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THE PENNSYLVANIA STATE UNIVERSITY  
MINERAL INDUSTRIES EXPERIMENT STATION  
DEPARTMENT OF GEOLOGY AND GEOPHYSICS  
GEOPHYSICAL LABORATORY  
Project B-130

Seismograph Report XXXIX

1 May 1967 - 30 June 1968

Code - SCP

S. S. Alexander, Director

R. C. Bubeck, Graduate Assistant

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Locality: The station is located in the basement of Deike Building. The instruments are mounted on concrete pillar separated from the foundations and set on bedrock (limestone). The geographic coordinates are:

$\phi = 40^{\circ} 47.65'$  N =  $77^{\circ} 51.95'$  W H = +352 m

The geocentric coordinates are:

$\phi = 40^{\circ} 36'$  N =  $77^{\circ} 52'$  W H = +1 m

Please address all communications to:

Geophysical Laboratory  
207 Mineral Sciences Building  
University Park, Pennsylvania, U.S.A., 16802

The State College Observatory is equipped with world-wide standard VELA-Uniform instruments. These were in continuous operation throughout the period covered by this report except for interruptions to change records and to make repairs and adjustments. The instruments were last calibrated on November 16, 1966. The constants were:

<u>Component</u>	<u>Seismo- meter Period (sec)</u>	<u>Galvano- meter Period (sec)</u>	<u>Damping ratio</u>	<u>Sensitivity</u>
SPN	1.0	0.79	17	50,000
SPE	1.0	0.78	17	50,000
SPZ	1.0	0.75	17	50,000
LPN	15.0	100.	critical	1,500
LPE	15.0	100.	critical	1,500
LPZ	15.0	100.	critical	1,500

Events marked "LOCAL" and "BLAST" are short-duration, high-frequency events with P-S times of 20 seconds or less. Most of these are quarry blasts in Pennsylvania and adjoining states. Only the larger of the many such events recorded daily are reported, and many of the reported events not so labeled are of this nature.

The time is controlled by a crystal clock which is checked daily against radio station WWV. Time signals are recorded automatically on the SPN component.

The recorded seismograms through 22 July 1967 are filed

with the U. S. Coast and Geodetic Survey in Washington, D. C. Copies of individual seismograms through that date may be obtained from them. Records subsequent to 22 July 1967 have been kept on file in our Geophysical Laboratory.

The list which follows shows the earliest observed motion of each earthquake recorded and lists the components on which this earthquake is observable. Where readable, the direction of first motion is indicated by the following symbols:

N and S = North and South

E and W = East and West

U and D = Up and Down

i means readable to 0.1 sec. on at least 1 trace

e means not readable to 0.1 sec.

RF means record failure. No seismogram exists for this earthquake on this component.

\* means earthquake recorded by this component, direction of first motion not read (no implication that it is unreadable)

- means seismogram exists but body waves not strongly or not clearly recorded. Surface waves may be clearly recorded.

DATE	GMT OF FIRST MOTION	TYPE OF ONSET	OBSERVABLE ON									REMARKS
			NS	EW	Z	NS	EW	Z	NS	EW	Z	
01 MAY 67	07-20-21.1	IP	*	E	D	*	*	D				
01 MAY 67	19-10-37.2	IP	*	*	D	-	-	-				L
02 MAY 67	14-32-25.	IP	N	W	U	-	-	-				L
02 MAY 67	14-39-39.3	IP	S	E	D	-	-	-				L
02 MAY 67	20-26-50.2	I	*	*	D	-	-	-				B
02 MAY 67	20-33-19.	IP	S	W	U	-	-	-				L
03 MAY 67	17-15-30.	E	*	*	*	-	-	-				B
03 MAY 67	20-39-10.4	I	*	*	U	-	-	-				B
03 MAY 67	20-53-50.8	I	*	*	U	-	-	-				B
03 MAY 67	21-16-21.1	I	*	*	U	-	-	-				L
04 MAY 67	16-03-19.8	I	*	W	D	-	-	-				
04 MAY 67	18-36-08.	E	*	*	*	-	-	-				
04 MAY 67	18-46-30.5	I	*	E	D	-	-	-				
04 MAY 67	18-59-55.	I	S	E	D	-	-	-				B
04 MAY 67	20-34-27.	IP	S	E	U	-	-	-				L
05 MAY 67	02-16-04.	IP	S	W	D	-	-	-				B
05 MAY 67	16-01 .	E	-	-	-	*	*	*				
05 MAY 67	17-57-57.0	IP	*	*	U	-	-	-				B
05 MAY 67	20-19-41.0	IP	S	W	D	-	-	-				B
06 MAY 67	14-05-39.4	IP	S	*	D	*	W	*				L
06 MAY 67	20-24-46.2	I	N	*	*	-	-	-				L
07 MAY 67	15-54-35.0	I	*	*	U	-	-	-				L
08 MAY 67	14-45-44.	I	RF	*	D	-	RF	RF				L
09 MAY 67	13-04- .	E	RF	-	-	*	RF	RF				
09 MAY 67	16-22-28.2	I	RF	RF	D	-	-	-				B
09 MAY 67	20-33-26.5	IP	N	RF	U	-	-	-				L
10 M 67	16-45-59.0	I	*	*	U	-	-	-				B
10 MAY 67	20-48-22.0	IP	N	E	U	-	-	-				
12 MAY 67	15-15-28.0	IP	S	W	D	*	*	*				L
12 MAY 67	16 53 14	E	*	*	*	-	-	-				L
12 MAY 67	18 02 03	E	*	*	*	-	-	-				
12 MAY 67	19 12 14	E	*	*	*	-	-	-				
12 MAY 67	19 20 28	E	*	*	*	-	-	-				L
12 MAY 67	19 28 23	E	*	*	*	-	-	-				L
12 MAY 67	20 23 16	E	*	*	*	-	-	-				B
12 MAY 67	20 45 21	E	*	*	*	-	-	-				B
12 MAY 67	21 04 21	E	*	*	*	-	-	-				B
13 MAY 67	05 27 39.4	IP	S	W	D	*	*	*				L
14 MAY 67	18 15 23	E	*	*	*	-	-	-				L
14 MAY 67	22 30 43	E	*	*	*	-	-	-				L
15 MAY 67	08 24 55.1	IP	*	*	U	-	-	-				
16 MAY 67	14 07 06.8	I	N	E	D	-	-	-				B
16 MAY 67	20 36 45.0	IP	N	E	U	-	-	-				B
17 MAY 67	20 39 26.4	I	N	E	U	-	-	-				B
17 MAY 67	20 49 32.6	I	N	E	D	-	-	-				B
18 MAY 67	11 35 24.9	IP	*	*	U	-	-	-				
18 MAY 67	15 49 45.0	IP	*	W	D	-	-	-				
18 MAY 67	20 33 08.5	I	N	E	D	-	-	-				B
19 MAY 67	18 02 03.2	IP	*	E	D	-	-	-				L
19 MAY 67	19 34 47	E	*	*	*	-	-	-				

DATE	GMT OF FIRST MOTION			TYPE OF ONSET	OBSERVABLE ON LP						REMARKS
	NS	EA	Z		NS	EA	Z	NS	EA	Z	
19 MAY 67	20	25	25.3	IP	S	E	U	-	-	-	
19 MAY 67	20	46	11.6	IP	*	E	U	-	-	-	B
19 MAY 67	21	08	23.2	IP	S	*	U	-	-	-	L
20 MAY 67	15	06	07.8	IP	*	E	D	-	-	-	
21 MAY 67	07	24	21.0	IP	*	*	U	*	*	*	
21 MAY 67	19	04	13.7	IP	*	*	U	*	*	*	
22 MAY 67	06	28	31.5	I	*	*	U	-	-	-	
22 MAY 67	19	07	13	I	*	*	*	-	-	-	L
22 MAY 67	19	23	25.3	I	*	*	U	-	-	-	LL
22 MAY 67	20	41	47.6	I	N	W	D	-	-	-	LL
22 MAY 67	21	05	34.2	I	*	E	D	-	-	-	BB
22 MAY 67	21	10	35	E	*	*	*	-	-	-	BB
22 MAY 67	23	17	42.5	IP	S	*	D	-	-	-	B
23 MAY 67	14	06	10.9	IP	S	W	D	-	-	-	
23 MAY 67	19	11	24.2	I	S	W	U	-	-	-	L
23 MAY 67	20	15	25	I	S	W	D	-	-	-	LB
23 MAY 67	21	32	49.1	I	*	W	D	-	-	-	LL
24 MAY 67	14	53	05	E	RF	*	*	RF	RF	-	LB
24 MAY 67	20	42	53	E	RF	*	*	RF	RF	-	BB
24 MAY 67	22	20	34	E	RF	*	*	RF	RF	-	LL
24 MAY 67	23	52	23	E	RF	*	*	RF	RF	-	LB
25 MAY 67	13	40	27	E	RF	*	*	RF	RF	-	B
25 MAY 67	20	36	57.0	I	S	E	D	-	-	-	
25 MAY 67	21	00	11	E	*	*	*	-	-	-	
26 MAY 67	20-44	45.2		IP	N	E	D	-	-	-	B
26 MAY 67	20-52	33.		I	S	W	U	-	-	-	
27 MAY 67	15-09	26.9		U	RF	E	D	-	-	-	L
27 MAY 67	16-09	32.		E	*	*	*	-	-	-	LL
27 MAY 67	17-33	53.6		IP	S	*	U	-	-	-	
27 MAY 67	21-36	56.5		I	N	E	*	-	-	-	LL
29 MAY 67	12-38	49.		E	*	*	*	-	-	-	
29 MAY 67	19-38	58.5		IP	S	E	U	-	-	-	
29 MAY 67	21-14	24.3		I	N	E	U	-	-	-	
30 MAY 67	23-28	23.0		I	*	E	D	-	-	-	L
31 MAY 67	20-43	41.0		I	N	E	D	-	-	-	B
01 JUN 67	03-46	01.3		IP	N	E	U	-	-	-	B
02 JUN 67	14-38	13.8		IP	S	W	U	-	-	-	
02 JUN 67	17-58	34.		I	S	*	U	-	-	-	
02 JUN 67	20-33	12.2		IP	N	E	RF	-	-	-	B
03 JUN 67	15-39	16.5		IP	S	W	U	-	-	-	BB
03 JUN 67	18-53	43.2		IP	S	W	U	-	-	-	B
04 JUN 67	09-17	34.5		IP	S	E	D	-	-	-	
04 JUN 67	16-39	41.8		I	N	W	D	-	-	-	
04 JUN 67	19-10	25.		I	S	*	U	-	-	-	
04 JUN 67	20-30	12.8		IP	S	W	U	-	-	-	BB
05 JUN 67	13-24	21.		E	*	*	*	-	-	-	BB
05 JUN 67	15-04	25.		E	*	*	*	-	-	-	B
05 JUN 67	16-17	10.0		I	N	W	D	-	-	-	
05 JUN 67	20-07	21.8		IP	S	E	U	-	-	-	
05 JUN 67	20-51	15.5		IP	S	E	D	-	-	-	B

