

**AAIU Report No. 1998/007**

**AAIU File No. 19960046**

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<b>Aircraft Type and Registration:</b>	SA 315B Lama, G-BNNF
<b>No &amp; Type of Engines:</b>	One Artouste III B
<b>Year of Manufacture:</b>	1980
<b>Date &amp; Time (UTC):</b>	30 July 1996, at 1810 hrs
<b>Location:</b>	Knockalough, Upperchurch, Co. Tipperary
<b>Type of Flight:</b>	Aerial Work, Forestry Fertilising
<b>Persons on Board:</b>	Crew - 1
<b>Injuries:</b>	None
<b>Nature of Damage:</b>	Aircraft damaged beyond economic repair
<b>Commander's Licence:</b>	Commercial Pilots Licence (New Zealand)
<b>Commanders' Age:</b>	43 years
<b>Commander's Flying Experience:</b>	7886 hrs (of which 579 were on type) Last 90 days 199 hrs Last 28 days 57 hrs
<b>Information Source:</b>	ATC Shannon, who were advised by Gardaí, Thurles, Co. Tipperary. AAIU Field Investigation.

### **Background Information**

On the day of the accident the helicopter was engaged in routine aerial fertiliser spreading on forestry plantations in County Tipperary. This is a seasonal operation.

The operating company maximised its use of air and ground resources from (plantation) site to site, by pre-planning and reconnoitring in advance.

There was a duplicated back-up system of personnel and equipment on the ground supporting the operation, including Unimogs (crane vehicles), hoppers (underslung buckets), vans, transit crew cabs, low loaders and accommodation caravans. This duplication allowed the pilot to spread at one site while the next site facility was being prepared by the second ground crew. The operation would normally continue in this leap-frogging fashion.

## **History of the Accident**

The helicopter arrived at the last site of that day, Knockalough forest block, which is 1300ft AMSL, at 1800 hrs approximately. This site required only two bags (750kgs each) of fertiliser, enough to fill two hoppers. Normal ground/air routine ensued. Once airborne, the pilot hovered the helicopter over the first hopper where one ground crewman connected the underslung aircraft hook to the "A" frame (effectively the handle) of the hopper, while the second ground crewman connected the aircraft's electrical lead (via alligator clips) to the connector at the back of the hopper. The pilot flew to the spread area and attempted to spread the load but the hopper failed to work. He returned to the dump site with a full load having communicated his intention to the ground crew via VHF radio in the Unimog. The electrical leads were changed and the pilot commenced his second run. This failed also and he again returned to the site, having agreed with the ground crew by radio that they should replace the electrical leads again. The pilot placed the hopper on the ground and the hook was disconnected. He stood off in the hover while the ground crew checked the hopper solenoid and engine functions. On a thumbs up signal from the ground crew he positioned the helicopter over the hopper to re-connect the hook and the third set of electrical leads.

The pilot stated that while in the low hover he drifted slightly forward and possibly back again and, as the ground crew tried to connect the lead, he lost sight of what was happening behind him as far as the skids in relation to the hopper were concerned (pilots rear view is achieved by two large mirrors fitted forward of the cockpit at floor level).

The rear of the left hand skid went into the "A" frame and picked it up as the helicopter rose slightly. The helicopter was now connected to the hopper by the skid, as later evidenced by the aircraft paint along the inner arm of the "A" frame. The pilot states that he reached the limit of the starboard cyclic pitch control and the helicopter quickly rolled to port, impacting the ground under power. The loss of control is consistent with dynamic rollover, which was irretrievable in this instance. The sequence of events happened within 3-4 seconds.

The aircraft settled across the forest path. There was no fire. The pilot was uninjured. He was restrained by a full harness. The two ground crewmen took evasive action away from underneath the helicopter and were also uninjured.

The helicopter was properly maintained. There was no evidence to suggest that a technical malfunction or adverse weather conditions contributed to the accident.

## **Additional Information**

VHF comms between the pilot and ground crew were good using the Unimog radio. However, the company acknowledged that comms between the helicopter in the hooking-up phase and the ground crew were normally hand-signal based. They have tested out various radio sets for use in this phase, without much success. The perceived problem is that these are adversely affected in the operating environment of fertiliser dust and rainwater. Their investigations are ongoing.

The accident happened at 1810 hrs. but was not reported to the Gardaí until 2205 hrs.

***Note:- In May 1979 a similar accident occurred in Co.Wicklow to a Bell 206B helicopter, operated by a different company.***