THE 1957 GULF COAST RB-47 INCIDENT

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Here is another of the illustrative UFO cases which Dr. McDonald prepared to support his address to the AAAS Symposium at Boston on December 27, 1969. Dr. McDonald is Professor of Atmospheric Sciences at the University of Arizona, Tucson.

LET us begin with a brief summary of this intriguing case. An Air Force RB-47, equipped with ECM (Electronic Counter-measures) gear, manned by six officers, was followed over a total distance in excess of 600 miles and for a time period of more than an hour on September 19-20, 1957, as it flew from near Gulfport, Miss., through Louisiana and Texas, and into southern Oklahoma. The unidentified object was, at various times, seen visually by the cockpit crew (as an intense white or red light), followed by ground-radar, and detected on ECM monitoring gear aboard the RB-47. Simultaneous appearances and disappearances on all three of those physically distinct "channels" mark this UFO case as especially intriguing from a scientific viewpoint. The incident is described as Case 5 in the Condon Report and is conceded to be unexplained. The full details, however, are not presented in that Report.

1. Summary of the Case

The case is long and involved and filled with well-attested phenomena that defy easy explanation in terms of present-day science and technology. The RB-47 was flying out of Forbes AFB, Topeka, on a composite mission including gunnery exercises over the Texas-Gulf area, navigation exercises over the open Gulf, and ECM exercises in the return trip across the south-central U.S. This was an RB-47 carrying a six-man crew, of whom three were electronic warfare officers manning ECM (Electronic Counter-measures) gear in the aft portion of the aircraft. One of the extremely interesting aspects of this case is that electromagnetic signals of distinctly radar-like character appeared definitely to be emitted by the UFO, yet it exhibited performance characteristics that seem to rule out categorically its having been any conventional or secret aircraft.

I have discussed the incident with all six officers of the crew:

Lewis D. Chase, pilot, Spokane, Wash.
James H. McCoid, co-pilot, Offut AFB
Thomas H. Hanley, navigator, Vandenberg AFB
John J. Provenzano, No. 1 monitor, Wichita
Frank B. McClure, No. 2 monitor, Offutt AFB
Walter A. Tuchscherer, No. 3 monitor, Topeka

Chase was a Major at the time; I failed to ask for information on 1957 ranks of the others. McClure and Hanley are currently Majors, so might have been Captains or Lieutenants in 1957. All were experienced men at the time. Condon Project investigators only talked with Chase, McCoid, and McClure, I ascertained. In my checking it proved necessary to telephone several of them more than once to pin down key points; nevertheless the total case is so complex that I would assume that there are still salient points not clarified either by the Colorado investigators or by myself. Unfortunately, there appears to be no way, at present, to locate the personnel involved in ground-radar observations that are a very important part of the whole case. I shall discuss that point below.

Date of the incident

This flight occurred in September, 1957, just prior to the crew's reassignment to a European base. On questioning by Colorado investigators, flight logs were consulted, and based on the recollection that this flight was within a short time of departure from Forbes to Germany (plus the requirement that the date match a flight of the known type and geography), the September 19, 1957 date seems to have emerged. The uncertainty as to whether it was early on the 19th or early on the 20th, cited above, is a point of confusion I had not noted until preparing the present notes. Hence I am unable to add any clarification, at the moment, in this matter of the date confusion found in Thayer's discussion of the case (CR, pp. 136-138). I shall try to check that in the near future. For the present, it does not vitiate case-discussion in any significant way.

The incident is most inadequately described in the Condon Report. The reader is left with the general notion that the important parts occurred near Fort Worth, an impression strengthened by the fact that both Crow and Thayer discuss meterological data

only for that area. One is also left with no clear impression of the duration, which was actually over an hour. The incident involved an unknown airborne object that stayed with the RB-47 for over 600 miles. In case after case in the Condon Report, close checking reveals that quite significant features of the cases have been glossed over, or omitted, or in some instances seriously misrepresented. I submit that to fail to inform the reader that this particular case spans a total distance-range of some 600 miles and lasted well over an hour is an omission difficult to justify.

From my nine separate interviews with the six crew members, I assembled a picture of the events that makes it even more puzzling than it seems on reading the Condon Report—and even the latter account is puzzling enough.

