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FALKLAND OPERATIONS

I

"Super Etendard" Naval Aircraft Operations During The Malvinas War

Commander Jorge Luis Colombo, ARA

Preparation For The Mission

The squadron was incorporated into the armada during the last months of 1981 after the aircraft and pilots arrived from France. At that time the level of flying experience in the Super Etendard was very low (45 flight hours per pilot). The only training thus far had been basic training conducted outside the country. No one had flown the aircraft at night nor had there been any tactical training. Neither had the French Navy provided any attack doctrine that pertained to the new aircraft. The only thing known about the aircraft was the technique of flying it.

During the months of December 1981 and January, February, and March of 1982, we were in the process of evaluating the aircraft's central inertial system and its radar in the air-to-surface mode. Towards the end of March each pilot had accumulated about 80 flight hours. By the time hostilities commenced the individual experience level was at about 100 hours.

On Wednesday, 31 March, the order came down for the squadron to prepare the air-to-surface attack system or, in other words, the Exocet missile for use in the least possible time. Our initial evaluation resulted in a request for one month's time in order to peak the system and to train the pilots in a technique that was virtually new to us. There were no formulated tactics at hand.

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Captain de Fragata Jorge Luis Colombo was the Commanding Officer of the Argentinian Second Naval Air Fighter-Attack Squadron.

On 1 April we began preparations such as testing: the attack unit which interfaces with the Inertial Navigation System and the Digital Calculator, also the Agave radar system, the Aerodynamic Center, the Information Exchange Unit, etc. It was also necessary to install and test the missile launchers. Most important of all, we had to attach the missile training shape and ensure that everything functioned correctly. During the first part of April we still trusted that French technical assistance from Aerospatiale would be forthcoming by mid-month. Under the terms of a contract the firm was supposed to ensure that the Super Etendard-Exocet system functioned correctly. Within a few days, and with understandable pessimism, we received the news that French assistance would not be forthcoming. This meant that we would not receive valuable information which related in a direct way to system readiness. As a secondary consequence, but one not less important, we were denied the opportunity to avail ourselves of the invaluable experience and knowledge of the designers and manufacturers of the system. If a problem were to occur which exceeded the limits of our basic skills, it would likely remain unsolvable.

"Argentine naval aviation opened the eyes of the world to a new chapter in the doctrine of naval air operations for all modern navies of the West."

The squadron officers, chief petty officers, and petty officers, together with the engineers and technicians of Naval Air Arsenal* Number Two from Espora Naval Air Base, were confronted with a true challenge: make the Super Etendard and its Exocet missile system operational without outside assistance. If this were not enough, it had to be done within thirty days. Working day and night without rest they did it in only fifteen days. The talent of squadron personnel, combined with that of the engineers and technicians, allowed accomplishment of a task which at first had seemed impossible. The Exocet was operational. This missile would leave the rail and it would impact if launched under suitable conditions.

While the technical preparation of the missile required effort and imagination, the tasks of pilot training and operational planning did not require less.

The technique of launching the missile, even though fairly complicated, was more or less known. What it required, however, was intensified training in the use of the aircraft's radar and, among other things, training associated with flying in pairs at more than 500 knots while grazing the water and at the same time maintaining absolute radio silence so as to not announce position. Working in the zone around Puerto Belgrano, and with

*"Arsenal" in Spanish denotes a yard or workshop activity as well as the ordnance related meaning common to English language.

all types of ships including merchant ships and warships, we repeated the missile launch sequence hundreds of times until a minimum level of training in this very complicated work was attained.

But this was without doubt the least difficult aspect of the training. The determination of acquisition tactics was not as difficult as the study of radii of action in the outer range limits of the Super Etendard, or the determination of the flight profile most suitable to ensure penetration through the English defensive system without being detected by radar or electronic countermeasure systems. Moreover, we had to determine the feasibility of operating from Puerto Argentino. Configured for real operations, with missiles and supplementary fuel tanks, we flew from both dry and wet airstrips which simulated the length of the airstrip in the Malvinas.

