NAVAL AVIATION

NEWS

RESTRICTED

Rocket Engines
Air Force Rescue
NavAer 00-75R-3

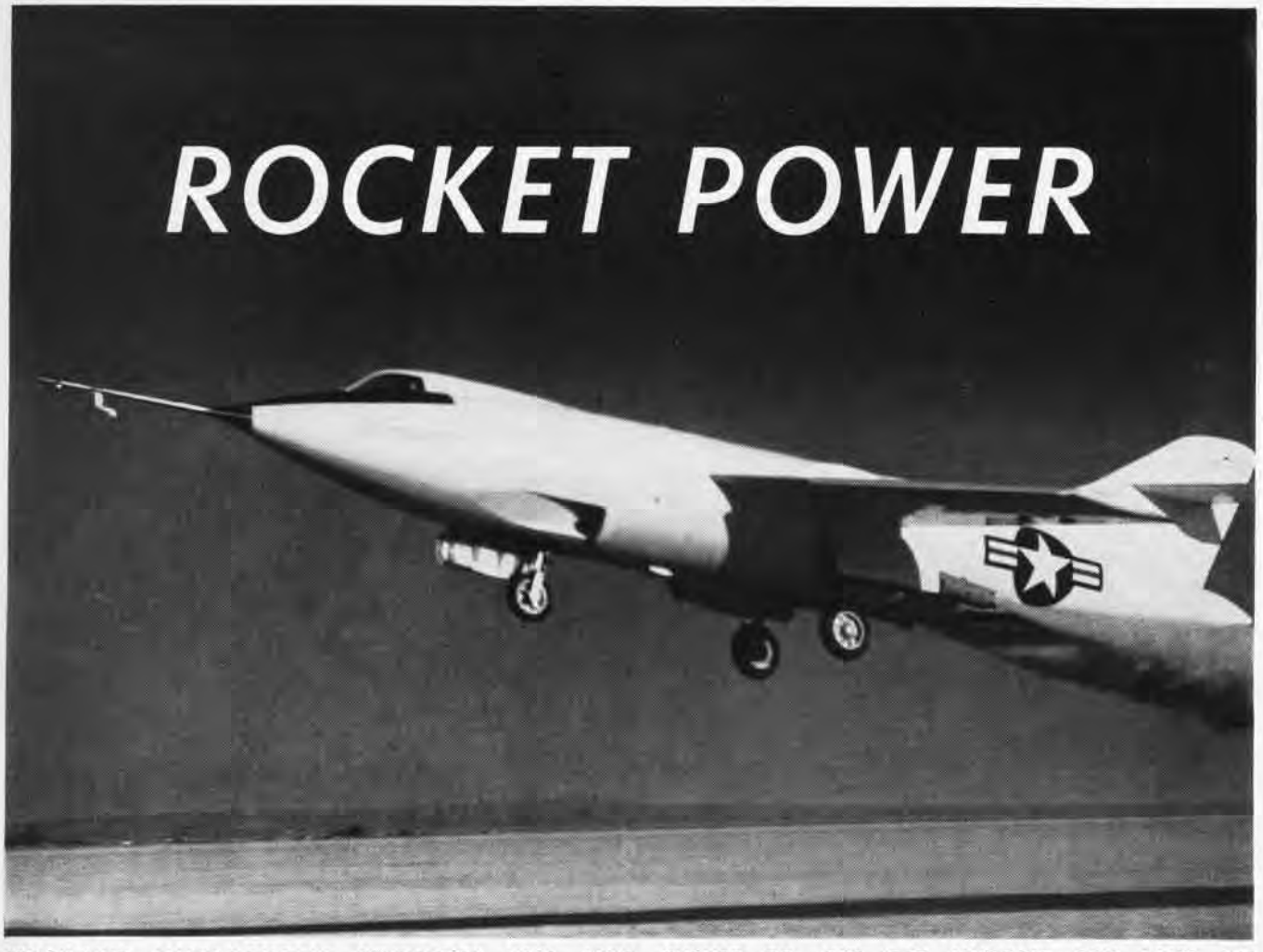
February 1949

RESTRICTED

NAVAL AVIATION

Two of the most eye-catching news pictures of Navy planes in recent months are presented here. One is a P2V-2 with plastic nose photographing Glacier Bay in Alaska. Other is an F9F in midair. Note yaw indicator on nose.

ROCKET POWER



PENCIL-LIKE NAVY-DOUGLAS SKYROCKET USES JATO THRUST TO GET OFF MUROC'S DRY LAKE BED

ONE WAY to get away from it all is by rocket. According to the followers of rocketry, a rocket-powered vehicle could be built which would be capable of escape from the earth. They claim it is possible to build such a machine with present day materials and knowledge. Think of it! Not merely to escape from the brig, or a nagging wench, but actually to escape from the earth! Ah, to hie oneself up and away to some halcyon cove on Venus. Feminine Venusians gliding to and fro across the glade . . .

Rockets have other uses also. The rocket is the only power plant capable of operating outside the earth's atmosphere. The higher one goes, the more efficient the rocket becomes. Ultimately, if man continues to push his machines higher and faster, the time will arrive when only rocket-powered craft will be able to carry the ball. Even at the present stage of development, they produce more power for short periods of time than any other power plant.

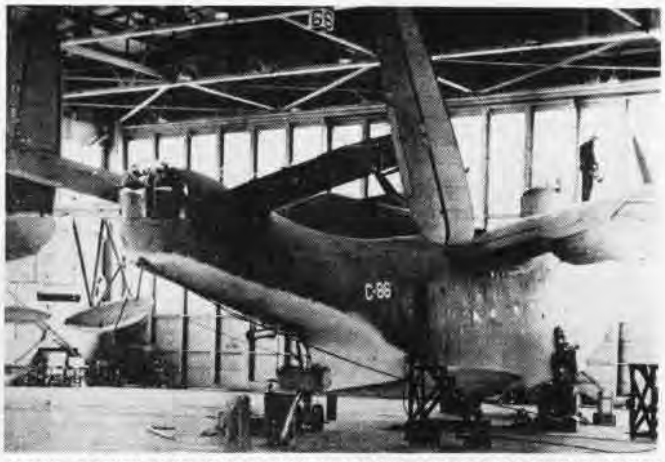
As a rule, the man-on-the-street thinks of rocket power as something very modern, or even something belonging vaguely to the future. However, rockets are one of the oldest types of power known, making their way into history about the same time as gunpowder and Friar Roger Bacon, in the 13th century.

Ogdai, son of Genghis Khan, and a chip off the old warhorse, laid siege to a small city in south China, whose defenders used rockets back in 1232. Although the rockets probably had a spectacular effect, it was to no avail; Ogdai took over the town anyway. So, though the exact origin of rockets is obscure, they are generally believed of Chinese origin.

Apparently Ogdai couldn't keep his big mouth shut, for very soon thereafter rockets were being used by Mediterranean pirates in their trade; Italians were using them in a local war; and Arabs were writing favorite rocket recipes for whoever cared to create the new dish. Time went on and in the 18th and 19th centuries, rockets were a preferred weapon among various Indian princes of the royal blood. During the 19th century, the English also utilized rockets to give enemy coastal cities a long-range hotfoot.

The rocket power plant in use at that time was the solid propellant type. The solid propellant rocket consists of a combustion chamber and a nozzle. The combustion chamber is a cylindrical affair, filled with propellant almost to the nozzle. The nozzle of today is a convergent-divergent type; the one used during the early days was surely not so efficient, probably being just the open end of the combustion chamber.

RM-1 NACA SUPERSONIC ROCKET-POWERED VEHICLE SET FOR LAUNCH



LIQUID ROCKET JATO WAS TESTED INSTALLED AFT OF PBM TUNNEL HATCH

PROGRESS CAME SLOW

AFTER the initial discovery, rocket development lagged. Rockets remained erratic and inaccurate until the 20th century and were almost completely replaced by guns as weapons, although rockets were still popular for purposes of celebration.

However, between 1900 and the beginning of World War II, although rockets were put to little practical use, they progressed faster, so far as development was concerned, than ever before. The factor that changed the complexion of rocket futures more than anything else was the shift from solid propellants to liquid propellant rockets.

Dr. Goddard, rocketry's grand old man, initiated the research on liquid rockets in this country, and provided incentive for work which was to be done later on in Germany. Dr. Goddard built his first liquid propellant rocket in the 1920's. In 1931 the American Rocket Society was formed, and in the mid-30's Germany began pouring very large sums of money into rocket research.

The liquid rocket engine using bi-propellants, which was the type Dr. Goddard invented, is somewhat more complex than the solid propellant rocket. This type of engine consists of fuel and fuel tank, oxidizer and tank, mechanical pumps or pressure feed systems to get the oxidizer and fuel to the combustion chamber, some type of valve control, a cooling system, and a combustion chamber and nozzle.

The fuel is usually some type of hydrocarbon or hydrogen, though not always; a great deal of development is being done on a variety of propellants. The oxidant might be any of a number of liquid oxidizers. Cooling is achieved by circulating one of the propellants around the combustion chamber and nozzle in a coolant jacket. The nozzle is a convergent-divergent type.

The relatively small mass and extremely high velocity of the jet makes a rocket inefficient at low flight speeds. Since thrust is generated purely by reaction, it becomes slightly more efficient as it goes higher and leaves the atmosphere. The fact that both fuel and oxidizer are carried within the rocket results in a very high total propellant consumption. The simple, light engine capable of handling large quantities of energy in the smallest space, produces enormous thrust outputs compared to frontal area.

In the U.S., development was left up to the few hardy souls such as Dr. Goddard and members of the American Rocket Society until 1941. During this time, however, monetary assistance was provided some projects by various Government agencies, including the Navy. When war was sufficiently near at hand, the Army and Navy called in most of the people interested in rocketry to work on the development of military rocket vehicles. What these people managed to do during the war years makes a right bright light on the record.

NACA D-558-2 FLYING MODEL HAS STEEP CLIMB

Always looking for a way to get planes off faster and in shorter distances, the Navy was primarily interested in rocket power as an assisted take-off device. So, one of the first projects given the rocket boys by BUAER, was the job of producing such an auxiliary power plant.

TWO PROJECTS were begun at the Engineering Experiment Station at Annapolis. One was headed by rocket's man of vision, reticent Dr. Goddard. The other project was headed by another visionary, and even more retiring individual, a young naval officer, Robert C. Truax. In 1942 an engine was ready for testing. It was a liquid propellant motor, and it was in the course of research on this power plant that bi-propellants capable of spontaneous ignition were discovered. Bi-propellants which ignite spontaneously when mixed have since become the most popular type of rocket propellants. (*The term "propellants" is going to get monotonous, but, as carefully pointed out by the lads who are versed in rocket lore, the word "fuel" can't be used because fuel is but one half of the rocket's motivating power. Propellants include both oxidizer and fuel.*)

This first liquid rocket JATO motor, Dr. Goddard's, was installed in the aft end of a PBY behind the second step. This method of installation did not prove feasible because water would short out the engine, and it could not be run without certain safety devices being removed.

When the rocket engines were ready in the Truax project, a new method of installation was tried. Two motors were hooked up to the struts and this system performed admirably. Take-off distances were cut 40 to 50%. On one test the plane was loaded to a point where it could stay in the air only with

full power applied. Yet the plane got off with the help of the two JATO units in 33 seconds.

Another program that went on simultaneously with the EES projects was carried on by Aerojet Corp. on the West Coast. They also built a liquid rocket JATO unit which was subsequently tested on a *Mariner* and a *Coronado*.

Although the liquid rocket JATO idea proved successful so far as performance was concerned, the weight and complexity of the engine, plus the problems of handling rocket propellants and the problem of maintenance, precluded its adoption by the fleet. Also, both America and Britain were experimenting with solid propellant JATO, and this unit, if perfected, appeared to hold the greater promise for immediate operational application—minus many problems of the liquid units.

So, the liquid propellant JATO projects were dropped for the time being, but results of these programs were to lay the groundwork for the use of liquid rocket power in guided missile and pilotless aircraft in the Navy.

The development of solid propellant JATO was going on at Cal. Tech. just prior to the war, and a BUAER representative was sent out to witness an *Ercoupe* JATO take-off demonstration in August of 1941. Six small units were used with 25 pounds of thrust per unit. The small size of the units made their use impractical for Navy planes, although they operated successfully. The British had a larger unit which the Navy borrowed and tested in May 1942.

GERMANY'S FIRST ROCKET FIGHTER WAS ME-163

These tests were conducted at NAS ANACOSTIA, the JATO units installed on a Brewster F2A. The operation was successful, but not without incident. The fabric covered tail of the F2A had a tendency to ignite from the JATO blast. Later test work made the units completely and safely operational but not without plenty of development work.

During a static firing of two JATO units on a twin-engined plane, both units broke loose and created considerable scurrying about among the spectators before they burned out. The pilot couldn't see what was going on from the cockpit and remained as calm as Yorick's skull. Though his gas tank had been pierced by one of the units, the gas miraculously failed to burn, and the pilot's only comment was, "Gee, it must have scared you guys!" Top form, what!

THE VIPER'S PILOT WAS SUPPOSED TO STRIKE AND DIVE AWAY PERHAPS TO LIVE ANOTHER DAY

By early 1944 the problems had been ironed out, and BUAER wanted to give their new development to the fleet. But the fleet was doing all right, and they were loath to "buy" this implement of *Buck Rogers*.

A couple of seaplanes landed in ponds while flying across country about this time, and JATO got them back into the air under conditions which were giving ducks take-off troubles. While this publicity was still hot, a "selling" team went out to various fleet commanders to show them what JATO could do.

Although at times the boys had a tough time getting an audience, once they could present performance proof on JATO, it sold. One fleet commander had been particularly "busy" and it was only with considerable difficulty that an exhibition could be arranged to meet his time schedule.

FORTUNATELY THESE WEREN'T TOO SUCCESSFUL

Two PBM's were loaded with identical loads, one equipped with JATO, the other without. When the Admiral arrived, the two planes roared off together. The JATO plane got off in record time and went up like a bird, while the other plane was still chugging across the bay. As a matter of fact, the JATO-less plane churned all the way across the bay and never even got on the step. The fleet commander was properly impressed. He was ready to install JATO on every plane under his command.

However, the pilot of the PBM that failed to get airborne was not nearly so impressed. He figured something very peculiar was going on and he investigated. He found out that the two planes had been loaded with identical weight. But while the JATO plane's weight went properly on the CG, his plane had unaccountably been loaded aft of the tunnel hatch. Careful calculation readily showed that it would have taken a good-sized derrick to get the logy plane on the step—let alone into the air.

In the last year of the war JATO proved itself beyond any question. And today it is taken as a matter of course. It was not always so.

American rocket men hesitate to go on record when it comes to a comparison between American rocket development today and German rocket development at war's end. Some advances have been made, but none are as yet outstanding. Hitler began pouring large sums of money into rocket development in 1935, and continued an all-out effort right to the war's end.

WHEN LAUNCHING ROCKET MISSILES FROM SHIPS THE EXHAUST WILL PRESENT A MAJOR PROBLEM

WARTIME DEVELOPMENT

THE GERMAN Army's Peenemuende laboratory and Goering's laboratory at Trauen were lavishly furnished and undoubtedly the world's most up-to-date rocket research centers. At war's end V-2's were being produced in large numbers; other rocket powered missiles were being used against allied bombers; and later developments in the rocket field promised the Germans an opportunity to hit America with rocket-powered missiles. Germany also produced two rocket-powered piloted aircraft, and a number of pilotless, air-to-air, ground-to-air and air-to-ground pilotless missiles, which were used operationally. How successful were these weapons is still a very controversial subject; however, the bombers lost due to rocket attacks and the British people who withstood the V-2 attacks attest that they were effective.

America has not yet produced a rocket superior to the V-2, though present designs now in construction promise superior performance. The A-6000-C-4 liquid engine developed and produced by Reaction Motors, now being used to power the X-1 and the D-558-2, is probably better than any comparable German design. However, Germany had fairly similar engines during the war. If proof of the pudding is in the eating, then the American engine is better, for the X-1 has flown faster powered by the A-6000-C-4 than any German rocket-powered plane. Of course, it must be remembered that the ME-163 flew some 623 mph in 1941.

So, at least we have a claim for superiority today. Nevertheless, no American rocket engine operating today would startle German rocket researchists to any great extent.

ONE OF MANY GERMAN GUIDED MISSILE DESIGNS

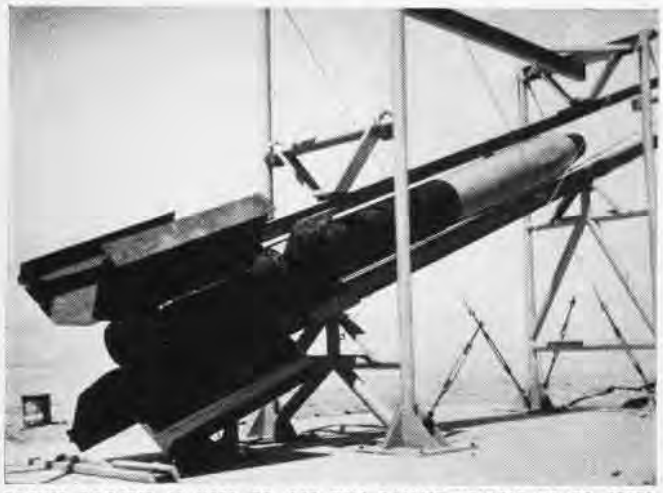
Though German rocket development was outstanding, it did not meet the German goal. It was a gigantic gamble that failed. Their new weapons were not efficient enough to stop the allied bombing nor to bring England to her knees. Some of the reason for this failure was a lack of time. Military expediency made the Germans accept some untried and not-so-good ideas, in order to get something into the air and working against the enemy.

Goering originally established the Trauen laboratory and gave it almost unlimited powers, simply because the Army's Peenemuende laboratory appeared to threaten his position. He was afraid they might come up with something that would win the war and he would have no part of it. He closed down this laboratory in 1942 when certain setbacks occurred at Peenemuende which led him to believe it was no longer a threat to his prestige. Actually, at that time, Trauen apparently was abreast if not ahead of Peenemuende development, and their longer-range program promised much better end results.

THE ME-163 was fast, yet it had to be abandoned because of its danger in operation, and its handling problems. The *Natter*, a half piloted-aircraft, half guided-missile, which was aimed from the ground to a point of interception, then guided to within firing range by a pilot, had only one test before being ashcanned. The pilot after loosing his rockets toward a bomber formation, was to dive away in his empty and unstable aircraft, then bail out at some speed between 125 and 185 mph. The one attempt resulted in a pilot fatality.

The V-2 had a devastating morale effect, and a considerable damage value. However, the Germans suffered 20%

JAPANESE BAKA BOMB WAS UNDOUBTEDLY A GERMAN BASIC DESIGN WITH KAMIKAZE VARIATIONS



ROCKET BOOSTER IS USED TO GET THIS RAMJET VEHICLE UP TO SPEED

NACA ROCKET-POWERED TIAMAT FLEW PRESET RECTANGULAR COURSE

duds on launching, and a large percentage of those successfully launched failed to reach Antwerp or London targets.

The V-9 and V-10 combination which was to reach America was never tried. It was to be a step rocket with a pilot who would bail out near its destination. Its feasibility is questionable, to say the least.

In the guided missile field, Germany never perfected a suitable guidance system.

LARK UNDERWENT GREAT DEAL OF TESTING

THIS is in no way an attempt to belittle the German development. No one can do that with less than tongue-in-cheek attitude. Still, cost of German development should be considered. And it was considerable, in terms of money, manpower, lives and material.

In the U.S., rocket research is working to perfect and further develop liquid engines still similar to German types. A great deal of effort is going into guidance and control. No rocket-powered missiles are considered operational, but certainly some experimental rocket-powered vehicles are on a par with German operational rocket equipment. In the piloted rocket-powered fields, the U. S. has some planes flying, though strictly experimental; there have been no abortive failures such as the *Natter* and the ME-163. Of course, there is no war-time pressure, and there has been a considerable time lag.

At the present time only three companies are producing rocket engines for the Navy, Reaction Motors Inc., Aerojet Corp. and Bell Aircraft Company. Reaction Motors was incorporated in 1941 by four members of the American Rocket Society and produces the A-6000-C-4. In addition it is working on some smaller engines for guided missiles, and some large thrust units for upper air research vehicles. Aerojet Corp., founded in 1942, is a big producer of solid propellant JATO units. It also is working on various other phases of rocket development. Bell Aircraft is a relatively small producer of liquid propellant engines for guided missiles.

Rocket research is being carried out by a number of educational institutions with facilities for such work under Navy sponsorship. BUAER recently established an Aeronautical Rocket Laboratory at Lake Denmark, near Dover, New Jersey, which will become a rocket test station. It is not yet in operation, but will be testing sometime in 1949. It will also work on fuel handling and storage problems.

The thing that gives rocket engines that special something, is the propellants they use. As previously stated, rocket propellants include both fuel and oxidant, so as to make them independent of the atmosphere for combustion. This fuel may be solid, such as is used in JATO units, or it may be liquid such as was used in the V-2. In the aeronautical field, liquid propellants appear to offer the greatest opportunity. Inasmuch as so much depends upon propellants, a further discussion of this phase of rocket research is in order.

The liquid rocket may carry its propellant as a single fluid containing both fuel and oxidizer, or it may carry its fuel and oxidizer separately, and mix them only in the combustion chamber. The first type of rocket fuel is known as a mono-propellant, the latter as a bi-propellant for very obvious reasons.

There are two methods of getting the propellants into the rocket's combustion chamber, one, by tank pressurization, two, through the use of liquid pumps.

Pressurization is the simpler method, but necessitates use of pressures higher than those in the combustion chamber, which in turn demands heavy tank and line construction, and a supply of high pressure inert gas such as nitrogen or helium. Accordingly the weight of the propellant storage system is high per pound of propellant carried.

PUMPING employs low pressure storage of the propellants and a suitable pump. One type is the turbine-driven centrifugal pump. This system has the advantage of light-weight storage tanks, but building a suitable pump for various propellants is quite a problem. When pumping such highly corrosive fuels as hydrazine, or corrosive oxidizers, the pump is complicated with material, sealing and bearing difficulties.

In addition, an auxiliary power plant of high capacity, low weight and cost, suitable for short period operation, is required to drive the pump.

Since the mono-propellants must contain all the components necessary for a large energy releasing reaction, they tend to be explosive in nature. This places a severe limitation on the possible mono-propellants that can be safely used for liquid rockets.

Bi-propellants keep the oxidizer and fuel separated until they reach the combustion chamber, which affords much less handling danger, inasmuch as the individual components may be non-explosive. But the bi-propellants have the disadvantage that the flow of the two liquids into the combustion chamber is critical. Variations in metering will result in combustion inefficiency or in depletion of supply of one liquid before the other with resultant loss in range. Which, on a trip to Venus, could prove to be rather disconcerting.

