

Wallops Internal Publication
WFF-822-95-001

**Geodetic Coordinates Manual
NASA Goddard Space Flight Center
Wallops Flight Facility**

R. A. Davis

January 1995



National Aeronautics and
Space Administration

Goddard Space Flight Center
Wallops Flight Facility
Wallops Island, Virginia 23337

Geodetic Coordinates Manual

for

National Aeronautics and Space Administration
Goddard Space Flight Center
Wallops Flight Facility

Rodney A. Davis
January 1995

This manual supersedes the Geodetic Coordinates Manual NASA Goddard Space Flight Center, Wallops Flight Facility by R. A. Davis published in January, 1994 (WFF-822-94-001).

Table of Contents

Introduction	1.0.0
Definitions	1.1.0
Table 1 - Reference Ellipsoid Constants	2.0.0
Table 2 - Datum Shift Constants	2.1.0
Figure 1 - Datum Map	2.2.0
Table 3.0 Station Positions Organized by Position Number	3.0.0
Table 3.1 Station Positions Organized by Position Type	3.1.0
Table 4.0 Clarke Ellipsoid 1866 North American Datum 1927	4.0.0
Table 4.1 World Geodetic System 1972.....	4.1.0
Table 4.2 International Ellipsoid European Datum 1950.....	4.2.0
Table 4.3 International Ellipsoid Qornoq Datum.....	4.3.0
Table 5 World Geodetic System 1984 North American Datum 1983	5.0.0
Table 6 Mobile Radar Position History.....	6.0.0
References	7.0.0

Introduction

The Geodetic Coordinates Manual for the National Aeronautics and Space Administration Goddard Space Flight Center, Wallops Flight Facility includes the official list of geodetic coordinates for all facilities supporting assigned range projects.

In addition to a summary of definitions, the manual includes several sets of data. The first table lists the ellipsoid constants for each of the reference ellipsoids used in the manual. The second table contains the datum shift constants used in compiling the manual. Figure 1 is a map depicting each datum used. The number, location, name, and reference number for each station position found in the manual are provided in Table 3.0. Table 3.1 contains the same information as Table 3.0 but is sorted by position type.

The fourth table represents the original coordinate data for all station positions not originally provided referenced to the World Geodetic System 1984/North American Datum 1983. The position number, name, latitude, longitude, and mean sea level height are included in this table. The positions are grouped by location. Furthermore, the table is partitioned according to reference ellipsoid and datum. The first section, Table 4.0, contains data referenced to the Clarke 1866 Ellipsoid/North American Datum 1927. The next section, Table 4.1, contains data referenced to the World Geodetic System 1972 ellipsoid and datum. Data referenced to the International Ellipsoid/European Datum 1950 is presented in Table 4.2. Finally, Table 4.3 is comprised of data referenced to the International Ellipsoid/Qornoq Datum.

The World Geodetic System 1984/North American Datum 1983 ellipsoid and datum is the combination currently used for all data products generated in post flight data reduction. Coordinate data referenced to this ellipsoid and datum for all station positions is listed in Table 5. The number, name, latitude, longitude, and ellipsoid height for each station position is found in this table. The table is grouped according to location.

Mobile radars are frequently relocated. A history of their locations can be found in Table 6. The table is grouped by radar identification. Within each group the positions are listed in chronological order with the last known location listed last.

Finally, Table 7 is a comprehensive list of references indicating the source of the station position information found in this manual.

Definitions

Ellipsoid of Revolution

The ellipsoid of revolution is the geometrical figure used in geodesy to approximate the shape of the earth. It approximates the slight flattening at the earth's poles and bulge at the equator. The ellipsoid is generally defined with respect to its size and shape. Size is indicated by the radius at the equator, the semi-major axis. The degree of flattening, a measure of how closely the ellipsoid resembles a sphere, establishes the shape.

Geodetic Position

The ellipsoidal angular coordinates are geodetic latitude and longitude. The geodetic latitude is the angle described by the line normal to the reference ellipsoid at the point of interest and the plane of the equator. Latitudes are considered positive north of the equator and negative south of the equator. The geodetic longitude is the angle measured in the equatorial plane between the prime meridian (Greenwich, England) and the meridian of interest. In this document, longitudes are positive east of the prime meridian and those west of the meridian are negative.

Three reference surfaces are used in the determination of the vertical geodetic location of points: the physical surface of the earth, the geoid, and the geometric surface of the ellipsoid. Geodetic measurements are made on the physical surface of the earth to establish the heights above mean sea level of vertical control points. The geoid is defined as the equipotential surface in the gravity field of the earth which coincides with the undisturbed mean sea level extended continuously through the continents. Since the distribution of the earth's mass is uneven, the geoidal surface will be somewhat irregular; thus, the areas of separation between the geoid and the regular ellipsoid are referred to as the geoid heights or geoid-ellipsoid separations. The geodetic height is the computed height of a point above or below the geometric surface of the reference ellipsoid. This value is approximated by adding the height above mean sea level and the geoid-ellipsoid separation.

Geocentric Position

The geocentric positions are defined in a spherical Cartesian system with the origin at the center of the reference ellipsoid. The X, Y and Z coordinates are defined as follows: X lies on the intersection of the prime meridian and the plane of the equator, Y lies 90 degrees east of the prime meridian and Z is coincident with the earth's axis of rotation. Although geocentric coordinates are not included within this manual, the geocentric latitude and geocentric radius of the earth for the site positions are included in the coordinates file.

Geodetic Datum

The geodetic datum is a surface referenced to an ellipsoid used for positioning points on the earth's surface. Figure 1 illustrates the location of each geodetic datum referred to within this manual.

Geodetic Datum Shifts

A geodetic datum is associated with a particular reference ellipsoid; therefore, it may be necessary to shift the datum (U, V, and W shifts) in order to transform a site position to the new reference ellipsoid.

Table 1 - Reference Ellipsoid Constants

Reference Ellipsoid	Semi-Major Axis (meters)	Inverse of Flattening
Clarke 1866	6,378,206.4	294.9787
Clarke 1880	6,378,249.145	293.465
International	6,378,388.0	297.0
World Geodetic System 1972	6,378,135.0	298.26
World Geodetic System 1984	6,378,137.0	298.257223563

Table 2 - Datum Shift Constants

(Geodetic datum to North American Datum 1983)

Geodetic Datum	U (meters)	V (meters)	W (meters)
European 1950			
Esrage, Sweden	-88.0	-92.0	-119.0
Andoya, Norway	-89.0	-92.0	-119.0
ARC 1960			
San Marco, Africa	-160.0	-8.0	-300.0
Qornoq			
Sondrestrom, Greenland	164.0	138.0	-189.0

Figure 1 - Datum Map

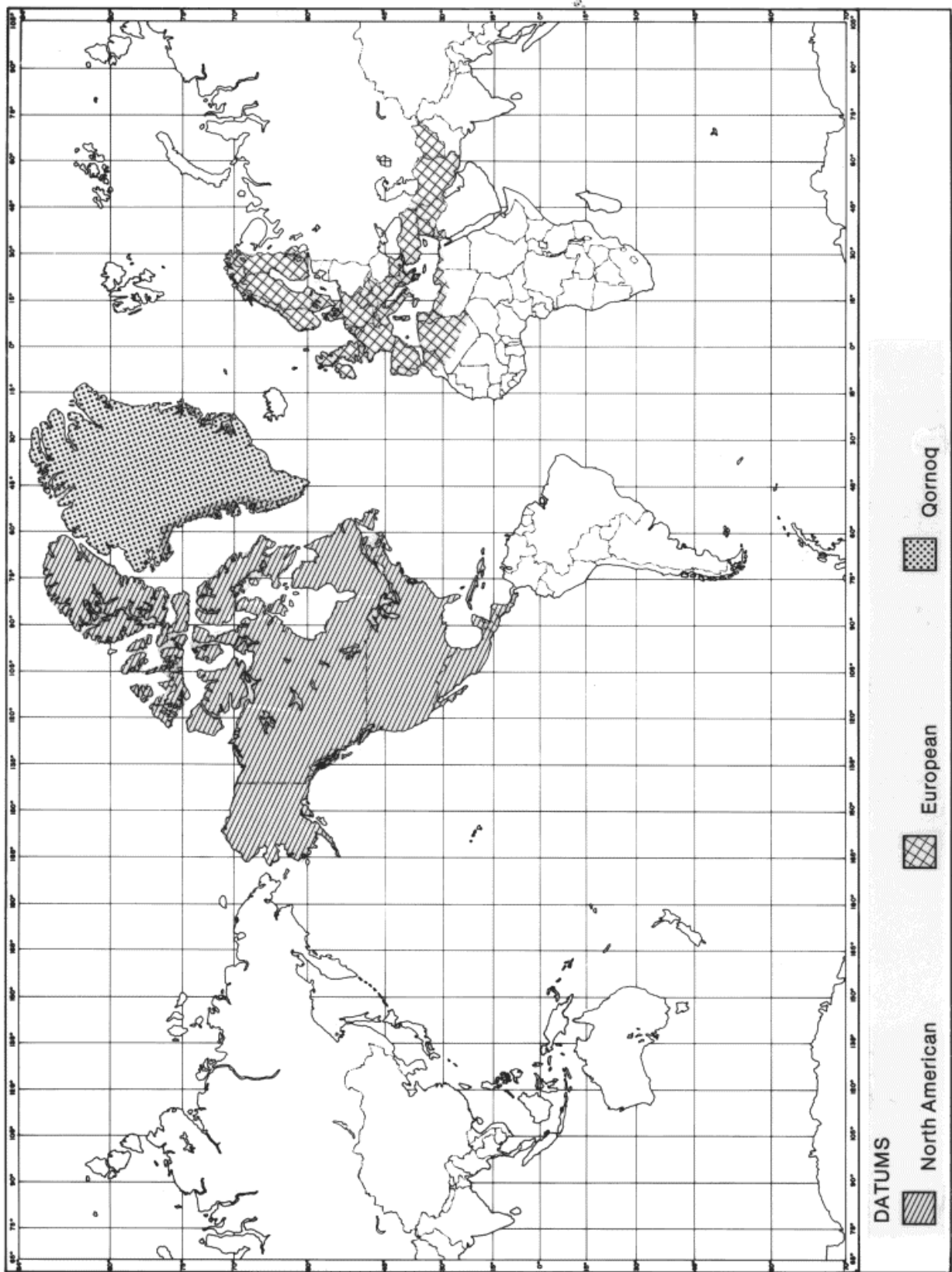


Table 3.0
Station Positions
Organized by Position Number

Station Position Identifications

Position Number	Location	Position Name	Reference Number
1	Wallops Flight Facility	Formerly AN/MPS-19 Radar 1	1
3	Wallops Flight Facility	AN/FPS-16 Radar 3 (153)	53
4	Wallops Flight Facility	SPANDAR Radar 4 (150)	1
5	Wallops Flight Facility	AN/FPQ-6 Radar 5 (151)	1
6	Wallops Flight Facility	AN/MPS-19 Radar 6 (136)	1
7	Wallops Flight Facility	ASR-7 Radar on N-159	91
18	Wallops Flight Facility	AN/FPS-16 Runway Radar 18 (152)	1
25	Wallops Flight Facility	Zero Launcher Pad 0	1
26	Wallops Flight Facility	HAD Launcher Pad 0	1
27	Wallops Flight Facility	Aerobee Launcher Pad 1	1
28	Wallops Flight Facility	Military Launcher South Pad 2	1
29	Wallops Flight Facility	Military Launcher North Pad 2	1
30	Wallops Flight Facility	Thiokol AML-2 South Pad 2	1
31	Wallops Flight Facility	Thiokol AML-1 North Pad 2	1
32	Wallops Flight Facility	RAG Launcher Pad 2A	1
33	Wallops Flight Facility	Former Jupiter Launcher Pad 2A	1
34	Wallops Flight Facility	Scout Mark II Launcher Pad 3A	1
35	Wallops Flight Facility	HAD Launcher Pad 3	1
36	Wallops Flight Facility	MAST Launcher Pad 4	1
37	Wallops Flight Facility	Military Launcher Pad 4	1
38	Wallops Flight Facility	HAD Launcher Pad 4	1
39	Wallops Flight Facility	Working Point Pad 5	1
40	Wallops Flight Facility	AML 50K Launcher Pad 1	105
51	Wallops Flight Facility	MRP: N. Island by-pass road Y-60 area	9
52	Wallops Flight Facility	MRP: Nike-C at E-134	15
53	Wallops Flight Facility	MRP: Island radar north of by-pass road	15
54	Wallops Flight Facility	Mobile Radar Position	23
55	Wallops Flight Facility	MRP: Building Y-60	6
57	Wallops Flight Facility	MRP: Tower on the east side of E-134	38
58	Wallops Flight Facility	MRP: South of building Y-60	40
59	Wallops Flight Facility	MRP: Roof of Y-60	40
61	Wallops Flight Facility	Ref Mic West End 10-28 Runway	59
62	Wallops Flight Facility	Ref Mic (5 & 6) Runway 10-28	60
64	Wallops Flight Facility	Formerly AN/GSN-5 Radar 64	1
65	Wallops Flight Facility	Formerly AN/GSN-5 Radar 65	1
70	Wallops Flight Facility	Noise Test Array 1 Mike 1	16
71	Wallops Flight Facility	Noise Test Array 1 Mike 2	16

Station Position Identifications

Position Number	Location	Position Name	Reference Number
72	Wallops Flight Facility	Noise Test Array 1 Mike 3	16
73	Wallops Flight Facility	Noise Test Array 1 Mike 4	16
74	Wallops Flight Facility	Noise Test Array 1 Mike 5	16
75	Wallops Flight Facility	Noise Test Array 1 Mike 6	16
76	Wallops Flight Facility	Noise Test Array 1 Mike 7	16
77	Wallops Flight Facility	Noise Test Array 1 Mike 8	16
78	Wallops Flight Facility	Noise Test Array 2 Mike 1	16
79	Wallops Flight Facility	Noise Test Array 2 Mike 2	16
80	Wallops Flight Facility	Noise Test Array 2 Mike 3	16
81	Wallops Flight Facility	Noise Test Array 2 Mike 4	16
82	Wallops Flight Facility	Noise Test Array 2 Mike 5	16
83	Wallops Flight Facility	Noise Test Array 2 Mike 6	16
84	Wallops Flight Facility	Noise Test Array 2 Mike 7	16
85	Wallops Flight Facility	Noise Test Array 2 Mike 8	16
86	Wallops Flight Facility	Noise Test Array 2 Mike 9	16
87	Wallops Flight Facility	Noise Test Array 2 Mike 10	16
88	Wallops Flight Facility	T-38 High Speed Acoustics Test Mic 1	37
100	Wallops Flight Facility	Zero Point	1
101	Wallops Flight Facility	Runway 10 Dashed Line at 1000'	1
102	Wallops Flight Facility	Compass Rose by N-159	34
103	Wallops Flight Facility	Old Kennedy Antenna Site	1
106	Wallops Flight Facility	Check Point Point 6	1
107	Wallops Flight Facility	Check Point Point 9	1
108	Wallops Flight Facility	Check Point Point 12	1
109	Wallops Flight Facility	Check Point Point 15	1
110	Wallops Flight Facility	Check Point Point 18	1
111	Wallops Flight Facility	Check Point Point 22	1
112	Wallops Flight Facility	Check Point Point 25	1
113	Wallops Flight Facility	Check Point Point 28	1
114	Wallops Flight Facility	Check Point Point 30	1
115	Wallops Flight Facility	Check Point Point 35	1
116	Wallops Flight Facility	Check Point Point 38	1
117	Wallops Flight Facility	Check Point Point 40	1
118	Wallops Flight Facility	Check Point Point 42	1
119	Wallops Flight Facility	Check Point Point 47	1
120	Wallops Flight Facility	Check Point Point 49	1
121	Wallops Flight Facility	Check Point Point 51	1

Station Position Identifications

Position Number	Location	Position Name	Reference Number
122	Wallops Flight Facility	Check Point Point 53	1
123	Wallops Flight Facility	Check Point Point 56	1
124	Wallops Flight Facility	Check Point Point 58	1
125	Wallops Flight Facility	Check Point Point 60	1
126	Wallops Flight Facility	Check Point Point 62	1
127	Wallops Flight Facility	Check Point Point 65	1
128	Wallops Flight Facility	Check Point Point 70	1
129	Wallops Flight Facility	Check Point Point 71	1
130	Wallops Flight Facility	Check Point Point 72	1
131	Wallops Flight Facility	Check Point Point 74	1
132	Wallops Flight Facility	Check Point Point 75	1
133	Wallops Flight Facility	Hazeltine Point 101	1
134	Wallops Flight Facility	Check Point Point 105	1
135	Wallops Flight Facility	Runway Point 115	1
136	Wallops Flight Facility	Check Point Point 126	1
137	Wallops Flight Facility	Check Point Point 129	1
138	Wallops Flight Facility	Huey Pac Scan Point 139	1
139	Wallops Flight Facility	Bench Mark Point 202	1
140	Wallops Flight Facility	ADAS Telemetry Antenna	34
142	Wallops Flight Facility	AN/GMD X-85	1
143	Wallops Flight Facility	RARF Antenna A North	1
145	Wallops Flight Facility	NAOTS Water Tank	1
146	Wallops Flight Facility	Kennedy Boresight Tower	1
147	Wallops Flight Facility	MET Tower, 300 ft	1
148	Wallops Flight Facility	North Balloon Launch Site TB-560	11
149	Wallops Flight Facility	Camera Station no. 1 E-104	12
150	Wallops Flight Facility	Camera Station no. 2 E-104	12
151	Wallops Flight Facility	Camera Station no. 3 DOG	12
152	Wallops Flight Facility	Camera Station no. 4 DOG	12
153	Wallops Flight Facility	Remote Recorder no.1	12
154	Wallops Flight Facility	1250 ft S of pt 6 Runway CL	12
155	Wallops Flight Facility	1250 ft N of pt 75 Runway CL	12
156	Wallops Flight Facility	TRADAT 3/19/81	13
157	Wallops Flight Facility	LDAR Pole Antenna - SPANDAR	64
158	Wallops Flight Facility	LDAR Ground Antenna - SPANDAR	64
159	Wallops Flight Facility	LDAR Pole Antenna - Assateague	64
160	Wallops Flight Facility	LDAR Square Base - Assateague	14