First signal

Just as the aircraft crossed the Mississippi coast near Gulfport, McClure, manning the No. 2 monitor, detected a signal near their 5 o'clock position (aft of the starboard beam). It looked to him like a legitimate ground-radar signal, but corresponded to a position out in the Gulf. This is the actual beginning of the complete incident; but before proceeding with details it is necessary to make quite clear what kind of equipment we shall be talking about as we follow McClure's successive observations.

Under conditions of war, bombing aircraft entering hostile territory can be assisted in their penetrations if any of a variety of electronic countermeasures (ECM techniques as they are collectively termed) are brought into action against ground-based enemy radar units. The initial step in all ECM operations is, necessarily, that of detecting the enemy radar and quantitatively identifying a number of relevant features of the radar system (carrier frequency, pulse repetition frequency, scan rate, pulse width) and, above all, its bearing relative to the aircraft heading. The latter task is particularly simple in principle, calling only for direction-finding antennas which pick up the enemy signal and display on a monitorscope inside the reconnaissance aircraft a blip or lobe that paints in the relative bearing from which the signal is coming.

The ECM gear used in RB-47s in 1957 is not now classified; the No. 2 monitor that McClure was on, he and the others pointed out, involved an ALA-6 direction-finder with back-to-back antennas in a housing on the undersurface of the RB-47 near the rear, spun at either 150 or 300 rpm as it scanned in azimuth. Inside the aircraft, its signals were processed in an APR-9 radar receiver and an ALA-5 pulse analyser. All later references to the No. 2 monitor imply that system. The No. 1 monitor employed an APD-4 direction finding system, with a pair of antennas permanently mounted on either wing tip. Provenzano was on the No. 1 monitor. Tuchscherer was on the No. 3 monitor, whose specifications I did not ascertain because I could find no indication that it was involved in the observations.

Returning now to the initial features of the UFO episode, McClure at first thought he had 180-degree ambiguity in his scope, i.e., that the signal whose lobe painted at his 5 o'clock position was actually coming in from the 11 o'clock position perhaps from some ground radar in Louisiana. This suspicion, he told me, was temporarily strengthened as he became aware that the lobe was moving *upscope.* (It is important here and in features of the case cited below to understand how a fixed ground-radar paints on the ECM monitor scope as the reconnaissance aircraft flies towards its general direction: Suppose the ground radar is, at some instant, located at the 1 o'clock position relative to the moving aircraft, i.e., slightly off the starboard bow. As the aircraft flies along, the relative bearing steadily changes, so that the fixed ground unit is *"seen"* successively at the 2 o'clock, the 3 o'clock, and the 4 o'clock positions, etc. The lobe paints on the monitor scope at these successive relative azimuths, the 12 o'clock position being at the top of the scope, 3 o'clock at the right, etc. Thus any legitimate signal from a fixed ground radar must move *downscope,* excluding the special cases in which the radar is dead ahead or dead astern. Note carefully that we deal here only with direction finding gear. Range is unknown; we are not here speaking of an airborne radar set, just a radar-frequency direction-finder. In practice, range is obtained by triangulation computations based on successive fixes and known aircraft speed.)

As the lobe continued moving *upscope,* McClure said the strength of the incoming signal and its pulse characteristics all tended to confirm that this was some ground unit being painted with 180-degree ambiguity for some unknown electronic reason. It was at 2800 megacycles, a common frequency for S-band search radars.

However, after the lobe swung dead ahead, his earlier hypothesis had to be abandoned for it continued swinging over to the 11 o'clock position and continued *downscope* on the port side. Clearly, no 180-degree ambiguity was capable of accounting for this. Curiously, however, this was so anomalous that McClure did not take it very seriously and did not at that juncture mention it to the cockpit crew nor to his colleagues on the other two monitors. This upscope-downscope *"orbit"* of the unknown was seen only on the ALA-6, as far as I could establish. Had nothing else occurred, this first and very significant portion of the whole episode would almost certainly have been forgotten by McClure.

