

THE OFFICIAL HISTORIES OF THE 6994TH SECURITY SQUADRON



“Top 10” Questions

Question #10. USAF vs. Army ARDF. One of the more interesting EC-47 sidebars involves a USAFSS/ASA “fly-off” conducted under NSA auspices in Puerto Rico in 1967. Dave Eddy, before his untimely death, provided a good bit of info on this project, but some “official” results would be a most interesting addition.

Response. This response is one of the most interesting of the lot. Pages from a USAFSS monograph entitled *A Special Historical Study of ARDF/SIGINT Command and Control in Southeast Asia 1965-1969* illustrate not only certain day-to-day operational problems but also provide a glimpse of the behind-the-scenes conflicts among USAFSS, ASA, and NSA regarding the relative effectiveness of the Air Force and Army ARDF platforms.

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A SPECIAL HISTORICAL STUDY
OF
ARDF/SIGINT COMMAND AND CONTROL
IN
SOUTHEAST ASIA
1965 - 1969

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systems and ASA was not able to provide enough of the right editions of cryptographic pads to pass ARDF fixes from the EC-47s to the Army direct support units (DSUs). This was a direct result of the wide range of the C-47. Having this range, *COMPASS DART* had several ground units to support on each mission, and by the spring of 1967 the supply of appropriate crypto pads had run critically low.* When *COMPASS DART* contacted its primary DSU and set up the daily communicating procedure, it was not unusual for one or the other to not have the proper pages.⁵⁷

(u) ~~(S//VCGO)~~ The problem increased when, for any reason, the airborne operator could not contact his primary DSU and had to shift to his alternate. If their pads did not match, there was simply nothing they could do at that point and air-ground-air communications were impossible. Paradoxically, shorter range Army aircraft rarely had this problem since they would probably communicate with only one DSU. Moreover, since the Aviation Units were part of the ASA organization and located as near as possible physically to the units they supported, a close coordination was possible right up to the time of takeoff.⁵⁸

ASA Commander Misled by "Someone"

(u) ~~(S//VCGO/ARPO)~~ When ASA commander General Denholm visited the 509th RRG and the NRV in April 1967, he heard only the first part of the story; i.e., that tactical commanders were complaining about the support,

* The problem was further compounded by the drastic rise in ARDF fixes being communicated, again due to the growing efficiency and effectiveness of the Air Force ARDF system. They were simply using up the one time pad pages faster than they were available. This supply was under the complete production and distribution control of NSA through ASA.

or lack of same, that they were getting from *COMPASS DART*. Apparently nothing was said about the communications problem, and there is no record of just who was doing the talking. But the informant's credibility must have been such that General Denholm took his word without question and was understandably perturbed. Actually, had he talked to the 509th RRG Commander, Colonel McFadden, or NRV, Col. George Applington, his mind would have been put at rest, but apparently he didn't. So, when he returned to Hawaii, he had much to say.⁵⁹

(U) ~~(S//VCCO)~~ He told USAFSS Commander General Coira, who was at Pac Scty Rgn at the time, about it, and the USAFSS commander couldn't believe it, since it was contrary to every report he had gotten on *COMPASS DART*. The ASA commander took General Coira's denial seriously and told the ASA Pacific people to get him all of the information and to be sure it was right, saying ". . .it is imperative that I have the facts immediately so that any misunderstanding between General Coira and myself can be allayed."⁶⁰ He and General Coira both got off messages to the 509th RRG and the 6994th Scty Sq, respectively, telling them to get together and find out what was going on. ASAPAC, in the meantime, came up with a briefing based on 509th RRG figures, and this showed that *COMPASS DART* was passing more than 90 percent of its fixes to tactical commanders in near real time. This was enough to cause complaint, but was certainly nothing degrading.

Unclaimed Report Quashed

(U) ~~(S//VCCO)~~ At Tan Son Nhut, 6994th Scty Sq Commander Col. Robert Wallander immediately asked Colonels Applington and McFadden who was doing all the talking, but they were completely in the dark. Only

General Denholm knew to whom he had talked, and apparently he wasn't saying, not officially anyhow. For the record, both the 509th RRG commander and the NRV sharply defended *COMPASS DART*. Said Colonel Applington:⁶¹

The same allegation was brought up to me by the Larsen committee in about the same words. I specifically told them that it was not true. . . . I followed it up by telling Bob Shultz (connection unknown--Author's Note) that I felt it was a reflection not only on *COMPASS DART* but on me as NRV. I got pretty mad about it. . . .

