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TECHNICAL PUBLICATION

PHOTOGRAPHIC EVALUATION REPORT

MISSION 1028-1

24-29 DECEMBER 1965

MISSION 1028-2

29 DECEMBER 1965 - 2 JANUARY 1966

[redacted]
SEPTEMBER 1966
COPY [redacted]
185 PAGES

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NATIONAL PHOTOGRAPHIC INTERPRETATION CENTER

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SYNOPSIS

Launching of Mission 1028 (J-26) occurred at 2106Z on 24 December 1965. Recovery of both SRV's (Satellite Re-entry Vehicles) was achieved by air catch -- the first at 0015Z on 30 December 1965, and the second at 2325Z on 2 January 1966. The mission accomplished 57 operational, 11 domestic, and 9 engineering passes.

Both panoramic and stellar cameras functioned properly throughout the mission. The index camera on the first phase of the mission (1028-1) was also operational throughout its portion of the mission. The shutter of the index camera employed in the second phase (1028-2) failed to close on frame 1 and remained open throughout the mission. Therefore, no usable index photography was obtained on the second half of the mission. The forward panoramic camera was subject to intermittent failure of the frequency mark track throughout the mission. An area of out-of-focus imagery at the supply end of the frame is present on 2 passes of the forward record. The aft panoramic footage was affected by an extremely slight loss of optimum focus along the frequency mark edge of numerous frames throughout the mission. All horizon cameras operated properly; however, the veiled imagery noted on previous missions was present.

The photography on this mission is considered to be of slightly better quality than that obtained on the last few missions. A Mission Information Potential (MIP) of 85 was assigned to both portions of the mission.

The interpretation of the material is limited by cloud cover which degrades or obscures approximately 30 percent of the photography. Snow cover and cloud shadow also reduce its usability.

Despite the failure of the index camera on 1028-2 and the presence of minor anomalies, overall, the mission is considered good.

GENERAL FLIGHT DATA

1. Launch and Recovery Dates

Launch -- Mission 1028-1: 24 December 1965/2106Z
Recovery -- Mission 1028-1: 29 December 1965/0015Z
Reactivation -- Mission 1028-2: 29 December 1965
Recovery -- Mission 1028-2: 2 January 1966/2325Z

2. Orbital Parameters

	Mission 1028-1 (Rev 42)
Period:	90.775 min.
Perigee:	97.655 nm
Apogee:	243.580 nm
Eccentricity:	0.02020
Inclination Angle Deg:	80.016
Perigee Latitude Deg. N:	28.442

3. Photographic Operations

Pass Information

	Mission 1028-1	Mission 1028-2
Operational Passes	28	29
Domestic/Operational	1	0
Domestic	5	5
Engineering	5*	4

*Includes one complete pass which was edited out.

4. Recovery Revolution

a. Mission 1028-1: 81
b. Mission 1028-2: 141

PART I. CAMERA OPERATIONS

1. Forward-Looking (Master) Panoramic Camera No 176

The forward-looking panoramic camera functioned properly throughout the mission. The photography was, however, affected by the following degradations.

a. Degradation of the photography by fog patterns due to light leaks was extremely minor. The location and configuration of these patterns are shown below.

Approximate Location of Fog Patterns

1. First frame of camera operation (present on only the first frame of a few passes).

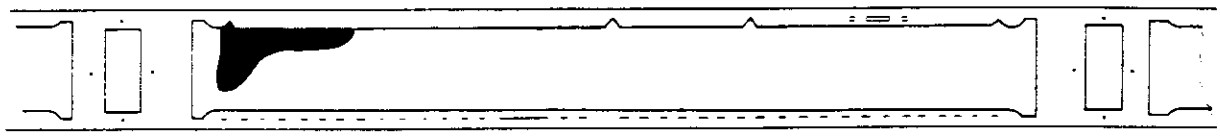
2. Fifth frame of camera operation (present only at the beginning of some passes).

3. Present at the supply end of the last frame or the take-up end of the first frame of a few passes.

4. Present on the first frame of pass 1D.

b. An area of out-of-focus imagery was detected at the supply end, camera number edge of the format in passes 130D and 131D. The out-of-focus condition is first noticeable in frame 12 of pass 130D but the degradation is slight. The condition becomes progressively more severe and reaches maximum degradation by frame 15. Thereafter, the degree of severity remains fairly consistent, being slightly less in some instances. The out-of-focus area thus continues through frame 85 of pass 131D. It is not present in frames 86 through 111 of pass 131D, but is detectable in frames 112 through 127. The degradation in frame 127 is slight and there is no out-of-focus area present in any succeeding frame. The maximum area affected by this condition

is a band which extends approximately 4 inches to the right of the supply shrinkage marker, is approximately 0.5 inch wide, and is adjacent to the camera number edge of the format. Beginning close to the supply shrinkage marker it extends approximately half way across the width of the format area. The shape of this area is illustrated below.



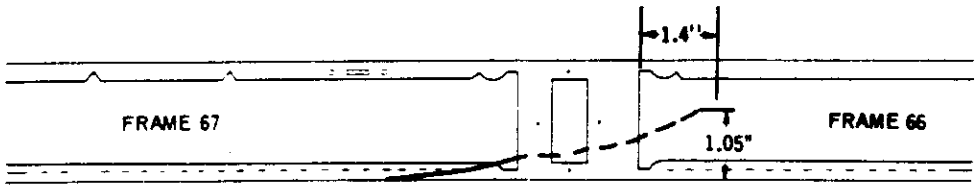
Pitch measurements (measurements between the film edge and format edge at each end of the frame) show that the format has a greater bias in those frames which display the focus degradation. The location of a manufacturer's splice in frame 50 of pass 130D suggests the possibility that either a change in film tension due to the adhesion of the splice to a successive film wrap or a bias in the joined material caused a slight mistracking of the film.

c. Fine emulsion scratches located under the camera number just inside the format at the binary edge are present on most frames of the mission. An occasional series of short, fine, emulsion scratches oriented parallel to the major axis of the film is located at the take-up end of a few frames.

d. Dendritic static discharge traces are intermittently present along both edges of the film throughout the mission. The frequency and severity of traces on this mission are considerably greater than on recent missions. Cause of all the static discharges is unknown. Although the number of static discharges noted during the pre-slice operation was greater than normal, the increase was not significant enough to explain the numerous discharge traces which slightly degrade the material.

e. A series of crimps, indented from the base side, begin in frame 66 of pass 22D. These crimps join to form a continuous crease which runs off of the frequency mark edge of the film in frame 67. Associated with these crimps are emulsion cracks and abrasions. A manufacturer's splice located in frame 64 is suspected to be the cause of the crimps, crease, and abrasions. Pitch measurements

indicate no extreme bias in the platten area during exposure. It is quite probable that the material was creased during the splicing or spooling process. An illustration of the orientation of the crease follows.



2. Aft-Looking (Slave) Panoramic Camera No 177

The aft-looking panoramic camera operated properly throughout the mission. There were no serious degradations of the photography; however, some of minor consequence were present.

a. The fog patterns due to light leaks, although of only minor severity, are more frequent, larger, and more intense than those imaged on the forward panoramic material. These patterns generally affect the last few frames of the last camera operation in a pass. The density of the fogged areas is commensurate with the duration between camera operations and the solar elevation during that period. The approximate location and configuration of the fog pattern is illustrated below:

1. First frame of camera operation (present on only the first frame of some passes).

of these traces could have been imaged during the process of film transport through the camera and, if so, whether humidity conditions during the film loading procedure are a factor in the generation of the static discharges. This question is, as yet, unanswered.

f. Fine emulsion scratches oriented parallel to the major axis are present intermittently throughout the mission. The most continuous of these is located 1.43 inches from the frequency park edge of the film. The scratch appears to be independent of the camera scan mechanism since it is present through the horizon formats.

g. Transverse banding was occasionally detectable throughout the mission but degradation was nonexistent to slight for the most part. Severe banding is present on frames 73 through 83 of pass 121D. Although these bands are usually confined to approximately 3 inches at the beginning of scan, some of these frames contain a series of bands which begin after approximately 4 inches of scan. This condition is unusual but can be possibly attributed to dirt in the scan mechanism.

7. Second frame from end of camera operation (present only at end of pass 121D).

8. Last frame of camera operation (present only at end of passes 1D, 9D, 21D, 36D, 45D, and 121D).

9. Present at the supply end of the last frame or the take-up end of the first frame of most passes.

b. Under high magnification (40X plus) it was discovered that the imagery along the frequency mark edge of some frames was not as good as that along the camera number edge. The imagery along the frequency mark edge of the format is slightly out-of-focus. The transition from good focus at the camera number edge of the format to slightly out at the opposite format edge is gradual with no definite line of demarcation. Although this condition prevails throughout the mission, it is considered only a slight degradation since it is just perceptible under high magnification.

c. Fine emulsion scratches located just inside both format edges under the camera number and at the take-up end of the frame are present intermittently throughout the mission. A series of short fine emulsion scratches is also present in the take-up bonus area of most frames of the mission. Since this raking is located in the bonus area of the format, none of the useable image area is degraded.

d. Numerous minus density streaks (on the ON) are intermittently present throughout the mission. Most are biased and appear to follow the path of the field flattener. Many, however, are randomly oriented. Frame 9 of pass 5D contains the image of a particle of foreign matter and the resulting minus density streak as the particle is swept along by the field flattener. A thin line of minus density located approximately one inch from and parallel to the frequency mark edge of the film begins in frame 70 of pass 102D and is intermittently detectable to the end of the mission.

e. Traces of dendritic static discharges are numerous along both edges of the material throughout the mission. Many traces extend into the format area but most are confined to the borders. Reports from the processing contractor state that more static discharges than usual were noted during the pre-inspection and processing phases of their operation. However, this increase does not account for all of the traces present on the material. It is questioned whether a portion

of these traces could have been imaged during the process of film transport through the camera and, if so, whether humidity conditions during the film loading procedure are a factor in the generation of the static discharges. This question is, as yet, unanswered.

f. Fine emulsion scratches oriented parallel to the major axis are present intermittently throughout the mission. The most continuous of these is located 1.43 inches from the frequency park edge of the film. The scratch appears to be independent of the camera scan mechanism since it is present through the horizon formats.

g. Transverse banding was occasionally detectable throughout the mission but degradation was nonexistent to slight for the most part. Severe banding is present on frames 73 through 83 of pass 121D. Although these bands are usually confined to approximately 3 inches at the beginning of scan, some of these frames contain a series of bands which begin after approximately 4 inches of scan. This condition is unusual but can be possibly attributed to dirt in the scan mechanism.

