FLYING SAFETY

UNITED STATES AIR FORCE

DECEMBER 1955

FLYING SAFETY

VOL. ELEVEN NO. TWELVE

● For a complete rundown on the Air Force's airborne detectives, be sure to check the article entitled, "The Sky Is Their Beat."

● There are some rather pointed reminders for you hard hat heroes on page 9. If you're having snap trouble, better read it twice.

● For those who find the paint on the pavement confusing, we've got "Runway Warpaint."

● As strong exponents of fair play, we believe that both sides of any question should be heard. In this case, we went down to a tower and got the word from the boys in the greenhouse.

Next month, our feature story will introduce you to the supersonic Super Sabre.

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USAF PERIODICAL 62-1

How Well Can You Remember ?

If you miss more than four, better thumb through some back issues. And don't peek at the answers.

OCTOBER

1. What new features have been added to the revised Air Force altimeter?
   - a. *10,000-foot needle triangular extension and striped warning area.*
   - b. *A roller drum and a striped warning area.*

2. How does a pilot recognize the back or low side of the power curve while flying?
   - a. *Decreased airspeed and increased rate of sink.*
   - b. *Decreased airspeed and decreased rate of sink.*
   - c. *Abrupt stall.*

3. When taxiing on icy surfaces in multi-engine aircraft, which of the following techniques is recommended?
   - a. *Use of brakes.*
   - b. *Use of throttles.*
   - c. *Use of snow-grip tires.*

4. To detect ice accumulation on jet engines during winter operations while in flight, which instrument will give the most rapid indication?
   - a. *Tailpipe temperature gage.*
   - b. *Free air inlet gage.*

5. A handy-dandy kit for administrative pilots to carry during winter flying should contain:
   - a. *Rifle, fishing tackle and bedroll.*
   - b. *Long underwear and high boots.*
   - c. *Knife, signal mirror, matches and flashlight.*

NOVEMBER

6. Crews of the 374th TCW are checked by the standcrew:
   - a. *Each month.*
   - b. *Annually.*
   - c. *At least each six months.*

7. Above 25,000 feet and faster than .65 Mach, the 6-3 slats on the F-86 provide:
   - a. *More usable G than the old type slats.*
   - b. *Less maneuverability.*
   - c. *More buffet.*

8. When should an F-86 gear be retracted during a minimum-run takeoff?
   - a. *Immediately.*
   - b. *After acceleration to normal takeoff speed given in Dash One.*
   - c. *Not below 500 feet.*

9. What is the best source of information on available flight charts and publications?
   - a. *USAF Catalog of Aeronautical Charts and Aeronautical Information Publications.*
   - b. *U. S. Geodetic Survey.*
   - c. *Any base operations section.*

10. By what means was some suspected fuel tested by the C-124 pilot at Saigon?
   - a. *Tested its liquid quality between his fingertips.*
   - b. *Obtained a sample in a glass jar, agitated it and watched its settling action.*
   - c. *Checked with driver of truck as to source of fuel.*

DECEMBER

11. The main difference between the P-1A and the P-3 protective helmet is the addition of a visor.
   - a. *True*
   - b. *False.*

12. What is the letter code used on the Form 175 to denote you will discharge cargo at your destination?
   - a. *AC.*
   - b. *AP.*
   - c. *DC.*

13. An EC-121 flies at 10,000 feet on an AOC mission to get:
   - a. *Out of icing.*
   - b. *The best combination of communications and radar coverage.*
   - c. *Maximum efficiency from the engines.*

14. Runway distance markers indicate to a pilot the takeoff distance remaining to the end of the runway.
   - a. *True.*
   - b. *False.*

15. In tower terminology, the "idiot perch" refers to:
   - a. *The A operator's station.*
   - b. *The B operator's station.*
   - c. *Giving DF steers to misplaced pilots.*

ANSWERS

1. a	6. c	11. a
2. a	7. a	12. c
3. b	8. b	13. b
4. a	9. a	14. a
5. c	10. b	15. b

LETTERS TO THE EDITOR

More Crystal Headsets

In your April 1955 issue, Lt. Col. Bushue had a note recommending the switch to small crystal-type headsets. I concur with him insofar as the good qualities of the headset, but I would go a step further and recommend the investment of a few more greenies for the purchase of the two-ear headset, (approximately $28.00). A set of this kind is custom-made for each individual.

The plastic earpiece is molded directly from the wearer's ears to insure a comfortable, snug fit. Incorporated in this type of headset is an individual volume control which allows the pilot to adjust the incoming signals to a level suitable to him. How many times have you been blasted out of the cockpit using the old donut ear boxes because the joker sitting in the other seat was deaf and had to run the volume extra high?

With these custom-fitted ear pieces, engine noises can be shut out noticeably. It is presumed that the colonel's one-ear job is interchangeable and thus can be used in the outboard ear regardless of whether the left or right seat is being occupied. When reception is good, we usually fly with the inboard ear-piece in our shirt or flight suit pocket to facilitate conversation within the cockpit. However, when reception is on the poor side and every decibel is required to read the signal or copy the clearance, then using both pieces not only shuts out unnecessary surrounding noises but has two ears working instead of one. Reception is thus greatly improved.

Approximately fifteen Coast Guard pilots have been using the type headset described above for from two to three years and the general consensus among them is that they are the best seen and tried to date for the tops in radio reception.

One other advantage is that it permits the cultivation and growing of hair on the part of the cranium which has hitherto been worn bare by the old fashioned type ear muffs.

LCDR J. K. Rea
U. S. Coast Guard Headquarters
Washington, D. C.

Sounds as if these small, crystal-type headsets are the most. Especially for some of the more skin-headed, long-in-the-tooth plane drivers.

★

Flip Flopped

The article entitled "Hazards or Aids" by Mr. G. M. Kevern in your August issue was much appreciated.

However, I have one question that I believe is worth considering. Was the upper left hand picture on page 3 taken during inverted flight? All Winged Out Threshold light installations that I am familiar with have the three rows of lights on the left when approaching the runway. Also, Figure 8 on page 7 shows the proper manner of presentation, while the picture referenced above shows the three rows of lights on the right.

The most logical conclusion of course is a negative turned upside down. But, will the majority of pilots recognize the slip?

Capt. John J. Dwyer, Jr.
FSO, 605th AB Wg.
APO 406, New York, N. Y.

Our editor in charge of approach lights says you are right. He has never seen a system incorporating three rows on the left side either.

Our editor in charge of selecting photographs says you may be right, but that's the way the photo arrived.

The rest of us agree that in all probability the negative was flopped.

As pointed out in the article, the important thing is to refer to the PHACUS to know what type system is installed. If you know what to expect, the actual type of lighting is of secondary importance.

★

the E in P. McCRIPE

Here is a picture showing a procedure that we believe is the best means of routing the long hose from the bailout bottle. It keeps the hose out of the pilot's way, makes for easy hook-up and when original oxygen connections are made, it reminds the pilot of that last letter in his P. McCripe checklist.

We have been using this procedure in our squadron for more than a year and have found no disadvantages or unsatisfactory conditions.

Bailout bottle hose is routed to keep it out of pilot's way and to allow easy hook-up.

We recommend it for Air Force-wide SOP.

Lt. Niles A. Carter
54th FIS, Ellsworth AFB.

This is the way one outfit solved the long oxygen hose problem. Anyone else have any suggestions?

★

Welcome Applause

I want to take this opportunity to express my personal gratitude for the fine job you are doing with the *Flying Safety Magazine*. I find it to be a top aviation publication.

The "Cross Feed", "Rex Says", "Well Done" and "Keep Current" all put across valuable lessons with a punch and yet with a good-natured humor that helps to make the lesson well received.

I like the recurring articles which highlight seasonal problems. They are timely and fresh each year even though treating the same general subjects.

Your special articles on interesting new equipment or important new procedures expand the service rendered by the "Keep Current" series. The recent article by Tony Levier about the hundred series aircraft and the current article on the Zero Reader are fine examples in this line.

Heartiest congratulations on a great publication that is giving outstanding service to the USAF.

Colonel Vincent M. Miles
HQ, USAF

Thank you, sir. We only hope we can continue to live up to your fine words.

★

Snow Removal

Hazards presented by the residual by-products of normal snow removal (snowbanks, ice) result in many accidents every year. With this in mind, it is suggested that an alternative method be considered. If conditions are favorable, the operation of a team of vehicles over the snow-covered runway will induce rapid melting and dispersal of all traces of snow.

The primary decision to utilize the foregoing method may be arrived at by running a vehicle over the runway and inspecting the tracks for melting. This phenomena has no doubt been observed by all persons who have traveled on snow-covered highways.

In the event observed melting action warrants, about 20 vehicles should be marshalled. The drivers should be carefully briefed to exercise driving caution and in particular, to maintain not less than 100 yards clearance between vehicles. The operation consists of traveling up and down the runway in order to spread the melting action by splashing the slush and water over the remaining snow. It has been noted that vehicular speeds of about 30 mph are satisfactory. Depending upon the ground temperature, free air temperature and/or action by unrestricted sunlight, it is possible to substantially diminish or completely eliminate residual snow in this manner.

The foregoing method was successfully utilized to remove a 12-inch covering of snow at Mountain Home AFB, Idaho, with the aid of sunlight but with the free-air temperature below freezing. The runway was completely dry after less than three hours of operation. It also was used successfully at the same base with less snow cover on several other occasions, which invariably resulted in complete elimination of all snow traces on the paved surfaces. Recently it was used at Molesworth, England, with melting action present, temperature at 32°F, and the sky overcast heavily. (The decision to clear snow in this manner was prompted by a forecast temperature of 36°F, which did not occur.) The four-inch covering was diminished in about three hours of operations to a point where the residual snowbanks, following normal plowing operations were less than a foot high on the average. Five vehicles were kept in action during the period.

1st Lt. A. Wisniewski
Hq 582d Air Supply Gp
USAFE

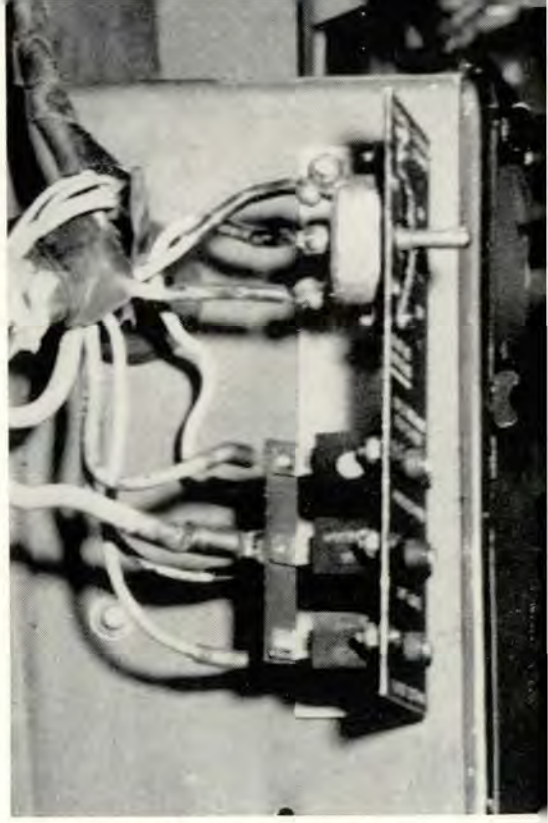
They tell us it works, too! So get out the rolling stock and make like a snow plow.

★

Uncovered Switch Panel

A hazard to flying has come to our attention and I believe it's worth passing on.

A crew member who had been riding in the nose compartment of a B-25 picked up his parachute to slide it through the tunnel to the pilot's compartment, when the ripcord handle came in contact with the rear portion of the bombardier's windshield wiper switch. The ball was completely burned off the ripcord cable which would prevent the "D" ring from performing its intended function of opening the chute. The cable was also burned in another place.



