Aviation Investigation Final Report

Location:	Marina, California	**Accident Number:**	LAX06LA192
Date & Time:	June 4, 2006, 14:00 Local	**Registration:**	N180LG
Aircraft:	Cessna 180A	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot's seat slid aft during the takeoff roll and the airplane nosed over after veering off the runway surface. As the pilot powered the airplane for the takeoff roll, his seat slid aft and he was unable to reach the controls to maintain control of the airplane. It veered left off the runway and came to rest inverted. Post accident examination of the seat track showed that the seat locking pin positively engaged in all of the seat track holes. The most forward hole contained a bolt used as a forward seat stop to prevent the seat from coming off of the seat track. When the seat pin was engaged in this hole, full depth engagement was not possible. Rub marks were present on the bolt shank that was visible through the seat track hole. The pilot normally flew the airplane with the seat in its forward most position. The airplane manufacturer did not design the seat stop and there was no installation record of the bolt used as a seat stop in the airplane maintenance records. The airplane was equipped with an after-market backup seat stop to prevent the seat from slipping aft if the primary seat locking mechanism failed. Although there were no mechanical problems noted with the device, the backup stop was not secured to the seat track.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the installation of the unapproved forward seat stop by unknown maintenance personnel, which did not allow for full depth engagement of the seat lock pin, resulting in the seat slipping aft during the takeoff roll and subsequent loss of directional control. A contributing factor to the accident was the pilot's failure to secure the backup seat stop.

Findings

Occurrence #1: LOSS OF CONTROL - ON GROUND/WATER
Phase of Operation: TAKEOFF - ROLL/RUN

Findings
1. (C) MISCELLANEOUS,BOLT/NUT/FASTENER/CLAMP/SPRING - IMPROPER
2. (C) MAINTENANCE,INSTALLATION - IMPROPER - OTHER MAINTENANCE PERSONNEL
3. (C) FUSELAGE,SEAT - NOT SECURED
4. (F) SAFETY SYSTEM(OTHER) - NOT ENGAGED
5. (F) PREFLIGHT PLANNING/PREPARATION - INADEQUATE - PILOT IN COMMAND
6. AIRCRAFT CONTROL - NOT POSSIBLE - PILOT IN COMMAND

Occurrence #2: ON GROUND/WATER ENCOUNTER WITH TERRAIN/WATER
Phase of Operation: TAKEOFF - ROLL/RUN

Findings
7. TERRAIN CONDITION - GROUND

Occurrence #3: NOSE OVER
Phase of Operation: TAKEOFF - ROLL/RUN

Factual Information

On June 4, 2006, at 1400 Pacific daylight time, a Cessna 180A, N180LG, sustained substantial damage when the pilot's seat slid aft and the airplane veered from the runway during the takeoff roll at Marina Municipal Airport, Marina, California. The airplane came to rest inverted. The private pilot and one passenger were not injured. The pilot, who was also the registered owner of the airplane, was operating it under the provisions of 14 CFR Part 91. Visual meteorological conditions prevailed, and no flight plan had been filed for the local area personal flight. The flight was destined for Frazier Lake Airpark, Hollister, California.

The pilot stated that during the takeoff roll, his seat slipped aft and the throttle control slipped from his grasp so he was unable to pull it to the closed position. The airplane veered left from the runway and nosed over. He had adjusted his seat prior to takeoff and noted no slippage. He believed that he had also secured the after market seat stop called a SAF-T-STOP on the seat track but was not certain. The pilot stated that he normally flew the airplane with the seat in its forward most position. The seat and seat track were last inspected during the annual inspection in September 2005.

The seat track and locking mechanism were examined on June 20, 2005, by the National Transportation Safety Board investigator, and compared with data obtained from airworthiness directive (AD) 87-20-03 R2. AD 87-20-03 R2 defines the airworthiness requirements and minimum acceptable wear on the seat locking mechanism and seat track components. The seat track roller assembly was intact and operational. The seat track holes were measured using an electronic micrometer. The holes were all within specified tolerances. The roller housing had a light coat of dust and grime. The rollers turned freely on their axle bolts. The spring that keeps the locking pin in place provided positive engagement. The tang thickness was greater than 1/2 of the roller housing thickness.

Two bolts were installed through the seat track; one through the most forward hole and one through the most aft hole. The purpose of the bolts was to serve as the fore and aft seat stops. The bolts fit perpendicular to the seat track and were secured to the track using nuts. The forward bolt shank that was visible through the seat track hole had noticeable rub marks on its upper surface. When the bolt was removed and examined, there were no rub marks on the bottom portion of the bolt.

The seat lock pin was engaged in each of the seat track holes and did not disengage with an applied force. The investigator noted that when the seat pin was engaged in the most forward hole with the bolt through it, specified depth engagement of the seat pin was not possible. When the locking pin passed through the hole, it would hit the shank of the bolt prior to reaching its full locking depth. There was no installation record of the bolt seat stop in the airplane maintenance records.

The airplane inside seat track was equipped with a SAF-T-STOP. The stop was not tightened on the track and was free to move fore and aft. When the investigator tightened the stop on the seat track, the seat did not move past the stop. The purpose of the SAF-T-STOP is to prevent the seat from slipping aft if the primary seat locking mechanism fails.

According to Cessna Aircraft Company, the approved seat stop uses a U-shaped piece of metal that fits over the seat track and is held using a pin through the side hole. This is secured using a cotter pin. The design does not allow the seat lock pin to engage in the hole through which it is secured.

Pilot Information

Certificate:	Private	**Age:**	69,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	November 1, 2005
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	June 1, 2004
Flight Time:	2206 hours (Total, all aircraft), 1512 hours (Total, this make and model), 31 hours (Last 90 days, all aircraft), 18 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N180LG
Model/Series:	180A	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	32693
Landing Gear Type:	Tailwheel	**Seats:**	4
Date/Type of Last Inspection:	September 1, 2005 Annual	**Certified Max Gross Wt.:**	2650 lbs
Time Since Last Inspection:	47 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	3112 Hrs	**Engine Manufacturer:**	Teledyne Continental
ELT:	Installed, not activated	**Engine Model/Series:**	O-470-K
Registered Owner:	On file	**Rated Power:**	230 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	MRY,257 ft msl	**Distance from Accident Site:**	7 Nautical Miles
Observation Time:	14:08 Local	**Direction from Accident Site:**	35°
Lowest Cloud Condition:	1200 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	Broken / 1200 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	9 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	300°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.02 inches Hg	**Temperature/Dew Point:**	18°C / 13°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Marina, CA (OAR)	**Type of Flight Plan Filed:**	None
Destination:	Hollister, CA (1C9)	**Type of Clearance:**	None
Departure Time:	13:58 Local	**Type of Airspace:**	

Airport Information

Airport:	Marina OAR	**Runway Surface Type:**	Asphalt
Airport Elevation:		**Runway Surface Condition:**	Dry
Runway Used:	29	**IFR Approach:**	None
Runway Length/Width:	3000 ft / 75 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	36.681945,-121.762222

Administrative Information

Investigator In Charge (IIC):	Dunks, Kristi
Additional Participating Persons:	James Friel; Federal Aviation Administration; San Jose, CA
Original Publish Date:	February 26, 2007
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=63850