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# Jets

**FLIGHT TEST**

## Lightning VS Tornado

Battle of the  
interceptors

## Falklands War

- Air combat analysis
- The Vulcan raids
- AIM-9L: war-winner?

# No contest

## Bae's world-beating Hawk

## Sea Vixen Flying again



## Air Warrior What's all the fuss about?



Kai Tak 747s ● Concorde's successor ● Italian Starfighters ● Russian Air Force



Christ, Chief.....

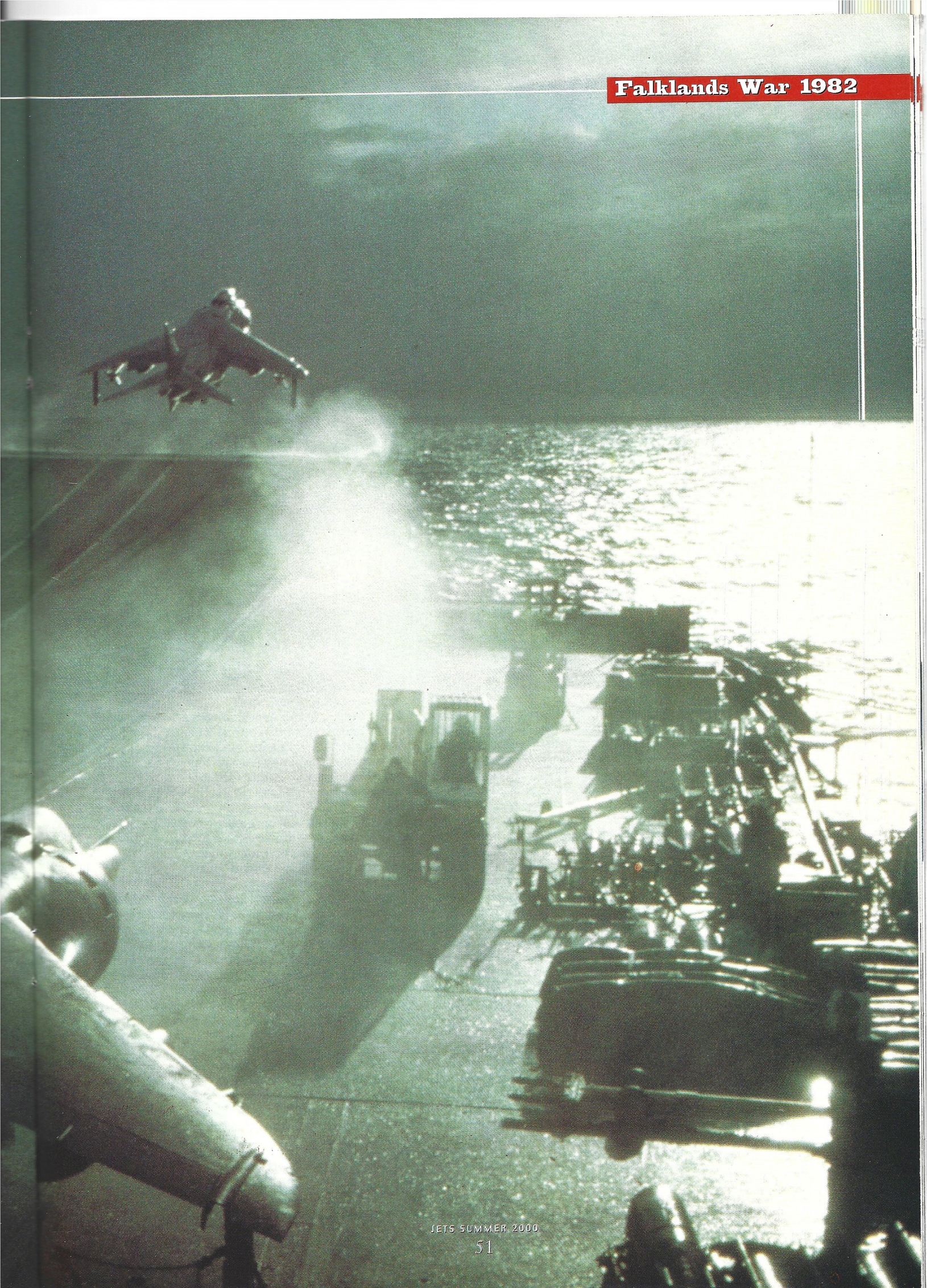
# It's just like a war film

Argentine air strikes against NATO warships, British carrier operations at 52°S: no-one could have planned for the Falklands War. Each side drew on untapped reserves of professionalism and brinkmanship, and the outcome was always in doubt

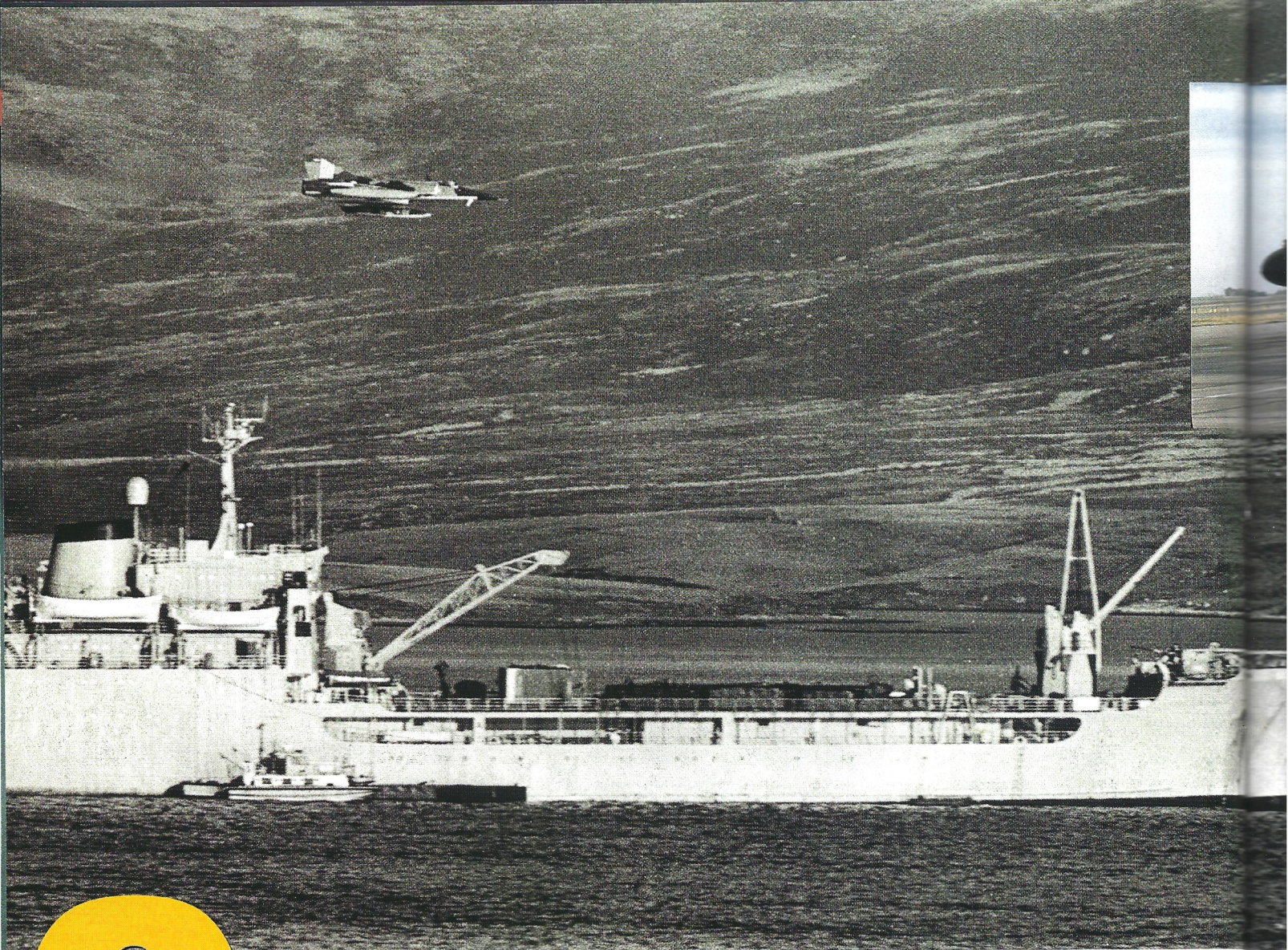
Text: Alan Harper











**O**VER THE FALKLAND ISLANDS in May 1982 there took place some of the most ferocious combat in the history of jet warfare.

In just one two-hour period in the late morning of 21 May, for example, with both attacking and defending aircraft operating at extreme range from their bases, the Fuerza Aérea Argentina (FAA) lost no fewer than nine attack aircraft – and three pilots – in low-level operations against British ships. All of them were shot down by the AIM-9L Sidewinder missiles and 30mm Aden cannon of Royal Navy Sea Harriers.

But the Falklands air war was not a South Atlantic replay of the Battle of Midway, as some had predicted. There was no carrier battle, although a strike from the Argentine navy's aircraft carrier *25 de Mayo* was constantly expected by the British Task Force.

Neither was the South Atlantic air campaign a 1980s version of the Battle of Britain, with single-seat fighters battling each other for supremacy of the airspace over contested territory. For there were no dogfights: according to records from both sides in the conflict it

appears that only two air-to-air engagements saw the protagonists turn towards each other with any aggressive intent – and on both occasions matters were settled within seconds, conclusively in favour of the Sea Harriers. Practically all other engagements, and all other air-to-air kills, were clean intercepts or tail chases.

Neill Thomas, then a 37-year-old Lieutenant Commander, remembers his pilots being slightly bemused by this at first. It wasn't how they'd thought it was going to be.

### **A hell of a job**

"They'd ask me what was going on: why weren't we fighting?" he recalls. "I had to remind some of them that the idea wasn't to fight, it was to kill. And if you could achieve that end through cunning or tactics rather than breathtaking airmanship, then so much the better." Nevertheless, Thomas retains a high regard for the courage of the Argentine pilots: "I wouldn't have liked to do what they were doing: it was a hell of a job."

For Thomas, CO of 899 Naval Air Squadron – the Yeovilton-based training wing for the Sea Harriers –

the point had been made a few weeks before. While still in mid-Atlantic, in addition to the unwelcome attentions of Soviet Tu-95 Bears, the Task Force found itself subject to scrutiny by FAA Boeing 707 transports, pressed into service for long-range reconnaissance. Worried about submarines, Task Force commander Admiral 'Sandy' Woodward found these visits increasingly irksome. He summoned Thomas and Andy Auld, CO of 800, for advice.

