

## 16 Sep 45

In the WPBC rotation pool on the north end of Saipan, Willie Greene was still waiting for transportation home. He'd been there 19 days now. Among other activities, he calculated his separation points. He already had 66, and he expected to pick up 15 more from another Air Medal and two battle stars that he had coming. That would give him 81, which was enough to get out. "Oh, boy!!" he thought.

Today the C-46 with the Queen crew left Kanoya, Japan, flew to Iwo Jima, and then on to Saipan, arriving at 2030. It was a relief to be back. They'd left 19 days ago and had had more of an adventure than they'd ever expected. There remained only the task of giving statements to the 882nd Squadron S-2, which they would do over the next few days.

## 17 Sep 45

From the 500th Bomb Group Operations Journal:

"17 Sept. 8 A/C on flight to Guam to pick up supply parachutes.

MAJ HALE: is relieved of duty as Asst S-3 and transferred to 882nd Squadron.

MAJ BRADEN: 883rd Squadron, assigned Group Operations Officer.

CAPT OSWALD: becomes assistant Operations Officer.

LT COL PARSONS: relieved from duty as Group S-3 and will assume and will assume command of 882nd Squadron upon return from California.

SGT QUINN: leaves for U.S.A. on emergency furlough."

## 18 Sep 45

As the 500th Bomb Group began to close down operations on Saipan, the command wisely required most section heads to write histories of their sections. One of the best of these accounts was written by Group RCM Officer 1/Lt Milton O. Pack. It is reproduced below.

### RCM HISTORY OF THE 500th BOMB GROUP

The RCM [*Radar Countermeasures*] history of the 500th Bomb Group actually started on the first of March 1944 when four RCM Observers (*[MOS]* 7888) reported to Walker AAF. These observers were Lieutenants Norman F. Garrigus, Burton L. Wilner, Robert E. Holmes, and Milton O. Pack. Each of them had received thorough training preparing him for the job to be done. This training consisted of courses of instruction for communications cadets, radar maintenance officers, and RCM observers.

They arrived just in time to take over the work of the observers of the 462 Bomb Group, who had been relieved of duty, in preparation for overseas shipment. This work later proved to be of immense value as it was the only contact the observers had with RCM equipment during the remainder of their stay in the States.

The "fly-away" planes of the 462 Bomb Group had just arrived at Walker AAF and they had no RCM equipment installed. The equipment, however, was lying crated in the radar building and had to be installed before the planes left the field. The equipment to be installed consisted of shock-proof mounts, pressure cans for RCM antennae, antennae, transmitters and receivers. The observers and the few enlisted men that were available set to work and the job was completed before the planes left the field for their overseas trip. Months later, word was received from the 462 Group observers expressing thanks for the good work that had been done.

After that phase of work had been completed, the observers set to work studying the circuits and operations of the radar set that was to be used by the 500th Group -- the AN/APQ-13. Word had arrived that the radar operators would be enlisted men, who had had no previous training in the operation of a set similar to the

AN/APQ-13, and the observers realized that the flight training and a good part of the ground training of these men would fall on their shoulders.

In order to prepare themselves for this job, all available time was spent in studying. This was no easy task, because all of the work had to be accomplished alone -- none of the radar maintenance officers had any spare time to assist them. At last, just about the time that the radar operators arrived, the observers realized that they were ready to undertake the job.

It will not be necessary at this time to go into the difficulties that were experienced in training the radar operators. They were, however, numerous; lack of ground equipment, lack of flight equipment, lack of sufficient flight instructors, even resistance on the part of some of the Group personnel to realize the importance of radar training for the "strike team" -- radar operator and navigator. In spite of this, the training was accomplished and the Group left for its overseas base -- with the fingers of some of the personnel crossed for luck.

Once in the theatre, the main job of the RCM section was no longer radar, but RCM. For the first time the observers realized how little they knew about the job to be done. It is doubtful whether, during the first months of operation, any one had a concrete idea of what the Wing RCM policy was -- if there was any at all.

