History

COLD WEATHER TEST

U.S. Air Force.

94th Fighter Squadron (JP)

1st Fighter Group

Winter 1947-48

TAC A2B-SP-1

HISTORY OF COLD WEATHER TESTS
Ladd Field Alaska
Winter 1947-48

U.S. Air Force, 94TH FIGHTER SQUADRON (JP)
1ST FIGHTER GROUP
March Air Force Base
Riverside California

Roy O. Smith, Jr.
ROY O. SMITH, JR
Captain, USAF
Historical Officer

Donald E. Hillman
DONALD E. HILLMAN
Lt. Colonel, USAF
Commanding

TABLE OF CONTENTS

NARRATIVE:

TABLE OF CONTENTS (CONT'D)

This report has been written to insure a complete analytical accounting of the 94th Fighter Squadron's participation in Cold Weather Tests at Ladd Field, Alaska, during the winter of 1947-48. It is the purpose of this narrative to describe all phases of the maneuver: Planning period, movement to Alaska, the training period at Ladd Field, and the squadron's return movement to March Air Force Base. It is hoped that the relation of events and experiences within this report will be of immediate value to the USAF in determining future requirements in and for the Alaskan Department. This organization wishes to emphasize that any shortcomings described and difficulties encountered were those experienced during this unit's stay in the Alaskan Theater and may or may not have since been corrected.

The description of conditions experienced at Ladd Field: facilities, location, weather, and supply problems, while not necessarily typical of conditions at other Air Bases in Alaska, are believed to be sufficiently representative for future planning purposes. The references to conditions experienced at stopover points along the "Alcan Air Route" are believed to be particularly important since these bases are the best available stops for comparatively short range aircraft.

As shown in the Table of Contents, this report is divided into four chapters which discuss each phase of the mission.

In World War II small scale operations were carried out in the Aleutians, Iceland, and Greenland, but complete knowledge is lacking in the difficulties which would be encountered by Tactical Units in

the Arctic. The Air Forces realizing the possibility of future intense operations in Arctic regions, has instituted a policy that all Air Force units will undergo a period of Arctic training. In conformance with this policy, the 94th Fighter Squadron was directed [1] to undergo winter training for a period of six months to determine the feasibility of operating jet aircraft in the Arctic.

With the need for this type of mission established and the organization selected to undergo the tests, there remained the preliminary problems of: reorganizing and equipping the selected unit, placing necessary supplies in the Alaskan Theater, putting the squadron personnel through the Preparation for Overseas Movement (POM), and moving the four echelons (Air-Ground-Water-Flight) of the squadron to Alaska. Many of the problems encountered in the POM [2] period might be considered routine - those that inevitably crop up when a unit is alerted for an overseas movement, however, since the utilization of T/O&E 1-17R (augmented) for Arctic Jet Operations established a precedent, it is believed worthwhile to set forth in detail some of the problems encountered which otherwise would not have been mentioned.

1/ Plan, AAF Arctic Maneuver, Winter 1947-48, 94th Ftr Sq (JP) (vid. s.d. #1)

2/ WD POM 3d Edition, Jan 45 - less exceptions stated in Movement Order

Chronological Order of Events

15 April 1947	Commanding Officer, 94th Ftr Sq (JP) volunteers for Arctic Training
1 May 1947	Alaskan Conference - Anchorage, Alaska
12-15 May 1947	T/O&E Conference, AAF, Washington D C
21-27 May 1947	2d Conference on T/O&E, Washington D C
1 July 1947	Deadline date for logistical requirements.
June,July,August	Training, indoctrination, and preparation for movement and operations in the Arctic.
24 July 1947	Received Warning Order
26 July 1947	Received Amendment No. 1 to Warning Order
18 August 1947	Received Movement Directive
23 September 1947	Received Amendment 1 to Movement Order

ADVANCE ECHELON

22 August 1947	3 Officers and 50 Enlisted Men depart March Field and arrive Great Falls AAFld, Great Falls, Montana.
24 August 1947	Departed Great Falls and arrived at Ladd Field, Alaska

WATER SHIPMENT

6 October 1947	1 CWO and 2 Enlisted Men depart March Field and arrive at Port of Embarkation, Seattle, Washington
12 October 1947	Departed POE, Seattle
15 October 1947	Arrived Whittier, Alaska
16 October 1947	Arrived, Ladd Field, Alaska

MAIN BODY

10 October 1947	2 Officers and 262 Enlisted Men depart March Field and arrive at Great Falls
13 October 1947	Departed Great Falls, Montana, and arrive at Ladd Field, Alaska.

FLIGHT ECHELON

22 October 1947	Departed March Field and arrived Great Falls via Ogden, Utah
25 October 1947	Departed Great Falls - arrived Edmonton
26 October 1947	Departed Edmonton - arrived Ft. Nelson
27 October 1947	Departed Ft. Nelson - arrived Whitehorse
1 November 1947	Departed Whitehorse - arrived Ladd Field

RETURN MOVEMENT

15 February 1948	Departed Ladd Field by C-82s (TAC)
16 Feb - 1 March 1948	Arrived March Air Force Base

Chapter I

PREPARATION FOR OVERSEAS MOVEMENT

POM - Personnel and Administration

The reorganization of the 94th Fighter Squadron was accomplished on paper at two T/O&E conferences in Washington D C, attended by the Commanding Officer, 94th Ftr Sq., Commanding Officer, 1st Ftr Group, and staff members of Twelfth Air Force Headquarters, during the periods of 12-15 and 21-27 of May 1947. The results of these conferences gave the squadron a strength of 38 officers and 347 enlisted men with functional organization as shown in the accompanying charts.[3] In an attempt to augment the squadron over a period of time, Headquarters Twelfth Air Force authorized the squadron to increase from its strength of 32 officers and 98 enlisted men to 33 officers and 162 enlisted men conforming to a T/O&E proposed by the 1st Fighter Group which allowed men for 2d Echelon Maintenance. The 94th Squadron Commander on 17 June 1947, requested 5 officers and 173 enlisted men for further augmentation based on the Washington T/O&E Conferences.[4] However, it was not until the receipt of a directive from March Field Headquarters on 5 August that further augmentation could be accomplished.[5] The accompanying chart graphically shows the influx and outgo of personnel during this critical period before 14 August 1947. (The deadline date set by the War Department for the reorganization of the 94th Fighter Squadron (JP))

3/ Chart - "Organization of the 94th Fighter Squadron" (vid. s.d. #2)

4/ General Order No. 16, Headquarters March Field, 5 Aug 1947

5/ Chart - "Augmentation of the 94th Fighter Squadron" (vid. s.d. #3)

During the time that the bulk of personnel were being transferred to the 94th, March Field was being reorganized to the "Wing Plan". This base reorganization further delayed the transfer of personnel causing most of them to arrive in two large groups.

Key personnel to aid in the organization and classification of these personnel, unfortunately, were some of the last to arrive. Therefore this work had to be done by the few original members qualified in this work. This delayed the rejection of unqualified individuals and the obtaining of replacements.

Criteria for determining overseas eligibility was initially lacking but was clarified to allow enlisted men, whose wives were expectant within four (4) months from date of departure, to remain in the Zone of Interior.[6] This in itself was not sufficient since other hardship cases were forthcoming - sick dependents being the outstanding example. It is recommended that Squadron Headquarters with the concurrence of Base Headquarters be the deciding factor in all hardship cases.

Substitution in Military Occupational Specialities (MOS) resulted in an unusually large group of unqualified personnel, particularly in communications and the engineering specialty groups.[7]

Sufficient time was not allowed by the late transfers to allow personnel to make arrangements for their dependents prior to the overseas movement. A further hardship was caused by the fact that this was a Temporary Duty assignment and dependents were not authorized transportation to their permanent address.

6/ Ltr, Hq 94th Ftr Sq (No file No.) "Disqualification for O/S Duty Under the Provisions of WD Cir 310/45, 2d Ind to CO 1st Ftr Group dated 23 July 1947

7/ Par 2, Amendment No. 1, Movement Directive Shipment No. 6159 (vid.s.d. #2)

After a personal interview with all of the newly assigned men and reclassifying a number of personnel, the squadron took shape shortly before the departure of the Main Body. However, there were many questions that remained unanswered due to the fact that 50 men were already in Alaska with the Advance Party.

The date of departure of the latter group had been advanced 30 days upon the recommendation of the 1st Fighter Group CO in order that the barracks at Ladd Field, which were in a bad state of repair could be made habitable. All of the Utilities personnel who were present for duty were sent with volunteers completing the quota. Some of these men were newly assigned and classification and interview for them was necessarily hurried and brief.

With only a short time available before the scheduled departure dates, personnel still arriving to fill the quota, and the necessary arctic training continuing, the squadron had no time before leaving to work as a unit. No section head had a chance to find all of the weaknesses in his section and the ability of the squadron to work as a separate unit remained completely untried.

The completed organization can be noted from the accompanying charts, this final form, however, was not determined until 12 September, 1947, when the last instructions changing the authorized grades of several men and deleting the dental personnel were received. 8/

8/
1. Ltr Hq T/C file 210.3, "Medical Department Personnel for Alaskan Maneuver (94th Ftr Sq)" to CG 12AF 21 Aug 1947 (vid.s.d. #5)

2. TWX Hq 12 AF No. A3E 0377, 12 Sept 1947, (vid.s.d. #6)

Upon receipt of Warning Orders,[9] flying training was conducted in preparation for the arctic conditions to be encountered. Emphasis was placed on instrument flying. Two ship instrument teams with pilots using shielded goggles were sent over the prescribed 1st Fighter Group Instrument Course.[10] In compliance with a Twelfth Air Force directive each pilot completed fifty (50) GCA approaches in P-80s and when possible in the P-80B. The P-80B was used when available in order to familiarize each pilot with its new characteristics. (The new aircraft being heavier and having more thrust) Each of the pilots was able to complete a major portion of his GCA runs in the P-80B. During this time although JP-1 fuel was being used, each pilot when starting or stopping the aircraft, went through the procedure as though using gasoline under arctic conditions. All pilots were checked and given new instrument cards and all night flying requirements under AAF Regulation 60-2 were completed for the half year ending in December 1947. Alaskan Communications directives were received and all pilots were briefed on the facilities available to them and on the required reporting procedures. Pilots also were required to make pre-flight inspections under the supervision of the Line Chiefs.

During the first week in September, 1947, an Arctic Indoctrination Team from the 3718th AFPU, Chanute Field, Illinois, conducted classes for all personnel. Until this time there had been no direct stimulus provided for the Alaskan Maneuver. These talks were

9/ Ltr, Hq AAF, no file number, "Warning Orders - 94th Ftr Sq (JP)" to CG T/C, 18 July 1947.

10/ No reference available.

highly entertaining and much information was gained; however, it is recommended that personnel familiar with the aircraft to be used be provided for presenting this information if it is at all possible. Their discussion of equipment should be limited only to equipment that will be issued and used in the Arctic. This course did have a very definite value in boosting the morale of the squadron and in giving each individual something to look forward to.

Two officers were sent to the Ordnance School at Aberdeen Maryland for a course in preparing Ordnance vehicles for aretic use. Also, two officers and three enlisted men were sent to the Climatic Hangar at Eglin Field, Florida. Due to the late integration of the squadron, however, certain key personnel who should have received this instruction, had not been assigned at that time.

POM - Maintenance

The squadron's 28 winterized P-80B-5s were received from the Lockheed Aircraft Co. during August and September of 1947. The first steps taken after their receipt was to perform the acceptance inspections and pack 263A equipment for the move to Ladd Field. The painting of squadron colors and insignia was accomplished as soon as possible, usually during the acceptance inspections.

New tail pipe covers and wheel chocks were manufactured by the March Field Shops to be taken with the Air Echelon group. All of the auxiliary equipment - communications, armament and ordnance, was checked by the sections concerned, and it was found that AMC Winterization Check Lists had not been completed; particularly on some communications equipment.[11/] It was also found that the type A-1 Gun Chargers

11/ Interview with the Communications Chief

for the M-3 caliber .50 machine guns had not been available at the factory and as a result, only a limited number of the guns could be test fired before leaving March Field.[12/]

During flight checks it was determined that the type J-1 Universal Attitude Indicator contained a very noticeable and dangerous lag in its erection system. After numerous checks of the electrical system, it was felt that low voltage from the inverters was causing this condition. A new type relay, the "Strato-Pax" was ordered and installed in the aircraft during the stops at Great Falls and Edmonton. Although this relay helped to some extent, a certain amount of lag was inherent in the instrument which was very noticeable when used in high speed aircraft.

During the aircraft acceptance period following the receipt of P-80Bs between 21 August and 5 September, 1947, the squadron had 25 old P-80As which were undergoing inspection prior to being transferred to other units. This number plus the addition of the P-80Bs, placed an extremely heavy load on the engineering personnel who were maintaining both old and new airplanes. The newly assigned personnel were not of much assistance at this time because of the time recuired in processing and their attendance at arctic indoctrination classes. Flying operations continued until three days before departure of the Air Echelon. (Completing the 50 GCA approaches per pilot.) By this time the Ground Echelon had departed and all last minute maintenance was performed by the 25 mechanics assigned to accompany the Air Echelon.

One of the largest time consuming problems was the necessity of

12/ Interview with Armament Officer

replacing all J-33-21 units not incorporating the turbine wheel with the pinned type buckets, with other engine units having this feature: After checking unit serial numbers, it was found that fourteen (14) units needed replacement. Arrangements were made with the Air Depot at Ogden AAFld, Ogden Utah, for unit changes to be made at that station. Ground handling equipment and maintenance crews were flown to Ogden on 2 October, 1947, to make these changes, which further depleted the squadron's strength in experienced mechanics at a time when they were also needed for the proper handling of airplane transfers and maintaining aircraft for the completion of flying requirements.

POM - Supply

The initial preparation of supplying the 94th with minimum essential equipment as listed in the augmentation list[13/] was held up by the necessity of awaiting the movement directive. Although the movement directives were published on the 6th and 7th of August, 1947, these directives were not received by the 94th and by the March Field Project Officer until the 18th of August. This held up supply action and the time remaining after receipt of the movement directive was not adequate to complete all supply action in the normal manner and resulted in numerous air pick-ups to complete the equipping of the squadron.

Further supply complications arose when the plan[14/] of sending the Main Body by air instead of by rail and water was changed on the 23d of September - Parkas and arctic overshoes had to be requisitioned.

13/ Ltr & 2 Incl thereto, War Dept, file-AGAO-I 322 94th Ftr Sq (JP) "Reorganization of the 94th Ftr Sq (JP)" 14 July 1947 (vid s.d.#7)

14/ Amendment #1 to Movement Directive Shipment No. 6159 (vid s.d. #4)

Also, other items such as field stoves, which were originally intended to accompany troops, had to be left behind.

Technical Supply

Requisitions were initiated to cover all T/O&E items authorized on the Arctic augmentation list (Equipment Modification List). Also, requisitions were submitted for water proof paper, rust preventive compounds, naptha flakes, shipping ticket envelopes, and other items necessary for proper packaging of equipment. Squadron tool kits were made up to conform with the augmented equipment lists and were packed as were the equipment and clothing. Although packing itself involved no difficulties - with the cooperation of the base Commercial Transportation Section - the necessity of leaving necessary items unpacked during the heavy flying schedule caused a last minute rush.

The Technical Supply Officer was designated as Liaison Officer of the 94th and he with two (2) enlisted men departed for the Seattle Port of Embarkation on 6 October, 1947. While at Seattle, he checked shipping documents of incoming equipment before departing on 12 October by ship for Whittier, Alaska. (As near as could be determined by checking shipping documents, a major portion of the supplies had reached the Port of Embarkation.)

Upon arriving at Whittier on October 15th, this officer was designated as a Troop Train Commander for a train leaving that night for Ladd Field. This allowed no opportunity to check the status of the T/O&E equipment at this port. From the small amount of equipment found at Ladd Field, upon his arrival there, it can be assumed that most of the equipment was in storage at Whittier and Ft. Richardson awaiting shipment by rail.