"The admiral wanted to know whether it was technically possible for a Sea Harrier to 'fire across his bows' – a great naval expression, but he meant it literally," said Thomas. "We explained that with 30mm tracer shells the 707's crew would probably get the message. To me at that stage the idea of shooting down an unarmed 707 seemed all wrong. But Woodward was deadly serious: this wasn't a game."

A few weeks later Thomas demonstrated the truth of that statement. He was on combat air patrol (CAP) over Falkland Sound, in company with Lt Cdr Mike Blissett and controlled by the Type 22 frigate *HMS Brilliant*, which was

Photographs: Imperial War Museum/via Glenn Sands





Top: Woodward's nightmare. CANA Super Etendard 0753 was used on both the *Sheffield* and *Atlantic Conveyor* Exocet missions. Above: naval A-4Q Skyhawk (ex-US Navy A-4B) of 3 Esc. Main picture: one of four 6 Grupo Dagger As over *Sir Bedivere*, 24 May. Two Daggers were damaged in the attack. Previous page: Sea Harrier XZ499 takes off from *Hermes* on 21 May, with an RAF GR.3 in the foreground.

part of the escort to the amphibious fleet. It was 21 May, the first day of the landings in San Carlos Water.

"We were at about 1,000ft, halfway down Falkland Sound, and *Brilliant* vectored us off over West Falkland after a contact they'd got." It was a lone A-4B of 5 Grupo which had just attacked *Ardent*. "We headed off at a fair old rate of knots, and were approaching Charters when we picked up four A-4s coming over the ridge."

These were A-4C Skyhawks of the FAA's Grupo 4 de Caza, which had taken off armed with 500lb bombs from San Julian 45 minutes before and refuelled from a KC-130H. They were heading north-east, and when picked out low and left by Thomas and Blissett were about 35 nautical miles – four minutes – from the anchorage. The tracks of the attacking and defending aircraft crossed at right angles, and as the Sea Harriers broke to starboard to get behind them the A-4s also broke into a hard 180-degree turn to starboard.

"As soon as they saw us the A-4s turned tail, jettisoned their bombs and headed off to the south," recalls Thomas. From here the fate of the Skyhawks was sealed, as the Royal Navy's training and tactics slipped ruthlessly into gear. Thomas and Blissett pulled harder into their turn, wheeling at full throttle through a 270 which placed them directly in the Skyhawks' six.

"They must have lost a lot of speed, because we ended up about a

mile and a half astern," says Thomas. "Mike was nearer than myself, and fired; I couldn't see him until then. He got the man on the left, and having picked Mike up reasonably well to my left, about 40 degrees off, I got a very good growl from the target, so I just shot the missile and it went straight to it. The other two broke to starboard, with Mike close astern of them. I got a growl from my second Sidewinder but couldn't fire, because I didn't know where Mike was. So we missed the other two."

The two Skyhawks came down within a few hundred metres of each other near Christmas Harbour, and both Teniente Nestor Lopez and Primer Teniente Daniel Manzotti were killed. Blissett had damaged a third A-4 with his cannon, but it made it back to the mainland.

## Toss bombing

Neill Thomas flew 60 combat missions, many of which combined ground attack – usually computer-controlled 'toss-bombing' – with combat air patrol. Much of the rest of the time was spent sitting on deck, day and night, in the cockpit of a fully armed and fuelled Sea Harrier, on alert. Thomas used to use these long hours of waiting to catch up with paperwork, of which, as boss of 899 NAS and chief tactical instructor of 800, he had plenty (although on one occasion he fell asleep). Others would write letters, or just sit. But even when the fighting was at its height, morale among the Sea Harrier pilots remained steady. "One young pilot went rather quiet at first, but he did very well later on, and was fine," says Thomas. One other pilot, who had proved to be exceptionally able in combat, had to be sent home with battle fatigue. But generally, Thomas contends, the mental attitude of the RN pilots remained as reliable as their aircraft throughout the campaign. "We were always keen to get into the air," he says. "We knew we were more than a match for anyone."

As the experienced CO of 899, Thomas was originally told by the Navy to remain at Yeovilton, even though most of his aircraft and pilots were being sent to Portsmouth to join 800 and 801 squadrons aboard *Hermes* and *Invincible*.

"Then I managed to find another aeroplane, thanks to BAe, and they realised they were short of pilots," Thomas recalls. "I'd asked to go,

# Falklands Air Combat ANALYSIS

All times Falklands Islands Time (GMT -4)

## Key to abbreviations

|      |                                                      |
|------|------------------------------------------------------|
| FAA  | Fuerza Aérea Argentina                               |
| CANA | Comando Aviación Naval Argentina                     |
| Esc  | Escuadrilla de Ataque (CANA)                         |
| Gr   | Grupo (FAA)                                          |
| 800  | 800 Naval Air Squadron (HMS <i>Hermes</i> )          |
| 801  | 801 Naval Air Squadron (HMS <i>Illustrious</i> )     |
| CAP  | Combat Air Patrol                                    |
| SHAR | Royal Navy Sea Harrier                               |
| GR.3 | 1 (F) Squadron RAF Harrier GR.3 (HMS <i>Hermes</i> ) |

## 1.5.82

- 0448: First RAF Vulcan strike (Black Buck 1 – 1,000lb bombs) on Stanley Airport. One hit on runway.
- 0725: 801 CAP (Lt Cdr R. Kent, Lt B. Haigh) vectored towards two Daggers (6Gr). No contact.
- 0800: 12 800 SHARs attack Stanley and Goose Green airfields.
- 0830: 801 CAP (Flt Lt P. Barton, Lt Cdr J. Eaton-Jones) vectored towards two Mirages (8Gr) escorting four A-4Bs (5Gr). No contact.
- 1100: Task Force located by S-2E Tracker (Esc Antisubmarina) from 25 de Mayo.
- 1200: 801 CAP (Lt Cdr N. Ward, Lt M. Watson) vectored towards three Turbo Mentors (4Esc). One damaged (Ward, cannon).
- 1215: Same CAP vectored towards two Mirages (8Gr). At least one R530 missile fired, out of range. Mirages broke off.
- 1528: 801 CAP (Lt S. Thomas, Flt Lt P. Barton) vectored towards two Mirages (8Gr). Turning fight. Barton (Sidewinder) destroys one, Pr Tnte C. Perona ejects. Thomas (Sidewinder) damages the other (later shot down by ground fire – Capt G. Garcia Cuerva killed).
- 1541: 800 CAP (Flt Lt A. Penfold, Lt M. Hale) intercepts two Daggers. Two Shafir missiles fired, evaded. Penfold (Sidewinder) destroys one – Pr Tnte J. Ardiles killed.
- 1545: Three Daggers (6Gr) attack *Glamorgan*, *Alacrity*, *Arrow*. Some damage, no bomb hits.
- 1647: 801 CAP (Lt Cdr M. Broadwater, Lt W. Curtis) intercepts three Canberras (2Gr) 50 miles from *Invincible*. Curtis (Sidewinders) destroys one – Tnte E. de Ibanez, Pr Tnte M. Gonzalez eject, but never found.
- 2358: 801 SHAR (Flt Lt I. Mortimer), pursuing contact (S-2E Tracker), detects 25 de Mayo carrier group c. 150 miles NW of Task Force.

## 2.5.82

- 0500: 25 de Mayo carrier strike (eight A-4Q Skyhawks, 3 Esc) cancelled after S-2E Tracker failed to regain contact with Task Force.
- AM: First Super Etendard/Exocet (2 Esc) strike abandoned after refuelling problem.
- 1557: Cruiser *General Belgrano* torpedoed and sunk.

## 4.5.82

- 0430: Second RAF Vulcan raid (Black Buck 2 – 1,000lb bombs) on Stanley Airport. No hits.
- 1102: Two Super Etendards (2 Esc), vectored by SP-2H Neptune (Esc de Exploración), launch two Exocets at *Sheffield*. One missile hit. Ship abandoned.
- 1300: Three 800 SHARs attack Goose Green airfield (Lt. G. Batt, Lt N. Taylor, Flt Lt E. Ball). One destroyed (35mm cannon), Taylor killed.

## 6.5.82

- Dawn: 801 CAP SHARs (Lt W. Curtis, Lt Cdr J. Eaton-Jones) did not return.

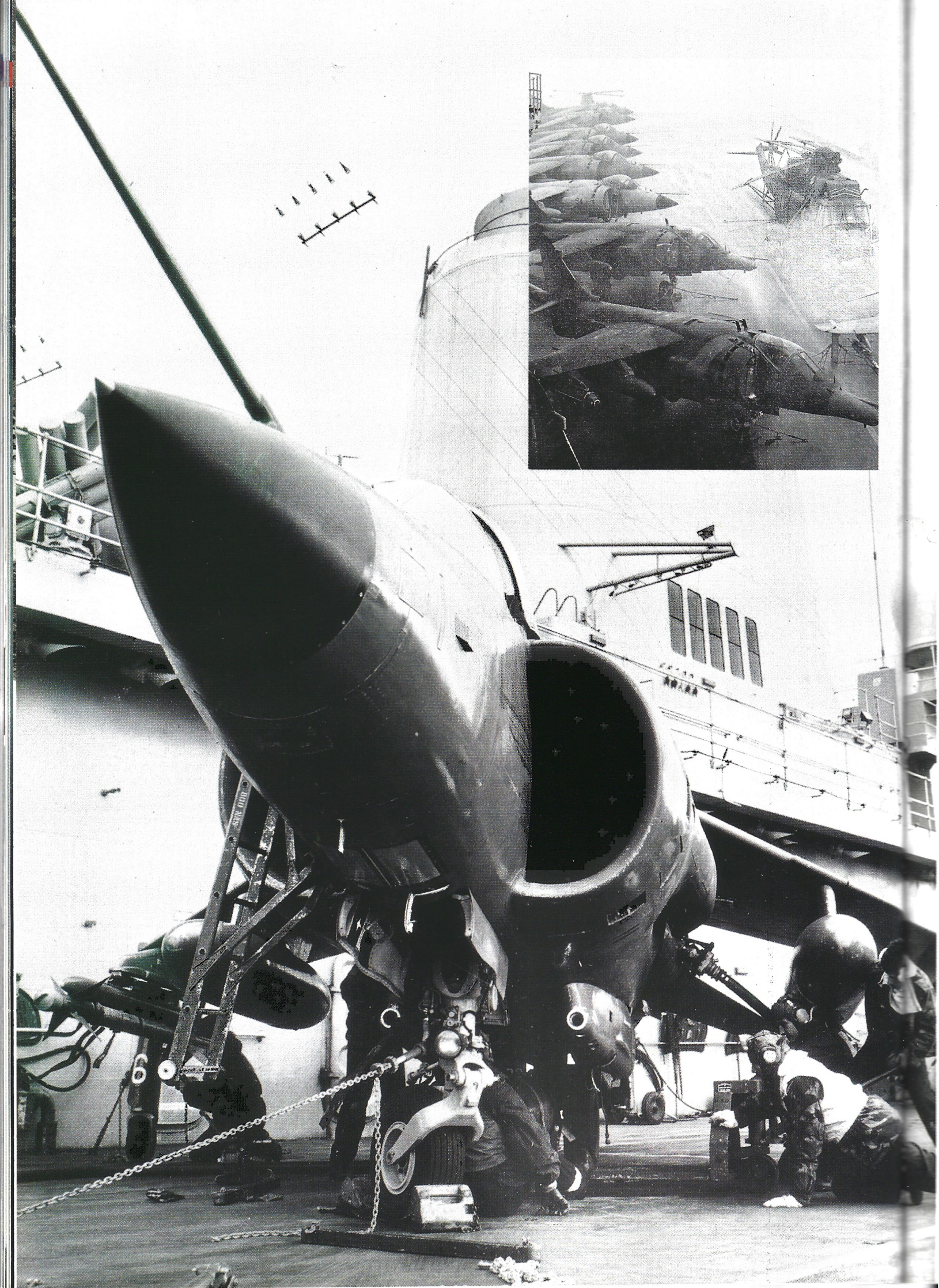
## 7.5.82

- 1017: FAA C-130 Hercules engaged by *Coventry* (Sea Dart). No hits.

