الهيئة العامة للطيران المدني
GENERAL CIVIL AVIATION AUTHORITY

United Arab Emirates

Air Accident Investigation Sector

Accident

- Summary Report -

AAIS Case Nº AIFN/0011/2020

Ground Contact during Attempted Go-Around

Operator:	Al Jazirah Aviation Club
Make and Model:	Aeroprakt-22LS
Nationality and Registration:	The United Arab Emirates, A6-XSM
Place of Occurrence:	Al Jazirah Aerodrome, Ras Al Khaimah
State of Occurrence:	The United Arab Emirates
Date of Occurrence:	24 September 2020

This Investigation was conducted by the Air Accident Investigation Sector of the United Arab Emirates pursuant to Civil Aviation Law No. 20 of 1991, in compliance with Air Accident and Incident Investigation Regulation, and in conformance with the provisions of Annex 13 to the Convention on International Civil Aviation.

This Investigation was conducted independently and without prejudice. The sole objective of the investigation is to prevent future aircraft accidents and incidents. It is not the purpose of this activity to apportion blame or liability.

The Air Accident Investigation Sector issued this Summary Report in accordance with national and international standards and best practice. Consultation with applicable stakeholders, and consideration of their comments, took place prior to the publication of this Report.

The Summary Report is publicly available at:

http://www.gcaa.gov.ae/en/epublication/pages/investigationReport.aspx

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Investigation Process

The occurrence involved a light sport Aeroprakt-22LS aircraft, registered as A6-XSM and owned by the Al Jazirah Aviation Club. The occurrence was reported to the AAIS Duty Investigator by phone call to the Hotline Number +971 50 641 4667.

After the initial on-site investigation and assessment of the damage, the occurrence was classified as 'Accident'.

The National Bureau Air Accidents Investigation of Civil Aircraft (NBAAI) of the Ukraine was notified as the State of Design and Manufacture. The NBAAI assigned an accredited representative to support the Investigation.

The scope of this Investigation is limited to the events leading up to the occurrence; no in-depth analysis of non-contributing factors was undertaken.

Notes:

1. Whenever the following words are mentioned in this Report with first capital letter, they shall mean the following:
   - (Accident) - this investigated accident
   - (Aircraft) - the aircraft involved in this accident
   - (Investigation) - the investigation into this accident
   - (Pilot) - the pilot of the aircraft
   - (Report) - this Summary Report.
2. Unless otherwise mentioned, all times in the Report are United Arab Emirates local time (LT) (UTC minus 4 hours).
3. The structure of this Summary Report is an adaptation of the ICAO Annex 13 Final Report format.

Factual Information

History of the Flight

On 24 September 2020, at 1630 local time (LT), an Aeroprakt-22LS fixed-wing light sport Aircraft, registered A6-XSM, owned by Al Jazirah Aviation Club, took off from Al Jazirah Aerodrome for a private flight in the Ras Al Khaimah area. There were two persons on-board; the Pilot and a passenger.

After one hour and nine minutes of flying time, the Pilot prepared for the landing at Al Jazirah Aerodrome. In the interview the Pilot stated that he was approaching runway 34 at 100 km/h[1] and flap setting 1.

The pilot of an aircraft which was waiting at the holding point of runway 34, observed the final approach of the Aircraft and described it as stable and under control. Due to the orientation of his aircraft, he was unable to observe the flare, landing, or go-around attempt.

The Pilot of A6-XSM stated that when the Aircraft touched down, it bounced back into the air, at which point he applied full throttle and initiated a go-around.

Footage from the aerodrome observation cameras showed the Aircraft touching down approximately 245 meters past the runway threshold, with approximately 255 meters runway lengths remaining. The main gear and nose gear contacted the ground for one second before the Aircraft became airborne.

The Aircraft flew for approximately 11 seconds over a distance of 162 meters in a high pitch attitude without gaining height. During this time it rolled left-and-right significantly until it sank towards the ground, to the left of the runway boundary.

The right wing touched the ground approximately 3.5 meters left of the runway side stripe and 93 meters from the runway end. Ground marks indicated that the right main gear wheel touched down approximately 4.5 meters from the runway boundary line, 2 meters behind the right wing ground mark, followed by marks from the nose gear and the left main gear.

[1] The Aeroprakt airspeed indication displays in kilometers per hour (km/h).

The aerodrome observation camera footage showed the Aircraft turning to the right and tracking across the ground for approximately 25 meters until it came to a stop facing north-east, 14 meters to the left of the runway edge. (Figure 1.)

The Pilot and passenger were uninjured.

