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U. S. S. PHILIPPINE SEA (CV-47)
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MAR 11 1951

From: Commanding Officer, U.S.S. PHILIPPINE SEA (CV-47)
To : Chief of Naval Operations
Via : (1) Commander Carrier Division ONE
(2) Commander Carrier Division FIVE
(3) Commander SEVENTH Fleet
(4) Commander Naval Forces, Far East
(5) Commander-in-Chief, Pacific Fleet

Subj: Action Report for the period 1 January to 1 February 1951

Ref : (a) CNO res ltr Op-345 ser 1197P34 of 3 Aug 1950

Encl: (1) Pamphlet on F9F-2 Operating Procedures During Korean Campaign e.b

1. This action report for the subject period is submitted in accordance with reference (a)

Part I - Composition of Own Forces and Mission

During the subject period, the U.S.S. PHILIPPINE SEA operated off the east and south coasts of Korea as a unit of TASK FORCE 77, in accordance with ComCarDivONE Operation Order No. 4-50, plus supplemental plans issued from time to time during this period.

TASK FORCE 77 consisted of the U.S.S. MISSOURI (BB-63), U.S.S. PHILIPPINE SEA (CV-47), U.S.S. LEYTE (CV-32), U.S.S. PRINCETON (CV-37), U.S.S. VALLEY FORGE (CV-45), U.S.S. MANCHESTER (CL-83), U.S.S. JUNEAU (CLAA-119), U.S.S. ST. PAUL (CA-73) and units of DesDiv 21, 31, 51, 52, 92 and 112. At various times during the operation, ComSEVENTHFlt, embarked in the U.S.S. MISSOURI (BB-63), was present; however, ComCarDivONE (RADM E.C. EWEN, USN), embarked in this vessel, acted as OTC until 19 January 1951, at which time ComCarDivFIVE (RADM R.A. OFSTIE, USN), embarked in the U.S.S. PRINCETON (CV-37), assumed duty as OTC.

The mission of TASK FORCE 77 was to support the United Nations ground forces in Korea, which were retreating south of the 38th degree parallel. The support missions included close support, deep support, armed and photo reconnaissance, interdiction of enemy supply lines, and strikes against enemy installations.

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Part II - Chronological Order of Events

From 1 to 7 January, the U.S.S. PHILIPPINE SEA (CV-47) was moored to buoy Number 17, SASEBO KO, Japan. At 0845I on 7 January, the U.S.S. PHILIPPINE SEA (CV-47) got underway and rendesvoused with the other units of TASK FORCE 77 on 8 January. On 9 and 10 January inclement weather prevented air operations. Commencing 11 January through 27 January, except for replenishment days, air operations consisting principally of close air support missions in the vicinity of the bomb line and armed reconnaissance flights along enemy main supply routes north of the bomb line were conducted. On 28 January, strikes against key railway and highway bridges along enemy supply routes were added to the daily close air support and armed reconnaissance flights. A total of 725 offensive and 257 defensive sorties were flown during the period from 11 January through 1 February. No air operations were conducted on 14, 18, 22 and 30 January during replenishment nor on 21 January because of inclement weather. Upon completion of air operations on 1 February 1951, the U.S.S. PHILIPPINE SEA (CV-47) proceeded to YOKOSUKA, Japan for maintenance, repairs and recreation.

Part III - Ordnance

a. Ammunition expended

Bombs: (443.8 tons)
1490 - 100# GP
168 - 500# GP
119 -1000# GP
54 -2000# GP
1501 - 260# FRAG
236 - 220# FRAG
11 - 350# ADB

Napalm:
14.11 tons of powder

Rockets:
1141 - HVAR
108 - 3.25"

Machine gun ammo:
267,940 rounds of 20MM

Part IV - Damage

a. Own

(1) Ship - None.

(2) Aircraft:

	COMBAT				OPERATIONAL				
		F4U	AD	F9F	TOTAL	HO3S	F4U	AD	F9F	TOTAL
Lost		0	0	0	0	0	1	1	0	2
*Damaged		8	4	4	16	1	8	7	6	22
Total		8	4	4	16	1	9	8	6	24

*Includes all Class "B", "C" and "D" damage.

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b. Damage inflicted on the enemy

TARGET	DESTROYED	PROBABLY DESTROYED	DAMAGED
Boats (Misc)	2		3
Boats (Power)	3		2
Bridges	2		26
Buildings (Misc)	1338		4
Carts (Supply)	39		
Command Post	1		
Gun Positions	2		10
Jeeps	3		1
Locomotives	2		2
Oil Drums	10		50
Oxen	37		
Railroad Cars			29
RR Control Tower			1
Supply Dumps	10	1 (90%) 1 (50%)	6
Tanks			2
*Troops	1815		
Trucks	3		2
Tunnel			1
Warehouses	130		4
Villages	16 (50%) 10 (40%) 5 (30%) 8 (unknown)		

*Troops known to be killed. It is impossible to ascertain the number of troops killed in and behind enemy lines.