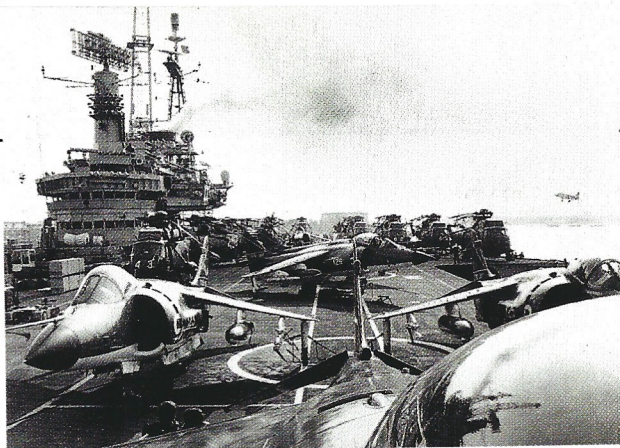
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Mike got the man on the left... I got a very good growl from the target, so I just shot the missile and it went straight to it









Left: Sea Harrier maintenance aboard HMS *Invincible*. Inset: snow storm, HMS *Hermes*, with 800 NAS SHARs, 1 Sqn RAF GR.3s and an 826 NAS Sea King HAS.5. The Sea Harriers routinely operated in extreme conditions that only V/STOL carrier aircraft could have coped with. Top: *Hermes'* flight deck, Portsmouth, 5 April 1982. Above: on 13 June, with forward operating base 'Sheathbill' out of action, 800 SHARs XS 455 (Lt Cdr Neill Thomas) and ZA177 (pictured - Lt Simon Hargreaves), were forced to land aboard assault ships *Fearless* and *Intrepid*.

Photographs: Imperial War Museum/Navy News

and eventually they said I could if I didn't make a nuisance of myself." 899 was absorbed into 800 for the duration, though Thomas's seniority was acknowledged when Andy Auld, CO of 800, asked him to be the squadron's chief tactical instructor. In all, six 899 pilots were absorbed into 800 on *Hermes*, while five were sent to 801 on *Invincible*.

## The carriers sail

On Monday 5 April *Invincible* sailed from Portsmouth with eight Sea Harriers and 12 pilots, followed by *Hermes* with 12 aircraft and 16 pilots. In mid-May eight more Sea Harriers and pilots of 809 NAS were delivered via *Atlantic Conveyor*, four going to each ship. At the same time six 1 Squadron RAF Harrier GR.3s and pilots joined *Hermes*. Two more flew direct from Ascension (assisted by four Victor tankers) to *Hermes* on 1 June, followed by another two on 8 June. Converted to fire AIM-9G Sidewinders, the GR.3s were originally intended as attrition replacements for the SHARs, but were used mainly for ground attack.

The Neill/Blissett engagement of 21 May might seem exceptionally swift and efficient, but it was typical of many of the Sea Harrier kills achieved against the Daggers and Skyhawks of the Argentine air force and navy. Since 1 May, the first day of air fighting, when Sea Harriers of both 800 and 801 squadrons had stamped an undeniable moral

authority on the campaign by aggressively seeking to engage supersonic Mirages and Daggers high over the islands, the Argentine pilots had not sought air combat with the British. Royal Navy training and tactics had proved demonstrably superior. The Sea Harrier also proved a more capable combat aircraft than the Argentines had suspected, and its new 'all aspect' AIM-9L Sidewinder was rightly feared as a vastly more effective missile than anything in the Argentine arsenal.

The Skyhawks' reaction on sighting the rapidly closing Sea Harriers over West Falkland - jettisoning their bombs and aborting the mission - was also typical. As Thomas points out: "If we'd done nothing, that attack still wouldn't have got to the target."

Deterrence was vital to the success of the Sea Harriers in the fleet defence role. FAA radar at Port Stanley was used effectively to alert incoming raids of the presence of Sea Harrier CAPs, especially early in the campaign, and a number of raids were aborted after being warned of the danger. By 21 May low-level Sea Harrier patrols were more routine, and Sharkey Ward's 801 NAS adopted very low-level CAPs as a matter of policy, the Sea Harriers' Blue Fox radar transmissions providing the deterrence.

Although no airborne early warning system was available to the Royal Navy, it had powerful tracking radars aboard some of its ships, particularly the Sea Dart and Sea Wolf-equipped Type 42s and Type 22s. But in the air defence of the amphibious fleet and the landing area, the admiral knew he had a serious problem.

On 21 May Woodward only had two Type 42s. *Sheffield* had been sunk, *Exeter* was en route from Belize and *Cardiff* had only recently left Gibraltar. That left *Glasgow* and *Coventry* - and *Glasgow* was unwell after taking a bomb through the engine room the week before. Of the Type 22s, *Broadsword* and *Brilliant* were the only two available.

## Missile trap

Woodward could not afford to lose a carrier, and kept them well

## 9.5.82

- AM: Two A-4Cs (4Gr) did not return: Tnte J. Farias, Tnte J. Casco presumed crashed in poor weather. 800 SHARs (Fit Lt D. Morgan, Lt Cdr G. Batt) launched to begin regular pre-CAP bombing of Stanley Airport. Cloud cover: attack spy trawler *Narwhal* instead.
- 1220: *Coventry* engages three unseen targets (Sea Dart) off Port Stanley. Result uncertain.
- 1507: *Coventry* destroys Argentine Army Puma at Goose Green with Sea Dart (range 10+ miles).

## 12.5.82

- 1244: Four A-4Bs (5Gr) attack *Brilliant* and *Glasgow* 15 miles S of Port Stanley. *Glasgow's* Sea Dart does not launch, 4.5in gun jams after eight rounds. Two A-4Bs destroyed (*Brilliant*/Sea Wolf), one crashes evading missile. Pr Tnte O. Bustos, Tnte J. Ibarlucea, Tnte M. Nivoli killed. No bomb hits.
- 1304: Four A-4Bs (5Gr) attack *Glasgow* (Sea Dart still u/s) and *Brilliant*. Weaving attack confuses Sea Wolf, which refuses contacts. One bomb hit on *Glasgow* (did not explode) - significant damage. One A-4B destroyed by Argentine AA at Goose Green: Pr Tnte F. Gavazzi killed.

## 15.5.82

- 0340: SAS raid on Pebble Island: six Pucará (3Gr), four Mentors (3Esc), one navy Skyvan destroyed.
- AM: Bombing strikes on Stanley Airport, Mount Kent, Sapper Hill by 800 and 801 CAPs.
- 1330: FAA 707 overflies Amphibious Group (too rough to launch SHAR from *Atlantic Conveyor*). CANA SP-2H Neptunes (Esc de Exploración) retired.

## 16.5.82

- 1350: 800 SHARs bomb freighter *Rio Carcarana* off Port King. Two hits, ship abandoned.
- 1450: 800 SHARs strafe *Bahia Buen Suceso* at Fox Bay. Some damage.

## 17.5.82

Bombing strike on Stanley Airport by 801 CAP.

## 18-20.5.82

Eight SHARs and six GR.3s join *Hermes* and *Invincible* from *Atlantic Conveyor*.

## 19.5.82

Four 801 SHARs bomb Mount Kent. Two GR.3s launched to intercept 707. No contact.

## 20.5.82

Three GR.3s bomb fuel dump at Fox Bay.

## 21.5.82

- 0840: Pucará (3Gr) shot down by Stinger near San Carlos. Capt J. Benítez ejects.
- 0840: GR.3 (Fit Lt J. Glover) shot down by Blowpipe near Port Howard. Pilot ejects, captured.
- 0845: Macchi MB-339A (1 Esc) attacks *Argonaut* with 5in rockets and 30mm cannon, N of East Falkland. Some damage.
- 0925: Two Daggers (6Gr) attack *Antrim*, Falkland Sound. Slight damage.
- 0930: Six A-4Bs (5Gr) attack *Argonaut* off Fanning Head. Two bomb hits, ship on fire.
- 0930: Three Daggers (6Gr) attack *Broadsword*, *Argonaut*: slight damage. One Dagger destroyed (either *Broadsword*, Sea Wolf, or *Plymouth*, Seacat). Tnte P. Béan killed.
- 0931: Three Daggers (6Gr) attack *Antrim*: serious damage. Two chased by 800 CAP (Lt M. Hale/Sidewinder, Lt Cdr R. Fredriksen) but escaped.
- 1045: Two Pucará (3Gr) intercepted by 801 CAP (Lt Cdr N. Ward, Lt S. Thomas, Lt A. Craig). One destroyed (Ward, cannon). Mayor C. Tomba ejects.
- 1200: Single A-4B (5Gr) attacks *Ardent*, no hits.
- 1205: 800 CAP (Lt Cdr N. Thomas, Lt Cdr M. Blissett) intercept four A-4Cs (4Gr) Two destroyed (Thomas, Blissett, Sidewinders: Tnte N. Lopez, Pr Tnte D. Manzotti killed) one damaged (Blissett, cannon).
- 1335: 800 CAP (Lt Cdr R. Fredriksen, Lt A. George) vectored towards four Daggers (6Gr).

cont'd p57

**Royal Navy training and tactics had proved demonstrably superior. The Sea Harrier also proved a more capable combat aircraft than the Argentines had suspected**



## Losses

### Argentine air losses

Argentina lost 38 fixed wing aircraft shot down by British weapons. The Sea Harriers were the most lethal adversary, accounting for 21 (18 with AIM-9L Sidewinders, two with 30mm Aden cannon, and one – Sharkey Ward's C-130 on 1 June – with both).

