

FLIGHT SUMMARY REPORT

Flight Number: 95-146
Calendar/Julian Date: 17 July 1995 • 198
Sensor Package: Dual Wild Heerbrugg RC-10
Hycon HR-732
Thematic Mapper Simulator (TMS)
Area(s) Covered: Payette National Forest, Idaho

Investigator(s): Greer, USDA Forest Service

Aircraft #: 706

SENSOR DATA

Accession #:	04951	04952	04953
Sensor ID #:	034	026	039
Sensor Type:	RC-10	RC-10	HR-732
Focal Length:	12" 304.66 mm	12" 304.97 mm	24" 609 mm
Film Type:	Aerochrome IR SO-060	Panatomic X Aerographic II 2412	Aerochrome IR SO-134
Filtration:	Wratten 12	Wratten 12	Wratten 12
Spectral Band:	510-900 nm	510-700 nm	510-900 nm
f Stop:	11	11	14.2
Shutter Speed:	1/250	1/225	1/250
# of Frames:	156	157	294
% Overlap:	60	60	60
Quality:	Good	Excellent	Excellent
Remarks:	Camera clock offset 10.8 seconds from navigation data	Camera clock offset 4.5 seconds from navigation data	Camera clock offset 2.7 seconds from navigation data

SENSOR DATA continued

Flight Number: 95-146

Accession #:	----
Sensor ID #:	074
Sensor Type:	TMS
Focal Length:	----
Film Type:	----
Filtration:	----
Spectral Band:	----
f Stop:	----
Shutter Speed:	----
# of Frames:	----
% Overlap:	----
Quality:	----
Remarks:	

Airborne Science and Applications Program

The Airborne Science and Applications Program (ASAP) is supported by three ER-2 high altitude Earth Resources Survey aircraft. These aircraft are operated by the High Altitude Missions Branch at NASA-Ames Research Center, Moffett Field, California. The ER-2s are used as readily deployable high altitude sensor platforms to collect remote sensing and *in situ* data on earth resources, celestial phenomena, atmospheric dynamics, and oceanic processes. Additionally, these aircraft are used for electronic sensor research and development and satellite investigative support.

The ER-2s are flown from various deployment sites in support of scientific research sponsored by NASA and other federal, state, university, and industry investigators. Data are collected from deployment sites in Kansas, Texas, Virginia, Florida, and Alaska. Cooperative international scientific projects have deployed the aircraft to sites in Great Britain, Australia, Chile, and Norway.

Photographic and digital imaging sensors are flown aboard the ER-2s in support of research objectives defined by the sponsoring investigators. High resolution mapping cameras and digital multispectral imaging sensors are utilized in a variety of configurations in the ER-2s' four pressurized experiment compartments. The following provides a description of the digital multispectral sensor(s) and camera(s) used for data collection during this flight.

Thematic Mapper Simulator

The Daedalus Thematic Mapper Simulator (TMS) is a multispectral scanner flown aboard the ER-2 aircraft which simulates spatial and spectral characteristics of the seven Landsat-D Thematic Mapper bands. The specific bands are as follows:

<u>Daedalus Channel</u>	<u>TM Band</u>	<u>Wavelength, μm</u>
1	A	0.42 - 0.45
2	1	0.45 - 0.52
3	2	0.52 - 0.60
4	B	0.60 - 0.62
5	3	0.63 - 0.69
6	C	0.69 - 0.75
7	4	0.76 - 0.90
8	D	0.91 - 1.05
9	5	1.55 - 1.75
10	7	2.08 - 2.35
11	6	8.5 - 14.0 low gain
12	6	8.5 - 14.0 high gain

Sensor/aircraft parameters are as follows:

IFOV:	1.25 mrad
Ground Resolution:	81 feet (25 meters) at 65,000 feet
Total Scan Angle:	43°
Swath Width:	8.4 nmi (15.6 km) at 65,000 feet
Pixels/Scan Line:	716
Scan Rate:	12.5 scans/second
Ground Speed:	400 kts (206 m/second)

Camera Systems

Various camera systems and films are used for photographic data collection. Film types include high definition color infrared, natural color, and black and white emulsions. Available photographic systems are as follows:

- Wild-Heerbrugg RC-10 metric mapping camera
 - 9 x 9 inch film format
 - 6 inch focal length lens provides area coverage of 16 x 16 nautical miles from 65,000 feet
 - 12 inch focal length lens provides area coverage of 8 x 8 nautical miles from 65,000 feet

- Hycon HR-732 large scale mapping camera
 - 9 x 18 inch film format
 - 24 inch focal length lens provides area coverage of 4 x 8 nautical miles from 65,000 feet

- IRIS II Panoramic camera
 - 4.5 x 34.7 inch film format
 - 24 inch focal length lens
 - 90 degree field of view provides area coverage of 2 x 21.4 nautical miles from 65,000 feet

The U.S. Geological Survey's EROS Data Center at Sioux Falls, South Dakota serves as the archive and product distribution facility for NASA-Ames aircraft acquired photographic and digital imagery. For information regarding photography and digital data (including areas of coverage, products, and product costs) contact EROS Data Center, Customer Services, Sioux Falls, South Dakota 57198 (Telephone: 605-594-6151).