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Part V - Personnel, performance and casualties

a. Performance - The crew continued to perform their duties during flight operations and replenishment in an outstanding manner.

b. Casualties - There was one fatality during the period. MURRAY, F.J., ETC, 222 91 28, USNR, died from Embolism n.e.c. Cerebral. LIEUTENANT HIGEL, G.E., 304262, received a low back sprain and contusions when the AD-4N in which he was flying failed to gain enough speed and went into the sea during launching. LIEUTENANT (Junior grade) THOMPSON, M.E., 390065, received mild contusion of the left shoulder when the F4U he was flying went into the sea. LIEUTENANT FREES, N.W., Jr., 125282, received a sprained back when the AD-4W he was flying went into the sea. One enlisted man, MORELLI, F.G., 949 93 50, USN, received a fracture of the right arm from a fall to the hangar deck from the flight deck. Minor injuries consisting of lacerations, contusions, etc., while numerous, do not show any appreciable increase in rate.

Part VI - Doctrine and Operating Procedures

a. Jet Operations - At the request of Commander Carrier Division ONE, VF-111 and VF-112, the jet squadrons attached to this vessel, have prepared a pamphlet on F9F-2 operating procedures during the Korean Campaign. This pamphlet representing over six months of combat operating experience, is believed to contain much information of value to new squadrons and ships operating the F9F-2 and is attached herewith as enclosure (1).

b. Mixed Ordnance Loads on Aircraft Wing Stations

(1) Mixed ordnance loads on the wings of both F4U-4B and AD-4 have recently been ordered for certain types of missions. Such mixed ordnance wing loadings as bombs and rockets are recommended against under the present type of operations for the following reasons:

(a) Bomb and rocket attacks vary widely in nature. Rocket attacks are often carried out at very low altitude due to the nature of the target, terrain and the close range required to insure accuracy. Safe pullout altitude is considerably lower than that for the 100 lb. G.P. and 220 or 260 lb. frag. bombs.

(b) The wing station bomb and rocket selector arrangement offers an easy setting of switches which permits improper selection. The automatic selector switch was designed for sequence release of a single type of ordnance.

(c) In addition to simple improper selection resulting in the wrong type of ordnance being released, the type of attack may result in danger to the aircraft through release of a bomb while making a low altitude pullout attack intended for rocket release.

(2) It is considered desirable in many cases to have a wide variety of ordnance available but it is believed wise to incorporate this variety between

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aircraft rather than on each aircraft until a more adaptable wing station selector system is provided in the aircraft. The present selector system and incorporation of variety between aircraft are considered adequate for the present, however.

c. Rear-Towing Tow Bars for Tricycle Jet Aircraft

(1) ComAirPac letter serial 10/01450 of 19 December 1950 requested further information regarding the unsuitability of rear-towing tow bars. The presently used rear-towing bars are a makeshift design which have the following undesirable features:

(a) Attachment to the tail skag places undue side loads upon a part not designed to take them.

(b) The tail skag attachment is necessarily a fairly loose fit which permits oscillation to build up in towing; sometimes so severe the aircraft must be stopped.

(c) The aircraft tail skag and towing bar do not ride smoothly over deck projections, such as tie down channels, barriers and cross-deck pendants. In slowing the F9F, the tail tends to drive down onto the deck.

(d) Only shallow turns are possible with the present makeshift towbars.

(e) The towbars are rather clumsy to handle and, without suitable rollers on the short leg, often catch and tear the nylon jet barriers.

(f) The towbars, like those for conventional carrier aircraft, do not permit towing into the final spot; a desirable feature for new designs for carrier deck towing systems.

d. Baker Method Air Operations

(1) Whenever air operations are conducted by the BAKER Method, it is recommended that a course and speed intention signal be given thirty minutes in advance of the scheduled operation.

