

Jury Rigs for Radar

The 9th Defense Battalion in the Solomons had to patch and improvise in order to keep warning and fire control radar sets on the air. The effectiveness of this work is evident in the number of planes shot down in 18 months.

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When radar was very young in the Marine Corps, there was a great deal of curiosity about its practical use, and many marines were very outspoken in their doubts. One of the biggest problems was a lack of spare parts to keep the equipment going. Consequently, there were a great many sets, which had to be patched up by makeshift emergency repairs, more commonly referred to as "jury rigs."

When the 9th Defense Battalion landed on Guadalcanal on 3 December 1942, they had only a very limited supply of spare parts for the radar sets they brought with them. The elaborate setup of depots had not yet come into existence, and the meager supplies in the depot at Pearl Harbor were too far away to be of any use. As a result of this, the 9th DB (now the 9th AAA Bn) and other defense battalions in the Solomons area had to depend almost entirely on their own technicians for ingenious devices to keep the warning and fire control radar sets in operation. Although the 9th had few technicians, they were of high quality and all possessed the ability of teaching their subordinates. Several of them had been "hams," amateur radio operators, before joining the Corps and this background proved a great asset when the pressure was on and they had to improvise to keep their sets on the air. How well they accomplished this feat is borne out by the record of planes shot down during their 18-month stay in the Solomons area.

Among the technicians in the 9th were four men who were in the first class of radar technicians graduated from the first radar school at Quantico. These men, T. N. McGown, Stanley Krezel, Theodore Hitchcock and M. G. Jones, all rose to the rank of master technical sergeant before leaving the Pacific. McGown became a warrant officer in radar maintenance.

Almost all of the makeshift rigs used by the 9th can be credited to these men or the men they taught. As crew chiefs, they worked continuously with the younger technicians, most of them fresh out of schools, and gradually these new men began to get the picture of the Pacific.

There is no way in which a Stateside school can simulate Pacific field conditions, so most of the green men started to school all over again—Pacific style. They learned under combat conditions, and most of them came out very capable radar men. Everybody worked with the same view ... to improve the performance of the set and improve its value to the organization. It took a little while for them to become confident in their set and know its limitations and possibilities, because they had come to mistrust it before they had ever used it. The stories in the States had always been tales of woe ... it was said that the sets were outmoded . . . that you couldn't track a target . . . that it was impossible to keep them on the air. In the Pacific they soon learned that they had to keep them on the air, if only for their own personal safety.

There was much skepticism as to the value of radar in war, but the commanding officer of the 9th DB, Col William S. Scheyer, gave radar in this battalion all possible assistance and the results surprised the skeptics. When radars broke down, he listened patiently to the radar officers' woes and approved changes and modifications proposed to improve radar performance.

Gradually, the battalion began to respect radar, and with their respect came a greater cooperation from all hands. In true marine fashion, gripes resounded when a "snooper"9 sneaked in and unloaded a bomb without being detected, but equally loud were the cheers when a Nip plane was brought down by "unseen" fire (complete radar control). It's true that the old type fire control radars are a far cry from the streamlined sets we have now, but at the time it was the best because it was all we had.

The long range search radar, by virtue of the diligent technical nursing of MTSgt Hitchcock, performed yeoman duty throughout the Solomons campaign with a minimum of time off the air for maintenance. There were few Japanese raiders from the enemy airfields at Bougainville and Rabaul that this set did not detect when they were still far away. The battalion was usually alerted 15 minutes before the arrival of all big raids. Float planes attempting sneak raids by low altitude approaches were detected by fire control radars assigned to close-in search missions. These radars were not designed for such employment and consequently were not as durable as the long range search radars, but their day-in day-out efficient performances on search missions, in spite of disadvantages, were remarkable.

All the "jury rigs" used by the 9th DB in achieving its remarkable results with radar are too numerous to recount here, but a few of the most important ones are worthy of note. Upon many of these emergency rigs depended not only the performance of a radar set, but the safety of several thousand troops as well. Some of the mock-ups were simple, some very complex ... no one can be counted more valuable than another for without them the unit could not perform.

A fuel pump sprung a leak on a PE-84 (power supply used with the fire control radar) and the engine stopped. Investigation showed that the gasket was rotten, and when the spares were checked it was found that gaskets had been shipped short. The power van attendant took a piece of K-ration carton and carved out a gasket. This lasted a week, but when it began to leak, he had to replace it with the top of an old boot. This was a very satisfactory gasket, its value greatly enhanced in view of the fact that the boot once belonged to a Jap. Gaskets were manufactured from every conceivable article, including ponchos. It was a very difficult job to keep ordinary gaskets in good shape because of the climate. Power van attendants did a magnificent job of keeping motors maintained and in working order. They replaced filters with mosquito net and pumped water through the cooling system with a small pump on the side of a barrel. Most of the maintenance they knew didn't come out of the book.

On Dog Battery's site at Rendova, a nearby mountain caused a serious condition of back echoes. The crew chief decided that a little chicken wire might help the situation when mounted on the back of his antenna. He made this modification, and, while it did not completely solve the problem, his operators were able to track targets through areas that had previously been dead for them. As a result, their data to the director for the 90mm guns was much smoother than it previously had been and greatly improved performance of the entire battery resulted.

MTSgt Krezel had continuous trouble with shorts in the "octopus" cable (main cable with many branches) of the IFF gear on the FCR. When he opened the main junction plug on the back of the control unit, he found it full of water. There is a mesh covering on this cable through which water can pass and seep into the plug. A visit to the Seabees provided some beeswax which proved very satisfactory as weather proofing, and no more trouble was experienced with this cable. When the beeswax wasn't to be had, it was found that the "cosmoline" served in the mess under the name of butter worked just as well.

No commanding officer in the Pacific was content to keep any set out of action during the early stages of an operation if it could be employed to the slightest advantage. As a result of this line of thought, the fire control radars were often employed for search missions as previously mentioned. Because the fire control radars have three scopes, the strain on operating personnel

performing search layer of insulation, a layer of shielding (ground braid) and then more insulation. After being stepped on several times, and because of the big bend in it, the weather usually softened the insulation enough so that the shielding could cut into it. This usually brought the shielding close enough to the conductor to cause an arc and short the cable. It was found that repair could be affected by cutting into the cable, stripping back the shielding some four or five inches and then smoothing the sharp edges. A different location of entry into the receptacle reduced the bend, and with a generous amount of rubber insulation tape these cables were again usable.

MTSgt Hitchcock had to jury-rig his LRSR many times to keep it going. He also added a great many refinements, such as drying ovens, cooling fans and telephone connections which, though not necessary to keep the set on the air, greatly improved the performance, of men and equipment. One of the most important jury rigs he accomplished was made on the power supply. The small generator on the power plant was broken off in such a manner that it could not be remounted. Hitchcock mounted this generator on a board, and, after much experimenting and adjusting, he was able to use it for three months until a new one arrived. Since this was the only long range set in the area at the time, it was a very important emergency repair which vitally affected all hands. A way was also devised to prevent sheered water pumps and fans from going through the radiator. The grill on the front of the radiator was reversed and put on the motor-side of the engine. Although the pumps and fans continued to sheer, they hit this grill, and this prevented damage to the tubes in the radiator.

The Seabees made many of the jury rigs possible in the Pacific. They were never too busy to help a radar man, and their materials were never too precious to lend or give, even if it were the last thing they had. Every marine outfit is grateful to the Seabees for the fine cooperation they gave us, and we all know that without them a great many sets would have had far less operational hours.

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