Squadron Supply

Minimum essential equipment authorized by T/O&E 1-17R and individual equipment authorized under T/E 21, Part II, Section V, was received from the Base Quartermaster, March Field, promptly and was easily packed and distributed in time. The Movement Orders for the Advanced Echelon, received on the 18th of August, allowed only three (3) days to equip these three (3) officers and fifty (50) enlisted men before their departure on August 22d. This was accomplished in the required time and their departure was not delayed.

The late acquisition of personnel forced the requisition of additional clothing based on QM clothing tables, and with few exchanges, all personnel were properly equipped. Again the sudden change in transportation of the Main Body forced the turn-in of all overcoats, and in their place were issued the pile lined parkas. This change caused much extra work and forced the Base Project Officer to make flights to Ogden, Utah, and to other Supply Depots to obtain these new items of equipment. Travel by air forced the squadron to store some items, such as field stoves, that it had intended to take. These were inventoried and signed for by an officer from 1st Fighter Group Headquarters. Many problems could have been solved (turning-in of buildings and storage of equipment) if a rear party could have been left to clean up after the Squadron had departed. This was done on the return movement from Ladd Field. With the present accountability of equipment, a clean-up party is considered a "must" for any large movement of men and supplies.

POM - Summary

Most of the difficulties encountered during the preparation for

overseas movement were due to the lack of time and changes made in the original plans. Normally the two months allowed should have been ample, but due to the delay in actually receiving and implementing the plans, time ran short.

Personnel shortages were encountered in some MOSs, and clear cut directives on use of personnel in overseas theaters were not available, particularly for those on Temporary Duty status. Incoming personnel should have flowed smoothly into the squadron with administrative, and key personnel coming first; (Adjutant, Engineering Officer, Technical Supply Officer, Motor Transport Officer, classification personnel, typists, duty sergeant, etc.)

The arrival of new aircraft was some two to three weeks later than anticipated. This delayed the transfer of old aircraft and thorough shakedown flights on the new aircraft. Pilots did not have enough time to become thoroughly familiar with the new aircraft. The extra flying training necessary to prepare for arctic conditions brought great pressure to bear on the Engineering and Technical Supply sections when most of their time should have been devoted to readying aircraft and packing supplies for the overseas movement.

Lack of time again appeared to be a major factor in the delivery of supplies, however, this was not felt until the arrival of the squadron at Ladd Field. Apparently,[15/] the supply depots lacked sufficient time to obtain and ship the necessary T/O&E equipment, resulting in vehicles being shipped unwinterized. Again, at the ports of Whittier and Fort Richardson, Alaska, the volume of incoming supplies far exceeded the facilities of the Alaskan Railroad to transport all equipment by the deadline date of 1 September 1947.

15/ Ltr: Liaison Officer, 1st Ftr Group, no file number "Status of Incoming Water Shipments, P-80 at Port of Whittier to TAC, 16 Oct 1947. (vid s.d. #8)

Chapter II

MOVEMENT TO LADD FIELD, FAIRBANKS, ALASKA

Movement to Alaska

The 94th Fighter Squadron was broken down into five separate shipments in accordance with the movement directives.[16] They are as follows:

Strength		Shipment No.	Remarks
Off	EM		
1	2	---	Liaison Officer to Seattle POE
3	30	6159 AI	Air Maintenance Echelon
3	50	6159 AII	Advance Air Echelon
28	0	6159 AZ	Flight Echelon
3	265	6159 AIII	Main Body

Advance Party

The departure date for the Advance Air Echelon was moved forward thirty (30) days upon the recommendation of the Commanding Officer, 1st Fighter Group, following his inspection of the facilities for the 94th at Ladd Field. As was previously stated, this allowed three (3) days for the men to be equipped and readied for departure on August 22d. Personnel needed to completely organize the advance group had not all been assigned, however, each squadron section was represented by at least one man; all of the utilities personnel available were sent - the remaining number was composed of volunteers who were able to leave on short notice. One Major (1059) one Captain (0600), and one 2d Lieutenant (2120) represented Operations, Motor Pool, and Orderly Room respectively. Non-commissioned officers represented the remaining sections

16/ War Dept Movement Directives for Shipment No. 6159 and Amendments 1, 2, and 3. (vid s.d. #4)

of the Squadron, however, there remained a shortage of trained utilities men.

The Advance Party departed March Field in two (2) C-82s of the Troop Carrier Command and arrived at Ladd Field on August 24th after stopping at the Port of Aerial Embarkation, Great Falls, Montana, for processing.

Arriving at Ladd Field, the party set up its headquarters and organized details to make electrical, plumbing, and carpentry repairs. Other details cleaned the buildings, set up beds, policed the area, and banked the buildings with gravel to provide insulation. After completing the rehabilitation of the barracks area, efforts were directed to the hangar in an attempt to set up semi-permanent partitions, benches and counters. Doors had to be hung, window panes replaced, and repairs made to the permanent heating and electrical systems.

Since no T/O&E equipment had arrived, tools, trucks and equipment were drawn from Ladd Field supplies to carry out this mission. Scarce items proved to be lumber, hardware, and Class 25 equipment for offices. However, with the cooperation of the Base, in the use of their machine equipment, lumber from crates was reworked and items such as drawing boards were manufactured locally.

By the time the Main Body arrived on 13 October, 1947, the general repair of the barracks area and hangar had advanced sufficiently that each section, with a few minor changes, was ready to operate.

Main Body

The Main Body of the 94th left March Field on October 10th in C-82 and C-47 type aircraft and reached Ladd Field on October 13th.

No difficulty was encountered with this movement and actual processing at the Port of Aerial Embarkation (Great Falls) took only a matter of hours. This movement would have been accomplished in two days except for bad weather enroute which delayed the slower C-47s.

At this point, it is well to note that the 94th Fighter Squadron was separated into five distinct parts. In accordance with Paragraph 2(d), AR 345-400, it was necessary to submit five (5) different Morning Reports. This involved teaching four other clerks how to make out this form. It is doubtful that a machine records unit without previous knowledge of the nature of this movement could have deciphered and actually accounted for all personnel. Several weeks were taken after the 94th arrived at Ladd Field to consolidate and correct all the errors that were previously made during this period. It is recommended that a log be used for each separate unit or that information copies only (of the Morning Report) be sent to the parent unit for consoldidtion and forwarding to the machine records unit.

Flight and Air Maintenance Echelons

Since this was the first attempt to move a large number of jet aircraft over a long route, stopping at bases not normally equipped to handle this type aircraft, this movement will be dealt with in detail.

The following extracts of a letter from Headquarters Eastern Pacific Wing, Pacific Division of ATC to the CG, Pacific Division, ATC, "Strategic Air Command and Tactical Air Command Movements Over Alcan Route", show clearly the plan devised for moving the flight echelon of the 94th from March Field, California to Ladd Field, Alaska:

[redacted]

* * * * * *

I. Movements: (Presently known)

B. TAC 94th Fighter Sq. (JP), 1st Fighter Gp. (JP), March Field, California; twenty-eight (28) P-80Bs about 20 October 1947, returning about 1 April 1948.

* * * * * *

II. These movements more in detail are as follows:

* * * * * *

B. TAC P-80B Movement

1. Fifty-three (53) personnel (Advance Party), traveling on TAC aircraft arriving Great Falls about 1 October 1947, proceeding to Alaska stopping at Fort Nelson.

2. Four (4) C-47s, crew of four (4) each aircraft (2 off, 2 EM), plus three (3) officers and thirty (30) enlisted men total (maintenance and servicing personnel) arriving Great Falls about 15 October 1947.

a. Aircraft and personnel will be split among Great Falls, Edmonton, Fort Nelson and Whitehorse to await P-80s.

3. Twenty-eight (28) P-80Bs about 20 October 1947, arriving Great Falls for rest, servicing, route briefing, to be dispatched over route to Ladd Field, Fairbanks, Alaska, stopping at Edmonton, Fort Nelson and Whitehorse.

4. All aircraft to be processed for overseas movement at home station. (Air-POM)

5. All personnel, advance and others, to be Arctic equipped at home station. (Air-POM)

6. All personnel to be processed for overseas movement at home station. (Air-POM)

7. 1st Fighter Group sending Liaison Officer to Great Falls to coordinate PAE details.

8. Aircraft winterized to -65°C.

* * * * * *

III. Arrangements made and discussion are as follows:

[redacted]

A. GREAT FALLS:

[redacted]

Reference P-80B movement:

a. P-80s will proceed from March Field via Hill Field, Ogden Utah.

b. The four (4) C-47s preceding the move are carrying parts, tools, and personnel to service and maintain the P-80s.

c. Dispatch one (1) C-47 each to Edmonton, Fort Nelson, and Whitehorse, personnel on board to be determined by TAC officer in charge.

d. P-80s restricted to daylight CFR.

e. After rest, servicing, supply of shortages and route briefing, dispatch P-80s (weather permitting) in flights of four (4) over the route. Since daylight CFR weather will be the bottleneck, aircraft should not arbitrarily RON at Edmonton, but push on through as far as daylight CFR weather permits.

f. To avoid overtaxing the parking space, P-80s should not bank up in excess of sixteen (16) at one stop even though predicted weather makes it desirable.

g. Prepared emergency stops are Grand Prairie, Fort St. John, Watson Lake, and Northway, each of which will have JP-1 fuel available for emergency (5000 gals.).

* * * * * *

VI. Following is a summary of personnel needed from TAC:

* * * * * *

C. Four C-47s each with four (4) man crew, plus three (3) officers and thirty (30) enlisted men to maintain and service P-80s at Great Falls, Edmonton, Fort Nelson, and Whitehorse. C-47s to carry tools, parts for P-80s, return Zone of Interior when P-80s reach Ladd Field; in place again for P-80s return next April.

* * * * * *

The plan outlined above was followed except for one detail - [redacted] The Squadron Engineering Officer instead of dispersing his personnel

along the Alcan Route, divided the sections into four (4) crews, three (3) C-47s preceded the P-80s by one stop and were on hand to prepare the refueling facilities, obtain parking spaces, and service aircraft. When the P-80s landed, there were enough men to assist in the parking of the aircraft. One crew always remained with the P-80s to aid them in becoming airborne and repair any last minute mechanical difficulty. A fifth C-47 transport loaded with the majority of the heavy ground handling equipment accompanied the jet aircraft as closely as possible so that airplane hydraulic jacks, extra auxiliary power plants, unit change stands, and extra equipment was always on hand for use shortly after landing of jet aircraft, and available until after their takeoff. In this way, both men and equipment carried in the C-47s were closely available to perform any maintenance required along the route: This method of scheduling and handling the transports and mechanics of the Air Echelon, worked very satisfactorily.

Ogden

After waiting two days for favorable weather, 28 P-80s in three (3) sections of eight, eight and twelve aircraft, departed for Ogden, Utah, on the morning of October 22d. Servicing here was slow due to the availability of only one (1) JP-1 refueling unit. Upon completion of refueling, all jets departed for Great Falls AAFld, Montana.. Although the field elevation here is 4788 feet, no difficulty was experienced in using two ship elements for take off. 17/ Except for a blown tire on landing, no difficulty was experienced on the flight from Ogden.

17/ Photograph (vid s.d. #9)

At Great Falls, a production line was established in one of the hangars and all aircraft were processed: Fifty-six (56) ice-grip tires and fourteen (14) Strato-Pax-Relays were installed. All wheel bearings were cleaned and repacked with ANG-15 grease for cold weather operation. Only one (1) 2000 gallon F2A fuel servicing trailer, with a micronic filter installed, was available for use here. This trailer had to be reserviced by transferring fuel from 55 gallon drums into the unit itself. As this method was too slow to accomplish the re-servicing in time for the next scheduled flight, it was decided to carry the 55 gallon drums of JP-1 fuel on a 40 foot flat bed trailer, and to use a gasoline driven refueling pump to refill the fuel servicing trailer. By this method, as each aircraft was refueled, the truck was at the same time being refilled from the 55 gallon drums. Servicing was finally completed at 0200 hours on October 23d, having started at sundown on the previous day.

It was necessary, with the aforementioned procedure, to handle over 300 drums of fuel by loading and unloading from the 40 foot flat-bed. At that time, it appeared that no underground JP-1 tanks, or any electrical pumping system was available for F2A fuel trailer re-servicing. Therefore, in view of the fact that Great Falls is the point of departure for movement of aircraft into the Alaskan Theater, it is recommended that immediate steps be taken to furnish adequate ground storage facilities for JP-1 fuel for jet aircraft, and that sufficient F2A refueling trailers are available to properly service large numbers of aircraft in the shortest time.

Before taking off from Great Falls, a route briefing was held for all P-80 pilots. This included a film on the various intended landing fields. After the briefing was concluded, each pilot was required to take a large manila folder containing maps, charts, tables, etc., issued by ATC. Since there was no place in the cockpit for this folder, it had to be stored in the nose of the aircraft. Even if there had been sufficient room in the cockpit for these folders, they would have been useless in flight, as it would have been practically impossible to sort through all this material and still fly the airplane. In most cases if it becomes necessary to resort to such information, it is too late to use it successfully - Due to the short time in transit in jet aircraft, it is recommended that a thorough briefing be given at the start of the trip, and local briefings be limited to weather and local circumstances.

After briefing at Great Falls, a short uneventful flight was made to Edmonton, Canada, on 25 October. Refueling here was easily accomplished as two (2) jet fuel units and experienced, capable ATC personnel were available. The remainder of the Strato-Pax-Relays were installed that evening and on the following morning, 26 of the 28 P-80s cleared Edmonton: One plane required a canopy adjustment while the second aborted with a low oil pressure reading, dropped his tip tanks and landed. The oil transmitter was bled and the gauge worked perfectly. Procuring new tip tanks was more of a problem: The set of tanks required at Edmonton, drawn from AF Supply, uncrated, were found to be short one (1) standpipe assembly and various other fittings. Therefore, proper assembly was not possible without too much delay

in procuring the needed supplies. One completely assembled set of tanks was delivered to Edmonton by ATC, the next day, supplied from stock in AF Supply at Great Falls, Montana.

Fort Nelson, Canada[18]

Having arrived at Fort Nelson at mid day, the first section now with seven aircraft, decided to push on to Whitehorse. Approaching Watson Lake, the flight was forced to descend under the overcast which soon lowered to a point where it was inadvisable to continue. Rather than climb out again and fly over the top with the destination weather questionable (no contact could be made with Watson Lake), the flight returned to Fort Nelson. On the morning of 27 October, with all 28 P-80s present, (The two aircraft remaining at Edmonton rejoined late on the afternoon of the 26th) the flight to Whitehorse was begun. Over-the-top flight was required and 26 aircraft arrived at Whitehorse. On let-down, the left nose door on one of the planes was badly buckled and a new door had to be flown from March Field to replace the old one. Since weather delayed the flight to Ladd Field for four days, there was ample time to replace the part.

One set of tip tanks was accidentally released before take-off from Fort Nelson, requiring the flight leader to remain behind with the pilot of the disabled aircraft.

Arrangements had been made with Headquarters AMC for certain aircraft supplies to be on hand at each scheduled stop along the route: This equipment included sets of disassembled wing tip fuel tanks packed in wood crates. It was necessary for the Air Echelon mechanics to uncrate and assemble the fuel tanks on the spot. This was considered

18/ Photograph (vid s.d. #10)

dangerous and proved to be very difficult due to the lack of proper tank cleaning and pressure testing facilities at any scheduled stop: Leak testing facilities are of prime importance because the only method of testing the tanks in the field is to install them on the aircraft, service them with JP-1 fuel, and run the unit before proper tank pressure can be obtained:

In order to clarify this last statement, organizations based at their home station always receive from their supply, wing tip fuel tanks that are assembled, cleaned and pressure-tested, and ready for use. Due to this fact, when the organizations move was planned, no thought was given to the possible assembly of tanks, and no arrangements were made to include pressure testing gauges and fittings for this work.