I. E. HOBBS

Copy to:
CNO (Advance) (2)
CinCPacFlt (Advance) (2)
CinCPacFlt Evaluation Group (5)
ComAirPac (10)
USS VALLEY FORGE
USS PRINCETON
USS LEYTE
CVG-11
Naval War College (3)

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F9F-2 OPERATING PROCEDURES DURING KOREAN CAMPAIGN

A - CRUISING AND MAXIMUM SPEEDS USED

1. The following table has been established and has been followed as consistently as practicable. The figures were obtained from NATC Patuxent data for the F9F-2 aircraft. Speeds given are indicated air speeds:

ALTITUDE	SAUNTER	LINER	BUSTER	GATE
0	195		430	Full
5	195		410	Throttle
10	195		390	
15	195	260-85%	370	
20	195		330	
25	195	225-88%	300	
30	195		275	
35	195	210-91%	245	

2. The SAUNTER speed given above was used as a guide by all flight leaders, however, the flight leader was permitted to vary this speed as practicable in order to lessen the burden of his wingmen. For example, it was found that while heavily loaded it was easier to maintain formation with a higher saunter speed - about 210 knots; when lightly loaded, preparatory to landing, no difficulty was encountered flying formation as low as 180 knots. The LINER speeds given were interpolated by the flight leader, however, below 15,000 feet the speed was kept at 260 - 265 knots. BUSTER was calculated from NATC Patuxent data using an arbitrary 94% throttle setting. It was found that this was an optimum value between high speed flight and maximum fuel consumption. GATE was full throttle at all altitudes.

B - ALTITUDES USED:

1. During the early phases of the Korean War, when no air opposition was expected, the majority of the Local Combat Air Patrol flights were performed at 15,000 feet. However, later in the campaign it was customary to station a section of aircraft at 10,000 feet and have a division at 25,000 feet. These flights were relieved "On Station" with no difficulty encountered.

2. On those flights over the Korean combat area the flight leaders would brief their flights according to the table below. This table was also taken from NATC Patuxent data. Generally, flights were performed at a distance of 150 miles, however, many flights were made at distances up to 235 miles. On those shorter flights the flight leader (normally a division of four aircraft) would make his approach altitude between 15,000 and 20,000 feet depending on the most favorable wind condition and cloud cover. Approximately 25 miles from the target area the descent would be commenced, timing it to reach the objective area at sea level. Usually 20 - 25 minutes would be spent at low level attack altitudes on targets of opportunity or sweeping missions. About 5 minutes of this time would be spent at 100% throttle. The retirement altitude would depend upon the most favorable wind condition and cloud cover, but normally would approximate the approach altitude. On those longer flights the approach and retirement altitude would vary from

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20,000 to 25,000 feet, again depending upon the most favorable wind condition and cloud cover. However, time at sea level over the objective area would be reduced to 10-15 minutes. Returning flights normally arrived over base 3-6 minutes prior to "Charlie" time and would hold at an altitude of from 10,000 to 15,000 feet until the signal "Charlie" was given. If, however, "Charlie" was received while enroute to base, the descent would commence while still 25 miles out.

TABLE

BEST RANGE - F9F-2 "P8"

ALT	IAS	MI/LB
40,000	205	.38
35,000	235	.33
25,000	240	.28
15,000	260	.21
5,000	270	.17
BELOW 5,000 - 270 IAS		

CLIMB SPEEDS

ALT	IAS	ALT	IAS
40,000	195	20,000	305
35,000	245	15,000	315
30,000	275	10,000	325
25,000	295	5,000	330

AFTER JOIN-UP FUEL USED TO DIST. AT ALT.			FUEL AT TARGET'S.L.' TO BE OVER SHIP WITH 1200 LB		
	ALT	LBS		ALT	LBS
100 MI	5,000	760	100 MI	5,000	2025
	15,000	755		15,000	1970
	25,000	765		25,000	2010
150 MI	5,000	1040	150 MI	5,000	2320
	15,000	990		15,000	2200
	25,000	965		25,000	2180
	35,000	1030		35,000	2190
200 MI	5,000	1340	200 MI	5,000	2600
	15,000	1220		15,000	2430
	25,000	1140		25,000	2360
	35,000	1180		35,000	2340
250 MI	5,000	1640	250 MI	5,000	2900
	15,000	1440		15,000	2670
	25,000	1320		25,000	2535
	35,000	1330		35,000	2490
				40,000	2470

C - LOAD USE: (Fuel and Ammunition)

1. All flights in the Korean combat zone carried a full fuel load (both internal and external) and full ammunition. However, prior to encountering the MIG-15 enemy aircraft some flights were also launched with varying rocket loads. Local Combat Air Patrol flights would normally gross 15,600 pounds. However, rocket flights were conducted with as high a gross

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weight as 16,200 pounds.

22. Gross weights were calculated by the following table:

9600	Weight of aircraft
5300	Full fuel load
200	Pilot and parachute
470	Full ammunition load
15,570 or 15,600	Total gross weight
140	Each 5" HVAR for Fighter Overload Condition.

