standard Navy de-fueling pump at the ship's oil outlet ahead of the proportioner thereby boosting the oil pressure to that desired for optimum operation of proportioners.

(2) When a static bond inspection (Reference NavShips 250-332) was conducted, a number of hoses failed to show a closed circuit from flange to flange. In the interest of conservation, this discropancy was alleviated by inserting a copper wire through the faulty hoses and soldering it to the inside of the terminal fittings.

6. Safety

a. General

(1) During the entire cruise the safety record of the Air Department has remained excellent. Three accidents have occurred which resulted in serious injury to three personnel, but with no fatalities. One accident was the result of a hook failure on an F9F-2. The airplane crashed into the after part of the island at Repair 8. A 20mm cannon discharged one round into the island when the nose of the plane smashed into the bulkhead of Repair 8, and flying metal fragments struck the eye and forehead of the Air Group Flight Surgeon who had retreated into the compartment. As a result of this accident, further emphasis was placed on the evacuation of all possible personnel from danger areas during flight operations. Another accident occurred when an F9F-2, with its wings not fully spread, was taxied off the deck edge elevator during a jet launch. The combination of relative wind and tailpipe blast from a jet turning up on the port catapult rotated the plane in such a manner as to direct the tailpipe blast directly upon personnel and a starter jeep on the deck edge elevator. One man received internal injuries when the starter jeep pinned him against the guard rail due to the force of the blast. Lacking the protection of blast deflectors, this ship has found it necessary to observe special precautions in the movement of all aircraft during jet launching operations. This however was the only serious accident of this nature occuring during the entire cruise.

(2) A broken leg resulted from a tow bar accident. The tow bar had just been released from the tractor which was pulling an AD aft. Before the aircraft came to a complete stop, the port wheel struck a cross-deck pendant sheave housing which caused the plane to spin with the tow bar still attached to the tail wheel. As a result, the tow bar was wrenched out of the hands of a handler, swung, and struck a plane pusher across the legs. Tow bars have accounted for several other less serious injuries, most of them too feet and toes when the tow bars were inadvertently dropped.

(3) One minor accident occurred in which a "hook runner" was run down by a crossdeck pendant. This illustrates the hazards of an eager crew cutting corners to gain seconds. The man observed an F9F-2 land in position to catch an early wire. He started out on deck and discovered too late that the tail hook had skipped. He was run down by a later wire which the aircraft did catch. Luckily, he received only bruises and abrasions.

(4) Numerous ship and Air Department instructions have been promulgated in the interest of safety. Among the most important of these is a ship's instruction which sets forth procedures for abandoning the 02 level in the event of fire on the hangar deck. Another ship's instruction directs the abandoning of the 02 level aft whenever an aircraft with a hung bomb is to be landed aboard. An Air Department instruction sets forth detailed procedures regarding the unloading of guns of returned aircraft.

(5) The elevators continue to entice personnel to take unnecessary chances. Despite continuous and forceful condemnation of all known violators, personnel will try from time to time to make an elevator at the last possible moment. There have been no injuries resulting from this practice during the past six months, although there have been several close calls. All operators have been repeatedly cautioned to actuate the controls only upon proper signal and the directors have been most careful in controlling elevator movements.

(6) A common malpractice is the throwing of chocks at a wheel instead of shoving them into place properly. Rare instances of throws from six feet or more have been observed. Not only is this destructive to the chocks, but misses can do damage to hydraulic lines, wheel fairings, and, in extreme cases, to personnel if the chock bounces off the tire.

(7) Adrift safety wire, nuts, bolts, pins, rags, ammo links, fuze tags, and items of every description are a constant source of danger on the flight deck. The tendency to be neglectful of small articles about the deck produces a hazardous missile condition when aircraft are turned up. Repair 8 personnel have conducted inspections before each launch for loose gear. This inspection is most important after a rearming operation has been completed. The number of accidents thus prevented is inestimable, but the impressive weight of debris which have been collected and thrown over the side indicate the practibility of such a program.

(8) Oil on the flight deck, and particularly oil on the hangar deck, has caused falls. None have resulted in serious injury, but the conditions must be guarded against.

(9) It has been observed that the first few days of flight operations following a period of inactivity are the most dangerous. To re-emphasize safety precautions to all personnel in the Air Department, a memorandum to all division officers has been issued following each in-port period requiring them to review all pertinent safety precautions and procedures with their men, and to report completion prior to the first day of flight operations. The tenor of these memoranda is informal and includes a resume of the dangerous practices and accidents which occurred during the previous period of operations. They are aimed toward making each person safety-conscious and at motivating the individual to feel responsible not only for his own safety, but for the safety of others who may be imperiled by his negligence.

(10) To combat safety violations, a strict policy of refusing to neglect any infraction is observed. Every violator is ordered to report to the Air

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Officer immediately upon report or observance of an accident or dangerous practice. Ordinarily he is accompanied by his supervisory petty officers and division officer. The reasons for the incident are determined and responsibility assigned. If the fault is found to lie in policy or established procedures, new instructions are issued to correct the situation. It is considered that this policy of immediate follow-up has been instrumental in establishing and maintaining safety consciousness among all Air Department personnel and has had its influence throughout the ship.

C. SUPPLY DEPARTMENT

1. Aviation Stores

During the period 20 May ~~8 Nov~~ to 18 Dec the Aviation Supply Group processed a total of 8456 stub requisitions, submitted 1354 stock replenishment requisitions, and prepared 835 invoices for class 265 material. High usage was experienced in the following items:

R86-BG-RB19R-2	Sparkplugs	5702 Ea
R17-I-7402	Inverters	12 Ea
R17-I-7475	Inverters	12 Ea
R82-P-580000-534	Hook points	200 Ea
R82-DG-5256004	Wings, AD	1 Ea
R82-CVVS-37013-1-L	Wings, F4U	4 Ea
R82-CVVS-37013-2-R	Wings, F4U	4 Ea
R82-GR-GSR-402-10-L	Wings, F9F-2	2 Ea
R82-GR-GSR-402-11-R	Wings, F9F-2	1 Ea
R83-GR-134095-R	Wing Fold Cylinders	30 Ea
R87-APD-P-100017	Propeller AD	23 Ea
R87-HS-24E-60-45	Propeller F4U-4	14 Ea
R87-HS-P-10005	Propeller F4U-5	4 Ea
R83-T-12660	Tubes	32 Ea
R83-T-5581-1	Tires	32 Ea
R83-T-11956	Tubes	22 Ea
R83-T-5874-1	Tires	19 Ea
R83-T-11975	Tubes	126 Ea
R83-T-5828-1	Tires	137 Ea
R82-GR-132860L	Drop Tanks, Left	12 Ea
R82-GR-132860R	Drop Tanks, Right	13 Ea
R83-GR-134194L	Cylinder, MLG	12 Ea
R83-GR-134194R	Cylinder, MLG	14 Ea

2. Clothing and Small Stores

It has been the experience of this vessel that the propensity to consume clothing is greater in the forward area than is usually the case in CONUS. Sales greatly exceeded average usage tables, consequently the demand for clothing was greater than that which could be supplied by the supporting vessels. This was especially prevalent in underwear, socks, dungarees, and white hats.