Due to this lack of equipment, the set of tip tanks used at Fort Nelson, Canada, was assembled, serviced with fuel, and found to leak. Tanks were drained, removed, and the outer extrusion bands tightened three times. It was finally found necessary to caulk the inner and outer extrusion bands with a large quantity of gasket cement before tank fuel pressure would remain constant. The tanks still continued to seep fuel at the back and along the outer extrusion band, but due to the rate of fuel seepage, and the length of the next flight, it was decided to release the aircraft for its next move.

Whitehorse, Canada

While waiting for weather to clear along the route to Fairbanks, the two (2) aircraft left behind at Fort Nelson, arrived on the 27th of October, thus all 28 airplanes were ready to make the last leg of the journey to Ladd Field together. During the few days of delay at

Whitehorse, the squadron was to observe the first effects of cold weather - Canopies became difficult to operate and in one case, it was necessary to jettison the canopy in order to open it. Low struts and tires were common and oxygen filler valves lodged in the open position and had to be closed manually. Frost formed on the surfaces of the aircraft and had to be removed with hydraulic fluid. This was particularly true of the painted wing tips and tails where the frost seemed to have an icy base.

A light two-inch snow had fallen the day previous to departure - - and on the following morning, when taxiing, the exhaust blast of the first plane picked up this snow and turned it into water, covering the following plane with a coating of ice droplets, and all planes returned to the line. The ice was removed, planes reserviced, and again planes taxied to the takeoff position. This time, all pilots were acquainted with the difficulty and each man used his throttle sparingly in pulling out from the parking area and a large taxi interval was maintained. Two planes were delayed in attempting to close their canopies, but all 28 aircraft were able to join in time for the Commanding Officer to lead a full squadron formation over Ladd Field on 1 November 1947.

Chapter III

OPERATIONS AT LADD FIELD

Description of Area and Working Facilities

Ladd Field is located almost in the center of Alaska - in the Tanana Valley, which is formed by the Brooks Range on the north and by the Alaskan Range to the south. As a result, the unpredictable coastal weather of southern Alaska is held out and in most cases, weather affecting the Ladd Field area moves from Nome eastward. Temperatures however, do not move with the frontal systems in winter, but are dependent upon the cloud cover over each particular area. Long range forecasts suitable for P-80 flying were not available and weather had to be continually checked: This was true during November, 1947, in which most P-80 flying was done.

Ladd Field with its long parallel runways, filled the area made by the horseshoe curve of the Chena River.[19] It can readily be seen that the 94th Squadron was located some distance from the main base.

94th Fighter Squadron Housing Area

A portion of the '300 Area' had been selected to house the squadron's enlisted men. This area, consisting of twelve (12) huts, plus a mess hall and a latrine, was taken over by the Advance Echelon arriving in August. Each of the housing units consisted of three (3) quonset type structures, arranged in T-shape, and joined at the center by a 23 foot square building. These units were all that were available to accomodate the 347 men assigned. One of the twelve buildings was used as a combination Day Room, Mail Room and Special Services Office, and another for a Supply Room, which reduced the available living

19/ Photo-diagram (vid s.d. #11)

quarters to ten (10). The center section of these huts measured 23' x 23' x 9', with a 4 foot square coal bin in one corner. Each of the three wings were 15' x 36', and were 7 1/2' high in the center. Ten (10) enlisted men were quartered in each of the center sections and eight (8) enlisted men in the wings: This arrangement gave each of the 247 men living in the wings approximately 67 square feet of floor space. The center sections were more crowded, having only 51.3 square feet of floor space per person. Because of the necessity of storing large amounts of heavy arctic clothing, barracks bags and foot-lockers in these crowded barracks, the maintenance of fires and protection against fires became a serious problem.

The latrine facilities for the 347 men included 16 commodes, 14 faucets for washing and shaving, 13 shower heads and approximately 15 feet of urinal space. All of these were contained in one building 20' x 70'. These inadequate accomodations coupled with the necessity of walking outdoors a distance of 100 to 650 feet from their huts, seriously increased the tendency in cold weather for the men to neglect their habits of cleanliness and sanitation. This together with crowded conditions in the barracks undoubtedly increased their susceptibility to, and aided in the spreading of respiratory diseases. 20/

Repeated efforts were made to secure additional housing space in the form of portable Pacific Type Huts but with no success.

Most of the improvements that were made in the housing situation were accomplished on the initiative of the enlisted personnel living in them. These improvements consisted of painting the interiors, building storm doors and making furniture. Some improvements were accomplished

20/ Photograph (vid s.d. #12)

by Judd Field; these consisted of patching roofs and other external repairs.

Initially the housing available for the officers of the squadron was wholly inadequate. They were quartered in bays and rooms of a hospital type building along with officers of the 375th Reconnaissance Squadron. These rooms were quite crowded; floor space averaging 58 square feet per person. Conditions were improved on 6 December when quarters became available in a new BOQ which had just been completed.

Recreational Facilities

The recreational facilities at Judd Field might be considered adequate, in that one could find most of the facilities there that one would expect at an overseas post, however, those available had not been erected with a view toward accomodating as many personnel as were stationed there in 1947-48. Most of the post facilities are grouped in a central location near Base Headquarters. While they are convenient to the nearby organizations, the outlying squadrons and companies were handicapped, especially in inclement weather, from using these facilities. From the Squadron's viewpoint, it was desirable to bring certain facilities closer to its area. This could have been done to an extent if more space had been available in the living quarters - enough for a properly equipped Day Room, writing rooms, etc. Inclement weather, irregular transportation service, and crowded conditions prevented many of the personnel from utilizing existing Base facilities.

In an attempt to add to the recreational facilities, a photo

darkroom was constructed in one corner of the Day Room. Although very small, it did offer diversion for a few camera enthusiasts. Skis and ice skates were obtained from the Base Special Services Office and were available on the basis of 1 pair of skis to each 22 enlisted men and 1 pair of skates to each 26 enlisted men. During favorable weather, the demand for these items exceeded the supply.

Two flights were made to Anchorage in groups of six (6) officers and thirty (30) enlisted men. At Anchorage, the men were the guests of the 57th Fighter Group. These trips proved to be a great boost in morale for all who participated.

The Day Room was redecorated, painted, and furnished with items of local manufacture. Although it was still too small to be of use to all members of the Squadron, it added greatly to its utility.

Hangar Area

The working area assigned the 94th at Ladd Field consisted of one-half of the floor space of Hangar No. 3, plus the shop space situated on the ground floor and second floor on the north side of the hangar. The other half of the hangar was utilized by the 375th Reconaissance Squadron (VLR). This arrangement was not satisfactory to either this unit or the 375th Squadron, however, because of an overall lack of space, it represented the best arrangement possible at that time.

Hangar No. 3 was large enough to conveniently accomodate two (2) B-29s parked end-to-end and two (2) P-80s, providing the P-80s were parked between the wings of the two B-29s. The most frequent

arrangement was to have one (1) B-29 and up to six (6) P-80s in the hangar at one time, with the necessary number of maintenance stands, aft section tail dollys, and other ground handling equipment in the hangar, it was not feasible to have more than six (6) P-80s inside any time the 375th was working on a B-29.

In order to enclose all of the engineering sub-sections, much improvising and combining of specialist groups was done. It was necessary to combine the electrical and instrument sections in a room approximately 12 feet x 12 feet. The sheet metal specialists, utilities personnel and carpenters were housed in a room 10 feet x 16 feet - which restricted the proper cutting of lumber and prevented the use of T/O&E equipment by the sheet metal section. The third echelon maintenance specialists of the squadron were assigned to the proper sections in the Base Maintenance Shops.

The Base Battery Shop was inadequate to handle the needs of the squadron and its distance from the hangar made its use impractical. The best available space on the ground floor of the hangar lean-to was chosen and battery chargers, racks and equipment installed. Work orders requesting the installation of sinks, drains and exhaust fans were instituted but this work was not accomplished prior to the dep arture of the squadron.

Another problem encountered was the fire hazard presented by the lack of a suitable location for the Armament Section to clean guns and to store inflamable cleaning agents - No solution being found, the armorers were situated in a blocked off portion of the shop section and enjoined to use caution when handling cleaning solvents.

In gereral, all of the maintenance specialists except communications were situated on the lower floor of the hangar, while on the

second floor were situated the Communications Section, Operations Office and Office of the Commanding Officer, Orderly Room, Engineering Office, personal equipment and locker rooms, pilots' ready room, and Engineering Inspection Office.[21]

Storage space was totally lacking. Except for items needed for immediate use, stored in the wing of the Squadron Supply room and in the bins of the Technical Supply, all items were stored outside the hangar under tarpaulins. This included all ordnance vehicles and special purpose vehicles. Although storage space for bombs and ammunition was never needed because of the grounding of aircraft, there was no suitable place within a reasonable distance for the storage of these explosives. Aircraft were left on the parking line and covered with canopy and wing covers.[22]

21/ Photographs (vid s.d. #13)

22/ Photograph (vid s.d. #14)

[redacted]

Command Control of the 94th Fighter Squadron

Directives from higher headquarters established the command and control of this squadron at Ladd Field.[23/] In brief, the Commanding Officer of Ladd Field was charged with administration to include rations, quarters, morale, welfare, and discipline. Supplies would flow through the normal channels of Ladd Field to the squadron, and administrative and technical inspections of the 94th would be made by his agents. Operations and Training would be under the supervision of the Commanding Officer, Ladd Field, and the training directives of the Alaskan Air Command would be carried out.

Assignment and reporting of personnel and other routine administration would continue to be excercised by the Commanding General, Tactical Air Command.

Orderly Room

As may be expected, once the squadron was stabilized, most of the problems of the Orderly Room became routine. This section proved to be adequately organized to perform its functions, however, it should be noted that at least three (3) extra clerical personnel were required to handle the number of extra reports required by the experimental nature of the squadron's mission, and the fact that correspondence came both from the Tactical Air Command and the Alaskan Air Command. The crowding of desks in the orderly room was not the best

---

23/

1. Par 2b, War Dept Movement Directive, Shipment No. 6159, dated 7 August 1947. (vid s.d. #4)

2. Ltr: Hq AAC, YFOPN 370.2 "Command Control of the 94th Ftr Sq." To: CO, Ladd Field, 17 Nov 1947

[redacted]

for efficient operation, but the physical set-up was on a par with other organizations. Particular attention should be given to artificial lighting required due to short hours of daylight. The bulb reflector type of lighting definitely decreased the efficiency of all personnel, clerical and mechanical. Modern fluorescent type lights would have given a much better light without appreciable increase in the current consumption.

Reports

Prior to leaving March Field and anticipating a shortage of blank forms, the squadron requisitioned as many of all types as possible in order to be adequately supplied during its stay in Alaska. No trouble was encountered except in obtaining the new WD AGO Form 67-1, and WD AGO Form 66, which could not be obtained at March Field before leaving or at Ladd Field in an adequate number.

Although some difficulty was initially experienced as to which reports required by commands in the Alaskan Theater, and in the routing of reports going to the Zone of Interior, requests from higher headquarters for different reports soon clarified reporting procedure. One remaining difficulty was the time element involved in mailing them to Tactical Air Command or to March Field, California - Several TWXs were received indicating nonreceipt of reports that had been mailed from Ladd Field as much as ten (10) days previously. Mail coming from the States was quite regular; but mail going to the States indicated more erratic schedules. It is felt that the time allowed for submission of reports was insufficient considering the unavoidable delays in transmission.

It is also believed that too many time-consuming reports were required during the same period of time, which was a definite hindrance to accuracy. As an example, the following reports submitted by the Classification Section were due as of the 31st of December,,1947:

Report of AAF Personnel (AAF Form 127)
Personel Survey of the Army (WD GPA-35)
Officers Efficiency Report (WD AGO Form 67-1)
Form 66 Data Sheet (TAC Form 35-3)

These reports were compiled and completed by the same clerical personnel, especially trained for this type of work. The normal activities, such as submission of applications for graduate and undergraduate training, work on officer and enlisted classification, compilation of Officer Forms 66, and all correspondence pertaining thereto, were also accomplished during this period. This does not take into consideration all other periodic reports from daily to annual, which must be either coordinated or consolidated by clerical personnel of the command section. Over a period of time, the volume and magnitude of periodic reports has greatly increased, and it is believed that sufficient consideration should be given to spread the special reports in order that they do not fall due on or near the same date.

Delinquencies

A survey of the service records revealed that 126 enlisted men or 34% of the strength, were under 21 years of age and that thirteen (13) were under 18 years of age. With the number of young soldiers it is felt that the behavior of the personnel reflected in the following delinquency report is exceptional. Especially, since the squadron was not operational for the whole period and it was difficult to keep personnel occupied at all times.

Date	Delinquencies Reported 94th Ftr Sq	Lodge Guard	Remarks
1 - 15 November	7	?	Uniform Violations - 4
16 - 30 November	0	45	3 cases reported within the Squadron
1 - 15 December	0	75	
16 - 31 December	2	20	Curfew Violations
1 - 15 January	3	42	New Years Celebrations
16 - 31 January	0	36	

Duty Section

As can be seen from the Table of Organization, the squadron was authorized fifteen (15) privates MOS (590) and one (1) duty NCO, MOS (566). These men were utilized entirely within the squadron as firemen and orderlies. Twelve (12) firemen were required to fire all the coal stoves and boilers in the quarters and buildings assigned to the squadron. These men also removed the ashes from the stoves, maintained hot water, kept the coal bins filled, and acted as fire guards. This work was done on a twenty-four hour basis.

This number of men was inadequate to perform all of the jobs in this category. It is recommended that at least one (590) Fireman be assigned for each twenty (20) men assigned. The number of men required to fill Base details depends on the manning table of the Base, and other work loads depend on the weather, facilities available for use by the squadron, and the general conditions under which the squadron is required to operate.

Some of the details for which the squadron was required to furnish personnel are ennumerated below:

11 Men	Unloading JP-1 fuel drums	Two Weeks
10 Men	Pumping fuel from drums to storage tanks	Two Weeks
2 Men	Ration breakdown at Base Quartermaster	Permanent
4 Men	Base AF Supply due to shortage of Base Supply Personnel	

8 Jan Required to operate gunnery and dive bomb range (Furnished, but not required since the Squadron was unable to fire gunnery.)

Mess

An organizations Mess is of prime importance in Arctic climates. Not only does the health of the personnel depend on the Mess, but its efficient operation is the greatest single factor in maintaining the organizations morale.

The 94th's Mess Hall was a "T-shaped" building, located in the barracks area. The main portion contained the dining tables and seating space, while the single wing contained the stoves, work tables, sinks, and storage space. The facilities offered were not adequate for the preparation of an average of 950 individual servings daily. The single coal range had a capacity for serving approximately 140 men, while seating was available for approximately 240 men. Space was therefore at a premium. Vertical racks had to be constructed for trays, cups and saucers. A large stainless steel topped serving table was constructed to serve cold dishes and dry foods. Special racks were required for hanging winter clothing, which further reduced needed space.

Problems not usually encountered in temperate climates are listed below:

1. Snow tracked in soon melted on the cement floor forming a slippery film with the ever-present ashes and coal dust. This required frequent moppings between and during servings.

2. Sufficient warm storage space is vital. Rations must be uncrated and stored inside in order that they will not freeze.

3. Garbage must be stored in a shelter of sufficient warmth to prevent freezing.

4. A large double boiler is desirable to melt the frozen milk that is issued.

5. The water was unusually hard and it formed a large amount of grease on the silverware and trays, even though water softener was used.

