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AIRCRAFT ACCIDENT REPORT

No. 91-003

CESSNA 421C ZK-WLG

Auckland Airport Apron

12 January 1991

Transport Accident Investigation Commission
Wellington · New Zealand

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Transport Accident Investigation Commission
Wellington

Chief Commissioner
Transport Accident Investigation Commission

The attached report summarises the circumstances surrounding the accident involving Cessna 421C aircraft ZK-WLG at Auckland Airport on 12 January 1991 and includes suggested findings and safety recommendations.

This report is submitted pursuant to Section 8(2) of the Transport Accident Investigation Commission Act 1990 for the Commission to review the facts and endorse or amend the findings as to the contributing factors and causes of the accident.

9 July 1991

R CHIPPINDALE
Acting Chief Executive

APPROVED FOR RELEASE AS A PUBLIC DOCUMENT

16 July 1991

M F DUNPHY
Chief Commissioner

TRANSPORT ACCIDENT INVESTIGATION COMMISSION

AIRCRAFT ACCIDENT REPORT NO. 91-003

Aircraft Type, Serial Number and Registration:	Cessna 421C, 421C0492, ZK-WLG
Number and Type of Engines:	Two Continental GTS 10-0520-L
Year of Manufacture:	1978
Date and Time:	12 January 0122 hours (NZDT)
Location:	Auckland Airport Apron
Type of Flight:	Non-Scheduled Air Transport
Persons on Board:	Crew 1 Passengers 3
Injuries:	Crew Nil Passengers Nil
Nature of Damage:	Ground contact by both propellers, nose undercarriage leg torn off.
Pilot in Command's Licence:	Airline Transport Pilot Licence
Pilot in Command's Age:	46
Pilot in Command's Total Flying Experience:	9137 (of which 250 hours were on type)
Information Sources:	Transport Accident Investigation Commission Field Investigation
Investigator in Charge:	Mr R. Chippindale

1. FACTUAL INFORMATION

1.1 The Capital Aviation aircraft was taxiing after start up for a flight from Auckland to Wellington. After leaving the "Skycare" apron the pilot's intended taxi route was south-west along the adjacent taxiway towards the main taxiway and thence to the holding point for runway 23 (See Diagram 1).

1.2 At 0122 hours as the aircraft was being taxiied towards the adjacent taxiway with its landing and taxi lights both in use, its right mainwheel entered an area of uncompacted soil in a grassed area bounded by a concrete kerbing.

1.3 The aircraft sank into the earth and the right undercarriage leg's travel was stopped as it collided with the kerbing after crossing a three foot wide section of the soft ground. As a result of the aircraft's consequent yaw to the right, the nose leg separated from the aircraft.

1.4 Both propellers were damaged.

1.5 The airport operating company did not intend the area from which the aircraft was taxiing to be available to casual operators for parking and loading their aircraft. Capital Aviation was such an operator.

1.6 The airport authority, Auckland International Airport Limited had not promulgated any restrictions on the use of the area. They had painted a wingtip clearance line to provide a safety margin between large aircraft using the access taxiway and those parked on the apron and had installed two lights on a nearby building to floodlight the area. Neither of these lights was directed towards the accident site. A floodlight on a pole above the accident area faced in the opposite direction to illuminate a security gate.

