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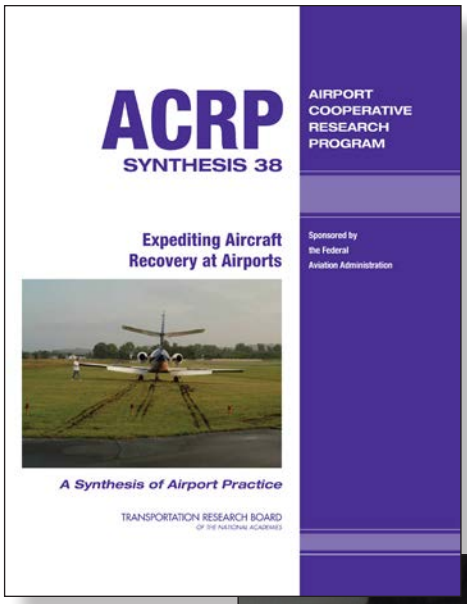
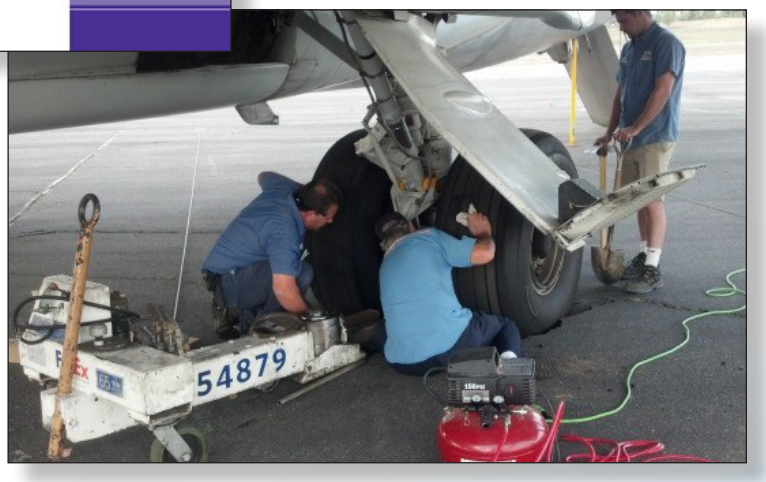
Planning for Recovery of Disabled Aircraft

A Boeing 727-200, operated by a FedEx Express crew, landed in early January 2013 at the Riverside Municipal Airport (KRAL), a general aviation (GA) facility in Riverside, California. The B727 had been donated by FedEx to California Baptist University (CBU) for its new aviation science program. Given the aircraft's large size and weight, a landing waiver was obtained for the GA airport. The B727 landed and taxied safely to the ramp, where it was parked for two weeks before a decision was made to re-position the aircraft.





Right: Maintenance personnel examine a disabled B727 aircraft at KRAL airport in Riverside, CA. The aircraft, too heavy for the general aviation airport's ramp design, unexpectedly sank into the asphalt during a pushback procedure.

Image courtesy of C. Daniel Prather, Ph.D., CBU.

During the subsequent pushback, an underpowered forklift was used as the tow vehicle, causing the aircraft tires to sink into the ramp asphalt. CBU officials and KRAL personnel realized too late that the GA ramp was not designed to support the 100,000+ pound commercial aircraft. As the asphalt failed, preventing the B727 from further towing, the new aircraft owner and airport operator quickly and unexpectedly found themselves in a recovery operation.

Although such events may be rare, disabled aircraft at airports can result in costly flight delays and significant disruption to airport operations. These events often require considerable airport personnel time to manage safety concerns for personnel, the aircraft, and airport infrastructure.

Recovering a disabled aircraft may be as simple as replacing a blown tire, or as complicated as a salvage operation requiring specialized equipment and labor. Despite the risks, industry research reported that "90% of airports and airlines are not adequately prepared to handle even the simplest [aircraft] recovery situation." (Olsen 2008) Without sufficient preparation, it is more likely that these events may result in extended downtime, injuries to personnel, and additional damage to the aircraft or airport facilities.

