fuel tanks.

      (2) Gain access to inbd and outbd sides of Wing Sta 360.

      (3) Identify film type and cut to size. See Table I.

Wings - Lower Skin and Stringers WS 360
Figure 30 (Sheet 1)

4. Inspection Procedure

A. Determine inspection requirements for a particular airplane model as follows:

(1) 707 100/200 - Table I and Details II, III and IV.

(2) 707 300/400 - Table II and Details II, III and V.

(3) 720 - Table III and Details II, III and VI.

B. Refer to appropriate Table and Details and perform radiographic inspection as follows:

WARNING: PRECAUTIONS AND SAFETY PROCEDURES CONTAINED IN CHAPTER 28 OF THE MAINTENANCE MANUAL MUST BE FOLLOWED BY PERSONNEL ENTERING ANY TANK THAT HAS CONTAINED FUEL. POSSIBILITY OF EXPLOSION AND TOXIC DANGER EXISTS IN VICINITY OF FUEL TANKS WHICH HAVE CONTAINED FUEL.

(1) Identify x-ray film requirement and exposure values for No. 1 exposure from the appropriate Table.

(2) Place film inside of wing according to the Detail noted for the particular exposure.

(3) Position the x-ray generator for each exposure according to Detail noted in the Table.

(4) Position x-ray generator perpendicular to the lower wing surface as shown in Detail 1.

(5) Make the radiographic exposure using the appropriate Table generator setting as a guide. Film density should be between 1.5 and 3.0 at the selected inspection fastener area.

C. Repeat for each exposure identified in the Table for the particular model.

D. Review the film with special attention given to the area around selected fastener locations shown in the appropriate Detail for the airplane model.

(1) A crack in the wing skin or stringer outer flange will run in a forward and aft direction.

Wings - Lower Skin and Stringers WS 360
Figure 30 (Sheet 2)

EXPOSURE NUMBER	FILM			GENERATOR SETTINGS		
	POSITION	ASTM CLASS	SIZE [3]	KV	MAS	SFD
1	1A 1B [1] 1C 1D	I, II I, II I, II I, II	6 3/4 x 10 6 1/2 x 10 6 1/2 x 10 6 1/2 x 10	90	1290	70
2	2A 2B [1] 2C 2D	I, II I, II I, II I, II	7 x 10 6 1/2 x 10 6 1/2 x 10 6 3/4 x 10	110	1020	70
3	3A 3B [1] 3C	I, II I, II I, II	6 5/8 x 10 6 1/2 x 10 6 3/4 x 10	110	1020	70
4	4A 4B [2] 4C	I, II I, II I, II	14 x 17 14 x 17 14 x 17	110	1020	70
5	5E 5D 5C [1] 5B 5A	I, II I, II I, II I, II I, II	6 3/4 x 8 6 3/4 x 8 6 3/4 x 8 6 3/4 x 8 6 3/4 x 8	90	1290	70
6	6D 6C [1] 6B 6A	I, II I, II I, II I, II	6 3/4 x 10 6 5/8 x 10 6 3/4 x 10 6 5/8 x 10	90	1290	70
7	7C 7B [1] 7A	I, II I, II I, II	6 5/8 x 10 6 5/8 x 10 6 3/4 x 10	110	1020	70
8	8A [1]	II	5 1/2 x 10	110	1020	70

X-RAY PARAMETERS 707-100/200
TABLE I

NOTES

- ALL DIMENSIONS ARE IN INCHES

[1] SEE DETAIL II and IV FOR PLACEMENT OF FILM

[2] SEE DETAIL III AND IV FOR PLACEMENT OF FILM

[3] MINIMUM FILM DIMENSIONS. FOR EASE OF FILM PLACEMENT A FILM LENGTH OF 17 INCHES CAN BE USED. PROPER COVERAGE IS OBTAINED WHEN THIS FILM IS BUTTED AGAINST THE WS 360 BULKHEAD.

Wings - Lower Skin and Stringers WS 360
Figure 30 (Sheet 3)

EXPOSURE NUMBER	FILM			GENERATOR SETTINGS		
	POSITION	ASTM CLASS	SIZE [3]	KV	MAS	SFD
1	1A 1B [4] 1C 1D	I, II I, II I, II I, II	6 3/4 x 8 6 1/2 x 8 6 1/2 x 8 6 1/2 x 8	90	1620	70
2	2A 2B [4] 2C 2D	I, II I, II I, II I, II	7 x 10 6 1/2 x 10 6 1/2 x 10 6 1/2 x 10	90	1620	70
2(a) [6]	2(A)A 2(A)B [4] 2(A)C 2(A)D	I, II I, II I, II I, II	7 x 10 6 1/2 x 10 6 1/2 x 10 6 1/2 x 10	120	1200	70
3	3A 3B [4] 3C	I, II I, II I, II	6 3/4 x 10 6 5/8 x 10 6 1/2 x 10	110	1020	70
4	4A 4B [5] 4C	I, II I, II I, II	14 x 17 14 x 17 14 x 17	110	1020	70
5	5E 5D 5C [4] 5B 5A	I, II I, II I, II I, II I, II	6 3/4 x 8 6 1/2 x 8 6 1/2 x 8 6 1/2 x 8 6 1/2 x 8	110	1020	70
6	6D 6C [4] 6B 6A	I, II I, II I, II I, II	7 x 10 6 1/2 x 10 6 1/2 x 10 5 1/2 x 10	110	1020	70
7	7C 7B [4] 7A	I, II I, II I, II	6 1/2 x 6 3/4 x 10 6 3/4 x 10	110	1020	70
8	8A [4]	II	5 x 10	90	1290	70

X-RAY PARAMETERS 707-300/400
TABLE II

Wings - Lower Skin and Stringers WS 360
Figure 30 (Sheet 4)

NOTES

- ALL DIMENSIONS ARE IN INCHES.

(3) MINIMUM FILM DIMENSIONS. FOR EASE OF FILM PLACEMENT A FILM LENGTH OF 17 INCHES CAN BE USED. PROPER COVERAGE IS OBTAINED WHEN THIS FILM IS BUTTED AGAINST THE WS 360 BULKHEAD.

(4) SEE DETAIL II AND V FOR PLACEMENT OF FILM.

(5) SEE DETAIL III AND V FOR PLACEMENT OF FILM.

(6) THIS IS THE SAME LOCATION AS EXPOSURE 2 FOR THIS MODEL. DIFFERENT GENERATOR SETTINGS ARE USED TO ALLOW COVERAGE OF FASTENERS NOT COVERED IN EXPOSURE 2.

Wings - Lower Skin and Stringers WS 360
Figure 30 (Sheet 5)

EXPOSURE NUMBER	FILM			GENERATOR SETTINGS		
	POSITION	ASTM CLASS	SIZE (3)	KV	MAS	SFD
1	1A 1B 1C (7) 1D	I, II I, II I, II I, II	6 3/4 x 10 6 1/2 x 8 6 3/4 x 8 6 3/4 x 8	90	1620	70
2	2A 2B (7) (A) 2C 2D	I, II I, II I, II I, II	7 x 10 6 3/4 x 10 13 1/2 x 4 1/2	90	1620	70
3	3A 3B (7) 3C	I, II I, II I, II	6 3/4 x 10 6 3/4 x 10 6 3/4 x 8	90	1620	70
4	4A 4B (8) 4C	I, II I, II I, II	14 x 17 14 x 17 14 x 17	90	1620	70
5	5E 5D (7) 5C 5B 5A	I, II I, II I, II I, II I, II	6 3/4 x 8 6 3/4 x 8 6 3/4 x 8 6 1/2 x 8 6 1/2 x 8	110	1020	70
6	6D 6C (7) (A) 6B 6A	I, II I, II I, II I, II	6 3/4 x 10 6 3/4 x 10 13 1/2 x 4 1/2	90	1620	70
7	7C 7B (7) 7A	I, II I, II I, II	6 3/4 x 10 6 3/4 x 10 6 3/4 x 10	90	1620	70
8	8A (7)	II	5 x 10	110	1290	70