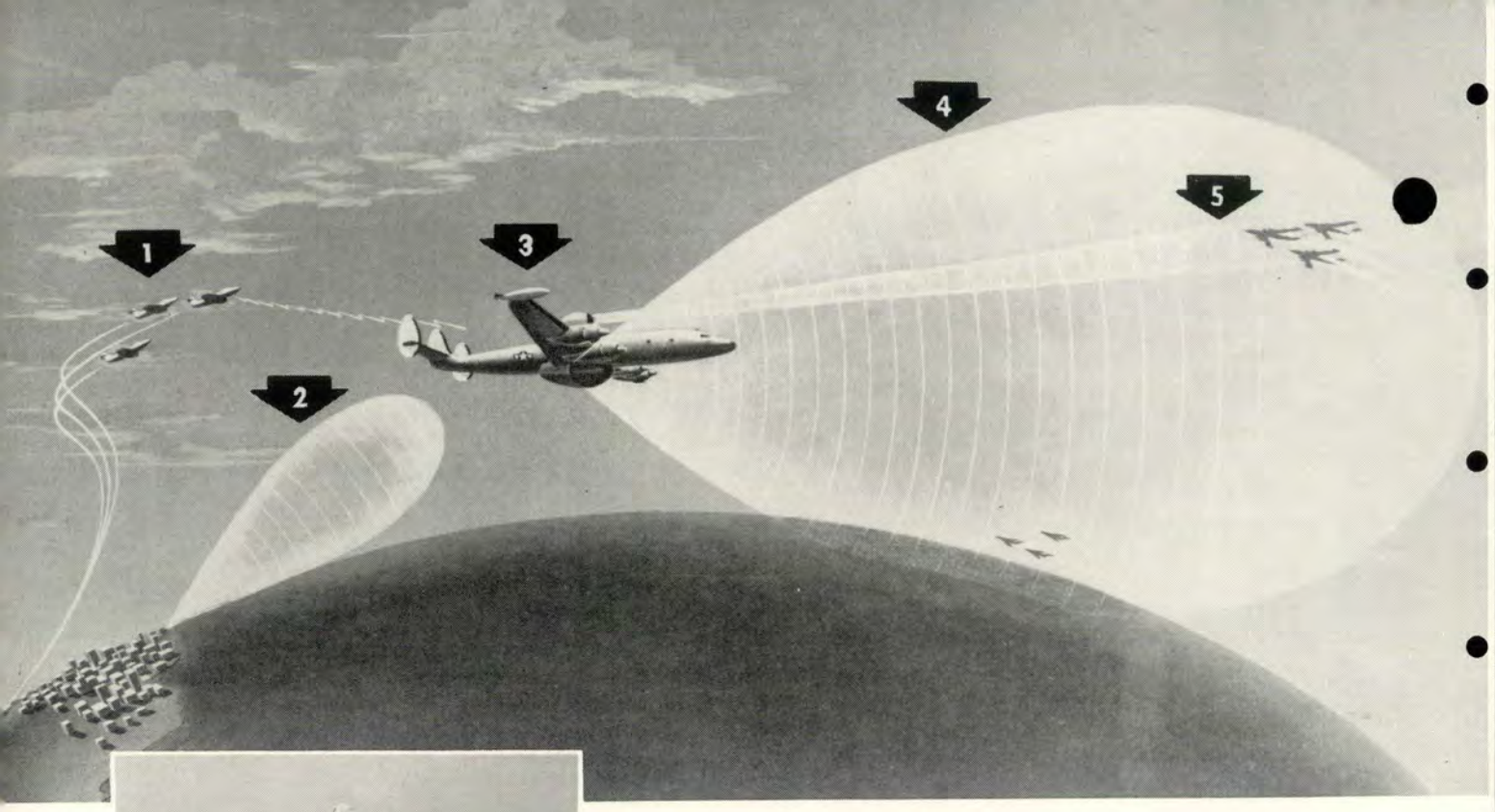
Above, "hot" wires in this uncovered switch panel burned the ripcord cable of the chute, below, and "D" ring slipped completely free.

Here are two photographs: One of the damaged chute and one of the uncovered switch panel. The picture of the switch panel was taken from the tunnel looking forward.

A cover has been placed over the switch panel to protect it against inadvertent contact with the "hot" wires.

Capt. Billie J. Wetzel
FSO, 2851st AB Wg, Kelly AFB.

Lucky none of the troops had to use this little dude! We have to admit this is the first time we ever heard of this kind of parachute casualty.



The black radome on the Super Snooper's belly holds a revolving antenna, while the fin-like protuberance houses additional radar.

EC-121 flying radar stations are patrolling our shores on a 24-hour basis. Extra fuel in the tiptanks gives added range and endurance.

the SKY is

CHRISTMAS EVE. A big night for most everyone. To some it means last minute shopping and home to trim the tree; to others it means warmth and light and conviviality; to still others it means church and peace and meditation. But for a relative few, it means increased vigilance, lonely hours, hard work and a bleak night.

These men are in this country's Armed Forces. Their job is to see that this Christmas Eve doesn't differ from those of former years; that it remains a happy prelude to the holiday season.

Many of those maintaining the long vigil are in the Air Force; fighter pilots standing alert, bomber and cargo crews on assigned missions, mechanics and radar technicians keeping the equipment going, large numbers of other back-up men working to keep things functioning smoothly. Finally, there will be several crews of airmen droning around endlessly in strange-looking, humpbacked, pot-bellied aircraft. Theirs is a unique mission—they're the Paul Reveres of the atomic age, riding a metal steed which has electronic eyes, and, if the moment arrives, it's up to them to give the first warning of danger.

Who are these men and exactly what do they do? A look at their Christmas Eve mission, which is a typical operation, might prove to be interesting.

It's about midnight, and the crew has been airborne for 13 hours. The dark, tunnel-like interior of the aircraft is jammed with equipment which emits a weird glow. Anyone familiar with a GCI station would probably recognize the set-up at once. The hunched figures bent over the glowing screens are scope men, and this is nothing more or less than an airborne radar station.

The men on this Christmas Eve mission are flying in an EC-121 out of McClellan AFB and are part of the 552d Airborne Early Warning and Control Wing of the 8th Air Division (Defense).

Most Air Force people have become

Artist's concept of the all-weather EC-121 in action shows (1) defending fighters answering early warning call of aircraft; (2) ground radar, limited by horizon, operating to pick up planes that might penetrate outer net; (3) the flying radar station at an altitude which permits looking over the horizon; (4) huge search area covered by radar installed under plane's belly, (5) height-finder radar operating from the tall, narrow dome mounted on the top of the fuselage.

Crew training continues to play an important part in the wing's program. Tactics and SOPs are being developed through experiments.

Their Beat!

familiar with the Super Connie that is vaguely reminiscent of a large, pregnant duck. Also, they usually know that the big bird is some kind of a flying radar station, performing patrol duties somewhere over the ocean. Fundamentally, this concept is correct, but it has some rather interesting ramifications. Anytime you take a relatively new airplane, blend in an all-weather operation and mix it all into a new defense concept, you come up with some rather unusual problems.

But to get back to the typical mission. This crew will fly for 15 hours over a pre-designated course at an altitude of 10,000 feet, about 150 miles from shore. The radar operators share a responsibility with ground radar stations of detecting aircraft penetrating our coastline.

Those familiar with the commercial version of a Connie wouldn't recognize the inside of this bird. From the aft door all the way forward to the pilot's compartment, the fuselage is crammed with radar scopes, radios, bunks, ovens, sinks, tables and even a few upholstered, fat cat airline seats. There is plenty of walk-about room for the crew, but still, the overall effect is that the plane is bursting at the seams. It takes but one glance to see that the interior of this aircraft is filled in each nook and cranny with equipment.

"... dark, tunnel-like interior of plane is jammed with equipment which emits a weird glow."

The three assigned pilots alternate flying the plane on a designated track between two established points. The navigator feeds them headings to crank in, allowing for drift, so that the plane doesn't deviate from the assigned course. The engineers and radiomen both have a long haul. Their respective equipment must be monitored closely during the entire flight. The senior director, in charge of the "radar room," and his radar operators alternate at the search scopes at least once an hour; longer periods of concentrated staring reduce a man's efficiency at a rapid rate.

The senior director is responsible for transmitting the air surveillance information rapidly and accurately to the Direction Center on the ground. The radar scopes visually present the

Headings must be plotted constantly, allowing for drift, to keep the plane on course.

AOC missions mean a long haul for radio men. Radios must be monitored at all times.

air situation in such a way that the senior director can evaluate it for control and reporting purposes.

At least six radar operators are required to man an Airborne Operations Center. Two off-centered PPI scopes are used for detection, tracking and direct telling of information to the Direction Center. A third PPI scope is monitored by an air surveillance supervisor who acts as system coordinator, while the other three men fill in on the height finder, plotter and recorder positions.

The scope operators call in blips or paints which appear on their screens to the supervisor who assigns them a number. After the new paint has been established definitely, its direction, time of discovery, location and estimated number of aircraft are called in to the Center. A typical call might read, "New track, Nectar three three, at one eight five, range eighty, southwest, time five four."

An interesting facet of an AOC is that each aircraft carries two technicians who perform on-the-spot maintenance on the radar equipment. Although hampered by a lack of proper test equipment, which is being developed for the Air Force by manufacturers following AEW&C specifications, these men manage to maintain a high in-commission rate. And it goes without saying that they perform their jobs usually under adverse conditions at best.

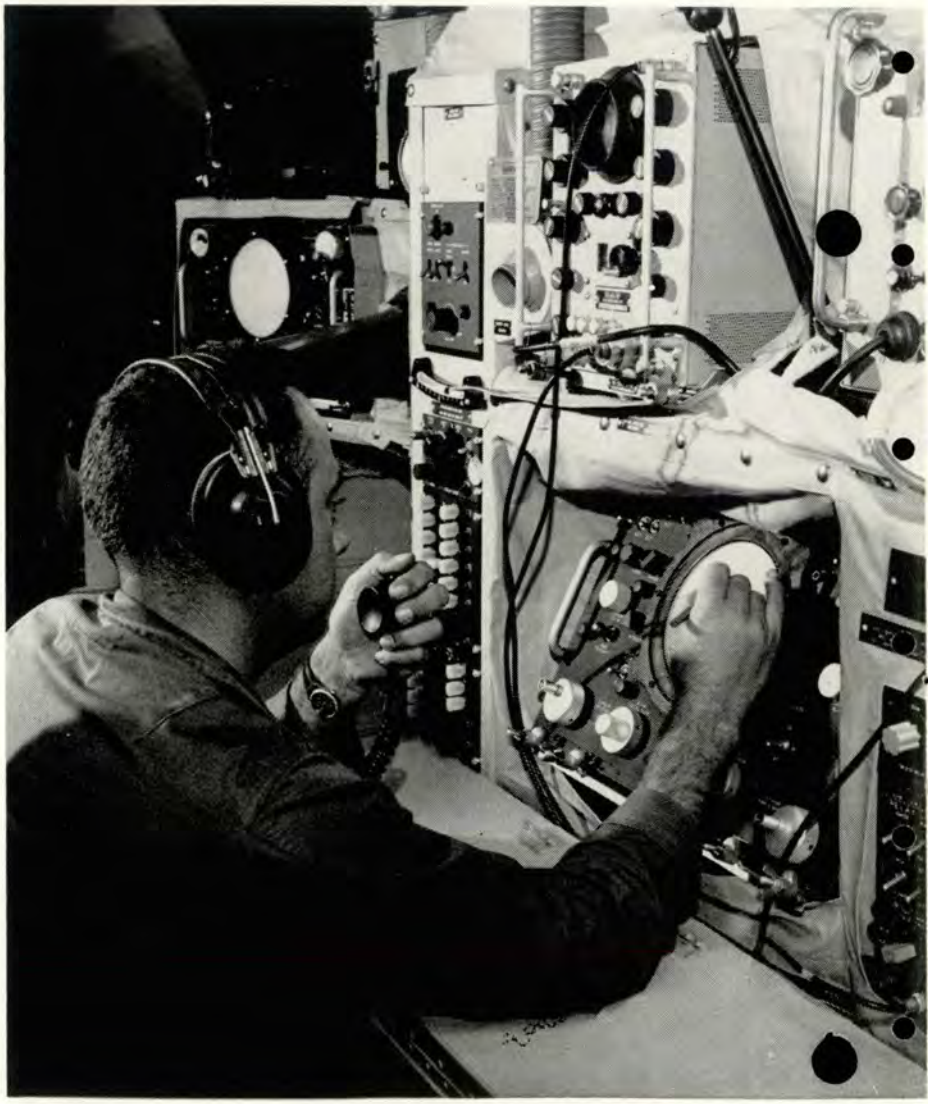
After running through this Christmas Eve mission, it might be well to take a look at the unit responsible for it, and to learn something of the duties, over-all Air Force mission and how it is accomplished.