Station Position Identifications

Position Number	Location	Position Name	Reference Number
161	Wallops Flight Facility	LDAR Pole Antenna - Receiver Site	14
162	Wallops Flight Facility	LDAR Ground Antenna - Receiver Site	64
163	Wallops Flight Facility	LDAR Pole Antenna - New Church	64
164	Wallops Flight Facility	LDAR Square Base - New Church	14
165	Wallops Flight Facility	MLS-DME	17
166	Wallops Flight Facility	MLS-Azimuth Site	17
167	Wallops Flight Facility	MLS-Elevation Site	17
168	Wallops Flight Facility	Intersection of Runways 1735-0422	18
169	Wallops Flight Facility	Center of Collection Array	18
170	Wallops Flight Facility	First Pole Microphone	19
171	Wallops Flight Facility	Microphone 13	20
172	Wallops Flight Facility	High Speed Turnoff	21
173	Wallops Flight Facility	Test Point 1	22
174	Wallops Flight Facility	TM Tracker (8ft Ant) N-162	43
175	Wallops Flight Facility	MET (8ft Ant) N-162	43
176	Wallops Flight Facility	STIR Antenna Z-41	26
177	Wallops Flight Facility	Command Destruct Antenna	31
178	Wallops Flight Facility	MLS AZ CENLIN MON PAD	32
179	Wallops Flight Facility	Medium Gain TM Antenna North	1
180	Wallops Flight Facility	Medium Gain TM Antenna South	1
181	Wallops Flight Facility	HAD Launcher Pad 2	35
183	Wallops Flight Facility	9 Meter Antenna Cent.	43
184	Wallops Flight Facility	9 Meter RM-1	43
185	Wallops Flight Facility	9 Meter N-1	43
186	Wallops Flight Facility	9 Meter N-2	43
187	Wallops Flight Facility	9 Meter E-1	43
188	Wallops Flight Facility	9 Meter E-2	43
189	Wallops Flight Facility	9 Meter S-1	43
190	Wallops Flight Facility	9 Meter S-2	43
191	Wallops Flight Facility	9 Meter W-1	43
192	Wallops Flight Facility	9 Meter W-2	43
193	Wallops Flight Facility	9 Meter Collim Ant.	43
194	Wallops Flight Facility	6 Meter Center	43
195	Wallops Flight Facility	ADAS Boresight Ant (S-BN)	43
196	Wallops Flight Facility	LAS RET REF,APT FPS16	43
197	Wallops Flight Facility	VHF "Zero" RNG Antenna	43
198	Wallops Flight Facility	VHF SCAMP Antenna	43

Station Position Identifications

Position Number	Location	Position Name	Reference Number
199	Wallops Flight Facility	SATAN Transmit	43
200	Wallops Flight Facility	VHF SATAN #1 Receive	43
201	Wallops Flight Facility	Multi-Mode GRND RCVR - Receiver Site	44
202	Wallops Flight Facility	Balloon Release Airfield	45
203	Wallops Flight Facility	MRP: By-pass road north of ICC	47
204	Wallops Flight Facility	MRP: South of building Y-60	46
205	Wallops Flight Facility	Army MDS Mobile Radar Ant. South Stake	51
206	Wallops Flight Facility	Army MDS Mobile Radar Ant. North Stake	51
207	Wallops Flight Facility	Army MDS Mobile Ant. 2-25-87 E. Stake	52
208	Wallops Flight Facility	365-N1 Helo A1, M12 Ref. Mike	54
209	Wallops Flight Facility	365-N1 Helo A2, M5 Ref. Mike	54
210	Wallops Flight Facility	MLS Survey Point no. 3B7-164	1
211	Wallops Flight Facility	MLS Survey Point no. 3K8-103	1
212	Wallops Flight Facility	365-N1 Helo A1, M17	54
213	Wallops Flight Facility	MLS Survey Point no. 122 Runway 17-35	1
214	Wallops Flight Facility	MLS Survey Point no. 033 Runway 17-35	1
215	Wallops Flight Facility	ARC Launcher Pad 2	67
216	Wallops Flight Facility	Boresight Tower (FPQ-6)	1
217	Wallops Flight Facility	Boresight Tower (FPS-16)	69
218	Wallops Flight Facility	MRP: Island radar complex n. by-pass	72
219	Wallops Flight Facility	Z-41 SPS 49 Radar	73
220	Wallops Flight Facility	MRP: PK nail South Island	75
221	Wallops Flight Facility	MRP: Triangle area of airfield	80
222	Wallops Flight Facility	Boresight horn associated with 221	80
223	Wallops Flight Facility	Terminal building X-75	81
224	Wallops Flight Facility	Launcher-Pad 3B AML 20K	82
225	Wallops Flight Facility	MRP: Near Spandar	83
226	Wallops Flight Facility	MRP: Island radar complex n. by-pass	84
227	Wallops Flight Facility	MRP: Near Spandar	85
228	Wallops Flight Facility	REFS Test Rocket launcher	86
229	Wallops Flight Facility	MRP: East side of building E-134	88
230	Wallops Flight Facility	MRP: Old UHF North antenna pedestal	89
231	Wallops Flight Facility	GUSTY antenna	90
232	Wallops Flight Facility	MRP: U-20 Tower	95
233	Wallops Flight Facility	Camera Station PK Nail South Island	96
234	Wallops Flight Facility	MRP: Mainland near UHF radar	100
235	Wallops Flight Facility	MRP: Y-95 tower	103

Station Position Identifications

Position Number	Location	Position Name	Reference Number
236	Wallops Flight Facility	MRP: Island radar complex n. by-pass	104
237	Wallops Flight Facility	Mappsville Translator Tower	104
238	Wallops Flight Facility	VHF SATAN #2 Receive	106
239	Wallops Flight Facility	VHF 7.3 Meter Receive	106
300	White Sands Missile Range	Aerobee Tower L-21A	3
301	White Sands Missile Range	Aerobee Tower L-21B	3
302	White Sands Missile Range	Aerobee Launcher L-455	3
303	White Sands Missile Range	Navy Launcher L-457	3
304	White Sands Missile Range	Launcher L-462	3
305	White Sands Missile Range	Launcher L-479	3
306	White Sands Missile Range	Aries, Top of Ring L-536	3
307	White Sands Missile Range	Launcher L-580	3
308	White Sands Missile Range	Launcher L-630	3
320	White Sands Missile Range	Radar Site R-112	3
321	White Sands Missile Range	Radar Site R-113	3
322	White Sands Missile Range	Radar Site R-114	3
323	White Sands Missile Range	Radar Site R-122	3
324	White Sands Missile Range	Radar Site R-123	3
325	White Sands Missile Range	Radar Site R-124	3
326	White Sands Missile Range	Radar Site R-125	3
327	White Sands Missile Range	Radar Site R-127	3
328	White Sands Missile Range	Radar Site R-128	3
329	White Sands Missile Range	Radar Site R-329	3
330	White Sands Missile Range	Radar Site R-350	3
331	White Sands Missile Range	Radar Site R-393	3
332	White Sands Missile Range	Radar Site R-394	3
333	White Sands Missile Range	Radar Site R-395	3
334	White Sands Missile Range	Radar Site R-396	3
335	White Sands Missile Range	Radar Site R-455	3
336	White Sands Missile Range	Radar Site R-482	3
400	Poker Flat, AK	MRL 7.5K Pad-1	1
401	Poker Flat, AK	MRL 7.5K Pad-2	1
402	Poker Flat, AK	AML 20K Pad-3	1
403	Poker Flat, AK	AML 20K Pad-4	1
404	Poker Flat, AK	AML 4K3 Pad-5	1
405	Poker Flat, AK	Formerly VERLORT Radar	1
406	Poker Flat, AK	WSMR Radar East	2

Station Position Identifications

Position Number	Location	Position Name	Reference Number
407	Poker Flat, AK	WSMR Radar X-Band West	2
408	Poker Flat, AK	Hilltop Launcher Pad 6	2
409	Poker Flat, AK	TM Tracker TRADAT no. 1	2
410	Poker Flat, AK	TM Tracker TRADAT no. 2	2
411	Poker Flat, AK	MRP: Poker Flat Research Range	8
412	Poker Flat, AK	MRP: Poker Flat Research Range	63
413	Poker Flat, AK	Boresight associated with 412	70
414	Poker Flat, AK	Blockhouse	93
415	Poker Flat, AK	MET Tower, 265.88 ft	93
416	Poker Flat, AK	Optics Tower, 64.89 ft	93
417	Poker Flat, AK	CARIB marker	93
600	Eastern Space & Missile Center	AN/FPQ-13 Radar 0.13	5
601	Eastern Space & Missile Center	AN/FPQ-14 Radar 0.14 PATQ	5
602	Eastern Space & Missile Center	AN/FPQ-14 Radar 19.14 MILA	5
603	Eastern Space & Missile Center	Unified S-band MILA	5
604	Eastern Space & Missile Center	Telemetry TAA-24 MILA	5
605	Eastern Space & Missile Center	Pad 39A launcher	5
606	Eastern Space & Missile Center	Pad stand 39B	71
607	Eastern Space & Missile Center	AN/FPQ14 Radar 28.14 Jonathan-Dickinson	5
608	Eastern Space & Missile Center	Pad 17B	5
609	Eastern Space & Missile Center	Pad 17A	87
610	Eastern Space & Missile Center	Pad 40	97
611	Eastern Space & Missile Center	STS Landing North	5
612	Eastern Space & Missile Center	STS Landing South	5
613	Eastern Space & Missile Center	MRP: MILA	101
675	Puerto Rico	MRP: Tortuguero	98
676	Puerto Rico	HAD Launcher	98
677	Puerto Rico	MRL Launcher	98
700	Fort Yukon, AK	Launcher	10
701	Fort Yukon, AK	Mini Tracker	10
702	Fort Yukon, AK	Mobile Radar Position	10
703	Bermuda	AN/FPQ-6 BDA (141)	5
704	Norfolk, VA	VORTAC Station ORF	12
705	Sea Isle, NJ	VORTAC Station SIE	12
709	Longmont, CO	Mobile Radar Position	27
710	Erie, CO	Mobile C-Band 16-18 Jan 85	29
711	Palestine, TX	Mobile Radar Position	30

Station Position Identifications

Position Number	Location	Position Name	Reference Number
712	Goodland, KS	Mobile Radar Position	33
714	Mt. Lemmon, AZ	CAPRI Radar	39
715	Somerset, PA	MRP: Somerset County Municipal Airport	41
716	Springfield, TN	MRP: City Industrial Park	42
717	Millstone Hill, MA	Radar/Optical Site	96
718	Snowhill, MD	VORTAC station	SWL 94
719	Patuxent River NAS, MD	VORTAC station	PXT 94
720	Duck, NC	Optical site	96
800	Esrangle, Sweden	MPS - 36 Radar	49
801	Esrangle, Sweden	Maraba S-Band Station	49
802	Esrangle, Sweden	NASA Telemetry Trailer	49
803	Esrangle, Sweden	Esrangle Radar	49
804	Esrangle, Sweden	Esrangle Telemetry	49
805	Esrangle, Sweden	Super Loki Pad	49
806	Esrangle, Sweden	Skylark Tower	68
807	Esrangle, Sweden	MRL Launcher	78
808	Esrangle, Sweden	MRP: Karuna, Sweden	92
830	Churchill, Canada	Mobile Radar Position	76
831	Churchill, Canada	Aerobee Launcher	Pad 3 77
832	Churchill, Canada	Universal Launcher	Pad 1 77
833	Churchill, Canada	Auroral Launcher	Pad 7 77
834	Churchill, Canada	Arcas East Launcher	Pad 4A 77
835	Churchill, Canada	Arcas West Launcher	Pad 4A 77
836	Churchill, Canada	TM antenna #1	77
837	Churchill, Canada	TM antenna #10	77
850	Alcantara, Brazil	Mobile Radar Position	106
851	Alcantara, Brazil	Brazil radar - Adour	106
852	Alcantara, Brazil	Brazil radar - Atlas	106
853	Alcantara, Brazil	Radar boresight	106
854	Alcantara, Brazil	TM Antenna (18 ft)	106
855	Alcantara, Brazil	TM Antenna (20 ft)	106
856	Alcantara, Brazil	HAD Launcher	106
857	Alcantara, Brazil	MRL Launcher	106
858	Alcantara, Brazil	RAG Launcher	106
859	Alcantara, Brazil	Universal Launcher	106
910	Sondrestrom, Greenland	HAD Launcher	28
911	Sondrestrom, Greenland	MRL Launcher	28

Station Position Identifications

Position Number	Location	Position Name	Reference Number
912	Sondrestrom, Greenland	Danish Launcher	28
913	Sondrestrom, Greenland	Mobile C-Band R2 9-86	48
914	Sondrestrom, Greenland	Mobile MPS-19 R10 9/28/84	28
915	Sondrestrom, Greenland	FSR Boresight	28
916	Sondrestrom, Greenland	Boresight Tower Horn	28
917	Sondrestrom, Greenland	TACAN Site	28
918	Sondrestrom, Greenland	TM Antenna (20 ft) no. 9 8-86	48
919	Sondrestrom, Greenland	TM Antenna (6 ft) no. 7	28
920	Sondrestrom, Greenland	TM Antenna (8 ft) no. 2	28
921	Sondrestrom, Greenland	TM Antenna (8 ft) no. 4	28
922	Sondrestrom, Greenland	Anemometer Tower Base	28
923	Sondrestrom, Greenland	Anemometer Tower Level 1	28
924	Sondrestrom, Greenland	Anemometer Tower Level 2	28
925	Sondrestrom, Greenland	Anemometer Tower Level 3	28
926	Sondrestrom, Greenland	HAD Launcher no. 3 9-86	48
927	Sondrestrom, Greenland	Test Rocket Launcher 9-86	48
928	Sondrestrom, Greenland	Boresight Dish for 20 ft Ant 9-86	48
929	Sondrestrom, Greenland	TM Antenna (10 ft) no. 1 10-86	50
940	Andoya, Norway	Launch Pad #9	62
941	Andoya, Norway	Launch Pad #10	62
942	Andoya, Norway	Launch Pad #3	57
943	Andoya, Norway	Launch Pad #5	57
947	Andoya, Norway	MRP: (Grustaket)	62
948	Andoya, Norway	Antenna 2	62
949	Andoya, Norway	Antenna 4	62
950	Andoya, Norway	Antenna 8	62
951	Andoya, Norway	Tracking Radar Pad	62
952	Andoya, Norway	Tradat 9 - 12/17/88	74
953	Andoya, Norway	Mobile Radar Position	99
960	Woomera, Australia	MRL Launcher	65
961	Woomera, Australia	HAD Launcher	65
962	Woomera, Australia	Mobile Radar Position	65
963	Woomera, Australia	Mobile TM no. 1	65
964	Woomera, Australia	Mobile TM no. 10	65
965	Woomera, Australia	Radar 32 Australia R1	65
966	Woomera, Australia	Radar 33 Australia R2	65
967	Woomera, Australia	Boresight Tower	65

Station Position Identifications

Position Number	Location	Position Name	Reference Number
980	San Marco, Africa	San Marco Platform - Launcher Pit	66
981	San Marco, Africa	Santa Rita Platform - Radar Antenna	66

Table 3.1
Station Positions
Organized by Position Type

Station Position Identifications

Position Number	Location	Position Name	Reference Number
** Camera			
149	Wallops Flight Facility	Camera Station no. 1 E-104	12
150	Wallops Flight Facility	Camera Station no. 2 E-104	12
151	Wallops Flight Facility	Camera Station no. 3 DOG	12
152	Wallops Flight Facility	Camera Station no. 4 DOG	12
233	Wallops Flight Facility	Camera Station PK Nail South Island	96
720	Duck, NC	Optical site	96
** LDAR			
157	Wallops Flight Facility	LDAR Pole Antenna - SPANDAR	64
158	Wallops Flight Facility	LDAR Ground Antenna - SPANDAR	64
159	Wallops Flight Facility	LDAR Pole Antenna - Assateague	64
160	Wallops Flight Facility	LDAR Square Base - Assateague	14
161	Wallops Flight Facility	LDAR Pole Antenna - Receiver Site	14
162	Wallops Flight Facility	LDAR Ground Antenna - Receiver Site	64
163	Wallops Flight Facility	LDAR Pole Antenna - New Church	64
164	Wallops Flight Facility	LDAR Square Base - New Church	14
** Launch Facility			
25	Wallops Flight Facility	Zero Launcher Pad 0	1
26	Wallops Flight Facility	HAD Launcher Pad 0	1
27	Wallops Flight Facility	Aerobee Launcher Pad 1	1
28	Wallops Flight Facility	Military Launcher South Pad 2	1
29	Wallops Flight Facility	Military Launcher North Pad 2	1
30	Wallops Flight Facility	Thiokol AML-2 South Pad 2	1
31	Wallops Flight Facility	Thiokol AML-1 North Pad 2	1
32	Wallops Flight Facility	RAG Launcher Pad 2A	1
33	Wallops Flight Facility	Former Jupiter Launcher Pad 2A	1
34	Wallops Flight Facility	Scout Mark II Launcher Pad 3A	1
35	Wallops Flight Facility	HAD Launcher Pad 3	1
36	Wallops Flight Facility	MAST Launcher Pad 4	1
37	Wallops Flight Facility	Military Launcher Pad 4	1
38	Wallops Flight Facility	HAD Launcher Pad 4	1
39	Wallops Flight Facility	Working Point Pad 5	1
40	Wallops Flight Facility	AML 50K Launcher Pad 1	105
148	Wallops Flight Facility	North Balloon Launch Site TB-560	11
181	Wallops Flight Facility	HAD Launcher Pad 2	35

Station Position Identifications

Position Number	Location	Position Name	Reference Number
202	Wallops Flight Facility	Balloon Release Airfield	45
215	Wallops Flight Facility	ARC Launcher Pad 2	67
224	Wallops Flight Facility	Launcher-Pad 3B AML 20K	82
228	Wallops Flight Facility	REFS Test Rocket launcher	86
302	White Sands Missile Range	Aerobee Launcher L-455	3
303	White Sands Missile Range	Navy Launcher L-457	3
304	White Sands Missile Range	Launcher L-462	3
305	White Sands Missile Range	Launcher L-479	3
306	White Sands Missile Range	Aries, Top of Ring L-536	3
307	White Sands Missile Range	Launcher L-580	3
308	White Sands Missile Range	Launcher L-630	3
400	Poker Flat, AK	MRL 7.5K Pad-1	1
401	Poker Flat, AK	MRL 7.5K Pad-2	1
402	Poker Flat, AK	AML 20K Pad-3	1
403	Poker Flat, AK	AML 20K Pad-4	1
404	Poker Flat, AK	AML 4K3 Pad-5	1
408	Poker Flat, AK	Hilltop Launcher Pad 6	2
605	Eastern Space & Missile Center	Pad 39A launcher	5
606	Eastern Space & Missile Center	Pad stand 39B	71
608	Eastern Space & Missile Center	Pad 17B	5
609	Eastern Space & Missile Center	Pad 17A	87
610	Eastern Space & Missile Center	Pad 40	97
676	Puerto Rico	HAD Launcher	98
677	Puerto Rico	MRL Launcher	98
700	Fort Yukon, AK	Launcher	10
805	Esrangle, Sweden	Super Loki Pad	49
807	Esrangle, Sweden	MRL Launcher	78
831	Churchill, Canada	Aerobee Launcher Pad 3	77
832	Churchill, Canada	Universal Launcher Pad 1	77
833	Churchill, Canada	Auroral Launcher Pad 7	77
834	Churchill, Canada	Arcas East Launcher Pad 4A	77
835	Churchill, Canada	Arcas West Launcher Pad 4A	77
856	Alcantara, Brazil	HAD Launcher	106
857	Alcantara, Brazil	MRL Launcher	106
858	Alcantara, Brazil	RAG Launcher	106
859	Alcantara, Brazil	Universal Launcher	106
910	Sondrestrom, Greenland	HAD Launcher	28

