APPENDIX E

LINE-OFF-SIGHT AND TROPOSCATTER SITING SURVEY

The purpose of the accompanying forms is to facilitate the on-site survey phase of site selection. No attempt has been made to produce a text on the subject, nor is it intended as a replacement for any known USN document. Rather, this collection of forms is intended as an aid in assembling the pertinent field data for engineering design of either a line-of-sight or a tropospheric communications system, regardless of the locale, or agency making the survey.

Dependent upon the purpose of survey or the geographic area, some of the included data is not applicable (e.g., import data for sites within the U.S.Z.I.) and should, therefore be removed from the forms prior to issuance to the survey teams. A suggested list of required equipment, for field survey, is shown in Figure E-1.

In the preparation of these forms, it has been assumed throughout that competent field teams would be utilized in making the surveys. There is no reliable short-cut method for selecting line-of-sight or tropospheric scatter sites since no two sites present identical problems. In the final selection, a compromise is usually necessary between the purely electronic considerations and those involving site accessibility and the costs of procurement and construction, with certain minimum transmission requirements as the one inflexible parameter. An orderly and logical approach to the selection of sites is outlined in the following steps.

o Preliminary Design. Engineering design, based on thorough map studies, taking into consideration path loss calculations, anticipated transmitter power, antenna size, approximate site location, zone of radiation hazard, and where applicable, the great circle bearings to adjacent sites.

o On-Site Survey. Working from the preliminary design, features of an area such as line-of-sight visibility, accessibility, topography, construction and support facilities, and other considerations essential to the selection are evaluated from a physical survey. These forms are intended for use in this phase of the work.

o Path Loss Measurements. These measurements are obtained by actually measuring the propagation losses between adjacent sites when on-site survey or prediction techniques fail to provide clear assurance of adequate field strengths at otherwise acceptable site locations.

EQUIPMENT DESCRIPTION	MILITARY STOCK NO.	EQUIPMENT DESCRIPTION	MILITARY STOCK NO.
Theodolite (Kern)	6675-580-3838	Shovel	5120-293-3336
Tripod	6675-641-5715	Hand Pick	5120-194-9458
Solar Attachment (DKM-1 recommended)	Not listed	Flashlight	6230-163-1856
		Drafting Equipment	6675-286-0603
Grid Lamp & Batteries (For Kern)	Not listed	Sketch Pad	7530-286-6902
		Thermometer	6685-174-6238
Level Rod	6675-171-5158	Brunton Compass	6675-171-5122
Range Pole	6675-283-0013		
100 ft. Chain	5210-293-3505	Altimeter	6675-551-4691
Hatchet	500-222-0457	Ephemeris or Nautical Almanac	Not listed
6 ft. Rule	5210-541-3324	Tables and Books	Not listed
Stakes (50)	5510-171-7701	Brush Hook, Machete	5110-595-8427
Marking Keel	7510-272-9254	Flagging Cloth, 10 yds.	8305-680-0985
Tacks or Nails	5315-664-1458A	Chronometer	6645-556-1863
Field Book	7530-243-0369	2 sets of Portable UHF Transceivers (or equivalent for interparty communications)	Not listed
Twine	4020-291-5896		
Binoculars	6650-530-0959		
Camera (Land preferred)	Not listed		
		Cement for Markers	Not listed
Film	Not listed	Paint (Spray can)	8010-619-2877
Plumb Bob	5210-224-8794		A1AA619

Figure E-1. Field Survey Equipment

o Site Acquisition. This involves the negotiations for purchase or lease, for right-of-way, etc. When the survey is undertaken for a government agency this phase is accomplished by offices of the U.S. Government and under no circumstances are survey teams to anticipate or enter into any part of these negotiations.

Ideally, a site survey team should include an electronic engineer and a civil engineer, and for obvious reasons, it is recommended that these men be thoroughly familiar with the area maps, plats, and path calculations as well as the preliminary design prior to the actual field survey.

o Data Book. The Survey Data Book included in this appendix, consists of forms and check-lists for the collection of information that is required regardless of the type of site.

The following table lists the forms of the Data Book as they appear in this Appendix.

	Form	Figure Number	Page Number
I.	Pre-Site Survey Data	E-2	E-4
II.	Electronic Engineering Survey Data	E-3	E-7
III.	Civil Engineering Survey Data	E-4	E-18
IV.	Support Data	E-5	E-24

I. PRE-SITE SURVEY DATA

A. GENERAL SURVEY DATA

The following data is to be on hand and available to the survey team prior to their departure for the field. When at al possible, marked maps and plats will be furnished which indicate proposed sites, antenna bearings, radiation hazard area, and horizontal profile constructed from map studies.

1. Name of Project _____
2. Task Number _____
3. Site Name _____
4. Location of Site _____
5. Owner _____
6. Date of Survey _____
7. Survey Party Members:

	Name	Affiliation
a.		
b.		
c.		
d.		
e.		
f.		
g.		
h.		
i.		
j.		
k.		
l.		

