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(h) Deficiencies in Aircraft Equipment(continued).

Jungle Kit (Back-pack Kit): The experience of one VF pilot who made a water landing caused him to comment that since the life jacket would not hold up both himself and the jungle kit he was forced to jettison the kit.

The most satisfactory results have been obtained by breaking down the jungle kit and having the pilot carry the necessary survival items with him.

The whistle, mirror, pocket compass, dye marker and water-proof light can be attached to the life jacket. The pocket-knife, emergency flask kit, ammonia vials, fishing equipment, burning lense, and first-aid equipment consisting of the tourniquet, morphine, bandage compress and burn ointment can be carried in the flight suit, while the .38 revolver, sheath knife, and wrist compass can be carried on the person.

It is thought that by equally distributing the survival equipment on the person rather than concentrating it in one spot, i.e. on the back or seat, it is much more comfortable and practical in that the pilot is not likely to lose his flight suit or life jacket in ditching.

Dye Marker: The line attaching the dye marker to the life jackets has been tearing loose. This can be remedied by placing a rivet at each end of the dye marker packet.

Ditching Station: The radioman during all landings, take-offs, and emergency ditchings of VT aircraft takes a position in the center cockpit where a seat has been erected consisting of a para-raft for a seat and jungle kit as a back rest. This arrangement has been very satisfactory as has already been proved during two ditching operations.

(3) Communications and Radio.

Radio Material Difficulties in General: Radio troubles have been traced to a number of things other than the basic units. Loose connections, phone and microphone jacks, phone cords and headsets are the greatest sources of trouble. Microphones fail frequently due to abuse or dampness. Improper voltage regulation at one time caused various troubles. Frequent checks of the voltage regulators by the electricians have rendered this very unlikely in the future. There is now an ample supply of all types of equipment completely tuned and ready to be placed in operation at a moment's notice. This is due to salvaging parts from damaged aircraft and to the efficient manner in which the ship's radio material crew is operating.

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(h) Deficiencies in Aircraft Equipment(continued).

This supply of spare units also permits the material crew to get the new planes up to squadron standards in the shortest possible time. It is the opinion of all concerned that the amount of operating spare parts and bulk spares, as well as radio personnel available to the squadrons, is sufficient to maintain equipment in an efficient operating condition.

ZBX Homing Equipment: The ZBX homing equipment has given very little trouble. Weak receptions have been usually caused by weak tubes or a need for realignment. Noisy operations have sometimes been caused by sparking of the dynamotor brushes, but usually originates in the ignition system of the plane. There should be a minimum of trouble with this unit in the future.

ARC-1 VHF Equipment: The ARC-1 transmitter receiver is the most widely used and most important piece of communication equipment used. Most failures have been tube failures and the need for readjustment caused by hard carrier landings. Periodic checks have been of great value in eliminating this trouble.

(4) Radar Equipment.

ASB Radar: It is felt that on the whole there has been a minimum amount of maintenance trouble with the BAKER gear. Factors which have contributed substantially to this condition are:

(a) Extensive use of the equipment has kept it dry internally and prevented arc-overs and high voltage breakdowns, which are a constant source of trouble with infrequent or sporadic use in these areas.

(b) Good cooperation of the operators in reporting small discrepancies have, in many cases, provided a means of forestalling complete breakdowns.

(c) A systematic check of voltage regulators by the electrical department.

(d) Adherence to correct operating procedure while in flight.

(e) Enough spare units are maintained in good condition to allow an exchange of complete sets with a minimum of delay.

Of the failures and troubles thus far encountered, those most prevalent are:

(h) Deficiencies in Aircraft Equipment(continued).

(a) External connections and cable failures due to stress of vibration and normal operation. In this respect is is suggested that greater care might be exercised in the handling of the adjustable mount which forms a base for the indicator. In two instances this mount was not securely locked at the time of catapulting, resulting in the severing of all connections and parting of the mount itself from its base.

(b) Damage to fuse holders in control box caused presumably by crewmen in inserting ammunition can in turret gun.

(c) Normal tube failure due to usage and resultant misalignment of receiver and transmitter, causing a loss of signal strength. In only a few cases have tubes burned out completely, but normal deterioration results in a loss in efficiency which is not excessive.