Station Position Identifications

Position Number	Location	Position Name	Reference Number
911	Sondrestrom, Greenland	MRL Launcher	28
912	Sondrestrom, Greenland	Danish Launcher	28
926	Sondrestrom, Greenland	HAD Launcher no. 3 9-86	48
927	Sondrestrom, Greenland	Test Rocket Launcher 9-86	48
940	Andoya, Norway	Launch Pad #9	62
941	Andoya, Norway	Launch Pad #10	62
942	Andoya, Norway	Launch Pad #3	57
943	Andoya, Norway	Launch Pad #5	57
960	Woomera, Australia	MRL Launcher	65
961	Woomera, Australia	HAD Launcher	65
980	San Marco, Africa	San Marco Platform - Launcher Pit	66
** Microwave Landing System			
165	Wallops Flight Facility	MLS-DME	17
166	Wallops Flight Facility	MLS-Azimuth Site	17
167	Wallops Flight Facility	MLS-Elevation Site	17
178	Wallops Flight Facility	MLS AZ CENLIN MON PAD	32
210	Wallops Flight Facility	MLS Survey Point no. 3B7-164	1
211	Wallops Flight Facility	MLS Survey Point no. 3K8-103	1
213	Wallops Flight Facility	MLS Survey Point no. 122 Runway 17-35	1
214	Wallops Flight Facility	MLS Survey Point no. 033 Runway 17-35	1
** Microphone			
61	Wallops Flight Facility	Ref Mic West End 10-28 Runway	59
62	Wallops Flight Facility	Ref Mic (5 & 6) Runway 10-28	60
70	Wallops Flight Facility	Noise Test Array 1 Mike 1	16
71	Wallops Flight Facility	Noise Test Array 1 Mike 2	16
72	Wallops Flight Facility	Noise Test Array 1 Mike 3	16
73	Wallops Flight Facility	Noise Test Array 1 Mike 4	16
74	Wallops Flight Facility	Noise Test Array 1 Mike 5	16
75	Wallops Flight Facility	Noise Test Array 1 Mike 6	16
76	Wallops Flight Facility	Noise Test Array 1 Mike 7	16
77	Wallops Flight Facility	Noise Test Array 1 Mike 8	16
78	Wallops Flight Facility	Noise Test Array 2 Mike 1	16
79	Wallops Flight Facility	Noise Test Array 2 Mike 2	16
80	Wallops Flight Facility	Noise Test Array 2 Mike 3	16
81	Wallops Flight Facility	Noise Test Array 2 Mike 4	16

Station Position Identifications

Position Number	Location	Position Name	Reference Number
82	Wallops Flight Facility	Noise Test Array 2 Mike 5	16
83	Wallops Flight Facility	Noise Test Array 2 Mike 6	16
84	Wallops Flight Facility	Noise Test Array 2 Mike 7	16
85	Wallops Flight Facility	Noise Test Array 2 Mike 8	16
86	Wallops Flight Facility	Noise Test Array 2 Mike 9	16
87	Wallops Flight Facility	Noise Test Array 2 Mike 10	16
88	Wallops Flight Facility	T-38 High Speed Acoustics Test Mic 1	37
170	Wallops Flight Facility	First Pole Microphone	19
171	Wallops Flight Facility	Microphone 13	20
208	Wallops Flight Facility	365-N1 Helo A1, M12 Ref. Mike	54
209	Wallops Flight Facility	365-N1 Helo A2, M5 Ref. Mike	54
212	Wallops Flight Facility	365-N1 Helo A1, M17	54
** Mobile Radar			
51	Wallops Flight Facility	MRP: N. Island by-pass road Y-60 area	9
52	Wallops Flight Facility	MRP: Nike-C at E-134	15
53	Wallops Flight Facility	MRP: Island radar north of by-pass road	15
54	Wallops Flight Facility	Mobile Radar Position	23
55	Wallops Flight Facility	MRP: Building Y-60	6
57	Wallops Flight Facility	MRP: Tower on the east side of E-134	38
58	Wallops Flight Facility	MRP: South of building Y-60	40
59	Wallops Flight Facility	MRP: Roof of Y-60	40
203	Wallops Flight Facility	MRP: By-pass road north of ICC	47
204	Wallops Flight Facility	MRP: South of building Y-60	46
205	Wallops Flight Facility	Army MDS Mobile Radar Ant. South Stake	51
206	Wallops Flight Facility	Army MDS Mobile Radar Ant. North Stake	51
207	Wallops Flight Facility	Army MDS Mobile Ant. 2-25-87 E. Stake	52
218	Wallops Flight Facility	MRP: Island radar complex n. by-pass	72
220	Wallops Flight Facility	MRP: PK nail South Island	75
221	Wallops Flight Facility	MRP: Triangle area of airfield	80
225	Wallops Flight Facility	MRP: Near Spandar	83
226	Wallops Flight Facility	MRP: Island radar complex n. by-pass	84
227	Wallops Flight Facility	MRP: Near Spandar	85
229	Wallops Flight Facility	MRP: East side of building E-134	88
230	Wallops Flight Facility	MRP: Old UHF North antenna pedestal	89
232	Wallops Flight Facility	MRP: U-20 Tower	95
234	Wallops Flight Facility	MRP: Mainland near UHF radar	100

Station Position Identifications

Position Number	Location	Position Name	Reference Number
235	Wallops Flight Facility	MRP: Y-95 tower	103
236	Wallops Flight Facility	MRP: Island radar complex n. by-pass	104
411	Poker Flat, AK	MRP: Poker Flat Research Range	8
412	Poker Flat, AK	MRP: Poker Flat Research Range	63
613	Eastern Space & Missile Center	MRP: MILA	101
675	Puerto Rico	MRP: Tortuguero	98
702	Fort Yukon, AK	Mobile Radar Position	10
709	Longmont, CO	Mobile Radar Position	27
710	Erie, CO	Mobile C-Band 16-18 Jan 85	29
711	Palestine, TX	Mobile Radar Position	30
712	Goodland, KS	Mobile Radar Position	33
715	Somerset, PA	MRP: Somerset County Municipal Airport	41
716	Springfield, TN	MRP: City Industrial Park	42
808	Esrange, Sweden	MRP: Karuna, Sweden	92
830	Churchill, Canada	Mobile Radar Position	76
850	Alcantara, Brazil	Mobile Radar Position	106
913	Sondrestrom, Greenland	Mobile C-Band R2 9-86	48
914	Sondrestrom, Greenland	Mobile MPS-19 R10 9/28/84	28
947	Andoya, Norway	MRP: (Grustaket)	62
951	Andoya, Norway	Tracking Radar Pad	62
953	Andoya, Norway	Mobile Radar Position	99
962	Woomera, Australia	Mobile Radar Position	65
** Miscellaneous			
102	Wallops Flight Facility	Compass Rose by N-159	34
143	Wallops Flight Facility	RARF Antenna A North	1
153	Wallops Flight Facility	Remote Recorder no.1	12
196	Wallops Flight Facility	LAS RET REF,APT FPS16	43
223	Wallops Flight Facility	Terminal building X-75	81
414	Poker Flat, AK	Blockhouse	93
417	Poker Flat, AK	CARIB marker	93
704	Norfolk, VA	VORTAC Station ORF	12
705	Sea Isle, NJ	VORTAC Station SIE	12
718	Snowhill, MD	VORTAC station SWL	94
719	Patuxent River NAS, MD	VORTAC station PXT	94
917	Sondrestrom, Greenland	TACAN Site	28

Station Position Identifications

Position Number	Location	Position Name	Reference Number
** Mobile Telemetry			
802	Esrangle, Sweden	NASA Telemetry Trailer	49
854	Alcantara, Brazil	TM Antenna (18 ft)	106
855	Alcantara, Brazil	TM Antenna (20 ft)	106
952	Andoya, Norway	Tradat 9 - 12/17/88	74
963	Woomera, Australia	Mobile TM no. 1	65
964	Woomera, Australia	Mobile TM no. 10	65
** Runway			
100	Wallops Flight Facility	Zero Point	1
101	Wallops Flight Facility	Runway 10 Dashed Line at 1000'	1
106	Wallops Flight Facility	Check Point Point 6	1
107	Wallops Flight Facility	Check Point Point 9	1
108	Wallops Flight Facility	Check Point Point 12	1
109	Wallops Flight Facility	Check Point Point 15	1
110	Wallops Flight Facility	Check Point Point 18	1
111	Wallops Flight Facility	Check Point Point 22	1
112	Wallops Flight Facility	Check Point Point 25	1
113	Wallops Flight Facility	Check Point Point 28	1
114	Wallops Flight Facility	Check Point Point 30	1
115	Wallops Flight Facility	Check Point Point 35	1
116	Wallops Flight Facility	Check Point Point 38	1
117	Wallops Flight Facility	Check Point Point 40	1
118	Wallops Flight Facility	Check Point Point 42	1
119	Wallops Flight Facility	Check Point Point 47	1
120	Wallops Flight Facility	Check Point Point 49	1
121	Wallops Flight Facility	Check Point Point 51	1
122	Wallops Flight Facility	Check Point Point 53	1
123	Wallops Flight Facility	Check Point Point 56	1
124	Wallops Flight Facility	Check Point Point 58	1
125	Wallops Flight Facility	Check Point Point 60	1
126	Wallops Flight Facility	Check Point Point 62	1
127	Wallops Flight Facility	Check Point Point 65	1
128	Wallops Flight Facility	Check Point Point 70	1
129	Wallops Flight Facility	Check Point Point 71	1
130	Wallops Flight Facility	Check Point Point 72	1
131	Wallops Flight Facility	Check Point Point 74	1

Station Position Identifications

Position Number	Location	Position Name	Reference Number
132	Wallops Flight Facility	Check Point Point 75	1
133	Wallops Flight Facility	Hazeltine Point 101	1
134	Wallops Flight Facility	Check Point Point 105	1
135	Wallops Flight Facility	Runway Point 115	1
136	Wallops Flight Facility	Check Point Point 126	1
137	Wallops Flight Facility	Check Point Point 129	1
138	Wallops Flight Facility	Huey Pac Scan Point 139	1
139	Wallops Flight Facility	Bench Mark Point 202	1
154	Wallops Flight Facility	1250 ft S of pt 6 Runway CL	12
155	Wallops Flight Facility	1250 ft N of pt 75 Runway CL	12
168	Wallops Flight Facility	Intersection of Runways 1735-0422	18
169	Wallops Flight Facility	Center of Collection Array	18
172	Wallops Flight Facility	High Speed Turnoff	21
173	Wallops Flight Facility	Test Point 1	22
201	Wallops Flight Facility	Multi-Mode GRND RCVR - Receiver Site	44
611	Eastern Space & Missile Center	STS Landing North	5
612	Eastern Space & Missile Center	STS Landing South	5
** Stationary Radar			
1	Wallops Flight Facility	Formerly AN/MPS-19 Radar 1	1
3	Wallops Flight Facility	AN/FPS-16 Radar 3 (153)	53
4	Wallops Flight Facility	SPANDAR Radar 4 (150)	1
5	Wallops Flight Facility	AN/FPQ-6 Radar 5 (151)	1
6	Wallops Flight Facility	AN/MPS-19 Radar 6 (136)	1
7	Wallops Flight Facility	ASR-7 Radar on N-159	91
18	Wallops Flight Facility	AN/FPS-16 Runway Radar 18 (152)	1
64	Wallops Flight Facility	Formerly AN/GSN-5 Radar 64	1
65	Wallops Flight Facility	Formerly AN/GSN-5 Radar 65	1
219	Wallops Flight Facility	Z-41 SPS 49 Radar	73
320	White Sands Missile Range	Radar Site R-112	3
321	White Sands Missile Range	Radar Site R-113	3
322	White Sands Missile Range	Radar Site R-114	3
323	White Sands Missile Range	Radar Site R-122	3
324	White Sands Missile Range	Radar Site R-123	3
325	White Sands Missile Range	Radar Site R-124	3
326	White Sands Missile Range	Radar Site R-125	3
327	White Sands Missile Range	Radar Site R-127	3

Station Position Identifications

Position Number	Location	Position Name	Reference Number
328	White Sands Missile Range	Radar Site R-128	3
329	White Sands Missile Range	Radar Site R-329	3
330	White Sands Missile Range	Radar Site R-350	3
331	White Sands Missile Range	Radar Site R-393	3
332	White Sands Missile Range	Radar Site R-394	3
333	White Sands Missile Range	Radar Site R-395	3
334	White Sands Missile Range	Radar Site R-396	3
335	White Sands Missile Range	Radar Site R-455	3
336	White Sands Missile Range	Radar Site R-482	3
405	Poker Flat, AK	Formerly VERLORT Radar	1
406	Poker Flat, AK	WSMR Radar East	2
407	Poker Flat, AK	WSMR Radar X-Band West	2
600	Eastern Space & Missile Center	AN/FPQ-13 Radar 0.13	5
601	Eastern Space & Missile Center	AN/FPQ-14 Radar 0.14 PATQ	5
602	Eastern Space & Missile Center	AN/FPQ-14 Radar 19.14 MILA	5
603	Eastern Space & Missile Center	Unified S-band MILA	5
607	Eastern Space & Missile Center	AN/FPQ14 Radar 28.14 Jonathan-Dickinson	5
703	Bermuda	AN/FPQ-6 BDA (141)	5
714	Mt. Lemmon, AZ	CAPRI Radar	39
717	Millstone Hill, MA	Radar/Optical Site	96
800	Esrangle, Sweden	MPS - 36 Radar	49
801	Esrangle, Sweden	Maraba S-Band Station	49
803	Esrangle, Sweden	Esrangle Radar	49
851	Alcantara, Brazil	Brazil radar - Adour	106
852	Alcantara, Brazil	Brazil radar - Atlas	106
965	Woomera, Australia	Radar 32 Australia R1	65
966	Woomera, Australia	Radar 33 Australia R2	65
981	San Marco, Africa	Santa Rita Platform - Radar Antenna	66
** Stationary Telemetry			
103	Wallops Flight Facility	Old Kennedy Antenna Site	1
140	Wallops Flight Facility	ADAS Telemetry Antenna	34
142	Wallops Flight Facility	AN/GMD X-85	1
156	Wallops Flight Facility	TRADAT 3/19/81	13
174	Wallops Flight Facility	TM Tracker (8ft Ant) N-162	43
175	Wallops Flight Facility	MET (8ft Ant) N-162	43
176	Wallops Flight Facility	STIR Antenna Z-41	26

Station Position Identifications

Position Number	Location	Position Name	Reference Number
177	Wallops Flight Facility	Command Destruct Antenna	31
179	Wallops Flight Facility	Medium Gain TM Antenna North	1
180	Wallops Flight Facility	Medium Gain TM Antenna South	1
183	Wallops Flight Facility	9 Meter Antenna Cent.	43
184	Wallops Flight Facility	9 Meter RM-1	43
185	Wallops Flight Facility	9 Meter N-1	43
186	Wallops Flight Facility	9 Meter N-2	43
187	Wallops Flight Facility	9 Meter E-1	43
188	Wallops Flight Facility	9 Meter E-2	43
189	Wallops Flight Facility	9 Meter S-1	43
190	Wallops Flight Facility	9 Meter S-2	43
191	Wallops Flight Facility	9 Meter W-1	43
192	Wallops Flight Facility	9 Meter W-2	43
193	Wallops Flight Facility	9 Meter Collim Ant.	43
194	Wallops Flight Facility	6 Meter Center	43
195	Wallops Flight Facility	ADAS Boresight Ant (S-BN)	43
197	Wallops Flight Facility	VHF "Zero" RNG Antenna	43
198	Wallops Flight Facility	VHF SCAMP Antenna	43
199	Wallops Flight Facility	SATAN Transmit	43
200	Wallops Flight Facility	VHF SATAN #1 Receive	43
231	Wallops Flight Facility	GUSTY antenna	90
238	Wallops Flight Facility	VHF SATAN #2 Receive	106
239	Wallops Flight Facility	VHF 7.3 Meter Receive	106
409	Poker Flat, AK	TM Tracker TRADAT no. 1	2
410	Poker Flat, AK	TM Tracker TRADAT no. 2	2
604	Eastern Space & Missile Center	Telemetry TAA-24 MILA	5
701	Fort Yukon, AK	Mini Tracker	10
804	Esrangle, Sweden	Esrangle Telemetry	49
836	Churchill, Canada	TM antenna #1	77
837	Churchill, Canada	TM antenna #10	77
918	Sondrestrom, Greenland	TM Antenna (20 ft) no. 9 8-86	48
919	Sondrestrom, Greenland	TM Antenna (6 ft) no. 7	28
920	Sondrestrom, Greenland	TM Antenna (8 ft) no. 2	28
921	Sondrestrom, Greenland	TM Antenna (8 ft) no. 4	28
929	Sondrestrom, Greenland	TM Antenna (10 ft) no. 1 10-86	50
948	Andoya, Norway	Antenna 2	62
949	Andoya, Norway	Antenna 4	62
950	Andoya, Norway	Antenna 8	62

Station Position Identifications

Position Number	Location	Position Name	Reference Number
** Tower			
145	Wallops Flight Facility	NAOTS Water Tank	1
146	Wallops Flight Facility	Kennedy Boresight Tower	1
147	Wallops Flight Facility	MET Tower, 300 ft	1
216	Wallops Flight Facility	Boresight Tower (FPQ-6)	1
217	Wallops Flight Facility	Boresight Tower (FPS-16)	69
222	Wallops Flight Facility	Boresight horn associated with 221	80
237	Wallops Flight Facility	Mappsville Translator Tower	104
300	White Sands Missile Range	Aerobee Tower L-21A	3
301	White Sands Missile Range	Aerobee Tower L-21B	3
413	Poker Flat, AK	Boresight associated with 412	70
415	Poker Flat, AK	MET Tower, 265.88 ft	93
416	Poker Flat, AK	Optics Tower, 64.89 ft	93
806	Esrangle, Sweden	Skylark Tower	68
853	Alcantara, Brazil	Radar boresight	106
915	Sondrestrom, Greenland	FSR Boresight	28
916	Sondrestrom, Greenland	Boresight Tower Horn	28
922	Sondrestrom, Greenland	Anemometer Tower Base	28
923	Sondrestrom, Greenland	Anemometer Tower Level 1	28
924	Sondrestrom, Greenland	Anemometer Tower Level 2	28
925	Sondrestrom, Greenland	Anemometer Tower Level 3	28
928	Sondrestrom, Greenland	Boresight Dish for 20 ft Ant 9-86	48
967	Woomera, Australia	Boresight Tower	65