The ship-borne missile systems, when they worked properly, also proved themselves to be awesome opponents, with ten confirmed fixed-wing kills. Sea Dart, the fleet's primary air defence missile deployed aboard the Type 42 destroyers, accounted for four Skyhawks, a Canberra and one reconnaissance Learjet more than 30 miles away at 40,000ft. Sea Wolf was the newest system, and in the early stages of the campaign prone to malfunction, but it accounted for at least two confirmed kills and two possibly shared. The relatively unsophisticated, visually-guided Seacat GWS20, mounted aboard the older frigates, was credited with one confirmed Skyhawk and a possible Dagger.

The ground-based Rapier network set up after 21 May to protect the landing area destroyed one Dagger and a possible Skyhawk, while the army's shoulder-launched Blowpipes and Stingers shot down one MB.339 and a Pucará. The 40mm guns aboard the aptly-named HMS *Fearless* shot down a Skyhawk on 27 May, and the following day ground fire destroyed a Pucará near Darwin.

| Skyhawk                               | Mirage IIIEA                        |
|---------------------------------------|-------------------------------------|
| 12.5.82 Sea Wolf ( <i>Brilliant</i> ) | 1.5.82 SHAR, Sidewinder             |
| 12.5.82 Sea Wolf ( <i>Brilliant</i> ) |                                     |
| 21.5.82 SHAR, Sidewinder              | Canberra B.62                       |
| 21.5.82 SHAR, Sidewinder              | 1.5.82 SHAR, Sidewinder             |
| 21.5.82 SHAR, Sidewinder              | 13.6.82 Sea Dart ( <i>Cardiff</i> ) |
| 21.5.82 SHAR, Sidewinder              |                                     |
| 21.5.82 SHAR, 30mm Aden cannon        | Pucará                              |
| 23.5.82 Sea Wolf                      | 21.5.82 Stinger                     |
| ( <i>Broadsword</i> )/Rapier          | 21.5.82 SHAR, 30mm Aden cannon      |
| 24.5.82 Anti-aircraft fire            | 28.5.82 Anti aircraft fire          |
| 25.5.82 Sea Dart ( <i>Coventry</i> )  |                                     |
| 25.5.82 Sea Dart ( <i>Coventry</i> )  | MB.339A                             |
| 25.5.82 Seacat ( <i>Yarmouth</i> )    | 28.5.82 Blowpipe                    |
| 27.5.82 40mm Oerlikon                 |                                     |
| ( <i>Fearless</i> )                   | C-130E Hercules                     |
| 30.5.82 Sea Dart ( <i>Exeter</i> )    | 1.6.82 SHAR, Sidewinder/            |
| 30.5.82 Sea Dart ( <i>Exeter</i> )    | 30mm Aden cannon                    |
| 8.6.82 SHAR, Sidewinder               |                                     |
| 8.6.82 SHAR, Sidewinder               | Learjet 35A                         |
| 8.6.82 SHAR, Sidewinder               | 7.6.82 Sea Dart ( <i>Exeter</i> )   |

#### Daggers

|                                        |
|----------------------------------------|
| 1.5.82 SHAR, Sidewinder                |
| 21.5.82 Sea Wolf ( <i>Broadsword</i> ) |
| or Seacat ( <i>Plymouth</i> )          |
| 21.5.82 SHAR, Sidewinder               |
| 21.5.82 SHAR, Sidewinder               |
| 21.5.82 SHAR, Sidewinder               |
| 21.5.82 SHAR, Sidewinder               |
| 23.5.82 SHAR, Sidewinder               |
| 24.5.82 SHAR, Sidewinder               |
| 24.5.82 SHAR, Sidewinder               |
| 24.5.82 SHAR, Sidewinder               |
| 29.5.82 Rapier                         |

### British air losses

Six Royal Navy Sea Harriers were lost during the Falklands campaign: four to accidents, one to a Roland missile and one to radar controlled anti-aircraft fire during a ground-attack mission.

Anti-aircraft fire accounted for two of the RAF Harrier GR.3s, while a Blowpipe missile shot down a third. The fourth GR.3 lost suffered a landing accident at the HMS *Shearhall*/forward operating base on West Falkland.

to the east, as far as possible from the Exocet-armed Super Etendards that were his biggest fear. Yet as the conflict wore on, and the ship-mounted air defence missiles – and Rapier, once installed around the landing area – failed to perform as advertised, he moved his two capital ships as close to the islands as he dared, to give the Sea Harriers as much time over the islands as possible.

A '42/22 missile trap' was the Admiral's answer to the lack of AEW. It was dangerous – the crews of both *Sheffield* and *Glasgow* could testify to that – but it provided a potent combination of warning and defence with its complementary radar and missile systems, orchestrated by the Type 22 via a datalink. *Coventry* and *Broadsword* were sent to patrol 12 miles north of Pebble Island, to warn the fleet of incoming raids and control the Sea Harrier CAPs by radio. Sea Dart would fire at anything that came within range, and Sea Wolf would protect the ships themselves. And Sea Wolf had shown potential on 12 May, destroying two Skyhawks in short order and causing a third to crash. ("Christ Chief," exclaimed a young seaman up on *Brilliant*'s gun direction platform. "It's like a f\*\*\*ing war film up here!")

But on Tuesday 25 May, Argentina's national day, it all went badly wrong.

Neill Thomas had just taken off on CAP with Lt Dave Smith. The British had received intelligence from the mainland that Skyhawks had taken off from Rio Gallegos. "Generally these reports were quite reliable. They couldn't be specific about when the attack would arrive, but we knew something was on," says Thomas. "So when we were told, by *Hermes*, to go and have a look for a Pucará north of Port Stanley, I queried it – and afterwards stormed

down to the ops room, pretty angry. But it was their call.

"We had a look, perhaps not as low as we should have done because I didn't think the Pucará was all that important at that stage, and then had to climb up and go off north-west towards our CAP position to the north of Falkland Sound.

"As we started to let down we got a call – it was *Broadsword* – that they'd picked up an aircraft coming out from the coast." The 'missile trap' picket had been working well: just that morning it had accounted for two 4 Grupo Skyhawks with Sea Dart, while the day before Andy Auld and Dave Smith of 800 NAS had been vectored by *Coventry* onto a flight of Daggers and shot down three of them. Now the ships were about to come under attack by two flights of two A-4Bs of 5 Grupo, which had been sent out to find them. Thomas and Smith were still ten miles from their CAP area, heading north-west. The first two Skyhawks were already over the sea at low level, heading north at high speed on their bombing run.

"It was touch and go whether



### The Phantom menace?

How would the air war have gone if the Royal Navy had retained HMS *Ark Royal* (right) instead of being forced down the Sea Harrier route? The old Ark, with its 12 F-4K Phantoms, 14 Buccaneers and five Airborne Early Warning (AEW) Gannets, left the service in 1977. The advantages that this Air Group enjoyed that the *Invincible*/Hermes combo didn't were:

- supersonic high level intercept capability (F-4K)
- radar intercept lookdown capability over land (F-4K)

- an outstanding fighter bomber in the Buccaneer which could have attacked mainland airfields under F-4K escort
- AEW capability that we sorely missed down South

The deterrence aspects of the *Ark Royal* air group were, on paper, huge. However, the disadvantages were also major:

- serviceability of the F-4K and its weapon system was very poor – it would not have been possible to mount and fill three CAP stations continuously
- Buccaneer serviceability was also

unpredictable

- neither of these fast jets could have operated from the deck in the same bad weather that Sea Harrier operated in, particularly on night operations
- the AEW Gannet radar was of little use over land – and that is where the enemy attack aircraft were running in: over West Falkland. As an F-4K pilot as well as a Sea Harrier pilot, my choice would be to

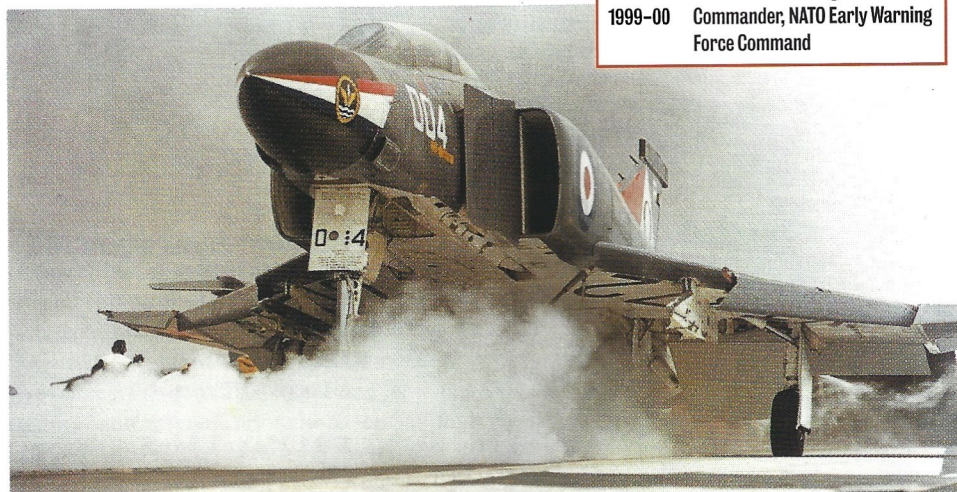
opt for the *Invincible*/Hermes combo. We did, after all, win. Without good serviceability, the *Ark Royal* air group would probably have lost.

Sharkey Ward





Imperial War Museum/Navy News



Pucará (top) and an unidentified wreck: including captured assets, Argentina lost 100 aircraft of all types during the conflict. Above: 899 NAS F-4K. The Phantoms of the old *Ark Royal* (left) would not have helped the British cause, according to 801 boss Sharkey Ward.

we'd get there in time: we just opened the taps and went for it," Thomas remembers. "But I still hadn't seen the A-4s when we were called off by *Coventry* because we were approaching their missile engagement zone."

But on board the Type 42 the *Sea Dart*'s 909 radar was confused by echoes from the distant shore of Pebble Island and couldn't lock on to the Skyhawks. *Broadsword*'s *Sea Wolf* saw two aircraft, but flying very close together, and that didn't look like a recognisable target. *Coventry* opened up with her 4.5-inch gun. While Neill and Smith in their *Sea Harriers* executed a wide 360 to keep clear of *Coventry*'s *Sea Darts*, two 1,000 bombs skipped over *Broadsword*, a third fell short, and the fourth ploughed through the flight deck without exploding and demolished the nose of the *Lynx*.