FIGURE 1. DESCRIPTION OF PHOTOGRAPHIC DATA

The data pertaining to photographs contained in this publication are defined as follows:

PASS: A pass is the operational portion of an orbital revolution. A suffix D indicates that the photography was acquired during the descending portion, a suffix A indicates that the photography was acquired during the ascending portion, and a suffix M indicates that the photography was acquired during a pass that includes both ascending and descending portions. An additional suffix E indicates that the pass was an engineering operation or that a portion of the pass has been edited.

DATE OF PHOTOGRAPHY: The date of photography indicates the day, month, and year (GMT) that the photography was acquired.

UNIVERSAL GRID COORDINATES: These coordinates are included to locate the illustrated photography within the panoramic format.

ENLARGEMENT FACTOR: The enlargement factor is included to indicate the number of diameters the original material has been enlarged in the photographic illustration.

GEOGRAPHIC COORDINATES: These coordinates are included to indicate the latitude and longitude of the center of the panoramic format.

ALTITUDE: This measurement is the vertical distance from the vehicle to the Hough Ellipscid at the time of the acquisition of the photography.

PITCH: Rotation of the camera about its transverse axis. Using appropriate aeronautical terminology, positive readings indicate nose-up attitude and negative readings indicate nose-down attitude.

ROLL: Rotation of the camera about its longitudinal axis. Using appropriate aeronautical terminology, positive readings indicate left wing-up attitude and negative readings indicate right wing-up attitude.

YAW: Rotation of the camera about its vertical axis. Positive readings indicate counterclockwise rotation when viewing the ground nadir from the vehicle-mounted camera in flight.

LOCAL SUN TIME: This time is included to present to the viewer a realistic time of acquisition of the photography illustrated.

SOLAR ELEVATION: The solar elevation is the angular elevation of the sun above a plane tangent to the surface of the earth at the center of the panoramic format. A negative solar elevation indicates that the sun is below the plane.

SOLAR AZIMUTH: The solar azimuth is the angular measurement of the rays of the sun measured from true north in a clockwise direction.

EXPOSURE: The exposure is the duration of the photographic exposure expressed in a fraction of a second and is computed from the scan rate and slit width.

PROCESSING LEVEL: The particular degree of development given to the film to attain negatives of the highest possible quality. Three levels of processing, Primary, Intermediate, and Full, are currently employed.

VEHICLE AZIMUTH: The clockwise measurement from true north to the longitudinal axis of the vehicle heading.

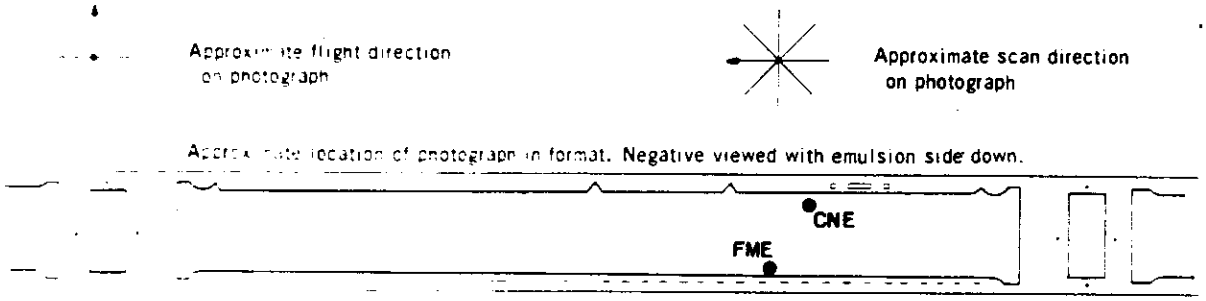
FIGURE 2. EXAMPLE OF THE RESOLUTION ALONG THE CAMERA NUMBER EDGE OF AN AFT FRAME

FIGURE 3. EXAMPLE OF THE RESOLUTION ALONG THE FREQUENCY MARK EDGE OF THE SAME AFT FRAME

The resolution along the camera number edge of a frame can be compared to that along the frequency mark edge of the same aft frame in Figure 3. The loss in quality along the frequency mark edges is readily detectable at magnifications of 40X and greater.

NPIC K-8937 (8/66)
NPIC K-8938 (8/66)

	FIGURE 2	FIGURE 3
	Camera No Edge	Freq Mark Edge
Camera	Aft	Aft
Pass	45D	45D
Frame	10	10
Date of Photography	27 Dec 65	27 Dec 65
Universal Grid Coordinates	61.2 - 14.5	61.2 - 9.5
Enlargement Factor	40X	40X
Geographic Coordinates	32-49S 59-58W	32-49S 059-58W
Altitude	837,013	837,013
Camera Attitude:		
Pitch	-14°30'	-14°30'
Roll	-0°10'	-0°10'
Yaw	0°01'	0°01'
Local Sun Time	1332	1332
Solar Elevation	68°06'	68°06'
Solar Azimuth	253°	253°
Exposure	1/193	1/193
Vehicle Azimuth	170°59'	170°59'
Processing Level	Intermediate	Intermediate



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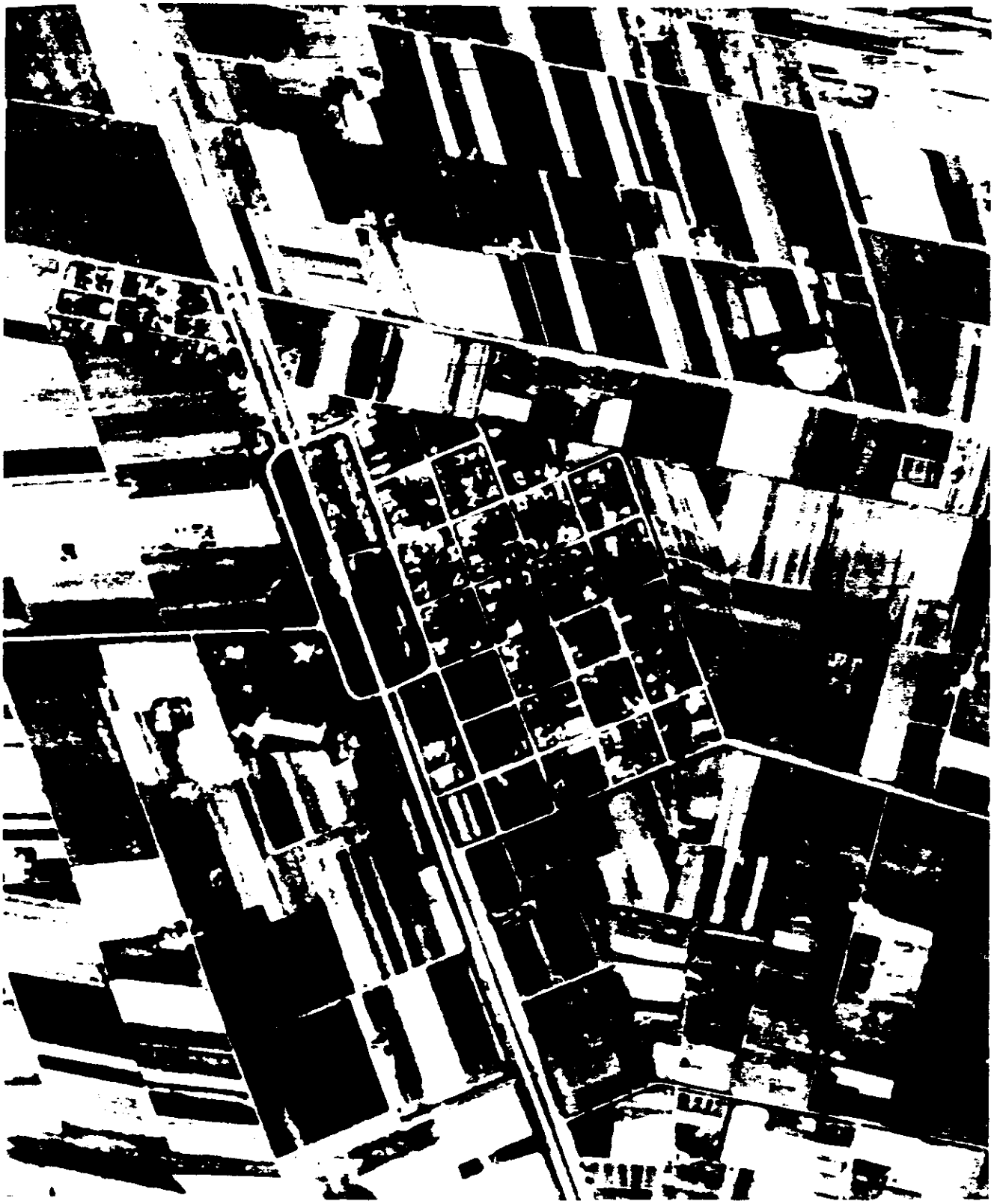

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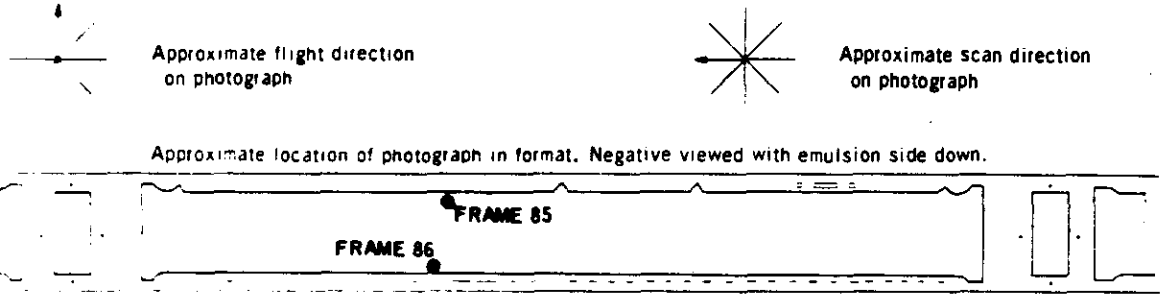
FIGURE 4. EXAMPLE OF THE RESOLUTION ALONG THE CAMERA NUMBER EDGE OF AN AFT FRAME

FIGURE 5. EXAMPLE OF THE RESOLUTION ALONG THE FREQUENCY MARK EDGE OF THE SUCCESSIVE AFT FRAME

The identical coverage illustrated here clearly shows the loss of image quality. This slightly out-of-focus condition was present along this edge on all aft frames throughout the entire mission.