X-RAY PARAMETERS 720
TABLE III

NOTES

- ALL DIMENSIONS ARE IN INCHES

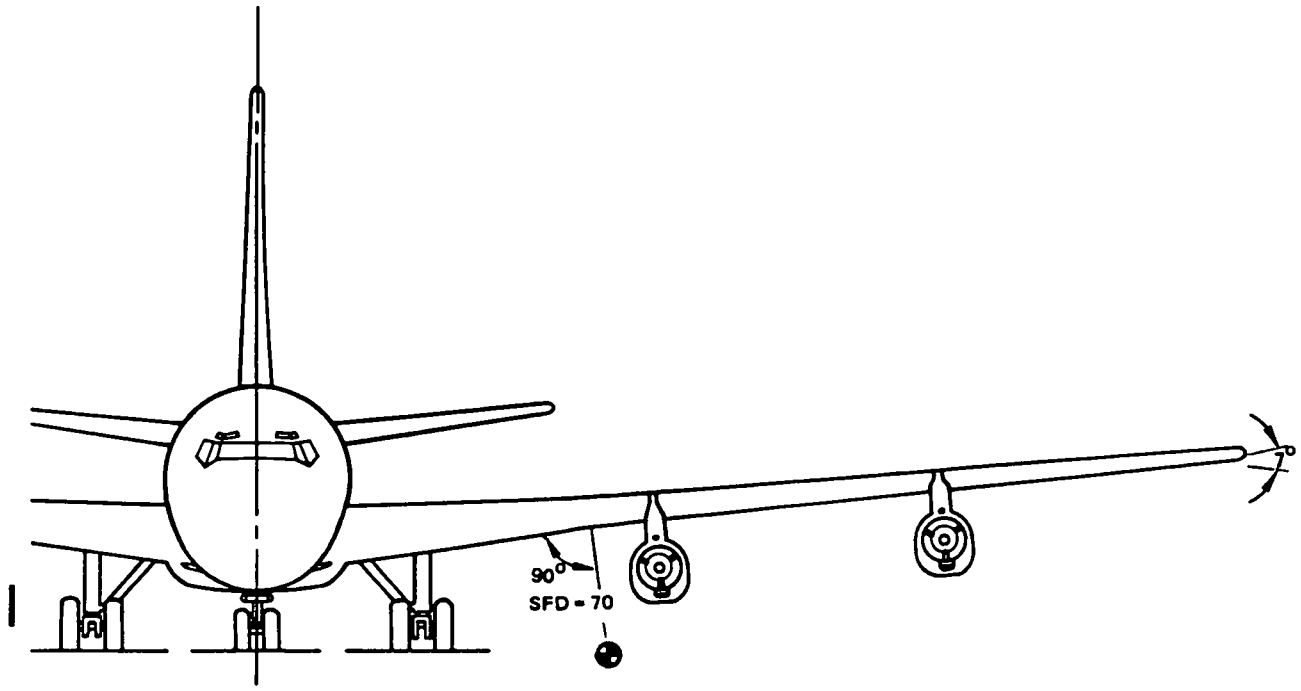
(A) MAKE THESE SETS OF EXPOSURES ON A SINGLE SHEET OF FILM.

(3) MINIMUM FILM DIMENSIONS. FOR EASE OF FILM PLACEMENT A FILM LENGTH OF 17 INCHES CAN BE USED. PROPER COVERAGE IS OBTAINED WHEN THIS FILM IS BUTTED AGAINST THE WS 360 BULKHEAD

(7) SEE DETAIL II AND VI FOR PLACEMENT OF FILM.

(8) SEE DETAIL III AND VI FOR PLACEMENT OF FILM.

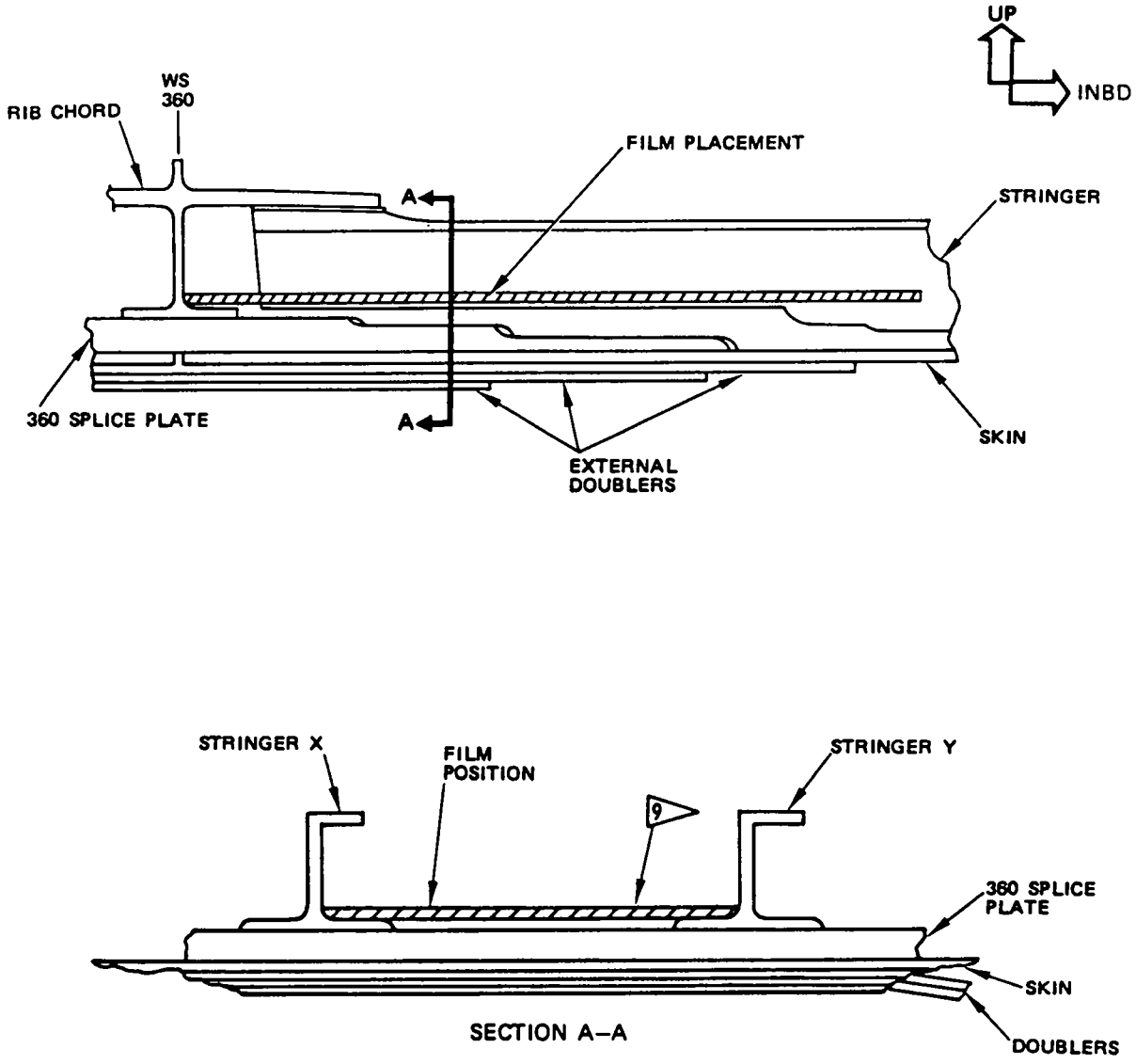
Wings - Lower Skin and Stringers WS 360
Figure 30 (Sheet 6)