By the standards of that day,

## Commodore Neill Thomas DSC RN

|         |                                                                                                                 |
|---------|-----------------------------------------------------------------------------------------------------------------|
| 1965-67 | Flying training: Jet Provost, Hunter                                                                            |
| 1968    | Advanced Flying Training, Sea Vixen 890/899 NAS                                                                 |
| 1969    | Operational Conversion to Phantom F-4K                                                                          |
| 1970-72 | Embarked on HMS <i>Ark Royal</i> with 892 NAS                                                                   |
| 1972-73 | Flying instructor, Chipmunks                                                                                    |
| 1973-75 | 892 NAS                                                                                                         |
| 1975    | Sea Training                                                                                                    |
| 1976-78 | F-4 Training Flight                                                                                             |
| 1978-79 | Maritime Tactical School                                                                                        |
| 1980    | Sea Harrier conversion                                                                                          |
| 1981-83 | CO, 899 NAS                                                                                                     |
| 1983-89 | Directorate of Naval Air Warfare Staff, Flag Officer Naval Aviation MoD Directorate of Operational Requirements |
| 1990-91 | Commander (Air), HMS <i>Ark Royal</i>                                                                           |
| 1992-99 | Senior Aviation Officer, FONA Naval & Air Attache, Seoul NATO Defence College                                   |
| 1999-00 | Commander, NATO Early Warning Force Command                                                                     |

*Broadsword* was lucky. The next pair of Skyhawks was already committed to its run over the sea. Again Smith and Thomas were desperately searching for their small, fast, low-level targets when David Hart-Dyke, *Coventry*'s captain, again called on them to clear the MEZ. *Sea Wolf* was back on line, although *Sea Dart* still couldn't make out its targets. Then as *Broadsword* prepared to despatch the A-4s her guidance system was suddenly masked by *Coventry* crossing in front of the frigate: the missiles were blindfolded. "By the time we came in the second time, we were in exactly the same position," said Thomas. With the *Sea Harriers* in no position to stop him Primer Teniente Mariano Velasco put three bombs into the destroyer's starboard side. "As we started the turn I saw the bombs go off. It was

One destroyed (Fredriksen, *Sidewinder*; Tnte H. Luna ejects). *Ardent* bombed.

- 1345: Three Daggers (6Gr) attack ships in anchorage and escape. Slight damage.
- 1350: 801 CAP (Lt Cdr N. Ward and Lt S. Thomas) vectored towards three Daggers (6Gr) north of Port Howard. Turning fight, three Daggers destroyed (Thomas, two, *Sidewinders*; Ward, one, *Sidewinder*). Capt Donadille, Mayor J. Puma, Pr Tnte J. Senn eject.
- 1406: Three A-4Qs (3Esc) attack *Ardent*, two bomb hits. 800 CAP (Lt C. Morrell, Flt Lt J. Leeming) intercepts. Three destroyed (Morrell two, one *Sidewinder*, one cannon; Leeming one, cannon). Capt de Corbeta A. Philippi, Tnte de Navio J. Arca eject; Tnte de Fragata M. Marquez killed.
- 1455: *Ardent* abandoned. *Antrim* (Seaslug u/s) removed from landing area.

## 22.5.82

- 0300: C-130 tracked by *Coventry*: *Sea Dart* malfunctions.
- 0800: 707 attacked by *Sea Darts* from *Cardiff*. Near miss. Four-ship GR.3 strike against Goose Green airstrip: fuel dump damaged.
- 1610: Two unidentified A-4s attack *Brilliant* off Fanning Head. No hits. 800 CAP strafes and drives ashore Argentine patrol craft *Rio Iguazu*, Chisleul Sound.

## 23.5.82

- 0800: Four GR.3s bomb Dunnose Head airstrip.
- 0930: 800 CAP (Flt Lt J. Leeming, Flt Lt D. Morgan) encounter four helicopters near Port Howard: two Pumas, one Agusta A 109A destroyed.
- 1245: Two flights of two A-4Bs (5Gr) attack *Broadsword*, *Antelope* and *Yarmouth* S. of Fanning Hd. *Antelope* hit. One A-4B destroyed, possibly hit by both *Sea Wolf* (*Broadsword*) and *Rapier*. Pr Tnte Guadagnini killed.
- 1300: Three A-4Qs (3 Esc) attack. No bomb hits.
- 1320: Four Daggers (6Gr) attack. No bomb hits.
- 1405: 800 CAP (Lt Cdr A. Auld, Lt M. Hale) encounter three more Daggers (6Gr) over Pebble Is. One destroyed (Hale, *Sidewinder*) Tnte H. Volponi killed.
- 1650: Two Super Etendards (2 Esc) abandon strike mission: found no targets.
- 1715: Bomb in *Antelope* explodes, ship abandoned.
- 1900: Four 800 SHARs launched to attack Port Stanley airfield. One (Lt Cdr G. Batt) crashes and blows up after take-off. Pilot killed.

## 24.5.82

- 0830: Two 800 SHARs and four GR.3s attack Stanley Airport.
- 1005: Four Daggers (6Gr) attack *Fearless*, *Sir Galahad* and *Sir Lancelot* off Ajax Bay. Two Daggers damaged.
- 1015: 800 CAP (Lt Cdr A. Auld, Lt D. Smith) vectored towards four more Daggers (6Gr). Three destroyed (Auld two, *Sidewinders*, Smith one, *Sidewinder*). Mayor Puga, Capt R. Diaz eject, Tnte Castillo killed.
- 1045: Five A-4Bs (5Gr) attack *Sir Galahad*, *Sir Lancelot* and *Sir Bedivere*. All ships hit. Some A-4Bs damaged.
- 1215: Three A4Cs (4Gr) attack ships, Falkland Sound. All damaged, one later crashes: Tnte J. Bono killed.
- 1645: Two 800 SHARs bomb Stanley Airport.

## 25.5.82

- Several GR.3 strikes on Stanley Airport.
- 0837: A-4B (4Gr) destroyed (*Coventry*/*Sea Dart*) west of West Falkland, Capt Palaver killed. Others broke off.
- 1130: Four A4Cs (4Gr) attack shipping in San Carlos Water. Two destroyed (*Coventry*, *Sea Dart*, *Yarmouth*, *Seacat*). Tnte Lucero ejects and is picked up; Capt Garcia ejects, but is not found.
- 1400: 800 CAP (Lt Cdr N. Thomas, Lt D. Smith) called down on two A-4Bs (5Gr), but called off by *Coventry* - *Broadsword* hit.
- 1419: 800 CAP pursues two more A-4Bs (5Gr), called off again. *Coventry* sunk.
- 1536: Two Super Etendards (2Esc) detected 40 miles from Task Force, N. of islands.
- 1538: Two Exocets launched, one hits *Atlantic Conveyor* (two miles from *Hermes*). Three Chinooks, six Wessex 5s destroyed. Ship abandoned.

cont\* p59 >



## War winner?

The Sidewinder traces its ancestry to the US Naval Weapons Test Centre at China Lake in the early 1950s. Air combat in Vietnam and the 1973 Arab Israeli war highlighted the limitations of earlier models, which were too easily confused by background infra-red emitted from the ground and reflected by clouds, and needed to 'see' the target's jetpipe to have any chance of acquiring it.

The 9L was based on the 9H, but with a much improved 'all aspect' optical system, an active laser proximity fuse and a better cooling system. New pointed double-delta canard fins gave much better manoeuvrability.

The Falklands War saw the 9L's first use in action, where it achieved a kill rate of over 80%. Later that summer over the Bekaa Valley, Israeli pilots found it equally effective.

Sharkey Ward, CO of 801 NAS, was an enthusiastic convert to the new missile, which the Royal Navy had on order in early 1982 to replace its 9Gs. "US Defense Secretary Caspar Weinberger personally put us at the



head of the queue to receive them in time," he told *Jets*. "Many of our kills might not have been achieved with the Golf, which was neither as sensitive nor as manoeuvrable as the Lima."

The 'all aspect' 9L can home in on the high airframe temperature of a fast-moving aircraft, which gives the pilot a greater range of options in approaching his target. "We spent a lot of time developing tactics for the 9L prior to the Falklands," Ward recalls.

"This paid off handsomely with the Thomas/Barton intercept of two Mirage IIIs: the first air kills."

In fact the success of this engagement, which saw one Mirage destroyed and one damaged (later shot down by friendly fire attempting to force-land at Stanley) could be seen as a result of superior RN training, as both Sea Harriers were successfully manoeuvred behind the Mirages for

classic six o'clock attacks.

Subsequent RN study of combat reports concluded that the AIM-9L was never used in its true role as an all-aspect missile: earlier marques of Sidewinder might have proved as effective. Commodore Neill Thomas agrees: "I think all the shoot-downs in the end were pretty much line astern. The all-aspect capability turned out to be more of a threat than a reality."

And yet the importance of the 9L's improved seeker head should not be under-estimated: "It performed with distinction at very low level over land and sea," Sharkey Ward contends. "It was superb."

Perhaps it may be concluded that the AIM-9L was not a war winner in the sense that the Royal Navy could not have won without it: but if the Argentine fighters had had it as well, things might have been different.

### AIM-9L Sidewinder

|            |                                            |                  |                     |
|------------|--------------------------------------------|------------------|---------------------|
| Length     | 9ft 6in (2.89m)                            | Guidance         | Infrared homing     |
| Diameter   | 5in (0.13m)                                | Warhead          | 20.8lb (9.36kg)     |
| Span       | 2ft 1in (0.63m)                            |                  | blast fragmentation |
| Weight     | 191lb (86.6kg)                             | Speed            | Mach 2.5            |
| Propulsion | Single-stage solid propellant rocket motor | Range            | 10nm+ (17km)        |
|            |                                            | Unit cost (1999) | \$83,000            |

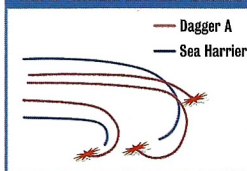
dreadful." Nineteen men were killed, and within minutes the ship had turned over. Overhead Thomas and Smith could only watch.

"Inevitably, you start thinking about whether you did the right thing," says Thomas. "For years afterwards David Hart-Dyke, whenever I saw him, would ask: 'Did I haul you off too soon?' It was

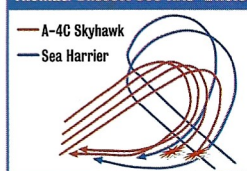
obviously very much on his mind. But tactically he was exactly right, unless he knew we were right in behind the aeroplane – and at that stage I hadn't seen it.