8. Description of coordinates of established geographic points in the area to be surveyed and the bearing and distance from these points to the proposed site. _____

9. Latitude _____ Longitude _____ Elevation _____
(Obtain latitude, longitude, and elevation from map study)

10. Code Designation _____
11. Type of Station _____
12. Required Area in Acres _____
13. Alternate Site Name _____
14. Description of coordinates of established geographic points in the area to be surveyed and the bearing and distance from these points to the proposed alternate site. _____

15. Latitude _____ Longitude _____ Elevation _____
(Obtain latitude, longitude, and elevation from map study)

AIAA620

Figure E-2. Pre-Site Survey Data (Sheet 1 of 3)

B. TABLE OF MAPS AND PLATS FURNISHED COMPANY OR ACQUIRED BY SURVEY TEAMS

1. Title _____
Descriptive name of map

a. Map Series _____
b. Type _____
Geographic, Geodetic, Topographic, Profile, Plot, etc.
c. Territory _____
d. Source _____
e. Scale _____ Date _____
f. Special Data (Plot size, antenna bearing, etc.) _____

2. Title _____
Descriptive name of map

a. Map Series _____
b. Type _____
Geographic, Geodetic, Topographic, Profile, Plot, etc.
c. Territory _____
d. Source _____
e. Scale _____ Date _____
f. Special Data (Plot size, antenna bearing, etc.) _____

3. Title _____
Descriptive name of map

a. Map Series _____
b. Type _____
Geographic, Geodetic, Topographic, Profile, Plot, etc.
c. Territory _____
d. Source _____
e. Scale _____ Date _____
f. Special Data (Plot size, antenna bearing, etc.) _____

4. Title _____
Descriptive name of map

a. Map Series _____
b. Type _____
Geographic, Geodetic, Topographic, Profile, Plot, etc.
c. Territory _____
d. Source _____
e. Scale _____ Date _____
f. Special Data (Plot size, antenna bearing, etc.) _____

AIAA621

Figure E-2. Pre-Site Survey Data (Sheet 2 of 3)

C. ENGINEERING DESIGN DATA

1. Anticipated Frequency _____ MHz
2. Proposed Transmitter Power _____ kw
3. Antenna Size _____ diameter in feet
4. Tower Height _____ feet
5. Radiation Hazard Zone _____ feet in front of antenna
6. Approximate Layout of Fixed Plant _____
7. Other Pertinent Data _____

D. IMPORT AND CUSTOMS REQUIREMENTS

1.	Bills of Lading Required	Yes _____	No _____
2.	Consular Invoices Required	Yes _____	No _____
3.	Gross Weights Required	Yes _____	No _____
4.	Net Weights Required	Yes _____	No _____

5. Special Classifications (Describe special classifications required by types of materials, countries of origin, processing, references to import classifications, etc.) _____
6. Duties (List only fees to be paid by NAVELEX or its contractors)
7. Import License Requirements (List only those pertaining to the NAVELEX and its contractors)
   a. Title and date of regulations _____
   b. Source from which regulations may be obtained _____
   c. Summary of regulations _____

AIAA 622

Figure E-2. Pre-Site Survey Data (Sheet 3 of 3)

The objective of this survey is to determine the radio horizon, that is, the minimum angle of take-off of the radio beam above or below the horizontal. Line-of-sight requires that the center of the beam be above all obstructions from one station to the next. For tropo, it is highly desirable to have a negative take-off angle, with a maximum of +1° being the usual limit.

With this in mind, the transit is set in position at the selected antenna site, and the vertical angle, above or below the horizon, of all obstructions for 360° of azimuth, are plotted on the polar coordinate paper (included in this appendix) as indicated in the following instructions. Distances to the obstacles are not required.

- o Horizon Profile Requirements
  - a. Shall be plotted on polar coordinate graph paper
  - b. Shall be plotted with respect to true north
  - c. Shall include bearing to magnetic north
  - d. Shall include azimuth bearing to adjacent stations
  - e. Elevations shall be plotted to the smallest direct reading of the instruments used

at ten degree increments of azimuth except on the path to adjacent stations where elevation increments shall be at least six minutes at one-degree increments for five degrees on either side of the true bearing of the adjacent stations. Where abrupt changes occur within increments readings are to be made to reflect this change.

o Path Profile for Line-of-Sight Site. The number and accuracy of measurements required to establish a meaningful path profile are matters of good engineering judgment. In the event that highly accurate maps are available from which graze point and Fresnel Zone interference points can be scaled, it is necessary only to establish accurate path clearance optically. Where optical sightings are not feasible, or when accurate maps of the area under investigation are not available, the engineer must determine the altitude of the adjacent sites and all intervening heights which could affect the transmission characteristics of the path. In either case a profile graph of the proposed path shall be included in the data obtained.

o Path Profile for Tropospheric Scatter Sites. The distance between tropospheric scatter sites makes it impractical for site survey teams to field-plot path profiles between stations. Such profiles are best constructed from engineering map studies. However, it is desirable that the terrain adjacent to the site be compared to the profile provided by the engineering study. Minimum requirements are elevation of site and angles to visible obstructions along the path. Notations should be made on the profile where deviations are noted.