6. Hot soup, with facilities available to keep it hot, should be served at least twice daily.

7. Waiting lines must be inside the mess hall, 24/ therefore sufficient space should be allowed for this. A satisfactory arrangement was seen at Nome. A Nissen Hut adjoined the mess hall - here clothing was stored and personnel could remain inside while waiting to be served

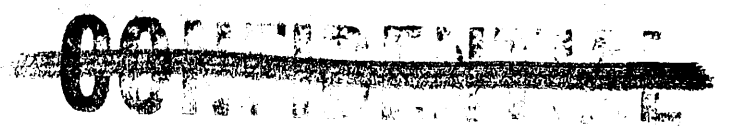
8. The issue of coffee should be increased to provide coffee during working hours for personnel who are recuired to work out-of-doors for long periods of time.

9. Spoilage of fresh vegetables in transit is very high: During the period between 20 December and 29 December, a check was made of spoilage of various issues made to this squadron:

Turnips	52%	Celery	37%
Carrots	20%	Apples	23%
Beets	53%	Oranges	22%
Lemons	31%	Pears	7%
Potatoes	12%	Lettuce	50%
Cabbage	48%		

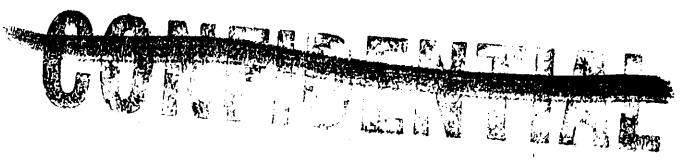
25/

The above figures cannot be said to give a true overall picture, however they may serve as a guide. This spoilage causes a number of



forced issues which, in turn, do not allow a variety of foods to be served. This condition is due to the irregularity of the present shipping schedules.

It is believed that if a recent proposal, 26/ submitted by Headquarters Ladd Field, to have fruits and vegetables trucked in direct to Ladd Field from Skagway or Seattle, were approved, much of this waste would be eliminated, and a more steady flow of food would result.



24/ Photograph (vid s.d. #15)

25/ Interview with Mess Officer

26/ No document available

Goals to be Achieved

Paragraph III of the operations annex to the "Army Air Forces Arctic Program for one JP Squadron" discussed the arctic training of the 94th Fighter Squadron as follows:

* * * * * *

III. Phase 3, Theater Training.

A. Flight requirements as dictated by AAF Training Standards and directives from this headquarters will constitute the flight program. Additional stress will be placed on navigation, formation, instrument procedures, gunnery, and bombing; so as to arrive at the overall desired proficiency for Arctic operation.

1. The 94th Squadron, based at Ladd Field, Fairbanks, Alaska, should be able to accomplish 2400 hours flying time in P-80s during the period 1 November through April 1948, based on the following assumptions.

a. During the six (6) months period, the weather bureau estimates 100 operational days at Ladd Field (See Weather Annex)

b. Short working days during winter months (4 to 6 hours during December and January).

c. The expected reduced operational efficiency of aircraft and personnel in cold climate.

d. The 94th Squadron now averages approximately 55% assigned P-80s in commission at all times.

e. Added supply and maintenance problems aggravated by great distances to depot and difficulty of movement of supply.

f. Considering all factors mentioned, the squadron maintenance record will probably be reduced by 20%. Using 35% of total aircraft assigned as the best average percentage in commission, 8 aircraft can be expected to be kept in commission at all times.

g. Two sorties should be flown per operating day, average sortie 1 1/2 hours. Three (3) hours per day flying per aircraft in commission. (8 aircraft) X (3 hrs per day) X (100 operational days) = 2400 flying hours.

2. Flight Training

a. The first flight each pilot makes from Ladd Field will be a familiarization flight to acquaint the pilot with the field and surrounding terrain, become acquainted with, and gain confidence in the radio aids at hand and become familiar with the operation of the aircraft under Arctic conditions.

b. The following missions will be conducted during the six (6) months period of operations. Careful consideration will be given by the Squadron Commander in scheduling the below mentioned missions. Existing conditions, will be considered, such as night flying during the long nights through December and January, concentrating on other types of missions during the longer days to be encountered in the spring.

1. Cruise control missions at various altitudes.
2. Formation both squadron and flight.
3. Navigation day and night.
4. Acrobatics.
5. Gunnery.
6. Dive Bombing.
7. Skip bombing.
8. Night flying.

* * * * * *

An Alaskan Air Command directive[27] further amplified the flying and ground training to be performed by the squadron: Each pilot if he completed the course prescribed, would have flown eighty-eight (88) hours, giving the squadron a total of 2640 hours, there being 30 pilots assigned.

27/ Extract of AAC Reg 50-28, 31 July 47 (vid s.d. #16)

Hours Flown

Flying was conducted on seventeen (17) days during the squadrons stay in Alaska, the maximum time flown in one day being fifty-two (52) hours. For these seventeen days, the average time flown per day was approximately 33 hours, giving each pilot an average twenty (20) hours of Arctic flying time. 28/

Operations

With the arrival of the flight echelon on 1 November, 1947, flying operations in Alaska began. Due to orientation lectures being conducted for all pilots, and the necessity of checking all aircraft after the flight from March Field, it was not until the 13th of November that flying could be begun in earnest. Except for the intercept missions conducted on November 15th and November 18th, schedules were determined, to a great extent, by weather: Low ceilings and changing weather for several days caused low level navigation, GCA and local instrument flights to be in order. Each Saturday morning Squadron formation flights were customarily scheduled to keep the squadron in its best form.

Flying routine was just being established, with plans underway to commence gunnery and bombing, when the fatal accident of 1st Lt. William J. Reilly led to the discovery of fuel filter trouble which caused all P-80s to remain grounded for the remainder of our time in Alaska. 29/

28/ 1. Chart - P-80 Flying Time (vid s.d. #17)
2. Chart - Pilots' Progress Chart (vid s.d. #18)
3. Photograph-Chart, Daily P-80 Flying Time (vid s.d. #19)

29/ VOCO

Temperature

The temperatures encountered at Ladd Field from 1 November 1947 through 15 February 1948, because of their moderateness, are of interest when compared to previous recorded figures in the files of the Air Weather Service.[30] The mean temperature for this 107 day period as recorded by the Ladd Field Weather Office was 2.4°F. and the daily average for the 17 days during which the 94th accomplished some flying was 11.3°F.[31] These averages contrast sharply with the temperatures encountered from 1 January through 31 March 1947 when the 62d Fighter Squadron was training at Ladd Field. The average temperature for their training period, according to records was -28°F,[32] and they were able to do some flying on 52 days.

No attempt is being made here to compare effectiveness of the two organizations or of the two types of aircraft, but only to note that this Squadron's testing period was comparatively warm, unfortunately perhaps, when one of the primary considerations was to obtain data on the effectiveness of the P-80B operating during extremely cold weather. In spite of the moderate temperatures experienced during the 94th's training period, the the cold weather experienced was of sufficient intensity to indicate certain major defects in the P-80B aircraft and its engine unit. Cold weather, to show its real effects,

30/ Annex #7, Plan AAF Arctic Maneuver, 94th Ftr Sq, Winter 1947-48 Hq. USAF

31/ Photograph-Chart, Temperatures Encountered (vid s.d. #20)

32/ Annex #7, Plan AAF Arctic Maneuver, 94th Ftr Sq, Winter 1947-48 Hq. USAF

should last for several days - A sharp dip in temperature that may be experienced in the temperate zones at night, during winter, generally does not last long enough to thoroughly "cold soak" the aircraft, allied equipment, and fuel. It is only when "cold soaking" is accomplished that the full effects of cold weather show their manifestations.

Accidents

Two major accidents occurred during the tour in Alaska, the first occurring on the 18th of November:[33/]

During takeoff, one aircraft flying wing position was bounced into the air by the rough runway (aggravated by additional snow fall and periods of thawing and icing) before sufficient flying speed was attained. The aircraft settled back on the runway, rocking forward and compressing the nose wheel strut to its maximum (12" from fully extended position). The Pilot, believing the nose gear had collapsed, retracted the gear and slid off the end of the runway. The landing gear and fairing doors received major damage and the fuselage and tip tanks were buckled. To prevent further accidents of this type, all pilots were briefed on the circumstances and causes.

The following is a description of the events leading to the second, a fatal accident, occurring on December 1st, 1947:

Having concluded a 45 minute test to determine if the tip tanks were feeding properly, the pilot was on the initial approach of a tactical landing pattern when observed by the tower operator and a pilot on the ground: As the aircraft was seen to peel up, the pilot radioed that his tailpipe temperature was rising rapidly and that he

33/ Chart-Photograph, Aircraft Accident Rate (vid s.d. #21)

could make an emergency landing. The aircraft was seen by a P-80 pilot on the ground, to peel up to an estimated 2000 feet, complete one 360° turn and 270° of a second turn. The aircraft appeared headed 60° to the runway at an estimated altitude of 500 feet and disappeared behind a small rise. Flame was seen at the tail by both observers; neither could state whether the flame was continous or intermittent. A few seconds later, black smoke was seen to rise from the point of impact behind a small hill. Examination at the scene of the crash, revealed that the right wing of the aircraft first struck a tree, 16" in diameter, at a point 30 feet from the ground. The aircraft then struck the ground on its left wing 150 feet from the tree. The outer part of the wing was broken off and the remainder of the aircraft skidded 50 feet to a stop among heavy trees and rough terrain. Investigation also revealed that the gear, dive flaps, and wing flaps were up. The pilot was killed instantly upon impact with the ground, and shortly thereafter, the cockpit section of the aircraft was consumed by fire.

The direct cause of the accident as determined by the accident board, was engine flame-out due to clogged fuel screens, with a malfunction of the hydraulic system a contributing factor. As a result, all P-80s of the squadron were grounded until the unsafe condition could be remedied.

Operational Difficulties

The following difficultics and/or experiences noted by pilots while undergoing arctic training are listed below. None were particularly hazardous, but all delayed scheduled missions are caused aborts.

On seven occasions canopies jammed and failed to close due to binding of metal parts or jumping of the chains on the sprocket teeth.

Changing weather did not allow missions to be scheduled as desired. Flights were held in the near vicinity of the field, or crews were kept waiting for a change in weather.

On warm days there was danger from icing when taxiing close to the preceding aircraft. Parking was done at a 45° angle to allow ships to pull out of the parking line with a minimum of throttle application. 34/

Upon arrival at Ladd Field, fuel pressure gauges on some aircraft gave low readings. When the gauges were bled, no more trouble was encountered.

Four (4) aircraft became stuck in the deep snow when turning. Snow removal is a necessity for P-80 aircraft.

Some cases of elevator trim tabs freezing were encountered, however in all cases the tab became operative before or shortly after takeoff. Centering the tab on the green light, just before takeoff, reduced this hazard.

Due to the dense cold air, more thrust was encountered: Takeoff runs were shorter, patterns larger, due to idling thrust, and the flareout on a landing was longer.

The push button radios sometimes failed to change channels. No explanation could be given by the communications section due to the short operational period.

Landing gear struts collapsed while taxiing, this was later remedied by checking the two valve core seals.

34/ Photographs of Parking Area (vid s.d. #22)

High oil pressure was common, and warm up in flight was not rapid. On ground test stands (Cold Weather Test Laboratory) run ups were made from start to 100% as rapidly as possible until oil temperatures and pressures were normal without any ill effects. Based on these tests, it was hoped that high oil pressures would be allowed for cold weather operation.

Three (3) tip tank failures occurred when fuel failed to feed from the tank. It is possible that ice formed in the tanks, plugging the lines, however, no opportunity for continued tests along this line was available.

Full power could not be applied before takeoff due to slipping of the tires on the icy runway. The brakes were released at 60% and full power applied gradually. The wing man followed through and with little practice, two ship elements took off easily.

Although not serious, the tail pipe temperature guage (400° - 1000°C) did not have the proper range. On long let downs, tail pipe temperatures were lower than 400°C., therefore no indication was shown on the gauge. It is always comforting to the pilot to glance down and see immediately that the unit is still operating.

On let downs, close to the ground, where a cold layer of air exists (as much as 20° lower than the temperature a thousand feet higher in the air) the camera lens were found to fog, resulting in poor pictures. No solution was found during the Squadron's stay in Alaska.

Two problems which were not encountered by this squadron, but which will undoubtedly present themselves in future operations, are the icing of the aircraft and the diffuser screen of the jet unit.

One pilot assigned to Air Materiel Command, in ferrying a P-80B from Whitehorse, Canada, to Ladd Field, was forced to climb through a front - Icing was encountered to such an extent that the maximum ceiling of the iced aircraft was 20,000 feet. For all-weather operations of jet aircraft, deicing equipment should be considered.

Ice fog was never encountered but on one day, with the temperature at approximately -35°F., one B-17 run-up was observed to completely cover the air field with ice fog. In future operations, the possibility of the formation of ice fog in the take-off of large numbers of jet aircraft should be a consideration. This fog could prove to be extremely hazardous in the event an early return was necessary.

Ground Training

Ground Training followed the course outlined in AAC Regulation 50-28, 31 July 1947.[35/] During the first few weeks, instructors from the Base conducted hourly classes at the beginning of each day while the aircraft were being prepared for flight. During the evenings, when flying had stopped, all pilots participated in some form of athletics in the gymnasium.

After December 3d, when all aircraft were grounded, Ground Training was enlarged upon. Several hundred reels of training films were viewed, lectures were given by the pilots on topics of interest, and athletics in the afternoons was increased to one and one-half hours per day. The Link Trainer was used to capacity by all pilots. Minimum flying requirements were met by flying base aircraft.

35/ Chart-Photographs - Ground Training (vid s.d. #23)

Nome - Arctic Survival Course

All pilots attended the seven (7) day Arctic Survival Course at Nome sometime during the tour in Alaska. This proved to be the most instructive and most valuable course offered. It was from experiences gained at this school that the Squadron determined the requirements for the Arctic Survival Kit recommended in the Personal Equipment Section. In this school, two days were spent on the sea ice and two days on the tundra learning how to survive with the contents of the survival kit. Although the course was primarily fashioned for bomber crews, it could readily be changed to aid fighter pilots in learning to use his equipment which is more limited. This course should be given to crews immediately upon their arrival in the Alaskan Theater, as it forcefully brings home to the individual the necessity for proper dress and equipment at all times.

Personal Equipment

Arctic flying presents new problems in divising personal equipment for the fighter pilot. Limited space in the aircraft, plus the probability that the pilot will resort to the use of the parachute in case of accident, require that all survival equipment items be carried on the pilot - As much necessary equipment as possible should be carried, for in any case, chance of survival alone in the arctic is slight.

"Scramble takeoffs" are out of the question with winter flying gear unless the pilot is actually in the aircraft. 36/ Waiting in the

36/ Photograph of P-80 Cockpit (vid s.d. #24)

aircraft in cold weather is not practicable for long period of time. One remedy suggested to overcome this problem is - to build the survival kit and parachute into the ejection seat which remains with the pilot on his parachute descent. With this arrangement, the pilot would only have to strap himself to the seat in readying for takeoff. The kit, parachute, and seat should be easily disassembled for replacement of components and for inspection.

Based on experiences at the Arctic Indoctrination School at Nome, 37/ the pilots of the 94th Fighter Squadron listed the items they felt should be a part of the bail-out kit as it is now constructed.

In general, the primary requirement "warmth" has been neglected. A sleeping bag for use in conjunction with the parachute, is a necessity. All clothing should be designed on the layer principle with a tough water repellent top layer. An adequate stove for melting snow for water and cooking should be carried. All of this equipment should be in a small light weight pack that will not be lost during bail-out 38/

37/ Photographs taken at Survival School, Nome Alaska (vid sd #25)

38/ Report, "Bail-out Kit and Clothing for Arctic Fighter Pilot " (vid s.d. #26)

Maintenance and Supply

In order to give a clearer picture of Supply and Maintenance activities at Ladd Field during the tour of duty there, a summary of the outstanding difficulties, and general conditions existing between 1 November, 1947, and 1 February, 1948, are described first. Following that, each section, and/or aircraft system is discussed in detail.