On a dry airstrip we found that we could comply with the values of the braking curves. This demonstrated to us that we would be able to land at Puerto Argentino but with a very small margin of safety. On a wet airstrip we could not land.

As regards the takeoff, it could be done in the aforementioned configuration but it would be at the design limit without a safety margin. Final conclusion: we would not operate from Puerto Argentino, except to use it as an emergency divert field in the event of battle damage. Accordingly, the need for inflight refueling imposed itself.

Our imperative need was a flight profile which assured several things. First among these things was the ability to operate more than 400 nautical miles from the coast (probably more like 500 nautical miles) since the English ships we were to attack certainly would not operate within this distance from the continent. The flight profile also had to include provision for inflight refueling and, based on the fundamental need to avoid detection, there was also a requirement for an attack leg at maximum velocity beneath the extremities of the radar horizon. Finally there would be missile launch and subsequent evasion.

One thing we could not evaluate was the real capability of English electronic countermeasures. This was especially the case with their first line ships (*Sheffield*, the first of the Type 42 class, had undergone two years of intensive modernization at an approximate cost of $70 million US). This incertitude led us to a nonpermissive emissions control plan wherein only a minimum number of radar sweeps were allowed when within an anticipated range. In this way we would avoid radar interference (jamming)* and total failure of the mission. In concrete terms, we had to adjust the planning and execution of the flight so as to enter the launch area as discreetly as possible.

*The parentheses are the author's. He uses, however, the Spanish words for "scope blockage" which is best translated as "jamming."

We would remain very low in altitude, we would launch and then we would exit even faster than we approached. This was the only way of assuring that the mission would be executed professionally while at the same time conserving our scarce and valuable assets. As much as possible we also had to allow for a certain degree of flexibility so as to adjust to the specific situation. Accordingly, success was assured.

We studied the radar curves of the Argentine Type 42 destroyers. The destroyers ARA *Hercules* and ARA *Santisima Trinidad* provided the necessary information. Evidently, the most effective English antiair defense system was equal to that which was installed on these two ships. Then we analyzed the characteristics of the Sea Dart missile (an area defense missile) which was frightful by virtue of its range, precision, and velocity.

Once we had determined the interesting points in its flight profile we practiced against our destroyers. Squadron pilots were embarked on board to observe the results of our attacks as displayed on their radar scopes. Of course, these personnel plus the captain and officers of the ship were given preflight briefings and later they put forward analyses.

We lacked training in inflight refueling. We obtained a KC-130 from the Air Force for exercises. These exercises took place many miles from the coast in total electronic silence. Correct execution of these exercises had the potential to determine subsequent mission success.

Finally, we practiced the complete operation. Takeoff from Espora Naval Air Base, inflight refueling at more than 300 nautical miles from the coast, communication with the explorer aircraft which gave the position of the enemy, followed by attack, escape, and then return to base.

We had asked for thirty days in order to train and peak everything. It took only fifteen days. The squadron was ready.

Execution of the Mission

So far no single detail had been overlooked. But one thing preoccupied us: we had to repeat the same training in the actual zone of operations. That theater was very different. Weather conditions, among other things, were different there.

On Monday, 19 April, two aircraft flew from Espora to Río Grande Naval Air Base. The next day two more aircraft followed. These four Super Etendard aircraft and five Exocet missiles were to constitute the only operational capital that the squadron would have throughout the entire campaign.

Flights in the zone commenced the same day that the squadron arrived at Río Grande. The training was basically the same that had been conducted thus far. The only thing to change was the area of operations. The necessity and utility of the previous phase of training was immediately apparent. Sea state, wave height and almost always a strong wind had presented us with

very distinct radar work and new factors to bear in mind. It was the same with operations from Río Grande Naval Air Base.

On Friday, 24 April, we met with the Air Force pilots who were operating from the Naval Air Base in their Mirage-Dagger aircraft. They had asked for this briefing in order that we might tell them how we were going to attack. They were interested in knowing how our flights had been developing and also in our planning. It was the first time that they had been confronted with the problem of attacking surface ships. Most of all they wanted to learn about our tactics. They showed particular interest in the analysis of enemy radar capabilities and in enemy evasion methods.