ACRP Synthesis 38: Expediting Aircraft Recovery at Airports, provides specific guidance to airport operators in these situations. The synthesis presents current aircraft recovery processes and practices developed by the Federal Aviation Administration (FAA) and International Civil Aviation Organization (ICAO), as well as guidance provided by aircraft manufacturers and industry groups, and lessons learned from aircraft recovery case studies. Recovery efforts for a disabled aircraft involving a National Transportation Safety Board (NTSB) accident investigation also must follow an authorized release by NTSB of the aircraft to be moved.

The recovery process is often quite complex and requires the airport operator to work diligently with the aircraft owner/operator to recover the disabled aircraft. Recovery also commonly involves many other stakeholders including maintenance and operations personnel, insurance agents, and accident investigators. These stakeholders frequently have different priorities during the recovery that can further complicate the process. The principal concern of the airport operator is usually to expedite the aircraft's recovery for a swift return to normal operations. However, the aircraft owner/operator and insurer are more focused on minimizing secondary damage to the aircraft, even if this requires a significant amount of time to resolve.

ACRP Synthesis 38 presents key information on what airports can do to expedite the recovery of disabled aircraft, including the roles of various personnel involved in aircraft recovery, and common complications airports may experience in the recovery process.

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John Wayne Airport (SNA) in Orange County, California, partners with the Orange County Fire Department (OCFD) for its aircraft recovery operations. Firefighter Pete Hamborg and fellow OCFD staff found that *ACRP Synthesis 38* provided much needed guidance for their recovery planning with SNA. "[The synthesis] reinforced from an authoritative outward perspective what we knew was a critical part of our internal operation," said Hamborg. "It is one thing to encounter real world 'on the runway' scenarios involving aircraft recovery; it is another thing entirely to convey those complex demanding dynamics to an administrator. This report bridges that gap."

The OCFD team followed the synthesis' recommendation to put together a formal Aircraft Recovery Plan for SNA, ensuring that the recovery process includes all important steps. The synthesis' findings also helped the department staff build support from their administrators for additional resources, including new equipment and training for new crew members. "Before the report came out, we felt like we were inventing best practice and there was no point of comparison," Hamborg said. "The great thing this report did was provide us with a touchstone."

In January 2013, KRAL personnel did not yet have the benefit of guidance from *ACRP Synthesis 38* when unexpectedly facing the recovery of a disabled B727. Ironically, the aircraft's new owner/operator, Daniel Prather, Ph.D., aviation science department chair at CBU, was quite familiar with the synthesis, having just completed his role as principal investigator of its research team. "The knowledge gained in writing the ACRP synthesis served me well during this recovery operation," said Prather. "In reality, more planning by the airport operator and CBU could have occurred prior to this event."

Neither CBU, a first-time aircraft owner/operator, nor KRAL, a GA airport utilized by light aircraft, had yet developed the planning documents and resources recommended by *ACRP Synthesis 38* for recovery of such a large aircraft. Without this pre-planning, the recovery took a full week and required all needed materials and equipment to be brought to the airport from off-site. "No one wanted to turn this into a $25,000 recovery operation if this could be avoided," Prather said. "Thankfully, the aircraft did not impact any movement areas during the duration of the event. If it had, this event would likely have been greatly expedited, resulting in higher costs and less downtime."

Reference: Olsen, J., "Ready for Recovery?" *Airports International* Vol. 41, No. 2, Mar. 2008, pp. 32–33.

Above: A disabled B727 aircraft is parked on steel plates during its recovery process on the ramp at KRAL airport in Riverside, CA. Following the recovery, permanent concrete pads were poured for long-term parking of the aircraft at KRAL, and asphalt repairs were made to return the ramp to normal use. Image courtesy of C. Daniel Prather, Ph.D., CBU.

Key findings of *ACRP Synthesis 38* include the need for airports to:

- Develop an Aircraft Recovery Plan,
- Properly communicate with all personnel during a recovery effort,
- Be familiar with both FAA and ICAO guidance on aircraft recovery,
- Use good judgment in weighing expeditious recovery versus the liability associated with causing secondary damage to the aircraft,
- Be aware of possible complications that may occur during the recovery operation, and
- Be aware of locally available materials, equipment, and supplies that may be useful to the recovery effort.

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