Colonel McFadden was even more emphatic in his defense of *COMPASS DART*, saying:⁶²

Any allegation that your *COMPASS DART* crews are anything less than professionally responsible is invalid and not deserved. The system for passing information to the ground provides for identification of the Hestia (crypto) pad page as the first of the transmission sequence. To argue this in detail may not be appropriate. Certainly the record will show that *COMPASS DART* is as religious in the performance of their routine duty as is any unit in South Vietnam. It is my conviction from the observations I have made over the past six months that the 6994th Scty Sq, the *COMPASS DART* crews, and all Air Force personnel assigned to that organization, have engaged in the highest order of cooperation with the 509th RRG in the counter-insurgency effort. In my opinion, their contribution, efficiency, and effectiveness at least match the best offered by MACV. I regret any occurrence which would reflect other than proper recognition for your organization's considerable accomplishments. Please accept the personal compliments I send to you and your command.

MACV also knew neither the source of nor the reason for the statements.

So a blind alley seemed to have been reached, and General Coira told

General Denholm:⁶³

It is apparent that this serious allegation is without foundation in fact as your statistics prove, but follows the history of two previous allegations inimical to *COMPASS DART* performance reputation. I have been unable to track down sources of these false reports. . . .

Raised Eyebrows Meet NSA ARD-18 Evaluation

(u) ~~(S)~~ What appeared to be a general effort to downgrade the

effectiveness of *COMPASS DART*, particularly as compared with the Army ARDF system, continued at NSA. The preliminary reports of a comparison test conducted by Sanders Associates, manufacturers of the ARD-18 ARDF system, in Puerto Rico in March 1967 were just available and NSA did a preliminary evaluation for DOD.* The NSA figures showed *COMPASS DART* distinctly superior in all categories of operation in a side-by-side comparison. Of 78 ARDF fixes compared, the ARD-18 was able to fix 20 which the Army crew could not fix at all. All of these were extremely short radio transmissions where the Air Force system had its greatest advantage because of internal automatic computations.⁶⁴ On 58 of the 78 fixes compared, the ARD-18 was more accurate than the ARD-15, and only once was the Army system able to fix a radio not fixed by the ARD-18.[†]

(u) ~~(S)~~ The NSA director's comments to DOD were interesting to say the

* DOD directed the comparison test in January 1967. USAFSS did an extensive research job on possible sites in Georgia and Florida before settling on Puerto Rico to get maximum similarity to terrain, geography, and conditions. Both ASA and USAFSS brought back operating teams from the war zone to get the best possible results from both systems. The tests started on 10 March and finished on the 20th. They operated in a 25 kilometer square area against a variety of antennas similar to some of those used by the Viet Cong and North Vietnamese in South Vietnam. Although Sanders was contracted to conduct the tests and write the results, all was under the scrutiny of USAFSS, NSA, ASA, DOD (DDR&E) representatives. Only the DF systems were compared, eliminating the acquisition position which gave *COMPASS DART* an added operational advantage.

† This was not the total number of fixes made in the 10-day period. But those where the two systems compared closely with each other were omitted for the sake of simplicity.

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least. General Carter had this to say:⁶⁵

The test results revealed that, although both systems provide 500-1000 meter accuracy a majority of the time (one of the basic design specifications), they both performed below advertised capabilities. Some of the causes of location inaccuracy have been identified and remedial steps are being taken. Improved navigation equipments are being investigated for both systems, and on-board processing for the navigation-plotter of the *COMPASS DART* will improve both the speed and accuracy of that system.

Within rather generous limits, the comments were accurate, but USAFSS's Colonel Younkin, DCS for Systems and Technology, disagreed strongly with the implications they made. He took issue with General Carter, calling his comments "highly misleading" and adding that the statement ". . . implies that the two systems are comparable; a fact that is in conflict with their (NSA's) report of the test results." On the comparative accuracy of the DF systems, he said:⁶⁶

. . . (General Carter said) "The test results revealed that, although both systems provide 500-1000 meter accuracy a majority of the time, they both performed below advertised capabilities." This statement leaves the impression that the systems are comparable. However, the NSA report indicated that 72 percent of the Air Force fixes were less than 1,000 meters, with a mean error of 718 meters (figuring all ARD-18 fixes), while the Army had only 59 percent within 1,000 meters with a mean error of 1,331 meters (figuring all Army fixes).

With these figures in mind, then, it was difficult to understand why General Carter warned DOD that ". . . qualitative and quantitative comparison of the two systems should not be made solely on the basis of these results." It was also difficult to understand, after the lengths the command had gone to to duplicate as nearly as possible the environment of the combat zone, why he said "the geographical environment did not represent Southeast Asia combat operations, nor was there any similarity between the operational environments in these two areas."⁶⁷

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MACV Thwarts NRV Move For ACC Control, But. . .

