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NATIONAL SPACE SCIENCE DATA CENTER

NSSDC

75-18

DATA ANNOUNCEMENT BULLETIN

STATUS OF AVAILABILITY OF MARINER 10 (1973-085A) TV PICTURE DATA

October 1975

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(NASA-TM-X-72584) STATUS OF AVAILABILITY OF MARINER 10 (1973-085A) TV PICTURE DATA Data Announcement Bulletin (NASA) 31 p HC $4.00 CSCL 05B

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National Aeronautics and Space Administration

Goddard Space Flight Center
Greenbelt, Maryland 20771

NSSDC 75-18

DATA ANNOUNCEMENT BULLETIN

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

NATIONAL SPACE SCIENCE DATA CENTER
Code 601

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STATUS OF AVAILABILITY OF MARINER 10 (1973-085A) TV PICTURE DATA

October 1975

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ILLUSTRATIONS

NSSDC 75-18

STATUS OF AVAILABILITY OF MARINER 10 (1973-085A) TV PICTURE DATA

October 1975

INTRODUCTION

This Data Announcement Bulletin (DAB) describes the Mariner 10 TV data now available from the National Space Science Data Center (NSSDC) and explains the procedures for ordering these data. NSSDC receives the Mariner 10 picture data on a continuing basis; therefore, descriptions of the TV data products and supporting documentation scheduled to become available through NSSDC in the future are also included. The descriptions of Mariner 10 TV data products and supporting documentation appear in the following order:

- Mission Test Video System (MTVS) Pictures
  - Earth/Moon Calibration
  - Venus Encounter
  - Mercury First Encounter
  - Mercury Second Encounter
  - Mercury Third Encounter
- Image Processing Laboratory (IPL) Pictures
  - Mercury First Encounter
  - Mercury Second Encounter
  - Mercury Third Encounter
- Indexes to the Mariner 10 Pictures
- Supplementary Experiment Data Records (SEDR)
- MVM73 Earth/Moon Calibration Catalog on Microfiche
- MVM73 Venus Encounter Catalog on Microfiche
- MVM73 Mercury First Encounter Catalog on Microfiche
- MVM73 Mercury Second Encounter Catalog on Microfiche
- MVM73 Mercury Third Encounter Catalog on Microfiche
- Journal Articles

A summary of the status of Mariner 10 picture data and supporting data to be produced by the Jet Propulsion Laboratory (JPL) in Pasadena, California, and distributed by NSSDC is found on page 18.

BACKGROUND

Mariner 10 was launched November 3, 1973, from the Eastern Test Range, Florida. The Venus encounter was achieved February 5, 1974. There were three encounters with the planet Mercury by Mariner 10. The

first Mercury encounter occurred March 29, 1974; the second, September 21, 1974; and the third, March 16, 1975. The spacecraft was equipped with two vidicon cameras with eight filters each. The cameras were mounted on a scan platform allowing movement in vertical and horizontal directions for precise targeting. Catadioptric Cassegrain telescopes were attached to the vidicon cameras for narrow-angle photography, and an auxiliary optical system was mounted on each camera to provide wide-angle photography. The narrow-angle system had a 1500-mm focal length and a field of view (FOV) of 0.37 by 0.48 degrees; the wide-angle system had a 62-mm focal length and an 11- by 14-degree FOV. The eight filter positions were: wide-angle image relay mirror, blue bandpass, ultraviolet polarizing, minus ultraviolet bandpass, clear, ultraviolet bandpass, defocusing lens (for calibration), and orange bandpass.

MISSION TEST VIDEO SYSTEM (MTVS) PICTURES

EARTH/MOON CALIBRATION

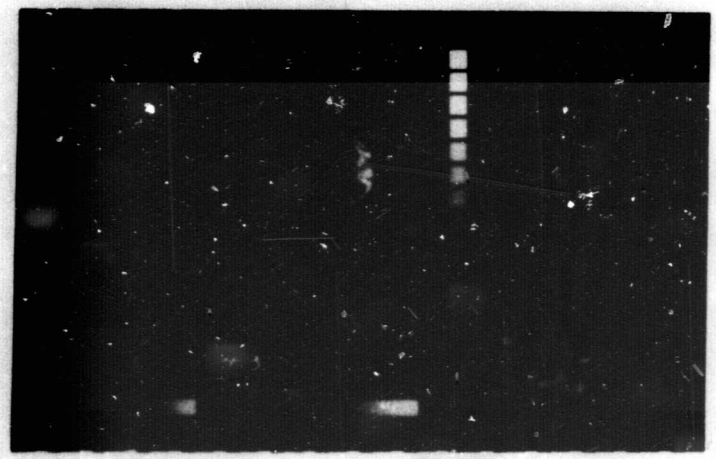
Three versions of the Mariner 10 Earth/Moon calibration data were produced by the Mission Test Video System (MTVS) at JPL in a near real-time operating mode. These versions are:

- Raw picture with contrast enhancement
- High-pass filtered picture (filtered to enhance high frequency in a horizontal direction)
- Vertical AGC (filtered to enhance high frequency detail in a vertical direction)

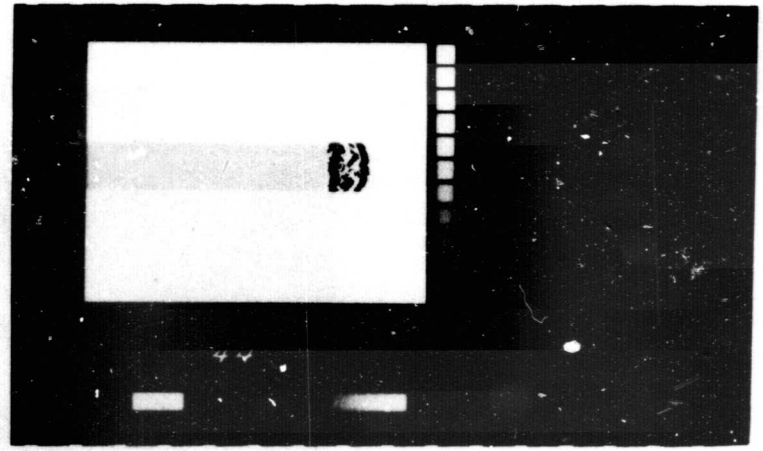
There are 918 individual pictures processed by MTVS from the Earth/Moon calibration (306 frames, 3 versions each). The following descriptions of the imagery processed by the MTVS should aid the user in selecting the version best suited for his particular study. Figures 1 and 2 contain samples of each version for one FDS count (Flight Data System count) during the Earth/Moon calibration. The data block for this picture is explained in Figure 3.

The raw pictures display the full range of brightness present in the original scene. Relative brightness between areas is accurately preserved.