NACA GROUND-TO-AIR MISSILE ON STAND JUST PRIOR TO TEST LAUNCH

SO FAR, AMERICA HAS NOT PRODUCED A MISSILE SUPERIOR TO THE V-2

PROPELLANT PROBLEMS

FACTORS which must be considered in the selection of liquid rocket propellants are availability, specific impulse, safety, density, and adaptability with related problems. No matter how good the propellant may be, if it is only available in such limited quantities that cost of production is extremely high, and only a few missiles can be launched per year, it has little military value. If rockets are to take any of the load from aircraft during the next war, it'll take a bit of liquid. During the last conflict 21 million gallons of fuel were used in allied aircraft each day. That's a lot of petrol—and rockets are far less efficient. However, rockets won't have to cruise around looking for targets like aircraft. A rocket-powered vehicle would only be launched toward a definite fixed target, or a moving target after sighting—a fast straight-line trip.

Specific impulse is a measure of the energy produced by the propellants. It is defined as the pounds of thrust obtained per pound of propellants consumed per second. The range of a rocket missile is approximately proportional to the square of the specific impulse. Unfortunately propellants cannot be chosen merely because of a high specific impulse; they must still meet the other requirements of availability, safety, density and adaptability.

Safety is important because of the critical nature of most rocket propellants. Many rocket propellants are similar to high explosives and safety considerations are of the utmost importance. Not only are there handling dangers insofar as charging and launching is concerned, but storage, manufacture and transporting of rocket fuels must also be considered. A safety code has been evolved by the Navy department, which will be coordinated with the Air Force and Army. This code is being distributed at present to cognizant activities for comment and interim application.

As stated, a high specific impulse is not sufficient in itself. The size and weight of the fuel system necessary for carrying the propellants is important and both of these factors are related to the average density of the propellants employed. All other factors being equal, a high average density is advantageous.

For the chemical-type reaction so necessary to the liquid rocket engine, an ideal propellant would be one having a high density and containing a high percentage of hydrogen for a high energy release rate. Unfortunately, these two characteristics are seldom found in liquid propellant compounds. Generally, compounds containing high percentages of hydrogen are of low density.

The adaptability factor applies to both the adaptability of propellants to the power plant, and the adaptability of the power plant to operational use. The chemical and physical characteristics of liquid rocket fuels affect both of these factors and accordingly both effects must be considered.

SOLID propellant rockets can be used in much the same manner as artillery weapons. They can be fired with extreme rapidity and the problems are no more complex. However, liquid rocket-powered missiles such as the V-2 are extremely difficult to adapt to operational use. Good progress is being made toward simplifying this type engine, however. Special storage facilities are required accessible to the launching site, and the point of manufacture for some fuels and oxidizers may be near the launching site, due to handling problems.

Many of the fuels and oxidizers are corrosive and demand expensive material considerations in motor, tank and pump design. Great care and special equipment are required to charge the missile and protect the ground crew from contact with the propellants.

For military application, a rocket engine must be suitable for operation throughout a wide temperature range. To attain this wide operating range, propellants require as wide a pumpability range as practicable. This range is obtained by specifying a freezing point of minus 70 degrees F. or lower. Liquified normal gases and gasoline can meet this requirement easily but many attractive propellants such as hydrazine have freezing points above the freezing point of water. Additives can sometimes be used to depress the freezing

point to an acceptable value without sacrificing performance excessively. On the other hand, some propellants have a low boiling point which introduces the additional problem of considering low temperature embrittlement of construction materials.

PROPELLANTS with very high vapor pressure and very low boiling and freezing points restrict the operational value of missiles by necessitating last minute charging to reduce evaporation losses, and obviate the possibility of storing the missile completely charged.

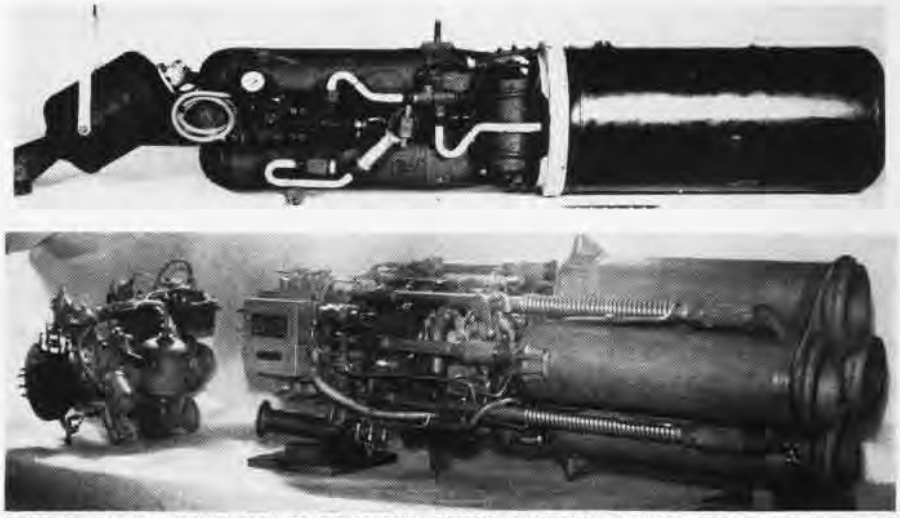
In some bi-propellant systems, the oxidizer and the fuel ignite spontaneously upon contact after injection into the combustion chamber. These so-called hypergoles simplify motor construction by eliminating a separate ignition source.

In rocket motors designed for long periods of operation, cooling must be provided. This is usually done by a regenerative cooling system in which one of the propellants is circulated around the combustion chamber and nozzle before actual injection into the chamber. Propellants which are used for regenerative cooling must of necessity be stable under elevated temperatures and not subject to a change in state.

The best engine coolant is one that will absorb and quickly conduct away generated motor heat with the lowest possible temperature differential. Another important consideration is the boiling point. If the coolant reaches or exceeds its boiling point in the cooling process resistance to heat transfer will be increased, coolant flow will be interrupted by vapor lock, and the motor will burn out. Accordingly a propellant which has a high boiling point, at the operational fluid pressure, is desirable.

A high heat of combustion is a definite requirement, performance wise, for a rocket fuel. Preferably, the fuel should have the highest possible heat of combustion on a volume basis; that is to say, the product of the heat of combustion per pound and the pounds of fuel per unit volume should be as high as possible.

Propellants having low viscosities at reduced temperatures are very desirable from a pumpability standpoint and information on viscosity of the propellant is required for estimates of pressure drops in components of the propellant feed system.



GERMAN ENGINE ABOVE USED PRESSURE FEED SYSTEM; AMERICAN A6000C4 USES NEW FUEL PUMP

HIGH VAPOR pressure propellants introduce power plant problems very similar to those encountered with high vapor pressure gasolines in reciprocating engines, the major problems being those associated with vapor lock, pumping and evaporation losses. Other problems are encountered with high vapor pressure toxic materials.

The use of toxic propellants complicates operations in a manner similar to corrosiveness. In addition to the possible presence of poisonous vapors from the propellant, the motor exhaust itself may be toxic. Toxic exhaust is a particular problem in naval application of rocket-propelled missiles because of the necessarily confined launching platform aboard ship.

A considerable number of propellants are being studied by BUAER, even though about the only systems that are of current operational value are the mixed acid-monoethylaniline and liquid oxygen-ethyl alcohol types.

At present the specific impulse obtainable from a chemical reaction is limited to a value of approximately 250 seconds for a service-type engine, by combustion chamber temperature and the molecular weight of the exhaust gases. But there is every reason to believe that this figure will be surpassed in the foreseeable future.

So, if you want to get away fast, the rocket is the thing, but like any other method of "leaving home" there are complications strewn along the way.

REACTION MOTORS TEST PLATFORM TRIES OUT ROCKET ENGINE WHICH WILL DRIVE NAVY'S VIKING

GRAMPAW PETTIBONE

Grampaw Pettibone says:

Just take a look at the figures in the Accident Rate Table at the bottom of the page and you'll see why I'm smiling for a change. In the last three years there has been a steady decline in the number of serious and fatal aircraft accidents. In 1947 and 1948 where the number of hours flown was pretty nearly the same, there was a big reduction in the number of persons killed in naval aviation accidents. Even so, there were 1558 major accidents in fiscal 1948 or an average of about 4 per day. There is still plenty of room for improvement.

As we go to press the records show that we are doing better in the first six months of fiscal 1949. With only two days left to go on this period ending December 31st, there have been 54 fatal accidents in which a total of 112 lives were lost. This represents about a 20% improvement over the corresponding period last year.

Let's all put out some real thought and effort and see if we can't make 1949 the safest year on record.

This Months Rough Ride

I've been on a few rough rides in my day and heard about some that were a lot worse, but here's a story that's hard to tie. The plane was a PB4Y-2 piloted by an Ensign on an instrument flight plan to Mobile, Alabama. We pick up the pilot's statement just after he starts to comply with instructions to "proceed to the north west leg and hold, etc."

"I told them I was starting my climb and would proceed as instructed to 2500 feet and hold on the northwest leg.

"At approximately 1600 feet I lost contact with the ground and at approximately 2000 feet I encountered severe turbulence and an updraft that took us to 4000 feet. With conditions prevailing as they were, I called

the approach controller and told them I was encountering such turbulence that I was not going to try an approach at Mobile and requested clearance back to Montgomery. The controller contacted ATC and advised me I was cleared to Montgomery airport, (Maxwell Field), to climb to and maintain 500 feet on top. They further advised me to continue my climb on the northwest leg and to call when at my altitude of 500 feet on top. At 9500 feet, I contacted the controller again and advised them of my altitude and that I was still climbing. At this point after being on a heading of approximately 305 degrees on the northwest leg, I was cleared to proceed on my base course to Montgomery and to continue my climb to 500 feet on top.

"I do not remember just how long it was after that, but I had turned to my approximate base course of 060 degrees and had climbed to 12,000 feet when we encountered severe turbulence. Our next indication of any up or down drafts was experienced when we were dropped from 12,000 feet down to 6000 feet, while still in a climbing attitude and back up to 13,500 feet in a matter of a very few seconds. Series of very violent drafts continued in rapid succession, so fast that I had no idea what corrective measure to use to bring the plane to a normal attitude.

"My gyro horizon was tumbled on the first series of up and down drafts and I was left with only the basic instruments of needle-ball altimeter and airspeed to know my attitude. They were all moving so rapidly that it was difficult to determine in just what direction the plane was moving. In a nose high attitude with forward pressure applied on the elevator control, our altitude seemed to go up, gaining speeds which were unreadable at a glance. During the early period of the severe turbulence, a definite "stalled" shudder was noticed and immediately I noticed the ball go out to the left about one-quarter inch and also a definite loss of control of the elevators; in fact it was such that I was in question as to whether I had any elevators at all.

"My first attitude was nose down just after the shudder, which lasted only momentarily. I had lost all ICS communication, therefore was at a loss to relay any information to anyone in the plane. I was later informed that no one had a headset on due to being tossed around so much. A bail-out order during this experience would have been suicide. At no time did I ever give up as having lost the battle for life which was existing.

"During one of the violent drafts, just after the loss of the elevator at approximately 6000 feet, and in a nose down attitude, we reached approximately 3000 feet before I could feel any elevator pressures at all.

"Immediately following this recovery I was holding forward pressure on the elevator control which continued to become greater, being followed by a pressure on my back against the seat and later being suspended by my safety belt. Also, when I pulled back on the elevator control after finding it impossible to recover by forward pressure, I experienced an excess speed noise and a very hard seat pressure on the pull out.

AIRCRAFT ACCIDENTS IN STEADY DECLINE

BUT THERE'S PLENTY OF ROOM FOR IMPROVEMENT!

	Fiscal Year 1946*	Fiscal Year 1947	Fiscal Year 1948
Major Damage Accidents (*a*)	5,031	1,979	1,558
Fatal Accidents	537	181	144
Fatalities	1,067	332	246
Fatal Acident Rate per 10,000 hours (*b*)	.82	.73	.62
Number of pilots killed per 1000 exposed per year	14.19	9.04	7.78
Aircraft Hours Flown	6,559,232	2,485,130	2,312,064

***Fiscal 1946 includes the last two months of the war, but the figures given above do *not* include combat accidents and combat fatalities. Nevertheless more than half the major damage accidents during 1946 occurred during July-August-September quarter.**

(*a*) Major damage accidents include Class A, B, and C damage, i.e. strikes, major overhauls, or replacement of major assemblies such as wings, empennage, engines.

(*b*) The rate for pilots killed per 1,000 a year is computed for pilots on active duty. The corresponding rate for pilots participating in the Naval Air Reserve Program is about half as great.

"This maneuver, a half, if not a complete loop, is verified by later statements of the crew and passengers aboard. Everyone reported being on the overhead of the fuselage and witnessed gear falling from the deck of the plane to the overhead where they were thrown by the inverted position. Chief ———— volunteered information that he was pinned between the forward crown turret and the port side of the overhead and witnessed all of the loose gear stowed in the plane captain's jump seat fall to the overhead of the plane. The men in the after station were sitting on the heater pipe located in the overhead of the after station.

"Dents, approximately 12 inches in length, are present to verify that statement. Loose gear was tossed in every direction about the plane. It has been noticed that a number two can of peaches came to rest in the dome of the forward crown turret on the flight deck. An inverted position was necessary for that to happen, and to substantiate the statements made by the crew and passengers on board.

"It was due only to the terrific updrafts present that we were able to recover from the inverted position. I am certain we were swept upward while being inverted as our altitude was indicating around 7000 feet at the point of recovery.

"After gaining a level attitude and erecting my gyro horizon three or four times I started my fight to get down under the storm. On two occasions when at approximately 3000 feet, on the let down we were swept back up to around 6500 feet. The altimeter hardly ever stopped and it was only due to a very dependable radio altimeter that I was able to estimate my altitude below 4000 feet.

"At approximately 1615, local time, and at an altitude of 200 feet I was clear of the overcast. I turned to a course of 090 degrees and immediately asked Chief ———— to give me a gas check. Due to the gyrations and unusual attitudes just experienced every reason was present to believe that we might have lost most of our gas load. Chief ———— reported that the sight gauges read approximately 35 gallons on each tank, but that bubbles were flowing in the sight gauges so much that he could not be sure the reading was correct.

"I was the only one in the plane aware of the fact that we had only one elevator. I was experiencing a very difficult time in maintaining altitude due to the porpoising effect of the lone elevator. After flying approximately five to ten minutes on the easterly heading, Midshipman ———— spotted Ellyson Field on our starboard side about one mile distant. The visibility at that time was estimated to be about one and one-half miles, with the ceiling slightly over 200 feet. A very dark area was prevailing in the direction of Pensacola with visibility to the east and north of Ellyson such that we could not determine weather in those areas. Number four engine was cutting out intermittently, therefore it was my decision to set the plane down.

"A normal landing was made; however, due to the extra speed necessary to control the elevator we were fast on the approach, going over the end of the runway at approximately 115-120 knots. Impact was made at approximately 105-110 knots with brakes being applied immediately. However, due to the short runway, we were unable to bring the plane to a stop. When I saw that we would not make it, I applied full power on the port outboard engine with intentions of ground looping the plane to the starboard. After leaving the runway to the right, the port main landing gear collapsed and the plane came to a stop just inside the fence on the north end of runway 36. All passengers and crew members were on top of the plane by the time I got out of the plane through the cockpit hatch.

"The plane was a strike, but I was very relieved to see that every man was going about on his own and that no one was injured other than a few minor cuts and bruises, which were all sustained in flight."

"I cannot say that everyone in the plane was calm; they had little time to be that way . . . but everyone was doing his utmost to carry on during a very serious situation. I wish to express my appreciation to every man involved for his support during this incident."

Life Is Brief Sans Briefing

A pilot of the F4U-4B shown in the accompanying photo was the division leader of a four-plane night cross-country flight, which included a five minute stop at NAAS MIRAMAR. On this landing he broke off and made a normal approach to what he thought was runway 28. His vision of the runway was obstructed to an appreciable extent because of thin scattered clouds at 800 feet and ground fog in the gully through which ran two rows of high intensity approach lights. These red lights extended back from the head of runway 28 for a distance of 2000 feet and are the same width as the runway.

The aircraft made contact with the ground in a normal landing attitude approximately 400 feet short of the runway. The wheels were broken off by the initial impact which was with the top portion of a six-foot embankment. The plane then bounced forward 72 feet at which time the propeller began digging in. About 44 feet further the propeller left the aircraft and the landing gear strut stubs began digging in. This flipped the *Corsair* into the air and over on its back for a 40-foot slide.

The Accident Board states that the pilot mistook the two rows of red lights for the service runway. He had only a brief vision of the entire field before pulling up the plane's nose into a landing attitude. This accounted for his not seeing the green lights across the end of the service runway. The ground fog in the gully dimmed the intensity of the red lights to such an extent that the pilot failed to recognize their true color.

Interrogation of other pilots on the same flight disclosed that they experienced the same confusion regarding the true limits of the runway, and could have suffered similar mishaps had they been allowed to make their approaches. The Board also notes that this pilot was making his first night landing at this field and was not briefed regarding the additional lighting facilities. He had, however, made a daylight landing at this field a week previously.

Grampaw Pettibone says:

I agree wholeheartedly with the opinion of the Board in this case. The one gratifying feature about this accident was the fact that the pilot escaped with his life. Lucky, I would say.

Don't be overconfident about landing at a field at night, merely because you've been there once in the daytime. Things have a way of looking a lot different at night, especially when you throw in a little fog, smoke, or haze. Avoid confusion by insisting on a THOROUGH BRIEFING.

Get the Shovel

The pilot of an FG-1 stalled out a little high while landing under calm wind conditions (2 knot, 40° crosswind). His left wing dropped and he apparently hit the slipstream of the plane ahead just as he touched down. He applied left brake and right aileron and reported, "This procedure seemed to be effecting recovery." However, the airplane, not understanding what was expected of it, dutifully turned left upon application of left brake and headed for the sticks. One of the photographs which accompanied the accident report, shows that both brakes were on as the plane left the runway. As a result, the *Corsair* flipped over on its back and suffered strike damage.

Grampaw Pettibone says:

They really had to break out the shovels to dig this lad out. Fortunately, he got out of this scrape with nothing worse than a broken arm.

Remember, when the winds are light and variable it is a good idea to allow yourself some extra interval on the plane ahead. This chap got into trouble by *(1)* landing a little too close to the aircraft ahead, *(2)* trying to land his plane about 10 feet too high, *(3)* improper use of brakes.

It takes fast headwork to get off the brakes when you have almost effected a recovery from a bad swerve and see that you are going off the runway into soft dirt; but if you don't do it, you are almost sure to end up on your back. That is not good.

33 AF MEN SAVED BY NAVY

Their faces covered with sunburn lotion, Air Force survivors in small raft were picked up after B-17 and PB4Y-2 spotted them, then lost contacts in the darkness

Survivors of ditched Air Force C-54 in life rafts as carrier *Rendova* heaves to in background to take men aboard; three-day search saw 26 Navy, AF planes in search

THIRTY-THREE survivors of an Air Force transport which had ditched 1,200 miles southwest of Honolulu owed their lives today to a search team of Navy planes and ships and a Navy PB4Y-2 navigator who insisted on "one more look," before giving up the search.

The CVE *Rendova* picked up the men exhausted from 40 hours in two life rafts, on December 6. Four others were lost. Oil leaks in two engines of their C-54 forced the plane down in the water while en route to Japan.

A search plane from VP-28, one of many dispatched by Fleet Air Wing Two from that squadron, VP-22 and VP-32, made the successful spot of the survivors, leading to the rescue. Pilot was Lt. Cdr. Steve G. Kona and the navigator was Ens. L. R. Johnson.

Kona had taken off from Johnston Island at 0500 to make parallel sweeps of an area where the rafts were sighted the previous day by a B-17 search plane. He was accompanied by two *Privateers* from VP-22. As he neared the end of his search pattern at 1345 Kona decided to return to Johnston. Navigator Johnson requested that the plane conclude the last leg of search as plotted, and it was on this leg that the bow lookout, Chief Aviation Machinist Mate C. M. Killam, the plane captain, sighted a dye marker which, on investigation, proved to be the survivors.

Privateers of VP-22 relieved Kona on station after he had made several runs and dropped emergency rations and life rafts. He returned to Johnston low on gas after 15 hours of flying. Five *Privateers* from VP-28 had been sent to Johnston, staging base for the search operations, four acting in the search and one serving as standby. Two of the planes made contact with the survivors, one being lost and the other, flown by Kona, leading to their rescue by the *Rendova*. Kona notified the carrier by voice when he first sighted the men. A total of 123 hours was flown by VP-28 during the three-day operation.

Participating pilots were Lt. Cdrs. W. C. Bender, R. F. Bergeron and Kona, Lt. R. E. Edwards and Lt. (jg) J. W. Thompson.

Bender and Bergeron took off from Johnston at 1730 on 5 December to search the area where the Air Force plane was ditched. An expanding rectangular search was initiated, using a visibility of five miles. Bender was on the seventh leg of his search when a CW transmission of an Air Force B-17 was intercepted which stated it had dropped an AR-3 life boat some 50 miles distant.

The search was transferred to that area and a red flare sighted at 2310. Parachute flares and smoke lights were dropped and several low altitude runs made over the flare area. On one run the bow and tail lookout collaborated on survivor identification so a 1000′ orbit was started and intermittent red flares sighted. Bender had to leave the area because of low fuel and contact was lost.

The photograph below shows Lt. Cdr. Kona and his plane crew which made the successful contact. They are, left to right: front row, Piggot, Killam, Ens. Johnson, Higgins, Blackburn; rear, Merchant, Sheriff, Owens, Brown, Bixler and Kona.

Injured Air Force Survivor lowered off *Rendova* for treatment, Kwajalein atoll

This plane crew from VP-28 sighted Air Force plane 400 miles from Johnston

NATIVE OUTRIGGERS BRING DOWNED AIR FORCE MEN OUT TO NAVY PBM

B-29 WITH ELECTRICAL SYSTEM OUT HAD TO LAND IN SURF OFF FAIS

NAVY RESCUES USAF MEN

VP-46, PACIFIC—Post-war story:

This squadron sent a PBM to Fais island, just east of Ulithi, to pick up 10 survivors of a downed B-29 which had ditched in the surf offshore. All members of the plane had been picked up by natives and taken in. After the Air Force men had appointed their plane commander, Capt. Charles B. Hodges, "King," the King of the island would then talk to him. The natives believed the war to be still on and asked if the Japanese had conquered the United States.

On receiving orders to make the trip to the island, the plane was gassed to 2,000 gallons, guns and ammunition were removed, flight rations and additional rafts and lifejackets were put aboard. JATO units were loaded in anticipation of an open sea landing and take-off.

Three hours later the plane with Lt. H. J. Baird as pilot spotted the B-29 wreckage. An AF B-29 was circling overhead. Several of the B-29 crewmen and natives could be seen waving from the beach.