Table 4.0

Clarke Ellipsoid 1866
North American Datum 1927

Flattening = $1/294.9787$
Semi-Major Axis = 6,378,206.4 meters

Clarke Ellipsoid 1866 / North American Datum 1927

Position Number and Name		Latitude	Longitude	Height Above MSL (feet)
** Location: Wallops Flight Facility				
1	Formerly AN/MPS-19 Radar 1	37 50 29.53160	37.84153656	-75 29 5.95310 -75.48498697 25.320
3	AN/FPS-16 Radar 3 (153)	37 50 28.38960	37.84121933	-75 29 7.62320 -75.48545089 42.580
4	SPANDAR Radar 4 (150)	37 51 16.74250	37.85465069	-75 30 48.39430 -75.51344286 102.480
5	AN/FPQ-6 Radar 5 (151)	37 51 36.50390	37.86013997	-75 30 34.76740 -75.50965761 49.150
6	AN/MPS-19 Radar 6 (136)	37 50 29.38200	37.84149500	-75 29 6.14720 -75.48504089 25.400
7	ASR-7 Radar on N-159	37 55 57.75190	37.93270886	-75 28 20.41290 -75.47233692 111.400
18	AN/FPS-16 Runway Radar 18 (152)	37 56 38.32990	37.94398053	-75 27 52.51000 -75.46458611 73.290
25	Zero Launcher Pad 0	37 49 53.02180	37.83139495	-75 29 25.71940 -75.49047761 7.500
26	HAD Launcher Pad 0	37 49 53.39810	37.83149947	-75 29 22.99450 -75.48972070 7.400
27	Aerobee Launcher Pad 1	37 50 6.15010	37.83504169	-75 29 11.04950 -75.48640264 7.500
28	Military Launcher South Pad 2	37 50 14.31300	37.83730917	-75 29 2.06120 -75.48390589 7.500
29	Military Launcher North Pad 2	37 50 14.91620	37.83747672	-75 29 1.69250 -75.48380347 7.500
30	Thiokol AML-2 South Pad 2	37 50 16.16480	37.83782355	-75 29 0.13870 -75.48337186 8.000
31	Thiokol AML-1 North Pad 2	37 50 16.91060	37.83803072	-75 28 59.32420 -75.48314561 8.000
32	RAG Launcher Pad 2A	37 50 18.51730	37.83847703	-75 28 57.75800 -75.48271055 7.500
33	Former Jupiter Launcher Pad 2A	37 50 21.28040	37.83924455	-75 28 56.34620 -75.48231839 6.000
34	Scout Mark II Launcher Pad 3A	37 50 52.47470	37.84790964	-75 28 26.11920 -75.47392200 6.500
35	HAD Launcher Pad 3	37 50 57.28100	37.84924472	-75 28 22.20050 -75.47283347 7.000
36	MAST Launcher Pad 4	37 51 2.62080	37.85072800	-75 28 14.12680 -75.47059078 6.000
37	Military Launcher Pad 4	37 51 3.14890	37.85087469	-75 28 12.42280 -75.47011744 6.000
38	HAD Launcher Pad 4	37 51 3.83070	37.85106408	-75 28 11.84240 -75.46995622 6.000
39	Working Point Pad 5	37 51 9.95290	37.85276469	-75 28 6.49800 -75.46847167 7.000
51	MRP: N. Island by-pass road Y-60 area	37 50 30.23850	37.84173292	-75 29 4.04580 -75.48445717 24.880
52	MRP: Nike-C at E-134	37 56 5.29490	37.93480414	-75 28 13.62040 -75.47045011 45.453
53	MRP: Island radar north of by-pass road	37 50 30.49500	37.84180417	-75 29 4.29870 -75.48452742 19.830
54	Mobile Radar Position	37 50 30.02290	37.84167303	-75 29 3.76930 -75.48438036 25.000
55	MRP: Building Y-60	37 50 29.28950	37.84146931	-75 29 6.34340 -75.48509539 26.737
57	MRP: Tower on the east side of E-134	37 56 5.60880	37.93489133	-75 28 12.87300 -75.47024250 60.640
58	MRP: South of building Y-60	37 50 25.95578	37.84054327	-75 29 10.04769 -75.48612436 20.270
59	MRP: Roof of Y-60	37 50 29.29140	37.84146983	-75 29 6.35445 -75.48509846 31.485
61	Ref Mic West End 10-28 Runway	37 56 33.13314	37.94253698	-75 29 7.54313 -75.48542865 19.430
62	Ref Mic (5 & 6) Runway 10-28	37 56 32.93940	37.94248317	-75 28 27.85418 -75.47440394 34.356
64	Formerly AN/GSN-5 Radar 64	37 56 36.40040	37.94344456	-75 27 52.55140 -75.46459761 44.830
65	Formerly AN/GSN-5 Radar 65	37 56 24.69980	37.94019439	-75 27 45.82750 -75.46272986 46.820
70	Noise Test Array 1 Mike 1	37 55 43.08610	37.92863503	-75 28 11.22919 -75.46978589 34.460
71	Noise Test Array 1 Mike 2	37 55 46.81487	37.92967080	-75 28 10.42151 -75.46956153 34.250

Clarke Ellipsoid 1866 / North American Datum 1927

Position Number and Name			Latitude		Longitude		Height Above MSL (feet)
72	Noise Test	Array 1 Mike 3	37 55 49.90390	37.93052886	-75 28 13.17905	-75.47032751	30.450
73	Noise Test	Array 1 Mike 4	37 55 40.90183	37.92802828	-75 28 15.12885	-75.47086912	33.630
74	Noise Test	Array 1 Mike 5	37 55 41.54153	37.92820598	-75 28 19.83617	-75.47217671	31.610
75	Noise Test	Array 1 Mike 6	37 55 44.40443	37.92900123	-75 28 13.86842	-75.47051901	31.180
76	Noise Test	Array 1 Mike 7	37 55 47.81332	37.92994815	-75 28 14.84336	-75.47078982	30.160
77	Noise Test	Array 1 Mike 8	37 55 43.63214	37.92878671	-75 28 18.17193	-75.47171443	31.110
78	Noise Test	Array 2 Mike 1	37 55 58.32944	37.93286929	-75 28 6.64821	-75.46851339	34.630
79	Noise Test	Array 2 Mike 2	37 55 56.23888	37.93228858	-75 28 8.31263	-75.46897573	34.670
80	Noise Test	Array 2 Mike 3	37 55 54.14832	37.93170787	-75 28 9.97702	-75.46943806	33.340
81	Noise Test	Array 2 Mike 4	37 55 52.05775	37.93112715	-75 28 11.64139	-75.46990039	32.110
82	Noise Test	Array 2 Mike 5	37 55 49.96718	37.93054644	-75 28 13.30574	-75.47036271	30.770
83	Noise Test	Array 2 Mike 6	37 55 47.87660	37.92996572	-75 28 14.97006	-75.47082502	30.390
84	Noise Test	Array 2 Mike 7	37 55 45.78601	37.92938500	-75 28 16.63435	-75.47128732	30.920
85	Noise Test	Array 2 Mike 8	37 55 43.69541	37.92880428	-75 28 18.29861	-75.47174962	31.310
86	Noise Test	Array 2 Mike 9	37 55 41.60481	37.92822356	-75 28 19.96285	-75.47221190	31.610
87	Noise Test	Array 2 Mike 10	37 55 39.51420	37.92764283	-75 28 21.62706	-75.47267418	32.250
88	T-38 High Speed Acoustics Test Mic 1		37 55 41.18320	37.92810644	-75 28 13.36890	-75.47038025	34.770
100	Zero Point		37 56 36.51090	37.94347525	-75 27 36.64470	-75.46017908	36.233
101	Runway 10 Dashed Line at 1000'		37 56 34.06710	37.94279641	-75 28 55.15040	-75.48198622	30.500
102	Compass Rose by N-159		37 55 56.76330	37.93243425	-75 28 18.03860	-75.47167739	34.679
103	Old Kennedy Antenna Site		37 55 43.03470	37.92862075	-75 28 32.33650	-75.47564903	104.350
106	Check Point	Point 6	37 55 36.99990	37.92694441	-75 28 16.69290	-75.47130358	34.190
107	Check Point	Point 9	37 55 41.18320	37.92810644	-75 28 13.36900	-75.47038028	34.245
108	Check Point	Point 12	37 55 45.36650	37.92926847	-75 28 10.04490	-75.46945692	34.748
109	Check Point	Point 15	37 55 49.54970	37.93043047	-75 28 6.72080	-75.46853356	36.435
110	Check Point	Point 18	37 55 53.73310	37.93159253	-75 28 3.39650	-75.46761014	36.494
111	Check Point	Point 22	37 55 57.91640	37.93275455	-75 28 0.07220	-75.46668672	36.355
112	Check Point	Point 25	37 56 2.09980	37.93391661	-75 27 56.74770	-75.46576325	36.354
113	Check Point	Point 28	37 56 6.28320	37.93507867	-75 27 53.42300	-75.46483972	36.346
114	Check Point	Point 30	37 56 10.46640	37.93624067	-75 27 50.09830	-75.46391619	36.401
115	Check Point	Point 35	37 56 14.64950	37.93740264	-75 27 46.77360	-75.46299267	36.716
116	Check Point	Point 38	37 56 18.83260	37.93856461	-75 27 43.44870	-75.46206908	36.728
117	Check Point	Point 40	37 56 23.01560	37.93972655	-75 27 40.12370	-75.46114547	36.737
118	Check Point	Point 42	37 56 27.19870	37.94088853	-75 27 36.79820	-75.46022172	36.715
119	Check Point	Point 47	37 56 28.87190	37.94135331	-75 27 35.46800	-75.45985222	36.630
120	Check Point	Point 49	37 56 30.54510	37.94181808	-75 27 34.13760	-75.45948267	36.351
121	Check Point	Point 51	37 56 32.21830	37.94228286	-75 27 32.80740	-75.45911317	36.463

Clarke Ellipsoid 1866 / North American Datum 1927

Position Number and Name			Latitude		Longitude		Height Above MSL (feet)	
122	Check Point	Point 53	37 56	33.89140	37.94274761	-75 27 31.47710	-75.45874364	36.597
123	Check Point	Point 56	37 56	35.56450	37.94321236	-75 27 30.14680	-75.45837411	36.352
124	Check Point	Point 58	37 56	37.23770	37.94367714	-75 27 28.81650	-75.45800458	36.225
125	Check Point	Point 60	37 56	38.91090	37.94414192	-75 27 27.48620	-75.45763506	35.768
126	Check Point	Point 62	37 56	40.58400	37.94460667	-75 27 26.15590	-75.45726553	35.272
127	Check Point	Point 65	37 56	42.25710	37.94507142	-75 27 24.82560	-75.45689600	34.725
128	Check Point	Point 70	37 56	43.93020	37.94553617	-75 27 23.49520	-75.45652644	34.181
129	Check Point	Point 71	37 56	45.60340	37.94600094	-75 27 22.16480	-75.45615689	33.668
130	Check Point	Point 72	37 56	47.27650	37.94646570	-75 27 20.83430	-75.45578731	33.153
131	Check Point	Point 74	37 56	48.94970	37.94693047	-75 27 19.50390	-75.45541775	32.632
132	Check Point	Point 75	37 56	50.18610	37.94727392	-75 27 18.52080	-75.45514467	32.183
133	Hazeltine	Point 101	37 56	33.60330	37.94266758	-75 27 21.40510	-75.45594586	25.678
134	Check Point	Point 105	37 56	33.66530	37.94268481	-75 27 33.89990	-75.45941664	36.549
135	Runway	Point 115	37 56	33.75830	37.94271064	-75 27 52.62370	-75.46461770	40.041
136	Check Point	Point 126	37 56	33.88090	37.94274470	-75 28 17.58860	-75.47155239	37.712
137	Check Point	Point 129	37 56	33.94170	37.94276158	-75 28 30.07120	-75.47501978	35.798
138	Huey Pac Scan	Point 139	37 56	33.97800	37.94277167	-75 28 37.56070	-75.47710019	36.459
139	Bench Mark	Point 202	37 56	28.25690	37.94118247	-75 28 1.00150	-75.46694486	39.593
140	ADAS Telemetry Antenna		37 55	35.27730	37.92646592	-75 28 35.96940	-75.47665817	84.900
142	AN/GMD	X-85	37 50	37.80640	37.84383511	-75 28 46.92820	-75.47970228	47.010
143	RARF Antenna A North		37 51	22.46770	37.85624103	-75 30 42.44790	-75.51179109	55.080
145	NAOTS Water Tank		37 56	20.77700	37.93910472	-75 28 26.83600	-75.47412111	169.100
146	Kennedy Boresight Tower		37 55	44.81390	37.92911497	-75 28 35.30180	-75.47647272	187.010
147	MET Tower, 300 ft		37 51	8.03290	37.85223136	-75 28 16.93560	-75.47137100	5.000
148	North Balloon Launch Site TB-560		37 52	20.50000	37.87236111	-75 26 31.70000	-75.44213889	65.040
149	Camera Station no. 1	E-104	37 56	13.56490	37.93710136	-75 28 9.99020	-75.46944172	65.042
150	Camera Station no. 2	E-104	37 56	13.59600	37.93711000	-75 28 10.06140	-75.46946150	65.062
151	Camera Station no. 3	DOG	37 56	42.66700	37.94518528	-75 27 47.41320	-75.46317033	55.316
152	Camera Station no. 4	DOG	37 56	42.68940	37.94519150	-75 27 47.38640	-75.46316289	55.316
153	Remote Recorder no.1		37 55	31.72830	37.92548008	-75 28 14.51067	-75.47069741	34.400
154	1250 ft S of pt 6	Runway CL	37 55	26.54120	37.92403922	-75 28 25.00240	-75.47361178	34.190
155	1250 ft N of pt 75	Runway CL	37 57	0.64450	37.95017903	-75 27 10.20830	-75.45283564	32.180
156	TRADAT	3/19/81	37 51	35.34000	37.85981667	-75 30 36.84000	-75.51023333	25.590
157	LDAR Pole Antenna - SPANDAR		37 51	14.65189	37.85406997	-75 30 44.25952	-75.51229431	63.107
158	LDAR Ground Antenna - SPANDAR		37 51	14.17680	37.85393800	-75 30 43.66080	-75.51212800	20.341
159	LDAR Pole Antenna - Assateague		37 51	54.52128	37.86514480	-75 22 7.22899	-75.36867472	66.342
160	LDAR Square Base - Assateague		37 55	53.79139	37.93160872	-75 23 0.84412	-75.38356781	5.000

Clarke Ellipsoid 1866 / North American Datum 1927

Position Number and Name	Latitude	Longitude	Height Above MSL (feet)
161 LDAR Pole Antenna - Receiver Site	37 55 43.80488	37.92883469 -75 28 33.03497	55.000
162 LDAR Ground Antenna - Receiver Site	37 56 49.49398	37.94708166 -75 27 50.23031	16.808
163 LDAR Pole Antenna - New Church	37 58 35.79071	37.97660853 -75 32 4.84728	18.186
164 LDAR Square Base - New Church	37 58 40.19342	37.97783151 -75 32 1.56063	40.000
165 MLS-DME	37 55 26.64304	37.92406751 -75 28 25.83699	49.740
166 MLS-Azimuth Site	37 55 26.26409	37.92396225 -75 28 25.21715	41.080
167 MLS-Elevation Site	37 56 41.28634	37.94480176 -75 27 19.69671	34.500
168 Intersection of Runways 1735-0422	37 56 17.33784	37.93814940 -75 27 49.25987	36.800
169 Center of Collection Array	37 56 20.19382	37.93894273 -75 27 36.78145	34.097
170 First Pole Microphone	37 56 33.78062	37.94271684 -75 28 30.07241	35.800
171 Microphone 13	37 56 33.65384	37.94268162 -75 27 31.66605	36.500
172 High Speed Turnoff	37 56 21.03702	37.93917695 -75 27 41.74205	36.737
173 Test Point 1	37 56 33.65380	37.94268161 -75 27 31.66600	36.500
174 TM Tracker (8ft Ant) N-162	37 55 40.98710	37.92805197 -75 28 33.98160	105.000
175 MET (8ft Ant) N-162	37 55 41.61930	37.92822758 -75 28 33.47730	100.880
176 STIR Antenna Z-41	37 49 58.37220	37.83288116 -75 29 24.63360	63.000
177 Command Destruct Antenna	37 51 58.94370	37.86637325 -75 30 19.18000	42.590
178 MLS AZ CENLIN MON PAD	37 55 27.93780	37.92442717 -75 28 23.88830	35.177
179 Medium Gain TM Antenna North	37 55 41.65420	37.92823728 -75 28 28.35030	55.800
180 Medium Gain TM Antenna South	37 55 40.59510	37.92794308 -75 28 29.17200	58.000
181 HAD Launcher Pad 2	37 50 17.57380	37.83821495 -75 28 58.77710	8.000
183 9 Meter Antenna Cent.	37 55 38.04642	37.92723512 -75 28 31.27825	59.500
184 9 Meter RM-1	37 55 39.22111	37.92756142 -75 28 38.91540	38.060
185 9 Meter N-1	37 55 39.03636	37.92751010 -75 28 31.27825	38.230
186 9 Meter N-2	37 55 45.02186	37.92917274 -75 28 31.27825	40.550
187 9 Meter E-1	37 55 38.04640	37.92723511 -75 28 30.03013	36.400
188 9 Meter E-2	37 55 38.04632	37.92723509 -75 28 21.47365	31.450
189 9 Meter S-1	37 55 37.05755	37.92696043 -75 28 31.27825	36.090
190 9 Meter S-2	37 55 31.18894	37.92533026 -75 28 31.27845	34.640
191 9 Meter W-1	37 55 38.04640	37.92723511 -75 28 32.52738	38.400
192 9 Meter W-2	37 55 38.04632	37.92723509 -75 28 39.97416	37.210
193 9 Meter Collim Ant.	37 55 0.16733	37.91671315 -75 28 19.35878	154.800
194 6 Meter Center	37 55 38.04636	37.92723510 -75 28 34.27280	59.030
195 ADAS Boresight Ant (S-BN)	37 55 0.15530	37.91670981 -75 28 19.33980	159.200
196 LAS RET REF,APT FPS16	37 55 0.18200	37.91671722 -75 28 19.32800	154.200
197 VHF "Zero" RNG Antenna	37 55 44.78470	37.92910686 -75 28 35.24640	191.520
198 VHF SCAMP Antenna	37 55 46.13450	37.92948181 -75 28 24.57890	75.910