Figure 1. Aircraft resting point

Damage to Aircraft and Property

Because of the ground impact, the Aircraft sustained damage to the left wing, right wing, right flaperon, right main landing gear, nose wheel strut and shock absorber, tail wheel, and all three propeller blades.

The engine did not show any signs of leakage and the flaps were found extended to position 1.

There was no damage to property, or the environment.

Personnel Information

The Pilot held a light sport aircraft (LSA) pilot license, issued by the General Civil Aviation Authority of the United Arab Emirates (GCAA), with permission to carry a passenger. The license was issued on 19 September 2019 with two-year validity. The Pilots' LSA aviation medical certificate was issued on 22 April 2019 and was valid until 21 April 2024. As a condition of his medical certificate, the Pilot was required to wear prescription glasses for distant vision correction and to carry a spare pair.

The Pilot commenced his flying training on 26 April 2019 and attained his license on 19 September 2019, with a total time of 30 hours 35 minutes and 142 landings. This included 4 hours 10 minutes and 44 landings as pilot-in-command.

On 1 December 2019, the Pilot was successfully checked out to carry a passenger. Since this flight, he had flown twice: on 7 December 2019 for 30 minutes, when he conducted four landings; and on 22 September 2020, which was his proficiency check flight. This flight took one hour and involved five landings. The next flight, two days later, was the Accident flight.

In total, the Pilot had accumulated 41 hours 25 minutes and 173 landings, including 12 hours in command.

In the interview, the Pilot stated that at the time of the Accident he was not fatigued and was well-rested. He stated that there was no technical anomalies with the Aircraft and that the engine provided full power when he initiated the go-around.

The Pilot added that he made it a habit to inform his passengers to keep clear of the aircraft controls during the flight and not to communicate with him during approach and landing, to minimize distraction.

Aircraft Information

The Aeroprakt-22LS (A-22LS) is a two-seat, high-wing light sport aircraft with an enclosed cockpit. It is equipped with a non-retractable tricycle-type landing gear with a steerable nose wheel. Both main wheels are equipped with brakes.

The flaperons serve as extendable flaps and ailerons, and the elevator is equipped with a trim tab. (Figure 2.)

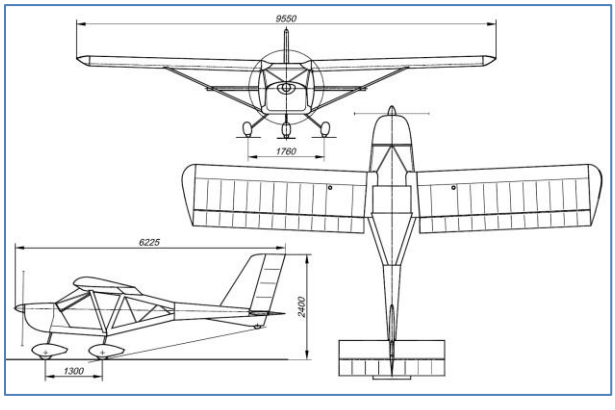

Figure 2. Aeroprakt A22-LS dimensions

The A-22LS is not fitted with a stall warning system, as this is not required by the LSA certification standard.

The A-22LS is approved for flights under visual flight rules (VFR) and certified in the LSA category with a maximum take-off weight of 600

kg. Fuel is stored in two 45-liter wing tanks, which provide a maximum range of 981 km.

The A-22LS is powered by a 100-horse power, water-cooled Rotax-912ULS engine with a three-blade on-ground adjustable pitch propeller.

A6-XSM was manufactured in 2010 as serial number 058 by Aeroprakt Ltd in Ukraine. The Aircraft time since new was 4579.9 hours and the engine time since new was 541.4 hours.

The Aircraft and engine were last inspected 51.1 hours prior to the Accident, during a 200-hour inspection on 3 September 2020.

The records of airframe and engine maintenance and inspection provided to the Investigation showed no technical defects prior to the Accident.

No technical anomaly was reported by the Pilot before the flight.

Meteorological Information

The Investigation reviewed the weather information from Ras Al Khaimah International Airport METAR during the period from 1700 to 1800 LT (1300 and 1400 UTC), which is provided in table 1.

Ras Al Khaimah International Airport is approximately 17 km south-east of Al Jazirah Aerodrome.

