PROJECT 10073 RECORD CARD

1. DATE	2. LOCATION	12. CONCLUSIONS
21 June 1963	S of Midway (Pacific)	☐ Was Balloon ☐ Probably Balloon ☐ Possibly Balloon ☐ Was Aircraft ☐ Probably Aircraft ☐ Possibly Aircraft ☐ Was Astronomical ☐ Probably Astronomical ☐ Possibly Astronomical ☒ Other SATELLITE (ECHO) ☐ Insufficient Data for Evaluation ☐ Unknown
3. DATE-TIME GROUP Local _____ GMT 21/1440Z	**4. TYPE OF OBSERVATION** ☐ Ground-Visual ☐ Ground-Radar ☒ Air-Visual ☐ Air-Intercept Radar	
5. PHOTOS ☐ Yes ☒ No	**6. SOURCE** Military	
7. LENGTH OF OBSERVATION Not reported	**8. NUMBER OF OBJECTS** one	**9. COURSE** Easterly

10. BRIEF SUMMARY OF SIGHTING

Object shape and size of 1st mag star observed at 50 deg elevation Heading East.

11. COMMENTS

At the reported time ECHO was about 18 deg N 175 deg W heading SE. Since the description of the object conforms with that of ECHO and ECHO was in the area the case is evaluated as a Satellite sighting.

ATIC FORM 329 (REV 26 SEP 52)

21/1440Z

DEPARTMENT OF THE AIR FORCE
STAFF MESSAGE BRANCH
UNCLASSIFIED MESSAGE

INCOMING

SMB B155

VHQA598ZCECB333

····· YY RUEAHQ

DE RUHPF B041

ZNR

Y 211537Z

FM COMBARPAC

TO RUHPHH/COMHAWSEAFRON

RUHLKM/CINCPACAF

RUAUAAH/HADD KUNIA

ZEN/CINCNORAD

INFO RUECW/CNO

RUEAHQ/COFS USAF

RUHPA/CINCPAC

RUHPB/CINCPACFLT

RUHAFS/CINCUSARPAC

RUHLKMP/PACAFBASECOM HICKAM

RUECW/SECNAV

NAVY GRNC

BT

UNCLAS

A. JANAP 146D

1. CIRVIS

2. N43205

3. UFO

A. ONE

B. APPROXIMATE SIZE AND SHAPE OF FIRST MAGNITUDE STAR SIGHTED

50 DEGREES ABOVE HORIZON

4. SOUTH OF MIDWAY

5. 211440Z

INFO : NIN-9, XOP-1, XOPX-4, SAF-OS-3,
JCS-35, ARMY-2, CMC-8, OSD-15,
NSA-7, DIA-25, DIA/CIIC-2 (112)

02

21/1345 330.07 155 175

10°N → SE

Midway 30° 175°W

DEPARTMENT OF THE AIR FORCE
STAFF MESSAGE BRANCH
UNCLASSIFIED MESSAGE

I N C O M I N G

AF IN : 9236 (21 Jun 63) 2 of 2

PAGE TWO RUHPF B041

6. UNKNOWN

7. EAST BOUND

8. UNKNOWN

9. NONE

BT

21/1538Z

NOTE : Advance copies del to DIA, NIN & XOPX.
Readdressed to CIA #550

DEPARTMENT OF THE AIR FORCE
STAFF MESSAGE BRANCH
UNCLASSIFIED MESSAGE

INCOMING

AF IN : 9243 (21 Jun 63) M/gf

INFO : NIN-9, XOP-1, XOPX-4, SAF-OS-3, JCS-35, ARMY-2, CMC-8, OSD-15
NSA-7, DIA-25, DIA/CIIC-2 (112)

02

SMB C143

601ZCECB337

.....YY RUEAHQ

DE RUHPF B042

ZNR

Y 21155ZZO

FM COMBARPAC

TO RUHPHH/COMHAWSEAFRON

RUHLKM/CINCPACAF

RUAUAAH/HADD KUNIA

ZEN/CINCNORAD

INFO RUECW/CNO

RUEAHQ/COFS USAF

RUHPA/INCPAC

RUHPB/CINCPACFLT

RQHAFS/CINCUSARPAC

RUHLKMP/PACAFBASECOM HICKAM

RUENW/SECNAV

NAVY GRNC

BT

UNCLAS

A. JANAP 146D

1. CIRVIS EVALUATION MY 211537Z. UNIDENTIFIED

BT

21/1558Z

NOTE : 211537Z is AFIN 9236 (21 Jun 63)
Adv cys del to XOPX, DIA & NIN
Readdressed to CIA #551.