Additional information regarding ER-2 acquired photographic and digital data is available through the Aircraft Data Facility at Ames Research Center. For specific information regarding flight documentation, sensor parameters, and areas of coverage contact the Aircraft Data Facility, NASA-Ames Research Center, Mail Stop 240-6, Moffett Field, California 94035-1000 (Telephone: 415-604-6252).

**CAMERA FLIGHT LINE DATA
FLIGHT NO. 95-146**

Accession # 04951

Sensor # 034

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	7664-7670	18:19:56	18:22:45	63686/19411	Clear
C - D	7671-7680	18:29:01	18:33:14	63740/19428	Clear
E - F	7681-7695	18:37:34	18:44:08	63947/19491	Clear
G - H	7696-7709	18:47:35	18:53:41	63964/19496	10% cumulus (frames 7697-7700)
I - J	7710-7730	18:59:22	19:08:45	64195/19567	Fogged in processing
K - L	7731-7755	19:14:20	19:25:35	64224/19575	Fogged in processing (frames 7731-7746)
M - N	7756-7769	19:30:21	19:36:27	64086/19533	Minor-10% cumulus (frames 7766-7769)
O - P	7770-7784	19:39:56	19:46:30	63953/19493	Clear
Q - R	7785-7800	19:54:06	20:01:07	64219/19574	10% cumulus (frames 7794-7795 and 7799-7800)
S - T	7801-7819	20:07:14	20:15:39	64137/19549	Minor-30% cumulus (frames 7801-7805) minor-20% cumulus (frames 7808-7810)

**CAMERA FLIGHT LINE DATA
FLIGHT NO. 95-146**

Accession # 04952

Sensor # 026

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	7181-7188	18:19:19	18:22:34	63688/19412	Clear
C - D	7189-7198	18:28:53	18:33:03	63740/19428	Clear
E - F	7199-7213	18:37:26	18:43:56	63933/19487	Clear
G - H	7214-7227	18:47:28	18:53:30	63950/19492	10% cumulus (frames 7215-7218)
I - J	7228-7248	18:59:15	19:08:32	64200/19568	Clear
K - L	7249-7273	19:14:12	19:25:21	64228/19577	Clear
M - N	7274-7287	19:30:12	19:36:14	64086/19533	Minor-10% cumulus (frames 7284-7287)
O - P	7288-7302	19:39:48	19:46:18	63967/19497	Clear
Q - R	7303-7318	19:53:58	20:00:54	64219/19574	10% cumulus (frames 7312-7313 and 7318)
S - T	7319-7337	20:07:07	20:15:26	64126/19546	Minor-30% cumulus (frames 7319-7323); minor-20% cumulus (frames 7326-7329)