NOTES

- ALL DIMENSIONS ARE IN INCHES
- TUBE HEAD PLACEMENT IS PERPENDICULAR TO LOWER WING SURFACE FOR ALL EXPOSURES

TYPICAL TUBE HEAD ALIGNMENT
DETAIL I



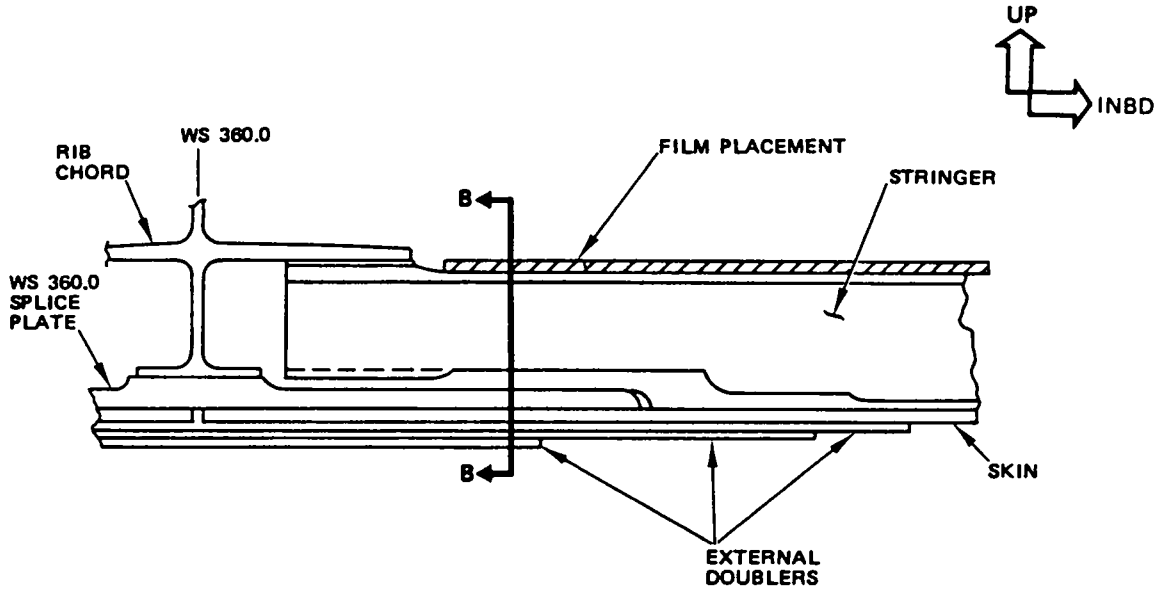
NOTES

- INBD SIDE SHOWN, OUTBD SIDE SIMILAR

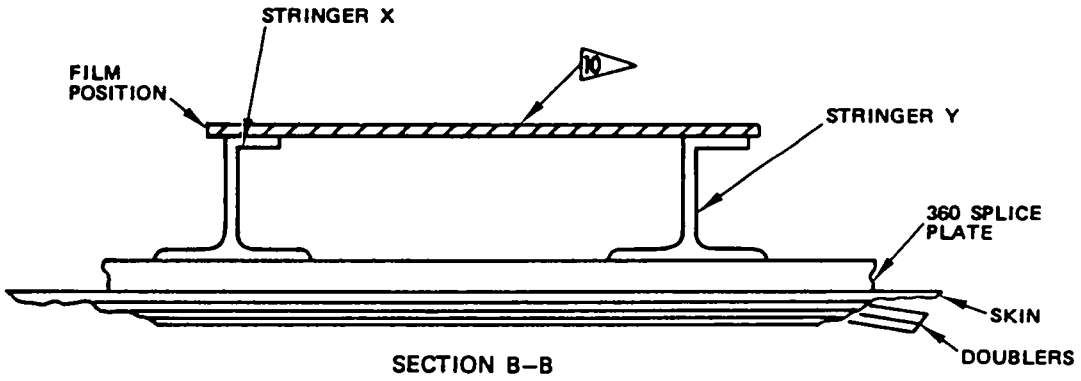
9 PLACE FILM ON LOWER SURFACE TO OBTAIN FULL COVERAGE BETWEEN STRINGERS

FILM POSITION
DETAIL II

Wings - Lower Skin and Stringers WS 360
Figure 30 (Sheet 8)



FILM POSITION FOR BETWEEN STRINGERS 1 THRU 3 INBD ONLY



SECTION B–B

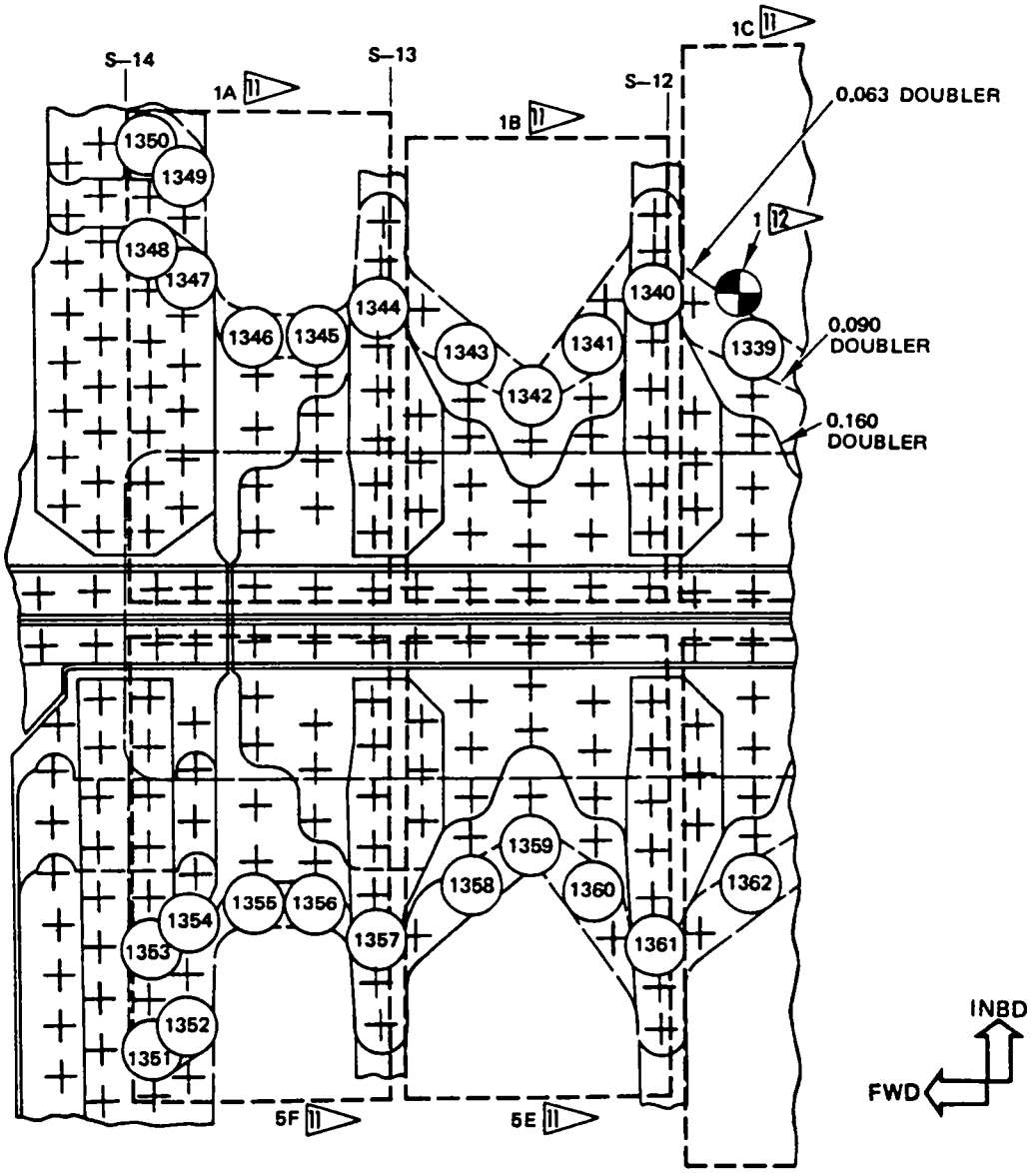
NOTES

- INBD SIDE SHOWN, OUTBD SIDE SIMILAR

10 POOR ACCESS TO S–1 THRU S–3 ON THE INBOARD SIDE OF THE 360 SPLICE MAY PREVENT FILM PLACEMENT BETWEEN STRINGERS. PLACE FILM ON TOP OF STRINGERS AS SHOWN.