First of all, it was realized that the Wing would have to start from scratch in their operation against the enemy. This if nothing else was a blast at the RCM program of the Army Air Forces. RCM personnel, both army and navy, had been operating in the Pacific areas for quite some time, but still there was no liaison between those organizations and the 73rd Wing. It would have been of invaluable aid to the Wing to have received information about the then known Japanese equipment. But none was forthcoming and the information was gotten the hard way.

RCM stands for Radar Counter Measures -- but before one can take counter measures, one must know something about the "thing" that the measures are to be taken against. In other words, not a damn thing was known about the Jap radar set-up and it was the job of the RCM observers to find out what that set-up was. The only way to do that was to fly observers in strike aircraft with radar intercept equipment, to search the spectrum of radar frequencies.

The intelligence that can be gotten from intercept equipment is very limited -- however, that limited information can be invaluable in determining the enemy's radar defense system. The following information can be gotten from intercept equipment:

1. The presence of an enemy radar set within "line of sight" of the intercept plane.
2. Whether the enemy radar set is searching or locked on the plane that the observer is in.
3. If searching, the rate of sweep can be determined and the beam width of the radar set can be estimated.
4. The exact frequency of the radar set can be determined.
5. The pulse repetition frequency -- PRF -- can be determined.
6. The pulse width -- PW -- of the radar set can be determined.
  1. It can be determined whether the enemy radar transmitter is lobe switched.

With this in view, each Group sent an RCM observer on all missions, to determine the enemy radar defense set-up. At first, operation of the intercept equipment was started at take off and all signals were logged, once out of radar range of Saipan. Since Iwo Jima was not in our possession at the time, all intercepts were from enemy radars, with the exception of friendly naval radar signals.

The early logs of radar intercepts were prolific with entries. It was not exceptional for an observer to return with more than fifty entries. At that time, accuracy of PW and PRF was not too important, however, the more frequencies that were logged, the better. Intercepts were broken down into those logged enroute and those logged in the target area.

After the first month of operations, the intercepts that [had] been gotten began to follow a definite pattern. 1. Intercepts seemed to fall in the following groups of frequencies: 37mc, 60mc, 70mc, 90mc, 120mc, 150mc, and 200 mc. 2. PRF's were mainly centered about 500 pps. However, some exceptional ones went as high as

2000-3000. 3. Pulse Widths were either around 30-50 usec. or 5-10 usec.

In addition to the information about the radar signals, it was determined that the planes were being picked up by early warning radars on Iwo Jima and were being tracked by other radars in the Nanpo Shoto chain of islands. Thus the enemy had plenty of warning that raids were in progress.

It was suggested at the time that the missions be planned so that the planes fly out of radar range of those islands, but it was decided that the benefit derived from these islands as aids to navigation greatly outweighed the disadvantage of the planes being tracked by the enemy radars.

With the knowledge of the characteristics of typical early warning and gun laying radars, and with the aid of additional intelligence reports that were beginning to trickle in through channels, it was possible to determine whether intercepts were from early warning or gun laying radars. This was of great assistance to the later search missions of the Wing. It was possible to break down the RCM search and assign special jobs to different observers flying the same mission.

Despite the fact that it was known that the enemy had gun laying radar, it was the Wing policy not to use jamming transmitters against them. There were two main reasons for this decision. First, it was decided that the enemy GL radars were not good enough to give accurate results against the high altitude raids that we were flying. Second, the Wing did not want to tip its hand and show that it had transmitters that covered the Jap GL radars.

From 24 November until 7 April the RCM operations of the Group remained the same -- RCM search on each strike -- with the exception of the five low altitude fire raids during March. On these raids, each plane was equipped with as much "Rope" RR-3/U [*long strips of aluminum foil*] as was available at the time. The crews were briefed to drop the rope as a countermeasure against SLC [*searchlight control*] radars.

The method of dropping the rope was to be 3 packages every ten seconds, the rope to be dispensed through the camera hatch [*in the rear unpressurized section*]. The best time for dropping the rope is before the searchlight beam catches the plane. Once the plane is caught, it is possible to track the plane visually and the rope has no effect.

