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RESEARCH STUDY: STS-1 ORBITER DESCENT

FINAL REPORT

Prepared for:

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
GEORGE C. MARSHALL SPACE FLIGHT CENTER  
MARSHALL SPACE FLIGHT CENTER, ALABAMA 35812

Attention:

AP29-F/Edward M. Harper

Under Contract:

NAS8-34334

Prepared by:

John S. Hickey

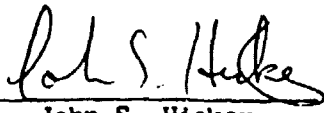
April 22, 1981



PREFACE

This is the Final Report prepared by Atsuko Computing International (ACI), under Contract NAS8-34334, entitled "Research Study: STS-1 Orbiter Descent", for the Space Sciences Laboratory of Marshall Space Flight Center. The NASA technical monitor for this contract is Dr. Robert E. Turner.

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## ABSTRACT

This report describes the data reduction software developed by ACI to reduce the STS-1 radiosonde data. A group of four programs have been developed and implemented on the REEDA System (HP-1000 Series F minicomputer running under RTE-IVB O/S). These programs were utilized to process the raw STS-1 radiosonde data and generate tabulated first difference, contract data, 30 second data, and graphical plot data tapes.

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## 1. INTRODUCTION

Atsuko Computing International (ACI), is pleased to submit this Final Report under Contract NAS8-34334, entitled "Research Study: STS-1 Orbiter Descent".

The objective of this project was to convert existing AVE-SESAME Contact programs to the REEDA System and to reduce various STS-1 radiosonde data. A sequence of events was performed by ACI during this contract to accomplish the above objective:

- o Converted the AVE-SESAME Contact Program (IBM) to the REEDA System.
- o Reduced all STS-1 radiosonde releases at selected sites to obtain atmospheric parameters of thermodynamic quantities and winds just before and after the Orbiter penetrates the landing area.
- o Generated a data book which provided a preliminary look at conditions during the STS-1 Orbiter descent, containing contact data, 30 seconds data and graphical profiles utilizing the reduced radiosonde data.

## 2. TECHNICAL

ACI converted the an AVE-SESAME Contact Program which existed on the IBM 360 to the REEDA System. This contact program processes raw radiosonde soundings and computes at each pressure contact the thermodynamic quantities and interpolates the winds to each contact as described below:

### A. Contact Data

Contact vs Time, Min.

Height, GPM  
Pressure, MB  
Temp °C  
Dew Point °C  
Wind Direction, Deg  
Wind Speed,  $\text{ms}^{-1}$   
U Comp.,  $\text{ms}^{-1}$   
V Comp.,  $\text{ms}^{-1}$   
Pot Temp, °K  
E Pot Temp, °K  
Mixing Ratio, GM/KG  
Relative Humidity, %  
Range, KM  
Azimuth, Deg

After the Contact Program was converted on the REEDA System and verified as operational, it was then modified to process the raw data at each 30 seconds and generate the following:

### B. 30 Second Data

Time vs Pressure, MB

Temp °C  
Dew Point °C  
Vert. Temp, °C  
Temp. °K  
Rel. Humidity, %  
Wind Direction, Deg  
Wind Speed,  $\text{ms}^{-1}$   
Altitude, km

Altitude vs Pressure, MB  
Dew Point °C  
Vert. Temp, °C  
Temp. °K  
Rel. Humidity, %  
Wind Direction, Deg  
Wind Speed, ms<sup>-1</sup>  
Time, Min.

To further enhance the capability of depicting the reduced data, existing REEDA System software was modified to produce graphical profile plot tapes of the following:

C. Reduced Data (Plotted)

Altitude vs Temp °C  
Dew Point °C  
Wind Speed, ms<sup>-1</sup>  
Wind Direction, Deg

Once the AVE-SESAME Contact Program and additional REEDA System software was modified, ACI utilized the software to reduce all radiosonde releases (as provided by MSFC) and generate the previously described outputs (A, B, C).

ACI then incorporate, into a data book, the reduced radiosonde data for each release. This data book provides for a preliminary look at conditions during the Orbiter descent.



### 3. PROGRAMS

ACI developed four programs under this contract to satisfy the objectives of processing the STS-1 raw radiosonde data. The following four programs are currently operational on the REEDA System:

- o STS01 -- 1st Difference Program
- o STS02 -- Contact Data Program
- o STS03 -- Plot Data Program
- o STS04 -- 30 Second Data Program

ACI utilized the above programs to process the following six radiosonde soundings in support of the STS-1 launch:

- o ST1234 -- 1234GMT, April 12, 1981, Wheeler, CA
- o ST1330 -- 1330GMT, April 12, 1981, Tehachapi, CA
- o ST1535 -- 1535GMT, April 14, 1981, Wheeler, CA
- o ST1541 -- 1541GMT, April 14, 1981, Tehachapi, CA
- o ST1815 -- 1815GMT, April 14, 1981, Wheeler, CA
- o ST1818 -- 1818GMT, April 14, 1981, Tehachapi, CA

A data book was generated incorporating the outputs produced by using programs STS01-STSO4 to process all six STS-1 soundings. The appendix of this report contains an example output of each of the STS01-STSO4 programs.

This report does not include a source listing of the STS01-STSO4 programs (over 3000 lines of FORTRAN IV code), but can be made available upon request.

**APPENDIX A**



**APPENDIX A: STS-1 SOUNDING**

This appendix provides, as an example, the raw sounding data for Wheeler Ridge, California. 1234GMT, April 12, 1981.

ST1234 T-00004 16 OM CP00033 USING 00112 BLKS P-0000

0001	2	9999	06.6	1001.0	0.4	73.0	29.1	75.02	0.5	350	04	12	01	1234	00002	0
0002	0															
0003	007	0997	63.0	34.5	000.1						04	12	01	1234	00002	0
0004	008	0986	64.2	50.0	000.4						04	12	01	1234	00002	0
0005	009	0975	64.5	53.4	000.7						04	12	01	1234	00002	0
0006	010	0964	63.9	40.0	001.0						04	12	01	1234	00002	0
0007	011	0953	63.0	44.3	001.3						04	12	01	1234	00002	0
0008	012	0943	62.8	43.1	001.7						04	12	01	1234	00002	0
0009	013	0932	62.5	45.6	002.0						04	12	01	1234	00002	0
0010	014	0921	62.6	39.7	002.3						04	12	01	1234	00002	0
0011	015	0911	62.3	41.3	002.6						04	12	01	1234	00002	0
0012	016	0900	62.1	46.0	002.9						04	12	01	1234	00002	0
0013	017	0890	61.0	49.2	003.3						04	12	01	1234	00002	0
0014	018	0879	61.6	53.1	003.7						04	12	01	1234	00002	0
0015	019	0868	61.4	71.0	004.0						04	12	01	1234	00002	0
0016	020	0858	60.5	59.1	004.3						04	12	01	1234	00002	0
0017	021	0847	60.8	49.7	004.7						04	12	01	1234	00002	0
0018	022	0837	60.7	52.0	005.1						04	12	01	1234	00002	0
0019	023	0827	60.5	35.6	005.4						04	12	01	1234	00002	0
0020	024	0816	60.2	25.8	005.7						04	12	01	1234	00002	0
0021	025	0806	59.3	20.0	006.1						04	12	01	1234	00002	0
0022	026	0795	59.5	67.0	006.4						04	12	01	1234	00002	0
0023	027	0785	60.9	00.9	006.7						04	12	01	1234	00002	0
0024	028	0775	61.0	00.4	007.3						04	12	01	1234	00002	0
0025	029	0765	60.9	00.5	007.6						04	12	01	1234	00002	0
0026	030	0755	60.5	01.5	007.9						04	12	01	1234	00002	0
0027	031	0746	60.4	00.6	008.2						04	12	01	1234	00002	0
0028	032	0736	60.2	79.5	008.7						04	12	01	1234	00002	0
0029	033	0726	59.5	79.5	009.1						04	12	01	1234	00002	0
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0031	035	0707	58.7	79.9	009.9						04	12	01	1234	00002	0
0032	036	0697	58.6	79.4	010.3						04	12	01	1234	00002	0
0033	037	0688	58.2	79.6	010.0						04	12	01	1234	00002	0
0034	038	0678	57.4	79.3	011.2						04	12	01	1234	00002	0
0035	039	0669	57.0	79.2	011.6						04	12	01	1234	00002	0
0036	040	0659	56.6	79.5	012.0						04	12	01	1234	00002	0
0037	041	0650	56.3	79.6	012.4						04	12	01	1234	00002	0
0038	042	0641	55.8	00.1	012.8						04	12	01	1234	00002	0
0039	043	0631	55.7	00.1	013.2						04	12	01	1234	00002	0
0040	044	0622	54.0	00.4	013.7						04	12	01	1234	00002	0
0041	045	0613	54.7	00.3	014.1						04	12	01	1234	00002	0
0042	046	0605	54.1	00.2	014.5						04	12	01	1234	00002	0
0043	047	0596	54.0	00.3	014.9						04	12	01	1234	00002	0
0044	048	0587	53.5	00.2	015.3						04	12	01	1234	00002	0
0045	049	0578	53.2	00.1	015.7						04	12	01	1234	00002	0
0046	050	0569	52.5	79.0	016.1						04	12	01	1234	00002	0
0047	051	0561	51.9	79.4	016.4						04	12	01	1234	00002	0
0048	052	0552	51.5	79.4	016.8						04	12	01	1234	00002	0
0049	053	0544	50.8	79.5	017.3						04	12	01	1234	00002	0
0050	054	0535	49.9	79.5	017.7						04	12	01	1234	00002	0
0051	055	0526	49.4	79.6	018.2						04	12	01	1234	00002	0
0052	056	0518	49.0	00.3	018.5						04	12	01	1234	00002	0
0053	057	0510	48.3	79.7	018.9						04	12	01	1234	00002	0
0054	058	0502	47.7	79.7	019.3						04	12	01	1234	00002	0
0055	059	0493	46.9	79.4	019.0						04	12	01	1234	00002	0
0056	060	0485	46.3	79.4	020.3						04	12	01	1234	00002	0
0057	061	0477	45.4	79.4	020.7						04	12	01	1234	00002	0
0058	062	0469	44.0	79.1	021.2						04	12	01	1234	00002	0