SATELLITE 1960 IOTA 1
FOR OTHER LATITUDES

	EQUATOR S-N			SOUTH-NORTH				NORTH-SOUTH			
	TIME (UT)	LONG. (W)	LAT.	TIME CORR.	LONG. CORR.	HT. (MI)	BEAR. (N-E)	TIME CORR.	LONG. CORR.	HT. (MI)	BEAR. (N-E)
JUNE 16, 1963											
1	27.1	121.92	47.4	28.7	-82.72	1048	90.0°	28.7	-82.76	1088	90.0°
3	22.2	151.03	45.0	23.2	-60.86	1026	72.3°	34.3	-104.58	1135	107.7°
5	17.2	180.14	40.0	18.9	-45.65	969	60.7°	38.9	-119.73	1158	119.4°
7	12.3	209.24	35.0	15.7	-36.05	925	54.0°	42.3	-127.24	1166	126.1°
9	7.3	238.35	30.0	13.1	-28.73	887	49.4°	45.3	-136.51	1167	130.7°
11	2.4	267.46	20.0	8.4	-17.42	820	43.7°	50.7	-147.65	1153	136.5°
13	57.4	296.56	0.	0.	0.	720	40.0°	60.3	-164.75	1083	140.2°
15	52.5	325.67	-20.0	6.1	17.49	664	43.8°	-45.6	148.94	974	136.4°
17	47.6	354.78	-30.0	-12.4	28.89	656	49.5°	-40.7	137.68	909	130.6°
19	42.6	23.88	-35.0	-14.7	36.29	658	54.1°	-38.0	130.35	872	126.0°
21	37.7	52.99	-40.0	-17.5	45.93	666	60.8°	-35.0	120.72	832	119.3°
23	32.7	82.09	-45.0	-21.4	61.32	688	72.4°	-31.0	105.43	782	107.6°
			-47.4	-26.1	83.37	748	90.0°	-26.1	88.41	728	90.0°
JUNE 17, 1963											
1	27.8	111.20	47.4	28.5	-82.76	1078	90.0°	28.5	-82.80	1078	90.0°
3	22.8	140.31	45.0	23.0	-60.89	1013	72.3°	34.2	-104.63	1129	107.7°
5	17.9	169.41	40.0	18.8	-45.68	957	60.7°	38.7	-119.37	1156	119.4°
7	12.9	198.52	35.0	15.7	-36.07	910	54.0°	42.2	-127.30	1167	126.1°
9	8.0	227.62	30.0	13.1	-28.74	871	49.4°	45.1	-136.55	1170	130.7°
11	3.1	256.71	20.0	8.3	-17.43	805	43.7°	50.5	-147.70	1159	136.5°
13	58.1	285.79	0.	0.	0.	709	40.0°	60.1	-164.78	1095	140.2°
15	53.2	314.84	-20.0	-4.0	17.50	658	43.8°	-45.6	148.92	989	136.4°
17	48.2	344.05	-30.0	-12.4	28.90	652	49.5°	-40.7	137.67	923	130.6°
19	43.3	13.15	-35.0	-14.7	36.29	657	54.1°	-38.0	130.34	886	126.0°
21	38.3	42.26	-40.0	-17.5	45.93	667	60.8°	-35.0	120.71	845	119.3°