FILM POSITION
DETAIL III

Wings - Lower Skin and Stringers WS 360
Figure 30 (Sheet 9)



NOTES

- STRINGERS 12 THRU 14
- MODEL 707–100/200
- VIEW FROM INSIDE OF WING, LOOKING DOWN
- DOUBLERS ON OUTSIDE OF WING

1360 FASTENERS TO BE INSPECTED

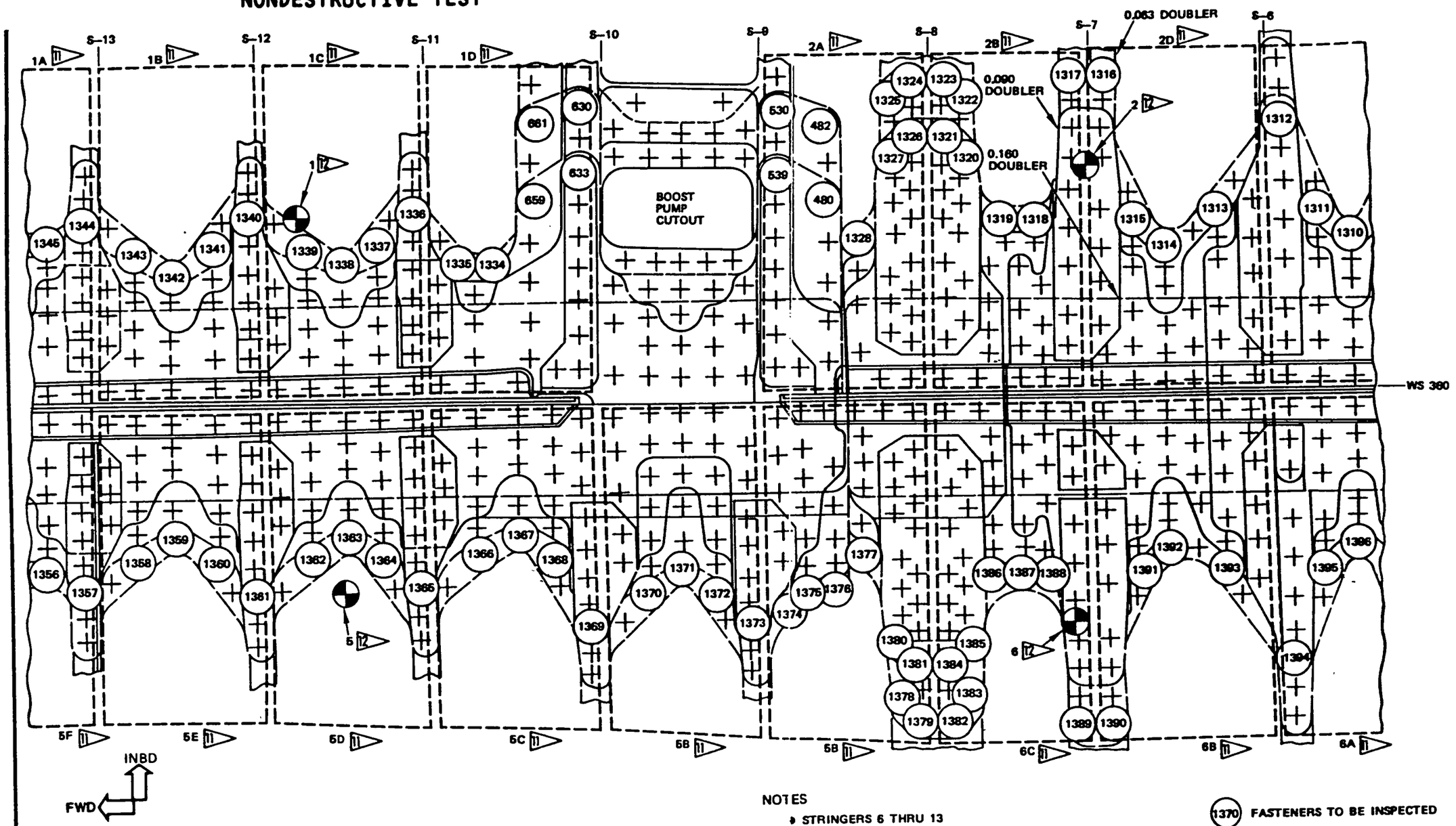
X-RAY GENERATOR LOCATION

11 FILM POSITION

12 EXPOSURE NO

WING STATION 360 LOWER
SPLICE STRINGERS
DETAIL IV

Wings - Lower Skin and Stringers WS 360
Figure 30 (Sheet 10)



NOTES

- STRINGERS 6 THRU 13
- MODEL 707-100/200
- VIEW FROM INSIDE OF WING, LOOKING DOWN
- DOUBLERS ON OUTSIDE OF WING

(1370) FASTENERS TO BE INSPECTED

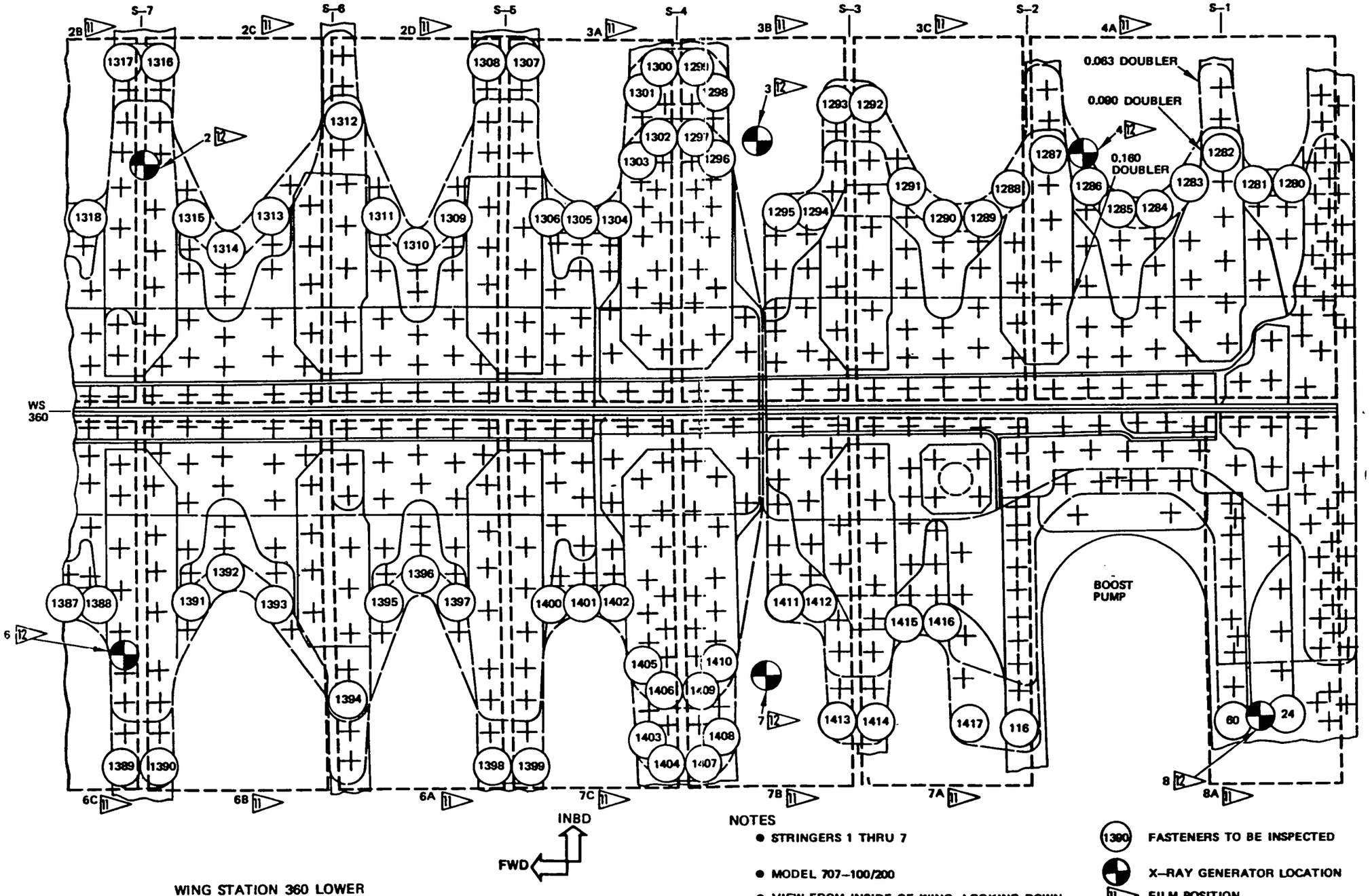
X-RAY GENERATOR LOCATION

FILM POSITION

EXPOSURE NO.