NPIC K-8939 (8/66)
NPIC K-8940 (8/66)

	FIGURE 4	FIGURE 5
Camera	Aft	Aft
Pass	36D	36D
Frame	85	86
Date of Photography	27 Dec 65	27 Dec 65
Universal Grid Coordinates	37.5 - 14.7	37.4 - 9.7
Enlargement Factor	40X	40X
Geographic Coordinates	34-33S 145-59E	34-46S 146-02E
Altitude	839,274	840,893
Camera Attitude:		
Pitch	-15°58'	-15°58'
Roll	0°02'	0°01'
Yaw	0°18'	0°19'
Local Sun Time	1339	1339
Solar Elevation	66°02'	65°55'
Solar Azimuth	251°	250°
Exposure	1/195	1/195
Vehicle Azimuth	170°40'	170°38'
Processing Level	Intermediate	Intermediate



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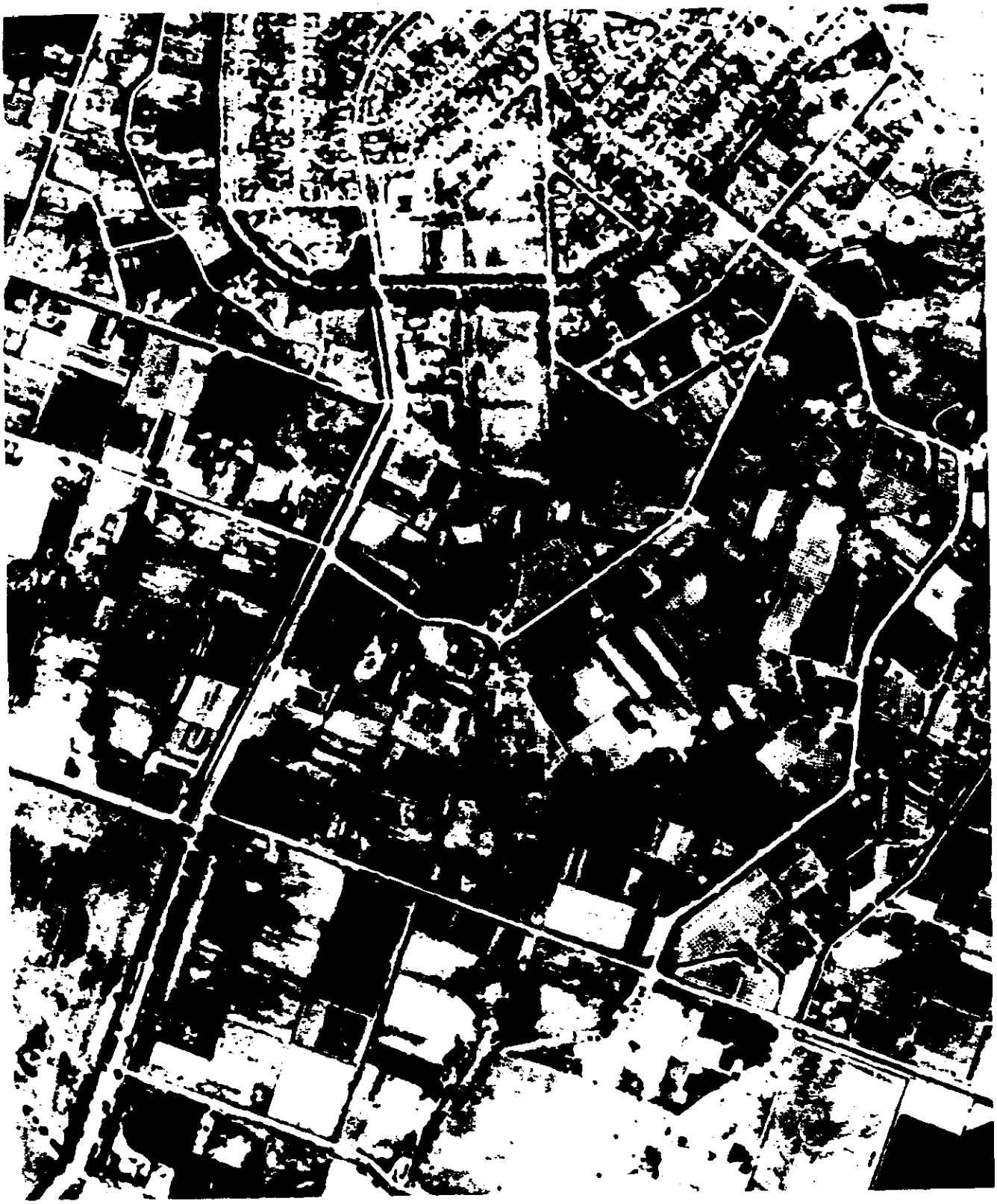

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3. Forward-Looking (Master) Horizon Cameras

Both master horizon cameras were operational throughout the mission. The imagery ranges from under to over exposed as is normal for these cameras. The horizon arcs, however, are of good quality and are usable for attitude determination throughout the mission. A small plus density trace resulting from a dendritic static discharge is present at the supply end of all take-up horizon formats of the mission.

4. Aft-Looking (Slave) Horizon Cameras

Both slave horizon cameras were operational throughout the mission. The starboard horizon displays a veiled appearance on all passes from 1D through 68D. When examined under magnification the photography is found to be sharp (in focus). This phenomenon has been noted on previous missions and is being investigated. This condition does not seem to affect the horizon arcs which were suitable for the determination of attitude throughout the mission. Both horizons contain small traces of dendritic static which occur along the frequency-mark edge of the format and do not affect the horizon readout.

5. Stellar Camera No D77 Reseau No 97 (Mission 1028-1)

The stellar camera operated properly throughout the mission. The record is exceptionally clean and free of degrading factors. Most stellar images appear doubled or streaked; however, they are adequate for stellar reduction and the quality of the imagery is considered to be good. Streaked images, believed to be particles of crystallized jettisoned fuel, are present on the following frames:
1,2,3,4,7,8,10,11,14,17,18,19,20,22,23,25,26,29,32,34,35,36,46,47,48,52,55,58, 60,61,63,71,75,77,80,94,104,106,116,120,129,136,140,152,246, and 273.

Approximately 40 percent of each stellar format is affected by fog resulting from light reflecting on the baffle and side curtain. The density of this fog is commensurate with the solar elevation and look angle during exposure. A slight band of fog perpendicular to the film edges is detectable between frames 99/100 and 187/188. A plus density line located between the correlation mark and the stellar format runs parallel to the film edges from frame 369 through frame 417. This line appears to be caused by a slight abrasion of the film and is located 0.15 inches from the correlation mark edge of the film. Dendritic static discharge traces appear intermittently along this line. Emulsion cracks parallel to the minor axis begin in frame

324 and are present intermittently throughout the remainder of the material. The last 2 feet of film were abraded by runout. This includes only one foot of stellar imagery, the last foot being intended as wrap-up. No major problems were encountered in the stellar reduction.

6. Stellar Camera No D74 Reseau No 95 (Mission 1028-2)

The stellar camera was operational throughout its portion of the mission. Although it affects approximately 40 percent of each stellar format, the flare level is considered to be slightly less than normally experienced and stellar images are readily detectable. Although most star images are elongated or doubled they are suitable for attitude reduction. Intermittent areas of fog patterns containing images of equipment are present throughout the record. In many cases the degree of fogging is so severe that the stellar images are obscured. These fogged areas were caused by the large amount of light entering the S/I unit through the malfunctioning index shutter.

Since the index record on 1028-2 was not usable, there was no stellar reduction on the second portion of the mission because both the S and I records are necessary for attitude determination.

7. Index Camera No D77 Reseau No 91 (Mission 1028-1)

The index camera operated well throughout the mission and the photographic quality is good. Most frames contain an image of a portion of the edge of the reseau. These images are caused by internal light scatter within the reseau being refracted by the edge. The last frame is fogged and abraded by runout.

8. Index Camera No 74 Reseau No 76 (Mission 1028-2)

The shutter failed in the open position on the first frame and remained open throughout the second phase of the mission. All but 2 formats are fogged. Those not fogged were exposed during night engineering passes and contain no imagery. No imagery is detectable in the second phase of the mission and no portion of the record is usable for attitude determination.

9. Associated Equipment

This equipment records part of the information required for correlation and mensuration of the panoramic cameras.

a. The frequency marks are missing on approximately one-third of the [illegible] mission material. They do not fade out but stop abruptly, usually at the end of a frame. They always restart after the smeared

pulse and continue for at least the remainder of that frame. No failure pattern is detectable and the cause for intermittent operation is believed to lie in marginal operation of the neon bulb or drive transistor Q109.

b. The smeared pulse on the forward material which indicates stellar/index operation failed twice during the flight. It was not recorded as required on frame 44 of pass 87D and frame 28 of pass 196AE. The length of these smeared pulses varies from 0.8 inches on frame 23 of pass 133D to 5.1 inches on 6 frames throughout the mission (Example: frame 146 of 22D).

c. The shrinkage markers and data block edge of the formats from both cameras display ragged edges throughout the mission. This was caused by an emulsion build-up on the film guide rails.

FIGURE 6. EXAMPLE OF STELLAR PHOTOGRAPHY, MISSION 1028-1

The middle stellar frame in the series shown contains an image of what is possibly a particle of jettisoned fuel. The degree to which the flare pattern affects the imagery can also be seen. The stellar record from both portions of the mission was good.

NPIC K-8941 (8/66)

Camera	Stellar
Pass	7D
Frame	68 through 74
Date of Photography	25 Dec 65
Enlargement Factor	Contact
Geographic Coordinates	30-07N 080-06E
Altitude	609,064
Attitude of Forward-Looking (Master) Panoramic Camera:	
Pitch	15°20'
Roll	-0°11'
Yaw	-0°01'
Local Sun Time	1307
Solar Elevation	34°15'
Solar Azimuth	198°
Exposure	2 sec
Vehicle Azimuth	171°23'

[redacted]

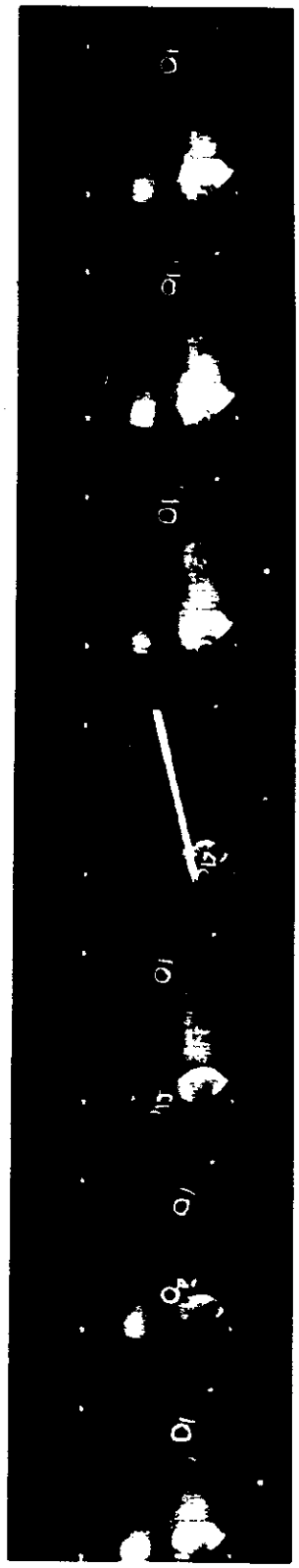

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FIGURE 7. EXAMPLE OF INDEX PHOTOGRAPHY ON MISSION 1028-1

The good quality of the index photography is easily seen in the accompanying illustration. The grid lines are well imaged and the resolution of the imagery is good.