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0059	063	0460	43.4	79.4	021.7	04	12	01	1234	00002	0
0060	064	0452	42.4	79.4	022.1	04	12	01	1234	00002	0
0061	065	0445	42.0	79.3	022.5	04	12	01	1234	00002	0
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0063	067	0429	40.4	79.3	023.0	04	12	01	1234	00002	0
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0065	069	0414	38.6	78.0	024.3	04	12	01	1234	00002	0
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0070	074	0378	35.2	65.2	026.3	04	12	01	1234	00002	0
0071	075	0370	34.9	43.2	026.8	04	12	01	1234	00002	0
0072	076	0363	34.3	33.6	027.3	04	12	01	1234	00002	0
0073	077	0357	33.4	22.6	027.8	04	12	01	1234	00002	0
0074	078	0350	32.5	15.4	028.3	04	12	01	1234	00002	0
0075	079	0343	31.0	13.2	028.7	04	12	01	1234	00002	0
0076	080	0336	30.9	09.2	029.2	04	12	01	1234	00002	0
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0080	084	0310	27.4	22.2	031.1	04	12	01	1234	00002	0
0081	085	0304	26.6	48.2	031.6	04	12	01	1234	00002	0
0082	086	0298	25.7	60.0	032.1	04	12	01	1234	00002	0
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0084	088	0285	24.0	63.2	032.9	04	12	01	1234	00002	0
0085	089	0279	23.2	99.9	033.4	04	12	01	1234	00002	0
0086	090	0274	22.4	99.9	033.8	04	12	01	1234	00002	0
0087	091	0268	21.5	99.9	034.3	04	12	01	1234	00002	0
0088	092	0262	21.0	99.9	034.8	04	12	01	1234	00002	0
0089	093	0256	20.2	99.9	035.3	04	12	01	1234	00002	0
0090	094	0250	19.4	99.9	035.7	04	12	01	1234	00002	0
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0098	102	0208	14.4	99.9	039.9	04	12	01	1234	00002	0
0099	103	0203	14.3	99.9	039.3	04	12	01	1234	00002	0
0100	104	0198	14.5	99.9	039.7	04	12	01	1234	00002	0
0101	105	0193	15.0	99.9	040.2	04	12	01	1234	00002	0
0102	106	0189	15.2	99.9	040.6	04	12	01	1234	00002	0
0103	107	0184	15.2	99.9	041.0	04	12	01	1234	00002	0
0104	108	0179	15.0	99.9	041.5	04	12	01	1234	00002	0
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0123	127	0105	15.0	99.9	051.0	04	12	01	1234	0002	0
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0125	129	0099	15.4	99.9	052.2	04	12	01	1234	0002	0
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0162	002.0	51.0	105.7			04	12	01	1234	0002	0
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0164	003.0	51.7	107.1			04	12	01	1234	0002	0
0165	003.5	52.6	110.2			04	12	01	1234	0002	0
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0171	006.5	59.1	124.0			04	12	01	1234	0002	0
0172	007.0	57.2	131.9			04	12	01	1234	0002	0
0173	007.5	55.0	131.4			04	12	01	1234	0002	0
0174	008.0	52.0	128.5			04	12	01	1234	0002	0
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0184	013.0	46.9	110.5	04	12	01	1234	0002	0	0	0
0185	013.5	47.0	108.8	04	12	01	1234	0002	0	0	0
0186	014.0	47.0	106.9	04	12	01	1234	0002	0	0	0
0167	014.5	47.3	105.8	04	12	01	1234	0002	0	0	0
0188	015.0	48.2	103.5	04	12	01	1234	0002	0	0	0
0189	015.5	48.2	101.8	04	12	01	1234	0002	0	0	0
0190	016.0	48.3	101.0	04	12	01	1234	0002	0	0	0
0191	016.5	48.2	099.6	04	12	01	1234	0002	0	0	0
0192	017.0	50.8	098.8	04	12	01	1234	0002	0	0	0
0193	017.5	50.7	097.1	04	12	01	1234	0002	0	0	0
0194	018.0	51.0	094.7	04	12	01	1234	0002	0	0	0
0195	018.5	51.3	093.7	04	12	01	1234	0002	0	0	0
0196	019.0	51.2	092.9	04	12	01	1234	0002	0	0	0
0197	019.5	51.1	091.4	04	12	01	1234	0002	0	0	0
0198	020.0	51.3	090.3	04	12	01	1234	0002	0	0	0
0199	020.5	51.4	089.7	04	12	01	1234	0002	0	0	0
0200	021.0	51.6	088.0	04	12	01	1234	0002	0	0	0
0201	021.5	51.5	086.7	04	12	01	1234	0002	0	0	0
0202	022.0	51.1	085.4	04	12	01	1234	0002	0	0	0
0203	022.5	50.9	084.1	04	12	01	1234	0002	0	0	0
0204	023.0	50.8	082.2	04	12	01	1234	0002	0	0	0
0205	023.5	49.6	080.8	04	12	01	1234	0002	0	0	0
0206	024.0	48.9	079.5	04	12	01	1234	0002	0	0	0
0207	024.5	48.3	078.6	04	12	01	1234	0002	0	0	0
0208	025.0	48.1	076.9	04	12	01	1234	0002	0	0	0
0209	025.5	47.7	075.6	04	12	01	1234	0002	0	0	0
0210	026.0	47.0	074.0	04	12	01	1234	0002	0	0	0
0211	026.5	46.4	072.3	04	12	01	1234	0002	0	0	0
0212	027.0	45.7	070.2	04	12	01	1234	0002	0	0	0
0213	027.5	45.1	068.3	04	12	01	1234	0002	0	0	0
0214	028.0	44.4	066.9	04	12	01	1234	0002	0	0	0
0215	028.5	43.2	065.7	04	12	01	1234	0002	0	0	0
0216	029.0	42.2	064.2	04	12	01	1234	0002	0	0	0
0217	029.5	41.0	062.7	04	12	01	1234	0002	0	0	0
0218	030.0	40.0	061.7	04	12	01	1234	0002	0	0	0
0219	030.5	39.0	060.9	04	12	01	1234	0002	0	0	0
0220	031.0	38.1	060.1	04	12	01	1234	0002	0	0	0
0221	031.5	37.0	059.6	04	12	01	1234	0002	0	0	0
0222	032.0	36.3	059.0	04	12	01	1234	0002	0	0	0
0223	032.5	35.3	058.4	04	12	01	1234	0002	0	0	0
0224	033.0	34.5	057.7	04	12	01	1234	0002	0	0	0
0225	033.5	33.9	057.5	04	12	01	1234	0002	0	0	0
0226	034.0	32.9	056.7	04	12	01	1234	0002	0	0	0
0227	034.5	32.0	055.6	04	12	01	1234	0002	0	0	0
0228	035.0	31.4	055.1	04	12	01	1234	0002	0	0	0
0229	035.5	30.6	054.3	04	12	01	1234	0002	0	0	0
0230	036.0	30.1	053.2	04	12	01	1234	0002	0	0	0
0231	036.5	29.5	052.9	04	12	01	1234	0002	0	0	0
0232	037.0	29.3	052.1	04	12	01	1234	0002	0	0	0
0233	037.5	28.6	051.4	04	12	01	1234	0002	0	0	0
0234	038.0	28.9	051.1	04	12	01	1234	0002	0	0	0
0235	038.5	27.9	051.0	04	12	01	1234	0002	0	0	0
0236	039.0	27.6	050.7	04	12	01	1234	0002	0	0	0
0237	039.5	27.1	050.5	04	12	01	1234	0002	0	0	0
0238	040.0	26.8	050.4	04	12	01	1234	0002	0	0	0



0239	040.5	26.5	050.1	04	12	01	1234	0002	0	0
0240	041.0	25.0	050.1	04	12	01	1234	0002	0	0
0241	041.5	25.9	049.9	04	12	01	1234	0002	0	0
0242	042.0	25.2	049.7	04	12	01	1234	0002	0	0
0243	042.5	24.7	049.9	04	12	01	1234	0002	0	0
0244	043.0	24.3	050.0	04	12	01	1234	0002	0	0
0245	043.5	23.9	050.2	04	12	01	1234	0002	0	0
0246	044.0	23.8	050.5	04	12	01	1234	0002	0	0
0247	044.5	23.2	050.7	04	12	01	1234	0002	0	0
0248	045.0	22.9	051.3	04	12	01	1234	0002	0	0
0249	045.5	22.6	050.9	04	12	01	1234	0002	0	0
0250	046.0	22.4	051.1	04	12	01	1234	0002	0	0
0251	046.5	22.0	051.1	04	12	01	1234	0002	0	0
0252	047.0	21.9	051.3	04	12	01	1234	0002	0	0
0253	047.5	21.5	051.3	04	12	01	1234	0002	0	0
0254	048.0	21.3	051.5	04	12	01	1234	0002	0	0
0255	048.5	21.1	051.7	04	12	01	1234	0002	0	0
0256	049.0	20.8	052.0	04	12	01	1234	0002	0	0
0257	049.5	20.6	052.2	04	12	01	1234	0002	0	0
0258	050.0	20.5	052.6	04	12	01	1234	0002	0	0
0259	050.5	20.5	052.9	04	12	01	1234	0002	0	0
0260	051.0	20.0	053.0	04	12	01	1234	0002	0	0
0261	051.5	20.0	053.3	04	12	01	1234	0002	0	0
0262	052.0	19.8	053.9	04	12	01	1234	0002	0	0
0263	052.5	19.7	053.8	04	12	01	1234	0002	0	0
0264	053.0	19.6	053.1	04	12	01	1234	0002	0	0
0265	053.5	19.5	053.1	04	12	01	1234	0002	0	0
0266	054.0	19.4	053.0	04	12	01	1234	0002	0	0
0267	054.5	19.3	053.0	04	12	01	1234	0002	0	0
0268	055.0	19.2	053.1	04	12	01	1234	0002	0	0
0269	055.5	18.9	053.2	04	12	01	1234	0002	0	0
0270	056.0	18.8	053.3	04	12	01	1234	0002	0	0
0271	056.5	18.8	053.4	04	12	01	1234	0002	0	0
0272	057.0	18.7	053.4	04	12	01	1234	0002	0	0
0273	057.5	18.4	053.5	04	12	01	1234	0002	0	0
0274	058.0	18.5	053.6	04	12	01	1234	0002	0	0
0275	058.5	18.6	053.8	04	12	01	1234	0002	0	0
0276	059.0	18.6	054.0	04	12	01	1234	0002	0	0
0277	059.5	18.6	054.2	04	12	01	1234	0002	0	0
0278	060.0	18.6	053.9	04	12	01	1234	0002	0	0
0279	060.5	18.6	054.0	04	12	01	1234	0002	0	0
0280	061.0	18.6	054.0	04	12	01	1234	0002	0	0
0281	061.5	18.6	054.2	04	12	01	1234	0002	0	0
0282	062.0	18.7	054.3	04	12	01	1234	0002	0	0
0283	062.5	18.7	054.7	04	12	01	1234	0002	0	0
0284	063.0	18.9	054.5	04	12	01	1234	0002	0	0
0285	063.5	19.0	054.4	04	12	01	1234	0002	0	0
0286	064.0	19.2	054.3	04	12	01	1234	0002	0	0
0287	064.5	19.3	054.3	04	12	01	1234	0002	0	0
0288	065.0	19.4	054.4	04	12	01	1234	0002	0	0
0289	065.5	19.5	054.5	04	12	01	1234	0002	0	0
0290	066.0	19.6	054.5	04	12	01	1234	0002	0	0
0291	066.5	19.6	054.6	04	12	01	1234	0002	0	0
0292	067.0	19.8	054.6	04	12	01	1234	0002	0	0
0293	067.5	19.9	054.6	04	12	01	1234	0002	0	0
0294	068.0	20.0	054.7	04	12	01	1234	0002	0	0
0295	068.5	20.1	054.7	04	12	01	1234	0002	0	0
0296	069.0	20.3	054.8	04	12	01	1234	0002	0	0
0297	069.5	20.4	054.9	04	12	01	1234	0002	0	0
0298	070.0	20.5	054.9	04	12	01	1234	0002	0	0





0299	070.5	20.7	054.9	04	12	81	1234	00002	0	0
0300	071.0	20.9	054.9	04	12	81	1234	00002	0	0
0301	071.5	21.1	055.2	04	12	81	1234	00002	0	0
0302	072.0	21.2	055.7	04	12	81	1234	00002	0	0
0303	072.5	21.6	055.9	04	12	81	1234	00002	0	0
0304	073.0	21.6	055.0	04	12	81	1234	00002	0	0
0305	073.5	21.7	055.5	04	12	81	1234	00002	0	0
0306	074.0	21.8	055.8	04	12	81	1234	00002	0	0
0307	074.5	22.0	056.1	04	12	81	1234	00002	0	0
0308	075.0	22.0	056.5	04	12	81	1234	00002	0	0
0309	075.5	22.4	056.9	04	12	81	1234	00002	0	0
0310	076.0	22.6	056.9	04	12	81	1234	00002	0	0
0311	076.5	23.0	056.8	04	12	81	1234	00002	0	0
0312	077.0	23.1	056.8	04	12	81	1234	00002	0	0
0313	077.5	23.4	057.0	04	12	81	1234	00002	0	0
0314	078.0	23.7	057.1	04	12	81	1234	00002	0	0
0315	078.5	23.9	057.4	04	12	81	1234	00002	0	0
0316	079.0	24.0	057.6	04	12	81	1234	00002	0	0
0317	079.5	24.1	058.0	04	12	81	1234	00002	0	0
0318	080.0	24.4	058.4	04	12	81	1234	00002	0	0
0319	080.5	24.7	058.8	04	12	81	1234	00002	0	0
0320	081.0	24.8	059.2	04	12	81	1234	00002	0	0
0321	081.5	24.9	059.4	04	12	81	1234	00002	0	0
0322	082.0	25.1	059.7	04	12	81	1234	00002	0	0
0323	082.5	25.3	060.1	04	12	81	1234	00002	0	0
0324	083.0	25.4	060.5	04	12	81	1234	00002	0	1



**APPENDIX B**

**APPENDIX B: PROGRAM STS01 - 1st DIFFERENCE**

This appendix provides an example output generated by the 'STS01' first difference program.