(U) ~~(S//VCCO)~~ Meanwhile, despite the fact that early in May, NSA had given in to MACV on the priority position of SIGINT collection, the NRV was still pushing its plan to let the ACC task ARDF/SIGINT aircraft.⁶⁸ Surprisingly, even some members of the MACV J-2 were in sympathy with the idea, but when the NRV briefed General McChristian on what it proposed to do on 11 May, the MACV intelligence chief replied only with a flat "no." He added that if, for whatever reason, the ACC was ever given the job of tasking the positions, then the ACC would be put under the direct control of his office.⁶⁹ This apparently settled the matter, and the 6994th Scty Sq, for one, was relieved, momentarily at least. General McChristian was leaving shortly, however, and squadron officials didn't know what his replacement, General Davidson, would think about it.⁷⁰ Such was the force of personalities in these struggles, but on 20 May, MACV took complete charge of the ACC, although it left some flexibility in the system.

(U) ~~(S//VCCO/AFEO)~~ NSA apparently had shifted to a new tack, as hinted by General Carter's attempt to show that there was little or no difference between the Air Force and Army platforms, and this shift showed up in Saigon when Dr. Larsen made another trip to the war zone.* There were no more references to shortcomings in *COMPASS DART* as there had

* The exact dates of the visit are unavailable here, nor is it clear whether or not Dr. Larsen did any business with MACV. He did not, however, discuss any of his findings or recommendations with the 6994th Scty Sq nor USAFSS officials in Saigon.

been before, but the DDR&E official said ". . .we could discern no difference in the response of the Air Force ARDF operations and those of the Army." This was understandable, since the aircraft were tasked in those areas and under those conditions where they could best meet the field commanders requirements. But Dr. Larsen began to discuss the *DRILL PRESS/SENTINEL SARA* aircraft which carried no ARDF equipment. The two C-47s were just about to be phased out of wartime operations and Dr. Larsen requested that this be deterred because of their value to the SIGINT data base.⁷¹

(u) ~~(TS)~~ To MACV, these two airplanes, each with five intercept positions (both HF and VHF), were in the same category as the Z positions on *COMPASS DART* and were tasked in the same way. Dr. Larsen was impressed with the records of the two platforms, and reported:⁷²

Airborne intercept operations are providing unique support to combat operations. The *DRILL PRESS* aircraft intercept low power manual Morse transmitters which apparently are not acquired by our ground sites and which pass tactical operational traffic in exploitable low grade ciphers. We are told that *DRILL PRESS* aircraft were programmed out in June 1967. We asked the AFSS region commander (Pac Scty Rgn) to leave the aircraft there indefinitely. We believe that airborne intercept should be expanded as soon as possible. The unique coverage that airborne intercept could provide of readable low grade traffic would not only be of great value to our combat commanders but would also contribute significantly to the call sign solution problem.

Dr. Larsen's Bid for Army Platforms Brings Reaction

(u) ~~(TS)~~ Any breast-beating USAFSS might have done upon this belated vindication of *DRILL PRESS/SENTINEL SARA* was short-lived indeed, because Dr. Larsen turned right around and told ASA to ". . .submit a proposal to NSA which would provide for at least one additional intercept aircraft per Army and Marine division in South Vietnam."⁷³

(u) ~~(TS//SI//AFEO)~~ General Coira was dumbfounded, and told USAF:⁷⁴

I find it difficult to understand his (Larsen's) reaction after observing the demonstrated capability of the Air Force performing in an assigned Air Force role (and then turning) to the chief, ASA, to solicit a CCP submission for additional Army aircraft in a SIGINT support role.

Despite the USAFSS commander's confidence that the Air Force was ". . . clearly ahead in providing an airborne intercept capability in Southeast Asia (SEA) with both *DRILL PRESS/SENTINEL SARA* and (other) ACRP" and that the command could meet any identified Army or Marine requirements ". . .with superior capability and earlier than any competitive Army program," the move, in retrospect, was clear. These would be SIGINT aircraft, with no connection with ARDF or with MACV. All of ASA's resources immediately went into the CCP, and NSA wanted control of them. This it would get. General Coira knew that if the Army got its requirements into the CCP, the Air Force would have a tough time getting authority to duplicate the capability. So he urged the Air Staff to ". . .immediately identify the earliest available airframes that could be reconfigured to perform the airborne intercept function as soon as requirements are identified." USAFSS, at the same time, told USAF it should impress on Dr. Larsen the importance of establishing well-defined requirements for *SENTINEL SARA* and assure him of the "capability which the Air Force has for rapidly expanding the (*SENTINEL SARA*) fleet, as well as the contribution that can be made as a by-product of the Z positions currently being installed on the *COMPASS DART* aircraft."⁷⁵

CCP Becomes Point of Contention

(u) ~~(TS//SI//AFEO)~~ But the Air Force, with USAFSS's backing, had been painting itself into a corner on the control issue, and with the