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D. EXECUTIVE DEPARTMENT

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1. Religious Activities

Protestant, Catholic, Christian Science, and Mormon services were conducted regularly during the operating period. Special services were held at Thanksgiving. The number of Jewish personnel serving on board became so small that Jewish services were discontinued. Evening prayers before Taps and grace before meals in the Wardroom were continued. During the period of approximately six months that this vessel was in Far Eastern waters, 366 services were held with an attendance of 37,612. During the same period the chaplains delivered 32 moral lectures with an attendance of 3,808.

2. Welfare and Recreation

In summarizing the recreational program while in Far Eastern waters, several points are noteworthy:

a. There is a heavy demand for reading material. The library was well patronized and, in addition, large quantities of magazines and over 8,000 pocket books were distributed.

b. The difficulty in using the hangar deck for movies can be partially offset by having double features when possible and by showing movies to small groups in other locations.

c. Comparatively little interest was shown in athletics due to the shortness of in-port periods and the lack of space and time for workouts while at sea. Basketball, baseball, softball, boxing, and skeet teams engaged in intra-mural or intra-ship competition with success, but interest did not compare to that shown in the States.

d. Rest hotels were not as popular as last year, possibly due to the increase in hotel charges.

3. Information and Education

The Information and Education Office has worked consistently to fulfill its functions. Working closely with the Chaplains and the division officers, the office has presented moral lectures, lectures on the danger of venereal diseases and numerous movies on citizenship and conduct, in compliance with the informational goals of the I and E program.

In the July Navy-wide advancement examination, there were 495 candidates for petty officer third, 72 candidates for petty officer second, and 39 candidates for petty officer first. Of this total of 606 candidates, 481 were advanced in rating.

In the United States Armed Forces Institute program, 62 USAFI General Education Development tests of high school level, 17 General Education Development tests of college level, 21 end-of-course tests, and 3 2CX (2-year college level) examinations were administered. Individuals enrolled in 206 USAFI courses and 18 courses from cooperating colleges,

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bringing the total enrollment to over 800 personnel.

E. DENTAL DEPARTMENT

1. During this period the dental department carried on seven day week routine dental treatment.

2. On 3 December the Dental Officer gave palliative treatment by radio to a patient on the USS EPPERSON (DD719).

3. There is still a large demand for dental work. A gradual build up in the work load has been noticed throughout the cruise. The Dental Department, USN Hospital, Yokosuka, Japan, has been of great assistance in prosthetic cases.

4. It is recommended that a third Dental Officer be placed on ships of this type when an air group is embarked. It is further recommended that prostheti facilities be installed.

F. MEDICAL

1. Condition of the Crew

With cold weather operations, an increase in upper respiratory infections has been noted, particularly in aviation personnel. This has caused an increase in the number of pilots grounded, and in the length of time they have been grounded.

2. Narrative Summary

Since leaving the United States, the health of the crew has remained excellent. No major epidemics have occurred. The venereal rate has remained well below the 7th Fleet average.

On two occasions after extended operating periods, the minor accident rate rose sharply. It is believed that in this type of operation three weeks is the maximum period crew and pilots can operate with maximum efficiency and safety.

No deaths occurred from disease or injury other than combat losses during the entire cruise. 1,090 personnel were admitted to the sick list for a total of 2,728 sick days. Total treatments rendered (sick call visits) were 21,946.

The functioning of the Medical Department was somewhat hampered by lack of personnel, especially in higher rates, and by the fact that much of the equipment is overage and in poor working order, requiring excessive maintainence. Supplies have been adequate in all categories except a few items where an overall shortage exists.

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G. ENGINEERING

1. Condition of Readiness

a. With exception of brief periods in Condition ONE, the entire time the vessel was in the operating area was spent with Condition THREE set and X-RAY and YOKE fittings closed. In this condition, strict compliance with the authorized two openings for each section of the ship would have seriously impaired the operating efficiency of the vessel. Access to storerooms and other spaces for breakout of provisions, spare parts, etc., would have been so restricted that many normal functions of the ship would have become disrupted had not deviation from the prescribed setting been made.

b. The difficulty was eased by developing a schedule for routine breakouts of provisions, supplies and ships store stock which authorized a minimum number of additional openings at specific times on certain days. This procedure, however necessary, was not in compliance with the directives of COMAIRPAC's Standard Ship's Organization Book nor did it take into account the numerous additional unscheduled openings that were required daily and which could not be predicted.

c. It is recommended that Chapter 20, Article 2017, of the Standard Ship's Organization Book for Vessels of Air Force Pacific Fleet be revised to permit enough latitude for commanding officers to authorize openings adequate to the demands of the situation. To this end, it is suggested that the revision establish the optimum desired by COMAIRPAC with provision for deviation in individual vessels according to the recommendation of the Damage Control Board in each case.

2. Training

a. It should be emphasized to each carrier preparing to deploy that full scale damage control training periods are not possible while in the operating areas in WESTPAC. There, the concentration must be placed on training small groups and exercising repair parties. Ships should take maximum advantage of every opportunity that presents itself for training the damage control organization as a whole prior to deployment and while enroute to and from R & R ports.

3. Repairs

The ship's force was fully able to accomplish all repairs that were required during the operating periods. The facilities of the tenders and SRF Yokosuka were adequate to accomplish the work during the availability periods which was beyond the capacity of ship's force. The most difficult problem in hull maintenance has been controlling leakage from the flight deck. Jet blast and heavy loads combine to destroy the watertightness of the seams, and the heavy loads in addition cause numerous plank securing studs to snap out of the deck plating tearing pieces of the plating away as they do. It is believed that the only solution to this problem will be to install heavier deck plates and more strength members to adequately support the planking and accommodate the excessive loads.