Clarke Ellipsoid 1866 / North American Datum 1927

Position Number and Name	Latitude	Longitude	Height Above MSL (feet)
199 SATAN Transmit	37 55 45.30120	37.92925033 -75 28 22.92690	62.710
200 VHF SATAN #1 Receive	37 55 42.94300	37.92859528 -75 28 30.16490	70.930
201 Multi-Mode GRND RCVR - Receiver Site	37 56 43.39290	37.94538692 -75 27 23.92160	34.360
202 Balloon Release Airfield	37 55 42.40691	37.92844636 -75 28 23.85574	36.000
203 MRP: By-pass road north of ICC	37 50 30.49303	37.84180362 -75 29 4.28802	20.110
204 MRP: South of building Y-60	37 50 25.95580	37.84054328 -75 29 10.04770	20.270
205 Army MDS Mobile Radar Ant. South Stake	37 50 35.12191	37.84308942 -75 28 44.11592	16.540
206 Army MDS Mobile Radar Ant. North Stake	37 50 36.25336	37.84340371 -75 28 44.04206	14.460
207 Army MDS Mobile Ant. 2-25-87 E. Stake	37 50 32.44310	37.84234531 -75 28 41.60740	20.200
208 365-N1 Helo A1, M12 Ref. Mike	37 56 32.94710	37.94248530 -75 28 28.82860	34.920
209 365-N1 Helo A2, M5 Ref. Mike	37 56 29.79390	37.94160942 -75 27 52.36480	38.530
210 MLS Survey Point no. 3B7-164	37 56 34.12190	37.94281164 -75 29 7.55820	20.496
211 MLS Survey Point no. 3K8-103	37 56 33.63420	37.94267617 -75 27 27.65870	36.207
212 365-N1 Helo A1, M17	37 56 36.93980	37.94359439 -75 28 36.28590	32.990
213 MLS Survey Point no. 122 Runway 17-35	37 56 44.75990	37.94576664 -75 28 3.45750	33.539
214 MLS Survey Point no. 033 Runway 17-35	37 56 11.63440	37.93656511 -75 27 46.30490	35.982
215 ARC Launcher Pad 2	37 50 16.32570	37.83786825 -75 29 4.09150	7.500
216 Boresight Tower (FPQ-6)	37 51 54.39570	37.86510992 -75 30 24.58540	167.920
217 Boresight Tower (FPS-16)	37 56 47.38931	37.94649703 -75 27 39.51630	167.280
218 MRP: Island radar complex n. by-pass	37 50 30.48338	37.84180094 -75 29 4.31776	20.452
219 Z-41 SPS 49 Radar	37 49 58.65565	37.83295990 -75 29 25.01749	107.400
220 MRP: PK nail South Island	37 50 25.98789	37.84055219 -75 29 10.16788	20.585
221 MRP: Triangle area of airfield	37 56 27.24869	37.94090241 -75 27 46.44961	51.000
222 Boresight horn associated with 221	37 56 27.65753	37.94101598 -75 28 0.23835	81.130
223 Terminal building X-75	37 50 37.59205	37.84377557 -75 28 40.09976	8.000
224 Launcher-Pad 3B AML 20K	37 50 57.41285	37.84928135 -75 28 22.36377	6.700
225 MRP: Near Spandar	37 51 16.99407	37.85472058 -75 30 47.20025	21.690
226 MRP: Island radar complex n. by-pass	37 50 30.48338	37.84180094 -75 29 4.31776	20.202
227 MRP: Near Spandar	37 51 17.01476	37.85472632 -75 30 47.22621	21.640
228 REFS Test Rocket launcher	37 50 18.00764	37.83833546 -75 28 57.98422	10.040
229 MRP: East side of building E-134	37 56 5.61036	37.93489177 -75 28 12.87780	69.090
230 MRP: Old UHF North antenna pedestal	37 51 22.46763	37.85624101 -75 30 42.44332	58.620
231 GUSTY antenna	37 49 58.31957	37.83286655 -75 29 24.77649	64.000
232 MRP: U-20 Tower	37 51 22.46420	37.85624006 -75 30 42.43340	60.870
233 Camera Station PK Nail South Island	37 49 21.56004	37.82265557 -75 29 54.24039	11.020
234 MRP: Mainland near UHF radar	37 51 21.29280	37.85591467 -75 30 43.66860	21.170
235 MRP: Y-95 tower	37 50 29.93970	37.84164992 -75 29 6.45630	38.450

Clarke Ellipsoid 1866 / North American Datum 1927

Position Number and Name		Latitude		Longitude		Height Above MSL (feet)
238	VHF SATAN #2 Receive	37 55 31.66043	37.92546123	-75 28 37.95969	-75.47721103	70.220
239	VHF 7.3 Meter Receive	37 55 43.63840	37.92878844	-75 28 26.77780	-75.47410494	61.650
** Location: White Sands Missile Range						
300	Aerobee Tower L-21A	32 24 15.03371	32.40417603	-106 20 31.07841	-106.34196623	4027.030
301	Aerobee Tower L-21B	32 24 15.16173	32.40421159	-106 20 28.79867	-106.34133297	4026.960
302	Aerobee Launcher L-455	32 25 4.20587	32.41783496	-106 19 15.49955	-106.32097210	4037.380
303	Navy Launcher L-457	32 24 47.77938	32.41327205	-106 19 44.92154	-106.32914487	4042.550
304	Launcher L-462	32 25 5.00613	32.41805726	-106 19 9.77861	-106.31938295	4039.860
305	Launcher L-479	32 25 0.41237	32.41678121	-106 19 30.98653	-106.32527404	4045.850
306	Aries, Top of Ring L-536	32 25 0.33547	32.41675985	-106 19 30.17535	-106.32504871	4039.685
307	Launcher L-580	32 25 4.79285	32.41799801	-106 19 10.02899	-106.31945250	4041.125
308	Launcher L-630	32 25 3.69161	32.41769211	-106 19 13.48974	-106.32041382	4046.390
320	Radar Site R-112	32 21 28.58871	32.35794131	-106 22 12.81144	-106.37022540	4048.580
321	Radar Site R-113	32 21 28.59807	32.35794391	-106 22 9.31601	-106.36925445	4049.180
322	Radar Site R-114	32 21 28.60776	32.35794660	-106 22 5.82020	-106.36828339	4047.170
323	Radar Site R-122	32 54 7.93521	32.90220422	-106 5 55.01218	-106.09861449	4148.480
324	Radar Site R-123	32 54 4.96528	32.90137924	-106 5 55.03011	-106.09861947	4149.461
325	Radar Site R-124	33 26 42.41536	33.44511538	-106 7 53.56052	-106.13154459	5326.781
326	Radar Site R-125	33 5 45.76510	33.09604586	-106 9 30.92549	-106.15859041	4175.621
327	Radar Site R-127	33 48 49.70438	33.81380677	-106 39 30.38369	-106.65843992	5025.012
328	Radar Site R-128	33 48 46.74002	33.81298334	-106 39 30.37123	-106.65843645	5017.281
329	Radar Site R-329	32 24 20.54872	32.40570798	-106 20 56.54030	-106.34903897	4047.960
330	Radar Site R-350	32 21 23.94467	32.35665130	-106 22 42.84444	-106.37856790	4015.580
331	Radar Site R-393	32 28 21.89340	32.47274817	-106 25 16.24672	-106.42117964	3989.150
332	Radar Site R-394	32 22 3.05170	32.36751436	-106 20 27.77700	-106.34104916	4030.340
333	Radar Site R-395	32 22 43.96292	32.37887859	-106 16 46.90137	-106.27969482	4079.166
334	Radar Site R-396	32 23 14.73175	32.38742549	-106 13 28.74050	-106.22465014	4077.498
335	Radar Site R-455	33 3 56.75916	33.06576643	-106 10 50.01215	-106.18055893	4125.618
336	Radar Site R-482	32 22 43.90626	32.37886285	-106 16 47.09088	-106.27974747	4078.138
** Location: Poker Flat, AK						
400	MRL 7.5K Pad-1	65 7 47.82300	65.12995083	-147 29 8.80300	-147.48577861	647.410
401	MRL 7.5K Pad-2	65 7 48.96800	65.13026889	-147 29 1.06900	-147.48363028	647.410
402	AML 20K Pad-3	65 7 48.71800	65.13019945	-147 28 58.82200	-147.48300611	647.410
403	AML 20K Pad-4	65 7 50.27000	65.13063056	-147 28 50.72000	-147.48075556	647.410
404	AML 4K3 Pad-5	65 7 46.64700	65.12962417	-147 28 50.91900	-147.48081084	647.410

Clarke Ellipsoid 1866 / North American Datum 1927

Position Number and Name	Latitude	Longitude	Height Above MSL (feet)
405 Formerly VERLORT Radar	65 7 37.85900 65.12718305	-147 29 11.63600 -147.48656556	658.000
406 WSMR Radar East	65 7 3.13600 65.11753778	-147 27 34.60500 -147.45961250	1338.440
407 WSMR Radar X-Band West	65 7 0.20700 65.11672417	-147 27 40.66500 -147.46129583	1334.820
408 Hilltop Launcher Pad 6	65 7 2.85900 65.11746083	-147 27 30.54400 -147.45848445	1356.520
409 TM Tracker TRADAT no. 1	65 7 1.61800 65.11711611	-147 27 37.18000 -147.46032778	1355.880
410 TM Tracker TRADAT no. 2	65 7 1.70800 65.11714111	-147 27 36.71300 -147.46019805	1355.780
411 MRP: Poker Flat Research Range	65 7 37.77100 65.12715861	-147 29 11.00900 -147.48639139	655.680
412 MRP: Poker Flat Research Range	65 7 37.94700 65.12720750	-147 29 11.88700 -147.48663528	666.890
413 Boresight associated with 412	65 7 45.72300 65.12936750	-147 28 55.56000 -147.48210000	746.110
414 Blockhouse	65 7 45.29700 65.12924917	-147 28 58.53400 -147.48292611	672.860
415 MET Tower, 265.88 ft	65 7 45.72300 65.12936750	-147 28 55.56000 -147.48210000	650.110
416 Optics Tower, 64.89 ft	65 6 57.76500 65.11604583	-147 27 50.60700 -147.46405750	1288.370
417 CARIB marker	65 11 33.02400 65.19250667	-147 29 44.20500 -147.49561250	0.000
** Location: Fort Yukon, AK			
700 Launcher	66 33 45.68000 66.56268889	-145 11 40.37000 -145.19454722	444.000
701 Mini Tracker	66 33 39.70000 66.56102778	-145 11 59.72000 -145.19992222	443.000
702 Mobile Radar Position	66 33 39.70000 66.56102778	-145 11 59.72000 -145.19992222	455.000
** Location: Norfolk, VA			
704 VORTAC Station ORF	36 53 30.30000 36.89175000	-76 12 2.40000 -76.20066667	20.000
** Location: Sea Isle, NJ			
705 VORTAC Station SIE	39 5 43.40000 39.09538889	-74 48 2.60000 -74.80072222	10.000
** Location: Longmont, CO			
709 Mobile Radar Position	40 9 51.00000 40.16416667	-105 9 40.00000 -105.16111111	5036.000
** Location: Erie, CO			
710 Mobile C-Band 16-18 Jan 85	40 3 4.84480 40.05134578	-105 0 23.21400 -105.00644833	5165.289
** Location: Palestine, TX			
711 Mobile Radar Position	31 47 2.34960 31.78398600	-95 42 55.41480 -95.71539300	393.373
** Location: Goodland, KS			
712 Mobile Radar Position	39 22 17.48640 39.37152400	-101 42 19.00440 -101.70527900	3654.000

Clarke Ellipsoid 1866 / North American Datum 1927

Position Number and Name	Latitude	Longitude	Height Above MSL (feet)
** Location: Mt. Lemmon, AZ			
714 CAPRI Radar	32 26 29.74700 32.44159639	-110 47 17.30300 -110.78813972	9194.060
** Location: Somerset, PA			
715 MRP: Somerset County Municipal Airport	40 2 21.00000 40.03916667	-79 0 58.00000 -79.01611111	2238.800
** Location: Springfield, TN			
716 MRP: City Industrial Park	36 29 34.04000 36.49278889	-86 51 37.85000 -86.86051389	739.060
** Location: Millstone Hill, MA			
717 Radar/Optical Site	42 37 12.00000 42.62000000	-71 29 24.00000 -71.49000000	479.003
** Location: Snowhill, MD			
718 VORTAC station SWL	38 3 23.30000 38.05647222	-75 27 51.40000 -75.46427778	50.000
** Location: Patuxent River NAS, MD			
719 VORTAC station PXT	38 17 15.80000 38.28772222	-76 24 2.00000 -76.40055556	50.000
** Location: Duck, NC			
720 Optical site	36 6 0.00000 36.10000000	-75 48 0.00000 -75.80000000	9.843
** Location: Churchill, Canada			
830 Mobile Radar Position	58 44 12.66780 58.73685217	-93 49 8.26527 -93.81896258	74.690
831 Aerobee Launcher Pad 3	58 44 3.47300 58.73429806	-93 49 12.92200 -93.82025611	69.226
832 Universal Launcher Pad 1	58 43 55.40700 58.73205750	-93 48 56.69600 -93.81574889	66.601
833 Auroral Launcher Pad 7	58 43 57.01900 58.73250528	-93 48 52.77200 -93.81465889	68.898
834 Arcas East Launcher Pad 4A	58 44 1.43700 58.73373250	-93 49 17.94000 -93.82165000	69.554
835 Arcas West Launcher Pad 4A	58 44 1.40500 58.73372361	-93 49 18.16000 -93.82171111	69.554
836 TM antenna #1	58 44 15.28715 58.73757976	-93 49 7.18983 -93.81866384	65.860
837 TM antenna #10	58 44 15.56137 58.73765594	-93 49 6.79127 -93.81855313	73.570
** Location: San Marco, Africa			
980 San Marco Platform - Launcher Pit	-2 56 18.00000 -2.93830000	40 12 45.00000 40.21250000	41.000
981 Santa Rita Platform - Radar Antenna	-2 56 10.00000 -2.93611000	40 12 33.00000 40.20917000	51.000

Table 4.1

World Geodetic System 1972

Flattening = $1/298.26$

Semi-Major Axis = 6,378,135.0 meters

World Geodetic System 1972

Position Number and Name	Latitude	Longitude	Height Above MSL (feet)
** Location: Eastern Space & Missile Center			
600 AN/FPQ-13 Radar 0.13	28 13 38.20690 28.22727969	-80 36 22.54650 -80.60626292	47.014
601 AN/FPQ-14 Radar 0.14 PATQ	28 13 34.87420 28.22635394	-80 35 57.98800 -80.59944111	49.016
602 AN/FPQ-14 Radar 19.14 MILA	28 25 28.78590 28.42466275	-80 39 52.38970 -80.66455269	36.909
603 Unified S-band MILA	28 30 29.07150 28.50807542	-80 41 36.83440 -80.69356511	8.596
604 Telemetry TAA-24 MILA	28 27 46.26310 28.46285086	-80 39 10.92180 -80.65303383	58.891
605 Pad 39A launcher	28 36 29.61360 28.60822600	-80 36 15.41470 -80.60428186	103.445
606 Pad stand 39B	28 37 37.60440 28.62711233	-80 37 15.65410 -80.62101503	109.219
607 AN/FPQ14 Radar 28.14 Jonathan-Dickinson	26 58 58.66400 26.98296222	-80 6 30.08860 -80.10835794	68.766
608 Pad 17B	28 26 44.67150 28.44574208	-80 33 56.93220 -80.56581450	35.138
** Location: Bermuda			
703 AN/FPQ-6 BDA (141)	32 20 52.46580 32.34790717	-64 39 13.04980 -64.65362494	69.225

Table 4.2

International Ellipsoid
European Datum 1950

Flattening = $1/297.0$
Semi-Major Axis = 6,378,388.0 meters

International Ellipsoid / European Datum 1950

Position Number and Name	Latitude	Longitude	Height Above MSL (feet)
** Location: Esrange, Sweden			
800 MPS - 36 Radar	67 53 19.00000	21 6 39.00000	964.567
801 Maraba S-Band Station	67 53 34.00000	21 5 12.00000	1056.000
802 NASA Telemetry Trailer	67 53 35.00000	21 5 12.00000	1056.000
803 Esrange Radar	67 52 51.00000	21 3 57.00000	1591.000
804 Esrange Telemetry	67 53 35.00000	21 5 10.00000	1089.239
805 Super Loki Pad	67 53 41.00000	21 6 33.00000	984.252
806 Skylark Tower	67 53 35.81000	21 6 29.84000	978.406
807 MRL Launcher	67 53 36.24000	21 6 23.76000	978.406
808 MRP: Karuna, Sweden	67 53 25.22000	21 6 25.36000	987.339
** Location: Andoya, Norway			
940 Launch Pad #9	69 17 38.79000	16 1 13.43000	21.325
941 Launch Pad #10	69 17 38.48000	16 1 12.37000	21.325
942 Launch Pad #3	69 17 39.54000	16 1 20.18000	19.685
943 Launch Pad #5	69 17 39.92000	16 1 17.16000	19.685
947 MRP: (Grustaket)	69 17 32.52000	16 1 30.19000	32.810
948 Antenna 2	69 17 41.24000	16 1 44.01000	19.685
949 Antenna 4	69 17 40.90000	16 1 43.75000	19.685
950 Antenna 8	69 17 40.69000	16 1 43.24000	19.685
951 Tracking Radar Pad	69 17 35.74000	16 1 25.46000	32.810
952 Tradat 9 - 12/17/88	69 17 41.64000	16 1 46.56000	32.480
953 Mobile Radar Position	69 17 35.82000	16 1 24.57000	36.089

Table 4.3

International Ellipsoid
Qornoq Datum

Flattening = $1/297.0$
Semi-Major Axis = 6,378,388.0 meters

International Ellipsoid / Qornoq Datum

Position Number and Name	Latitude	Longitude	Height Above MSL (feet)
** Location: Sondrestrom, Greenland			
910 HAD Launcher	67 1 29.71880 67.02492189	-50 36 8.37900 -50.60232750	128.850
911 MRL Launcher	67 1 28.89050 67.02469181	-50 36 8.33570 -50.60231547	128.490
912 Danish Launcher	67 1 22.93760 67.02303822	-50 36 5.00300 -50.60138972	110.570
913 Mobile C-Band R2 9-86	67 1 25.60280 67.02377856	-50 36 24.78360 -50.60688433	126.010
914 Mobile MPS-19 R10 9/28/84	67 1 25.13090 67.02364747	-50 36 24.60160 -50.60683378	129.470
915 FSR Boresight	67 1 18.49140 67.02180317	-50 36 4.85600 -50.60134889	131.170
916 Boresight Tower Horn	67 1 21.29770 67.02258269	-50 36 4.75660 -50.60132128	163.970
917 TACAN Site	66 59 52.62130 66.99795036	-50 37 15.02890 -50.62084136	1085.870
918 TM Antenna (20 ft) no. 9 8-86	67 1 28.35420 67.02454283	-50 36 26.63200 -50.60739778	138.120
919 TM Antenna (6 ft) no. 7	67 1 27.76590 67.02437942	-50 36 26.06480 -50.60724022	127.110
920 TM Antenna (8 ft) no. 2	67 1 28.06250 67.02446181	-50 36 26.33500 -50.60731528	128.610
921 TM Antenna (8 ft) no. 4	67 1 27.90310 67.02441753	-50 36 26.16360 -50.60726767	128.530
922 Anemometer Tower Base	67 1 27.36270 67.02426742	-50 36 12.48910 -50.60346919	127.000
923 Anemometer Tower Level 1	67 1 27.36270 67.02426742	-50 36 12.48910 -50.60346919	149.000
924 Anemometer Tower Level 2	67 1 27.36270 67.02426742	-50 36 12.48910 -50.60346919	174.000
925 Anemometer Tower Level 3	67 1 27.36270 67.02426742	-50 36 12.48910 -50.60346919	199.000
926 HAD Launcher no. 3 9-86	67 1 27.86290 67.02440636	-50 36 7.76070 -50.60215575	127.960
927 Test Rocket Launcher 9-86	67 1 27.25890 67.02423858	-50 36 5.06270 -50.60140631	132.400
928 Boresight Dish for 20 ft Ant 9-86	67 1 22.59400 67.02294278	-50 41 26.29470 -50.69063741	329.860
929 TM Antenna (10 ft) no. 1 10-86	67 1 27.73000 67.02436944	-50 36 26.10000 -50.60725000	128.000