Lt. Baird made a couple of low passes over the island and decided an open sea landing on the lee of the island was possible. The PBM was landed and taxied as close to shore as safety permitted. As soon as the engines stopped, the natives started out in outrigger canoes with the 10 Air Force men. One canoe followed with a load of bananas and cocoanuts.

As soon as the survivors were taken aboard, a JATO take-off was made. The B-29 pilot watching from behind the pilot wasn't sure the take-off could be made with the island staring him in the face. Needless to say JATO impressed him when the *Mariner* cleared it.

'KING' HODGES SHAKES WITH CDR. STERNLIEB

The flight back encountered strong headwinds, effects of typhoon *Agnes* that was fast approaching Saipan. After the plane landed and was ramped, the survivors were greeted by a large crowd and interviewed over radio station WVTF. During the interviews they praised the chow of the rescue plane and told of some of the awful but well-meant food prepared for them by the natives.

Other highlights were: *1*. The natives rapidly were becoming adorned with aluminum bracelets and armbands, and *2*. The King of the natives was presented the B-29 provided he did not fly it too much.

Saipan In Greenland Dash

Helicopters Sent to Rescue AF Crew

All it turned out to be for the 1,000 men and five helicopters aboard the CVL *Saipan* was a rough trip and lost Christmas holidays, but the Navy played a part in the rescue of 12 Air Force men marooned on a 7,700-foot ice cap in Greenland.

After trying since December 9 to get the men off with gliders, the Air Force put a ski-equipped transport down on the ice and rescued the men two days before the *Saipan* was to have arrived offshore to take up its part in the rescue.

Three Piasecki *Flying Bananas* from HMX-1 at Quantico were taken aboard the *Saipan* at Norfolk, as well as two HJS-1's from Patuxent. When the *Saipan* got close to Greenland, the helicopters were to be used in an attempt to get the men off. The *Saipan* was close to Newfoundland, with a party of newspapermen and photographers aboard, when news of the rescue came through. It turned south again and let them off at Argentia, to fly back to the U.S.

Pilots of the three Marine helicopters were Col. Edward C. Dyer, commanding officer of HMX-1; Lt. Col. John F. Carey, executive officer; and Major Armond H. De Lalio. A total of eight pilots and 25 enlisted men from Quantico were aboard the *Saipan* for the operation. Patuxent sent two Sikorsky helicopters piloted by Capt. William V. Davis, head of flight test division, and Major R. L. Nickerson, USMC, also from flight test.

Since the *Saipan* left Norfolk just before Christmas, its crew had its holiday leave cancelled. They spent the day on the high seas, many of them seasick from the exceptionally rough weather they ran into in the dash north.

NAS CORPUS CHRISTI — Who says seaplane ramp duty is lousy? R. J. Lacke saw a 40-pound drum fish swimming off the ramp behind hangar 47. He promptly speared it and showed it off to his mates to prove you don't always have to have bait.

DID YOU KNOW?

MANY RETRIEVED VEHICLES COULD BE REFIRED

PTV-N-2 Program Complete

Ram-Jet Missile Shows Good Results

The last of the PTV-N-2's (formerly *Gorgon* IV, even more formerly KUM-1) have been fired and the test program wrapped up. During the flights performed by the stub-winged missiles new time-in-air marks were established for ram-jet powered vehicles.

The 20-inch ram-jet which powered the Martin built missile was developed by USC and built by Marquardt Aircraft company. Fully loaded with instrumentation and 116 gallons of gasoline, it weighed 1600 pounds. Carried aloft for launching, under the wing of a P-61, the PTV-N-2 flew under control to the point of fuel exhaustion, when a parachute automatically popped and dropped it more or less gently to the ground, or sea.

The PTV-N-2 program produced excellent data results via telemetered information and provided additional work on radio-control of guided missiles and pre-set flight maneuvering.

Since large power increases come with speed in the ram-jet vehicle, the missile was held at best operating speed by the use of automatic drag flaps. Though the ram-jet is considered to fit into the supersonic speed spectrum, the PTV-N-2 was flown only at subsonic speeds.

Marines Teach Jet Pilots

VMF-311 Instructs in Flying TO-1

VMF-311, EL TORO—After four months of operations as the Marines' first *Shooting Star* (TO-1) squadron, pilots of the unit are familiar with its ground handling and normal operations and have trained other pilots in the jet.

The squadron was assigned the added mission of providing transitional train- and covered flight safety, emergency ing in jets to fighter pilots. The first class, with 18 students, began on 11 October and finished 5 November. A 22-hour flight syllabus was presented in which the student progressed from familiarization through aerobatics to altitude cruise control, navigation, tactical formation flying, instrument flight and into the basic principles of gunnery and bombing.

A 43-hour ground school syllabus went on concurrently with flight work

LT. COL. CONDON LEADS FIRST MARINE TO-1'S

procedures, engine and airframe, aviator's equipment, high altitude operations, high speed flight, ordnance and trends in fighter tactics.

Concurrently running with the jet school are a *Corsair* school for pilots who need either a refresher or indoctrination course, and a turbo-jet maintenance school for qualified mechanics. Commanding officer of the squadron is Lt. Col. John P. Condon.

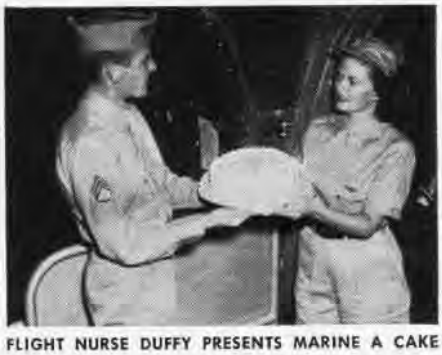
Try This On Your Bearcat

Prop Windmills to Start Engine

VR-31—Two pilots of this transport squadron recently got a chance to try out a much-discussed but little-tried idea for starting a balky engine.

Westbound with an R5D, Lt. Cdrs. Loewer and Caldwell stopped at Albuquerque, N. M. to refuel. A complete starter failure occurred on the #3 engine. Faced with a long delay, the pilots tried starting the R-2000 engine by allowing it to windmill on a high speed taxi run.

With 10,000 feet of runway available, the prop windmilled well over the requisite 600 rpm at 60 knots. The engine started with less than a 3,000-foot run in spite of the 5,300-foot elevation. Pausing briefly to pick up local wagers against the success of the operation, the flight continued on to its destination without further incident.



FLIGHT NURSE DUFFY PRESENTS MARINE A CAKE

Lone Marine Receives Cake

Samoa Detachment Honored on Day

VR-21, PACIFIC—The 173d anniversary of the U.S. Marines was duly celebrated at one of the smallest and certainly one of the most unusual Marine detachments of the corps in Samoa.

VR-21 delivered to the Marine sergeant-in-charge of the Fita-Fita Guards at American Samoa, a large, decorated cake on behalf of fellow Marines at Pearl Harbor. The recipient, Sergeant Buckner, was the only Marine now on the island and had under his command what is probably one of the best-drilled military outfits under the U. S. flag.

The Fita-Fitas, in their bare feet, while shirts and bright red lava-lavas, present in drill a marching group that rates second to none. The accompanying photo shows Lt. (jg) Eloise M. Duffy presenting the cake to Buckner.

Marines Cheat Fiery Death

160 mph Crash Landing Saves Men

VMR-252, CHERRY POINT—Two pilots and an airman had a narrow squeak with death here when flames broke out in their R5C plane while it was being flown to test a new engine. A crash landing at 160 mph saved their lives.

Pilots were Lt. Richard Fairchild and Gordon Keller and the airman S/Sgt. Theodore R. Frye. Flying at 1500 feet, seven miles from here, the plane suddenly was filled with smoke so dense one pilot could not see the other. Frye attempted to quench the fire with an extinguisher but smoke and flames filled the cockpit.

Forcing a window open, Fairchild stuck his head out and steered the plane to the crash landing. It bounced three times before coming to rest. The tail section split open from the impact. Fairchild and Keller received severe burns on the hands and face.

List Air Museum Material

Be on Lookout for Historical Items

The Navy's quest for aeronautical material for the National Air Museum goes on slowly but surely. The following items were among those recently listed by aviation activities:

One Jap Sieron aircraft and related components—NAS ALAMEDA.

Jap treated paper balloon—NAS LAKEHURST.

Jap Mk 6 airborne radar—NATTC CORPUS CHRISTI.

German sleeve and tow target equipment—NATC PATUXENT.

Antiaircraft target reel equipment—ASO, NASD PHILADELPHIA.

Technical Data Division of BUAER has requested the Supply Division to take necessary action for the retention and preservation of these items, pending final acceptance by the National Air Museum. All activities should be constantly on the alert for items of aeronautical material (Naval or ex-enemy) in which the Museum might be interested.

Bearcat Outclimbs Jet Fury

Seattle Show Features Air Groups

Twenty-three thousand persons attending open house at NAS SEATTLE on 7 November as part of Navy Day celebration saw a spectacular air show by three carrier air groups, featured by a race between an F8F and FJ-1.

Although slower in level flight, the faster-accelerating *Bearcat* beat the jet to the prescribed 10,000-foot altitude from a standing start. It not only beat it there but made two high-side passes on the *Fury* while it was still climbing.

Air groups from the *Boxer, Rendova* and *Valley Forge* put on a two hour air show for the spectators, with fighters alternating in aerobatic maneuvers at 10 minute intervals.

Get those x%?! wheels down! This may be a forced landing!

New Look Coveralls Tricky

Pilot's Pants Bring on Ground Loop

VR-32, SAN DIEGO—It happened to one of this squadron's pilots:

While he was taxiing into take-off position, the pilot's coveralls became entangled in the landing gear control lever, preventing full port brake utilization.

When a ground loop began to develop, he found it impossible to stop. Although there was no damage done to the plane, the pilot suffered "acute complexionitis."

Another pilot blew a port tire taking off at Litchfield Park, Ariz. He replaced it on the spot and flew on to San Diego. Landing, the starboard tire blew, resulting in a few precarious moments for the pilot but no plane damage. Those grey hairs are new.

MCAS EL TORO—The GCA unit, with completion of the direct contact line with ATC Los Angeles, gives El Toro a 24-hour all-weather air station.

Marines Speed Radio Check

Shorter Reporting System Is Success

VMF-214, RENDOVA—This squadron has worked out a simplified voice procedure which saves time in checking out plane radios prior to rocket or carrier strikes.

Planes without two-way radio are barred from participation, so there is a problem of getting a quick check out by all pilots on a flight to see if their radios are working.

The new system saves about 65% of the time formerly required for pilots to "report in." Normally a radio check went thus: "This is First Night leader, radio check, one over to two," "Two over to three," "Three over to four" etc.

By doing away with the last three words of this transmission and letting each pilot check by merely calling out his number in the flight, only one word is broadcast over the air.

The new radio checks now sound like this: "From First Night leader, radio check, one," "Two," "Three," "Four.', etc. Tests indicated that best time formerly was 21 seconds for MAG-12. The new system permits a check in six. In carrier strikes and deck procedure, the time gained for a clear radio net is apparent.

Safety Flight Mark Broken

Corsair Pilot Killed in Spin Training

NAS PENSACOLA—The phenomenal safety record of the Aviation Training Command came to an end on 20 November when a *Corsair* pilot failed to recover his plane from a spin entered on top of a loop. Up to then, Reserve and training planes had flown 210,000 hours over a period of two and a half months without a fatality. This included all flying done at Corpus, Pensacola, Memphis and the 27 Reserve air stations about the country.

People who *see the Navy's new jet fighter, the Chance Vought XF7U-1 Cutlass, for the first time, usually remark that it looks like a giant bug squatting on the runway. Its nose is 15 feet in the air and its tail a couple of feet off the ground.* NAVAL AVIATION NEWS *was struck by its resemblance to a Praying Mantis and herewith presents photographs of the two to show the similarity. The Mantis is about five inches long. The plane's enemies may pray, too.*

Navigator Clan Forms

THE NAVY, which spawns numerous "organizations" like the *Ancient Order of Salty Dunkers* and the *Shellbacks Club*, has come up with a new one—the R. O. C. H. H. B. H. B. A.—conceived and manned by junior pilots of VP-47.

Membership in the "world's most exclusive organization"—full name, *Royal Order of the Confused and Hapless Homing Pigeons and Human Birddog Association*—is limited to navigators only. The following requirements were set up by Lt. Dilbert, honorary president, and his aide Ens. Lee S. Houchins, PIO of the squadron:

1. Four cups of hot coffee must be poured down the back of the neck, down the spine, posterior and one-fourth of the original volume be caught and retained in the port and stbd shoes. The "pouring of the coffee" ceremony must be performed accidentally by a member of the crew.

2. While seated at the navigating table, must have answered the following queries: Where are we? Pass the sugar? What are those pointed things? How come your eyes are crossed? That coffee won't spoil your chart, will it?

3. Must show scars of being jabbed by the following articles: radioman's notebook or clipboard, plane's yellow sheet book, pilot's chow trays, pencils in ears of various passengers.

4. Must be able to operate the following equipment: cigaret lighter, safety matches, drop, perk or saucepan coffee pot, pencil sharpener, can opener and zipper.

5. Must have been lost frequently and with reckless abandon.

6. Must have navigation time in the hundreds (direction optional).

7. A vague knowledge of the pilot's compartment and controls is an optional requirement.

Four classes of degrees are available in the organization: A Class—the 'What the Hell' type; B Class—The 'To Heck With It, I'm Hitting the Sack' type; C Class—The 'You Got It' type, and D Class, The 'Huh? I Thought You Were Navigating' type.

Marines Hop China Airlift

Aids American Consulate in Crisis

VMR-153, CHINA—The Air Force isn't the only aviation outfit going in for airlifts; this squadron operated a lift of its own, under conditions similar to the aerial lifeline to Berlin, only this one went to the Communist-blockaded city of Mukden.

With the city surrounded by Chinese Reds, VMR-153 was called on to airlift vitally needed supplies to the American consulate and to evacuate civilian personnel. Two days of operations on 28 and 29 October saw 18 tons of supplies flown in to the consulate. Thirty-five civilians, representing seven nationalities, and 10½ tons of cargo were flown out on return trips.

Operations, though hampered by lack of facilities at Mukden field, were carried out successfully by American consulate and VMR-153 personnel. Red and green Very pistol shells were used to inform pilots as to whether the field was in Communist or Nationalist hands. On 31 October, Nationalist forces withdrew and the city fell to the Communists who had besieged it for a time.

Mariner Saves Sick Worker

Canal Zone Rescue Made by VP-44

VP-44, CANAL ZONE—Lt. G. D. Prestwich of this squadron made a mercy rescue mission to Swan Island to pick up a civilian worker, John W. Johnson, suffering from blood poisoning at the radio station there.

Lt. Prestwich made an open sea landing with his PBM-5 half a mile west of the island, using power-on full stall. The patient was taken aboard and an open sea JATO take-off made a few minutes later.

In answer to a request from the radio station, sulfa drugs were dropped from the air before the plane took Johnson to Coco Solo. The man was given emergency treatment en route by Lt. (jg) Muehe, USMC, who accompanied the flight.

Ever see *a jet plane that flew by flapping its wings? This F9F-3 might be doing just that in this picture, but it is not. Folding one wing without the other one going up can be done, but it is not standard procedure, despite this photo.*

1000-Mile Mercy By VP-22

Insulin Drop Saves Seaman's Life

VP-22, PACIFIC—Seaman Jimmie J. Jones can add his "well done" to those extended this squadron for successful completion of a recent mercy mission because he was the "critically ill seaman" aboard the USS *Kyes* for whom insulin was dispatched.

Fairwing Two sent Lt. Cdr. J. W. Hughes, exec of VP-22, out on the mercy mission to rendezvous with a destroyer a thousand miles at sea. Hughes and his crew left Barber's Point with 3400 gallons of gasoline aboard their *Privateer*.

They dropped the insulin on the bow of the *Kyes* as darkness was closing in and returned to Kaneohe Bay after the 12-hour flight. It has since been learned that Seaman Jones recovered from his illness. The flight crew included Lt. W. L. Adams, Ens. W. C. Harmon, Midshipman F. E. Hower, G. H. Milne, ADC; R. M. Everly, AL2; W. Janac, AA; R. D. Knutson, AN, and C. H. Peeples, AN.

USAF PILOTS WITH FLEET

EACH carrier landing was a new thrill and a lot of joy to a pilot who hasn't been doing that before. I made new friends during my carrier indoctrination and enjoyed the entire problem." This was the comment of Maj. George I. Ruddell, USAF, veteran of 45 carrier landings, and one of nine Air Force pilots who recently joined forces with CAG-7 aboard the USS *Leyte* for a month of carrier training.

Concensus of a joint Air Force-Navy conference held at CinCLant headquarters, Norfolk, to evaluate the experiment, was that the entire exercise involving the Air Force group was highly successful and that future exchanges of pilots and various other personnel between the services was desirable.

Previously, Air Force pilots have acted only as observers of naval air operations, but this group flew with the Navy fighter squadrons in actual aircraft carrier operations.

Before reporting to CAG-7, the Air Force flyers received three weeks of basic carrier training and indoctrination aboard the USS *Wright* at the Naval Air Training Command, Pensacola. Then came the more advanced training on the *Leyte* shakedown cruise.

The USAF had additional officers scattered throughout other units of the Atlantic Fleet. Two pilots were assigned to Patrol Squadron Eight for familiarization with P2V operation. One pilot served on the staff of each of the following units: Second Task Fleet, CarDiv 4, CarDiv 6, and CarDiv 7.

The nine USAF officers who took part in the *Leyte* operations were: Maj. Leonard I. Wiehrdt, Maj. Kenneth O. Chilstrom, Maj. George I. Ruddell, Capt. John T. Nelson, Capt. George Hrico, 1st Lt. John J. Knight, 1st Lt. Gordon R. Kenn, 1st Lt. Charles W. Stover, 1st Lt. John J. Walsh.

The average time of the Air Force pilots in F8F-2's was approximately 100 hours and the average number of carrier landings made by each pilot was 40. Being catapulted from the flight deck of a carrier was a new experience for the visiting officers, each man averaging 10 launchings.

In round-table discussion at the conference, each Air Force pilot contributed his personal opinion of the ways to improve and clarify various methods of operations, flight signals, and administration to transfer USAF pilots into a carrier unit in minimum time.

1st Lt. Charles Stover, who made 40 carrier landings during the exercises, said, "Carrier landings are similar to land-based landings, but they do employ a definite technique."

USAF OFFICERS GET THE WORD ABOARD WRIGHT

Navy dive-bombing came into discussion, and 1st Lt. Gordon R. Kenn added, "The Navy type dive-bombing with fighter-bombers is basically the same as that used by the Air Force." Lt. Kenn did considerable air-ground support work, involving strafing and dive-bombing, in the Caribbean area while attached to Air Group 7.

Admiral W. H. P. Blandy, CinCLant, greeted the eight Air Force officers at the conference and said, "I am very happy indeed to have had you in the Fleet and I hope you have enjoyed your experiences in these exercises. I am sure you will take some very valuable knowledge with you from your experience in operating in another service.

"I have the theory we are going to solve this unification business faster by the greatest possible knowledge on the part of one service to another. You gentlemen, as the future military leaders, will certainly benefit by that knowledge. The more we know about the other fellow's problem and the solution for it, I think the more sympathy we'll have for the other service and a better understanding of it. It will certainly bring the best results when it comes to organization and it will work itself out if we all know and sympathize with the other fellow's job, better than in the past."

VR-6, GUAM—The NAS AGANA Officers Club is completely defunct, since opening of a new club in the completely remodelled officers' mess. The old building, long a haven for toil-worn, care-weary, has been abandoned to cobwebs, mice and ghosts. The new club is of varnished bamboo, rattan furniture and tropical plants and shows signs of being a financial success.

BRUTE STRENGTH TRIUMPHS IN MATS AIR LIFT

Plane Carries Prop Shaft

Heavy Cargo to Japan Via MATS

MATS, GUAM—Heavy and unwieldy was the piece of freight MATS was called on to deliver from Guam to Yokosuka, Japan—a 6,920-pound ship's drive shaft for the Coast Guard ship *Kukui*.

To save two-weeks time, MATS was called on to deliver the bulky shaft. Sunday being a "short schedule day," and the cargo being big, it put a strain on the skeleton loading crew. Chief Tidwell's comment, as he put his shirt back on, was typical: "We could have used a little help."

Tidwell made the trip to Tokyo to assist and advise personnel at Haneda in unloading the shaft. A fork lift truck picked up the shaft on its pallet, delivered it to another truck with a high-lift bed, which raised it level to the door of the R5D. Elbow grease of a half dozen men pulled it into the plane, as the photo shows. After being secured, the shaft made the trip safely.

Instructor: *"I'll bet a lot of people down there think we're not going to get out of this spin!*
Student: *Yah. And there are people up here who are thinking the same thing!*

VR-2 Aids Starving Elephants

CREW MEMBERS OF MARS PUSH WATERPROOFED HAY BUNDLE OUT HATCH

SWARTHMORE VICTORY CREW IN ROWBOAT RETRIEVES HAY, WORM DROPS

IT WAS the aerology lecture for all pilots of VR-2 at NAS ALAMEDA. Cdr. James G. Lang, squadron CO, rose and blandly announced that they would deliver hay and worms to elephants and birds that were starving 1,200 miles out to sea.

A wave of sympathy swept the meeting, for it was quite evident the good skipper was about to slip off the deep end. Several cast furtive glances at the door in case violence should set in but all apprehensions were quieted, although not dismissed, when the particulars were explained.

It seems that the *SS Swarthmore Victory* had run short of hay and worms for her six elephants and numerous tropical birds destined for American zoos. The Navy authorized VR-2 to make delivery of the needed supplies.

The *Marshall Mars* was made ready and 28 members of press and radio authorized to go along. The NAS supply department packaged the 12 bales of hay weighing 320 pounds each and departure was set up for 0215 so as to arrive after daylight. Lt. (jg) Dave Maloney was plane commander.

Thanks to some excellent navigation by Ens. M. M. Mullen and Frokjer, NAP, the ship was intercepted right on the nose. Twelve low passes were made for dropping the hay, with Cdr. Lang as bombardier. The thirteenth pass was made to drop worms, 2,500 of them, in a water-tight can. All feed was recovered by the ship's boat and the *Mars* then returned to Alameda.

The complete flight was made with speed and efficiency with but one incident to mar the feeling of a "well done" for the crew—said incident being convincing wives of the purpose of the mission before take-off.

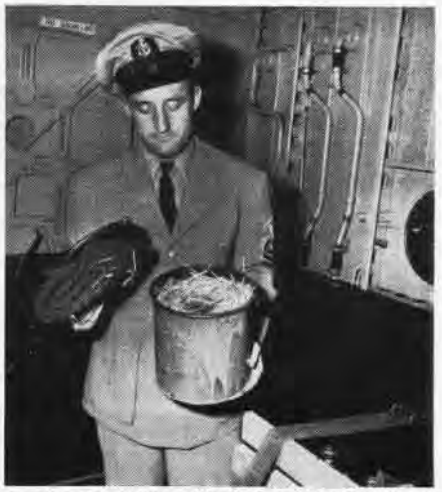
In all fairness to the fair sex, they had a legitimate cause to cock a wary eye and press a straining ear to the phone, fully expecting to hear the clink of a cocktail glass and the blare of a juke box. Some, upon being informed, "I won't be home tonight, honey, because we have to take hay and worms to elephants and birds," merely said, "That's nice, dear" and serenely went back to fitting the little square pegs in the little round holes.

