



MEMORANDUM FOR RECORD

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

Date: May 26, 2021
Subject: Record of Conversation with Jon Flickinger (Draken International F-1 Chief Pilot) NTSB Accident Number: WPR21FA203

In a conversation with Jon Flickinger, the following is a summary of what he stated:

- He possessed an ATP pilot certificate and rated with a DA-FI type rating.
- He has been with Draken International since 2016, and in his current position since 2017.
- He has about 3,500 total flying hours (mostly F-16) and 140 flying hours in the F-1.
- He flew in formation with the accident airplane.
- He was the number 2 airplane.
- The area mission was simulated air to air combat involving about 24-25 aircraft.
- The preflight was uneventful.
- The two ship took off on time and area work was uneventful.
- He reached his fuel limit first and departed about 15 minutes before the lead aircraft.
- He landed at Nellis Air Force base on runway 03R, which is the nonprimary runway and he had used it about 20% of the time flying there.
- He heard the lead aircraft report in, to the squadron that he was "code 1" – which means the aircraft had no maintenance discrepancies.
- Accident pilot appeared in good spirits and rested, normal self.

- No issues with the accident pilot in his position as Chief Pilot.



MEMORANDUM FOR RECORD

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

Date: Jun 17, 2021

Subject: Record of Conversation with Donald Butler (F-1 Pilot, Draken International)

NTSB Accident Number: WPR21FA203

In a conversation with Donald Butler, the following is a summary of what he stated:

- In attendance (online) was John Waugh and Rich Ramirez–Las Vegas FAA FSDO, Harlie Bodine – Draken International Director of Safety, Victor Halos, Draken International Manger of Safety, Jason D’Amico, Senior Tech Advisor Draken International and Jon Flickinger, Draken International F-1 Chief Pilot.
- The witness chose to have attorney Jamie Rodriguez as his representative.
- Former USAF A-10, F-16 pilot, A-4 for Draken. 150 hrs., in F-1.Commercial, Instrument rated. About 6,000 hours total flight time.
- Currently managed Draken International’s contract for flight operations at Nellis AFB. Full time employee. Flies about 3-4 times a week.
- Was in the second cadre of F-1 pilots trained at Draken International.
- Trained with the accident pilot.
- F-1 flight training parallels USAF training and was just as thorough.
- Average pilot takes about 2-3 weeks of training for basic and mission qualification in the F-1.
- F-1 ground school is instructor taught.
- Classroom and cockpit familiarization.

- For the emergency procedures, get academics, and cockpit familiarization, and then go through all checklists.

- Work through all off the emergency checklists in academics and self-study, and then go through with instructor and then given opportunity to go to the go out to the jet to familiarize with the critical action procedures. Then a live ground run in the airplane to go through all the basic actions and do the action items, with power hooked up.

- F-1 no flap pattern— bottom line; usually takes place due to hydraulic 1 system malfunction. Set up for no-flap approach. Will vary airspeed based on aircraft weight and fly straight in.

- Went through no flap checklist in ground school and during flight training.

- On his check ride, there was a 2-3 hour long oral examination. Approach to stall was accomplished not configured and configured.

- Approach to stall is recovered, when you exceed 17 AOA, get a red warning in AOA bracket and aural tone and recovery the airplane.

- No-Flap straight in was accomplished at St George, Utah, was accomplished on his check ride.

- Precautionary approach currency is monthly and there are all no-flap approaches.

- Flew 126 F-1 flights. Had three emergencies. Two were gear malfunctions, and the other an ECS issue where the temperature got hot.

- Knew the accident pilot well from work.

- Described the accident pilot as energetic, professional, and talented.

- Saw him on Friday before the Monday accident flight – same as he always knew him.

- Safety culture at Draken International was top notch.

- Pilot morale was high.

Questions from others:

- Mirror USAF on how they operate.

- in USAF days if had issue on ground and it works itself out – executes iaw checklist.

- If flap issue when checking flaps, maintenance guy go under looks at circuit breakers and does not touch something, the pilot keeps working it and it fixes itself. If that something the USAF pilots would continue to fly the airplane. Yes, in F-16 flight control issues does not pass test. You clear it and re-accomplish it and if it passes the check, you fly the airplane.