After each of the five raids, it was agreed that the rope had been effective as a countermeasure. Crews reported that the lights had been diverted from detecting their planes and others reported that the rope had been effective even after their planes were tracked by the lights. This was very encouraging, but it was wondered how long that simple method would be capable of fooling the enemy.

During this period, recording equipment had been received in the Group and recordings of VHF transmitters and interphone conversation in the target areas were made. In addition, some recordings of suspected fighter control communications channels were made. These recordings were submitted to higher echelons [*because the 500th had no Japanese linguists*].

Jamming transmitters were first used against the enemy on the medium altitude daylight mission on 7 April. This was the first medium altitude daylight raid for the Wing and it was decided that it would be necessary to use the jammers to protect the formations from radar controlled AA guns.

Very little time was allowed for getting the transmitters out of storage and tuned to predetermined frequencies. However, sufficient transmitters were prepared so that each combat squadron had a complete barrage coverage between the frequencies 190-210 mc. From previous search missions, it had been learned that the majority of the enemy GL radar lay between 190-210 mc.

Unfortunately, none of the Group observers flew on this mission and it was impossible to determine the completeness of the barrage. However, from later analysis it was believed that the barrage was quite complete. It is doubtful, however, that our jamming had any effect that day, as visibility was unlimited and visual gunsighting was possible.

The use of RR-3/U had been SOP since the first night fire raids, but the jammers were not used again until

after the two night fire raids on Tokyo on 25 and 27 May. On these missions the losses of the Bomber Command were excessively high and it was decided to use a maximum number of jamming transmitters on all future missions.

In the opinion of the writer, it would be practically impossible at this time to evaluate the effect that our jamming has had on the enemy searchlight defense, and radar controlled gun laying systems, for the simple reason that it is not known to what extent the Japs relied on the information they received from their radar for SLC and GL.

It is known that Jap GL and SLC radars are of early design, being copied from captured Allied equipment. The sets that were copied were of the earliest type GL and SLC radar and were not very accurate. The enemy must have realized this fact and made allowances for it. The question is -- did they use their SLC and SL radar extensively in their defense system?

If they did use their radars extensively, it is safe to assume that our countermeasures program was successful. This statement is based on observations by RCM observers, who are the only personnel that can compare the signals received, both before and after the jamming program was started.

Three facts are outstanding in their importance for indicating the effectiveness of our jamming.

1. Many signals, when spot-jammed by RCM observers were noted to go off the air completely, or shift in frequency. This most definitely indicates that the jamming was effective.

2. Before the jamming program started, as many as 10-15 GL and SLC signals could be found in any of the important city areas. After the jamming program started, there was a noted decrease in the number of gun laying signals.

3. Before the jamming program started, the majority of the SLC and GL signals lay in the 200 mc band and extremely few lay in the 75 mc band. It is a significant fact that there were only two jammers per Group that could cover the 75 mc band and there were 60 jammers that could cover the 200 mc band. In other words, the enemy must have noted the comparative absence of jamming in the 75 mc band and placed more emphasis on the radar sets in that band.

If the enemy did not make extensive use of their GL and SLC radar sets, it cannot be attempted to even guess how much effect was had on his defense system. There are indications that many searchlights and guns were not radar controlled. This is evidenced by the accuracy of some of the searchlights despite the extensive use of rope and electronic jammers.

Towards the end of our operations, another tactical usage of RR-3/U rope was attempted. On one mission two of the planes in the Wing flew a rectangular course around the approach from the IP to the target, sowing rope on one of the legs. It was thought that the rope dropped by the orbiting planes would shield the approaching strike planes. This procedure was thought successful by observers accompanying the mission.

The end of the war caught the Wing in a period of expansion as far as RCM operations was concerned. Seven enlisted men had been given instruction as spot-jammers and extensive use would have been made of them on future missions. In addition, each Group was outfitting one plane as a "Guardian Angel" to carry as many as fifteen jamming transmitters and to orbit the target area. New equipment was coming in in ever increasing numbers and it was expected that they would be put to use in the near future.