D - TYPES OF MISSIONS:

1. The following type missions were flown in the Korean campaign; types are listed according to plurality:

TYPE	DESIGNATION
(a) Local Combat Air Patrol	1A2
(b) Target Combat Air Patrol	1A4
(c) Fighter Sweeps	1T1
(d) Close Air Support	1S2
(e) Fighter Escort	1T9

(a) LOCAL COMBAT AIR PATROL flights were conducted in the following manner. Aircraft were manned with sequence of flight foremost in mind and without regard as to squadron. For example, the first aircraft spotted forward on the flight deck would be manned by a division from one squadron while the second four aircraft spotted might be manned by a division from the other squadron. Normally four aircraft would be catapulted within two minutes and rendezvous effected according to the doctrine being presented elsewhere in this report. This flight would then report to the parent carrier and be turned over to an air controller for fighter direction. Normally at least two intercepts would be made during each two hour period; these would consist of identifying friendly aircraft flying in the immediate area, or intercepting returning flights from the objective area. The flight would be returned to the parent carrier's control about 3 - 5 minutes prior to scheduled "Charlie" time and would be landed after any other jet flight returning from the combat area.

(b) A typical TARGET COMBAT AIR PATROL flight might be flown as follows: The flight would take-off and rendezvous as above, report to the parent carrier and be turned over to the carrier controlling that day's operations. They would then be cleared to the objective area. Approximately 50 miles from destination, they would establish communication with the Tactical Air Direction Center for instructions. They then would be turned over to a fighter director located in the objective area and patrol and intercept according to his instructions. They would inform the fighter director of their estimated time of departure according to their fuel state, landing time, and/or both. They then would return to the force.

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enemy jet aircraft will be discussed elsewhere in this report. Normal retirement from the defense corridor would commence after the conventional aircraft had left the objective area. Return to base and landing would be accomplished normally as discussed above.

E - JET vs JET Aerial Combat

1. Although the opportunity to conduct aerial combat against jet fighters has been limited to approximately five missions, several previous assumptions concerning tactics have been found to be in error. These are enumerated and commented on as follows:

(a) Single High Speed Pass and Break-Away:

1. The basic conception of combat in a jet fighter has previously been that due to tremendous speeds the firing time allowed would restrict tactics to a single pass and breakaway for each plane of a division, and then a complete re-positioning for a second attack. It was also thought that the evasive maneuvers of the attacked fighter would prevent any other than the single attack. Combat with the MIG-15 has proven otherwise, although it should be noted that without a single exception pilots rated the enemy pilots as poor, and it must be assumed that they did not fight their plane to best advantage. In the engagement with the MIG-15, no difficulty was experienced in gaining an advantageous tail position, and holding this position for sufficient time to press an attack. The only evasive maneuver that could not be countered was the diving escape, but before this could be excuted, ample attack time had been allowed. If the enemy jet could only resort to diving to escape a successful encounter must be acknowledged, as friendly aircraft were safe from attack during this maneuver.

(b) Conventional Fighter Tactics Employed:

1. The proven "scissors" tactics, as employed by conventional aircraft, were used to good advantage in gaining the offensive. The enemy jets that would stay in an encounter for any length of time were quickly confused and put on the defensive by "scissors" tactics.

(c) Altitude Advantages:

1. Altitude advantages of more than a few thousand feet were found to be unsatisfactory because of the spotting problems. Unless below, or a little above, sight contact could not be gained, or maintained. However, this was not considered to be serious, as a jet fighter can stay at maximum speed in a level attitude, and the element of surprise is as great when closing from below, or level, when commenced from the greater distances involved in jet vs jet combat, as it would be if a diving attack from altitude were made.

(d) Fuel

1. The theory that 100% power must be allowed for in computing time a jet fighter may remain in combat has been modified somewhat. It has been found that power ranges from 80% to 100% were used, and predominantly the low percentages until actual contact was made, and then

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power ranged from 90% to 100%, with 100% power used very little. Thus it was found that the jets could remain in the combat area considerably longer than the very short time planned for at first.

(e) Divisions or Sections:

1. The employment of two plane sections was found completely satisfactory against the relatively uncoordinated enemy jets, however, the four plane division should be used in cases of teamwork or coordinated attacks by the enemy.

F - CARRIER LANDING TECHNIQUES AND PROBLEMS:

1. It is generally felt that carrier landings in the F9F-2 type aircraft are accomplished with far greater ease than in conventional types. No major problems have been encountered in these squadrons during the Korean Campaign, however, definite techniques have been adopted.