The 552d AEW&C Wing is at present partly operational and partly in a training status. Many of the wing procedures are undergoing constant revision and rewriting as the unit learns through experience. The wing is composed of five squadrons; two flying operational missions, one each for training, maintenance and electronics.

The concept of Airborne Operational Control, with its increased early warning capabilities, is new and the equipment and techniques are still in the development stage. Consequently, the all-weather AEW&C units have had to come up with some fancy-Dan flying safety techniques and SOPs.

Great emphasis is placed on the requirements for check-out as either an IP, pilot or copilot. To become an IP, a pilot must have 3500 hours total time and 500 hours of four-engine time, or 2500 hours total and 1000 hours of four-engine time, plus 100 hours of EC-121 time. To check out as a first pilot requires 2000 hours total time and 200 hours of four-engine time or 1500 hours total and 400 hours of four-engine time, of which 100 must be in an EC-121, plus 100 hours of night and 100 hours of instrument time. Other requirements include passing a tough instrument course which emphasizes various let-down and low approach techniques,

Sitting at the master radar scope, senior director coordinates search work of radar observers.



written exams, a checkout on the flight engineer's panel and ground school on the aircraft. Copilot requirements include a minimum of 500 hours total time, 18 hours flying in an EC-121 with an IP, written exams, check-out on the engineer's panel and ground school training.

All crewmembers must fly with the stand-board crew at least once each six months, and many of the present operational procedures and techniques have evolved from these rides. Emergency procedures and instrument work, particularly VOR and ILS, are stressed.

The emphasis on weather is fully justified. This is an all-weather outfit that sees plenty of it, especially in winter. As a result, all pilots in the wing attend a special winter weather course each year just about the time

A new radar observer receives intensive OJT before manning a scope on AOC missions.

". . . scope operators call in blips or paints to supervisor who assigns them a number."

". . . crewmembers must go through the practice ditching course and demonstrate that they are able to use their flotation gear."

that football season comes in. Most of the AOC flying is done at 10,000 feet, as this has been found to be the best altitude for both communications and radar coverage. In the area where they operate, this means that the aircraft will pick up plenty of ice all winter; in fact, it is not unusual for a plane to come home looking like a flying iceberg.

Part of this is due to the mission, believe it or not. To get maximum radar coverage by utilizing fully the giant sweep antenna carried in the plane's belly, the EC-121 must be flown at a 4.5 to 6-degree nose-high angle of attack when on station. Consequently, ice tends to form rapidly in areas where present de-icing equipment cannot break it off. Last winter, one pilot picked up so much ice on the underside of his aircraft's wings and fuselage that it stalled out. A gradual descent had to be made to 3000 feet, where the pilot was able to hold altitude until the ice melted.

Another problem, or rather a trio of closely related problems, in the flying safety field involve crew fatigue, heat and vibration. Various length missions are still being flown to establish the best combination of crew efficiency and maximum utilization of the equipment on station. The number of relief people needed for each mission also still is unsettled. At present three pilots, two navigators, two engineers and two radio operators are carried, plus three directors and six radar operators, two radar technicians and two passive detection men.

After the electronic equipment has been in operation for a while, the cabin temperature starts to move skyward; high cabin temperatures are standard for most long flights. This, too, contributes materially to crew fatigue. The aircraft's cooling system just can't handle all the heat generated at present, but new equipment now being developed will alleviate this situation. Vibration, the third contributor to over-all fatigue has been lessened to some degree in the newer model planes and it is hoped that the manufacturer will be able to reduce it further on new planes.

To combat crew fatigue, crewmen who come off duty are required to rest. No reading, card playing or bull sessions are allowed. These men hit the sack, which is far more comfortable than a lot of GI types and can be curtained off to enable even the lightest sleepers a chance to conk out. Hot coffee is always available and a complete hot meal is served at regular dining hours, thanks to specially prepared dinners which can be heated in the airborne ovens.

While on AOC, the EC-121 has direct communications with the 8th Air Division Operations Center and the maintenance section. This system has paid dividends several times. The Ops Center keeps a close check on the weather and can select an alternate and give it to the AC while the plane

Meals are precooked on the ground then heated during the flight in the airborne oven.

Chow is good aboard the big birds. Crew is served a complete, hot meal during mission.

Plenty of hot coffee and comfortable lounge help the crew to relax during long missions.

is still on station. In the case of mechanical difficulty, the maintenance section can be read in and is able to give advice to effect a fix.

Another angle, which the 552d believes will contribute to flying safety, is that of crew integrity. At present, only the aircraft commanders and two flight engineers fly as a constant crew, but the eventual goal, as soon as the wing progresses out of the training stage, is to have the entire crew, including the radar operators, form a complete team.

Comprehensive briefings, both preflight and post-flight, play an important part in the safety program. Mission briefings are given by the aircraft commander, navigator, senior director and the engineer. Emphasis is placed on ditching positions and evacuation of the aircraft. All crewmembers must go through the practice ditching course and show that they are capable of using flotation equipment correctly.

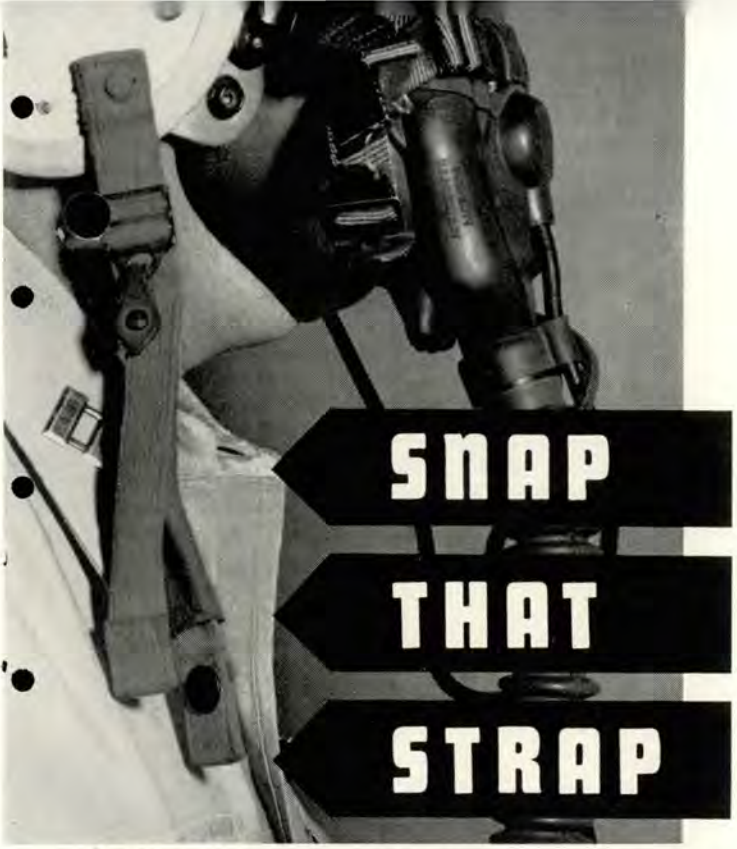
Col. R. W. Davania, 552d Wing Commander, in discussing the wing's present status stated, "Although we are now operating on a seven-day week, 24 hours a day, we consider ourselves to be in more or less of a training status. Our training is aimed at finding out the best ways for these planes to operate. In fact, our EC-121 tactics and procedures have been, and will continue to be developed through our training program. This is a new concept and we have no past experience from which we can get assistance. Since we have been in operation we have learned a lot, but through experimentation and experience we are improving daily, and we intend to keep on doing so."

Col. Davania believes the future possibilities of this operation are practically unlimited. "We can act as an airborne radar aid in bad weather and assist aircraft in for a landing in case a ground station goes out. In the future we expect to be used as navigational aids for long range fighters on either tactical or ferrying missions. We can visualize the day when we can provide a strong, puncture-proof net at any possible enemy's back door instead of off our own shores. We want to be able to provide warning of a possible strik early enough to allow ADC to concentrate defense forces and for SAC to launch retaliatory action shortly after enemy bombers leave their own shores."

The big birds more than proved their control capability during the USAF Rocketry Meet at Yuma this year. To demonstrate how accurately fighters can be vectored to a target from an airborne radar station, firing runs were made on the same type targets used during competition. At no time were the fighters more than a one-degree angle-off on a firing pass, although an angle-off of 10 degrees is allowable.

No difficulty was experienced in picking up either the target or the fighter aircraft on the scopes. Communications were above average and the fighters were vectored-in on a series of highly successful passes.

While it's true that the 552d Wing and its fellow unit, the 551st Wing on the East Coast, are still in the process of learning their tough grueling job, you can bet that if the whistle blows, they will be functioning ef ficiently as one of our first lines defense. ●



THERE ARE A LOT of hardheads wearing hard hats in the Air Force today—most of them incorrectly. They hook and plug, but they don't strap. And that little strap is the difference. It's been a lifesaver on innumerable crash landings and ejections; yet daily this chin strap dangles loosely in its slot. Generally speaking, pilots abhor statistics. But take a reading on these. They're sort of interesting and have to do with the improper wearing of the P-1A or P-3 protective helmet.

- Head injuries were the primary cause of death in 12 per cent of all fatal aircraft accidents.
- Injury to the area of the head which is covered normally by the protective helmet accounted for 21 per cent of all primary major (non-fatal) injuries sustained.

Today's pilot is surrounded by checklists. The more he climbs into his aircraft, the more it becomes second nature to zip through these checks. However, what act do you think he does first when he gets into the cockpit?

A recent intensive survey revealed that a pilot fastens his seat belt and shoulder harness first. If this seat belt routine could include a second strapping—fastening the chin strap of his helmet—then the number of injuries caused by loss of the helmet would be lessened.

In most flying schools today, an embryonic jockey is fitted with a protective helmet. He has three straps to secure—his seat belt, shoulder harness and chin strap. He forms the habit early. The big job is to get ye olde types to initiate this SOP, pronto.

Gripes such as "Uncomfortable," "Itches," "I forget to snap it," "It chokes me," or "I've heard that it will break your neck in some cases," are all familiar tidbits in bull sessions. Every pilot has his own pet expression about this piece of leather. Yet the straps are adjustable and can be worn without unnecessary discomfort and there is no record of a pilot ever suffering a broken neck due to a helmet chin strap. The big trouble seems to be in getting it to fit the folds of the chin when a pilot grows older.

To bring everybody up to date, the type P-1 flying helmet became the P-1A after modification. Later, the visor mechanism assembly was introduced. Hence, the type P-1A helmet became the type P-3 helmet.

Now that we are squared away on the nomenclature let's get fundamental and pick up the loose ends; namely, that loose chin strap.

To don or remove the type P-3 flying helmet, make sure that the visor is in the up position, then place the thumbs around the lower portion of each earphone mounting pad and spread the sides outward a sufficient distance to clear the ears. The visor assembly can be raised by using the finger tips as a wedge and pulling forward. Moving the visor mechanism forward unlocks the assembly and allows the springs to raise it automatically. To lower the visor, pull down the yoke and allow it to lock in place.

After the helmet is properly positioned on the head, attach the chin strap to the snap fastener located on the helmet tab. Adjust the chin strap for proper fit by applying tension to the webbing strap threaded through the adjustable buckle located on the right helmet tab.

Here are some do's and don'ts that you should follow if you want to get the most from your headgear.

Some don'ts:

- Don't carry your helmet by the communications cord.
- Don't put your helmet down on the visor lens.
- Don't spread your helmet excessively when donning.
- Don't wear a sloppy fitting helmet.

The next time you stroll across the ramp, count the number of jet jockeys who are violating the number one *don't*, above. Or, take a look in the ready room and see how many visor lens are scratched from lying face down on a table or shelf.

Some do's:

- Fasten the chin strap.
- Carry your helmet like a basket or under your arm.
- Install the canvas cover over the lens of your visor when your helmet is not being used.
- Hang your helmet by the chin strap or set it upright.
- Thread the communications cord behind the shell lacing to prevent excessive flexing.
- Soiled parts of the helmet can be cleaned with a rag dampened with a cleaning fluid obtained from supply.