(d) It seems apparent that originally more stress might have been placed on the instruction of operators in the basic electronic functions of their equipment. Correct interpretations, sharp focusing and tuning, and a good knowledge of antenna radiation patterns are necessary for best results.

(i) APX-2 IFF Equipment.

At the beginning of the present operation no small amount of confusion was caused by the faulty operation of the APX-2 gear. It was new equipment to the techniciams and it was in many respects a radical departure from former IFF gear. It also has many inherent engineering weaknesses which will probably never be overcome entirely, short of complete redesigning. Tube failure is an all-too-frequent occurrence and circuits are so closely interrelated that one defective tube might cause the set to be inoperative.(there are fifty-six miniature type tubes in this set). Steps were taken to reduce these failures by providing a more stable voltage control at its source, i.e., pilots were asked to refrain from turning on the gear until a stable generator output voltage could be maintained. This was done and fewer failures were the result. Also, more importance was placed on the pre-flight checking of the equipment by the air department. The maintenance department is now able to service the gear rapidly enough to replace defective sets as they are detected and keep a reserve on hand.

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(h) Deficiencies in Aircraft(continued).

(6) APN-1 Radio Altimeter.

Discrepancies in this gear are usually detected by the pilot at an early stage and the correction usually amounts to a tube replacement and a re-alignment. Test gear is now perfected and on hand for accurate calibration.

(7) Navigation.

Because of the generally short flights, navigation was not a very serious problem. Radio equipment - ZBX and radar - was very important in making possible flights in bad weather. On several occasions the radar and racon brought flights back without any difficulty during "zero zero" weather.

(8) Photography.

The K-20 camera was carried on every flight possible. The ease with which it can be stowed in the plane and used in flight made it a much better camera than the F-8.

Regular photo-reconnaissance missions calling for vertical coverage and obliques were flown in the TBM-3P. Missions that were assigned by radio to the photo plane on station were not as successful as those on which the photo-pilot was briefed before take-off. Much time was wasted in the former while the pilot looked up the proper maps and planned his flight lines.

Maximum endurance for TBM-3P doing mixed verticals and obliques (verticals at 168 knots indicated) was four and one-half hours.

(9) Miscellaneous.

(a) Landing flaps of the TBM-3's have been curling and breaking where they join the wings, probably the result of rocket blast which forces the flap open enough to allow the slip stream to catch it and curl it back. After strips were placed across flaps at this point no more damage was noted. R.U.D.M.'s were submitted.

(b) Trouble was experienced with the Norfolk installation of tow reel equipment. The squadron no longer uses the Norfolk installation, but uses the type recommended by ComAirPac.

(c) On five occasions the triangular flap fairing on the under side at the wing joint pulled off in dives. This did not noticeably affect the flight characteristics of the airplane. 531

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(h) Deficiencies in Aircraft Equipment(continued).

(d) The air support charts were not wholly satisfactory as they did not present an accurate picture of the road network as it actually existed. They also gave only a vague picture of the terrain. Maps issued for the close air support work at Okinawa were so inaccurate and vague that it was difficult at times to spot the targets assigned.

(i) Target Selection.

In many instances targets selected by photo interpretation turned out to be dummy and inoperational aircraft. This was not discovered until pilots were well into the attack, which resulted in a waste of the load carried to the target as well as unnecessarily subjecting pilots to the extremely accurate light AA fire.

In most instances too much time elapsed between the actual taking of the photographs and the dissemination of the information to the pilots. It was felt that if the morning photo plane returned immediately, the developed pictures could be used for briefing the afternoon strikes.

(j) Armament.

The normal load for VF was one 500 lb. GP bomb and six 5" HVAR rockets.

During the first two weeks of strikes against Sakishima Gunto many targets suitable for rockets were found and destroyed. However, on the succeeding strikes it was felt that in lieu of good rocket targets a better loading for VF would have been two 500 lb. GP bombs for cratering runways.

Considerable difficulty was experienced in the TBM with the poor performance of the Mark IV shackle. This shackle is being replaced with the Mark VIII.

There have been some instances of rockets failing to fire. Sometimes the pigtails came loose in flight and there were some instances where wires in the pigtails were broken.

A general conclusion from VT pilots was that their effectiveness would have been increased by leaving off rockets and increasing bomb loading accordingly. The VF planes should have had priority on the 5" HVAR rocket.