Table 1. METAR and the description

METAR OMRK 241300Z 01007KT CAVOK 40/06 Q1003 A2963=	
Time	1300 UTC (1700 LT)
Wind	010 degrees / 7 Knots
Visibility	10 Kilometers or more
Clouds	CAVOK
Air Temperature	40 degrees Celsius
Dew Point	6 degrees Celsius
Pressure (Altimeter)	1003 Hectopascal

METAR OMRK 241400Z 01007KT CAVOK 38/07 Q1004 A2965=	
Time	1400 UTC (1800 LT)
Wind	010 degrees / 7 Knots
Visibility	10 Kilometers or more
Clouds	CAVOK
Air Temperature	38 degrees Celsius
Dew Point	7 degrees Celsius
Pressure (Altimeter)	1004 Hectopascal

A weather station on Al Marjan Island, approximately 5 km north-west from the Aerodrome, recorded at 1730 LT a wind speed of 9 knots from 007 degrees, a temperature of 34 degrees Celsius, and an air pressure of 1003 Hectopascal.

Sunset at Ras Al Khaimah on 24 September 2020 was at 1810 LT.

Aerodrome Information

Al Jazirah Aerodrome is privately owned and operated by Al Jazirah Aviation Club. It is located approximately 25 km south-west of the city of Ras Al Khaimah, the United Arab Emirates.

The aerodrome has two runways, runway 16/34 and 10/28. Runway 16/34 is 500 meters long and 8 meters wide. Runway 10/28 is 768 meters long and 14 meters wide.

Al Jazirah Aerodrome operates during day-light hours only.

Aerodrome Observation Camera Footage

The Investigation obtained recordings from the aerodrome observation cameras, capturing the last stage of the approach, touchdown, and contact with the ground until the Aircraft came to rest.

The footage showed the Aircraft in a high pitch attitude with the right wing dropping just before the Aircraft touched down approximately 245 meters from the start of runway 34. The main gear and nose gear contacted the ground for one second and the Aircraft lifted off again.

The Aircraft became airborne for approximately a further 11 seconds, in a high pitch attitude with large left-and-right roll movements over a distance of approximately 162 meters.

The Aircraft's right wing touched the ground first, followed by the main landing gear. The Aircraft turned to the right and came to a stop after three seconds, at which time the left wing contacted the ground.

Organizational and Management Information

Operations Approval

Al Jazirah Aviation Club was approved by the GCAA under *Approved Flying Club Certificate* number U.A.E.AFC-C-01/2018, and was authorized to operate aircraft at Al Jazirah Aerodrome as per *Landing Area Acceptance* number LAA008, issued on 15 June 2015.

The Club's operational aircraft consisted of a total of 65 light sport aircraft, of which ten aircraft were owned by the club. The other aircraft were owned by Club's members. All Club aircraft were registered in the UAE.

Crosswind Limitations

The Aircraft manufacturer's *Pilot Operating Handbook,* section 3.3 – *Crosswind Limitation*, provided the following information:

> "Maximum crosswind component for A-22LS airplane is 7 m/s (14 kts).
>
> It is highly recommended to choose upwind direction for takeoff and landing with the least crosswind. It will significantly shorten takeoff and landing distances and increase degree of safety."

According to the manufacturer's *Flight Manual*, the stall speed of the Aircraft with flaps in the first position, at approximately 9 degrees, is 65 km/h. The stall speed increases to 70 km/h with retracted flaps.

According to the *Flight Manual*, after entering into the final approach, the throttle is set to idle and the descent is flown at a speed of 90 to 100 km/h. When windshear is expected, the approach must be performed at a speed of 100 km/h minimum.

Baulked Landing

A baulked landing is a rejected landing prior to or after touchdown, initiated at a very low height above the runway. Due to the low-energy state of the aircraft at the start of the go-around, it is considered to be a high-risk maneuver[2].

The *Pilot Operating Handbook* section 10.8 – *Airplane Flight Training Supplement*, contains a sub-section on baulked landings.

Sub-section 10.8.4 – *Ba[u]lked Landing*, states that "Ba[u]lked landing (go around) situation occur[s] due to errors made during approach which can not be corrected or in case if an obstacle is suddenly detected on the runway. The ba[u]lked landing procedure is described in the section 7.12."

The Aircraft manufacturer recommends a total training time of 20 minutes with one landing to be allocated to baulked landing training.

The *Pilot Operating Handbook* section 7.13 provides the procedure for baulked landing as follows:

1. Throttle – gradually FULL POWER.
2. Descent – DISCONTINUE.
3. Speed – accelerate to at least 100 km/h (54 kts) flying level.
4. Climb – at 100 km/h (54 kts).
5. Flaps – RETRACT SLOWLY at safe altitude.

Additional Information

UAE Civil Aviation Requirements

Part II, Chapter 10 of the UAE *Civil Aviation Regulations – Light Sports Aviation Activities (LSA),* prescribes the requirements for light sport aircraft activities.