DATE	GMT OF FIRST MOTION	TYPE OF ONSET	OBSERVABLE ON									REMARKS
			NS	EW	Z	NS	EW	Z	NS	EW	Z	
06 JUN 67	14-46-43.8	I	*	*	D	-	-	-				B
06 JUN 67	19-56-27.	E	*	*	*	-	-	-				L
07 JUN 67	07-12-44.0	I	*	*	D	*	*	*				
07 JUN 67	17-31-34.2	I	S	W	D	-	-	-				B
07 JUN 67	20-39-33.	E	S	W	*	-	-	-				B
07 JUN 67	20-42-09.0	I	S	E	D	-	-	-				B
08 JUN 67	16-00-21.	E	*	*	*	-	-	-				B
08 JUN 67	19-27-18.4	I	*	*	U	-	-	-				L
08 JUN 67	20-29-26.3	I	*	*	U	-	-	-				B
10 JUN 67	05-26-27.2	IP	S	E	U	*	*	*				
10 JUN 67	05-45-55.	E	*	*	*	-	-	-				
10 JUN 67	19-49-03.3	I	*	*	D	-	-	-				B
10 JUN 67	20-19-05.	E	*	*	*	-	-	-				B
10 JUN 67	22-48-14.	E	*	*	*	-	-	-				L
11 JUN 67	01-52-17.6	IP	*	*	U	-	-	-				
12 JUN 67	00-12-11.5	IP	S	E	D	*	*	D				
12 JUN 67	03-02-36.5	IP	*	W	D	*	*	*				
12 JUN 67	15-57-14.7	I	*	*	*	-	-	-				L
12 JUN 67	20-35-03.0	I	N	E	D	-	-	-				B
12 JUN 67	23-34-54.0	I	N	*	D	*	*	*				
13 JUN 67	19-09-31.6	IP	S	W	U	-	-	-				
13 JUN 67	19-09-59.6	IS	*	*	*	*	*	*				
13 JUN 67	20-37-29.6	IP	S	W	D	-	-	-				
14 JUN 67	03-23-44.4	I	S	*	D	-	-	-				
14 JUN 67	05-55-02.	E	-	-	-	*	*	*				
14 JUN 67	08-18-06.8	E	*	*	*	*	*	*				
14 JUN 67	22-14-31.	E	*	*	*	-	-	-				
14 JUN 67	18-04-25.6	I	*	*	U	-	-	-				L
15 JUN 67	16 58 14	E	*	*	*	-	-	-				L
15 JUN 67	20 28 20.4	I	*	*	D	-	-	-				B
15 JUN 67	21 02 50	E	*	*	*	-	-	-				L
15 JUN 67	21 38 21.3	E	*	*	D	-	-	-				L
16 JUN 67	06 22 52	E	*	*	*	-	-	-				
16 JUN 67	20 30 28.0	I	*	*	D	-	-	-				B
17 JUN 67	01 05 28	E	*	*	*	*	*	*				
17 JUN 67	05 17 18.0	I	*	*	U	*	*	*				
17 JUN 67	18 04 44.0	I	*	*	U	-	-	-				
17 JUN 67	19 01 57	E	*	*	*	-	-	-				L
17 JUN 67	20 30 52	E	*	*	*	-	-	-				B
19 JUN 67	17 02 36.7	IP	N	E	U	*	*	*				
19 JUN 67	20 53 49.0	E	*	*	*	-	-	-				
20 JUN 67	07 48 38.0	I	*	*	U	*	*	*				
20 JUN 67	17 15 23	E	*	*	*	-	-	-				
20 JUN 67	18 02 09	E	*	*	*	-	-	-				B
20 JUN 67	19 43 16	E	*	E	*	-	-	-				
20 JUN 67	21 32 43	E	*	*	*	-	-	-				
21 JUN 67	02 28 00	E	-	-	-	-	*	*				
21 JUN 67	06 57 52	E	-	-	-	*	*	U				
21 JUN 67	13 37 22	E	*	*	*	-	-	-				
21 JUN 67	16 37 10	E	-	-	-	*	*	*				



DATE	GMT CF FIRST MOTION				TYPE OF CNSSET	OBSERVABLE ON SP LP						REMARKS
	NS	EW	Z			NS	EW	Z				
29 JUN 67	19	30	32.0	I	S	E	U	-	-	-	L	
30 JUN 67	11	48	45.3	I	*	*	U	-	-	-		
30 JUN 67	14	38	48	E	*	*	*	-	-	-	L	
30 JUN 67	14	55	06	E	*	*	*	-	-	-	L	
01 JUL 67	15	21	48.6	I	*	*	U	-	-	-	L	
01 JUL 67	16	07	30	E	*	*	*	-	-	-		
01 JUL 67	19	20	12	E	*	*	*	-	-	-	B	
01 JUL 67	19	41	14.0	I	N	E	U	-	-	-	L	
01 JUL 67	20	31	52.0	I	S	*	U	-	-	-	L	
01 JUL 67	20	43	58	E	*	*	*	-	-	-		
01 JUL 67	21	31	34	E	*	*	*	-	-	-		
01 JUL 67	23	19	16.7	I	N	W	D	N	W	D		
02 JUL 67	07	22	55	E	*	*	*	*	*	*		
02 JUL 67	10	18	15	E	*	*	*	-	-	-		
03 JUL 67	18	25	23	E	*	*	*	-	-	-		
03 JUL 67	19	36	15	E	*	*	*	-	-	-		
03 JUL 67	18	25	23	E	*	*	*	-	-	-		
03 JUL 67	19	36	15	E	*	*	*	-	-	-		
04 JUL 67	14	28	51.5	I	*	*	U	*	E	U		
04 JUL 67	18	43	58.4	I	*	E	U	-	*	U		
04 JUL 67	23	54	50.5	I	*	*	U	S	E	U		
05 JUL 67	01	04	45	E	*	*	*	-	-	-		
05 JUL 67	04	12	18	E	*	*	*	-	-	-		
05 JUL 67	22	10	33.6	I	S	E	U	-	-	-	L	
06 JUL 67	05	14	29.2	I	*	*	U	*	*	*		
06 JUL 67	13	52	23.0	I	S	E	U	S	E	U		
06 JUL 67	17	00	48.0	I	*	*	U	-	-	-	L	
06 JUL 67	17	10	40	E	*	*	*	-	-	-		
06 JUL 67	18	37	40	E	*	*	*	*	*	*		
06 JUL 67	19	27	30	E	*	*	*	-	-	-		
06 416 JUL 67	21	27	41	E	*	*	*	-	-	-		
06 JUL 67	21	51	06.5	I	N	E	D	-	-	-		
07 JUL 67	14	23	21	E	*	*	*	-	-	-	L	
08 JUL 67	14	44	09.5	I	*	*	U	-	-	-	L	
08 JUL 67	16	57	25	E	*	*	*	-	-	-	L	
08 JUL 67	18	20	49	E	*	*	*	-	-	-	L	
08 JUL 67	19	21	35	E	*	*	*	-	-	-	L	
08 JUL 67	21	03	45	E	*	*	*	-	-	-	L	
08 JUL 67	22	07	00	E	*	*	*	-	-	-		
09 JUL 67	21	38	05.6	I	*	*	U	-	-	-		
10 JUL 67	12	20	01.6	I	S	W	D	-	-	-		
10 JUL 67	17	22	05	I	*	E	D	-	-	-		
11 JUL 67	21	47	23.7	I	*	*	U	-	-	-	B	
12 JUL 67	01	57	54.0	I	*	*	U	-	-	-		
12 JUL 67	10	41	18.5	IP	S	E	D	-	-	-		
12 JUL 67	21	07	14.2	I	*	*	*	*	*	U		
12 JUL 67	22	36	15.1	I	*	*	U	-	-	-		
13 JUL 67	14	29	09.8	I	N	W	U	-	-	-		
13 JUL 67	18	48	24.2	I	*	*	D	-	-	-	B	
14 JUL 67	03	28	19.8	IP	S	W	D	*	*	*		