At the beginning of the operation the fuze selection was not good, as only instantaneous fuzes were being used. This was soon corrected, and towards the end of the operation selective arming was in use.

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(k) Coordination and Leadership of Strikes.

During the first few weeks of landing operations on Okinawa, the air group used both VF and VT as air coordinators. However, on most strikes in the Sakishima area, the leader was a VF pilot, and as the group was striking continuously, all VF division leaders were used as strike leaders. During squadron training each division leader should be given the opportunity to lead and coordinate a large flight of planes.

(l) Anti-aircraft Fire.

Anti-aircraft fire encountered over Okinawa was practically negligible. However, over the Sakishima islands extremely accurate AA fire, mostly of the light caliber type, was encountered. Most of the light caliber AA over the Sakishimas was moderate in intensity. The heavy AA was meager and was usually off in deflection, although on in range and altitude. Indications were that the enemy was not using all guns at one time.

(m) Plane and Pilot Complement.

(1) The VF squadron was formed with a complement of 18 planes and 27 pilots. Upon arrival in the combat zone the plane complement had risen to 20 yet the total number of pilots had shrunk to 24. This put an undue hardship on the pilots. (For the month of April, pilot average was 113 hours; high man, 126 hours). As this class CVE can comfortably handle 20 VF, this plane complement should be established during training. This would place the pilot complement at a minimum of 30, allowing six 5-man teams.

A squadron of this size is not large enough to absorb an entire replacement team at one time. Replacements should be made promptly as pilot complement should never go below 150%, but replacements should be made individually by junior officers. When opportunity for selection of new leaders arises, this could be done from those officers trained with the squadron.

(2) It is condidered that the current ratio of 150% pilots to planes assigned is an adequate and suitable complement for VT squadrons.

The enlisted personnel complement as now authorized is adequate.

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ACTION REPORT - OKINAWA

PART VI - SPECIAL COMMENTS AND INFORMATION

SECTION (B) - AMPHIBIOUS ACTION (1) Air support.

Rehearsals for the amphibious phase of the Okinawa operation were conducted at Guadalcanal on 5 and 6 March 1945, with this ship participating on both days.

This ship partisipated in the demonstration landings off the southern coast of Okinawa on 1 and 2 April 1945; during the next five days regular support missions were flown over southern Okinawa and over Ie Jima. After 7 April this vessel had as its primary mission the neutralization of the enemy air bases in the Sakishima Gunto, and participated in very few support missions thereafter. On 14 and 15 April, 22 TBM's dropped supplies to Marine Corps forces on the Motobu Peninsula and on the northern tip of Okinawa. On 16 April, Napalm bombs were dropped in support of the landings on Ie Jima.

Further participation in air support was limited to six days throughout the remainder of the operation.

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PART VI - SPECIAL COMMENTS AND INFORMATION

SECTION (C) - SPECIAL COMMENTS (1) Combat information center.

(a) General.

(1) During the early part of this operation several difficulties were encountered due to the faulty operation of equipment in C.I.C. or under C.I.C. supervision. This was partly due to defective work performed at the Puget Sound Navy Yard. The BL did not work properly during the first part of the operation, so that it was impossible to distinguish friendly from bogey plots. This was obviously a great handicap. After considerable investiation the antenna was found to be shorted. It was also discovered that yard workers had pressed together two male jacks in the cabling, resulting in a defective connection.

In addition, the SG was inoperative or working very poorly during the same period. It was found that a defective modulation generator had been supplied. By 12 April all these faults had been corrected and satisfactory performance of equipment was experienced to the end of the operation. In fact, it is considered that both the SK and SG radars performed unusually well during this period.

(2) During most of this operation ComCarDiv 22 had his flag in the SUWANNEE, and this placed additional and increased responsibilities upon C.I.C. It is believed that these resposibilities were met in a satisfactory manner.

Pursuant to instructions from the Flag, a special routine for SG radar operation was adopted in order to provide for adequate and effective search and station keeping. This routine was as follows:

Short Range
- 2 sweeps minimum gain setting.
- 2 sweeps one-third gain setting.
- 2 sweeps two-thirds gain setting.
- 2 sweeps full gain setting.
- 1 manual sweep minimum gain setting.