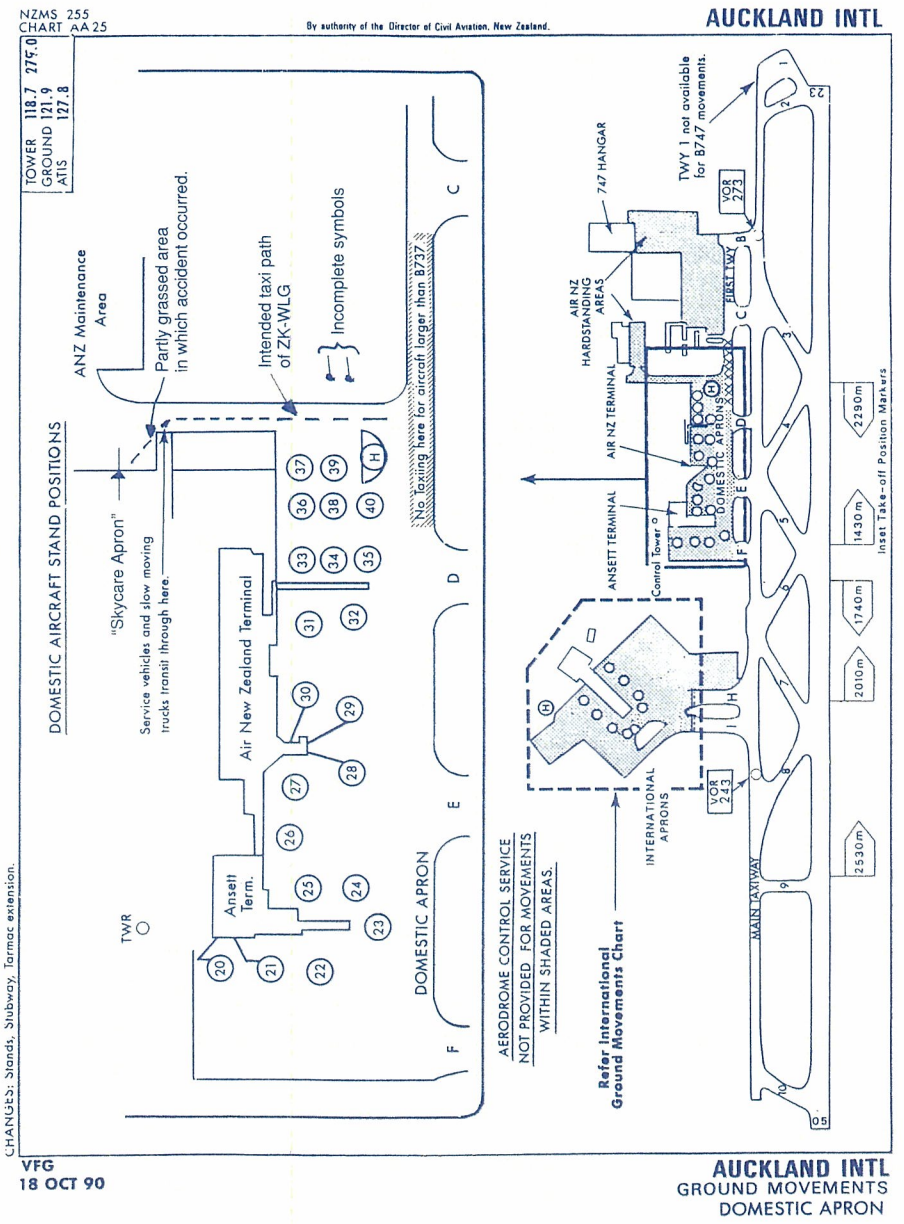
1.7 The taxiway alongside this apron ran to a maintenance/hangar facility and was provided with green centre lighting and some blue edge lighting (to indicate the limit of the available taxiway manoeuvring area).

1.8 The on-site investigation on 14 January found two of the green centre lights were not working and two others were of significantly lower intensity than the remainder. The blue edge lighting was not continuous. A row of lights at the north-western edge of the area was still in place but less than half of these were operating. Plates on the north-eastern edge of the hardstanding covered the connections for blue edge lighting which had been removed during the installation of the apron hardstanding.

1.9 The information published in the New Zealand Aeronautical Publication (NZAIP) indicated that taxiways at Auckland Airport had green centre lighting and blue edge lighting. The description of the night indication of the boundary of the apron's blue edge lighting or blue reflectors and floodlighting given in the Visual Flight Guide differed from page AGA 2-3 of the NZAIP which omitted any mention of blue edge lights or reflectors.

1.10 The area of ground into which the aircraft's mainwheel sank was first disturbed on 2 November 1989 to repair an underground watermain fault at that location. The repairs were completed in December 1990 but the subsequent backfill in the unstable ground did not compact sucessfully so frequent topdressings with loose soil were made to compensate for the continual subsidence in the area.

Diagram 1



1.11 The area was marked as a hazard during the repair of the watermain to prevent pedestrians from straying into the area but once the hole associated with the repair had been filled in, the markers were removed. The grass area was not suitable for aircraft movements and was adjacent to a boundary fence so the airport operating authority did not consider it necessary to indicate to pilots that the soft ground was a hazard to aircraft.

1.12 The Chart (AA 25 "Auckland Intl: Ground Movements: Domestic Apron") in the Visual Fight Guide of the NZAIP had several shortcomings. It was intended to show the location of the domestic apron on a small scale chart and then depict that apron in detail on a larger scale. The area boxed off on the smaller scale plan view of the airport, with the words "Domestic Aprons" did not coincide with the expanded chart of the area in that the "Skycare" apron was not included in the boxed off area but was included in the blown up section of the chart. This larger scale section did not depict the grass area into which the aircraft taxied or have any indication that the whole area was not available for aircraft movements. Whilst an area with two incomplete helicopter symbols was available for parking fixed wing aircraft this was not shown as such on the chart. No taxiway number or letter was allocated to the taxiway into the "Skycare" area and the "Skycare" area itself was not depicted as a parking area.

