

TECHNOLOGY DIGEST

Timely Technology Transfer

"ACCESS TO THE RAIL EQUIPMENT ACCIDENT AND INCIDENT DATABASE,"

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Summary

The Association of American Railroads has developed a Windows™ software application called **readFRA** designed to access the Federal Railroad Administration rail equipment accident and incident database. The database is a collection of reports submitted by the railroads each time a train accident results in property damage above the reporting threshold. Each report includes information such as the type of accident, operational data, equipment consist, property damage, and accident cause.

The objective of **readFRA** is to facilitate the process of retrieving reports from the database and to do simple statistical analyses. Information and statistics generated by **readFRA** can help railroads understand train accidents, identify safety research priorities, develop safety actions, and assess safety policies.



Suggested Distribution:

- R&T Dept.
- Operating Dept. — Safety
- Equipment Maintenance
- Track Maintenance

Association of American Railroads
Research and Test Department

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INTRODUCTION AND CONCLUSION

Railroads must file a Rail Equipment Accident/Incident Report with the Federal Railroad Administration (FRA), Office of Safety each time a train accident results in property damage above the reporting threshold indicated by FRA.¹ FRA maintains a database with all submitted reports. Each year FRA publishes a bulletin summarizing the data.² Analyses of these data can help the railroads understand train accidents, identify safety research priorities, and assess safety policies. To support these analyses, the Association of American Railroads (AAR) has designed a Windows™ software application called *readFRA*.

readFRA queries the database to find the reports that satisfy specified criteria. *readFRA* displays the resulting reports on the screen, and produces optional printouts of the reports (see Exhibit 1). *readFRA* can also produce simple statistics such as counts, sums, averages, and maximum or minimum values of fields grouped by one or more fields. All results can be saved on disk or copied onto the clipboard. The clipboard is a holding place for information to be transferred between Windows applications. For example, the clipboard's content can be pasted into a spreadsheet application to produce tables or graphics.

¹"FRA Guide for Preparing Accidents/Incidents Reports" (1993), U.S. Department of Transportation, Federal Railroad Administration.

²"Accident/Incident Bulletin, No. 163, Calendar Year 1994" (August 1995), U.S. Department of Transportation, Federal Railroad Administration, Office of Safety.

DATABASE

The database is a collection of records. Each record corresponds to a submitted rail equipment accident/incident report. Each record consists of a series of fields such as the code of the reporting railroad, the type of accident, the accident cause code, and the property damage estimated cost.

Each year AAR receives two final files in magnetic form from FRA. One file contains all the information from the submitted reports, including the narrative description field. The other file excludes the narrative description but includes a series of useful summary fields generated by FRA. To keep the information together, the two files are merged into a dBASE® database. The integrity of the data is maintained as a few structural adjustments are made to simplify data access. For example, redundant fields are eliminated, two new fields are added,³ and the narrative description field is consolidated.⁴

³ One added field classifies the primary cause of the accident as a track, signaling, equipment, human factor, or miscellaneous cause. The other provides a finer categorization of the cause of the accident.

⁴ The FRA splits the narrative description into various *string* fields because string fields are limited up to 255 characters. Using a more recent database engine, the narratives are consolidated into a single *memo* field. The memo field has no size restriction.



REQUIREMENTS

readFRA requires a 486-based, or better, personal computer with Windows, a pointing device, and sufficient hard disk space. Most importantly, it requires an appropriate understanding of both the database fields and the basic logical operations to build queries. The following example will illustrate the importance of a proper understanding of the database fields.

Five FRA added fields (highlighted) are shown in Exhibit 1. The first one is called *joint code*. FRA assigns a joint code to each record. The joint code provides an order to reports associated with the same accident. For example, for a collision, each railroad involved in the accident submits a report. And the railroad responsible for the track maintenance may submit an additional report. But for each accident, there is a unique record in the database with a joint code equal to one. If additional railroads were involved in the accident, then the additional railroads get a joint code equal to two for their first report. Extra reports, of railroads which have already been assigned a joint code equal to one or two, get a joint code equal to three. Therefore, to count accidents, the user should make sure to include only the records with a joint code equal to one. Otherwise, the user will double-count accidents. Proper understanding of the database fields will help achieve proper use of the information in the database.

If you are interested in using *readFRA* and need the license agreement and fee information, please affix your business card to the form below and fax your request. Or send an E-mail to SCampodo@lms.aar.com. If you have other questions or comments about this document, contact Sylvia Campodónico at (202) 639-2101.

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