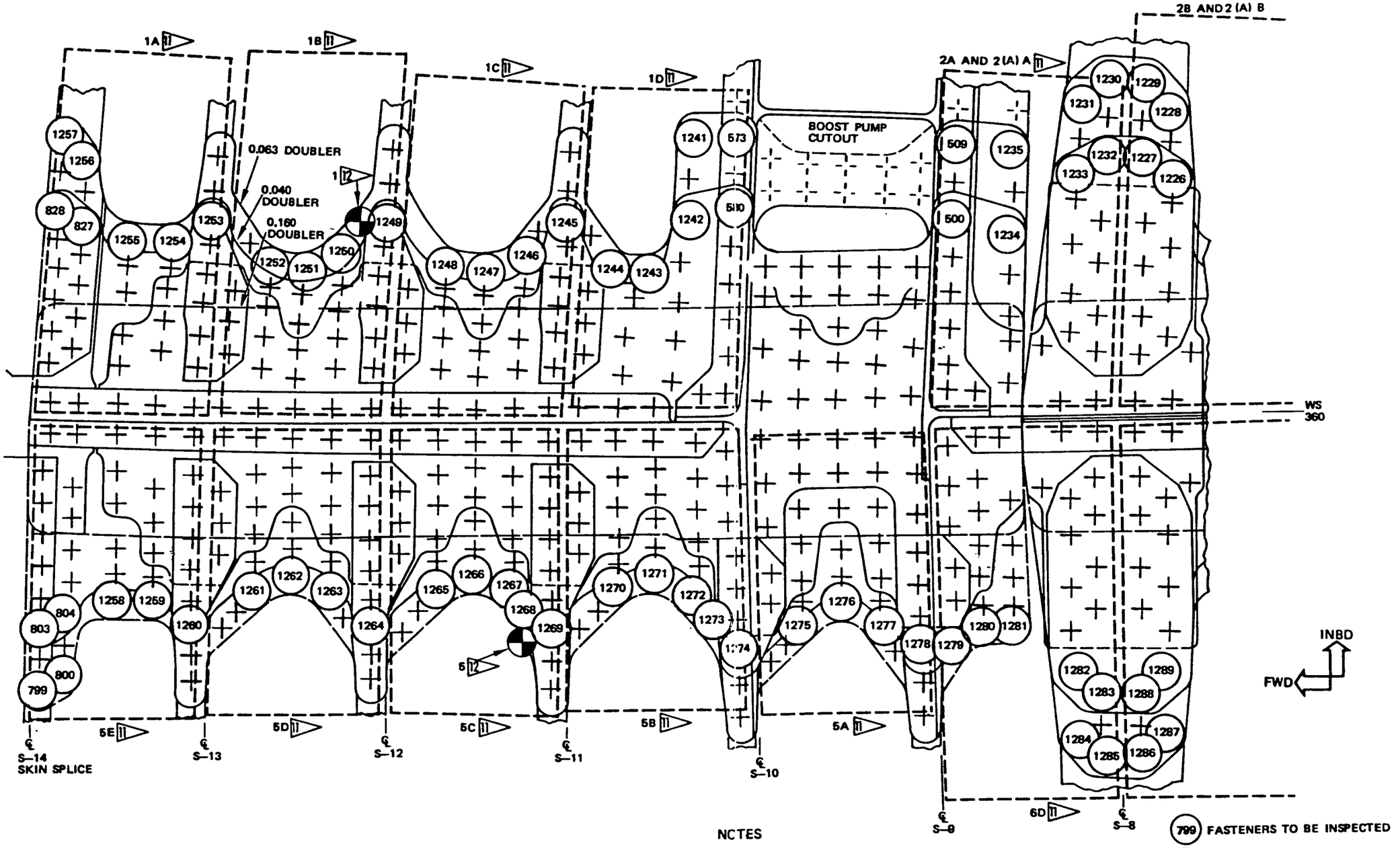
WING STATION 360 LOWER
SPLICE STRINGERS
DETAIL IV (CONT)

Wings - Lower Skin and Stringers WS 360
Figure 30 (Sheet 11)



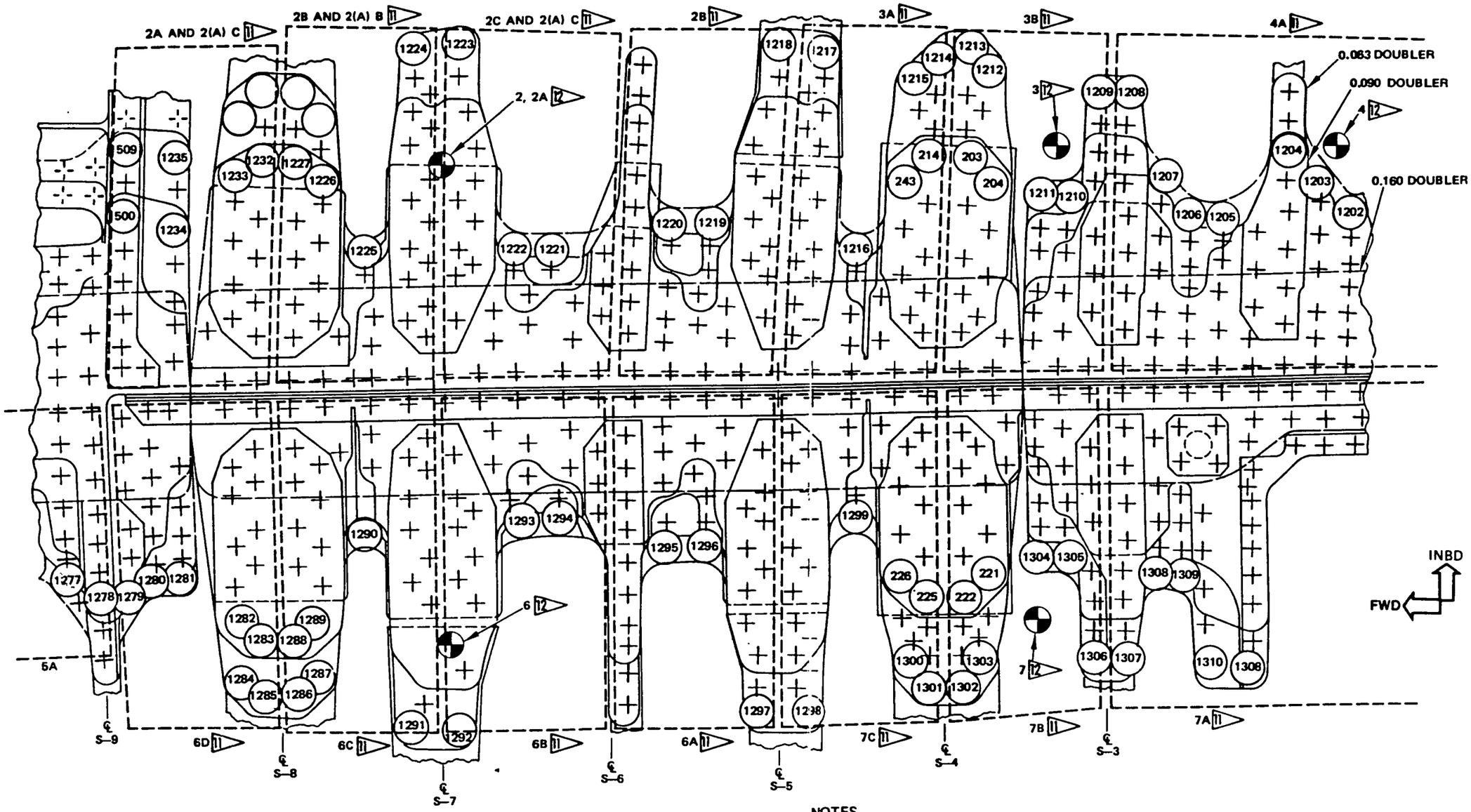
WING STATION 360 LOWER
SPLICE STRINGERS
DETAIL IV (CONT)

Wings - Lower Skin and Stringers WS 360
Figure 30 (Sheet 12)