23	33.4	71.36	-45.0	-21.4	61.33	692	72.4°	-31.0	105.44	793	107.6°
	28.5	100.47	-47.4	-26.1	83.38	736	90.0°	-26.1	83.41	736	90.0°
JUNE 18, 1963											
1	23.5	129.57	47.4	28.4	-82.81	1067	90.0°	28.4	-82.84	1067	90.0°
3	18.5	158.67	45.0	22.9	-60.93	999	72.3°	34.0	-104.68	1122	107.7°
5	13.6	187.78	40.0	18.8	-45.71	949	60.7°	38.5	-119.8	1152	119.4°
7	8.6	216.88	35.0	15.6	-36.10	906	54.0°	41.9	-127.35	1165	126.1°
9	3.7	245.97	30.0	12.9	-28.76	865	49.4°	44.9	-136.60	1172	130.7°
11	58.7	275.06	20.0	8.3	-17.44	799	43.7°	50.3	-147.75	1156	136.5°
13	53.8	304.20	0.	0.	0.	698	40.0°	60.0	-164.82	1108	140.2°
15	48.8	333.30	-20.0	-4.0	17.51	651	43.8°	-45.7	148.90	1005	136.4°
17	43.8	2.40	-30.0	-12.3	28.91	650	49.5°	-40.8	137.65	949	130.6°
19	38.9	31.51	-35.0	-14.7	36.30	656	54.1°	-38.1	130.33	901	126.0°
21	33.9	60.61	-40.0	-17.5	46.00	674	60.8°	-35.0	120.71	859	119.3°
23	29.0	89.71	-45.0	-21.4	61.34	697	72.4°	-31.0	105.43	805	107.6°
			-47.4	-26.1	83.38	745	90.0°	-26.1	83.42	745	90.0°
JUNE 19, 1963											
1	24.0	114.82	47.4	28.3	-82.85	1056	90.0°	28.2	-82.88	1056	90.0°
3	19.1	143.92	45.0	22.8	-60.97	989	72.3°	33.8	-104.72	1119	107.7°
5	14.1	173.02	40.0	18.7	-45.74	941	60.7°	38.3	-119.87	1149	119.4°
7	9.2	202.13	35.0	15.5	-36.12	898	54.0°	41.8	-127.40	1161	126.1°
9	4.2	231.23	30.0	12.9	-28.78	860	49.4°	44.7	-136.65	1171	130.7°
11	59.2	260.33	20.0	8.3	-17.45	795	43.8°	50.1	-147.79	1161	136.5°
13	54.3	289.44	0.	0.	0.	700	40.0°	59.8	-164.86	1120	140.2°
15	49.3	318.54	-20.0	-4.0	17.51	646	43.8°	-45.8	148.87	1049	136.4°
17	44.4	347.64	-30.0	-12.3	28.92	648	49.5°	-40.9	137.63	994	130.6°
19	39.5	16.75	-35.0	-14.7	36.31	657	54.1°	-38.1	130.32	946	126.0°
21	34.5	45.86	-40.0	-17.5	46.01	677	60.8°	-35.1	120.70	894	119.3°
23	29.5	74.96	-45.0	-21.4	61.35	702	72.4°	-31.0	105.42	817	107.6°
	24.5	104.07	-47.4	-26.1	83.38	756	90.0°	-26.1	83.42	756	90.0°