A comparison of accidents in which a helmet was worn (fighters and jet bombers) with accidents in which a helmet was not provided, revealed that about 15 per cent major and 7 per cent fatal head injuries occurred in the former, while 24 per cent major and 14 per cent fatal head injuries resulted in the latter.

Crewmembers in fighter and bomber type aircraft had the lowest percentage of serious head injuries, whereas crewmembers in trainer, miscellaneous and cargo aircraft had the highest percentage of such injuries.

Of 347 persons who used the ejection seat to escape from aircraft during 1949-53, 204 lost their helmets and oxygen masks. This is about 60 per cent.

Undoubtedly, airspeed at the time of ejection was a primary cause of loss of helmets. However, many ejection questionnaires and accident board proceedings show that crewmembers did not fasten the chin straps, thus contributing to the losses.

Make it part of your procedure to fasten the safety belt, shoulder harness and that chin strap. If you're forgetful, work out an agreement with your crew chief to give you a "chin strap fastened" signal. ●

Runway Warpaint

Runways are getting all duded up. Be sure you know what all the marks mean.

BEFORE BLASTING off, have any of you hot rocks noticed those signs that are set some 75 feet off to the side of the runway? The ones with the numbers on them? Or during the pitch-out, have you taken time to decipher those markings that are hieroglyphically displayed on the runway? Well, for the uninformed, those signs carry information as to the amount of runway remaining and can mean the difference between cavortin' or abortin'. Also, the runway is sporting that load of paint for a variety of good reasons.

Specifically, the runway distance markers are located on the left side of the runway at 1000-foot intervals. They were designed to check aircraft performance during takeoff rolls. They also prove useful during landing, in determining the distance to the spot where the concrete ceases and the boon-docks commence.

In accordance with AFR 60-16, all jet heads are required to compute the takeoff roll and enter same on the Form 175. The reason for this requirement is that there were too many aborted takeoffs resulting in (a) busted aircraft and (b) shook pilots.

The signs, consecutively numbered and uniformly spaced, implement this requirement. Now, with these easily read signs, there is no need to get panicky and abort or try to pull the beast into the air before she is ready to fly. Remember one thing, however. You compute the takeoff roll *required*, but the markers read the distance *remaining*. Thus, if the roll figures out at 4000 feet and the runway is 7000 feet long, wait until the 3000-foot marker comes around, not the 4000-foot one.

In case anybody is interested, the signs are four by four feet square and are fastened to wood stanchions. They are made of plywood, pressed wood or fabric and are painted with white reflective paint on a black background. In case you can't resist the urge to run into one of these signs, don't worry about it. They are constructed so that they will collapse without inflicting damage to the aircraft, it says here.

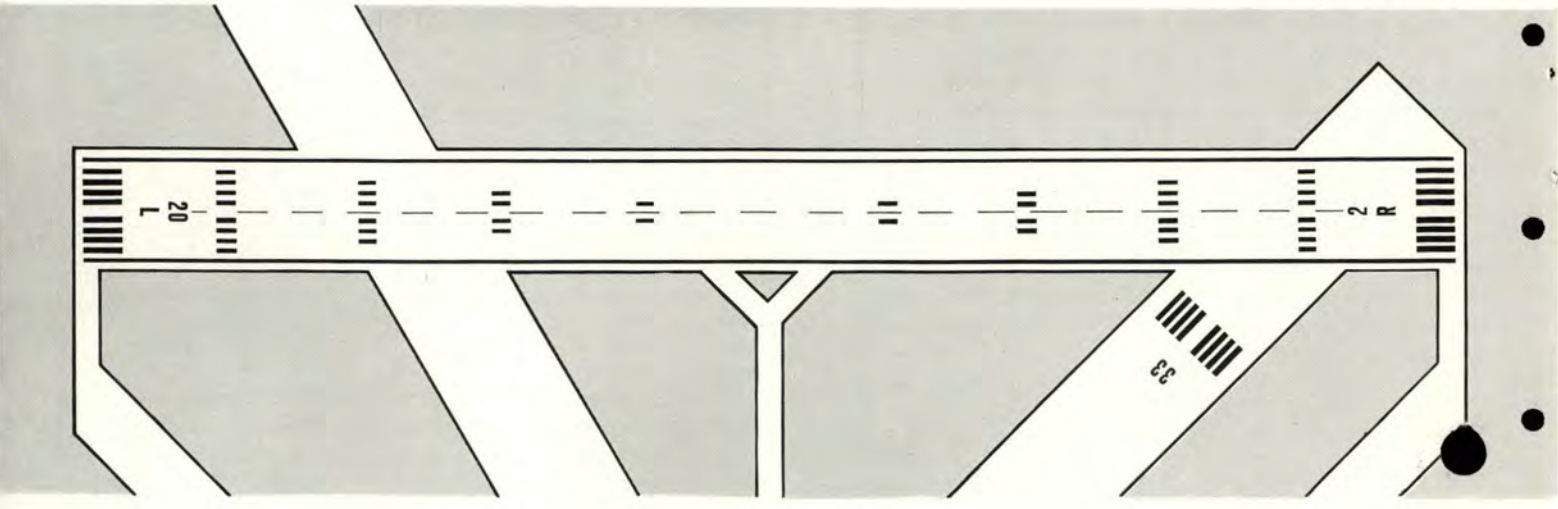
Runway Paint Job

Now, let's talk a little about the runway paint job. Just to prove how confused some fly types are regarding runway markings, listen to this semi-intelligent conversation.

1st pilot: "Say, Joe, what is the length of this runway?"

2nd pilot: "8000 feet, stupid. Didn't you see the eight stripes on the end of the runway when we landed? I sure did."

All-Weather Runway



A.O.: "Gentlemen, the runway is 10,000 feet long."

It turns out that since March 1954, the marking of runways with stripes to denote length has been discarded. Those eight stripes designate the threshold section of the strip. Regardless of the runway length, those 12-foot wide, 150-foot long, white stripes will appear at each end of the runway and will always be eight in number. For those of you who are intellectually minded, they carry the nomenclature of threshold markings.

Cheery daubs of yellow paint known as touchdown markings are used in conjunction with the aforementioned distance signs. For runways of 8500 feet or less these consist of three-foot wide stripes placed across the runway some 2000 feet from either end. For runways longer than 8500 feet these markings will be 3000 feet from the end. The idea is that these little daubs rough out the first third of the runway. In addition, there is a runway mid-point marker to aid in telling you how far you are down the runway. It is a cross-patch affair consisting of two bands, two feet wide, extending across the runway.

Three Types of Runways

The Air Force classifies runways into three types: Basic, instrument and all-weather. Basic runways are those runways that you see on small auxiliary fields or on small civilian airports. They are practically nonexistent in the Air Force.

The other two runways are illustrated at the bottom of the page. Instrument runways are the most common to all Air Force bases, worldwide. All-weather runways are the large-size editions that are scattered across the length and breadth of the land and can be differentiated by the smaller painted stripes within the first 2000 feet of the runway.

The large letters designating runways, in case there are parallels, are common knowledge. For instance, *L* for left runway, *C* for center runway and *R* for right runway.

There is no longer a visible means from the air of determining runway length. You'll have to consult the Radio Facility Chart or call the tower for this information.

Incidentally, the Civil Aeronautics Administration goes along with these markings 100 per cent, if you are landing at a civil airport. However, it should be remembered that some Air Force bases may not have their runways marked yet.

Blast Pad Damage

During the runup for takeoff, there is a little patch of paving surface just back of the threshold on most runways that is being abused. This blast pad, as it is officially labeled, is getting some mighty rough treatment by some heads who like to brag about touching down on the end of the runway and who are actually hitting the blast pad area.

This pad is a two-inch thick section made of highway paving material, 250 feet in length and is the exact width of the runway. It is marked with yellow chevrons and is strictly a non-traffic area. When you land on this pad you stand a good chance of breaking up the threshold lights and damaging your tires, not to mention busting up the concrete.

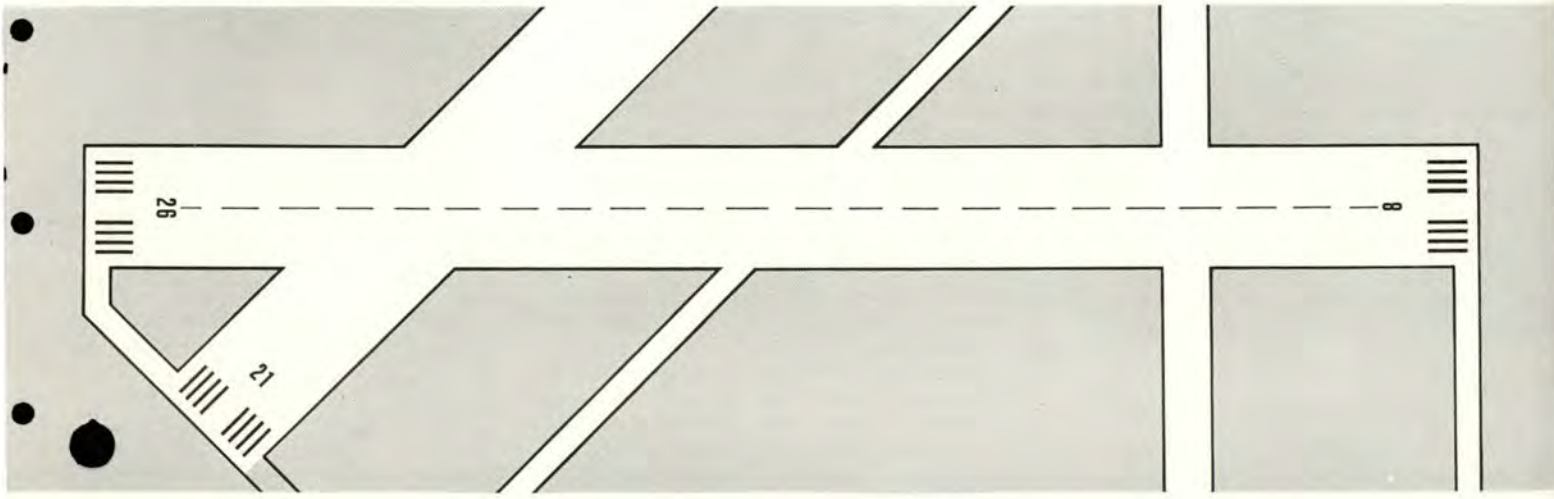
Runway distance markers are designed to check aircraft performance during takeoff.

In some parts of the world small spruce trees or light wooden tripods are placed along the sides of the runway for wintertime markings. Be prepared for your venture into this type of landing by getting thoroughly briefed before you leap off.

When the snow falls watch for any unique, but useful, runway markings.

A good thing to remember is that these little stepping stones to the ozone can help you a lot . . . if you know how to use them. ●

Instrument Runway



From Spangdahlem To Kisarazu

A REAL BLOW for flying safety was dealt last month and the repercussions will echo around the world. Not only will these repercussions travel far and wide, but they should make a sizable dent in the future aircraft accident rate; and that certainly is close to the hearts of all of us who operate aircraft.

Now, no one wants to become a statistic. Nor does anybody want to get hit in the pocketbook, and you can stay in the black on both counts if you can keep from becoming involved in an aircraft mishap.

What's being done to help you? Many, many things. And they all involve the man commonly referred to as the flying safety officer. Perhaps, on your base he is known as the director of safety, or the assistant to the vice commander for safety; but regardless of his title, he is interested in aircraft accident prevention and in balancing the accident budget.

In this case, we are referring to the recent World-Wide Flying Safety Officers' Conference held at Randolph Air Force Base, Texas. As Brig. General Joseph D. Caldara, Director of Flight Safety Research, stated during the meeting, "When you get 130 flying safety officers together to discuss aircraft accident problems, you are bound to come up with some constructive solutions." And he was right. Flying safety officers from all parts of the globe met to discuss some of the known aircraft accident problems and, to put it mildly, they came up with some solid solutions.

The discussions were centered around problems in the fields of training, facilities, maintenance and operations. They were based on known accident histories and were of concern to all Air Force bases, in varying degrees.

FSOs from near and far welcomed by General Caldara as safety conference got underway.

