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AIRCRAFT ACCIDENT INVOLVING ROYAL AIR FORCE PHANTOM FGR2 XV414

Date: 9 December 1980
Parent Airfield: Royal Air Force Wattisham
Place of Accident: 10 Miles North East of Lowestoft
Crew: Two
Casualties: Nil

CIRCUMSTANCES

1. On 9 December 1980, XV414 was one of a pair of Phantoms programmed for routine night air defence training. The sortie consisted of practice interceptions over the North Sea, with each aircraft flying alternately as the target and interceptor, under the control of a land based radar unit.
2. When flying as the target for the third interception, the crew of XV414 became aware that they had used slightly more fuel than expected but they attributed this to fairly protracted use of high power during the previous interception. XV414 completed one more full interception before the two aircraft separated and XV414 again became the target. While the ensuing interception took place, the crew - who had been monitoring the fuel state carefully - deduced that the fuel consumption was now nearly double that expected. They suspected that a fuel leak had developed, called off the exercise and announced their intention to return to base for a precautionary landing.
3. The pilot advanced the throttles and began a climbing turn towards the coast, during which the right hand (RH) fire warning captions illuminated. The navigator noticed the reflection of a fire in the RH outer wing panel and the pilot shut down the RH engine in accordance with prescribed emergency procedures. As he was completing the shut down procedures, a left hand (LH) fire warning occurred. He throttled back the LH engine but the warning remained and the navigator confirmed that a fire had started on the LH side. The navigator attempted to make a distress call but the radio went dead and some of the cockpit lights went out. He saw that the aircraft was still burning, shouted to the pilot to eject and then initiated his own ejection. The pilot heard the navigator's ejection seat fire and ejected also.

4. The aircraft was abandoned at about 7,000 ft and 350 kts. The pilot and navigator last saw XV414 as it disappeared into cloud at about 5,000 ft with a plume of flame emanating from the rear fuselage and leaving a trail of sparks behind it. The other Phantom had passed over XV414 a few minutes before the fuel leak was diagnosed. There were no external signs of any leak or a fire at that stage. Shortly afterwards, the crew of this aircraft saw two streams of vapour separated by plumes of flame emanating from the jet pipe area of XV414 as they closed with it. While attempting to establish radio contact the flames blossomed; the pilot transmitted that XV414 was on fire and ordered the crew to eject. There was no response. The pilot then made a distress call on behalf of XV414; his navigator later detected transmissions from Personal Locator Beacons of the crew, which confirmed that they had ejected.

5. A search and rescue helicopter from RAF Coltishall recovered the crew of XV414 within 30 minutes. The aircraft crashed into the sea some 200 yards astern of a Trinity House vessel; seamen aboard launched a boat to search for survivors but only retrieved a portion of the aircraft's port outer wing.

CAUSE

6. Initially no significant wreckage was recovered despite extensive trawling operations occupying some 11 weeks. Seven months after the accident however, local fishermen found the crash site by chance and both engines, together with parts of the airframe, were subsequently salvaged. Examination of the recovered debris confirmed that a massive fuel leak had occurred, although the precise source could not be determined. Fuel leaking into both engine bays had ignited, probably by contact with local hot spots on an engine casing. This had caused an intense fire which led to the loss of the aircraft.

SUBSEQUENT ACTIONS

7. Although fuel leaks on the Phantom have not been uncommon, successive modifications have been incorporated to eliminate known problems. This was the first airborne fire in a RAF Phantom to have been caused by ignition of a fuel leak. An urgent study of the fuel system integrity was therefore undertaken and this has shown that a crack in a fuselage fuel tank compartment wall can lead to the rupture of the tank itself and that the resulting fuel leak would be remarkably similar to that which occurred in XV414. High priority is therefore being given to the embodiment of a modification which introduces a tank compartment lining to protect the fuselage tanks against this type of failure.