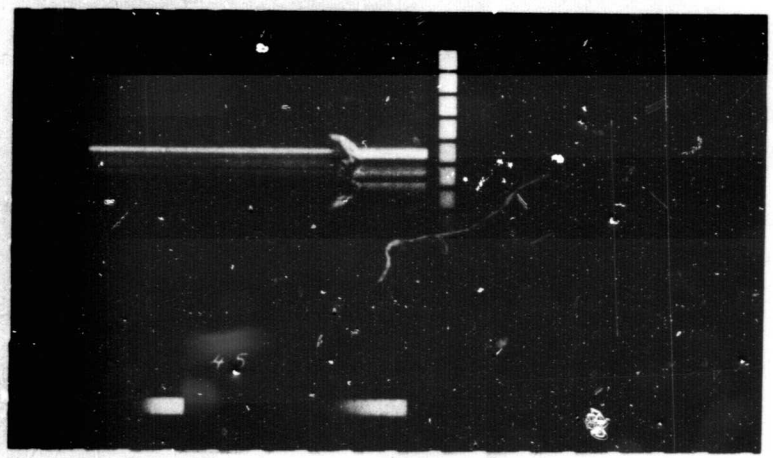
The high-pass filtered version has had the variations in average brightness level reduced along each TV line by a high-pass filter. This allows for use of extreme contrast stretch to display maximum surface details without encountering a washout of high-brightness and low-brightness areas. This horizontal filtering is accomplished by



a. Raw

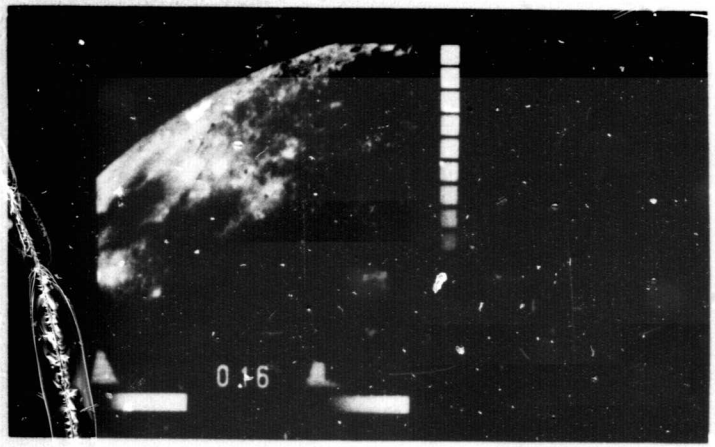


b. HPF (high-pass filtered)

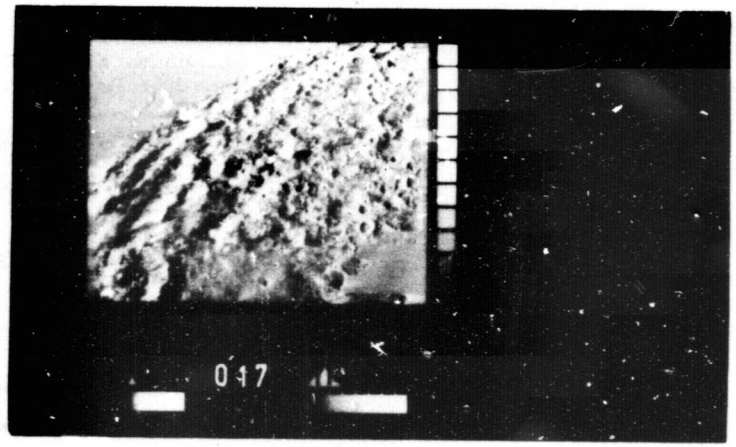


c. VAGC (vertical AGC)

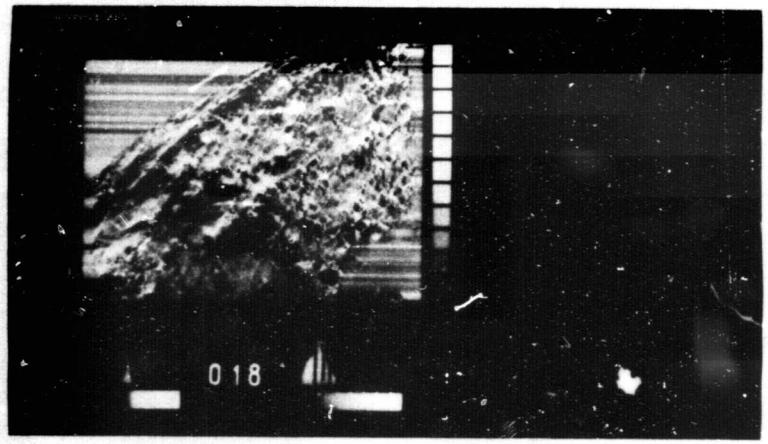
Figure 1. Sample Pictures of All Earth Versions for FDS 0001835



a. Raw

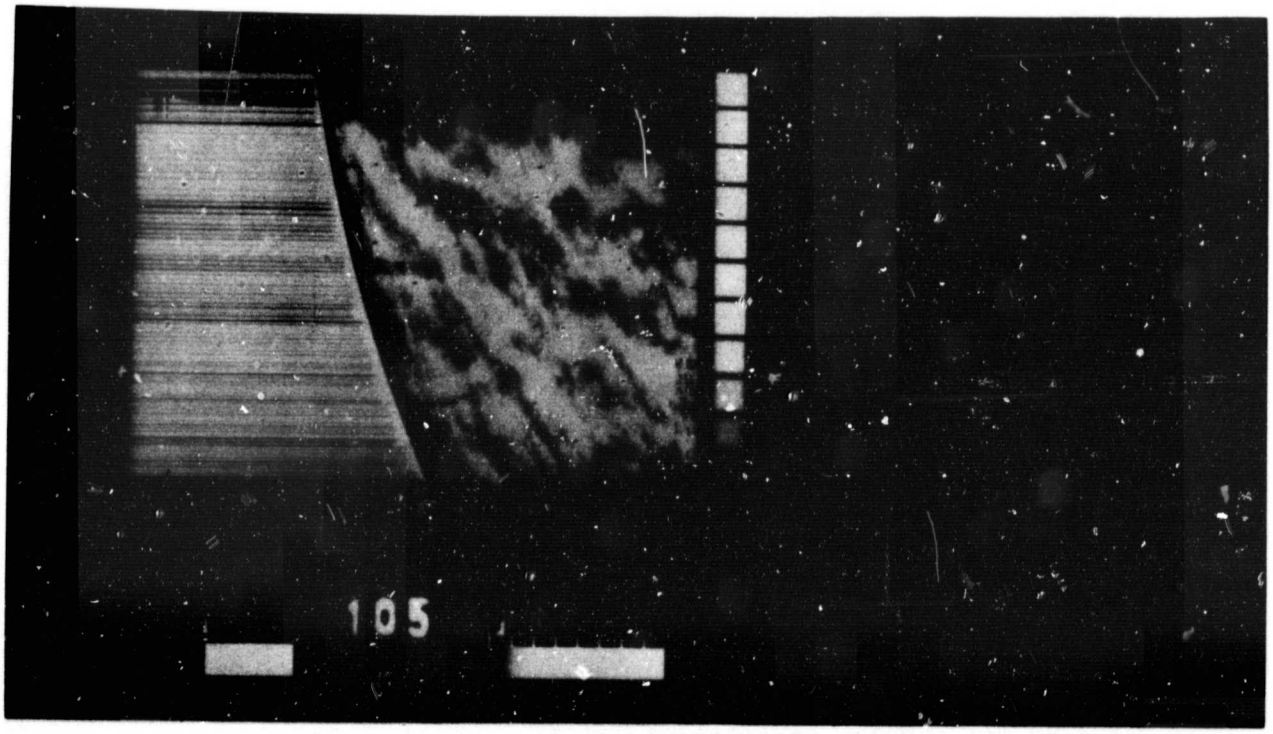


b. HPF (high-pass filtered)



c. VAGC (vertical AGC)