STATION 2 DATE 4/12/81 TIME 1234 GMT  
 CONTACT= 6.6 SFC PRES= 1001.0 TSFC= 0.4 PMSIC= 73.0 TORO= 29.1 MHORO= 75.8 WIND= 350. DEG AT .5 -SEC  
 FIRST PRES DIFF = 4.0

CTC	PRES	TORI	WORD	TIME	CTOF	POIF	TOIF	MOIF	TMOIF
7.	997.	43.0	34.9	.1	1.0	0.0	-.0	-6.0	.0
8.	996.	64.2	50.0	.4	1.0	0.0	-.4**	-4.0	0.0
9.	975.	64.5	53.4	.7	1.0	0.0	-.2	.1	0.0
10.	964.	63.9	48.0	1.0	1.0	.5	.4**	1.7	.1
11.	953.	63.0	44.3	1.3	1.0	-.5	-.1	1.9	-.0
12.	943.	62.0	43.1	1.7	1.0	0.0	-.2	-4.2	0.0
13.	932.	62.5	45.6	2.0	1.0	.5	-.2	3.8	0.0
14.	921.	62.6	39.7	2.3	1.0	-.5	0.0	1.9	.0
15.	911.	62.3	41.3	2.6	1.0	-.5	-.0	-1.6	.1
16.	900.	62.1	46.0	2.9	1.0	-.5	0.0	.8	0.0
17.	890.	61.0	49.2	3.3	1.0	0.0	0.0	7.0	-.0
18.	879.	61.6	53.1	3.7	1.0	.5	-.3	-14.9**	0.0
19.	868.	61.4	71.0	4.0	1.0	-.5	-.6**	1.3	.1
20.	858.	60.5	59.1	4.3	1.0	.5	-.2	5.9	.0
21.	847.	60.0	49.7	4.7	1.0	.5	-.0	-9.3	-.1
22.	837.	60.7	52.0	5.1	1.0	0.0	-.1	3.3	.0
23.	827.	60.5	35.6	5.4	1.0	-.5	-.1	2.0	.1
24.	816.	60.2	25.0	5.7	1.0	.5	-.5**	26.0**	-.1
25.	806.	59.3	20.0	6.1	1.0	.5	-.6**	-17.4**	.0
26.	795.	59.5	67.0	6.4	1.0	0.0	-.7**	-6.8	.2
27.	785.	60.9	80.9	6.7	1.0	0.0	-.1	.3	-.1
28.	775.	61.0	80.4	7.3	1.0	0.0	-.2	-.1	0.0
29.	765.	60.9	80.5	7.6	1.0	.5	-.1	.1	0.0
30.	755.	60.5	80.5	7.9	1.0	-.5	-.1	-.6	.1
31.	746.	60.4	80.6	8.2	1.0	0.0	-.2	.6	-.0
32.	736.	60.2	79.5	8.7	1.0	.5	-.1	.4	0.0
33.	726.	59.5	79.5	9.1	1.0	-.5	-.2	-.7	0.0
34.	717.	58.9	80.4	9.5	1.0	0.0	-.1	0.0	0.0
35.	707.	58.7	79.9	9.9	1.0	.5	-.2	.4	.1
36.	697.	58.6	79.4	10.3	1.0	-.5	-.2	-.3	-.0
37.	688.	58.2	79.6	10.0	1.0	.5	-.2	.1	0.0
38.	678.	57.4	79.3	11.2	1.0	-.5	0.0	.2	0.0
39.	669.	57.0	79.2	11.6	1.0	.5	-.1	-.2	0.0
40.	659.	56.6	79.5	12.0	1.0	0.0	-.1	-.3	0.0
41.	650.	56.3	79.6	12.4	1.0	-.5	-.2	-.1	0.0
42.	641.	55.8	80.1	12.8	1.0	.5	-.4**	.1	.0
43.	631.	55.7	80.1	13.2	1.0	0.0	-.4**	0.0	0.0
44.	622.	54.8	80.4	13.7	1.0	-.5	-.3	.1	0.0
45.	613.	54.7	80.3	14.1	1.0	.5	-.2	0.0	0.0
46.	605.	54.1	80.2	14.5	1.0	-.5	-.2	-.1	0.0
47.	596.	54.0	80.3	14.9	1.0	0.0	-.2	.0	0.0
48.	587.	53.5	80.2	15.3	1.0	.5	-.1	-.1	0.0
49.	578.	53.2	80.1	15.7	1.0	0.0	-.1	-.1	0.0
50.	569.	52.5	79.0	16.1	1.0	-.5	-.1	-.2	0.0
51.	561.	51.9	79.4	16.4	1.0	.5	-.1	-.1	0.0
52.	552.	51.5	79.4	16.8	1.0	-.5	-.1	-.1	0.0
53.	544.	50.8	79.5	17.3	1.0	.5	-.2	-.1	0.0
54.	535.	49.9	79.5	17.7	1.0	0.0	-.1	.3	0.0
55.	526.	49.4	79.6	18.2	1.0	.5	-.1	-.6	.1
56.	518.	49.0	80.3	18.5	1.0	0.0	-.0	-.3	0.0
57.	510.	48.3	79.7	18.9	1.0	0.0	-.1	-.2	0.0
58.	502.	47.7	79.7	19.3	1.0	-.5	-.1	-.1	0.0
59.	493.	46.9	79.4	19.0	1.0	.5	-.2	0.0	0.0
60.	485.	46.3	79.4	20.3	1.0	0.0	-.3	-.1	0.0
61.	477.	45.4	79.4	20.7	1.0	0.0	-.3	-.1	0.0
62.	469.	44.0	79.1	21.2	1.0	-.5	-.4**	.3	0.0



63.	460.	43.4	79.4	21.7	1.0	5	-2	-1	0.0
64.	452.	42.4	79.4	22.1	1.0	5	-2	-0	0.0
65.	445.	42.8	79.3	22.5	1.0	-5	-2	0.0	0.0
66.	437.	41.2	79.3	22.9	1.0	0.0	-1	-1	0.0
67.	429.	40.4	79.3	23.3	1.0	5	0.0	-1	0.0
68.	422.	39.5	79.0	23.9	1.0	-5	0.0	0.0	0.0
69.	414.	38.6	78.6	24.3	1.0	-5	0.0	0.0	0.0
70.	407.	37.8	78.6	24.7	1.0	-5	0.0	0.0	0.0
71.	399.	37.1	78.4	25.2	1.0	5	-2	-2	0.0
72.	392.	36.4	77.8	25.5	1.0	0.0	0.0	-6.1	0.0
73.	385.	35.6	77.6	25.9	1.0	-5	0.0	-4.8	0.0
74.	378.	35.2	65.2	26.3	1.0	5	-2	-6.2	0.0
75.	370.	34.9	43.2	26.8	1.0	5	-2	-7	0.0
76.	363.	34.3	33.6	27.3	1.0	-5	0.0	1.9	0.0
77.	357.	33.4	22.6	27.8	1.0	0.0	0.0	2.5	0.0
78.	350.	32.5	15.4	28.3	1.0	0.0	-1	-9	0.0
79.	343.	31.8	13.2	28.7	1.0	5	0.0	6	0.0
80.	336.	30.9	9.2	29.2	1.0	-5	0.0	6	0.0
81.	330.	30.0	6.5	29.6	1.0	0.0	0.0	5	0.0
82.	323.	29.1	5.4	30.1	1.0	5	-1	5	0.0
83.	316.	28.3	5.3	30.6	1.0	0.0	0.0	6.5	0.0
84.	310.	27.4	22.2	31.1	1.0	0.0	0.0	4.5	0.0
85.	304.	26.6	48.2	31.6	1.0	0.0	0.0	-6.7	0.0
86.	298.	25.7	60.8	32.1	1.0	0.0	0.0	-5.3	0.0
87.	292.	24.8	62.8	32.5	1.0	-5	0.0	-8	0.0
88.	285.	24.0	63.2	32.9	1.0	5	0.0	-18.2**	0.0
89.	279.	23.2	99.9	33.4	1.0	-5	0.0	-18.3**	0.0
90.	274.	22.4	99.9	33.8	1.0	0.0	0.0	0.0	0.0
91.	268.	21.5	99.9	34.3	1.0	0.0	0.0	0.0	0.0
92.	262.	21.0	99.9	34.8	1.0	0.0	0.0	0.0	0.0
93.	256.	20.2	99.9	35.3	1.0	0.0	0.0	0.0	0.0
94.	250.	19.4	99.9	35.7	1.0	5	0.0	0.0	0.0
95.	245.	18.8	99.9	36.1	1.0	-5	0.0	0.0	0.0
96.	239.	18.4	99.9	36.6	1.0	5	-3	0.0	0.0
97.	234.	17.5	99.9	37.0	1.0	0.0	0.0	0.0	0.0
98.	229.	16.6	99.9	37.4	1.0	-5	0.0	0.0	0.0
99.	223.	16.0	99.9	37.7	1.0	5	-1	0.0	0.0
100.	218.	15.3	99.9	38.2	1.0	0.0	0.0	0.0	0.0
101.	213.	15.0	99.9	38.5	1.0	0.0	0.0	0.0	0.0
102.	208.	14.4	99.9	38.9	1.0	0.0	0.0	0.0	0.0
103.	203.	14.3	99.9	39.3	1.0	0.0	0.0	0.0	0.0
104.	198.	14.5	99.9	39.7	1.0	0.0	0.0	0.0	0.0
105.	193.	15.0	99.9	40.2	1.0	5	-1	0.0	0.0
106.	189.	15.2	99.9	40.6	1.0	-5	0.0	0.0	0.0
107.	184.	15.2	99.9	41.0	1.0	0.0	0.0	0.0	0.0
108.	179.	15.8	99.9	41.5	1.0	5	-3	0.0	0.0
109.	175.	15.8	99.9	41.9	1.0	-5	-2	0.0	0.0
110.	170.	15.4	99.9	42.4	1.0	5	-2	0.0	0.0
111.	166.	15.7	99.9	42.8	1.0	0.0	0.0	0.0	0.0
112.	162.	15.9	99.9	43.3	1.0	5	-1	0.0	0.0
113.	157.	15.8	99.9	43.8	1.0	5	0.0	0.0	0.0
114.	153.	15.8	99.9	44.3	1.0	0.0	0.0	0.0	0.0
115.	149.	16.0	99.9	44.7	1.0	0.0	0.0	0.0	0.0
116.	145.	15.4	99.9	45.2	1.0	0.0	0.0	0.0	0.0
117.	141.	15.8	99.9	45.7	1.0	0.0	0.0	0.0	0.0
118.	137.	16.0	99.9	46.2	1.0	0.0	0.0	0.0	0.0
119.	133.	16.1	99.9	46.7	1.0	5	-1	0.0	0.0
120.	130.	16.0	99.9	47.2	1.0	-5	-1	0.0	0.0
121.	126.	15.7	99.9	47.7	1.0	5	-2	0.0	0.0
122.	123.	15.8	99.9	48.2	1.0	-5	0.0	0.0	0.0



