GENERAL DESCRIPTION OF FACILITIES

USARAL

PETROLEUM DISTRIBUTION SYSTEM

1 July 1958

HEADQUARTERS
UNITED STATES ARMY, ALASKA
APO 949

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GENERAL DESCRIPTION OF FACILITIES

USARAL

PETROLEUM DISTRIBUTION SYSTEM

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Prepared by:

USARAL PETROLEUM DISTRIBUTION SYSTEM

OFFICE OF THE QUARTERMASTER

1 July 1958

FOREWORD

This document is the second publication of a description of the existing petroleum storage and distribution facilities operated by the United States Army, Alaska

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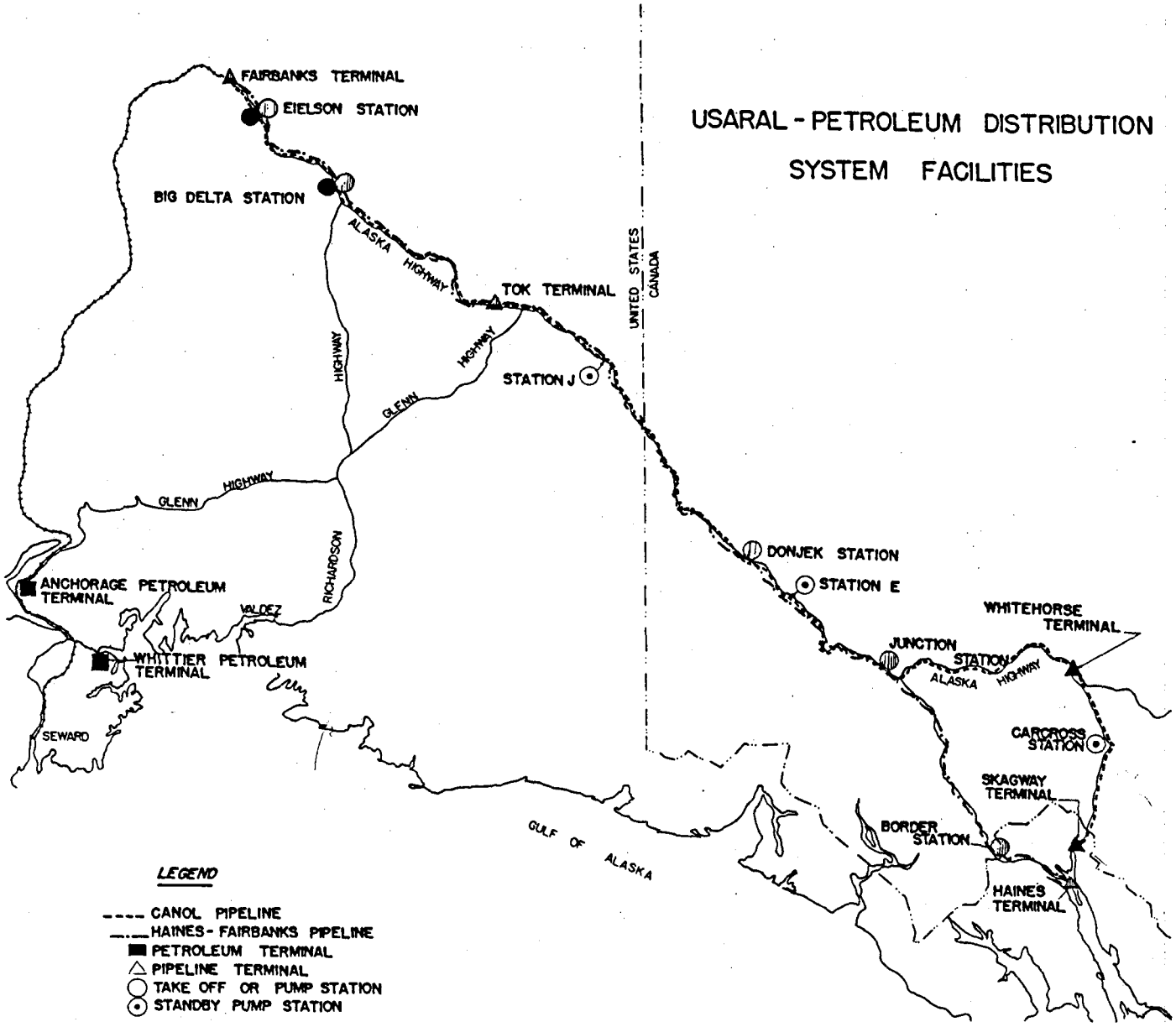
USARAL - PETROLEUM DISTRIBUTION SYSTEM FACILITIES
FAIRBANKS TERMINAL
EIELSON STATION
BIG DELTA STATION
ALASKA HIGHWAY
TOK TERMINAL
UNITED STATES
CANADA
HIGHWAY
HIGHWAY
STATION J
GLENN
GLENN HIGHWAY
RICHARDSON
ANCHORAGE PETROLEUM TERMINAL
VALDEZ
WHITTIER PETROLEUM TERMINAL
SEWARD
DONJEK STATION
STATION E
WHITEHORSE TERMINAL
JUNCTION STATION
ALASKA HIGHWAY
CARCROSS STATION
SKAGWAY TERMINAL
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PETROLEUM TERMINAL
PIPELINE TERMINAL
TAKE OFF OR PUMP STATION
STANDBY PUMP STATION

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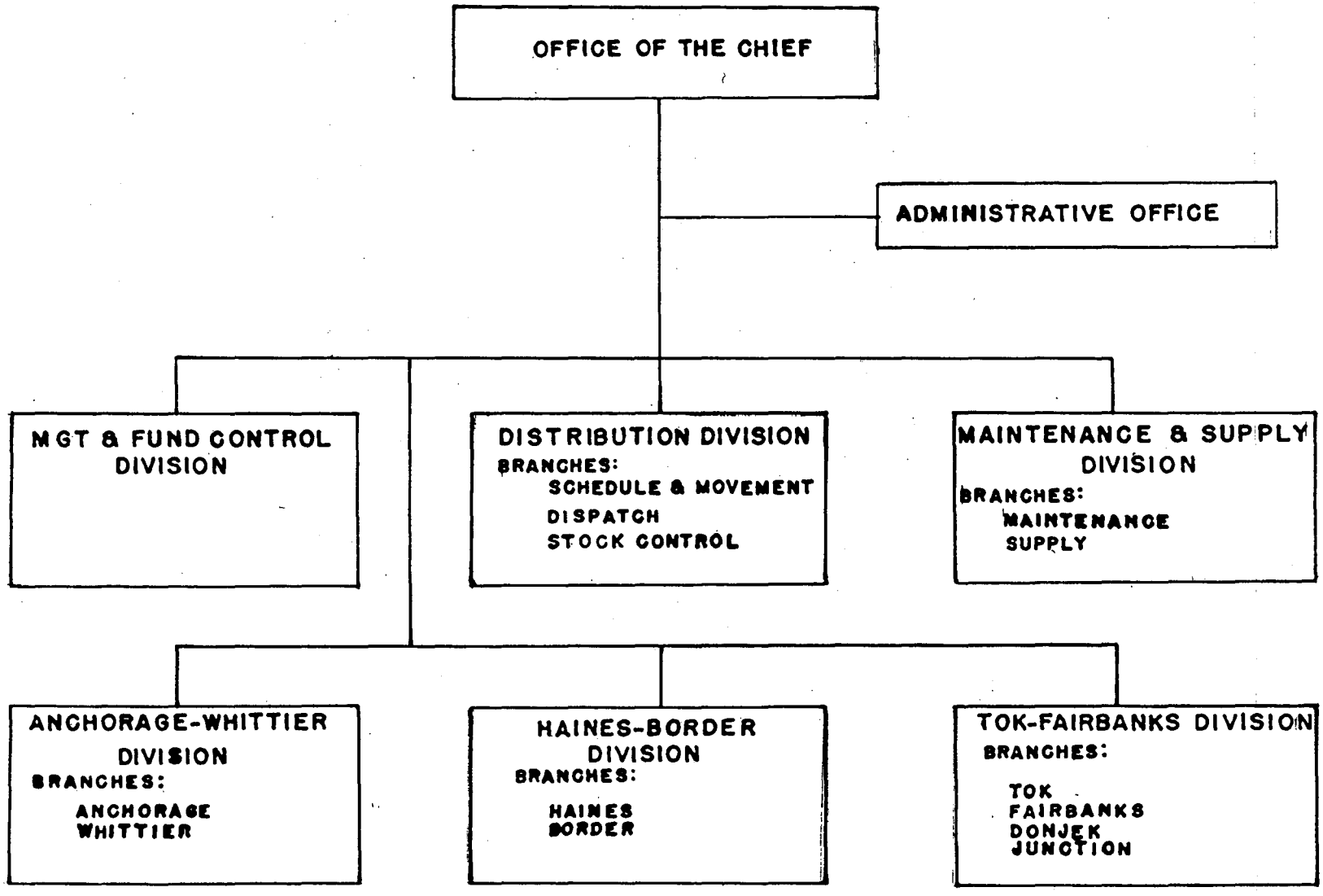
USARAL PETROLEUM DISTRIBUTION SYSTEM
ORGANIZATION CHART



Section I

ORGANIZATION AND MISSION

1. GENERAL. The USARAL Petroleum Distribution System (USARAL PDS), an element of the Staff Quartermaster, United States Army, Alaska, was established by General Order Number 69, USARAL, dated 5 October 1956. The organization and functions are included in "Organizational and Functional Manual", USARAL Pamphlet Number 10-1, 1 May 1958. The headquarters is located in Building T-759 at Fort Richardson, Alaska.

2. ORGANIZATION.

a. Office of the Chief

Chief
Assistant - Plans & Policy
Assistant - Operations
Quality Control Officer
Safety Director

b. Management & Funds Control Office

Budget & Funds Control
Program Analysis
ACMS Cost Accounting

c. Administrative Office

Mail & Records
Miscellaneous Services
Personnel

d. Distribution Division

Scheduling & Movement Branch
Stock Control Branch
Pipeline Dispatch Office

e. Maintenance & Supply Division

Maintenance Branch
- Engineering
- Building & Grounds
- Equipment & Services

Supply Branch
- Property
- Purchasing & Contracting
- Storage

f. Haines-Border Division

Haines Terminal & Pump Station
Border Pump Station

g. Tok-Fairbanks Division

Junction Pump Station
Donjek Pump Station
Tok Terminal & Pump Station
Fairbanks Terminal

h. Anchorage-Whittier Division

Anchorage Terminal
Whittier Terminal
USARAL Petroleum Products Laboratory

3. MISSION. The mission of USARAL PDS includes the following functions:

a. Chief serves in a staff capacity to the Quartermaster and as an advisor on petroleum matters to staff sections of this headquarters, the Joint Petroleum Office, and other headquarters.

b. Schedules, receives, stores, and distributes petroleum products to the Army and Air Force installations on the Alaska Mainland by use of available ocean terminals, bulk storage facilities, petroleum pipelines and related equipment.

c. Prepares Army petroleum requirements and submits slates for packaged and bulk petroleum products.

d. Maintains stock control records for Army and Air Force petroleum products, including related accountable and financial inventory accounting records.

e. Operates petroleum laboratory for testing all Alaskan Command petroleum products, and accomplishes quality control for all petroleum products in custody of United States Army, Alaska.

f. Redistributes excess stocks on the Alaska Mainland to meet requirements, and reports excesses to requirements to the Joint Petroleum Office.

g. Operates or provides reclamation facilities for standard type petroleum containers and internal cleaning of rail tank cars, tank trucks, and tank trailers.

h. Controls, operates, and maintains the Haines Military Dock, Lutak Inlet, Haines, Alaska.

i. Prepares data for use in administration of Department of Army petroleum supply program and related reports.

j. Maintains liaison and coordination with Alaskan Command, Alaskan Air Command, and subordinate commands on petroleum matters affecting this headquarters.

k. Budgets for and administers funds for operational requirements of the system.

l. Plans, develops, reviews, and analyzes the USARAL PDS portion of the Quartermaster Command program.

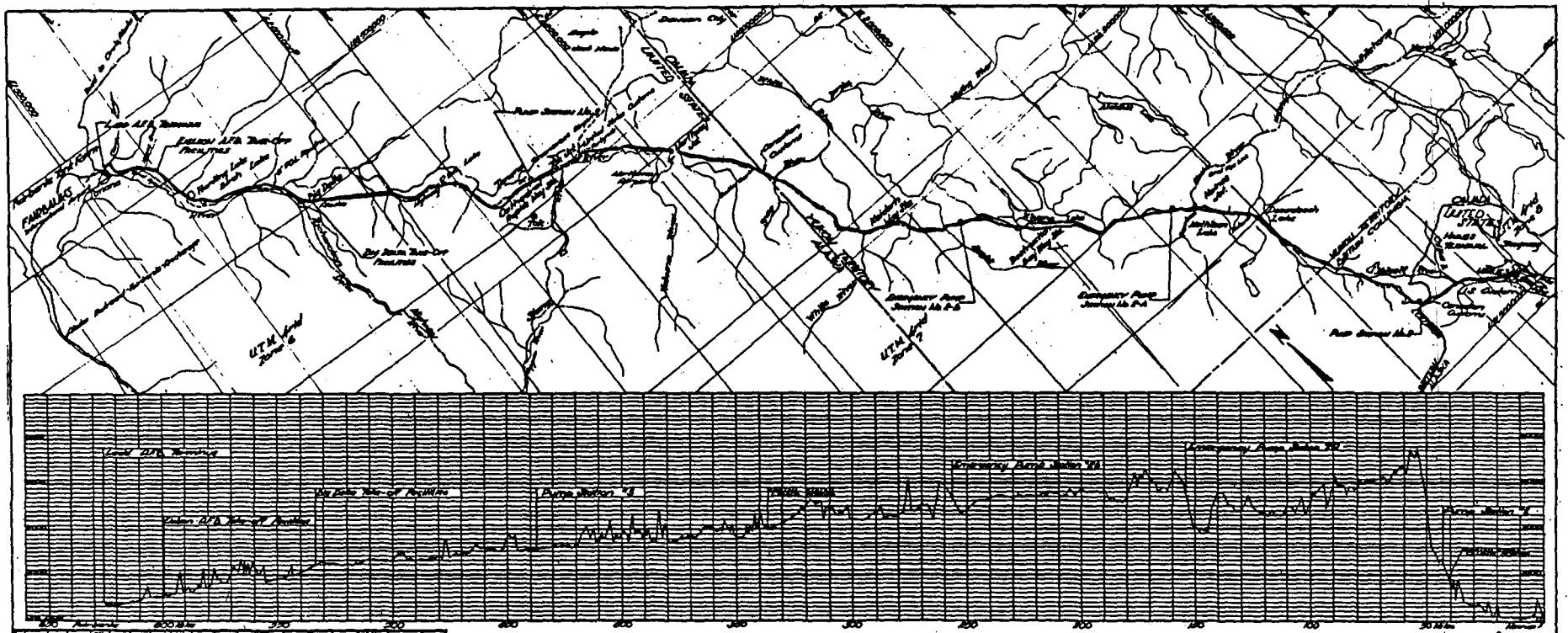
m. Directs the operation of all assigned petroleum installations.

4. PERFORMANCE OF MISSION.

a. Bulk petroleum products for installations south of the Alaska mountain range are received at the USARAL PDS terminal at the Port of Whittier during the winter months, and shipped by rail to the Anchorage Terminal by rail tank cars. During the summer months tankers deliver products to the Anchorage Terminal. Distribution is made from the Anchorage Terminal to Elmendorf Air Force Base, Fort Richardson and Wildwood Station by rail, barge, tank truck, and pipelines.

b. Bulk petroleum products for installations north of the Alaska mountain range are delivered by tankers to the Haines Terminal and pumped through the pipeline system to the using installations.

c. Packaged petroleum products are received at the Port of Whittier and shipped by rail to Fort Richardson where the United States Army Supply & Maintenance Center, Alaska, performs the storage mission for USARAL PDS.



• L E G E N D •

P.O.L. Line		Unidentified Line		Stream or River	
Check Valve		•U.T.M. Grid Line		Cathodic Protection Zone	
Gate Valve both ends flanged		Triangulation Point		Control Marker Symbol	
Highways or Road		Center of Photograph			
Railroad		Bench Mark		All bearings shown on maps are true Azimuths	
Railroad Survey		Highway Mile Post		Load Coil A.C.S.	
Canal Pipe Line		Timber or Brush		All horizontal distances, shown on the ship maps, were taken from the original survey maps prepared by the Fluor Corp of L.A. Calif.	
Telephone Line		Swamp or Muskeg			
4 L.O. Section Line		Borrow Pit			
Property Line		Pipe Bank			
A.C.S. Cable					

•Universal Transverse Mercator (U.T.M.) 9000 Grid Line Zones 6,7 & 8.

Horizontal Control by U.S. Coast and Geodetic Survey, vertical control from U.S.C. & G.S. and Geodetic Survey of Canada, bench marks along route. Datum is mean sea level, August 1953 Adj.

Topography and Preliminary location of P.O.L. Line by Ryall Engineering Co. by Stereophotogrammetric methods from aerial photography of October 1953.

Field Traverse & Profile by Ryall Engr. Co.

THIS DRAWING HAS BEEN MODIFIED AS BUILT

SERIAL NO.

Section II

HAINES-FAIRBANKS PIPELINE FACILITIES AND OPERATION

1. GENERAL DESCRIPTION. The Haines-Fairbanks Pipeline was constructed to transport liquid fuels from the deep water port of Haines, in southeastern Alaska, to military installations North of the Range in the interior of Alaska. To meet the military needs, petroleum products from ocean tankers or tanker barges are received in bulk terminal facilities at Haines. From this point, the petroleum products are transported by the eight-inch, multi-product pipeline to the Fairbanks area. Passing over 25 major river crossings, 82 minor stream crossings, 49 major highway crossings, 39 secondary road crossings, and 11 major swamp and tundra crossings, the pipeline extends over the coastal mountain range and through the plateaus and valleys of the Yukon and British Columbia Territories, Canada and Alaska. Along this route temperatures have ranged from a low of -83°F at Snag, Yukon Territory, to a high of 92°F at Fairbanks, Alaska, a range of 175°F. The initial cost of the project was $38,249,796, and the product held in the line at any time during operations is valued in excess of $1,500,000. The line is composed of 626 miles of eight-inch pipeline, 432 miles--Haines-Tok Section and 194 miles--Tok-Fairbanks Section; three booster pump stations (Border, Junction and Donjek); two take-off stations (Fort Greely and Eielson Air Force Base); and supporting terminal bulk storage tanks and related equipment and facilities.

2. DESIGN AND CONSTRUCTION. The design of the pipeline was accomplished for the Corps of Engineers by the Fluor Corporation, Los Angeles, California, during the period 1950 to 1952. Bids were advertised in the fall of 1953 and contract was awarded to Williams Brothers, McLaughlin, and Marwell of Vancouver, B.C., Canada, a joint venture organization. Field construction began early in 1954 with the main pipeline essentially completed before the winter season of 1954 to 1955; stations and storage facilities being completed during the summer of 1955, and the necessary testing of the line completed prior to 12 October 1955 on which date the United States Army, Alaska accepted the pipeline and facilities. The bachelor quarters, laboratory and refrigeration buildings at Haines were constructed under a separate contract.

3. ROUTE. The Haines-Fairbanks Pipeline begins at Lutak Inlet, approximately 3-1/2 miles north of Haines, Alaska, and follows the Haines Highway into Canada to Haines Junction, thence along the Alaska Highway via Tok Junction, Big Delta Junction, Eielson Air Force Base, and to its terminus at Ladd Air Force Base seven miles northeast of Fairbanks, Alaska. Most of this line is surface laid. The sections from Haines to a point about 40 pipeline miles northward and from Big Delta about 108 pipeline miles northward to Fairbanks Terminal are buried.

These sections were buried to minimize the hazard to private property and residents in these more congested areas, and to protect the pipeline from damage by heavy vehicular equipment. In addition, short sections along the route are buried to protect station personnel and equipment, and to protect the line from possible vehicular damage and from washouts during flash floods.

4. PROFILE. Six hundred twenty-six miles of pipeline extend from Haines, Alaska (elevation 30 feet) to Fairbanks, Alaska (elevation 430 feet). While the net vertical rise is only 400 feet, the pipeline system is complicated by a peak elevation of 3,750 feet at pipeline mile post 57. Other elevations of 3,300 feet at mile post 90, 3,350 feet at mile posts 162 and 175, 3,050 feet at mile post 252, 1,890 feet at mile post 445 and 1,900 feet at mile post 564 are all limiting factors to the gradient at normal line throughput.

5. A MULTI-PRODUCT PIPELINE.

a. Originally, the design criteria indicated that fuels to be transported through the pipeline would include:

(1) Diesel fuel, Arctic Grade C.

(2) Aircraft turbine and Jet fuel, JP-3.

(3) Vehicle motor gasoline, Grade 72 Octane.

(4) Aircraft reciprocating engine fuel, Grade 100/130.

(5) Aircraft reciprocating engine fuel, Grade 115/145.

b. Currently, fuels being transported through the line are:

(1) Diesel fuel, Grade DF-A.