Figure 2. Sample Pictures of All Moon Versions for FDS 0002154



a. Enlargement of MTCF Vertical AGC Picture Version

M T C F M V M	
MTCF MVM SYS VENUS SC TV1	MTCF identifier, MVM identifier, TV system serial no.
037.00.26.27.136 FDS 0058432	telemetry receipt time (day-hr-min-sec-msec) FDS count
MODE RT IM-1 RATE 117 EDIT	mode RT=real time, imaging mode, bit rate 117 = 117.6 KPBS, editing mode
F/L 003/700 0/B/M 698/000/002	first/last in sync line, no. of good/bad lines (always = 700)
MTC BER 000.00 SPK ON 103340	bit rate error during Mission Operations System (MOS), spikes detected during MOS
CAMERA B ET 00.0443 FP6 UV	camera (A or B) exp. time (sec/msec), camera filter position
CB ON FL OFF CAL ON	cathode beam status (off/on), camera flood light status, calibrate mode status
FS ERROR DC OFF	filter step status , dark current status (off/on)
A-T/C ERROR B-T/C ERROR	camera A/B temp. control status (low, high, both, error)
A CATH 1 0000 B CATH 1 000	
A GRID2 V 0000 B GRID2 V 0000	
A,B FOC I 0000 EVNT LADR 0000	data numbers of 10 TVS housekeeping measurements extracted from NIS-1
P/S INP 1 0000 +4 P/S V 0000	
AVG VIDEO 0000 15VDC MON 0000	
VERTICAL AGC 020	picture version, filter size in picture elements
STRETCH- AUTO CS PCT 80 TO 48	type of stretch, input parameters for specified search
LOW 121 = 00 HIGH 133 = 63	resulting end points of stretch used
TRANSLATION = TT2	translation table identifier, HPF filter transference factor
BLEMISHES REMOVED	blemishes removed (HPF and VAGC only)
RADIANCE TYPE NONE LEVEL 004	radiance contouring type identifier, radiance contouring level
MTC R/F 7036/0111 25 MAR 74	MTCF roll/file number, day/month/yr of processing

b. Data Block Explanation

Figure 3. MTCF Picture Enlargement and Data Block Explanation for FDS 0058432

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subtracting a fraction of the average value of nearby elements on both sides of each picture element from the value of the element. This version distorts the albedo while discriminating fine detail.

The vertical AGC version has been subjected to filtering along the vertical sets of picture elements. Each element is adjusted by a function of the average value of the picture elements in the column above the element being corrected. The vertical AGC version is also useful for studies of small-scale surface detail.

All Earth/Moon calibration data have been received. These data are available on 70-mm black and white roll film, and reproduction of individual frames can be obtained as positive or negative contact film transparencies, positive contact paper prints, or enlargements in various formats and sizes. The standard enlargement size is 8 by 10 inches.

VENUS ENCOUNTER

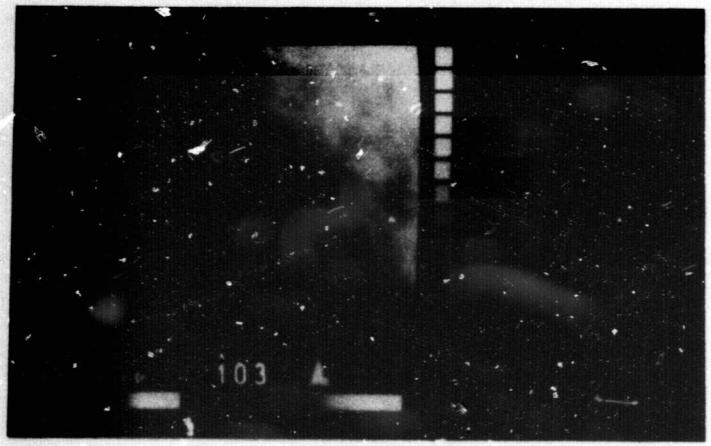
Twin TV cameras with 1500-mm lenses photographed the cloud cover of Venus in the visible and ultraviolet light bands. The cameras returned detailed images of the ultraviolet cloud markings that were first observed by earth-based telescopes. Figure 4 contains a sample of each picture version for one FDS count during the Venus encounter. These data are available in the same formats as the Earth/Moon calibration. The complete set of 7816 pictures of Venus is available from NSSDC.

MERCURY FIRST ENCOUNTER

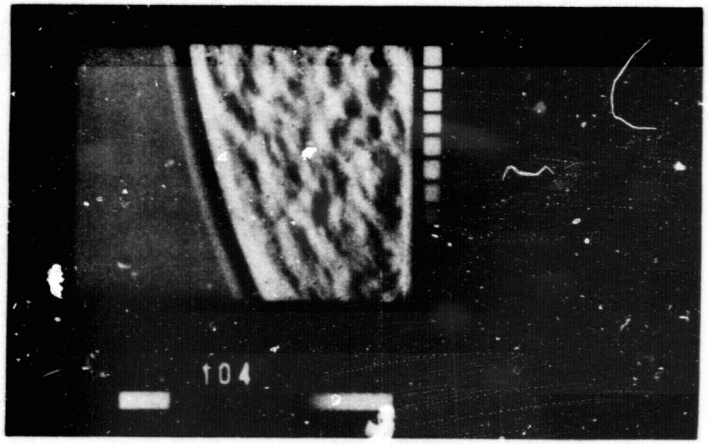
The first encounter of Mercury by Mariner 10 occurred March 29, 1974, with the point of closest approach about 735 km (460 miles) above the surface. The spacecraft passed by Mercury on the darkside with about one-half of the sunlit side visible to the two TV cameras on the incoming leg of the trajectory and the other half visible on the outgoing leg. From this encounter 2949 pictures are available. All these data have been received at NSSDC and are available in the formats described for the Earth/Moon calibration data.

MERCURY SECOND ENCOUNTER

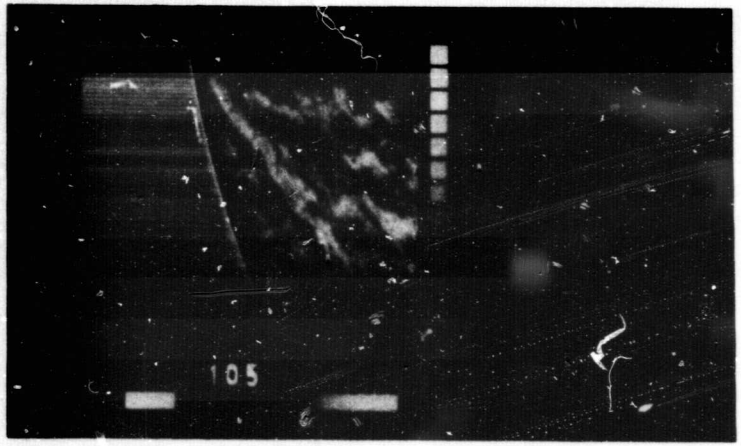
The second encounter of Mercury was September 21, 1974, at a distance of about 47,740 km (29,843 miles) above the planet. The spacecraft passed by the planet on the sunlit side on this encounter. From this flyby 1518 pictures are available. All second encounter data have been received and are available in the same formats previously described.



a. Raw



b. HPF (high-pass filtered)



c. VAGC (vertical AGC)

Figure 4. Sample Pictures of All Venus Versions of FDS 0058432

MERCURY THIRD ENCOUNTER

The third and last encounter of Mercury occurred March 16, 1975, with the nearest approach at an altitude of about 310 km (192 miles) above the surface. The flight path passed over the northern hemisphere on the darkside of the planet. These data have been received at NSSDC, and 1047 pictures are available in the previously described formats. (Figure 5 contains a sample of the Mercury encounter data for one FDS count.)

IMAGE PROCESSING LABORATORY (IPL) PICTURES

The Image Processing Laboratory (IPL) at JPL is currently processing enhanced versions of the Mariner 10 Mercury pictures. These enhancements are similar to those performed by the MTVS, but the IPL process is more refined. The vidicon shading has been removed where possible, and all pictures have been corrected for random noise. Most of the frames have been enhanced in the high-pass filter mode. There has been other specialized individual processing of certain frames, but this is not standard for all frames. The IPL data have not arrived at NSSDC. These are expected in the near future and will be made available in the same formats previously discussed.

