

S S E O P

Space Shuttle Earth Observations Project

To: STS 51-B Astronauts/Mission Specialists **Date:** May 5, 1987

From: C. L. Dailey

Signature: *C. L. Dailey*

Subject: SSEOP Catalogs

These catalogs are provided by the Space Shuttle Earth Observations Project as a guide to Earth observations photography you took during your mission. The SSEOP Team appreciates your effort in obtaining this photography.

If you have any comments or questions about the catalog or need additional copies, please contact C. Dailey, x35166.

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Dr Bill Th _____

JSC-22085

**Catalog of
Space Shuttle Earth Observations
Hand-Held Photography
Space Transportation System (STS) 51-B Mission**



**Space Shuttle Earth Observations Project
June 1986**

NASA

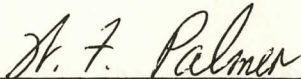
National Aeronautics and
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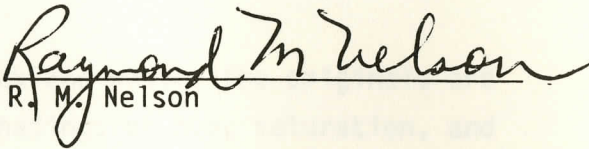
Lyndon B. Johnson Space Center
Houston, Texas 77058

CATALOG OF SPACE SHUTTLE EARTH OBSERVATIONS HAND-HELD PHOTOGRAPHY
SPACE TRANSPORTATION SYSTEM (STS) 51-B MISSION

Job Order 69-210

PREPARED BY

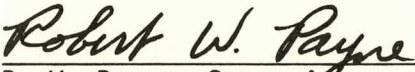

W. F. Palmer

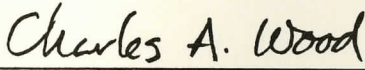

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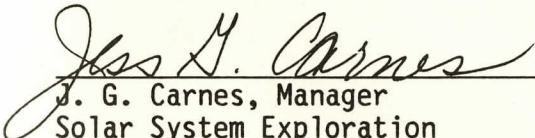
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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
LYNDON B. JOHNSON SPACE CENTER
HOUSTON, TEXAS

June 1986

PREFACE

This document catalogs Space Shuttle hand-held Earth observations photography that was acquired during the Space Transportation System (STS) 51-B mission. This catalog is a product of the Space Shuttle Earth Observations Project (SSEOP), Solar System Exploration Division, Space and Life Sciences Directorate, of the National Aeronautics and Space Administration (NASA), Lyndon B. Johnson Space Center (JSC). Support has been provided by Lockheed Engineering and Management Services Company, Inc., Houston, Texas, under Contract NAS 9-15800.

Cataloging of Earth-looking photography from the STS 51-B mission was accomplished by W. F. Palmer and R. M. Nelson of Lockheed Engineering and Management Services Company, Inc. Additional contributors to this report include D. L. Amsbury, M. R. Helfert, K. J. Hancock, and C. A. Wood of NASA/JSC and L. P. Boedeker, C. L. Daily, W. J. Daley, M. C. Kinsler, B. S. Nowakowski, and R. W. Payne of Lockheed.

1. INTRODUCTION

The Space Shuttle Earth Observations Project (SSEOP) was created to support the acquisition of Earth observations photography by Shuttle astronauts. Early activity included the formation of an Earth science investigative team to aid in the definition of photographic requirements. Project personnel coordinate and provide crew training in the Earth sciences, provide support during missions, and catalog and disseminate the photographic data.

Before the launch of each Space Shuttle mission, the crew is trained in the use of basic photographic techniques; provided with manuals depicting particular sites of scientific interest; and given general briefings on the Earth sciences, including geology, oceanography, and meteorology. In each phase of training, examples of previous manned-orbital photography play an important role. These photographs aid in the description and understanding of significant physical features and also help crew members learn reconnaissance cues for the identification and location of noteworthy features viewed from orbit.

