



## Multi-Modal Fact Sheet

### Data Recorders

March 2010

#### The Problem

Data critical to understanding how and why transportation accidents happen are frequently lost, damaged, or not required to be collected.

#### Background

Following any accident, investigators have a long list of questions, starting with “what happened,” and “why.” A prime source for information is the onboard recorders—the VDR<sup>1</sup> on a vessel, a locomotive’s LER,<sup>2</sup> or an aircraft’s FDR/CVR.<sup>3</sup> These devices contain valuable information such as engine and equipment settings, navigation details, voice recordings, and computer data that can help pinpoint what happened. Recorders, however, can be lost or damaged in accidents, or not even required by law to be on board.

In the marine industry, although a small number of Canadian passenger vessels have been voluntarily fitted with voyage data recorders, none of the ferries operating domestically—which carry tens of millions of passengers annually—are legally required to carry them.

Lost locomotive data in the rail industry has impeded investigation efforts in six fatal railway accidents in the last 18 years.<sup>4</sup> And although new crashworthy recorders are slowly being phased in as older locomotives reach the end of their service life, given the 20-30 year lifespan of locomotives, successful replacement of all recorders may be decades away.

Although the aviation industry has enjoyed the benefits of voice and data recordings for approximately 50 years, critical information has been lost by being overwritten or by a loss of power to the recorders.

Without a secure, retrievable information record, the search for hard evidence becomes more difficult. This can translate into longer investigations, which in turn can cause delays that place public safety at risk. With objective data, however, it is easier to pinpoint safety deficiencies which, when corrected, will make the system safer.



#### *Our Mission*

*The Transportation Safety Board of Canada (TSB) is an independent agency that makes transportation safer by investigating marine, pipeline, rail, and air transportation accidents and communicating the results to Canadians.*

1 Voyage data recorder

2 Locomotive event recorder

3 Flight data recorder/cockpit voice recorder

4 TSB Investigation Reports R92T0183, R96C0172, R97V0063, R99H0010, R03V0083 and R06V0136

## Data Recorders (continued)

### Solution

#### Marine

The TSB has previously emphasized the benefits of vessels carrying voyage data recorders<sup>5</sup> and, following the fatal 2006 sinking of a passenger ferry in British Columbia, the TSB recommended that all large passenger vessels<sup>6</sup> be required to carry VDRs (or a simplified version).<sup>7</sup> To date, however, this has not happened.

- Operators of large domestic passenger ferries in Canada should be required by Transport Canada to install voyage data recorders consistent with international standards and practices.

#### Rail

The TSB has also emphasized the survivability of recorded data on trains, and made multiple calls for improved crashworthiness standards to better preserve data.<sup>8</sup> Older recorders, however, may remain in service for decades.

- Industry needs to expand adoption of recently improved recorder standards to prevent the loss of data following collisions and derailments.

#### Air

In the air mode, the TSB has made recommendations<sup>9</sup> that the duration of all cockpit voice recordings be extended to two hours (from the currently mandated 30 minutes). Although there has been some industry movement toward this, a final regulatory change in Canada has yet to be made.

- Global efforts are required to build better recorders, to enhance the quality and duration of their recordings, and to ensure they keep recording when the power supply fails.

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For more information, visit the TSB website at [www.bst-tsb.gc.ca](http://www.bst-tsb.gc.ca) or contact the TSB Communications Branch by telephone at 819-994-8053 or by e-mail at [communications@bst-tsb.gc.ca](mailto:communications@bst-tsb.gc.ca).

<sup>5</sup> TSB Investigation Report M98C0082 (*Federal Bergen*)

<sup>6</sup> Specifically, this refers to passenger vessels over 500 gross tonnage—but also includes all other commercial vessels on an equivalent basis to those trading internationally.

<sup>7</sup> TSB Investigation Report M06W0052 (*Queen of the North*), Recommendation M08-03

<sup>8</sup> TSB Investigation Reports R96C0172, R97V0063 and R99H0010, Recommendation R02-04

<sup>9</sup> Recommendations A99-02 and A99-03 (TSB Investigation Report A98H0003)