If it weren't for the press and radio, God bless 'em, ranks of the bachelors might well have taken a sudden influx but all was forgiven when the news announcers told all that it "was so."

ALTHOUGH the flight had many humorous aspects which were well played up, it also had a more serious vein. The training for all hands concerned certainly will come in good stead in the future, for it clearly demonstrates feasibility of delivering cargo at sea on short notice. The next time, human life may be at stake or a vital piece of machinery may be needed, thus justifying the knowledge and experience gained from "Operation Hay."

CREWMAN GOODELL TIES BALED HAY ON MARS

CDR. LANG, VR-2 CO, FEEDS A BABY ELEPHANT



CHIEF SOJDA WITH WATERTIGHT CAN OF WORMS

VP-46 Covers Lots of Sea

Duty from Eniwetok to Japan

VP-46, PACIFIC—Like sea duty? Try signing up with this squadron for a while if you like travel. It started out the year with an advanced base operation at the Chou San Islands, Hong Kong and Manila.

From February to May, the squadron was at Eniwetok for *Operation Sandstone*. June and July it kept one plane on TAD to VP-43 in Japan and China. During the same period two planes were sent regularly to Manila and Yokosuka for navigation training. August saw three squadron planes participating in ASW exercises at Okinawa and evacuated to Manila because of a typhoon.

In September, five of the squadron's planes were at Tsingtao on ASW operations. The remaining planes evacuated Saipan to escape typhoon *Ione* and on their way back to Manila flew through and found another one.

VO Squadron Serves Fleet

Seaplane Makes First GCA Landing

VO-2, ATLANTIC—The observation pilot-plane "pool" idea for the fleet has gotten off to a good start with this newly-formed squadron providing detachments for numerous operations.

The Mediterranean fleet, the USS *Worcester* shakedown, Second Task Fleet operations and cruises by the *Missouri, Little Rock, Providence* and *Albany* have provided "jobs" for the squadron. Under the new plan, instead of each cruiser and battleship having its own observation planes and pilots, they "borrow" them from VO-2 when they need them.

Squadron pilots are busy with instrument and cross-country training at its Norfolk base. This training came in handy recently when two SC-1 pilots were caught in instrument weather near Quonset and had to come in by GCA at Boston. This is believed the first "live run" GCA approach ever completed by VO-type aircraft.

Woman Pilot Takes 8.6 G's

Former Dorothy Hester Visits 'Pensy'

NAS PENSACOLA—A former woman stunt pilot, now mother of two children, went to 8.6 G's in the training command's human centrifuge just to show embryo Navy pilots what a gal can do. Test pilots consider a pullout of 6 G's really tough.

The mother who volunteered to be a "guinea pig" for the test was Mrs. R. D. Hofer, wife of a Portland, Ore., publisher. She won fame 15 years ago as a stunt pilot under her maiden name of Dorothy Hester, well known out west.

WOMAN FROM MARS? NOPE, JUST 'GUINEA PIG'

Mrs. Hofer and her husband were at Pensacola as guests of Rear Admiral J. W. Reeves, Jr., Chief of Naval Air Training Command. While visiting the School of Aviation Medicine, Mrs. Hofer saw the apparatus which whirls naval aviators in circles at extreme speeds to determine their average blackout resistance.

"When I flew with Tex Rankin we did not have anything like that—can I take the test?" she asked.

Although it was a little unusual, aviation medical experts consented—after all Mrs. Hofer had been women's national stunt champion in 1931. In the first test, Mrs. Hester went to 6.3 G's before she blacked out. Then, donning an anti-blackout suit, she went to 8.6 G's before the curtain came down.

Pilots *who fly the Navy's AJ-1 carrier attack plane will be looking through the world's largest single-piece bubble canopy, made by the North American company plastics department. The canopy-polisher is not standard equipment with the AJ-1, it is reported.*

Dive Bombers Hit Targets

New Pilots of VF-64 Show Up Well

VA-64, ATLANTIC—This squadron turned in some creditable shooting records on its shakedown cruise aboard the USS *Midway* in the Caribbean, both with *Tiny Tim* rockets and torpedoes.

Using these two weapons for the first time, its pilots made four hits out of six with the torpedoes and 80% hits with the rockets. Using a water target near Guantanamo, the squadron sent 20 pilots, led by Lt. Cdr. R. G. Randal, the CO, and Lt. W. A. Wright out to drop 80 waterfill bombs. Average error for the dive bombing was 39.8 feet. Ens. H. M. Davenport was top bomber with an 18.7 foot average error. Four pilots had less than a 25-foot average while 15 were under the 50-foot mark.

During the cruise the squadron flew 675 hours in six weeks and made 320 carrier landings with only a broken tailwheel to mar an otherwise perfect performance. The record is especially outstanding since it included five reserve pilots just back on active duty, one pilot fresh from the bureau, one back from two years of college and two from operational training. They averaged less than 50 hours each in the AD-1 prior to the cruise.

Marine Pilot Misses Death

Monoxide Almost Results in Tragedy

MCAS CHERRY POINT—Lt. J. J. Fisher is alive today thanks to the alertness and loud voices of his Marine fighter squadron mates who aroused him out of a carbon monoxide stupor by shouting to him over their radios.

While flying near Guantanamo Bay off the CVE *Palau*, Fisher was overcome by monoxide and lapsed into semi-consciousness. When his *Corsair* failed to make a turn with the rest of his VMF-461 mates, they swarmed after him. Fellow pilots could see him slumped over his controls. His plane began a nose-down turn to the right and probably would have crashed had not Lt. J. McDaniel called him by name instead of by number.

Later, Fisher recalled his mind was a blank when suddenly he was surprised to hear someone calling his name. He wondered why they were using that instead of his number and his mind snapped back toward consciousness when he realized he couldn't remember his own number himself.

His mates talked him into opening his cockpit canopy and a few minutes later he made a successful emergency landing in a semi-conscious condition at NAS GUANTANAMO. He passed out again after landing and was carried to an ambulance. He recovered later.

RESERVES 'DEFEND' COAST

AIR RESERVISTS SWEEP OVER NAS MIAMI DURING AWARD SEQUENCE IN "SLATTERY'S HURRICANE"

ORGANIZED Reservists from NARTU SEATTLE, NAS OAKLAND and NAS LOS ALAMITOS participated in the Pacific Fleet maneuvers held off the West Coast during November and gave another convincing demonstration of their readiness for action.

From 1 to 6 November, Reservists from NARTU SEATTLE helped to defend successfully the Northwest from "attacking" naval forces. Patrol squadrons undertook search, and attack assignments and had excellent refresher training in prolonged tracking flights, utilizing radar to good advantage.

Carrier planes experienced some difficulty in finding the Fleet, because radar gear failed to operate properly and because of inexperienced radar operators. As a result more emphasis is being placed on radar maintenance and upon a more active radar operator training program in the Organized Reserve.

All pilots experienced again the predawn strike launch and were thoroughly imbued with a desire to follow through and complete their instrument training syllabus.

The caliber of Reserve operations was excellent. "Guess those Reserves haven't lost their knack";—"It is obvious these boys have been playing these games before—but for keeps;" were typical comments from Fleet pilots.

From 10 to 17 November, when the attacking forces of the Fleet concentrated their thrusts against the San Francisco Bay area, Reservists from Los Alamitos and Oakland shared in the "defense" of strategic points.

Oakland pilots logged 1760 flight hours, many of which were chalked up on night search attacks.

About 150 officers and 50 men from Los Alamitos, who had come aboard for two-weeks duty and had been organized into a CVG, moved to NAS ALAMEDA with their aircraft for the maneuver period. VR and VP squadrons provided additional airlift to Alameda.

These Reservists constituted the main striking force and in addition served as air cover for the CVE *Rendova* of the defending White Force. Air operations were excellent and all personnel were enthusiastic about sharing in an extensive operation with the Fleet.

The exercise earned a "Well Done" from ComFair, Alameda.

Jax and Miami Reservists in Movie

Weekend Warriors from NARTU JACKSONVILLE and Reservists from NAS MIAMI recently made a hit on another front when they became weekend actors in a 20th Century-Fox movie now being filmed, entitled "Slattery's Hurricane."

The story is about a naval aviator attached to the All Weather Squadron, based at Master's Field, Miami, whose members are better known as the *Hurricane Hunters.*

Reservists from NAS MIAMI were called upon to provide typical Navy background in the many sequences which were shot on the spot. Their families served in scenes requiring spectators. Captain Robert N. Hunter, CO of NAS MIAMI was even prevailed upon to play himself. In fact the whole ship's company got into the act.

Scene stealers were the crack pilots of Miami and of the Marine squadron at NARTU JACKSONVILLE, whose services were especially enlisted because NAS MIAMI could not furnish sufficient aircraft for a particular sequence. This was the part in which Slattery received the Navy Cross for tracking down a threatening hurricane. The scene was set up in the best Hollywood fashion and called for a mass formation of airplanes flying overhead and a band playing to add atmosphere.

Thirty Organized Marine Air Reservists of VMF-144 at Jax, who were aboard for drill on the weekend scheduled for shooting this scene, flew down to Miami led by Lt. Col. Freeman W. Williams, commander of the Marine Air Reserve detachment. They made their grand entrance just as the cameras were ready to roll and during the actual filming executed a perfect pass.

The famous Jax-Navy Band also was flown down for the event and provided the music during the ceremonial scene.

Advance contact man for the Jax contingent was the new NARTU PIO Lt. (jg) Frank Coghlan, a former screen actor himself. While at Miami, he renewed many of his old Hollywood friendships. Director Andre de Toth immediately tagged him to play the part of the control tower operator in the important hurricane sequence.

Linda Darnell, Veronica Lake and Richard Widmark, who are starred in "Slattery's Hurricane," were all "on location" with the company in Miami. Since they were very willing to pose for photographs between scenes, much helpful publicity for the Reserve program was obtained in both the Miami and Jacksonville areas.

Technical advisor for the movie, which really commemorates the fine work of Navy's All Weather Central, is Captain Howard T. Orville of the Naval Aerological Service, who also

LT. COL. WILLIAMS TALKS TO LINDA DARNELL

NAS DALLAS RECRUITS GET GUNNERY CHECKOUT

serves as president of the American Meteorological Society. Cdr. Harding of All Weather Central and Cdr. Vincent Sweeney, who supervised the Miami sequences, are among those who are assisting in the project.

On the local front it is notable that Navy aerologists not only helped with background material, but also aided the production directly on one occasion by predicting sunshine in the morning and rain in the afternoon. Trusting in their judgment, the director shot scenes requiring fair weather early in the day and, when the rains came promptly on schedule at 1320, was geared to film that part of the sequence.

Advisors on the scenario included two Wave members of the Composite Wave Volunteer Unit in Washington, D. C.—Lt. Cdr. Izetta Winter Robb, civilian editor of a naval aviation quarterly bulletin and Lt. Cdr. Florence van Straten, an aerologist in DCNO (Air) in the Navy Department.

Retirement Credit for Volunteers

Reservists who belong to Volunteer Aviation Units set up under the cognizance of the commandants, as well as those who are members of Organized or Associated Volunteer units under the Chief of Naval Air Reserve Training, will now be able to have one point credited toward retirement for each regularly authorized drill or meeting that they attend which lasts for at least two hours. Similarly Volunteer Naval aviators who maintain their flight proficiency at naval air stations with proper authorization from the commandant will be eligible for one point of credit for each training period, provided that such period extends over a minimum of two hours.

Details concerning credit towards retirement for Reservists, together with information on the proper keeping of records, are given in Naval Reserve Multiple Address Letter #54-48. Copies of this letter have been forwarded to all regular addressees. Further information may be obtained from the Assistant Director of Naval Reserve (Air) in each commandant's office within the continental USA.

The letter also lists the amount of credit which may be granted for the completion of the various correspondence courses.

Since credit toward retirement must be earned after 31 December 1948, it is expected that more and more Volunteer Air Reservists will avail themselves of the opportunity of acquiring points by joining VAU's and regularly attending meetings. As was brought out in the NA NEWS October issue, beginning on 1 January Reservists will have to acquire 50 points a year to have that year count toward the 20 years of service required for retirement benefits, which are payable when the individual reaches the age of 60.

VAU 12-10 Is Activated

On 17 November the Mills Volunteer Aviation Unit, VAU 12-10, was activated at San Francisco Municipal Airport. Cdr. W. F. McDonald, assistant district director of Naval Reserve (Air) was in charge of the ceremony, which was witnessed by Reservists of all classifications.

Meetings of the unit are now being held at the U. S. Coast Guard Air Base, Mills Field, at 1630 each Wednesday. Arrangements are also being made with NAS OAKLAND to provide flight facilities one day each month.

Cdr. Karl F. Lueder is CO of the unit.

Station Round-up

● NAS AKRON—Another telecast was made over TV Station WEWS in Cleveland. The gimmick used was the elaborately painted truck carrying a twin .50 caliber Martin turret, which was taken right into the studio for the telecast. Lt. L. A. West, technical training officer, John M. Roberts, AM2, and Bryant L. McBride, Jr., TD1, were the participants. They gave a brief resumé of the nationwide Reserve program and then brought their talk down to the local level with a demonstration of the turret in action. At least five men were recruited into 0-2 as a direct result of the program while one NavCad is also being processed.

● NAS COLUMBUS—During November pilots in the AVU(A) at Louisville, using two

CDR. W. MCDONALD (L) AND CDR. C. LUEDER

OAKLAND'S TARPEIN AND HOWELL ALIGN SIGHTS

SNJ's and one SNB, flew 98.7 hours. Authorization to establish an AVU(A) at Charleston, West Virginia and an AVU at Fort Wayne, Indiana, has been granted.

On 2 November, when there was an indefinite 300' ceiling with one mile visibility, an Air Forces aircraft from the Instrument School at Patterson Field, was practicing GCA approaches while commercial air carriers were "holding," waiting for an improvement in the weather before attempting standard instrument approaches without the use of GCA.

● NAS SPOKANE—On 20 November VF-86-F of CVE-86 and FASRON-86 were commissioned with appropriate ceremonies.

An intensified recruiting campaign is producing many inches of newspaper space and radio spot announcements. In the Armistice Day parade, the F6F towed behind a banner-laden Navy station wagon, giving the word about the Naval Air Reserve, caught the crowd's interest.

● NAS WILLOW GROVE—Pilots in the AVU (A) at Connellsville, which is composed of outstanding business and professional men in the Pittsburgh area, flew 207 hours during their three drill periods in November for an average of 4½ hours a man. About 22 enlisted men have come for each training period.

● NAS MEMPHIS—To help men advance at a faster rate, the aviation technical training department is setting up an airman's school similar to the recruit school, which will help personnel make the jump from recruit to third class petty officer.

Suggestions for improving sections of the ASO catalog made by the supply department have received a favorable response from the aviation supply officer at Philadelphia. One suggestion regarding the inclusion of source coding in the airframes section of the ASO catalog is being adopted.

● NAS NEW ORLEANS—Within three weeks (from Navy Day to 11 December) this station commissioned AVU's at Shreveport, Louisiana, at Jackson, Mississippi, and at Baton Rouge, Louisiana.

Electronics has taken a tip from NA NEWS and is now utilizing the radome handling cart pictured in a recent issue.

● NAS ST. LOUIS—Five WAVE officers and 10 enlisted WAVES have recently signed up and are most active in aiding the training program aboard this station.

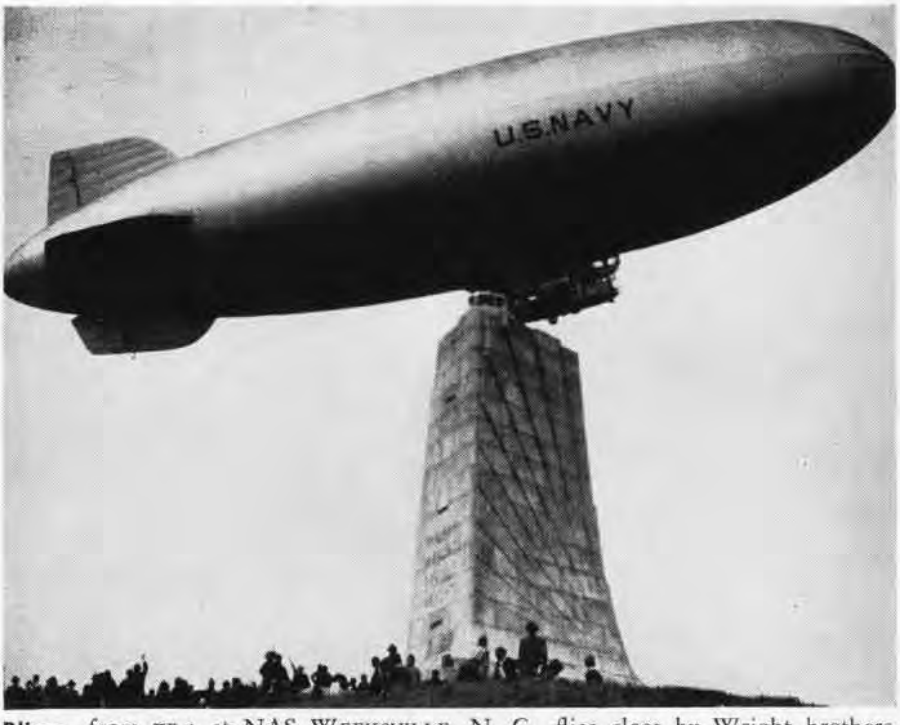
Mechs have come up with a rocket carrier for SCAR rockets which is being successfully used to service the lines. The cart was converted from a Mk 3 flat bomb trailer and will carry 180 fully assembled rockets.

CHERRY POINT VMF-212 CORSAIRS SALUTE MEMORIAL TO WRIGHT BROTHERS AT KILL DEVIL HILL, N. C. WHERE FIRST FLIGHT WAS MADE

NAVY BRINGS 'KITTYHAWK' HOME

NAVAL AND Marine aviation played an active part in the homecoming ceremonies for the Wright brothers' original plane, the *Kitty Hawk,* which made its first flight 45 years ago December 17, 1903. Arriving from England on the *Mauretania,* the plane was held up by a strike, so the CVE *Palau* picked it up at Newfoundland and brought the historic old plane to New York on Nov. 19. By Navy truck it went to Brooklyn, then Philadelphia and Washington. Navy squadrons from Norfolk and Marines from Cherry Point flew past the Wright memorial at Kittyhawk, N. C., on December 17 as part of ceremonies of the 45th anniversary observance there. The plane was put on display at Smithsonian Institution.

VMF-461 pilots watch loading Wright biplane on CVE *Palau* at Newfoundland



Blimp from ZP-1 at NAS WEEKSVILLE, N. C., flies close by Wright brothers memorial at 45th anniversary ceremonies; other Navy squadrons also participated

SMITHSONIAN AIDE BEERS HELPS UNPACK AIRCRAFT WING ON ARRIVAL

NAVY TRUCK FROM NAMC PHILADELPHIA CARRIED PLANE TO WASHINGTON

PRICELESS WRIGHT BIPLANE, FIRST TO CARRY MAN ALOFT IN FLIGHT, HANGS IN SMITHSONIAN INSTITUTION AT DEDICATION CEREMONIES DEC. 17

BOMBING SQUADRON 109

CDR. 'BUS' MILLER AND THE LAST CREW TO FLY WITH HIM IN COMBAT MADE A MEMORABLE RECORD

THE COMMISSIONING of Bombing Squadron One Hundred Nine on 2 August 1943 at NAS, San Diego, was a simple enough beginning to a meteoric career. Like a stately overture to a spectacular opera, the commissioning gave no foretaste of the dramatic career of a mighty squadron.

The famed Cdr. Norman N. Miller, known as "Bus," skippered the squadron through the final months of training in 1943 and then led it battling across the Pacific to show the Japanese that not only Kilroy but all his angry brothers were there. On 1,141 operational flights in the combat zones between 31 December 1943 and 16 August 1944, VB-109 made 432 bombing and strafing attacks, sank 51 ships, damaged 140 more, destroyed 5 planes in the air and 28 planes on the ground. Such a record proved that the self-styled *Miller's Reluctant Raiders* were anything but backward.

The honor of making the squadron's first score against the enemy went to Lt. John F. Bundy on his 1944 New Year's Day strike when he bombed a 2,000-ton cargo ship 40 miles from Mille, leaving it listing and settling.

From 3 January to 7 March, VB-109 operated out of Apamama, Gilbert Islands. On the 11th, Cdr. Miller, Lts. Jackson Grayson, George L. Hicks and Oden Sheppard joined forces with four planes of VB-108 and two of VD-3 to attack at high noon shipping in the lagoon and Kwajalein Island. The audacious attack was a smashingly successful one: shore installations, cargo ships and airplanes were destroyed as the raiders went through at low level.

In February, VB-109 logged some 200,000 miles of search and reconnaissance, covering millions of square miles of water and assuring the Fleet in its Marshalls campaign that no major enemy shipping was within striking distance. Taroa, Jaluit, Rongelop, Kwajalein, Wotje, Eniwetok, Mejit, Emidje, Utirik and Kusaie were on the bombing schedule regularly. Japanese losses in installations and ships mounted steadily.

As the tempo of the Marshalls campaign increased, plans were made to move the squadron forward, and Cdr. Miller piloted the first four-engined plane to land on the airstrips at Majuro and Kwajalein.

CDR. MILLER, Lt. Hicks and Lt. J. H. Jobe ended February's activities with a spectacular mission against Wake Island, spending 19 hours in the air to cover 2,500 miles of water. Joined by 5 planes of other squadrons, Miller led the formation in a masthead attack at high noon, effecting complete surprise and inflicting heavy damage upon installations, planes and personnel at a stronghold widely known for the vigor of its AA defense.

On 7 March, the squadron left Apamama to base at Kwajalein. Routine searches changed from long patrols northwest of Apamama to westward searches varying from 600 to 850 miles through the Marshalls and eastern Carolines, stopping just short of Truk. The squadron contributed substantially to the Central Pacific Campaign by knocking out military installations in the lesser islands in the eastern Carolines area. Heavy damage was inflicted on the formidable strongholds of Ponape and Kusaie. Oroluk, Pingelap, Kusaie were bombed regularly the first of the month, and Ant and Pakin received their share the last of March.

When Lt. A. G. Mellard was attacking Ponape 12 March, he was intercepted by two *Zekes*, one of which he probably destroyed; he damaged the other. The following day Miller bombed barracks, hangars and shops at Ponape and obtained excellent oblique photographs of the new airfield under construction.