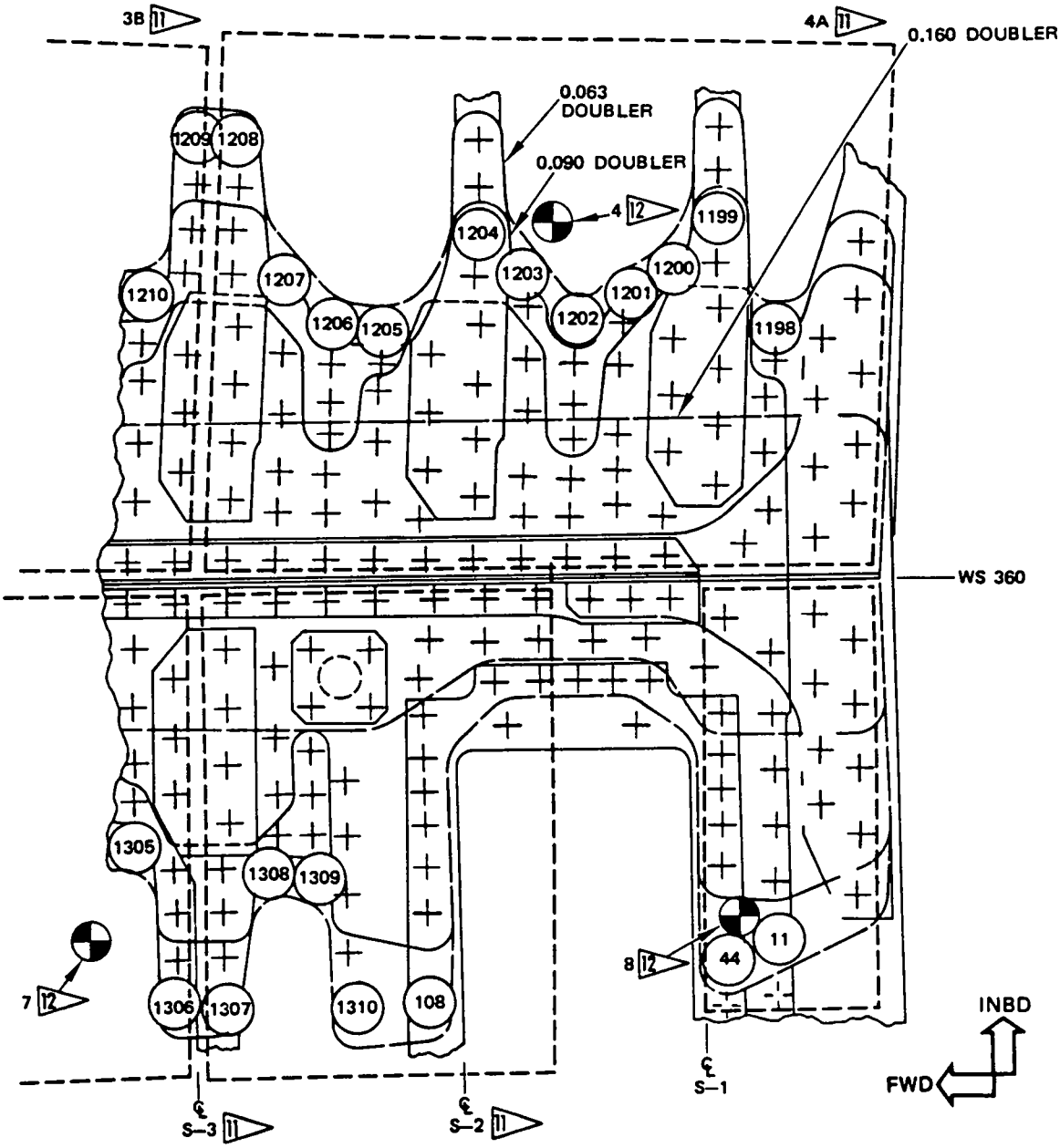
WING STATION 360 LOWER
SPLICE STRINGERS
DETAIL V

Wings - Lower Skin and Stringers WS 360
Figure 30 (Sheet 13)



WING STATION 360 LOWER
SPLICE STRINGERS
DETAIL V (CONT)

Wings - Lower Skin and Stringers WS 360
Figure 30 (Sheet 14)



NOTES

- STRINGERS 1, 2 AND 3
- MODEL 707-300/400
- VIEW FROM INSIDE OF WING, LOOKING DOWN
- DOUBLERS ON OUTSIDE OF WING

1305 FASTENERS TO BE INSPECTED

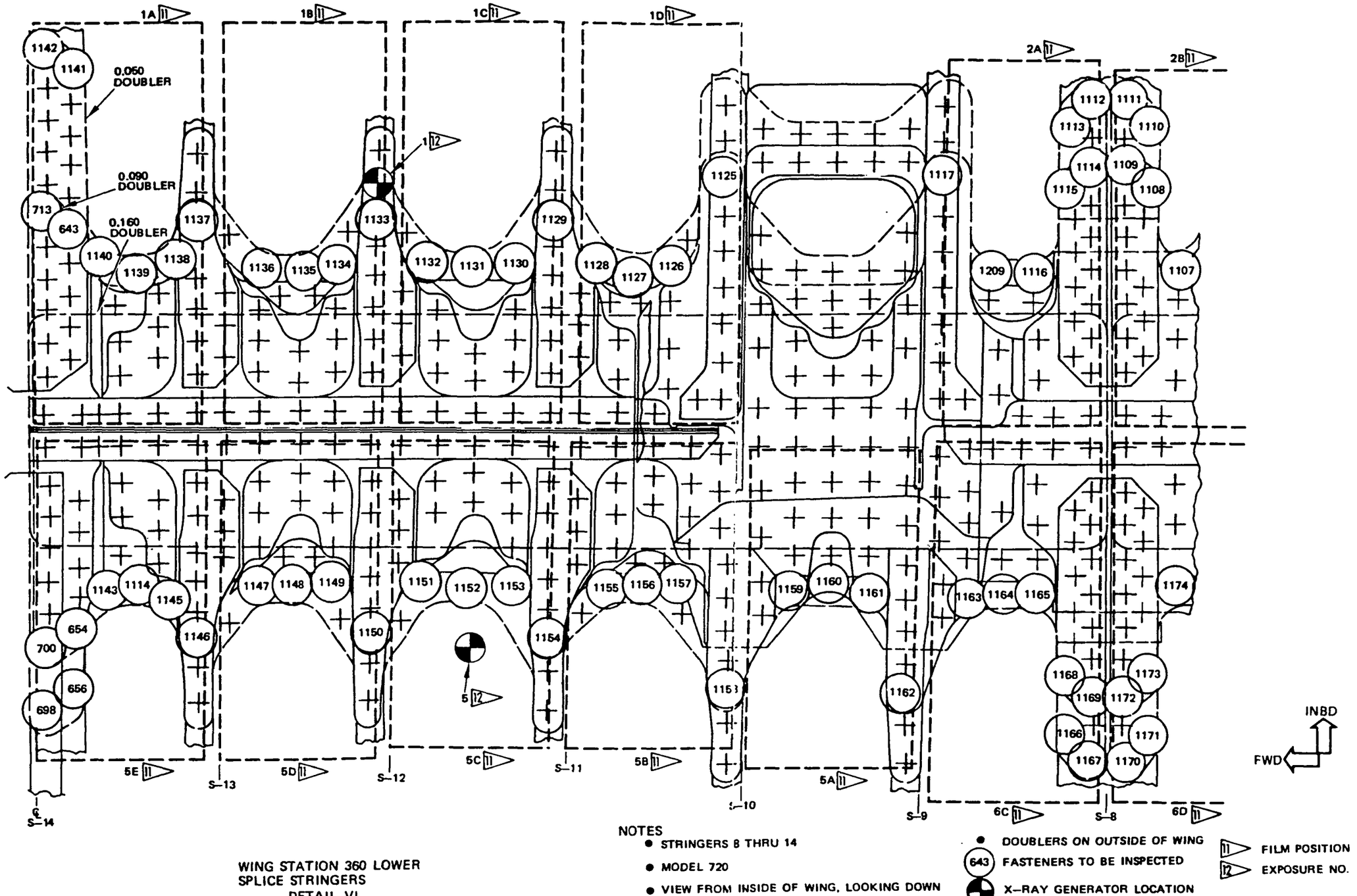
X-RAY GENERATOR LOCATION

11 FILM POSITION

12 EXPOSURE NO.

WING STATION 360 LOWER
SPLICE STRINGERS
DETAIL V (CONT)