SATELLITE 1960 IOTA 1
FOR OTHER LATITUDES

	EQUATOR S-N			SOUTH-NORTH				NORTH-SOUTH			
	TIME (UT)	LONG. (W)	LAT.	TIME CORR.	LONG. CORR.	HT. (MI)	BEAR. (N-E)	TIME CORR.	LONG. CORR.	HT. (MI)	BEAR. (N-E)
JUNE 20, 1963											
1	19.6	137.15	47.4	28.0	-82.89	1042	90.0°	28.0	-82.93	1042	90.0°
3	14.6	166.25	45.0	22.6	-61.00	969	72.3°	33.6	-104.77	1104	107.7°
5	9.6	195.36	40.0	18.4	-45.77	907	60.7°	38.1	-119.93	1142	119.4°
7	4.7	224.46	35.0	15.4	-36.15	861	54.0°	41.5	-129.46	1162	126.1°
9	59.7	253.56	30.0	12.8	-28.80	823	49.4°	44.5	-136.71	1172	130.7°
10	54.8	282.66	20.0	8.2	-17.47	760	43.8°	49.9	-147.85	1176	136.5°
12	49.8	311.76	0.	0.	0.	675	40.0°	59.6	-164.91	1132	140.2°
14	44.8	340.86	-20.0	-4.0	17.52	641	43.8°	-46.0	148.84	1036	136.4°
16	39.9	9.96	-30.0	-12.3	28.93	647	49.5°	-40.9	137.61	970	130.6°
18	34.9	39.06	-35.0	-14.7	36.32	658	54.1°	-38.2	130.30	932	126.0°
20	29.9	68.17	-40.0	-17.5	46.01	676	60.8°	-35.1	120.69	888	119.3°
22	24.9	97.27	-45.0	-21.3	61.35	710	72.4°	-31.0	105.42	831	107.7°
			-47.4	-26.1	83.38	765	90.0°	-26.1	83.42	765	90.0°
JUNE 21, 1963											
0	20.0	126.37	47.4	27.9	-82.93	1029	90.0°	27.9	-82.97	1029	90.0°
2	15.0	155.47	45.0	22.5	-61.04	954	72.3°	33.4	-104.82	1095	107.7°
4	10.1	184.57	40.0	18.3	-45.80	891	60.7°	37.9	-119.98	1136	119.4°
6	5.1	213.67	35.0	15.3	-36.17	846	54.0°	41.3	-129.51	1158	126.1°
8	0.1	242.77	30.0	12.7	-28.82	808	49.5°	44.3	-136.76	1171	130.7°
9	55.2	271.87	20.0	8.1	-17.48	746	43.8°	49.7	-147.90	1179	136.5°
11	50.2	300.97	0.	0.	0.	665	40.0°	59.5	-164.96	1143	140.2°
13	45.2	330.07	-20.0	-4.0	17.52	638	43.8	-46.1	148.81	1050	136.4°
15	40.3	359.17	-30.0	-12.2	28.93	647	49.5	-41.0	137.59	986	130.6°
17	35.3	28.27	-35.0	-14.7	36.33	660	54.1°	-38.3	130.28	948	126.0°
19	30.3	57.37	-40.0	-17.4	46.02	680	60.8°	-35.2	120.67	903	119.3°
21	25.3	86.47	-45.0	-21.2	61.35	717	72.4°	-31.1	105.41	844	107.7°
23	20.4	115.57	-47.4	-26.1	83.38	775	90.0°	-26.1	83.42	775	90.0°
JUNE 22, 1963											
1	15.4	144.67	47.4	27.7	-82.98	1014	90.0°	27.7	-83.01	1015	90.0°
3	10.4	173.77	45.0	22.3	-61.07	937	72.3°	33.2	-104.87	1089	107.7°
5	5.5	202.86	40.0	18.2	-45.82	874	60.7°	37.7	-120.03	1128	119.4°
7	0.5	231.96	35.0	15.2	-36.19	829	54.0°	41.1	-129.57	1153	126.1°
8	55.5	261.06	30.0	12.6	-28.84	791	49.5°	44.1	-136.82	1169	130.7°
10	50.5	290.16	20.0	8.1	-17.49	731	43.8°	49.4	-147.96	1162	136.5°
12	45.6	319.26	0.	0.	0.	655	40.1	59.3	-165.01	1134	140.2°
14	40.6	348.36	-20.0	-4.0	17.53	635	43.8	-46.2	148.77	1066	136.4°
16	35.6	17.46	-30.0	-12.2	28.94	648	49.5	-41.1	137.56	1003	130.6°
18	30.6	46.56	-35.0	-14.6	36.33	663	54.1°	-38.4	130.25	964	126.0°
20	25.7	75.65	-40.0	-17.4	46.02	686	60.8°	-35.2	120.65	919	119.3°
22	20.7	104.75	-45.0	-21.2	61.36	726	72.4°	-31.1	105.40	859	107.7°
			-47.4	-26.1	83.38	788	90.0°	-26.1	83.41	788	90.0°

MODIFIED ORBITAL ELEMENTS FOR SATELLITE 1960 IOTA 1

REFERENCE TIME 1963 Y M D H 1 M 17.86 M OF
INCLINATION 47.34 DEG.
ASCENDING NODE (LONG.) 89.28 DEG. WEST
PRIME SWEEP INTERVAL ONE DAY -16.93 MIN.
ARGUMENT OF PERIGEE 288.64 DEG.
RATE OF CHANGE 0.22074 DEG. PER PERIOD
ANOMALISTIC PERIOD 115.187 MIN.
RATE OF CHANGE -0.00048 MIN. PER PERIOD
ECCENTRICITY 0.04747
RADIUS OF PERIGEE 4641.4 MILES
RADIUS OF APOGEE 5104.7 MILES
RATE OF CHANGE -0.82 MILES PER DAY
ASCENDING NODE (GMT) 109.69 DEG.
RATE OF CHANGE -0.9930 DEG. PER DAY
LATITUDE OF PERIGEE 44.27 DEG.
READ-IN EXPECTED REV. 91