Specialists from the Directorate of Flight Safety Research talked briefly on these specific problems. However, after these presentations, the ball was carried almost exclusively by the conferees. They were the ones who came up with the recommendations and proposed solutions.

Let's take an example of a normal conference day. This way, you can see how the results of this conference can hardly miss reaping rich rewards in the prevention of costly and unnecessary aircraft accidents.

Each morning, the representatives of D/FSR discussed the problems in two of the categories and showed from actual reports how they caused or contributed to aircraft mishaps. Figures and data compiled by Flight Safety Research were presented to vividly emphasize the fact that accidents caused by these problems can and must be eliminated.

Here, for example, are the three problems that were presented in the operations category:

- How can we, as supervisory personnel, assure ourselves that pilots know the aircraft they are assigned to fly?
- How can we lower the frequency of undershoot landings?
- How can we lessen the hazards created by present-day limitations in weather reporting and forecasting equipment and procedures?

Following the morning presentations, the FSOs split up into 10-man seminar teams with a leader and a

Left, small, informal seminars were formed to discuss selected problems. Above, FSOs from as far off as FEAF also were present. Below, even informal chatter contributed to the exchange of accident prevention ideas.

D/FSR advisor to insure discussion progress.

Here are just a few concrete examples of recommendations on the operations problem — knowing your aircraft:

- The conferees felt that pilots selected for combat crew training should receive transition in aircraft possessed by their parent organizations. If unassigned, they should be placed on duty with an organization that has identical aircraft.
- Any pilot checking out in a new aircraft should receive adequate formal classroom lecture training, to include mobile training unit instruction, if available, followed by a closed-book examination and spot questions on the aircraft.
- Emphasize annual proficiency checks to include blindfold checks on emergency procedures and a thorough examination of a pilot's ability to cope with emergency situations.
- Strong emphasis was placed on a requirement for simulators, plus TF or TB models, prior to receiving tactical aircraft.
- Limit the number of aircraft in which a pilot can be proficient and place more emphasis on simplification and standardization of cockpits and systems.
- Man mobile control units with a qualified pilot to monitor and record all approaches, patterns and landings.
- The idea was advanced to establish a base transition and instrument training program under the best qualified instructors with the requirement for completion of the check twice each year. All pilots should attend the school and pass the check, with no exceptions.

After the seminars were completed, each leader took the rostrum and presented the solutions or recommendations arrived at by his group.

Following these presentations, each solution or recommendation was discussed in an open forum. It is not difficult to imagine the many ideas, and possible solutions to these problems, that were exchanged.

A typical exchange of ideas occurred when an FSO from one base raised a question in the facilities category concerning, "What to do with that dangerous lip at the end of the runway?"

His question was answered by a cohort who arose and stated, "By close daily inspections, I find you can keep on top of the runway overrun or lip problem. I discovered a three-inch lip on the runway at my base one day, last month. I could have made a report, submitted a work order and so on, then waited with my fingers crossed until necessary repairs took place. However, I discussed the problem with the air installations officer and he put a couple of loads of dirt out there, compacted them and that removed the hazard; at least until permanent repairs could be made."

That is really an example of doing something *now* to cut down on the accident potential around the airfield. And the philosophy of *doing-it-now* is a major factor in this accident prevention business.

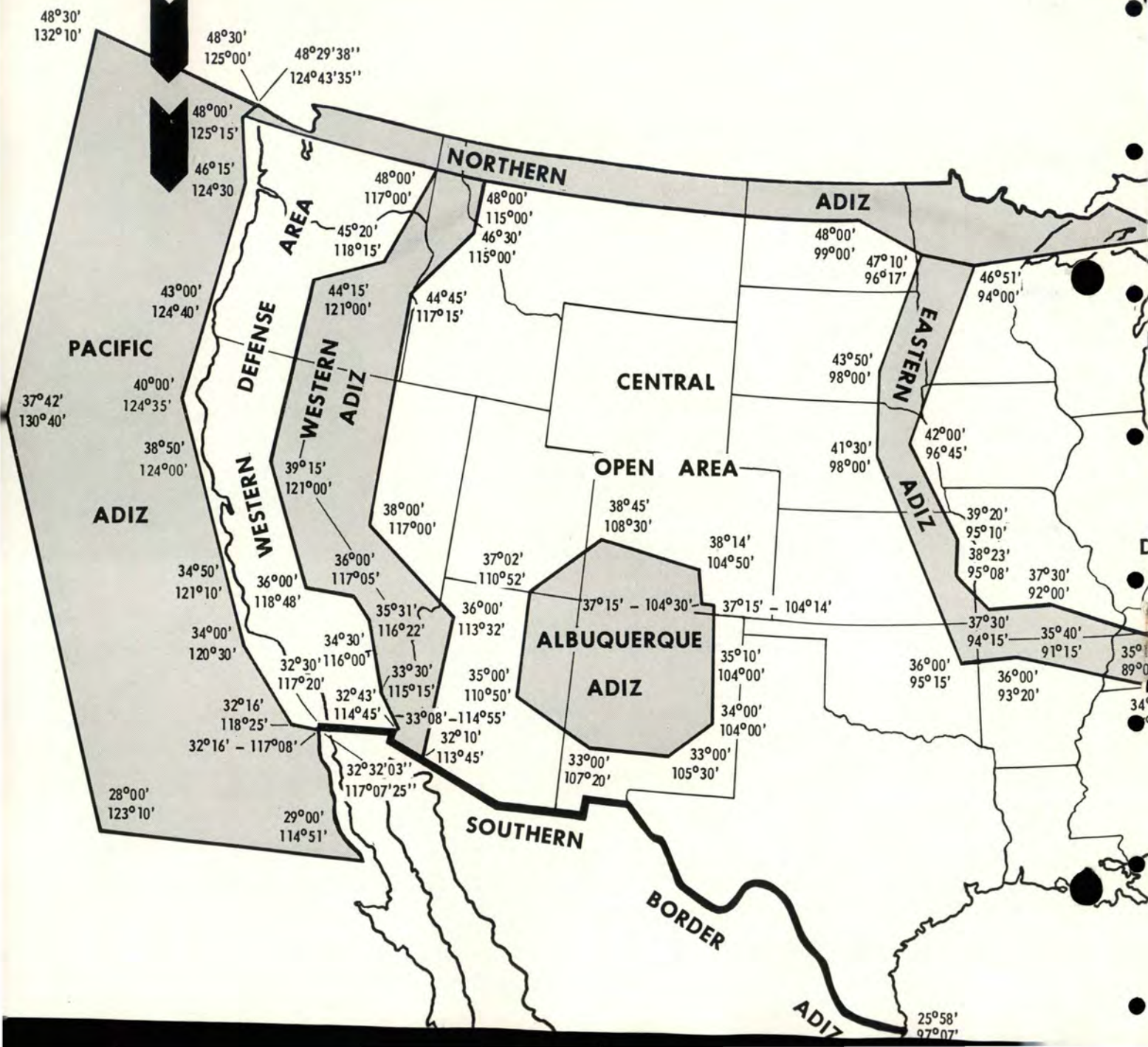
The many solutions and recommendations arrived at during the conference are far too numerous to mention here; however, you can bet your next month's flying pay that your FSO has them all on paper.

As a direct result of this conference, many an FSO who felt that he had hit a stone wall in a particular problem at his base suddenly found out that other bases had a similar problem. Furthermore, he discovered how other bases tackled it; some successfully, some unsuccessfully. Perhaps he learned that there is a proved solution; proved, in that it did the job for another FSO. As a result, he will return home with both proved and possible solutions to problems that in the past had been deterrents to his accident prevention program.

The response to the conference was overwhelming. Everybody worked hard and was richly rewarded in receiving additional information and ideas that will help to do the job of "*conserving our national resources through the prevention of costly and unnecessary aircraft accidents.*" That's like money in the bank. ●

New Defense Areas and ADIZs

When it comes to identification zones, it pays to know the whys and wherefores . . . and this map and information should help you learn.



AS YOU CAN see from the accompanying map, there have been some drastic changes in the overall Air Defense Identification Zones structure.

The new ADIZs and the newly designated Defense Areas and Open Areas become effective 1 December, and while the changes have appeared in the Radio Facility Charts, FLYING SAFETY believes that a complete rundown on all the new areas and the procedures to be used in them will be valuable to Air Force crewmembers.

One change that is more important to civilian pilots than to the military is that aircraft flying at a TAS of 110 knots or less, at an altitude of 1500 feet or less, are exempt from AFR 60-22 except in times of emergency as outlined in paragraph 12.

Some of the changes in areas and procedures are quite different from what you are used to, so read them carefully and know what you read, if you wish to avoid any possibility of that old bugaboo, a violation.

First of all, you will file either a DVFR or an IFR flight plan, prior to takeoff, in writing or by telephone, with an appropriate aeronautical facility when your proposed flight:

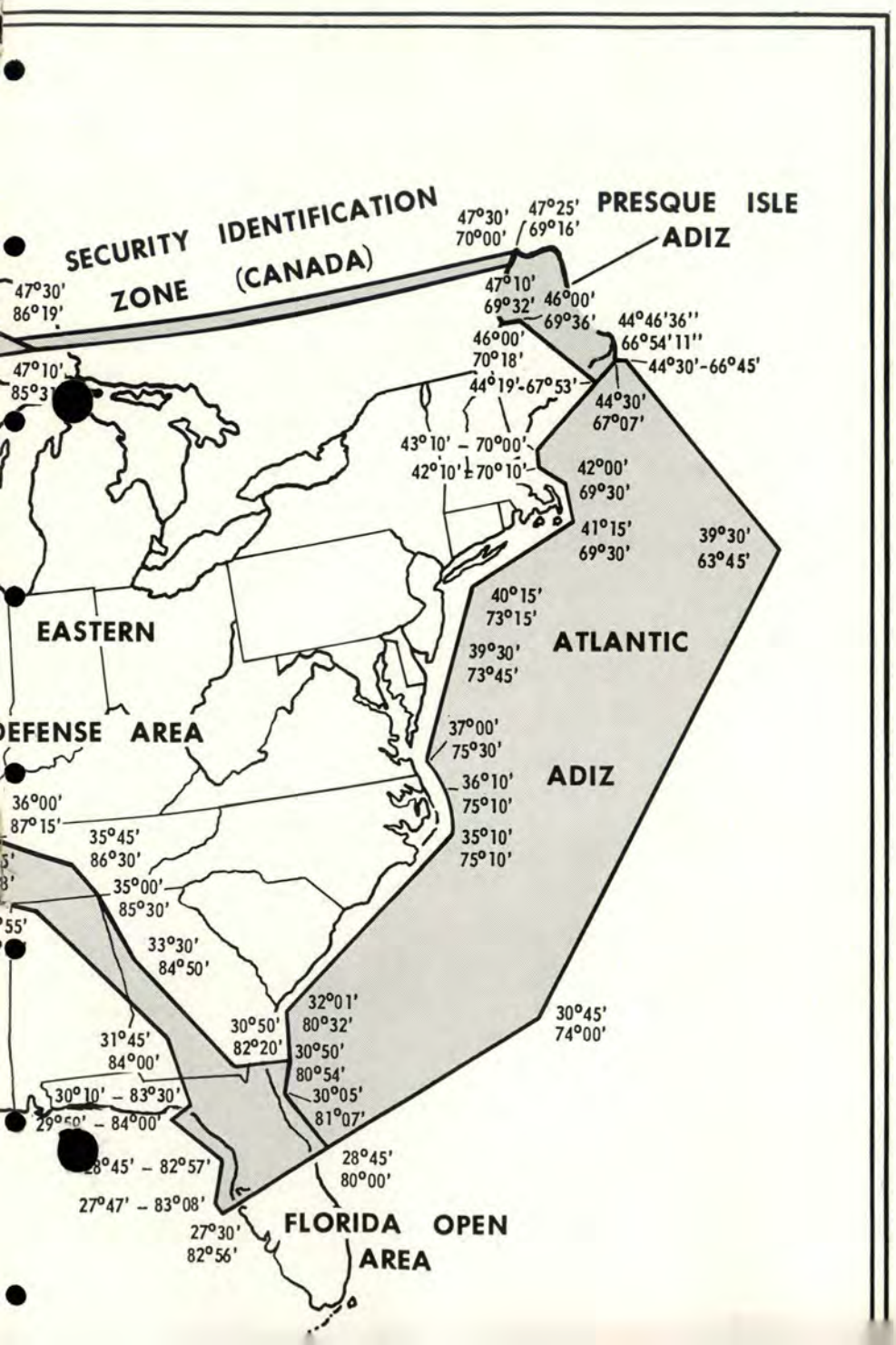
- Originates outside of the United States and penetrates a domestic ADIZ toward the United States. The domestic ADIZs include the Northern and Southern Border ADIZs and the Presque Isle ADIZ.
- Penetrates or operates within a Coastal ADIZ. The Pacific and Atlantic ADIZs make up the areas defined as Coastal ADIZs. In this case, DVFR is required on penetrations both inbound and outbound.
- Penetrates the Eastern or Western ADIZs toward a Defense Area, or when operating within either ADIZ.

