DOI FY 06 Aviation Mishaps

4 Aircraft Accidents

The loss of one life

One serious, and three minor injuries

12 Incidents with Potential
NTSB 831.13 Flow and dissemination of accident or incident information.

(b) ... Parties to the investigation may relay to their respective organizations information necessary for purposes of prevention or remedial action.

... However, no (release of) information... without prior consultation and approval of the NTSB.

This information is provided for accident prevention purposes only.
Husky A-1B

Mission
Resource Clinic
Training

Damage
Substantial

Injuries
None

Procurement
Fleet

NTSB ID
ANC06TA002
Issues

Mission briefing

Cockpit communications

Distraction

Crew Selection

Training standards and program objectives
The National Transportation Safety Board determined that the probable cause of this accident was ...

Probable Cause

“The flight instructor's inadequate supervision of the dual student during the landing roll, which resulted in the dual student applying the brakes excessively, and the airplane nosing over. A factor associated with the accident was the excessive braking by the dual student.”
First mark of the left wheel

Aircraft approximately 200' from the end of the gravel strip

FAI
Reenactment during recovery

Damage to vertical fin and roof
Wings and vertical fin slightly twisted
Discussion
5Ms
Man ... Man, Machine, and Media interact to produce a successful Mission or, sometimes, an unsuccessful one.
Machine ... There is significant overlap between Man, Machine, and Media, because these elements interrelate directly, but the critical element is Mission ...
Management because it defines how the other elements interact...
Management ...
Management is often the controlling factor in mission success or failure.
Aerospatiale SA 319B
Aoulette
Mission
Passenger Transport & Resource Recon
Damage
Substantial
Injuries
1 Serious
3 Minor
Procurement
ARA
NTSB ID
SEA06TA028
Escalante, UT
December 14, 2005

Aerospatiale SA 319B
Aoulette

Mission
Passenger Transport
& Resource Recon

Damage
Substantial

Injuries
1 Serious
3 Minor

Procurement
ARA

NTSB ID
SEA06TA028
The National Transportation Safety Board determined that the probable cause of this accident was ...

**Probable Cause**

“The pilot's inadequate remedial action when ground resonance was encountered during landing.

Contributing factors were the rough/uneven terrain and company inadequate maintenance.”
Issues

- Project planning
- Mission creep
- Managing risks
- ALSE
- Hazard reporting
- Maintenance problems
- Aircraft and pilot carding
Figure 11-5. Hard contact with the ground can send a shock wave to the main rotor head, resulting in the blades of a three-bladed rotor system moving from their normal 120° relationship to each other. This could result in something like 122°, 122°, and 116° between blades. When one of the other landing gear strikes the surface, the unbalanced condition could be further aggravated.
Man

Pilot was carded

Pilot recognized ground resonance
  -- Failure to repair
  -- Failure to report
  -- Improperly maintained key components

Pilot’s selection of landing area

Inappropriate recovery
Machine

Improper maintenance
- Owner/Operator
- Mechanic/DoM

Key components
- Tires (underinflated)
- Struts (overinflated)
- Dampner (very weak)

FAA certification and oversight
Media

Weather not a factor in accident
- Clear and cool
- 10+ miles vis
- 7100’ MSL
- Light winds

Landing area risks
- General risks
- Uneven surface
Mission

Feral Cattle Eradication
- Phase I
- Phase II
- Use of helicopter
- Unit/Field Office management
- Helicopter Manager
- Passengers
Management

Project Aviation Safety Plan

Failure to involve senior Bureau Aviation Managers

Lack of SAFECOMs

ALSE
Management

Project Aviation Safety Plan
- Not updated
- Not signed
- Aviation Risk Assessment (ORM)

Local management's SA of risk level (medium risk syndrome)

Failure to involve senior Bureau Aviation Managers
Management

Lack of SAFECOMs

Decision to transport personnel at night

ALSE
- Helmets
- Boots
- Repair issues
Management

Load Calculation

- Aircraft did NOT exceed GW or performance limits
- Several errors with load calc
  - Dated two days before accident
  - Not initially available
  - GW in error
  - Addition error
Overview of Accident Site
The rotor blade struck all four passengers.
Proper Use of Flight Helmets saved 4 lives
Left Outboard Passenger
Proper Use of Flight Helmets saved 4 lives
Left Inboard Passenger
Proper Use of Flight Helmets saved 4 lives
Right Inboard Passenger
Proper Use of Flight Helmets saved 4 lives
Right Outboard Passenger
Proper Use of Flight Helmets saved 4 lives
Right Outboard Passenger
Proper Use of Flight Helmets saved 4 lives
Right Outboard Passenger
Proper Use of Flight Helmets saved 4 lives
Right Outboard Passenger
**Hazard** - any actual or potential condition that can cause injury, illness, or death of personnel, damage to or loss of equipment, property or mission degradation; a condition or activity with potential to cause damage, loss or mission degradation