The 500th Bomb Group was fortunate in that none of the original RCM observers were lost due to enemy action. In fact it was the only Group in the Wing to be that fortunate. Of the original observers, Lieut. Robert E. Holmes was transferred to Wing, Lieut. Burton L. Wilner finished his tour of 35 missions, Lieut. Norman F. Garrigus completed 33 missions, and Lieut. Milton O. Pack completed 26 missions.

As a final recommendation, it would be of immense value in evaluating the effectiveness of the RCM program of the 20th Air Force if evaluation teams were sent up to Japan to get the information from the Jap radar personnel. No amount of theorizing or guesswork on the part of armchair RCM personnel will unveil the true

effectiveness, or ineffectiveness as the case may be, of the countermeasures that were used -- only first hand information from Jap radar personnel will reveal the true nature of that effectiveness.

MILTON O. PACK,  
1st Lieut., Air Corps,  
RCM Officer

### **19 Sep 45**

Today, after 22 long days in the rotation pool at the Western Pacific Base Command, Willie Greene finally shipped out. Coincidentally, the ship his group was placed on was the SS Alcoa Patriot, probably a sister ship of the SS Alcoa Polaris, which had brought the ground echelon of the 500th Bomb Group to Saipan exactly a year ago today.

**20**

**Sep**

**45**

Today was Willie Greene's first full day at sea on his way home to the States. He wasn't too happy with the accommodations on the SS Alcoa Patriot. The bunks were too short for his lanky frame, it was hot in the compartment, and the food was terrible. Also, the ship was not moving as fast as he would like. Other than that, things were fine.

### **21 Sep 45**

Another of the useful section histories written during the winding down period on Saipan was that of the Intelligence Section, authored by Group S-2 Capt John R. Smolenski. He titled it "An Evaluation of the Work of Intelligence with the 500th Bombardment Group." Here are excerpts from this eleven-page-long document:

"... The physical set-up for each Group and Squadron Intelligence Section within the 73rd Wing was substantially the same. Each Group was provided with a large double Quonset briefing room, capable of seating about 45 full B-29 crews. In the rear of the briefing building was the Group Intelligence Office, which although crowded to some extent, was better than anything provided by any training base in the United States. This Briefing building was not ready to occupy when the first missions were run, but rather two single story Quonset huts were placed end to end, and this was used to brief and carry on Intelligence work, during the early missions. Each Squadron was eventually provided with a Quonset hut which served as both a Squadron briefing room and a Squadron Intelligence Office.

All major strikes were briefed in the group Briefing room, whereas all Weather Reconnaissance missions, Radar Scope missions, Leaflet bombing missions, and all other single ship missions were briefed in the Squadron briefing room. ...

One of the most important duties of Intelligence was the briefing of the crews, and simultaneously, the preparation of the folders which were to be taken by the various crew members on the mission. At first, when the 73rd Wing was assigned nine Primary targets that it was to concentrate on, each Intelligence Officer was assigned one of the targets. It was thought that with each officer devoting his time to that one target, more information and better presented information could be given to the crews. This did not prove to be the case, inasmuch as all of the Intelligence Officers were not equal in speaking ability, and thus some of the Intelligence briefings were below par where others were exceptional. It was therefore decided to assign two officers, best in the public speaking arts, to do all the intelligence briefings, and this worked out very well as evidenced by the letter of commendation this Section received from the Commanding General of the 73rd Bombardment Wing. As for the preparation of folders for certain crew members, each group was allowed a certain amount of freedom in its arrangement of the material in the folders, so long as certain Wing minimum requirements were fulfilled. Each bombardier, navigator, and radar operator received a folder with that material necessary to do his job better. Due to a shortage of the standard black target folders, with the transparent plexiglass pages, the radar operators' folders were only large manila folders. However, when Radar Bombing reached the peak of