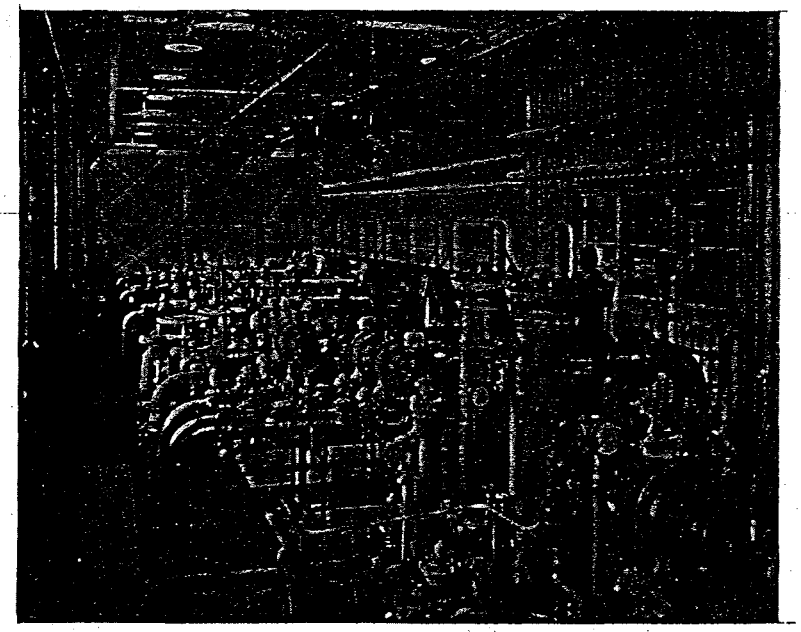
(2) Aircraft turbine and Jet engine fuel, Grade JP-4.

(3) Automotive combat gasoline.

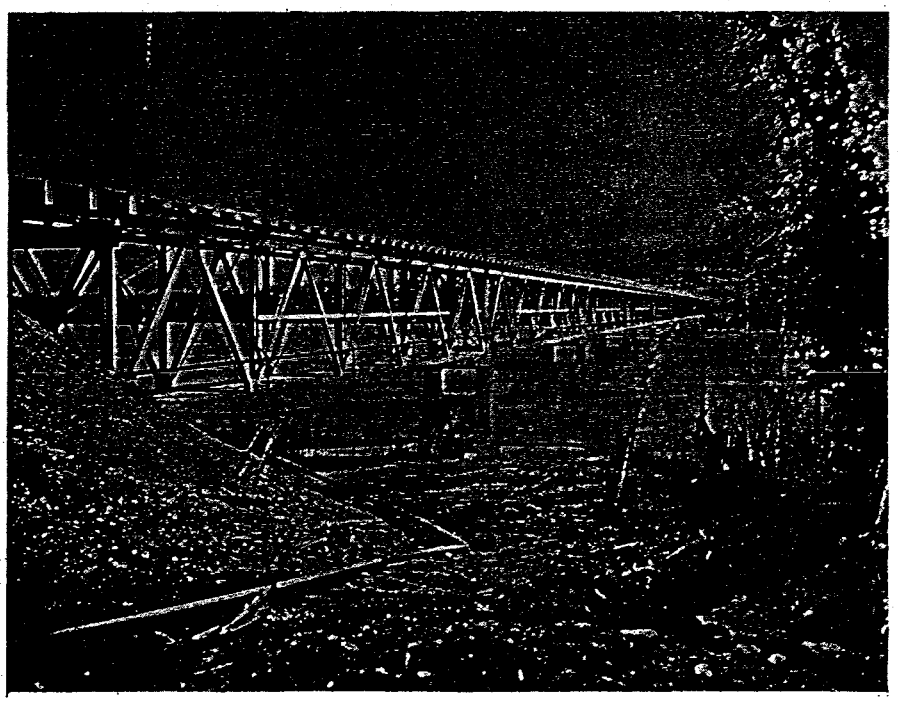
(4) Aviation gasoline, Grade 115/145.

c. The requirement for Aviation gasoline, Grade 100/130 is so slight that this product is now procured locally.

6. TANKAGE. The pipeline complex facilities include bulk storage tankage as follows:



"Tok Terminal - Mainline Pump Building Interior"



"Tobertson River Bridge Crossing"

a telephone-teletype communication system to all pipeline installations and constitutes the nerve center for conducting product movement operations through the pipeline complex.

a. The Control Board consists of three parts; namely, paper tape scaled to 1/8 inch per 100 barrels, a pipeline scale profile, and devices for determination of variations of volume due to changes in operating temperatures and pressures.

b. The scaled paper tape is used to accurately plot the complete displacement of the products in the line by "batches", corrected to reference pressures and temperatures and other operating data such as time of entry into the line, gravity of product, etc. Each "batch" is indicated by product color code on the tape to provide a visual guide as to the contents of the line. The tape is manually advanced in the direction of the flow of the product at hourly intervals, a distance equal to the net quantity of fluid pumped into the line.

10. LINE DELIVERY OF PRODUCTS. Delivery of bulk quantities to designated points are accomplished as follows:

a. Tok Terminal - all products are delivered into terminal storage from the Haines-Fairbanks Pipeline.

b. Big Delta (Fort Greely) Take-off Station - products are delivered to Big Delta by taking "heart cuts" from passing "batches" scheduled for installations further north. Diesel fuel is also delivered from three-inch pipeline (CANOL) by direct take-off.

c. Eielson Take-off Station - products are delivered into Eielson Air Force Base tankage from both the eight-inch and three-inch lines.

d. Fairbanks Terminal - products are pumped into terminal storage tanks from both the eight-inch and three-inch lines for subsequent delivery to Ladd Air Force Base.

11. PRODUCT EXPANSION AND CONTRACTION IN THE PIPELINE. Once in the pipeline, products are exposed to great variations in the prevailing ambient temperatures along the line. The pipeline is packed (pressured) each time pumping operations are shut down; however, since petroleum products expand and contract with changing temperatures, a continuous build-up and reduction of pressures is experienced. To relieve the pressure in the line during temperature rises, product must be "bled off" into appropriate tankage at the Tok Terminal. Conversely with a drop in ambient temperatures, products contract or shrink, reducing line pressures. Repressuring is not essential in the latter instances, as experience has shown that allowing the line to go slack creates less

HAINES-FAIRBANKS PIPELINE

8.001 " I.D. Pipe
Distance-626 Miles

HAINES TO TOK
Distance-432 Miles

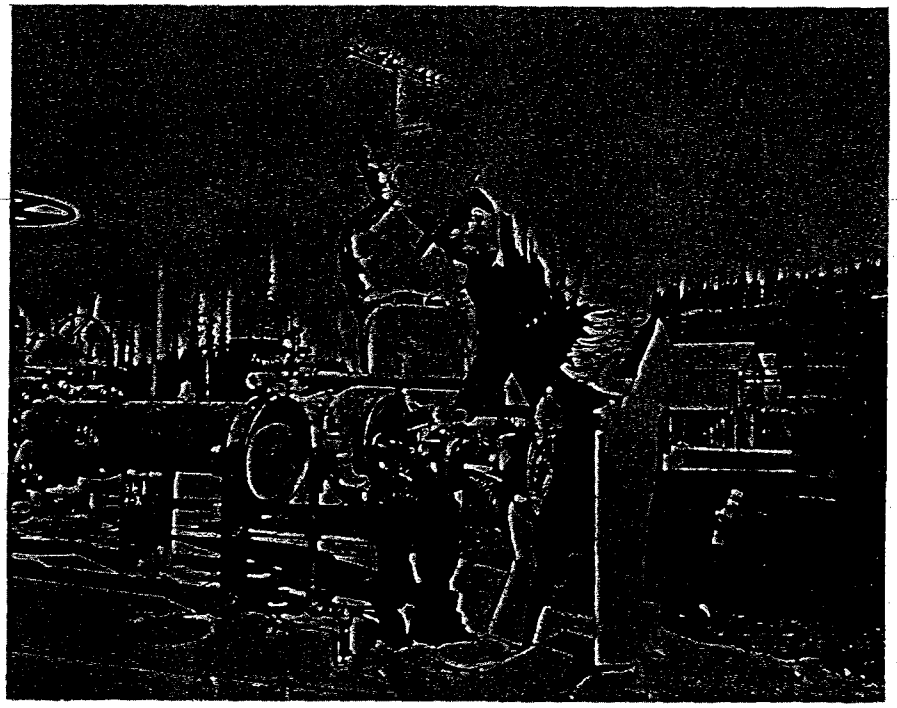
CONDITION	HAINES		BORDER		JUNCTION		DONJEK		TOK RECEIPTS
	SUC.	DIS.	SUC.	DIS.	SUC.	DIS.	SUC.	DIS.	BPH
NORMAL: 4 STA's ON LINE	25	1200	440	1440	600	1200	600	1200	670
REDUCED: 3 STA's ON LINE	25	1100	440	1440	600	1200			600

TOK TO FAIRBANKS
Distance-194 Miles

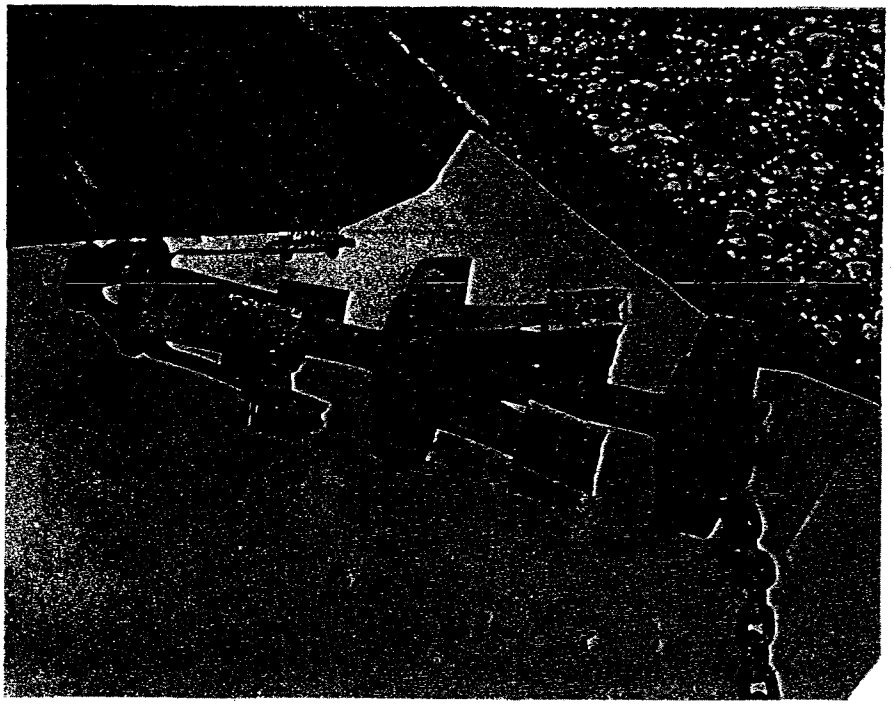
TOK		FAIRBANKS RECEIPTS
SUC.	DIS.	BPH
40	1200	800

NOTE: Normal operation movement from Haines to Tok 16,080 BPD; from Tok to Fairbanks 19,200 BPD with four different products (JP-4, Motor Gasoline, Aviation Gasoline and DF-A) in line.

Haines Station with postive displacement pumps keeps Border Station supplied with sufficient fuel for that station to hold maximum discharge pressure at all times.



"Haines Terminal - Scraper Being Launched"



"Haines Terminal - Scraper"

interfacial mixing than daily repressuring. This expansion and contraction is so great that during a temperature rise, it is possible to receive product at 1,000 barrels per hour at Tok Terminal while pumping at a rate of 500 barrels per hour at the Haines Terminal; and with a sharp temperature decrease, it is possible to pump product into the line at Haines at a rate as high as 500 barrels per hour without receiving product at the Tok Terminal. Due to these conditions, it has been necessary to pump at maximum rates to prevent laminar flow in the line. Evaluation of operational experiences and consultants' recommendations point to a requirement for burial of the line to correct these temperature problems. The burial of the line is planned for FY 1960 and future MCA Programs at an estimated cost of $3,075,000.

12. SCRAPER TRAPS. The eight-inch line was originally designed to include a total of six scraper traps for use in scraper operations for cleaning the line and to assure delivery of clean products; however, during the construction of the line two additional scraper traps were added. During the initial clean-up and first year of operation, it became necessary to install six additional "temporary" scraper traps providing a scraper launching and receiving facility at approximately 50-mile intervals. Location of these traps are as indicated below:

a. Station Location — Pipeline Mile Post

Haines	0
Border	47
Junction	158
Donjek	248
Tok	432
Fairbanks	626

b. Intermediate Location Prior to Completion of Construction:

Scotty Creek	344
*Big Delta	521

c. Temporary Traps Added by Special Contract in Calendar Year 1956. (These have served their purpose and were "spooled through" in Spring 1958.)

Summit	85
Destruction Bay	211
White River	291
Northway Junction	383
Dot Lake	475
**Salcha River	586

* Moved to Mile Post 531 (1958)
** Moved to Mile Post 599 (1958)

13. PIPELINE MAINTENANCE PATROLS. Continuous patrolling of the line is necessary to check condition of the line, valves, and valve boxes, mileage markers, warning signs, stream crossing structures and vents, and to accomplish all other corrective and preventive maintenance. These personnel also perform right-of-way maintenance in the control and removal of vegetation.

a. Responsibilities for specific portions of the line are assigned to four patrols composed of four-man teams as follows:

(1) Haines Patrol - responsible for line from Haines Terminal north to Junction Station. (Summer months only as road is closed in winter.)

(2) Junction Patrol - responsible for line from pipeline mile post 108 north to Canadian Border.

(3) Tok Patrol - responsible for line from Canadian Border north to Big Delta Take-off.

(4) Fairbanks Patrol - responsible for three-inch and eight-inch lines from Big Delta Take-off north to Fairbanks Terminal.

b. Composition of Teams:

(1) Personnel assigned to each patrol other than Haines:

(a) One petroleum pipeline repairman, foreman.

(b) One petroleum pipeline repairman.

(c) One welder, acetylene/electric.

(d) One engineer equipment operator.

(2) Personnel assigned to Haines Patrol include:

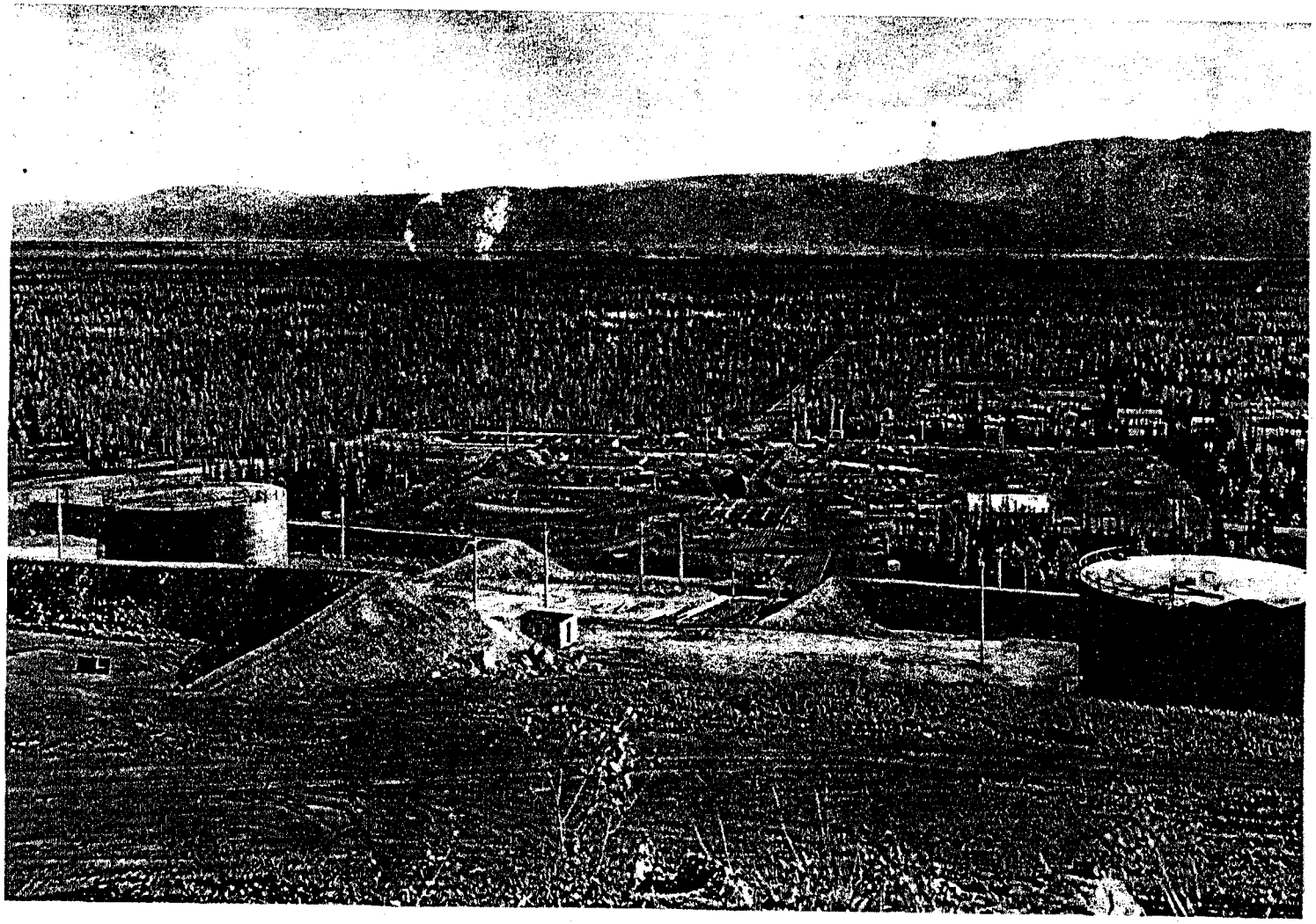
(a) One petroleum pipeline repairman, foreman.

(b) One engineer, equipment operator.

(c) One petroleum pipeline repairman (furnished by Haines Terminal, when required).

(d) One welder, acetylene/electric (furnished by Haines Terminal, when required).

(3) Additional laborers are drawn, as required, from the Haines and Tok Terminals.



TOK TERMINAL
DURING CONSTRUCTION

c. Patrols are normally equipped with the following:

(1) One truck, tractor, 5-ton.

(2) One trailer, semi, low bed.

(3) One tractor, full track w/side boom.

(4) One truck, 2-1/2 ton, 6x6, w/welding equipment and tools.

(5) One stopple (Tok and Haines only).

(6) One back-hoe (Fairbanks only--for buried portion of the line).

14. AERIAL SURVEILLANCE OF PIPELINE. To facilitate observation of conditions along the line and to particularly detect evidence of leaks and line breaks, both military and civilian aircraft are utilized on a regularly scheduled basis.

a. Military Aerial Surveillance. Army aircraft are employed for the surveillance of the pipeline from Northway to Fairbanks Terminal. Weekly trips are made over the north portion of the line, and the pilot reports any observed leaks, breaks or other conditions.

b. Civilian Contract Aerial Surveillance. Weekly round trip flights from Haines to Northway are made by civilian aircraft under contract to the Government. The pilot reports by radio to Haines, Border, or Junction Station any observed leaks, breaks or other conditions warranting immediate attention, advising of the existing condition and location by pipeline mile.

Section III

THE THREE INCH PIPELINE

The three-inch and four-inch pipeline system is a portion of the Canol network of pipelines constructed during World War II (completed 1945) under the joint direction of the Public Roads Administration and the Corps of Engineers. This pipeline system was utilized by the United States Army subsequent to the termination of World War II. The system was composed of 108 miles of four-inch pipeline (Canol Number 2, Skagway, Alaska to Whitehorse, Yukon Territory, Canada) and 596 miles of three-inch pipeline (Canol Number 4, Whitehorse to Fairbanks, Alaska); three terminal pump stations (Skagway, Whitehorse, and Tok); one receiving terminal (Fairbanks); one non-operational standby booster station (Station "J" in Alaska between Northway, Alaska and the Canadian Border); two take-off stations (Fort Greely and Eielson Air Force Base); and supporting terminal bulk storage tanks, and related facilities.

Effective 31 March 1958 the terminal at Skagway and the four-inch line to the Canadian Border were sold to the White Pass & Yukon Railroad. The four-inch line from the Canadian Border to Whitehorse was accepted by the Canadian Government 1 April 1958, and part of the terminal facilities at Whitehorse were leased to the White Pass & Yukon Railroad. The remaining facilities at Whitehorse and the three-inch line from Whitehorse to Junction Pump Station (Mile Post 1026) were leased to the Alaska-Yukon Distributors, Ltd. Both of these leases are temporary measures pending formal disposal of all Canol facilities in Canada to the Canadian Government.

The remaining facilities include 196 miles of three-inch pipeline from Tok Terminal to Fairbanks Terminal, 60 miles of three-inch pipeline from Tok Terminal to Northway, a terminal pump station at Tok, a take-off station at Big Delta, a take-off station at Eielson Air Force Base and a receiving station at Fairbanks Terminal. The three-inch line runs parallel to the eight-inch line and is surface laid.

Current operations are limited to transporting diesel fuel from Tok Terminal to Fort Greely, Eielson Air Force Base and Ladd Air Force Base (196 miles) and back-pumping from Tok to Northway (60 miles) for the Alaska Communication System and Civil Aeronautics Administration.

The three-inch pipeline provides flexibility of pipeline operations between Tok Terminal and stations served by this terminal.

Section IV

HAINES TERMINAL AND PUMP STATION

1. GENERAL. Haines Terminal and Pump Station, 203 acres in area, is located three miles north of the City of Haines on the west side of Lutak Inlet.