Now here is one of the big differences in procedure. You can start a flight from a Defense Area and land in the adjacent ADIZ without filing DVFR, or you can take off from either a Defense Area or the Eastern or Western ADIZ and fly toward and land in the Central or Florida Open Area without filing DVFR, providing you do not penetrate the Albuquerque ADIZ or the Northern ADIZ. For example, you could take off from Norton AFB and land at either Nellis AFB or Hill AFB without filing DVFR. However, in filing from either Nellis or Hill to Norton, you would have to file DVFR as you would be penetrating a Defense Area.

- Penetrates or operates within the Albuquerque ADIZ. Once again, there are some different procedures involved in operating in this ADIZ. Any flight originating within the Albuquerque ADIZ, which maintains a track away from the Los Alamos prohibited area need not file DVFR while within this area. This includes westbound and southbound flights, and eastbound flights on civil airways.
- Another change in DVFR flight rules states that deviation from the flight plan is authorized if prior notification has been given an appropriate aeronautical facility. Thus, a flight plan may be changed to include a penetration if you notify the proper radio facility and receive approval.

The procedures involving the Security Identification Zone, which lies between the Northern and Presque Isle ADIZs, are under the jurisdiction of the Canadian government.

One more important point to know is that flight inside a Defense Area exclusively can be made VFR. For example, you can file VFR from McChord AFB to Hamilton AFB, as you would be operating within the Defense Area. ●



Chatter from the Fish Bowl

I HAD TO pause at the entrance of the "greenhouse." Laboring up five winding flights of stairs can be quite a task. I took a gander at the parked aircraft on the ramp, at the jet taxiing out for takeoff and at the C-124 which vibrated the tower as it climbed out of the pattern. It seemed to me that the sounds of everyday air base life were a bit muted at this vantage point above the hangar.

Primarily, I had made the long climb up to the control tower because I was curious. Sure, I've been in control towers before, fairly often too, but strictly in a passive sense. Then, also, I've noticed that tower operators are among the most maligned of all the troops involved in the flying business. It's easy to give them a verbal or mental pasting every time you have to wait to take off or land or for taxi instructions. So I decided to find out just what these lads have to do and what skills they need to interpret the various regulations and to operate the control panels, gages, switches, mikes, recorders, light guns and scopes which fill their fish bowl to bursting. So here I was at the tower door.

As I opened the door to the temperature-controlled room, a veritable maelstrom of noise hit me. My first thought was, "How can anyone make sense out of all this unintelligible chatter?

After introducing myself to the two airmen who were working this trick, I followed a procedure that I would recommend to any other tower guests. Back off to a neutral corner, open your eyes and ears and digest what is going on around you before venturing into the why's and wherefore's.

My eyes stopped first on the room-wide console in the front of the tower. UHF, VHF, HF and LF loudspeakers were banked along the topside. Flip switches for each frequency were positioned beneath their respective speakers, with a slatted, latticed filing panel next to the loudspeakers.

My wind having returned, and noticing that a rare moment of silence had stilled the room, I directed my question and answer barrage at the trick chief who had accompanied me to the tower. "Just so I'll have an idea of what all this equipment is used for, how about giving me a rundown?"

Equipment Rundown

The sergeant took a deep breath and plunged in, pointing out each item, "The console has a field lighting panel, meteorological equipment, flight progress board, crash phone panel, transmission recorder equipment and an aircraft movement and flight data recording board. There are 62 transmitting and receiving switches in the tower, and tower men must be able to operate all of them in total darkness.

"Here is the 18-channel UHF set, the VHF equipment and a compass locator monitor. We have also a low frequency transmitter and receiver to control the crash trucks and some of the field utility vehicles."

Next, he indicated the multi-channel intercom boxes which connect the

tower to base ops, transient alert, weather, crash stations, the flying safety office, engineering and AACS. Also, there is a direct telephone line to approach control facilities, ARTC and Flight Service. He moved from there to the telautograph, which in layman's language is the gadget that transmits weather observations from the weather station; then to the battery of telephones and last to the UHF/DF equipment. This last gimmick intrigued me no end and I decided to ask some questions about it a little later.

When I asked the sergeant how high a wind velocity was necessary to make the tower rock, I got a grin in return. "About 100 mph, although towers are stressed for 105 mph. It would take a real blow to knock this baby over."

There were two men on duty in the tower. A staff sergeant, handling the mike at position *A* and an A/2C at position *B*, who was copying an IFR clearance at the moment.

Tower Duties

Although the equipment is not labeled *A* or *B* station, an explanation here might clear up some pertinent points. Tower duties fall into two broad categories. The controller operating the traffic microphone and all of its multitudinous facets is the *A* station man. While he is busy keeping pilots happy, in a very loose sense of the word, the operator manning station *B* copies clearances and handles secondary communications. But I'll get into more detail on each man's specific duties later on.

I noticed the three light-guns hanging from the ceiling within easy reach of the controller and asked the staff sergeant if they are used as much now as they were in the early 1940's.

"No, sir. Most of our air traffic is handled by the high frequency channels that you see here. Mostly we use them to give clearance to vehicular traffic across the runways. Only in case of radio failure are they used for landing."

I noticed that as he ended his conversation with me, he cocked an ear toward one UHF frequency loudspeaker. I tried to make sense out of the air clutter which had commenced again, but found it difficult to understand. A tower operator from a base 20 miles away kept cutting in on the frequency and garbling the pilot's request. But somehow the operator understood the message and gave out taxi instructions, as requested.

During a momentary break in the chatter, I asked how he could ferret out what transmissions were directed at him and how he could tell from which loudspeaker the sound was coming?

"Experience, sir. It just takes a lot of listening. For instance, take a jet pilot at altitude requesting landing instructions. You can hear him breathing and there is a high, nasal pitch to the voice. On the ground the sound is entirely different. I guess after you have heard so many of them, you just listen for the tower prefix and automatically each voice registers different. It just takes time."

During the next few minutes I learned that some tower operators can remember the identification numbers of from seven to nine aircraft at a time and from the pilots' position reports, can place them in the pattern in their proper order.

Practice DF Steer

Just as I was about to launch into another series of questions, a request for a practice UHF/DF steer came in. I moved up to the console and watched the operation.

Asking for the pilot to give him a five-second transmission, the tower operator flipped up a switch and the DF set went to work. The needle swung to a heading of 30 degrees and froze there.

"This is a vital piece of equipment. Pilots seldom get lost. By their own admission, however, they can become disoriented or misplaced. When this inability to precisely locate themselves crops up, they usually give us a call." I might add that this statement was uttered with a wide grin on a young face. After a series of steers the pilot called in and stated that he was over the field.

Incidentally, the type of DF facility in a tower, if it has such equipment,

Pay your control tower a visit. It will help you understand some of the operator's problems.

can be found in the Radio Facility Chart. The tower operator gives you a no-wind heading to the transmitter of the set, which is located along the perimeter of the field.

Next, I noticed a slim needle making scribblings on a continuous roll of paper, which was mounted above the DF set. Thinking it was some part of the equipment, I asked about it.

"No, sir, that is a graph roll connected with the base weather station. It keeps us informed as to the current weather, and is especially useful during periods of marginal ceilings and visibilities. Instead of having to call them, when they might be very busy, one of the station men can relay us the weather by this means. This way we know the latest reported conditions almost to the minute."

As he was talking, my eyes were roving about and settled upon another type of roller disc. I asked about it and without hesitating he indicated for me to watch. He depressed the mike switch and immediately the roller disc started rotating and a metallic finger drew a line across its surface. Yep, it was a recorder. A record of every transmission made is permanently inscribed on this disc. Its uses are obvious in cases of accidents, investigations or research studies on extraneous transmissions.

Between copying clearances, giving landing instructions and working aircraft on the DF equipment, tower operators are often very busy; so keep chatter to a minimum.

Emergency Procedure File

I had been told that there was a set of Tech Orders on all aircraft in the tower. Just as I was about to broach the subject, the tower operator turned to me from his stand and pointed to the typewriter table. There, in an orderly file binder, were some red-bordered sheets.

"We are required by AFR 5-52 to have a current file of emergency procedures on all aircraft in the USAF inventory. For example, if a pilot declares that he can't get his gear down and has tried all of the emergency procedures he knows, he calls us. We have all the T.Os. here and we get on the horn and call base operations. In the majority of cases something is figured out which will get the aircraft on the ground safely."

I walked over to the typewriter desk as he turned back to his loudspeakers and glanced at a printed form that was in the machine. It was a required report that has to be made by the tower operator as to the status of his equipment at the start of his duty. It reminded me of a preflight inspection that a pilot has to make before starting up.

About this time the air traffic control officer of the AACS Detachment puffed into the cab and, after letting him get his breath, I hit him with a few questions on the background training needed to become a tower operator.

My first question was, "What type of schooling does a controller have to pass successfully to qualify him to handle all of the traffic that comes into this base?"

Area Check for Operators

"Well, sir, before I answer this one specifically, I'd like to bring up a point. Before any tower operator is permitted to take over the *A* station position, he must pass what we call an area check, both written and oral.

"To get an idea of what this means, here is the Radio Facility Chart page for this area. Draw a circle with a 50-mile radius around this base. A tower operator must know all radio stations, their frequencies, bearings from the station to the field and their power output. He must be familiar with all landing fields in this area; runway directions, lengths and strengths.

"He must know the data on all radio facilities, such as tower frequencies, UHF/DF, VHF/DF, radio beacons and homers. He not only has to know their frequencies but also their physical locations. He must be aware of all obstructions and hazards in the area. He must have at his fingertips a knowledge of all Air Route Traffic Control procedures and Flight

Service Center policies, plus all pertinent local flying regulations and any peculiar traffic pattern problems.

"A tower operator must know, and I mean know, all of this almost instantaneously or at least know where to find it. He is given regular six-month checks to keep him alert to any changes."

As an afterthought, the captain added, "Most operators can fly any type approach on a Link, so they know most of a pilot's problems on low approaches."

He continued, "To get back to your question on tower operator training. All schooling is held at Keesler Air Force Base, Mississippi. Subjects include weather, radio aids to navigation, air traffic rules, airways traffic control and simulated operations. Airmen are eligible also to attend on-the-job training with CAA for a period of six months, if they have attained a 5 level AFSC and have enough retainability in the Air Force."

A and B Station Duties

I countered with another question. "After school then, as I understand it, the apprentice reports for duty and you head him toward the *B* station. Can you give me some details on what he does?"

We walked over to a functional chart which was leaning against a wall. "If you don't mind a bit of AACS terminology, here's what a *B* position operator has to do. We call it the idiot perch. He holds down the flight data position. He receives and transmits aircraft position reports, flight plans and departure and arrival reports concerning aircraft within the control area over the interphone and telephone. He transmits flight plans, flight progress reports and arrival and departure reports of aircraft to operations and other interested agencies. He must have about 10 hands; see all, know all and help his poor bewildered trick chief over the hurdles. This operator determines the efficiency of tower operations. Briefly, he handles most of the telephone work with base ops, Flight Service and with ARTC.

"As for the *A* station man, he is the local controller. He transmits traffic clearance information, weather reports and forecasts to pilots and landing and takeoff instructions. He supervises subordinate air traffic control technicians and conducts on-the-job training on his shift."

I had another question for the air traffic control officer. "How much leeway does a tower operator have in handling the peculiar traffic problems of his base?"