DATE	GMT OF FIRST MOTION			TYPE OF ONSET	OBSERVABLE ON SP			ON LP			REMARKS
	NS	EW	Z		NS	EW	Z	NS	EW	Z	
15 JUL 67	21	17	41.8	I	*	*	*	-	-	-	
16 JUL 67	13	53	41.8	I	*	*	D	*	*	*	
17 JUL 67	14	46	55.2	I	S	*	U	-	-	-	B
17 JUL 67	19	18	03.0	I	*	W	U	-	-	-	B
17 JUL 67	19	55	25.8	I	*	*	*	-	-	-	L
17 JUL 67	22	21	55	E	*	*	*	-	-	-	
18 JUL 67	15	41	48.6	I	N	W	*	-	-	-	
18 JUL 67	19	34	18.5	I	S	*	U	-	-	-	B
18 JUL 67	20	34	57.8	I	*	*	U	-	-	-	L
19 JUL 67	21	06	57	E	*	*	*	-	-	-	L
20 JUL 67	02	26	26	E	*	*	*	-	-	-	
20 JUL 67	09	11	40	E	-	*	*	-	-	-	
20 JUL 67	14	37	02	E	*	*	*	-	-	-	
20 JUL 67	14	45	39	E	-	-	-	*	*	*	
20 JUL 67	15	55	15	E	*	*	*	N	*	*	
20 JUL 67	17	10	13	E	*	*	*	-	-	-	L
20 JUL 67	21	10	00	E	*	*	*	-	-	-	L
21 JUL 67	09	17	15.0	I	*	*	U	-	-	-	
21 JUL 67	18	41	21	E	*	*	*	-	-	-	L
21 JUL 67	19	31	02.0	I	*	*	D	-	-	-	L
21 JUL 67	21	07	34	E	*	*	*	-	-	-	B
22 JUL 67	04	51		E	-	-	-	*	*	*	
22 JUL 67	15	55	09	E	*	*	*	-	-	-	
22 JUL 67	17	08	44.3	IP	N	E	D	N	E	D	
22 JUL 67	19	55	16	E	*	*	*	-	-	-	
22 JUL 67	20	20	10	E	*	*	*	-	-	-	L
24 JUL 67	07	58	45.3	IP	S	E	U	-	-	-	
24 JUL 67	16	21	38.9	I	N	E	U	-	-	-	L
24 JUL 67	18	30	04	E	-	-	-	*	*	-	
24 JUL 67	20	41	41	E	*	*	*	-	-	-	
24 JUL 67	23	27	54	E	*	*	*	-	-	-	
25 JUL 67	13	21	22	E	*	*	*	-	-	-	
25 JUL 67	19	03	50.3	I	S	W	D	-	-	-	B
26 JUL 67	09	14	05	E	*	*	*	*	*	*	
26 JUL 67	15	03	38	E	*	*	*	-	-	-	
26 JUL 67	17	10	18.1	I	*	*	U	-	-	-	L
26 JUL 67	19	05	20	E	*	*	*	*	*	*	
26 JUL 67	20	50	28	E	*	*	*	-	-	-	L
27 JUL 67	00	07	30	E	*	*	*	*	*	*	
27 JUL 67	00	20	01	E	*	*	*	-	-	-	
27 JUL 67	05	34	10	E	-	-	-	*	*	*	
27 JUL 67	12	41	00	E	-	-	-	*	-	*	
27 JUL 67	16	47	06	E	*	*	*	-	-	-	L
27 JUL 67	18	12	16	E	*	*	*	-	-	-	L
27 JUL 67	19	18	10	E	*	*	*	-	-	-	L
28 JUL 67	03	52	32.1	I	N	W	U	*	*	*	
28 JUL 67	20	26	24.6	I	*	*	U	-	-	-	
28 JUL 67	21	39	44.0	I	N	*	*	-	-	-	
29 JUL 67	10	30	56.6	I	S	*	D	S	*	D	
29 JUL 67	22	49	00	E	-	-	-	*	*	*	

DATE	GMT OF FIRST MOTION			TYPE OF ONSET	OBSERVABLE ON SP LP						REMARKS
	NS	EW	Z		NS	EW	Z	NS	EW	Z	
30 JUL 67	00	06	24.1	I	S	*	D	S	*	D	
30 JUL 67	01	42	50.0	I	*	E	D	*	*	*	
30 JUL 67	08	53	30	E	-	-	-	*	*	*	
30 JUL 67	11	09	09	E	*	*	*	*	*	*	
30 JUL 67	13	55	40	E	-	-	*	*	*	*	
30 JUL 67	17	40	39	E	*	*	*	-	-	-	L
31 JUL 67	12	28	40	E	*	*	*	-	-	-	L
31 JUL 67	20	01	57	E	*	*	*	-	-	-	L
01 AUG 67	01	22	57	E	*	*	*	*	*	*	
01 AUG 67	10	05	05	E	-	-	-	*	*	*	
01 AUG 67	15	36	41.6	I	S	W	U	-	-	-	L
01 AUG 67	20	47	20	E	*	*	*	-	-	-	L
02 AUG 67	00	55	30	E	*	*	*	-	-	-	
02 AUG 67	11	14	57	E	*	*	*	N	*	U	
02 AUG 67	14	14	35	E	*	*	*	*	*	*	
02 AUG 67	17	10	33	E	*	*	*	-	-	-	
02 AUG 67	20	10	42	E	*	*	*	-	-	-	
02 AUG 67	21	44	22.4	I	*	E	U	-	-	-	L
03 AUG 67	01	04	20	E	-	-	-	*	*	*	
04 AUG 67	16	36	08	E	*	*	*	-	-	-	L
04 AUG 67	17	31	18.0	I	*	*	D	-	-	-	L
04 AUG 67	19	48	32.2	U	*	*	U	-	-	-	B
04 AUG 67	23	38		E	-	-	-	*	*	*	
05 AUG 67	17	43	16	E	*	*	*	-	-	-	L
05 AUG 67	18	43	49	E	*	*	*	-	-	-	L
06 AUG 67	17	30	07.6	IP	*	*	U	-	-	-	
07 AUG 67	08	30	20	E	*	*	*	-	-	-	
07 AUG 67	11	23	33.2	IP	*	*	U	*	*	*	
07 AUG 67	22	16	55	E	*	*	*	-	-	-	
09 AUG 67	07	22	49.6	I	*	*	U	-	-	-	
09 AUG 67	08	39	14.7	I	*	*	D	-	-	-	
09 AUG 67	13	32	36	E	*	*	*	N	*	*	
09 AUG 67	17	31	05	E	*	*	*	-	-	-	
09 AUG 67	17	39	16.5	I	*	W	U	-	-	-	
09 AUG 67	20	04	27	E	*	*	*	-	-	-	L
09 AUG 67	22	30	17.8	I	*	E	D	-	-	-	
10 AUG 67	11	32	42.4	I	*	*	U	*	*	*	
10 AUG 67	18	50	03	E	*	*	*	-	-	-	L
11 AUG 67	12	32	21.0	IP	N	*	U	*	*	*	
11 AUG 67	20	32	43	E	*	*	*	-	-	-	L
12 AUG 67	09	58	27	E	*	*	*	*	*	*	
12 AUG 67	13	23	30	E	-	-	-	*	*	*	
12 AUG 67	14	16	28.8	I	N	W	D	*	*	*	
12 AUG 67	21	59	49	E	*	*	*	-	-	-	
13 AUG 67	16	51	22	E	*	*	*	-	-	-	
13 AUG 67	20	19	49.5	IP	*	*	D	*	*	*	
13 AUG 67	22	17	24.9	IP	*	E	D	*	*	*	
13 AUG 67	22	34	01	E	*	*	*	-	-	-	
14 AUG 67	02	51	13.8	IP	*	*	U	-	-	-	
14 AUG 67	12	50	09.5	IP	*	*	U	-	-	-	

