APPENDIX A

BASE CIVIL ENGINEERING DATA

CAM-5 AUXILIARY RADAR STATION BCE DATA

LOCATION AND TOPOGRAPHY

Location:	Mackar Inlet, Canada, on the Arctic Ocean shore.	
Terrain:	High (about 1300' above SL) rugged, glacier scarred and rocky.	
Topography:	Narrow beaches, rapidly rising highlands and relatively high summits (exceeding 1800') are the most prominent features.	

CLIMATE

Precipitation:	Annual (including 26" snowfall)	5"
Temperature:	Minimum and Maximum (degrees Fahrenheit)	-74 & +68 degrees
GROUNDS	Total acres	6237A
BUILDINGS	Refer to following Table of Particulars for details 1. Total Number	8
AIRCRAFT FACILITIES	Total Aircraft Facility Surface (gravel)	76,666 SY
Runway:	1. Distance from Main Building Site	27,500'
	2. Elevation (approximate feet above SL)	115'
	3. Surface: Gravel on 12" wearing course on non-frost acting base	46,444 SY (110' X 3,800')
Shoulder:	Gravel	21,111 SY
Taxiway:		None
Apron:	Gravel	8194 SY
Lighting:		
Runway:	1. Sides: White Lights 10' from edge, 200' interval	34

AIRCRAFT FACILITIES (Continued)

	2. Threshold: a. Green/Red marker lights, 10' interval (10 each end)	20
	b. Strobeacon Reil (2 each end)	4
Taxiway:		None
Apron:	Outlining Blue LIghts	10
Wind Cone:	White lights	4
Navaids:	NX-4000 Beacon	1
Wind Cone:	(Illuminated)	1
ROADS	1. Total road surface (gravel)	54,900 SY
	2. Paved Surface	None
	3. 12-foot wide roadway (length)	4500'
	4. 16-foot wide roadway (length)	27,500'
	5. Surface: Gravel on 6" wearing course on 3' non-frost acting base on existing ground	
EXTERNAL SANITARY SEWER	3" sewer line to outfall area (length)	348'
System:	Human and kitchen waste, piped to internal storage tanks, is periodically pumped via sewer line to outfall area.	
STORM DRAIN SYSTEM	NOTE: There is no pipeline storm drain system.	
System:	Surface water is permitted to drain away by following natural run-off pattern of terrain, except where blocked by buildings, gravel pads, roadways, etc., at which point culverts are provided.	
	Culverts: 1. Approximate number	12
	2. Approximate total length	288'
EXTERNAL WATER DISTRIBUTION	NOTE: There is no external, primary pipeline system.	

EXTERNAL WATER DISTRIBUTION (Continued)

System:	External water distribution is accomplished by water haul from fresh water lake to storage tank in Module Train	
	1. Summer haul	1,000'
	2. Winter haul	1,000'
INTERNAL WATER DISTRIBUTION	System is located in Module Train and consists in general of steel receiving tank, filters, water treatment system, primary and secondary potable water storage tanks, electric hot and cold water lines, valves, etc. Water is teated with iodinators.	
Steel Tanks:	1. Receiving (1) (U.S. gallons)	2,000 GAL
	2. Primary (Two, 2500 gallons ea)	5,000 GAL
	3. Secondary (Two, 2500 gallons ea)	5,000 GAL
ELECTRIC POWER	Power is generated at station (total capacity)	360 KW
Power Plant:	Diesel-Electric Units	
	1. Primary Units: Five, GMC Model 6-71, 60 KW, 1200 rpm, 120/208v, 3 ph, 60 zy at 80% of pf located in Module Train.	300 KW
	2. Secondary Unit: 60 KW, located in Garage, GMC Model 6-71.	60 KW
Distribution:		
	Internal: System consists of switchboard, dual bus system but operating on single bus, (servicing both Technical and Utility loads), and assorted branch circuits in Module Train, with single bus service provided in buildings and areas requiring only utility service.	
External:	System consists of ground supported cable runs, in general (with short buried runs under man-made obstructions), servicing buildings and areas requiring electric power and such transformers associated therewith.	4

ELECTRIC POWER (Continued)