2. FACILITIES.

a. Pier

b. Manifold Building

c. Tank Farm

d. Main Line Pump Building

e. Laboratory Building

f. Utility Building

g. Administrative Building

h. Warehouse-Garage-Shop Building

i. Truck Loading Rack

j. Station Housing

k. Cold Storage Locker Building

l. Fire Pump Building

m. Hose Cart Houses

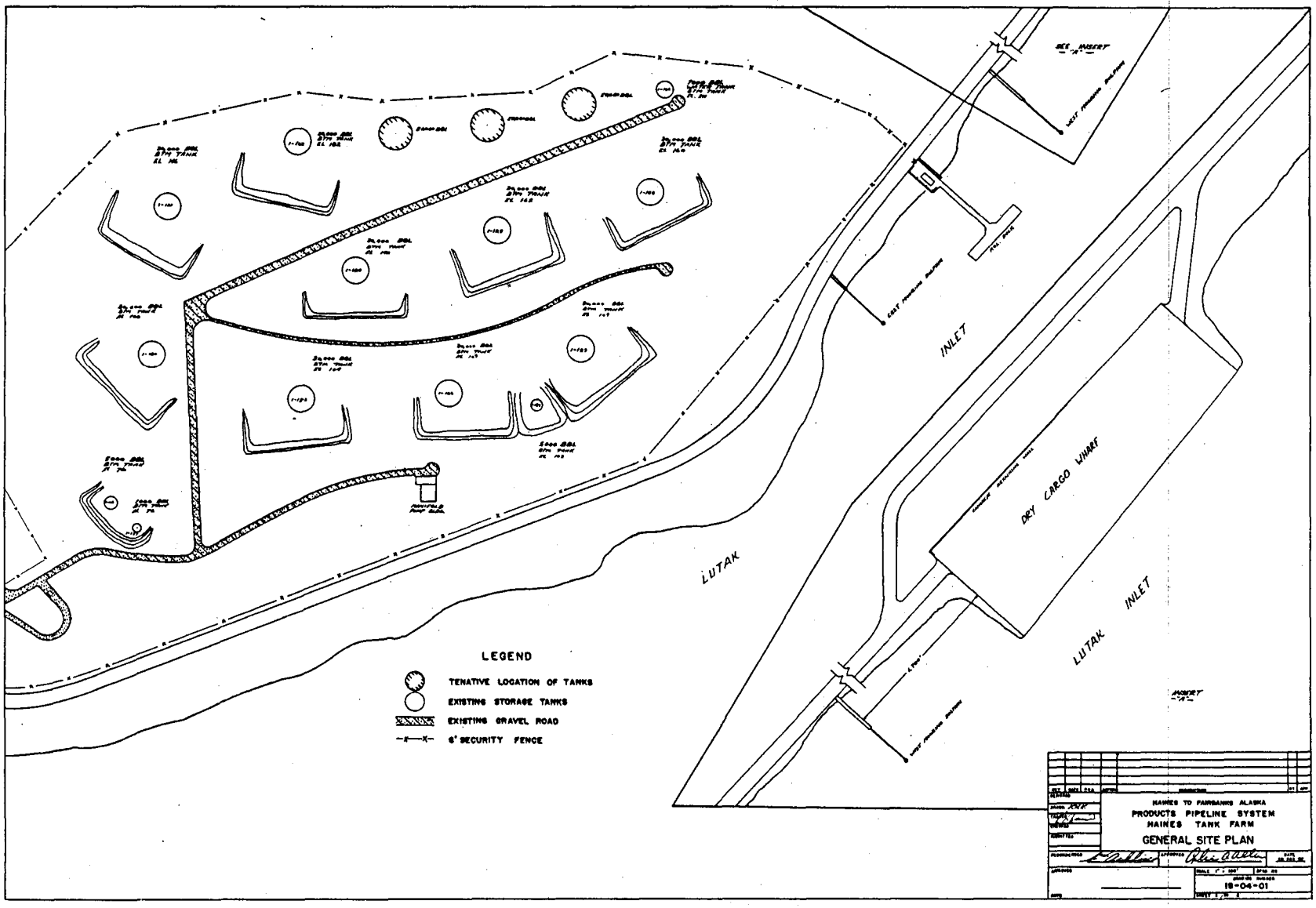
n. Service Station

o. Incinerator

p. Semi-permanent Buildings

q. Warehouse Area

3. PIER. The terminal pier at the north end of the station provides facilities for docking and discharging tankers. It is a T-shaped, concrete decked steel structure capable of mooring a 26,000 DWT tanker.


LEGEND
TENATIVE LOCATION OF TANKS
EXISTING STORAGE TANKS
EXISTING GRAVEL ROAD
6' SECURITY FENCE
INLET
LUTAK
DRY CARGO WHARF
LUTAK INLET
HAINES TO FAIRBANKS ALASKA
PRODUCTS PIPELINE SYSTEM
HAINES TANK FARM
GENERAL SITE PLAN
18-04-01

Bow and stern mooring dolphins are provided to hold the vessel in place against spring fenders. These dolphins, 780 feet apart, are installed on a centerline 75 feet shoreward from the spring fenders on the unloading platform and are equipped with electrically operated cat heads and carrier to main dock. Two derricks are furnished for handling the unloading hoses and the two 15 HP barge stripping pumps. Other facilities at the pier include:

a. Dockmasters' office consisting of heated office space with toilet and enclosed area for fire foam equipment.

b. Pumphouse with dual gasoline-electric motor driven, 150 HP fire pump.

c. Cathodic corrosion protection system for steel pier structure.

d. Two hose houses (fire hose) and suitably arranged fire hydrants.

e. Drip pans under product hose connections with drain system and sump tank.

f. Floodlights.

g. Six-inch fresh water line for servicing tankers.

4. MANIFOLD BUILDING. This facility houses two transfer pumps, piping, valves, and manifolds required to route the products from the petroleum dock to terminal storage tanks and from terminal storage tanks through two Warner-Lewis Water Separators to the main line pump building. Products can also be transferred between tanks. Originally designed and constructed as an open building, the manifold building has since been enclosed and provided with heat. Elevation difference between the terminal storage tanks and the manifold building varies from 20 feet to 102 feet. Tank elevation measured at grade level varies from 100 feet to 182 feet.

5. TANK FARM. The tank farm is a fenced-in area southeast of the petroleum dock, between the dock and the terminal buildings. The tank farm consists of 12 product tanks, 10 tanks for products to be transported through the pipeline and two tanks for station fuels. (See a below)

a. The tanks and capacities are as follows:

Tank Nr.	Capacity in Barrels
1 through 9	30,000 each
10	5,000 (for station use only)
11	5,000
12	1,000 (for station use only)

b. Each 30,000-barrel tank is equipped with a 40-foot swing line for filling and withdrawal of product. Water drain off is accomplished by gravity flow from the center sump of the tanks. A four-inch line runs from the central water draw-off sump to a drain box just outside the tank. The drain box is provided with a six-inch outlet for disposal of the water. The water draw-off sump operations are manually controlled by a gate valve just outside the tank.

c. The tanks are situated on a hillside with each tank surrounded by a dike of sufficient capacity to contain one hundred fifty (150) percent of the tank capacity. A ditch and dike across the south side of the tank farm protects station buildings from water run-off or product overflow. Roads in the tank farm area provide access to all tanks.

d. The fire foam building is situated within the tank farm area with a network of pipes leading to each tank for fire fighting purposes. Either fresh or salt water can be used in this system through use of salt water pump located on the petroleum dock or by gravity from the fresh water tank.

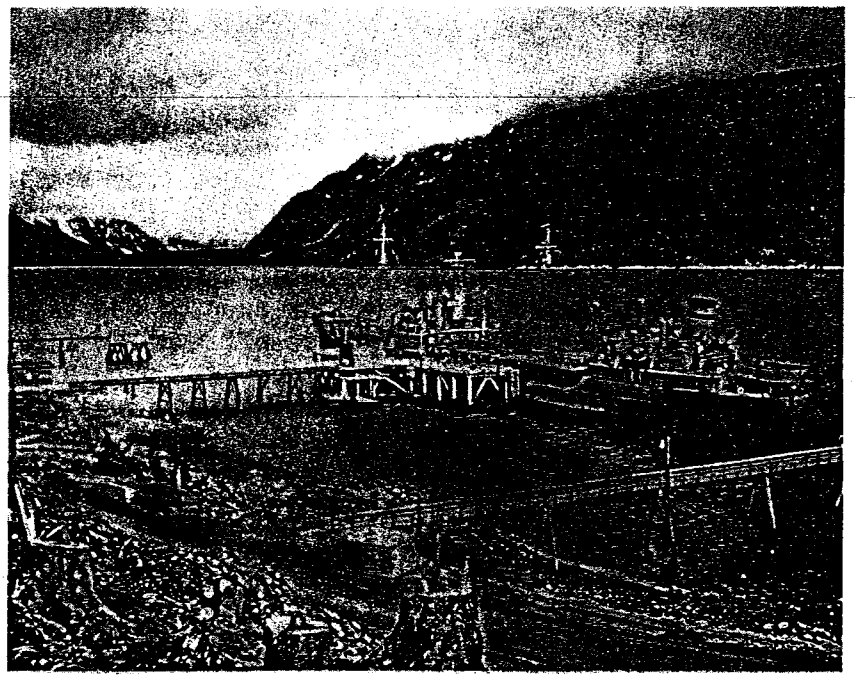
e. Floodlights are provided for the illumination of the entire terminal area.

f. A 7,500-barrel fresh water tank is located in the tank farm area for the storage of fresh water used by the installation.

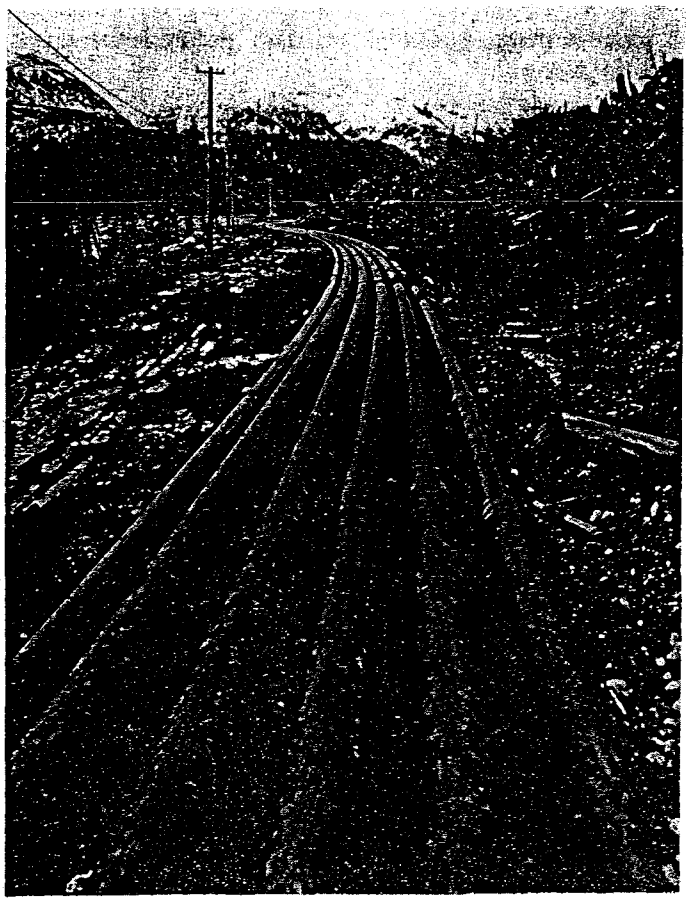
6. MAIN LINE PUMP BUILDING. This building is divided into a control room, engine room, pump room, storage room and rest room.

a. The pumping equipment includes three main line reciprocating Wilson-Snyder quintuplex pumps rated at 272 GPM, 120-70 RPM, 1200 PSI discharge pressure. Each pump is driven by a Chicago-Pneumatic Model 69-CP diesel engine, 6 cylinder, 4 cycle, 720-420 RPM, 285 HP. Engines and pump units are connected by a 6 to 1 geared speed reduction unit. The units will operate individually or in parallel. The maximum station pumping capacity is 1167 BPH with the pumps connected in parallel.

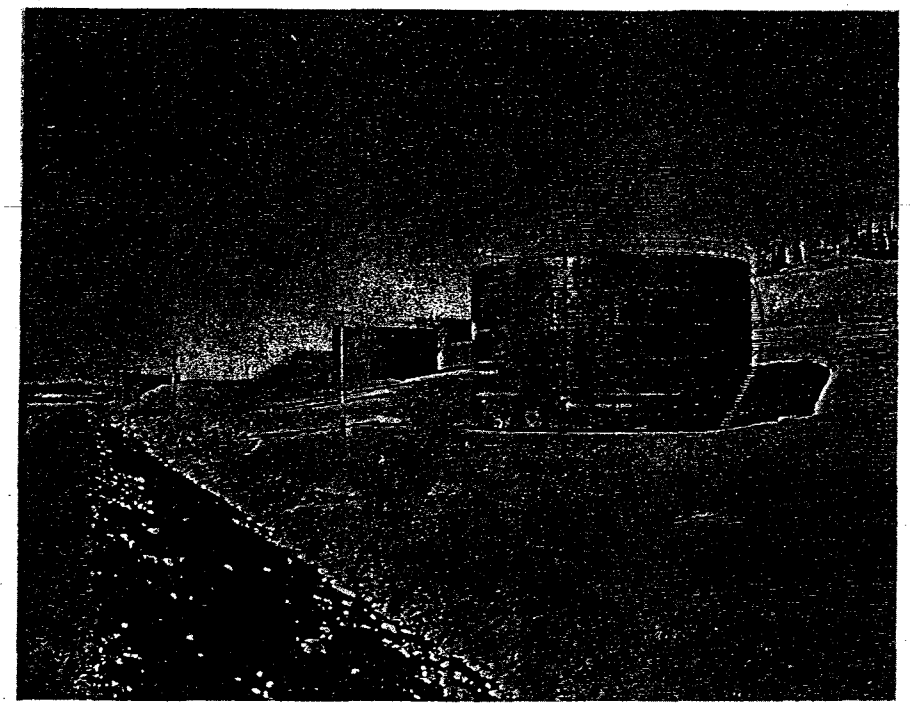
b. Diesel fuel oil is supplied to pump engines from a 5,000-barrel station storage tank.



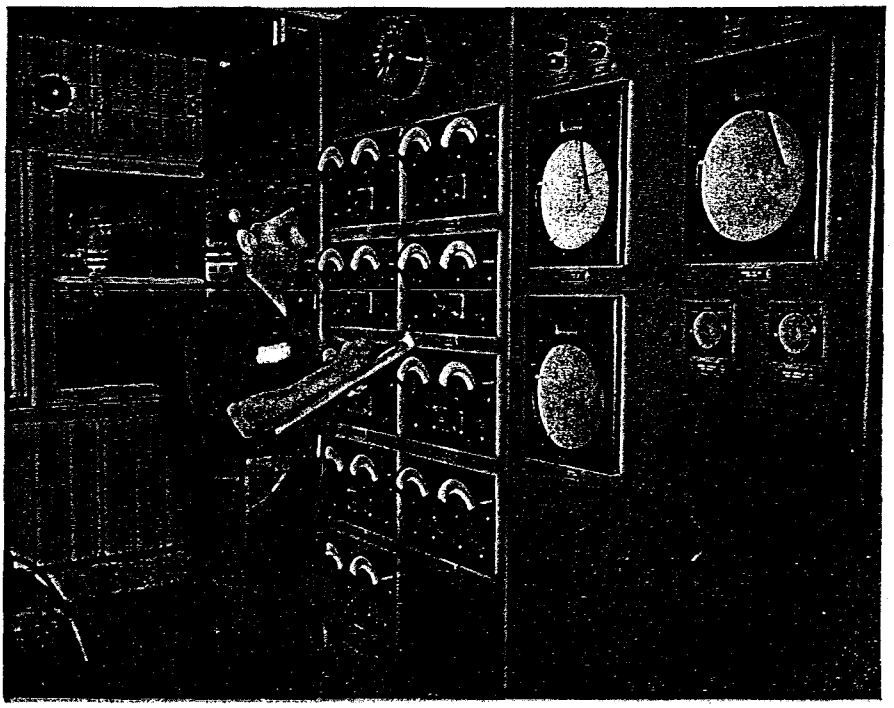
"Haines Terminal - Tanker at POL Dock"



"Haines Terminal - Pipe from POL Dock to Manifold Building"



"Haines Terminal - Tank Farm"



"Haines Terminal - Control Panel in Mainline Pump Building"

c. Engine coolant water is piped from the diesel engines to a 3-unit radiator building near-by and returned to the engines.

d. The control room is isolated by means of a pressure barrier fire wall and door arrangement permitting this room to be pressurized to exclude petroleum vapors. A fire wall isolates the engine room.

e. Two Moorlane Strainers are installed on the intake line from the storage area.

f. A product sump within the building is provided to accumulate drain discharges from the strainers. The product in the sump is disposed of by pumping into the line when appropriate.

g. A scraper launcher is located just outside of the building for sending scrapers to Border Station.

7. LABORATORY BUILDING. This building serves as a laboratory for testing all petroleum products handled at the Haines Terminal. It contains an office, laboratory, knock engine room and storage room.

8. UTILITY BUILDING. This building furnishes heat and electric power for the station. It houses four General Electric, 480 volt, 60 cycle, 150 KW, 720 RPM generators driven by four Chicago-Pneumatic 6 cylinder, 4 cycle, 720 RPM, 285 HP, Model 69-CP diesel engines. Cooling water is pumped to a 4-unit radiator building and returned to the engines. For heat, there are three oil fired, 100 HP low pressure (15 PSI) boilers.

9. ADMINISTRATION BUILDING. This building provides office space and a three-place garage.

10. WAREHOUSE-GARAGE-SHOP BUILDING. This is a multi-purpose building containing:

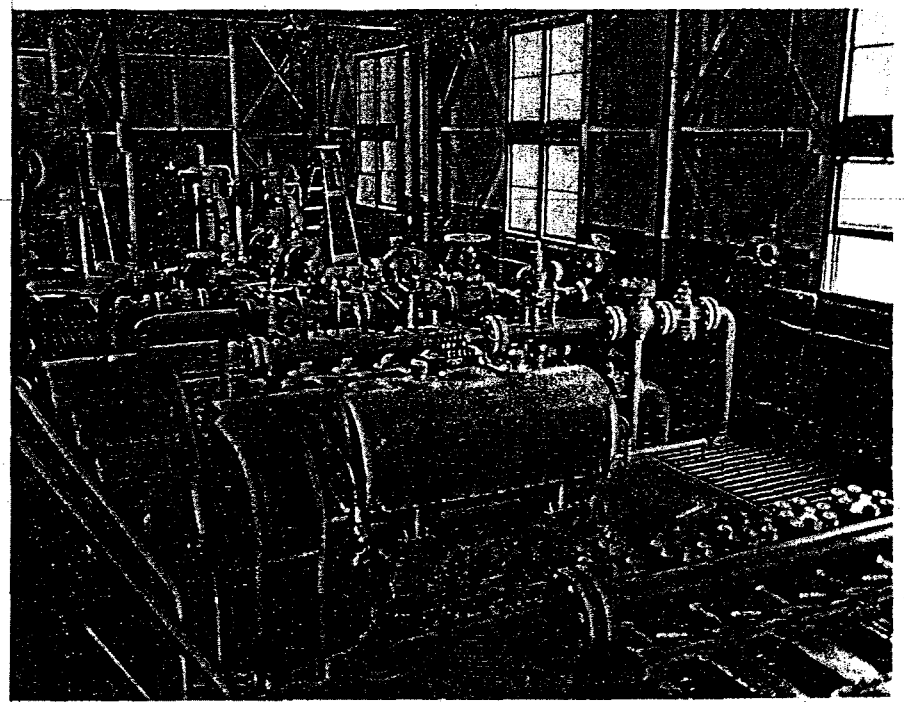
a. A four-door storage garage for line patrol and maintenance equipment.

b. A shop for automotive repair and general maintenance.

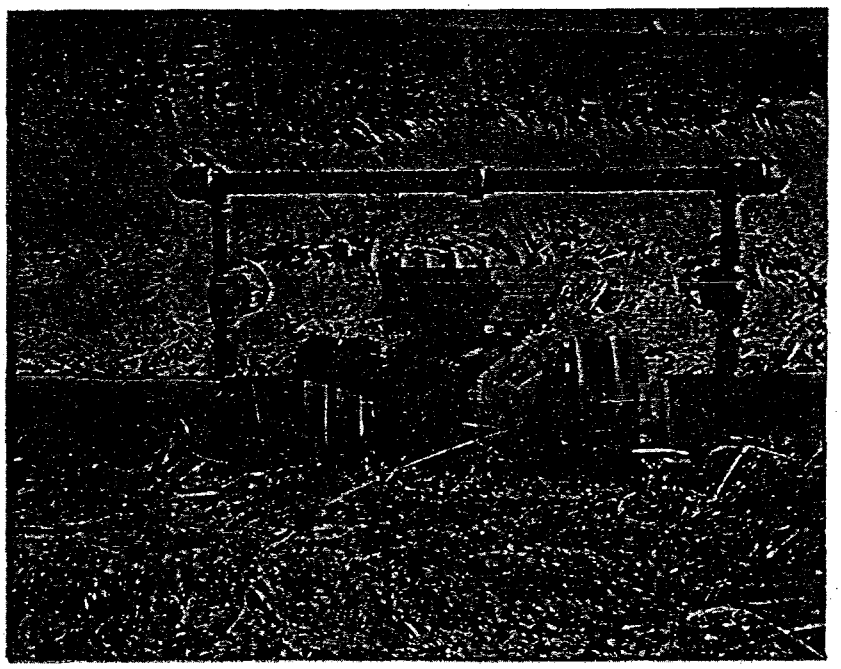
c. Office, tools and parts storage, and a toilet.

d. Warehouse consisting of approximately 1,000 square feet for heavy item storage and approximately 1,500 square feet containing bins for repair parts and small items.