DATE	GMT OF FIRST MOTION				TYPE OF ONSET	OBSERVABLE ON SP			LP			REMARKS
	NS	EW	Z			NS	EW	Z	NS	EW	Z	
14 AUG 67	13	46	06.0		I	S	E	U	-	-	-	L
14 AUG 67	19	21	15		E	*	E	U	-	-	-	
14 AUG 67	21	30	21		E	S	*	*	-	-	-	
15 AUG 67	03	28	56		E	*	*	*	*	*	*	
15 AUG 67	20	41	24		E	*	*	*	-	-	-	
16 AUG 67	16	11	57		E	*	*	*	-	-	-	L
16 AUG 67	20	09	17.4		I	*	W	U	-	-	-	L
16 AUG 67	20	40	46		E	*	*	*	-	-	-	L
17 AUG 67	14	30	05.0		I	*	E	U	-	-	-	
17 AUG 67	17	15	06		E	*	*	*	-	-	-	L
17 AUG 67	22	50	44.3		I	*	E	*	-	-	-	
18 AUG 67	05	59	03		E	*	*	*	-	-	-	
18 AUG 67	15	14	07		E	*	*	*	-	-	-	L
18 AUG 67	18	47	26.3		I	*	*	U	-	-	-	
18 AUG 67	19	56	53		E	*	*	*	-	-	-	L
18 AUG 67	20	41	15		E	*	*	*	-	-	-	B
18 AUG 67	21	55	04		E	*	*	*	-	-	-	
19 AUG 67	13	55	08		E	*	*	*	-	-	-	
19 AUG 67	15	47	03.2		IP	*	*	U	*	*	*	
21 AUG 67	00	16	35.2		I	*	*	D	-	-	-	
20 AUG 67	02	15	13		E	*	*	*	-	-	-	
20 AUG 67	20	08	04		I	*	*	D	*	*	*	
21 AUG 67	07	52	19.1		IP	*	*	U	*	*	U	
22 AUG 67	09	06	02		E	*	*	*	*	*	*	
22 AUG 67	10	08	48		E	*	*	*	-	-	-	
22 AUG 67	13	16	32		E	*	*	*	*	*	*	
23 AUG 67	09	30	16.3		I	*	*	U	*	*	*	
23 AUG 67	16	15	56		E	*	*	*	-	-	-	L
23 AUG 67	19	26	08.0		I	S	*	*	-	-	-	
24 AUG 67	03	33	56.5		I	*	*	U	-	-	-	
24 AUG 67	21	24	23.6		I	*	*	U	-	-	-	L
25 AUG 67	15	35	48		E	-	-	-	*	*	*	
25 AUG 67	18	37	28.4		I	*	*	D	-	-	-	L
26 AUG 67	00	51	40		E	*	*	*	*	*	*	
26 AUG 67	18	44	00		E	-	-	-	*	*	*	
27 AUG 67	13	14	47.1		IP	N	E	U	N	E	U	
27 AUG 67	15	27	14		E	*	*	*	-	-	-	
27 AUG 67	18	56	33		E	*	*	*	*	*	*	
28 AUG 67	15	25	20		E	*	*	*	*	*	*	
29 AUG 67	07	47	00		E	-	-	-	*	*	*	
29 AUG 67	11	47	20		E	-	-	-	*	*	*	
30 AUG 67	04	40	56		E	*	*	*	*	*	*	
30 AUG 67	11	52	42		E	-	-	-	*	*	*	
30 AUG 67	13	46	52		E	*	*	*	*	*	*	
30 AUG 67	15	08	37		E	*	*	*	-	-	-	
30 AUG 67	21	39	20.6		I	*	E	U	-	-	-	
01 SEP 67	17	54	53		E	*	*	*	-	-	-	L
01 SEP 67	19	36	13		E	*	*	*	-	-	-	B
01 SEP 67	22	54	24.4		I	*	*	U	-	-	-	
02 SEP 67	19	58	19		E	*	*	*	-	-	-	L

DATE	GMT OF FIRST MOTION			TYPE OF ONSET	OBSERVABLE ON SP			OBSERVABLE ON LP			REMARKS
	NS	EW	Z		NS	EW	Z	NS	EW	Z	
02 SEP 67	20	01	34	E	*	*	*	-	-	-	
02 SEP 67	20	37	02	E	*	*	*	-	-	-	
03 SEP 67	11	39	22.4	I	*	*	D	-	-	-	
03 SEP 67	21	16	30.8	IP	N	E	U	N	E	U	
05 SEP 67	18	13	07.0	I	*	*	U	-	-	-	L
05 SEP 67	19	10	03	E	*	*	*	-	-	-	L
05 SEP 67	19	30	15	E	*	*	*	-	-	-	L
05 SEP 67	20	36	51	E	*	*	*	-	-	-	L
05 SEP 67	23	17	07	E	*	*	*	-	-	-	L
06 SEP 67	07	49	09.0	I	*	*	U	-	-	-	
07 SEP 67	02	16	01	E	*	*	*	*	*	*	
07 SEP 67	07	34	20.3	IP	S	W	D	*	*	*	
07 SEP 67	17	07	14	E	*	*	*	-	-	-	L
07 SEP 67	18	17	22	E	*	*	*	-	-	-	L
07 SEP 67	18	52	04	E	*	*	*	-	-	-	L
07 SEP 67	21	38	36.0	E	*	*	U	-	-	-	L
08 SEP 67	09	10	33.0	IP	*	*	U	-	-	-	
08 SEP 67	17	46	17	E	*	*	*	-	-	-	L
08 SEP 67	20	34	23	E	*	*	*	-	-	-	L
08 SEP 67	20	42	04	E	*	*	*	-	-	-	L
08 SEP 67	22	57	07	E	*	*	*	*	*	*	
09 SEP 67	10	16	56.7	IP	S	E	D	S	E	D	
09 SEP 67	17	08	12	E	-	-	-	N	E	*	
12 SEP 67	17	59	15	E	*	*	*	-	-	-	
12 SEP 67	19	42	27	E	*	E	*	-	-	-	
12 SEP 67	22	09	20	E	-	-	-	*	*	*	
13 SEP 67	18	52	04	E	*	*	*	-	-	-	
13 SEP 67	19	00	48	E	-	-	-	*	*	*	
13 SEP 67	20	36	12	E	*	*	*	-	-	-	
14 SEP 67	14	28	36	E	-	-	-	*	*	*	
14 SEP 67	16	15	06.7	I	*	E	U	-	-	-	
14 SEP 67	18	42	53.1	I	*	W	U	-	-	-	
14 SEP 67	20	36	29.3	I	*	E	U	-	-	-	
15 SEP 67	01	14	20	E	-	-	-	*	*	*	
15 SEP 67	11	35	20	E	-	-	-	*	*	*	
15 SEP 67	18	48	06.2	I	*	E	*	-	-	-	
15 SEP 67	19	31	59	E	*	*	*	-	-	-	
15 SEP 67	21	00	09	E	*	*	*	-	-	-	
16 SEP 67	04	37	02	E	-	-	-	*	*	*	
16 SEP 67	08	42	25.0	I	*	*	U	*	*	*	
16 SEP 67	17	46	11	E	*	*	*	-	-	-	
16 SEP 67	18	42	10	E	-	-	-	*	*	*	
16 SEP 67	20	23	54	E	*	*	*	-	-	-	
16 SEP 67	20	33	26	E	*	*	*	-	-	-	B
17 SEP 67	01	23	45	E	*	*	*	-	-	-	
17 SEP 67	08	02	03.0	I	S	*	D	*	*	*	
17 SEP 67	17	05	07	E	*	*	*	*	*	*	
18 SEP 67	07	11	39	E	*	*	*	*	*	*	
18 SEP 67	15	09	47.2	I	S	*	U	-	-	-	L
18 SEP 67	15	16	36.7	I	*	W	U	-	-	-	L

DATE	GMT OF FIRST MOTION			TYPE OF ONSET	OBSERVABLE ON SP LP						REMARKS
	NS	EW	Z		NS	EW	Z	NS	EW	Z	
18 SEP 67	15	52	07	E	*	*	*	-	-	-	
18 SEP 67	16	05	16	E	-	-	-	*	*	*	
18 SEP 67	18	24	02	E	*	*	*	-	-	-	
19 SEP 67	11	08	48.5	I	*	*	U	*	*	*	
19 SEP 67	13	04	18	E	*	*	*	-	-	-	
19 SEP 67	15	14	25.5	I	N	*	*	-	-	-	
19 SEP 67	16	36	23.7	I	S	E	U	-	-	-	
19 SEP 67	17	49	19.0	I	N	E	D	-	-	-	
19 SEP 67	20	26	29	E	*	*	*	-	-	-	
19 SEP 67	20	43	05	E	*	*	*	-	-	-	
20 SEP 67	09	42	25	E	*	*	*	*	*	*	
20 SEP 67	19	35	30	E	-	-	-	*	*	*	
20 SEP 67	22	12	24.5	I	S	W	U	-	-	-	
21 SEP 67	00	18		E	-	-	-	*	*	*	
21 SEP 67	00	21		E	-	-	-	*	*	*	
22 SEP 67	08	18	55.6	I	S	W	D	*	*	*	
22 SEP 67	09	24	17.2	I	-	-	D	-	-	-	
22 SEP 67	10	30	33.0	I	*	*	U	*	*	*	
22 SEP 67	16	10	51.0	I	*	W	U	-	-	-	
22 SEP 67	21	50		E	-	-	-	*	*	*	
22 SEP 67	21	54	00.9	IP	S	W	U	-	-	*	
23 SEP 67	00	02	55	E	*	*	*	-	-	-	
23 SEP 67	00	21	30	E	-	-	-	*	*	*	
23 SEP 67	07	21	26	E	-	-	-	*	*	D	
25 SEP 67	04	13	30.5	I	S	*	D	-	-	-	
25 SEP 67	08	57	29.0	I	*	*	U	-	-	-	
25 SEP 67	09	02	30	E	*	*	*	*	*	*	
25 SEP 67	18	15	07	E	*	*	*	-	-	-	
25 SEP 67	20	56	25.2	I	N	E	U	-	-	-	
26 SEP 67	11	22	53.2	IP	N	W	U	-	-	-	
26 SEP 67	16	22	35.5	I	*	*	U	*	-	U	
26 SEP 67	16	31	48	E	*	*	*	*	E	*	
27 SEP 67	17	06	08.4	I	N	E	U	-	-	-	
27 SEP 67	17	16		E	*	*	*	*	*	*	
27 SEP 67	18	26	06.5	I	S	W	U	-	-	-	
28 SEP 67	03	10	39.0	IP	*	*	U	-	-	-	
28 SEP 67	03	33		E	-	-	-	*	*	*	
28 SEP 67	05	15	50.6	IP	N	W	D	-	-	-	
28 SEP 67	15	53	16.4	I	*	*	D	*	*	D	
29 SEP 67	05	25	03.5	I	*	*	D	*	*	*	
29 SEP 67	15	52	08	E	-	-	-	*	*	*	
30 SEP 67	02	16	52.0	I	S	E	U	-	-	-	
30 SEP 67	18	13	09.6	I	-	E	U	-	-	-	
02 OCT 67	16	05	52.0	I	S	-	D	-	-	-	
02 OCT 67	17	43	50.3	I	-	-	U	-	-	-	
02 OCT 67	22	50	55.5	I	N	E	U	-	-	-	
03 OCT 67	18	21	18.4	I	N	*	U	N	E	U	
04 OCT 67	01	57	22	E	*	*	*	-	-	-	
04 OCT 67	06	07	32.1	I	N	*	U	*	*	*	
04 OCT 67	09	10		E	-	-	-	*	*	*	