NPIC K-0942 (8/66)

Camera	Index
Pass	7D
Frame	71
Date of Photography	25 Dec 65
Enlargement Factor	2X
Geographic Coordinates	30-07N 080-06E
Altitude	609,064
Attitude of Forward-Looking (Master) Panoramic Camera:	
Pitch	15°20'
Roll	-0°11'
Yaw	-0°01'
Local Sun Time	1307
Solar Elevation	34°15'
Solar Azimuth	198°
Exposure	1/500 sec
Vehicle Azimuth	171°23'

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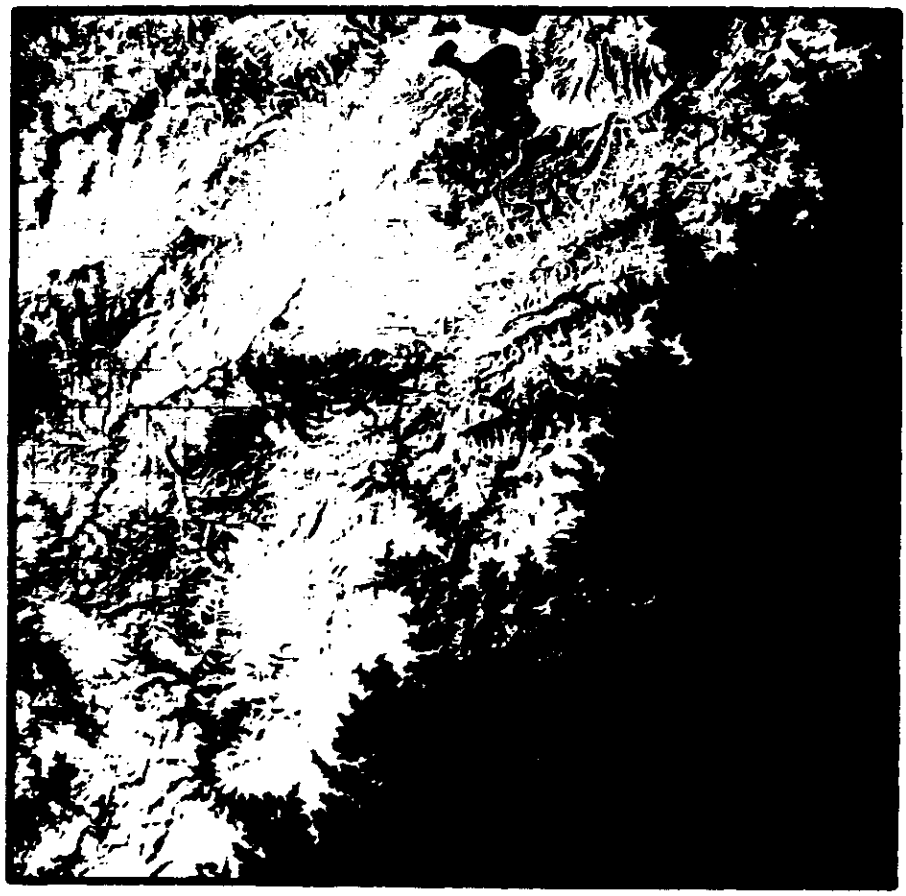

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PART II. FILM

1. Film Processing

This section provides an evaluation of exposure, processing, and densities of the original negatives from Mission 1028.

a. Exposure was mostly good throughout the mission. Excluding engineering passes, solar elevations ranged from 2°04' to 74°13'. As is normal, acquisition in areas with low solar elevations coupled with low reflectivity produced by wet terrain provided minimal exposure even when processed at the full level of development. Likewise, areas illuminated by high solar elevations combined with the extreme reflectivity of fresh snow cover produced the maximum exposure recorded by this mission. The processing contractor reported that even though a large percentage of both the forward and aft material was processed at the full level of development, their overall minimum density levels tended to be low.

b. Twenty-eight changes in the development level were made on the forward material and 35 on the aft material. The necessity for a change in the level of development in order to provide optimum processing of the material was determined by visual observation and infra-red detection densitometry. The percentages of film processed at the various levels are:

Development Level	1028-1		1028-2	
	Forward	Aft	Forward	Aft
Primary	0%	0.1%	1%	0%
Intermediate	4%	16.0%	9%	6%
Full	96%	83.9%	90%	94%

Eleven parts of the forward film and 9 parts of the aft film required printing at 2 density levels to provide duplicate positives of optimum quality.

2. Physical Film Degradations

a. Some minor abrasions, pinholes, and comets were noted throughout the mission; however, degradation is considered minor.

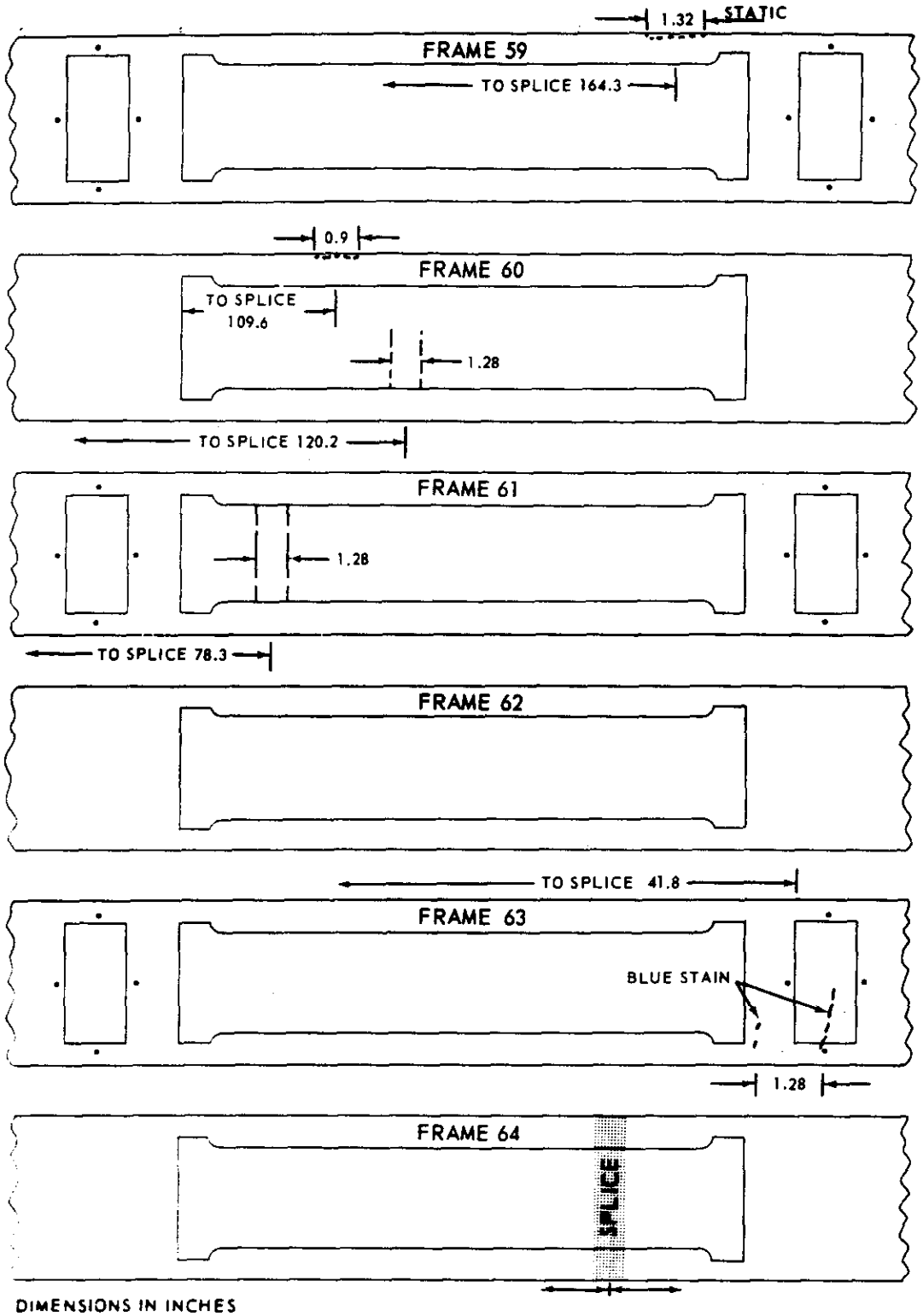
b. The crimps and creases in frames 66 and 67 of pass 22D of the forward footage is described in Part I, paragraph 1, sub-paragraph e of this report.

c. Any abnormal tension transient of the film is a potential hazard to system performance. Such a transient is produced when the cold flow of adhesive from a manufacturer's splice causes adjoining film wraps to adhere. Adhesive transfers, static discharge traces, plus density streaks, and emulsion lifts are usually present in association with manufacturer's splices. The following diagrams give the location of these anomalies in relation to all splices on the forward and aft material.