Following the arrival of the Flight Echelon on November 1st, immediate preparations were undertaken to inspect the aircraft and return them to service. All of the ground personnel except the thirty (30) men with the P-80s had arrived by October 13th, and were working to improve the facilities in their sections. The major portion of this work was completed during the middle of November, however, certain phases continued throughout the squadron's stay in Alaska. Transportation seriously handicapped the squadron in becoming operational. There were no tow vehicles for use by line personnel or by the Auxiliary Power Unit Section. The refueling section was only able to furnish four (4) servicing trailers per day. Also, details had to be furnished for unloading T/O&E equipment and JP-1 fuel from flat cars. As a result, for the first two weeks in November, much time was expended in preparing newly received equipment for use. All of the vehicles that arrived were pushed into service first and later withdrawn for service when they could be spared. Manpower was pushed from one essential job to another in order to become operational with the least amount of delay. Sections had just begun to establish their routine and flying schedules were well underway when the

accident of 1 December, 1947, led to the grounding of all squadron aircraft on 3 December, 1947.

From this time until departure, all efforts were directed toward establishing a 'fix' that would allow the P-80Bs to fly. No activities performed during this period could be considered normal for a fighter squadron, and by the middle of January, 1948, it was obvious that no 'fix' would be made before the cold weather passed. Supply sections began to make initial preparations to turn in supplies upon receipt of movement orders from Headquarters, USAF. On February 7th, initial plans were made to transfer all aircraft and T/O&E to the 57th Fighter Group, and to prepare for the return movement which was to begin on 15 February 1948.

Aircraft General

Valve cores: All valve cores should be tightened on the aircraft, before and during cold weather operations. It was found that this action prevented, to a large degree, the number of aircraft that had deflated shock struts. The valve extension on the hydraulic strut valve has proven very satisfactory, and in order to increase its utility, it is suggested that this extension contain the hydraulic strut valve core, the Kit-Dill-3020, Stock No. 6500, Class 04A. This would provide a double seal with two valve cores in series, one in the landing gear strut and one in the extension. Valve cores in the hydraulic accumulators should also be tightened after the aircraft has cold soaked.

Oxygen Filler Valves: It was found that oxygen filler valves leaked after servicing. [redacted] of this leaking could be obtained

only by listening for a hissing sound from the valve and by a pressure drop on the oxygen pressure gauge. It is suggested that personnel be trained to check for oxygen leakage in cold weather and that a new type filler valve be provided.

Air Louvers: Permission was granted[39/] and work started on modifying the lower left and right air louvers between stations 283 and 307.5 of the aircraft fuselage. This action was initiated after a fire occurred in the fuselage, between the engine air baffle, and the tail cone baffle, which was not accessible to fire extinguishers. The fire occurred during a preflight inspection and ignition check. The starter was energized for some fifty seconds with an auxiliary power unit and for five additional seconds with the aircraft battery system cut in. During this time the control valve had leaked and fuel, aided by gravity, flowed from the drip valve from the lower burners, and to the scupper drain from the upper burners. This fuel ignited and fire was seen on the ground under the drip valve, and under the scupper drain in the fuselage where the fuel had over flowed and come through the intersection between the engine and tail cone.

Tip Tanks: Some trouble was encountered with tip tanks failing to feed. The cause of this was determined to be due to air pressure to the tanks being blocked off by the icing of the air pressure regulator. Air pressure was also released when the rubber regulator seals lost their sealing efficiency in the cold temperatures.

Fuel Booster Pump Drains: Fuel booster pump drains are required to be drained at each daily and preflight inspection: The leading

39/ TWX: Hq. AMC, Wright Fld-No. TSMTS 36-10-35, TO: CO Ladd Fld.

[redacted] tank booster pumps are provided with drain lines from the pump base to the dive flap opening and have spring loaded drain cocks. This arrangement has proven quite advantageous to maintenance personnel. The main wing and fuselage booster pumps have no drain lines installed, however, and are much more difficult to service. It is recommended that, as the time factor is of great importance for line maintenance in cold weather operations, all booster pumps be provided with drain lines that are more accessible and that incorporate the spring loaded quick-drain cocks.

Canopies: During the November operations, approximately fifteen percent (15%) of the aircraft were out of commission due to canopy trouble. Three factors are considered to have caused this trouble:

1. The canopy seals restrict movement by hardening at low temperatures.

2. The difference in the coefficient of expansion of the metal canopy track and the plastic canopy caused as much as 1/8 to 3/16 inches difference in size between the canopy and track when the temperatures lowered, causing the canopy to bind.

3. As the aircraft mass shrinks faster than the canopy chain, the chain loosens in cold weather. Thus, with a loose chain and added friction, the canopy chain tends to jump the sprocket teeth of the torque tube assembly and causes it to malfunction.

The following corrective measure was suggested by the Lockheed company and found to work entirely satisfactory on one aircraft that was tested to -20°F. - - Fashion micarta blocks and install

on the bulkheads, Station 163.87, in the cutout support casting, No. 178.670, left and right. One other block is attached to the brace located at the crank assembly on the right front torque tube sprocket. These blocks prevent the chain from jumping, however, further tests at lower temperatures are recommended.

Snow and Ice Removal: It was found that much ice accumulated in the aircraft parking area, just aft of the exhaust from the tailpipe. Since snow removal is never complete, this will be a problem where parking is crowded.

Fuel Warning Lights: Unsatisfactory Report No. 48-143, submitted from March AFB. on 25 March 1948, discusses the lack of a warning light indication for the left leading edge fuel tank. This tank contains 100 octane gasoline for cold weather starts. The present SOP for cold weather gasoline starts, requires the pilot to purge the fuel system of jet fuel by operating on gasoline for the final two minutes before shutting of the engine unit. - If the gasoline level is not known, it is possible to run out of gasoline and draw jet fuel through the system. Thus the next ground start will be a hot start. It is recommended that a separately integrated fuel warning light be installed in winterizing P-80 type aircraft for the left leading edge fuel tank.

Deterioration Of Tires: It was found that JP-1 fuel soaks into the snow to form a half frozen slush. During the suspended operational period, it was impracticable to remove the aircraft and they remained in this kerosene-snow mixture. When tires were removed from the aircraft, they were found to be deteriorated by the action of the

kerosene. Perforated wooden parking pads were manufactured by the squadron in order to preserve the remaining tires.

Aircraft in Commission: During the squadron's one month of operation approximately 65% of the aircraft were maintained in commission.[40/] Maintenance was handicapped by the lack of hangar space and by the difficulty for line personnel to work outside. It is estimated that 75% of the maintenance for this month was required to be performed in the hangar. As has been previously stated, only six (6) P-80s and one (1) engine build-up section could be maintained in the hanger. However, the overall efficiency began to increase toward the end of the month as personnel became accustomed to adverse working conditions. For high maintenance efficiency and thus higher efficiency in general, permanent or portable shelters for aircraft operating in arctic climates should be added to the T/O&E.

Instrument Section

Two problems encountered by this section were discovered upon receipt of the aircraft: As was previously mentioned, inaccurate readings were encountered in the Universal Attitude Indicator (J-1) and to a lesser degree in the Slave Type Gyrosyn Compass.

The erroneous readings from the attitude indicator ranged from three (3) to twelve (12) degrees with the average error being about four (4) degrees. The use of the "Strato-Pax-Relay helped reduce the error but not to the extent necessary for precision flying at speeds of 400 to 500 miles per hour. The only recourse available was to change complete assemblies and return the old assemblies to supply

40/ Chart-Photograph: Aircraft in Commission (vid s.d. #27)

as repairable. This action was necessary as there were no Technical Orders or test equipment available. It is recommended that necessary Technical Orders and test equipment accompany any and all new equipment, otherwise corrective maintenance and constructive recommendations on new equipment are delayed until receipt of necessary items through normal supply channels.

A program for a functional test of the Gyrosyn Compass under the direction of the Air Proving Ground Command had been arranged by their project officer, however this flight test was never accomplished due to the grounding of P-80 aircraft. 41/

Fuel System

Following the major aircraft accident on 1 December 1947, the engine of the wrecked aircraft was brought back to Ladd Field and inspected by the engineering officers and by the Allison and Lockheed representatives. Investigation revealed that sediment and foreign material had collected on the high pressure fuel filter discharge nozzle screens. Six (6) of the fourteen (14) screens were collapsed to a point where no fuel could pass through them. The low pressure fuel filter was examined and found fairly clean. Sediment similar to that found on the screens was found on the walls of the fuel cells. With this condition existing, the engine would continue to operate if a high RPM was maintained, however, if the power was reduced, and then increased, a flameout would occur. Inspection of the tail cone revealed wrinkling and discoloration of the metal, indicating uneven flame distribution and excessively high tailpipe temperatures.

41/ Ltr: Hq APCG (no file No.) "Program for Functional Test (Cold Weather) of the Gyrosyn Compass (Proj. No. 4-43-3CW", To: CO CWT Det., Ladd Fld, Alaska

As a result of this finding, a spot check of all other units was instigated. it was found that the filters and screens on 75% of the remaining aircraft were at least partially clogged. This investigation resulted in the grounding of all P-80s at Ladd Field.

On 5 December 1947, a conference, attended by the Squadron Commander, Engineering Officers, Operations Officer, Technical Representatives was held and the following course of action decided upon:

1. Trace fuel contamination from 55 gallon drums to storage tanks through refueling units to aircraft by taking sludge and fuel samples from each.

2. Clean refueling systems and take necessary measures to insure the servicing of clean fuel.

3. Flush all internal and external fuel tanks with 1500 gallons of JP-1 fuel while the aircraft were kept in constant rocking motion to agitate the fuel in the fuel cells. Fuel was to be serviced to various tanks, passed through the fuel system and then pumped out of the main fuel line just aft of the fuselage tank, back into the servicing trailers. All trailers used were cleaned and tested for proper functioning.

4. Flush the emergency fuel pump system thoroughly

5. Remove and replace the low pressure fuel filter, and clean the fuel filter bowl thoroughly.

6. Remove main fuselage fuel tank cover plate and tank manhole plates and wipe out the remaining sediment by hand.

7. Remove, disassemble, clean, inspect, and reinstall the

fuel flow meter.

8. Complete engine change.

9. Complete 50 hour inspection on aircraft.

10. One plane designated as the test aircraft, with the following test procedure.

a. One hour ground run-up of engine with rocking of aircraft to agitate fuel in the fuel tanks.

b. Reinspect and clean both the high and low pressure filters and visually inspect the fuel nozzle screens.

c. Providing engine inspection after ground run-up proved satisfactory, a controlled flight test will be performed.

d. After flight test a complete inspection of fuel filters and engine will be made. If fuel system is clean at final inspection, all aircraft will be cleared for flight. For the first ten hours, filters will be checked after each flight.

e. An adequate 50 Hour Inspection in accordance with Technical Order 02B-105BA-2, 3 June 1947, as revised 25 September 1947, will be accomplished on old engines as soon as the squadron is operational

It was believed at this time that the contaminated fuel had reached the fuel nozzle screens through the emergency fuel system. Fuel is filtered through this system only by the low pressure filter and it was believed that the increased viscosity of jet fuel at low temperatures was sufficient to cause sufficient pressure drop across the low pressure filter to open both bypass valves and thus allow contaminated fuel to go to the engine air adapter and nozzle screens.

The Squadron Commander held a meeting of all engineering officers and enlisted section heads on 7 December, 1947, to prepare a schedule and form working crews necessary for the fuel system flushing

and engine changes. It was decided to place the squadron on a 24 hour, 7 day work schedule, effective the 8th of December. The flight crews were augmented with men from the APU, Armament, Electrical, and Instrument Sections, and organized into four (4) eight hour shifts of thirty-six (36) men. Each shift was controlled by an officer with engineering experience and one of the squadron's four Flight Chiefs.

The work on the flushing and engine changes was hampered by lack of hangar space which allowed only five aircraft to be accomodated at one time.

P-80 No. 45-8574 was established as the test plane and the test was completed in approximately one week. All fuel tank access plates were removed and the tanks cleaned as thoroughly as possible. All fuel lines were flushed with JP-1 fuel. Allengine accessories were replaced. The engine had a top overhaul in accordance with TO 02P-105BA-2 and the aircraft was serviced through a couble thickness of chamois skin. In subsequent ground run-up, dirt still passed through the fuel system and clogged the fuel nozzle screens: It was then realized that the aircraft could not be cleaned properly by flushing.

As a result of a conference between AMC and Colonel Hardy, A-4, Yukon Sector, the Squadron was required to stop engine changes and begin top overhaul on all used engines. Four (4) of the six (6) new engines installed had to be removed and returned to AF Supply.

To facilitate engine overhaul, the Squadron went of the 24 hour schedule and established an assembly line: Each flight was respons-

ible for engine removal, turn-in of old and installation of new engine fuel accessories: barometrics, fuel pumps, governor, stop cocks, and cleaning of the high pressure fuel filter. The engine accessory hoses were attached together in a special hook-up so that in one operation they could all be flushed by pumping fuel into the main fuel line and out the manifold line.[42] As work proceeded on the front or accessory end of the engine, the tail pipe was removed from the other end. The engine was then conveyed to the engine overhaul crew which accomplished the top overhaul inspection. The tail pipe was replaced and then the finished engine was inspected and set on blocks, as there were not enough engine stands to accomodate the twenty-seven (27) engines. In the engine overhaul, there was 100% replacement of fuel nozzles and air adapter fuel strainers. It was found that approximately 90% of the inner liners had to be changed. This was attributed to the uneven burning caused by clogged fuel nozzles and possibly to the rapid cooling of these liners after flight in arctic weather. Supplies for this engine overhaul had been requisitioned before Colonel Hardy's conference with Headquarters AMC and were air lifted to the Squadron so that no time was lost. The engine overhaul was completed on 29 December, 1947 - - 27 engines in 2 weeks. Four Unsatisfactory Reports were submitted on the fuel system during this period: UR Numbers 47-474, 47-473, 47-460 and 47-488.

Early in January, as a result of tests conducted by Lockheed Aircraft Corporation,[43] Air Materiel Command, the 94th Fighter Squadron,

42/ Photograph-Engine Flushing Rig (vid s.d. #28)

43/ Test, Lockheed Co. No. 6349, "Cold Test on Low Pressure Micronic Fuel Filter for Model P-80B Fuel System, 22 December 1947.

and the Cold Weather Test Detachment at Ladd Field, the whole problem of unfiltered fuel became quite clear:[44/] All fuel accumulates a minimum of 1% water content through manufacture and condensation - This water freezes below 15°F, forming sufficient ice particles in suspension to clog the low pressure filter now used. The micronic filters installed on the F2A fuel servicing trailer, and the high pressure filter in the P-80B have fuel bypass features: Therefore, when these filters are blocked with ice, they bypass unfiltered fuel directly to the engine resulting in eventual loss of power.

The solution to this problem seems to lie in one of two directions: Either a fuel filter be designed which will not be affected by ice particles (not believed feasible), or a fuel of different specification be used that will eliminate the possibility of ice crystals forming at low fuel temperatures.

It is recommended that the low pressure fuel filter be replaced with one similar in design to the high pressure filter, and that an additional filter be placed in the emergency bypass system. All three of these filters should be tested for proper fuel flow capacity with consideration given to the higher viscosity of jet fuel at low temperatures and the fuel return features of the governor and barometric.

Hydraulic Section

Some difficulty was encountered with the "O" Ring Packing, PN 6227-43, in the main landing gear oleo struts, becoming cut and chipped upon action of the gear. This is believed to be caused by the

44/ Special Report #11 of Allison Co. Representative, Mr D.F. Wright, "Jet Aircraft Fuel System-Troubles Encountered", 3 Feb 1948 (vid s.d. #29).

packing "O" Ring hydraulic being forced to roll rather than slide when the oleo piston moves. This rolling is due to the piston becoming excessively dry in the sub-arctic climate. Even though daily cleaning and wiping of oleo struts with hydraulic oil was stressed to all mechanics, this condition still occurred at frequent intervals.