1.13 The pilot had not consulted either of the charts relating to the area of apron involved.

1.14 The Visual Flight Guide Ground Movement Information Chart included the information "Parking by Allocation Only" and "Stand Allocations: Request 15 minutes before ETA . . . 131.8 MHz . . .". The pilot did not request a parking allocation. However an airport company official advised that prior to the incident no special authority was required for casual operators to use the "Skycare" apron.

2. ANALYSIS

2.1 The apron which the pilot elected to use was part of the area available for domestic operators to park for loading their aircraft. It had been floodlit and marked to some extent by the airport operator but not in accord with the information provided in the NZAIP.

2.2 The apron was not depicted clearly in the VFG chart as an "apron" but the measures the operating authority had taken to illuminate and mark it demonstrated that they recognised it as such.

2.3 Although the grassed area had been in existence since before the construction of the hardstanding it was not recognised as a possible hazard to aircraft movements. No blue edge lights or reflectors were placed at the boundary between the grassed area and the hard standing but the apron was not sufficiently well lit to dispense with these markers. The absence of lights or reflectors to determine the edge of the apron was a significant omission in the area of the accident as it included other hazards such as substantial posts, hydrant markers, road kerbing and a wire security fence in addition to the soft ground. Although there was a floodlight above the area it was aligned to face away from the area.

2.4 The unserviceability of some of the taxiway lights was not a factor but was an indication that this area was not allocated the same degree of attention as the more intensively used aprons adjoining the domestic passenger terminals.

2.5 The pilot was entitled to expect the area to be marked as an apron, in the manner indicated in the NZAIP, for use at night and to depend upon such markings for his guidance.

2.6 The chart which depicted the domestic aprons was deficient in that it indicated the area as an extension of the domestic apron but did not give any detail about its status or restrictions on its use; such as the grass/dirt area which was not intended for aircraft movements. It was also lacking in detail on the parking area to the north-east of the taxiway into the area.

2.7 As there was no edge marking for the apron it would have been prudent for the pilot in command to have ensured that his short route to the taxiway guidance system was clear before boarding the aircraft for his departure.

3. FINDINGS

3.1 The causal factors in this accident included:

The absence of a clear instruction from the airport company that the "Skycare" area was not intended for use by casual operators,

Insufficient flood lighting for the safe use of the apron at night without the guidance of edge marking lights or reflectors,

The absence of edge lighting or reflectors on the "Skycare" apron,

The absence of a specific marking for the obstructions at the south-east edge of the apron,

The omission of the pilot to ensure that his path from the apron to the taxiway was clear of obstructions and,

The blending of the fresh earth on the soft area with the tarmac in the aircraft's taxi lights giving an impression of a continuous tarmac surface.

4. SAFETY RECOMMENDATIONS

4.1 As a result of this investigation it was recommended to the General Manager of the Auckland International Airport Limited that he:

Install blue edge lighting or blue reflectors around the perimeter of the "Skycare" apron,

Realign the floodlight above the accident area to illuminate the obstructions in that area,

Allocate the taxiway to the "Skycare" apron an identification letter to enable ready reference to it for aircraft, air traffic control and rescue service guidance, and

Liaise with the Air Transport Division of the Ministry of Transport to have a more informative and accurate depiction of the areas adjacent to the taxiway to the "Skycare" apron and the purpose of these areas.

4.2 The aerodrome operating company responded as follows:

"It is not our intention that casual operators use the sealed area at the north-west end of the access taxiway to the Air New Zealand Maintenance Area. A Class I Notice to airmen (Notam) was issued on 22 February 1991 restricting operators on the access taxiway to those which had prior written approval of Auckland International Airport Limited.

Changes to the ground movement charts and associated written information in the NZAIP Visual Flight guide are also being prepared, which should remove any ambiguity. Revisions to the charts will be made in consultation with the Air Transport Division.

Some additional blue-edged reflectors have been installed at the location of the incident. The need for further reflectors is being considered.

No action on realignment of floodlights is considered necessary following installation of white concrete-edge markers and blue reflectors.

The access taxiway will be allocated an identification letter. This will be shown on the next available issue of the ground movement chart.

We wish to make it clear that our actions should in no way whatsoever imply acceptance of responsibility or liability for the incident."

16 July 1991

M F DUNPHY
Chief Commissioner