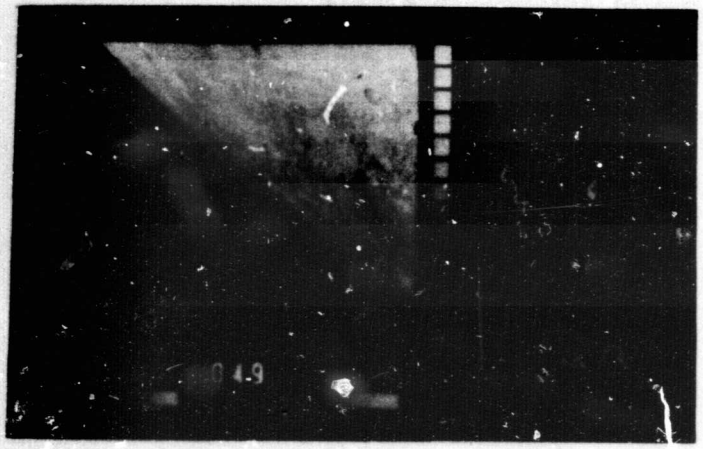
INDEXES TO THE MARINER 10 PICTURES

Indexes that contain identifying information for picture selection are available from NSSDC on 16-mm microfilm. These indexes are strongly recommended as an aid to the user in preparing requests for pictures.

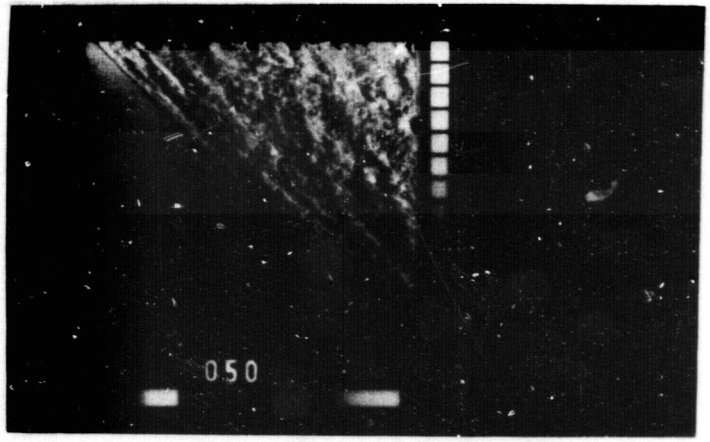
There are eight indexes (see Figure 6), which contain for each Mariner 10 exposure: (a) FDS count (picture ID), (b) spacecraft event time, (c) spacecraft altitude, (d) latitude, R-5, (e) longitude, R-5, (f) viewing angle of R-5 (center of picture), (g) solar lighting angle, and (h) roll/file number. Each of the indexes is ordered by one of the categories listed above, thereby enabling the user to select and supply NSSDC with correct descriptive numbers when ordering pictures. The indexes are grouped on one reel of 16-mm microfilm.

SUPPLEMENTARY EXPERIMENT DATA RECORDS (SEDR)

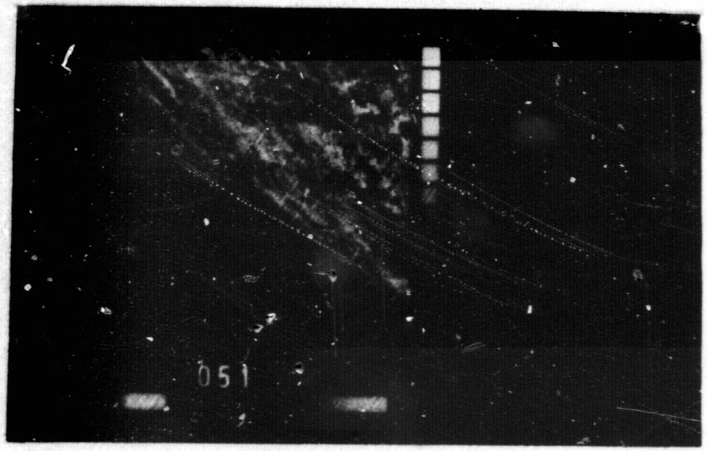
Complete Supplementary Experiment Data Records (SEDR), available on one reel of 16-mm microfilm, will be routinely provided in response to all initial requests for picture data.



a. Raw



b. HPF (high-pass filtered)



c. VAGC (vertical AGC)