Table 5

World Geodetic System 1984
North American Datum 1983

Flattening = $1/298.257223563$
Semi-Major Axis = 6,378,137.0 meters

World Geodetic System 1984 / North American Datum 1983

Position Number and Name		Latitude	Longitude	Height Above Ellipsoid (feet)
** Location: Wallops Flight Facility				
1	Formerly AN/MPS-19 Radar 1	37 50 29.98254	37.84166182	-75 29 4.68560 -75.48463489 -95.136
3	AN/FPS-16 Radar 3 (153)	37 50 28.84045	37.84134457	-75 29 6.35590 -75.48509886 -77.876
4	SPANDAR Radar 4 (150)	37 51 17.19344	37.85477595	-75 30 47.12869 -75.51309130 -17.871
5	AN/FPQ-6 Radar 5 (151)	37 51 36.95385	37.86026496	-75 30 33.49970 -75.50930547 -71.195
6	AN/MPS-19 Radar 6 (136)	37 50 29.83295	37.84162026	-75 29 4.87971 -75.48468881 -95.056
7	ASR-7 Radar on N-159	37 55 58.19758	37.93283266	-75 28 19.13842 -75.47198289 -8.789
18	AN/FPS-16 Runway Radar 18 (152)	37 56 38.77409	37.94410391	-75 27 51.23444 -75.46423179 -46.884
25	Zero Launcher Pad 0	37 49 53.47390	37.83152053	-75 29 24.46132 -75.49012814 -112.972
26	HAD Launcher Pad 0	37 49 53.85007	37.83162502	-75 29 21.73617 -75.48937116 -113.072
27	Aerobee Launcher Pad 1	37 50 6.60149	37.83516708	-75 29 9.78195 -75.48605054 -112.969
28	Military Launcher South Pad 2	37 50 14.76231	37.83743398	-75 29 0.79525 -75.48355424 -112.969
29	Military Launcher North Pad 2	37 50 15.36588	37.83760163	-75 29 0.42612 -75.48345170 -112.969
30	Thiokol AML-2 South Pad 2	37 50 16.61546	37.83794874	-75 28 58.87120 -75.48301978 -112.469
31	Thiokol AML-1 North Pad 2	37 50 17.36143	37.83815595	-75 28 58.05632 -75.48279342 -112.469
32	RAG Launcher Pad 2A	37 50 18.96785	37.83860218	-75 28 56.49041 -75.48235845 -112.969
33	Former Jupiter Launcher Pad 2A	37 50 21.73098	37.83936972	-75 28 55.07836 -75.48196621 -114.469
34	Scout Mark II Launcher Pad 3A	37 50 52.92372	37.84803437	-75 28 24.84982 -75.47356940 -113.963
35	HAD Launcher Pad 3	37 50 57.72493	37.84936804	-75 28 20.93615 -75.47248227 -113.463
36	MAST Launcher Pad 4	37 51 3.05563	37.85084879	-75 28 12.87142 -75.47024206 -114.463
37	Military Launcher Pad 4	37 51 3.58582	37.85099606	-75 28 11.16530 -75.46976814 -114.463
38	HAD Launcher Pad 4	37 51 4.26810	37.85118558	-75 28 10.58439 -75.46960677 -114.463
39	Working Point Pad 5	37 51 10.40082	37.85288912	-75 28 5.22936 -75.46811927 -113.463
40	AML 50K Launcher Pad 1	37 50 6.80857	37.83522460	-75 29 13.57359 -75.48710377 -112.205
51	MRP: N. Island by-pass road Y-60 area	37 50 30.68909	37.84185808	-75 29 2.77846 -75.48410513 -95.576
52	MRP: Nike-C at E-134	37 56 5.74044	37.93492790	-75 28 12.34547 -75.47009596 -74.741
53	MRP: Island radar north of by-pass road	37 50 30.94558	37.84192933	-75 29 3.03137 -75.48417538 -100.626
54	Mobile Radar Position	37 50 30.47346	37.84179818	-75 29 2.50198 -75.48402833 -95.456
55	MRP: Building Y-60	37 50 29.74045	37.84159457	-75 29 5.07592 -75.48474331 -93.719
57	MRP: Tower on the east side of E-134	37 56 6.05434	37.93501509	-75 28 11.59806 -75.46988835 -59.554
58	MRP: South of building Y-60	37 50 26.40611	37.84066836	-75 29 8.77982 -75.48577217 -100.186
59	MRP: Roof of Y-60	37 50 29.74235	37.84159510	-75 29 5.08697 -75.48474638 -88.971
61	Ref Mic West End 10-28 Runway	37 56 33.57888	37.94266080	-75 29 6.26955 -75.48507488 -100.698
62	Ref Mic (5 & 6) Runway 10-28	37 56 33.38467	37.94260685	-75 28 26.57888 -75.47404969 -85.802
64	Formerly AN/GSN-5 Radar 64	37 56 36.84493	37.94356803	-75 27 51.27588 -75.46424330 -75.347
65	Formerly AN/GSN-5 Radar 65	37 56 25.14477	37.94031799	-75 27 44.55179 -75.46237550 -73.374
70	Noise Test Array 1 Mike 1	37 55 43.53190	37.92875886	-75 28 9.95513 -75.46943198 -85.757

World Geodetic System 1984 / North American Datum 1983

Position Number and Name		Latitude		Longitude		Height Above Ellipsoid (feet)		
71	Noise Test Array 1 Mike 2	37 55	47.26062	37.92979462	-75 28	9.14730	-75.46920758	-85.964
72	Noise Test Array 1 Mike 3	37 55	50.34964	37.93065268	-75 28	11.90478	-75.46997355	-89.760
73	Noise Test Array 1 Mike 4	37 55	41.34770	37.92815214	-75 28	13.85494	-75.47051526	-86.587
74	Noise Test Array 1 Mike 5	37 55	41.98743	37.92832984	-75 28	18.56236	-75.47182288	-88.604
75	Noise Test Array 1 Mike 6	37 55	44.85024	37.92912507	-75 28	12.59437	-75.47016510	-89.034
76	Noise Test Array 1 Mike 7	37 55	48.25910	37.93007197	-75 28	13.56920	-75.47043589	-90.050
77	Noise Test Array 1 Mike 8	37 55	44.07800	37.92891056	-75 28	16.89800	-75.47136055	-89.104
78	Noise Test Array 2 Mike 1	37 55	58.77503	37.93299306	-75 28	5.37353	-75.46815931	-85.574
79	Noise Test Array 2 Mike 2	37 55	56.68451	37.93241236	-75 28	7.03805	-75.46862168	-85.537
80	Noise Test Array 2 Mike 3	37 55	54.59398	37.93183166	-75 28	8.70254	-75.46908404	-86.867
81	Noise Test Array 2 Mike 4	37 55	52.50345	37.93125096	-75 28	10.36701	-75.46954639	-88.097
82	Noise Test Array 2 Mike 5	37 55	50.41292	37.93067026	-75 28	12.03147	-75.47000874	-89.440
83	Noise Test Array 2 Mike 6	37 55	48.32238	37.93008955	-75 28	13.69590	-75.47047108	-89.820
84	Noise Test Array 2 Mike 7	37 55	46.23183	37.92950884	-75 28	15.36031	-75.47093342	-89.290
85	Noise Test Array 2 Mike 8	37 55	44.14127	37.92892813	-75 28	17.02468	-75.47139574	-88.900
86	Noise Test Array 2 Mike 9	37 55	42.05072	37.92834742	-75 28	18.68904	-75.47185807	-88.604
87	Noise Test Array 2 Mike 10	37 55	39.96015	37.92776671	-75 28	20.35336	-75.47232038	-87.964
88	T-38 High Speed Acoustics Test Mic 1	37 55	41.62904	37.92823029	-75 28	12.09494	-75.47002637	-85.447
100	Zero Point	37 56	36.95499	37.94359861	-75 27	35.36871	-75.45982464	-83.954
101	Runway 10 Dashed Line at 1000'	37 56	34.51267	37.94292018	-75 28	53.87623	-75.48163229	-89.638
102	Compass Rose by N-159	37 55	57.20899	37.93255805	-75 28	16.76413	-75.47132337	-85.521
103	Old Kennedy Antenna Site	37 55	43.48072	37.92874464	-75 28	31.06298	-75.47529527	-15.853
106	Check Point Point 6	37 55	37.44583	37.92706829	-75 28	15.41916	-75.47094977	-86.030
107	Check Point Point 9	37 55	41.62904	37.92823029	-75 28	12.09504	-75.47002640	-85.972
108	Check Point Point 12	37 55	45.81227	37.92939230	-75 28	8.77074	-75.46910298	-85.469
109	Check Point Point 15	37 55	49.99539	37.93055428	-75 28	5.44644	-75.46817957	-83.778
110	Check Point Point 18	37 55	54.17872	37.93171631	-75 28	2.12196	-75.46725610	-83.716
111	Check Point Point 22	37 55	58.36195	37.93287832	-75 27	58.79749	-75.46633263	-83.855
112	Check Point Point 25	37 56	2.54529	37.93404036	-75 27	55.47284	-75.46540912	-83.853
113	Check Point Point 28	37 56	6.72862	37.93520239	-75 27	52.14800	-75.46448555	-83.861
114	Check Point Point 30	37 56	10.91176	37.93636438	-75 27	48.82316	-75.46356199	-83.802
115	Check Point Point 35	37 56	15.09466	37.93752629	-75 27	45.49850	-75.46263847	-83.487
116	Check Point Point 38	37 56	19.27767	37.93868824	-75 27	42.17349	-75.46171486	-83.472
117	Check Point Point 40	37 56	23.46055	37.93985015	-75 27	38.84842	-75.46079123	-83.460
118	Check Point Point 42	37 56	27.64346	37.94101207	-75 27	35.52278	-75.45986744	-83.482
119	Check Point Point 47	37 56	29.31656	37.94147682	-75 27	34.19249	-75.45949791	-83.567
120	Check Point Point 49	37 56	30.98966	37.94194157	-75 27	32.86198	-75.45912833	-83.843

World Geodetic System 1984 / North American Datum 1983

Position Number and Name			Latitude		Longitude			Height Above Ellipsoid (feet)	
121	Check Point	Point 51	37 56	32.66276	37.94240632	-75 27	31.53167	-75.45875880	-83.731
122	Check Point	Point 53	37 56	34.33576	37.94287104	-75 27	30.20126	-75.45838924	-83.597
123	Check Point	Point 56	37 56	36.00877	37.94333577	-75 27	28.87085	-75.45801968	-83.842
124	Check Point	Point 58	37 56	37.68190	37.94380053	-75 27	27.54044	-75.45765012	-83.965
125	Check Point	Point 60	37 56	39.35503	37.94426529	-75 27	26.21004	-75.45728057	-84.422
126	Check Point	Point 62	37 56	41.02808	37.94473002	-75 27	24.87964	-75.45691101	-84.918
127	Check Point	Point 65	37 56	42.70114	37.94519476	-75 27	23.54924	-75.45654146	-85.465
128	Check Point	Point 70	37 56	44.37421	37.94565950	-75 27	22.21875	-75.45617188	-86.006
129	Check Point	Point 71	37 56	46.04739	37.94612428	-75 27	20.88827	-75.45580230	-86.519
130	Check Point	Point 72	37 56	47.72046	37.94658902	-75 27	19.55768	-75.45543269	-87.034
131	Check Point	Point 74	37 56	49.39364	37.94705379	-75 27	18.22719	-75.45506311	-87.555
132	Check Point	Point 75	37 56	50.63003	37.94739723	-75 27	17.24403	-75.45479001	-88.001
133	Hazeltine	Point 101	37 56	34.04775	37.94279104	-75 27	20.12929	-75.45559147	-94.522
134	Check Point	Point 105	37 56	34.10965	37.94280824	-75 27	32.62406	-75.45906224	-83.641
135	Runway	Point 115	37 56	34.20322	37.94283423	-75 27	51.34821	-75.46426339	-80.139
136	Check Point	Point 126	37 56	34.32622	37.94286839	-75 28	16.31348	-75.47119819	-82.449
137	Check Point	Point 129	37 56	34.38699	37.94288528	-75 28	28.79597	-75.47466555	-84.356
138	Huey Pac Scan	Point 139	37 56	34.42336	37.94289538	-75 28	36.28572	-75.47674603	-83.689
139	Bench Mark	Point 202	37 56	28.70433	37.94130676	-75 27	59.73122	-75.46659200	-80.587
140	ADAS Telemetry Antenna		37 55	35.72346	37.92658985	-75 28	34.69628	-75.47630452	-35.307
142	AN/GMD	X-85	37 50	38.25169	37.84395880	-75 28	45.66469	-75.47935130	-73.453
143	RARF Antenna A North		37 51	22.91843	37.85636623	-75 30	41.18184	-75.51143940	-65.271
145	NAOTS Water Tank		37 56	21.22221	37.93922839	-75 28	25.56011	-75.47376670	48.929
146	Kennedy Boresight Tower		37 55	45.25993	37.92923887	-75 28	34.02831	-75.47611897	66.810
147	MET Tower, 300 ft		37 51	8.45468	37.85234852	-75 28	15.69312	-75.47102587	-120.456
148	North Balloon Launch Site TB-560		37 52	20.94646	37.87248513	-75 26	30.42592	-75.44178498	-55.423
149	Camera Station no. 1	E-104	37 56	14.01024	37.93722507	-75 28	8.71485	-75.46908746	-55.145
150	Camera Station no. 2	E-104	37 56	14.04134	37.93723371	-75 28	8.78605	-75.46910724	-55.125
151	Camera Station no. 3	DOG	37 56	43.11041	37.94530845	-75 27	46.13730	-75.46281592	-64.858
152	Camera Station no. 4	DOG	37 56	43.13281	37.94531467	-75 27	46.11049	-75.46280847	-64.858
153	Remote Recorder no.1		37 55	32.17426	37.92560396	-75 28	13.23703	-75.47034362	-85.827
154	1250 ft S of pt 6	Runway CL	37 55	26.98733	37.92416315	-75 28	23.72922	-75.47325812	-86.033
155	1250 ft N of pt 75	Runway CL	37 57	1.08874	37.95030243	-75 27	8.93216	-75.45248116	-88.000
156	TRADAT	3/19/81	37 51	35.79005	37.85994168	-75 30	35.57252	-75.50988126	-94.751
157	LDAR Pole Antenna - SPANDAR		37 51	15.10279	37.85419522	-75 30	42.99375	-75.51194271	-57.247
158	LDAR Ground Antenna - SPANDAR		37 51	14.62770	37.85406325	-75 30	42.39501	-75.51177639	-100.013
159	LDAR Pole Antenna - Assateague		37 51	54.96437	37.86526789	-75 22	5.94503	-75.36831806	-54.288

World Geodetic System 1984 / North American Datum 1983

Position Number and Name	Latitude	Longitude	Height Above Ellipsoid (feet)
160 LDAR Square Base - Assateague	37 55 54.23881	37.93173300	-115.394
161 LDAR Pole Antenna - Receiver Site	37 55 44.25090	37.92895858	-65.200
162 LDAR Ground Antenna - Receiver Site	37 56 49.93764	37.94720490	-103.356
163 LDAR Pole Antenna - New Church	37 58 36.23509	37.97673197	-101.679
164 LDAR Square Base - New Church	37 58 40.63783	37.97795495	-79.863
165 MLS-DME	37 55 27.08918	37.92419144	-70.483
166 MLS-Azimuth Site	37 55 26.71023	37.92408618	-79.143
167 MLS-Elevation Site	37 56 41.73048	37.94492513	-85.694
168 Intersection of Runways 1735-0422	37 56 17.78298	37.93827305	-83.397
169 Center of Collection Array	37 56 20.63887	37.93906635	-86.107
170 First Pole Microphone	37 56 34.22591	37.94284053	-84.355
171 Microphone 13	37 56 34.09821	37.94280506	-83.694
172 High Speed Turnoff	37 56 21.48203	37.93930056	-83.463
173 Test Point 1	37 56 34.09817	37.94280505	-83.694
174 TM Tracker (8ft Ant) N-162	37 55 41.43316	37.92817588	-15.203
175 MET (8ft Ant) N-162	37 55 42.06535	37.92835149	-19.323
176 STIR Antenna Z-41	37 49 58.82428	37.83300674	-57.469
177 Command Destruct Antenna	37 51 59.39248	37.86649791	-77.745
178 MLS AZ CENLIN MON PAD	37 55 28.38390	37.92455108	-85.043
179 Medium Gain TM Antenna North	37 55 42.10019	37.92836116	-64.407
180 Medium Gain TM Antenna South	37 55 41.04112	37.92806698	-62.207
181 HAD Launcher Pad 2	37 50 18.02454	37.83834015	-112.469
183 9 Meter Antenna Cent.	37 55 38.49249	37.92735903	-60.707
184 9 Meter RM-1	37 55 39.66725	37.92768535	-82.143
185 9 Meter N-1	37 55 39.48242	37.92763401	-81.977
186 9 Meter N-2	37 55 45.46784	37.92929662	-79.650
187 9 Meter E-1	37 55 38.49246	37.92735902	-83.810
188 9 Meter E-2	37 55 38.49228	37.92735897	-88.763
189 9 Meter S-1	37 55 37.50363	37.92708434	-84.120
190 9 Meter S-2	37 55 31.63509	37.92545419	-85.577
191 9 Meter W-1	37 55 38.49248	37.92735902	-81.807
192 9 Meter W-2	37 55 38.49249	37.92735903	-82.993
193 9 Meter Collim Ant.	37 55 0.61189	37.91683664	34.547
194 6 Meter Center	37 55 38.49246	37.92735902	-61.177
195 ADAS Boresight Ant (S-BN)	37 55 0.59986	37.91683329	38.947
196 LAS RET REF,APT FPS16	37 55 0.62656	37.91684071	33.947
197 VHF "Zero" RNG Antenna	37 55 45.23073	37.92923076	71.320