"If we had been there a few minutes earlier, it might have been different. It only took five minutes to look for that Pucará, but that might have been enough." **JETS**

Ward/Thomas 801 NAS 21.5.82



Thomas/Blissett 800 NAS 21.5.82



## 800 Naval Air Squadron

1,126 combat missions  
1,299 flying hours  
14 AIM-9L Sidewinders launched  
Kills: 14  
(6 Daggers, 8 Skyhawks)

## 801 Naval Air Squadron

599 combat missions  
786 flying hours  
12 AIM-9L Sidewinders launched  
Kills: 7  
(3 Daggers, 1 Mirage, 1 C-130, 1 Pucará, 1 Canberra)

## Sharkey's Machine – could do better

Sharkey Ward, outspoken boss of 801 NAS aboard *Invincible* during the Falklands campaign, offers a personal view of the effectiveness of the Royal Navy's Sea Harrier operations

At 0400 on Friday 2 April 1982, with my squadron on leave and spread all over the place, I received this order over the telephone: "Sharkey, from the Command, you are to mobilise your squadron for sea immediately".

That Sunday afternoon, 801 Naval Air Squadron embarked on HMS *Invincible* with eight Sea Harrier FRS Mk1s and about 100 officers and men. Our sister squadron, 800 NAS, embarked on the somewhat older but larger HMS *Hermes* with 12 aircraft.

We were off to war. I relished the prospect.

The weekend had passed in a blur of planning, logistics and intense media coverage. Few laymen recognised the existence of the Sea Harrier. Many, indeed, thought that the Task Force was to sail with no fighter air defence assets at all. Television experts were already prejudging the fight to come. Argentina had 200 Mirages, Daggers, Skyhawks, Canberras and Pucarás – and the Task Force was to sail with 20 jump jets. The odds were 10 to

1: clearly, the Task Force was doomed!

Some of us knew better, but we were too busy at the time to tour the television studios. I had become intimately acquainted with the Sea Harrier over the previous six years, having overseen the type's introduction into RN service and commanded both the flying trials and training squadrons.

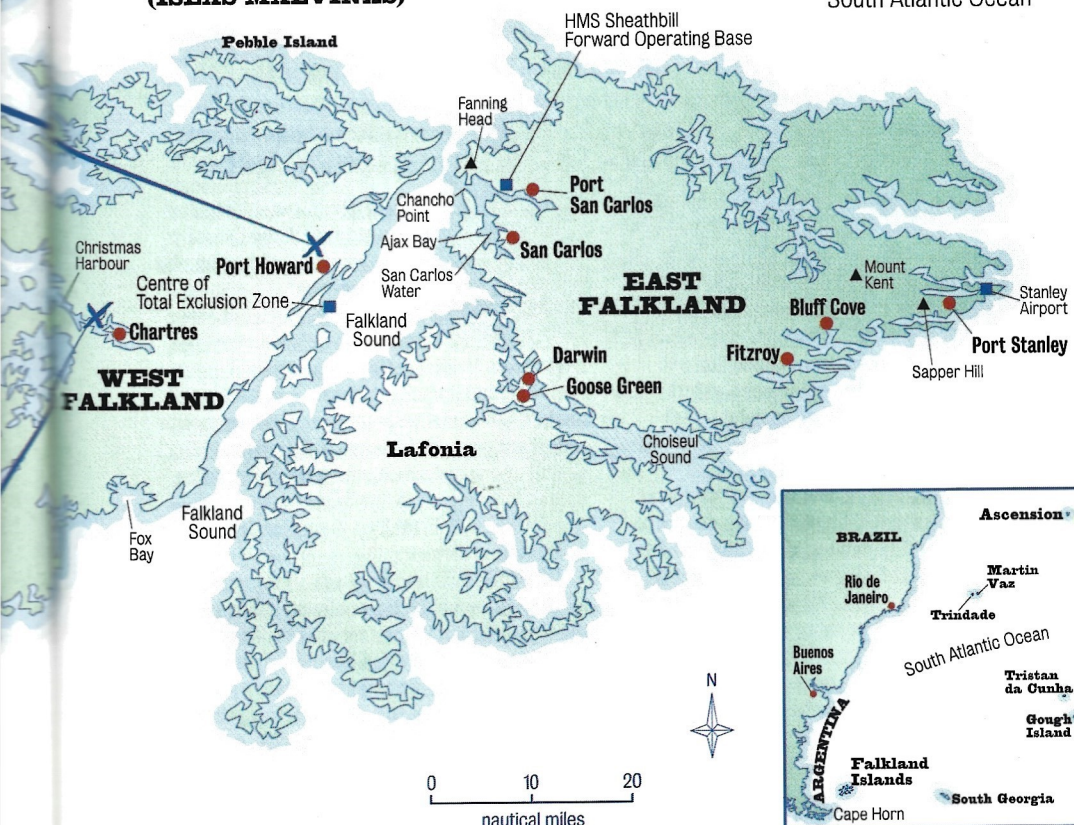
My confidence and optimism were based on hard experience in practice combat, but these feelings were shared by very few –

even within the Navy. Cold War planners had never imagined that the Sea Harrier would have to tangle with land-based fighters on equal terms: long-range maritime patrol aircraft far out in the North Atlantic were felt to be its likely prey, as it operated alongside anti-submarine helicopters from the diminutive decks of the Navy's three 'Invincible'-class carriers. Although it replaced the Phantom and Buccaneer, it was never designed to take on their roles; so on paper it was an easy matter to compare the little Sea Harrier unfavourably with its powerful predecessors.

The handful of believers included First Sea Lord Sir Henry Leach, but many years



## FALKLAND ISLANDS (ISLAS MALVINAS)



Of the two aerial engagements illustrated (above), that of Thomas and Blissett was the more typical: a fast low-level intercept which instantly deterred the four FAA Skyhawks. The Ward/Thomas engagement was almost a dogfight: the centre Dagger (Capt Donadille) came briefly head-on against Ward's SHAR, and fired his twin 30mm DEFA cannon – before being shot down himself by Thomas.

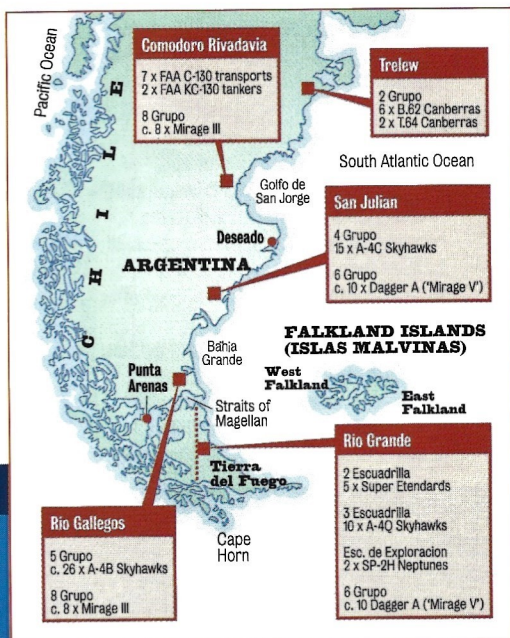
after the conflict, Admiral Sandy Woodward remembers that at the time of mobilisation he knew little about the capability of the Sea Harrier. Never exposed to the SHAR world, he was a professional and gifted submariner who had risen to Flag rank and as a seagoing Admiral was serving in the Mediterranean as we sailed South. He joined the Task Group and took command as we passed Gibraltar, hoisting his flag in HMS *Hermes*.

Unfortunately, the Admiral's staff who had been appointed to serve him during the conflict were also, in the main, non-aviators, and knew little of the Sea

Harrier's capabilities. Since the demise of the old *Ark Royal* most of the sea officers in the Navy had forgotten about fixed wing aviation and put all their air defence faith in that quartet of surface-to-air missiles: Seacat, Seaslug, Sea Dart and the untested Sea Wolf.

Over in *Invincible* things were different. Captain Jeremy Black listened – possibly because I gave him no choice – and placed full faith in my analysis of the aeroplane's capabilities.

However, we had only just commissioned the SHAR's Blue Fox radar – indeed, the last five sets were installed in Sea Harriers on board the carriers as we headed south! 801 had been responsible for completing trials and drawing up operational procedures and tactics for Blue Fox, and we were fully up to speed with its use. Equally important, our maintenance crews were well used to it, which had an important bearing on



## 26.5.82

Several GR.3 strikes: Stanley Airport and Mount Kent.  
1317: Small formation of unidentified A-4s bomb SAS on Sussex mountains and makes off. Daggers (6Gr) approach San Carlos Water, but do not close.

## 27.5.82

1200: Two GR.3s attack Stanley Airport.  
1300: Two GR.3s (Sq Ldr G. Iveson, Flt Lt M. Hare) attack Argentine positions near Goose Green. One shot down by cannon fire. Iveson ejects, evades capture.  
1550: Four A-4Bs (5Gr) bomb shore units on north shore of San Carlos. One destroyed (Pr Tnte Velasco ejects), three damaged (Fearless/40mm guns).

## 28.5.82

Third RAF Vulcan strike (Black Buck 4 – Shrike missiles) aborted due to Victor tanker defect.  
0800: Three Pucaras (3Gr) attack troops at Darwin. One damaged (Blowpipe).  
1100: Two Pucaras (3Gr) encounter two Royal Marines Scout helicopters, Darwin. One Scout destroyed, Lt R. Nunn killed. One Pucara crashes in cloud, Tnte M. Gimenez killed.  
1200: GR.3s bomb Mount Kent.  
801 SHAR CAPs bomb Stanley Airport during day.  
1535: Three GR.3s (Sq Ldrs P. Harris, J. Pook, Flt Lt A. Harper), at request of 2 Para, attack AA gun sites at Goose Green.  
1600: two MB.339As (1Esc) attack Darwin. One destroyed (Blowpipe), Tnte de Fragata D. Miguel killed.  
1609: Two Pucaras (3Gr) attack Darwin. One damaged, one destroyed (ground fire). Tnte Cruzado ejects.

## 29.5.82

GR.3 strikes: Port Stanley, Mount Kent.  
Several 800 SHAR strikes on Stanley Airport.  
1115: Tanker *British Wye*, 400 miles N. of South Georgia, bombed by FAA C-130. One hit, no damage.  
1135: Two Daggers (6Gr) attack ships in San Carlos. One destroyed (Rapier), Tnte J. Bernhardt killed.  
Bomb strikes by both 800 and 801 on Pebble Island and Stanley Airport. GR.3 strike at Mount Kent.  
1447: 801 SHAR slides off the deck in high winds. Pilot (Lt Cdr M. Broadwater) ejects and is picked up.

