NATIONAL TRANSPORTATION SAFETY BOARD
Vehicle Recorder Division
Washington, D.C. 20594

May 24, 2017

Locomotive Event Recorder

Group Chairman's Factual Report
By Cassandra Johnson

1. EVENT SUMMARY

Location:	Hoboken, New Jersey
Date:	September 29, 2016
Operator:	New Jersey (NJ) Transit
Passenger Train ID:	1614
Locomotive ID:	4214 (trailing locomotive)
NTSB Number:	DCA16MR011

For a summary of the accident, refer to the Accident Summary report, within this docket.

2. LOCOMOTIVE EVENT RECORDER GROUP

An event recorder group was formed.

Chairman:	Cassandra Johnson Mechanical Engineer National Transportation Safety Board (NTSB)
Member:	Randy Fannon Primary Investigator Brotherhood of Locomotive Engineers and Trainmen
Member:	Fred Mattison System Train & Engine Compliance Officer New Jersey Transit
Member:	William Smith Operating Practices Specialist Federal Railroad Administration (FRA)

3. DETAILS OF RECORDER INVESTIGATION

The NJ Transit passenger train 1614 consisted of a cab control car (ID 6034), three coaches, and a diesel locomotive (ID 4214). Locomotive 4214 was located at the rear of the train and was shoving the NJ Transit passenger train 1614 at the time of the event. Locomotive 4214 was equipped with the following onboard event recorder:

Device/Model:	**Quantum Q1036**
Serial Number:	**95120161**

3.1. Quantum Event Recorder Condition

Locomotive 4214's Quantum event recorder was undamaged as shown in figure 1.

Figure 1. Photo of locomotive 4214's Quantum event recorder.

3.2. Download Attempted On-Scene

On September 29, 2016, without removing the Quantum recorder from locomotive 4214, the NTSB Vehicle Recorder Division's recorder specialist witnessed NJ Transit attempt to download the Quantum recorder. However, the download was unsuccessful. Subsequently, the Quantum recorder was removed from the locomotive and further downloads were attempted at the NJ Transit's lab, which were also unsuccessful.

The recorder was retained by NTSB and sent to the event recorder manufacturer, Siemens, for downloading under the supervision of NTSB.

3.3. Download at Event Recorder Manufacturer's Lab

On October 1, 2016, NTSB Vehicle Recorder Division's recorder specialist witnessed Siemens successfully download the Quantum recorder. The download was accomplished by Siemens removing the event memory chips from the Quantum event recorder and placing them on a new board in a functioning Q1036 event recorder (serial number 95120090) and then downloading the event recorder data.

3.4. Locomotive 4214's Event Recorder Data

Locomotive 4214's event recorder data was processed using the Quantum readout software. The event recorder data started on July 18, 2016 at 09:49:06 am event recorder time and ended on July 19, 2016 at 04:01:29 am event recorder time. Therefore, locomotive 4214's Quantum event recorder was not working at the time of the accident.

3.5. Federal Railroad Administration Regulations

Per Title 49 *Code of Federal Regulations* Part 229.135(a), the lead locomotive of NJ Transit passenger train 1614 is required to have an event recorder. Since cab car 6034 (the lead in the consist) was equipped with an onboard event recorder that provided event recorder data during the event.[1] NJ Transit passenger train 1614 met the requirement of the federal regulation.

3.6. Siemens Failure Analysis Report

NTSB requested Siemens to perform a failure analysis on the Quantum event recorder. Siemens' Q1036 Recorder S/N 95120161 Failure Analysis Report is attachment 1 to this factual report.

[1] Refer to the Cab Car Event Recorder Group Chairman's Factual Report in the docket for more details.