- If you did break and on downwind and had flap malfunction, what would you do – fly the ancillary zero procedures – if caught it before my turn – increase final approach airspeed, make less of a bank turn, and set back up for a straight in. If already in turn and noticed problem would accelerate to keep airplane flying.
- Min airspeed on downwind is 200 kts at Nellis.
- If in turn after perch and had a flap malfunction, it depends on what he would do.
- Have right to declare emergency and take whatever actions you need to take.
- Average sortie duration is 1.2 in the F-1.
- Max duty day is 12 hours.
- F-1's engine spools up fairly decent and have T.O. guidance where to keep power settings to facilitate quicker spool up and follow up. Never go below 6,500.
- Spool up is better than the A-4.
- Do you cover no flap overhead pattern in training – you do by default because you do an overhead approach, and it incorporates an engine problem.
- No flap overhead patterns are discussed but not practiced. Same as with other airplanes he has flown.
- Classified accident pilot as professional.
- No flap is considered an emergency pattern and T.O. says to fly straight in pattern.
- Have to re-enter to do straight in approach.
- Speed brakes as required in pattern – no T.O. restricting use.



MEMORANDUM FOR RECORD

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Senior Aviation Accident Investigator
Western Pacific Region-Aviation Safety

Date: Jun 17, 2021
Subject: Record of Conversation with Erik Sprague (F-1 Pilot, Draken International Director of Training)
NTSB Accident Number: WPR21FA203

In a conversation with Erik Sprague, the following is a summary of what he stated:

- In attendance (online) was John Waugh and Rich Ramirez—Las Vegas FAA FSDO, and Harlie Bodine – Draken International Director of Safety, Jason D’Amico, Senior Tech Advisor Draken International and Jon Flickinger, Draken International F-1 Chief Pilot.
- The witness chose to have attorney Jamie Rodriguez as his representative.
- He has been with Draken International since last July; less than a year.
- Is a F-1 Pilot and newly appointed Director of Training.
- Has been with Draken International since last July, less than a year.
- Former F-18 pilot in U.S. Marines Corp., for 20 years. A lot of time instructing in F-18 (Legacy and Super Hornet), T-34, and T-45.
- About 3,300 hours of flight experience. 89.7 hrs. in the F-1.
- ATP pilot.
- Newly assigned the last two weeks in the Director of Training position.
- His position covers just the Nellis operation.

- Started 1 week of F-1 system academics. Memorization of emergency immediate action procedures and going out to the airplane for hands on time on switches and cockpit orientation.
- 2 transition flights, two familiarization flights, and then a check ride.
- After check ride, you complete a couple of follow-on training flights in tactical employment. A couple of air-to-air sorties, a couple of radar work sorties, and then the low altitude qualification.
- After 15 hours you can fly on contract against the USAF.
- Few other upgrades like NVG, Mission Commander, IMC qualification, etc.
- He was fully qualified in the F-1 on March 10th.
- F-1 ground school is instructor taught.
- He would look thing over before it was formally taught. Reads through emergency procedures and would discuss them through several days. Dialog between instructor and student.
- Maintain currency by doing immediate action or memory items and write those out.
- Simulated Emergency Procedures Training (SEPT) is accomplished – you sit down with another person and talk about it and bounce things off each other. What would you do in this scenario.
- A lot is based on some things that we had recent experience with.
- The F-1 training level of study compared to his past flight training.
- Striving to get simulator in F-1 training. The biggest difference is the availability of a simulator.
- SFO training- done at St George, Utah.
- Approach to stall training in F-1. Done both clean and configured. We have minimum airspeeds 160 clean and 130 with flaps full down. AOA tone or that airspeed, you would recover. Recover with max afterburner, relax the AOA, and level wings.
- You will lose a significant amount of altitude and lose more in the clean configuration than the configured configuration.
- Seems the F-1 afterburner response takes longer the than the F-18 because it a turbo jet engine.
- F-1 no-flap training, Gives ourselves a wide berth. 2-2.5 miles abeam and set up for at least a 5-mile straight in. No flap - faster than normal and develop sink rates quicker.

