

MODEL 5073SPA System Performance Analysis

General Description

Entities throughout the world operate extensive ALERT monitoring networks. Radio frequencies are used to communicate data from remote stations, through repeaters, to receiving base stations running the NovaStar software. Due to the random event-based reporting inherent of ALERT networks, it is sometimes difficult to ascertain how well individual stations perform on a day-to-day basis. As systems expand and add new gages, the potential exists for data degradation due to collision and through frequency saturation. With an understanding of the ALERT protocol and the nature of ALERT networks, it is possible to quantify the performance of individual sensors and an entire ALERT network. HydroLynx offers an analysis service and performance metrics tools that run against an existing NovaStar database to generate concise reports summarizing the health and performance of individual stations and the network in general.

The ability to quickly review the quality of data transmissions and the performance of individual stations within a network can help an entity focus field maintenance efforts. The analysis also provides a convenient review of the data loss experienced by a system and an evaluation of the level of radio frequency saturation.

HydroLynx Systems will utilize our developed tools to conveniently extract data from your NovaStar system and analyze data sets for a period that you determine. We can analyze your system for a recent storm event or for non-rain periods. Our Microsoft Excel workbook tools will generate reports that are easy to review and will quantify the performance of individual stations and the system as a whole.

General System Analysis

Raw ALERT data and sensor definitions from the NovaStar database are imported into an MS Excel workbook. Macros within the workbook are then executed to summarize the general aspects of the network including:

1. Starting date of analysis
2. Ending date of analysis
3. Total records analyzed for period
4. Distribution of ALERT messages by sensor grouping
5. Distribution of ALERT messages by validation code
6. Sensors with highest number of invalid data reports
7. Average daily radio traffic loading
8. Average hourly radio traffic loading
9. Median hourly radio traffic loading
10. Peak hourly radio traffic loading
11. Summary of the 10 sensors with the largest number of reports for the analysis period

Rain Sensor Timer Performance Analysis

A second macro within the workbook is run to summarize the timer (I'm alive) reports for rain sensors. The rain timer performance analysis quantifies, for each rain sensor, the number of expected timer reports, the number of received timer reports, and the timer performance percentage for each sensor (received/expected * 100). This report can be run once per month to quantify general system performance for non-rain periods.

Rain Event Performance Analysis

A third macro is run to summarize the event reporting performance for each rain sensor. The rain event performance analysis quantifies, for each rain sensor, the number of expected incrementing reports, the number of received incrementing reports, and the event performance percentage for each sensor (received/expected * 100). This report is run after a large storm event to summarize the performance of the system under heavy traffic loading.