**CAMERA FLIGHT LINE DATA
FLIGHT NO. 95-146**

Accession # 04953

Sensor # 039

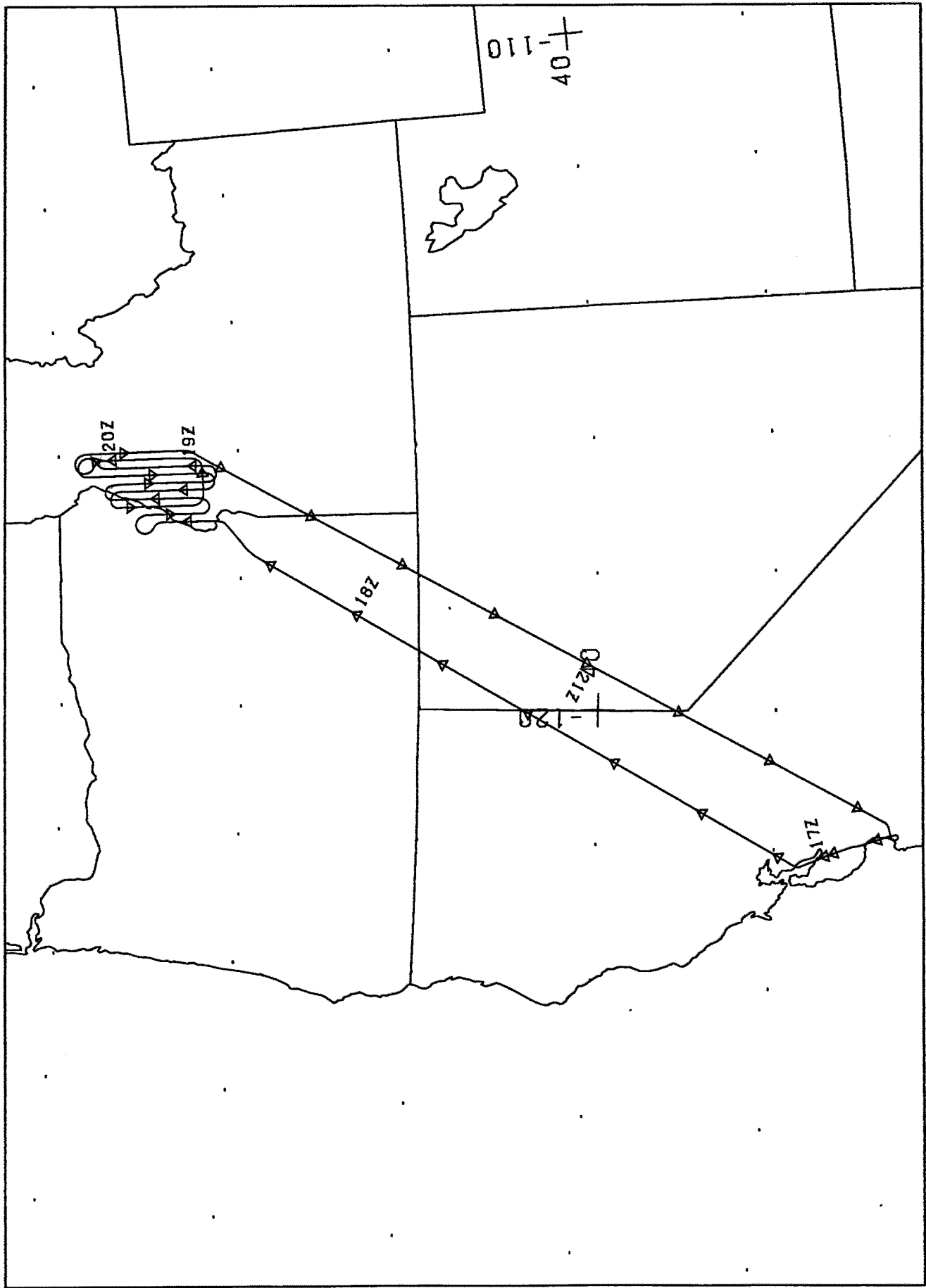
Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	0001-0013	18:19:30	18:22:23	63677/19409	Clear
C - D	0014-0032	18:28:49	18:33:09	63758/19433	Clear
E - F	0033-0060	18:37:21	18:43:53	63932/19486	Clear
G - H	0061-0086	18:47:23	18:53:25	63965/19497	Minor-10% cumulus (frames 0063-0069)
I - J	0087-0126	18:59:10	19:08:36	64202/19569	Clear
K - L	0127-0173	19:14:07	19:25:15	64223/19575	Clear
M - N	0174-0200	19:30:09	19:36:25	64100/19538	Minor-20% cumulus (frames 0193-0200)
O - P	0201-0228	19:39:43	19:46:15	63971/19498	Clear
Q - R	0229-0258	19:53:53	20:00:53	64223/19575	10% cumulus (frames 0246-0248); minor-10% cumulus (frames 0257-0258)
S - T	0259-0294	20:07:01	20:15:29	64153/19554	10-30% cumulus (frames 0259-0265); minor-20% cumulus (frames 0272-0277)