DATE	GMT OF FIRST MOTION			TYPE OF ONSET	OBSERVABLE ON						REMARKS	
	NS	EW	Z		NS	EW	Z	NS	EW	Z		
04 OCT 67	10	24	50	E	*	*	*	*	*	*	*	
04 OCT 67	17	35	46	E	*	*	*	*	*	*	*	
04 OCT 67	17	11	55.4	I	S	E	D	-	-	-	-	
04 OCT 67	18	31	31.3	I	S	W	U	-	-	-	-	
05 OCT 67	09	49	55.0	I	N	W	U	-	-	-	-	
05 OCT 67	12	11	18.0	I	-	-	D	-	-	-	-	
06 OCT 67	20	56	52.4	I	*	*	D	-	-	-	-	
07 OCT 67	01	24	15.1	I	S	E	D	-	-	-	-	
07 OCT 67	08	39	00.5	I	*	*	U	-	-	-	-	
07 OCT 67	12	52	23.5	I	S	*	U	-	-	-	-	
07 OCT 67	22	20	36.3	I	*	*	U	-	-	-	-	
08 OCT 67	17	55		E	-	-	-	*	*	*	*	
09 OCT 67	08	42		E	-	-	-	*	*	*	*	
09 OCT 67	13	48	15	E	*	*	*	-	-	-	-	
09 OCT 67	14	20		E	*	*	*	-	-	-	-	
09 OCT 67	17	35	22	E	*	*	*	*	W	D		
11 OCT 67	20	36	22	E	*	*	D	-	-	-	-	
11 OCT 67	20	37	26	E	S	*	D	-	-	-	-	
12 OCT 67	07	00	12	E	-	-	-	*	*	*	*	
12 OCT 67	13	04	53.5	I	S	E	D	-	-	-	-	
12 OCT 67	18	50	49	E	*	-	-	-	-	-	-	
13 OCT 67	22	00	15.0	I	*	E	U	-	-	-	-	
13 OCT 67	22	28	25	E	-	-	-	*	*	*	*	
14 OCT 67	02	18	44	E	*	*	*	-	-	-	-	
14 OCT 67	03	36	52	E	*	*	*	-	-	-	-	
14 OCT 67	16	07	51.8	I	*	*	U	-	-	-	-	
14 OCT 67	18	18	43.3	I	*	*	D	-	-	-	-	
15 OCT 67	08	06	45.1	I	N	E	U	N	E	U		
15 OCT 67	23	58		E	-	-	-	*	*	*	*	
16 OCT 67	13	34	40	IP	*	*	U	*	*	*	*	
16 OCT 67	17	19	17	E	*	*	U	-	-	-	-	
17 OCT 67	05	16	49	E	-	-	D	-	-	-	-	
17 OCT 67	15	14		E	-	-	-	*	*	*	*	
17 OCT 67	19	53		E	-	-	-	*	*	*	*	
17 OCT 67	22	09		E	-	-	-	*	*	*	*	
18 OCT 67	01	20	25.5	I	S	*	D	*	*	D		
18 OCT 67	14	36	08.4	IP	-	E	U	-	-	-	-	
18 OCT 67	22	25	15	E	-	-	U	-	-	-	-	
20 OCT 67	01	37		E	-	-	-	*	*	*	*	
20 OCT 67	22	29	09	E	S	E	U	-	-	-	-	
21 OCT 67	02	46	15	E	*	*	U	-	-	-	-	
21 OCT 67	05	10	19.3	UP	S	W	U	-	-	-	-	
22 OCT 67	01	02	17	E	*	*	U	-	-	-	-	
22 OCT 67	19	03		E	-	-	-	*	*	*	*	
23 OCT 67	19	00	14	E	*	*	*	-	-	-	-	
23 OCT 67	19	12	46.8	I	*	W	U	-	-	-	-	
24 OCT 67	11	10	37	E	-	-	*	-	-	-	-	
25 OCT 67	01	14	01	E	*	*	*	*	*	*	*	
25 OCT 67	09	29	59	E	*	*	*	-	-	-	-	
25 OCT 67	10	01		E	-	-	-	*	*	*	*	

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DATE	GMT OF FIRST MOTION		TYPE OF ONSET	OBSERVABLE ON						REMARKS
				SP			LP			
				NS	EW	Z	NS	EW	Z	
25 OCT 67	15	41	E	*	*	*	*	*	*	
26 OCT 67	00	51	E	-	-	-	*	*	*	
26 OCT 67	12	30	E	*	*	*	*	*	*	
26 OCT 67	13	50	E	*	*	*	*	*	*	
26 OCT 67	18	26	E	-	-	-	*	*	*	
28 OCT 67	15	58	E	S	W	U	-	-	-	27
28 OCT 67	18	48	IP	-	-	*	-	-	-	31
28 OCT 67	21	01	I	*	*	*	-	-	-	26.8
29 OCT 67	03	40	E	-	-	-	*	-	*	
30 OCT 67	19	54	E	*	*	*	-	-	-	03
31 OCT 67	20	20	E	-	-	-	*	-	*	
31 OCT 67	21	36	E	-	-	-	*	*	*	
01 NOV 67	05	36	E	-	-	-	*	*	*	
01 NOV 67	18	03	E	*	*	D	-	-	-	52
01 NOV 67	19	18	E	*	*	D	-	-	-	14
02 NOV 67	03	43	I	*	*	D	-	-	-	27.6
03 NOV 67	08	24	I	-	-	D	*	*	*	16.5
03 NOV 67	21	14	I	*	*	U	-	-	-	36.2
04 NOV 67	02	20	E	*	-	-	-	-	-	47
04 NOV 67	16	34	I	S	-	D	-	-	-	42.7
05 NOV 67	14	31	E	-	-	*	-	-	-	08
06 NOV 67	06	08	E	-	-	-	*	*	*	
07 NOV 67	03	45	E	-	-	-	*	*	*	45
08 NOV 67	03	16	I	S	E	D	S	*	D	16.7
08 NOV 67	07	12	E	-	-	-	*	*	*	
08 NOV 67	17	20	E	*	*	*	-	-	*	18
08 NOV 67	19	45	I	E	N	U	-	-	-	36.0
09 NOV 67	02	37	I	*	*	U	-	-	-	09.2
09 NOV 67	07	56	E	-	-	*	-	-	-	44
09 NOV 67	23	56	E	-	-	-	*	*	*	
10 NOV 67	18	38	I	N	W	D	-	-	-	24.2
11 NOV 67	22	24	I	N	W	U	-	-	-	22.2
12 NOV 67	02	39	I	-	-	U	-	-	-	47.5
12 NOV 67	10	51	E	*	*	*	*	*	*	
14 NOV 67	05	47	E	*	*	*	-	-	-	17
15 NOV 67	21	43	I	N	W	U	*	*	*	01.4
17 NOV 67	05	05	E	*	*	*	*	*	*	09
18 NOV 67	12	22	E	*	*	*	-	-	-	53
19 NOV 67	15	44	E	-	-	-	*	*	*	
22 NOV 67	15	02	E	*	*	D	-	-	-	49
22 NOV 67	16	10	E	-	-	-	*	*	-	
22 NOV 67	16	42	E	-	*	U	-	-	-	27
23 NOV 67	08	50	E	-	-	-	-	-	*	
23 NOV 67	13	50	I	S	W	U	*	*	*	42.2
26 NOV 67	03	13	I	*	*	U	-	-	-	30.1
26 NOV 67	08	19	E	-	-	*	-	-	-	53
27 NOV 67	04	34	I	*	RF	U	-	-	-	28.5
27 NOV 67	04	49	I	E	RF	U	*	*	*	04.5
27 NOV 67	05	14	I	E	RF	U	*	*	*	03.0
27 NOV 67	09	14	E	-	-	-	*	-	*	