They put forward the possibility of a joint operation. They had in mind the air-to-air capability of their fighter escort aircraft which were armed with Shafrir air-to-air missiles. In order to evaluate this possibility a flight of two Super Etendards and two Daggers was planned for the following day. This single practice with an air escort never came off because after the two Super Etendard aircraft took off both of the Air Force fighters developed problems. One could not take off and the other had to return to base a little after it was airborne due to a fuel system malfunction. After this we never again tried or practiced making our attacks with an escort provided by the Air Force. The reason is very simple: the Super Etendard had established discretion as the basis of its success. This discretion entailed the total absence of radio communications between attacking aircraft and, most important of all, approaching the target at great velocity from far away and at low altitude. The operations also included inflight refueling in order to effect attacks 500 nautical miles from the continent. None of this was possible with an Air Force escort. Our flight profiles were simply incompatible. Operations with a Dagger escort would have entailed the complete loss of our most precious operational characteristics: surprise and discretion. These characteristics were at the same time our best defense. They ensured that we could execute an attack without the enemy being able to launch his aircraft or missiles to impede it or later pursue us. With the exception of inflight refueling, the only joint operation carried out was with Air Force A-4s during the last attack which was made against the aircraft carrier *Invincible*. It was not an operation conducted with escort but one in which, at the request of the Air Force, four Air Force Skyhawk aircraft were added to an attack section of Super Etendard aircraft. This was undertaken to increase the probability of success only from the standpoint of quantity of ordnance launched and even at the cost of surprise and discretion. I will return to this operation in more detail later. All in all, and in the interest of historical truth, this must remain very clear: the Super Etendards were always solitary hunters.

I will pass over those missions which did not result in success and will relate only the three that resulted in sinkings or verified damage. The leaders of the missions and therefore those who were in command were always commanders or lieutenant commanders.

Attack Upon the Destroyer Sheffield. It took place on Tuesday, 4 May 1982. It was to be the only attack made in accordance with the initial plans which called for antisurface exploration prior to the attack. This surveillance was meant to give an initial target position and identification. It was further desired that the same explorer aircraft maintain contact and update target position just before the attack.

With the initial position of the enemy 100 miles or so south of Puerto Argentino and about 380 miles from the Río Grande Naval Air Base, the Naval Aviation Command ordered takeoff at 0945. Two aircraft with one missile each took off to attack the enemy whose position had been updated at 0915 by an explorer Neptune of the armada. At 1004 we made a rendezvous with the tanker aircraft. After receiving fuel and now being some 250 miles from the target we commenced the final attack phase.

At 1030 both aircraft received an updated target position from the Neptune. At the same time the aircraft were in the midst of really bad meteorological conditions which consisted of squalls and clouds common at that time of year in those latitudes. Visibility was diminished to 1,000 meters and the cloud ceiling was at 500 feet. The targets were 115 miles away and consisted of two medium-sized ships and one large ship.

At 1104 both aircraft launched their missile simultaneously. The targets were displayed on their radar sets. They had practiced so many times before and they had launched, without being detected by the enemy, at a range that assured an ample margin for impact. No type of electronic interference was detected and this indicated a complete surprise.

After missile launch the aircraft reversed course and at maximum speed and always at level flight the aircraft retired without being molested. Another conclusive proof that the discretion which had been so many times analyzed and so obstinately searched for had rendered its fruits. The aircraft landed normally at 1210.

It was an efficient operation executed professionally by professionals. The binomial explorer aircraft-attack aircraft thusly demonstrated its power in a totally new way in war at sea.

The Naval Aviation Arm of the Argentine armada became a pioneer in these new tactics which had never before been used by any country in the world. On Tuesday, 4 May 1982, while fighting for a noble cause in a lost corner of the South Atlantic, Argentine naval aviation opened the eyes of the world to a new chapter in the doctrine of naval air operations for all modern navies of the West. No one can doubt this.