During each mission, project personnel monitor Earth systems for areas of special interest such as hurricanes and other major storms, floods, ice, fires, active volcanoes, and pollution problems. Special requests are forwarded to the crew through Mission Control. After the mission, the film is processed, annotated, and plotted. Information is distributed through this catalog, with the photographs described in terms of their geographic and physiographic characteristics and the camera-lens-film combination.

2. ACQUISITION OF EARTH OBSERVATIONS PHOTOGRAPHY

The photographs described in this catalog were collected using two types of cameras. NASA-modified Hasselblad 500 EL/M 70-mm cameras (figure 2-1) were equipped with Zeiss 50-mm CF Distagon 4.0, 100-mm CF Planar 3.5, and 250-mm CF Sonnar 5.6 lenses. Kodak Ektachrome 64 Professional film 5017 was used in the Hasselblad cameras. A Linhof Aero Technika 45 camera (figure 2-2) was equipped with interchangeable Linhof 90-mm Super Angulon 5.6 and 250-mm Tele-Arlon 5.6 lenses. The film used for this camera was 5-in. Kodak Ektachrome 64 Professional film 5017. Photographs were taken through the windows of the Shuttle Orbiter (figure 2-3).

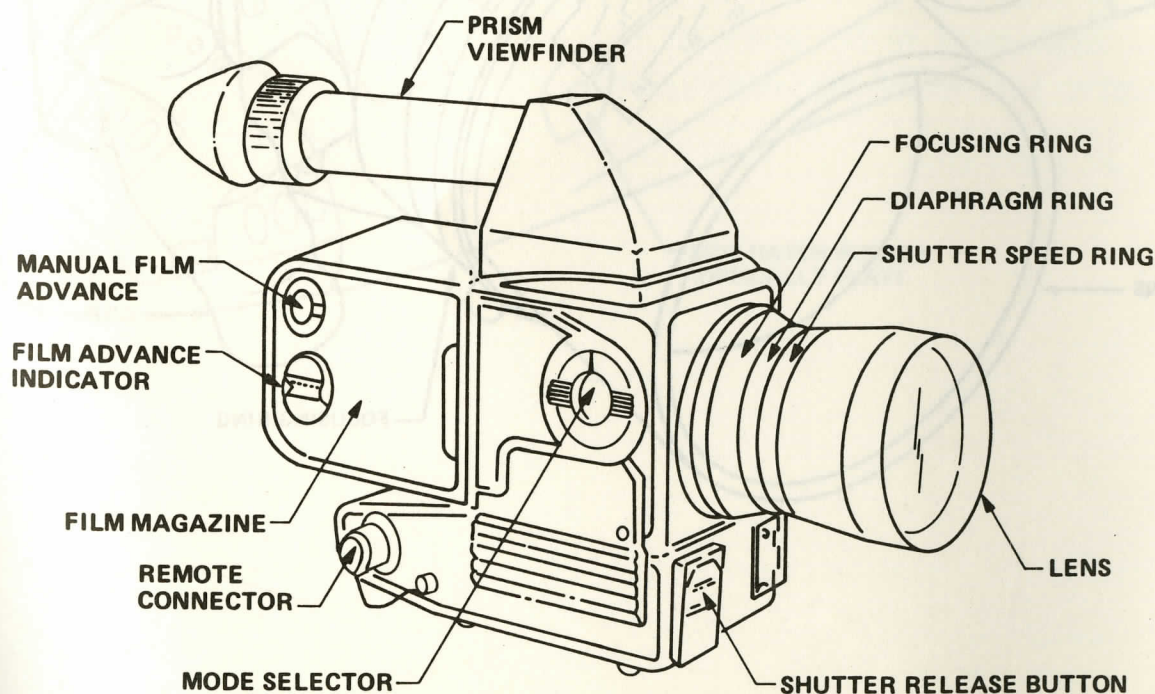


Figure 2-1.- NASA-modified Hasselblad 500 EL/M camera.