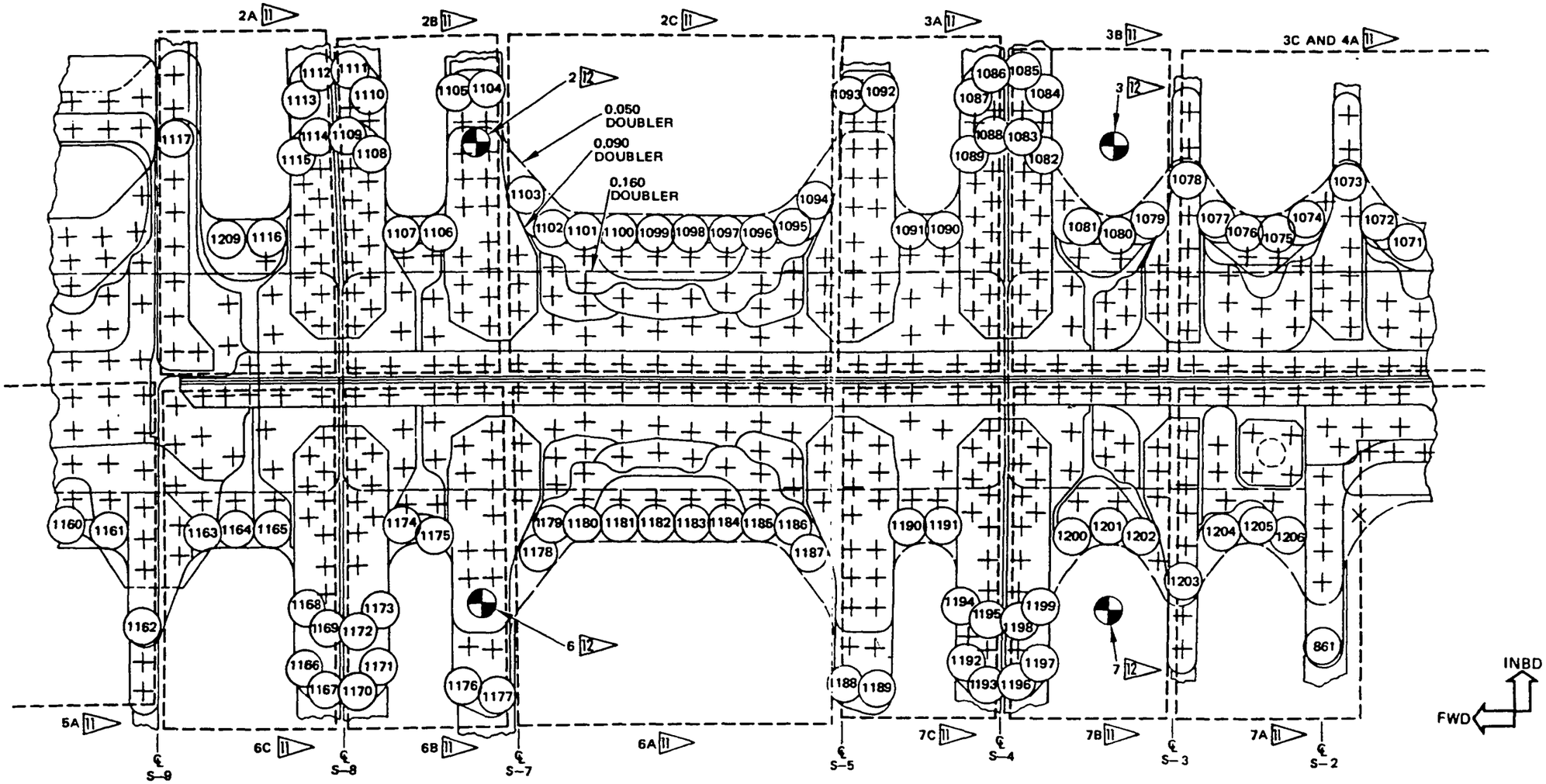
Wings - Lower Skin and Stringers WS 360
Figure 30 (Sheet 15)



WING STATION 360 LOWER
SPLICE STRINGERS
DETAIL VI

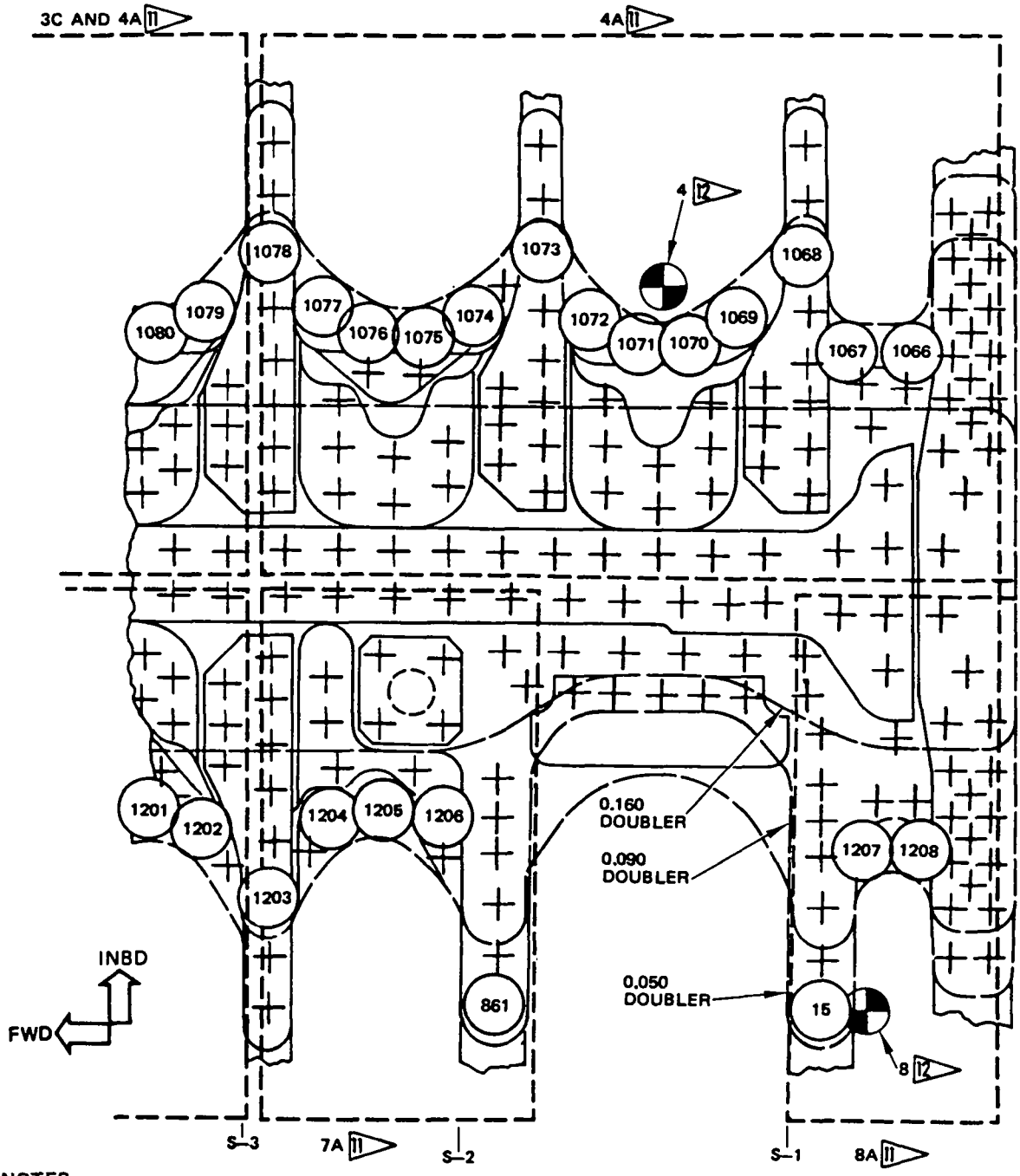
NOTES
- STRINGERS 8 THRU 14
- MODEL 720
- VIEW FROM INSIDE OF WING, LOOKING DOWN
- DOUBLERS ON OUTSIDE OF WING
- (643) FASTENERS TO BE INSPECTED
- X-RAY GENERATOR LOCATION
- 11 FILM POSITION
- 12 EXPOSURE NO.