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H. NAVIGATION DEPARTMENT

1. Loran

The value of loran as a means for determining the ship's position while in the Sea of Japan cannot be over-emphasized. Loran stations 2HØ and 2H1 are always available, day or night, good weather or bad, for rapidly determining an accurate position. As tables for the above stations have not been published, it is necessary to utilize loran chart No. VL30-17R (1st Edition, February 1952). It was found very advantageous to transfer the loran lines of position for these stations from the loran chart to the chart used on the DRT (HO 3320, CONSEC No. A6753). These lines of position were inked on the chart in different colors; red lines for 2HØ and blue lines for 2H1. A sheet of transparent "dulcel" was then placed over the chart. It was then only a matter of a few minutes to take a loran reading on the two stations (ground waves were practically always available), mark the position of the "bug" on the DRT, plot in the loran lines of position with the aid of an interpolator (HO Misc 11,691), figure set and drift, and correct the bug to the new fix. When it was possible to check the accuracy of these loran fixes by celestial or visual means, they were never found to be in error more than a mile or two. This method of determining position while operating in the Sea of Japan is highly recommended.

2. Mark 5 Bubble Sextant

The use of the Mark 5 bubble sextant for determining position at night when no horizon was available proved to be surprisingly accurate, contrary to popular belief. With practice and averaged observations, sights were usually reliable to an accuracy of about three to five miles.

3. Yokosuka Degaussing Range

The degaussing range at Yokosuka was run on three different occasions and the condition of the degaussing gear was reported satisfactory. The BON HOMME RICHARD was the first CVA to run the new range.

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I. AIR GROUP COMMENTS

1. Ordnance

a. Glide and Dive Bombing

(1) The Navy is in great need of a simple bombing aid which will coordinate angle of dive, air speed, and altitude during dive and glide bombing runs. This information need be supplied only to the pilot and not fed into some complicated automatic releasing mechanism. At present pilots are required to estimate angle of dive, which at best, is sufficiently inaccurate as to cause many misses. The pilot is required to take his attention away from the target to determine his air speed and altitude, which further interrupts his run. A simple device for coordinating and presenting these three basic and essential factors of an accurate bombing run should be developed. (Refer to CO, VA-75 Confidential ltr ser 045 of 25 November 1952 to CNO).

(2) Information is also needed on the mil lead to use when dropping the 500 pound cluster fragmentation bomb, M29A1 and the 100 pound cluster incendiary bomb, AN M12.

b. Ordnance Safety Regulations

There should be a standard set of Ordnance Safety Regulations, which apply to all aircraft carriers. It is believed these regulations would not only be of great value to the Navy as a whole, but to air groups in particular. When air groups are deployed aboard a carrier for operations, their ordnance handling is governed by the current safety regulations of that particular carrier. This often creates a situation confusing to the air group, because a regulation that may be strictly enforced on one carrier may be considered unimportant or ignored on another. For instance, one carrier permits fusing bombs on the third deck, while another insists that bombs be fused only after they are loaded on aircraft. On some carriers, rockets are not plugged in wing receptacles until the aircraft engine is turning up; others permit rockets to be plugged in after the aircraft has been checked for stray voltage.

It is believed that full coverage of ordnance safety on board a carrier could be obtained by requiring all carriers to submit copies of their current ordnance safety regulations to a central command which could screen them and submit CVA type standard safety regulations to BuOrd for approval and promulgation.

If modification of a particular safety regulation was considered necessary to permit more efficient operation on a particular carrier, permission to modify the regulation in question should be requested.

c. Bomb-Fuse-Target Selection

A chart showing the most effective use of aviation ordnance against various targets is needed. The chart should be approximately 6 X 6 feet and colored for eye appeal. It could be hung in pilot ready rooms where it

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would be readily available for study. All targets as well as the bombs and suitable fuzes for each should be illustrated. Although a pilot can acquire this knowledge with experience, it is believed that an attractive chart, graphically illustrated would increase his effectiveness to an appreciable degree at an earlier date, allowing him to make better use of his ordnance when confronted with targets of opportunity.

d. Aero 14A Hydraulic Gun Charging System

Since incorporation of the AERO 14A hydraulic gun charging system, no casualties have occurred which could be traced to the gun charger or its components. Prior to the installation of this modified gun charging system, over 50% of all casualties were attributed to the standard, or AERO 13A gun charger and its components.

As of this date, the F9F squadrons have fired 560,076 rounds of 20MM ammunition at a rate of 1400 rounds per casualty. A breakdown of casualties in the order of highest percentage of malfunction is as follows:

1. Link jams 30%
2. Broken solenoid leads . . 30%
3. Broken parts 20%
4. All others 10%

e. Boresighting (F9F-2)

A sighting gage has been made to assist in maintaining a more accurate alignment of the gunsights in F9F aircraft. This unit fits in the cockpit. The sighting references are aligned to coincide with the optical gunsight of a plane whose sight is known to be correctly boresighted. After the sighting tube on the gage has been rigidly secured, the unit can be moved from plane to plane and the alignment of each sight checked in a matter of a minute or two. This gage is similar to the boresight gage which was issued with the "Helldiver", during World War II, for aligning the sight in boresighting the aircraft. The template has proven accurate and it is believed that gages of similar pattern can be developed locally for all type aircraft which are equipped with cockpit canopies mounted on tracks. As this gage can be used only to align the sight, the guns of the aircraft must still be positioned using orthodox methods.

f. Boresighting (AD-4)

The AD-4 E&M Manual advocates boresighting the inboard guns to converge at 1800 feet and the outboard guns at 2100 feet in azimuth. This was not felt to produce a practical pattern because ordinarily a pilot pulls out of his dive long before reaching these ranges from the target. Strafing is usually done as a flak suppression measure during bombing runs. Most bombing is done in a 40° - 50° dive with a 3000 feet release point, which is approximately 4300 feet to the target. In order that the strafing be most effective just prior to and at the release point, VA-75 aircraft were boresighted with the inboard guns converging at 3600 and the outboard guns at

5000 feet. This has given very satisfactory results and is recommended for consideration by all AD squadrons.

g. AERO 13A HYDRAULIC GUN CHARGING SYSTEM (AD)

Many 20MM stoppages were due to malfunctions of the hydraulic gun charger system. These failures were the result of leakage at the low pressure valve of the hydraulic pressure switches and at the inlet valve of the four-way valve. Leakage at the low pressure valve of the pressure switch bled air into hydraulic lines and so offset switch adjustment that early closure of the four-way valves' exhaust valve was effected with enough pressure remaining in the charger line to prevent the charger from moving fully forward to "ready". Pressure leakage at the inlet valve of the four-way valve, occuring after both the charging and exhaust cycles had been completed and the system returned to normal, allowed increasing pressure to flow to the charger and pressure switch. When this leakage from the AD's 3000 pound hydraulic system raised charger line pressure as high as 90 psi the charger piston would begin to move toward "safe", causing a cushioning effect against the forward motion of the bolt toward battery. This condition resulted in a light blow of the firing pin being delivered to the cartridge primer causing misfires.