	1. Number of primary power transformers	
	a. Powerplant to Garage (one, 120/208/2400v)	75 KVA
	b. Garage (one, 2400/120/208v)	75 KVA
	c. Powerplant to Airstrip Area (one, 120/208/2400v)	30 KVA
	d. Airstrip Area (one, 2400/120/208v)	30 KVA
Demand & Consumption:	1. Peak Demand	132 KW
	2. Average Power Consumption	
	a. Monthly	80,137 KWH
	b. Annual	961,638 KWH
	3. Fuel Oil Consumption, Power Production	
	a. Monthly average (U.S. gallons)	7,505 GAL
	b. Annual average (U.S. gallons)	90,060 GAL
POL STORAGE, DISTRIBUTION	Total Storage Capacity, external tanks (U.S. gallons)	243,600 GAL
Storage:	1. Diesel Oil: Total Capacity	231,600 GAL
	a. Total number of tanks	5
	b. Airstrip Area:	101,600 GAL
	(1) Steel: 2 tanks (18,300 ea)	36,600 GAL
	(2) Steel: 1 tank 65,000	65,000 GAL
	c. Building Site Area:	
	(1) Steel: 2 tanks (65,000 ea)	130,000 GAL
	3. Mogas: Total Capacity	12,000 GAL
	a. Total number of tanks	2
	b. Building Site Area	
	(1) 1 steel tank	6,000 GAL
	(2) 1 steel tank (airstrip)	6,000 GAL
Pipelines:	1. Total length (including building feeder lines)	2" x 22,350'
Pumphouse:	Total number (Module Train tanks area, only)	1
System:	Product delivered by airlift for off loading into receiving tanks. Mogas is trucked to site. Diesel fuel is transferred via fuel pipeline (approx. 5.5 miles) to building site tank. Diesel	

POL STORAGE, DISTRIBUTION (Continued)

fuel transferred via 2" pipeline to building site tanks. Module Train, garage and warehouse are serviced with fuel via pumphouse and pipelines. Drum stocks transferred via portable pump units or tank vehicle, if/and as required.

HEATING

Module Train:

1. Primary System: Circulating hot water servicing single tube, finned convectors. Heat recovered from powerplant engine coolant and exhaust gases is transferred to heating system via heat exchangers.
2. Supplementary System: Electric unit heaters in areas not fully serviced by convectors.
3. Emergency System: During periods when an insufficient number of engine-alternator units are operating to fulfill heating requirements, an oil fired boiler (450,000 BTU/hr output) is available to supply hot water for the heating system.
4. C&E Mission Modules: Heat recovered from electronic equipment is distributed and recirculated via fans and ductwork.

Other Buildings:

1. Garage: Hot air, oil fired furnace (4500 cfm) 400,000 BTU/hr
2. Warehouse: Hot air, oil furnace (3800 cfm) 350,000 BTU/hr

FIRE PROTECTION

Facilities #1, #2 and #3 have automatic fire detectors installed with a smoke detector and/or heat detector in each room. A coded closed-circuit alarm system centralizes at the Control Console. This allows announcements over the Public Address System. Alarm buzzer in all enclosed areas and

FIRE PROTECTION (Continued)

and outdoor siren sounds whenever the fire detectors, CO_2 system or manually operated pull boxes are actuated. A custom 6500 fire alarm master control panel is located in FAC #1, MOD #15. The 1526 single zone alarm panels are located in FAC #2 and #3.

Fire Fighting:
Module Train:

1. Standpipe System consisting of three, 225-gallon water tanks pressurized by nitrogen gas (50 psi) and hose stands located in corridor cabinets. 675 GAL
2. Deluge System consisting of fixed CO_2 tanks equipped for manual and automatic discharge.
   a. System automatically operated in water supply modules
   b. System manually operated in powerplant and fire barrier modules

NOTE: Actuation of CO_2 system automatically turns in fire alarm, deactivates associated heating and ventilating fans, and releases associated normally open fire doors to confine fire.

3. Fire Extinguishers: CO_2, Halon, dry chemical and loaded-stream water hand extinguishers are placed at strategic locations throughout the Train.

Other Buildings:

Except as follows, fire fighting equipment in other buildings is limited to the hand-extinguishers listed above:

1. Garage: Automatic CO_2 deluge system in Mechanical Room and Generator Room
2. Warehouse: Same as Garage

ANTENNAS

(See Plot Plan for location and type)

REFUSE DISPOSAL

Collection:

Refuse is collected periodically and trucked to dump.