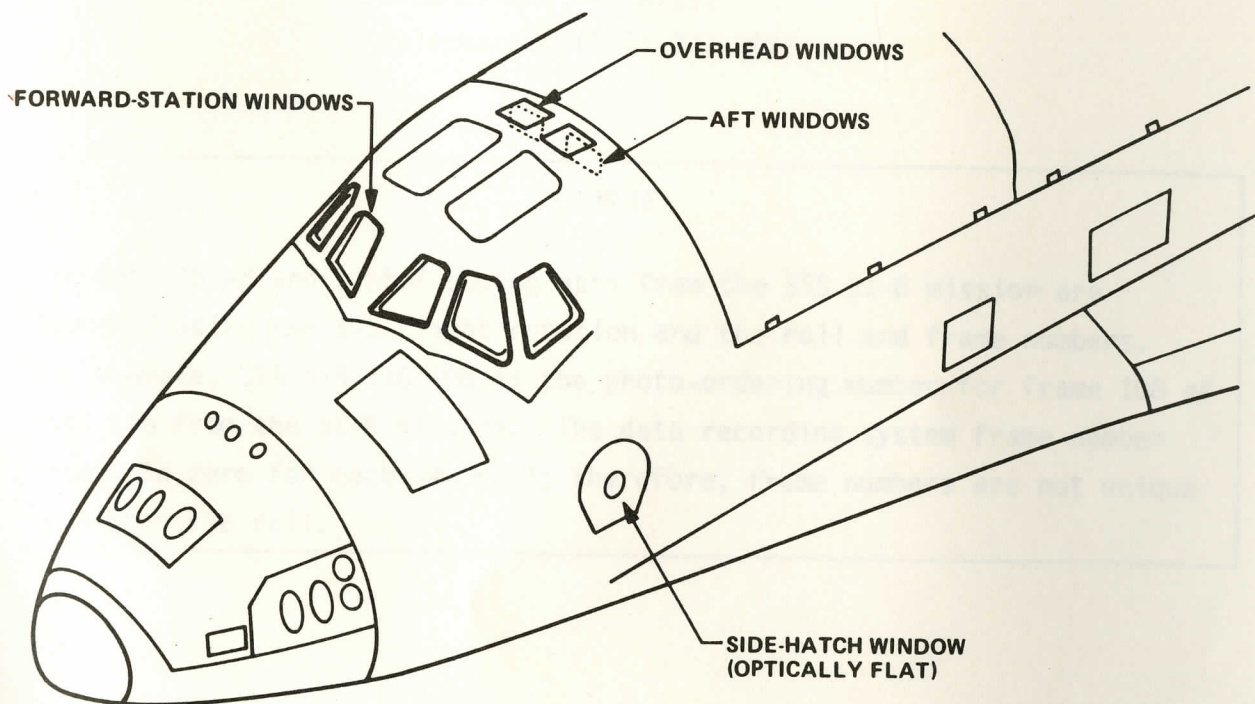


Figure 2-3.- Location of windows in the Shuttle Orbiter.

TABLE A-1.- MISSION DATA FOR STS 51-B

Launch:	April 12, 1985, 11:02 a.m. CDT, from Kennedy Space Center, Florida
Landing:	May 6, 1985, 11:11 a.m. CDT, at Edwards Air Force Base, California
Orbits:	110
Vehicle:	Challenger (OV-099)
Altitude:	190 nautical miles
Inclination:	57°
Crew:	Commander - Robert F. Overmyer Pilot - Frederick D. Gregory Mission Specialists - Don L. Lind Norman E. Thagard William E. Thornton Payload Specialists - Taylor G. Wang Lodewijk van den Berg