Squadron RUDMs have recommended that design of the faulty valves, "O" ring seals, and plunger and seat assemblies be improved so as to reduce malfunctioning due to leakage. It is believed that failures of this type will continue to occur despite better valve design as long as moving the charger lug fully forward and keeping it there depends on perfect exhaust of pressure line. Completion of the exhaust cycle is vulnerable to the leakages described above, and even after line pressure has dropped to normal a weak charger spring often results in the charger failing to reach ready position. What is needed is a gun charger system which provides positive pressure for both phases of the charging cycle. With such a system it is estimated that AD type aircraft 20MM gun malfunctions would be reduced 40%.

The outboard Aero 14A rack on the starboard wing (wing station 12) was selected for the suspension of the ADSK-1 survival kit or the K-25 camera pod. This station was cut out of the armament system at terminal panel 25 (post 35) and so rigged that it would be fired only through actuation of a special toggle switch. The new wire comes off the Outer Station Latch circuit breaker and therefore the Master Armament Switch must be "ON" to fire the rack.

In order to carry the K-25 camera pod on wing station 12 an additional alteration was necessary at the Aero 14A rack. This alteration was made on five aircraft which thereafter have carried only the camera pod on wing station 12. At the rack, the lead to the rack release solenoid was cut and led to the K-camera motor. Thus the power which would normally release the camera pod now runs the camera motor.

h. Gun Lubricants

It was found after operating in the combat area a few weeks that the highly corrosive qualities inherent in the low temperature lubricant, E-51, greatly increased the workload of the ordnancemen. Too much of the ordnancemen's time was being utilized in combatting rust which resulted from use of

E-51 lubricant, leaving less time available for maintenance on other ordnance equipment. Because of the nature of the mission and the relatively mild temperatures encountered, the squadrons experimented with other lubricants, the most satisfactory of which was SAE-1010 engine oil. This lubricant has been used exclusively since August with a resulting increase of gun dependability and a decrease in the amount of superficial gun maintenance required. The squadrons were advised by a BuOrd representative (Mr. Warner) in December of this year that in view of the results based on actual ammunition expenditure figures the squadrons should continue to use this lubricant until a newly developed non-alcoholic low temperature oil becomes available to operating activities, or until extremely low temperature makes the use of the less desirable E-51 lubricant imperative. To maintain a close check on high altitude performance of 20MM machine guns and to avoid increasing the work load of the ordnancemen the last CAP flight on the day prior to replenishment fired their guns at 30,000 feet altitude, visibility permitting. This firing took place just prior to their return to the ship.

i. Hand protection for aviation ordnancemen

Cold weather experience in Korean operations has indicated the urgent need for satisfactory protection for the hands of personnel performing rearming duties on the flight deck. Mittens are unsatisfactory since the handling of fuzes and arming wires requires freedom of the fingers. Leather gloves soon become saturated with oils and greases causing them to become soggy and slippery, and when dried they harden and crack.

It is recommended that gloves of neoprene or some durable material which is impervious to lubricants be procured and worn with light weight wool inner-liners.

j. Rocket Launchers AERO 14A

During the first tour on the line, ejected .50 Cal. cartridge cases frequently cut the rocket pigtails on F4U-4 aircraft. There were also incidents of the rocket pig-tail becoming disconnected from the wing igniter during flight. The cutting of the pigtails was eliminated by the addition of an "L" shaped piece of metal tubing bolted to the wing bomb rack pylon, thereby moving the position the igniter from the surface of the wing to a position about one inch above the base of the rocket. Only one inch of the pigtail was then exposed to the ejected brass. Taping the pigtails and igniters together with masking tape prevented them from becoming disconnected in flight.

k. MK 9 Mod 2 Rocket Launcher

Early experience with this launcher indicated the need for close post-flight checks. In several instances pilots reported that rockets fell from launchers on high speed pull outs due to the weight of the rocket head applying a torquing effect to the launcher. Subsequent inspection disclosed

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that in these incidents the rocket had torn the launching plate from the launcher. Inspection of other launchers disclosed loose, broken or missing screws, which were intended to secure the launching plate to the skin of the launcher. Close daily checks and replacement of faulty launchers have completely eliminated the loss of rockets in high speed pull outs.

l. AD Rocket Loading

In the past, cases of cut rocket pigtails have occurred which were suspected to have been caused by ejected 20MM brass. During this operating period rockets were not loaded on wing stations 5, 6, 7 and 8 which are adjacent to outboard brass ejector chutes. As a result, no cases of cut pigtails were experienced. It is recommended that stations, 5, 6, 7 and 8 never be loaded with rockets unless necessitated by the number of rockets to be carried, or that a suitable brass deflector be designed for these stations.

m. Ordnance Statistics

Of a total of 5419 bombs expended during this period on the line (exclusive of incendiaries and napalm) the following expenditures are listed by month together with the malfunctions which occurred each month.

	November	December
Expenditures	1267	4152
Dropped on catapult launch	0	2
Hung bombs	0	5

Bombs which dropped on catapult launch were carried on MK 55 Mod 0 bomb racks. The racks were worn out but had to be used until they could be replaced by the MK 55 Mod 1 racks.

Two hung bombs occurred on MK 55 Mod 1 bomb racks. The racks failed to release their 250 lb. GP bombs due to bound release solenoids. As three such incidents have occurred, Fighter Squadron Seventy Two has submitted a RUDM # 63-52 covering the subject thoroughly.

Three bombs hungs on AERO 14A bomb racks. It is believed that the first cold weather caused flight carbon deposits in the three malfunctioning racks to bind the release mechanisms so that they could not be tripped by their release solenoids. The racks operated satisfactorily after they had been cleaned with stoddard solvent.

Of a total of 466 rockets expended during this period on the line the following expenditures are listed by month together with the malfunctions which occurred each month.

	November	December
Expenditures	192	274
Duds	9	4
Pigtails becoming unplugged	2	4
Broken pigtails	1	0
	12	8

The following expenditures of 20MM and 50 Caliber ammunition were made during this period on the line.