123.	119.	16.0	99.9	49.7	1.0	0.0	-1.1	0.0	-1.1
124.	115.	16.0	99.9	49.3	1.0	0.0	-0.0	0.0	-1.1
125.	112.	16.1	99.9	49.0	1.0	0.0	-0.2	0.0	-1.1
126.	109.	15.0	99.9	50.4	1.0	-0.5	-1.1	0.0	0.0
127.	105.	15.0	99.9	51.0	1.0	0.0	-1.1	0.0	0.0
128.	102.	15.5	99.9	51.6	1.0	0.0	-1.1	0.0	0.0
129.	99.	15.4	99.9	52.2	1.0	0.0	-0.0	0.0	-0.0
130.	96.	15.2	99.9	52.0	1.0	0.0	-0.2	0.0	-0.0
131.	93.	15.4	99.9	53.5	1.0	0.0	-1.1	0.0	-0.0
132.	90.	15.4	99.9	54.1	1.0	0.0	-1.1	0.0	0.0
133.	87.	15.1	99.9	54.7	1.0	0.0	0.0	0.0	0.0
134.	84.	14.0	99.9	55.3	1.0	0.0	0.4	0.0	0.0
135.	81.	15.2	99.9	55.9	1.0	0.0	-0.3	0.0	0.1
136.	78.	16.2	99.9	56.6	1.0	0.0	-0.2	0.0	-0.0
137.	75.	16.0	99.9	57.2	1.0	-0.5	-0.0	0.0	-1.1
138.	73.	17.4	99.9	57.9	1.0	-0.5	-0.4	0.0	-0.0
139.	70.	17.3	99.9	58.7	1.0	0.0	-0.3	0.0	-0.0
140.	67.	17.7	99.9	59.4	1.0	-0.5	-0.3	0.0	-0.0
141.	65.	18.7	99.9	60.2	1.0	-0.5	-0.5	0.0	-0.0
142.	62.	18.0	99.9	61.0	1.0	-0.5	-1.1	0.0	0.0
143.	60.	19.0	99.9	61.8	1.0	-0.5	0.0	0.0	0.0
144.	57.	19.3	99.9	62.6	1.0	-0.5	0.0	0.0	0.1
145.	55.	19.6	99.9	63.5	1.0	-0.5	-0.4	0.0	-0.0
146.	52.	19.9	99.9	64.3	1.0	-0.5	-0.2	0.0	0.0
147.	50.	19.4	99.9	65.1	1.0	-0.5	-0.5	0.0	-0.0
148.	47.	18.6	99.9	66.0	1.0	-0.5	-0.5	0.0	-0.0
149.	45.	18.7	99.9	66.8	1.0	-0.5	-1.1	0.0	-1.1
150.	42.	18.6	99.9	67.6	1.0	-0.5	-0.4	0.0	0.0
151.	40.	19.3	99.9	68.0	1.0	0.0	-0.2	0.0	0.0
152.	38.	19.6	99.9	69.8	1.0	-0.5	-0.2	0.0	-1.1
153.	35.	20.2	99.9	70.9	1.0	-0.5	-0.5	0.0	-1.1
154.	33.	21.7	99.9	72.1	1.0	-0.5	-1.0**	0.0	0.0
155.	30.	21.1	99.9	73.3	1.0	-0.5	-0.3	0.0	-1.1
156.	28.	21.0	99.9	74.4	1.0	0.0	-0.5	0.0	-0.2
157.	26.	22.0	99.9	75.0	1.0	-0.5	-0.5	0.0	-1.1
158.	23.	24.1	99.9	77.4	1.0	-0.5	-0.5	0.0	-1.1
159.	21.	25.6	99.9	79.0	1.0	-0.5	-0.6	0.0	-0.2
160.	18.	28.2	99.9	81.0	1.0	-0.5	-0.4	0.0	-1.1



ANGLE DATA

TIME	ELEV	HZ	DMZ	DMZ	DMZ
0.0	0.0	350.0			
0.5	60.2	112.1			119.2**
1.0	53.2	112.6			-2.6**
1.5	50.3	107.9			1.3**
2.0	51.0	105.7			.7**
2.5	50.9	104.0			1.6**
3.0	51.7	107.1			.4
3.5	52.6	110.2			.3
4.0	53.0	113.9			-.6
4.5	55.0	116.4			-.3
5.0	57.0	118.2			-.3
5.5	59.0	119.4			1.5**
6.0	59.0	123.6			-1.9**
6.5	59.1	124.0			3.8**
7.0	57.2	131.9			-4.2**
7.5	55.0	131.4			-1.2**
8.0	52.0	128.5			-.6
8.5	50.9	124.5			1.2**
9.0	48.7	122.8			-.1
9.5	47.5	120.9			.2
10.0	45.7	119.4			-.4
10.5	45.6	117.1			-.3
11.0	45.2	115.4			-.0
11.5	45.4	113.6			.3
12.0	45.9	112.4			.2
12.5	46.6	111.5			.1
13.0	46.9	110.5			-.2
13.5	47.0	108.8			-.1
14.0	47.0	106.9			.2
14.5	47.3	105.8			.2
15.0	48.2	103.5			.2
15.5	49.4	101.0			-.2
16.0	50.0	101.0			-.2
16.5	50.2	99.6			-.4**
17.0	50.0	98.0			-.4**
17.5	50.7	97.1			-.4**
18.0	51.0	94.7			.7**
18.5	51.3	93.7			.1
19.0	51.2	92.9			-.3**
19.5	51.1	91.4			.2
20.0	51.3	90.3			.2
20.5	51.4	89.7			-.5**
21.0	51.6	88.0			.2
21.5	51.5	86.7			0.0
22.0	51.1	85.4			.0
22.5	50.9	84.1			-.3**
23.0	50.0	82.2			.3
23.5	49.6	80.0			.1
24.0	48.9	79.5			.2
24.5	48.5	78.6			-.2
25.0	48.1	76.9			0.0
25.5	47.7	75.6			0.0
26.0	47.0	74.0			-.2
26.5	46.4	72.3			-.1
27.0	45.7	70.2			-.1
27.5	45.1	68.3			-.3
28.0	44.4	66.9			-.1
28.5	43.2	65.7			-.1





29.0	42.2	64.2	.5	-1	0.0
29.5	41.6	62.7	.5	.1	.3
30.0	40.6	61.7	.5	0.0	.1
30.5	39.0	60.9	.5	.1	0.0
31.0	38.1	60.1	.5	-1	.2
31.5	37.0	59.6	.5	-2	-0
32.0	36.3	59.0	.5	.1	0.0
32.5	35.3	58.4	.5	.1	-1
33.0	34.5	57.7	.5	-2	.3
33.5	33.9	57.5	.5	-3**	-3**
34.0	32.9	56.7	.5	.1	-1
34.5	32.0	55.6	.5	.2	.3**
35.0	31.4	55.1	.5	-1	-1
35.5	30.6	54.3	.5	-2	-2
36.0	30.1	53.2	.5	-0	.4**
36.5	29.5	52.9	.5	.2	-3
37.0	29.3	52.1	.5	-3	.1
37.5	28.6	51.4	.5	.5**	.2
38.0	28.9	51.1	.5	-7**	.1
38.5	27.9	51.0	.5	-3**	-1
39.0	27.6	50.7	.5	.1	-1
39.5	27.1	50.5	.5	.1	.1
40.0	26.6	50.4	.5	0.0	-1
40.5	26.5	50.1	.5	-2	-2
41.0	25.8	50.1	.5	.4**	-1
41.5	25.9	49.9	.5	-4**	0.0
42.0	25.2	49.7	.5	.1	.2
42.5	24.7	49.9	.5	.0	-1
43.0	24.3	50.0	.5	.0	.1
43.5	23.9	50.2	.5	.1	-1
44.0	23.8	50.5	.5	-2	-1
44.5	23.2	50.7	.5	.2	.2
45.0	22.9	51.3	.5	0.0	-5**
45.5	22.6	50.9	.5	.1	-3**
46.0	22.4	51.1	.5	-1	-1
46.5	22.0	51.1	.5	.2	.1
47.0	21.9	51.3	.5	-2	-1
47.5	21.5	51.3	.5	.1	-1
48.0	21.3	51.5	.5	0.0	0.0
48.5	21.1	51.7	.5	-0	.1
49.0	20.8	52.0	.5	.0	-1
49.5	20.6	52.2	.5	.1	.1
50.0	20.5	52.6	.5	-0	-0
50.5	20.3	52.9	.5	-0	-1
51.0	20.0	53.0	.5	.2	.1
51.5	20.0	53.3	.5	-1	.2
52.0	19.8	53.9	.5	.1	-3**
52.5	19.7	53.8	.5	0.0	-4**
53.0	19.6	53.1	.5	.0	-0
53.5	19.5	53.1	.5	0.0	.1
54.0	19.4	53.0	.5	0.0	.1
54.5	19.3	53.0	.5	-0	.1
55.0	19.2	53.1	.5	-1	0.0
55.5	18.9	53.2	.5	.1	.0
56.0	18.8	53.3	.5	.1	0.0
56.5	18.8	53.4	.5	-0	-0
57.0	18.7	53.4	.5	-1	.1
57.5	18.4	53.5	.5	.2	0.0
58.0	18.5	53.6	.5	-0	.1
58.5	18.6	53.8	.5	-0	0.0

59.0	19.6	54.0	5	0.0	0.0
59.5	19.6	54.2	5	0.0	0.0
60.0	19.6	54.9	5	0.0	0.0
60.5	19.6	54.0	5	0.0	0.0
61.0	19.6	54.0	5	0.0	0.0
61.5	19.6	54.2	5	0.0	0.0
62.0	19.7	54.3	5	0.0	0.0
62.5	19.7	54.7	5	0.0	0.0
63.0	19.9	54.5	5	0.0	0.0
63.5	19.0	54.4	5	0.0	0.0
64.0	19.2	54.3	5	0.0	0.0
64.5	19.3	54.3	5	0.0	0.0
65.0	19.4	54.4	5	0.0	0.0
65.5	19.5	54.5	5	0.0	0.0
66.0	19.6	54.5	5	0.0	0.0
66.5	19.6	54.6	5	0.0	0.0
67.0	19.6	54.6	5	0.0	0.0
67.5	19.9	54.6	5	0.0	0.0
68.0	20.0	54.7	5	0.0	0.0
68.5	20.1	54.7	5	0.0	0.0
69.0	20.3	54.8	5	0.0	0.0
69.5	20.4	54.9	5	0.0	0.0
70.0	20.5	54.9	5	0.0	0.0
70.5	20.7	54.9	5	0.0	0.0
71.0	20.9	54.9	5	0.0	0.0
71.5	21.1	55.2	5	0.0	0.0
72.0	21.2	55.7	5	0.0	0.0
72.5	21.6	55.9	5	0.0	0.0
73.0	21.6	55.0	5	0.0	0.0
73.5	21.7	55.5	5	0.0	0.0
74.0	21.8	55.8	5	0.0	0.0
74.5	22.0	56.1	5	0.0	0.0
75.0	22.0	56.5	5	0.0	0.0
75.5	22.4	56.9	5	0.0	0.0
76.0	22.6	56.9	5	0.0	0.0
76.5	23.0	56.8	5	0.0	0.0
77.0	23.1	56.8	5	0.0	0.0
77.5	23.4	57.0	5	0.0	0.0
78.0	23.7	57.1	5	0.0	0.0
78.5	23.9	57.4	5	0.0	0.0
79.0	24.0	57.6	5	0.0	0.0
79.5	24.1	58.0	5	0.0	0.0
80.0	24.4	58.4	5	0.0	0.0
80.5	24.7	58.8	5	0.0	0.0
81.0	24.8	59.2	5	0.0	0.0
81.5	24.9	59.4	5	0.0	0.0
82.0	25.1	59.7	5	0.0	0.0



**APPENDIX C**



**APPENDIX C: PROGRAM STS02 - CONTACT DATA**

This appendix provides an example output generated by the 'STS02' contact data program.