**Risk** - chance of hazard or bad consequences; the probability of exposure to chance of injury or loss from a hazard; risk level is expressed in terms of hazard probability and severity
### Pre-accident Aviation Risk Assessment

**November 9, 2005**

**Risk Approval Level**

<table>
<thead>
<tr>
<th>Hazard Risk Assessment Code</th>
<th>Risk Level</th>
<th>Appropriate Management Level for go/no-go decision</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Fire</td>
</tr>
<tr>
<td>I-A, I-B, II-A</td>
<td>EXTREMELY HIGH</td>
<td>Incident commander or Operations Section Chief.</td>
</tr>
<tr>
<td>I-C, I-D, II-B, II-C, III-A</td>
<td>HIGH</td>
<td>Line Manager</td>
</tr>
<tr>
<td>I-E, II-D, III-B, III-C, IV-A</td>
<td>MEDIUM</td>
<td>Air Operations Branch Director</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Forest Aviation Officer/ Unit Aviation Manager</td>
</tr>
</tbody>
</table>
Discussion
Bell 206 L1-C30P

Mission
Fire Reconnaissance

Damage
Substantial

Injuries
None

Procurement
Exclusive Use

NTSB ID
SEA06TA153
The National Transportation Safety Board determined that the probable cause of this accident was ...

**Probable Cause**

“The improper overhaul of the turbine assembly by maintenance personnel, which resulted in failure of the turbine and a total loss of engine power.

A contributing factor was the pilot's misjudgment of the landing flare at the termination of the autorotation.”
**Issues**

Material failure of engine – NOT due to pilot or vendor

Excellent post-accident response by local unit

Flight helmets and four-point shoulder harnesses contributed to lack of injuries
Man

Properly carded

Highly experienced seasonal pilot

Recognition and reaction to the engine failure

Landing area selection and touchdown technique
**Machine**

Vendor maintenance personnel replaced turbine section 13 hours before accident.

Teardown analysis determined fatigue failure of a #2 turbine wheel blade.

Shoulder harnesses likely prevented serious injury.
Media

Weather not a factor in accident

Landing area risks
- General risks
- Numerous good areas within gliding distance
Mission

Fire reconnaissance
- Pilot plus three passengers

Power Assurance Check
- 8,000 MSL
  (5,000 AGL)
- 90 Kts
- Climbing
Management

EXCELLENT reaction to the accident

- Initial response
- Notification
- Senior leader involvement
  -- Local BIA
  -- Acting National Aviation Program Manager
Overview of Accident Site
#2 Turbine Wheel

Origin of Engine Failure

Trailing Edge

Overload
External Damage from Engine Failure
Evidence of Main Rotor Impact on Tailboom
Damage to landing gear suggests greater than 10 G's
4-point shoulder harnesses prevented serious injury
Aerospatiale
AS 350-B2

Mission
Resource / Cargo
Transport

Damage
Destroyed

Injuries
1 Fatal

Procurement
Exclusive Use

NTSB:
ANC06GA121
The National Transportation Safety Board determined that the probable cause of this accident was ...

**Probable Cause**

“The pilot's failure to maintain clearance from the sling load during cruise flight, which resulted in the load becoming entangled in the tail rotor, and an in-flight loss of control.”
West Fish Creek Well Site and Mishap site

Base camp (Inigok)

Nuiqsut

32 mi
Issues
Managing risks
Management Oversight
Lax Discipline
Stress and Fatigue
Flight Following
Weather
Pilot qualification and carding
Man

Pilot was carded
Replacement pilot
No Alaska experience
No prior sling experience (<5 hours at carding)
Not instrument rated
All A-Star time on Grand Canyon tours
Man

Failed initial AMD checkride
-- confined areas
-- mountain operations
-- sling loads
-- judgment

Contested by vendor

Passed second checkride
-- Director, ARO on board as observer
-- Pilot met minimum Practical Test Standards
Man

Stress

-- Pilot didn’t adjust well to camp life

-- Normally up until 2300-0100 hrs and slept in until 1000 hrs

-- Looked forward to getting out of the field

-- Had been told that the next day he might be leaving Inigok
Man

Stress

-- Tent fire at 0400 hours, Aug 9 destroyed pilot’s belongings

-- Pilot lost clothing, wallet, credit cards, pilot cards, and boots

-- Pilot flew 0.7 hrs that day and 5.1 hrs over the next two days in hiking shoes

-- Days off on Aug 11
Machine

No recent maintenance issues

Emergency Locator Transmitter (ELT) was armed but did not aid in locating wreckage

AFF was key in locating the accident site and the investigation
Evidence that the engine was running at the time the tail boom separated

No evidence of any aircraft systems failures

Cargo hook was functional

Cargo hook undamaged, but attaching hardware bent
Machine

Lead line was not attached to the cargo hook and was found with the cargo net.