Only one Aileron Booster Assembly, PN 176455-2 was required to be replaced. The assembly furnished by Ladd Field Supply did not have the proper winterized hydraulic "O" Ring packings installed. Therefore, it was necessary to process the aileron booster assembly through the Base Maintenance Hydraulic Shop for installation of the correct winterized seals.

Too much stress can not be placed on the proper winterized parts being available to any organization when needed.

Inspection Section

Even before the Flight Echelon left March Field for Alaska, it was apparent that the work load of this section would be heavy. At that time, due to the fact that the larger portion of the engineering personnel had gone with the Ground Echelon, no immediate action could be taken to increase the personnel of this group. It was apparent from the existing work load (transfer inspection on P-80As, inspection of accessories and auxiliary equipment, acceptance inspections of P-80's, forwarding of reports, and crating and storage of equipment) that additional augmentation of personnel would be necessary for efficient operation in Alaska. Therefore, upon arrival in Alaska, an

inspection office was set up and inspection schedules established. An additional clerk and one (1) additional inspector were added so that a more thorough study and report on difficulties encountered could be made.

Inspections were made of T/O&E equipment as it arrived, in order to determine the nomenclature of each item and to decide whether it would be needed for immediate use or should be stored outside.

In addition to the time consumed in routine inspections, difficulties were encountered in the fuel system which required a more thorough inspection of the aircraft and engine unit. The conditions found showed the necessity for a complete Top Overhaul Inspection of all units and complete flushing of all tanks, lines and emergency fuel systems.

During the special project, on aircraft and units, an inspection system was set up to cover the third echelon maintenance being conducted by the Squadron Engineering Section: This required the presence of an inspector at each phase of the project, which was operated on a 24 hour schedule. A list of items that required replacement was made and a study conducted of material failures and causes which are listed in UR No. 48-31, dated 22 January.

At completion of Top Overhaul, the J-33-21-A power units were placed in extended storage. Due to the shortage of proper materials for complete compliance of extended status, the Base Air Inspector was contacted and approval obtained for present storage with all available precautions accomplished.

An inspection and study of the rubber accessories with a factory representative, disclosed a considerable amount of deterioration

in the main landing gear casings, which is covered by UR No. 48-39, dated 23 January, 1948

An operational inspection was performed on all P-80Bs with special emphasis given to all electrical and hydraulic systems and accessories for proper functioning. This special inspection was made just prior to the transfer of the aircraft to the Ladd Field Base Maintenance Section on verbal orders of the Commanding General, Yukon Sector, AAC, Ladd Field. All aircraft forms and 263 equipment was checked by the Base Inspectors for completeness subject to transfer. This inspection required the utilization of all Squadron Inspectors.

Electrical Section

This section was composed of three (3) aircraft electricians, (685) and two electrical accessory repairmen (958). It was soon evident that this section was inadequately supplied with men and equipment. The battery is one of the weakest pieces of equipment in cold weather operations. In fighters (P-80s) this is especially true. They were removed at the completion of flying and placed in a warm room on "trickle charge" to insure adequate capacity on the following day. For arctic operation, the T/O&E of the Jet Fighter Squadron should provide for at least eight (8) men in the Battery Section to allow 24 hour operation, and a minimum of ten (10) wall type rectifiers with their related equipment.

At the beginning of operations the need of a Battery Shop was felt - For the first of half of November, all squadron batteries were serviced in the Base Battery Shop. The overcrowded facilities there,

proved insufficient to service all of the Squadron's batteries: Only 12 of 28 sets were available for daily use. Batteries from the Squadrons auxiliary power units further increased this load.

Even after the Squadron had formed its own battery shop, the removal and charging of batteries remained a problem. All batteries had to be removed as soon as possible after each flight.[45/] This involved 64 installations and removals per day with sixteen (16) aircraft in commission. These batteries weigh approximately 60 pounds and it is difficult to place them in the crowded quarters of the nose wheel well, and the necessary removal of heavy outer clothing to accomplish this further aggravates the problem. It is recommended that a fast, light, hydraulically operated lift be designed to meet the following specifications: (1) Can operate on both snow and clear ground. (2) Can be handled easily by one man.

During flight there is a difference in the temperature of the battery plates, warm from chemical action, and the plastic top, cold from outside air. The water vapor formed from the chemical action condensed on the cold top and walls of the battery, creating a large drop in battery charge and lowering the fluid level to such an extent that proper hydrometer readings could not be taken. As a result, 75% of the batteries were found dry after four (4) hours of flight. After warm storage, the battery regained some of its old charge and the electrolyte, though still low, increased as the water returned to solution in the electrolyte. The low humidity of the outside air has a tendency to further deplete the electrolyte.

Plastic battery cases are extremely vulnerable to cold temperatures.

45/ Photograph: Daily Removal of P-80B Batteries (vid s.d. #30)

This was evidenced by the fact that 32 batteries were salvaged with cracked cases as compared with 12 for the same period in temperate climates.

Four (4) instances of difficulties were encountered with the Micro-Switch Actuator Arm of the Fuel Totalizer. (Part No. PN 45091-40) The micro-switch was found to be loose and to have moved out of its correct operating position. This was corrected by moving the actuator arm back to its normal position and adding additional tension. The actuator arm was then secured with two (2) rivets instead of one (1)

Auxiliary Power Unit Section

Four (4) C-19 Auxiliary Power Units, one P-308 Air Compressor, and one A-6 Fuel Transfer Pump, were carried by the Air Echelon. The remaining APU equipment was shipped with T/O&E.

By 20 November, 1947, when the main portion of the flying operations were being conducted, the following equipment was on hand:

Power Units	Heaters	Compressors
9 - Dual C-13A	19 - Herman Nelsons	1 - P-308
4 - C-19	16 - D-1 Heaters	
2 - C-1B		
2 - C-10		
1 - C-11A		

It was found that the nine (9) C-13A power units were sufficient for full operations, however twelve C-13A's are desired to maintain nine (9) in commission. It is recommended one additional Powerman (MOS 166) making a total of fourteen (14) be authorized for this section. Also, adequate quarters must be available for the inspection and maintenance

of this equipment.

The dual C-13A Power Unit was found to be adequate for starting P-80s in temperatures down to -30°F. However, in order to increase its efficiency for further operations, the following modifications are recommended:

1. Length of cable (between power unit and receptacle on aircraft) should be increased to 25 feet.

2. Power leads should be rerouted out the side of the unit (preferably the left side) and both leads attached along the entire length. This would enable mechanics to plug in for starting in one operation. (The use of double leads, attached and routed in the above manner is necessary in reducing voltage drop caused by added physical drag in cold weather.)

3. The length of the trailer hitch (on front of trailer) should be increased by 24 inches to allow more operating room and to decrease the turning radius of the trailer.

4. Installation of internal and external lights is deemed necessary for efficient operation, inspection, maintenance, in arctic darkness.

5. Increase battery heater pad area in order that the two (2) coolant vapor heaters may bring the batteries up to desired operating temperature (10°C) before starting the APU engine.

Service tests were performed with the vapor heater in operation prior to starting with the following results: - (Temperatures are shown in Centigrade)

Time	Battery Temperature	Oil Temperature	Cylinder Head Temp
0915	-22	-22	0
0930	-20	- 5	20
0945	-15	15	50
1000	-10	30	60
1015	- 5	40	60
1030	0	45	90
Additional Coolant Added			
1045	0	45	70
1100	4	50	70

6. Modify plywood panels and metal battery housing, hinging the back and front panel so as to provide ease in removing and replacing batteries.

7. Battery "quick disconnects" be used throughout. (No information available in UR Digest)

8. It is believed that at -50°F, these units will be able to service only one (1) aircraft at a time. It is recommended that the R-1 (300 Ampere capacity) Generator on the Dual C-13A Power Unit be replaced with one of 500 amp capacity, or more.

Refueling [46/]

When flying began on November 1st, only four (4) fuel trailers that had been modified by Ladd Field were available. By the middle of November six (6) JP-1 trailers and two (2) 100 Octane trailers were in use. Without these modified trailers provided by Ladd Field, flying operations could not have begun. The squadron's authorized trailers arrived during the months of October, November, and December, however, they had to be depickled and modified for JP-1 fuel before they could be used.

During normal operations, JP-1 fuel consumption averaged 14,000 gallons per day. Fuel being supplied in 55 gallon drums proved to be a bottleneck - Even with the use of six auxiliary gasoline pumps, the project required a 24 hour schedule. This was necessary because fuel was pumped from drums to storage tanks and then to refueling trucks.

To provide clean and easily obtainable fuel, railroad tank cars should be used whenever possible.

After the accident on 1 December, 1947, the refueling section was used to trace the source of dirty fuel - Samples were taken at all critical points, however no unusual sediment was found except that there was a larger amount due to the fuel being shipped in dirty fuel drums.

46/ Photograph: Refueling Operations (vid s.d. #31)

during January, when there was a possibility that it would be necessary to mix alcohol with the fuel, classes were conducted by Mr. Sherer of Air Materiel Command to make certain that all personnel would be well qualified in this process.

It was found that the compressed air motors for actuating the hose reels, and the meter gauges stuck when SAE No. 10 lubricating oil was used. Aircraft hydraulic fluid (ANVV 0366) was substituted for the lubricating oil and found satisfactory.

Nozzle washers do not make a close seal in cold weather; this allowed the fuel to leak and caused the clothes of the refueling personnel to become soaked with fuel. A winterized washer should be manufactured that will seal properly in cold weather.

The trailer fuel pump engines were found to stall at the required pump speed of 45 RPM. In order to comply with TO 19-25C-2 (maximum rate of flow - 40 gallons per minute), these pumps must be operated at an even lower RPM. It is suggestedthat thegear ratio be changed to a higher engine speed to allow the prescribed flow of 40 gallons of fuel per minute. The exhaust pipe of the Wisconsin motor should be rerouted through the rear pump compartment to give heat to this equipment.

Arctic Oil (AN 00115 used in the 4 - 5 ton tractors, proved unsatisfactory. - One tractor used eleven (11) quarts in one week, and by the second week, with the oil level kept constantly high, the crankshaft and connector rods were ruined. SAE No. 10 oil was substituted and found satisfactory but required preheat for starting at -25° F. The Slave Kit (Auxiliary Cold Weather Starting) CK-100,

was found highly satisfactory. This unit could be made more maneuverable by placing it on a 1/4 ton trailer and if provided with various voltages, this unit could start all vehicles in the motor pool, and ground gasoline engines not having warm storage. Warm storage should be provided if at all possible for all special purpose vehicles.

Armament and Ordnance

Since no gunnery or bombing missions were flown, the armament and ordnance personnel were called on for routine maintenance only. It is believed that this section was adequately organized to perform its mission even in cold weather. Cold weather did not bring about any special problem other than reducing the efficiency of personnel.

The armament shop, as were others, was extremely crowded. Gun cleaning facilities were poor, and there was no storage or working space for the ordnance personnel if they had been required to belt large quantities of ammunition or handle explosives.

The installation of the M-3 Machine Gun brought on several minor difficulties:

The charging cables had to be rerouted in order to keep them from fraying.

The G-19 Solenoids on the outboard and tunnel guns hamper the removal of the guns. By moving some of the wiring and making new cutouts to clear the solenoids, this problem was overcome. A detailed description of these difficulties are contained in URs No. 47-454 and 47-471. Guns should be easy to remove as heavy gloves have to be worn when handling metal objects in cold weather. Maintenance, outlined in TM-9-219 and TO 11-1-28, performed on all guns proved to be satisfactory.

There are no provisions for stowing the M-8 Pyro Pistol and signal cartridges or for the AN-M3 Smoke Grenades. UR's 47-440 and 47-437 explain how the pistol and flares might be stowed in the cockpit while the smoke grenades are fastened in the nose compartment.

The K-14B gunsights were difficult to remove from their mounting because the cannon plug is located behind the instrument panel and its removal and re-installation is hindered by other instruments. It removal could be made quicker and easier if the plug and receptacle were moved to the rear of the sight bracket. Several of these sights gave trouble: Since rapid repair is not easy on this critical item, an adequate stock level should be maintained at Base level. On six (6) sights the gyro 'pipper' was erratic and roamed beyond the prescribed limits. The probable cause was due to the oversized junction of the drive belts, causing the belt to whip and slip. Either poor workmanship or improper winterization procedures (No winterization information available) caused the troubles encountered.

Photo Section

By the middle of February, only one third of the photo equipment authorized was received. Even if this equipment had arrived, it is doubtful that a properly equipped Squadron Photo Lab could have been constructed, due to the lack of space.

Photo personnel worked with the Base personnel in their labs. When operations demanded, the required equipment was borrowed from other organizations.

Due to the number of extra reports, Unsatisfactory Reports, and publicity photographs required, two (2) additional Laboratory Technicians

(MOS 945), making a total of four (4), are required for a mission of this type. This type of work was the major portion of the work accomplished by this section.

It is recommended that One (1) 4 x 5, C-3 Graflex Camera and Fit with 200 flash bulbs be added to the equipment list for this section. It is also recommended that some provision be made to prevent the frosting-up of the AN-M6 and M-6 Gun Cameras' lens as discussed by Squadron Operations.

Communications

The substitution of related SSN's in this section resulted in a large number of unskilled men being assigned. These men were trained as much as possible before their departure form March Field, and were utilized in the winterizing of the communications equipment which had not been winterized in accordance with AMC winterization check lists.

One communications man was sent with the Air Echelon (Shipment No. 6159A-II), carrying two complete units for the radio set AN/ARC-3, spare tubes, microphones, headsets, and tools. This equipment proved to be adequate as only one transmitter had to be replaced.

Due to the fact that the VHF D/F facilities were installed at Ladd Field, this section proved to be overstaffed. Three (3) men assigned to the Squadron were placed on loan to the Base VHF D/F Station.

All of the communciations equipment was new when put into service and very little trouble developed during the short operational period.

Some confusion arose because of the similar color coding of the co-axial cables leading to the AN/ARC-3 and the AN/ARA-8 radio sets. This mistake was easily made in the poor artificial light of the hangar, but after this was brought to the attention of the mechanics, no further difficulty was encountered along this line. Other causes of weak reception may have been due to low temperatures causing the squelch circuits to go out of adjustment, however, the short period of operations didn't afford enough time to perform tests. On the whole, all communications equipment proved to operate satisfactorily.

Squadron Supply

The QM Supply Room was on a par with others operating at Ladd Field. Here again, storage space was a problem and less used items were stored outside.

No trouble was experienced by the section in securing supplies, except in securing clothing for mess personnel: Class X clothing was issued in place of the usual cooks and bakers clothing.

The laundry facilities at Ladd Field were inadequate for the number of men stationed there during the winter of 1947-48. With laundry being sent every two weeks, it was necessary to issue extra fatigue suits and winter underwear.

During the first month of operations, the lack of transportation slowed up supply action and delayed the unloading of T/O property consigned to the Squadron. By the end of January, 1948, an inventory indicated that 65% of all Ordnance, Medical, Engineer, CWS and QM equipment had been received. In the missing equipment, only

a drafting set and a plumbers tool kit were items that were urgently needed, Although an Office Machine Repairman was authorized in the Table of Organization, no tools were authorized for his use.

Once the squadron was established and schedules set up, this section operated satisfactorily.

Technical Supply [47]

AF Technical Supply action while enroute from March Field to Ladd Field proved to be minor. The aircraft were equipped with ice-grip tires at Great Falls (56 tires and tubes) and twenty-eight (28) Strato-Pax-Relays were requisitioned there. Two sets of tip tanks were required enroute and were drawn from Great Falls and Fort Nelson. At Whitehorse, Canada, a nose compartment door was needed, and it was received by air shipment from March Field.

At Ladd Field, the Tech Supply Section was adequate in size except for the storage of large items which had to be kept outside of the hangar, covered with tarpaulins. Sufficient space was available for the office area, stockroom and tool room. Counters and bins were constructed by the middle of November and a ten-day stock level of standard items of issue requisitioned and stored. In order to aid Base Supply in filling our supply requisitions, three (3) men were loaned to them for an indefinite period.