In the event that a site (other than the one selected by the map study) is surveyed, a profile graph of the new path must be constructed.

AIAA 630

Figure E-3. Electronic Engineering Survey Data (Sheet 1 of 11)

As in surveying a line-of-sight site, engineering judgment dictates the detail required for the profile graph. Generally speaking, all heights masked from the observer's view along the proposed path by adjacent heights lose their significance. In flat or rolling terrain, heights protruding six minutes above the theoretical earth curvature to a distance of thirty miles are of interest.

o Use of Path Profile Chart. A path profile chart is used in the following manner:

a. The path route is established.
b. The elevations of all high points along the path are determined.
c. The distance from the selected site to the obstruction is calculated. (Usually good topographic maps will give results of sufficient accuracy).
d. These elevations and distances are plotted on the profile chart.
e. Horizon (tangential) lines are constructed on the chart, from each plotted site, to establish line-of-sight without obstructions.

Map elevations should not be used in areas of tall trees or other obstructions that extend above the indicated map elevation. The elevation of the top of the highest obstruction should be plotted.

A blank profile chart is provided in this manual in the event that a profile must be constructed in the field. In order to provide the maximum flexibility for using the charts, a graph has been provided for selecting the proper scales. The examples below illustrate the use of these charts.

o Example. Assume sites are approximately 40 miles apart. On scale 1-a at '40 miles', read elevation opposite on scale 1-b '1600 ft.'. Since this represents full-scale elevation on the profile chart, each major elevation division on the profile chart will then be marked in increments of 160 ft. The major division of the "Distance Between Stations" scale on the profile chart will be marked in increments of 2 miles, i.e. 40 miles is 20 divisions.

o Example 2. Assume that the available maps are scaled in kilometers and that the sites are approximately 100 kilometers apart. Step A: On scale 3-a, opposite 100 kilometers, read 62.2 miles on scale 3-b. Step B: Opposite 62.2 miles on 1-a, read 3830 feet on 1-b. Step C: Opposite 3.83 thousand feet on 5-b, read 1150 meters on scale 5-a. The profile chart can now be marked off with a full horizontal scale (distance between stations) of 100 kilometers, and a full vertical scale (height above sea level) of 1150 meters with increments of 115 meters.

AIAA 630

Figure E-3. Electronic Engineering Survey Data (Sheet 2 of 11)

1. Horizon Profile Data

a. Azimuth bearing of Magnetic North_____
b. Azimuth bearing of adjacent station East (ASE)_____
c. Azimuth bearing of adjacent station West (ASW)_____
d. Instrument data

Instrument type_____
Instrument serial no._____ Date of Last Calibration_____

e. Horizon data

Az.	Elev. of Horizon	Az.	Elev. of Horizon	Az.	Elev. of Horizon
0		130		250	
10		140		260	
20		150		270	
30		160		280	
40		170		290	
50		180		300	
60		190		310	
70		200		320	
80		210		330	
90		220		340	
100		230		350	
120		240			

Az.	Elev. of Horizon	Az.	Elev. of Horizon	Az.	Elev. of Horizon	Az.	Elev. of Horizon
ASE		ASE		ASW		ASW	
-5		+1		-5		+1	
-4		+2		-4		+2	
-3		+3		-3		+3	
-2		+4		-2		+4	
-1		+5		-1		+5	

(This data should be plotted on the polar chart.)

AIAA 630

Figure E-3. Electronic Engineering Survey Data (Sheet 3 of 11)