DATE	GMT OF FIRST MOTION		TYPE OF ONSET	OBSERVABLE ON									REMARKS
	NS	EW		SP	NS	EW	Z	NS	EW	Z	LP		
28 NOV 67	03	32	E	*	*	*	-	-	-				
29 NOV 67	01	33 51	E	*	*	*	*	*	*	*			
30 NOV 67	07	35 00.0	I	*	*	D	-	-	-				
30 NOV 67	07	35 02.5	I	S	W	D	*	*	D				
30 NOV 67	18	14 03.5	I	*	*	U	*	*	*				
01 DEC 67	14	08 52.5	I	S	E	U	*	*	*				
02 DEC 67	00	37 30.9	I	*	*	U	-	-	-				
02 DEC 67	12	55 54.5	I	S	*	U	-	-	-				
04 DEC 67	09	01 40	E	-	-	-	*	*	*				
04 DEC 67	22	29	E	-	-	*	-	-	-				
05 DEC 67	09	15 35	I	S	W	U	-	-	-				
05 DEC 67	11	15 57	E	-	-	*	-	-	-				
05 DEC 67	17	58 50.0	I	*	E	U	*	*	*				
06 DEC 67	02	59 06.1	I	S	*	D	*	*	*				
07 DEC 67	22	02 49.5	I	S	*	U	-	-	-				
10 DEC 67	12	13 46.8	I	*	*	U	E	-	U				
12 DEC 67	16	19 56.5	I	*	*	U	-	-	-			L	
12 DEC 67	19	39 11	E	*	*	*	-	-	-			L	
12 DEC 67	22	49 47	E	*	*	*	-	-	-			L	
13 DEC 67	10	50 26.5	I	*	E	D	-	-	-				
13 DEC 67	18	16 08	E	*	*	*	-	-	-				
13 DEC 67	19	37 53	E	*	*	*	-	-	-			L	
13 DEC 67	20	03 17	E	-	-	-	*	*	*				
13 DEC 67	21	59 35.4	I	*	*	D	-	-	-			L	
14 DEC 67	18	36 43	E	*	*	*	-	-	-				
14 DEC 67	21	33 16	E	*	*	*	-	-	-			B	
14 DEC 67	23	28 40.3	I	*	*	U	-	-	-				
15 DEC 67	19	18 55	E	*	*	*	-	-	-			L	
16 DEC 67	03	27 05.9	I	*	*	U	-	-	-				
16 DEC 67	12	24 44	E	*	*	*	-	-	-				
16 DEC 67	20	01 01.3	I	*	*	D	-	-	-				
16 DEC 67	20	11 20	E	*	*	*	-	-	-			L	
16 DEC 67	20	47 08	E	*	*	*	-	-	-			L	
16 DEC 67	21	05 46.8	I	N	E	U	-	-	-				
17 DEC 67	19	14 02.2	I	N	E	U	-	-	-			L	
18 DEC 67	17	43	E	-	-	-	*	*	*				
20 DEC 67	11	53 26.4	I	*	*	U	*	*	*				
21 DEC 67	02	35 45.0	I	N	W	U	N	W	U				
21 DEC 67	08	00 13.9	I	N	W	U	*	*	*				
21 DEC 67	11	59 06.4	I	*	*	U	*	*	*				
21 DEC 67	18	44	E	-	-	-	*	*	*				
23 DEC 67	00	04	E	-	-	-	*	*	*				
23 DEC 67	13	42 08.5	I	N	E	D	*	*	*				
24 DEC 67	04	30 36.2	I	*	*	U	*	*	*				
24 DEC 67	08	46 10	E	*	*	*	*	*	*				
24 DEC 67	20	08 56.9	I	S	*	D	*	*	D				
24 DEC 67	21	38 17.5	I	S	E	D	*	*	*				
25 DEC 67	01	42 22.0	I	*	*	D	*	*	*				
25 DEC 67	11	51 50.0	I	*	*	D	*	*	*				
25 DEC 67	18	30	E	-	-	-	*	*	*				



DATE	GMT OF FIRST MOTION			TYPE OF ONSET	OBSERVABLE ON SP			ON LP			REMARKS
	NS	EW	Z		NS	EW	Z				
26 DEC 67	09	36	55.0	I	-	*	D	*	*	*	
26 DEC 67	22	35	05	E	*	*	*	*	*	*	
27 DEC 67	02	38		E	-	-	-	*	*	*	
27 DEC 67	05	10		E	-	-	-	*	*	*	
27 DEC 67	09	28	05.0	I	S	E	D	S	E	D	
28 DEC 67	05	33	26.0	I	*	*	D	*	*	*	
28 DEC 67	22	20	20	E	-	-	-	N	W	U	
30 DEC 67	04	29	44.0	I	*	E	D	*	*	*	
02 JAN 68	00	40	03.0	I	*	-	D	*	*	*	
02 JAN 68	22	55	18.4	I	N	E	U	-	-	-	
03 JAN 68	04	18	29.0	I	*	*	D	*	*	*	
03 JAN 68	07	46	37.0	I	*	*	D	-	-	-	
03 JAN 68	10	26	21.0	I	N	*	D	-	-	-	
04 JAN 68	01	07	56	E	*	*	D	-	-	*	
06 JAN 68	00	26	32	E	*	*	*	RF	RF	RF	
06 JAN 68	19	32	54	E	N	E	D	RF	RF	RF	
06 JAN 68	23	38	22.6	IP	N	*	D	*	*	*	
07 JAN 68	10	15	22	E	*	*	D	RF	RF	RF	
08 JAN 68	18	54	16	E	*	*	U	-	-	-	
08 JAN 68	20	30	57	E	*	*	U	-	-	-	
08 JAN 68	22	43		E	RF	RF	RF	*	*	*	
11 JAN 68	09	44	30.8	E	*	*	U	RF	RF	RF	
11 JAN 68	07	23		E	RF	RF	RF	-	*	*	
13 JAN 68	16	17	29	I	*	*	D	*	*	D	
14 JAN 68	12	44	22	E	*	*	*	*	*	*	
14 JAN 68	17	53	20.0	I	*	*	U	*	*	*	
15 JAN 68	01	44	57	E	*	-	*	*	*	*	
15 JAN 68	02	12	02.0	I	*	*	U	*	*	*	
16 JAN 68	16	53	40.5	I	*	*	D	*	*	*	
19 JAN 68	06	23	29.0	I	*	*	D	*	*	*	
19 JAN 68	14	52	02	E	-	-	D	-	-	-	
19 JAN 68	18	21	04.8	IP	N	E	U	-	-	-	
19 JAN 68	20	45		E	-	-	-	*	*	*	
19 JAN 68	22	26	51	E	*	*	U	-	-	-	
20 JAN 68	21	39	35.0	I	*	*	D	-	-	-	
20 JAN 68	21	47	52.0	I	*	*	D	-	-	-	
21 JAN 68	01	40	10	I	*	*	U	-	-	-	
21 JAN 68	16	53	48	E	*	*	*	*	E	D	
21 JAN 68	23	50	25.0	E	*	*	D	*	*	*	
22 JAN 68	03	15		E	*	*	*	*	*	*	
23 JAN 68	16	17	00.0	I	*	*	D	*	*	*	
24 JAN 68	10	07	44	E	-	-	*	-	-	-	
24 JAN 68	11	32	32.0	I	-	-	U	-	-	-	
25 JAN 68	05	05	15.0	I	*	*	U	*	*	*	
25 JAN 68	12	37	15	E	*	*	*	*	*	*	
28 JAN 68	01	58	00	E	-	-	*	-	-	-	
28 JAN 68	08	53	18	E	-	-	*	-	-	-	
29 JAN 68	05	13	21.2	I	*	*	D	-	-	-	
29 JAN 68	09	52		E	-	-	-	*	*	*	
29 JAN 68	10	31	46.7	I	-	-	U	S	E	U	