It was found that the T/O&E allowance for arctic clothing was inadequate to supply all personnel working out of doors; 50 additional Parkas (D-2) were secured on memorandum receipt from the Ladd Field Supply to fill this need.

47/ Chart-Photograph: "AOCP" (vid s.d. #32)

The lack of transportation was a serious problem to this section for the first three weeks of operation. As a result there were delays in drawing supplies from the Base and moving T/O&E into place.

During the period from 25 October to 12 November, 1947, approximately fifty percent (50%) of the squadron's Air Force equipment was received and distributed. After this date, a few items of equipment were received, but it was not until the last two weeks of January, 1948 that an additional forty percent (40%) of the Air Force equipment had arrived, bringing the total to ninety percent (90%).[48/] The fact that this equipment was not in place when the squadron was ready to commence operations caused needless delay.

The T/O&E under which the squadron operated at Ladd Field was found to be inadequate in some instances: This was particularly true for the Instrument Shop, which lacked suitable test equipment for the new type instruments in the P-80B. The 00-30 Series of Technical Orders which authorized the organizational equipment had not been properly screened, therefore much equipment which was not needed, arrived, and other equipment which was needed still remained in transit. This extra equipment threw an additional burden on the supply section that was unnecessary and delayed the processing of needed equipment.

The following items of authorized equipment, considered essential to P-80B maintenance, but not received, are as follows:

Class 17A

1	ea	COMPRESSOR, Air Portable	8100-211460
1	ea	COMPRESSOR, Air Portable	8100-212000

48/ Interview with Technical Supply Officer

Class 17B

1	ea	PACKER Bearing, Aircraft Wheel	7900-532700

Class 17C

1	ea	BENCH-Instrument Repair, Type 1	7800-112253
1	ea	BENCH-Instrument Repair, Type 2	7800-112254
1	ea	BENCH-Instrument Repair, Type 3	7800-112254-3
1	ea	BENCH-Instrument Repair, Type 5	7800-112255
1	ea	TESTER-Tachometer, Type M-1	7800-901912
1	ea	TESTER-Tachometer, 40823	7800-805450
1	ea	TESTER-Liquidometer, Type O-1	7800-807330
1	ea	TESTER-Torque, Spec 50452	7800-812260

Class 18

1	ea	TOOL-Applicating & Extracting	8003-56B533
1	ea	FIXTURE-Exhaust Cone	8025-9074013
1	ea	TOOL-Ring & Tube Assembly	8025-9074091

The following list of items are examples of equipment needed but not authorized:

Class 17C

1	ea	TESTER-Flux Valve Continuity	8056-100570
1	ea	Differential Milliameter & Tool Adapter	8056-100687
1	ea	Power & Low Voltage Test Fixture	8056-100667
1	ea	Turn Table & Adapter	8056-100810
1	ea	TESTER-Portable, for Indicator Thermometer, Type A-6 (PN 6126-17B17) Range: 0° to 1000°C.	

Class 17B

1	ea	WRENCH, Box, 12 point 3/8"x7/16"	7900-836460
1	ea	WRENCH, Box, 12 point 1/2"x9/16"	7900-836490
1	ea	SCREWDRIVER, Phillips, No. 2, 3"	7900-663580

The following list of items are examples of those received, but for which there was no use:

Class 17C

1 ea	ea	TESTER, Turbo Supercharger, Regulator Type EE-2	7800-812285

Class 18

1	ea	BAR, Propellor Shaft Nut Wrench (and other propellor tools)	8003-44B9055

Note: C-47 aircraft authorized in T/O&E but not taken.

Class 19A

15	ea	STAND, Assembly, Crew Chief, Maintenance, Type A-1	8200-864000
3	ea	PLANT, Electrical, Prt 9. 4kva Type B-6B	8200-730460
8	ea	PLANT, Electrical Power, Stationary, Type B-8	8200-730650

It can readily be seen that the this surplus heavy equipment bottlenecked the supply of items that were critically needed. It is mandatory that a Table of Organization suitable for a Jet Fighter Squadron be devised. When operating conditions of a squadron sent overseas are known in advance, Technical Orders should be screened and unnecessary equipment be deleted or shipped at a later date.

Another factor contributing to the Squadron's supply problems, was that Supply Tables II and III were compiled using consumption data based on the P-80A aircraft. As a result, these tables failed to include many of the items required due to late modifications made on the P-80B for arctic operation.

The following list of critical items of supply for the maintenance of the P-80B were not on Tables II and III as a result of these modifications:

Class 01-L

0112-LS3487	EXTRUSION
0112-35-175870	RUDDER
0112-60-178185	CANOPY

Class 02C

0259-5230300	NOZZLE
0259-6702046	FILTER
0259-8659142	PLUG
0259-6702090	PUMP
0259-6702037	ADAPTER
0259-6702038	ADAPTER
0259-6702039	ADAPTER
0259-6702040	ADAPTER
0259-6702041	ADAPTER
0259-6702042	ADAPTER
0259-6702043	ADAPTER
0259-6702044	ADAPTER
0259-6702045	ADAPTER
0259-9053859	BUSHING

Class 03B

4109-530876-1	DISK ASSEMBLY
4109-9530215M1	WHEEL ASSEMBLY
4109-9530215M1	BRAKE ASSEMBLY

Class 03C

4220-6627901	BRUSH ASSEMBLY
4248-650-7099	RELAY RECT. ASSEMBLY
4257-6041Hi57A	RELAY
4295-ML3011-1	INVERTER

Class 03F

4504-13014-2	REGULATOR
4504-91147-2	VALVE ASSEMBLY
4519-30100	VALVE ASSEMBLY
4519-826R	MIRROR

Class 03G

4601-22-0107	CYLINDER
4614-190-90020	CYLINDER
4619-190-90360	CYLINDER
4625-G47-100	CYLINDER

Class 03H

4708-F97	PLUG
4708-9039873	GASKET

Class 03I

4841-86223	DIAPHRAM
4841-AA14010B	ACCUMULATOR
4842-135-00560	VALVE

Class 03I (Cont'd)

4842-600-76080	FILTER
4846-121	BODY
4846-124	NIPPLE
4846-6-945-15	VALVE
4832-121064-040-02	PUMP
4869-L682C3	PUMP

Class 03J

4906-31964	PLUG
4906-32027	NIPPLE
4912-NP1140-5	CAP
4912-NP1140-10	CAP

Class 05C

6053-215002	INDICATOR
6024-C2100	COMPASS TYPE B-1
6040-656520	COMPASS
6040-664101	INDICATOR TYPE J-1
6040-664255	INDICATOR TYPE V-1

Class 05E

6319-4159178	CASING
6319-4159179	HOSE
6319-4159180G2	ELEMENT
6319-415961	NUT
6319-415963	INSULATOR

Class 11B

5210-321923-4	HEATER ASSEMBLY

Class 20

2000-274100	COVER ASSEMBLY

The 94th Fighter Squadron's recommendations for the revision of the T/OE for Arctic operations were submitted by the Squadron to Headquarters, Tactical Air Command, during the month of February, 1948, at a conference (Headquarters TAC) attended by the Squadron's Assistant Engineering Officer. These recommendations were based on the 94th's operations at Ladd Field during the months of November, December, and January, 1947-48.

After examining the facilities at Ladd Field, it was decided to integrate the 94th's transportation personnel and equipment with the existing facilities in the Base Motor Pool. The decision was made for two reasons: The late arrival of the T/O&E from the Zone of Interior and the lack of a sheltered location for the establishment of a separate motor pool. This arrangement worked to the advantage of the Ladd Field shop at first, because our equipment was late in arriving. However as the vehicles arrived, they were processed as expeditiously as possible and put into operation immediately.

In addition to arriving late,[49/] none of the motor vehicles had been completely winterized in the Zone of Interior prior to shipment. Some of those received had been relubricated with light winter oils and greases, but in no instance were heaters, defrosters, or winterized cabs installed. Information copies of shipping orders to various Ordnance Depots received by this Squadron indicated that an attempt would be made to winterize vehicles in the Zone of Interior: They would be shipped on wheels and arrive prior to 1 November 1947. As it worked out, the major part (70%) of our vehicles did not reach Ladd Field until mid-November; two weeks after the Squadron became operational. During this time the Squadron was dependent on Ladd Field to furnish the necessary vehicles. At that time, Ladd Field was short of effective transportation and could furnish only a minimum of equipment.

49/ See document #8, ltr: "Status of Incoming Water Shipments (P-80) at Port of Whittier" from TAC Liaison Officer to TAC 16 Oct 1947

[redacted]

... By 15 November, eighteen (18) vehicles had arrived, and by 30 November, an additional twenty - three (23) vehicles had arrived.[50/] Due to the immediate need for these vehicles, the action usually taken on receipt, was to first remove the pickling compound and heavy lubricants; substitute winter lubricants and complete the rest of the winterization process when the vehicle could be temporarily spared.

Considering all factors contributing to the delay in arrival of the 94th's transportation equipment; crowded ports, heavy shipments to the Alaskan Theater, existence of other priority missions in Alaska at this time, and poor railway service between Alaskan ports and Ladd Field, it is believed that the order for movement of vehicles from the various Supply Depots to the Port of Embarkation, should have been given at least thirty (30) days sooner, or by 20 July, 1947. (Information copies of shipping orders from the War Department Tool and Equipment Division at Warren Ohio, addressed to PTO, Seattle, Washington, and to the CO, Mt. Rainier Ordnance Depot are dated as late as 20 August 1947.) This additional time should be sufficient for winterization to be completed in the Zone of Interior, and for other time delays that might develop.

No new techniques were evolved either in routine maintenance or in the necessary winterization processes. Technical Order No. 19-WA-1 and other Technical Orders referenced in T. O. No. 19-1-01 were complied with prior to the preparation of the vehicles for winterization. The first Jeep required a week to be completely winterized.

50/ Chart: Status of Vehicles (vid s.d. #33)

[redacted]

As experience was gained, and production line methods utilized, this time was cut to approximately 48 man hours to "depickle" and winterize one Jeep.

Space was not available in the ten-stall shop at Ladd Field, for the winterization of vehicles. This work was done at the Ordnance Shop serving Ladd Field. When this work was begun, four (4) men were assigned to this shop and later, an additional three (3) men were assigned. In addition to the winter lubrication of vehicles, the Arctic Winterization Kits were also installed in the vehicles at this shop. Special tools are required to install these kits and it is believed that it would be impractical for an organization such as this one to do this work in the field unless these tools are added to the T/O&E, and shop space is available. This problem is solved if the necessary work is accomplished in the Zone of Interior. (As outlined in T. O. 19-114-1)

As the weather grew colder, one of the biggest problems became that of getting the vehicles started after they had cold soaked over night or for a longer period. At low temperatures the batteries would not retain a high charge, then, as was necessary, they were left outside. Once started, it was impractical to charge the batteries by idling the engine because all vehicles were using OEO-15 Arctic Engine Oil.[51] Moreover, verylittle charge could be built up on the short trips around the base on which the vehicles were being used. (The winterized Jeep has additional equipment that increases the load on the electrical system, i.e., Southwind Heater, defrosters, and standby heater.)

51/ Ladd Field Supply & Maintenance directive, 5 Jan 48 - ". .no winterized vehicles will be left idling when the temperature is above -10°F."

[redacted]

Tests Conducted

Tests were conducted during the early part of January to determine the comparative effectiveness of standby heaters and 'slave kits' when used as aids to cold weather starting: In the first test, using three (3) Jeeps and one (1) 2 1/2 ton truck as test vehicles, after they had cold soaked for 12 hours in an average temperature of -35°F, the Jeeps required 35 to 45 minutes of heating and the 2 1/2 ton truck required 2 1/2 to 4 hours of heating before they started effectively on their own batteries. Under similar conditions, using slave kits, both the Jeep and the truck started instaneously without any heat application. In this test, however, it was found advisable to let the vehicle run at a fast idling speed for 10 to 15 minutes in order to warm it up sufficiently for a restart to be made in the event the engine stalled. The second method was found to be more satisfactory as quicker starts could be obtained with less work and also because no fire guard was necessary. It was also found that if the vehicle was to be parked and subject to cold soaking again, that it should be idled from 30 to 45 minutes to warm up the battery sufficiently to insure restarts for the remainder of the day.

It was originally expected that the Squadron could make some use of the M-29 Cargo Carriers (Weasels) which were substituted for the Weapons Carriers on T/O&E 1-17R. Only two (2) of the seventeen (17) Weasels were received by this organization. One of the two was tested by the Engineering Section to determine its value in towing P-80s on packed snow. The following observations were made:

[redacted]

The turning radius of M-29s with P-80 in tow is too large for any practical operation.

The visibility is extremely poor and would constitute an unsafe condition as well as poor operating efficiency.

The clutch is too weak and it is estimated that it would burn out in a very short period of operation. On the test vehicle, the wear experienced was far beyond any acceptable amount.

The vehicle is underpowered and too light for pulling a 10000 - 15000 pound load.

The conclusions arrived at from the above was that 1 1/2 ton personnel carriers would be a more suitable vehicle for the purpose. This vehicle (personnel carrier) is heavy enough; has six (6) wheels which could be chained for traction; and has sufficient power. Also, it is believed that the C-13A Dual Auxiliary Power Plant, used for starting P-80s, could be mounted on the rear of this vehicle thereby having the starting source on the same vehicle used to tow the aircraft to its starting position. This vehicle could also be more easily adapted to multiple duties of the flight line such as personnel carrying, cargo hauling, etc.

Summary

In the event of futrue missions of this type, to like climates, it is recommended that:

Every effort be made to have the vehicles in place and operational prior to, or on the date on which operations are to begin.

Winterization be accomplished in the Zone of Interior.

One and one-half (1 1/2) Ton Personnel Carriers be furnished in place of the M-29 Cargo Carriers or 3/4 Ton Weapons Carriers.

The T/O&E be augmented to include provisions for recharging of batteries in the field; i.e., three (3) battery rectifiers, and one (1) EM, MOS 685, experienced in battery work.

From the medical standpoint, the problems encountered during the operations of this squadron within the Alaskan Theater have been little different from those to be expected at any station within the Zone of Interior. Relatively high temperatures experienced during the past winter eliminated for all practical purposes the problems which normally would be expected to arise as a result of training under the usual arctic conditions. In addition, since the squadron was based at a permanent Air Force station, it has been possible for the medical officer to have immediately available the facilities of an organized station hospital.

Upon receipt of movement orders, a Flight Surgeon and four (4) enlisted men (Sergeant 673, Sergeant 861, Private First Class 657, and Private 657) were assigned for duty with the squadron. At this time, the Dental officer and Dental assistant were deleted from this shipment.[52/] Due to the shortage of dental personnel at the new station, the services of this officer could have been utilized to the fullest extent.

Medical processing of the personnel prior to overseas shipment was accomplished personally by the Flight Surgeon in accordance with existing regulations. By means of individual interviews with the enlisted personnel of the organization, it was possible to accomplish the reassignment of several individuals not qualified for arctic service. These interviews also served to afford the medical officer

---

52/ See Document #8, Ltr: TAC file 210.3 "Medical Department Personnel" to CG 12AF 21 Aug 1947

[redacted]

[illegible] perspective of the medical aspects of the men in the squadron, which proved to be of considerable value. It is recommended that such a policy be instituted in future operations rather than the frequent cursory processing performed in an already overcrowded military outpatient clinic.

It is felt that a more thorough arctic indoctrination of organizations ordered to this theater in the future would be beneficial. Although the reports of Task Force Frigid and Exercise Musk-Ox were made available and contained useful information, the demonstrations and lectures by the mobile unit which were conducted before departure were of little practical value. Plastic-framed spectacles had been recommended for use of men working at sub-zero temperatures but could not be obtained for this squadron because of lack of authorization prior to deb rkation.