Figure 5. Sample Pictures of All Mercury MTVS for FDS 0000132

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VENUS

FDS COUNT	SCE DAY	EVENT TIME HR MM SS M	C I	EXPOSURE TIME	FILTER COLOR	PICTURE TYPE	S/C ALT	LAT OPT PATH-RS	LONG OPT PATH-RS	VIEW ANGLE-RS	LIGHT ANG-RS	**BAL** BAL R/F
0058424	37:	0:18:10.610	B	00.0443	UV	RAW PICTURE	219.946	-39.56	268.17	53.82	81.20	9011/0079
0058424	37:	0:18:10.610	B	00.0443	UV	HIGH PASS FILTER	219.946	-39.56	268.17	53.82	81.20	9011/0080
0058424	37:	0:18:10.610	B	00.0443	UV	VERTICAL AGC	219.946	-39.56	268.17	53.82	81.20	9011/0081
0058425	37:	0:18:52.610	A	00.0666	UV	RAW PICTURE	220.296	-37.35	272.95	57.43	84.81	9011/0082
0058425	37:	0:18:52.610	A	00.0666	UV	HIGH PASS FILTER	220.296	-37.35	272.95	57.43	84.81	9011/0083
0058425	37:	0:18:52.610	A	00.0666	UV	VERTICAL AGC	220.296	-37.35	272.95	57.43	84.81	9011/0084
0058426	37:	0:19:34.610	B	00.0443	UV	RAW PICTURE	220.645	-35.06	248.85	37.57	65.30	9011/0085
0058426	37:	0:19:34.610	B	00.0443	UV	HIGH PASS FILTER	220.645	-35.06	248.85	37.57	65.30	9011/0086
0058426	37:	0:19:34.610	B	00.0443	UV	VERTICAL AGC	220.645	-35.06	248.85	37.57	65.30	9011/0087
0058427	37:	0:20:16.609	A	00.0666	UV	RAW PICTURE	220.995	-29.50	232.00	21.92	50.03	9011/0088
0058427	37:	0:20:16.609	A	00.0666	UV	HIGH PASS FILTER	220.995	-29.50	232.00	21.92	50.03	9011/0089
0058427	37:	0:20:16.609	A	00.0666	UV	VERTICAL AGC	220.995	-29.50	232.00	21.92	50.03	9011/0090
0058428	37:	0:20:58.609	B	00.0443	UV	RAW PICTURE	221.344	-24.82	214.40	7.09	34.25	9011/0091
0058428	37:	0:20:58.609	B	00.0443	UV	HIGH PASS FILTER	221.344	-24.82	214.40	7.09	34.25	9011/0092
0058428	37:	0:20:58.609	B	00.0443	UV	VERTICAL AGC	221.344	-24.82	214.40	7.09	34.25	9011/0093
0058429	37:	0:21:40.609	A	00.0666	UV	RAW PICTURE	221.693	-17.81	199.77	12.04	19.66	9011/0094
0058429	37:	0:21:40.609	A	00.0666	UV	HIGH PASS FILTER	221.693	-17.81	199.77	12.04	19.66	9011/0095
0058429	37:	0:21:40.609	A	00.0666	UV	VERTICAL AGC	221.693	-17.81	199.77	12.04	19.66	9011/0096
0058430	37:	0:22:22.608	B	00.0443	UV	RAW PICTURE	222.043	-11.33	184.82	27.95	10.00	9011/0097
0058430	37:	0:22:22.608	B	00.0443	UV	HIGH PASS FILTER	222.043	-11.33	184.82	27.95	10.00	9011/0098
0058430	37:	0:22:22.608	B	00.0443	UV	VERTICAL AGC	222.043	-11.33	184.82	27.95	10.00	9011/0099
0058431	37:	0:23: 4.608	A	00.0666	UV	RAW PICTURE	222.392	-2.50	168.07	47.03	19.98	9011/0100
0058431	37:	0:23: 4.608	A	00.0666	UV	HIGH PASS FILTER	222.392	-2.50	168.07	47.03	19.98	9011/0101
0058431	37:	0:23: 4.608	A	00.0666	UV	VERTICAL AGC	222.392	-2.50	168.07	47.03	19.98	9011/0102
0058432	37:	0:23:46.607	B	00.0443	UV	RAW PICTURE	222.742	12.18	137.86	80.80	51.79	9011/0103
0058432	37:	0:23:46.607	B	00.0443	UV	HIGH PASS FILTER	222.742	12.18	137.86	80.80	51.79	9011/0104
0058432	37:	0:23:46.607	B	00.0443	UV	VERTICAL AGC	222.742	12.18	137.86	80.80	51.79	9011/0105
0058436	37:	0:26:34.606	B	00.0443	UV	RAW PICTURE	224.139	19.10	130.53	90.10	60.24	9011/0106
0058436	37:	0:26:34.606	B	00.0443	UV	HIGH PASS FILTER	224.139	19.10	130.53	90.10	60.24	9011/0107
0058436	37:	0:26:34.606	B	00.0443	UV	VERTICAL AGC	224.139	19.10	130.53	90.10	60.24	9011/0108
0058437	37:	0:27:16.606	A	00.0666	UV	RAW PICTURE	224.489	5.53	162.48	55.70	26.61	9011/0109
0058437	37:	0:27:16.606	A	00.0666	UV	HIGH PASS FILTER	224.489	5.53	162.48	55.70	26.61	9011/0110
0058437	37:	0:27:16.606	A	00.0666	UV	VERTICAL AGC	224.489	5.53	162.48	55.70	26.61	9011/0111
0058438	37:	0:27:58.605	B	00.0443	UV	RAW PICTURE	224.838	-5.03	180.30	34.65	8.38	9011/0112
0058438	37:	0:27:58.605	B	00.0443	UV	HIGH PASS FILTER	224.838	-5.03	180.30	34.66	8.38	9011/0113
0058438	37:	0:27:58.605	B	00.0443	UV	VERTICAL AGC	224.838	-5.03	180.30	34.66	8.38	9011/0114
0058439	37:	0:28:40.605	A	00.0666	UV	RAW PICTURE	225.187	-12.81	195.43	17.46	13.15	9011/0115
0058439	37:	0:28:40.605	A	00.0666	UV	HIGH PASS FILTER	225.187	-12.81	195.43	17.46	13.15	9011/0116
0058439	37:	0:28:40.605	A	00.0666	UV	VERTICAL AGC	225.187	-12.81	195.43	17.46	13.15	9011/0117
0058439	37:	0:28:40.605	A	00.0666	UV	RAW PICTURE	225.187	-12.81	195.43	17.46	13.15	9011/0118
0058439	37:	0:28:40.605	A	00.0666	UV	HIGH PASS FILTER	225.187	-12.81	195.43	17.46	13.15	9011/0119
0058439	37:	0:28:40.605	A	00.0666	UV	VERTICAL AGC	225.187	-12.81	195.43	17.46	13.15	9011/0120
0058440	37:	0:29:22.604	B	00.0443	UV	RAW PICTURE	225.537	-19.65	208.68	3.67	26.88	9011/0121
0058440	37:	0:29:22.604	B	00.0443	UV	HIGH PASS FILTER	225.537	-19.65	208.68	3.67	26.88	9011/0122
0058440	37:	0:29:22.604	B	00.0443	UV	VERTICAL AGC	225.537	-19.65	208.68	3.67	26.88	9011/0123
0058441	37:	0:30: 4.604	A	00.0666	UV	RAW PICTURE	225.886	-25.52	224.59	13.95	42.36	9011/0124
0058441	37:	0:30: 4.604	A	00.0666	UV	HIGH PASS FILTER	225.886	-25.52	224.59	13.95	42.36	9011/0125
0058441	37:	0:30: 4.604	A	00.0666	UV	VERTICAL AGC	225.886	-25.52	224.59	13.95	42.36	9011/0126
0058442	37:	0:30:46.604	B	00.0443	UV	RAW PICTURE	226.235	-31.37	242.85	31.39	59.38	9011/0127
0058442	37:	0:30:46.604	B	00.0443	UV	HIGH PASS FILTER	226.235	-31.37	242.85	31.39	59.38	9011/0128
0058442	37:	0:30:46.604	B	00.0443	UV	VERTICAL AGC	226.235	-31.37	242.85	31.39	59.38	9011/0129
0058443	37:	0:31:28.603	A	00.0666	UV	RAW PICTURE	226.585	-33.59	269.49	54.29	81.82	9011/0130

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Figure 6. Sample of Mariner 10 Index Sorted by FDS Count

The SEDR contain such parameters as latitude and longitude, solar illumination angle, viewing angle, spacecraft position, camera identification, time at which the picture was taken, and shutter speed for each picture taken. This information supplements the information in the data block for Mariner 10 pictures, which in some cases, is inaccurate. The SEDR correct those preliminary data. Figure 7 contains a sample of the SEDR and includes information for several FDS counts (see row 5 for FDS 0058432).

MVM73 EARTH/MOON CALIBRATION CATALOG ON MICROFICHE

This catalog consists of 16 cards of 105- by 148-mm (4- by 6-in.) microfiche that contain the Earth/Moon calibration data. There are eight cards each of the Earth and Moon, with 60 images to a card. The frames are displayed as raw, high-pass filtered, and vertical AGC, side by side for a given FDS count. There are no supporting data frames on the fiche. A reel of the SEDR data will be sent with each request for microfiche. To enable the requester to select the picture version best suited for his study, microfiche may be ordered as a complete catalog or by individual cards. Figures 8 and 9 show samples of the Earth and Moon microfiche.

MVM73 VENUS ENCOUNTER CATALOG ON MICROFICHE

This catalog consists of 120 cards of 105- by 148-mm (4- by 6-in.) microfiche that contain the Venus photographs returned by Mariner 10. The frames are in order by FDS count with the raw, high-pass filtered, and vertical AGC versions together for each FDS count. Because no supporting data are contained on the microfiche, we will supply the SEDR on one reel of microfilm with any request for these fiche. A complete set of microfiche may be ordered, or individual cards may be selected. Figure 10 is a sample of the Venus microfiche.

MVM73 MERCURY FIRST AND SECOND ENCOUNTER CATALOGS ON MICROFICHE

There are separate catalogs of microfiche for each Mercury encounter. Those investigators desiring to obtain Mercury data may order all catalogs. There are 50 cards in the catalog for the first encounter data and 26 cards in the catalog for the second encounter data. These microfiche have no supporting data frames and SEDR on one reel of microfilm will be routinely provided with requests for the microfiche. The frames are ordered by FDS count with the images shown as raw, high-pass filtered, and vertical AGC for one count grouped together. These catalogs may be ordered as a complete set, or specific cards may be selected. Figure 11 is a sample of the Mercury microfiche.