11. TRUCK LOADING RACK. This facility is of steel frame construction on a concrete foundation, a metal roof and wood plank floor decking with two three-inch headers, one for diesel fuel and one for motor gasoline.



"Haines Terminal - Mainline Pump Building Interior"



"Check Valve #33 at PL Mile Post 230.5. Showing By-pass"

12. STATION HOUSING. Housing at this station consists of both permanent type and temporary type buildings.

a. Permanent type buildings are of rigid steel frame construction covered with insulated steel panels. The floors and foundations are concrete, and the roofs are prefabricated steel decking covered with insulating board, built-up composition roof and gravel protective coating. These buildings include the following:

(1) One dormitory (CBQ) with a capacity of 10 men, including a dining room, kitchen, living room, and two latrines and one shower room.

(2) One apartment type building consisting of eight 3-bedroom units.

(3) One apartment type building consisting of eight 2-bedroom units.

b. The temporary type building (see paragraph 18) is used as an 18-man CBQ, and has a reading room, kitchen, two shower and toilet rooms.

13. COLD STORAGE LOCKER BUILDING. This is a concrete building with a freeze room (-10°F) and a chill room (35°F) which are equipped with individual food lockers.

14. FIRE PUMP BUILDING. This building, adjacent to the Utility Building, houses a dual gasoline engine booster pump to increase water pressure in the lines when needed for fire fighting.

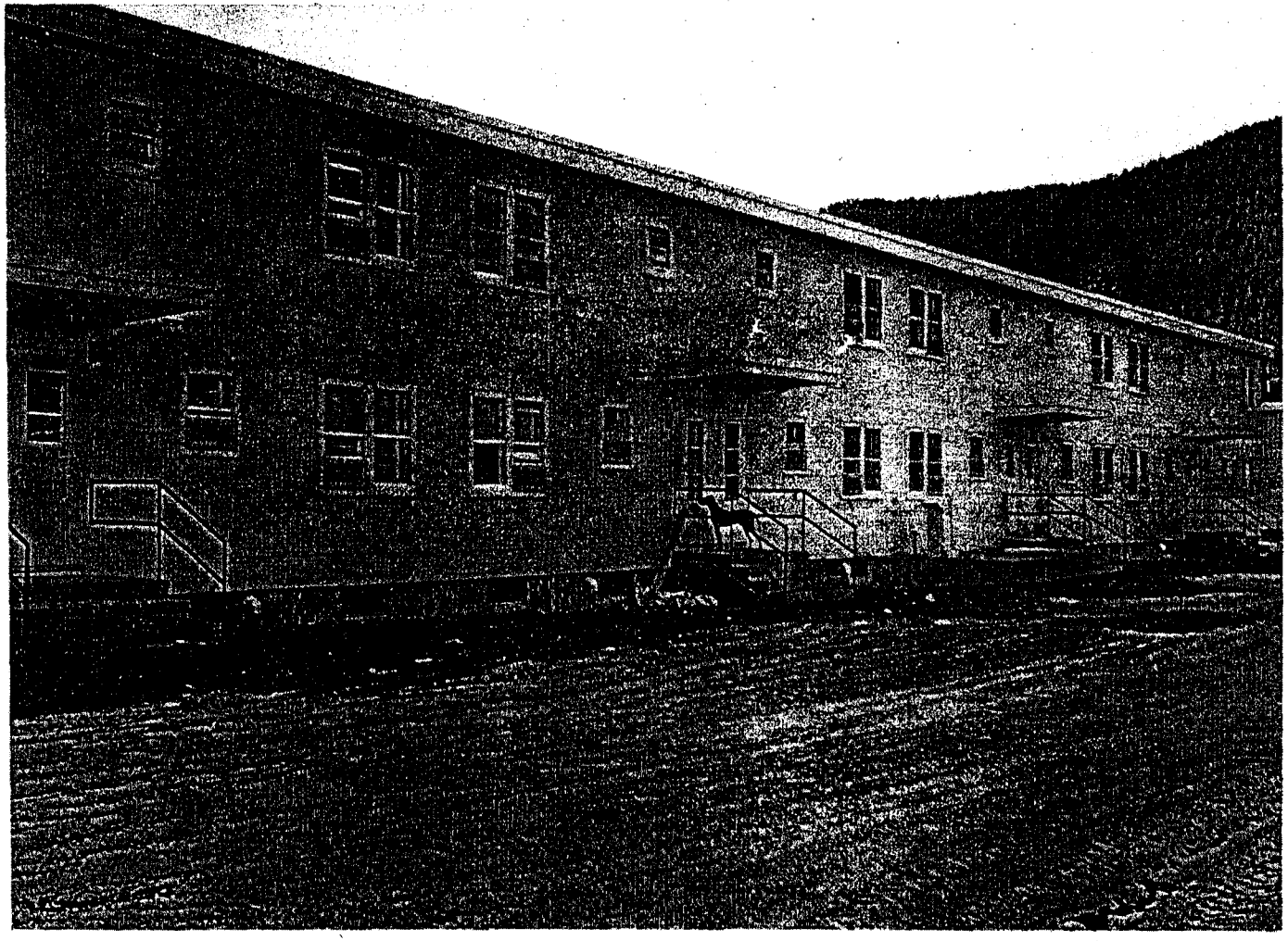
15. HOSE CART HOUSES. There are two hose cart houses--one located near the Warehouse-Garage-Shop Building and one near the Fire Pump Building.

16. SERVICE STATION. Located in front of the Warehouse-Garage-Shop Building, the service gasoline station pump is served by a two-inch line from the 1,000-barrel station storage tank, and is used for refueling government vehicles.

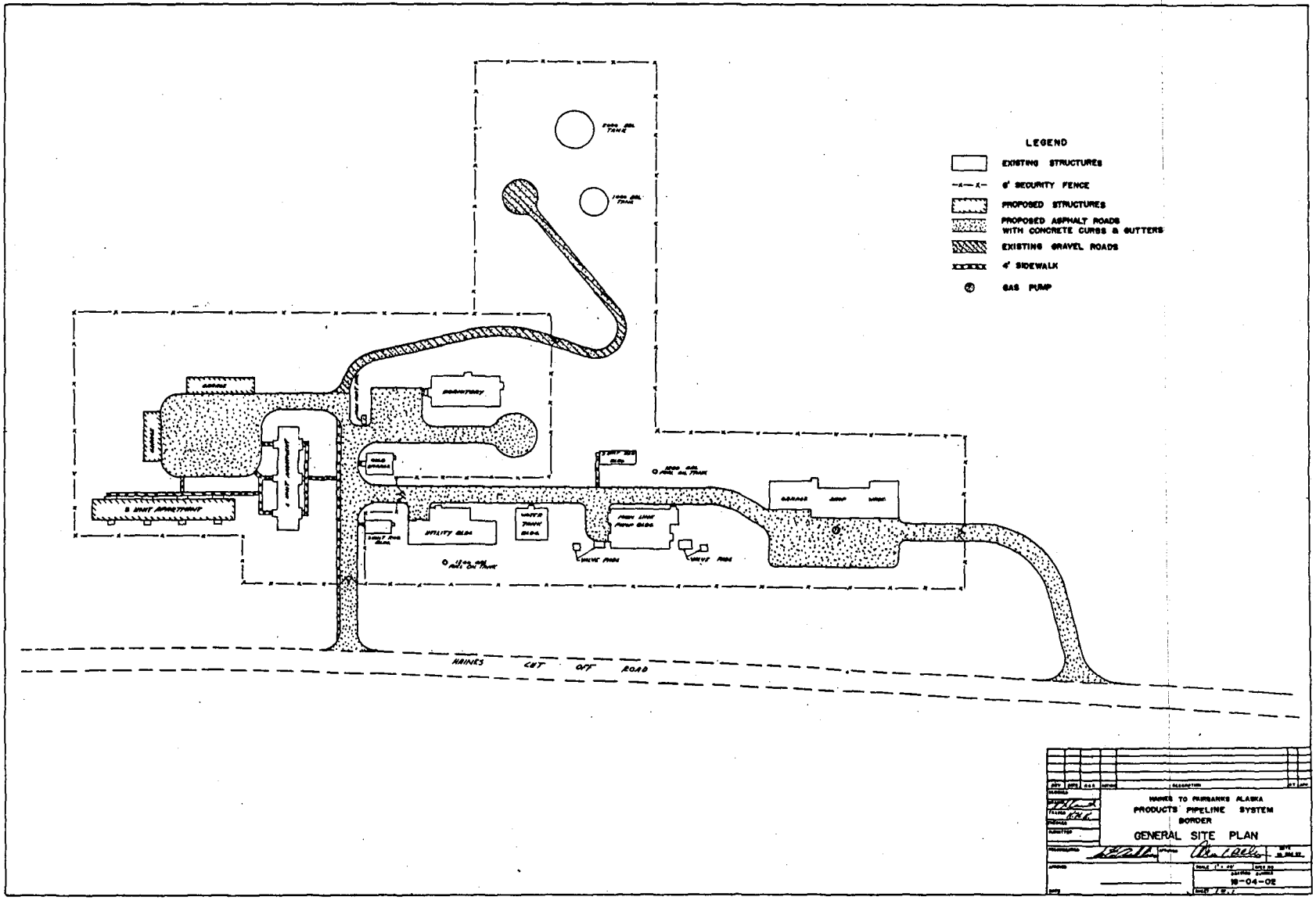
17. INCINERATOR. Fired by a diesel oil burner the incinerator is suitable for burning rubbish and garbage under all weather conditions.

18. SEMI-PERMANENT BUILDINGS. These are two buildings erected by the contractor and located outside the fenced area. One of these buildings is used as a CBQ (see paragraph 12b). The other building contains a carpenter shop and boiler plant for heating the CBQ.

19. WAREHOUSE AREA. The site is 23.39 acres in area located in the City of Haines. There are three warehouses with a total of 45,000 square feet of floor space. The buildings are in fair condition and retained in standby status by the United States Army. Two of these warehouses are used for storage of station supplies pending construction of a warehouse at Haines Terminal.



FAMILY QUARTERS
HAINES


LEGEND
EXISTING STRUCTURES
6' SECURITY FENCE
PROPOSED STRUCTURES
PROPOSED ASPHALT ROADS WITH CONCRETE CURBS & GUTTERS
EXISTING GRAVEL ROADS
4' SIDEWALK
GAS PUMP
DORMITORY
UTILITY BLDG.
GARAGE
HAINES CUT OFF ROAD
HAINES TO FAIRBANKS ALASKA
PRODUCTS PIPELINE SYSTEM
BORDER
GENERAL SITE PLAN
18-04-02

Section V

BORDER PUMP STATION

1. GENERAL. Border Pump Station is located on the Haines Cut-off Highway approximately five miles north of the International Boundry near the Klehini River. There are no nearby towns. The site is 47 miles north of the Haines Terminal at an elevation of 1,300 feet above sea level. This station is an essential part of the normal pipeline operation with capacity to pump products over the peak of the entire system at pipeline mile post 57, elevation 3,750 feet where the Haines Cut-off Highway and the pipeline cross the Chilkat Pass in the Coast Range. The site is 32 acres in area with facilities enclosed by a chain-link fence.

2. FACILITIES.

a. Main Line Pump Building

b. Utility Building

c. Warehouse-Garage-Shop Building

d. Station Housing

e. Cold Storage Locker Building

f. Service Station

3. MAIN LINE PUMP BUILDING. The interior of this building is divided into an engine room, pump room, and control room. The control room is isolated by means of a pressure barrier fire wall and door arrangement permitting the room to be pressurized for excluding petroleum vapors from the area. A fire wall isolates the engine room.

a. The pumping facilities at this station consist of three units, each composed of a Chicago-Pneumatic Model CP-69, 6 cylinder, 4 cycle, diesel engine driving a Byron Jackson, 4 stage centrifugal pump. The diesel engines are coupled to the pumps by means of a 4.750 to 1 geared speed increaser unit. Engine speed range is from 750 RPM to 573 RPM. Thus, the pump speed range is 3,515 RPM down to 2,722 RPM. Maximum engine brake horsepower is 293. The pumps may be operated individually or in series.

b. Two Moorlane Strainers are also housed in the pump house. These strainers serve as both filters and water extractors. A product sump within the building is provided to accumulate the drain discharges from the strainers. The product in the sump is disposed of by pumping into the line when appropriate. Scraper traps are located on each side of the building for receiving and launching scrapers.

c. Engine coolant water is piped from the diesel engines to a 3-unit radiator building near the pump house, and returned to engines.

d. Diesel fuel oil is provided from the 5,000-barrel station storage tank located on a hill above the pump house. This tank is filled from the pipeline at scheduled intervals.

3. UTILITY BUILDING. This is a multi-purpose building which contains:

a. An engine room housing two 150 KW General Electric generators, each driven by a 6 cylinder Chicago-Pneumatic diesel engine identical to those which drive the pipeline pumps, and one 59 KW 13000 Caterpillar driven generator. Jacket coolant water is piped from the diesels to a 2-unit radiator building and returned to engines.

b. A pump room housing two domestic water pumps, a fire pump, chlorination equipment and boiler and cooling water softening equipment. The water system is supplied by a Peerless deep-well pump in an insulated pump house on the bank of the Klehini River. Water is stored in a 60,000-gallon tank in a heated tank house on the station.

c. A boiler room housing three 80 HP low pressure (15 PSI) boilers furnishes low pressure steam for station heating. Steam distribution and condensate return lines for the station are in underground conduit.

4. WAREHOUSE-GARAGE-SHOP BUILDING. This building serves as:

a. Maintenance Shop.

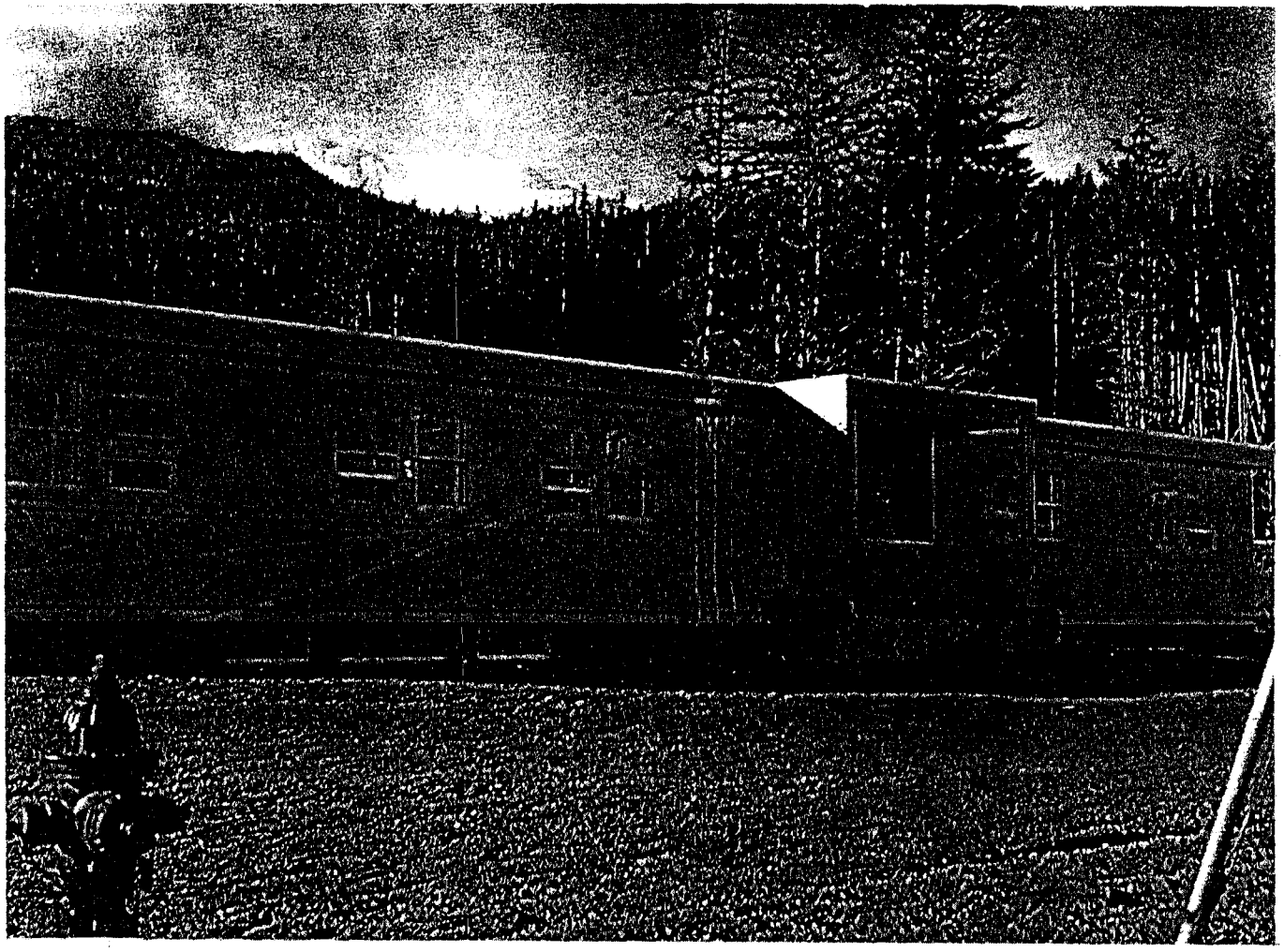
b. Warehouse for spare parts, pipe fittings, and tools for station maintenance.

c. Four-place garage for vehicle storage.

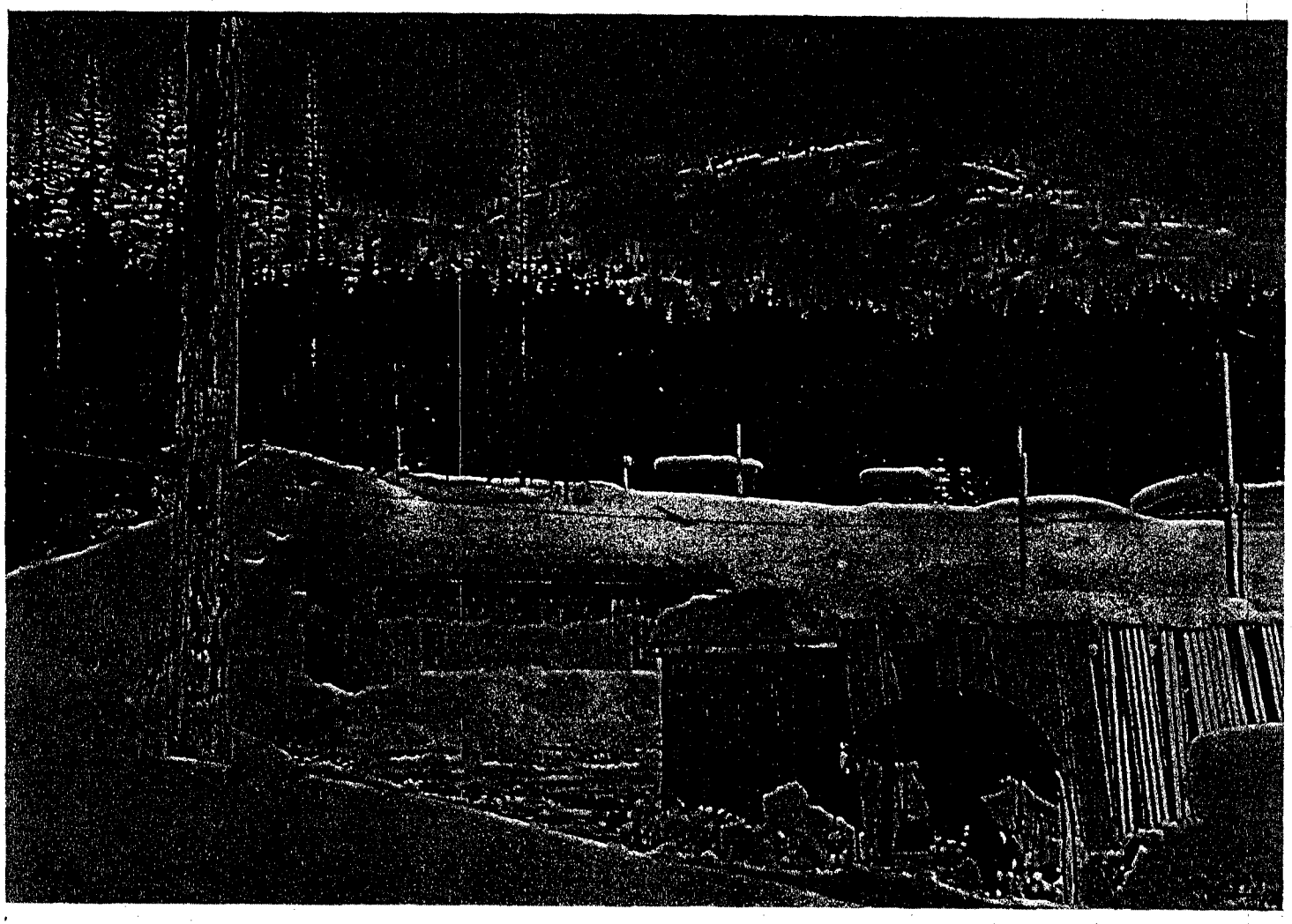
5. STATION HOUSING. Housing at this station consists of both permanent type buildings and trailers.

a. Permanent type buildings are of rigid steel frame construction covered with insulated steel panels. The floors and foundations are concrete, and the roofs are prefabricated steel decking covered with insulating board, built-up composition roof and gravel protective coating. The buildings include the following:

(1) One dormitory (CBQ) consisting of living room, dining room, kitchen and bath - ten men capacity.