On 4 April, Cdr. Miller was ordered to attack a reported enemy carrier in the Hall Islands—and things really began to happen!

Robert Gariel, AMM2c, Miller's tail gunner, in recalling the events of that day, said, "The others can see where we're going, but back in the tail I can only see where we've been. I'll never forget the time we went to the Hall Islands where a Jap carrier and five escorts had been reported. They weren't there, so Cdr. Miller went after another target. All of a sudden I heard his voice over the interphone—'Bow gunner, keep an eye open for reefs. We're going into Truk.' Boy, that took 10 years off my life!"

And something more than that off the Japs! Entering the lagoon at minimum altitude, Miller bombed and doubtless destroyed an enemy destroyer at anchor in

R. ADM. PRICE AWARDS LT. JOBE THE AIR MEDAL

what is believed to be the first attack on Truk by a lone plane.

On 21 April, "Bus" Miller won his title of "the one man task force" when he attacked and burned down installations at Ulul and Nomwin, destroyed five coastal freighters and a patrol gunboat, and seriously damaged two other coastal freighters.

On 25 April, Miller discovered a new airfield at Pulawat. As he put it, "It wasn't supposed to be there, but there it was, a good one, too, already operational." For the next six weeks, Miller made his one-man war on Pulawat, and when a force of *Liberators* finally struck Pulawat the middle of May, the battered lighthouse alone remained standing.

The invasion of the Marianas made June a heavy month operationally. Outstanding warriors who made the enemy lose valuable installations, planes and ships were Lt. Cdr. Janeshek, Lts. Jobe, Bridgeman, Keeling,

TO LT. KEELING'S GUNNERS GOES THE CREDIT FOR DOWNING THIS MAVIS

PILOTS MARSHALL, WASSMER, KENNEDY, JOBE AND STEELE GET THE WORD

Sheppard, Mellard, Belew and Wheaton. Lt. Wheaton piloted the first heavy bomber to land on the fighter strip at Aslito (Isley) airfield, Saipan, on 28 June.

Acting on a hunch shared by Cdr. Miller that the Japanese must be routing their shipping into Truk southward from Guam, thus making their approach south of 109's search sectors, Lt. Cdr. George L. Hicks ventured on 3 June to test the theory. He little realized that he was piloting his *Liberator* into a hornet's nest of 11 enemy ships. In the face of intense and accurate AA fire, Hicks pressed his attack from 200 feet altitude to sink a 7,000-ton cargo ship, damage 2 merchant ships, 3 escorts and a destroyer.

TARGETS were non-existent in the routine search areas during July, so in order to strike the enemy, VPB-109 had to base an advanced echelon temporarily at Isley Field. Operating from that point on the 14th, Miller and Jobe made a low altitude bombing and strafing foray, striking Iwo Jima just after sunset. It was the first attack by land-based aircraft to which Iwo Jima was subjected. Miller and Jobe seriously damaged an enemy destroyer, a 6,000-ton freighter, 2 small oilers and 3 coastal freighters, and destroyed 8 planes on the ground, probably destroyed 10 more and damaged others. In addition, they started fires in shore installations and exploded an oil or ammunition dump.

The 20th of July was the day that Miller, Janeshek, Jobe and Bridgeman hit the target jackpot when they attacked Chichi Jima, Haha Jima and Iwo Jima at dusk. They sank a destroyer at Chichi Jima, damaged a DE and a 4,000-ton merchant ship; destroyed 2 planes on the ground and damaged 8 others; damaged 8 coastal freighters at Haha Jima and started fires on all the islands.

It was during this raid that Jobe scored 8 direct hits out of 10 bombs dropped on a Japanese destroyer and blew its entire stern off. He probably thought he'd done enough for that night, but as things turned out, he was just starting. There remained the job of flying his plane back to Saipan with only 3 engines, his plane perforated with 100 assorted holes, his radio out, no stars from which to navigate, and two crewmen wounded. Most of the time he had to use an engine setting considered "impossible." But Jobe and his crew made it back, three hours overdue, after jettisoning everything they could lay hands on.

Cdr. Miller left his last "calling cards" at Truk on the 27th and 29th of July. He damaged a 1,500-ton merchant ship, 3 coastals, 10 Japanese LCT's huddled together in a boat pool, and heavily strafed installations at Dublon, Moen and Falo.

Lt. Clifton B. Davis flew the last combat patrol of the tour on 16 August. On the 18th, as VB-109 was relieved, Commander-in-Chief, Pacific Fleet, radioed, "It is enough to say that the enemy will be glad you have left the forward area. Congratulations on an outstanding tour of combat duty. Well done!"

On 20 April 1945, VPB-109 under the command of Lt. Cdr. Hicks, exec on the first tour, began its final victorious round. Based at Palawan, then Okinawa and Iwo Jima, the squadron spent 61 days in combat operations in four months.

It was hard to beat the deadly effectiveness of the minimum altitude attack, and VPB-109 didn't try to. It saw to it that all of its new pilots had the word, and then from Singapore to Shanghai, from Shantung to Hokkaido, it fired its guns and dropped its bombs, a champion in the ring again. VPB-109 sank 118 ships, damaged 87 others, and inflicted incalculable damage on enemy strongholds or weak spots in 46 bombing and strafing attacks.

ACI Officer, Lt. Theodore M. Steele, reported: "The squadron was perhaps proudest of its low-level bombing tactics (single plane) which it devised and perfected, and of its later two-plane tactics used in operations off the Empire. These tactics helped to give the squadron one of the better safety records in the Pacific while it meted out unparalleled destruction."

Typical of the thoroughness of the attacks staged from Palawan were those made the early part of May when Lt. Robert E. Vadnais, ferreting beyond his search sector found a series of shipyards and newly completed freighters at Pontianak, Borneo. In an outstanding performance, he destroyed 8 small freighters, 6 cargo launches, destroyed one shipyard and over two-thirds of another with 12 ways full, seriously damaged a large schooner and 10 small freighters. Lt. Davis went back the next day to destroy 7 small freighters, a sawmill and a shipyard. Lt. Jobe ended the strikes on 5 May by destroying 10 small freighters, a cargo vessel and five-sixths of a large shipyard.

FROM OKINAWA, VPB-109's base after 6 May, the squadron continued to scourge the Japanese. Continued raids knocked out target after target. The squadron's score rose sharply on 27 May when Lt. J. J. Jadin and Lt. (jg) R. A. Moyer seriously damaged a 2,300-ton freighter off Chosen and a radar and radio station on Gaja Shima. Lt. Cdr. Hicks and Lt. L. E. Kennedy had good hunting in the small islands off southern Chosen. Hicks sank a large schooner and 3 small freighters, and seriously damaged three others. Kennedy sank 2 small freighters, a 2,300-ton freighter, and a destroyer on the high seas, blowing the entire bow off with a direct hit.

Beginning on 1 July, the squadron operated from Iwo Jima, flying fleet barrier patrols, making special weather recco flights and performing air-sea rescue functions for P-51 and B-29 strikes against the Empire. The 27th of July the squadron returned to Okinawa, and on the last day of the month, Skipper Hicks led a highly successful strike against railway facilities in northern Korea.

An omen of victory came on 10 August with the order to carry armament for defensive purposes only. Six days later in a ceremony marking the end of hostilities, VPB-109 received the Presidential Unit Citation for its tour of duty in the central Pacific in 1944.

High on the roll of honor of all the happy victors was VPB-109 who, under the daring, aggressive leadership of Cdr. "Bus" Miller and Lt. Cdr. Hicks, had played so distinguished a part in bringing the Japanese Empire to decisive and devastating defeat.

★ THIS IS the fourteenth of a series of short sketches of squadrons in World War II. It is based on reports filed with Aviation History and Research in DCNO(Air).

Tough Tests Pick Pilots

Medical officer William M. Craft tests eye muscles of applicant on phorometer

NavCad applicant K. Adams gets Barany chair test from examiner McDuffie

NAS ALAMEDA—When a recent Navy directive opened the aviation cadet training program to enlisted men, a small group of bluejackets from Alameda responded and six passed the rigid physical and aptitude tests.

The going was fast and rough as the enlisted men went through the day-long written and physical examinations. A three-hour series of aptitude tests to determine intelligence and stability included:

Aviation classification—instrument reading, accuracy checking, vocabulary, practical problems, arithmetic.

Mechanical comprehension—"Two carts are on a hill. One cart is loaded with 200 pounds of hay, the other with 200 pounds of sand. Which is more likely to tip over on the hillside?"

Biographical inventory—Family history and background, personal phobias (Are you afraid of high places?"), childhood diseases, ambitions, likes and dislikes.

Enlisted men selected as applicants to the Navcad program must be high school graduates between 18 and 25, must pass minimum test scores, be emotionally stable and good physical specimens.

As an example of the latter requirement, he must have 20-20 vision and equally perfect hearing and balanced equilibrium. Along with the usual blood tests, x-rays, urinalysis and knee-thumping, the physical exam includes all sorts of slick maneuvers with a phorometer, depth perceptor and Barany chair (see photo).

The phorometer is a complicated set of steel eyeglass frames swiveling on a stand at one end of a long, narrow room. At the other end of the cubicle is a wall box with a fascinating set of lights that revolve, recede, lengthen, diminish and sputter as the Navcad applicant's eye muscle balance is measured, eye tension tested for accommodative power and ability to focus at close range.

Apparatus to gauge depth perception consists of a pair of heavy twine reins the applicants is required to puppet-pull so that two black, vertical sticks line up side by side. This determines a man's ability to judge stance of the objective.

The Barany chair, named after the physician who invented the process, tests the equilibrium by simulating motions of the body in different axes encountered while flying a plane.

The Navcad applicant is seated in the chair and is whirled around 10 times at a swift pace while assuming different positions. His ability to sit upright, focus his eyes on a given object, or stand without tottering determines his balance.

In the past, when only college men were eligible for the Navcad program, about 80 percent of applicants passed the physical and aptitude tests. It will be interesting in the future to note how many enlisted men meet this high ratio. Fewer applicants may qualify as pilots because of the faster aircraft now rolling off assembly lines, according to Dr. Maurice N. Walsh of Mayo clinic. Psychiatric tests must be stricter than ever, he said, because new planes will make severer emotional demands on pilots.

Many lives were lost in training during World War II, even though pilots were screened with considerable care. This was due to the effects of anxiety at critical moments.

The supersonic aircraft intensify the need for psychiatric tests for pilots. When maximum speed is reached, the pilot has a sense of weightlessness which feels like falling and may produce strong anxiety reactions.

Navy Turns Out TO-1 Pilots

Fuel Usage Watched in New Plane

VF-52—This squadron is turning out a monthly quota of fighter pilots who have completed the transitional training course in TO-1 jet *Shooting Stars*. The first group of 18 pilots finished the work on 24 November and the second began going through the mill on 1 December.

Included in the first group were pilots from ComFairWestCoast staff, AG-5 and AG-11, VRF-32 and pilots awaiting future assignment. The 21-hour flight syllabus included indoctrination, cruise control, formation, instrument, navigation, high altitude tactics, division tactics and simulated gunnery. Ground school embraced jet theory, aerodynamics, cruise control, high altitude training and basic jet operational planning. Each officer got 52 hours of ground school.

TRANSITIONAL PILOTS LEARN TO FLY THE TO-1

The safety record of the group was considered outstanding. One minor accident occurred when the pilot of a TO-1 porpoised during landing and damaged the nose wheel. Of all the landings made on the relatively short (6000') runway at San Diego, only one plane landed long enough to run off the end of the runway. It was undamaged.

After completing the prescribed course, all transition pilots said actual flying of jets is comparatively easy but that flight planning preparations and careful flight attention were much more critical than in conventional aircraft. Pilots also became "believers" in maintaining a meticulous watch of fuel consumption.

VMF-115, HAWAII—Who said peacetime? With a great increase in plane and pilot availability, this squadron flew 1120 hours in one month, the best monthly record since peacetime routine was established. It was almost 500 hours better than the best total for the squadron while it was in North China. It included 368 hours of tactics, 295 hours of gunnery, 142 hours of instruments and 188 hours night flying. Average pilot time was 37 hours.

N.A. NEWS VISITS
NAS OLATHE

Reserves Fly At Nation's Crossroad

AT NATIONAL MODEL MEET HELD AT OLATHE, TORONTO QUINTET SHOW MODELS TO LT. MILBOURNE

LONG BEFORE a sailor named Columbus disturbed the Atlantic currents, the site of Naval Air Station at Olathe was established as the center of travel in America. Herds of buffalo had worn a pathway between the lush summer blue-stem grasslands of the Missouri Valley and the winter feeding grounds of the Western plains. Being natural engineers, the bison traveled the easiest, most direct route.

Since they were careful observers, pioneers of the 1850 to 1880 migrations travelled the same route, and great wagon-trains rolled Westward over what were called the Santa Fe and Oregon Trails. Both trails passed exactly across the station's runways.

Railroads quickly followed. Kansas City, just 20 miles away, became the rail and cattle terminus opening the old West—a position of leadership it still maintains today. With the advent of the automobile, it also became a central junction for transcontinental roads.

It was only natural, therefore, that the area should become the nation's center for the airplane. Today, the home offices for TWA, Mid-Continent and Continental and major offices of four other lines are located in Kansas City. NAS OLATHE has long since seen the air traffic of the world converge on its runways.

The flavor of the West remains and the station is proud of applying the phrase "where the West begins"—a blending of cowboy boots and Navy suits.

During the war, Olathe was the headquarters for all continental operations of VR-3, and the NATS planes carried thousands of service personnel to and from the battle fronts of the globe.

Commissioned in October 1942 by Capt. D. W. Tomlinson, the first mission of the base was to give primary training to the Navy's fledglings. Capt. Tomlinson was followed by Lt. Cdr. Arthur Helm, the famous Capt. Dixie Kiefer, Capt. R. G. Lockhart and Cdr. Harold Brow. The 4500 primary students rolled up 463,220 hours in the clear Kansas air during this period.

VR-3 took over in September 1944, and its records are too well known to need repeating.

JOHNSON COUNTY SCHOOL TEACHERS HEAR LT. KINCANNON EXPLAIN WEATHER FORECAST PROBLEMS

Olathe became a part of the Naval Air Reserve in the spring of 1946. Its subsequent achievements have not lessened its color.

JUST FOUR miles from the town of the same name, which means "beautiful" in Shawnee, NAS OLATHE is a recognized factor in community life. Its personnel are welcome and respected in the area, and, in turn, like their surroundings.

Commanding officer of NAS OLATHE is Captain Campbell Keene. Having enlisted as a seaman second class in 1917, Capt. Keene was commissioned an ensign in the Naval Reserve and designated a naval aviator in 1918 after flight training at Pensacola. In 1940, after a wide variety of naval aviation assignments, he was transferred to the *Wright* as air officer and was later given temporary additional orders to Wake Island. He was captured on Wake and spent the remainder of the war in Japan. Before taking over at Olathe, Capt. Keene served as aviation aide to the Commandant, 11th ND, and later was CO of NAS MIRAMAR.

Commander James A. Peterson, who was commissioned in the Naval Reserve in 1929, is the executive officer at the station. After serving as flight instructor at Pensacola, he was assigned in 1939 to the Naval Reserve Aviation Base in Kansas City, Kansas. Since that date his duties have identified him with this area, and, as a true "old timer," his friendships and experience have been most valuable.

The station has 36 officer and 426 enlisted stationkeepers on the roster for the Navy while three officers and 41 men are in Marine Air Detachment.

RODEO'S MCGEE, CAPT. KEENE, GOVERNOR CARLSON, MAYOR ROBINSON

A FEW OF THE 70,000 VISITORS AT THE NATIONAL MODEL AIR MEET

TWELVE Organized squadrons of the Naval Air Reserve and one of the Marine Air Reserve operate from Olathe. In addition, the Associated Volunteer Reserve unit, which the station supports at Wichita, Kansas, makes the Navy's air imprint felt over a wide radius.

In all some 387 Organized officers and 1025 men as well as 189 Associated Volunteer Reserve officers take part in regular training, while many Volunteer pilots come out occasionally to keep up their flight proficiency.

The majority of Organized aviators are GI students at the universities of Kansas, Missouri and Kansas City and at Kansas State College and Baker University.

In a closely knit community such as Olathe, mutual interests bring many brothers and fraternal groups into the Navy orbit. Lt. Cdr. Paul Boyer is CO of VF-56-L, while his brother William, a Lt. (jg), is exec of VA-56-L.

VA-70-A boasts the station's only husband-wife combination in Gerald L. and Emma A. Thomas, R2 and YN2 respectively. Both are students at KU and both are three-year veterans. Lt. Cdr. D. W. Martin of this squadron, now a GI dental student, was formerly the type training officer at the base.

FASRon-67 has two family teams in skipper, Lt. Cdr. E. E. McLaughlin and his brother, who is a DK1, and in L. J. Waco ADEC and L. D. Waco, Jr., SR. Father, Lt. (jg) Robert Canfield and his twin sons, Richard and Robert, both SR's, are members of VF-69-A.

VF-70-A throws its weight about for many reasons. It has Forest Griffith, SR, who is a *Big Six* star fullback, and Edwin Lee, starting tackle at KU. With such men sparking the drive, this squadron won the recruiting trophy at the station last spring.

Practically the entire football squad of Kansas University, in fact, is enrolled in one or another of the squadrons. W. E. Holdton is in VF-55-L and Griffith, Kline and McCarmach, as well as KU cheerleader Coker, are in VF-56-L.

Since NAS OLATHE stands for naval aviation in the "heart of America," Reservists are constantly called upon to participate in many special community events which are held both at the base itself and in the surrounding area.

In the fall of 1947, the station, in cooperation with the Olathe Chamber of Commerce, staged a nine-state regional model airplane meet. This was so successful that in 1948 the Chamber of Commerce and the American Legion arranged to hold the 17th National Model Airplane Meet for a five-day period aboard the station.

An estimated 70,000 spectators and 1200 contestants from every state, as well as from Canada and Mexico, poured into the area for the event, which is still receiving plaudits from newspapers and magazines as the best meet ever held.

Contestants were housed in Kinnick Hall and were fed in the general mess. During five days of pandemonium and buzzes, the model youth of America enjoyed unparalleled flying competition and managed to establish 11 new world records. At the end of the meet everyone at the station from the CO down, together with some 5500 townsfolk who had worked day and night, took a long satisfied look at the job—and quietly collapsed.

OLATHE C. OF C. HONORS STATION IN FLOAT

A repeat performance has now been scheduled and Olathe will again serve as host for the National Model Meet in 1949.

Stationkeepers also jump into the staging of the famous rodeo which the town of Olathe presents each year. With the same enthusiasm as that shown by their civilian neighbors, they watch cowboys, who later will end the season under the lights of Madison Square Garden, do their stints in the three-day blow-out.

FORTY MILES to the north of the station is Fort Leavenworth, home of the Army's Command and General Staff College, where officers from all services and from friendly allies as well are attached. Marine transport planes have been used for the past two years to fly officers from the graduating class at Leavenworth to the Marine combined maneuvers on the West Coast. Olathe is the staging point for both take-off and return. This opportunity to work out mutual problems and projects has strengthened the cordial relations between the services.

On 29 November, the station was host to more than 700 members of the Johnson County Farm Bureau at the largest meeting of the group ever held. The farmers and their families were guests in the general mess and enjoyed a tour of the station following their business meeting.

The Pensacola cruises were initiated in April by VF-70-A, which flew down for overwater gunnery exercises. Personnel and equipment were transported in six FG-1D's and one R4D.

In June, VP-ML-65 staged a training flight to Florida. Twenty-one officers and 30 men enjoyed 10 days of intensive flight training, bombing, and gunnery and equally intensive liberty in

Pensacola, Miami, Key West, Memphis, and St. Louis. Also during June, VF-69-A and VA-69-A flew to Pensacola for six days of gunnery exercises. Sixteen officers and 24 men, under Lt. Cdr. Jack Kitchen, made the cruise, the first one to be conducted without any supervision by a station officer. Of the 24 men, 16 were seaman recruits who showed outstanding initiative and ability in maintenance and armament.

AGAIN IN August (and another fiscal year) the VP's headed for far vistas. Fifty-three officers and men of VP-ML-65 topped off their cruise with an overnight hop to Bermuda. They reported same weather, same ocean, same Bermuda.

From 1 July to 1 November of this year, Olathe planes have flown 17,864 hours. Even during the curtailment of flying in August due to the model meet, the pilots chalked up 7,516 hours.

During the summer of 1948 the station was called upon for frequent flyovers to celebrate special events in surrounding communities.

During July, the station was designated co-ordinator for a two-hour flyover at Bolivar, Missouri, on the occasion of the dedication of the statue of Simon Bolivar by President Truman and President Romulo Gallegos of Venezuela. Through the cooperation of Reserve stations at Dallas, St. Louis and Memphis, more than 100 planes were overhead during the entire ceremonies.

Typical of the mercy flights undertaken by Olathe pilots was the one made in a PBY in September. Under the command of Cdr. M. Kauffman, training officer, the plane and crew joined in the search for fliers missing in northern Canada, known as *Operation Attaché*, which fortunately ended in locating the downed men.

The station is frequently called upon to furnish funeral details for the dead.

LT. CDR. JOHNSON 'CHECKS OUT' TEACHER KAY

The Marine Air Detachment supplies many firing squads and color guards for occasions on which the station represents the Navy.

NAS OLATHE has the distinction of having the Navy's only GCA school, as well as the only tower operator's school, located on its premises. Both operate under the Chief of Air Technical Training, and have a roster of approximately 450 officers and men.

Olathe Air Reserve Squadrons

CVG-69—Cdr. J. W. Hurley, CO

VF-69-A—Lt. Cdr. J. M. Forbes, CO; Lt. E. J. Michell, Exec.

VA-69-A—Lt. Cdr. L. N. Wood, CO; Lt. N. Keefe, Exec.

VF-70-A—Lt. Cdr. J. C. Morley, CO; Lt. R. B. Brunson, Exec.

VA-70-A—Lt. Cdr. D. W. Martin, CO; Lt. R. H. Dugan, Exec.

CVLG-55—Lt. Cdr. H. H. Basore, Jr., CO

VF-55-L—Lt. Cdr. H. H. Shimer, CO; Lt. Cdr. A. R. Hantla, Exec.

VA-55-L—Lt. Cdr. W. W. Wright, CO; Lt. M. L. Nelson, Exec.

CVLG-56—Lt. Cdr. J. S. Kitchen, CO

VF-56-L—Lt. Cdr. P. L. Boyer, CO; Lt. Cdr. R. L. Doering, Exec.

VA-56-L—Lt. Cdr. S. L. Sutton, CO; Lt. (jg) W. E. Boyer, Jr., Exec.

VP-ML-65—Lt. Cdr. E. P. Conlan, CO; Lt. Cdr. L. E. Snyder, Exec.

VR-53—Lt. Cdr. R. G. Dalin, CO; Lt. Cdr. H. Kelley, Exec.