First visual sighting

The signal faded as the RB-47 headed northward to the scheduled turning point over Jackson, Miss. The mission called for simulated detection and ECM operations against Air Force ground radar units all along this part of the flight plan, but other developments intervened. Shortly after making their turn westward over Jackson, Miss., Chase noted what he thought at first were the landing lights of some other jet coming in from near his 11 o'clock position, at roughly the RB-47's altitude. But no running lights were discernible and it was a single

very bright white light, closing fast. He had just alerted the rest of the crew to be ready for sudden evasive manoeuvres, when he and McCoid saw the light almost instantaneously change directions and rush across from left to right at an angular velocity that Chase told me he'd never seen matched in all of his flight experience. The light went from their 11 o'clock to their 2 o'clock position with great rapidity, and then blinked out.

Immediately after that, Chase and McCoid began talking about it on the interphone and McClure, recalling the unusual 2800 megacycle signal that he had seen over Gulfport, now mentioned that peculiar incident for the first time to Chase and McCoid. It occurred to him at that point to set his No. 2 monitor to scan at 2800 mcs. On the first scan, McClure told me, he got a strong 2800 mcs signal from their 2 o'clock position, the bearing on which the luminous object had blinked out moments earlier.

Provenzano told me that right after that they had checked out the No. 2 monitor on valid ground radar stations to be sure it was not malfunctioning and it appeared to be in perfect order. He then checked on his No. 1 monitor and also got a signal from the same bearing. There remained, of course, the possibility that just by chance, this signal was from a real radar down on the ground and off in that direction. But as the minutes went by, and the aircraft continued westward at about 500 kts. the relative bearing of the 2800 mcs source did *not* move downscope on the No. 2 monitor, but kept up with them.

Ground control radar involved

This quickly led to a situation in which the entire 6-man crew focused all attention on the matter; the incident is still vivid in the minds of all the men, though their recollection for various details varies with the particular activities they were engaged in. Chase varied speed, to see if the relative bearing would change but nothing altered. After over a hundred miles of this, with the 2800 mcs source keeping pace with the aircraft, they were getting into the radar-coverage area of the Carswell AFB GCI (Ground Controlled Intercept) unit and Chase radioed that unit to ask if they showed any other air traffic near the RB-47.

Carswell GCI immediately came back with the information that there was apparently another aircraft about 10 miles from them at their 2 o'clock position. (The RB-47 was unambiguously identifiable by its IFF signal; the *"other aircraft"* was seen by *"skin paint"* only, i.e., by direct radar reflection rather than via an IFF transponder, Col. Chase explained.)

This information, each of the men emphasized to me in one way or another, made them a bit uneasy for the first time. I asked McClure a question that the Colorado investigators either failed to ask or did not summarize in their Report. Was the signal in all respects comparable to that of a typical ground radar? McClure told me that this was what baffled him the most, then and now. All the radar signature characteristics, as read out on his ALA-5 pulse analyser, were completely normal—it had a pulse repetition frequency and pulse width like a CPS-6B and even simulated a scan rate! But its intensity, McClure pointed out, was so strong that *"it would have had to have an antenna bigger than a bomber to put out that much signal."* And now, the implications of the events over Gulfport took on a new meaning. The upscope-downscope sweep of his No. 2 monitor lobe implied that this source, presuming it to be the same one now also being seen on ground radar at Carswell GCI, had flown a circle around the RB-47 at 30-35,000 ft. altitude while the aircraft was doing about 500 kts.

Shortly after Carswell GCI began following the two targets, RB-47 and unknown, still another significant action unfolded. McClure suddenly noted the lobe on the No. 2 monitor was beginning to go upscope, and almost simultaneously, Chase told me, GCI called out that the second airborne target was starting to move forward. Keep in mind that no visual target was observable here; after blinking out at the 12 o'clock position, following its lightning-like traverse across the nose of the aircraft, no light had been visible. The unknown now proceeded to move steadily around to the 12 o'clock position, followed all the while on the No. 2 monitor and on the GCI scope at Carswell near Fort Worth.

Huge red glow

As soon as the unknown reached the 12 o'clock position, Chase and McCoid suddenly saw a bright red glow *"bigger than a house,"* Chase said, and lying dead ahead, precisely the bearing shown on the passive radar direction-finder that McClure was on and precisely the bearing now indicated on the scope. **Three independent sensing systems** were at this juncture giving seemingly consistent indications: two pairs of human eyes, a ground radar, and a direction-finding radar receiver in the aircraft.