The personnel of the medical section arrived at Ladd Field on 14 October, 1947, along with the main body of the squadron. It was the decision of the Base Surgeon that the dispensary, at that time operated by the 375th Reconnaissance Squadron (VLR), be shared with this squadron which proved to be a very satisfactory arrangement. Supplies, for a thirty day period, were requisitioned through a joint account from the Base Medical Supply. Not infrequently, some difficulty was experienced in obtaining useful drugs and equipment as a result of nonavailability of these items in the supply. However, as a result of the more or less ideal setup in regards to supplies, very little of the authorized equipment was used.

It is believed that in the event a squadron was based at a distance from a hospital, that the authorized equipment would be quite

[redacted]

inadequate under the usual arctic conditions. Since we had no occasion to cope with this problem, no specific recommendations are made as to possible changes.

As is shown in the accompanying chart,[53] there were no unusual medical trends. There were no medical problems arising from exposure to extreme cold. This may be attributed to the inordinately high temperatures and to the fact that except for the month of November, normal operational activities were not carried on especially as regards the enlisted men working on the flight line.

During the first month after arrival, there was an increase in respiratory infections which was ascribable to the sudden change in climate and to the improper wearing of clothing during the acclimatization process. It has been observed that wound-healing time is apparently increased in this area. There was no opportunity to carry out any scientific study of this problem. No cases of Venereal disease were reported during the tour of duty.

Although the messing facilities were inadequate, the Mess was reasonably sanitary and the diet quite adequate. There were no cases of nutritional deficiencies.

No changes are recommended for Quartermaster issues of clothing. As to recommendations for changes in regards to flying equipment, they are discussed under the report of the Personal Equipment Section.

It is recommended that the First-aid Kit in the Fighter Pilot Bail-Out Kit be replaced and the following items inserted:

Carlisle dressings	One tube of petrolatum
One (1") inch adhesive tape	Small pair of scissors
Tourniquet	Sulfanilamide powder or other topical application.

53/ Medical Report Chart (vid s. d. #34)

nder the circumstances, the morale of the men w. unusu lly good even with the r.ther poor facilitie: rovided for the recreation of enlisted men on the Base. Lack of space prevented the est:blishment of an adequate Day-Room for the enlisted men within the squadron area. It is suggested that organizations traini:g in this area in the future be made aware of this problem.

COMMENTS:

As a result of unfavor ble circumstances, the medic.l section of this squadron had little opportunity to study the medical aspects or the eff.cts of extreme cold.

1. The accomplishment of more thorough processing and indoctrination of men scheduled for arctic climate is recommended. It is further suggested that the medical section precede the main body of an organization for the purpose of setting up an effective dispensary before their arrival.

2. Organizations should be given more comprehensive information as to the facilities in which they will be based in order that more detailed planning may be done in regards to the messing, housing and recreation of the men.

3. Authorized medical equipment accompanying a squadron training at a distance from any hospital facilities should be revised for arctic climates.

4. Recommended changes sh uld be made in the First-Aid Kit which is a component of the Fighter Pilot Bail-Out Kit.

Chapter IV

RETURN MOVEMENT

[redacted]

Return Movement

In order to clarify the conditions existing under which the P-80B aircraft remained grounded, the following teletype conference held on 28 January, 1948, between Headquarters USAF and Headquarters Yukon Sector, Alaskan Air Command, is quoted here:

TELETYPE CONFERENCE

TELECONFERENCE 281859Z JAN TT-9Ø13

PRESENT HERE:

B/GEN E. J. TIMBERLAKE, A-3
B/GEN D. F. GAFFNEY, A-3
B/GEN L. P. WHITTEN, AF/MAT
COL J. MOORE, P&O
COL A. W. REED, TAC
COL C. C. HARRIS, MAINT
COL E. J. MINTH, WRIGHT FIELD
COL J. D. CALDERA, ALASKAN AIR COMMAND
LT. COL C. OVERSTREET, ALASKAN AIR COMMAND
LT. COL W. W. VEAL, P&O
MAJ. W. A. MILLER, MAINT
MAJ. J. B. CODY, P&O
CAPT. F. W. KLIEBE, 56TH FTR GR.
COL. T. D. MAC DONALD (added later)

SUBJECT: P-80 AIRCRAFT

CLASSIFICATION-RESTRICTED

THOSE PRESENT ARE:

B/GEN F. F. EVEREST, CG YUKON SECTOR, AAC, LADD FIELD ALASKA
LT. COL D. E. HILLMAN, CO, 94TH FIGHTER SQDN
LT. COL B. K. SIMS, AIR SUPPLY & MAINT, LADD FIELD ALASKA
MAJOR C. L. PETERSON, 94TH FIGHTER SQUADRON
CAPT. R. L. BOONE, 94TH FIGHTER SQUADRON
COL T. J. BARRETT, POWER PLANT LABORATORY, WRIGHT FIELD
MR. N. ECKERT, POWER PLANT LABORATORY, WRIGHT FIELD
MR. J. [illegible] WITTLE, POWER PLANT LABORATORY, WRIGHT FIELD

[redacted]

TELETYPE CONFERENCE - CONT'D

DA-1.

THIS TELECONFERENCE HAS BEEN CALLED TO DISCUSS THE RETURN OF THE 94TH FIGHTER SQUADRON PERSONNEL.

REPRESENTATIVES FROM AMC, THE MATERIEL DIVISION AND OPERATIONS DIVISION OF THIS HEADQUARTERS, COLONEL CRAMER OF ALASKA, AND THE ENGINEERING OFFICER OF THE P8Ø GROUP AT SELFRIDGE FIELD ARE PRESENT.

THERE HAS BEEN SUCH A WIDE DIVERGENCE OF OPINION ON THE PROPOSED FIX FOR THE P-80 AIRCRAFT THAT UP TO NOW IT HAS BEEN IMPOSSIBLE TO REACH A REASONABLE DECISION AS TO THE DISPOSITION OF THE 94TH SQUADRON.

(END DA-1)

DA-2

FORMERLY GENERAL EV REST, CO, LADD FIELD, RECOMMENDED THAT SQDN BE RETAINED UNTIL 17 FEBRUARY; RECOMMENDS THE SAME ON 24 JANUARY. HOWEVER, GENERAL EVERETT on 25 JANUARY IN RADIO YKCGO-0152 RECOMMENDS IMMEDIATE RETURN. WHY THE REVERSAL OF DECISION?

(END DA-2)

YK-1 ANS DA-2

DECISION REVERSED BECAUSE FIELD TEST AT LADD UNDER DIRECTION OF MR ERKENBRECHER HAVE INDICATED LITTLE LIKELIHOOD THAT BLEND OF AN-F-18 ALCOHOL WITH JP-1 FUEL WILL ELIMINATE FORMATION OF ICE CRYSTALS WHICH BLOCK LOW PRESSURE FILTER EXCEPT UNDER CONTROLLED CONDITIONS OF BLENDING IMPRACTICAL TO ATTAIN IN THE FIELD.

DA-3.

HAVE THE TESTS BEEN COMPLETED ON THE TWO (2) P-80B AIRCRAFT? THIS HQ WAS ADVISED THAT THE TESTS COULD BE COMPLETE 25 JANUARY. WHAT WERE THE RESULTS?

(END DA-3)

(YK-2 ANS DA-3)

WEATHER CONDITIONS HAVE PREVENTED TESTS TUNS AT PRESCRIBED TEMPERATURES. RESULTS OF RUNS AT TWO FUEL TEMPERATURES INCONCLUSIVE. POORLY BLENDED FUEL USE DURING RUN ON 24TH. TESTS CONTINUE TODAY. ICE WAS ENCOUNTERED WITH ALCOHOL BLENDED FUEL AT PLUS 5 TO PLUS 9 DEGREES F BELIEVED DUE TO LACK OF CONTROL IN MIXING PROCESS IN THE SERVICING UNIT.

(END YK-2)

HERE IS MORE ON YK-2

YK-2 ANS DA-3 CONTD.

FLUID PROPORTIONING DEVICE QUOTATION MARKS "PROPORTIONERE" QUOTATION MARK CAN PROBABLY BE UTILIZED INSURE DEGREE OF CONTROL IN BLENDING REQUIRED IN USING ALCOHOL AN-A-18 WITH JP-1 FUEL. NONE AVAILABLE OR KNOWN AVAILABLE AMC.

END YK-2

DA-4.

WHEN GROUND RUN WAS MADE ON P-80B THAT HAD FUEL SYSTEM FLUSHED WITH 1500 GAL. FUEL, YOU REPORTED SOME FOREIGN WATER STILL IN SYSTEM. WHAT DO YOU CONSIDER "SOME"? MORE THAN NORMAL? TOO MUCH FOR SAFE OPERATION? MORE THAN WAS EXPERIENCED IN ZI? (END DA-4)

TELETYPE CONFERENCE - CONT'D

YK-3 INS DA-4

FOREIGN MATTER OBTAINED THRU GROUND RUNS OF P-80B WHICH HAD BEEN FLUSHED WAS TOO GREAT FOR SAFE OPERATION CONSIDERING THE FACT THAT LOW PRESSURE FILTERS WILL NOT FUNCTION. IF LOW PRESSURE FILTERS COULD BE DEPENDED UPON THE REMAINING FOREIGN MATTER COULD PROBABLY BE ELIMINATED IN SEVERAL HOURS OF FLYING WITH FREQUENT CHANGES OF FILTERS.

DA-5

ADVISE THAT SELFRIDGE HAS ENCOUNTERED ONLY ONE KNOWN CASE OF ICING OF LOW PRESSURE FILTER DURING WINTER - AVERAGE GROUND TEMPERATURE 12 DEGREES. FOLLOWING PRECAUTIONS TAKEN BY SELFRIDGE AS SOP.

1. DRAINING OF REFUELING SEGREGATOR UNITS THREE OR MORE TIMES PER DAY.

2. DRAINING ALL FUEL TANKS AT DAILY; IF DRAINS ARE ICED THEN AIRPLANES THAWED IN HANGAR AND DRAINED BEFORE RELEASING FOR FLIGHT.

3. DRAINING OF TIP TANKS ARE BEING ACCOMPLISHED AFTER THE LAST FLIGHT OF DAY AND PRIOR TO REFUELING FOR NEXT DAYS OPERATION

(END DA-5)

YK-4 INS DA-5

SELFRIDGE SOP HAS BEEN FOLLOWED AT LAST EXCEPT FOR ITEM 3. TIP TANKS HAVE BEEN MODIFIED AFTER GROUNDING. THIS MODIFICATION RECOMMENDED BY 94TH. AVERAGE GROUND TEMPERATURES OF SECONDARY IMPORTANCE. OURS HAVE BEEN -5 DEGREES F. ACTUAL TEMPERATURE OF FUEL AT TIME OF OPERATION IS DETERMINING FACTOR IN FORMATION OF ICE CRYSTALS. SELFRIDGE FIELD SOP

TELETYPE CONFERENCE CONT'D
YK-4 ANS DL-4

WILL ONLY ELIMINATE FREE WATER IN FUEL AND WILL NOT ELIMINATE ENTRAINED OR DISSOLVED WATER WHICH FORMS CRYSTALS AT LOWER TEMPERATURES.

(END YK-4)

DL-6

HAS A SIMILAR SOP BEEN ESTABLISHED AT LADD?

(END DL-6)

YK-5

IN ORDER TO AVOID A LONG RANGE SPARRING MATCH LETS GET TO THE BASIC QUESTION WHICH IS:

SHALL P-80 AIRCRAFT BE FLOWN UNDER COLD WEATHER CONDITIONS IN WHICH THE LOW PRESSURE FILTER WILL BE INOPERATIVE TO A LARGE PROPORTION OF THE TIME QUERY IN VIEW OF THE KNOWN SENSITIVITY OF J-33 ENGINES AND THE P-80 FUEL TOTALIZER TO ANY CONTAMINATION IN FUEL CMA AND REGARDLESS OF ALL PRACTICAL MEASURES TAKEN TO PROVIDE CLEAN FUEL TO AIRCRAFT CMA IT IS THE CONSENSUS HERE THAT P-80S SHOULD NOT BE FLOWN WITH A NON-FUNCTIONING LOW PRESSURE FILTER. THE QUESTION OF RETURNING THE 94TH TO THE Z.I. HINGES ON THE PROBABILITY OF PROVIDING A FIX FOR THE FUEL AND FILTER COMBINATION IN THE IMMEDIATE FUTURE. FIELD TESTS TO DATE, ALTHOUGH NOT CONCLUSIVE, HOLD LITTLE PROMISE. ANOTHER POINT IS THAT THIS LOW PRESSURE FILTER IS INSTALLED TO PROTECT ENGINE AND TOTALIZER FROM FOREIGN MATTER ORIGINATING IN THE AIRCRAFT ITSELF SUCH AS FUEL BOOSTER PUMP FAILURES CMA DISINTEGRATION OF FUEL CELLS AND HOSE CONNECTIONS. WITHOUT A FUNCTIONING FILTER CMA HAZARDS ARE INTRODUCED WHICH ARE INDEPENDENT OF SERVICED FUEL CONDITIONS. (END YK-5)

TELETYPE CONFERENCE CONT'D
DA-7

BASED ON YOUR REPLIES, PRESENT PLANS ARE TO RETURN PORTION OF SQDN TO ZI. GEN TWINING WILL HAVE COMPLETE DETAILS ON HIS RETURN TO ALASKA. PROCEED WITH CLEANING OPERATIONS AS OUTLINED IN ACCORDANCE WARX 94651 DATED 23 JAN.

(END DA-7)

* * * * * *

Once the decision to return the Squadron to the Zone of Interior had been made, all sections began the turn-in of supplies and packing of equipment. On 9 February, 1948, a conference was held at Headquarters Yukon Sector attended by Generals Lee and Fitzimmons, TAC, Colonel Brogger, TAC, Colonels Hofley and Baldwin, AMC, Commanding Officer, 94th Fighter Squadron, Commanding General, Yukon Sector. At this conference the following plan was formulated and subsequently carried out by the 94th Fighter Squadron:

Twenty (20) C-82 type aircraft of the 62d Troop Carrier Group were designated as the air lift to move the 94th from Ladd Field to March Air Force Base, California.

Method of return to be by individual C-82 loads.

First C-82 to arrive Ladd Field by 12 February, 1948.

Last C-82 to depart Ladd Field by 19 February 1948.

Aircraft to be loaded to maximum gross of 54,000 pounds. (To include 8400 pounds of payload - personnel, baggage, and minimum essential equipment.

The route used to be the same as for Yukon Exercise except loading and turn-around at Ladd instead of Big Delta and delivery to March instead of McChord.

320 Parachutes to be delivered to the 94th on first C-82 arriving Ladd Field.

The backlog of freight destined for Alaskan Theater at Great Falls may be lifted provided no delay with early return of 94th results.

It was essential that this movement be accomplished in the time available so that the C-82 Unit would be through in time for the final lift of "Yukon Exercise "D" from Elmendorf Field on March 2d.

This plan called for the return of minimum essential equipment to March Air Force Base: Tools had been inventoried and packed to be air lifted and it was then learned that all T/O&E, including tool kits would be turned in at Ladd Field. 54/ This change did not delay the departure of the main body of the 94th, which began on 15 February, 1948, as a rear party composed of supply and engineering personnel had been designated to complete the transfer of P-80B aircraft, 55/ turn in supplies and vehicles, and clear buildings.

All boxes of equipment were stenciled and a packing list compiled for the contents of each. All Class 13 clothing was cleaned and returned to Base Supply. When the Technical Supply Officer cleared his account with the Ladd Field Supply, approximately 10,000 items had been turned in during this two week period. Considering the short time in which the Squadron had to prepare and execute this move, very little difficulty was encountered.

54/ Secret Book Message No. 132352, Headquarters Yukon Sector

55/ Photograph: "Transfer Inspections at Ladd Field" (vid s.d. #35)