- The F-1 has short wings and likes to go fast and when you go into angle of bank will require more power addition when you go into a turn. Angle of bank is a concern. Technique I would use 30° angle of bank. I do not want to wrap this up with no-flaps. If I go into a high angle of bank, I am going to descend a lot more. To prevent from descending, I am going to pull back on the stick harder. If I pull back on the stick harder, not going to have as much AOA available before I reach the stall region.

- Normal F-1 overhead procedures – come in at 300 kts, fly overhead the runway (assuming single ship), power around 7,000, half-way down the runway – right or left break – pull the power to 6,500. Generally, does not use speed brakes from previous habit pattern in Hornets. You do not need to use speed brakes. Some people may use speed brakes depending on technique. Come around on downwind and drop flaps to half. When wing level on downwind, drop gear below 240 kts, and full flaps below 225. His habit patterns approaching perch is 5 green no red lights (for the three gear and slats and flaps all the way down). Make abeam call. 200ish airspeed, constant deceleration. Usually, 200 kts until starting turn. Slow it down to 10° AOA, about 170-175 kts depending on weight. About a 30° angle of bank. Roll wings level on final, slowing down 160-165 kts, if gusty carry a few extra knots, Flew about a 2.5° glide slope. In the approach turn, power is about 7,200 -7,300 depending on temperature, On final no less than about 7,000. Land about 12-13° AOA. Hold that in the aerobrake until about 100 kts. Good brakes and big wheels and airplane will slow down. Drag chute used only for emergencies and on runways less than 8,000 ft. Do not use barriers.

- When he first got there were using runway 21 a lot for landing. Lately has been about a 50/50 split between runway 21 and 3.

- Dry lake is the area he would use to trouble shoot a problem in flight.

- He had no emergencies declared in F-1.

- Had a slat/flap light one time, Sometimes the light will come on if there is a split slat situation, (more than 7° off), go to emergency retract and back to normal and it resets it and clears the light.

- Had it about 10 miles out coming in for the overhead pattern.

- No maintenance issues or aborts – pretty equal to his past flying experiences.

- If you have a problem with the engine started, would shut down if it still unresolved. Eventually he would unless it is really easy to resolve. If cannot go on anymore in checks– shut down.

- He makes the call to take the aircraft not, it not comfortable with it, does not take it, no pressure from others.

- F-1 pilot safety culture is good.

- F-1 pilot morale is good (accident aside).
- Not aware of any F-1 pilot attrition.
- Knew accident pilot from work.
- The accident pilot was senior to him. Qualified before him in the F-1.
- Had relationship through flying with him.
- Described accident pilot as proficient and very smart.
- Flew with the accident pilot in formation about 15 times.
- Nothing noteworthy flying with him compared to others.
- Last contact with accident pilot, he flew earlier the accident day and saw the accident pilot on his way out. Had brief words with him and he smiled.
- Nothing unusual with accident pilot that day.

Questions from others.

- The previous DOT of training filled the accident pilot's position.
- If you have a malfunction, would you notice abeam the numbers – He would probably notice it there.
- When you make the approach turn, that your commitment to land.
- Prior to Director of Training position was assistance training for the F-1.
- If he realized he had a no flap issue in the overhead pattern, after the break, Indicators for leading and trailing edge devices. First thing he is thinking that I am not going to be able a slow, also faster, probably about 195-210 knots, that a big radius, so I know I am not going to make the radius I just broke at. So, I am going to have to break out somehow. Weary of the runway and traffic. If not given priority handling would declare an emergency. Ultimately, he would set himself up for a 5-mile straight in. Pay close attention to AOA gauge. Fly about 11°AOA, soft landing and have to really slow down and use drag chute. Runways at Nellis are adequate to support that.
- The procedure is that prior to rolling off the perch you will have a normal landing configuration,
- Break halfway down the runway is his technique.

- If he breaks out of the pattern at the perch for runway 3R, wide turn and outside pattern, would tell tower he is doing it. Would make a level turn because other people coming into overhead. Going to near APEX and dry lake area to the NE to trouble shoot.

- Generally, have about 10 minutes of extra fuel to trouble shoot.

- Average F-1 sortie was about 1.2 hrs.