2. It is highly desirable to have approximately 200 yards, "in the groove" to take care of any minor corrections with regard to "lining up" and adjusting speed. The landing signal officer does not have as good a speed indication on the landing jet aircraft as he is able to have on the conventional types and it is necessary for the pilot to adjust his speed within safe limits before he takes his attention from the cockpit instruments completely and focuses his attention on the landing signal officer. With the excellent visibility that is afforded the pilot in the F9F, he is able to make these minor corrections in speed and alignment in the groove and at the same time be under the control of the landing signal officer. There has been a tendency on the part of some pilots to leave too much of a speed correction for the straightaway and this has resulted in reduction of too much throttle to lose excess speed with consequent settling at the ramp.

3. The proper handling of the aircraft after the cut still remains the most important part of the recovery. Pilot error involving diving for the deck is still noted and must be attributed to the high landing speed and excellent visibility which combine to render the impression of a too-rapid advance along the deck. Both squadrons have adopted the policy of landing aboard with the flaps in the "TAKE-OFF" position. There has been no damage to the inboard flap sections and "TAKE-OFF" flaps have provided a cushioning effect on landing which has proved to be highly desirable.

4. Break-up and rendezvous procedures used in the Korean Campaign.

(a) The procedures used in rendezvous and break-up during the Korean Campaign do not in all cases comply with those set down in applicable USF publications, but are considered unique in that the largest flight thus far on any one mission was composed of not more than four aircraft. The procedures discussed below are those used and are felt to be the most expeditious and efficient methods available considering the tactical employment.

(b) Rendezvous: On many missions sections are operated independently and aircraft are launched with an approximate interval of four seconds with the leader proceeding immediately on assigned heading to the target. When

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four planes are assigned to a single mission, the second section turns inside the first and effects a standard rendezvous in the assigned rendezvous sector. The policy was adopted whereby sections are launched together with an approximate four second interval and an approximate minute between sections. This procedure has paid-off in reducing rendezvous time and increasing time over target and fuel available at a far more economical altitude. In the event of a downed aircraft in the scheduled launched, the other plane in the section orbits in the rendezvous sector and waits for the spare aircraft to join on him.

(c) Break-up: Groups returning from missions remain at their cruising altitudes and when instructed by their controller switch to the assigned land/launch frequency where they contact the landing controller and report their position, altitude, and the low fuel state in the flight. The landing controller is stationed in Primary Fly and acts in a capacity similar to that of a tower operator on a shore base. It is his duty to feed the returning aircraft into the landing pattern at proper intervals, taking into consideration low fuel states and all situations where it may be necessary to bring any one plane or group of planes aboard before another. Flights are given signal "CHARLIE" either by sections or by divisions, whichever is applicable, form the altitude that has been assigned to them by the landing controller. This altitude is usually the altitude at which they have returned to base. When a division is given "CHARLIE" the second section takes a position approximately 500 yards behind the first section during the high speed let-down. The landing aircraft pass over the destroyer screen below 400 feet and in the assigned sector, utilizing dive brakes to slow down to a speed of 200-250 knots at the time of passing the starboard side of the carrier in the break-up position. A normal break-up is effected and the landing controller feeds other aircraft into the pattern to maintain a constant landing interval.

5. Catapult Launch - Problems and techniques:

(a) Catapulting of F9F-2 type aircraft in low relative wind conditions and high gross weights imposed several problems during the early months of the Korean Campaign. It is felt that the warm climatic conditions which prevailed at that time, plus the lower static thrust of the P-6 engine, created a marginal safety feature during launch. It is imperative that full power be maintained throughout the launch. This has imposed no problem in the later model aircraft (which have the throttle friction control lock), but in the earlier models, inadvertent retarding of the throttle was experienced in many cases. The pilot's hand should remain free of the throttle during initial acceleration and then be put on the throttle to ensure that full power is being utilized. He should grip the stick firmly with his right hand and thereby fly the aircraft off the deck under positive control. A tab setting of one and three-quarters to two degrees "BACK" has been found to be very satisfactory.

(b) During the early phases of the Korean campaign considerable difficulty was experienced with the H-4B catapult. It was found that the catapult was given abnormal accelerations; however, experts soon remedied

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this condition by shortening the clearance between full battery of the catapult piston and the firing position, and by tightening the holdback. Later flights were made at high gross weight with no difficulty. The following wind/weight table is presently being used by the parent carrier, the USS PHILIPPINE SEA (CV 47):

AIRCRAFT NORMAL GROSS WEIGHT OF 15,600 POUNDS

Relative Wind	Catapult Accumulator Dome Pressure
30 Knots	3500 psi
32 "	3400 "
34 "	3300 "
36 "	3200 "
38 "	3100 "
40 "	3000 "

(c) During this period where abnormal accelerations were experienced with the catapults, high breakage of the catapult bridles resulted when it was necessary to use the maximum accumulator pressure.