FASRon-67—Lt. Cdr. E. E. Laughlin, CO; Lt. Cdr. O. B. Smith, Exec.

FASRon-167—Lt. Cdr. C. A. Truitt, CO; Lt. Cdr. L. O. Westcott, Exec.

VMF-215—Maj. C. W. Masheter, CO; Maj. W. K. Snyder, Exec.

The station's own GCA unit, *Canary*, has given many assists to planes converging on Kansas City. *Canary* has talked down TWA and *Flying Tiger* contract planes and aircraft of virtually all airlines.

The first satellite AVU(A) was established at Hutchinson, Kansas, in January 1948 under the command of Lt. M. L. Detter. With 128 officers and 60 men, the unit began to score flight records immediately as pilots checked out in type. In September, it was considered advisable to move the unit to Wichita, Kansas, where it now operates from Wichita Municipal Airport. Public support for the unit is outstanding at Wichita, where an air-minded populace has given everything needed for smooth operation. AVU(A) pilots flew 714 hours from 1 July to 1 November 1948.

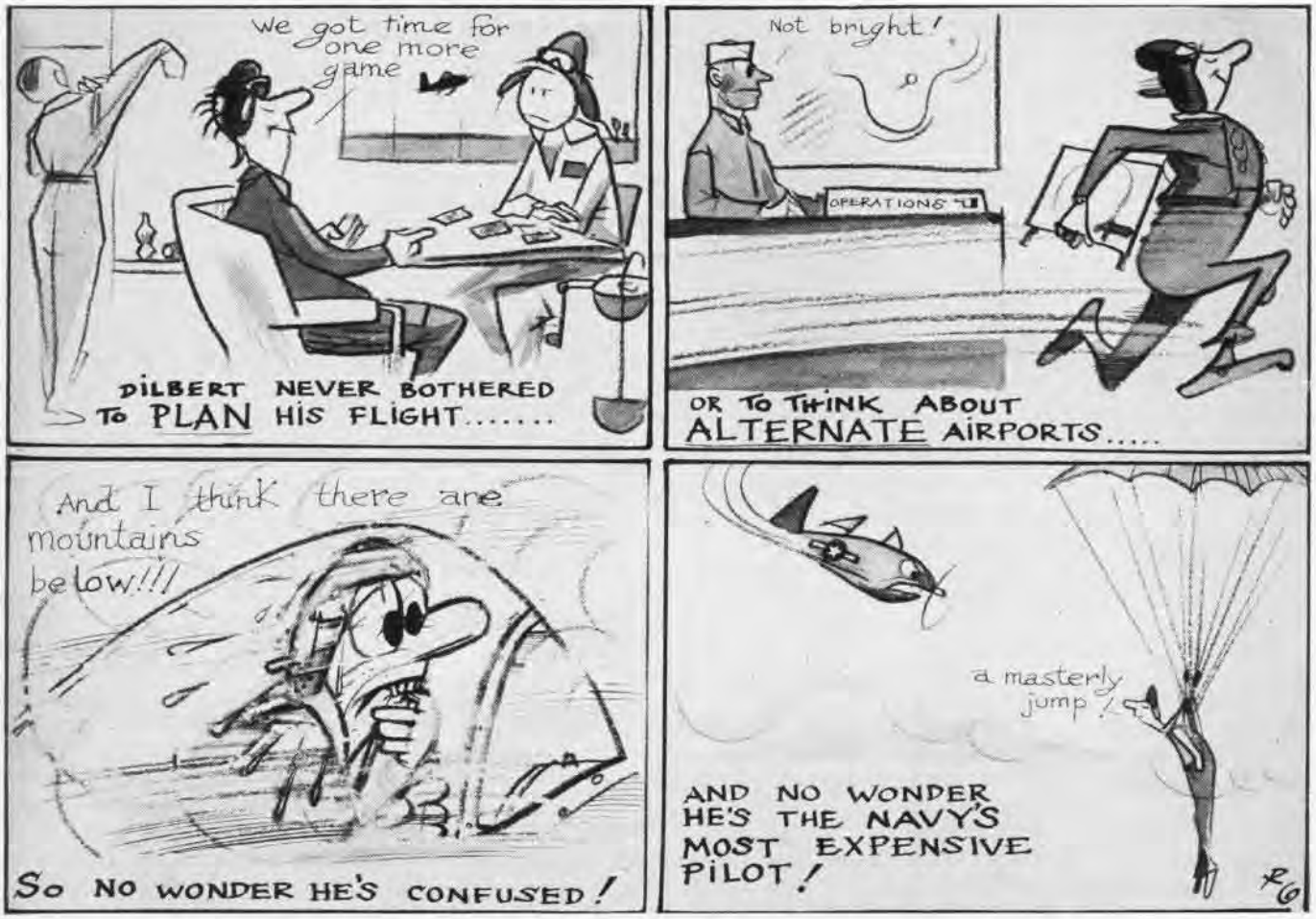
AVU(A)-2 was activated in Omaha, Nebraska on 25 July 1948 under command of Lt. Cdr. S. H. Meek. The Governor of Nebraska and civic leaders took part in the ceremonies. Since then Omaha pilots have piled up 534 hours. Due in great measure to their interest and enthusiasm, a new Naval Air Reserve station is now being set up at Lincoln, Nebraska.

ALL THESE activities and many more are regularly recorded in the *Olathe Air Scoop*, the station newspaper for Organized Reservists. Edited to catch the general tone of the station and its surroundings, it is quoted frequently by columnists in the *Kansas City Star* and it has been similarly quoted by Arthur Godfrey on his daily broadcast.

The best comment on station activities, however, is the fact that Olathe was one of the runners-up last year for the Edwin Francis Conway Trophy which is awarded annually to that station in the Reserve network which shows the most efficient operations.

CAPTAIN KEENE, OLATHE CO., JUDGES FLOATS IN OLD SETTLER'S PARADE

REAR ADM. WHITEHEAD CONGRATULATES S. JORDAN ON SPEEDY MODEL



DISPOSITION BOARD STEW

A Flight of Fancy With a Costly Ending

FEBRUARY is a fine month for the Disposition Board Stew, a dish which is particularly easy to prepare during winter months. Although the recipe varies with different cooks, here's one formula that seems to be very popular. Like other culinary treats, this stew can be ruined by too many cooks, so don't let a good aerologist, a smart operations officer, or a squadron safety officer help out. They'll only foul up the formula.

INGREDIENTS

1 aircraft, high performance type
1 pilot (pick a fresh, hot one)
3 hours fuel
1 point of departure
1 compass heading (approximate only)
½ ounce common sense (may be omitted)
1 well aged chart
2 or 3 pinches of panic
10 bunches static
1 parachute
Fog, rain snow, darkness to taste
4 or 5 well worn alibis

DIRECTIONS

For best results don't cook this up until about an hour and a half before sunset. First place the fuel and the well aged chart in the aircraft. (Caution: Choose the chart carefully. A correct, up-to-date chart may cause the recipe to fail.) Then quickly blend in pilot and parachute, being careful to avoid any briefing. Place this mixture on approximate compass heading for destination and allow it to simmer gently for 1½ to 2 hours. Wash and drain the static and add small sprigs of it every few minutes. Pour in the rain, snow, or fog to taste, and stir in a generous portion of turbulence.

When the pilot is thoroughly done as indicated by rosy color, moisture on brow, and rapid breathing, prick gently with a fork and sprinkle in a pinch or two of panic. With a large spoon skim off any remaining fuel, and place the parachute rip cord in pilot's hand.

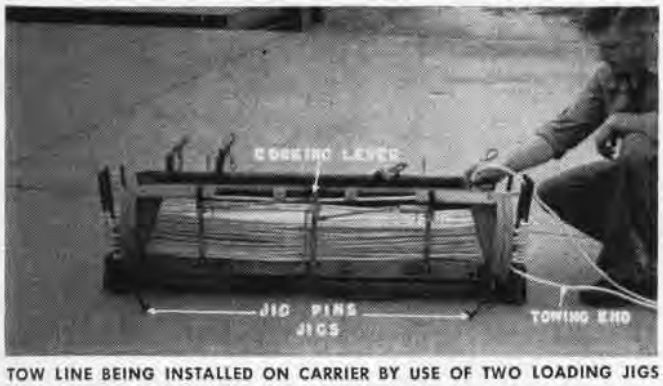
The dish is now ready to serve. After stirring for a second or two with a brisk rotary motion, remove pilot and parachute from mixture. Pull rip cord. If parachute functions, convene disposition board and serve pilot on a warm platter, using the well worn alibis as a garnish. If parachute does not work, start over again with fresh ingredients.

FAMOUS LAST WORDS

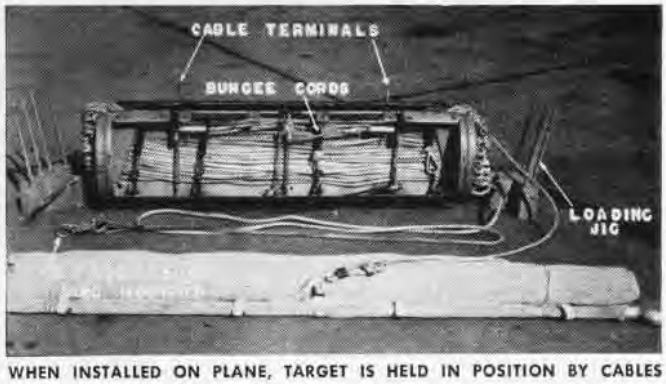
The Board has decided you lack the brains
Required to fly our high-priced planes.
Turn in your wings, your helmet, your boots.
We wish you success in civilian pursuits.

TECHNICALLY SPEAKING

Target Carrier for CV Use



TOW LINE BEING INSTALLED ON CARRIER BY USE OF TWO LOADING JIGS



WHEN INSTALLED ON PLANE, TARGET IS HELD IN POSITION BY CABLES

PROCUREMENT of approximately 500 Aero 1A banner target carriers has been initiated by the Bureau of Aeronautics, and it is expected that these new launchings devices will be ready for service use in the near future.

In the past suitable equipment has not been available for air launching a banner target from carrier type planes. The targets have been "drag-launched" with the result of frequent damage to the banner and loss of operational efficiency. Successful development of the Aero 1A, however, now will provide carrier squadrons with a means of air launching a banner target after reaching the firing area.

The carrier is a welded steel tubing framework with removable nose and tail fairings and side panels, having an overall length of 72" and a diameter of 15". It will hold 900' of 7/16" diameter nylon line which is retained by four lengths of bungee cord fitted with halyard snaps.

A length of hydraulic hose is fitted over each bungee to absorb the wear caused by the tow line when paying out. The towline is installed by using two loading jigs (*see photos above*). The target is attached to the tow line and held in position on the under side of the carrier by two suspension cables fitted with swaged eye terminals through which the latch pins are inserted.

Each suspension cable passes through the thimble end of the bungee cord which retracts the cable on release of the target. A Mk 7 Mod 1 leader ring is tied to the towing end of the tow line and attached to the airplane tow release. The target release mechanism consists of a solenoid and an enclosed coil spring which, through a mechanical linkage, retract the latch pins and launch the target when the airplane electrical bomb release is actuated.

The target drag causes the line to pay out until the target and line are fully streamed and being towed from the airplane tow release fitting. Weight of the carrier empty is 60.5 lbs. When loaded with 900' of 7/16" diameter nylon line and an A6A banner target complete with stabilizing weight, the weight is 142.5 pounds.

Banner target carriers have been loaded successfully with A6A and A10 banner targets and installed on the wing bomb racks of the F6F, F7F-3N, F8F-1, F8F-1B, F4U-4B, SB2C-5, and TBM-3E aircraft and checked for ground and structural clearances. A carrier can be loaded and installed by three experienced men in approximately 25 minutes.

Loaded or empty, the carrier had no noticeable effect on the stability of any of the airplanes with the exception of the F8F-1B. When installed on the port wing of this aircraft, either loaded or empty, considerable port wing heaviness was noted at speeds below 115 knots with the flaps extended.

INSTALLATIONS WERE CHECKED FOR CLEARANCE

The loaded carrier will withstand the loads imposed by catapult take-offs and arrested landings.

The banner target carriers are expected to be especially adaptable to jet type towing aircraft. The slow acceleration of jet propelled aircraft requires that a banner-type target be dragged approximately 4,500 feet before becoming airborne. This results in excessive wear on the target and hastens unraveling in flight. Moreover, the drag load of a target during take-off and climb increases fuel consumption and limits the towing time. Launching in flight with the Aero 1A carrier should solve these problems.

Alameda Gets Variety Job

NAS ALAMEDA—With the recent hiring of 600 new employes, this station's O&R department now numbers 6,572 men and women engaged in repairing, modifying and overhauling 1,000 planes.

Among the planes due for the assembly line are *Hellcats, Bearcats, Panthers, Furies, Shooting Stars, Phantoms, Banshees, Skyraiders, Skymasters, Seahawks, Harpoons* and *Neptunes*.

'Beasts' Have Cockpit Fumes

VR-32, SAN DIEGO—Proof of the subtleness of carbon monoxide was demonstrated here recently. Two SBW planes were grounded and returned to O&R test for noted discrepancies.

One was returned for wingtip replacement, the other to be tested for fumes in the cockpit. The discrepancies accidentally were reversed, and the plane slated for wingtip replacement was tested for cockpit fumes. Carbon monoxide was found in excessive quantities, although unsuspected.

GUNS FOR NAVAL PLANES

A FULLY-EQUIPPED laboratory and factory practically in the backyard —as distances go—of the Bureau of Ordnance and the Bureau of Aeronautics, proved a wartime godsend to the development and production of aviation ordnance equipment. Although the U. S. Naval Gun Factory at Washington, D. C. is not ordinarily thought of as part of the aeronautical organization, its facilities are making a tremendous contribution to the job of putting the best possible fighting equipment on naval planes.

The expansion of the Gun Factory's facilities in connection with aviation ordnance was directed and authorized by BuOrd in 1943 because of many advantages, such as shops of all types available for experimental work, engineering talent available, proximity to the Navy Department, the Naval Proving Ground at Dahlgren, and the air stations at Anacostia, Patuxent, and Chincoteague.

A naval aviator was assigned to the factory to assist in establishing the organization necessary to expedite the design, development, fabricating and testing of aircraft ordnance equipment. This program was considered urgent—and still is—because of the rapid development not only of the equipment itself but also of the aircraft in which it is used. The need to complete new developments and have them ready in time to match airplane development and production was paramount.

Further consolidation of the aircraft armament facilities was effected by the completion in November 1944 of a four-story building, having a floor space of 80,000 square feet, to house the organization. At the present time the Naval Gun Factory is organized and equipped to conduct applied research, and to design, develop, manufacture and test all types of ordnance equipment used by the air arm of the Navy.

TECHNICIANS AT THE NAVAL GUN FACTORY CHECK ROCKET MOTORS WITH A MALALIGNMENT GAGE

THE RESEARCH and testing laboratories have a total floor area of approximately 20,000 square feet. These laboratories contain many varied instruments and machines for research studies and test on all types of electrical, mechanical and hydraulic ordnance equipment which are used in combat aircraft.

This equipment includes many types of electrical meters and bridges, recording oscillographs, cathode ray oscillographs, static and dynamic strain gage equipment, electronic test instruments, transient recorders, 200,000-pound tension-compression machine, accelerated weathering equipment, temperature-humidity-pressure-vacuum chambers, 40 "G" acceleration wheel, electric dynamometers and hydraulic, pneumatic and hydrostatic testing machines.

In addition to this more or less standard equipment, many special machines and devices are available for tests and experiments in order to simulate naval aircraft in action under combat conditions.

Typical of this specialized equipment is a stratosphere chamber with a temperature range of from -90° F to +160° F, a vacuum of 28 inches of mercury and controlled humidity from 20% to 100%. Vibration machines also have been installed which will vibrate objects weighing up to as much as 3,000 pounds at a frequency of 3,000 cycles per minute and at an amplitude of .125 inches.

An impact machine is installed which will deliver deceleration forces due to impact equivalent to 1,000 gravitational units on specimens which weigh up to 500 pounds. This machine simulates the type of shock which is encountered in aircraft under crash landing conditions or when struck by small caliber projectiles or antiaircraft shell fragments. Portable instruments are available which permit engineers to conduct strain gage tests on bomb racks, fully loaded during actual flight maneuvers.

The machine shop facilities, comprising approximately 20,000 square feet of the first and second floors of

RIDE ON WHEEL GIVES FORTY 'G' ACCELERATION

IMPACT MACHINE SIMULATES SHOCK OF CRASH

the aircraft armament building, are mainly used for manufacture of experimental and prototype units. Large scale manufacture of aircraft armament equipment is handled by the production shops of the Naval Gun Factory.

A comprehensive research program to investigate the characteristics of the exhaust blast from rockets is now underway at this activity. A mobile laboratory, including special electronic recording and analyzing equipment, has been manufactured for this project.

EQUIPMENT INCLUDES A STRATOSPHERE CHAMBER

The development of electronic equipment at this activity includes not only the instrumentation for the rocket blast project, but also the requirements for fire control computers and applied research in general. A shielded room has been constructed and equipped for development, checking and calibration of high gain electronic circuits in three frequency regions: namely, audio to supersonic, normal R. F. and ultra-high frequencies.

THE TYPES of equipment which currently are being designed and developed are varied, ranging from comprehensive development programs on aircraft rocket launchers and on all calibers of aircraft machine guns to the design of aircraft fire control computers. Other tasks that have been or are now assigned, to mention only a few, include aircraft periscopes and bombsights, handling equipment for all forms of airborne ordnance, single and double-acting hydraulic and pneumatic gun chargers, and test equipment required for standardization of tests on aircraft machine guns.

The Naval Gun Factory, by providing this concentration of highly-developed equipment, engineering know-how and technical skill—all within close range of the central organizations of BUORD and BUAER, has proved an invaluable support to naval aviation.

NAVY HONORS HEROES

NAVY FIGHTERS ESCORT TBM BEARING ASHES OF TWO HEROES FOR BURIAL OFF COAST OF HAWAII

AN SB2C pilot and his aircrewman, veterans of 38 combat missions together before their capture and execution by the Japanese, were given a military funeral and their ashes strewn together over the Pacific off Diamond Head, Hawaii.

Lt. (jg) Harwood S. Sharp and James R. Langiotti, ARM1, were shot down off Formosa in 1944. After a year in Jap prison camps, they were executed. An American graves commission found their ashes in urns in Shanghai and returned them to Hawaii for reburial.

Relatives of the two men stated that they wished their ashes to be strewn over the Pacific together, as they had fought. Services for the men were among the largest given war dead, being witnessed by 600 men and officers of NAS BARBER'S POINT, in addition to hundreds of Army officers and men.

Sharp and Langiotti were attached to VB-8 aboard the *Bunker Hill* at the time they were hit by enemy antiaircraft fire off Formosa. Both had been saved previously in the famous "Mission After Darkness" after crash-landing their plane near the U. S. fleet. They had been picked up the next day after 12 hours in the water.

The *Avenger* carried the ashes of the two men seaward for burial in Hawaii escorted by a flight of two F7F's, four F6F's, two F8F's and another TBM.

BUGLER BLOWS TAPS AS ASHES OF SHARP AND LANGIOTTI ARE HONORED AT NAS BARBER'S POINT

Self Starter For Jets

AIRESEARCH WORKER HOLDS PART OF 88-POUND SELF-STARTER FOR JET ENGINES IN NAVY PLANES

THE FIRST successful self-starter for jet and turboprop aircraft engines has been developed by AiResearch Manufacturing Co., Los Angeles, under contract with BUAER.

The new self-starter system can eliminate the necessity of cumbersome storage batteries or heavy auxiliary power jeeps such as are now used to start jets at air stations or on carrier decks. It uses a newly developed small gas turbine weighing 88 pounds as its main component. Highly-compressed air is bled from this turbine to operate a high-speed air turbine starter unit, which is attached directly to the jet or turboprop engine.

The system will enable use of jets at bases which are not equipped with heavier starting units. It requires only a three-quarter horsepower motor and one storage battery for its own starting. The turbine engine which powers the starter also can be used for cabin pressurization and air conditioning, for heating and de-icing, and to operate other power-consuming devices.

Two versions of the turbine have been developed by AiResearch, both representing a substantial decrease in weight and size over existing aircraft auxiliary power units. High precision turbine wheels spinning at 40,000 rpm, together with combustion temperatures higher than 1600 degrees F. make possible their high ratio of power for weight and size.

The 88-pound version produces 65 equivalent air horsepower at sea level. The other version, a shaft power unit, weighs 95 pounds and develops 85 hp at sea level. With reduction gearing, both can be used to drive all electrical equipment and other accessories.

Involving a turbine principle destined to provide more power for weight and size than heretofore realized from other power plants, they are the first "radial inward flow" power turbines to be developed, according to AiResearch engineers. Radial inward flow turbines have been utilized in the past with water and steam, but never before has development of air or gas type been successful.

As opposed to axial flow principle, radial inward flow provides an "accelerated" air flow through the turbine. This eliminates some of the losses inherent in the axial flow design, and results in very high turbine efficiency.

Crane Speeds Plane Loading

NAS ALAMEDA—This station recently established what is believed to be a record by hoisting 92 aircraft aboard a carrier in one hour and 40 minutes. The carrier had to make the tide in two hours and the planes were lined up on the pier, waiting to be placed aboard, by the crane, with slings bolted to fuselages.

The station's 600,000-pound Colby-Portal crane lifted the single-engine and multi-engine planes aboard the flight deck. This same crane once lifted two planes in one minute. Another time, when pulling a cab house out of another large crane, the Colby inadvertently pulled the entire crane up in the air because the cab house was not loose from the main chassis. Total load was 100 tons, or a third of the crane's own weight.

The crane runs on 16 heavy duty railroad wheels, has a 30' beam and is propelled by a 300 -hp diesel engine which has not been removed since installation four years ago.

CHUTE LOFT EASILY PORTABLE TO FIELD SITE

Portable Loft for Chutes

SMS-12, EL TORO—This service squadron has developed equipment for drying parachutes in the field since none is available in allowance lists.

SMS-33 first developed such a "loft" and SMS-12 copied and improved on it. Features desired, in addition to satisfactory drying of chutes, were: lightness in weight, ease to assemble and dismantle, and small bulk when dismantled.

A base was made of two 2"x12" boards, 12' long. To these were fastened four base plates. The frame was of chrome-moly tubing, held rigid with cross bracing of 3/16" control cables. Aluminum pulleys were welded to the peak and the entire loft covered with waterproof canvas.

The base can be used to form a box 12'4"x2'4"x2' which will hold all the materials necessary to assemble the loft. Entire weight is 1000 lbs. It takes about 15 man-hours to assemble or dismantle the loft.

Pilots Use Hand Language

VMF-323, EL TORO—Having trouble with talkative pilots over the radio? Then read what this Marine squadron is doing to "chop the chatter."

In preflight briefing, the squadron commander ordered all pilots not to use the radio except in case of real emergency. All plane-to-plane communications, except the commander's orders to the entire flight, were to be made by use of hand signals.