I mentioned before that HMS *Sheffield* would be the only ship attacked according to initial precepts. This resulted from the Neptune's being out of service by mid-May. Flying hundreds of hours before 2 April, they had continued their efficient and silent work without pause from that moment on until they arrived at the limit of material endurance. This was especially the

case as it applied to radar and electronic countermeasure systems. Although the commanding officer of the squadron and his personnel contributed a mighty maintenance effort, the aged equipment could not support such intensive use.

This gave rise to work which was notable for the minuteness and the patience it required. It was one of many little known episodes in this war. It was a product of an unfolding genius within a group of senior and junior naval officers assigned to the Operations Center in Puerto Argentino. It was also a consequence of necessity. As the days passed, their work allowed the last two Super Etendard attacks.

The imperative need to obtain enemy position at sea and the absence of explorer aircraft caused the admiral in charge of Malvinas naval operations to order an analysis of all Sea Harrier radar contacts. These positions, together with those that correlated to loss of contact somewhere at sea, and obtained by means of radar installed in Puerto Argentino, were plotted minute by minute, second by second, day and night without cease. Necessarily, an aircraft which appeared on the radar scopes, and which came from the sea, could not be very far from the ship that launched it. This applied to the Sea Harrier which, having completed its mission, returned to its aircraft carrier.

In this manner we obtained the position data which allowed the later attacks. Enemy positions were transmitted to the Naval Aviation Command on the continent. It was this command which planned the attacks during the period 25-30 May. The two missions carried out during this period were very much alike in their conception and planning. In these operations target position information had vital importance but so did the determination of adequate approach sectors to the target. This ameliorated the lack of surface surveillance information which was so particularly suited to a calculated approach and the optimum utilization of the aircraft and its navigation and attack systems. By such means the Super Etendard, without prior surface exploration, was able to sink the *Atlantic Conveyor* and damage the *Invincible*.

Attack Upon the Containership Atlantic Conveyor. The attack was executed on Tuesday, 25 May 1982; a very special day for Argentines [Argentine Independence Day].

The Naval Aviation Command had received an enemy position by the aforementioned means from Puerto Argentino. An order was issued to attack a target located about 100 nautical miles northeast of Puerto Argentino. The flight, which took a double inflight refueling, was the longest of all with a duration of four hours.

The distance from Río Grande Naval Air Base to the objective was about 500 miles. In accordance with the plan, and taking into account distance and flight characteristics, we asked for the tanker aircraft to take position some 160 miles

east of Puerto Deseado. Although the route to the attack position was very long it would, however, permit passing 100 miles north of the Malvinas Islands at their closest point. This ensured that the aircraft would not be detected by the dozens of English ships which at this point in the campaign were found in the extreme east of the islands.

After takeoff the aircraft refueled in flight without difficulties. The two Super Etendards initiated their final attack leg more than 270 miles from the target.

At 1632 both aircraft launched their missile at about the same range as during the attack upon *Sheffield*. Both missiles were launched under optimum conditions after both aircraft had acquired the echo on their radars.

As before, the aircraft were not bothered before, during, or after missile launch. Afterwards, and in constant level flight, they set course for Puerto Deseado where they intended to land. The distance to Río Grande was too great.

However, a chance encounter with the tanker aircraft, which had remained in the area of the initial refueling, allowed another inflight refueling. By this means, and now by night, they returned to Río Grande Naval Air Base.

By practice this procedure had been demonstrated to be successful. The target position provided to the Naval Aviation Command by the armada was precise. It allowed the conduct of an attack which before the absence of effective exploration would not have been otherwise possible.

The *Atlantic Conveyor* went down and with it went equipment and repair parts which were very important logistic support items for British operations. Later this rebounded* through countless specialized English magazines and in General Jeremy Moore's published accounts which appeared in various Argentine and foreign media.

Attack Upon the Aircraft Carrier Invincible. During the course of this last attack the only remaining Exocet missile was launched. The attack was conducted on 30 May 1982. It was led by a lieutenant commander naval aviator.