MEMORANDUM FOR RECORD

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

Date: Jul 17, 2021
Subject: Record of Conversation with Harlie Bodine (Director of Safety Draken International)
NTSB Accident Number: WPR21FA203

In a conversation with Harlie Bodine, the following is a summary of what he stated:

- In attendance was John Waugh and Rich Ramirez—Las Vegas FAA FSDO, and Victor Halos – Draken International Safety Manager.
- The witness chose to have attorney Jamie Rodriguez as his representative.
- He is a full-time employee. Primary job is as Director of Safety. Also flies with Draken International as an attached (part time) flier in the L-159.
- His goal is to fly 1 week a month, which was about 5 sorties at 1.5 duration, for about 8-10 hours a month.
- His duties are about 75% in safety and 25% in flying, and it varies.
- Former USAF fighter pilot with about 3,800, hours of flight experience. He has about 87 hours in the L-159.
- He was a board president and a pilot member on two USAF Class A mishap investigations.
- He started in August of 2020, as Director of Safety for Draken International.
- Safety Programs mirrors USAF.
- Draken International Safety has a West Coast Manager, and an East Coast Manager, and he is in charge overall as the Director of Safety.

- Defense Contractor Safety Requirements state what safety programs to run.
- The contract itself either refers to the Defense Contractor Safety Requirements, Chapter 6, and may also impose additional safety requirements that clarify them for operation with the USAF.
- Some of the big items required: Safety reporting in which they use SMS.
- Quarterly safety briefings, and trend analysis are prepared using SMS.
- Their Flight Safety programs mirrors the USAF unit they support. They are integrated with the USAF wing safety office. They participate in unit safety meetings and then have Draken International safety meetings to cover specifics to their operations.
- They have an Executive Safety council – C suite, Vice Presidents, and Directors, at the senior level.
- He reports directly to the CEO.
- Draken International Corporate offices are at Ft Worth, Texas, and he resides there.
- Had to generate new safety programs since he started, with the growth of the company.
- Several incidents where safety department conducted a safety review board. All evidence and information are captured and then go through analysis with a team (appropriate SMEs as required).
- Then they brief CEO with recommendations, and he blesses recommendations, and they are tracked until completion.
- Any F-1 trending analysis on incidents, etc. Landing gear has been the biggest focus. Another company had a gear accident, and they had a similar incident but not as bad. They were able to safety and successfully recover the aircraft. A lot of time spent on the landing gear and trying to get safety to run the operation on it.
- Their gear incident registered as a higher risk in SMS. Ran full investigation on it and identified 2-3 recommendations to mitigate it.
- USAF safety and staff assistance visits do not inspect them but Government Flight Representative (GFR), the Government Ground Representative (GGE), and Contract Officer Representative (CORE) do.
- Their GFR, who they have regular contact with is an F-16 aggressor pilot and has accomplished a safety inspection of their operations since he has been Director of Safety.

- Said the GFR said they had a “well-run safety program.” Zero non-compliance or discrepancies issues were noted on the safety inspection about a month ago.
- Briefs all new F-1 pilots during new hire safety training and flight safety is integrated in their academics.
- Employees can anonymously report safety hazards and issues.
- Flight training safety issues are handled depending on the severity of the event, by the formal or informal route for mitigation.
- All Draken International Safety meetings are mandatory.
- Quarterly pilot safety meetings and the notes become a read file for pilot that did not attend. It is a go-no go item that has to be completed prior to flight.
- There is a F-1 Safety council consisting of F-1 operators to share safety issues and data, that they take part in.
- Have an Operation Risk Management program. Military like. Currently, were into heat stress.
- The landing gear issue was the only trend in the F-1s.
- No part time F-1 pilots, due to fleet size and it is a newer airplane to them. Want the most experienced pilots, full time applied to learning how to employ the F-1. The L-159 and A-4, which have a large part time contingency supporting them, but they have been flying them long enough.
- Two internal safety inspection processes; one is a safety observation program and tracked. The second is when a safety personnel travels to a new deployed location; they do a formal safety inspection. Also have a scheduled audits as well.
- From a flight safety standpoint, he assesses that they have a very safe and good safety culture. Pilots are willing to share their less-than-optimal experiences.
- On the ground side, the company is in transition. We have seen a great increase in the safety culture on the ground side and they are continuing to drive that transformation.
- Pilot morale is high. Obviously, May 24th has had an impact and not sure what the impact will be. Prior, the pilots are high moral, fired up, glad to be there, very professional fighter pilots, and their work shows that.
- Did not know accident pilot prior to working at Draken International.
- With Draken International, interacted with him regularly because of his position. Incredibly profession, proficient, very intelligent. Aero engineer background – wicked smart.