One of the important points not settled by the Colorado investigations concerned the question of whether the unknown was ever painted on any radar set on the RB-47 itself. Some of the men thought the navigator had seen it on his set, others were unsure. I eventually located Maj. Hanley at Vandenberg and he informed me that all through the incident, which he remembered very well, he tried, unsuccessfully to pick up the unknown on his navigational radar (K-system).

I shall not recount all of the details of his efforts and his comments, but only mention the end result of my two telephone interviews with him. The important question was what sort of effective range that set had. Hanley gave the pertinent information that it could just pick up a large tanker of the KC-97 type at about 4 miles range, when used in the *"altitude-hold"* mode, with antenna tipped up to maximum elevation. But both at the start of its involvement and during the object's swing into the 12 o'clock position, GCI showed it remaining close to 10 miles in range from the RB-47. Thus Hanley's inability to detect it on his K-system navigational radar in altitude-hold only implies that whatever was out there had a radar cross-section that was

A Boeing B-47E Stratojet (1953) in flight: the photo-reconnaisance version RB-47E followed soon afterwards.

less than about 16 times that of a KC-97 (roughly twice 4 miles, inverse 4th-power law). The unknown gave a GCI return that suggested a cross-section comparable to an ordinary aircraft, Chase told me, which is consistent with Hanley's non-detection of the object. The Condon Report gives the impression the navigator did detect it, but this is not correct.

I have in my files many pages of typed notes on my interviews, and cannot fill in all of the intriguing details here. Suffice it to say that Chase then went to maximum allowable power, hoping to close with the unknown, but it just stayed ahead at about 10 miles as GCI kept telling them; it stayed as a bright red light dead ahead, and it kept painting as a bright lobe on the top of McClure's ALA-6 scope. By this time they were well into Texas still at about 35,000ft. and doing upwards of 500 knots, when Chase saw it begin to veer to the right and head between Dallas and Fort Worth.

RB-47 closes with object

Getting FAA clearance to alter his own flight plan and to make sure other jet traffic was out of his way, he followed its turn, and then realized he was beginning to close on it for the first time. Almost immediately GCI told him the unknown had stopped moving on the ground-radarscope. Chase and McCoid watched as they came almost up to it. Chase's recollections on this segment of the events were distinctly clearer than McCoid's. McCoid was, of course, sitting aft of Chase and had the poorer view; also he said he was doing fuel-reserve calculations in view of the excess fuel-use in their efforts to shake the unknown, and had to look up from the lighted cockpit to try to look out intermittently, while Chase in the forward seat was able to keep it in sight more nearly continuously.

Chase told me that he'd estimate that it was just ahead of the RB-47 and definitely below them when it instantaneously blinked out. At the same moment McClure announced on the interphone that he'd lost the 2800 mcs signal, and GCI said it had disappeared from their scope. Such simultaneous loss of signal on what we can term three separate channels is most provocative, most puzzling.

Putting the aircraft into a left turn (which Chase noted consumes about 15-20 miles at top speed), they kept looking back to try to see the light again. And, about halfway through the turn (by then the aircraft had reached the vicinity of Mineral Wells, Texas, Chase said), the men in the cockpit suddenly saw the bright red light flash on again, back along their previous flight path but distinctly lower, and *simultaneously* GCI got a target again and McLure started picking up a 2800 mcs signal at that bearing! (As I heard one after another of these men describe all this, I kept trying to imagine how it was possible that Condon could listen, at the October, 1967, plasma conference at the UFO Project, as Col. Chase recounted all this and shrug his shoulders and walk out.)

Securing permission from Carswell GCI to undertake the decidedly non-standard manoeuvre of diving on the unknown, Chase put the RB-47 nose down and had reached about 20,000 ft., he recalls, when all of a sudden the light blinked out, GCI lost it on their scope, and McClure reported loss of signal on the No. 2 monitor! Three-channel consistency once more.