Article (20) – Required Flying Hours, states that an LSA Aeroplane fixed-wing pilot is required to complete the approved theoretical test and to accomplish as a minimum of practical training, a total of 20 flight hours, of which 10 hours are to be supervised by a flight instructor, and five solo hours, and two cross-country hours, to be attested by the flying club.

Article (26) – *License issuing Authority and Validity* states that: "The Flying Club may issue a pilot license once the applicant has met the applicable training requirements and all other requirements and conditions stipulated in this regulation. Such a license shall be approved by the Competent Authority."

The license is valid for a period of two years from the issue date, or when the aviation medical certificate expires.

Article (27) – *Conditions for Flying*, item 5. Reads: "Where he/[s]he has not conducted flying activities for more than 90 days from the date of last take-off and landing, he/she shall carry out 3

[2] The low-energy, or baulked landing regime is defined by Transport Canada as: aircraft flaps and landing gear in the landing configuration, aircraft in descent, thrust stabilized in the idle range, airspeed decreasing; and aircraft height 50 feet or less above the runway. Source: Transport Canada AC 700-016

take-offs and landings supervised by an Instructor or an Examiner on the same category and type of the aircraft for which he is licensed."

Article (27) item 6, states that: "He/she is not permitted to carry occupants unless he/she has completed a minimum of 10 flying hours solo."

The Pilot was in compliance with these requirements.

Decay of Manual Flying Skills

A collaborative safety report, titled *Skills and Knowledge Degradation due to Lack of Recent Practice*[3], published by the European Union Aviation Agency (EASA) on 27 October 2020, discusses the reduction of skills and knowledge of aviation professionals.

The report explains that accuracy, speed and effectiveness of tasks deteriorate with the lack of practice. One of the factors for the variation of skill decay is experience.

It states that: "Low-experience personnel are more sensitive to decay [of] manual (physical) skills tha[n] experienced personnel, as they have not developed as much muscle memory, which does retain comparatively well when developed sufficiently."

Analysis

Pilot Proficiency and Aircraft Handling

The Pilot was appropriately trained to operate the A-22LS and to carry a passenger for the flight on the day of the Accident. His proficiency check flight, which lasted approximately one hour and included five landings with an examiner, occurred a day before the Accident.

The Pilot's logbook recorded that he commenced his flying training on 26 April 2019 and completed his training with a check flight on 19 September 2019 with a total flying time of 30 hours 25 minutes. Between 7 December 2019 and the proficiency check on 22 September 2020, the Pilot did not fly. His next flight was the Accident flight on 24 September 2020.

The Investigation concluded that the Pilot was current as per regulatory requirements, medically fit to fly, and was allowed to carry a passenger.

The Pilot successfully completed his concentrated flying training in September 2019 with minimum hours. However, the time period between his last flight in December 2019 and his first flight in September 2020 (the proficiency check flight) was most likely a time where previously learned knowledge and acquired aircraft handling skills degraded.

According to a pilot who witnessed the final approach from the holding point of runway 34, the Aircraft appeared to be stable and under control.

An analysis of the landing footage from the aerodrome observation cameras, which did not record the approach, showed that the Pilot was struggling with his landing technique after the flare, prior to touching down approximately halfway along the runway. He operated the Aircraft at low speed before touchdown, as indicated by the large roll movements, and initiated a go-around after touchdown.

At this stage of the flight, the energy state of the Aircraft had degraded further due to the contact with the ground and the high pitch attitude. The only option for the Pilot to maintain the Aircraft airborne after the application of full throttle, should have been the application of the correct pitch attitude. However, reducing the Aircraft pitch may have been opposite to the Pilot's instinctive control inputs, as he was attempting to gain height.

The proficiency check flight did not identify the Pilot's landing technique as deficient and cleared the Pilot without the necessary handling skills to successfully manage a low-energy baulked landing.

Aircraft Performance

The general inspection of the Aircraft and engine did not reveal any conditions that could have degraded the Aircraft's performance during the approach and attempted landing.

[3] EASA Safety Issue Report – *Skills and Knowledge Degradation due to Lack of Recent Practice* - V1.0 – 27 October 2020 - A collaborative document produced by EASA Together4Safety - With support from Aeroporto di Bologna, AESA, Eurocontrol, FAA, NLR and Thales

The weather information revealed a slight cross-wind during the attempted landing, which was within the Aircraft design limitation.

The Pilot stated that he did not encounter any problems with the Aircraft during the flight and that the engine was providing full power when he initiated the go-around.