- Saw accident pilot leave squadron Friday night before the accident on Monday. The accident pilot talked about his plans for the weekend and was in a very good mood and no red flags.

- Flew with him daily that week because they were integrating L-159s with F-1s into the weapon school support. The accident pilot had high situational awareness on the range.

Responses to FAA Questions:

- SMS manual is online.

- Vendor wrote the SMS manual.

- Last month received about 15 reports in SMS but not sure about the number for the year so far.

- If it affects the mission, the pilot will log the report into SMS, like a bird strike.



MEMORANDUM FOR RECORD

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

Date: Jul 21, 2021
Subject: Record of Conversation with Steven Kirik (F-1 Flight Examiner)
NTSB Accident Number: WPR21FA203

In a conversation with Steven Kirik, the following is a summary of what he stated:

- In attendance (online) was John Waugh and Rich Ramirez–Las Vegas FAA FSDO, and Harlie Bodine – Draken International Director of Safety.
- The witness chose not to have a representative present.
- Former USAF pilot. F-1 flight examiner. ATP pilot, Experimental aircraft rated L-39, L-159, T-37, A-37, A-4, F-15, MB-339, F-86, T-38, F-5, T-2, and SU-27.
- About 9 check rides given in F-1 aircraft to Draken International.
- Check rides in F-1 averages about 1.2 – 1.5 hours in duration.
- Do emergency training at St George, Utah, for SFO and no flap pattern there.
- Overall, no negative trends in F-1 check rides from Draken International.
- When you are dealing with fighter pilots that have 2000+ hours, they usually fly pretty well.
- Test knowledge and skill on the F-1 check rides.
- Oral examination, pre check briefing, Once demonstrated knowledge, then brief flight and fly the check ride. Finish by debrief and complete paperwork.
- Precision and Non-precision approaches, single engine failure, pattern with a non-standard flap configuration and a normal pattern and landing on check rides.

Non-standard flap configuration approaches are generally 3-5 miles final and more of a straight in type approach.

- 3 type of approach to stalls, clean configuration, configured straight ahead, and configured in the turn. Recover at AOA tone.

- Gave accident pilot check ride – flew the airplane well for a 2000+ fighter pilot. General knowledge was very good; believe him to be a pretty smart guy. Flew a normal check ride and met the standards. Good pilot.

- For the break, sometimes based on what ATC tells you, based on his military background, you break in the first 3000 ft unless told otherwise, but any breaks from the approach end to mid field is fine with him; may be playing the winds, a lot of factors that go into to that.

- More concerned about flying the speeds on downwind and configuring the airplane and rolling off into the final turn with the proper spacing based on the winds, traffic, and has the aircraft configured safety.

- On check rides, he would ask different modes of flap operation and when they retracted. Hydraulic 1 system malfunction would drive to a no-flap scenario.

- Did not experience any slat or flap malfunctions while flying the Draken International F-1.

- Maintenance wise no delays except for a fuel truck availability issue when stepping to the F-1 with Draken International.



MEMORANDUM FOR RECORD

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

Date: Sept 1, 2023
Subject: Record of Email with Leonard Dick (Vice President of Flight Operations Draken International)
NTSB Accident Number: WPR21FA203

In an email from Leonard Dick, the following is a summary of what he stated:

- In Draken operations all no flap patterns are to be flown from a straight in approach.
- Draken does not fly the final turn at 150 knots or 12-13 incidence. The flight manual says 150 knots and 10 degrees incidence; however, we do not go below 165 knots on the Final Turn.
- For a clean aircraft, 170-180 knots is a good number to shoot for and 170 knots equates to about 10° incidence. 13° incidence is only used after touchdown and aerobraking, which would equal 135 knots (assuming Clean 1000L). 150 knots at touchdown with 11° incidence is the perfect number.