BOQ BUILDING
BORDER STATION



SNOW REMOVAL
BORDER STATION

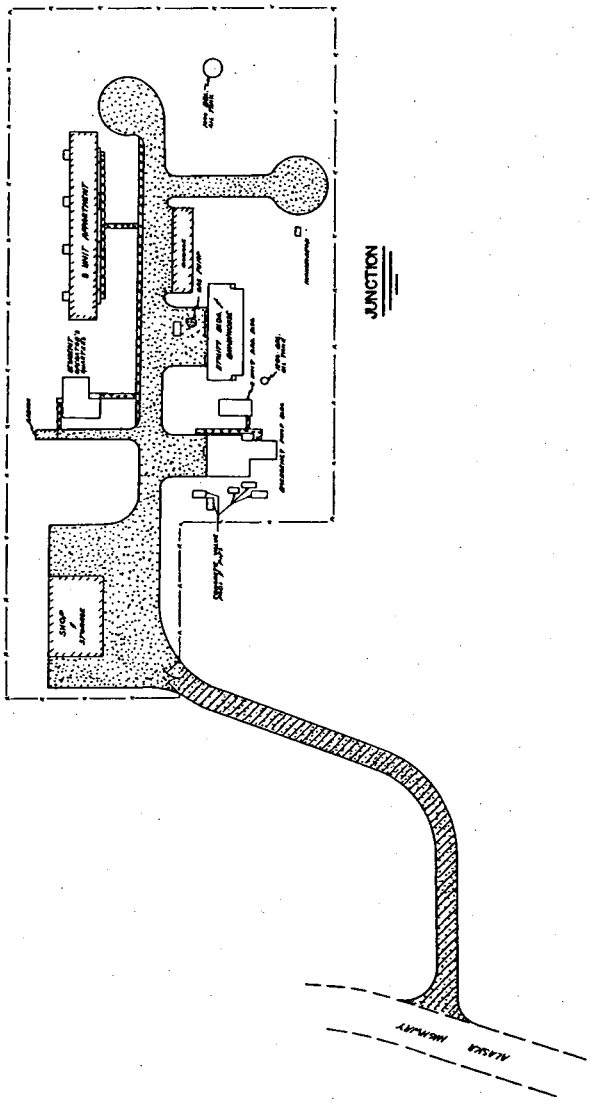
(2) One apartment type building consisting of six 2-bedroom units.

b. Eight trailers are installed outside the station security fence. These trailers are connected to station utilities.

c. Six (6) additional family quarters units have been approved and funded on the FY 58 program.

6. COLD STORAGE LOCKER BUILDING. This is a concrete building with freeze room (-10°F) and a chill room (35°F) with individual food lockers.

7. SERVICE STATION. Government vehicles are fueled from a gasoline pump located in front of the Utility Building. This pump is supplied from a 1,000-barrel storage tank.


JUNCTION

Section VI

JUNCTION PUMP STATION

1. GENERAL. Junction Pump Station is located approximately ten miles northwest of the junction of the Haines Cut-off Highway with Alaska Highway, near Haines Junction, Yukon Territory, Canada. It is approximately 169 miles from the Haines Terminal. The station area consists of approximately 5 acres with the facilities enclosed by chain-link fencing. The station elevation is 2,722 feet above sea level at 137° 40' West Longitude and 60° 55' North Latitude.

2. FACILITIES.

a. Main Line Pump Building.

b. Utility Building

c. Station Housing

d. Service Station

3. MAIN LINE PUMP BUILDING. This building is a single story structure consisting of an engine room, pump room and office. The office is isolated from the pump room by means of a pressure barrier fire wall and door arrangement permitting the room to be pressurized for excluding petroleum vapors from this area. The engine room is isolated from the pump room by a fire wall.

a. The pumping facilities at this station consist of two units, each composed of a Chicago-Pneumatic Model 69-CP, 8 cylinder, 4 cycle, diesel engine driving a Byron-Jackson centrifugal pump. The diesel engines are coupled to the pumps by means of a 4.750 to 1 geared speed increaser unit. Engine speed range is 705 RPM to 805 RPM. Maximum engine break horsepower is 425. The pumps may be operated individually or in series.

b. Two Moorlane Strainers are also housed in the pump house. These strainers serve as both filters and water extractors. A sump tank within the building is provided to accumulate the drain-off from the filters. Originally drain-off product could not be pumped from sump tanks into pipeline. Pumps have been installed to return product to pipeline. The Moorlane Strainers are to be replaced by jet type strainers. The pump room is ventilated and the main line is insulated.

c. Scraper traps are located on each side of the building for receiving and launching scrapers through the pipeline.

d. Cooling jacket water is piped from the diesel engines to a 2-unit radiator building adjacent to the pump house and returned to engines.

e. Diesel fuel oil is provided from a 1,000-barrel station bulk storage tank. The tank is filled from the pipeline at scheduled intervals.

4. UTILITY BUILDING. This is a multi-purpose building containing:

a. Engine room with two power units, each consisting of a Caterpillar Model D-13000 diesel engine driving a General Electric 480 volt, 60 cycle, 50 KW, 900 RPM generator. Radiators are mounted on the diesel engines.

b. A five-man capacity bunk room for visiting line maintenance personnel.

c. A garage-shop area.

d. Tool Room.

e. A room housing a pneumatic water tank with a Peerless pump.

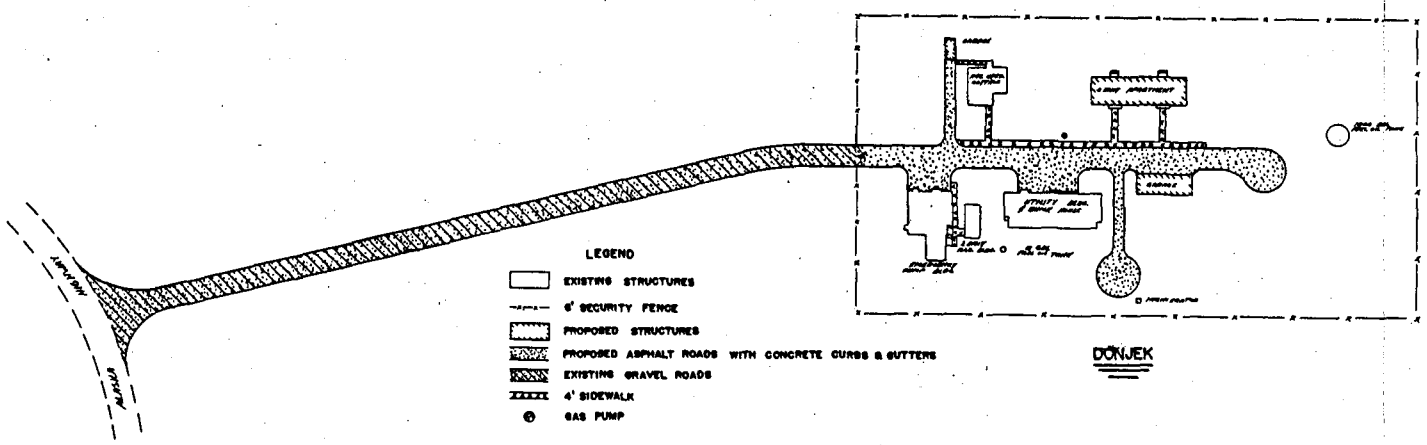
5. STATION HOUSING. Housing at this station consists of one permanent type house and trailers.

a. The permanent type house is a single family 3-bedroom unit for the station foreman. Five additional family quarters units have been approved and funded in the Fiscal Year 1958 MCA Program.

b. Six installed trailers are located within the station security fence and are connected to station utilities.

6. SERVICE STATION. Government vehicles are fueled from a gasoline pump located in front of the Utility Building. This pump is supplied from a 2,000-gallon storage tank.

NOTE: All permanent type buildings are heated by individual forced air systems with oil burner fired furnaces.


LEGEND
EXISTING STRUCTURES
6' SECURITY FENCE
PROPOSED STRUCTURES
PROPOSED ASPHALT ROADS WITH CONCRETE CURBS & GUTTERS
EXISTING GRAVEL ROADS
4' SIDEWALK
GAS PUMP
DONJEK

Section VII

DONJEK PUMP STATION

1. GENERAL. Donjek Pump Station is approximately 25 miles northwest of the trading post of Burwash Landing, Yukon Territory, and approximately 500 feet north of the Alaska Highway near Donjek River bridge. The site is 248 pipeline miles from Haines Terminal at an elevation 2,673 feet above sea level. The station area is approximately 5 acres with facilities enclosed by a chain-link fence.

2. FACILITIES.

a. Main Line Pump Building.

b. Utility Building.

c. Station Housing.

d. Service Station.

3. MAIN LINE PUMP BUILDING. This building is a single story structure consisting of an engine room, pump room, and office. The office is isolated from the pump room by means of a pressure barrier fire wall and door arrangement permitting the rooms to be pressurized excluding petroleum vapors from this area. The engine room is isolated from the pump room by a fire wall.

a. The pumping facilities at this station consist of two pumping units, each containing a Chicago-Pneumatic Model CP-89, 8 cylinder, 4 cycle, diesel engine driving a Byron-Jackson centrifugal pump. The diesel engines are coupled to the pumps by means of a 4.750 to 1 geared speed increaser unit. Engine speed range is from 705 RPM to 805 RPM. Thus, the pump speed range is 3,349 RPM to 3,824 RPM. Maximum engine break horsepower is 425. The pumps may be operated individually or in series.

b. Two Moorlane Strainers are also housed in the pump house. These strainers serve both as filters and water extractors for the petroleum products. A product sump within the building is provided to accumulate the drain discharges from the strainers. Originally this product could not be pumped back into the pipeline. A pump has been installed to return the product to the line, and jet type strainers will replace the Moorlane strainers.

c. Scraper traps are located on each side of the building for receiving and launching scrapers through the pipeline.

d. Jacket cooling water is piped from the diesel engines to a 2-unit radiator building adjacent to the pump house and returned to engines.

e. Diesel fuel oil is provided from the 1,000-barrel station bulk storage tank. The tank is filled from the pipeline at scheduled intervals.

f. There is a six-inch product by-pass which is valved in such a manner that products can be routed through or by-pass the station pumps.

4. UTILITY BUILDING. This is a multi-purpose building containing:

a. Engine room with two power units, each consisting of a Caterpillar Model D-13000 diesel engine driving a General Electric 480 volt, 60 cycle, 50 KW, 900 RPM generator. Radiators are mounted on the diesel engines.

b. A five-man capacity bunk room for visiting line maintenance personnel.

c. A garage-shop area.

d. Tool room.

e. A room housing a water pneumatic tank with a Peerless pump. This station has no water supply on installation. Water must be transported via truck a distance of 3 miles from an existing well located north of the station at old Canol Station "F" on the ALCAN Highway. A well is planned for future construction.

5. STATION HOUSING. Housing at this station consists of one permanent type house and trailers.

a. The permanent type house is a single family 3-bedroom unit for the station foreman. Four (4) additional family quarters units have been approved and funded in the FY 58 program.

b. Four installed trailers are located within the station security fence and are connected to station utilities.

6. SERVICE STATION. Government vehicles are fueled from a gasoline pump located in front of the Utility Building. The pump is supplied from a 2,000-gallon storage tank.

NOTE: All permanent type buildings are heated by individual forced air systems with oil burner fired furnaces.

Section VIII

TOK TERMINAL AND PUMP STATION

1. GENERAL. Tok Terminal and Pump Station, seven miles north of Tok Junction, Alaska, and 95 miles north of the Canadian-Alaskan Border, is the fifth installation on the Haines-Fairbanks Pipeline (Pipeline Mile Post 432). The Haines-Tok section of the Haines-Fairbanks Pipeline terminates at this installation. Tok terminal tankage is utilized as "regulating tankage". All batches are taken into tankage, rescheduled and pumped to receiving stations north of Tok. This tankage also permits water and solid matter to settle out of the products prior to rescheduling. The terminal site is an area of approximately 127 acres with all permanent facilities enclosed by chain-link fencing.

2. FACILITIES.

a. Manifold Building.

b. Tank Farm.

c. Main Line Pump Building.

d. Utility Building.

e. Maintenance and Services Building.

f. Warehouse-Garage-Shop Building.

g. Water Tank Building.

h. Truck Loading Rack.

i. Station Housing.

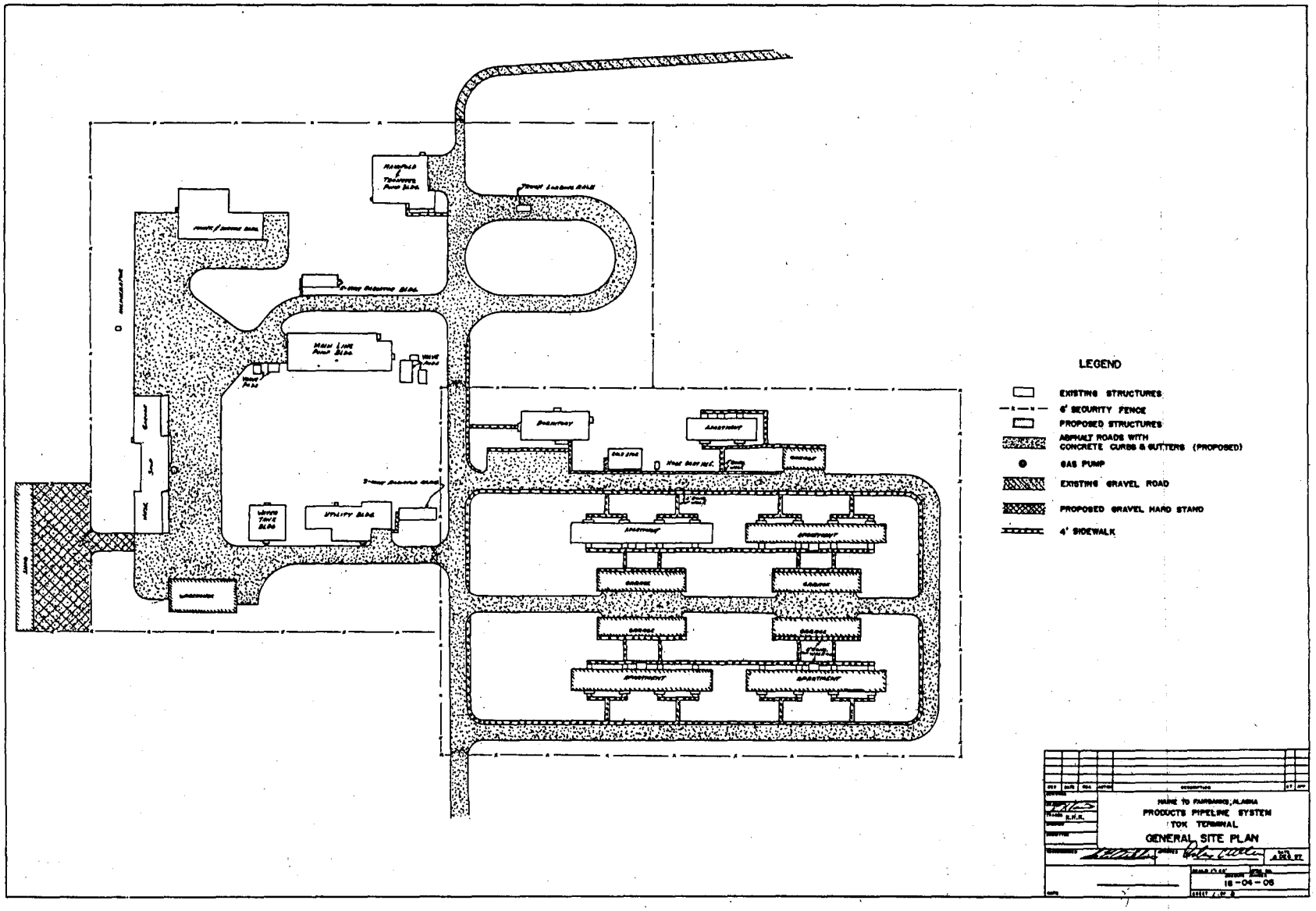
j. Cold Storage Locker Building.

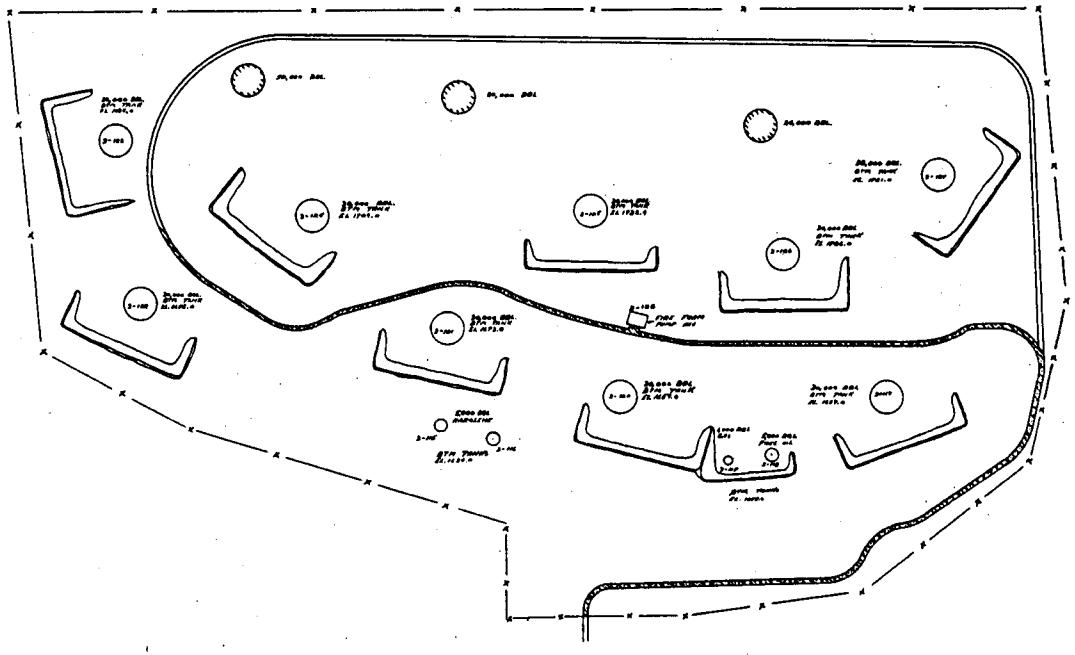
k. Incinerator.

l. Service Station.

m. Storage Building (Semi-permanent)

3. MANIFOLD BUILDING. This building houses the manifold piping and valves required to route products from the eight-inch pipelines to terminal storage tanks--from terminal storage tanks through water separators (three Warner-Lewis Separators--two for eight-inch line operations and one for three-inch line operation) to the main line pump building. Three transfer pumps are provided for transfer of products between storage tanks and to station tanks.


LEGEND
EXISTING STRUCTURES
6' SECURITY FENCE
PROPOSED STRUCTURES
ASPHALT ROADS WITH CONCRETE CURBS & GUTTERS (PROPOSED)
GAS PUMP
EXISTING GRAVEL ROAD
PROPOSED GRAVEL HARD STAND
4' SIDEWALK
MAIN LINE PUMP BLDG.
UTILITY BLDG.
APARTMENT
GARAGE
MAINE TO FAIRBANKS, ALASKA
PRODUCTS PIPELINE SYSTEM
TOK TERMINAL
GENERAL SITE PLAN
16-04-05



LEGEND

- PROPOSED STORAGE TANKS
- EXISTING STORAGE TANKS
- EXISTING GRAVEL ROADS
- PROPOSED GRAVEL ROADS
- 6' SECURITY FENCE

HAINES TO FAIRBANKS ALASKA
PRODUCTS PIPELINE SYSTEM
TOK TANK FARM
GENERAL SITE PLAN

18-04-05

a. Three product lines extending from the manifold to pump building consist of an eight-inch line for receiving products from the main line, an eight-inch suction line to the main line pumps and a three-inch line for pumping products to the three-inch line.

b. Elevation difference between the terminal storage tanks and the manifold/pump buildings varies from 60 feet to 125 feet. Tank elevation measured at grade level varies from 1,636 feet to 1,733 feet.

4. TANK FARM. The tank farm, a fenced area north of the terminal buildings, contains thirteen product tanks; ten for products to be transported through the line, and three for station fuels (see a below).

a. The tank numbers and capacities are as follows:

Tank Nr.	Capacity
17 through 25	30,000-barrels each
26	5,000-barrels
27	5,000-barrels (for station use)
28	5,000-barrels (for station use)
29	1,000-barrels (for station use)

b. Each 30,000-barrel tank is equipped with a swing line 40-feet long for filling and withdrawing product. Water removal is accomplished by gravity flow from the center sump on each tank. A four-inch line runs from the central water draw-off sump to a drain box just outside the tank. The drain box is provided with a six-inch outlet for disposal of the water. Water draw-off operations are manually controlled by a gate valve just outside the tank.