Controlling the Airspace

It seems as though the base commander rules the airspace above his base. Through his base operations officer he lays down the law. AACS feels that if they satisfy the base ops officer, they are satisfying the pilots flying from his field. AACS must abide by the provisions of the Air Force-Navy-Civil (ANC) approved procedures for control of air traffic, plus Air Force regulation 60-16, CAA regulation 60 and AACS regulations covering radar.

Pilots may not like crosswind landings and sometimes complain bitterly to AACS, but the base operations officer, in the interest of flight safety, is the one who can change the operating conditions. Of course, a pilot can refuse to land on the designated runway if he so desires, but the tower operator is merely following the instructions of the base ops officer in designating the landing runway.

Fast Closure Rates

The days are gone when a pilot could depend on the old rule of "see and be seen." The closure rates of modern jet aircraft have far outstripped the capabilities of human vision and reaction time. Further expansion of the Air Force and the introduction of more high performance aircraft can be expected to increase the possibility of mid-air collisions.

Along with mid-air collisions, there

A current file of emergency procedures on Air Force aircraft is maintained in tower.

are other tower problems. Congested frequencies have created a lot of headaches. UHF now is more congested than VHF, and tied in with this channel congestion is the problem of extraneous transmissions.

Keep Mike Chatter Down

Special requests, like having the tower call Old Mack at 1987 to tell him that you'll be in at 1030 and for Airman Glotz to have the car at base ops are examples. If the tower is busy, it won't be done and if the tower is not busy at the time, it may or may not be done. So, as they say in the old school, "Knock it off."

So the age-old advice about proper use of the microphone is again repeated. Have a listen before you start yakking. The air chatter in a tower sounds like a Donald Duck record being played at double speed. Also, the policy that some pilots follow about letting the tower know how many passengers they have aboard, how much freight and so forth doesn't have a thing to do with the control

Information necessary for local traffic control is transmitted by A position operator.

of traffic. (Editor's note—see article on page 28.)

Another big problem that tower operators face these days is that traffic is a lot faster than it used to be and there is more of it. They state that it's a breeze to handle all-jet traffic at a base, but mix a couple of transports or trainers into the middle of a zipping bunch of jets and the gray hairs start popping out.

As I took one last glimpse down at the ramp and watched a B-47 crew board their bird, I threw the sergeant one last question. "What are your biggest gripes about pilots in general? After all, they heap a lot of abuse on you."

Tower Problems

This question definitely shook him up. His face lit up and mentally he rubbed his hands together. This was a chance of a lifetime. A chance for the boys in the tower to express their views, as usually the pilots have their say and that's that.

"Well, to begin with, Uncle Sam's pilots are just about the sharpest bunch of flyboys in existence. We know it. I just wish they didn't think the poor dopes in the tower are there to match wits with them. Often I visualize the fiendish glee in a pilot's eye as he cuts somebody else out of the pattern and makes it on time to the club. I would like to see his face if he realized just how close he came to getting his wings clipped permanently by the T-Bird that had one pilot under the hood and the other cleaning his fingernails. Sometimes it's really hard to keep the language clean on the mike, and besides it doesn't help our ulcers.

"If a pilot chooses to disregard the tower instructions, that's his red wagon. No doubt he has good reasons—his mike was stuck—the tower was blocked out—or something. The only catch to this is that the pilot he almost clobbered, who was following instructions, has some very nasty comments for us people in the bird cage, and who can blame him? Sometimes that traffic pattern gets to be like a Memorial Day race, with the tower just sort of an unofficial referee. It all boils down to a case of everyone abiding by the rules."

Light guns are used now only to clear planes when radio failure occurs and to control the movement of vehicular traffic on the airport.

Cooperation Helps

He continued, seriously, "Most pilots are cooperative, courteous and really try to help as much as possible. It's just that one per cent that makes life hard sometimes. For instance, the pilots and airport personnel who disregard instructions. Or the fact that too many pilots know too little about ATC problems. Then, there are the impatient pilots. Particularly those who have been waiting quite a while for an ATC clearance. They seem to feel we are trying deliberately to stall them. This not only upsets everybody, but blocks out other transmissions, slowing things up still more. Then there is the occasional lack of coordination from other units. We don't have time to argue. Things generally are happening thick and fast. Sometimes people seem more interested in putting across their point or gripe than in cooperating and getting the job done.

"And remember, it takes two years from the time he enlists to get an operator to where he can handle VFR traffic safely and to where he really will be worth something to the Air Force. It takes from five to seven years for a controller to become familiar with all types of weather and all types of operations. It requires a great deal of study and experience and, above all, it requires accepting a lot of responsibility.

"Pilots can make it tough for us by not spacing themselves properly in a VFR traffic pattern, yet they expect the tower to provide proper separation. Some do not remain on tower frequency while taxiing and can't receive additional instructions, if necessary. Other pilots do not maintain radio discipline. They call each other all of the time and yak endlessly.

"... a pilot seldom gets lost, but sometimes a DF steer comes in handy if he's misplaced."

Know Your Procedures

"Many pilots are not familiar with reporting procedures required during letdowns, instrument approaches and for on-the-top clearances as established in ANC manuals.

"Well, sir, that about does it. Like any other facility with as many phases and problems as the tower, there are a good many gripes and there always will be."

I picked up my hat. "Thanks, sergeant. I'll see what we can whip up. I think you mentioned also that if instrument schools in the Air Force, from base level up, would put in some curriculum hours on the ANC manual, it would help a pilot to more thoroughly understand the tower operator's viewpoint. Isn't that right?"

"That's right, sir," he said. "Glad to have had the chance to show you the tower. We get sort of lonely up here. We'd welcome visits from a lot more pilots. And I think they would find it interesting, too."

I closed the door. The chirp of a flock of birds on the hangar roof sounded like the arrival of spring, which was still six months away. I picked my way down the steep stairway. It was easier going down than climbing up. But it had been worth it. I figure I'll lay off that mike button a little more now than before.

WELL ★ DONE ★

CAPT. MYERS was in base ops at Adana, Turkey, when a teletype message was received requesting that a communications check be made on a long overdue C-47. Upon learning that radio facilities were inoperative after regular duty hours at that station, he went out to his C-119 and contacted the C-47 on VHF. Visibility at the time was less than 100 feet due to heavy fog and Capt. Myers notified the pilot that it would be impossible to land. He requested a fuel check, and was informed that there were only 65 gallons of fuel remaining and that the pilot did not believe he could make another field as the entire Turkish coast was socked in.

Myers then advised that an attempt be made to reach another field approximately 125 miles away that would be open, and gave the proper heading to the base. He requested frequent progress reports so that a position could be established in the event ditching in the water became necessary.

At this time, the plane was reaching VHF limits and Myers had his radio man make contact on liaison. The pilot stated that they were still about 55 miles from the destination and had 30 gallons of fuel left. Immediately after this contact he declared an emergency. After calling MAYDAY, the C-47 pilot was able to contact his destination on VHF and was directed to a nearby field where he landed with only 10 gallons of fuel.

Capt. Myers' quick action and excellent judgment, coupled with his knowledge of existing facilities and conditions, enabled him to direct operations that saved the aircraft and prevented injury or possible loss of life to the crew. Well Done!

CAPTAIN
Roy E. R. Myers

60th T. C. Gp, Rhein Main, Germany

KNOWLEDGE • TRAINING

REX SAYS

I WAS NO. 3 in a flight of four F-80s and after taxiing into position and performing my runup, I released the brakes and started down the runway. After getting lined up I checked my instruments and found that I had only 96 per cent, even with full throttle. I then checked the instrument panel and noted that the emergency fuel system light was on.

I aborted at about 135 mph and was able to stop on the runway, although my brakes caught fire. I shut down and the fire crew came out and extinguished the smoldering brakes. I thought I had done rather well until it was called to my attention that the emergency fuel switch was in the UP or manual position. I had placed it there after my runup and then hurried through my cockpit check so rapidly that I didn't notice its position. Another case of being in too great a hurry and not checking everything properly.

I might add that since this near accident occurred I have been more than adequately briefed by my supervisors and you can be sure I won't get caught short again.

I LEARNED about fuel management the hard way on an air-to-ground gunnery mission when I flamed out on downwind leg.

I had started my last pass in an F-84E when the main fuel low-level warning light came on. My forward tank read full so I switched to forward auxiliary as I turned on downwind, and concentrated on the gunnery pattern.

Just before turning base the engine flamed out. I initiated airstart procedures with the alert switch ON, fuel selector on ALL TANKS and got a successful start. The main tank filled after I pushed the forward tank circuit breaker switch in. After that there was no sweat and I was able to return to the base and make a normal landing. Needless to say, now I keep checking fuel management procedures and my circuit breakers regularly.

REX SAYS—*These lads came out smelling like a rose. You guys have got to learn those procedures and then put them into practice. Both pilots were lucky; you might not be.*

★ ★ ★

WE ARE ALL in this flying game together and a recent remark which I overheard on tower frequency the other day indicated that we're still looking out for the other airplane driver.

When taxiing out or holding for takeoff, I make it a point to have my crew follow the practice of inspecting the airplane ahead of them for any irregular items that may have escaped the notice of the other crew. Only once has an oversight been noted. This was a case of a landing gear down-lock still in place as evidenced by the red cloth streamer.

This time, it so happened that I was on the final approach when I overheard somebody inform the pilot of an airplane awaiting takeoff that an inspection door was hanging loose.

It was gratifying to me that this person-to-person touch, brief as it was, exemplified a common interest—safety in flight.

REX SAYS—*Our brother's keeper. Reporting an incident like this might have prevented an accident. I'm for a guy who keeps a wary eye out for another guy.*

★ ★ ★

AFTER TAKEOFF from a small civilian field, the pilot of a Gooney Bird noticed that the airspeed indicator wasn't doing business. He and the crew chief discussed the situation and decided that the pitot cover had not been removed. The latter suggested that mayhap a bit of heat in the pitot head might burn the cover off. It didn't.

The driver then decided to attempt a landing. This didn't meet with any great amount of success as the old Gooney got to bouncing and, as the pilot zigged when the plane

". . . I aborted at about 135 mph and was able to stop on the runway, but the brakes caught fire."

zagged, the porpoising action got pretty severe. Finally the throttles were opened and at this point the pilot decided to continue on with the flight as planned.

After about two hours of flying through heavy turbulence the plane was brought in for an emergency landing. This time the touchdown was successful. The crew had had enough.

Getting back to the beginning of this little fiasco, the pilot had instructed the crew chief not to remove the rudder lock until he was in the cockpit and holding the rudder pedals. The pilot made a quickie-type walk around and leaped aboard. The airman was stationed by the tail. Nobody remembered the pitot cover.

REX SAYS—*This is hardly worth commenting on. This lad must belong to the old school of tire-kickers, though fortunately there aren't many of them around any more.*

★ ★ ★

I DON'T HAVE any claim to fame nor do I want my name on a Form 14. But due to a very helpful passenger, I almost scored on both of these counts.

I'd been manifesting this airman all the way across the States. He was on leave. He got chummy with the crew chief and at times had helped him put the control locks on and such.

So what happened? We landed, all the crew walked into base ops and, without further ado, the passenger proceeded to put on the rudder control lock. A short time later, instead of making with the visual preflight routine, I just climbed in and taxied out to the active runway. I checked the engines, received my clearance, looked to see if all of the passengers were buckled down and took the runway for takeoff.

About 100 yards down the runway I needed some right rudder. What's this? No rudder? Again I kicked. Nothing.

I chopped the throttles, did a dancing act on the brakes with accompanying throttle manipulations, averted a groundloop and came to a stop.

Shamefaced, I knew what had happened. I had failed to go through the perfunctory flight control freedom-of-movement exercise. As for the passenger, the sergeant nibbled, the copilot masticated and I chewed.

"I keep telling Gridley all he has to do is fasten his chin strap."

REX SAYS—*Must have been a real calm day, otherwise maybe a little rudder-brake combination while taxiing might have detected this immobility. As to the passenger—bet he is still eating from the mantel.*

★ ★ ★

I'M IN THE IP business, flying cadets in B-25s, and over the years I've withstood the usual and the unusual when it comes to situations. But I witnessed a near-tragedy recently that chilled the marrow of my bones. I thought I'd pass it along to Rex because it could happen to anybody, anytime, anywhere.

It was a local night flight. Two parallel runways were in use, with planes performing both full stop and touch and go landings. One B-25 was cleared for a blackout, touch and go and had landed, completed his check and had power on, moving down 17L.