50 Caliber	20MM
52,340	203,431

2. MAINTENANCE

a. Cold Weather Operations

(1) With the advent of cold weather, all pilots, plane captains and maintenance personnel were refreshed in cold weather starting procedures. By use of auxiliary power units, plane captains started and warmed up cold piston engines prior to the time for pilots to man planes. In the case of jet aircraft, the daily preflight specific gravity check of the batteries was augmented by pilot checks of the battery potential on the cockpit voltmeter prior to start. If the voltage was not up to a specified minimum, an A.P.U. was employed to supplement the aircraft battery. Of the five starting jeeps available, only one was equipped to supply both jet starting power and aircraft service power, necessitating the employment of additional men to operate the A.P.U.s. To prevent rapid battery discharge, the necessity of operating the engine above generator cut-in speed was strongly emphasized.

(2) Reference was frequently made to the information presented in various technical publications pertinent to cold weather operation, especially ACL 54-49, TN 84-45, TN 23-50 and ComAirPac Instruction 03470.1A. The use of grade 1065 lubricating oil in piston engines when surface temperatures were below 50°F., as specified in TO 25-52, was not possible, as the only oil available was grade 1100. However, no difficulties due to lube oil were experienced and, although temperatures as low as 22°F were encountered, oil dilution was never necessary.

(3) Plane captains' winter gear should include gloves similar to stock number R37-G-2500-20 (wool liner) and R37-G-2505-20 (leather covering). The mittens provided are unsatisfactory, inasmuch as such simple operations as installing and removing tie-downs, jury struts, etc., cannot be accomplished while wearing them.

b. Specific Problems

(1) Flame-outs caused by sticking aneroid shafts and bushings continued to be experienced by the jets, even though the shafts and bushings were inspected after every ten hours of flight. The improved aneroid shaft, part number 187539, was never made available.

(2) Heavy duty wing-folding cylinders, F9F service change 177, were finally receieved on 21 November 1952, after being badly needed since June. The crutch and pin type jury strut in use, however, still necessitates extra securing of the wings when folded during high wind conditions. This

was done by fabricating a wing tie-down fitting from a piece of 1½ inch steel stock, threaded on one end to screw into the mount for the MK 55 bomb rack, and fitted with a large ring on the other end. A tie-down line is led from this fitting to the deck.

(3) Increasing the pressure of the F9F-2 main landing gear tires from 200 psi to 225 psi prolonged tire life considerably. Tire life averaged 51 landings per main landing gear tire for the entire combat tour.

(4) The painting of a wing tip fueling ladder aligning stripe on F9F tip tanks greatly reduced the previously excessive breakage of tip tank lights.

(5) RP19R-2 spark plugs have continued to be unsatisfactory, particularly in the R3350-26 engine in AD aircraft. Thorough review of maintenance and operating procedures has improved the situation slightly, but the specified life of the plugs was never closely approached.

c. Comments and Recommendations

(1) The aircraft maintenance control system used on the BON HOMME RICHARD is heartily endorsed and recommended for all CVAs. An Air Group maintenance representative was stationed in Flight Deck Control to keep the air department informed of constantly changing aircraft availability, to coordinate with the air department, and to carry out the needs of the squadrons for maintenance spots, wing spreads, turn-up, etc.

(2) It is strongly recommended that a thorough study be made of the problem of space assignment for air group maintenance personnel and equipment. This Air Group has been based on board eight carriers in the past three years, and the maintenance spaces available have varied considerable between ships. Invariably, it has been a case of getting by with inadequate, make-do spaces. The increasing complexity of aircraft and their components requires constantly increasing numbers of technically trained personnel and increased quantities of tools, special equipment, technical publications, etc. There have been no real provisions made for additional spaces for these personnel to do their work or stow their equipment. On the contrary, the trend seems to be toward reducing their spaces.

(3) It is recommended that two vacuum cleaners be provided on each CVA for cleaning cockpits and the inside of the fuselages. Such cleaning is especially necessary after drilling or cutting operations in aircraft and after plane has landed at an emergency field ashore.

(4) The support furnished by the Supply Department to the air group was considered outstanding. The number of aircraft operating days lost to AOG aircraft during the final tour on the line was negligible.

(5) The excellent services rendered by the FASRON 11 detachment at K-18 in the repair of damaged or partially disabled aircraft, enabling their early return to the ship, was greatly appreciated. It is recommended that a small supply of high usage items for currently operating carrier aircraft (particularly mounted tires and arresting hook points) be maintained at this field.

(6) Nylon tie-downs, as developed by the VALLEY FORGE (CO USS VALLEY FORGE ltr ser 1352 of 23 May 1952) have been used and found to be superior to either the wire reel or manila tie-downs. They are easier to install and remove, easier to stow, and stronger, and will not become too hot to handle in jet blasts. One tie-down reel is used at all times on each aircraft to provide an electrical ground.

3. OPERATIONS

a. Tactics and Doctrine (lesson learned in Korea)

(1) Coordinated Attacks

Coordinated attacks by jet and propeller driven aircraft should be practiced by carrier air groups frequently prior to deployment to the forward area. Precise timing, vitally necessary in the coordination of flak suppression for bombing attacks can be realized only by constant training.

The jets primary offensive mission has been flak suppression. Jets are launched after the props, timed so as to overtake them at a predesignated rendezvous point on the Korean coast and provide cover inland to the target. On the attack the jets split up, half of them preceding the bombers by about 30 seconds, and attack reported flak positions. The other half go in with, or just behind, the bombers and attack observed flak positions. This procedure was developed when it was discovered that the enemy would not fire on the jets but hold their fire for the main attacking force. Futhermore, a flak suppression run should be made, immediately following the prop attack, on guns which can be brought to bear on prop recovery. If sufficient jets are available some of them should be held above for this task. If there are not sufficient jet aircraft to be assigned separately, initial flak suppression aircraft should recover and make another run immediately following, or with, the last props making the attack. Experience has shown that the propeller aircraft offer the best target on retirement, when altitudes are lower.