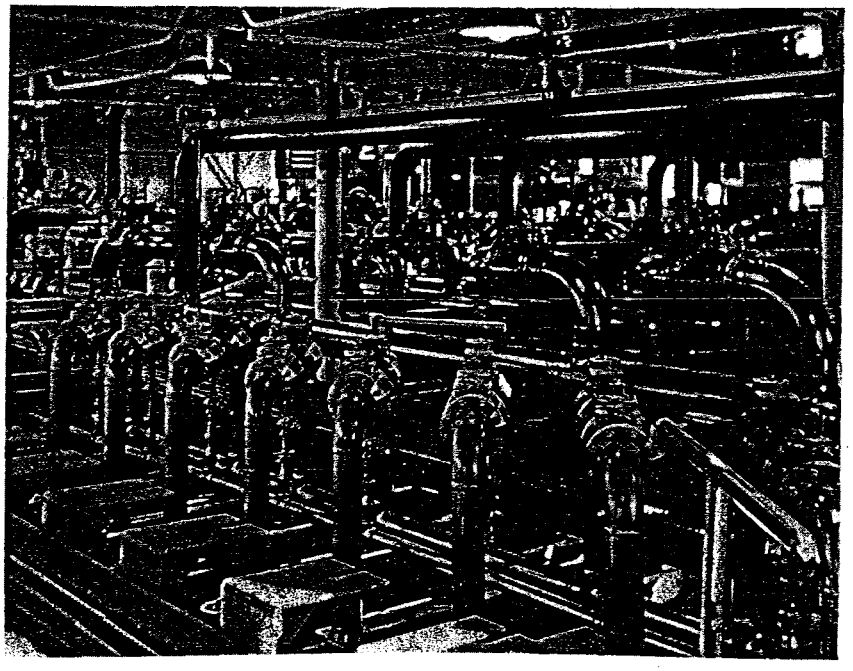
c. The tank farm is situated on a hillside with each tank surrounded by a dike of sufficient capacity to contain one hundred fifty (150) percent of the tank capacity. A ditch and dike are also provided across the south side of the tank farm to protect the station buildings from rain water or product overflow. A road in the tank farm area provides access to all tanks.

d. The fire foam building is situated within the tank farm area with a network of lines for fire fighting purposes. Each tank has a mechanical fire foam nozzle fed from a pipe connected to the system.

e. Floodlights on wood power-line poles are provided for tank farm lighting.

5. MAIN LINE PUMP BUILDING. This building is control center of operations with a dual function of receiving products from the Haines-Tok section of the eight-inch line, and dispatching all movements north through both the three-inch and eight-inch lines. The building is divided into a control room, an engine room and a pump room.

"Tok Terminal - Mainline Pump Building Interior"



"Tok Terminal - Manifold Transfer Building Interior"

a. The eight-inch pumping equipment includes three main line reciprocating pumping units, each consisting of a Chicago-Pneumatic Model 69-CP, 6 cylinder, 4 cycle, 720-420 RPM, 285 HP diesel engine; driving a Wilson-Snyder quintuplex plunger pump rated at 272 GPM, 120-70 RPM, 1200 PSI discharge pressure. Each engine and pump unit is connected by a 6 to 1 gear reduction unit. Each unit will operate individually or in parallel. Maximum station pumping capacity on the main line is 1,167 BPH with the pumps connected in parallel.

b. The three-inch pumping equipment includes two main line reciprocating pumping units, each consisting of a Caterpillar Model D-13000, diesel-powered, 4 cycle, 900 RPM, 125 HP engine; driving a Wilson-Snyder triplex reciprocating pump with a constant speed of 90 RPM for pumping 45 GPM, 1,420 PSI discharge pressure. Each engine and pump unit is connected by a 2.23 to 1 gear reduction unit; a further reduction in speed is obtained from a 4.44 to 1 ratio gear unit built into the pumps. Units are not operated in parallel; each unit is alternately utilized for pumping operations.

c. Diesel fuel oil is supplied to pump engines from a 5,000-barrel station storage tank.

d. Engine coolant water is piped from the diesel engines to a 5-unit radiator building near-by and returned to the engines.

e. The control room is isolated by means of a pressure barrier fire wall and door arrangement, which permits the control room to be pressurized for excluding petroleum vapors from this area. The engine room is isolated from the pump room by a fire wall.

f. Two Moorlane Strainers installed on the intake line are in parallel for alternate use when receiving product.

g. A product sump within the building is provided to accumulate drain discharges from the strainers. The product in the sump is disposed of by pumping into the line when appropriate.

h. Scraper traps are installed for receiving and sending scrapers through the eight-inch pipeline and for sending scrapers through the three-inch pipeline.

6. UTILITY BUILDING. This building furnishes heat, electric power and water for the station. It houses three General Electric 480 volt, 60 cycle, 150 KW, 720 RPM generators driven by four Chicago-Pneumatic, 6 cylinder, 4 cycle, 720 RPM, 285 HP, Model 69-CP diesel engines. Engine cooling water is pumped to a 3-unit radiator building and returned to the engines. Heat for the station is generated by three oil fired, 150 HP, low pressure (15 PSI) boilers. There is also a deep water well, a fire pump, two domestic water pumps and a water softener unit for boilers and the diesel radiator cooling systems in the utility building.

7. MAINTENANCE AND SERVICES BUILDING. This structure is a Butler type building with 6,400 square feet of floor space, housing the machine, carpenter, and plumbing shops, heavy equipment maintenance shops, petroleum laboratory, office space, spare parts and general storage.

8. WAREHOUSE-GARAGE-SHOP BUILDING. This is a multi-purpose building containing:

a. A four-door garage for storage of assigned vehicles and equipment.

b. A shop for automotive repair and general maintenance.

c. Office, tools and parts storage, and a toilet.

d. Warehouse consisting of approximately 1,500 square feet of space containing bins for storage of small, fast moving items.

9. WATER TANK BUILDING. This building houses a 130,000-gallon water storage tank, providing water for both domestic use and fire protection.

10. TRUCK LOADING RACK. This facility is of steel frame construction on a concrete foundation, a metal roof and wood plank floor decking with two three-inch headers, one for diesel fuel and one for motor gasoline.

11. STATION HOUSING. Housing at this station consists of both permanent type buildings and trailers.

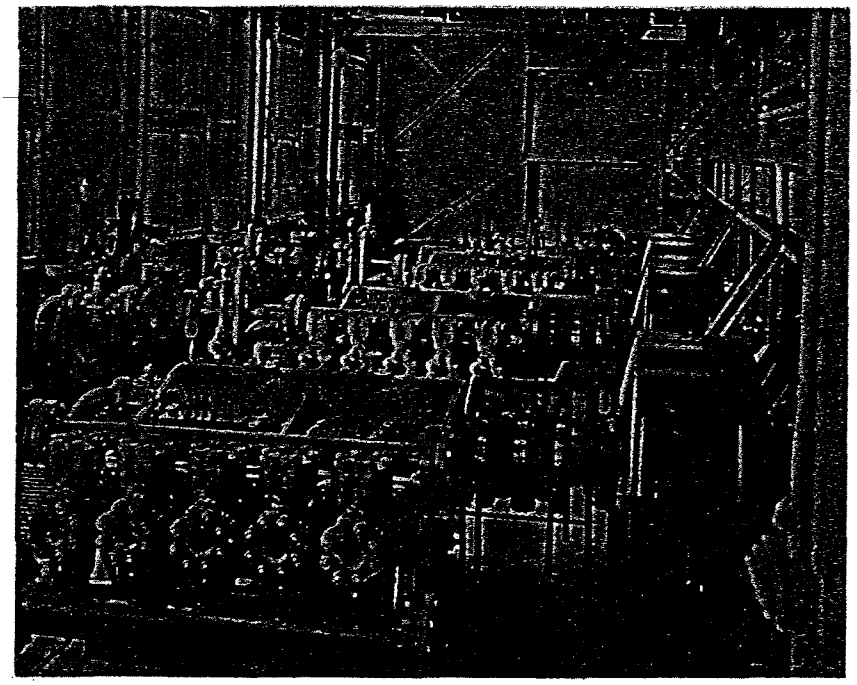
a. Permanent type buildings are of rigid steel frame construction covered with insulated steel panels. The floors and foundations are concrete, and the roofs are prefabricated steel decking covered with insulating board, built-up composition roof and gravel protective coating. These buildings include the following:

(1) One dormitory (CBQ) with a capacity of 10 men, including a dining room, kitchen and bath.

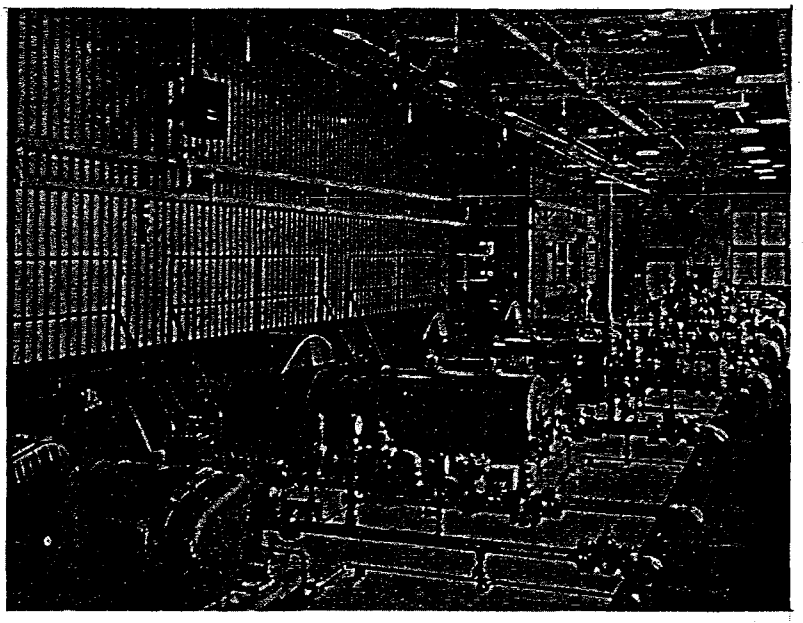
(2) One apartment type building consisting of four 3-bedroom units.

(3) One apartment type building consisting of eight 2-bedroom units.

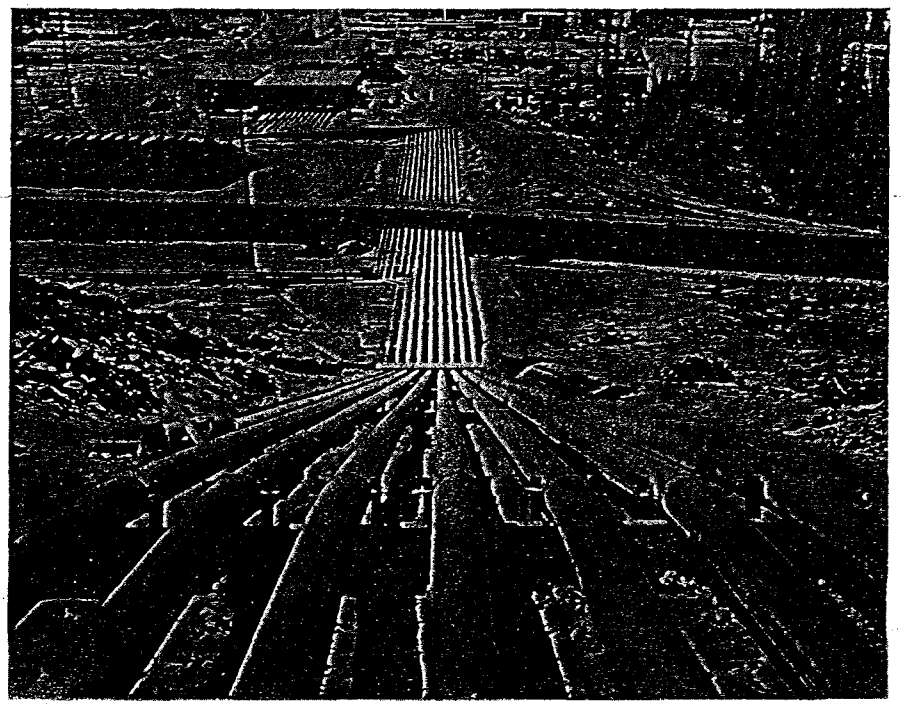
b. There are 16 installed trailers located outside the station security fence. These trailers are connected to station utilities.



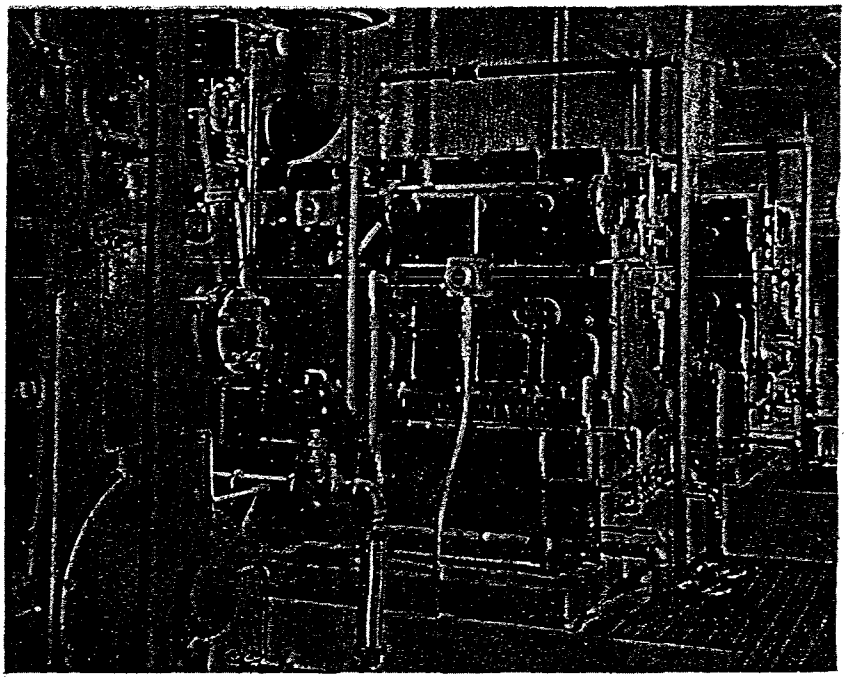
"Tok Terminal - Mainline Pump Building Interior"



"Tok Terminal - Mainline Pump Building Interior"



"Tok Terminal - Pipe from Pumphouse to Tank Farm"



"Tok Terminal - Mainline Pump Building Interior"

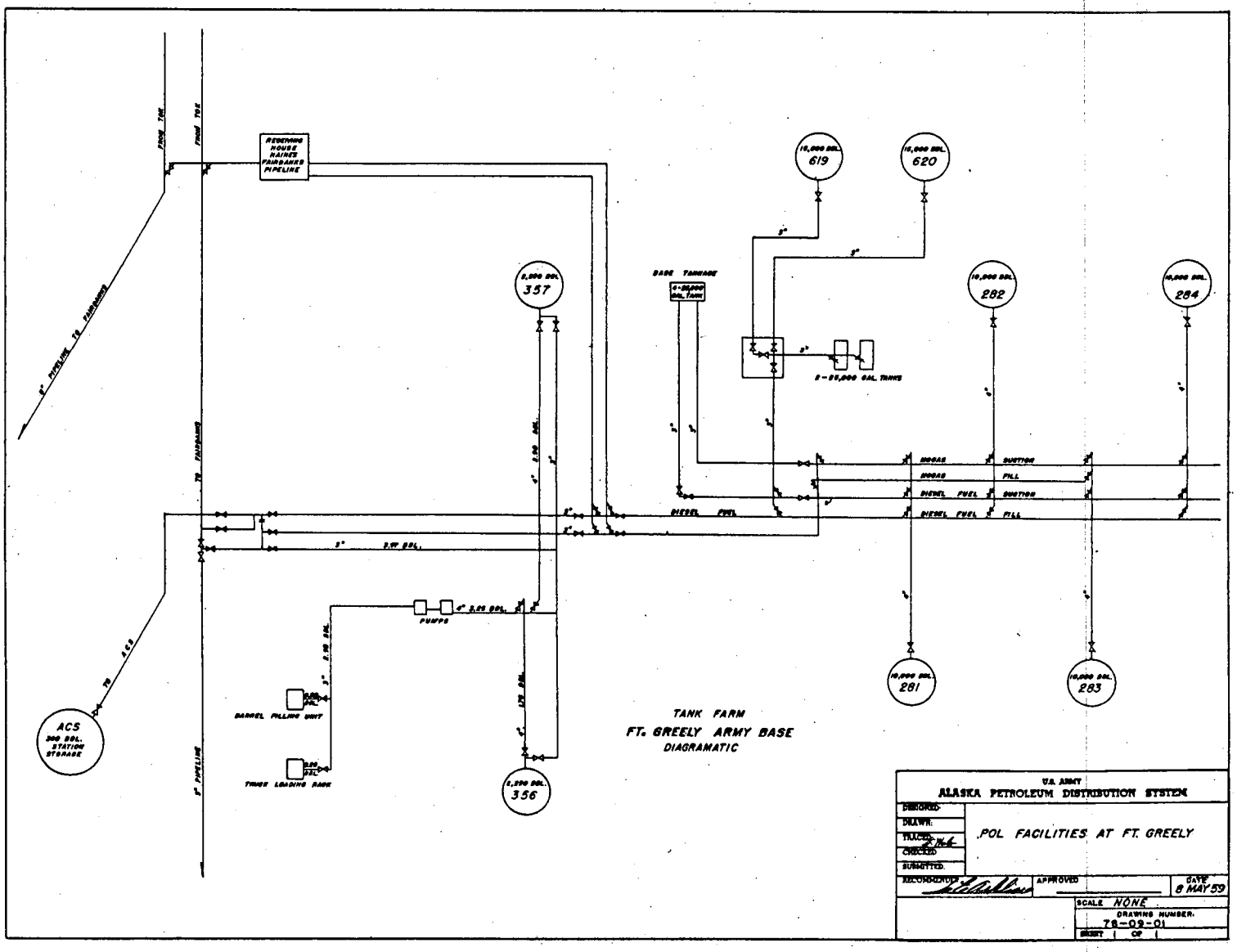
c. Planned permanent housing includes 24 additional family quarters for FY 1960 and future. Total planned housing will accomodate 82 percent of the station personnel.

12. COLD STORAGE LOCKER BUILDING. This is a concrete building with a freeze room (-10°F) and a chill room (35°F), which are equipped with individual food lockers.

13. INCINERATOR. Fired by a diesel oil burner, the incinerator is suitable for burning rubbish and garbage under all weather conditions.

14. SERVICE STATION. Located in front of the Warehouse-Garage-Shop Building, the service station gasoline pump is served by a two-inch line from a 1,000-barrel storage tank, and is used for refueling government vehicles.

15. STORAGE BUILDING (SEMI-PERMANENT). This building was erected by the contractor. It is located outside the fenced area and is being used for storage of miscellaneous supplies. Planned modifications will convert this structure to a storage-recreation-launderette building.


FROM TOK
FROM TAK
REGETHING HOUSE HAINES FAIRBANKS PIPELINE
6" PIPELINE TO FAIRBANKS
TO FAIRBANKS
8" PIPELINE
TO ACS
ACS
300 BBL. STATION STORAGE
BARREL FILLING UNIT
TANK TRUCK LOADING RACK
PUMPS
2,000 BBL. 357
2,000 BBL. 356
BASE TONNAGE
2-50,000 GAL. TANKS
10,000 BBL. 619
10,000 BBL. 620
10,000 BBL. 282
10,000 BBL. 284
10,000 BBL. 281
10,000 BBL. 283
MOGAS SUCTION
MOGAS FILL
DIESEL FUEL SUCTION
DIESEL FUEL FILL
DIESEL FUEL
TANK FARM
FT. GREELY ARMY BASE
DIAGRAMATIC
U.S. ARMY
ALASKA PETROLEUM DISTRIBUTION SYSTEM
DESIGNED
DRAWN
TRACED
CHECKED
SUBMITTED
RECOMMENDED
APPROVED
POL FACILITIES AT FT. GREELY
DATE 8 MAY 59
SCALE NONE
DRAWING NUMBER: 78-09-01
SHEET 1 OF 1

Section IX

BIG DELTA TAKE-OFF STATION AND PDS STORAGE FACILITIES AT FORT GREELY

1. GENERAL. Big Delta Take-off Station, 99 miles north of Tok Terminal, is the sixth installation on the Haines-Fairbanks Pipeline (Pipeline Mile Post 531). It is a take-off facility for delivery of products from the eight-inch and three-inch lines to both PDS and station tanks at Fort Greely.

2. MAIN LINE TAKE-OFF FACILITY. A single story 600 square foot structure divided into a communication (telephone and teletype) room, and a manifold room. Completely enclosed with chain-link fencing, the site occupies an area of approximately one acre.