Wings - Lower Skin and Stringers WS 360
Figure 30 (Sheet 16)



WING STATION 360 LOWER
SPLICE STRINGERS
DETAIL VI (CONT)

Wings - Lower Skin and Stringers WS 360
Figure 30 (Sheet 17)



NOTES

- STRINGERS 1 THRU 3
- MODEL 720
- VIEW FROM INSIDE OF WING, LOOKING DOWN
- DOUBLERS ON OUTSIDE OF WING

1201 FASTENERS TO BE INSPECTED

X-RAY GENERATOR LOCATION

11 FILM POSITION

12 EXPOSURE NO.

WING STATION 360 LOWER SPLICE STRINGERS
DETAIL VI (CONT)

Wings - Lower Skin and Stringers WS 360
Figure 30 (Sheet 18)

EFFECTIVITY
MODEL: ALL
SSI DOCUMENT (D6-44860)
SERVICE BULLETIN
REFERENCE: SB 2937
REFERENCE:
SSD 57-A15-13
57-A25-13
57-A35-13
57-A45-13

PART 2 - X-RAY

WING - MAIN FRAME

1. Purpose

   A. To detect cracks at specified fastener hole locations in stringers S-3, S-4, and S-8, inboard and outboard of lower WS 733 production break.

   B. This inspection requires wing tank entry. Fuel tank must be drained and purged to a "health safe" condition (as defined by Chapter 28 of the Maintenance Manual) before entering.

2. Equipment

   The equipment used to develop this technique is as follows:

   A. Sperry portable 160 kV side emission X-ray generator.

   B. Kodak M ready pack film.

   C. Lead screen 0.03 inch or thicker to be placed behind film.

3. Preparation for Inspection

   A. Drain and purge the appropriate fuel tanks.

   B. Gain access to inspection area through access panels 13 and 14 on Models 720 and 707-100/200 and panels 14 and 15 on Models 707-300/400, -300B and -300C.

   C. Cut film to size per Table I.

4. Inspection Procedure

   A. Exposure No. 1

      WARNING: PRECAUTIONS AND SAFETY PROCEDURES CONTAINED IN CHAPTER 28 OF THE MAINTENANCE MANUAL MUST BE FOLLOWED BY PERSONNEL ENTERING ANY TANK THAT HAS CONTAINED FUEL. POSSIBILITY OF EXPLOSION AND TOXIC DANGER EXISTS IN VICINITY OF FUEL TANKS WHICH HAVE CONTAINED FUEL.

      (1) Identify film type and size from Table I and film location from Detail I.

Stringer Horizontal Flange - S-3, S-4 and S-8 at WS 733
Figure 31 (Sheet 1)

(2) Place film on inside of wing and as close to vertical flanges of stringers as possible.

(3) Place lead shield behind films to prevent excessive film fogging from backscatter.

(4) Position the X-ray generator so that X-ray beam is perpendicular to the wing skin and located per Detail I.

(5) Make radiographic exposure No. 1 using Table I generator settings as a guide. Film density in the area to be inspected should be between 2.0 and 3.0 H&D.

B. For Exposure No. 2 through 4, repeat step A(1) thru A(5) used for Exposure No. 1.

C. Review the film with special attention given to the area around fastener locations noted in Detail I.

NOTE: Total aluminum thickness for all fastener locations varies from 0.62 to 0.78 inches.

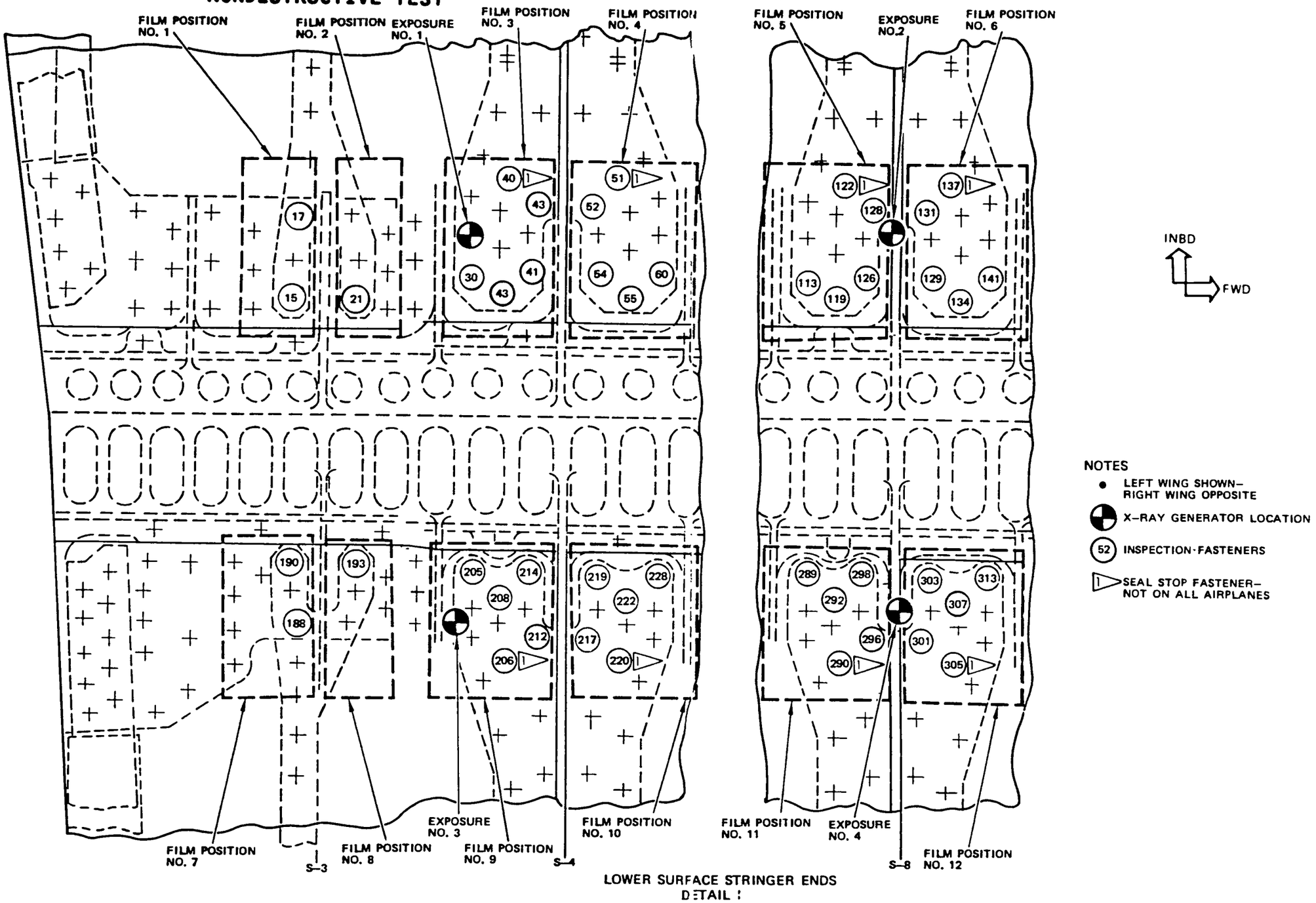
EXPOSURE NUMBER	FILM			SFD	GENERATOR SETTINGS	
	POSITION	ASTM CLASS	SIZE		KV	MAS
1	1	I	3 1/2 X 2 1/2	48	90	900
	2	I	3 1/2 X 2 1/2			
	3	I	3 1/2 X 5			
	4	I	3 1/2 X 5			
2	5	I	3 1/2 X 5			
	6	I	3 1/2 X 5	48	90	900
3	7	I	3 1/2 X 2 1/2 [1]			
	8	I	3 1/2 X 2 1/2	48	90	900
	9	I	3 1/2 X 5			
	10	I	3 1/2 X 5			
4	11	I	3 1/2 X 5	48	90	900
	12	I	3 1/2 X 5			

X-RAY PARAMETERS
TABLE I

NOTES
- ALL DIMENSIONS IN INCHES
- THESE PARAMETERS ARE INTENDED ONLY AS A GUIDELINE. EXACT GENERATOR SETTINGS WILL BE DEPENDENT UPON THE CHARACTERISTICS OF THE EQUIPMENT USED.
- STRUCTURAL THICKNESS RANGE FROM 0.62 TO 0.78 INCHES OF ALUMINUM.

[1] FILM MAY REQUIRE ADDITIONAL TRIMMING

Stringer Horizontal Flange - S-3, S-4 and S-8 at WS 773
Figure 31 (Sheet 2)



Stringer Horizontal Flangs S-3, S-4, and S-8 at WS 733.0
Figure 31 (Sheet 3)