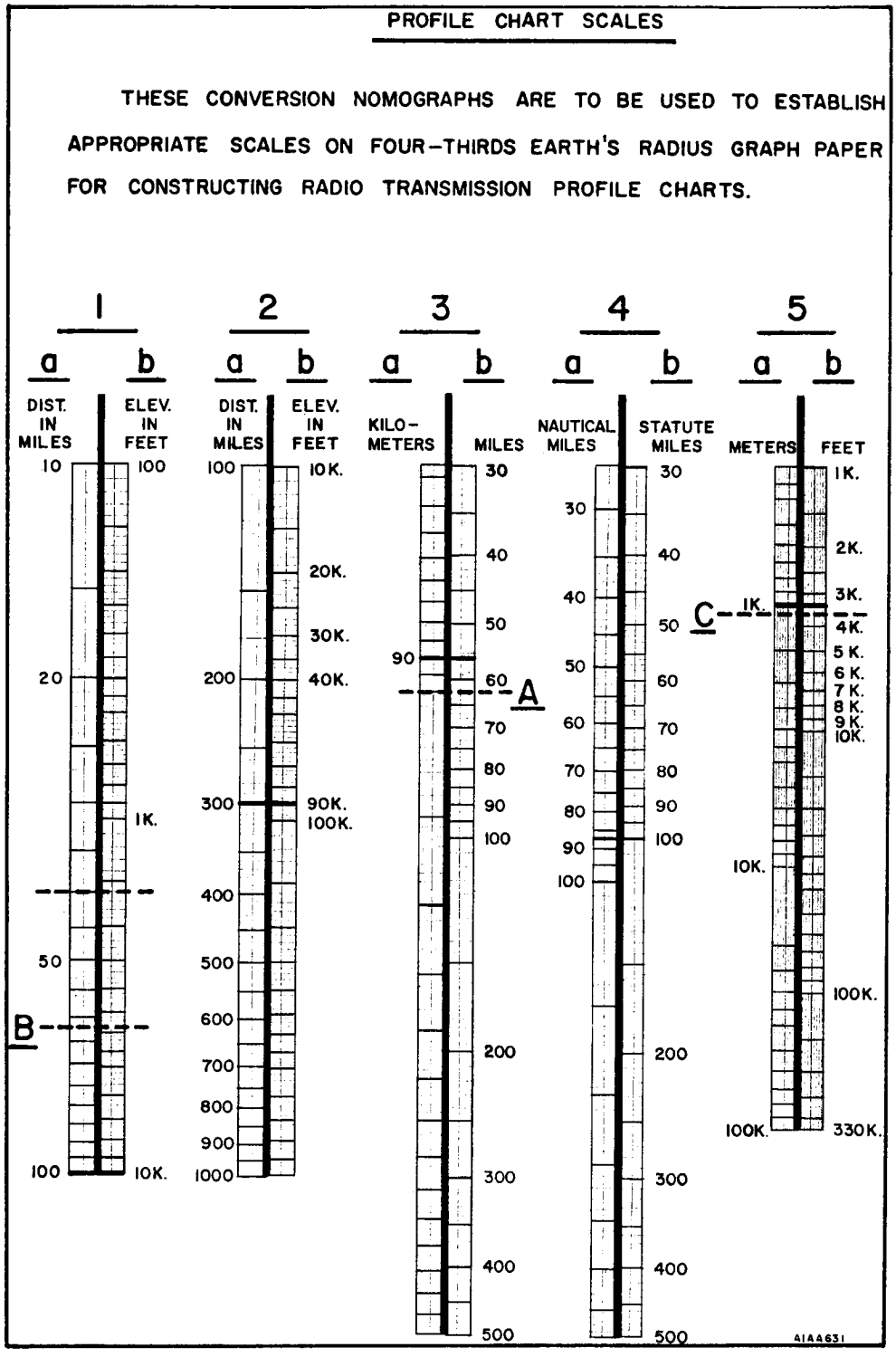

Figure E-3. Electronic Engineering Survey Data (Sheet 4 of 11)