SATI O, CALIF  
WHEELER RIDGE, CALIF

12 APRIL 1981  
1034 AMT

ISS 12. 11

TIME MIN	CHTCT	HEIGHT GPM	PRES MB	TEMP DG C	DEM PT DG C	DIR DG	SPEED M/SEC	U COMP M/SEC	V COMP M/SEC	POT T DG K	E POT T DG K	MX RTO GM/KG	RH PCT	RANGE KM	AZ DG
0.0	6.6	168.0	1001.0	8.4	3.8	350.0	.5	.1	-1.5	281.5	294.5	5.1	73.0	0.0	0
.1	7.0	201.2	997.0	9.5	4.5	292.9	4.6	4.3	-1.8	282.9	296.6	5.3	71.1	.1	112.
.4	8.0	293.4	986.0	10.2	3.6	292.9	4.6	4.3	-1.8	284.5	297.6	5.0	63.4	.1	112.
.7	9.0	386.9	975.0	10.7	3.6	290.4	4.6	4.3	-1.6	286.0	299.4	5.1	61.4	.1	112.
1.0	10.0	481.4	964.0	9.6	3.2	286.6	4.6	4.4	-1.3	285.8	296.9	5.0	64.0	.2	113.
1.3	11.0	576.5	953.0	9.0	2.1	282.4	4.2	4.1	-1.9	285.1	297.4	4.7	66.1	.3	109.
1.7	12.0	663.5	943.0	7.7	1.9	279.5	3.9	3.9	-1.6	285.6	297.6	4.6	66.6	.4	107.
2.0	13.0	760.2	932.0	7.1	1.1	275.9	3.8	3.7	-1.7	286.0	297.8	4.4	65.2	.5	106.
2.3	14.0	858.0	921.0	6.8	1.2	283.9	3.8	3.6	-1.0	287.1	299.8	4.8	68.2	.5	105.
2.6	15.0	947.8	911.0	6.8	1.2	293.0	3.6	3.3	-1.4	287.5	299.7	4.6	67.3	.5	105.
2.9	16.0	1037.7	900.0	6.4	.2	304.1	3.1	2.5	-1.7	288.1	299.7	4.3	64.5	.7	107.
3.3	17.0	1139.3	890.0	5.9	-1.6	317.0	2.8	1.9	-2.1	288.5	299.6	4.1	63.1	.7	109.
3.7	18.0	1241.1	879.0	5.6	-1.4	325.9	2.6	1.5	-2.2	289.2	299.8	3.9	60.7	.8	112.
4.0	19.0	1344.1	868.0	5.2	-6.2	331.3	2.4	1.1	-2.1	289.9	297.6	2.8	43.3	.8	114.
4.3	20.0	1438.5	858.0	3.7	-4.2	335.5	1.7	.6	-1.6	289.2	299.8	3.3	56.3	.9	115.
4.7	21.0	1543.4	847.0	4.2	-2.3	350.5	1.2	.2	-1.2	290.8	301.3	3.8	62.5	.9	117.
5.1	22.0	1640.1	837.0	4.0	-2.8	345.5	1.3	.3	-1.2	291.7	301.9	3.7	61.1	.9	119.
5.4	23.0	1737.9	827.0	3.7	-1.4	336.0	2.3	.9	-2.1	292.3	303.8	4.2	69.4	.9	119.
5.7	24.0	1846.6	816.0	3.2	-1.0	328.9	3.1	1.6	-2.6	292.9	304.9	4.4	74.0	.9	121.
6.1	25.0	1946.4	806.0	1.7	-1.9	327.3	4.0	2.1	-3.3	292.3	303.6	4.1	76.8	1.0	124.
6.4	26.0	2057.4	795.0	2.0	-7.9	337.8	4.8	1.8	-4.4	293.8	301.3	2.6	47.6	1.1	124.
6.7	27.0	2159.9	785.0	4.4	-19.7	337.0	5.6	2.2	-5.2	297.4	300.5	1.0	15.4	1.2	127.
7.3	28.0	2264.3	775.0	4.5	-18.8	310.1	7.0	5.3	-4.5	298.7	302.1	1.1	16.3	1.4	132.
7.6	29.0	2369.9	765.0	4.4	-19.1	295.6	8.0	7.2	-3.5	299.6	303.0	1.1	16.1	1.5	131.
7.9	30.0	2476.8	755.0	3.7	-19.7	289.8	8.5	8.0	-2.9	300.0	303.3	1.1	16.1	1.7	129.
8.2	31.0	2574.1	746.0	3.5	-19.9	286.5	8.1	8.1	-2.4	300.9	304.1	1.0	15.9	1.9	127.
8.7	32.0	2683.5	736.0	3.2	-18.4	284.0	8.2	7.9	-2.0	301.7	305.4	1.2	18.7	2.0	124.
9.1	33.0	2794.1	726.0	2.0	-19.3	283.5	8.2	8.0	-1.9	301.6	305.1	1.1	18.7	2.2	122.
9.5	34.0	2894.5	717.0	1.0	-21.6	282.4	8.2	8.0	-1.8	301.6	304.5	.9	16.4	2.4	121.
9.9	35.0	3007.3	707.0	.7	-21.1	277.9	7.6	7.5	-1.0	302.4	305.5	1.0	17.6	2.5	120.
10.3	36.0	3121.6	697.0	.6	-20.3	271.4	6.6	6.6	-.2	303.5	306.9	1.1	19.1	2.5	116.
10.8	37.0	3225.8	688.0	-.1	-21.2	263.3	5.5	5.4	.6	303.9	307.1	1.0	18.5	2.9	116.
11.2	38.0	3342.7	678.0	-1.4	-21.6	259.2	4.9	4.7	.9	303.8	306.9	1.0	19.5	3.0	115.
11.6	39.0	3449.0	669.0	-2.0	-21.9	257.0	4.2	4.1	.9	304.2	307.3	1.0	19.9	3.1	114.
12.0	40.0	3568.6	659.0	-2.6	-23.1	254.2	3.5	3.4	1.0	304.8	307.7	.9	18.9	3.2	113.
12.4	41.0	3677.5	650.0	-3.1	-23.6	253.0	3.5	3.4	1.0	305.5	308.3	.8	18.6	3.2	112.
12.8	42.0	3787.7	641.0	-3.8	-25.1	251.1	3.9	3.7	1.3	305.8	308.3	.8	17.2	3.3	110.
13.2	43.0	3911.8	631.0	-4.0	-25.2	247.8	4.2	3.9	1.6	307.0	309.5	.8	17.2	3.3	110.
13.7	44.0	4024.8	622.0	-5.4	-26.8	241.0	4.4	3.8	2.1	306.7	309.0	.7	16.6	3.5	108.
14.1	45.0	4139.1	613.0	-5.5	-26.7	232.7	4.2	3.3	2.5	307.9	310.1	.7	16.8	3.5	107.
14.5	46.0	4242.0	605.0	-6.4	-27.3	220.0	3.9	2.5	3.0	308.0	310.1	.7	17.1	3.5	105.
14.9	47.0	4359.1	596.0	-6.6	-27.6	209.5	3.6	1.8	3.1	309.1	311.3	.7	16.9	3.5	104.
15.3	48.0	4477.8	587.0	-7.3	-28.0	207.8	3.3	1.5	2.9	309.6	311.7	.6	17.1	3.5	103.
15.7	49.0	4598.1	578.0	-7.7	-28.2	216.4	3.1	1.9	2.5	310.5	312.6	.6	17.4	3.5	102.
16.1	50.0	4719.9	569.0	-8.8	-28.6	228.8	3.3	2.5	2.2	310.7	312.7	.6	18.2	3.5	101.

\* BY SPEED MEANS ELEVATION ANGLE BETWEEN 6 AND 10 DEG  
 \* BY TEMP MEANS TEMPERATURE OR TIME HAVE BEEN INTERPOLATED  
 \*\* BY GFFED MEANS ELEVATION ANGLE LESS THAN 6 DEG

ATSUKO COMPUTING INTERNATIONAL  
 HUNTSVILLE, ALABAMA • USA



STATION NO. 2  
WHEELER RIDGE, CALIF

12 APRIL 1981  
1234 GMT

155 10 0

TIME MIN	CHTCT	HEIGHT GPH	PRES MB	TEMP DG C	DEW PT DG C	DIR DG	SPEED M/SEC	U COMP M/SEC	V COMP M/SEC	POT T DG K	MX RTO GM/KG	RH PCT	RANGE KM	AZ DG
16.4	51.0	4929.4	561.0	-9.6	-28.6	231.7	3.5	2.8	2.2	310.9	.6	19.5	3.7	100.
16.8	52.0	4954.1	552.0	-10.2	-29.1	227.8	3.8	2.8	2.6	311.6	.6	19.5	3.8	99.
17.3	53.0	5066.4	544.0	-11.2	-30.1	223.1	4.3	2.9	3.2	311.8	.6	19.2	3.9	97.
17.7	54.0	5194.1	535.0	-12.5	-31.1	224.3	4.6	3.2	3.3	311.7	.5	19.3	3.9	96.
18.2	55.0	5323.5	526.0	-13.2	-31.9	230.3	4.7	3.6	3.0	312.4	.5	19.0	4.0	95.
18.5	56.0	5440.1	518.0	-13.8	-33.4	234.5	4.7	3.8	2.7	313.1	.4	17.1	4.1	94.
18.9	57.0	5558.2	510.0	-14.7	-33.3	235.0	4.6	3.8	2.6	313.3	.4	18.7	4.2	93.
19.3	59.0	5677.7	502.0	-15.6	-34.0	232.7	4.1	3.5	2.7	313.7	.4	18.8	4.3	92.
20.3	60.0	5936.7	495.0	-17.5	-35.1	224.5	4.2	2.9	3.0	314.5	.4	19.8	4.4	90.
20.7	61.0	6061.0	477.0	-20.6	-37.1	225.7	5.4	3.9	3.8	313.6	.3	21.0	4.5	89.
21.2	62.0	6186.6	469.0	-21.4	-38.3	228.3	6.2	4.7	4.2	314.4	.3	20.0	4.8	86.
21.7	63.0	6329.7	460.0	-22.7	-39.4	228.7	6.9	5.2	4.5	314.3	.3	20.0	4.9	85.
22.1	64.0	6458.8	452.0	-23.3	-40.6	231.1	8.7	6.8	5.1	315.0	.3	20.4	5.0	84.
22.5	65.0	6573.1	445.0	-24.3	-41.5	232.5	9.2	7.3	5.6	315.6	.2	20.5	5.4	81.
22.9	66.0	6640.1	429.0	-25.4	-41.9	232.1	9.1	7.2	5.6	315.6	.2	21.8	5.6	80.
23.8	68.0	6559.2	422.0	-26.6	-42.5	228.8	8.8	6.6	5.8	316.5	.2	22.7	5.9	79.
24.3	69.0	7097.1	414.0	-28.8	-43.1	225.9	9.1	6.5	6.3	316.0	.2	23.6	6.0	78.
25.2	71.0	7361.2	399.0	-29.8	-43.6	223.9	10.0	7.0	7.2	316.5	.2	24.5	6.3	76.
25.5	72.0	7487.2	392.0	-30.7	-43.6	223.1	10.7	7.3	7.0	316.9	.2	24.5	6.4	76.
25.9	73.0	7615.0	385.0	-31.5	-44.0	220.2	11.4	7.4	6.7	317.5	.3	27.5	6.7	74.
26.3	74.0	7744.7	378.0	-32.7	-44.2	216.8	12.1	7.2	9.7	318.2	.4	44.7	6.9	73.
26.6	75.0	7855.5	370.0	-32.7	-44.0	213.4	12.5	6.9	10.4	319.6	.4	56.7	7.2	71.
27.3	76.0	8029.8	363.0	-33.5	-43.5	213.5	12.8	7.1	10.7	320.3	.4	60.3	7.5	69.
27.8	77.0	8146.6	357.0	-34.7	-43.0	217.6	14.0	6.5	11.1	320.2	.4	64.4	7.8	68.
28.3	78.0	8264.6	350.0	-35.9	-43.7	221.0	16.0	10.5	12.1	320.4	.3	67.4	8.2	66.
28.7	79.0	8424.8	343.0	-36.8	-40.5	221.6	17.3	11.5	12.9	321.0	.3	68.3	8.6	65.
29.2	80.0	8567.2	336.0	-38.0	-41.3	221.7	18.2	12.1	13.6	322.3	.3	70.7	9.1	64.
29.6	81.0	8691.0	330.0	-39.2	-42.2	222.4	18.4	12.4	13.6	321.2	.3	73.4	9.5	63.
30.1	82.0	8837.5	323.0	-40.5	99.9	224.3	18.4	12.8	13.2	321.5	.3	99.9	10.0	62.
30.6	83.0	8986.5	316.0	-41.6	99.9	225.6	18.3	13.1	12.8	322.0	.3	99.9	10.5	61.
31.1	84.0	9116.2	310.0	-42.8	99.9	226.7	18.4	13.4	12.6	322.0	.3	99.9	11.1	60.
31.6	85.0	9247.7	304.0	-44.0	99.9	226.9	18.8	13.7	12.8	322.2	.3	99.9	11.6	59.
32.1	86.0	9381.2	298.0	-45.2	99.9	226.7	19.9	14.5	13.6	322.2	.3	99.9	12.2	59.
32.5	87.0	9516.6	292.0	-46.5	99.9	226.9	21.1	15.4	14.4	322.3	.3	99.9	12.7	58.
32.9	88.0	9677.2	285.0	-47.7	99.9	226.3	21.1	15.3	14.6	322.8	.3	99.9	13.2	58.
33.4	89.0	9817.4	279.0	-48.9	99.9	224.1	21.5	14.9	15.4	323.1	.3	99.9	13.8	57.
33.8	90.0	9935.9	274.0	-50.1	99.9	221.8	22.6	15.0	16.8	323.1	.3	99.9	14.3	57.
34.3	91.0	10080.1	268.0	-51.4	99.9	219.4	23.5	14.9	18.2	324.1	.3	99.9	15.0	56.
34.8	92.0	10226.9	262.0	-52.2	99.9	217.7	23.7	14.5	18.7	324.1	.3	99.9	15.6	55.
35.3	93.0	10376.4	256.0	-53.5	99.9	216.3	23.7	14.1	19.1	324.4	.3	99.9	16.3	55.
35.7	94.0	10528.9	250.0	-54.8	99.9	215.3	23.2	13.4	19.0	324.7	.3	99.9	16.9	54.
36.1	95.0	10657.5	245.0	-55.7	99.9	214.4	22.1	12.5	18.3	325.1	.3	99.9	17.4	53.