ILLUSTRATIONS OF SPLICES AND ASSOCIATED ANOMALIES ON MISSION 1028

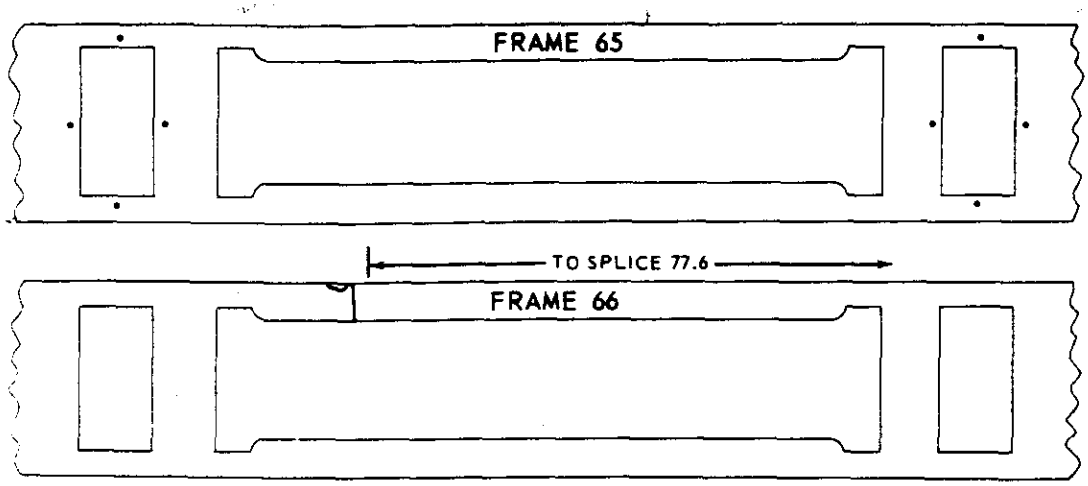
FORWARD PASSES

FWD 22D

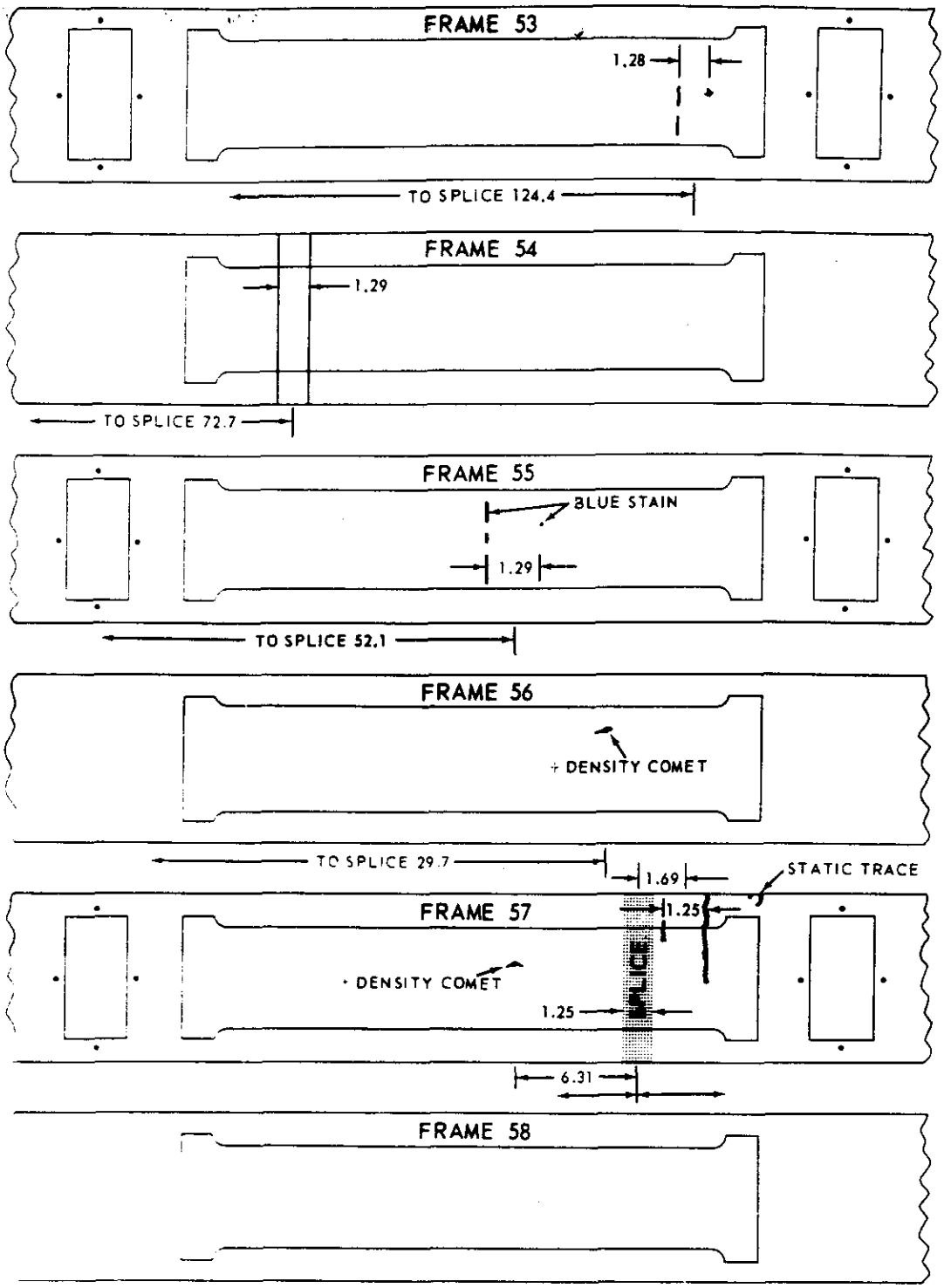


DIMENSIONS IN INCHES

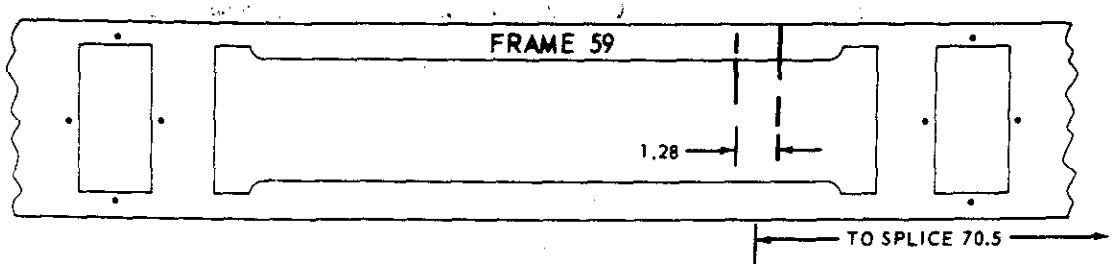
FWD 22D



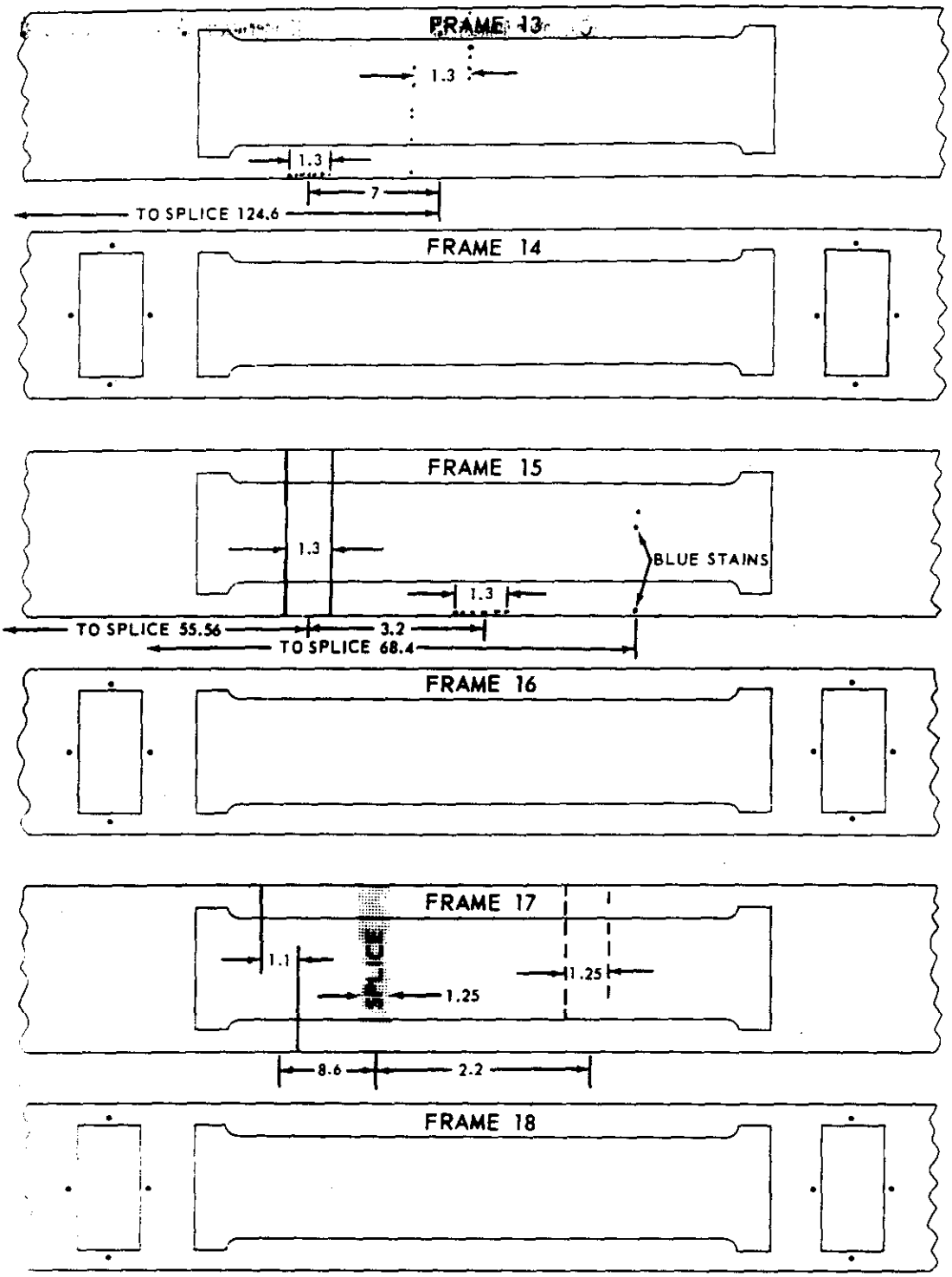
FWD 41D


FRAME 53
1.28
TO SPLICE 124.4
FRAME 54
1.29
TO SPLICE 72.7
FRAME 55
BLUE STAIN
1.29
TO SPLICE 52.1
FRAME 56
DENSITY COMET
TO SPLICE 29.7
1.69
STATIC TRACE
FRAME 57
1.25
DENSITY COMET
1.25
6.31
FRAME 58