World Geodetic System 1984 / North American Datum 1983

Position Number and Name	Latitude	Longitude	Height Above Ellipsoid (feet)
198 VHF SCAMP Antenna	37 55 46.58040	37.92960567	-44.293
199 SATAN Transmit	37 55 45.74709	37.92937419	-57.497
200 VHF SATAN #1 Receive	37 55 43.38900	37.92871917	-49.273
201 Multi-Mode GRND RCVR - Receiver Site	37 56 43.83692	37.94551025	-85.827
202 Balloon Release Airfield	37 55 42.85285	37.92857023	-84.210
203 MRP: By-pass road north of ICC	37 50 30.94361	37.84192878	-100.346
204 MRP: South of building Y-60	37 50 26.40613	37.84066837	-100.186
205 Army MDS Mobile Radar Ant. South Stake	37 50 35.56720	37.84321311	-103.926
206 Army MDS Mobile Radar Ant. North Stake	37 50 36.69867	37.84352741	-106.006
207 Army MDS Mobile Ant. 2-25-87 E. Stake	37 50 32.88867	37.84246908	-100.269
208 365-N1 Helo A1, M12 Ref. Mike	37 56 33.39234	37.94260898	-85.234
209 365-N1 Helo A2, M5 Ref. Mike	37 56 30.23903	37.94173306	-81.654
210 MLS Survey Point no. 3B7-164	37 56 34.56763	37.94293545	-99.632
211 MLS Survey Point no. 3K8-103	37 56 34.07862	37.94279961	-83.990
212 365-N1 Helo A1, M17	37 56 37.38513	37.94371809	-87.158
213 MLS Survey Point no. 122 Runway 17-35	37 56 45.20447	37.94589013	-86.622
214 MLS Survey Point no. 033 Runway 17-35	37 56 12.07961	37.93668878	-84.225
215 ARC Launcher Pad 2	37 50 16.77499	37.83799305	-112.966
216 Boresight Tower (FPQ-6)	37 51 54.84496	37.86523471	47.585
217 Boresight Tower (FPS-16)	37 56 47.83288	37.94662024	47.103
218 MRP: Island radar complex n. by-pass	37 50 30.93397	37.84192610	-100.004
219 Z-41 SPS 49 Radar	37 49 59.10774	37.83308548	-13.069
220 MRP: PK nail South Island	37 50 26.43821	37.84067728	-99.871
221 MRP: Triangle area of airfield	37 56 27.69362	37.94102601	-69.187
222 Boresight horn associated with 221	37 56 28.10668	37.94114074	-39.045
223 Terminal building X-75	37 50 38.03754	37.84389932	-112.467
224 Launcher-Pad 3B AML 20K	37 50 57.85659	37.84940461	-113.762
225 MRP: Near Spandar	37 51 17.44501	37.85484584	-98.660
226 MRP: Island radar complex n. by-pass	37 50 30.93397	37.84192610	-100.255
227 MRP: Near Spandar	37 51 17.46567	37.85485158	-98.710
228 REFS Test Rocket launcher	37 50 18.45826	37.83846063	-110.430
229 MRP: East side of building E-134	37 56 6.05588	37.93501552	-51.099
230 MRP: Old UHF North antenna pedestal	37 51 22.91834	37.85636621	-61.726
231 GUSTY antenna	37 49 58.77164	37.83299212	-56.464
232 MRP: U-20 Tower	37 51 22.91491	37.85636525	-59.476
233 Camera Station PK Nail South Island	37 49 22.01361	37.82278156	-109.458
234 MRP: Mainland near UHF radar	37 51 21.74357	37.85603988	-99.179

World Geodetic System 1984 / North American Datum 1983

Position Number and Name	Latitude	Longitude	Height Above Ellipsoid (feet)
235 MRP: Y-95 tower	37 50 30.39056 37.84177516	-75 29 5.18887 -75.48477469	-82.004
236 MRP: Island radar complex n. by-pass	37 50 30.90890 37.84191914	-75 29 3.00940 -75.48416928	-100.325
237 Mappsville Translator Tower	37 50 32.29110 37.84230308	-75 34 17.37610 -75.57149336	393.701
238 VHF SATAN #2 Receive	37 55 32.10664 37.92558518	-75 28 36.68667 -75.47685741	-49.980
239 VHF 7.3 Meter Receive	37 55 44.08440 37.92891233	-75 28 25.50410 -75.47375114	-58.550

** Location: White Sands Missile Range

300 Aerobee Tower L-21A	32 24 15.37170 32.40426992	-106 20 33.04407 -106.34251224	3949.264
301 Aerobee Tower L-21B	32 24 15.49968 32.40430547	-106 20 30.76423 -106.34187895	3949.201
302 Aerobee Launcher L-455	32 25 4.54214 32.41792837	-106 19 17.46634 -106.32151843	3959.841
303 Navy Launcher L-457	32 24 48.11518 32.41336533	-106 19 46.88904 -106.32969140	3964.925
304 Launcher L-462	32 25 5.34242 32.41815067	-106 19 11.74521 -106.31992922	3962.334
305 Launcher L-479	32 25 0.74829 32.41687453	-106 19 32.95376 -106.32582049	3968.271
306 Aries, Top of Ring L-536	32 25 0.67168 32.41685324	-106 19 32.14262 -106.32559517	3962.110
307 Launcher L-580	32 25 5.12915 32.41809143	-106 19 11.99560 -106.31999878	3963.599
308 Launcher L-630	32 25 4.02789 32.41778553	-106 19 15.45645 -106.32096013	3968.854
320 Radar Site R-112	32 21 28.93373 32.35803715	-106 22 14.77687 -106.37077135	3970.401
321 Radar Site R-113	32 21 28.94315 32.35803976	-106 22 11.27900 -106.36979972	3971.007
322 Radar Site R-114	32 21 28.95291 32.35804248	-106 22 7.78580 -106.36882939	3969.004
323 Radar Site R-122	32 54 8.25365 32.90229268	-106 5 56.98170 -106.09916158	4075.143
324 Radar Site R-123	32 54 5.28379 32.90146772	-106 5 56.99958 -106.09916655	4076.121
325 Radar Site R-124	33 26 42.68484 33.44519023	-106 7 55.55107 -106.13209752	5255.754
326 Radar Site R-125	33 5 46.06101 33.09612806	-106 9 32.90460 -106.15914017	4102.844
327 Radar Site R-127	33 48 49.93946 33.81387207	-106 39 32.44045 -106.65901123	4951.375
328 Radar Site R-128	33 48 46.97531 33.81304870	-106 39 32.42790 -106.65900775	4943.641
329 Radar Site R-329	32 24 20.88606 32.40580168	-106 20 58.50609 -106.34958502	3970.145
330 Radar Site R-350	32 21 24.28960 32.35674711	-106 22 44.80867 -106.37911352	3937.332
331 Radar Site R-393	32 28 22.21929 32.47283869	-106 25 18.22178 -106.42172827	3911.036
332 Radar Site R-394	32 22 3.39606 32.36761002	-106 20 29.73873 -106.34159409	3952.430
333 Radar Site R-395	32 22 44.30402 32.37897334	-106 16 48.86374 -106.28023993	4001.787
334 Radar Site R-396	32 23 15.07397 32.38752055	-106 13 30.69657 -106.22519349	4000.585
335 Radar Site R-455	33 3 57.05693 33.06584915	-106 10 51.99343 -106.18110928	4052.514
336 Radar Site R-482	32 22 44.24736 32.37895760	-106 16 49.05325 -106.28029257	4000.759

** Location: Poker Flat, AK

400 MRL 7.5K Pad-1	65 7 46.30417 65.12952894	-147 29 17.64295 -147.48823415	682.630
401 MRL 7.5K Pad-2	65 7 47.44934 65.12984704	-147 29 9.90895 -147.48608582	682.630

World Geodetic System 1984 / North American Datum 1983

Position Number and Name	Latitude	Longitude	Height Above Ellipsoid (feet)
402 AML 20K Pad-3	65 7 47.19937 65.12977760	-147 29 7.66190 -147.48546164	682.630
403 AML 20K Pad-4	65 7 48.75156 65.13020877	-147 28 59.55993 -147.48321109	682.626
404 AML 4K3 Pad-5	65 7 45.12847 65.12920235	-147 28 59.75862 -147.48326628	682.630
405 Formerly VERLORT Radar	65 7 36.33988 65.12676108	-147 29 20.47512 -147.48902086	693.223
406 WSMR Radar East	65 7 1.61799 65.11711611	-147 27 43.43966 -147.46206657	1373.670
407 WSMR Radar X-Band West	65 6 58.68989 65.11630275	-147 27 49.49839 -147.46374955	1370.053
408 Hilltop Launcher Pad 6	65 7 1.34106 65.11703918	-147 27 39.37858 -147.46093850	1391.750
409 TM Tracker TRADAT no. 1	65 7 0.10100 65.11669472	-147 27 46.01346 -147.46278152	1391.113
410 TM Tracker TRADAT no. 2	65 7 0.19101 65.11671972	-147 27 45.54646 -147.46265180	1391.013
411 MRP: Poker Flat Research Range	65 7 36.25189 65.12673664	-147 29 19.84810 -147.48884669	690.903
412 MRP: Poker Flat Research Range	65 7 36.42787 65.12678552	-147 29 20.72613 -147.48909059	702.113
413 Boresight associated with 412	65 7 44.20436 65.12894566	-147 29 4.39959 -147.48455544	781.330
** Location: Eastern Space & Missile Center			
600 AN/FPQ-13 Radar 0.13	28 13 38.38140 28.22732817	-80 36 21.95350 -80.60609819	-47.178
601 AN/FPQ-14 Radar 0.14 PATQ	28 13 35.04870 28.22640242	-80 35 57.39490 -80.59927636	-45.144
602 AN/FPQ-14 Radar 19.14 MILA	28 25 28.96030 28.42471119	-80 39 51.79560 -80.66438767	-56.923
603 Unified S-band MILA	28 30 29.24600 28.50812389	-80 41 36.23980 -80.69339994	-85.138
604 Telemetry TAA-24 MILA	28 27 46.43740 28.46289928	-80 39 10.32740 -80.65286872	-35.171
605 Pad 39A launcher	28 36 29.78950 28.60827486	-80 36 14.81950 -80.60411653	9.482
606 Pad stand 39B	28 37 37.77830 28.62716064	-80 37 15.05880 -80.62084967	15.256
607 AN/FPQ14 Radar 28.14 Jonathan-Dickinson	26 58 58.86180 26.98301717	-80 6 29.46330 -80.10818425	-23.163
608 Pad 17B	28 26 44.84550 28.44579042	-80 33 56.33800 -80.56564944	-58.924
609 Pad 17A	28 26 49.77980 28.44716106	-80 33 53.73421 -80.56492617	-58.793
610 Pad 40	28 33 43.16180 28.56198939	-80 34 37.89710 -80.57719364	-70.308
611 STS Landing North	28 37 57.94620 28.63276283	-80 42 21.81190 -80.70605886	-84.186
612 STS Landing South	28 35 49.33130 28.59703647	-80 40 57.64080 -80.68267800	-84.252
613 MRP: MILA	28 30 38.03020 28.51056394	-80 41 36.90660 -80.69358517	-65.154
** Location: Puerto Rico			
675 MRP: Tortuguero	18 28 46.83750 18.47967708	-66 26 18.81750 -66.43856042	-102.810
676 HAD Launcher	18 28 58.48550 18.48291264	-66 26 22.09710 -66.43947142	-121.860
677 MRL Launcher	18 28 59.04730 18.48306869	-66 26 21.25420 -66.43923728	-120.770
** Location: Fort Yukon, AK			
700 Launcher	66 33 44.45149 66.56234764	-145 11 49.77715 -145.19716032	463.567
701 Mini Tracker	66 33 38.47111 66.56068642	-145 12 9.12832 -145.20253564	462.570
702 Mobile Radar Position	66 33 38.47111 66.56068642	-145 12 9.12832 -145.20253564	474.570

World Geodetic System 1984 / North American Datum 1983

Position Number and Name	Latitude	Longitude	Height Above Ellipsoid (feet)
** Location: Bermuda			
703 AN/FPQ-6 BDA (141)	32 20 52.59690 32.34794358	-64 39 12.41780 -64.65344939	-42.224
** Location: Norfolk, VA			
704 VORTAC Station ORF	36 53 30.83469 36.89189852	-76 12 1.17612 -76.20032670	-100.161
** Location: Sea Isle, NJ			
705 VORTAC Station SIE	39 5 43.81112 39.09550309	-74 48 1.19830 -74.80033286	-103.228
** Location: Longmont, CO			
709 Mobile Radar Position	40 9 50.94418 40.16415116	-105 9 41.94464 -105.16165129	4985.734
** Location: Erie, CO			
710 Mobile C-Band 16-18 Jan 85	40 3 4.79007 40.05133057	-105 0 25.14070 -105.00698353	5112.820
** Location: Palestine, TX			
711 Mobile Radar Position	31 47 2.96035 31.78415565	-95 42 56.26029 -95.71562786	307.812
** Location: Goodland, KS			
712 Mobile Radar Position	39 22 17.48541 39.37152373	-101 42 20.62523 -101.70572923	3574.997
** Location: Mt. Lemmon, AZ			
714 CAPRI Radar	32 26 30.02234 32.44167287	-110 47 19.66249 -110.78879514	9097.041
** Location: Somerset, PA			
715 MRP: Somerset County Municipal Airport	40 2 21.28447 40.03924569	-79 0 57.09573 -79.01585993	2131.933
** Location: Springfield, TN			
716 MRP: City Industrial Park	36 29 34.20156 36.49283376	-86 51 37.84192 -86.86051164	643.873
** Location: Millstone Hill, MA			
717 Radar/Optical Site	42 37 12.32616 42.62009060	-71 29 22.23485 -71.48950968	388.930
** Location: Snowhill, MD			
718 VORTAC station SWL	38 3 23.73651 38.05659347	-75 27 50.11925 -75.46392201	-69.704

World Geodetic System 1984 / North American Datum 1983

Position Number and Name	Latitude	Longitude	Height Above Ellipsoid (feet)
** Location: Patuxent River NAS, MD			
719 VORTAC station PXT	38 17 16.24757 38.28784655	-76 24 0.82016 -76.40022782	-63.073
** Location: Duck, NC			
720 Optical site	36 6 0.58757 36.10016321	-75 47 58.66751 -75.79962986	-113.479
** Location: Erange, Sweden			
800 MPS - 36 Radar	67 53 18.93809 67.88859391	21 6 34.36321 21.10954534	1059.679
801 Maraba S-Band Station	67 53 33.93808 67.89276058	21 5 7.35823 21.08537729	1151.140
802 NASA Telemetry Trailer	67 53 34.93812 67.89303837	21 5 7.35818 21.08537727	1151.139
803 Erange Radar	67 52 50.93557 67.88081544	21 3 52.35714 21.06454365	1686.165
804 Erange Telemetry	67 53 34.93810 67.89303836	21 5 5.35809 21.08482169	1184.379
805 Super Loki Pad	67 53 40.93902 67.89470528	21 6 28.36171 21.10787825	1079.365
806 Skylark Tower	67 53 35.74877 67.89326355	21 6 25.20184 21.10700051	1073.520
807 MRL Launcher	67 53 36.17874 67.89338298	21 6 19.12152 21.10531153	1073.522
808 MRP: Karuna, Sweden	67 53 25.15826 67.89032174	21 6 20.72221 21.10575617	1082.455
** Location: Churchill, Canada			
830 Mobile Radar Position	58 44 13.30834 58.73703009	-93 49 9.53963 -93.81931656	-167.117
831 Aerobee Launcher Pad 3	58 44 4.11332 58.73447592	-93 49 14.19648 -93.82061013	-172.550
832 Universal Launcher Pad 1	58 43 56.04719 58.73223533	-93 48 57.96963 -93.81610267	-175.181
833 Auroral Launcher Pad 7	58 43 57.65923 58.73268312	-93 48 54.04547 -93.81501263	-172.884
834 Arcas East Launcher Pad 4A	58 44 2.07726 58.73391035	-93 49 19.21470 -93.82200408	-172.222
835 Arcas West Launcher Pad 4A	58 44 2.04526 58.73390146	-93 49 19.43471 -93.82206520	-172.222
836 TM antenna #1	58 44 15.92775 58.73775771	-93 49 8.46416 -93.81901782	-175.947
837 TM antenna #10	58 44 16.20197 58.73783388	-93 49 8.06559 -93.81890711	-168.236
** Location: Alcantara, Brazil			
850 Mobile Radar Position	-2 18 56.55866 -2.31571074	-44 22 16.50480 -44.37125133	152.920
851 Brazil radar - Adour	-2 19 51.97756 -2.33110488	-44 25 14.52350 -44.42070097	190.430
852 Brazil radar - Atlas	-2 26 36.80976 -2.44355827	-44 7 16.44200 -44.12123389	135.039
853 Radar boresight	-2 18 48.59606 -2.31349891	-44 22 20.20500 -44.37227917	195.262
854 TM Antenna (18 ft)	-2 18 54.09866 -2.31502741	-44 22 19.84980 -44.37218050	139.475
855 TM Antenna (20 ft)	-2 18 53.52306 -2.31486752	-44 22 19.82900 -44.37217472	145.522
856 HAD Launcher	-2 18 52.92896 -2.31470249	-44 22 3.69450 -44.36769292	131.506
857 MRL Launcher	-2 18 53.92196 -2.31497832	-44 22 3.69380 -44.36769272	134.662
858 RAG Launcher	-2 18 53.42476 -2.31484021	-44 22 3.00390 -44.36750108	131.883
859 Universal Launcher	-2 18 57.57996 -2.31599443	-44 22 3.43600 -44.36762111	136.608