(d) With colder weather, installation of P-8 engines, and the above-mentioned adjustments to the catapults, no trouble of any nature has been experienced.

(e) It has been found that "TAKE-OFF" flaps provide the pilot with better control following launch and reduce any tendency to "settle". Planes are brought on the catapult with flaps in the "UP" position and are put down on signal from the director following the engagement of the "HOLD-BACK" ring by the catapult crew.

G - MAINTENANCE COMMENTS:

1. The jet aircraft performance in the Korean combat area, under extreme cold weather conditions, presented many new and complex problems for the maintenance of the aircraft. A contributing factor to this situation was insufficient technical information and the necessity of experimenting in engineering while operating from a carrier.

2. The comments and suggestions are listed as follows:

Part	I	Engines
	II	Structures
	III	Hydraulics
	IV	Instruments
	V	Radio and Electronics
	VI	Aviators' and Aircraft Equipment
	VII	Ground Handling Equipment

PART I - ENGINES

1. The P&W J-42 Jet engines have operated very satisfactorily with only a minor percentage of complete engine failures. Most of the J-42 engines completed their maximum 300 hour operating time limit.

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2. There were difficulties encountered in high altitude flame outs in cold weather operations with no one determining factor as the apparent cause, but it is believed that the altitude density compensator on the TJC-1 Main Fuel Control was one of the contributing factors, due to icing of the protective screen and frosting of the bellows.

3. The cold weather operation presented engine problems in resetting main fuel pumps due to high density and changes in temperatures; therefore, it was necessary to select an average pump setting to operate the full range of changing air temperatures encountered in flight without constant fuel pump adjustment. It was also necessary to oil the High Pressure Cocks by using a light lubricating oil in the main fuel inlet line and actuating the Pressure cock by hand to eliminate sticking.

4. Due to lack of facilities for premixing 115/145 octane gasoline and 3% 1100 oil aboard carriers it was necessary to add a quantity of gas, then one gallon of oil (alternately). This process slowed down the refueling of aircraft considerably.

5. Aboard the present type carriers there is a lack of space and facilities required for adequate jet engine turn-up and test due to time involved between launches and respotting hangar and flight decks.

6. When operating in cold weather it is a vital necessity to maintain the aircraft batteries at full charge prior to each launch. This necessitates the use of APU's for the opening and closing of canopies, testing radio etc., and a limited use of the auxiliary hydraulic pump.

7. Due to a recent flame-out when dumping fuel it was found necessary to remove and blank off the two electric leads that positive close the dump valve when folding the wings.

PART II - STRUCTURES:

1. The following deficiencies were encountered on the F9F-2:

a. The present nose wheel is not structurally strong enough to withstand hard landings encountered in constant carrier operations. Nose wheel breakage results in damaged nose struts in many cases.

b. A new type pressure ball check should be designed in the tip tanks to eliminate fuel leakage.

c. The present main fuel cell baffles, with F9F Change No. 34 incorporated, are not satisfactory for carrier launching or landing and require inspection each 30 hour check, and the present cells require "beefing up" around the inspection cover plate attaching fittings.

d. The dump valve actuators in the wing tips should be modified to include a grease fitting to eliminate freezing of the actuating arm.

e. All replacement spare surfaces, such as tail section assembly, should be completely built up except for installation of the horizontal stabilizer. All electric wiring should be installed by the contractor prior to acceptance by the Navy, due to lack of sufficient type cables, fittings,

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etc., available in advanced operating areas.

f. The most recent tail hook failures made it necessary to inspect by hand the tail hook down lock micro-switch for security prior to each launch.

g. Due to numerous tail hook failures, it is suggested that an addition of a positive hydraulic or electric worm drive mechanism be installed to insure complete tail hook extension.

h. The retractable tail-skegs have been inoperative due to broken retracting cables. This breakage was caused by use of the tail-skeg as a towing point during pull back of aircraft for respot. Fittings for the cables were not available in the forward area. It is believed that this failure, preventing retraction of the tail-skeg, has been a contributing factor in prevention of wrinkled tail sections caused by excessive high pressure catapult launches. It is recommended that the tail-skeg retraction be in conjunction with the Main Landing Gear operation. It is also recommended that the aft section of the tail-skeg shoe be so designed as to prevent catching deck obstructions when towing aft.

i. It is imperative that a manual means be provided for stopping fuel supply to the engine after a belly landing and electrical failure.

j. The present jury struts tend to seize in their fittings necessitating removal by force resulting in minor damages to wing fittings. There is a tendency for the jury struts to creep from their fittings due to movement of the wings by wind and ship's roll. Therefore, it is necessary to lash the jury struts to the wing fittings.

k. It is recommended that a manual means be provided for the removal of the wing spread locking pins so that the wings may be folded manually in event of hydraulic system failure.

l. Based upon the recent cold weather operation it is highly recommended that a manual means be made available both inside and outside of the aircraft for opening and closing the canopy.