PLANET - VENUS TELEVISION BALLOON REPORT 07/11/75

FDS / ROLL NO	S/C EVENT TIME DAY HR MM SS MIL / FILE NO	CAM	EXPOSURE / FILTER	SUNLAT / SUNLON	S/C LAT / S/C LON	S/C RMAG / S/C ALT	TAN VEL / RAD VEL	PIC HT / PIC WD	PIX SZ(S) / LIN SZ(S)	SMR/V-S / SMR/DIR	TAPE ID
						MICROFICHE CODE					
0058428	37: 0:20:38.609	B	00.0443	-1.85	-18.26	227.466	.5	1.414	2.19	.03	ETVS7031
			UV	188.06	212.08	221.344	8.31	1.831	2.01	97.65	
9011	(0091,0092,0093)					* * *					

-----LAT(X)-----	-----LON(X)-----	----V/ANG(X)----	----S/ANG(X)----	----P/ANG(X)----	------SL/RNG(X)-------
-14.73 -23.26	210.41 226.16	3.98 14.4[illegible]	25.54 42.66	28.79 28.32	221.358 221.533
-24.82	214.40	7.09	34.25	28.56	221.390
-25.70 -35.06	202.50 219.21	11.90 18.43	27.59 44.04	28.80 28.33	221.472 221.650

0058429	37: 0:21:40.609	A	00.0666	-1.85	-18.26	227.815	.5	1.431	2.23	.04	ETVS7031
			UV	188.06	212.09	221.693	8.31	1.870	2.03	48.55	
9011	(0094,0095,0096)					* * *					

-----LAT(X)-----	-----LON(X)-----	----V/ANG(X)----	----S/ANG(X)----	----P/ANG(X)----	------SL/RNG(X)-------
-7.31 -17.02	196.27 211.19	19.41 1.55	9.82 27.32	29.22 28.75	222.032 221.696
-17.81	199.77	12.04	19.66	28.98	221.825
-17.87 -28.20	187.77 203.20	23.72 13.20	16.02 30.05	29.22 28.75	222.198 221.851

0058430	37: 0:22:22.608	B	00.0443	-1.85	-18.26	228.165	.5	1.444	2.45	.04	ETVS7031
			UV	188.06	212.10	222.043	8.31	2.057	2.05	88.54	
9011	(0097,0098,0099)					* * *					

-----LAT(X)-----	-----LON(X)-----	----V/ANG(X)----	----S/ANG(X)----	----P/ANG(X)----	------SL/RNG(X)-------
-.26 -11.56	181.03 196.65	36.33 16.79	7.20 12.90	29.62 29.15	223.204 222.297
-11.33	184.82	27.95	10.00	29.39	222.739
-10.13 -21.95	171.60 187.68	41.01 23.81	18.33 20.10	29.62 29.15	223.510 222.551

0058431	37: 0:23: 4.608	A	00.0666	-1.85	-18.26	228.514	.5	1.506	3.19	.05	ETVS7031
			UV	188.07	212.10	222.392	8.31	2.770	2.14	72.04	
9011	(0100,0101,0102)					* * *					

-----LAT(X)-----	-----LON(X)-----	----V/ANG(X)----	----S/ANG(X)----	----P/ANG(X)----	------SL/RNG(X)-------
10.35 -3.97	160.95 181.88	59.34 33.68	29.62 6.53	30.03 29.56	225.333 223.395
-2.50	168.07	47.03	19.98	29.79	224.298
1.29 -13.89	149.05 172.06	66.37 39.63	39.13 19.88	30.03 29.56	225.992 223.766

0058432	37: 0:23:46.607	B	00.0443	-1.85	-18.26	228.864	.5	1.448	13.58	.03	ETVS7031
			UV	188.07	212.11	222.742	8.31	1.869	3.90	84.49	
9011	(0103,0104,0105)					* * *					

-----LAT(X)-----	-----LON(X)-----	----V/ANG(X)----	----S/ANG(X)----	----P/ANG(X)----	------SL/RNG(X)-------
22.81 5.54	132.07 164.05	90.17 54.27	59.82 25.10	.00 29.95	228.762 225.235
12.18	137.86	80.80	51.79	30.19	227.805
11.84 -3.24	128.02 151.93	90.25 62.06	61.20 36.12	.00 29.95	228.752 225.932