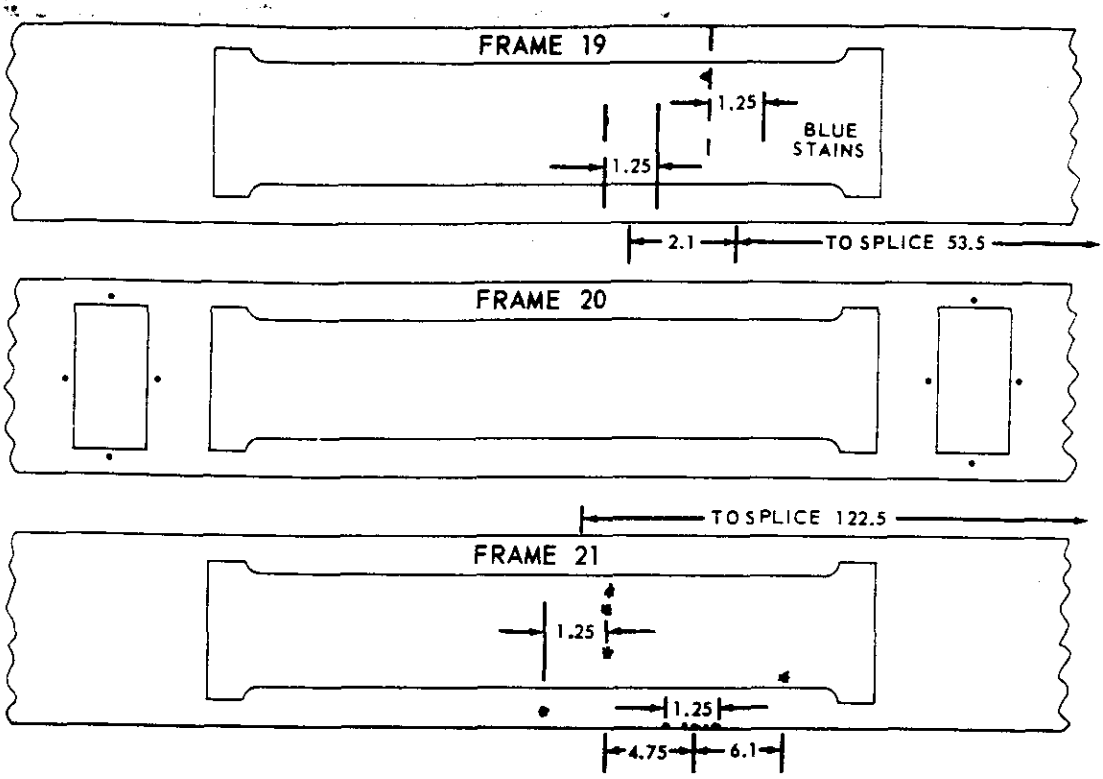
FWD 41D



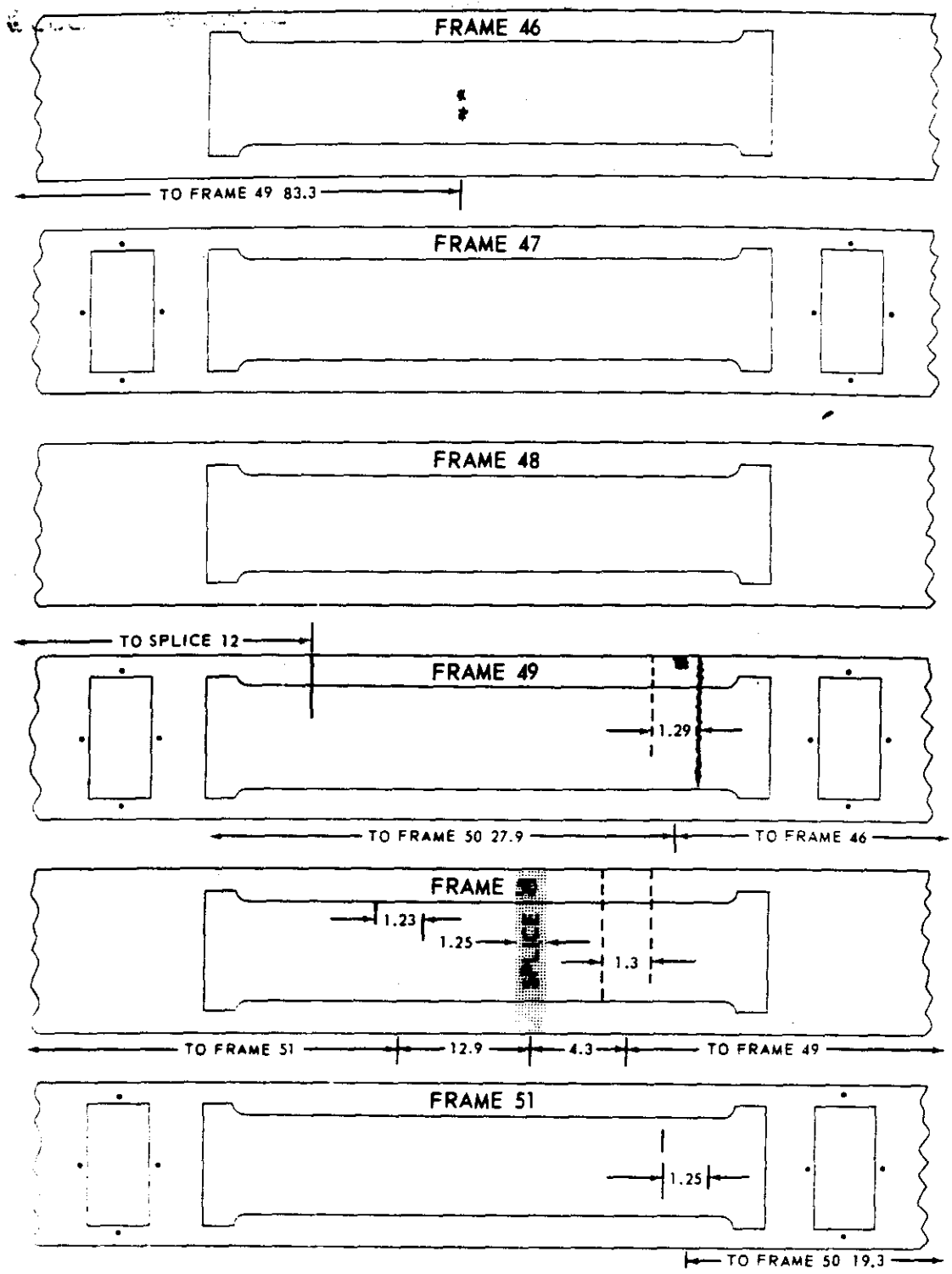
FWD. 88D


FRAME 13
1.3
1.3
7
TO SPLICE 124.6
FRAME 14
FRAME 15
1.3
BLUE STAINS
1.3
TO SPLICE 55.56
3.2
TO SPLICE 68.4
FRAME 16
FRAME 17
1.1
1.25
1.25
8.6
2.2
FRAME 18