DATE	GMT OF FIRST MOTION				TYPE OF ONSET	OBSERVABLE ON SP LP						REMARKS
	NS	EW	Z			NS	EW	Z	NS	EW	Z	
29 JAN 68	10	31	47.6	I	S	E	*	S	E	U		
29 JAN 68	16	55	31	E	*	*	U	*	*	*		
29 JAN 68	21	01	14	E	*	*	U	-	-	-		
30 JAN 68	01	42	55	E	*	*	U	-	-	-		
30 JAN 68	03	14	27	E	*	*	U	-	-	-		
30 JAN 68	04	02	53.0	IP	E	N	D	-	-	-		
30 JAN 68	20	22	58.4	I	*	*	D	*	*	*		
31 JAN 68	02	13	42.5	I	S	E	D	*	*	*		
01 FEB 68	08	05	11	E	-	-	*	-	-	-		
01 FEB 68	13	00	05	E	*	*	*	-	-	-		
03 FEB 68	05	42	27.2	I	W	N	D	*	*	*		
03 FEB 68	15	46	20	E	*	*	*	-	-	-		
04 FEB 68	09	23	06	E	-	-	*	-	-	-		
04 FEB 68	11	13	35	E	-	-	*	-	-	-		
04 FEB 68	11	37	25	E	-	-	*	-	-	-		
06 FEB 68	11	30	27	E	*	*	U	-	-	-		
06 FEB 68	22	55	08.5	I	*	*	U	*	*	*		
07 FEB 68	08	42	30	E	*	*	*	*	*	*		
10 FEB 68	01	36	50	E	-	-	*	-	-	-		
10 FEB 68	10	12	20.0	I	*	*	U	-	-	-		
12 FEB 68	06	00		E	-	-	-	*	*	*		
12 FEB 68	06	03	35	E	*	*	*	*	*	*		
12 FEB 68	10	30	05.9	I	*	E	D	*	*	*		
14 FEB 68	23	54	34	E	*	*	*	-	-	-		
15 FEB 68	02	52	57	E	*	*	D	-	-	-		
19 FEB 68	22	57	18.5	I	*	*	D	U	N	E	U	
20 FEB 68	02	27	20.0	I	N	*	U	*	*	*		
20 FEB 68	05	14	51.0	I	*	*	U	*	*	*		
21 FEB 68	06	28	38	E	*	-	*	-	-	-		
21 FEB 68	15	36	08	E	*	*	*	*	*	*		
21 FEB 68	16	52	20	E	-	-	-	*	*	*		
21 FEB 68	19	40	36	E	-	-	*	RF	RF	RF		
21 FEB 68	21	18	22	E	*	*	*	-	-	-		
21 FEB 68	21	25	31	E	-	-	*	-	-	-		
21 FEB 68	21	29	11	E	-	-	*	-	-	-		
22 FEB 68	17	57	28.0	I	*	*	U	*	*	*		
23 FEB 68	08	23	24.0	I	*	*	D	*	*	*		
23 FEB 68	09	42	56.5	I	*	*	U	-	-	-		
25 FEB 68	18	18	49.5	I	*	E	U	*	*	*		
26 FEB 68	09	39	54.0	I	*	*	U	-	-	-		
26 FEB 68	10	50	08	E	*	*	*	-	-	-		
26 FEB 68	11	05		E	-	-	-	*	-	*		
26 FEB 68	11	08	58.6	I	*	*	D	*	*	*		
27 FEB 68	05	38	46	E	-	-	*	-	-	-		
28 FEB 68	12	21	08.4	I	*	*	U	*	*	*		
28 FEB 68	15	09	42	E	*	*	*	-	-	-		
29 FEB 68	15	42	45	E	*	*	*	-	-	-		
02 MAR 68	03	21	50	E	-	-	*	-	-	-		
03 MAR 68	23	16		E	*	*	*	*	*	*		
05 MAR 68	00	31	48	E	*	*	D	-	-	-		

DATE	GMT OF FIRST MOTION			TYPE OF GNSSET	OBSERVABLE ON SP			ON LP			REMARKS
	NS	EW	Z		NS	EW	Z				
05 MAR 68	00	40	33	E	*	*	U	-	-	-	
05 MAR 68	18	35	42.0	I	*	*	D	*	*	*	
05 MAR 68	19	44	39.5	I	N	*	D	*	*	*	
07 MAR 68	07	29	52	E	*	*	U	*	*	*	
07 MAR 68	13	41	12.5	I	*	*	D	*	*	*	
08 MAR 68	05	39	27	E	*	*	*	-	-	-	
09 MAR 68	08	44	15.4	I	*	*	U	-	-	-	
10 MAR 68	04	00	03	E	*	*	U	-	-	-	
10 MAR 68	07	22	36	E	*	*	*	-	-	-	
10 MAR 68	07	30	09.5	I	*	*	D	-	-	-	
11 MAR 68	08	40	28.3	I	*	-	U	-	-	-	
12 MAR 68	09	38	02.8	I	N	W	U	-	-	-	
14 MAR 68	10	15	26	E	*	*	D	-	-	-	
14 MAR 68	19	42		E	-	-	-	*	*	*	
15 MAR 68	07	32		E	-	-	-	*	*	*	
17 MAR 68	20	33	36.7	I	-	-	U	*	*	*	
19 MAR 68	02	25	16	E	*	*	*	*	*	*	
19 MAR 68	07	59	40	E	-	-	-	*	*	*	
20 MAR 68	06	30	43.9	I	E	N	U	-	-	-	
20 MAR 68	12	24	01	E	-	-	*	-	-	-	
21 MAR 68	11	41	51	I	-	-	U	-	-	-	
22 MAR 68	02	05	52.2	I	S	E	D	-	-	-	
22 MAR 68	15	06	09.5	I	E	-	U	-	-	-	
22 MAR 68	21	17	09	E	*	*	D	-	-	-	
24 MAR 68	02	57	18	E	*	*	D	-	-	-	
24 MAR 68	17	19	21.5	I	S	*	D	*	*	*	
25 MAR 68	16	37	57.0	I	N	*	U	*	*	*	
26 MAR 68	01	00	32.5	I	N	E	D	N	*	D	
27 MAR 68	22	55	49	E	-	-	*	-	-	-	
28 MAR 68	01	13	27.5	I	N	E	U	*	*	*	
28 MAR 68	07	51	28.2	I	*	*	U	-	-	-	
28 MAR 68	12	52	45	E	*	*	*	-	-	-	
29 MAR 68	20	37	43	E	*	*	*	-	-	-	
01 APR 68	00	56	00	E	*	*	*	S	E	U	
01 APR 68	07	39		E	-	-	-	*	*	*	
03 APR 68	16	35	46	E	*	*	U	-	-	-	
06 APR 68	22	59	02.5	I	*	*	U	*	*	*	
07 APR 68	04	51	13.0	I	*	*	U	*	*	*	
07 APR 68	05	25	01	E	*	*	*	*	*	*	
09 APR 68	02	35	24	EP	E	*	U	E	*	U	
10 APR 68	08	56		E	-	-	*	*	*	*	
10 APR 68	10	59		E	*	-	*	*	*	*	
11 APR 68	03	55	45	E	*	*	D	-	-	-	
11 APR 68	06	58	46	E	-	-	U	-	-	-	
13 APR 68	01	20	43	EP	*	*	U	-	-	-	
14 APR 68	14	31	28	E	*	*	*	-	-	-	
15 APR 68	07	56	06	E	S	*	D	-	-	*	
19 APR 68	05	18	23	E	*	*	*	-	-	-	
19 APR 68	08	55		E	-	-	-	*	*	*	
20 APR 68	10	36	50	E	-	-	-	*	*	*	

DATE	GMT OF FIRST MOTION			TYPE OF ONSET	OBSERVABLE ON SP LP						REMARKS
	NS	EW	Z		NS	EW	Z	NS	EW	Z	
20 APR 68	12	39	10	E	-	-	-	-	-	-	*
21 APR 68	08	47	13	E	*	*	*	-	-	-	-
21 APR 68	09	35	08.2	I	N	*	U	-	-	-	-
23 APR 68	17	50		E	-	-	-	*	*	*	-
23 APR 68	20	37	48.2	I	N	W	D	N	W	D	-
24 APR 68	08	29	37.8	I	*	E	U	-	-	-	*
25 APR 68	21	53	04	E	*	*	*	*	*	*	-
26 APR 68	01	07		E	-	-	-	*	*	*	-
26 APR 68	01	28	50.7	I	*	*	D	*	*	*	-
26 APR 68	03	11	24.0	I	-	E	U	-	-	-	-
26 APR 68	13	26	19	E	-	-	U	-	-	-	-
26 APR 68	15	06	10.2	I	S	E	U	-	E	U	-
26 APR 68	17	54	13	E	*	*	*	*	*	*	-
28 APR 68	04	29	42	E	*	*	U	-	-	-	-
29 APR 68	17	14	27	E	*	*	U	-	-	-	-
29 APR 68	22	34	42	E	*	*	*	-	-	-	-
30 APR 68	01	54	16	E	-	-	*	-	-	-	-
01 MAY 68	00	03	18.5	I	*	*	U	*	*	*	-
02 MAY 68	05	34	37.5	IP	S	E	D	S	E	D	-
02 MAY 68	23	44	11	E	*	*	*	-	-	-	-
06 MAY 68	14	43	36	I	N	*	U	*	*	*	-
07 MAY 68	09	07	02	I	S	E	D	*	*	*	-
08 MAY 68	12	11		E	-	-	-	*	*	*	-
08 MAY 68	12	24	20.0	I	S	E	U	S	E	U	-
08 MAY 68	22	00	13	E	-	-	*	-	-	-	-
08 MAY 68	22	24		E	-	-	*	-	-	-	-
09 MAY 68	03	10	03	E	*	*	U	-	-	-	-
09 MAY 68	13	00	46	E	-	-	*	-	-	-	*
09 MAY 68	16	55	51.0	I	N	E	U	-	-	-	-
09 MAY 68	18	09	04	E	*	*	*	-	-	-	-
10 MAY 68	09	31	14.7	I	*	*	D	-	-	-	-
11 MAY 68	13	40	23	I	S	*	D	-	-	-	-
11 MAY 68	15	52	39	E	*	*	*	-	-	-	-
16 MAY 68	01	02	00	E	*	*	*	S	E	U	-
16 MAY 68	06	43	26	E	-	-	*	-	-	-	-
16 MAY 68	06	49	51.2	I	N	*	D	-	-	-	-
16 MAY 68	08	02	01.5	E	*	*	*	-	-	-	-
16 MAY 68	08	33	11	E	*	*	D	-	-	-	-
16 MAY 68	09	11	14	E	*	*	D	-	-	-	-
16 MAY 68	10	52	00.5	IP	*	*	D	N	W	D	-
16 MAY 68	12	22	34	E	*	*	D	-	-	-	-
16 MAY 68	16	26	51.0	I	*	*	D	*	*	*	-
16 MAY 68	17	41	12.5	I	*	*	D	*	*	*	-
16 MAY 68	18	56	21.2	I	*	*	U	-	*	*	-
16 MAY 68	19	29	46.1	I	*	*	U	*	*	*	-
16 MAY 68	20	35	14.0	I	*	*	U	*	*	*	-
16 MAY 68	23	18	00.8	I	*	*	U	*	*	U	-
17 MAY 68	13	15	35.5	I	S	W	D	-	-	-	-
17 MAY 68	16	14	45	E	-	-	*	-	-	-	-
17 MAY 68	18	30	15	E	-	-	*	-	-	-	-