(2) Armed Reconnaissance by Jet Aircraft

A four plane division is considered to be optimum for an effective jet Recco. Reconnaissance should be flown at an altitude not lower than 2500 feet above the terrain, maintaining a gentle section weave over the route at about 300 knots indicated. Frequent changes in altitude and speed further complicate the AA tracking problem. The second section should coordinate its weave with the first and maintain a relative position above and aft. Flight integrity is thereby maintained in a defensive formation, and in event of attack by enemy aircraft, mutual support can be given immediately. The primary function of a wingman on reconnaissance is to maintain position on his leader and to maintain a vigilant lookout for enemy aircraft. Navigation and visual search is the primary responsibility of the division and section leaders. Upon sighting a target of opportunity both sections should climb to a sufficient altitude (8000 feet) for a standard coordinated run (30 to 40 degree dive, 425 knots). The second section should maneuver so as to coordinate the attack on the opposite side from the lead section with approximately a five second interval. This will allow the second section to observe the hits

of the lead section. If the lead section appears to have obtained direct hits on a relatively small target, the second section may elect to hold its fire and ordnance for future targets. The most important requirement for a successful attack is sufficient altitude for the type of attack to be delivered. The attacks should be deliberate, unhurried, and coordinated. By careful execution of their attack, pilots can accomplish complete destruction of the target on the first run. Armed Reconnaissance should be flown with the cabin pressurization "off" to preclude fire entering the cockpit in the event of a plenum chamber fire. This procedure also permits the pilot to hear AA fire, which in turn serves as a reminder to "jink" and maintain proper altitude. The enemy has a system of green flares or smoke to alert gun positions along popular routes. When these signals are observed, pilots should keep a sharp look-out for flak and maintain a minimum altitude of 2500 feet to stay out of the effective range of small arms fire.

(3) Jet Rendezvous

It has been found that the rendezvous for jet aircraft can be made most effectively at low altitudes, regardless of mission and number of aircraft involved. Although more fuel is burned per minute at low altitudes, the time saved in quick rendezvous saves fuel in the long run and more time is available for the mission. Further, when rendezvous is accomplished below the overcast it permits positive control by CIC on the climb through.

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b. Pilot Training

The following suggestions are extended to squadrons and air groups expecting to be sent to Korea.

(1) If possible, pilots should be worked up gradually to flying the assigned aircraft in the load configuration which will be encountered in Korea. Carrier take-offs in particular are the critical phase of this indoctrination.

(2) As indicated in the AirLant-AirPac Training Manual, group work should be stressed in Phase III training. Individual training in bombing, rocketing and strafing so the pilots can hit at all angles of dive and at any altitude and airspeed should be accomplished in Phase I and II as far as possible. In Phase III, individual bombing practice should be considered secondary to section and division bombing in coordinated attacks on a target. Realistic problems involving an attack by two or more squadrons on targets similar to ones which are encountered in North Korea would be the most productive training-wise. A good target for this type of attack with flak suppression can be built by adding two or three bullseyes in the vicinity of a practice bombing target to simulate gun positions.

(3) More group formation all weather work, particularly in climbing and letting down through overcast, should be attempted when ceiling permits safe recovery altitudes and other safety considerations can be met.

(4) Navigation training in general, and terrain navigation in particular is excellent preparation for Korean flights. Flights which navigate by terrain only, over unfamiliar routes, and terminate in an actual or simulated attack on a designated target are particularly recommended. The use of large scale charts and practice in transition from one scale to another should be accomplished during this phase.

(5) Less emphasis should be placed on VA dive bombing training. Glide bombing has been employed almost exclusively during the combat tour. Various release altitudes should be incorporated by squadrons while in their training stage. These release altitudes should vary from 2500 feet to 8000 feet. Recovery altitudes should be correspondingly varied with an absolute minimum of 1500 feet strictly adhered to.

(6) Jet squadrons should place more emphasis on pilot training in bombing, map reading, and low level (below 6000 feet) navigation with the use of maps only.

(7) The principles of jinking should be taught all pilots before entering the combat zone, and proficiency in keeping a division together throughout violent jinking maneuvers should be attained.

c. Radio Discipline

(1) Improper communications procedures and poor radio discipline

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continue to be a problem of major proportions. This phase of a pilots training must begin on his first flight with an operational squadron. It is recommended that squadron commanders demand and insist on good radio discipline during all training phases and that drastic measures be taken against persistent offenders.

(2) To alleviate confusion on seriously overloaded strike-control frequencies, a relatively clear channel, usually the land-launch channel, was used by this Air Group for communications in the target area, and squadron tactical calls were sustituted for the more cumbersome standard JANAP call signs.

(3) Improper use of Guard Channel (121.5) by all military units in the Korean area is still prevalent, although some improvement has been noted since a conference on this subject was conducted by Commander, Seventh Fleet. SAR operations are frequently hampered by unwarranted chatter on Guard channel. It is believed that if all units could be contacted on established reporting in and out frequencies many needless transmissions on Guard channel could be eliminated. It has been one experience of this Air Group with both forces ashore and afloat that it is virtually impossible to establish such contact without resorting to the use of "Guard."

d. Close Air Support

(1) The close air support training of pilots is not consistent with the actual practice carried out in the Korean theater. When carriers are being deployed to the Korean theater the air groups are given an ORI inspection and one part of this exercise is a air support problem. On this problem the GEOREF system is used and the pilots are under the direction of a ground controller who has them orbit over the "enemy forces" until each pilot has positively identified the target before the attack commences. The flak situation on the Korean front precludes this type of target identification and makes release altitudes higher than those normally practiced advisable In addition, the UTM coordinate system is used exclusively in the Korean theater.

When Navy pilots are on close air support along the front, the aircraft orbit over friendly territory until the target is marked by a mosquito pilot who is familiar with the terrain and the exact location of friendly forces. This type of target marking provides adequate safety measures to insure that our aircraft do not bomb friendly forces and it provides protection from anti-aircraft fire until our aircraft are actually on a "dive" bombing run. In view of these facts, it is recommended that the close air support training given to Navy pilots be consistent with the actual procedure carried on in a combat theater.

e. Intelligence

(1) Intelligence Lectures for Enlisted Personnel - It is recommended that a series of intelligence lectures to enlisted personnel be initiated upon arrival in the operating area.

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Enlisted personnel form a vital link in operations against the enemy. The ordnancemen, mechanics, electronics specialists, and others work long hours maintaining aircraft in order to enable pilots to carry out their assigned missions. It was discovered that a large majority of the men did not understand the reasons for fighting in Korea, and very few of them knew what results were achieved by the aircraft on which they had spent their time and energy. In the combat zone there is no time for any large educational program along these lines. However, small scale maps of the Korean peninsula were placed in the crew's berthing spaces and upon it the targets for each day were annotated. Pictures of the targets were posted nearby. In addition, on the way to port after each operating period, the Intelligence Officers gave lectures on the squadrons' operations during the preceding period and impressed upon the men the fact that their efforts were making the end results possible. During the lectures the men were shown pictures of the targets before and after they were attacked. Post strike photographs, taken by the pilots with K-17 or K-25 cameras, were featured. Gun camera film taken of attacks during the period were also shown, with pilots often acting as narrators.