FWD 88D

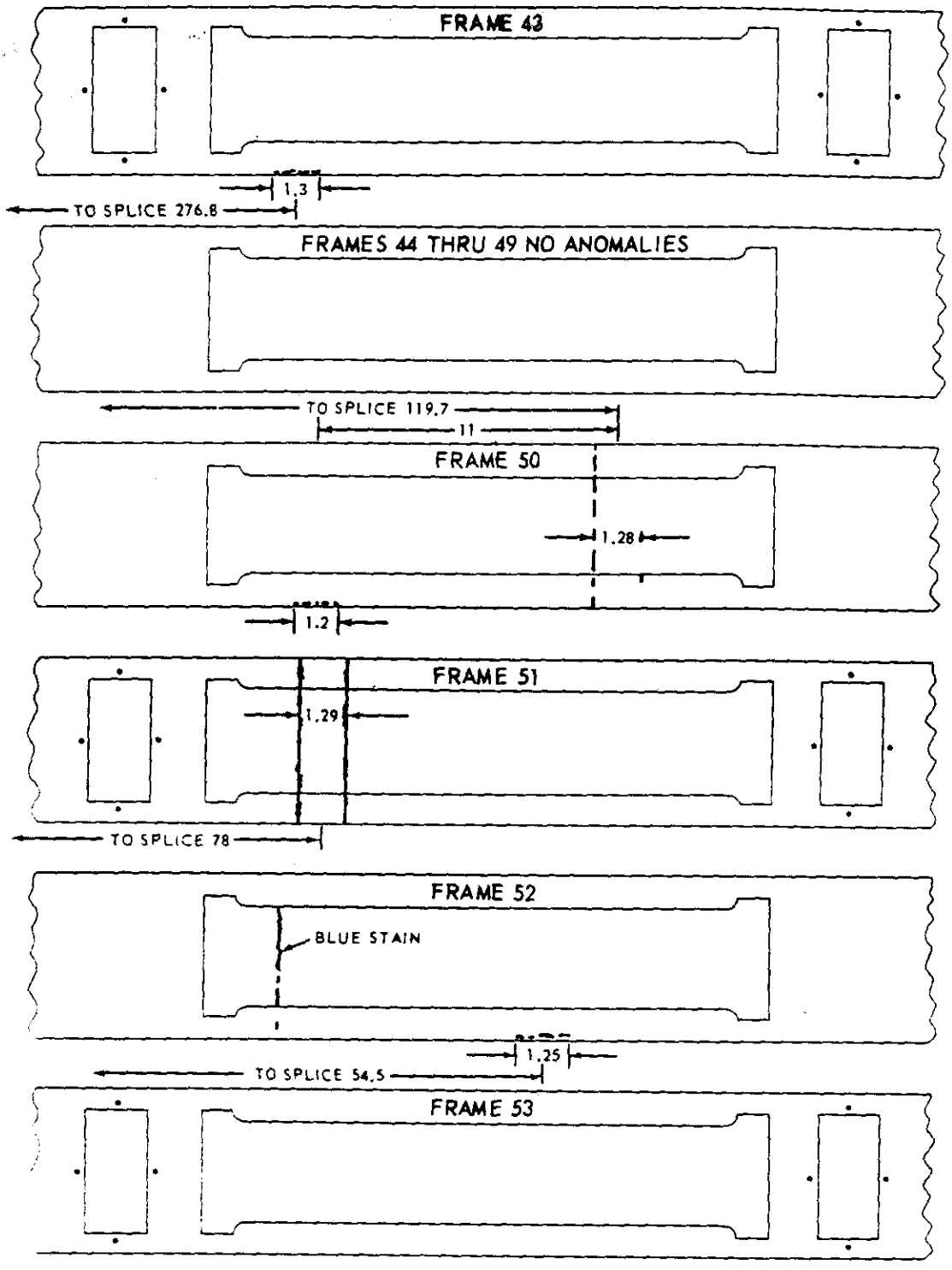

FRAME 19
1.25
BLUE STAINS
1.25
2.1
TO SPLICE 53.5
FRAME 20
TO SPLICE 122.5
FRAME 21
1.25
1.25
4.75
6.1

FWD 130D

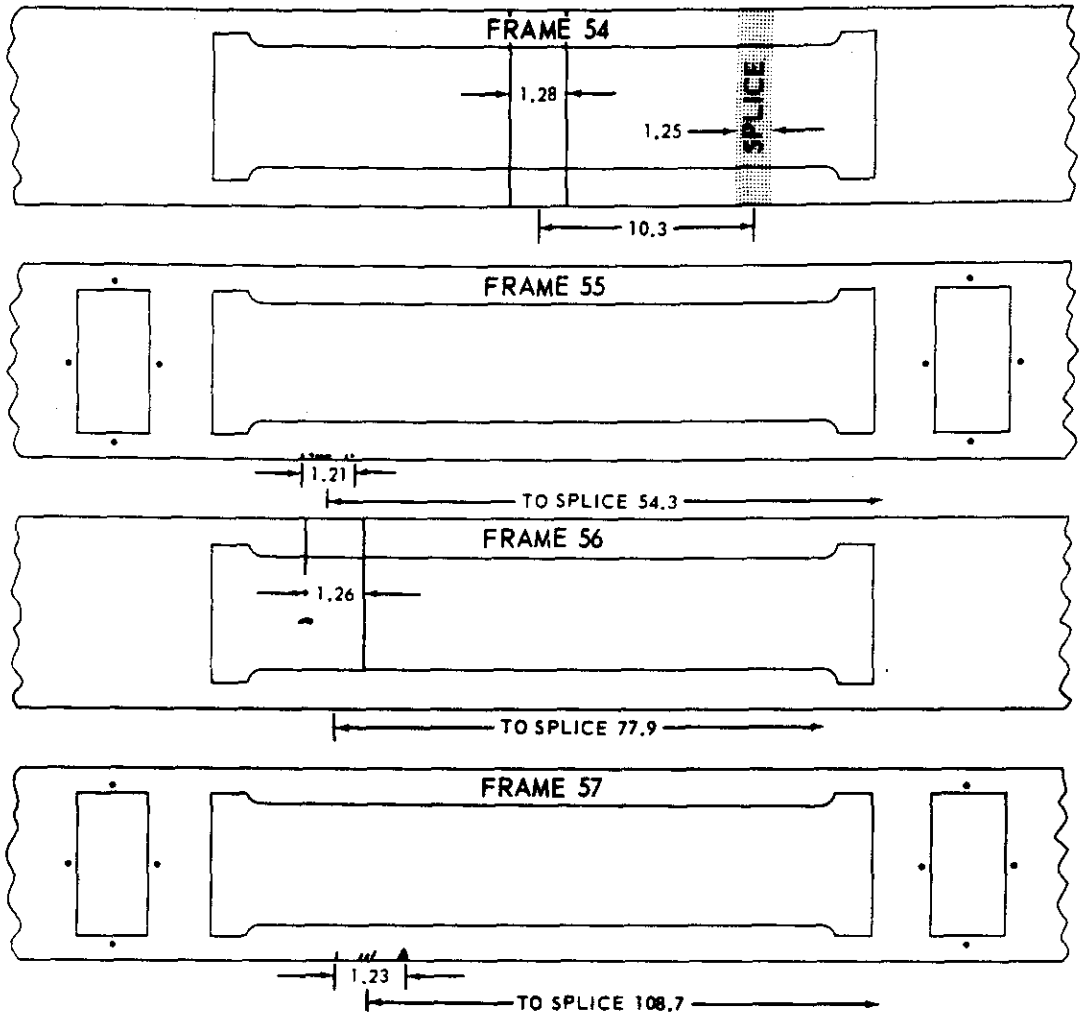

FRAME 46
TO FRAME 49 83.3
FRAME 47
FRAME 48
TO SPLICE 12
FRAME 49
1.29
TO FRAME 50 27.9
TO FRAME 46
FRAME
1.23
1.25
1.3
TO FRAME 51
12.9
4.3
TO FRAME 49
FRAME 51
1.25
TO FRAME 50 19.3

AFT PASSES

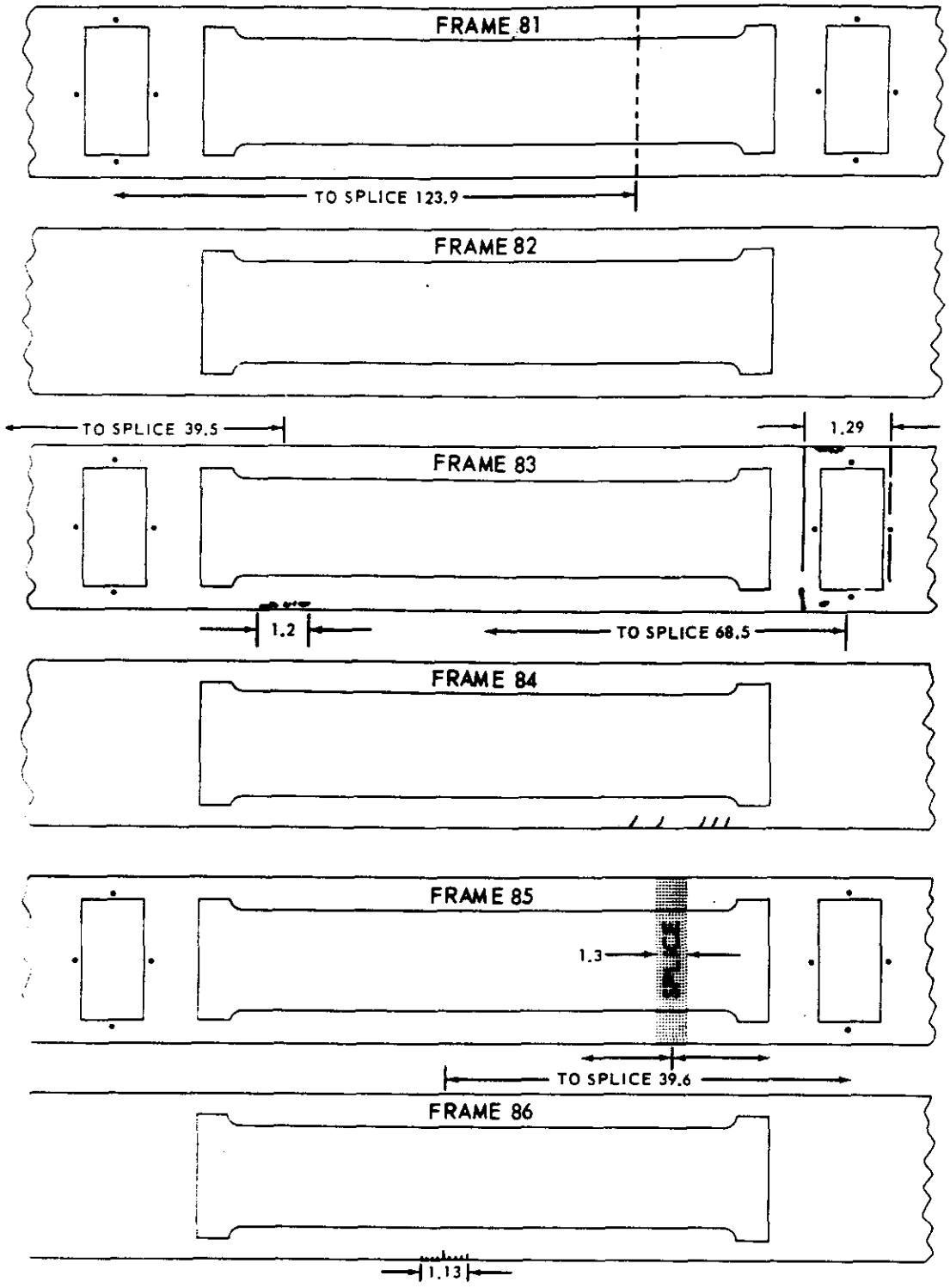
AFT 22D


FRAME 43
1.3
TO SPLICE 276.8
FRAMES 44 THRU 49 NO ANOMALIES
TO SPLICE 119.7
11
FRAME 50
1.28
1.2
FRAME 51
1.29
TO SPLICE 78
FRAME 52
BLUE STAIN
1.25
TO SPLICE 54.5
FRAME 53

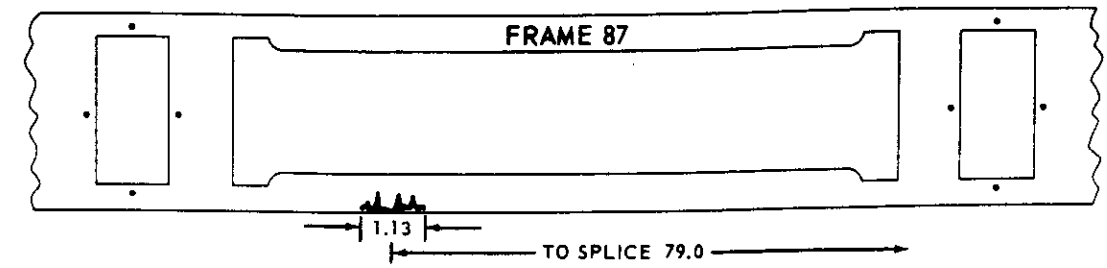
AFT 22D


FRAME 54
1.28
1.25
SPLICE
10.3
FRAME 55
1.21
TO SPLICE 54.3
FRAME 56
1.26
TO SPLICE 77.9
FRAME 57
1.23
TO SPLICE 108.7

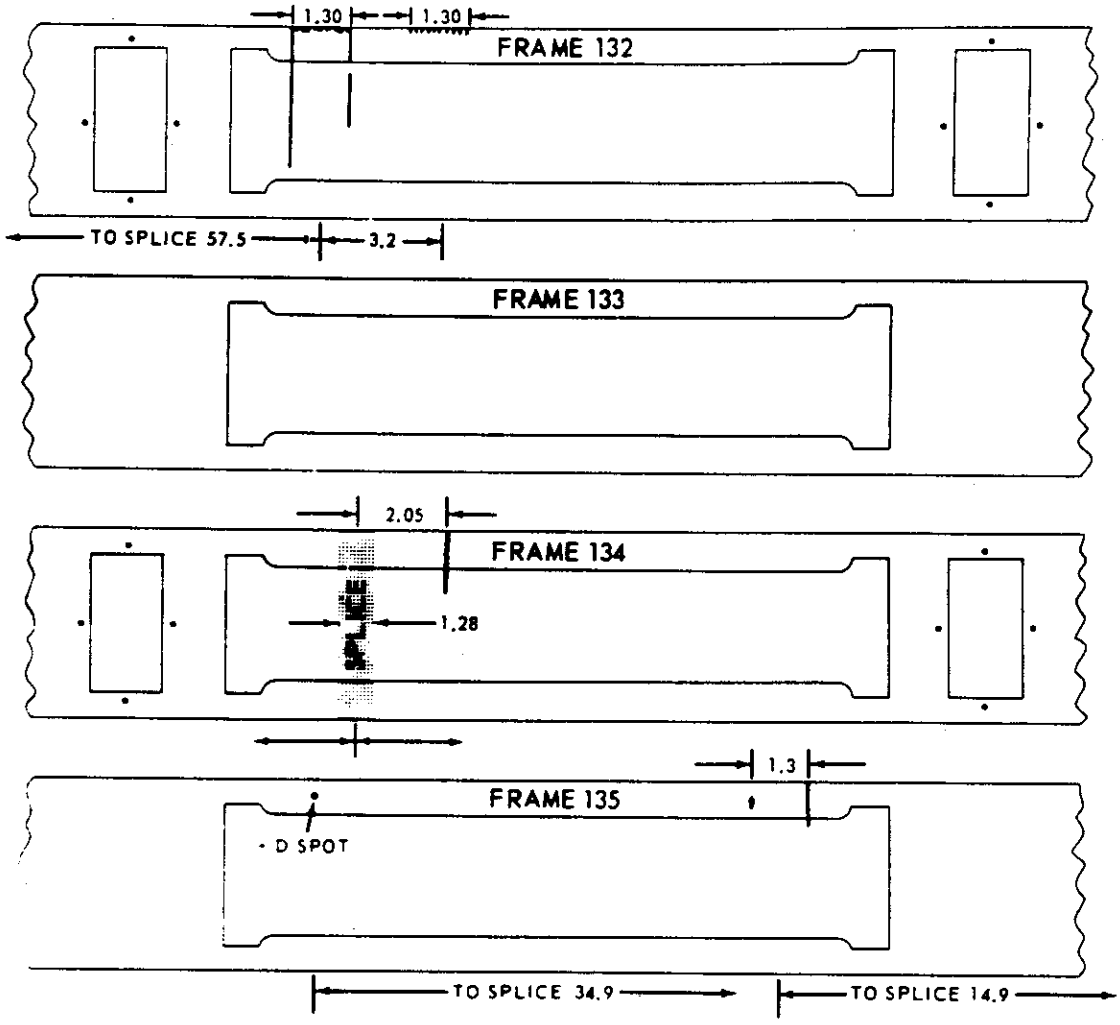
AFT 53D


FRAME 81
TO SPLICE 123.9
FRAME 82
TO SPLICE 39.5
1.29
FRAME 83
1.2
TO SPLICE 68.5
FRAME 84
FRAME 85
1.3
TO SPLICE 39.6
FRAME 86
1.13