\* BY SPEED MEANS ELEVATION ANGLE BETWEEN 6 AND 10 DEG

\*\* BY TEMP MEANS TEMPERATURE OR TIME HAVE BEEN INTERPOLATED

\*\*\* BY SPEED MEANS ELEVATION ANGLE LESS THAN 6 DEG



STATION NO. 2  
WHELLEN RIDGE, (MLJ)  
12 APRIL 1981  
1234 GMT

155 10. 0

TIME MIN	CNTCT	HEIGHT GPH	PRES MB	TEMP DG C	DEW PT DG C	DIR DG	SPEED M/SEC	U COMP M/SEC	V COMP M/SEC	POT T DC K	E POT T DC K	MX RTO GM/KG	RH PCT	RANGE KM	AZ DG
36.6	96.0	10815.2	239.0	-56.4	99.9	213.7	20.0	11.5	17.3	326.4	999.9	999.9	18.0	53.	
37.0	97.0	10948.9	234.0	-57.9	99.9	213.7	20.4	11.3	17.0	326.1	999.9	999.9	18.4	52.	
37.4	98.0	11084.6	229.0	-59.5	99.9	216.2	20.4	12.1	16.5	325.7	999.9	999.9	16.9	52.	
37.7	99.0	11250.4	223.0	-60.5	99.9	219.0	21.2	13.4	16.5	326.6	999.9	999.9	19.3	51.	
38.2	100.0	11391.2	218.0	-61.8	99.9	223.2	23.3	15.9	17.0	326.7	999.9	999.9	19.9	51.	
38.5	101.0	11534.6	213.0	-62.4	99.9	224.7	24.6	17.3	17.5	328.0	999.9	999.9	20.4	51.	
38.9	102.0	11680.9	208.0	-63.5	99.9	224.8	24.5	17.3	17.4	328.5	999.9	999.9	21.0	51.	
39.3	103.0	11830.2	203.0	-63.7	99.9	224.7	23.7	16.7	16.9	330.5	999.9	999.9	21.5	51.	
39.7	104.0	11983.3	198.0	-63.3	99.9	224.6	22.9	16.1	16.3	333.5	999.9	999.9	22.1	50.	
40.2	105.0	12140.9	193.0	-62.4	99.9	224.9	23.1	16.3	16.3	337.4	999.9	999.9	22.8	50.	
40.6	106.0	12270.3	189.0	-62.0	99.9	225.3	24.1	17.1	16.9	340.0	999.9	999.9	23.3	50.	
41.0	107.0	12436.1	184.0	-62.0	99.9	225.6	24.6	17.6	17.2	342.7	999.9	999.9	23.9	50.	
41.5	108.0	12607.0	179.0	-60.9	99.9	226.7	25.5	18.6	17.5	347.2	999.9	999.9	24.6	50.	
41.9	109.0	12747.9	175.0	-60.9	99.9	229.1	28.2	21.3	18.5	349.4	999.9	999.9	25.3	50.	
42.4	110.0	12927.4	170.0	-61.6	99.9	232.2	29.5	23.3	18.1	351.1	999.9	999.9	26.2	50.	
43.3	112.0	13226.7	162.0	-60.7	99.9	234.5	28.3	23.1	16.4	354.4	999.9	999.9	26.9	50.	
43.8	113.0	13421.7	157.0	-60.9	99.9	239.1	27.9	23.9	14.3	360.4	999.9	999.9	27.7	50.	
44.3	114.0	13582.2	153.0	-60.9	99.9	239.2	29.5	25.4	15.1	363.1	999.9	999.9	29.3	51.	
44.7	115.0	13747.0	149.0	-60.5	99.9	237.7	29.6	25.0	15.8	366.5	999.9	999.9	30.1	51.	
45.2	116.0	13916.0	145.0	-61.6	99.9	234.5	28.2	22.9	16.3	367.5	999.9	999.9	30.9	51.	
45.7	117.0	14089.7	141.0	-60.9	99.9	232.8	27.4	21.8	16.5	371.7	999.9	999.9	31.7	51.	
46.2	118.0	14268.7	137.0	-60.5	99.9	233.7	27.4	22.1	16.2	375.4	999.9	999.9	32.6	51.	
46.7	119.0	14453.3	133.0	-60.4	99.9	235.1	27.2	22.3	15.6	378.9	999.9	999.9	33.4	51.	
47.2	120.0	14595.5	130.0	-60.5	99.9	236.2	27.6	22.9	15.4	381.1	999.9	999.9	34.2	51.	
47.7	121.0	14789.9	126.0	-61.1	99.9	237.9	28.2	23.9	15.0	383.5	999.9	999.9	35.0	51.	
48.2	122.0	14939.6	123.0	-60.9	99.9	240.1	28.8	25.0	14.4	386.5	999.9	999.9	35.9	52.	
48.7	123.0	15145.3	119.0	-60.5	99.9	242.2	29.1	25.8	13.6	390.8	999.9	999.9	36.8	52.	
49.3	124.0	15358.2	115.0	-60.5	99.9	245.3	27.1	24.7	11.4	394.7	999.9	999.9	37.8	52.	
49.8	125.0	15522.9	112.0	-60.4	99.9	246.9	25.7	23.7	10.1	398.0	999.9	999.9	38.5	52.	
50.4	126.0	15691.9	109.0	-60.9	99.9	245.7	27.1	24.7	11.2	400.1	999.9	999.9	39.4	53.	
51.0	127.0	15924.4	105.0	-60.9	99.9	247.2	26.5	24.4	10.3	404.4	999.9	999.9	40.4	53.	
51.6	128.0	16104.4	102.0	-61.5	99.9	247.7	23.0	21.3	6.7	406.7	999.9	999.9	41.2	53.	
52.2	129.0	16289.4	99.0	-61.6	99.9	233.3	21.9	17.5	13.1	409.8	999.9	999.9	42.0	54.	
52.8	130.0	16479.9	96.0	-62.0	99.9	219.8	21.4	13.7	16.4	412.7	999.9	999.9	42.8	53.	
53.5	131.0	16676.4	93.0	-61.6	99.9	223.6	21.4	14.8	15.5	417.2	999.9	999.9	43.6	53.	
54.1	132.0	16879.6	90.0	-61.6	99.9	231.8	23.8	18.7	14.7	421.2	999.9	999.9	44.5	53.	
54.7	133.0	17089.3	87.0	-62.2	99.9	236.0	27.1	22.5	15.2	424.1	999.9	999.9	45.4	53.	
55.3	134.0	17305.9	84.0	-62.8	99.9	237.9	28.8	24.4	15.3	427.3	999.9	999.9	46.4	53.	
55.9	135.0	17530.4	81.0	-62.0	99.9	238.6	25.6	21.9	13.3	433.3	999.9	999.9	47.4	53.	
56.6	136.0	17764.8	78.0	-60.2	99.9	237.8	25.3	21.4	13.5	441.8	999.9	999.9	48.4	53.	
57.2	137.0	18010.1	75.0	-59.1	99.9	239.5	23.0	19.8	11.7	449.0	999.9	999.9	49.4	53.	
57.9	138.0	18180.0	73.0	-58.1	99.9	250.2	14.1	13.3	4.8	454.6	999.9	999.9	50.1	54.	
58.7	139.0	18444.2	70.0	-58.3	99.9	251.7	14.1	13.4	4.8	459.6	999.9	999.9	50.7	54.	
59.4	140.0	18720.4	67.0	-57.6	99.9	238.9	13.8	11.8	7.1	467.0	999.9	999.9	51.3	54.	

\* BY SPEED MEANS ELEVATION ANGLE BETWEEN 6 AND 10 DEG  
 \* BY TEMP MEANS TEMPERATURE OR TIME HAVE BEEN INTERPOLATED  
 \*\* BY SPEED MEANS ELEVATION ANGLE LESS THAN 6 DEG





STATION NO. 2  
WHEELER RIDGE, WMLIP

12 APRIL 1981  
1234 GMT

155 10. 0

TIME MIN	CNTCT	HEIGHT GPM	PRES MB	TEMP DC C	DEW PT DC C	DIR DC	SPEED M/SEC	U COMP M/SEC	V COMP M/SEC	POT T DC K	E POT T DC K	MX RTO CM/KG	RH PCT	RANGE KM	AZ DC
69.2	141.0	16912.5	65.0	-55.9	99.9	233.8	13.9	11.2	8.2	474.8	999.9	99.9	999.9	51.9	54.
61.0	142.8	19213.3	62.0	-55.7	99.9	246.9	13.4	12.3	5.2	481.6	999.9	99.9	999.9	52.7	54.
61.8	143.0	19422.2	60.0	-55.4	99.9	259.8	11.1	10.9	2.0	486.9	999.9	99.9	999.9	53.2	54.
62.6	144.0	19749.8	57.0	-54.9	99.9	250.3	5.0	4.7	1.7	495.2	999.9	99.9	999.9	53.6	55.
63.5	145.0	19978.3	55.0	-54.4	99.9	183.6	3.2	.2	3.2	501.4	999.9	99.9	999.9	53.6	54.
64.3	146.0	20338.1	52.0	-54.0	99.9	235.5	5.1	4.2	2.9	510.6	999.9	99.9	999.9	53.9	54.
65.1	147.0	20589.4	50.0	-54.8	99.9	249.9	7.4	7.0	2.6	514.4	999.9	99.9	999.9	54.1	54.
66.0	148.0	20984.1	47.0	-56.1	99.9	244.6	9.1	8.2	3.9	520.5	999.9	99.9	999.9	54.7	55.
66.8	149.0	21260.7	45.0	-55.9	99.9	244.1	6.5	5.9	2.9	527.4	999.9	99.9	999.9	55.0	55.
67.6	150.0	21699.5	42.0	-56.1	99.9	251.4	5.0	4.8	1.6	537.5	999.9	99.9	999.9	55.4	55.
68.8	151.0	22010.6	40.0	-54.9	99.9	302.5	2.3	1.9	-1.2	547.9	999.9	99.9	999.9	55.5	55.
69.8	152.0	22338.9	38.0	-54.4	99.9	255.0	3.3	3.2	.9	557.3	999.9	99.9	999.9	55.5	55.
70.9	153.0	22866.9	35.0	-53.5	99.9	335.8	5.1	2.1	-4.7	573.0	999.9	99.9	999.9	55.8	55.
72.1	154.0	23247.5	33.0	-51.1	99.9	339.2	3.5	1.2	-3.3	589.0	999.9	99.9	999.9	55.5	56.
73.3	155.0	23866.0	30.0	-52.1	99.9	257.1	8.6	8.3	1.9	602.7	999.9	99.9	999.9	55.9	55.
74.4	156.0	24312.7	28.0	-52.2	99.9	318.1	11.2	7.4	-8.3	614.3	999.9	99.9	999.9	56.3	56.
75.8	157.0	24793.9	26.0	-50.7	99.9	33.5	8.4	-4.6	-7.0	631.8	999.9	99.9	999.9	55.8	57.
77.4	158.0	25598.5	23.0	-47.5	99.9	18.3	6.7	-2.1	-6.3	663.6	999.9	99.9	999.9	55.4	57.
79.0	159.0	26202.6	21.0	-45.4	99.9	313.3	10.3	7.5	-7.1	687.7	999.9	99.9	999.9	55.1	58.
81.8	160.0	27239.3	18.0	-41.7	99.9	999.9	99.9	99.9	99.9	730.2	999.9	99.9	999.9	999.9	999.