The men were very receptive to this type of information. No one was required to come to the lectures, but at every lecture there was nearly one hundred percent attendance. The effect upon morale was excellent, since each man was impressed with the fact that he personally had something to do with every successful attack.

(2) Enlisted Assistants

It is impossible for the AIO to give proper attention to work affecting pilot safety and the success of missions and to keep himself abreast of current intelligence produced daily when a large percentage of his time is devoted to reports, recognition training, and routine matters. In order to carry out his assignment successfully, the AIO should be able to devote all his efforts to matters that affect the mission of Task Force 77. It is therefore recommended that each AIO be assigned a permanent enlisted assistant to handle reports and general office work.

(3) SAR Facilities

In general the SAR facilities in the Korean theatre are excellent. There is one additional facility, however, that would greatly extend the coverage in North Korea. When large strikes are conducted in the northeastern part of North Korea, a cruiser with a helicopter is stationed in the vicinity of the target, but when small strikes are sent into the area day after day the nearest helicopter is usually stationed near Wonsan. It would be highly desirable to station a helicopter permanently between Wonsan and Chongjin. If that were done, a pilot would be within range of a helicopter in all but the most inland parts of North Korea.

(4) Camouflage Detection

It is felt that the effectiveness of attacks against concealed targets could be greatly increased by intensive pre-deployment training in

camouflage detection. In Korean operations, most pilots gradually develop a facility for spotting enemy attempts at deception, but before that faculty can become general, many bombs, much time, and sometimes whole missions are wasted. Lives can be lost by pilots who are forced to reconnoiter heavily defended areas for excessive lengths of time or at excessively low altitudes in order to see a concealed target. In addition to classroom studies in the techniques of camouflage, pilots should be enabled to study examples of camouflage from the air. These examples could be constructed on almost any large military reservation by units of other services being trained in the art of camouflage.

(5) Map Kits

Before deployment to the Korean area each pilot should prepare a map kit composed of one complete set of 1:500,000 USAF Pilotage Charts, covered with Frisket paper and folded in such a way as to permit navigation from one chart to another by merely turning folds; a complete set of 1:250,000 Approach Charts, arranged in logical order; and an index of 1:250,000 charts annotated on a 1:3,000,000 chart. These should be placed in a legal-size folder. The folder may be covered with 1/32 inch cellulose acetate to form windows into which target photos, 1:50,000 target maps, and other necessary strike information may be inserted.

f. Miscellaneous Recommendations

(1) It is recommended that jets be utilized less for recco purposes and more for pre-briefed all-jet strikes, preferably on targets outside the normal operating area of the props. This procedure would utilize to advantage the best characteristics of jet attack bombers, namely, speed and surprise. Targets found on a jet recco route can seldom be hit immediately. Most of them necessitate a turn of at least 180 degrees. The time lost in this turn is time gained by the enemy to conceal himself or his equipment. With previous target area photo coverage, an all-jet strike can be completely briefed in detail as to specific targets in the area, direction of run, altitudes and all the other details which must be covered to assure a smooth and effective strike. While the jet recco may have accomplished much in the earlier days of the war when the enemy evidently moved much more during the day, it is particularly ineffective now that the enemy moves almost entirely at night. The enemy's AA fire has increased in intensity and accuracy during the last few months. Seldom does a coordinated jet and prop strike go in on a target without receiving flak. One reason for this is the length of time necessary to set up an attack. All the AA guns are manned by the time the jets go in on a flak suppression run. With an all-jet strike group, however, the run in could be started as much as twenty miles from the target and the jets, traveling at maximum speed could hit the target and retire before the enemy's AA defenses were fully alerted.

(2) In over 1200 combat missions, the VA squadron did not once utilize the APS-19 radar. The external radar "bombs" were removed when the aircraft were initially hoisted aboard. This equipment requires an excessive amount

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of stowage space, and since it is not utilized by attack AD's in this area, it is recommended that each squadron be equipped with only six complete sets.

(3) During all the operations of this Air Group with F9F aircraft, there has been one multiple wire engagement in about every 500 arrested landing. In nearly all cases this type of engagement resulted in a broken hook point or hook point mounting bolt and a subsequent barrier engagement. Either the arresting hook should be redesigned to prevent this type of engagement, or the hook point components should be strengthened sufficiently to stand up to the additional loads.

(4) Operational Losses

It is worthy of note that there was not one operational fatality during the entire cruise.

4. AVIATION EQUIPMENT AND SURVIVAL

a. MK III Anti-exposure Suit and Winter Flight Gear

(1) The Air Group did not find it necessary to wear the MK III anti-exposure suit in the Korean Area until its return to the line on 25 November. During the remainder of the cruise the sea water temperature was below 60 degrees, and all pilots were required to wear the suits. The cold weather gear to be worn under the anti-exposure suit was optional, since the regular liner bound at the crotch and armpits, was too short in the arms and legs, was improperly colored for safety in evasion incidents, and was generally impractical for use ashore. In lieu of the liner, most pilots elected to wear one or two pairs of heavy woolen underwear, a heavy wool shirt, WL-1 winter flight trousers, two pairs of socks (at least one of which was woolen), and N-1 field shoes. Many of the pilots wore the summer flying suit over the MK III suit to lessen the danger of snagging the suit and to provide readily accessible pockets for carrying gear needed during the flights. Summer flight gloves worn over the nylon and rubber gloves, worn with the waterproof liners, restricted finger movement to an excessive degree. Most pilots wore the parka hood on all flights, usually draped around their necks, but a few actually wore it over their crash helmets and found it to be comfortable.

(2) The tearing of neck and wrist seals imposed major difficulties in the maintenance of the suits. Between 25 November and 17 December 1952 it was necessary to replace 55 wrist seals and 13 neck seals of the 114 MK III suits worn by pilots and aircrewmen. Although care in putting the suit on and taking it off greatly reduces the attrition rate of the seals, it was necessary to strengthen the edges by turning back approximately one-quarter inch and cementing it securely, thus forming a more durable ring. During the period of trial, this proved to be satisfactory. To facilitate this process and to aid in the replacement of neck seals, the parachute

riggers of Air Group SEVEN developed a flat metal neck form. When replacing the seals they found that by separating all seams four inches down from the neck and cementing and rolling each section individually, an excellent seal can be accomplished. Although this method takes longer than the recommended method, it results in a factory-neat job.

