SEL | **Application Note** | **AN2016-02**

Using Analytic Assistant® and SYNCHROWAVE® Event 2015 to Create a COMTRADE File

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INTRODUCTION

SEL protective relays provide several tools that allow users to analyze system conditions and determine the root cause of relay operations. An event report is a tool in SEL relays that contains date, time, current, and voltage information and the status of multiple Relay Word bits. An event report can be triggered manually or by predefined programmable logic. Once an event is triggered, the essential data to understand and troubleshoot the system operation are stored in memory. These events can be viewed using either the ACSELERATOR Analytic Assistant SEL-5601 Software or SYNCHROWAVE Event 2015 SEL-5601-2015 Software. The following are two file types that SEL event viewer software imports for event analysis:

- Compressed event report

- COMTRADE

The compressed event report is unique to SEL devices. However, COMTRADE files comply with IEEE C37.111. This standard allows system events to be digitally stored in a common format [1]. Compressed event reports are essential when analyzing system events, but COMTRADE files can provide additional benefits. COMTRADE files can be replayed into a relay using a compatible test set, to help diagnose the cause of the relay operation, and to test different settings against the same event. This application note reviews the COMTRADE export functionality of Analytic Assistant and SYNCHROWAVE Event 2015.

PROBLEM

Not all SEL relays store events in COMTRADE format.

SEL SOLUTION

Analytic Assistant and SYNCHROWAVE Event 2015 can be used to create COMTRADE files from compressed event reports generated by SEL relays. These COMTRADE files can be viewed by compatible software and replayed into a relay using a compatible test set.

Analytic Assistant COMTRADE File Export

After downloading a compressed event report from an SEL relay, the file is saved with a .cev file extension. The file can then be opened using the Analytic Assistant. Once the file is opened, the software creates a COMTRADE file and saves it in the same location as the original compressed event report. As shown in Figure 1, the saved location of the compressed event report now contains the following three additional file types:

- Configuration file (.cfg)

- Data file (.dat)

- Header file (.hdr)

Name	Date modified	Type
EVE C.cev	7/25/2016 4:39 PM	CEV File
EVE C_from_cev.cfg	7/26/2016 1:38 PM	CFG File
EVE C_from_cev.dat	7/26/2016 1:38 PM	DAT File
EVE C_from_cev.hdr	7/26/2016 1:38 PM	HDR File

Figure 1   Analytic Assistant COMTRADE File Export

Before exiting Analytic Assistant software, navigate to **Options** (as shown in Figure 2) to ensure that the **Keep COMTRADE Files** box is checked; otherwise, COMTRADE files will be deleted when the program is closed.
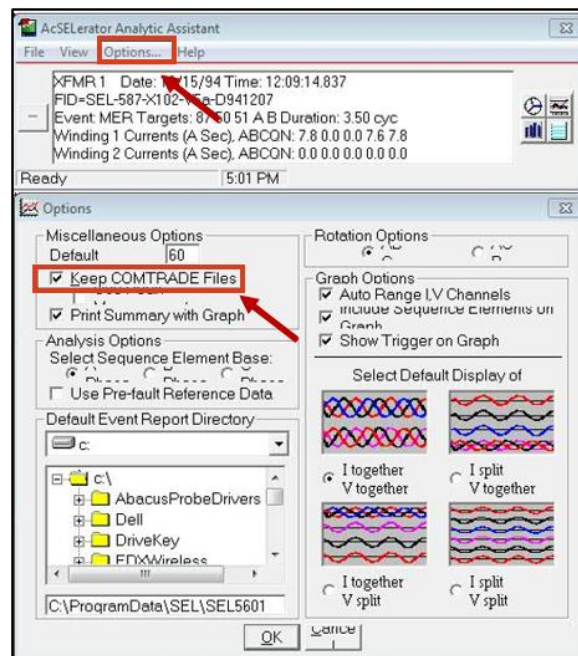

Figure 2   Analytic Assistant Keep COMTRADE Files Box

Note that Figure 2 applies to the licensed version of Analytic Assistant only. By default, the unlicensed version of Analytic Assistant will not remove the generated COMTRADE files.

SYNCHROWAVE Event 2015 COMTRADE File Export

A compressed event report from an SEL relay is downloaded and saved with a .cev file extension. The file can be opened using SYNCHROWAVE Event 2015. This software includes an **Export Event (Comtrade)** function, as shown in Figure 3.
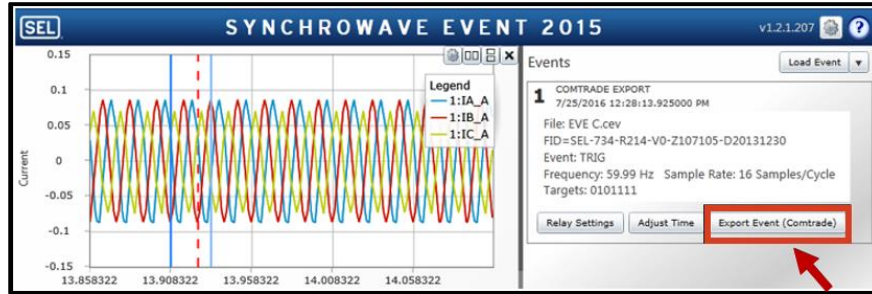

Figure 3 SYNCHROWAVE Event 2015 COMTRADE File Export

CONCLUSION

COMTRADE files provide a useful tool for testing relay operation and troubleshooting relay settings. Through the use of Analytic Assistant and SYNCHROWAVE Event 2015, any event file recorded by an SEL relay can be converted into a COMTRADE file to play or to view with compatible software and test equipment.

REFERENCE

[1] IEEE Standard C37. 111-2013, IEEE/IEC Measuring Relays and Protective Equipment – Part 24: Common Format for Transient Data Exchange (COMTRADE) for Power Systems.

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