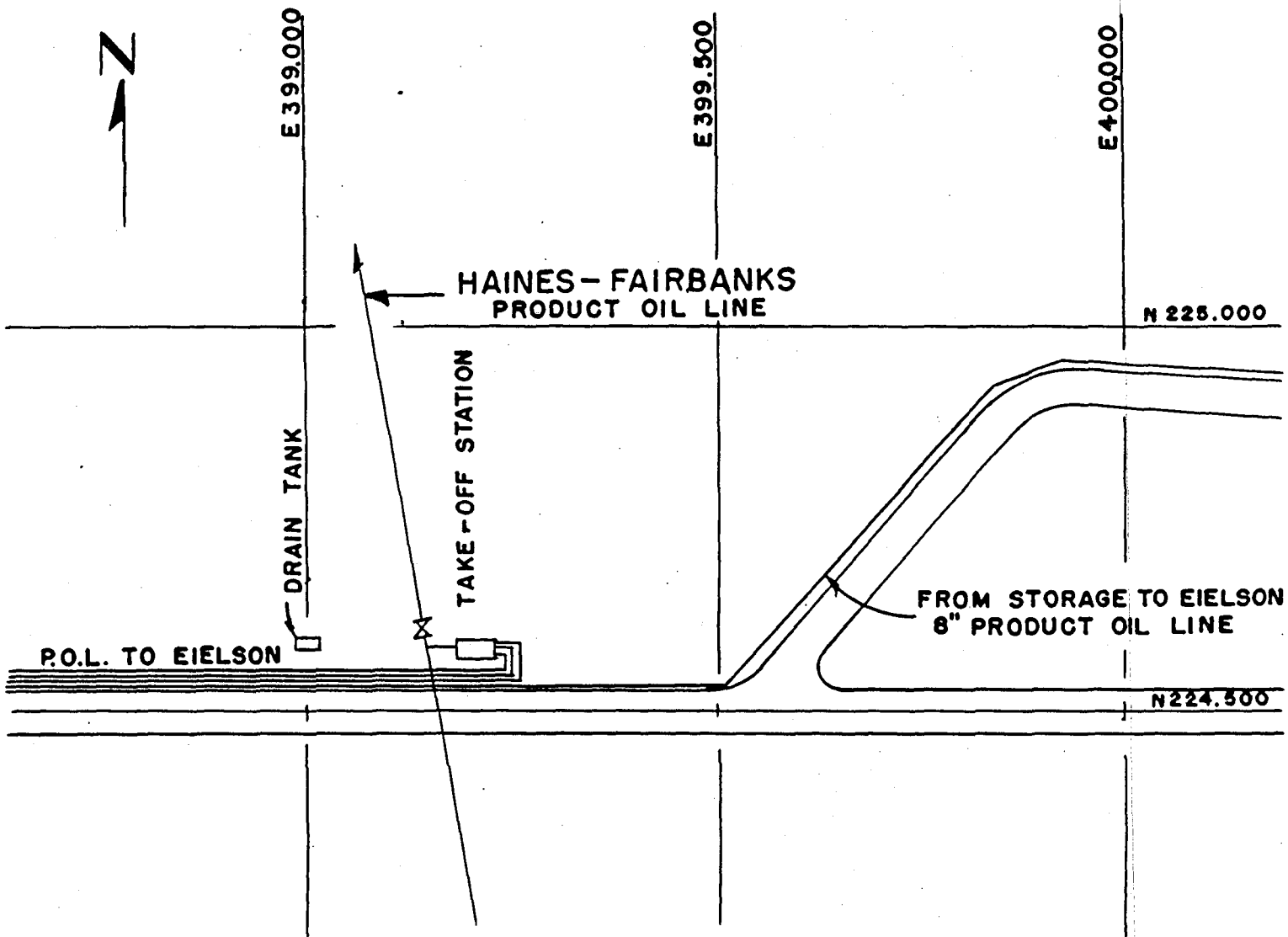
a. The three-inch and eight-inch pipelines run adjacent to this building. A six-inch, valved, take-off from each of these lines routes the product into the building. Inside the building, a pressure reducing valve reduces and controls the pressure of the product to be delivered to storage tanks at Fort Greely. From the pressure reducing valve the product passes through flow meters to the storage tanks. Maximum delivery rates are: eight-inch line--180 BPH of diesel fuel, 250 BPH of motor gasoline; and three-inch line--45 BPH of diesel fuel.

b. From the take-off station two four-inch lines run approximately 3,200-feet to a point on the Richardson Highway where they tie into two three-inch lines leading to the storage tanks at Fort Greely.

c. Electric power at 120/240 volts, single phase, is provided from a 15 KVA transformer mounted on a nearby line pole. The power is supplied by the Fort Greely power plant.

3. ADDITIONAL TAKE-OFF FACILITY AT BIG DELTA JUNCTION. An additional Canol Line Take-off, not being used, is located near Big Delta Junction approximately 1-2/3 miles north of the new take-off facility. Three 3-inch lines leading to storage tanks at Fort Greely are connected to the Canol Line at this point. This facility could be used to supply Fort Greely in case of an emergency.

4. TERMINAL TANKAGE AT FORT GREELY. Four 10,000-barrel steel, bolted and welded storage tanks numbered 281 through 284, originally a part of the Canol Pipeline system, are located at Fort Greely. Products are discharged from tankage by gravity flow operations. There are also two 15,000-barrel tanks for supplying the power house at Fort Greely, and two 2,250-barrel tanks. These tanks belong to Fort Greely but contain PDS stock fund products (see Section XVI).



EIELSON A.F.B.
LOCATION PLAN
MAINLINE TAKE-OFF

Section X

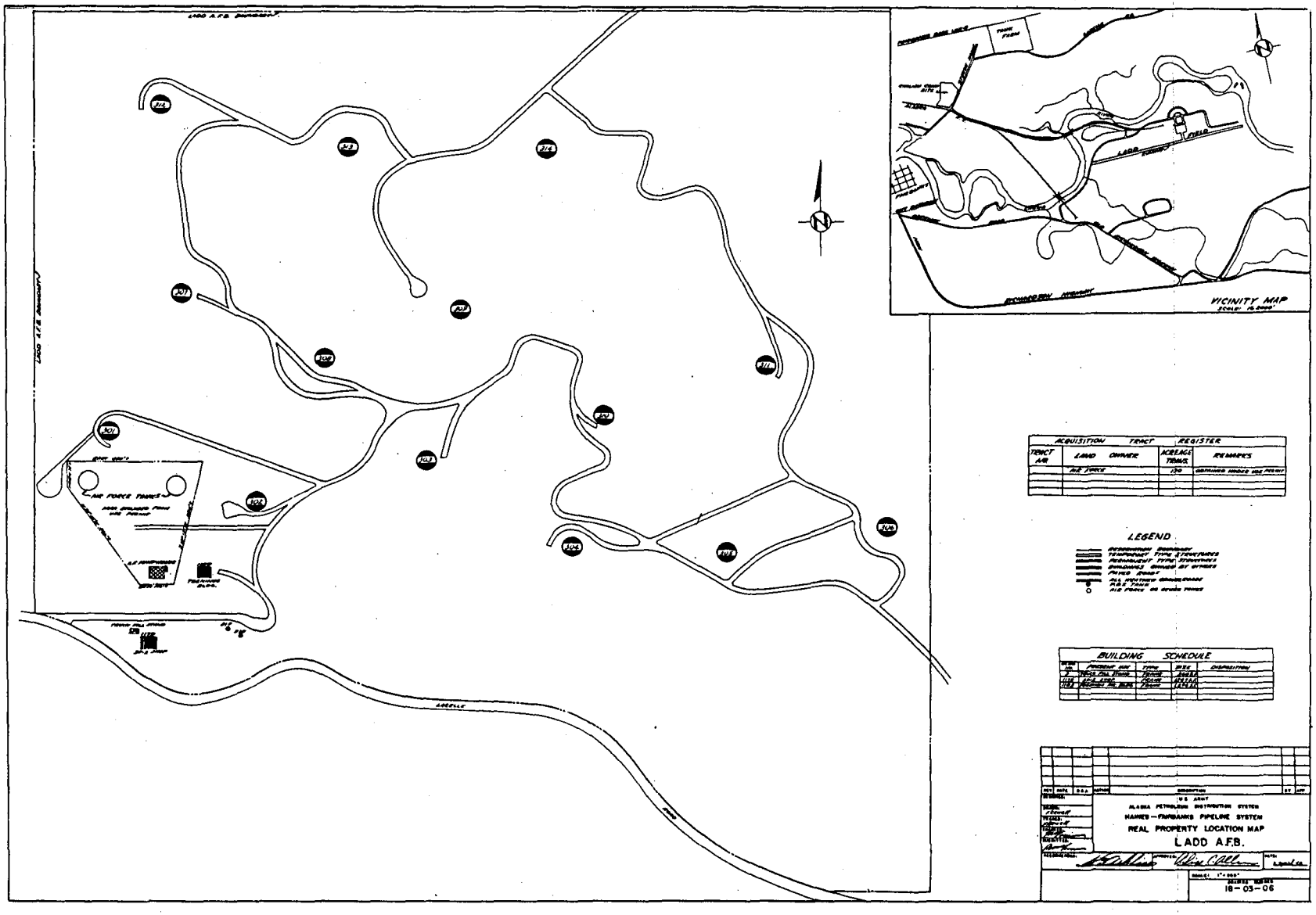
EIELSON TAKE-OFF STATION

1. GENERAL. Eielson Take-off Station, 27 miles south of Fairbanks Terminal, is the seventh installation on the Haines-Fairbanks Pipeline (Pipeline Mile Post 599). It is a take-off facility for delivery of products from the 8-inch line to the Eielson Air Force Base. Located within a restricted area on the base, the station site occupies approximately one acre.

2. MAIN LINE TAKE-OFF FACILITY. A single story 600 square foot structure divided into a communication (telephone and teletype) room and a manifold room with flow meters for measuring products. The manifold equipment is connected to the 8-inch main line by a 6-inch valved line. A pressure reducing valve reduces and controls the pressure of the product delivered to the Eielson tank farm. From the pressure reducing valve the product passes through flow meters to the tank farm.

3. ELECTRICAL FACILITIES. Electric power at 120/240 volts, single phase, is provided from a 15 KVA transformer mounted on a nearby line pole. Power is furnished by Eielson Air Force Base.

4. THREE-INCH LINE TAKE-OFF FACILITY. A 3-inch take-off line valved into the three-inch main line leads to a "manifold box" containing a pressure reducing valve and a flow meter for reduction and control of the pressure as the product is measured into the 3-inch lines for delivery to the base storage tanks. Diesel fuel can be received by this facility at approximately 45 BPH.


LADD A.F.B. BOUNDARY
FAIRBANKS CITY LIMITS
AIR FORCE TRACTS
LAWELLE
VICINITY MAP
LEGEND
ACQUISITION TRACT REGISTER
TRACT A/R
LAND OWNER
ACREAGE TRANS.
REMARKS
AIR FORCE
BUILDING SCHEDULE
ALASKA PETROLEUM DISTRIBUTION SYSTEM
HAINES — FAIRBANKS PIPELINE SYSTEM
REAL PROPERTY LOCATION MAP
LADD A.F.B.
18-03-06

Section XI

FAIRBANKS TERMINAL

1. GENERAL. Fairbanks Terminal is the terminus for both the 8-inch and 3-inch pipelines. The terminal is located approximately seven miles northeast of Fairbanks, Alaska. The site, approximately 167 acres, is without security fence protection. This terminal is the eighth installation of the Haines-Fairbanks Pipeline.

2. FACILITIES.

a. Manifold Building.

b. Tank Farm.

c. Garage-Shop-Office Building.

d. Laboratory.

3. MANIFOLD BUILDING. This building contains flow meters and manifolding required to receive products from the 3-inch and 8-inch pipelines, and transfer to terminal storage tanks.

a. The elevation difference between the facility and the storage tanks varies from 40 to 160 feet, with all tanks on different elevations.

b. Unlike other terminal storage areas, transfer of products between storage tanks, as well as delivery of products into Ladd Air Force Base transfer lines and manifold, is accomplished entirely by gravity flow. Scraper receiving traps are installed on both the 3-inch and 8-inch pipelines. The building receives power at 480 volts, 3 phase, from an underground line.

4. TANK FARM. The tank farm area is north of the manifold building. Tankage consists of 18 steel, bolted and welded tanks of temporary type provided as part of the Canol Pipeline. 14 tanks for storing products received through both lines, 2 tanks for station fuels, and 2 slop tanks.

a. The manifold building is connected by product lines to designated tanks. The same lines are utilized for delivering to Ladd Air Force Base manifolding-transfer system.

b. The tanks and capacities are as follows:

Tank Nr.	Capacity
301 through 314	10,000-barrels each
317	300-barrels (slop tank)
318	300-barrels (slop tank)
319	100-barrels (station fuel)
320	100-barrels (station fuel)

c. A network of roads in the tank farm area provides access to all tanks.

d. Neither permanently installed mechanical fire fighting equipment nor floodlights are available. (None planned in view of replacement tankage to be programmed after FY 1959 to be constructed in a different geographical area.)

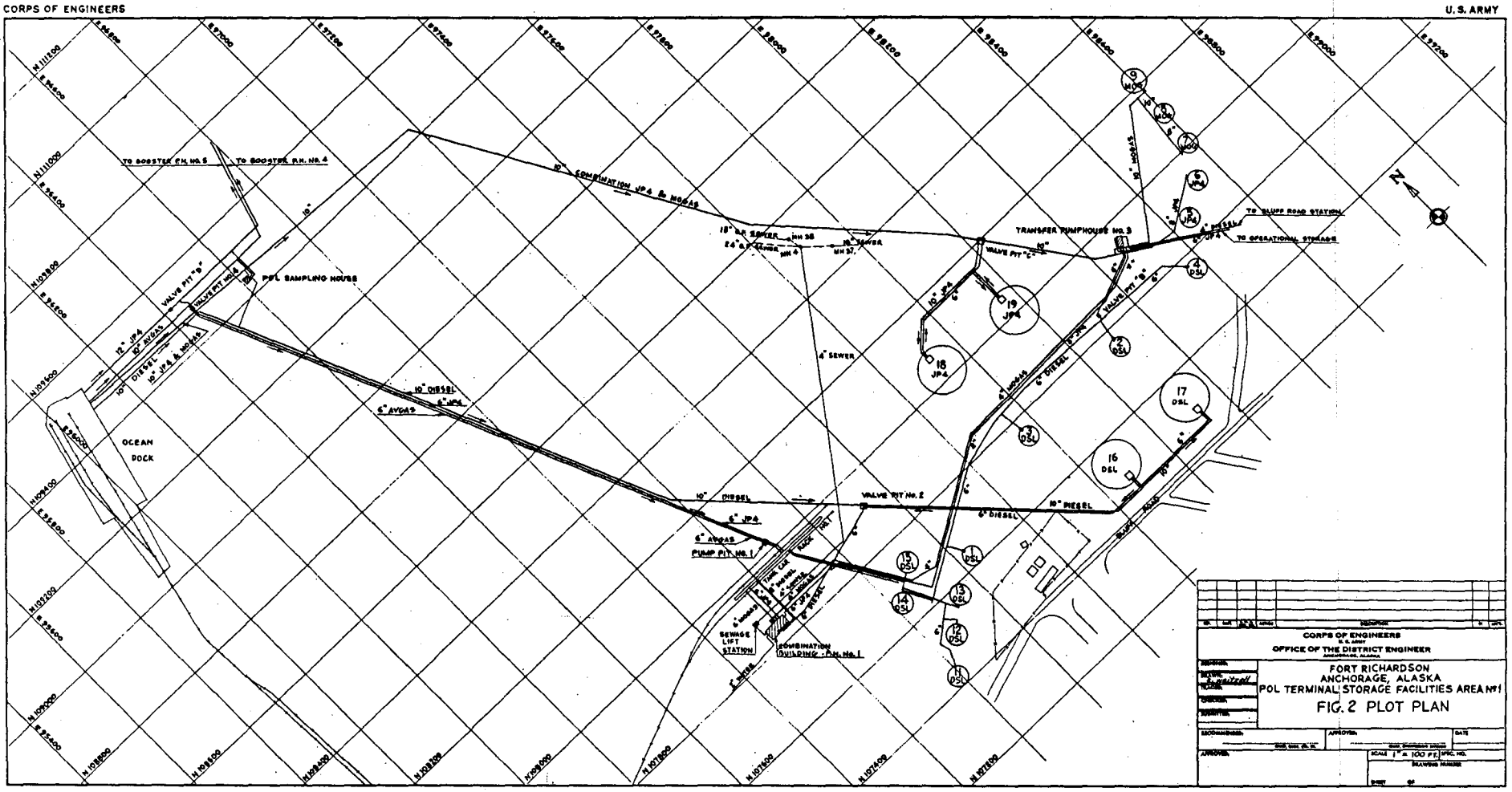
5. GARAGE-SHOP-OFFICE BUILDING. This is a single story building of rigid steel frame and insulated steel panel construction. The 1,728 square feet of floor space is divided into an office and shops.

6. LABORATORY. The laboratory is located in Building 1012 in the Ladd Air Force Base water purification building.

7. BACKPUMPING THREE-INCH OPERATIONS. Three-inch line backpumping to Eielson Air Force Base or Fort Greely, under emergency conditions, may be accomplished by portable pumping equipment.

CORPS OF ENGINEERS

U.S. ARMY



CORPS OF ENGINEERS
U.S. ARMY
OFFICE OF THE DISTRICT ENGINEER
ANCHORAGE, ALASKA

FORT RICHARDSON
ANCHORAGE, ALASKA
POL TERMINAL STORAGE FACILITIES AREA No. 1

FIG. 2 PLOT PLAN

SCALE 1" = 100 FT.

Section XII

ANCHORAGE PETROLEUM TERMINAL

1. GENERAL. Anchorage Petroleum Terminal consists of two sites: Area Nr. 1, 52 acres in area, located north of the City of Anchorage, and Area Nr. 2, 5 acres in area, located on Elmendorf Air Force Base, one mile northeast of Area Nr. 1.

2. FACILITIES.

a. Pier.

b. Product Pipelines.

c. Sample House.

d. Manifolds.

e. Tank Farms.

f. Pump Stations.

g. Tank Car Loading and Unloading Rack.

h. Communications.

3. PIER. The dock at the Port of Anchorage is located one mile north of the City of Anchorage at the terminus of a 1,500-foot causeway extending due North into Knik Arm. It is a straight line wooden structure with eight dolphins capable of mooring tankers up to 26,000 DWT. As water depth at low tide at the face of the dock is only one to five feet, two breasting barges must be placed between the dock and the ship. A 20-ton mobile crane is used for handling the unloading hoses. Other facilities at the pier include:

a. Gasoline driven, 500 GPM portable pump with foam generating equipment.

b. One four-inch water line with four hose connections spaced lengthwise on the dock.

c. One city fire hydrant at the South end of the dock.

d. Five risers for discharge of cargo.

4. PRODUCT PIPELINES. The following pipelines are available for discharging cargo to shore tankage:

a. Twelve-inch line for discharging jet fuel to Tank Farm Nr. 2.

b. Ten-inch line for discharging aviation gasoline 115/145 to Elmendorf Air Force Base/Terminal tankage.

c. Ten-inch line for discharging diesel fuel to Tank Farm Nr. 1.

d. Ten-inch line for discharging jet fuel and motor gasoline to Tank Farm Nr. 1.

e. Six-inch line for discharging diesel fuel to Tank Farm Nr. 1. This line is in standby status.

5. SAMPLE HOUSE. Facilities are available for taking line samples of incoming product received from tankers through the twelve-inch line and the three ten-inch lines. A sample house located adjacent to these lines contains the following:

a. Sample trough connected by small lines to each pipeline.

b. Table and explosion-proof light fixtures and heater.

6. MANIFOLDS. A central manifold system is not utilized at this terminal. As noted in paragraph 4, all lines, with one exception, are single product lines which eliminates the need for a central manifold. Each tanker discharge line is manifolded to the group of tanks it serves. Product transfer lines are manifolded from storage tanks through applicable pump houses by means of simple switching manifolds.

7. TANK FARMS. The Anchorage Terminal tankage is located in two areas designated as Area Nr. 1 and Area Nr. 2.

a. Area Nr. 1 is the main terminal containing seventeen above-ground and underground storage tanks. The tanks and capacities are as follows:

Number of Units	Capacity in Barrels
4	9,530
*4	11,000
4	13,990
1	20,000
*4	50,000

* Underground tanks.

(1) Each of the above-ground storage tanks and the 11,000-barrel underground tanks has a single pipeline for receiving and discharging product. These lines, ranging from six to ten inches, are manifolded so that product may be received directly from the dock or tank car unloading facilities. Product is transferred from these tanks utilizing the same lines. Each tank is equipped with a gauge hatch, pressure-vacuum or gooseneck vent and a water draw-off line.

(2) Each 50,000-barrel tank has a ten-inch pipeline for receiving product directly from the dock or tank car unloading facility, and a six-inch pipeline for discharging product. Discharge is through two deep well centrifugal pumps mounted in a pump house on each tank. Water draw-off is accomplished by means of a deep well centrifugal pump mounted in a pit at the top of the tank and extending into a sump located in the center of the tank bottom.

b. Area Nr. 2 is located on Elmendorf Air Force Base and contains four underground storage tanks, each having a capacity of 25,000-barrels.

(1) Each tank has three pits equipped as follows:

(a) Main pump pit with an electrically driven, 900 GPM pump, a six-inch suction line, gauge hatch, pressure-vacuum vent, and manifolding permitting movement of product to Elmendorf Air Force Base or Area Nr. 1 tankage.

(b) Sump pump pit with sump pump and water draw-off line.

(c) Fill pit with top and bottom six-inch fill lines. The tanks are situated in the form of a square and are looped on the inside and outside by a piping system with two connecting lines to each tank.

(2) The outside circle of six-inch piping is for receiving product from dock discharge facility via Nr. 5 pump house or tank car loading rack via Nr. 2 and Nr. 5 pump houses.

(3) The inside circle of six-inch piping is for discharging product to Elmendorf Air Force Base tankage.

8. PUMP STATIONS. Five pump stations are utilized in terminal operations:

a. Pump House Nr. 1, located in Area Nr. 1, is a combination concrete and frame building, including an office, personnel locker room, power room and pump/manifold room. The latter two rooms are separated by a fire wall. The pump house contains the following equipment:

(1) Pumping Units: Eight Fairbanks-Morse pumps driven by Fairbanks-Morse, 220/440 volts, 60 cycle, 3500 RPM electric motors, and two Gorman-Rupp pumps driven by General Electric, 220/440 volts, 60 cycle, 1760 RPM electric motors. Under normal operations, units are operated individually with capacity of 10,000 to 15,000 GPH; however, units operating in parallel will produce up to 20,000 GPH.

(2) A CO_2 automatic fire fighting system is installed in the pump room, consisting of a piping system connected to a CO_2 supply and spray nozzle. The system is activated by the action of heat on a temperature sensitive wire installed on the ceiling, and the alarm is automatically relayed to the fire station.