Although it was difficult for all pilots not to use that "mike," it was a pleasant experience to fly without listening to a lot of babbling on the radio. It was surprising to all pilots how easy it became with practice to pass information from plane to plane with hand signals only.

Dual Tanks Clean Aircraft

VMF-322, PACIFIC—Engineering department broke into the news with a "Rube Goldberg" contraption for cleaning grease and dirt from aircraft.

This machine consists of two 250-lb. pressure tanks, one stable with a small electric motor attached, and one mobile. The mobile tank is mounted on a small dolly and attached to the stationary tank by a 20-ft. high pressure line.

Both tanks have a safety check valve to control the pressure, which is maintained at approximately 75 lbs. The mobile tank is filled with one part gunk to five parts kerosene by volume. As the gunk will dissolve and streak most paints if left on too long, it is recommended that 15 to 20 minutes be considered a maximum time to leave the mixture on the plane before wiping.

Method for Edging Plastic

NAS ALAMEDA—The Overhaul and Repair department has devised an improved method for edging sheet phenol and vinyl resins, and methyl methacylate and cellulose compounds.

The use of jointers for edging and rabbiting plastic sheets resulted in chipping and cracked edges. This problem was overcome by substituting a plain heavy duty high-speed milling cutter for the three-blade spindle furnished with the jointer.

The equipment required is a milling cutter of the same diameter and face dimensions as the original three-blade spindle, plus an adapting mandrel which will fit the existing bearings of the jointer and milling cutter. The jointer requires no other modification.

As a result of this substitution, edges are equal to those that have been filed, sanded, and semi-polished, and require no further treatment for cementing and/or finishing. The use of this method effects a saving of approximately one-half the time on each article handled and eliminates damage and waste.

There is also added safety in this method since the milling cutter produces a slicing action, whereas the three-blade spindle has a chipping cut that causes work to vibrate, chatter, and frequently kick back, thus endangering the operator.

▲ ***BuAer Comment*—Jointers are recommended for fast production of straight edges on plastic sheets, but, as pointed out, require the use of a multi-edge cutting tool to prevent chipping. The relationship of cutting speed and cutting tools is discussed in AN-01-1A-12 Section IV.**

105 MM HOWITZER GOES UP RAMP INTO AN R5D

Ramp Handles R5D Loading

VMR-352, PACIFIC—A new loading ramp for R5D's has been tested and used by this squadron after being designed by CWO C. W. Richardson, squadron assistant engineering officer, and made in the metal shop.

It is constructed of X4130 or NE8630 chromemoly tubing of .065" wall thickness. Joints are either electrically-welded using planeweld #2 rod, or are acetylene welded. Runways are made of ¼" five-ply high density plywood painted with walk-way brush on paint for better traction.

Ramps are 24' long, 14" wide and 9" deep. Weight of a set of ramps has been kept under 600 lbs. Tests showed they will accommodate any vehicle that will go through the door of an R5D. On a recent Guam flight, Capt. R. W. Hoffman successfully loaded a Marine 105 mm. howitzer weighing 5,000 lbs., heaviest for any ramp.

AUTO PILOT CAN LAND AIRCRAFT

AUTO PILOT ADDS 140 LBS. TO PLANE WEIGHT

THE NAVY held public demonstrations recently of an automatic pilot which may possibly be used some day to bring carrier planes in to touchdown on the deck without requiring a pilot or LSO.

The auto pilot was installed in an R4D as part of the Navy's all-weather flying program. Developed by Minneapolis-Honeywell under contract with BUAER, initial research on angle of attack control for the project was done by Special Devices Center of the Office of Naval Research.

It is a stall-proof system, capable of flying the plane automatically in poor visibility, at high or low airspeeds, in any condition of loading, trim, normal attitude or air roughness. It can fly the plane automatically along a guidance reference such as the ILS beam to a complete touchdown on the runway.

The installation now weighs about 140 pounds, but developers hope to reduce this to 65 or 70 pounds to make it more feasible for fighters and other carrier planes.

In the public demonstration of the system, the R4D flew down the ILS glide path to a touchdown without the pilots doing anything but sit and watch. Throttles and other controls adjusted themselves. Being sensitive to an airplane's angle of attack which determines its stall point, this auto pilot provides virtually fool-proof stall characteristics, regardless of whether the plane is in a turn, climb, glide or level flight.

Possibilities of such a system of landing approach for bringing in planes aboard a carrier at night or in a fog can be envisioned. Pilot of the demonstration plane was Cdr. E. F. Saxman, with Lt. (jg) R. C. Knoeckel at co-pilot.

Light Shows Wheels Down

VMF-452, EL TORO—This squadron has developed a good system to prevent wheels-up landings at night, involving micro switches on both landing gears of the *Corsair* linked to the exterior approach lights and the chartboard light in the cockpit.

The chartboard light was moved from its original position and installed on the right of the hydraulic pressure gage and focused thereon. It is connected to the approach light switch and automatically illuminates the gage when the gear is down and locked.

Secondly, a micro-switch (part #CR-1070) was riveted to a frame adjacent to shaft VS-10883 of the main landing gear. An adjustable lever was fastened to the shaft and set to contact the micro switch only when the gear is fully down and locked and the chartboard light on. All wiring is connected to the approach light switch in the cockpit. When operating on land, the switch guard is removed and the switch left in "on" position for all operation. When aboard a carrier, the guard is replaced and the approach light functions by normal operation of the tail hook.

Before it developed this system, the squadron tried several other ideas which proved unworkable. One was to have a man with a flashlight try to see if the plane's wheels were down as it came into the landing circle. His white light often blinded the pilot. Sometimes he had to run all over the field to get close enough to direct his searchlight on the plane as it came in.

CHARTBOARD LIGHT ILLUMINATES THE GAGE

Another idea was to have the pilots call the control tower and report whether they had lowered their wheels. Planes failing to call were waved off. But accidents still continued to happen.

▲ ***BuAer Comment*—This change is essentially one that conforms to latest policy. It is presently being incorporated in new production aircraft. The BuAer system incorporates a flasher unit to provide the following approach light indication: Light off means wheels up and hook up or down; light flashing means wheels down and hook up; light on steady means wheels and hook both down.**

For standardization, it is intended retroactively to fit this system to most carrier type aircraft as soon as flasher units are available. The BuAer system as above planned is considered more desirable than the system described by VMF-452 because no change is required between ship and shore operation saving time and money.

Instrument Shop Effective

FASRON-8, ALAMEDA — The instrument shop of this FASRON is set up to handle all types of instruments peculiar to the aircraft based aboard and currently being supported by the unit. The shop is divided into two

CHIEF ROUX WITH VACUUM, PRESSURE BENCH

main parts: vacuum and pressure, and electronic and electrical.

Having proper test equipment and bench set-ups has been the reason for the small amount of turning in and drawing of instruments by this command. There are 31 bench set-ups for testing various instruments, and all are available to the squadrons for test purposes and for training of personnel. Each test position is mounted on a separate removable panel to provide convenient access for servicing.

ELECTRICAL AND ELECTRONIC BENCH, FASRON 8

The shop was designed and built mainly by L. E. Roux, AEC, who has several inventions to his credit. Among these is a P-3 fluxgate compass portable tester. When put into the circuit, this tester will check voltages and resistances of the entire circuit within the plane, including plugs and cables which are the greatest source of trouble outside of the main components of the P-3 fluxgate compass. It is merely a portable application of the bench test unit shown in the photograph of the shop electronic bench.

Approximately 70 percent of the material used in constructing the shop was salvaged from Class 265 material declared surplus to Navy needs or beyond economical repair. The shop was constructed over a period of about five months, concurrently with carrying out routine work.

Photos Lick Traffic Worry

VMP-254, EL TORO—Something new in photographic missions has been reported by this Marine squadron—traffic surveys.

The congestion at the main gate of the station gets bad around quitting time, because of reopening of the O&R shops here. Hundreds of private cars were added to the already overtaxed roadway system.

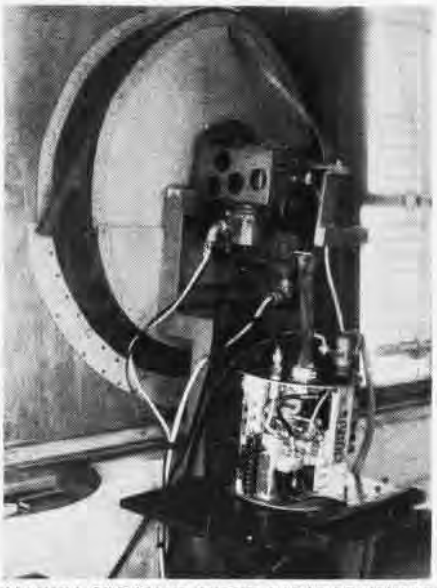
To assist in making a traffic study to figure out solutions, VMP-251 sent up three photo planes to take pinpoint pictures of key road intersections and sentry gates on a precise time schedule during rush hours.

The public works officer studied the pictures to find traffic blocks and the capacity of the roads. Rate of flow also was recorded by use of specially-marked vehicles purposely interspersed in the traffic at key points on a predetermined time schedule.

Test Stand Aids Checking

NAS ALAMEDA—To facilitate checking of the "gun aim" circuit and its components in APS-6 radar equipment, a test stand was designed and constructed by the O&R department.

Operation of the antenna in still air is

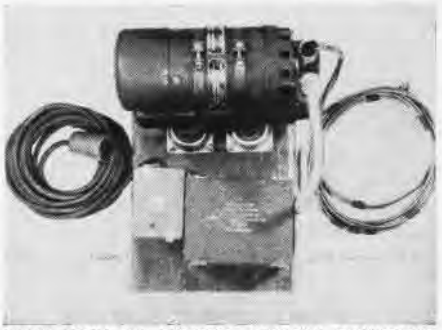


ALAMEDA O&R STAND CHECKS RADAR EQUIPMENT

obtained by a detachable shield and rubber boot which is installed after the unit is mounted on the test stand. Simultaneous vertical and horizontal adjustments can be made by turning hand screws. The vertical adjust screw mounted on the front operates the two top plates which are hinged together at the rear. The horizontal adjust screw mounted on the side rotates the stand around a 6-in. shaft on the base plate.

Use Jeep For Radar Work

MCAS, EL TORO—A shortage of type "A" line maintenance jeeps, for radar maintenance, led Marines of VMF(N)-542 to a unique solution. The squadron's radio-radar technicians constructed a portable A.C.

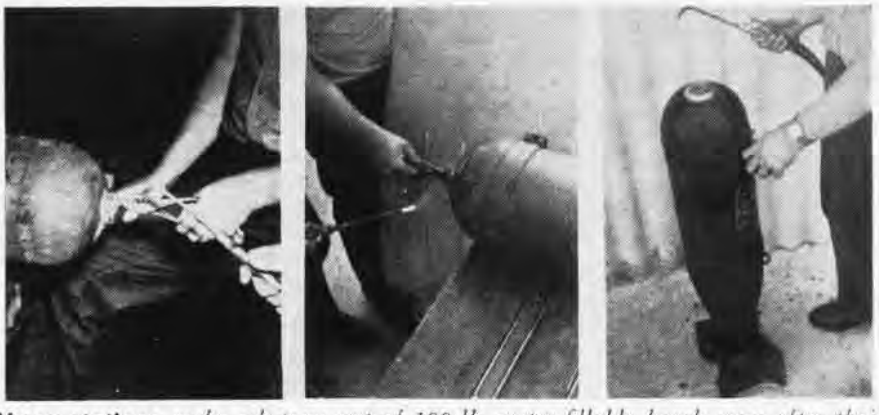


PLAN VIEW OF ELECTRIC CURRENT CONVERTER

power unit that can be used in conjunction with a regular type "B" jeep—or any other suitable power source.

The unit is made of a type 801-D motor generator and Kellog condenser box with starter switch. These are mounted together with input and output lines. When radar maintenance jeeps are not available, the portable unit is put in the rear of a "B" jeep and connected to the output. The men then have 800-cycle A.C. power available for radar maintenance.

Marine *Fighting Squadron 452, while carrier-based and operating ashore, found the universal airplane tail jack cumbersome for many tail wheel changes. A light weight jack was made using a tripod base with free center post actuated by a small hydraulic jack. Weight of the complete assembly was 15 lbs. plus jack and stand*



Many stations *make ash trays out of 100-lb. water-fillable bomb cases after their screw caps have rusted out from prolonged exposure to weather during storage. At NAS New Orleans, aircraft maintenance department reclaims them by soldering new caps on them immediately before use. The new caps came from the galley.*

FLYING CIC IDEA WORKS

MAG-15, PACIFIC—This command has developed a new technique for use in close air support exercises—placing the tactical air director overhead in an R4D instead of behind the lines somewhere or offshore in a ship.

This "Flying CIC" idea is used in connection with regularly scheduled CAS exercises simulating a full day's tactical air support of an amphibious operation. In accordance with current doctrine, the exercise was directed by means of tactical air coordinators and a tactical air direction center in the group command post. In view of the relative inaccessibility of the target area to surface transportation, TAD went up in an R4D with ample radio facilities. He maintained station over the target area throughout the exercises. Tactical air coordinators were maintained on station in F4U-4's.

Operations began at 0330 when the TADC in the R4D took station over the target area. At 0430 the first flight of F7F night fighters reported on station, and simulated pre-H hour strikes were carried out until dawn. The *Tigercats* utilized radar and low visibility area bombing techniques. Good to excellent results were obtained. Aircraft flare illumination was attempted for pinpoint attacks, but failed because of malfunctioning of the outdated flares.

Commencing at 0600, flights of six F4U's armed with .50 cal., miniature bombs and SCAR's were kept over station for one hour periods and made various simulated CAS strikes as called for by TADC. Sixty-seven targets were identified satisfactorily and attacked by 11 strike groups.

The following conclusions concerning this exercise are submitted for the information of activities concerned:

1. The practice of embarking the TAD in a multi-place aircraft over the target area for direction and observation of pre-H hour strikes and early CAS on D-day when satisfactory facilities would not normally be available ashore, is felt to be desirable.

2. Use of 3" smoke rockets by the TARCORS for marking targets for the strike groups was highly satisfactory, as evidenced by an average of only 1.4 minutes elapsed time between target marking and the first strike.

3. It was discovered that the radio set SCR-399 intended to provide communication facilities for the TACC was not in a satisfactory condition of preservation for placing in service immediately and would require two weeks of overhaul to be fully operational. It is felt that all such electronic equipment allowed and on hand should be operated to maintain it in ready condition.

4. The Mk 10, Mod O, F.S. smoke tanks used to lay smoke screens were found to be unsatisfactory in that the smoke curtain produced was too thin to be effective even when laid at minimum practicable airspeed (120 knots). This condition was further aggravated by an average 20-knot wind in the target area.

5. It is felt that definite possibilities exist for units concerned to increase the effective employment of VF-type aircraft in pre-dawn strikes when used with electronically-equipped pathfinders like F7F's, and under conditions of moonlight or flare illumination.

Switch Aids Heater Trouble

VMF-211, PACIFIC — Experience through cold weather operations of this squadron's F4U-4 aircraft has revealed that the master switch for the cockpit heater often is accidentally turned on by movements of the pilot.

It is believed that this excessive switching on and off shortens the operating time of the igniter assembly, R83-SUC-69A01. It is recommended that a spring-loaded switch, type AN-3028-3, guard-toggle switch and switch breaker, be installed to eliminate this difficulty.

▲ ***BuAer Comment*—This is considered a worthwhile suggestion which interested activities can follow without necessity of a service change or service bulletin.**

SNJ LANDING GEAR LOCKING PIN LUBRICATION

Lubrication of Locking Pin

NAS OAKLAND—The method used in lubricating the landing gear locking pin on SNJ aircraft as shown in the accompanying picture has proved very successful at this activity during the past eight months. A few drops of penetrating oil applied at every pre-flight inspection has eliminated many previous discrepancies and malfunctioning of the pins.

A small hole is drilled in the plexiglas over the locking pin and a metal screw or a small oil cup installed to prevent foreign particles from entering the locking mechanism.

▲ ***BuAer Comment*—No objection to lubrication of the locking pins by this method. However, it is not considered of sufficient importance to warrant inclusion in pre-flight inspections of other operating activities, since the methods and intervals laid down in the standard lubrication chart for the SNJ have proved entirely adequate in the past if diligently followed.**

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SERVICE Test INTERIM REPORT DIGEST

This digest covers the 15 December Interim Report of Service Test. NATC PATUXENT, and does not necessarily reflect BUAER policy.

AD-2 (253 Hours)

Magneto. Magneto breaker point housing air blast deflector was found detached from magneto cooling baffle. Air blast deflector dropped down and its attachment tab deflected the cooling air away from breaker point housing. The duralumin deflector is riveted to the magneto cooling baffle by two rivets and is located in path of the incoming cooling air to the magneto points.

Air loads imposed on deflector caused rivet holes to elongate and deflector dropped from its mounting. *Recommend* that steel washers be installed before upsetting rivets used to attach magneto point housing air blast deflector to magneto cooling baffle; that an additional support tab to the deflector be supplied, extending from the deflector to the other side of the cooling baffle; and that steel washers be added to the attachment rivets of the breaker point air blast deflector on magnetoes of this type at next 120-hour check.

Support Bracket. Duralumin support bracket for fuel pump sylphon vent line broke adjacent to attachment hole. Replaced with new bracket of 4130 steel. *Recommend* that bracket be strengthened.

Lower Dive Brake. Replacement spare lower brake, P/N 5251212, drawn from local stock, could not be fitted to plane because left hinge bushing hole had been drilled at angle of approximately three degrees from center line of the right hinge bushing hole. Hinge holes are jig drilled and cannot be corrected in the field. *Recommend* that cause of the misaligned hinge holes be investigated.

Gaskets. Inner diameter of gaskets installed on the engine oil in and oil out flanges was found to be 5/16" less than inner diameter of the flanges. Excess gasket material had been partially severed from gaskets by the attached oil lines and was on the verge of being drawn into oil system. New gaskets were manufactured to proper dimensions, permitting all gasket material to be compressed firmly between engine flanges and attached oil line flanges. *Recommend* that gasket of proper size for the oil in and oil out flanges be provided.

Exhaust Stack Brackets. Two of the newest type stand-off brackets, in which a slot for the exhaust stack weld is provided, were found broken. These are the eighth and ninth stand-off bracket failures. *Recommend* that stronger exhaust stack stand-off support bracket be provided.

Prop Control Rod Fitting. One of the four fingers on the female portion of the quick-disconnect fitting attached to the forward end of the propeller control rod broke off. Failure believed caused by engine vibration transmitted through bell crank assembly, P/N 4263775, to control rod, P/N 2254861-500. *Recommend* that quick-disconnect fitting be strengthened.

Bell Crank. Propeller control bell crank, P/N 4263775, chafed against No. 18 cylinder exhaust stack and exhaust stack clamp when propeller control was in the full low pitch position. Supporting bearing of bell crank is subjected to engine vibration and excessive forces parallel to the bearing axis. It had worn so much that bell crank no longer moved in its normal plane. *Recommend* that more rigid support for pivot point of propeller control bell crank be provided.

Engine Fire Seal. An engine change revealed the following discrepancies in the engine fire seal assembly:

1. Engine mount sockets were cut to depth of 1/8" by edge of baffle cutouts. Baffle cutouts provided in fire seal for clearance of engine mount sockets were not large enough to prevent edges of the baffle cutouts from chafing the engine mount sockets on the engine mount ring when the engine moved as result of torque.

2. Metal retaining ring which holds rubber seal strip in place and attaches fire seal baffle to engine adapter ring was broken adjacent to engine sump. Ring had chafed from contact with fire seal flange which is riveted to engine mount ring.

As remedial action, the torque side of the fire baffle cutouts was enlarged 3/8". Chafed areas on engine mount sockets were scraped, polished and painted. The damaged retaining ring was repaired and fire seal flange was reshaped to avoid future chafing. *Recommend* that fire seal baffle cutouts be enlarged to provide adequate clearance between cutouts and engine mount sockets on the engine mount ring when the engine moves as result of torque, and that the fire seal in main sump area be redesigned to prevent chafing between retaining ring and fire seal flange.

F8F-2 (130 Hours)

Oil Pressure. Engine oil pressure decreases with altitude, and on flights above 25,000 feet, pressures of 90 lbs, psi (10 lbs. below minimum listed in Pilot's Handbook) have been encountered. Condition is being investigated.

Fuel Pump. A small amount of corrosion was found on the relief valve spring, P/N 2601, guide, P/N 1863, and in the bore of the relief valve housing, P/N 3239. Valve parts were cleaned, lubricated with engine oil and reinstalled.

P2V-2 (375 Hours)

Manifold Pressure Regulator. The following is quoted from report of Flight Test. "Manifold pressure regulators are not needed as power control regulators in P2V-2 type aircraft. Their use prevents the pilot from determining the existence of incipient carburetor ice, provides no means of positive power control in the vent of regulator failure and adds to the problems of maintenance in field operating squadrons." It is not believed that the convenience provided by use of the pressure regulators offsets the safety of flight factor involved when operating under icing conditions. *Recommend* that manifold pressure regulator be removed or disconnected and that carburetor linkages be connected directly to the throttle quadrants in the cockpit.

Ignition Coil Assembly. Secondary winding of the coil for No. 12 cylinder and both windings of the coil for No. 18 cylinder short circuited. *Recommend* that engine manufacturer investigate and correct cause of failures.

Distributor Assembly. Left distributor drive shaft oil seal, P/N 10-32596, was worn and allowed oil to enter distributor housing. Breaker points showed evidence of burning.

Service Change No. 49. Change was issued to prevent accumulation of ice at wing heater air inlet. Change kit was to include following parts: one cuff assembly, P/N 135833-95L, one cuff assembly, P/N 135833-95R. The first part is a left hand assembly for the port wing while the second is a right hand assembly for starboard wing. Two left hand assemblies were received. The extra left hand assembly was modified locally to fit starboard wing heater assembly. *Recommend* that manufacturer exercise more care in packing service change kits.

Box Beam Nacelle Panel. Jagged crack approximately two inches long developed in forward spotweld panel, P/N 132059-13. Believed caused by metal fatigue brought about by personnel walking on panel while servicing aircraft. Fairing support structure, to which sides of this panel are attached, stops nine inches short of panel edges. This leaves outer edges of forward spotweld panels without support when weight is applied. Condition exists at all four outer edges on each forward spotweld panel. *Recommend* that fairing support structure be extended to the panel edges in order to provide a support for the panel.

Cable Strap Clamp. Majority of clamps provided to support electrical cables are of the cloth strap type, insulated with foamed sponge rubber. Rubber has caused cable insulation to turn dark brown and in some cases has obscured cable identification letters and numbers. Discoloration of the numerous electrical cables throughout aircraft has caused no apparent damage to insulation, but its appearance is similar to that of scorched insulation on overheated cables, and inspection is made difficult. *Recommend* that a standard AN clamp be used in future aircraft assembly in lieu of the electrical cable strap type clamp.