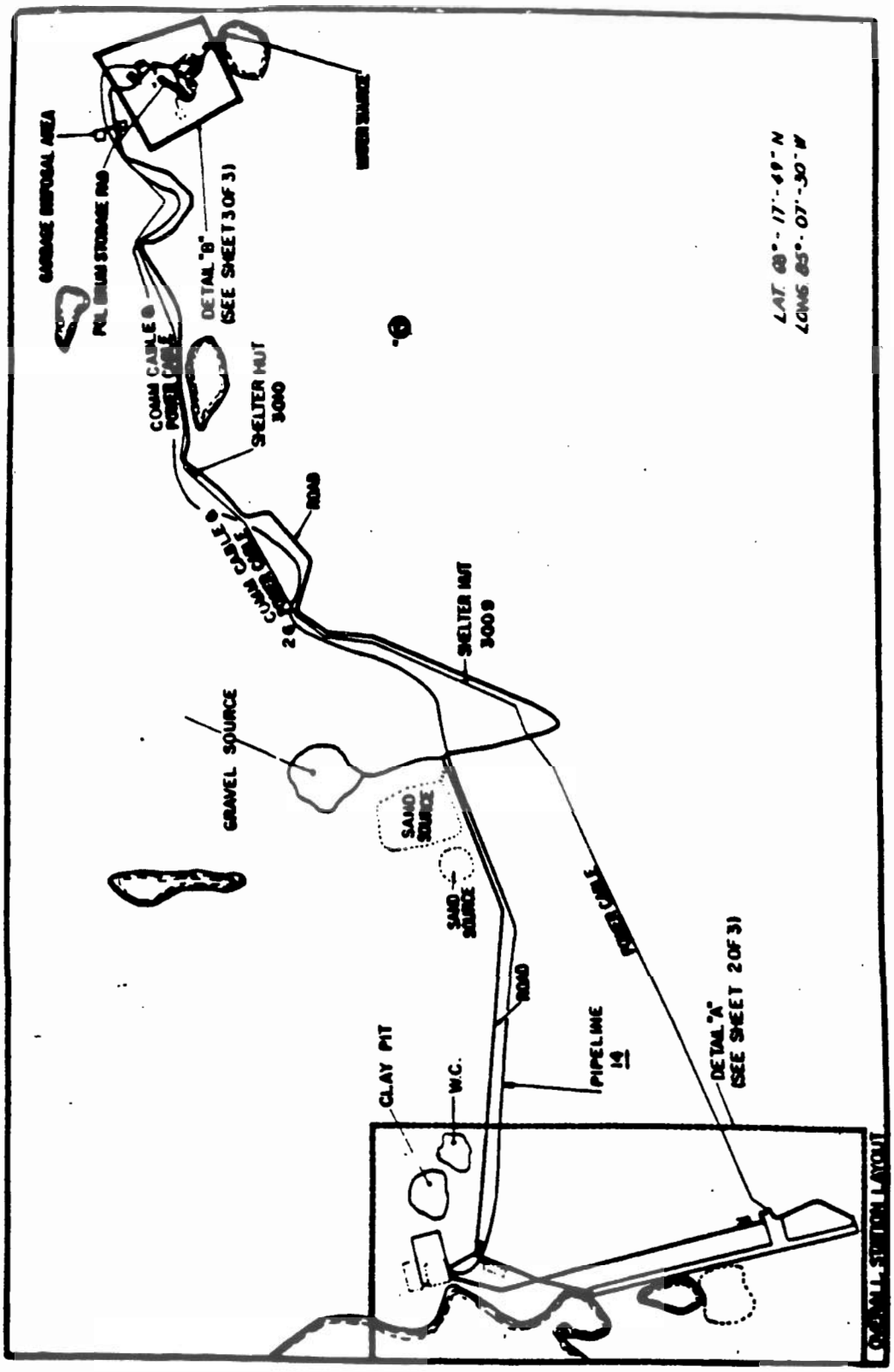
CAM-5 AUXILIARY RADAR STATION BCE DATA

Disposal:	NOTE: Refuse dumped at landbound disposal areas is periodically buried under material (gravel, etc.) stockpiled in the area for this purpose.	
	1. Dump Haul (distance): (approximate)	1/2 MI