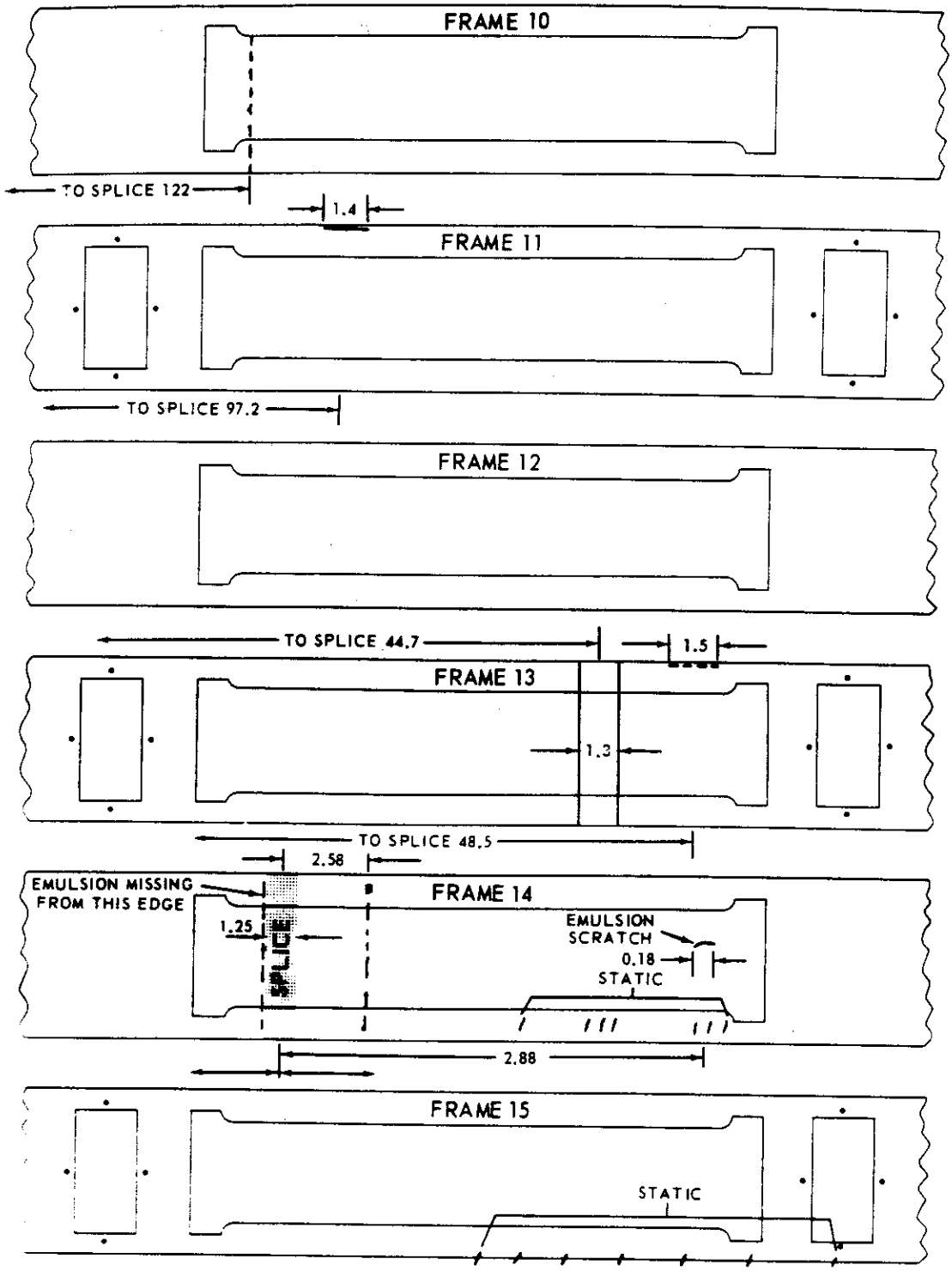
AFT 53D



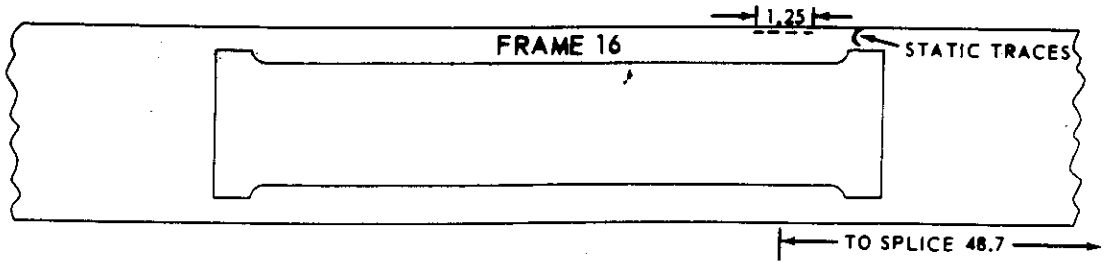
AFT 85D



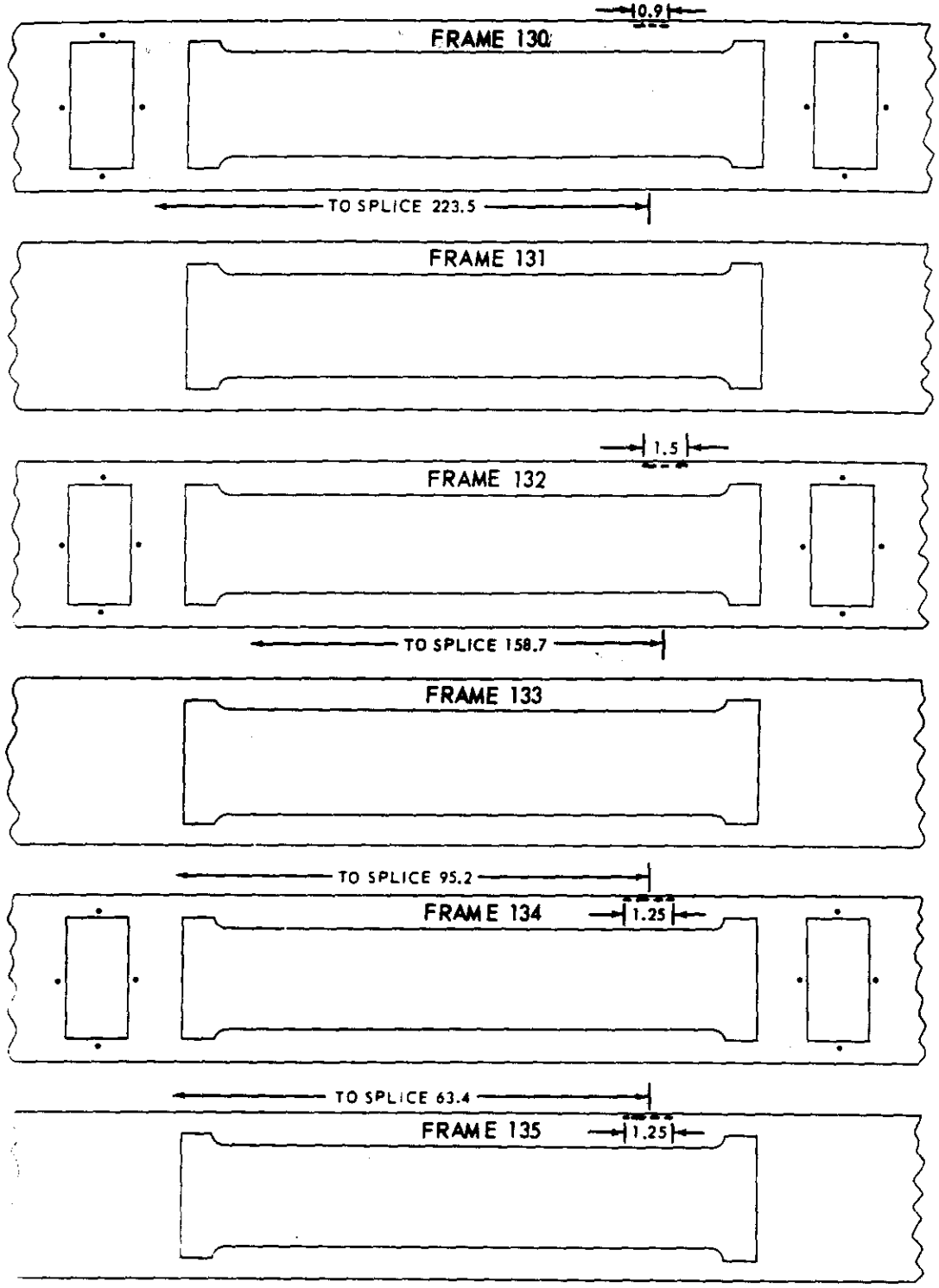
AFT 109D


FRAME 10
TO SPLICE 122
1.4
FRAME 11
TO SPLICE 97.2
FRAME 12
TO SPLICE 44.7
1.5
FRAME 13
1.3
TO SPLICE 48.5
2.58
EMULSION MISSING FROM THIS EDGE
FRAME 14
1.25
SPLICE
EMULSION SCRATCH
0.18
STATIC
2.88
FRAME 15
STATIC

AFT 109D



AFT 132D


0.9
FRAME 130
TO SPLICE 223.5
FRAME 131
1.5
FRAME 132
TO SPLICE 158.7
FRAME 133
TO SPLICE 95.2
FRAME 134
1.25
TO SPLICE 63.4
FRAME 135
1.25