Microphone Boom. Stowage Receptacle provided for pilots' microphones are so inconveniently located that they are seldom used during flight. A boom arrangement for hold-

Marine *Corps transports have joined the Navy and Air force in flying the Pacific routes under MATS. VMR-352 put 15 R5D planes on the run west of Hawaii when they were ordered to bolster the other two services, which switched men and planes to the Berlin airlift. Here Lt. Col. John S. Carter, Marine operations officer from Ewa, meets with Cdr. Carl H. Amme, Jr., director of Pacific Division Operations, and Lt. Col. Herman Rumsey, assistant.*

ing the microphone is provided in the Navy model R60 airplane. The boom is attached to the top of the cockpit with a ball-and-socket universal joint. The boom is telescoped and makes the microphone adjustable to any position when in use. A spring-loaded wire guide returns the boom to a readily accessible position when not in use. *Recommend* similar arrangement for all P2V aircraft.

Firewall Support Brackets. Routine inspection showed that both left and right upper firewall support brackets, P/N 139009-18,-19, on starboard firewall were buckled. Believe damage resulted from engine backfiring previously reported. A similar failure was experienced by a fleet activity. As remedial action the brackets were reinforced by additional plates secured on outside of bracket webs and separated by spacers with through bolts. *Recommend* that stronger firewall support brackets be incorporated on all P2V aircraft.

Service Change No. 51. Change requires replacement of spark plugs and ignition cable sleeves on the wing and empennage anti-icer heaters. Instructions include the steps for accomplishing the change on the wing heater with the heater in place. Accomplishing this part of the change without first removing the heater is impossible with standard tools. *Recommend* that Service Change No. 51 be modified to include instructions for removal and replacement of wing anti-icer heaters.

Carburetor. Inspection of the carburetor PR58Q-2, Wright P/N 130485N1, after erratic engine operation showed that gasoline was leaking past the gasket between the discharge bar and the throttle body unit.

Fuel Flowmeter. Starboard fuel flowmeter indicator gave erratic readings and investigation showed that fuel flowmeter transmitter had failed. Cause undetermined.

NAS MIAMI—During the year parachute riggers have packed more than 2,200 chutes, despite the fact that all chutes (and riggers) must be flown to NAS JACKSONVILLE to accomplish the packing since this station has no parachute loft to perform this work.

Photos Aid O&R at Norfolk

NAS NORFOLK—The Navy is using the O&R department here as a pilot installation to test use of photographic methods to produce templates for scaled undimensioned contractor-drawings such as those used for F8F planes.

Results obtained by making accurate sheet metal templates by photographic means have been so successful that its continued use here eventually will eliminate the time-consuming operation of scaling blueprints and laying out the templates by hand. Private companies have used a photo system for some time with good success.

Drawing for parts are procured by BUAER from airplane contractors. These drawings are not fully dimensioned or directly scalable and thus lack some essential information required to produce templates for overhaul and maintenance.

Airplane contractors, in general, use simplified methods of photographically laying out metal templates by projecting or applying photo reproductions of layouts to sensitized metal. These methods of producing templates eliminate the contractor's need for dimensioned drawings, and consequently plans received here have limited information.

Working contractor-drawings of this type require considerable calculation to prepare full scale drawings for lofting purposes. Errors often are unforseeably made and parts made from these templates often were inaccurate, with resultant loss of materials and labor.

One of the major factors in making the tests here possible was the use of vinylite dimensionally stable negative furnished by the manufacturer from the designer's original sketch. From these vinylite negatives, Norfolk obtains results comparable to those of airplane manufacturers in producing parts.

Use of the system has saved time when parts are required and available drawings lack dimensions. Parts are accurate within $\frac{1}{64}$". Processing time takes only 20 minutes a template. The process expedites making form blocks for parts which are to be produced in considerable quantities. Field activities can increase their efficiency by producing their own file copies of reduced size vandykes, from contractor-furnished vinylites.

MCAS EL TORO—All corners of this station are served by the mobile PX which makes the rounds during the day. Busy personnel during working hours can buy coffee, cold pop, doughnuts, candy, cigarettes, sandwiches, toothpaste, shaving cream, razor blades and other toilet articles.

VR-1—Lt. Cdr. W. W. Lamar, Jr., NATS PPC, must have been a Boy Scout when he was young. He carried a pocket compass on a recent flight—and it was a good thing he did. His R5D magnetic compass was unreliable, the fluxgate compass failed, one radio compass was out and the second doubtful. Lamar used his pocket variety to fly through the soup.

VR-2, ALAMEDA—Add odd cargoes for *Mars* planes: hatching eggs at the rate of 120 dozen a week are being sent to Guam twice weekly. Special handling is required to enable the eggs to breathe and to prevent their being ruptured by temperatures below 40°F and above 70°.

The Martin *Mauler (AM-1) has made its first carrier qualification landings aboard the CV Kearsarge off Quonset Point. Planes from VA-174, commanded by Lt. Cdr. R. E. Farkas, flew from Quonset and made 120 landings during first two days of the test. The Mauler is the heaviest single-engine carrier plane, weighing 22,000 or about the same as DC-3 commercial airliners. A one-man plane, it has a 50-foot span, range of more than 2,000 miles and speed more than 300 mph. A P&W R-4360-4 engine powers the new plane. Armament consists of wing guns, torpedoes, rockets and bombs. Plenty of punch for any fight.*

SUPPLY NEWS
FROM ASO AND SUPPLY DIVISION BUAER

Target Pilotless Aircraft

The ASO Source Coding and Provisioning Team convened to provision all target pilotless aircraft models now in use, i.e., the TDD'S-1, -2, -3, and -4; the KDG-2'S; KD3H-1'S and -2'S; KDR'S-1, -2; and KD2R2. These targets were manufactured by Globe Corp., Aircraft Division; and Radioplane Company.

Establishing interchangeability from Globe to Radioplane to Air Corps part numbers was accomplished for the TDD'S-3 and -4 by the presentation by Globe of a chart to determine interchangeability from Globe to Air Corps. However, the project was dropped for the following reasons:

It has been decided to give the 140 targets in service to the Reserve stations for a familiarization program. BUAER representatives stated that *it was not intended that these targets be flown*, but used only for familiarization; therefore no support would be necessary.

CNO letter advised that there were no further requirements in the present or future target programs for the TDD-2'S. BUAER advised ASO to arrange for salvage of spares peculiar to the TDD'S -3 and -4. It was suggested that since the majority of the TDD-2'S were located in Guam, they should be screened to determine if salvage is practicable before they are shipped back to NAS NORFOLK, NAS SAN DIEGO, or NAS PEARL HARBOR for that purpose.

The TDD'S -3 and -4 targets are considered obsolescent, and cannibalization up to 30% for spares has been authorized. On nine items there was known usage considerably higher than 30%. A forthcoming order authorizing 50% cannibilization is awaited, and no spares will be purchased.

Maintenance

The life of each target is considered to be five flights. Since a great many of the landings are in the water, a high percentage of replacement is needed for cable assemblies and servo units particularly.

It was further understood that targets P/A would not be overhauled but would be maintained by Utility Wing shops. Maintenance would be limited to that described in ACL 117-47.

BUAER has set up approximately $100,000 in ASO program 180 for the current year, but if additional funds to support this provisioning were required, it is believed funds would be made available to ASO.

Allowance Lists

A Section B allowance list was prepared for Globe and Radioplane targets to support one detached unit for shipboard or land-based operations away from the support of Utility headquarters. The Utility Wing personnel made several suggestions for additions to allowance lists as follows:

1. That NICO press tool 51-X-850 and 3-F6-960 crimping tool manufactured by the National Tel & Supply Co., Cleveland, Ohio, be added to the Section U allowance list.

2. That sun glasses and brief cases in quantities sufficient for each unit be placed on the table of basic allowances.

Deployment of Targets

Current planning information indicates that targets will be deployed as follows: ComAirLant will operate nine units in various locations ashore and afloat based out of Norfolk, Quonset, Guantanamo Bay and Port Lyautey. ComAirPac will operate nine units based out of Santa Ana, San Diego, Pearl Harbor, Guam and Tsingtao, China. These are mobile units and move as the needs of the Fleet for targets P/A arise. MCAS EL TORO (NAS SANTA ANA) will be required to support the Pilotless Aircraft School at Santa Ana, Point Mugu, and Inyokern.

It is interesting to note that the trend is away from man-carrying drones to targets P/A, and that no additional procurement of target drones is planned when the present supply is exhausted. Firm target P/A program for the future has been established, consisting of targets in five speed categories with only one model for each speed range. This will be sometime in the future, and will not occur until the inventory of present operating models can be expended. The next model to be procured is the XKD4G, 30 of which are now under procurement.

Provisioning of the Globe models was accomplished and a spare parts order consisting of approximately 100 P and P1 items was assembled, the value of the order being estimated at approximately $89,242.90. This material was for the support of KDG-2'S, KD3G-1'S, and KD3G-2'S. There were approximately 900 items reviewed. Approximately 275 were coded M; 125 M1; 500 X; 225 X1; 70 *; 10 A; none A1; 50 P; and 60 P1. These items will be allocated 50% to the East Coast and 50% to the West Coast.

The provisioning of the Radioplane models and the spare parts order consisted of approximately 125. P and P1 items were assembled with an estimated money value of $95,451. This was for support of KDR-1'S, KDR-2'S and KD2R-2'S. Approximately 1000 items were reviewed, including 350 M items; 75 M1; none X; 275 X1; 10 A; none A1; 75 P; 65 P1; 80 *. Material is to be allocated 50% to the East Coast and 50% to the West Coast.

It is believed that as soon as these orders are consummated and delivery is made, adequate spares will be in the system to support planned operations.

Don't Keep the Containers

ASO is concerned over the disappearance of a great many steel engine containers. Although it is felt that they may be available in outside storage, no report is being made because they have not been returned to the supply department.

Obviously, some activities are using these containers to store miscellaneous material. The containers should be used only for the purpose for which procured, namely, the stowage of engines for preservation. The steel engine containers are to be returned to the supply department when they cease to be used for that purpose.

Handling Class 265 Items

To insure availability of Class 265 material to meet BUAER schedules, the following five points should be emphasized:

1. Equipment that is worn, damaged or broken beyond serviceable use will be turned in to the supply department in exchange for new or reconditioned material and should be transferred immediately into Class 265 if, after screening, the material is found to be repairable.

2. Action must be taken by all activities to transfer to class 265 *all* material requiring incorporation of Zebra, Yoke, and X-ray changes.

3. Items listed on the enclosures to ASO C/L 109 must be shipped expeditiously to the designated overhaul points.

4. The expeditious flow of required material through screening and identification units is of prime importance, since the backlog in screening affects the availability of Class 265 material.

5. Accurate reporting of 265 material on hand, based on proper inventorying and taking up on stock cards, is of utmost importance.

ASO is making a concerted effort to keep to a minimum the number of additions and deletions each quarter on the BUAER Class 265 overhaul schedules by stabilizing the ASO Summary of Requirements. Changes in aircraft programs, overage material, and other factors make the task difficult. Progress along this line is being made and will continue so that the field will have relatively firm planning material with which to work and on which to base spare parts requirements.

AVIATION ORDNANCE

Angular Rate Device Tested

In an effort to determine the feasibility of using either a free gyro sight or a damped gyro sight in air-to-ground fire control, the Naval Aviation Ordnance Test Station, Chincoteague, Virginia, has designed and constructed a device which will provide a basis for evaluating the performance of such sights. The device measures angular rates and angular displacements with respect to the attacking aircraft's flight path during the initial phase of the tracking run.

Briefly, the gear consists of a modified Azon tail gyro with two degrees of freedom, an illuminated sight, Mk 8, a reflector plate having a 10% mirror coating, and a 16mm gun camera. The entire assembly is mounted in a standard F6F belly tank which can be transferred from one aircraft to another.

In operation, the reticle of the illuminated sight, Mk 8 is projected upon the reflector plate which performs two functions: (*1*) It reflects the reticle pattern to the camera lens, and (*2*) It passes the reticle pattern to a small mirror secured to the gyro. This arrangement allows two distinct reticle patterns to be photographed and the deviation and angular rate of the attacking aircraft with respect to its flight path during the initial phase of the tracking run can be determined by proper film assessment. When the system is not in use, the gyro is locked in its zero position by a caging mechanism which is controlled by the opening or closing of the particular firing circuit in use.

In the tests which have been performed thus far, the device has given satisfactory results; and it is believed that it will provide valuable information in connection with future studies.

The angular rate device described above, was designed and constructed by M. H. West, AOC, U. S. Navy.

BuOrd Comment:—Special test activities which desire to reproduce this equipment should direct inquiries to NAOTS Chincoteague since the limited application of this equipment precludes BuOrd procurement.

ROCKET GAS HEAT MEASURED BY NEW FAST GAGE

Response Temperature Gage

A new temperature gage having very fast response suitable for use in hot gases up to 650° F. has been developed by the Naval Gun Factory, Washington, D. C., for use in rocket blast research.

These gages are used to measure the temperature of the gases surrounding the rocket flames. These heated gases do not travel in a smooth continuous stream but in a rapid succession of puffs or blasts which are related to the complex dynamic equilibrium set up between the rocket jet and the surrounding atmosphere.

Reliable temperature measuring under these conditions requires the use of a fast response gage because of the transient nature of these puffs and the fact that the total burning period of the rocket lasts only a second or two. No commercially available gage has a sufficiently rapid thermal response to measure these fast temperature fluctuations.

The new gage will respond accurately to over 60 pulses per second. Since this is too fast for the eye to follow, all of the readings must be photographically recorded. Essentially this temperature gage consists of a grid of very fine alloy wire .0005 inches in diameter whose resistance change is proportional to its temperature change. Not only does the gage have fast response but also high sensitivity to small temperature changes. One experimental set up is being devised which will employ twenty gages.

•ADDRESS INQUIRIES ABOUT ORDNANCE ITEMS ON THIS PAGE TO CHIEF, BUREAU OF ORDNANCE

Naming of Guided Missiles

The basic designation of guided missiles shall be a two-letter combination of the three letters A (Air), S (Surface), U (Underwater) in which the first letter designates the origin of the missile and the second letter designates the objective. This combination of two letters shall be followed by the letter "M" indicating "missile." Examples:

AAM—Air-to-Air Missile
ASM—Air-to-Surface Missile
AUM—Air-to-Underwater Missile
SAM—Surface-to-Air Missile
SSM—Surface-to-Surface Missile
SUM—Surface-to-Underwater Missile
UAM—Underwater-to-Air Missile
USM—Underwater-to-Surface Missile

Each basic designation shall be followed by a service letter, "A" Air Force, "G" Army, "N" Navy and a model number which, in turn, shall be followed by a modification letter; for example, in the Air Force:

SSM-A-3b is Surface-to-Surface Missile, Air Force, Third Model, Second Modification.

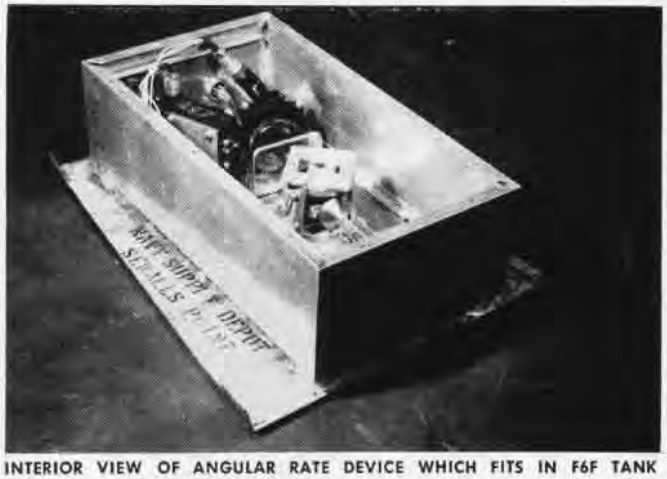
Note: After approval for joint use, the Service Letter shall be dropped, and the designation preceded by ANG.

c. PREFIX LETTERS: To designate the status of development of a missile, the following prefix letters shall be used:

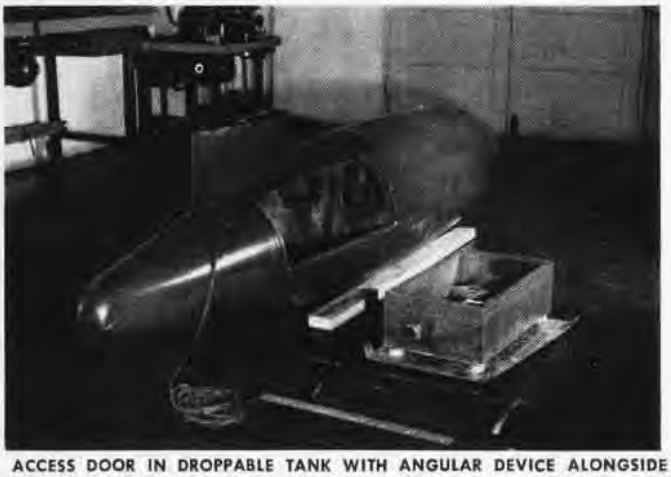
X—Experimental; Y—Service Test; Z—Obsolete

When conventional aircraft are employed as missiles, the standard or basic aircraft designation shall be prefixed by the letter "M" to indicate "Missile aircraft."

When conventional aircraft are modified to serve as controlling or directing aircraft for guided missiles or missile-aircraft, the standard or basic aircraft designation shall be prefixed by the letter "D" to indicate "Director-aircraft."



INTERIOR VIEW OF ANGULAR RATE DEVICE WHICH FITS IN F6F TANK



ACCESS DOOR IN DROPPABLE TANK WITH ANGULAR DEVICE ALONGSIDE

LETTERS

SIRS:

This air facility feels that it has achieved a new goal in disciplining school children.

There are about 20 school children who are transported to the local civilian grade school by Navy bus. To escape the usual difficulties encountered by school bus drivers, our Navy bus driver, George Crafts, chief motor machinist's mate, devised this honor system:

He collected 25¢ from each school child at the beginning of the term. On a chart maintained by Crafts, a record is kept of the children's conduct in the bus, promptness in meeting the bus to go to and from school, assistance in keeping the bus orderly and clean. At the end of the school term, the child who has the least number of black marks receives the "jackpot."

Chief Crafts' system worked so well last term that he has inaugurated it again this term, with the enthusiastic approval of all concerned.

H. G. CARTER, LT.
PUBLIC INFORMATION OFFICER
NAF SOUTH WEYMOUTH, MASS.

SIRS:

During the week preceding the arrival of the "Freedom Train" at Columbus, Ohio, the city took part in a "Rededication Week" during which the principles of Americanism were again brought to mind.

Approximately 600 officers, enlisted men and Waves from NAS COLUMBUS marched in the parade, held on Veterans Day of this week, in which representatives of all the services and of veterans groups in Columbus participated.

In addition, an F6F *Hellcat*, which had been used by the technical training department for Organized Reserve training, received a special paint job in keeping with the occasion. The plane, which is shown here, was painted red, white and blue with stars and was christened the "Freedom Plane." It was towed in the parade by a "Cle-Track" and was very well received by the estimated 60,000 spectators.

E. G. COLGAN, LT. CDR.
PUBLIC INFORMATION OFFICER
NAS COLUMBUS

SIRS:

The accompanying photo shows Capt. M. A. Nation of NAS DALLAS fixing the shoulder marks on the first of our Naval Air Reservists (enlisted man) to receive a commission in the Naval Reserve. One of the strong talking points we have in obtaining enlisted reservists Class J-2, is to inform them that participation as an enlisted man can lead to a commission when and if educational requirements are met. It has happened here and we are proud of it.

James Ottis Robinson, 23, of Dallas, was commissioned ensign in the Naval Reserve. Robinson, a former ADE2, has been made a member of VF-84-A. He has received his BS degree from North Texas State Teachers College, and is now teaching in a junior high school here. During the war he served in the Navy in both the U. S. and at Kaneohe Bay. He is married and has two small boys.

BARRY HOLTON, CDR.
PUBLIC INFORMATION OFFICER

SIRS:

I would like to take this opportunity to correct a statement in the December issue. In the Air Reserve Station Round-Up on page 21, you credit VF-62 with setting an all time high rocket record for the Atlantic Fleet range. I think you will find that the record was made, not by VF-62, but by VA-62-F of NARTU NORFOLK and the planes used were TBM-3E's, not F6F's as stated in the article. I'm sure of this as I was along on the flight that made the record.

Most credit should be given to Ens. Lacey of VA-62-F, who got five bulls-eyes for seven rockets expended. Other Reservists in the flight were Lt. Jack Diehl, Lt. (jg) Dick Kimbel, Ens. Robbie Robertson and Bob Hunt.

J. S. ALGRANTI
UNIVERSITY OF NORTH CAROLINA
CHAPEL HILL, N. C.

NAS KWAJALEIN—The Navy has taken over tiny Burnett Island, 20 minutes from Kwaj, and made it into a recreation spot, complete with beaches, beer garden, quarters for 50 men and a pool room. Rotating three-day liberty policy in NATS sees 50 men at a time enjoying the peace and quiet, with no bugles or uniform regs.

● NAS GROSSE ILE—The 204 Reserve recruits now undergoing group training took 1,354 hours of recruit training in November.

NAVAL AVIATION NEWS

Published monthly by Chief of Naval Operations (OP-50-D) and Bureau of Aeronautics to disseminate safety, survival, maintenance and technical data. Air mail should be used if practicable, address to: Chief of Naval Operations, Naval Aviation News, Navy Department, Washington 25, D. C. Direct communication can be made to Naval Aviation News, Room 4927, Main Navy Bldg., office telephone extension 61662.

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● THE COVER

Lockheed's photographer, Erick Miller, caught the R60-1 Constitution in a steep climb using six JATO bottles.

● RECOGNITION QUIZ

(Inside front cover)

Top—British Hawker Siddeley N 7/46, the latest Royal Navy jet fighter, one of the smoothest looking planes flying. Maximum level speed well over 600 mph, with Rolls Royce Nene engine. Air intakes are in wing roots, leading to single engine and exhaust outlets on both sides of fuselage instead of in tail. This gives more room for fuel tanks in fuselage.

Lower—Air Force's new McDonnell jet fighter, the XF-88. Twin jets are located in wing root, as in F2H and FH-1 Navy fighters, but the outlets are under the fuselage short of the tail. Swept-back wings and tail resemble the F-86, but that plane has airscoop in the nose for its single jet engine.

● PHOTO CREDIT

Interior view of Wright biplane hanging at Smithsonian Institution courtesy of that organization.

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● The printing of this publication has been approved by the Director of the Bureau of the Budget, 28 April 1945.

JET HERE TO STAY

Now that the airplane is here to stay, you might do well to familiarize yourself with these sleek speedsters. You may be seeing 'em. *Answers appear on last page.*

"Can't Imagine What I'd Do Without My N. A. News."