PART III - HYDRAULICS:

1. During extreme cold weather operations the present Hydrolube "U-4" was found to be unsatisfactory due to congealing at low temperatures. It is highly recommended that squadrons operating F9F aircraft in extreme cold temperatures be authorized to use AN-VV0-366B or some other substitute low temperature hydraulic fluid in liew of the "U-4".

2. It is believed that cold weather operations affect the present hydraulic check valves, timing switches and all spring operated type valves, due to extreme cold affecting the spring tension on these valves causing sluggish operation or complete failure of the affected system.

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2. The ARN-6 has been the greatest aid to navigation in this operation. It gives a quick reliable indication of bearing to a station necessary in high-speed aircraft. In several instances it prevented situations of low fuel state from developing into actual emergencies. The only trouble encountered in its operation occured in the sense antenna in the canopy. In warm weather operation the plastic support in several aircraft softened and required bracing by a locally manufactured bakelite support.

3. The APX-6 IFF equipment has given assured positive control of all airborne jet aircraft. Previous to its installation controllers would frequently "lose sight" of small flights. However, with its use, all flights within a range of 60 miles are always "visible" and can readily be identified individually by the different modes in operation. In many instances flights have been tracked to distances of 90-100 miles.

4. The shocks of catapulting and landing have caused an abnormally high number of failures of 6AK5 and 9001 radio tubes in the ARC-1 and ARR-2 equipment. In addition several MT-230/A mounting racks for the ARC-1 transceiver have been badly warped and required additional strips of aluminum to strengthen their longitudinal members.

5. The ARR-2 has a marginal sensitivity and it has been found difficult to keep it properly aligned for satisfactory operation. It has not proven to be completely reliable for accurate homing in high speed flight because of great distances covered while attempting to distinguish between relative signal strengths, and difficulty in selecting exact headings.

PART VI - AVIATORS' AND AIRCRAFT EQUIPMENT:

1. EXPOSURE SUIT - Mark II

a. The exposure suit was used by most of the pilots, who, while aware of its many faults, accepted it as insurance for whatever it might prove to be worth. The feet of the suit are so designed that it is not possible to wear one's normal size shoes over them. Leg-length of the suits is too short and difficulty was experienced in getting into the cockpit. On several occasions the suit was put to actual test and water was taken inside the suit. Much of the water undoubtedly entered at the wrists, the make-up of which is considered unsuitable as presently designed. The suit tears altogether too readily to allow of any but the most careful movements while leaving the cockpit following a water landing.

2. EJECTION SEAT

a. The ejection seat was used but once and operated satisfactorily but for the fact that the drogue chute failed to stabilize the seat after ejection.

3. AIRCRAFT STALL WARNING DEVICE

a. A great percentage of the stall warning devices have been blanked off due to failure of the flutter valve in the wing and lack of spare parts for repair. It is believed that the stall warning device should be operative for night carrier landing exercises and during pilot indoctrination.

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3. The present electric motor for auxiliary hydraulic pumps does not have sufficient cooling and power for normal flight operations or carrier deck spotting during cold weather operations. Constant use has caused several failures.

4. Inspection of the pressure relief valve on the hydraulic reservoir revealed that some were stuck or out of adjustment and were thus causing the hydraulic system to malfunction. It has been necessary to check the relief valve on each 60 hour check to insure that the adjustment has not varied, causing a back pressure on the hydraulic return lines.

5. It is suggested that the gun charging hydraulic system be modified to a circulating system in order to insure operation and to facilitate maintenance.

PART IV - INSTRUMENTS:

1. It has been found that the present gyro-horizon is not satisfactory for instrument flight at speeds above 200 knots. Although it properly indicated degree of bank and angle of climb, it is not fast-erecting and takes as high as 30-45 seconds to return to level upon completion of a turn.

2. The needle-ball instrument in its present configuration is useless in jet aircraft. Although the needle indicates rate of turn satisfactorily at speeds to 180 knots, it is not sufficiently sensitive and gives no readable indication of normal turns at the higher operating speeds of jet aircraft. The ball has not proven to be an accurate indication of yaw at high speed and is slow to react to changes in the longitudinal trim of the aircraft.

3. It is desirable at all times to have a completely reliable indication of engine RPM. The present tachometer is unsatisfactory after relatively few hours of operation. It cannot be depended upon to give true indications of small changes in engine RPM. In some aircraft the tachometer needle has struck so badly that an increase of decrease of as high as 4% RPM is required for an indication of change. During a carrier approach a dependable indication of 1% change in RPM is considered necessary.