TABLE A-3.- LIST OF STS 51-B HASSELBLAD PHOTOGRAPHY

ROLL	FRAME	GEO-NAME	FEATURE	CENTER POINT LAT LON	NADIR LAT LON	CC% DR TL FL	E S	DATE	GMT	ALT	NAZIR AZI ELE ORB
31	1		CARGO BAY				100 N N				
31	2		CLOUDS			HO 100 N N					
31	3		CLOUDS			HO 100 N N					
31	4		CLOUDS			HO 100 N N					
31	5		CLOUDS			HO 100 N N					
31	6		SUNSET			HO 100 N N					
31	7		SUNSET			HO 100 N N					
31	8		SUNSET			HO 100 N N					
31	9		SUNSET			HO 100 N N					
31	10		SUNSET			HO 100 N N					
31	11		SUNSET			HO 100 N N					
31	12		SUNSET			HO 100 N N					
31	13		SUNSET			HO 100 N N					
31	14		CARGO BAY			HO 100 N N					
31	15		CARGO BAY			HO 100 N N					
31	16		NORTHERN COASTLINE	41.0N 123.0W		75 NW	HO 100 N N				8
31	17	USA-CA	NORTHERN COASTLINE	41.5N 122.5W		75 NW	HO 100 N N				8
31	18	USA-CA	NORTHERN COASTLINE	41.5N 123.5W		70 NW	HO 100 N N				8
31	19	USA-CA	SIERRA NEVADA	38.0N 120.0W		60 NV	HO 100 N Y				8
31	20	USA-NV	SIERRA NEVADA	38.5N 118.5W		50	NV 100 N Y				8
31	21	USA	PACIFIC COAST			80 NW	HO 100 N N				8
31	22	USA-NV	GREAT BASIN, CARSON SINK	40.0N 117.0W		25 NE	LO 100 N N				8
31	23	USA-NV	GREAT BASIN, RUBY MTS	40.0N 117.0W		30 NE	LO 100 N N				8
31	24	USA-NV	GREAT BASIN, RUBY MTS	40.5N 116.0W		40 NE	LO 100 N N				8
31	25	USA-NV	GREAT BASIN, RUBY MTS	40.5N 116.0W		35 NE	LO 100 N N				8
31	26	USA-NV	GREAT BASIN, SNAKE RIVER	41.5N 116.0W		40 NE	LO 100 N N				8
31	27	USA-NV	GREAT BASIN, SNAKE RIVER	42.0N 115.5W		100 U	LO 100 N N				8
31	28	USSR	CARGO BAY-VERY DARK			0	100 U				
31	29	USSR	VERY DARK			0	100 U				
31	30	USSR	VERY DARK			0	100 U				
31	31	USSR	VERY DARK			0	100 U				
31	32	USSR	VERY DARK			0	100 U				
31	33	USSR	VERY DARK			0	100 U				
31	34	USSR	VERY DARK			0	100 U				
31	35	USSR	VERY DARK			0	100 U				
31	36	USSR	VERY DARK			0	100 U				
31	37	USSR	VERY DARK			0	100 U				
31	38	USSR	VERY DARK			0	100 U				
31	39	USSR	VERY DARK			0	100 U				
31	40	USSR	VERY DARK			0	100 U				
31	41	USSR	VERY DARK			0	100 U				
31	42	USSR	UOSKAYA BAY	55.0N 136.0E		60 SE	LO 100 N N				11
31	43	USSR	TATAR STRAIT	51.5N 140.5E		60 SE	LO 100 N N				11
31	44	USSR	KURIL ISLANDS	49.5N 154.5E		35 SE	LO 100 N N				11
31	45	USSR	KURIL ISLANDS	49.0N 154.5E		40 SE	LO 100 N N				11
31	46	USSR	KURIL ISLANDS	49.0N 154.5E		45 SE	LO 100 N N				11
31	47	USSR	KURIL ISLANDS	47.5N 152.0E		25 SE	LO 100 N N				11
31	48	USSR	KURIL ISLANDS	49.5N 154.5E		20	NV 100 N N				11
31	49	LIBYA	SAHARA DESERT	25.0N 22.0E		10	NV 100 N N				11
31	50	MEDITERRANEAN SEA	CLOUDS		31.6N 26.6E	60	LO 100 N N	85	430	8:54:45	129 65