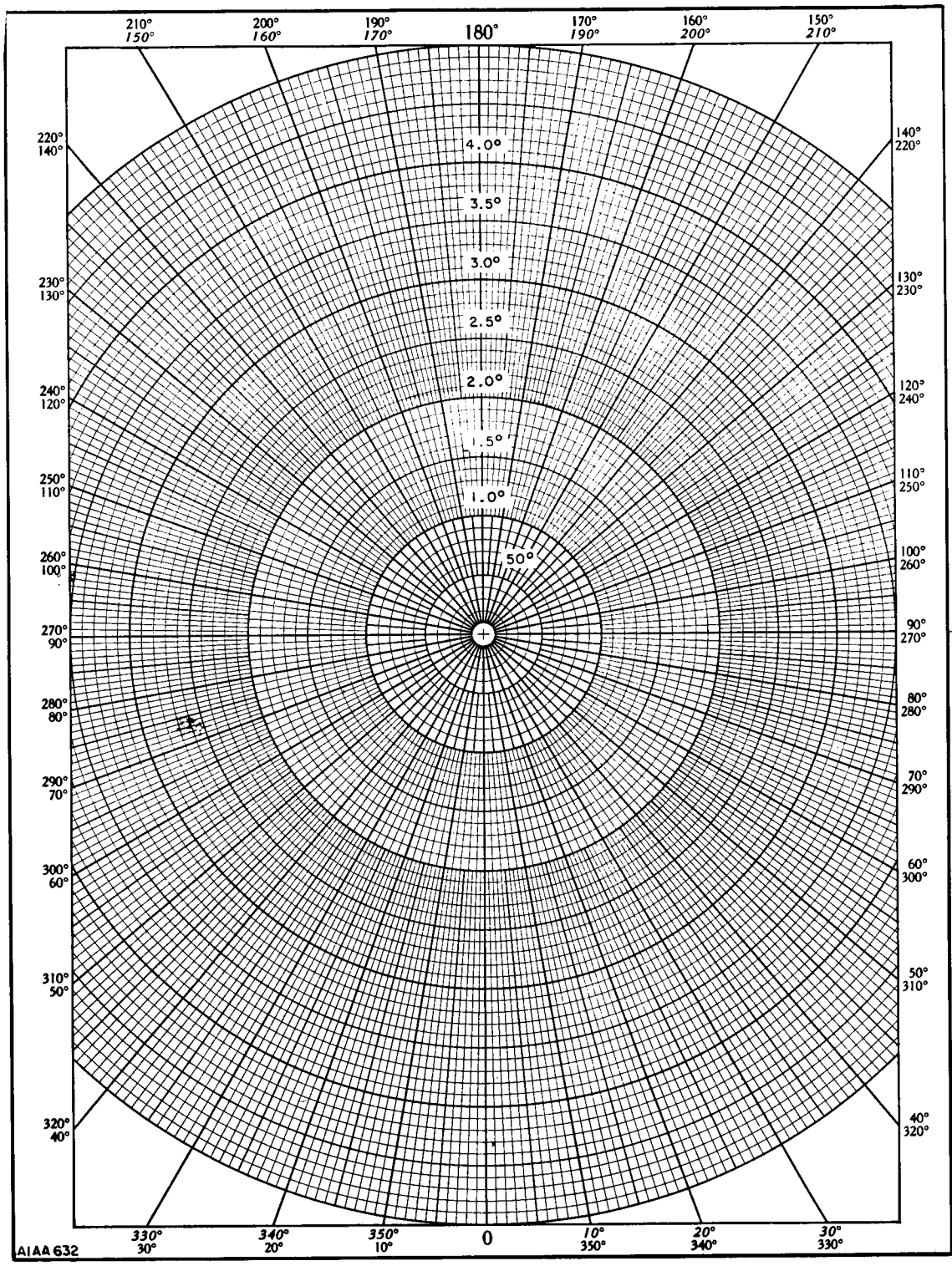

Figure E-3. Electronic Engineering Survey Data (Sheet 5 of 11)

B. PHOTOGRAPHS

The purpose of photographing the site is to visually display a 360° panoramic view of the forward area and the area within the site boundary. Care should be used in photographing the panoramic view in order that individual photos can be matched to display 360° of azimuth. One satisfactory method involves fastening a chalk-board (on which are written the pertinent facts of site and bearing) to the stadia rod which is targeted for horizontal level. Obviously, the task will be simplified if the camera (preferably Polaroid) is mounted on the transit in such a manner that azimuth adjustments can be accurately and simply made. A cable release for the camera is essential.

The number of shots required to complete a 360° arc of the site is dependent upon the camera used and should be determined before the photographs are made. Approximate vertical angles of obstructions and other useful information can be derived from photographs taken in this manner.

1. Photograph Data (Every effort should be made to obtain aerial photographs of the site and vicinity. Photographs covering 360° of azimuth from near the center of the site must be included.)

a. Title_____
   1. Source_____
   2. Date_____
   3. Availability_____
   4. Shows_____

b. Title_____
   1. Source_____
   2. Date_____
   3. Availability_____
   4. Shows_____

c. Title_____
   1. Source_____
   2. Date_____
   3. Availability_____
   4. Shows_____

d. Title_____
   1. Source_____
   2. Date_____
   3. Availability_____
   4. Shows_____

(Add Additional Sheets If Necessary)

AIAA 633

Figure E-3. Electronic Engineering Survey Data (Sheet 6 of 11)

C. RADIO INTERFERENCE DATA

1. Radio or Radar Transmitters
   a. Distance _____ miles
   b. Direction _____ degrees
   c. Frequency _____ kH_Z
   d. Power _____ kW
   e. Antenna pattern - attach radiation pattern when critical.

2. Radio Receiving Stations
   a. Distance _____ miles
   b. Direction _____ degrees
   c. Receiving frequencies _____ kH_Z _____ kH_Z (attach sheets if required)
   d. Type of station and operation organization
   _____

3. Distance from Roads or Highways in Front of Antenna _____

4. Distance from Power Lines _____

5. Distance from Ordnance Areas _____

6. Distance to Airports _____

7. Existence of Airways or Traffic Patterns in Antenna Quadrant _____

8. Average Number of Flights per Day _____

9. Type of Aircraft
   Preponderantly jet _____
   Preponderantly propeller _____
   Commercial airline _____
   Private light plane _____

10. Anticipated Industrial Noise Level _____
    High _____ Low _____

11. Radiation Hazard Zone (zone determined from engineering design)
    Occupied dwelling _____ Thoroughfare _____
    Live-stock grazing area _____

AIAA633

Figure E-3. Electronic Engineering Survey Data (Sheet 7 of 11)