(3) Another vulnerable part of the Mk III suit is the seat. Constant movement of the pilots's buttocks during operation of the aircraft caused greater wear in the seat than at any other place. A double layer of material, or a stronger fabric, might eliminate the fault.

(4) Only one-quarter to one-third of a turn is possible in screwing on the cover of the "G" suit opening of the Mk III suit. To obtain more threads, some pilots removed the "O" ring, took off the outer plastic face piece, and then replaced the "O" ring and cover. A snug, watertight fit is still obtain and there is positive assurance that the cover will remain in place.

(5) The Mk IV anti-exposure suit, which has several decided advantages over the Mk III suit, was made available after Air Group SEVEN departed CONUS, but no apparent effort was made to equip groups already in the Korean area. Although trial of the newer suit was not possible, inspection of it disclosed many of the faults found in the Mk III suit. No provision has been made for the incorporation of the necessary clothing and equipment worn and carried. The bulkiness of the suit, together with that of the liner, additional heavy clothing, and survival equipment, continue to restrict movement of the pilot and make successful ejection extremely difficult. The liner to be worn with the Mk IV suit appears impractical for evasion and survival ashore. It is suggested that in the future development of anti-exposure suits an effort be made to incorporate satisfactory land survival features.

(6) Pilots often complained that the Mae West lifejacket pressed down uncomfortably on their necks, which were protected only by the thin rubber neck seals and nylon scarfs when they were wearing the Mk III suits.

(7) It is recommended that half ounce tubes of petrolatum be carried in the pocket of the anti-exposure suit by all pilots and aircrewmen. The ointment could be used for smearing the face in the case of water emersion in the same manner that Channel swimmers grease themselves before entering the cold water.

b. Parachute Harnesses

The present Standard QFS parachute harnesses (stock # R83 NAF 312670-2) are an unsatisfactory size. The body harness is not large enough to provide a comfortable fit for the larger pilots when they are wearing winter flight gear. More important, the leg strap snap and vee ring connection to the body harness is so far to the pilot's rear that it does not allow pilots in anti-exposure suits and heavy clothing to buckle and unbuckle the leg straps with one hand. Both hands are required to perform the operation, and in an emergency such as ditching, it would be difficult to get rid of the parachute.

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It is recommended that a unit departing CONUS for duty in the Korean area during winter months obtain as many oversize quick-fit harnesses (stock # R83-NAF-602825-10) as possible prior to departure.

Because of the increased amount of survival equipment carried by pilots, it has become apparent that conservation of cockpit space is needed. The present cushion (Stock # R83-NAF-47565-24) or SP-1 seat pan assembly is so thick that the pilot has difficulty in seeing the upper part of the instrument panel. It is suggested that a thin foam rubber pad (½" thick) be incorporated into the top of the pararaft or the pararaft kit container. With some revision, the H-2 Oxygen Bailout Cylinder could be placed in the pararaft or in a special pocket on the parachute container itself.

Considerable speculation arose over the amount of effort and time required to get out of the nylon parachute harness during a water landing or parachute descent into water, due to the added survival equipment carried in combat. In cold weather the hands become numb and the nylon wobbing, when wet, becomes very stiff and slick. It is believed that a very simple quick disconnect box, incorporating the quick fit hardware, may be the answer to this problem. In any case, a better release method is needed than the present snaps and vee rings now employed on all Navy parachute harnesses worn by carrier pilots.

c. ADSK-1 Droppable Survival Kits

The items included in the ADSK-1 are very useful for cold weather survival, and most items are useful in warm weather. However, in summer months some items in the kit should be replaced with warm weather survival items. For this reason, it is recommended that the ADSK-1 kits be issued in the United States prior to departure, thus permitting sufficient time to make any required modifications before entering the combat area. It is recommended that as many self-heating "Hotcan" rations as possible be added to the ADSK-1, thereby providing an evadee with an occasional warm meal, and some much needed heat.

During this tour on the line, one ADSK was unintentionally dropped and was seen to function properly. Rubber stripping placed on the inside of the cover plate of the kit has proven to be very effective in keeping the pilot chute and the main sail in the container.

d. Summer Flight Clothing

It has become apparent that the summer flying suit now available to pilots is unsatisfactory for operations in the Korean area. It was necessary for pilots to make many modifications to the suit due to its non-durable construction, inadequate pockets and poor camouflage characteristics.

It has been recommended that a new combat summer flying suit of more durable material be procured.

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(VA-75 ltr ser 279 of 4 July 1952 to BUAER). Camouflage characteristics and provisions for comfortable and efficient stowage of survival items should be important considerations in any new design.

c. C-1 Survival Vest

Most pilots have worn the C-1 survival vest during the entire tour (with and without the anti-exposure suits). Though fairly bulky, it is considered the most efficient means of carrying survival equipment. This vest, and any other survival equipment carried, should be inventoried by each pilot prior to departure for the line from each in-port rest period. (It is possible that during the in-port periods rations may become inedible and other items may be lost). Some pilots incorporated survival gear into leggings, and a few pilots managed to carry survival gear in their pockets or in pocke sewed on the flight suit, but the survival vest was the only solution for th majority of the pilots. Since there is a tendency to place more and more equipment on the pilot's chest, in the vicinity of the Mae West, this area has become over-burdened. Other means and places should be found to carry equipment. (Refer to CAG-7 ltr ser 409 of 24 September 1952 to BUAER).

d. AN/PRC-17 or the AN/CRC-7 portable radios must be checked at frequent intervals. Air Group SEVEN has found, on routine inspections, as many as 54 out of 117 radios inoperative due to weak batteries or faulty parts. Of all their survival equipment, pilots value these radios second only to the parachute and they should be issued for each aircraft. Unfortunately, the unsatisfactory size, weight, and shape of the radio makes it necessary to carry it in the PK-2 raft pack, and in an emergency, the radios could be unintentionally abandoned. A new type of personal survival radio should be designed that is small, light, and flat, so that the pilot can carry the radio on his person without danger or discomfort. It is suggested that a radio such as the Air Force URC-4 be investigated for possible procurement by the Navy.

e. Chart Board

A change in the design of chart boards would be desirable for future VA type aircraft. Chart boards should be at least one inch in thickness, since it is customary for many pilots to carry air navigation charts, close air support grids, etc., inside the chart board for easy and quick accessibility. (Refer VA-75 letter serial 495 of 11 December 1952 to BUAER).

f. Ejection Seat

Most jet pilots feel that the face curtain features of the ejection seat are unsatisfactory and would prefer the "arm rest" type of ejection