## 30.5.82

Two GR.3s launched on unsuccessful laser-guided bomb strike.  
Two GR.3s attack troops and artillery near Stanley. One hit by ground fire: losing fuel, pilot (Sq Ldr J. Pook) ejects and is picked up 31 miles from *Hermes*.  
1331: Two Super Etendards (2Esc), with one Exocet, and four A-4Cs (4Gr) detected attacking task group from south. Exocet fired at 21 miles, A-4s following. Two destroyed (prob. *Exeter*/Sea Dart;). Pr Tnte Vazquez, Pr Tnte O. Castillo killed. No bomb or missile hits.  
1400: 800 SHARs bomb Stanley airfield.  
1430: GR.3s support SAS on Mount Kent.

## 31.5.82

0440: Fourth RAF Vulcan strike (Black Buck 5 – Shrike missiles) on Stanley Airport radar. Minor damage. Laser-guided bomb strikes on Stanley Airport by SHARs and GR.3s. Two GR.3s damaged.

## 1.6.82

0355: Two Canberras (2 Gr) attack San Carlos. 800 SHAR (Lt A. McHarg) scrambled, but no contact.  
0950: 801 CAP (Lt N. Ward, Lt S. Thomas) vs. FAA C-130 transport, north of Pebble Is. C-130 destroyed, crew killed (Ward, Sidewinder and cannon).

1255: Two GR.3s arrive aboard *Hermes* from Ascension.

1400: 801 SHAR (Flt Lt I. Mortimer) shot down off Port Stanley (Roland). Pilot ejects.

## 2.6.82

GR.3 ground-support strike.

## 3.6.82

0400: Fifth RAF Vulcan strike

cont' p61 >



## Missiles used in action

### Royal Navy

#### Sea Dart (Hawker Siddeley Dynamics)

Type: Semi-active radar homing SAM. Weight: 1,210lb (550kg). Length: 14ft 5in (4.40m). Propulsion: Ramjet motor with rocket booster. Range (achieved): Low level – 11 miles (20km); High level – 34 miles (65km). Speed: Mach 2

#### Sea Wolf GWS25 (British Aerospace)

Type: Radar or TV guided SAM. Weight: 180lb (82kg). Length: 8ft 3in (1.90m). Propulsion: Solid fuel rocket. Range: c. 1.5 miles (2.5km). Speed: Mach 2. (Pictured below)

#### Seacat GWS20 (Short Bros & Harland)

Type: Optically guided SAM. Weight: 150lb (68kg). Length: 4ft 9in (1.47m). Propulsion: Solid fuel rocket. Range: c. 2.3 miles (4.6km). Speed: Mach 0.9

### Fuerza Aérea Argentina

#### R530 (Matra)

Type: Infra-red homing or semi-active radar. Weight: IR – 427lb (193.5kg); SA – 425lb (192kg). Length: IR – 10ft 6in (3.19m); SA – 10ft 9in (3.28m). Propulsion: Solid fuel rocket. Range: 11.2 miles (18km). Speed: Mach 2.7

#### Shafir 2 (Rafael Armament Authority)

Type: Infra-red homing AAM. Weight: 205lb (93kg). Length: 8ft 1in (2.47m). Propulsion: Solid fuel rocket. Range: 3.1 miles (5km). Speed: n/a

### Comando Aviación Naval Argentina

#### AM.39 Exocet (Aerospatiale)

Type: Active radar homing anti-ship missile. Weight: 1,444lb (655kg). Length: 15ft 5in (4.69m). Propulsion: Solid fuel rocket. Range: 43 miles (70km) max. Speed: Mach 0.93

### British Army

#### Rapier (British Aerospace)

Type: Optically guided SAM. Weight: 93lb (42kg). Length: 7ft 8in (2.35m). Propulsion: Solid fuel rocket. Range: 5 miles (8km). Speed: Mach 2

#### Blowpipe (Short Bros)

Type: Shoulder-launched SAM. Weight: 24lb (11kg). Length: 4ft 7in (1.40m). Propulsion: Solid fuel rocket. Range: 2 miles (3.5km). Speed: n/a

#### FIM-92 Stinger (Hughes/Raytheon)

Type: Shoulder-launched SAM. Weight: 22lb (10kg). Length: 5ft 0in (1.52m). Propulsion: Solid fuel rocket. Range: 3 miles (4.8km). Speed: Mach 1

### Comando de Aviación del Ejército

#### Roland (Aerospatiale/MBB)

Type: Mobile SAM. Weight: 147lb (66.5kg). Length: 7ft 10in (2.40m). Propulsion: Solid fuel rocket. Range: 3.9 miles (6.3km). Speed: n/a

### Royal Air Force

#### AGM-45A Shrike (Texas Instruments)

Type: Passive radar homing anti-radiation missile. Weight: 390lb (177kg). Length: 10ft 0in (3.05m). Propulsion: Solid fuel rocket. Range: 10 miles (16km). Speed: Mach 2



Sea Wolf

# The Vulcan raids

When Argentine forces landed on the Falklands on 2 April 1982 few, even in the RAF, can have imagined that the remnants of the once great V-bomber force could be called upon to help. The RAF's obsolete Vulcan B.2s, then down to three squadrons, were rapidly heading for the history books, never having fired a shot in anger.

But on 9 April 44, 50 and 101 Squadrons at Waddington were placed on standby: the Vulcan's moment had arrived. The six best aircraft were selected (XL391 and XM597 from 101 Sqn, XM598 and XM654 of 50 Sqn and XM607 and XM612 of 44 Sqn) and five crews (who had all just come back from a 'Red Flag' exercise in Nevada) and work began on a hasty series of modifications, including ECM and inertial navigation equipment and a repaint, while the crews trained in conventional bombing and air-to-air refuelling techniques.

The first two Vulcans were ready to leave for Wideawake on Ascension Island at 0900 (GMT) as part of Operation Corporate on 29 April. XM598, flown by Sqn Ldr Reeve, and XM607 (Fit Lt Withers) carried a full load of 21 1,000lb bombs in their bays and each refuelled twice on their way to Ascension from Victor K.2 tankers from Marham. In an effort to keep their move secret from Soviet and Argentine eavesdroppers, the Vulcan crews adopted call signs and procedures used by RAF transport aircraft. Black Buck 1 was launched from Wideawake around midnight on April 30–May 1. XM598 was the primary aircraft, with XM607 in reserve, and the two Vulcans were led into the air by 11 Victor tankers. A pressurisation problem meant XM598 had to return to Wideawake, leaving XM607 (Fit Lt Withers) to continue alone.

The 3,600-mile (5,800km) flight took over seven hours. The standard tactic for bombing 'long thin' targets – runways, ships, submarines – involved crossing diagonally in the hope (or perhaps expectation) that at least one bomb would hit. And so it proved: two miles out at 10,000ft (3000m) the Vulcan's bombing computer released the 21 1,000lb bombs, and the first one landed plumb in the middle of the runway. A jubilant Withers and his crew turned for home and eventually arrived back at Wideawake in the mid-afternoon of May 1, after 15hrs 45mins in the air.

The raid was a huge shock to the Argentines: they simply weren't expecting it. A British intelligence source we spoke to sums up its effect: "A Vulcan flying all the way from Ascension Island to attack Stanley Airport was a

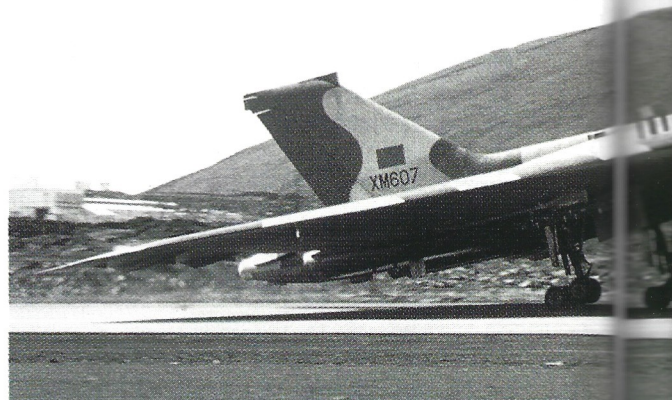
clear signal to Buenos Aires that Britain was prepared to put in a lot of work to get her islands back. She was not prepared simply to send a limited number of ships, let a few get sunk and if it didn't work head home.

"The Vulcan raids were also a signal to those doubters in the British Government at the time: Britain was playing this for keeps. It was not a face-saving exercise."

With the first raid judged to be a success, Black Buck 2 was launched in the afternoon of 3 May. XM607 was back in action having proved to be the most reliable aircraft. The aircraft's bomb load and target were the same as before. Once again the aircraft performed well, but this time, dropped from 16,000ft (4900m), the bombs missed the western edge of the runway.

The Vulcans could have struck again immediately, but 'Black Bucks' were highly tanker intensive and priority was given to sub-hunting Nimrods, for which the Victor 'air bridge' was primarily intended. Black Buck 3 was planned, but cancelled because of strong headwinds: this probably proved fortunate because the element of surprise had gone and it was time for the Vulcans to change tactics.

Black Buck 4 was the first anti-radar Vulcan mission with AGM-45A Shrike missiles. XM597 (Sqn Ldr McDougall) took off at midnight on 28 May but had to abort the mission five hours later when the lead Victor's hose deployment unit



## Sharkey's Machine (cont.)

its reliability in the South Atlantic. We had achieved good air-to-air and air-to-surface results with our radar and could rely on our navigation attack system.

But unbeknown to me then, aboard *Hermes* 800 Squadron distrusted both the radar and the nav/attack system, and moreover refuted the excellent results that we had produced.

Yet Blue Fox earned its keep in the war: for example, in finding the Argentine *25 de Mayo* carrier group north of the Task Force at night – a revelation that led Woodward, fearing a 'pincer attack', to order the sinking of the *Belgrano* – and in air combat

on 1 May and 1 June, when two Mirage IIIs, a Canberra and a C-130 were shot down after first being spotted on radar.

These totally different perspectives on the capabilities of the Sea Harrier led to each Air Group being used in different ways, in spite of the two carriers being nearly always within visual range of each other. 801 saw its main task as flying combat air patrol (CAP) missions in the direction of the threat, thus providing the outer ring of air defence for the Task Group and later for the San Carlos Beach Head. 800 NAS concentrated their efforts on ground attack, visual reconnaissance and,

over San Carlos, high level CAP.

From 'D-Day', 21 May, 801 mounted very low level CAP missions to the west of the beachhead, providing a barrier against air attack. 800 NAS were theoretically supposed to do the same under instructions from *Invincible* (the Task Force's anti-air warfare control ship), but instead *Hermes*' Sea Harriers tended to patrol at high altitude waiting to be called down. They did not rely on their radar but were controlled by the ships until visual with the enemy – and usually in his six.