D. UTILITIES

1. Electric Power

a. Primary power available_____

b. Operating company_____

c. Address_____

_____

d. Distance to nearest transformer or substation where take-off of usable power can be effected_____

e. Equipment power plan drawing no. _____(where applicable)
Standby available Yes_____ No_____

f. Other services (light, heat, etc.)
Standby available Yes_____ No_____

SERVICE	VOLTS	AMPS	PHASE	FREQUENCY

g. Equipment power characteristics
Regulation_____% Primary_____% Standby_____

h. Power outages_____hours yearly

i. Is there adequate power capacity to accommodate site load?
Yes_____ No_____

j. Joint usage of pole lines or underground cable Yes_____No_____

k. Estimated cost of power line construction from "d" above to site substation_____
show calculations and source of cost data

_____

_____

2. Telephone Service

a. Distance to nearest telephone service connection_____miles

b. Type of line construction Open wire_____
Cable_____
Number of pairs available_____

c. Estimated cost of line extension $_____

d. Remarks_____

_____

_____

_____

_____

_____

AIAA633

Figure E-3. Electronic Engineering Survey Data (Sheet 8 of 11)

E. PROPERTY OWNERSHIP

1. Private_____ Government_____ (Check one)
2. Name of Owner(s) (if privately owned)_____
3. Description of All Improvements on Land Areas Selected (including buildings and structures on property. Identify any problems of riparian or mineral rights).

_____
_____
_____
_____
_____
_____

NOTE

The proposed purchase or lease of property by the Federal Government is considered classified data. Survey party personnel shall not inquire into the availability or cost of property nor shall they divulge the suitability of the site to indigenous personnel. Inquiries and negotiations for real estate shall be handled by personnel designated by the interested agency. When specifically requested by NAVELEX, approximate lease or purchase prices may be obtained from the District or Division Corps of Engineers. Concurrence of the site selection should also be obtained from the U. S. Military Commander to prevent a conflict of interest in siting.

AIAA 633

Figure E-3. Electronic Engineering Survey Data (Sheet 9 of 11)

F. WEATHER DATA

1. Location of Recording Weather Station _____
city - town

2. Recording Station Elevation _____

3. Recording Station Distance from Survey Site _____

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
4. Rain Fall (inches) Max. recorded _____/_____/_____ inch/month/year												
5. Snow Fall (inches) Max. recorded _____/_____/_____ inch/month/year												
6. Humidity (%) Mean ave. May/Sept._____ Oct./Apr._____												
7. Temperature Max._____ Mean Ave._____ May/Sept._____ Oct./Apr._____	max / min.											
8. Wind Velocity (mph Max._____ Direction_____	mph / dir.											

9. Presence of Permafrost Yes_____ No_____

10. Average Frost Line Depth Winter_____ Summer_____

11. Location of Nearest Site Making Upper Air Sounding _____

AIAA633

Figure E-3. Electronic Engineering Survey Data (Sheet 10 of 11)

G. REMARKS AND PERTINENT DATA NOT COVERED BY PRECEDING SHEETS

AIAA633

Figure E-3. Electronic Engineering Survey Data (Sheet 11 of 11)

III. CIVIL ENGINEERING SURVEY DATA

A. SITE CONDITIONS

1. Topography

a. Highest elevation (above sea level)_____feet

b. Lowest elevation (above sea level)_____feet

2. Terrain

a. Heavy vegetation_____Light vegetation_____None_____

b. Heavily wooded_____Lightly wooded_____None_____

c. Steep slopes_____Gentle slopes_____Rolling_____Flat_____

d. Vegetation to be removed: Heavy_____Light_____None_____

e. Remarks_____

3. Soil Data

a. Rock_____Clay_____Gravel_____Sand_____Silt_____Other_____

b. Water table (feet below mean surface of site) High_____Low_____

4. Drainage

a. Surface characteristics_____

_____

b. Sub-surface characteristics_____

_____

5. Corrosion and Erosion

Salt air_____Sand storms_____Dust storms_____Ice_____Tornados

_____Hurricanes_____Monsoons_____Tidal wave_____Chemical

fumes_____Earthquakes_____Others_____

6. Water

a. Drinking water source: Wells_____Piped_____Springs_____Rain

_____Muncipal_____Government_____Private_____Springs

_____Rain_____

b. Name and address of supplier_____

_____

c. If existing wells, Capacity_____(gals/min.) Depth_____feet

d. If existing pipe lines, Pressure_____psi Quantity_____cfm

e. Distance to supply_____miles

AIAA 634 (A)

Figure E-4. Civil Engineering Survey Data (Sheet 1 of 6)

f. Remarks (Reliability, etc.)_____

_____

7. Other Water Available

a. Lake_____River_____Stream_____None_____Other_____

b. Pumping required Yes_____No_____ Approximate head in feet_____

c. Potable Yes_____No_____

d. Distance to supply_____miles

8. Sanitary Facilities

a. Existing Yes_____No_____

b. Type: Septic_____ Treated_____ Open drain_____

c. None_____ Other_____

d. If treated, name and address of owner_____

_____

e. Size of main_____inches diameter

f. Capacity of main_____cfm

g. Distance to main_____ miles

h. Pumping station required Yes_____No_____

i. Distance to probable outfall for a new sewer_____miles

j. Pumping station required Yes_____No_____Approximate head feet_____

How many_____

9. Storm Sewers

a. Existing_____Required_____

10. Natural Drainage

a. Good_____ Poor_____

11. Method of Garbage Disposal Required_____

12. Method of Rubbish Disposal Required_____

13. Remarks_____

_____

B. EXISTING SITE FEATURES

1. Towers

a. Type and number_____

_____

_____

b. Maximum heights_____

AIAA 634 (B)