Low on fuel, Chase climbed back up to 25,000 ft. and headed north for Oklahoma. He barely had it on homeward course when McClure got a blip dead astern and Carswell radioed that they had a target once more trailing the RB-47 at about 10 miles. Rear-visibility from the topblisters of the RB-47 now precluded easy visual check, particularly if the unknown was then at lower altitude (Chase estimated that it might have been near 15,000 ft. when he lost it in the dive). It followed them to southern Oklahoma and then disappeared.

2. Discussion

This incident is an especially good example of a UFO case in which observer credibility and reliability do not come into serious question, a case in which more than one (here three) channel of information figures in the over-all observations, and a case in which the reported phenomena appear to defy explanation in terms of either natural or technological phenomena.

In the Condon Report, the important initial incident in which the unknown 2800 MC source appeared to orbit the RB-47 near Gulfport is omitted. In the Condon Report, the reader is given no hint that the object was with the aircraft for over 600 miles and for over an hour. No clear sequence of these events is spelled out, nor is the reader made aware of all the "three-channel" simultaneous appearances or disappearances that were so emphatically stressed to me by both Chase and McClure in my interviews with them. But even despite those degrees of incompleteness, any reader of the account of this case in the Condon Report must wonder that an incident of this sort could be left as unexplained and yet ultimately treated, along with the other unexplained cases in that Report, as calling for no further scientific attention.

Actually, various hypotheses (radar anomalies, mirage effects) are weighed in one part of the Condon Report where this case is discussed separately (pp. 136-138). But the suggestion made there that perhaps an inversion near 2 km altitude was responsible for the returns at the Carswell GCI unit is wholly untenable.

In an Appendix, a very lengthy but non-relevant discussion of ground-return from anomalous propagation appears; in fact, it is so unrelated to the actual circumstances of this case as to warrant no comment here.

Chase's account emphasized that the GCI radar(s) had his aircraft and the unknown object on-scope for a total flight-distance of the order of several hundred miles, including a near overflight of the ground radar. With such wide variations in angles of incidence of the ground-radar beam on any inversion or duct, however intense, the possibility of anomalous propagation effects yielding a consistent pattern of spurious echo matching the reported movements and the appearances and disappearances of the target is infinitesimal. And the more so in view of the simultaneous appearances and disappearances on the ECM gear and via visible emissions from the unknown.

To suggest, as is tentatively done on p. 138 of the Condon Report, that the "red glow" might have been a "mirage of Oklahoma City," when the pilot's description of the luminous source involves a wide range of viewing angles, including two instances when he was viewing it at quite large depression-angles, is wholly unreasonable. Unfortunately, that kind of casual *ad hoc* hypothesizing with almost no attention to relevant physical considerations runs all through the case-discussions in the treatment of radar and optical cases in the Condon Report, frequently (though not in this instance) being made the basis of "explanations" that are merely absurd. On p. 265 of the Report, the question of whether this incident might be explained in terms of any "plasma effect" is considered but rejected. In the end, this case is conceded to be unexplained.

Bluebook not informed

No evidence that a report on this event reached Project Bluebook was found by the Colorado investigators. That may seem hard to believe for those who are under the impression that the Air Force has been diligently and exhaustively investigating UFO reports over the past 22 years. But to those who have examined more closely the actual levels of investigation, lack of a report on this incident is not so surprising. Other comparable instances could be cited, and still more where the military aircrews elected to spare themselves the bother of interrogation, by not even reporting events about as puzzling as those found in this RB-47 incident.

But what is of greatest interest is the point that here we have a well-reported, multi-channel, multiple-witness UFO report, coming in fact from within the Air Force itself, investigated by the Condon Report team, conceded to be unexplained, and yet it is, in final analysis, ignored by Dr. Condon. In no section of the Report specifically written by the principal investigator does he even allude to this intriguing case.

My question is how such events can be written off as demanding no further scientific study. To me, such cases seem to cry out for the most intensive scientific study—and the more so because they are actually so much more numerous than the scientific community yet realizes. There is a scientific mystery here that is being ignored and shoved under the rug; the strongest and most unjustified shove has come from the Condon Report. "Unjustified" because that Report itself contains so many scientifically puzzling unexplained cases (approximately 30 out of 90 cases considered) that it is extremely difficult to understand how its principal investigator could have construed the contents of the Report as supporting a view that UFO studies should be terminated.