Figure 7. Sample of Mariner 10 SEDR

ORIGINAL PAGE IS
OF POOR QUALITY

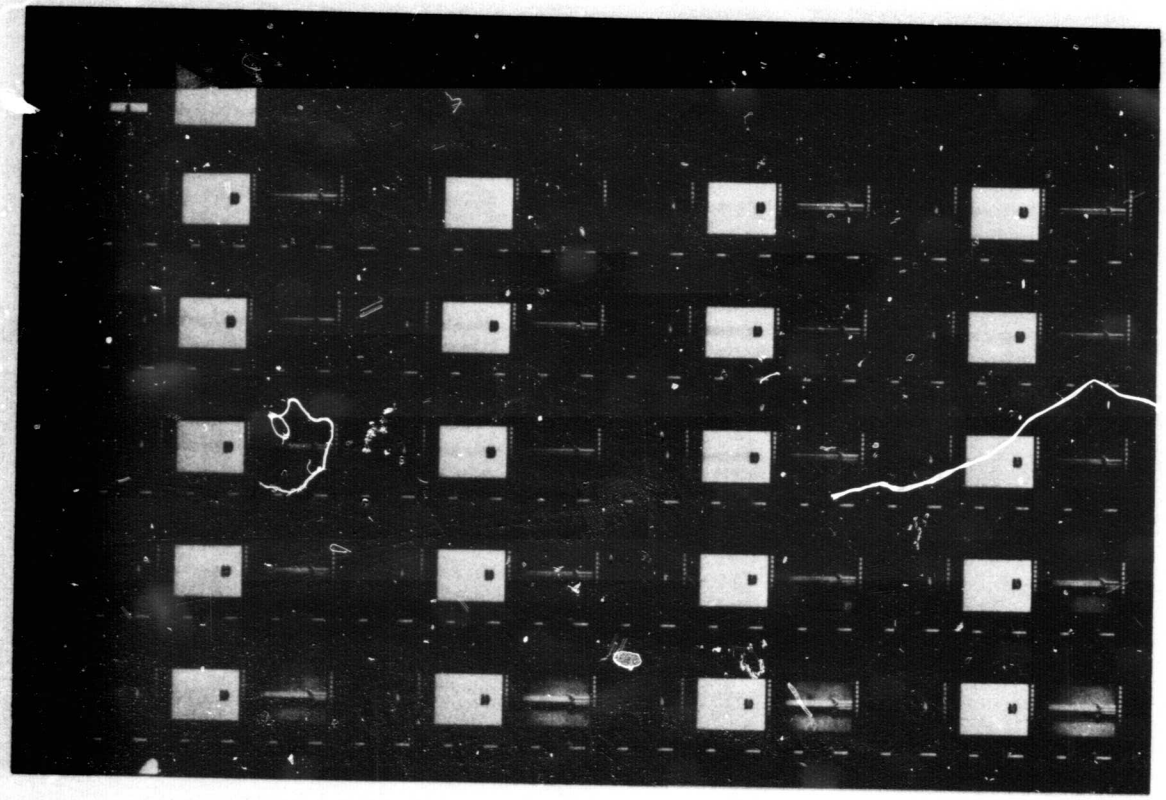

Figure 8. Sample of MVM-X Earth Microfiche

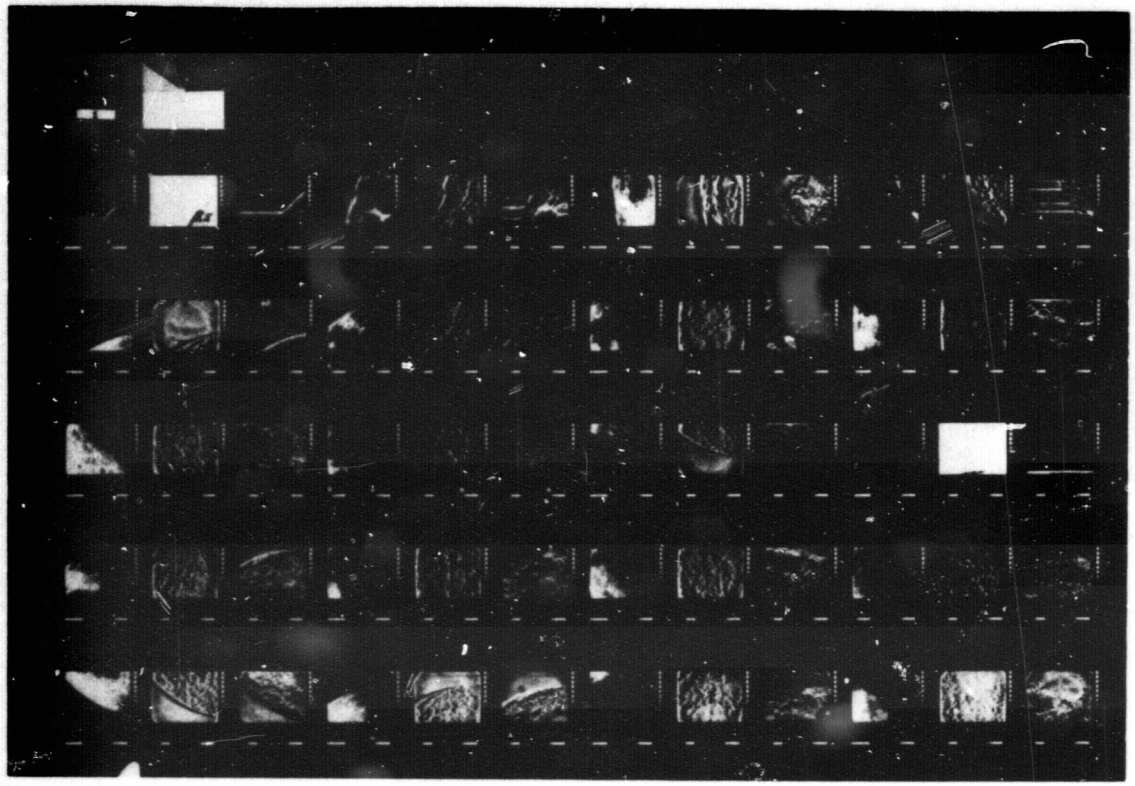

Figure 9. Sample of MVM-X Moon Microfiche

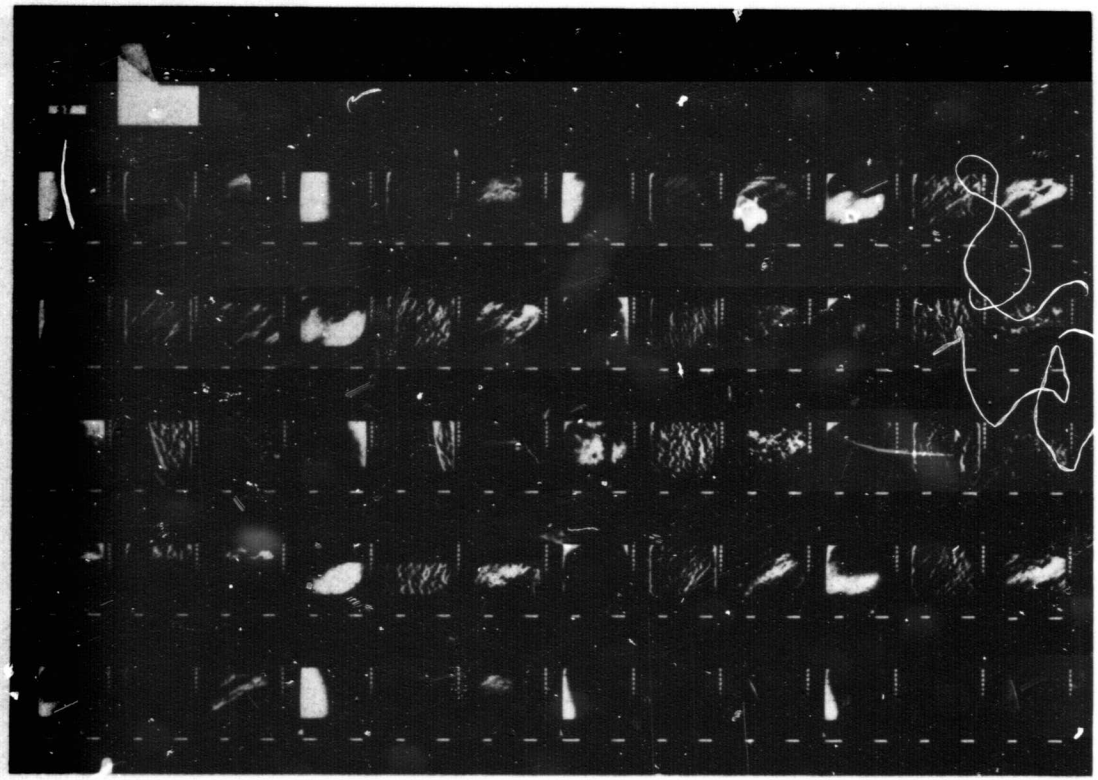

Figure 10. Sample of MVM-X Venus Microfiche

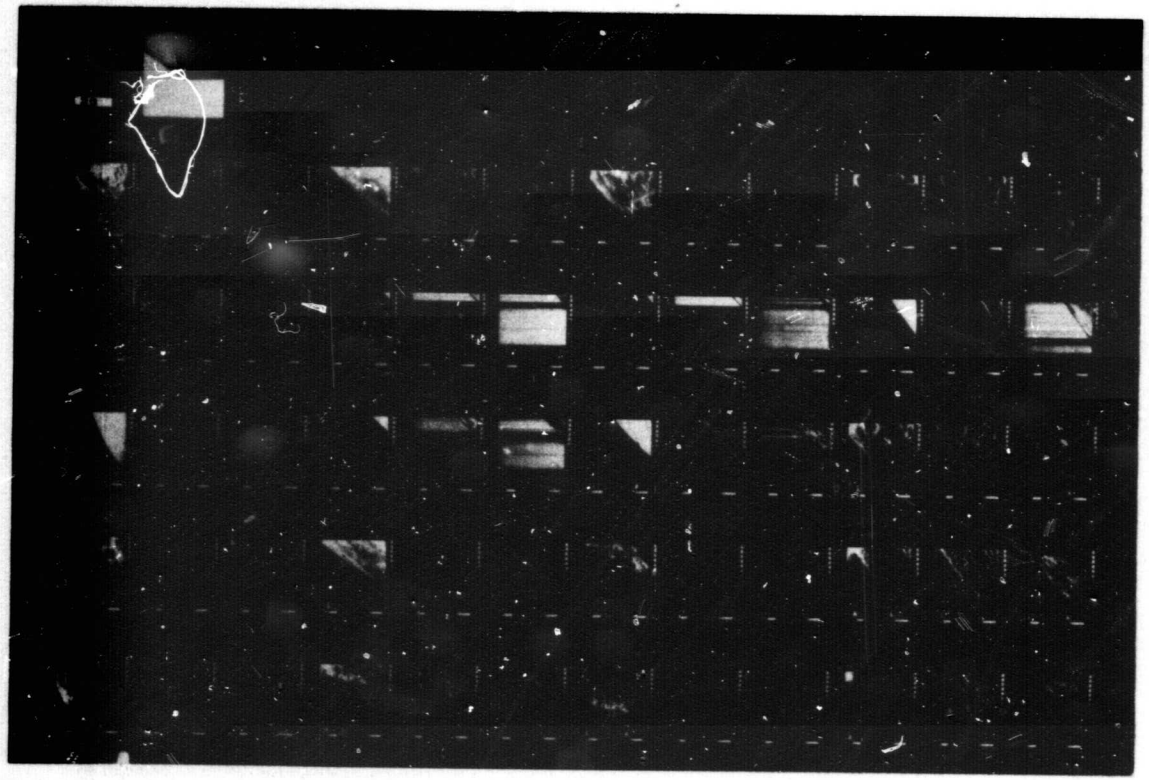

Figure 11. Sample of MVM-X Mercury Microfiche

MVM73 MERCURY THIRD ENCOUNTER CATALOG ON MICROFICHE

The Mercury third encounter catalog is currently being prepared at the JPL. This catalog will be similar to those for the first and second encounter data. The ordering procedure is the same, and the fiche will not contain any supporting data. At the present time, the number of cards in this set has not been determined.