Long Range
- 2 sweeps automatic full gain.
- 1 sweep manual full gain.

(3) Operations near land: The usual difficulties were encountered in tracking aircraft over land masses. An operational technique was developed to read through the land echoes by decreasing the gain and reading the "A" scope which would show the "dancing" plane echo above the land return.

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SECTION (C) - SPECIAL COMMENTS (1)
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(a) General(continued).

(4) IFF Performance: There was no difficulty with the BL after 12 April. However, innumerable aircraft were tracked and intercepted which turned out to be friendly planes with defective IFF gear. This applied to many planes from all ships of this task unit, as well as to friendly strangers, but the worst offenders were the PBM search planes. It seemed to be characteristic of this plane to show "bogey". It was suggested that the method of mounting the IFF antenna on these planes is responsible for the poor performance.

(5) Radar Maintenance and Effect of Weather: It is considered that after the "bugs" were ironed out the level of maintenance was satisfactorily high. On 17 and 18 May, while operating southeast of Okinawa, high pressure and dry atmosphere formed "ducts", which trapped radar waves and caused extraordinarily long ranges to be obtained. At 0655 on 18 May the China coast was picked up, bearing 290 degrees distance 335 miles, by the SK radar. Later in the morning a group of ships were visible on the SG remote PPI bearing 030 degrees at a range of 110, 000 yards. This contact was also visible on the SK radar. During this same period, reception of TBS and VHF transmissions from distances of a hundred miles or more were common.

(6) C.I.C. Communications: External communication was conducted almost solely by VHF. The ship is now equipped with 4-channel RDQ, and 2 ARC-1 Radios. When operating in close proximity to other units the air was jammed as usual. A different channel for intercept work was usually selected.

Internal communications, both within C.I.C. and to and from Flag and Ship's Bridges, and to and from Gunnery Control, were handled by sound powered phones. Teletalks were little used.

(b) Fighter Direction.

The Force Fighter Director adopted the policy of rotating the fighter direction duty from ship to ship daily, so that each carrier in the task unit had the duty each fourth day. This system worked fairly well. Its principal drawback is that there are usually several time-consuming transmissions while the Force Fighter Director is attempting to keep control of the interception when the duty is held by someone other than the Flagship.

As already pointed out, innumerable interceptions of friendly planes with defective IFF were performed. During the first part of the operation bogeys flying very high (30,000 feet plus) and very fast, were picked up on three or four occasions, sweeping south over the formation and then returning to the north. Various other bogeys were also picked up which would retire at a very high rate of speed when fighters were vectored out to intercept them.

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(b) Fighter Direction(continued).

It was thought that enemy pilots could possibly hear transmissions, see the fighters, or in some way be aware of pursuit.

There were a few instances where the enemy appeared to use window but it was difficult to determine what tactical value it had.

The following data represent the record of two interceptions which resulted in the destruction of enemy aircraft:

Interception 1

(1) 12 April 1945, 0908(I).
(2) Santee - FDO; Suwannee Team 2 - LCAP.
(3) Bogey 060° - 39 miles. SK radar.
(4) Course 280°, speed 190 kts. TH 040 - 18 miles.
(5) Sangamon SP Radar estimated angels 9; actual angels 10.
(6) Enemy was surpised from rear and did not see fighters.
(7) Only two vectors given. Bogey tallyhoed from below and behind.
(8) One Myrt splashed in flames.
(9) Fighters should have had an altitude advantage.

Interception 2

(1) 15 May 1945, 1832(I).
(2) Suwannee - FDO; Suwannee Team 3 - LCAP.
(3) Bogey 270° - 98 miles. Course 000°. Faded out and reappeared 276° - 76 miles SK radar.
(4) Fighters vectored 300° at angels 15 at 1845(I). Bogey estimated 3-4 planes on course 040° - speed 150 kts. vectored 000°. All ships except Suwannee report possible friendly. Tallyho at 1858(I) bearing 335° - 48 miles from base.
(5) Block Island SP estimated Angels 4; actual Angels 7.
(6) Enemy was bound apparently for Okinawa, away from our unit.
(7) Fighters were ordered to orbit after getting a merged plot and immediately tallyhoed.
(8) 3 Vals shot down. One Val escaped toward Okinawa.
(9) Fighter Direction considered satisfactory.

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