DATE	GMT OF FIRST MOTION			TYPE OF ONSET	OBSERVABLE ON SP			ON LP			REMARKS
	NS	EW	Z		NS	EW	Z	NS	EW	Z	
17 MAY 68	23	06	45	E	*	*	*	-	-	-	
18 MAY 68	06	01	09.0	I	*	*	D	-	-	-	
18 MAY 68	08	08	27	E	-	-	*	-	-	-	
19 MAY 68	09	17	43	E	*	*	U	-	-	-	
19 MAY 68	09	48	27	E	-	-	*	-	-	-	
19 MAY 68	22	29	47.5	I	*	*	D	*	*	*	
20 MAY 68	03	29	21.6	*	*	U	D	*	*	*	
20 MAY 68	10	46	18.1	I	*	*	U	*	*	U	
20 MAY 68	12	05	33.0	I	N	E	U	*	*	*	
20 MAY 68	20	24	28	E	*	*	*	-	-	-	
20 MAY 68	21	22	15.2	I	*	*	U	*	*	U	
21 MAY 68	00	32	05	E	*	*	U	-	-	-	
21 MAY 68	04	24	24.1	I	N	*	U	-	-	-	
21 MAY 68	08	32	31.1	E	N	*	U	N	*	U	
21 MAY 68	11	13	16	E	*	*	*	-	-	-	
21 MAY 68	11	16	26	E	*	*	*	-	-	-	
22 MAY 68	11	04	51.1	I	N	*	D	*	*	*	
22 MAY 68	19	42	29	E	*	*	*	*	*	NR	
22 MAY 68	07	54	52	E	*	*	*	-	-	NR	
23 MAY 68	17	40	30	E	-	-	-	*	*	*	
23 MAY 68	17	43	18	E	*	*	*	*	*	*	
24 MAY 68	14	19	24	E	*	*	*	*	*	*	
24 MAY 68	16	02	19.3	I	N	W	D	*	*	*	
24 MAY 68	21	48	21	E	*	*	*	-	-	-	
25 MAY 68	12	06		E	-	-	*	-	-	-	
28 MAY 68	13	43	20	I	-	-	-	*	*	U	
28 MAY 68	13	46	21	E	*	*	*	*	*	*	
28 MAY 68	22	41	00.5	I	S	*	U	*	*	*	
30 MAY 68	00	52	25	E	-	-	-	*	-	-	
30 MAY 68	00	55		E	-	-	-	*	*	*	
30 MAY 68	17	52	24.2	I	*	*	D	-	-	-	
30 MAY 68	19	14	45	E	*	*	*	-	-	-	
30 MAY 68	20	02	10	E	-	-	-	*	*	*	
01 JUN 68	10	44	50	E	*	*	U	-	-	-	
02 JUN 68	08	37	23.4	I	-	*	U	-	-	-	
03 JUN 68	09	36	27.5	I	*	*	D	-	-	-	
04 JUN 68	22	26	06	E	*	*	*	-	-	-	
04 JUN 68	22	35	53	E	*	*	*	-	-	-	
05 JUN 68	15	30	35	E	*	*	U	-	-	-	
05 JUN 68	23	16	35	E	*	*	U	-	-	-	
07 JUN 68	12	16	54.0	I	*	*	D	*	*	D	
07 JUN 68	21	16	54.0								
07 JUN 68	21	50	18	E	-	-	*	-	-	*	
08 JUN 68	00	50	31.3	E	-	-	U	-	-	-	
08 JUN 68	05	42	28.2	I	*	*	U	-	-	U	
08 JUN 68	07	35	02	E	*	*	*	-	-	-	
08 JUN 68	21	07	43.0	I	*	*	U	-	-	-	
08 JUN 68	23	43	10	E	*	*	*	-	-	*	
09 JUN 68	01	09		E	-	-	*	-	-	-	

DATE	GMT OF FIRST MOTION			TYPE OF ONSET	OBSERVABLE ON						REMARKS
	NS	EW	Z		NS	EW	Z	NS	EW	Z	
09 JUN 68	03	07	37	E	*	*	*	-	-	-	
09 JUN 68	10	27	24.3	I	N	*	U	-	-	*	
10 JUN 68	12	50	12.8	I	N	W	D	*	*	*	
11 JUN 68	05	58	12.6	IP	N	E	U	N	*	U	
11 JUN 68	10	43	44.6	IP	*	*	U	-	-	-	
11 JUN 68	11	49	13	E	*	*	*	-	-	-	
12 JUN 68	13	54	49.9	I	*	NR	U	*	*	*	
12 JUN 68	22	10	48.0	I	*	*	U	*	*	*	
13 JUN 68	21	23	42.0	I	*	*	U	*	*	*	
14 JUN 68	12	29	49.5	I	*	*	D	*	*	*	
14 JUN 68	13	35	19.0	I	*	*	U	*	*	*	
15 JUN 68	23	46	25.0	I	*	-	D	*	*	*	
15 JUN 68	14	06	09.5	I	*	E	U	*	*	*	
15 JUN 68	20	06	05.8	I	*	*	D	*	*	*	
16 JUN 68	01	14	15	E	*	*	*	-	-	-	
16 JUN 68	03	55	05	E	-	-	-	*	*	*	
16 JUN 68	05	21		E	-	-	-	*	*	*	
17 JUN 68	12	05	58.0	I	*	*	U	S	*	U	
17 JUN 68	15	02	40	E	-	-	*	*	*	U	
17 JUN 68	17	45	00	E	-	-	*	*	*	U	
17 JUN 68	22	13	44	E	-	-	*	*	*	U	
18 JUN 68	00	16	44	E	-	-	*	*	*	U	
18 JUN 68	02	30	48	E	-	-	*	N	*	U	
18 JUN 68	04	01	00	E	-	-	*	N	*	U	
18 JUN 68	05	35	08	E	-	-	*	*	*	*	
18 JUN 68	07	21	00	E	-	-	*	*	*	U	
18 JUN 68	09	04	12	E	-	-	*	*	*	U	
18 JUN 68	10	38	20	E	-	-	*	*	*	U	
18 JUN 68	12	35	40	E	-	-	*	S	*	U	
19 JUN 68	08	21	58.9	I	N	*	U	N	*	U	
19 JUN 68	09	14	12.0	I	*	*	U	*	*	*	
19 JUN 68	15	13	40	E	-	-	-	*	*	D	
19 JUN 68	16	55	38	E	-	-	-	*	*	D	
19 JUN 68	17	16	08	E	*	-	*	-	-	-	
19 JUN 68	20	10	34.5	I	S	*	D	S	*	D	
19 JUN 68	22	19	22	E	-	-	-	*	*	U	
19 JUN 68	23	47	23	E	*	*	U	*	*	U	
20 JUN 68	01	40	44	E	-	-	-	*	*	D	
20 JUN 68	02	47	02.4	I	N	*	U	N	*	U	
20 JUN 68	05	03	30	E	-	-	-	*	*	U	
20 JUN 68	04	38	18	E	*	*	*	-	-	-	
20 JUN 68	07	20	50	E	-	-	-	-	-	*	
20 JUN 68	09	19	32	E	-	-	-	-	-	*	
20 JUN 68	12	22	28	E	-	-	-	-	-	*	
21 JUN 68	00	34	33.3	I	*	*	U	*	*	*	
21 JUN 68	01	30	39.3	I	S	*	D	-	-	-	
22 JUN 68	01	25	30	E	*	*	*	-	-	-	
22 JUN 68	04	10	44	E	*	-	*	-	-	-	
22 JUN 68	09	54	40	E	-	-	-	-	-	*	
23 JUN 68	01	31	43	E	-	-	*	-	-	-	

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DATE	GMT OF FIRST MOTION			TYPE OF ONSET	OBSERVABLE ON						REMARKS
					SP			LP			
					NS	EW	Z	NS	EW	Z	
23 JUN 68	09	29	43	E	*	*	U	-	-	-	
23 JUN 68	17	02	35.8	I	*	*	D	*	*	*	
24 JUN 68	20	23	32	E	*	*	U	-	-	-	
25 JUN 68	01	27	10	E	-	-	*	-	-	*	
25 JUN 68	06	57	38	E	*	*	U	-	-	-	
26 JUN 68	01	49	12	E	*	*	*	*	*	*	
26 JUN 68	05	02	10.6	I	*	*	D	-	-	-	
26 JUN 68	10	36	44.7	I	*	*	U	*	*	*	
27 JUN 68	22	33	21.1	I	*	*	U	-	-	-	
28 JUN 68	12	28	11.5	I	*	W	U	-	-	-	
28 JUN 68	12	37		E	-	-	-	*	*	*	
29 JUN 68	06	27	43	E	*	*	U	-	-	-	
29 JUN 68	19	29	05.7	E	-	-	*	-	-	*	
30 JUN 68	20	28	02.3	I	*	*	U	*	*	*	

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