Aircraft in the light sport aircraft category are not required to be equipped with a stall warning system which would normally alert the pilot of imminent loss of lift. An experienced pilot will immediately increase airspeed by advancing the throttle and decreasing the pitch angle to reduce drag. An aural stall warning is a significant safety device, particularly for new pilots who are still getting familiar with the aircraft and its operational limitations.

The Investigation concluded that the Aircraft was airworthy and serviceable at the time of the Accident, and that the environmental conditions were not a factor in the Accident. However, the relatively inexperienced Pilot had to rely on visual external clues to determine the appropriate aircraft pitch and to prevent stalling the Aircraft. A stall warning system may have assisted the Pilot in identifying the early onset of a stall allowing correction of the Aircraft pitch attitude.

Baulked Landing Procedure

Two critical inherent risks are associated with rejected/baulked landings: the initial aircraft performance; and the climb capability (obstacle clearance) due to the low-energy state during this manoeuvre.

Rejected landings after touchdown further increase the risk as more kinetic energy is absorbed and a successful continuation of flight depends on accurate situation awareness and quick recovery commands. However, a decision to abandon the go-around and an attempt to salvage the landing has historically been shown to increase the risk of a runway excursion.

The standard operating procedures for a baulked landing at low heights or after touchdown include immediate application of maximum trust associated with rotation to the go-around pitch attitude, followed by retracting flaps at a safe altitude.

As baulked landings are often unexpected, pilots should be adequately trained for the technique of safe recovery.

This training becomes more essential for aircraft that are not equipped with a pitch attitude indicator, where the pilot is required to identify the correct pitch through visual external clues.

Proficiency check flights should include an appropriate number of baulked landings to sufficiently impart the procedure as described in the aircraft flight manual.

Conclusions

From the evidence available, the following findings, causes, and contributing factors were made with respect to this Accident. These shall not be read as apportioning blame or liability to any particular organization or individual.

- **Findings.** Statements of all significant conditions, events or circumstances in this Accident. The findings are significant steps in this Accident sequence but they are not always causal or indicate deficiencies.
- **Causes.** Actions, omissions, events, conditions, or a combination thereof, which led to this Accident.
- **Contributing factors.** Actions, omissions, events, conditions, or a combination thereof, which, if eliminated, avoided or absent, would have reduced the probability of the Accident occurring, or mitigated the severity of the consequences of the Accident. The identification of contributing factors does not imply the assignment of fault or the determination of administrative, civil or criminal liability.

Findings

a) The Aircraft was certificated, equipped, and maintained in accordance with the existing requirements of the *Civil Aviation Regulations* of the United Arab Emirates.

b) The Aircraft was airworthy when it was prepared for the flight.

c) The Pilot was licensed to operate the Aircraft and to carry a passenger.

d) The Pilot stated that he was not suffering from fatigue or any physical or psychological effect that could have contributed to the Accident.

e) The Pilot had not flown during the period between 7 December 2019 and 22 September 2020.

f) On 22 September 2020, the Pilot completed a one-hour proficiency check flight which included five landings.

g) The Aircraft was observed in a high pitch attitude, rolling to the left-and-right prior to touching down at approximately 245 meters from the start of the runway.

h) The Aircraft landing gear contacted the ground for one second before it lifted off again.

i) The Aircraft was airborne for 11 seconds and travelled a distance of 162 meters.

j) The Aircraft came to a stop 14 meters to the left of the runway edge.

Causes

The Air Accident Investigation Sector determines that the cause of the Accident was a loss of control due to decreasing airspeed during a baulked landing after touchdown and the subsequent contact with the ground.

The proficiency check procedures that were applied by the Club could not identify the Pilot's less-than-adequate landing technique and handling skills in baulked landing situations.

Safety Recommendation

Undetected decreasing airspeed during a baulked landing can lead to stall and consequent loss of control. A well-trained baulked landing procedure is critical, particularly for aircraft that are not equipped with a stall warning system, where the pilot has no aural indication of an impending stall, while, during a go-around, outside clues provide the only means of assessing the aircraft's pitch attitude and safe height above objects.

Proficiency check flights should therefore include an appropriate number of baulked landings to appropriately impart this procedure.

While a pilot is focused on external clues during baulked landings, their awareness of the airspeed nearing the stall speed limit would be enhanced by cockpit warning systems such as aural stall warning system.

The Air Accident Investigation Sector recommends that:

Al Jazirah Aviation Club

SR01/2021

Revise the proficiency check for improving pilot performance in landing, baulked landing, and go-around as described in the *Pilot Operating Handbook*.

This Summary Report is issued by the:
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