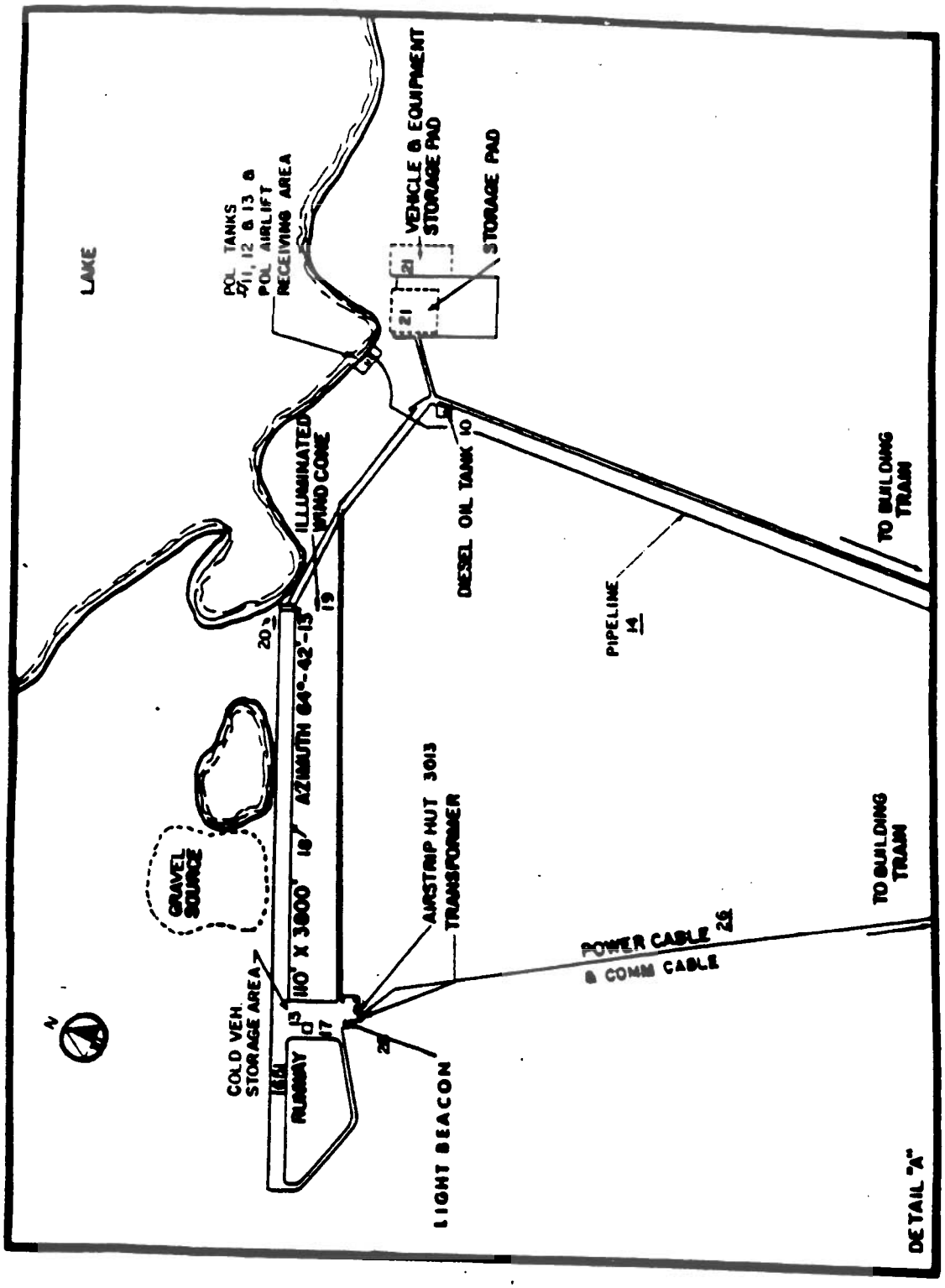
FACILITIES INVENTORY VALUE

Total	$8,615,000

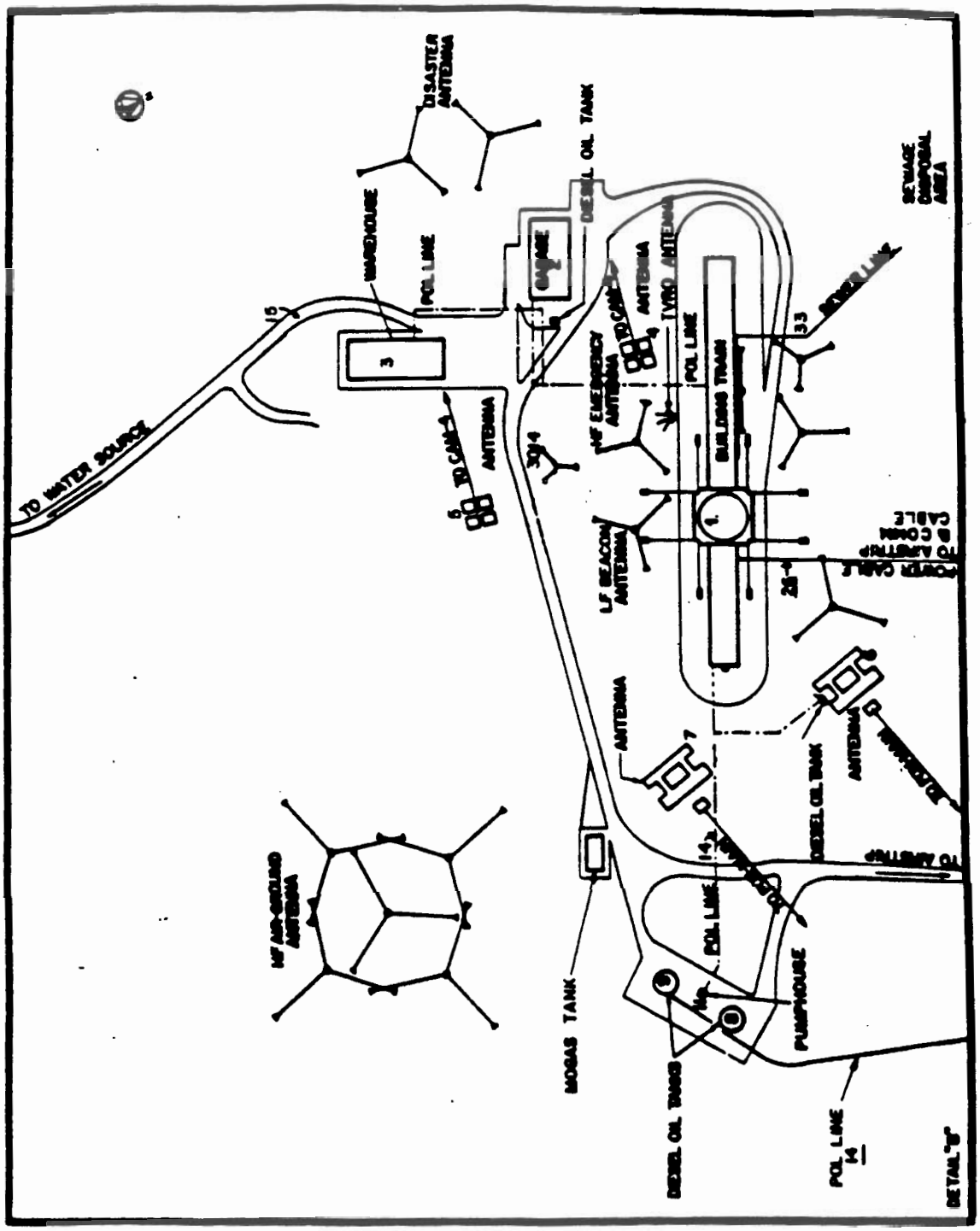
CAM-5 PLOT PLAN (SHEET 1 OF 3)



CAM-5 PLOT PLAN (SHEET 2 OF 3)



CAM-5 PLOT PLAN (SHEET 3 OF 3)



FACILITIES INDEX CAM-5

1. Module Train
2. Garage
3. Warehouse
4. Communication "DISH"
5. Communication "DISH"
6. Communication "BILLBOARD"
7. Communication "BILLBOARD"
8. Diesel Fuel Tank (Steel) (Site Area)
9. Diesel Fuel Tank (Steel) (Site Area)
10. Diesel Fuel Tank (Steel) (Airstrip Area)
11. POL Pumphouse
13. Unheated Vehicle Storage Building
14. POL Line
15. Road
17. Airstrip Apron
18. Runway Shoulder
19. Wind Cone
20. Runway Lights
21. Open Storage Area
26. Primary Power Cable (UG)
28. Beacon Light
33. Sewer Line
*34. Runway Strobeacons
*35. Runway Threshold Lights
1651. Runway
3009. Shelter Hut
3010. Storage Shed
3013. Airstrip Hut
3015. QML Storage Bldg