TMS SCANNER FLIGHT LINE DATA

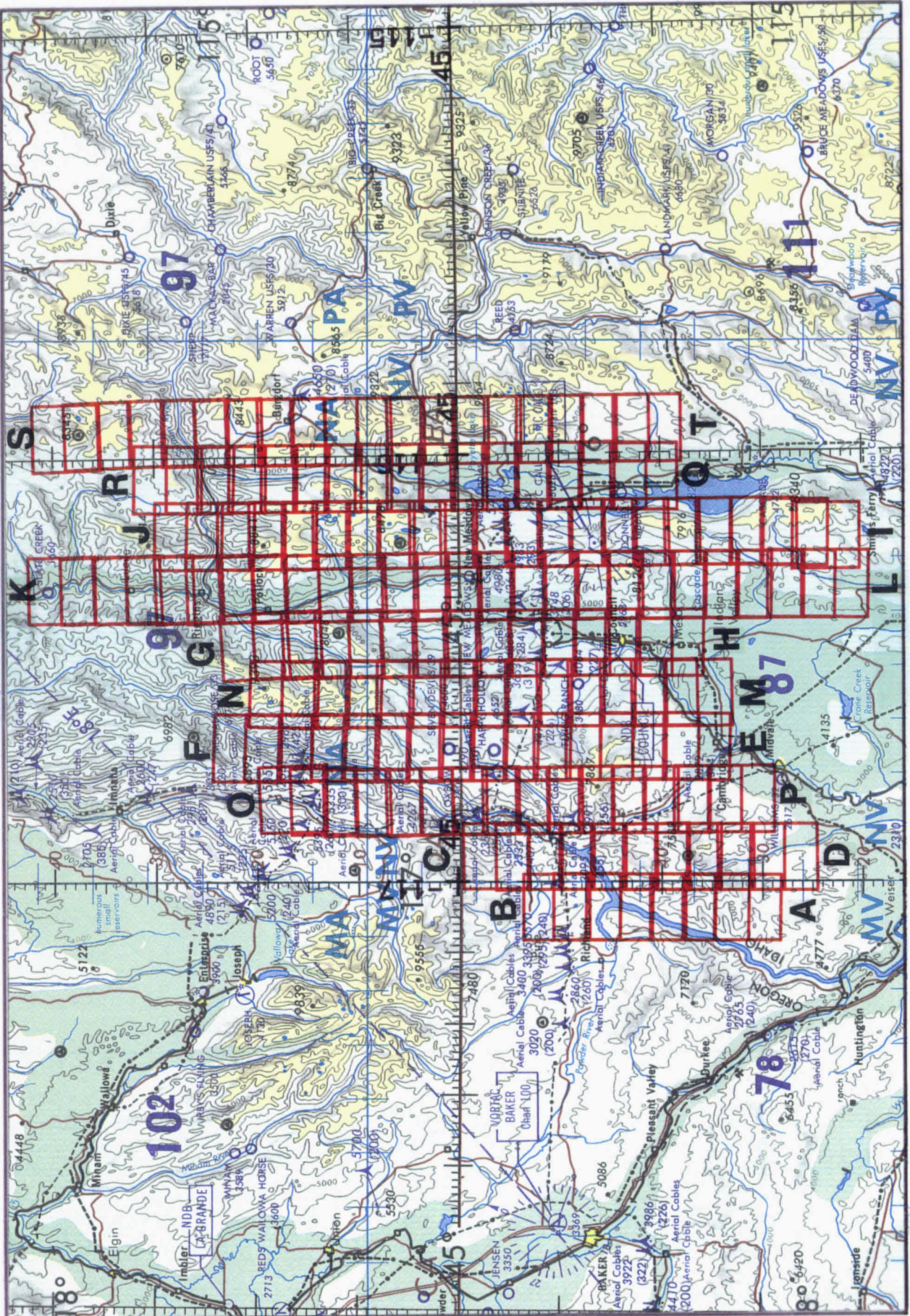
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DAEDALUS FLIGHT DATA
FLIGHT NUMBER: 95-146

Check Points	Actual time begin	Actual time end	Actual scanline begin	Actual scanline end	Altitude feet/meter	Scan Speed (rps)	total Good scanlines	total Interpolated scanlines	total Repeated scanlines
A-0	18:18:11.0	18:22:41.0	65494	68860	65000/19812	12.50	5367	0	0
C-D	18:28:5.0	18:33:14.0	72919	76780	65000/19812	12.50	3862	0	0
E-F	18:36:24.0	18:44:20.0	79136	85076	65000/19812	12.50	5941	0	0
G-H	18:47:14.0	18:56:5.0	87274	93907	65000/19812	12.50	6634	0	0
I-J	18:58:59.0	19:08:15.0	96085	103411	65000/19812	12.50	7526	1	0
K-L	19:13:54.0	19:25:23.0	107272	115885	65000/19812	12.50	8614	0	0
M-N	19:28:53.0	19:56:56.0	118261	124900	65000/19812	12.50	6040	0	0
O-P	19:39:30.0	19:46:22.0	126478	131626	65000/19812	12.50	5149	0	0
Q-R	19:53:14.0	20:01:1.0	136774	142613	65000/19812	12.50	5842	0	0
S-T	20:06:50.0	20:16:12.0	146971	154000	65000/19812	12.50	7079	1	0



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