JOURNAL ARTICLES

Several interpretive and analytical studies of the Mariner 10 mission and the TV experiment have been published. The following papers are recommended reading for investigators of the Mariner 10 pictures. *Reprints of these papers are not available from NSSDC.*

The June 1974 issue of Sky and Telescope contains a paper on Mercury; also Aviation Week and Space Technology for April 8, 1974; Science, 184, 4135, April 1974; and in Science, 185, 4146, July 1974. Papers on Venus are published in the February 18 and March 25, 1975, issues of Aviation Week and Space Technology, and in Science, 183, 4131, March 1974. The results of a study of an imaging experiment planned for the Mariner 10 mission are described in Icarus, 15, 2, October 1971. Several articles on Mercury are published in the Journal of Geophysical Research, 80, 17, June 1975.

SUMMARY OF THE STATUS OF MARINER 10 PICTURE DATA
TO BE DISTRIBUTED BY
NATIONAL SPACE SCIENCE DATA CENTER

Product	Availability
. MTVS Picture Data (raw pictures, high-pass filtered, and vertical AGC enhancements)	NSSDC can respond to requests if roll and file number, version, and FDS count are submitted by requester.
. IPL Picture Data	NSSDC cannot respond to requests until all data are received.
. Indexes to Mariner 10 TV Picture Data	NSSDC can respond to requests for 16-mm microfilm.
. SEDR (Supplementary Experiment Data Records)	NSSDC will supply the complete record on one 16-mm reel of microfilm with each initial request for picture data.
. MVM73 Earth/Moon Calibration Catalog on microfiche	NSSDC can respond to requests.
. MVM73 Venus Encounter Catalog on microfiche	NSSDC can respond to requests.
. MVM73 Mercury First Encounter Catalog on microfiche	NSSDC can respond to requests.
. MVM73 Mercury Second Encounter Catalog on microfiche	NSSDC can respond to requests.
. MVM73 Mercury Third Encounter Catalog on microfiche	Until the microfiche are received, NSSDC cannot respond to requests.

NATIONAL SPACE SCIENCE DATA CENTER

Charge and Service Policy

The purpose of the National Space Science Data Center (NSSDC) is to provide data and information from space science flight experiments in support of additional studies beyond those performed by the principal investigators. Therefore, NSSDC will provide data and information upon request to any individual or organization resident in the United States. In addition, the same services are available to scientists outside the United States through the World Data Center A for Rockets and Satellites (WDC-A-R&S). Normally, a charge is made for the requested data to cover the cost of reproduction and the processing of the request. The requester will be notified of the cost, and payment must be received prior to processing the request. However, as resources permit, the Director of NSSDC may waive the charge for modest amounts of data for use in scientific studies or specific educational purposes when they are requested by an individual affiliated with:

- NASA installations, NASA contractors, or NASA grantees
- Other U.S. Government agencies, their contractors, or their grantees
- Universities or colleges
- State and local governments
- Nonprofit organizations

ORDERING PROCEDURES

When planning to order Mariner 10 pictures from NSSDC, the requester will find the indexes to be most useful. The user may then want to order microfiche copies of the pictures before making a final selection of picture data required.

> NOTE: The roll and file numbers, as well as FDS count, desired are to be included for each picture requested.

The Mariner 10 TV data order form enclosed with this DAB is provided for the requester's convenience. All parts of the form must be completed to assure satisfactory request fulfillment. All required items should be identified in a single order to expedite the processing of the request. A copy of the "Charge and Service Policy" for dissemination of data from the National Space Science Data Center is included for the requester's guidance.

NSSDC requires knowledge of the scientific purpose for which the data provided will be used; therefore, a statement to this effect should be included in each request. NSSDC would also appreciate receiving copies of all publications resulting from studies in which data supplied by NSSDC have been used. It is further requested that NSSDC be acknowledged as the source of the data in all publications resulting from use of the data provided.

Requesters may view the Mariner 10 pictures at NSSDC. Inquiries about or requests for pictures from U.S. scientists should be addressed to:

National Space Science Data Center
Code 601.4
Goddard Space Flight Center
Greenbelt, Maryland 20771
Telephone: (301) 982-6695

Requests from researchers outside the U.S.A. should be directed to:

World Data Center A for Rockets and Satellites
Code 601
Goddard Space Flight Center
Greenbelt, Maryland 20771, USA

MARINER 10 TV DATA PRICE LIST

PICTURE INDEXES

One reel of 16-mm microfilm containing Mariner 10 indexes ..... $ 4.15

PICTURE CATALOGS

Complete MVM73 Earth/Moon Calibration Catalog on microfiche ..... $ 6.40

Complete MVM73 Venus Encounter Catalog on microfiche 48.00

Complete MVM73 Mercury First Encounter Catalog on microfiche 20.00

Complete MVM73 Mercury Second Encounter Catalog on microfiche 10.40

SUPPORTING DATA

One reel of 16-mm microfilm containing the SEDR data ... $ 4.15

TYPICAL PER ITEM COSTS (BLACK AND WHITE)

FORM	SIZE	COST
PRINTS	8 x 10 in.	$0.70
	11 x 14 in.	0.75
	16 x 20 in.	2.00
	20 x 24 in.	3.00

FORM	SIZE	COST
FILM DUPLICATES	4 x 5 in.	$0.70
MICROFICHE	4 x 6 in.	0.40
SLIDES	2 x 2 in.	0.90
	3.25 x 4 in.	1.75

PRICES FOR REPRODUCTION SERVICES OTHER THAN THOSE LISTED WILL BE QUOTED UPON REQUEST. ALL PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

LIST OF ABBREVIATIONS AND ACRONYMS

AGC	automatic gain control
ALT	altitude
ANG	angle
AUTO	automatic
AVG	average
BAL	balloon
BER	bit rate error
CAL	calibration
CAM	camera
CATH	cathode
CB	cathode beam
CI	color interior (film)
CS	control signal
DC	dark current
EDIT	edit
ERT	Earth received time
ET	exposure time
EVNT	event
FDS	flight data system
FL	flood light
F/L	first/last
FOC	focus
FOV	field of view
FP	filter position
FS	filter step
GMT	Greenwich mean time
HPF	high-pass filter
HR	hour
HT	height
ID	identification
IM	imaging mode
INP	input
IPL	Image Processing Laboratory
JPL	Jet Propulsion Laboratory
LAT	latitude
LIN	line size (projected) at center of picture
LONG	longitude
LUNLON	longitude of subsolar point on Moon (deg)
MIL	millisecond(s)
MIN	minute(s)
MON	monitor
MOS	Mission Operations System
MTC	mission test computer
MTCF	mission test center facility
MTVS	mission test video system

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MVM	Mariner-Venus-Mercury
MVM-X	Mariner-Venus-Mercury 10
NSSDC	National Space Science Data Center
OPT	optical
P/ANG(X)	phase angle of four corners and center of picture (deg)
PB	playback
PCT	percent
PIC	picture
PIX	picture
P/S	power supply
RAD (vel.)	radial velocity
R/F	roll/file
RT	real time
S/ANG(X)	solar lighting angle of four corners and center of picture (deg)
SC	spacecraft
S/C	spacecraft
SCE	spacecraft ephemeris
S/C RMAG	distance from spacecraft to center of planet (km)
SEDR	Supplementary Experiment Data Records
SL/RNG	slant range
SMR/DIR	smear direction
SMR/V-5	smear velocity
SPK	spike
SS	skip slide
SUNLAT	latitude of subsolar point (deg)
SUNLON	longitude of subsolar point (deg)
TAN (vel.)	tangential velocity
T/C	temperature control
TT	translation table
TVS	television system
UV	ultraviolet
V	vertical (automatic gain control)
VAGC	vertical automatic gain control
V/ANG	viewing angle
VDC	video dark current
VEL	velocity
WD	width
WDC-A-R&S	World Data Center A for Rockets and Satellites