As a result of analyses made in Puerto Argentino by the armada a new position to attack was identified. This time it was the aircraft carrier *Invincible*. It was situated some 100 miles southeast of Puerto Argentino.

Once more the Naval Aviation Command planned this last attack. The order to attack came on Sunday, 30 May.

In seizing this opportunity we had to take into account the probable effect of the mission flown only five days before. That improvised mission, upon penetrating from the northeast, had achieved total surprise. The English

*Rebounded is the most correct translation of "resaltado." Given the English language context "resounded" might be a better choice of word.

naval force would be preoccupied, in the days after this mission, with defending *Invincible* from an attack from the same sector. The English knew perfectly well that we had only one missile remaining.

This implied that an attack from the southeast sector was the only possible way to achieve the surprise which had so far yielded so much profit in our operations. An approach from the southeast compromised the operation in terms of radius of action because it eliminated the alternative of returning to an airfield closer than the airfield from which the aircraft were launched. This was different from the attack on the *Atlantic Conveyor*. We therefore planned, with detailed precision, for a double inflight refueling along the radial from Río Grande Naval Air Base. The distance was exceptional (about 500 miles from Río Grande).

Once the flight was completely planned the Argentine Air Force Headquarters made known its desire for a joint operation. They requested that four A-4C aircraft participate in the operation. The request was based on the precision of the Super Etendard inertial navigation system and its radar which allowed reaching the objective in open water. The only way for the Air Force A-4Cs to reach the target was to follow the Super Etendards. In addition they added the prospect of increasing the quantity of ordnance delivered. We ran the risk of losing surprise and discretion; therefore, we impressed upon them the need for the Air Force aircraft to comply with the same flight profile and the same electronic emissions restrictions of the Super Etendard. This was done and the four aircraft of the Air Force accompanied this attack armed with two 500-pound bombs each.

After takeoff the six aircraft transited to the refueling position which was to the southeast of Isla de los Estados. The refueling was accomplished without difficulty. Continuing on a course to the east the second rendezvous with the tank aircraft was effected so as to top off the fuel tanks just prior to initiating the attack.

At a range of about 300 miles from the objective the attack was initiated. The final course for this phase was to the northeast. The English aircraft carrier was surprised upon being attacked from a direction which was more than 100 degrees off its antiair defense threat axis which was oriented towards the west.

Once more the missile was launched under excellent conditions from a range which assured an impact. The launching aircraft had an echo on its radar confirmed also by the second Super Etendard which did not launch a missile.

Two A-4 aircraft were brought down by missiles after they were signaled the target's position, range, and bearing. The other two afterwards indicated that they followed the missile's trajectory and arrived at the objective which was wrapped in a dense smoke which was a consequence of missile impact only an instant beforehand. After dropping their bombs the two A-4s

returned to Río Grande. After missile launch the Super Etendards effected an escape and returned to Río Grande without difficulties.

Conclusions

Besides having been the first armada in the history of modern warfare to effectively utilize an air-to-surface missile launched from an aircraft, Argentine naval aviation and its Super Etendard aircraft evidenced the following capabilities inherent to this weapon system:

- Attacks were carried out against naval forces in open waters. These forces consisted of well-defended vital units which had an excellent probability of success. In the rigor of truth, the Super Etendards of the Argentine armada were the only aircraft in Latin America able to successfully perform this type of mission against a modern naval force such as the British fleet.
- The attacks conducted by the Second Naval Air Fighter-Attack Squadron with its Super Etendard had an immediate consequence, from the moment of its dramatic entrance with the sinking of *Sheffield*, of substantially modifying the employment of English naval forces. The Super Etendard was a tremendous additional threat to check. The English fleet was obligated to change not only its defensive disposition but also the location of its ships at sea. With justification we can now say, in terms of what happened in the war at sea, that the Malvinas War was divided into two stages: before and after the first launching of an Exocet missile.
- Finally, the English knew perfectly well that only three missiles remained after the first launching. The intelligent measuring out of this threat throughout almost all of the conflict, a correct administration of the means to employ the missile, and the professionalism with which only vital objectives were chosen, significantly altered the normal development of British operations at sea.