(3) Emergency electric power is furnished by a diesel powered generator with a Caterpillar, Model D-17000, 927 RPM, 173 HP diesel engine, and a Lewis-Allin, 208 volt, 800 RPM, 60 cycle, 96 KW, electric generator.

b. Pump House Nr. 2, located in Area Nr. 1, is utilized for discharging aviation gasoline from tank cars to Elmendorf Air Force Base tankage, and jet fuel from tank cars or tankage in Area Nr. 1 to tankage in Area Nr. 2. The pump house contains two Gorman-Rupp pumps driven by General Electric 220/440 volt, 60 cycle, 1760 RPM electric motors. When using pump house Nr. 5 as a booster pump station, these units have a capacity of approximately 20,000 GPH.

c. Pump House Nr. 3, located in Area Nr. 1, is a brick structure utilized to transfer product to Elmendorf Air Force Base tankage. The pump house contains the following equipment:

(1) Two Pacific Packing Company pumps rated at 250 GPM against a 220-foot head and driven by a Westinghouse 220/440 volt, 60 cycle, 3500 RPM, 20 HP electric motor; and two Pacific Packing Company pumps rated at 150 GPM at a 350-foot head and driven by Westinghouse 220/440 volt, 60 cycle, 3540 RPM, 25 HP electric motors.

(2) A CO_2 automatic fire fighting system is installed in the pump room, consisting of a piping system connected to a CO_2 supply and spray nozzle. The system is activated by the action of heat on a temperature sensitive wire installed on the ceiling, and the alarm is automatically relayed to the fire station.

d. Pump House Nr. 4, located one mile northeast of the pier on the ten-inch aviation gasoline line to Elmendorf Air Force Base tankage, is of wood and concrete structure. The pump house contains the following equipment:

(1) Pumping Units: Three Peerless vertical five stage centrifugal pumps driven by Waukesha Manufacturing Company gasoline engines of 165 HP at 1800 RPM. Each pump has a capacity of 60,000 GPH at 65 PSI discharge pressure.

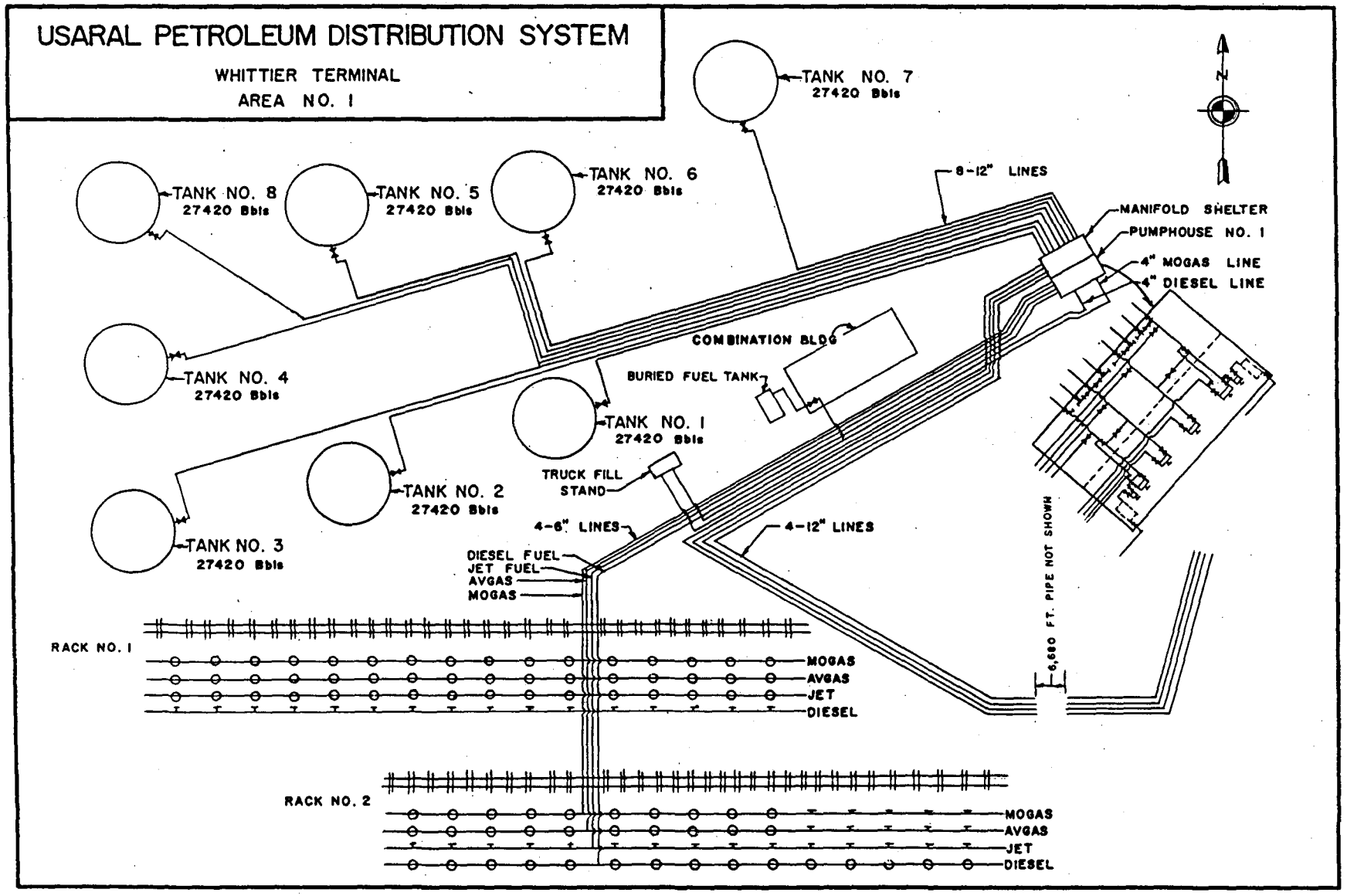
(2) Fire Fighting Equipment: 50-pound and 15-pound CO_2 fire extinguishers.

e. Pump House Nr. 5, located one mile northeast of the dock on the twelve-inch jet fuel line to the War Reserve tankage, is of concrete structure. The pump house has a pump room and control room separated by a fireproof wall. Two pumping units consist of a six-inch Fairbanks-Morse pump driven by a United States Electric Motors, Inc., 440 volt, 1800 RPM, 150 HP electric motor. The two units, operating in parallel, have a capacity of 168,000 GPH at 65 PSI discharge pressure.

9. TANK CAR LOADING AND UNLOADING RACK. The tank car loading and unloading rack, located in Area Nr. 1 is of steel construction. Eight risers are available on the rack for loading and/or unloading. A railroad spur on each side of the rack provides a capacity for loading or unloading 16 tank cars simultaneously. Loading or unloading capacities vary from 10,000 to 20,000 GPH depending on the product and manifolding arrangement.

10. COMMUNICATIONS. Communications between operational areas are provided through Elmendorf Air Force Base telephone exchange. (Programmed for FY 1959 is a closed circuit telephone system using a party line between operational areas.)

11. SEASONAL PORT OPERATIONS. Tankers are received at Anchorage during the ice-free period mid-May to mid-November. The port is icebound from mid-November to mid-May making it necessary to discharge tankers during this period at Whittier, a year round, ice-free port. Product is transferred to Army and Air Force installations in the Anchorage area by rail tank car during the winter.


USARAL PETROLEUM DISTRIBUTION SYSTEM
WHITTIER TERMINAL
AREA NO. 1
TANK NO. 7
27420 Bbls
TANK NO. 8
27420 Bbls
TANK NO. 5
27420 Bbls
TANK NO. 6
27420 Bbls
8-12" LINES
MANIFOLD SHELTER
PUMPHOUSE NO. 1
4" MOGAS LINE
4" DIESEL LINE
COMBINATION BLDG
BURIED FUEL TANK
TANK NO. 4
27420 Bbls
TANK NO. 1
27420 Bbls
TRUCK FILL
STAND
TANK NO. 2
27420 Bbls
TANK NO. 3
27420 Bbls
4-6" LINES
4-12" LINES
DIESEL FUEL
JET FUEL
AVGAS
MOGAS
6,680 FT. PIPE NOT SHOWN
RACK NO. 1
MOGAS
AVGAS
JET
DIESEL
RACK NO. 2
MOGAS
AVGAS
JET
DIESEL

Section XIII

WHITTIER PETROLEUM TERMINAL

1. GENERAL. Whittier Petroleum Terminal consists of two sites: Area Nr. 1, 85 acres located west of the main facilities of the Port of Whittier and Area Nr. 2, 4 acres located adjacent to the petroleum pier, Port of Whittier.

2. FACILITIES.

a. Pier.

b. Gravitometer Building.

c. Product Pipelines.

d. Manifolds.

e. Tank Farms.

f. Pump Stations.

g. Tank Car Loading Racks.

h. Tank Truck Loading Racks.

i. Combination Building.

3. PIER. The petroleum pier is located north of the Whittier townsite, consisting of a "T" shaped, wood decked, wood piling structure. The stem of the "T" extends 700 feet due north into the bay. Water depth at mean low tide is from 35 to 50 feet at the face of the dock. There are six dolphins capable of mooring tankers up to 26,000 DWT. Facilities on the pier include:

a. Six fire hydrants and hose houses connected to a six-inch fresh water line. Pressure is furnished from a heated pump house located on shore.

b. An emergency fire reporting telephone.

c. Ten electric light poles equipped with floodlights.

d. A gravitometer building.

4. GRAVITOMETER BUILDING. The gravitometer building contains two recording gravitometers manifolded so that each gravitometer can record the gravity of the product being transferred through any of the four pipelines.

5. PRODUCT PIPELINES. The following pipelines are available for discharging cargo to shore tankage:

a. Twelve-inch line for discharging diesel fuel to tankage in Area Nr. 1 and Nr. 2.

b. Twelve-inch line for discharging jet fuel to tankage in Area Nr. 1.

c. Twelve-inch line for discharging aviation gasoline to tankage in Area Nr. 1.

d. Twelve-inch line for discharging motor gasoline to tankage in Area Nr. 1.

6. MANIFOLDS. Two central manifolds are utilized for routing product into desired lines and/or storage tanks. Manifolds are located as follows:

a. In Area Nr. 1 adjacent to pump house Nr. 1, utilized to direct product from tankers into proper tankage, switch between tanks and deliver product to tank cars.

b. In Area Nr. 2, utilized in receiving diesel fuel from tankers and delivering diesel fuel to Port of Whittier facilities.

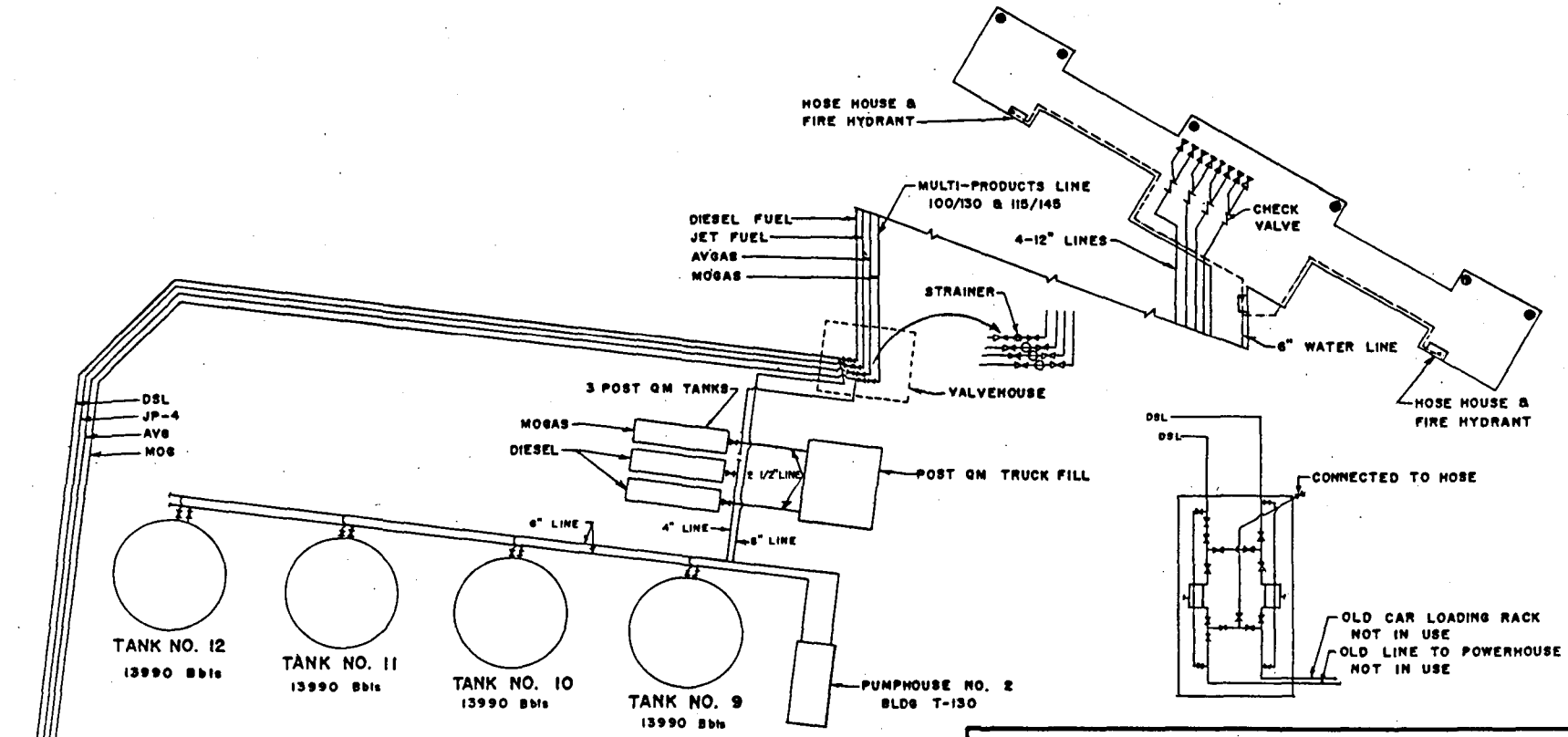
7. TANK FARMS. The Whittier Petroleum Terminal tankage is located in two areas designated as Area Nr. 1 and Area Nr. 2.

a. Area Nr. 1 is the main terminal containing eight above ground storage tanks of 27,420-barrel capacity for terminal operations and one 10,000-gallon underground tank for terminal use. Each of the 27,420-barrel storage tanks has a single twelve-inch line for receiving and discharging products. Auxiliary equipment includes a water drain line, two pressure-vacuum vents and a gauge hatch. Because of the extreme snowfall at Whittier, the tank roofs are designed to support a snowload of 100 PSI.

b. Area Nr. 2 contains four 13,990-barrel tanks. Each tank has two six-inch coupled lines; one for receiving product and one for discharging product. A covered walkway connects all four tanks and contains the following: tank control valves, water draw-off lines, automatic gauge indicator, and CO_2 fire extinguishers. The auxiliary equipment includes two gooseneck vents and a gauge hatch.

8. PUMP STATIONS. Two pump stations are utilized in terminal operations:

a. Pump House Nr. 1, located in Area Nr. 1, is a concrete and sheet metal structure containing the following equipment:



USARAL PETROLEUM DISTRIBUTION SYSTEM

WHITTIER TERMINAL

AREA NO. 2 AND PETROLEUM DOCK

(1) Pumping Units: Two 150 GPM Fairbanks-Morse Centrifugal pumps driven by Fairbanks-Morse 220/440 volt, 60 cycle, 1745 RPM, 5 HP electric motors, and four 900 GPM Fairbanks-Morse Centrifugal pumps driven by Fairbanks-Morse 220/440 volt, 60 cycle, 1770 RPM, 30 HP electric motors.

(2) Two water separators installed in the pipeline going to the tank truck-fill stand.

b. Pump House Nr. 2, located in Area Nr. 2, is a concrete and wood structure containing two American Machine Company pumps rated at 500 GPM at 3500 RPM driven by one Wagner Electric Manufacturing Co., and one General Electric Corporation 230/240 volts, 60 cycle, 1750 RPM, 7-1/2 HP electric motors.

9. TANK CAR LOADING RACKS. Two tank car loading racks are utilized to load tank cars and are designated Tank Car Rack Nr. 1 and Tank Car Rack Nr. 2.

a. Tank Car Rack Nr. 1 has risers for loading fifteen cars in one operation. These cars can be either jet fuel, aviation gasoline or motor gasoline. An average of 2-1/2 hours is required to load 15 cars.

b. Tank Car Rack Nr. 2 has risers for loading 10 aviation gasoline cars, or 10 jet fuel cars, or 15 diesel fuel cars in one operation. Two hours are required to load 10 jet fuel or 10 aviation gasoline cars, and 2-1/2 hours are required to load 15 diesel fuel cars.

10. TANK TRUCK LOADING RACK. The tank truck-fill stand, located in Area Nr. 1, can be utilized for outloading motor gasoline and diesel fuel. Presently in standby status.

11. COMBINATION BUILDING. This building contains an office, latrine, boiler room, lavatory, well type pump for water supply, garage and shop, petroleum laboratory and generator room. The generator room contains two skid mounted, diesel generators to provide emergency power for terminal operations.

Section XIV

FORT RICHARDSON STATION PETROLEUM FACILITIES

1. GENERAL. The petroleum supply mission for Fort Richardson is assigned to the Post Quartermaster. Petroleum handling facilities consisting of storage tanks, tank car unloading spur, tank truck-fill stand and pump station are located within the United States Army Supply and Maintenance Center, Alaska, loop area.

2. FACILITIES

a. Storage Tanks.

b. Tank Car Unloading Facilities.

c. Tank Truck Loading Facilities.

d. Issue Station.

3. STORAGE TANKAGE. There are three 5,370-barrel welded steel tanks (16,110-barrels).

4. TANK CAR UNLOADING FACILITIES. There is one railroad spur track equipped with eight unloading risers (three for motor gasoline and five for diesel fuel), electrical bonding equipment, 4,200 GPM centrifugal pumps, and necessary piping and fittings to permit unloading.

a. Separate lines and pumps are provided to allow simultaneous discharge of motor gasoline and diesel fuel.

b. The system is designed to furnish two pumps manifolded in series for use with each type of product. Designed in this manner, the system is capable of unloading both products at 200 GPM each (total time per tank car is approximately 50 minutes).

5. TANK TRUCK LOADING FACILITIES. Facilities are available for loading one motor gasoline and one diesel tank truck at the same time, with a loading time of approximately 10 minutes. Design of the loading and unloading facilities will allow only one operation to take place at any given time; therefore, either the tank car unloading or the tank truck filling operations must be suspended when the other is taking place.

6. ISSUE STATION. There is one issue station with two electric pumps and underground tanks.

Section XV

PORT OF WHITTIER STATION PETROLEUM FACILITIES

1. GENERAL. The petroleum supply mission at the Port of Whittier is assigned to the Post Quartermaster. Petroleum handling facilities consisting of storage tanks, loading facilities and one retail gasoline outlet are located on the installation.

2. FACILITIES.

a. Storage Tanks.

b. Tank Truck Loading Facilities.

c. Retail Facilities.

3. STORAGE TANKS. Products are delivered to station storage tanks through the pipeline connected with Whittier PDS Terminal facilities located adjacent to the Port of Whittier. There are three 25,000-gallon steel welded tanks.

4. TANK TRUCK LOADING FACILITIES. Only tank truck facilities are available.

a. Dispensing equipment, gravity flow type, can load either motor gasoline or diesel fuel into tank trucks.

b. This installation has two 1,200-gallon tank trucks.

5. RETAIL FACILITIES. One retail gasoline outlet with two electric pumps and a 5,000-gallon underground tank are available.

Section XVI

FORT GREELY STATION PETROLEUM FACILITIES

1. GENERAL. The petroleum supply mission for Fort Greely is assigned to the Post Quartermaster. Petroleum handling facilities consisting of both above-ground and underground storage tanks, truck-fill stands and retail service station are located on the installation.

2. FACILITIES.

a. Storage Tanks.

b. Tank Truck Loading Facilities.

c. Retail Facilities.

3. STORAGE TANKS. Products are delivered to all station storage tanks through the three-inch pipeline from either Big Delta Take-off Station or terminal tankage located at Fort Greely. Storage tanks are as follows:

Two - 15,000-barrel tanks*
Two - 2,250-barrel tanks*
Four- 596-barrel underground tanks

* These tanks contain PDS stock fund products.

4. TANK TRUCK LOADING FACILITIES. Only tank truck facilities are available.

a. Dispensing equipment, gravity flow type, can load either motor gasoline or diesel fuel from the underground tanks.

b. A standby gasoline loading rack is located at Big Delta Junction for refueling convoys traveling either the ALCAN or Richardson Highway. When necessary, this equipment can be used for station requirements.

5. RETAIL FACILITIES. There are two retail gasoline outlets, each with two electric pumps connected to underground tanks.

Section XVII

PLANNED ADDITIONAL TANKAGE FACILITIES

To provide necessary additional tankage and the replacement of certain existing tanks, plans have been formulated for the construction of the tankage listed below:

USARAL PDS TERMINAL TANKAGE - EXISTING AND PLANNED (M/BBLS)

LOCATION	EXISTING	CONSTRUCTION PLANNED	TOTALS
Haines Terminal	275.0	150.0	425.0
Tok Terminal	280.0	120.0	400.0
Big Delta (Fort Greely)	40.0	40.0 (1)	40.0
Eielson Terminal	96.0 (4)	0.0	96.0
Fairbanks Terminal	140.0	260.0 (2)	260.0
Anchorage Terminal	456.2	150.0 (3)	556.2
Whittier Terminal	275.3	0.0	275.3
TOTALS	1562.5	720.0	2052.5

NOTES:

1. Replacement construction - not included in totals.
2. 140 M/Bbls required as replacement - not included in totals.
3. 50 M/Bbls required as replacement , not included in totals.
4. Utilized as base tankage by Eielson AFB (Army owned).

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