4. The tailpipe temperature gage has operated satisfactorily at all times although it is a dependable indication of power delivered by the engine, the great range of the gage and the variance in temperatures encountered in different aircraft prohibits its use as an accurate indication of engine RPM.

PART V - RADIO AND ELECTRONICS:

1. The G-2 Compass entailed the major discrepancies encountered in instrument operation. Carrier landings caused failures of the coil holding clips of the remote indicating magnetic compass transmitter. This is a serious condition because locally repaired or new transmitters cannot be calibrated on board. In other components of the G-2 Compass the amplifiers had an abnormally high number of weak tubes causing excessive precession and the gyro units burned out in several indicators.

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4. OXYGEN SYSTEM:

a. The oxygen regulator continues to develope internal leaks. Some trouble was experienced as pilots wearing thick gloves inadvertently moved the control to "100% Oxygen" position while operating the landing gear control handle. Carriers operating jet squadrons should have aboard an oxygen manufacturing system.

5. ORDNANCE PROBLEMS

a. During the summer months of 1950, no outstanding Ordnance problems were encountered. Subsequent to this period, however, with the advent of cold weather and high altitude operations, many important difficulties arose. In early November, 1950, as inoperative guns cost pilots victories over MIG-15's, a thorough study of gun problems was initiated. In that all problems seemed to have come out of cold weather operations, the T-2 type gun heaters received primary attention. All gun heaters were tested and all, with the exception of those in newly-acquired F9F-2's were inoperative. The majority of the trouble evolved from the fact that the silver-soldered leads into the heater pads had become severed, probably caused by the vibration of the guns while firing. Other contributing factors included broken electrical leads and worn out heater pads. All inoperative gun heaters were replaced, and in doing so, all guns were thoroughly cleaned and checked. All worn parts were replaced and all excessive lubrication was removed. All pilots were rebriefed as to the proper method of operating the cockpit gun switches to eliminate the recharging cycle. Prior to each flight all guns were wiped clean of moisture and were taped to prevent cold air from flowing down the barrel onto the breech block. These steps, plus daily inspections of the guns and the gun heaters, greatly reduced the malfunctioning gun problems, but did not eliminate entirely the non-firing situation. In early January 1951 this unit received aid from BuOrd in the form of a three man team of Ordnance experts. Their recommendations to eliminate gun troubles were numerous but their main recommendations were

(1) To increase the size of the gas cylinder vent plug of the 20mm guns by use of a #43 drill.

(2) To eliminate the cold blast of air directly on the breech block by passing this air to the pressurization system itself.

(3) To polish the gun chambers frequently to reduce the cartridge ejection problems.

(4) To lubricate the ammunition with #1363 oil to reduce chamber friction. This unit is now conducting tests to confirm the recommendations as set above. Preliminary tests have proved successful.

PART VII - GROUND HANDLING EQUIPMENT:

1. Starting Jeeps, type A-1.

a. This jeep has proven satisfactory in all respects providing only

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7. Once aircraft have become separated while on a mission it is best for them to avoid prolonged attempts to rendezvous, and especially at low altitude which while facilitating detection also facilitates fuel consumption. Every effort must be made to avoid becoming separated throughout the flight; and to a great extent this is a flight leader responsibility.

I - ATTITUDE OF PERSONNEL TOWARD CARRIER JET OPERATIONS:

1. Pilots - Combat operations have not altered the opinion of the pilots who during shore-based operating preferred flying jets over conventional aircraft. The jets are comfortable, quiet, dependable and handle well in the air. They have shown themselves capable of sustaining considerable damage and still returning to base. There is no undue concern toward making water landings. Throughout the cruise the universal attitude has been regret that it was not possible to do more flying, the higher ratio of pilots per aircraft than existed in the propeller squadrons, and the much greater and more effective use of the propellor squadrons against the enemy tended to lower morale in the jet squadrons. Employment of jets by the enemy proved to be a morale booster as reflected in the attitude of the rest of the air group toward the jets and in the realization of our pilots that their efforts were not unrecognized. It would have been preferable to have had a ratio of 1.3 pilots per aircraft in the jet squadrons.

2. Maintenance Personnel - The jet squadrons' crews would prefer to be in a jet rather than a conventional squadron. Apart from the distinction of being attached to a squadron with the most publicized aircraft of the air group, the jets are safer to work around on the flight deck; they are cleaner and easier to maintain than the propellored types, and the people feel that they have gotten into a business which is bound to expand in both military and civil aviation.

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