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HEADQUARTERS VIII BOMBER COMMAND
APO 634

19 Dec '43

(J-G-2)
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In reply
refere to:
413.44

SUBJECT: RCN - "Window"

TO : Commanding General, 1st Bombardment Division, APO 634.
2d Bombardment Division, APO 634.
3d Bombardment Division, APO 634.
Info Copy to: Commanding General, VIII Air Force Service Command,
APO 635

1. The following deals with the Radio Countermeasure, "Window", and outlines the principles to be followed in order to use it efficiently.

2. Definitions.

a. "Window" is the general term applied to the Radar Countermeasure activity of "infecting" large areas of the upper atmosphere with quantities of metallized paper strips discharged from heavy bomber formations at a pre-determined rate.

b. The use of "Window" creates spurious images in enemy radar location equipment, reduces the accuracy of radar controlled anti-aircraft guns, and obscures the true size of bomber formations. This letter will deal with the use of "Window" only as a means to reduce the accuracy of anti-aircraft guns. Separate instructions will be issued later on other uses of this Radio Countermeasure.

c. The metallized paper strips are cut to a critical length. Enemy gun laying stations are most effectively deranged by one specific length, coastal watchings stations by another length and so on. The strips are known as CHAFF and there are different types or lengths of CHAFF identified by numbers, such as CHB-2, CHA-3, etc. Initially only one type of CHAFF is to be employed, CHA-3, for use against anti-aircraft guns.

d. CHAFF is loosely packed in cylindrical paper bundles containing 2000 strips. The bundles are called units and are discharged manually through a chute installed in the side of the aircraft. For B-17's the chute will be installed in the radio operator's compartment. For B-24's the chute will be installed near one of the waist guns. The impact of the slip stream "explodes" the unit dissipating the CHAFF. One unit of CHAFF, when properly discharged, produced a response on the enemy radar equipment equivalent to a single heavy bomber.

3. Packaging and storing.

a. Seventy-two units of CHAFF are packed in a carton. Nine cartons of CHAFF, 65C units, are contained in a packing case occupying approximately

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nine cubic feet and weighing 155 pounds. On the average operational mission where CHAFF is used for confusing radar controlled anti-aircraft guns, each aircraft delegated to discharge the CHAFF will carry two, three, or four cartons. (Three cartons weigh 50 pounds.)

b. CHAFF must be shielded at all times from the effect of moisture. It must be stored in a dry place, packing cases must be shielded from rain and in damp weather cartons must be delivered to aircraft in closed vehicles. CHAFF which has absorbed moisture will freeze at high altitude and will fail to dissipate upon launching. This consequently reduces its effectiveness considerably.

4. Principles governing the operational use of "Window".

a. CHAFF, when launched and dissipated, provides little or no protection to the formation of aircraft from which it is discharged. It does protect succeeding formations. Hence, the leading Combat Bomb Wing is invariably designated to discharge CHAFF. In using CHAFF against radar controlled anti-aircraft guns, every aircraft of the lead Combat Bomb Wing should discharge CHAFF. Aircraft in this Wing, if equipped with "Carpet", will derive their protection from that device. When both "Carpet" and "Window" are available to the aircraft of a Combat Bomb Wing, it is desirable that this Combat Bomb Wing always lead the other Combat Bomb Wings of the attacking force across the target.

b. CHAFF falls at the rate of approximately 400 feet per minute. The ideal protection condition is obtained when trailing formations of aircraft approach and pass a cloud of CHAFF at approximately the same altitude as the CHAFF. Hence, the lead formation should maintain an altitude higher by 400 feet for each minute of delay or lag applying to the second formation following in trail. The third formation should fly correspondingly lower and so on. Due to operational requirements these altitude differentials cannot always be attained. Actually there will be considerable protection from the CHAFF when the following Combat Bomb Wings fly at altitudes different by several thousand feet from that of the leading Combat Bomb Wing. Hence, the above tactical procedure, while desirable from the standpoint of obtaining maximum protection, does not necessarily have to be followed.

c. In order to receive benefit from the CHAFF, it is necessary for a trailing Combat Bomb Wing to cross a flak defended area within 20 minutes of the time that the leading Combat Bomb Wing (dropping the CHAFF) crosses the margin of the gun defended area. If some Combat Bomb Wings must cross the target at intervals from the leading Combat Bomb Wing greater than 20 minutes, then an intermediate Combat Bomb Wing should also release CHAFF. Operational experiences may prove the necessity of shortening this time interval.

d. Each aircraft in the 1st Combat Bomb Wing to cross the gun defended area will discharge CHAFF at the rate of 15 units per minute (one unit every four seconds). All aircraft will start the discharge of CHAFF two minutes before the gun defended area is reached and will continue to discharge until the gun defended area is crossed.

Example: Assume the target lies in the center of a gun defended area over which the bombers must fly for 20 miles. At a true ground speed of four miles per minute, it will take five minutes for the

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first Combat Bomb Wing to cross this area. CHAFF should be discharged two minutes before the gun defended area is reached giving a total discharge time of seven minutes. In order for each aircraft to discharge 15 units per minute, a total of 15 x 7 or 105 units must be carried in each bomber. 105 units is 1-1/2 cartons of CHAFF. It is not practical to carry a fraction of a carton. In this example, each aircraft would carry two cartons, discharging all units over the target area.

e. It will be necessary for the navigator in each aircraft to advise the radio operator in B-17's and one of the waist gunners in B-24's when to start the discharge of CHAFF.

f. The Field Order issued by this Headquarters will specify the missions on which CHAFF is to be used and any special instructions. Bombardment Division Field Orders will specify:

- (1) The Combat Bomb Wing to discharge CHAFF.
IP*(min) to IP*(min)
- (2) ~~The geographical location where discharge will begin and terminate.~~
- (3) The number of cartons of CHAFF to be carried by each aircraft.
- (4) The rate of discharge.

5. Installation and Supply.

a. CHAFF is launched or discharged through a metallic chute fitted to the fuselage of the aircraft. Chutes will be fitted under the supervision of VIII Air Force Service Command to all aircraft of the 14th, 45th, and 40th Combat Bomb Wings in the priority named. Beginning in about three weeks, aircraft assigned to other Combat Bomb Wings will be fitted subsequently in accordance with the availability of CHAFF, chutes, and tactical requirements. A supply of chutes will be maintained at each Strategic Air Depot but their distribution will be limited to the requirements of replacement aircraft assigned to those Combat Bomb Wings previously authorized to discharge CHAFF. Fittings of chutes will be made by Group personnel after a representative of VIII Air Force Service Command has designated such personnel as qualified to make the fittings.

b. Initial quantities of CHAFF will be limited and will be distributed to specific Groups only in accordance with orders originating at Headquarters of this Command. When supplies of CHAFF permit, stocks will be carried at each Strategic Air Depot and Groups designated to discharge CHAFF will be authorized to maintain minimum stock levels, under requisition placed directly with the Strategic Air Depot.

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6. Standard report forms covering the operational use of "Window" will be prepared and distributed through channels by this Headquarters for use at interrogation following each mission. Air crews are to be briefed on the information contained in paragraphs 2, 3 and 4 above.

By command of Major General F. L. ANDERSON:

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