* Not Shown on Plot Plan

TABLE OF PARTICULARS -- CAM-5 BUILDINGS -- REAL PROPERTY

BUILDING DESCRIPTION	CONSTRUCTION DATA FOUNDATION	CONSTRUCTION DATA BUILDING	FACILITIES AND/OR PURPOSE	ELECTRIC	HEAT	UTILITY DATA WATER	SEWAGE	VENTILATION	COMMENTS
Module Train (28' x 436') FAC No. 00001	Post/timber sill	Prefab unit, modular type (approx 16' x 28' per unit) a. Occupied Units (23) Wd frame with insulated plywd panels with ext metal sheathing b. Unoccupied Fire Barrier Units (3) Unheated stl box type with heated cross corridor	a. Electric powerplant b. Water purification and internal storage c. C&E mission equip d. Offices & first aid e. Kitchen, bakery & cold/dry storage f. Dining & recreation g. Bedrooms, bath, and laundry	a. 2-bus System (1 bus for tech loads & 1 for utility loads) b. Emer lights (btry powered with auto lighting and charging controls)	a. Basic System: Circulating hot water utilizing powerplant engine heat recovery system b. C&E Area: Ducted forced air utilizing C&E equipment heat recovery system. NOTE: For details, see "Heating" in associated BCE Data pages.	Plumbing system supplied with potable water pumped from internal, steel storage tanks	a. Int Plumbing system terminating at int storage tank serviced by outfall line b. Emer dry hd toilet facility	a. Supply: Ducted system equipped with Modultrol dmpr for auto control of fresh & recirc air mixture b. Exhaust: Ducted, forced air system	Surveillance radar antenna housed in rigid, unheated radome located on independent platform straddling Module Train
Shelter Hut (16' x 24') FAC No. 3009*	Timber sills	Timber frame with insulated canvas cover and 1/4 plywd overlay	Provide shelter for personnel from inoperative vehicles	No System	Oil burning space heater	No System	No System	No mechanical system	Phone Equipped
Garage (42' x 82') FAC No. 00002	Concrete footings on fill	Stl frame with insulated metal panels	a. Vehicle M & R b. Standby electric powerplant unit c. Emer/disaster radio system	a. Ext supply via station plant utility bus b. Emer lights (btry powered with auto lighting & charging controls)	Ducted forced air system from oil fired furnace	No System	No System	Ducted exhaust fan	
Warehouse (40' x 100') FAC No. 00003	Concrete footings on fill	Stl frame with insulated metal panels	a. General Storage b. Receiving dock c. Office d. Security crib	a. Ext supply via station plant utility bus b. Emer lights (btry powered with auto lighting & charging controls)	Ducted forced air system from oil fired furnace	No System	No System	No mechanical system	
Airstrip Hut (16' x 24') FAC No. 03013	Timber sills	Tmbr frame w/ insulated canvas cover	a. Shelter b. Weather Instruments		Oil burning space heaters	No System	No System	No mechanical system	Phone Equipped

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TABLE OF PARTICULARS -- CAM-5 BUILDINGS -- REAL PROPERTY

BUILDING DESCRIPTION	CONSTRUCTION DATA FOUNDATION	BUILDING	FACILITIES AND/OR PURPOSE	UTILITY DATA ELECTRIC	HEAT	WATER	SEWAGE	VENTILATION	COMMENTS
POL Pumphouse (8' x 8') FAC No. 00011	Concrete footings on fill	Stl frame with metal exterior (uninsulated)	POL Pumps	Ext supply via station plant utility bus	No System	No System	No System	No mechanical system	
Storage Shed FAC No. 03010 16' x 24'	Timber sills	Tmbr frame w/ insulated canvas and 1/4" plywd overlay	Emergency Shelter	No System	Oil burning space heaters	No System	No System	No mechanical system	Phone Equipped
Vehicle storage/unheated FAC No. 00013 40' x 40'	Concrete footints on fill	Steel frame with metal exterior (insulated)	Equipment storage	Ext supply via station plant utility bus	No System	No System	No System	No Mechanical System	