When this worked it frequently had devastating consequences for the

Argentine pilots, as 800's air combat tally confirms. But in most cases the Daggers and Skyhawks were only caught after they had been in amongst the ships. The deterrent value of more 801-style low-level CAPs in the west, forcing the Argentine pilots to turn away before they got to the target area, might have led to fewer air combat victories for the SHARs, but I firmly believe that it would have saved more lives in the anchorage.

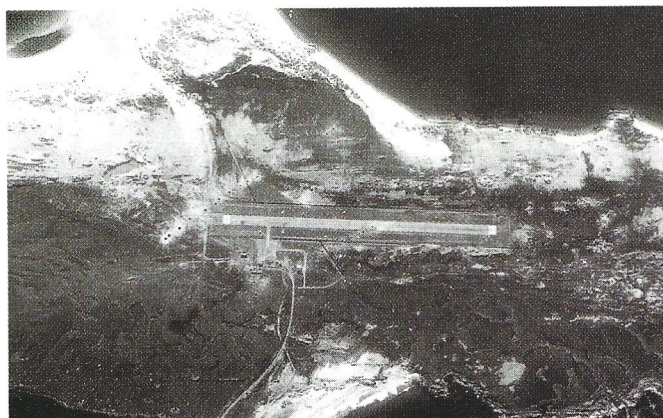
Deterrence is as much psychological as physical. Putting yourself in the way of an opponent won't work unless he thinks he can't beat you. All the way down the



failed, and as Black Buck 5 tried again on May 30. The target was the Westinghouse AN/TPS-43F surveillance radar at Port Stanley. Approaching at low level XM597 climbed to 16,000ft to attack the TPS-43 radar; while 801 NAS Sea Harriers were simultaneously attacking the airfield. The radar operators reduced their transmission strength, and it was 40 minutes before the signal was received again and the Shrikes were fired – the TPS-43 escaping serious damage. Black Buck 6, three days later with the same aircraft and crew, carried four Shrikes – two pre-tuned for the TPS-43 and the other pair for Skyguard gun-laying radars.

The raid followed the same profile as before. As Black Buck 6 got to about nine miles from Port Stanley, the Argentine radars went off, only to come on again once the Vulcan flew past. This cat and mouse game continued for 40 minutes. Eventually McDougall dived towards the airfield to try and tempt some reaction. The ploy worked, and two Shrikes were locked-on and launched, one detonating close to the Skyguard fire control radar, killing three of the operating crew. On its return flight however, XM597's refuelling probe broke, forcing an emergency diversion to Rio de Janeiro.

Although there is no direct evidence to suggest that the Shrike raids were successful, some analysts have concluded that the lack of official comment from Argentina indicates



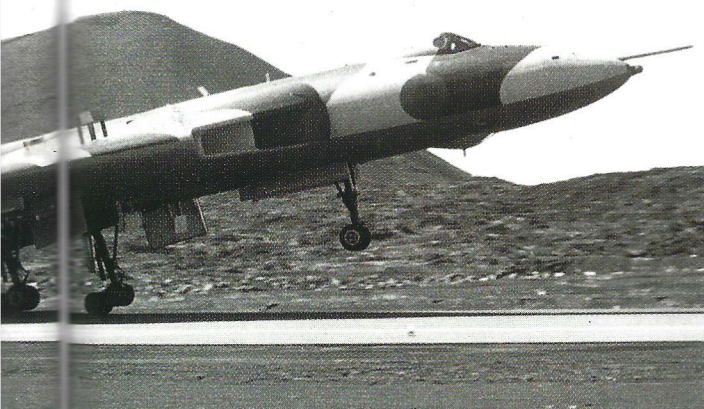
Above: Stanley Airport bearing bomb scars. Below: XM607 touches down at Wideawake after the first 'Black Buck' mission.

that at least one raid was effective. Subsequently, whenever a Vulcan was known to be in the area the tracking radars were switched off. And there is no doubting the raids' effect on morale: an Argentine signaller recalls: "When a Vulcan was in the area I felt that a Shrike missile would be homing in on me at any moment. Here was this great big English bomber from 4,000 miles away waiting to attack just me."

With the war clearly in its final phase, one last Vulcan raid was planned. On June 12, XM607 (Flt Lt Withers) took off on Black Buck 7 armed with iron bombs fused to 'air burst'. Apart from an engine flame-out which took three attempts to relight, the mission was uneventful.

Militarily, what the Vulcans achieved was strictly limited. But psychologically the raids were significant, both to the occupying forces and the Falkland Islanders, as they underlined, in the strongest terms, Britain's determination to carry the fight to Argentina.

Glenn Sands



Atlantic on board the ship I had been telling any reporter who would listen (we had several aboard *Invincible*) about the SHAR's exceptional record in practice air combat against allcomers, including USAF Aggressor squadrons and F-15s. I knew that these stories would start to chip away at the Argentine pilots' self confidence. When we then proved that these weren't just tall tales on 1 May with the first air combat kills of the war the SHAR's reputation as a fearsome opponent was confirmed, and the Argentine pilots never again sought air combat.

Since the Falklands, the world has moved on. The Sea Harrier Mk 'is now in service with a truly outstanding radar and weapon system. Yet its greatest asset lies not in its new Blue Vixen radar or in its AMRAAM missiles, but in the young men who fly it and fight it.

In today's halls of power there is a fuller recognition of the potency of the Sea Harrier, and there appears to be better teamwork and less rivalry between services than there used to be.

All of which helps me sleep soundly in

my bed – as does the knowledge that my eldest son, Lt Kristian 'Mental' Ward, BSc RN, is one of the few young pilots to be chosen to fly the Sea Harrier and to help protect the interests of the Realm.

## Commander N.D. "Sharkey" Ward DCS AFC RN (retired)

|         |                                                                                     |
|---------|-------------------------------------------------------------------------------------|
| 1966-69 | Flying Training:<br>Jet Provost, Hunter                                             |
| 1969    | Operational Conversion to<br>Sea Vixen<br>Operational Conversion to<br>F-4K Phantom |
| 1969-71 | Embarked on HMS <i>Ark Royal</i><br>with 892 NAS                                    |
| 1970    | Qualified Instrument Rating<br>Instructor                                           |
| 1972    | Qualified Air Warfare Instructor                                                    |
| 1972-74 | Nuclear Intelligence Officer,<br>NATO AFNORTH                                       |
| 1974-76 | Senior Pilot, 892 NAS,<br>HMS <i>Ark Royal</i>                                      |
| 1976-79 | Sea Harrier Desk Officer,<br>Mod, Whitehall                                         |
| 1979-80 | CO, Sea Harrier Intensive Flying<br>Trials Squadron, 700A NAS                       |
| 1980-81 | CO, Sea Harrier Head Quarters<br>Squadron, 899 NAS                                  |
| 1981-82 | CO, 801 NAS                                                                         |
| 1982    | Greenwich Royal Naval<br>Staff College                                              |
| 1982-85 | Air Warfare Adviser to First Sea<br>Lord and Naval Staff                            |
| 1985-90 | Managing Director,<br>Defence Analysts Ltd                                          |

(Black Buck 6 – Shrike missiles).  
One Skyguard AA radar destroyed.  
Refuelling problem: Vulcan diverts to Rio.

## 5.6.82

0400: British Army Gazelle shot down near Port Fitzroy, possibly by Sea Dart from *Cardiff*. SHARs and GR.3s start using new 850ft Port San Carlos airstrip (HMS *Sheathbill*).

## 6.6.82

Several GR.3 ground-support strikes.

## 7.6.82

0810: Two reconnaissance FAA Learjets engaged at 40,000ft over Pebble Island. One destroyed (*Exeter*/Sea Dart). Crew killed.

1900: Unidentified aircraft engaged by *Cardiff* SW of Port Stanley. Sea Dart malfunction. 801 SHAR vectored, but no contact.

## 8.6.82

1050: GR.3 crashes on landing at *Sheathbill*: strip u/s.

1200: Two Canberras (2Gr) bomb Liberian tanker *Hercules* 300nm north of Total Exclusion Zone. One hit, did not explode.

1250: Two GR.3s arrive aboard *Hermes* from Ascension.

1258: Five Daggers (6Gr) attack *Plymouth* off Chanco Point. Four hits (none explode). 801 CAP sent in pursuit: no contact.

1315: Five A-4Bs (5Gr) attack *Sirs Tristram* and *Galahad*, Fitzroy. Both ships hit and set on fire.

1535: Four A-4Cs (4Gr) attack Fitzroy area: no hits, all aircraft damaged.

1540: Four A-4Bs (5Gr) attack LCU *F4* in Choseul Sound: one hit (sank later). 800 CAP (Flt Lt D. Morgan, Lt D. Smith) intercept: three destroyed (Morgan two, Sidewinders; Smith one, Sidewinder). Tnte Arraras, Tnte A. Vazquez, Pr Tnte Bolzan killed.

## 9.6.82

GR.3 strikes on Sapper Hill, Mount Longdon. One aircraft damaged

## 10.6.82

AM: Four Pucarás attack British artillery at Mount Kent. GR.3 strikes: Port Stanley.

1315: Mirage III formation detected: no contact.

## 11.6.82

0700: Four 800 SHARs bomb Stanley Airport.

Four GR.3 strikes: one aircraft damaged.

Dusk: Pucará strike at Mount Kent: no damage.

## 12.6.82

0445: Sixth RAF Vulcan strike (Black Buck 7 – 1,000lb bombs) on Stanley Airport.

Several GR.3 strikes: one aircraft damaged.

## 13.6.82

1121: Seven A-4Bs (5Gr) attack 3 Commando HQ, Mount Kent. Some hits. Three A-4Bs damaged. Sea King attacked and damaged.

1120: Three Daggers (6Gr) attack *Cardiff*'s Lynx, S of Falkland Sound: no hits.

1130: Two GR.3s successfully use laser-guided bombs against artillery at Moody Brook.

1200: Four A-4s detected, CAP vectored: no contact.

1315: Chinook damages *Sheathbill* strip: 800 CAP (Lt Cdr N. Thomas, Lt S. Hargreaves) land on *Fearless* and *Intrepid*.

1457: Thomas and Hargreaves scrambled to intercept two A-4Qs (3 Esc): no contact.

2155: Canberra (2Gr) destroyed over San Carlos (*Cardiff*/Sea Dart). Capt R. Pastran ejects, Capt F. Casado killed.

2147: Unidentified missile sighted heading towards *Penelope* and *Nordic Ferry*: no hit.

## 14.6.82

Argentine surrender.