World Geodetic System 1984 / North American Datum 1983

Position Number and Name	Latitude	Longitude	Height Above Ellipsoid (feet)
** Location: Sondrestrom, Greenland			
910 HAD Launcher	67 1 25.28850 67.02369125	-50 35 50.67380 -50.59740939	252.200
911 MRL Launcher	67 1 24.46020 67.02346117	-50 35 50.63070 -50.59739742	251.800
912 Danish Launcher	67 1 18.50690 67.02180747	-50 35 47.29920 -50.59647200	233.900
913 Mobile C-Band R2 9-86	67 1 21.17290 67.02254803	-50 36 7.07930 -50.60196647	249.300
914 Mobile MPS-19 R10 9/28/84	67 1 20.70090 67.02241692	-50 36 6.89740 -50.60191594	252.800
915 FSR Boresight	67 1 14.06050 67.02057236	-50 35 47.15310 -50.59643142	254.500
916 Boresight Tower Horn	67 1 16.86690 67.02135192	-50 35 47.05310 -50.59640364	287.300
917 TACAN Site	66 59 48.18870 66.99671908	-50 36 57.34420 -50.61592894	1209.300
918 TM Antenna (20 ft) no. 9 8-86	67 1 23.92440 67.02331233	-50 36 8.92710 -50.60247975	261.400
919 TM Antenna (6 ft) no. 7	67 1 23.33610 67.02314892	-50 36 8.36000 -50.60232222	250.400
920 TM Antenna (8 ft) no. 2	67 1 23.63270 67.02323131	-50 36 8.63020 -50.60239728	251.900
921 TM Antenna (8 ft) no. 4	67 1 23.47330 67.02318703	-50 36 8.45880 -50.60234967	251.800
922 Anemometer Tower Base	67 1 22.93250 67.02303680	-50 35 54.78440 -50.59855122	250.300
923 Anemometer Tower Level 1	67 1 22.93250 67.02303680	-50 35 54.78440 -50.59855122	272.300
924 Anemometer Tower Level 2	67 1 22.93250 67.02303680	-50 35 54.78440 -50.59855122	297.300
925 Anemometer Tower Level 3	67 1 22.93250 67.02303680	-50 35 54.78450 -50.59855125	322.300
926 HAD Launcher no. 3 9-86	67 1 23.43250 67.02317569	-50 35 50.05590 -50.59723775	251.300
927 Test Rocket Launcher 9-86	67 1 22.82840 67.02300789	-50 35 47.35800 -50.59648833	255.700
928 Boresight Dish for 20 ft Ant 9-86	67 1 18.17330 67.02171480	-50 41 8.59150 -50.68571986	452.800
929 TM Antenna (10 ft) no. 1 10-86	67 1 23.30020 67.02313894	-50 36 8.39520 -50.60233200	251.300
** Location: Andoya, Norway			
940 Launch Pad #9	69 17 38.82554 69.29411821	16 1 7.60605 16.01877946	137.953
941 Launch Pad #10	69 17 38.51552 69.29403209	16 1 6.54602 16.01848501	137.953
942 Launch Pad #3	69 17 39.57564 69.29432657	16 1 14.35632 16.02065453	136.310
943 Launch Pad #5	69 17 39.95563 69.29443212	16 1 11.33616 16.01981560	136.311
947 MRP: (Grustaket)	69 17 32.55542 69.29237651	16 1 24.36735 16.02343537	149.432
948 Antenna 2	69 17 41.27595 69.29479887	16 1 38.18736 16.02727427	136.302
949 Antenna 4	69 17 40.93592 69.29470442	16 1 37.92738 16.02720205	136.302
950 Antenna 8	69 17 40.72591 69.29464609	16 1 37.41738 16.02706038	136.302
951 Tracking Radar Pad	69 17 35.77553 69.29327098	16 1 19.63688 16.02212136	149.433
952 Tradat 9 - 12/17/88	69 17 41.67598 69.29490999	16 1 40.73747 16.02798263	149.096
953 Mobile Radar Position	69 17 35.85552 69.29329320	16 1 18.74683 16.02187412	152.713
** Location: Woomera, Australia			
960 MRL Launcher	-30 56 34.29870 -30.9428608	136 31 14.60360 136.52072322	466.434
961 HAD Launcher	-30 56 35.08390 -30.9430789	136 31 13.97740 136.52054928	463.379

World Geodetic System 1984 / North American Datum 1983

Position Number and Name		Latitude		Longitude		Height Above Ellipsoid (feet)
962	Mobile Radar Position	-30 56 49.20310	-30.9470009	136 31 29.26420	136.52479561	443.950
963	Mobile TM no. 1	-30 56 56.93190	-30.9491478	136 31 40.21680	136.52783800	450.673
964	Mobile TM no. 10	-30 56 56.60650	-30.9490574	136 31 40.16300	136.52782306	456.056
965	Radar 32 Australia R1	-30 56 38.79270	-30.9441091	136 31 49.44650	136.53040181	452.231
966	Radar 33 Australia R2	-30 46 5.29930	-30.7681387	136 20 5.92990	136.33498053	416.535
967	Boresight Tower	-30 56 57.08900	-30.9491914	136 31 41.40670	136.52816853	489.193
** Location: San Marco, Africa						
980	San Marco Platform - Launcher Pit	-2 56 26.80608	-2.94077947	40 12 48.14715	40.21337421	-47.670
981	Santa Rita Platform - Radar Antenna	-2 56 18.80682	-2.93855745	40 12 36.14690	40.21004081	-37.690

Table 6

Mobile Radar Position History

Mobile Radar Position History

Position Number	Location	Position Name	Date Effective*
** Radar Number 2			
57	Wallops Flight Facility	MRP: Tower on the east side of E-134	07/19/82
51	Wallops Flight Facility	MRP: N. Island by-pass road Y-60 area	11/04/83
709	Longmont, CO	Mobile Radar Position	02/01/84
58	Wallops Flight Facility	MRP: South of building Y-60	11/01/85
716	Springfield, TN	MRP: City Industrial Park	11/11/85
715	Somerset, PA	MRP: Somerset County Municipal Airport	11/26/85
947	Andoya, Norway	MRP: (Grustaket)	10/15/87
220	Wallops Flight Facility	MRP: PK nail South Island	10/07/88
218	Wallops Flight Facility	MRP: Island radar complex n. by-pass	07/17/89
225	Wallops Flight Facility	MRP: Near Spandar	10/03/89
226	Wallops Flight Facility	MRP: Island radar complex n. by-pass	10/17/89
227	Wallops Flight Facility	MRP: Near Spandar	12/07/89
218	Wallops Flight Facility	MRP: Island radar complex n. by-pass	02/21/90
220	Wallops Flight Facility	MRP: PK nail South Island	10/16/90
230	Wallops Flight Facility	MRP: Old UHF North antenna pedestal	01/18/91
226	Wallops Flight Facility	MRP: Island radar complex n. by-pass	08/13/91
675	Puerto Rico	MRP: Tortuguero	05/11/92
218	Wallops Flight Facility	MRP: Island radar complex n. by-pass	08/11/92
236	Wallops Flight Facility	MRP: Island radar complex n. by-pass	03/01/94
** Radar Number 8			
52	Wallops Flight Facility	MRP: Nike-C at E-134	03/01/82
55	Wallops Flight Facility	MRP: Building Y-60	06/11/82
712	Goodland, KS	Mobile Radar Position	06/04/85
59	Wallops Flight Facility	MRP: Roof of Y-60	11/01/85
203	Wallops Flight Facility	MRP: By-pass road north of ICC	10/07/86
962	Woomera, Australia	Mobile Radar Position	11/18/87
218	Wallops Flight Facility	MRP: Island radar complex n. by-pass	10/11/88
830	Churchill, Canada	Mobile Radar Position	04/01/89
221	Wallops Flight Facility	MRP: Triangle area of airfield	05/15/89
220	Wallops Flight Facility	MRP: PK nail South Island	06/06/90
218	Wallops Flight Facility	MRP: Island radar complex n. by-pass	10/16/90
808	Estrange, Sweden	MRP: Karuna, Sweden	07/10/91
953	Andoya, Norway	Mobile Radar Position	04/30/92
234	Wallops Flight Facility	MRP: Mainland near UHF radar	08/26/92
235	Wallops Flight Facility	MRP: Y-95 tower	10/12/93

Mobile Radar Position History

Position Number	Location	Position Name	Date Effective*
** Radar Number 9			
53	Wallops Flight Facility	MRP: Island radar north of by-pass road	03/01/82
411	Poker Flat, AK	MRP: Poker Flat Research Range	10/13/83
57	Wallops Flight Facility	MRP: Tower on the east side of E-134	08/27/85
412	Poker Flat, AK	MRP: Poker Flat Research Range	10/01/85
** Radar Number 10			
229	Wallops Flight Facility	MRP: East side of building E-134	12/03/90
232	Wallops Flight Facility	MRP: U-20 Tower	11/06/91
613	Eastern Space & Missile Center	MRP: MILA	01/05/93
232	Wallops Flight Facility	MRP: U-20 Tower	03/01/93
850	Alcantara, Brazil	Mobile Radar Position	08/01/94
232	Wallops Flight Facility	MRP: U-20 Tower	11/23/94
** Radar Number 11			
54	Wallops Flight Facility	Mobile Radar Position	12/08/76
711	Palestine, TX	Mobile Radar Position	08/01/83
** Radar Number 15			
59	Wallops Flight Facility	MRP: Roof of Y-60	11/04/83
204	Wallops Flight Facility	MRP: South of building Y-60	08/27/86
** Radar Number 41			
702	Fort Yukon, AK	Mobile Radar Position	02/15/84

* Date Effective indicates the date that the radar was at the location.
 Continuous location at that position between dates can not be assumed.

References

References

- 1 Wallops Flight Center, Surveyed Points Charts and Tables. July 1977
- 2 Poker Flats Positions August 1980
- 3 Instrumentation Coordinates 1986 White Sands Missile Range
- 4 Location Coordinates of Launchers and Tracking Stations Punta Lobos Range, Peru Note From 822.4/J. W. Hardin To 824.1/J. F. Andrews September 24, 1982
- 5 Eastern Space and Missile Center Geodetic Coordinates Manual January 1989
- 6 Memo From 1022.2/Head, Radar and Optical Systems Section To 1023.1/Head, Data Processing and Analysis Section June 11, 1982
- 7 Memo From 1022.2/Head, Radar and Optical Systems Section To 1023.1/Head, Data Processing and Analysis Section July 19, 1982
- 8 Memo From 1022.2/Head, Radar and Optical Systems Section To 1023.1/Head, Data Processing and Analysis Section October 13, 1983
- 9 Memo From 1022.2/Head, Radar and Optical Systems Section To Distribution November 4, 1983
- 10 Memo From 823.1/D. F. Melvin To CSC/C. L. Humphreys February 15, 1984
- 11 Telephone call From 822.4/R. A. Burns To 823.1/C. D. Leitao October 4, 1983
- 12 Notes and papers From 823.1/W. F. Landon July 1984
- 13 Telephone call From 822.2/F. M. Boykin To 823.1/W. F. Landon March 19, 1981
- 14 Notes and Papers From 822.2/J. C. Gerlach March 31, 1981
- 15 Note From 822.2/A. R. Selser To CSC/C. F. Mooney March 1982
- 16 Note From 831.1/G. E. Godwin To 823.1/C. D. Leitao November 15, 1984
- 17 Note From 831.0/G. E. Godwin To CSC/F. M. Mooney April 29, 1980
- 18 Note From 831.0/B. L. Shaw To CSC/F. M. Mooney July 2, 1980
- 19 Note From 822.4/R. A. Burns To CSC/F. M. Mooney October 14, 1980
- 20 Note From 822.1/V. L. Yeffstig To CSC/F. M. Mooney November 17, 1980
- 21 Note From 831.0/G. E. Godwin To CSC/F. M. Mooney February 13, 1981
- 22 Telephone call From CSC/R. E. Maddox To CSC/F. M. Mooney October 6, 1982
- 23 Note From 822.4/R. A. Burns To 823.1/C. D. Leitao December 8, 1976
- 24 Directory of C-Band Tracking Station Locations Wolf Research and Development Corporation September 1969
- 25 Note From 822.4/R. A. Burns To 823.1/C. D. Leitao
- 26 Notes From Navy/Richard Davis To 823.1/C. D. Leitao April 13, 1983
- 27 Memo From Robert M. Sayre To 832.0/R. D. Atkins February 1, 1984
- 28 Notes From 823.1/D. F. Melvin To 823.1/C. G. Parra September 28, 1984
- 29 Memo From Defense Mapping Agency/T. D. Beckett January 25, 1985
- 30 Notes From 842.0/R. H. Bradford To 823.1/C. G. Parra April 15, 1985
- 31 Notes From 822.4/R. A. Burns To 823.1/C. G. Parra April 19, 1985
- 32 Note From 822.2/A. R. Selser To 823.1/C. D. Leitao May 15, 1985
- 33 Note From 832.0/R. D. Atkins To 823.1/C. D. Leitao June 4, 1985
- 34 Note From 822.4/R. A. Burns To 823.1/C. D. Leitao July 9, 1985
- 35 Memo From 822.4/R. A. Burns To 823.1/C. D. Leitao June 4, 1985 July 11, 1985
- 36 Notes From 833.3/D. P. Switter To 822.2/A. R. Selser July 29, 1985

References

- 37 Note From 822.0/W. Koukourikos To 823.1/D. F. Melvin July 31, 1985
- 38 Note From 822.2/A. R. Selser To CSC/C. L. Humphreys August 27, 1985
- 39 Memo and Documentation From 823.1/C. D. Leitao To 823.1/C. G. Parra October 4, 1985
- 40 Telephone Call From 822.2/A. R. Selser To 823.1/C. G. Parra November 11, 1985
- 41 Letter from Franklin Associates To 832.0/R. A. Adkins November 26, 1985
- 42 Memo From 832.0/R. D. Atkins To 823.1/C. D. Leitao March 20, 1986
- 43 Note From 822.4/R. A. Burns To 823.1/C. G. Parra April 14, 1986
- 44 Notes and Documentation From 823.1/W. F. Landon To 823.1/B. C. Robbins July 25, 1986
- 45 Notes From 822.4/R. A. Burns To 823.1/C. D. Leitao September 30, 1986
- 46 Notes From 822.4/R. A. Burns August 27, 1986
- 47 Note From 823.1/W. F. Landon To 823.1/B. C. Robbins October 15, 1986
- 48 Memo From CSC/Mechanical Systems Section/R. E. Maddox To 823.1/C. D. Leitao October 23, 1986
- 49 Notes From 823.1/C. D. Leitao To 823.1/B. C. Robbins October 24, 1986
- 50 Note From 823.1/C. D. Leitao November 11, 1986
- 51 Notes and Documentation From CSC/R. E. Maddox December 1, 1986
- 52 Notes From CSC/R. E. Maddox February 25, 1987
- 53 Memo From CSC/Mechanical Systems Section/R. E. Maddox To 823.1/C. D. Leitao April 24, 1987
- 54 Notes and Documentation From CSC/R. E. Maddox To 823.1/C. D. Leitao April 23, 1987
- 55 Note From 824.1/J. R. Veney To 823.1/P. L. Timmons June 17, 1987
- 56 Note From CSC/R. E. Maddox To 823.1/P. L. Timmons June 18, 1987
- 57 Notes from 823.1/D. F. Melvin To 823.1/P. L. Timmons August 1987
- 58 Notes from CSC/R. E. Maddox To CSC/C. L. Humphreys September 15, 1987
- 59 Notes from 822.4/L. A. Bruno To 823.1/P. L. Timmons September 21, 1987
- 60 Notes from 822.4/E. D. Ransone To 823.1/W. F. Landon October 7, 1987
- 61 Notes from 824.1/J. R. Veney To 823.1/P. L. Timmons November 6, 1987
- 62 Note from 823.1/P. L. Timmons To 823.1/B. C. Robbins March 29, 1988
- 63 Telephone call from 822.2/A. R. Selser To 823.1/D. F. Melvin December 23, 1987
- 64 WFF Survey notes from Joule/D. D. Swartz TO 823.1/P. L. Timmons February 29, 1988
- 65 Documentation from 822.4/R. A. Burns To 823.1/D. F. Melvin March 1, 1988
- 66 Documentation from 820.0/J. W. Gray To 823.1/P. L. Timmons April 14, 1988
- 67 Notes from 822.4/R. A. Burns To 823.1/P. L. Timmons April 19, 1988
- 68 Notes from 841.1/G. L. Bland To CSC/C. L. Humphreys May 24, 1988
- 69 Notes from 822.2/A. R. Selser To 823.1/G. J. Vieira June 16, 1988
- 70 Notes from 822.4/R. A. Burns To 823.1/G. J. Vieira June 17, 1988
- 71 Notes from 823.2/J. H. Stripling To CSC/C. L. Humphreys July 7, 1988
- 72 Notes from CSC/R. E. Maddox To 822.4/P. L. Timmons October 11, 1988
- 73 Survey notes from CSC/R. E. Maddox To 822.4/P. L. Timmons December 21, 1988
- 74 Notes from CSC/C. L. Humphreys To 822.4/P. L. Timmons January 12, 1989
- 75 Survey notes from CSC/R. E. Maddox To 822.4/P. L. Timmons February 3, 1989
- 76 Phone call from CSC/R. E. Maddox To 822.4/P. L. Timmons March 2, 1989
- 77 Notes from 832.1/W. A. Brence To 822.4/C. D. Leitao March 6, 1989

References

- 78 Survey data from 841.1/G. L. Bland To 822.4/D. F. Melvin April 3, 1989
- 79 Notes from 832.2/J. H. Stripling To 822.4/P. L. Timmons May 15, 1989
- 80 Survey data from CSC/R. E. Maddox To 822.4/P. L. Timmons June 8, 1989
- 81 Survey notes from CSC/R. E. Maddox To 822.4/P. L. Timmons June 9, 1989
- 82 Survey data from CSC/R. E. Maddox To 822.4/R. A. Davis September 29, 1989
- 83 Survey data from CSC/R. E. Maddox To 822.4/R. A. Davis October 4, 1989
- 84 Survey notes from CSC/R. E. Maddox To 822.4/R. A. Davis October 19, 1989
- 85 Survey notes from CSC/R. E. Maddox To 822.4/R. A. Davis December 12, 1989
- 86 Survey notes from CSC/R. E. Maddox To 822.4/R. A. Davis November 2, 1990
- 87 Eastern Space and Missile Center Geodetic Coordinates Manual January 1990
- 88 Survey data from 822.2/N. E. Novack To 822.4/C. D. Leitao December 3, 1990
- 89 Survey data from 822.2/N. E. Novack To 822.4/C. D. Leitao January 18, 1991
- 90 Memo from NAVSWC DET/D. Davis To 832.3/M. Fillis April 29, 1991
- 91 Survey data from 822.2/N. E. Novack To 822.4/C. D. Leitao August 1, 1990
- 92 Survey data from Julian Hague To Robert Huey, Gary Miller July 10, 1991
- 93 Survey data from CSC/R. E. Maddox To 822.4/R. A. Davis August 16, 1991
- 94 Digital Aeronautical Chart Supplement United States Government Flight Information Publication
- 95 Memo from 822.2/N. E. Novack To 822.4/C. D. Leitao November 7, 1991
- 96 Notes from 832.2/J. H. Stripling To 822.4/R. A. Davis November 21, 1991
- 97 45th Space Wing Geodetic Coordinates Manual January 1992
- 98 Survey notes from CSC/R. E. Maddox To 822.4/R. A. Davis May 11, 1992
- 99 Survey data from DYNCORP/J. Hague To 833.3/D. Suiter April 30, 1992
- 100 Memo from 822.2/Nathan E. Novack To 822.4/Rodney A. Davis August 26, 1992
- 101 Memo from 822.2/Nathan E. Novack To 822.4/Rodney A. Davis January 5, 1993
- 102 Memo from 822.2/Nathan E. Novack To 822.4/Rodney A. Davis March 19, 1993
- 103 Memo from 822.2/Nathan E. Novack To 822.4/Rodney A. Davis October 21, 1993
- 104 Memo from 822.2/Nathan E. Novack To 822.4/Rodney A. Davis March 1, 1994
- 105 Survey notes from CSC/R. E. Maddox To 822.4/R. A. Davis September 1, 1994
- 106 Survey notes from CSC/R. E. Maddox To 822.4/R. A. Davis January 1995