Figure E-4. Civil Engineering Survey Data (Sheet 2 of 6)

2. Fence Enclosures
   a. Owner _____
   b. Type and heights _____
   c. Identification _____
3. Buildings
   a. Type _____
   b. Use _____
4. Other Projections or Obstructions
5. Can existing towers be utilized
   a. Modification required _____
6. Remarks _____

C. ROADS

1. Highways
   a. Distance from site to main highway _____ miles
   b. Classification: Paved highway _____ Rural _____ Other _____
   c. Types: Concrete _____ Asphalt _____ Dirt _____ Other _____
   d. Minimum widths _____ feet

AIAA 634(C)

Figure E-4. Civil Engineering Survey Data (Sheet 3 of 6)

e. Paved shoulders Yes_____ No_____

f. Maximum grades_____percent

g. Bridge or tunnel limits: Load_____Tons/axle Clearance_____feet

Total width_____feet Lanes_____

h. Reliability: Months of year usable_____

Improvements required_____

_____

2. Existing Access Roads (From site to highway)

a. Distance to nearest existing road_____miles

b. Type: Paved_____Dirt_____Rock_____

Width_____feet Capacity: Heavy_____ Light_____

c. Months of year usable_____

d. Drainage: Excellent_____ Good_____ Poor_____

e. Improvements required_____

_____

3. Construction of New Access Roads (if required)

a. Length_____miles

b. Type: Paved_____Dirt_____Rock_____

Width_____feet Capacity: Heavy_____ Light_____

Maximum grade_____percent

c. Culverts required: Quantity_____ Average Fill_____in yards

Bridges required: Quantity_____Average Length_____feet

d. Construction period

Summer months only_____

Year round_____

4. Cable Railways Yes_____No_____

a. Capacity Cubic feet_____Weight_____

5. Remarks_____

_____

_____

_____

_____

_____

AIAA 634 (D)

Figure E-4. Civil Engineering Survey Data (Sheet 4 of 6)

D. LOCAL CAPABILITIES

1. Local Contractors

a. Obtain local contractor's directory, if feasible Yes____ No____

b. Nearest source of contractors ____________________

c. Distance from site ____________________ miles

d. Names and addresses ____________________

____

e. Type: Heavy____ Light____ Building____

f. Capabilities: 0 - $100,000____ $100,000 and up____

g. Construction equipment available

Cranes____ Bulldozers____ Trucks____ None____ Others____

2. Engineers and Surveyors

a. Obtain more than one, if available, and evaluate on separate sheets.

b. Nearest source and name and address ____________________

____

____

c. Qualifications: 1st Order____ Lower____

3. Labor Supply

a. Unlimited skilled____ Unlimited unskilled____ None____

Limited skilled____ Limited unskilled____

b. Union____ Non-union____

c. Rates: Skilled $____/hr. Unskilled $____/hr.

Overtime rates ____________________

4. Fuel

a. Type available: Gas____ Petroleum____ None____ Other____

b. Supply: Local____ Haul____ Piped____ Other____

c. Method of hauling ____________________

____

____

AIAA 634 (E)

Figure E-4. Civil Engineering Survey Data (Sheet 5 of 6)

5. Materials Available

ITEMS	PLENTIFUL	SCARCE	NONE	COST	SOURCE
Sand and Gravel					
Rock					
Ready-mix Concrete					
Cement					
Steel					
Lumber					
Miscellaneous Hardware					
Crushing Facilities					

6. Remarks _____

41AA634 (F)

Figure E-4. Civil Engineering Survey Data (Sheet 6 of 6)

IV. SUPPORT DATA

A. TRANSPORTATION

1. Waterway

a. Open sea _____ River _____ Canal _____ Lake _____ Bay _____ None _____ Other _____

b. Channel depths: Daily high water _____ feet Daily low water _____ feet Mean yearly high water _____ feet Mean yearly low water _____ feet

c. Name of shipping company _____

d. Docking facilities. Excellent _____ Good _____ Poor _____ None _____

e. Distance from site to dock. Air miles _____ Road miles _____

f. Reliability: Months of year usable _____

g. Distance from site to waterway. Air miles _____ Road miles _____

h. Remarks _____

2. Railway

a. Existing railway facilities

Government _____ Municipal _____ Private _____ None _____

b. Name and address of nearest terminal _____

c. Passenger _____ Freight _____

d. Distance to terminal: Air miles _____ Road miles _____

e. Distance to tracks: Air miles _____ Road miles _____

f. Regular passenger runs: Yes _____ No _____

g. How often? _____

h. Type rails: Standard gauge _____ Other _____

i. Reliability: Months of year usable _____

j. Remarks _____

3. Airway

a. Existing airports

Government _____ Municipal _____ Private _____ None _____

b. Name and address _____

AIAA 635 (A)