Another B-25 had made a full stop landing on 17R and was taxiing up another unlighted runway, preparatory to crossing 17L, and then return to the runup spot.

The tower operator evidently had given the taxiing B-25 permission to cross 17L, so he started out on the runway. Once out on the strip, he saw the oncoming B-25 and immediately applied full power to cross.

The oncoming B-25 at the same time evidently saw the taxiing aircraft. But too late. The pilot of the B-25 on takeoff run chopped the power and applied full right brake and rudder. Instead of a head-on collision, his wing nipped the rudder of the taxiing B-25. Whew!

After seeing this foul-up, I thought of some points that, if observed, would have prevented this mishap:

- Taxi with lights. That's what they're for.
- Use a lighted runway for taxiing. If unlighted, have the tower operator turn the lights on.
- Be sure the tower operator knows your position on the taxiway or runway at all times.
- Keep your head on a swivel.
- Unless the mission requires it, or the weather is sour, use landing

Rex Says

lights for night landings. It helps the guy on the ground to see you.

REX SAYS — *Amen. I'll buy this light and tower talk. Too many of us are content to tool down the final with nary a thought as to what's going on downstairs. Also, it's a must to keep an ear tuned to the tower for any emergency that might arise.*

★ ★ ★

I HAD FILED an IFR flight plan and was getting ready to go out to my T-Bird when the dispatcher asked me if I could take a passenger. He turned out to be an RO, so I figured there should be no sweat on any procedures.

After we got out to the plane I went over oxygen procedures with him and he seemed to be fully briefed. He had his own helmet and mask and after he climbed in I checked to see that he was hooked up. Everything looked okay so I started up and we took off.

Prior to departure, we both had 400 psi of oxygen and it was feeding normally. At 35,000 feet the cabin pressure was indicating 29,000 feet. About 45 minutes later the passenger complained of hypoxia and began to choke. I descended immediately to 20,000 feet, which put the cabin altitude at 15,000 feet. There was approximately 225 psi oxygen as I started descent.

At this altitude, the RO stated that he felt better, but that his extremities were completely numb. I made an emergency landing at an Air Force base and he was taken to the hospital for observation.

A check of his oxygen mask revealed that it fitted him loosely. Perhaps I should have checked it more carefully before takeoff, but it seems to me that a rated man should know enough to have his personal equipment properly fitted and checked regularly.

REX SAYS—*I've got to go along with that. Your passenger definitely was at fault. In fact, he was a walking casualty looking for a bed, and found it. Trouble is, unless you're sure of your man, it still is best to know, by checking, whether a passenger is informed on all procedures.*

★ ★ ★

I WONDER how many other well-meaning, conscientious pilots in the Air Force unintentionally violate a certain VFR flight regulation which might result in a nasty, head-on collision?

I was on a VFR flight plan, heading up a northeast, numbered airway. It was about dusk. I was sitting back, fat and sassy, flying the correct quadrantal altitude.

Lucky for me, my copilot was a perceiving cuss and all of a sudden he overpowered me and we changed course to the right awfully fast. This snapped me out of my lethargy just in time to see a red light zip past the side of our aircraft.

I immediately berated the obvious offender who had just flashed by and was all for trying to get a rundown on him. Why didn't these guys, who churned up the ozone for their livelihood, pay attention to their headings and altitudes?

About this time, Joe Copilot interjected a thought. Are we at the right altitude or was the other fellow flying at the right altitude?

So we flipped open the Supplementary Flight Information book and checked the abbreviated 60-16 flying regulations.

It said, under paragraph 32d, "In control zones and control areas, altitude will be as specified for the direction of flight for airways concerned. Elsewhere, wherever practicable, an aircraft will be flown at an altitude above sea level appropriate to its magnetic heading . . ."

I grinned sheepishly and started a climb. I felt properly chastised and thankful to my copilot for his prompt change in course.

REX SAYS — *One more accident averted. But he brings up a good point. Don't forget that when you fly VFR on airways, maintain that odd or even altitude like the Fac Chart says. Then if you go off airways, use the well-known quadrantal separation rule.*

★ ★ ★

WHILE STROLLING around the line not long ago, I came upon a rather amazing spectacle. And since I had my trusty Brownie slung over one shoulder, I thought I'd better record it for posterity just in case someone might question my veracity when I told the tale.

When I showed the picture to some of the troops, a bright soul suggested that I send it in to old Rex. Please note that this dude not only stashed away his lunch in a nice, dry place but he even brought a book to read. Grimm's fairy tales, no doubt.

A little inquiry turned up the information that the lunch hider "Always put his lunch there, so the other fellows wouldn't steal it." *He did, but he don't anymore.*

REX SAYS—*Probably wanted a hot lunch. It's a seven-day wonder he didn't try to retrieve it just about the time someone started the pipe to burning for a flight.*

This mania for hot food at lunchtime seems to be reaching fantastic proportions.

WELL ★ DONE ★

KNOWLEDGE • TRAINING

1st LIEUTENANT
Norman Schmidt
4927th Test Sq, Kirtland AFB

AFTER COMPLETING a local test mission in an F-84F, 1st Lt. Norman Schmidt entered the landing traffic pattern at Kirtland Air Force Base. He called on the break and placed the gear handle down, however the left main gear would not lock in the full down position. Lt. Schmidt immediately left the traffic pattern and attempted to obtain a safe gear indication.

He employed all of the emergency and normal extension procedures, including rocking the wings and performing accelerated maneuvers. However, the left main gear still would not lock in the down position.

With only 300 pounds of fuel remaining, Lt. Schmidt decided to try to jar the left gear down by bouncing the right wheel on the runway. The aircraft touched down well above stalling speed and after the third bounce the left gear locked down.

There was not sufficient runway left to permit a safe landing, so Lt. Schmidt accomplished a go-around and pulled up into a tight rectangular traffic pattern. As he turned onto the downwind leg the engine flamed out due to fuel exhaustion. He had anticipated this possibility, however, and had maintained adequate airspeed to perform a power-off approach. The landing was uneventful and no damage was incurred to the aircraft.

Lt. Schmidt's accurate appraisal of the emergency, his ability to foresee and plan for complications and his outstanding flying skill are a credit to himself and to the U. S. Air Force. Well Done!

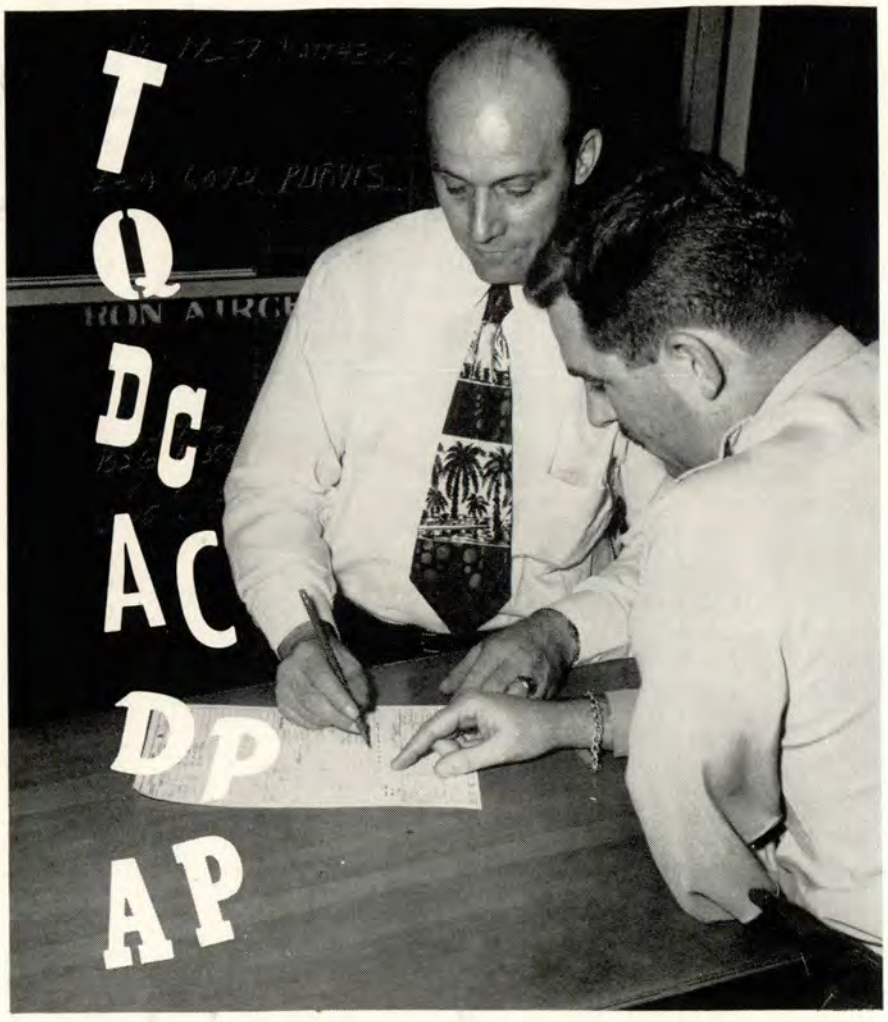
ANNUAL INDEX 1955

This year's index has incorporated an addition that should meet with your approval. You'll find, below, that articles are listed as to aircraft type for quick reference. On the opposite page is the regular index.

As a suggestion, you might tear out the index and paste it on the outside of your loose-leaf binder or cover sheet of your copies of the magazines.

★ ★ ★

Articles on Aircraft



Send a Letter

IF THE LETTER groups on the left side of this page make sense to you, then you fit into a rather select group. Right now, only about 10 per cent of all Air Force pilots know the meaning of these additions to the remarks section of the Form 175, or bother to use them.

After you circle or add one or more of these coded letters, Flight Service transmits them to your destination. There they are transformed into information such as your fuel and transportation requirements, passengers or cargo aboard and so on.

A screening of hundreds of Form 175s disclosed that the remarks on some have bordered from the ridiculous to the sublime. Probably you can remember some dillies you've contributed.

Another factor was revealed from discussions with tower operators worldwide. It seems that practically all pilots, regardless of the type of aircraft flown, put in their bids for fuel and transportation after they receive landing instructions.

The large accumulation of these discrepancies resulted in a simplified letter coding system. It is designed to relay information on passengers or cargo, as well as other data needed to expedite movement at destination.

There is no need to commit these letters to memory for any base ops dispatcher can run down the list in 30 seconds. But have a look at them anyway. Often times a first exposure jolts a pilot into learning.

S—Servicing only.

T—Transportation. (The number of persons requiring transportation will follow the T. Thus T20 indicates that 20 persons will need transportation.)

Q—Quarters. (The number of quarters for officers and airmen will be separated by a slash. Thus, Q4/20 stands for four officers and 20 airmen. If only airmen need quarters, the correct code will be Q/20.)

R—The aircraft will remain overnight at the destination indicated in the flight plan.

DC—Will discharge cargo. (A number immediately following DC will indicate the quantity. The last two zeros will be dropped. For instance, DC40 means 4000 pounds.)

AC—Can accept cargo. (The above paragraph concerning the zeros is applicable.)

AP—Can accept passengers. (Number following AP indicates the number of passengers acceptable.)

DP—Will discharge passengers. (Number following DP indicates number of passengers to be discharged.)

NP—Need parachutes. (Thus, 5NP3 indicates the aircraft can accept five passengers if three of them have parachutes. If no parachutes are needed, no NP is entered.)

TIK—Location identifier indicating the first intended destination on the next leg of the flight.

Automatically, a pilot's reaction to this seemingly complicated code is to shake his head, mutter under his breath, sign his clearance and stroll out to his machine.

In practice, most dispatchers will go through a quick rundown of the letters with pilots and summarize the entire code in less than a minute's time. Simply by circling the appropriate letter, a passenger can get a lift, a load can be prepared or other information can be sent.

A lot of base ops sections have added these letters to the Form 175s. A follow-up with solicited comments from assigned and transient crews reveals that once a pilot understands the purpose behind the coded letters, he is willing to go along with it.

As the signs outside most air bases say, "Give a serviceman a lift." We not go it one better and "give eve body a helping hand—correctly."

PHYSICAL ORIGINAL PAGES

TORN
OR
MISSING