

MEMORANDUM FOR RECORD

Albert Nixon Senior Aviation Accident Investigator Western Pacific Region-Aviation Safety

Date: Feb 5, 2024 Subject: Record of Email with Rob Modderman (VP of ATAC Safety) NTSB Accident Number: WPR22FA094

In an email to Rob Modderman, the following is a summary of what was stated:

As previously discussed, here are the Flight Manual Operating Instruction Mirage F-1 Aircraft and other ATAC references in the final report.

- Can you please review the information listed below and coordinate the approval for the release of the information.

The following are references from the final report.

Fuel System:

- The airplane's fuel system is comprised of a left and right fuel system.

- Normally, the left and right fuel systems are isolated from each other but can be connected to each other through a cross valve.

- Refueling is normally carried out by pressurized single point refueling.

- The total quantity of usable fuel that was normally serviced to the airplane when it was full was about 4,100 liters.

- This total does not include the use of the optional external centerline fuel tank which increased the fuel capacity by about 1,180 liters.

- The airplane is equipped with 9 internal fuel tanks (includes the 2 feeder tanks), 2 internal wing tanks, and 2 - 30 liter negative-g accumulators. Engine air pressure moves the fuel to the feeder tanks and from there it is flowed directly to the engine by 2 low pressure pumps.

-The F-1 refueling checklist indicated for a clean airplane the following usable fuel capacity (in liters):

FEEDER TANKS	FRONT FUSELAGE	REAR FUSELAGE	WING	TOTAL
1 090	1 560	1 070	380	4 100

- The airplane fuel gauges consisted of 2 vertical tapes that indicated the fuel quantity on the left and right side.

- The fuel tapes only indicate about a maximum of about 2,000 liters of fuel on each side and therefore, the tape indications would only start to decrease when the airplane had less than about 4,000 liters of total fuel.

Usually, once the airplane's external centerline and wing tanks are empty, the tape indications should reflect what the fuel remaining indicator (a 4-figure counter measure in liters) indicated.
With more than 2,000 liters of fuel in each tank, the fuel quantity tapes would indicate near the full indication.

In addition, the fuel remaining indicator was manually preset to the total quantity of fuel onboard before flight and would decrease according, to how much fuel the airplane used.
On the airplane's warning and caution panel, the FUEL PRES red light illuminated when engine inlet fuel pressure is < 700 mb (10.15psi). The LOW FUEL red light illuminated when either feeder fuel tank is < 250 liters. A red warning light illumination calls for immediate action

by the pilot.

- The emergency procedure for a FUEL PRES red warning light which indicated that the dry engine fuel pressure is less than 700 mb, while airborne is to shutdown use of AB and reduce RPM, check LP pumps on, check left and right LP caution lights out, land as soon as possible and monitor fuel totalizer and both fuel gauge for indications of a fuel leak.

- The emergency procedure for LOW FUEL warning light is to select the emergency transfer switch forward or aft as required which connects the left and right forward or aft tanks (depending on selection) and allows transfer of both tanks to the same feed tank. If the quantity of both feed tanks is below 250 liters and transfer sequence is normal, with or without tank 3 illuminated:

- RPM reduce.

- Descend to below 20,000 ft, heading to nearest field.

- RPM – set 8,000 for 30 seconds (maximum) and check the feed tank quantity.

- If the feed tank transfer does not increase – use emergency transfer.

- If the feed tank quantity increases – if necessary, continue flight at no higher than current altitude ($\leq 20,000$ ft).

- Land as soon as possible.

Master Failure Warning light:

- If a red light was illuminated, it would call for immediate action.