Figure E-5. Support Data (Sheet 1 of 5)

c. Type of air strip: Concrete _____ Asphalt _____ Dirt _____ Ice _____ Other _____

d. Length of runway _____ feet

e. Maximum size planes accommodated _____

f. Terminal facilities: Passenger _____ Freight _____ Radar control _____ None _____

g. Maintenance and fueling facilities _____

_____

h. Reliability: Months of year usable _____

i. Distance from site: Air miles _____ Road miles _____

j. Remarks _____

_____

4. Passenger Service

a. Scheduled bus service _____ Taxi _____ None _____ Other _____

b. Distance to nearest terminal _____ miles

c. Remarks _____

_____

5. Commercial Trucking

a. Availability: Unlimited _____ Limited _____ None _____

b. Nearest terminal _____ Miles _____

c. Name and address of companies _____

_____

d. Remarks _____

_____

B. IMPORT AND CUSTOMS REGULATIONS (Foreign Countries Only)

Include here notes on special problems or procedures which were not covered under this heading in Part I, Pre-survey Data.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

AIAA635(8)

Figure E-5. Support Data (Sheet 2 of 5)

C. SUPPORT CONSIDERATIONS

1. Living Standards: High _____ Modest _____ Poor _____

2. Housing

   a. Hotels: Plentiful _____ Scarce _____ None _____

      Accommodations: Excellent _____ Adequate _____ Poor _____

      Lodging, average price per day _____

      Food, average price per day _____

   b. Private Homes: Plentiful _____ Scarce _____ None _____

      Accommodations: Excellent _____ Adequate _____ Poor _____

      Average price per month $ _____

3. Food Supply (USA - N/A)

   a. Local restaurants: Yes _____ No _____

      Prices compared to U.S. % Higher _____ Same _____ % Lower _____

   b. Local merchants: Plentiful _____ Scarce _____ None _____

      Prices compared to U.S.: % Higher _____ Same _____ % Lower _____

   c. Import Supplies: Yes _____ No _____

      From where: _____

   d. Remarks: _____

4. Banking

   a. Nearest large bank _____ air miles _____ road miles _____

   b. Name and address: _____

   c. Local banks: Plentiful _____ Scarce _____ None _____

5. Clothing

   a. Local merchants: Plentiful _____ Scarce _____ None _____

   b. Prices compared to U.S.: % Higher _____ Same _____ None _____

   c. Import: Yes _____ No _____

   d. From where? _____

   e. Remarks: _____

AIAA635 (C)

Figure E-5. Support Data (Sheet 3 of 5)

6. Recreation

a. Types available: Government _____ Municipal _____ Private _____

b. Describe: _____

_____

_____

7. Medical facilities

a. Nearest hospital _____ Air miles _____ Road miles

b. Name and address: _____

_____

c. Dispensary facilities or doctors: Yes _____ No _____

d. Distance: _____ Air miles _____ Road miles

e. Remarks: _____

_____

8. Schools

a. Existing: Grade School _____ High Loaf _____ College _____

b. Private tutors _____ None _____

c. Distance _____

d. Standards: Excellent _____ Satisfactory _____ Poor _____

e. Sponsor: Government _____ Private _____ Municipal _____

f. Name of Sponsor: _____

9. Probable Support from a U.S. Military Base for Supplies and Services

a. Site _____

b. Type _____

c. Location _____

d.

Type Support	Support Base
Automobile maintenance: Field depot _____	_____
Clothing equipment and repair _____	_____
Clothing supply _____	_____
Commissary _____	_____
Communications & electronics supply _____	_____
Dry cleaning _____	_____
Heating fuel _____	_____
Laundry _____	_____
Maintenance: Radar, Comm. _____	_____
Mortuary _____	_____

AIAA 635 (D)

Figure E-5. Support Data (Sheet 4 of 5)

P. O. L. _____ _____

Post exchange _____ _____

Purchasing & contracting _____ _____

Rations: Field _____ _____

Repair & utilities _____ _____

Salvage _____ _____

Shoe Repair _____ _____

T/A Supply _____ _____

TO&E Supply _____ _____

Technical publications _____ _____

10. Population Data

a. Distance to nearest large city _____ miles

b. Name of nearest large city _____

c. Population of nearest large city _____

d. Distance to nearest town _____ miles

e. Name of nearest town _____

f. Population of nearest town _____

g. Prevailing nationality of population _____

h. Principal language spoken _____

D. REMARKS AND PERTINENT DATA NOT COVERED BY PRECEDING SHEETS

AIAA 635 (E)

Figure E-5. Support Data (Sheet 5 of 5)