**APPENDIX D**

**APPENDIX D: PROGRAM STS03 - PLOT DATA**

This appendix provides an example output of the data stored to the "plot data" magnetic tape generated by the 'STS03' program.



\*\*\*\*\* T=00000 IS ON LU 08

	2	WHEELER RIDGE, CALIF	12 APRIL	1961 1234	155
0001	0.0	6.6	160.0	1001.0	3.0
0002	.1	7.0	201.2	997.0	4.5
0003	.4	6.0	293.4	986.0	3.6
0004	.7	9.0	386.9	975.0	3.6
0005	1.0	10.0	481.4	964.0	3.2
0006	1.3	11.0	576.5	953.0	2.1
0007	1.7	12.0	663.5	943.0	1.9
0008	2.0	13.0	760.2	932.0	1.1
0009	2.3	14.0	858.0	921.0	1.0
0010	2.6	15.0	947.8	911.0	1.2
0011	2.9	16.0	1047.7	900.0	.2
0012	3.3	17.0	1139.3	890.0	5.9
0013	3.7	18.0	1241.1	879.0	-1.4
0014	4.0	19.0	1344.1	868.0	-6.2
0015	4.3	20.0	1438.5	858.0	3.7
0016	4.7	21.0	1543.4	847.0	-4.2
0017	5.1	22.0	1640.1	837.0	4.0
0018	5.4	23.0	1737.9	827.0	-2.8
0019	5.7	24.0	1846.6	816.0	-1.4
0020	6.1	25.0	1946.4	806.0	-1.0
0021	6.4	26.0	2057.4	795.0	-1.9
0022	6.7	27.0	2159.9	785.0	-7.9
0023	7.3	28.0	2264.3	775.0	-19.7
0024	7.6	29.0	2369.9	765.0	4.4
0025	7.9	30.0	2476.8	755.0	4.5
0026	8.2	31.0	2574.1	746.0	-19.1
0027	8.7	32.0	2683.5	736.0	-19.7
0028	9.1	33.0	2794.1	726.0	-19.9
0029					-10.4
0030					3.2
0031					3.5
0032					3.7
0033					4.4
0034					4.5
0035					2.0
0036					1.7
0037					3.2
0038					3.7
0039					4.0
0040					4.2
0041					3.7
0042					3.7
0043					4.2
0044					5.2
0045					5.6
0046					5.9
0047					6.4
0048					6.4
0049					6.4
0050					6.4
0051					6.4
0052					6.4
0053					6.4
0054					6.4
0055					6.4
0056					6.4
0057					6.4
0058					6.4
0059					6.4
0060					6.4
0061					6.4
0062					6.4
0063					6.4
0064					6.4
0065					6.4
0066					6.4
0067					6.4
0068					6.4
0069					6.4
0070					6.4
0071					6.4
0072					6.4
0073					6.4
0074					6.4
0075					6.4
0076					6.4
0077					6.4
0078					6.4
0079					6.4
0080					6.4
0081					6.4
0082					6.4
0083					6.4
0084					6.4
0085					6.4
0086					6.4
0087					6.4
0088					6.4
0089					6.4
0090					6.4
0091					6.4
0092					6.4
0093					6.4
0094					6.4
0095					6.4
0096					6.4
0097					6.4
0098					6.4
0099					6.4
0100					6.4



0091	35.0	10057.5	-4.0	39.9	15.7	23.1
0092	36.6	96.0	-56.4	99.9	213.7	24.1
0093	37.0	10948.9	234.0	99.9	213.7	20.0
0094	37.4	90.0	-57.9	99.9	216.2	20.4
0095	37.7	99.0	-60.5	99.9	219.0	21.2
0096	38.2	100.0	-61.8	99.9	223.2	23.3
0097	38.5	101.0	-62.4	99.9	224.7	24.6
0098	38.9	102.0	-63.5	99.9	224.8	24.5
0099	39.3	103.0	-63.7	99.9	224.7	23.7
0100	39.7	104.0	-63.3	99.9	224.6	22.9
0101	40.2	105.0	-62.4	99.9	224.9	23.1
0102	40.6	106.0	-62.0	99.9	225.3	24.1
0103	41.0	107.0	-62.0	99.9	225.6	24.6
0104	41.5	108.0	-60.9	99.9	226.7	25.5
0105	41.9	109.0	-60.9	99.9	229.1	28.2
0106	42.4	110.0	-61.6	99.9	232.2	29.5
0107	42.8	111.0	-61.1	99.9	234.5	28.3
0108	43.3	112.0	-60.7	99.9	237.2	27.1
0109	43.8	113.0	-60.9	99.9	239.1	27.5
0110	44.3	114.0	-60.9	99.9	239.2	29.5
0111	44.7	115.0	-60.5	99.9	237.7	29.6
0112	45.2	116.0	-61.6	99.9	234.5	28.2
0113	45.7	117.0	-60.9	99.9	232.8	27.4
0114	46.2	118.0	-60.5	99.9	233.7	27.4
0115	46.7	119.0	-60.4	99.9	235.1	27.2
0116	47.2	120.0	-60.5	99.9	236.2	27.6
0117	47.7	121.0	-61.1	99.9	237.9	28.2
0118	48.2	122.0	-60.9	99.9	240.1	28.8
0119	48.7	123.0	-60.5	99.9	242.2	29.1
0120	49.3	124.0	-60.5	99.9	245.3	27.1
0121	49.8	125.0	-60.4	99.9	246.9	25.7
0122	50.4	126.0	-60.9	99.9	245.7	27.1
0123	51.0	127.0	-60.9	99.9	247.2	26.5
0124	51.6	128.0	-61.5	99.9	247.7	23.0
0125	52.2	129.0	-61.6	99.9	233.3	21.9
0126	52.8	130.0	-62.0	99.9	219.8	21.4
0127	53.5	131.0	-61.6	99.9	223.6	21.4
0128	54.1	132.0	-61.6	99.9	231.8	23.8
0129	54.7	133.0	-62.2	99.9	236.0	27.1
0130	55.3	134.0	-62.8	99.9	237.9	28.8
0131	55.9	135.0	-62.0	99.9	238.6	25.6
0132	56.6	136.0	-60.2	99.9	237.8	25.3
0133	57.2	137.0	-59.1	99.9	239.5	23.0
0134	57.9	138.0	-58.1	99.9	250.2	14.1
0135	58.7	139.0	-58.3	99.9	251.7	14.1
0136	59.4	140.0	-57.6	99.9	238.9	13.8
0137	60.2	141.0	-55.9	99.9	233.8	13.9
0138	61.0	142.0	-55.7	99.9	246.9	13.4
0139	61.8	143.0	-55.4	99.9	259.8	11.1
0140	62.6	144.0	-54.9	99.9	259.3	5.0
0141	63.5	145.0	-54.4	99.9	183.6	3.2
0142	64.3	146.0	-54.0	99.9	235.5	5.1
0143	65.1	147.0	-54.8	99.9	249.9	7.4
0144	66.0	148.0	-56.1	99.9	244.6	9.1
0145	66.8	149.0	-55.9	99.9	244.1	6.5
0146	67.6	150.0	-56.1	99.9	251.4	5.0
0147	68.8	151.0	-54.9	99.9	302.5	2.3
0148	69.8	152.0	-54.4	99.9	255.0	3.3
0149	70.9	153.0	-53.5	99.9	335.8	5.1



0150	22.1	154.0	23247.5	33.0	-51.1	99.9	339.2	7.5 ***
0151	23.3	155.0	24866.9	30.0	-52.1	99.9	527.1	0.0 ***
0152	24.4	156.0	24312.7	28.0	-52.2	99.9	316.1	11.2 ***
0153	25.0	157.0	24793.9	26.0	-50.7	99.9	33.5	8.4 ***
0154	27.4	158.0	25598.5	23.0	-47.5	99.9	18.3	6.7 ***
0155	29.0	159.0	26202.6	21.0	-45.4	99.9	313.3	10.3 ***
0156	31.0	160.0	27239.3	18.0	-41.7	99.9	999.9	99.9 ***





**APPENDIX B**

**APPENDIX E: PROGRAM STS04 - 30 SECOND DATA**

This appendix provides an example output of the "30 second data" generated by the 'STS04' program.



STATION NO. 2  
WHEELER RIDGE, CALIF

12 APRIL 1981  
1234 GMT

155 10. 0

TIME MIN	CHTCT	HEIGHT GPM	PRES MB	TEMP DC C	DEU PT DC C	DIR DC	SPEED M/SEC	R HUM PCT
0.0	6.6	160.0	1001.0	6.4	3.8	350.0	.5	73.0
.5	8.3	324.6	982.3	10.4	3.6	292.1	4.6	62.7
1.0	10.0	481.4	964.0	9.6	3.2	286.6	4.6	64.0
1.5	11.5	620.0	948.0	7.8	2.0	281.0	4.1	66.3
2.0	13.0	760.2	932.0	7.1	1.1	279.9	3.8	65.2
2.5	14.7	917.9	914.3	7.0	1.4	290.5	3.6	67.6
3.0	16.3	1070.6	897.5	6.3	.0	307.1	3.0	64.1
3.5	17.5	1190.2	884.5	5.7	-1.0	321.3	2.7	61.9
4.0	19.0	1344.1	868.0	5.2	-6.2	331.3	2.4	43.3
4.5	20.5	1491.0	852.5	3.9	-3.3	344.0	1.4	59.4
5.0	21.8	1616.0	839.5	4.1	-2.7	346.7	1.2	61.5
5.5	23.3	1774.1	823.3	3.5	-1.2	333.2	2.6	71.0
6.0	24.8	1921.5	808.5	2.1	-1.7	327.6	3.7	76.1
6.5	26.3	2091.6	791.7	2.8	-11.8	337.5	5.1	36.8
7.0	27.5	2212.1	780.0	4.4	-19.3	322.1	6.1	15.8
7.5	28.7	2334.7	768.3	4.4	-19.0	300.0	7.6	16.2
8.0	30.3	2509.3	752.0	3.6	-19.8	288.7	8.5	16.1
8.5	31.6	2639.7	740.0	3.3	-19.0	285.1	8.3	17.6
9.0	32.8	2766.4	728.5	2.3	-19.1	283.6	8.2	18.7
9.5	34.0	2854.5	717.0	1.0	-21.6	282.4	8.2	16.4
10.0	35.3	3035.9	704.5	.7	-20.9	274.5	7.3	18.0
10.5	36.4	3163.3	693.4	.3	-20.7	268.5	6.1	18.9
11.0	37.5	3284.2	683.0	-.7	-21.4	261.4	5.1	19.0
11.5	38.8	3422.4	671.3	-1.8	-21.9	257.6	4.3	19.8
12.0	40.0	3568.6	659.0	-2.6	-23.1	254.2	3.5	18.9
12.5	41.3	3705.0	647.8	-3.4	-24.0	252.5	3.6	18.3
13.0	42.5	3845.7	636.0	-3.9	-25.2	249.4	4.0	17.2
13.5	43.6	3979.6	625.6	-4.8	-26.1	243.7	4.3	16.9
14.0	44.8	4110.5	615.3	-5.5	-26.7	234.8	4.2	16.8
14.5	46.0	4242.0	605.0	-6.4	-27.3	220.0	3.9	17.1
15.0	47.3	4388.8	593.6	-6.7	-27.7	209.1	3.5	16.9
15.5	48.5	4537.9	582.5	-7.5	-28.1	212.0	3.2	17.2
16.0	49.8	4689.4	571.3	-8.5	-28.5	225.9	3.2	18.0
16.5	51.3	4860.6	558.8	-9.8	-28.7	230.7	3.6	19.5
17.0	52.4	4999.0	548.8	-10.6	-29.5	225.8	4.0	19.4
17.5	53.5	5130.2	539.5	-11.9	-30.6	223.7	4.5	19.2
18.0	54.6	5271.7	529.6	-12.9	-31.6	227.9	4.7	19.1
18.5	56.0	5440.1	518.0	-13.8	-33.4	234.5	4.7	17.1
19.0	57.3	5588.1	508.0	-14.9	-33.5	234.5	4.6	18.7
19.5	58.4	5732.2	498.4	-16.0	-34.1	231.0	4.3	19.2
20.0	59.4	5863.0	489.8	-17.0	-34.6	226.7	4.1	19.8
20.5	60.5	5998.8	481.0	-18.1	-35.6	224.0	4.4	19.8
21.0	61.6	6136.3	472.2	-19.8	-36.7	224.9	5.1	20.6
21.5	62.6	6272.5	463.6	-21.1	-37.8	227.3	5.9	20.4
22.0	63.8	6426.5	454.0	-22.4	-39.1	228.6	6.7	20.0
22.5	65.0	6573.1	445.0	-23.3	-39.7	228.7	7.7	20.4
23.0	66.3	6739.3	435.0	-24.6	-40.8	231.5	8.9	20.5
23.5	67.4	6887.7	426.2	-25.9	-41.6	232.3	9.2	21.0
24.0	68.4	7014.3	418.8	-27.1	-42.2	230.8	9.0	22.2
24.5	69.5	7158.2	410.5	-28.3	-42.8	227.3	8.9	23.2