One “purse string” was pulled out of the eyelet.
Medium

Lowest ceilings and visibilities in mornings and evenings

Best conditions in the afternoons

Immediately prior, a passenger reported patchy fog and deteriorating conditions returning from West Fish Creek
Medium

Weather observations at Nuiqsut (24 miles east)

1828 hrs
400 Overcast
10 mi visibility
41°F (temp)
39.2 °F (dewpoint)

1853 hrs
200-400 Fog
1.25-2.5 mi visibility
39.2°F (temp)
37.4 °F (dewpoint)

1920 hrs (accident)
200 Fog
1.25-6 mi visibility
37.9°F (temp)
37.9 °F (dewpoint)
Mission

Joint use BLM-USGS field project

BLM site manager

BLM helicopter manager

Mishap flight to slingload waste from old USGS project to prepare for new USGS project

USGS provided payment for flight services to BLM
Management

- No load calcs
- No manifests
- No hook checks
- No daily diary
- No helitack or manager at hook up point

Generally lax discipline and failure to identify and manage risks by field personnel
Management

Flight following

-- VHF radio and antenna

-- Sat phone not compatible with aircraft avionics

-- Pilot frequently failed to phone in (no SAFECOM)

-- Camp did not have pilot’s sat phone number

-- AFF available but not monitored
Management

Living conditions

-- at least 17 years at Inigok
-- no permanent structures
-- only common area with heat was cook tent
-- lack of heat in individual tents
-- Unsafe heat in weatherport tents
Management

ALSE

-- Pilot frequently chose to not wear flight gloves (no SAFECOM)

-- Pilot wore shoes rather than boots for two days after tent fire (no SAFECOM)

-- Pilot not wearing gloves or shoulder harness at time of the accident
Management

Crash Plan

-- Personnel not aware of location of crash kit at Inigok helibase

-- Excerpt of IAMRG & CL

-- Good flight log

-- Didn’t have pilot’s sat phone number

-- AICC initially notified 2+25 after takeoff (fuel exhaustion 1+45)
Departed Base camp (Inigok) at 1853 hrs
West Fish Creek
Well Site #1
West Fish Creek
Well Site #1

Material carried in cargo net
Cargo at West Fish Creek Well Site #1
West Fish Creek
Well Site #1

Arrive 1911 hrs

Last AFF hit at 1920 hrs
47 kts, 302 ft, 325°

Depart 1916 hrs

AFF hit at 1918 hrs
31 kts, 200 ft, 129°

Estimated location of wreckage
Looking North along probable flight path
Relationship of Main Wreckage
Cargo and Netting
Separation and Abrasion of “Purse String”
Witness Marks on Tail Boom
Non-Tracking Tail Rotor Blade Destroyed
(high energy impact)
Tracking Tail Rotor Blade
(Purse String Fibers)
Tailboom Separation
(tension on right, compression on left)
Tail Rotor Driveshaft and Cover
(evidence that the driveshaft was turning when the tailboom separated)
Discussion
I Chose To Look The Other Way

I could have saved a life that day, but I chose to look the other way. It wasn't that I didn't care, I had the time, and I was there.

But I didn't want to seem a fool, or argue over a safety rule. I knew he'd done the job before, if I called it wrong, he might get sore.

The chances didn't seem that bad, I'd done the same, he knew I had. So I shook my head and walked on by, he knew the risks as well as I.

He took the chance, I closed an eye, and with that act, I let him die. I could have saved a life that day, but I chose to look the other way.

Now every time I see his wife, I'll know, I should have saved his life. That guilt is something I must bear, but it isn't something you need share.

If you see a risk that others take, that puts their health or life at stake. The question asked, or thing you say, could help them live another day.

If you see a risk and walk away, then hope you never have to say, I could have saved a life that day, but I chose to look the other way.

Courtesy of Don Merrell, J.R. Simplot Company, Don Plant Training Center; dmerrell@Simplot.com