STATION NO. 2  
WHEELER RIDGE, CNLIP

12 APRIL 1981  
1234 GMT

155 10. 0

TIME	CNTCT	HEIGHT	PRES	TEMP	DEW PT	DIR	SPEED	R HUM
MIN	GPH	MB	DC C	DC C	DG	M/SEC	PCT	
25.0	70.6	7304.5	402.2	-29.4	-43.4	224.6	9.6	24.1
25.5	72.0	7487.2	392.0	-30.7	-43.6	223.1	10.7	26.8
26.0	73.3	7647.4	383.3	-31.7	-43.1	219.3	11.6	31.8
26.5	74.4	7805.0	374.8	-32.4	-39.4	215.4	12.2	49.5
27.0	75.4	7949.2	367.2	-33.0	-38.4	213.4	12.6	58.2
27.5	76.4	8076.5	360.6	-33.9	-38.7	215.2	13.3	62.0
28.0	77.4	8201.8	354.2	-35.1	-39.3	219.1	14.8	65.6
28.5	78.5	8354.7	346.5	-36.3	-40.1	221.3	16.6	67.8
29.0	79.6	8510.2	338.8	-37.5	-41.0	221.6	17.8	69.8
29.5	80.8	8660.0	331.5	-38.9	-42.0	222.2	18.3	72.7
30.0	81.8	8808.2	324.4	-40.2	99.9	223.9	18.4	999.9
30.5	82.8	8956.7	317.4	-41.4	99.9	225.5	18.3	999.9
31.0	83.8	9050.2	311.2	-42.6	99.9	226.6	18.4	999.9
31.5	84.8	9221.4	305.2	-43.7	99.9	226.9	18.7	999.9
32.0	85.8	9354.5	299.2	-45.0	99.9	226.7	19.7	999.9
32.5	87.0	9516.6	292.0	-46.5	99.9	226.9	21.1	999.9
33.0	88.2	9705.3	283.8	-47.9	99.9	225.9	21.2	999.9
33.5	89.3	9847.0	277.8	-49.2	99.9	223.5	21.7	999.9
34.0	90.4	9993.6	271.6	-50.6	99.9	220.8	22.9	999.9
34.5	91.4	10138.8	265.6	-51.8	99.9	218.7	23.5	999.9
35.0	92.4	10286.7	259.6	-52.7	99.9	217.2	23.7	999.9
35.5	93.5	10452.5	253.0	-54.1	99.9	215.8	23.5	999.9
36.0	94.8	10625.3	246.2	-55.5	99.9	214.7	22.4	999.9
36.5	95.8	10783.6	240.2	-56.3	99.9	213.8	21.0	999.9
37.0	97.0	10948.9	234.0	-57.9	99.9	213.7	20.4	999.9
37.5	98.3	11139.8	227.0	-59.8	99.9	217.2	20.7	999.9
38.0	99.6	11334.8	220.0	-61.3	99.9	221.6	22.4	999.9
38.5	101.0	11534.6	213.0	-62.4	99.9	224.7	24.6	999.9
39.0	102.3	11718.2	206.8	-63.6	99.9	224.8	24.3	999.9
39.5	103.5	11906.8	200.5	-63.5	99.9	224.6	23.3	999.9
40.0	104.6	12077.9	195.0	-62.8	99.9	224.8	23.0	999.9
40.5	105.8	12238.0	190.0	-62.1	99.9	225.2	23.8	999.9
41.0	107.0	12436.1	184.0	-60.9	99.9	225.6	24.6	999.9
41.5	108.0	12607.0	179.0	-60.9	99.9	226.7	25.5	999.9
42.0	109.2	12783.5	174.0	-61.1	99.9	229.7	28.5	999.9
42.5	110.3	12964.3	169.0	-61.5	99.9	232.8	29.2	999.9
43.0	111.4	13135.7	164.4	-60.9	99.9	235.6	27.8	999.9
43.5	112.4	13304.7	160.0	-60.8	99.9	238.0	27.4	999.9
44.0	113.4	13485.9	155.4	-60.9	99.9	239.2	28.5	999.9
44.5	114.5	13664.6	151.0	-60.7	99.9	238.5	29.5	999.9
45.0	115.6	13848.4	146.6	-61.2	99.9	235.8	28.7	999.9
45.5	116.6	14020.2	142.6	-61.2	99.9	233.5	27.7	999.9
46.0	117.6	14197.1	138.6	-60.7	99.9	233.4	27.4	999.9
46.5	118.6	14379.5	134.6	-60.4	99.9	234.5	27.3	999.9
47.0	119.6	14538.6	131.2	-60.5	99.9	235.7	27.4	999.9
47.5	120.6	14712.1	127.6	-60.9	99.9	237.2	27.9	999.9
48.0	121.6	14879.7	124.2	-61.0	99.9	239.2	28.6	999.9
48.5	122.6	15063.0	120.6	-60.7	99.9	241.4	29.0	999.9
49.0	123.5	15251.8	117.0	-60.5	99.9	243.7	28.1	999.9
49.5	124.4	15424.1	113.8	-60.5	99.9	245.9	26.6	999.9



SIRIION HU. 2  
WHEELER WIDGE, UNIT

12 APRIL 1981  
1234 GMT

155 16. 0

TIME MIN	CHTCT	HEIGHT GPM	PRES MB	TEMP DC C	DEW PT DC C	DIR DC	SPEED M/SEC	R HUM PCT
50.0	125.3	15579.3	111.0	-60.6	99.9	246.5	26.2	999.9
50.5	126.2	15730.7	106.3	-60.9	99.9	245.9	27.0	999.9
51.0	127.0	15924.4	105.0	-60.9	99.9	247.2	26.5	999.9
51.5	127.8	16074.4	102.5	-61.4	99.9	247.6	23.6	999.9
52.0	128.7	16227.7	100.0	-61.6	99.9	238.2	22.1	999.9
52.5	129.5	16384.6	97.5	-61.6	99.9	226.6	21.5	999.9
53.0	130.3	16536.0	95.1	-61.9	99.9	220.9	21.4	999.9
53.5	131.0	16676.4	93.0	-61.6	99.9	223.6	21.4	999.9
54.0	131.8	16845.7	90.5	-61.6	99.9	230.6	23.4	999.9
54.5	132.7	17019.4	88.0	-62.0	99.9	234.7	26.0	999.9
55.0	133.5	17197.6	85.5	-62.5	99.9	237.0	28.0	999.9
55.5	134.3	17390.7	83.0	-62.5	99.9	238.1	27.7	999.9
56.0	135.1	17563.9	80.6	-61.7	99.9	238.5	25.6	999.9
56.5	135.9	17731.3	78.4	-60.5	99.9	237.9	25.4	999.9
57.0	136.7	17928.3	76.0	-59.5	99.9	238.9	23.8	999.9
57.5	137.4	18082.9	74.1	-58.7	99.9	242.9	19.1	999.9
58.0	138.1	18213.0	72.6	-58.1	99.9	250.4	14.1	999.9
58.5	138.8	18378.1	70.6	-58.2	99.9	251.3	14.1	999.9
59.0	139.4	18562.6	68.7	-58.0	99.9	246.3	13.9	999.9
59.5	140.1	18744.4	66.8	-57.4	99.9	238.3	13.8	999.9
60.0	140.8	18864.4	65.5	-56.3	99.9	235.1	13.9	999.9
60.5	141.4	19025.3	63.9	-55.8	99.9	238.6	13.6	999.9
61.0	142.0	19213.3	62.0	-55.7	99.9	246.9	13.4	999.9
61.5	142.6	19343.9	60.8	-55.5	99.9	254.4	11.9	999.9
62.0	143.3	19504.1	59.3	-55.3	99.9	258.6	9.5	999.9
62.5	143.9	19708.8	57.4	-55.0	99.9	252.6	5.7	999.9
63.0	144.4	19851.4	56.1	-54.7	99.9	229.0	3.6	999.9
63.5	145.0	19978.3	55.0	-54.4	99.9	183.6	3.2	999.9
64.0	145.6	20203.2	53.1	-54.1	99.9	222.1	4.1	999.9
64.5	146.3	20400.9	51.5	-54.2	99.9	240.2	5.7	999.9
65.0	146.9	20558.0	50.3	-54.7	99.9	248.6	7.1	999.9
65.5	147.4	20764.8	48.7	-55.3	99.9	247.2	8.2	999.9
66.0	148.0	20984.1	47.0	-56.1	99.9	244.6	9.1	999.9
66.5	148.6	21156.9	45.8	-56.0	99.9	244.3	7.5	999.9
67.0	149.2	21348.4	44.4	-55.9	99.9	245.2	6.2	999.9
67.5	149.7	21567.9	42.9	-56.0	99.9	248.8	5.5	999.9
68.0	150.2	21761.8	41.6	-55.8	99.9	256.0	4.3	999.9
68.5	150.7	21917.3	40.6	-55.3	99.9	277.5	2.8	999.9
69.0	151.2	22076.3	39.6	-54.8	99.9	290.2	2.3	999.9
69.5	151.7	22240.4	38.6	-54.6	99.9	265.2	2.8	999.9
70.0	152.2	22434.9	37.5	-54.3	99.9	272.8	3.0	999.9
70.5	152.6	22674.9	36.1	-53.8	99.9	316.8	3.6	999.9
71.0	153.1	22898.6	34.8	-53.3	99.9	336.0	5.0	999.9
71.5	153.5	23057.2	34.0	-52.3	99.9	337.2	4.3	999.9
72.0	153.9	23215.8	33.2	-51.3	99.9	338.8	3.6	999.9
72.5	154.3	23453.7	32.0	-51.5	99.9	293.0	3.9	999.9
73.0	154.8	23711.4	30.8	-51.8	99.9	264.6	6.6	999.9
73.5	155.2	23947.2	29.6	-52.1	99.9	269.6	8.2	999.9
74.0	155.6	24150.2	28.7	-52.2	99.9	300.5	9.0	999.9
74.5	156.1	24347.0	27.9	-52.1	99.9	321.2	10.5	999.9
75.0	156.4	24518.9	27.1	-51.6	99.9	341.6	8.1	999.9
75.5	156.8	24690.8	26.4	-51.8	99.9	15.7	7.6	999.9



77.0	171.4	2894.5	25.6	-50.7	99.9	72.0	9.1	999.9
77.5	157.6	25397.3	23.7	-48.3	99.9	47.7	7.6	999.9
78.0	159.1	25636.2	22.9	-47.4	99.9	22.6	7.0	999.9
78.5	158.7	26013.0	21.6	-46.7	99.9	13.2	6.6	999.9
79.0	159.0	26202.6	21.0	-45.4	99.9	347.1	6.8	999.9
80.0	159.5	26720.9	20.3	-44.5	99.9	326.6	8.2	999.9
80.5	159.8	26980.1	18.6	-43.5	99.9	313.3	10.3	999.9
81.0	160.0	27239.3	18.0	-42.6	99.9	999.9	99.9	999.9
			18.0	-41.7	99.9	999.9	99.9	999.9

