



## TECHNICAL ARTICLES

### Using DataView to review collected data – it does more than site visit station logs

#### Introduction

Most network sites now have DataView and all sites will have the system by December 31, 2000. The system has brought exciting changes to station operators, the first and foremost of which is increased efficiency.

The DataView system involves much less paperwork. From collection of data at the air quality stations to validation of data in the Information Management Center (IMC), most of the collection, processing, and storing of data is performed electronically, with very little paperwork involved. Less paperwork saves time and space. Data are obtained quicker so problems are corrected sooner and validation can begin earlier.

For the first time ever, station operators may view plots and tables of current, collected air quality data at their sites. Operations are streamlined with the DataView system, allowing station operators to perform their tasks quicker and easier than before, and with a better understanding of what is occurring at their station. The DataView system has a variety of tools that can help you understand the air quality operations at your site. Let's look at a few.

#### Station Operations

The old station checklists and station logs that were handwritten and mailed to the IMC for years have been replaced by a more efficient electronic version. All station operations, checks, and procedures performed are now automatically entered by DataView into an electronic station log (see Figure 1). This log can be viewed from the *Station Documentation* menu. It is a complete, written summary of what occurred at the station. It is critical for data validation and may be helpful in troubleshooting station problems.

At the station the air quality and meteorology data are continuously being collected by the datalogger. The datalogger stores these data, even in the event that DataView fails. It can store a minimum of 90 days of continuous gas analyzer data (one-minute data) and 3 months of hourly data for all parameters. The Information Management Center (IMC) at Air Resource Specialists, Inc. (ARS) polls the datalogger daily. In the event of a DataView failure, the data can still be retrieved because they reside on the datalogger (they also reside within DataView). After obtaining the daily data, the IMC again polls each site to retrieve the station log. This is used during data validation; it allows validators to see what occurred at the station that may have affected the data. Operators may view the data or data summaries at any time as described below.

Date	Time	Operation/Instrument	Message	Logged by
05/17/00	08:21	login		djm
05/17/00	08:21	site visit	Start Checklist - O3[TE49C/TE49Cca][CASTNet	djm
05/17/00	08:21	TEI 49C Ozone Analyzer	Offline	djm
05/17/00	08:21	CASTNet Dry Deposition 10 meter	FLW offline	djm
05/17/00	08:21	TEI 49C Ozone Analyzer	O3 and FLW online	djm
05/17/00	08:21	TEI 49C Ozone Analyzer	O3 - ZERO = 0	djm
05/17/00	08:21	TEI 49C Ozone Analyzer	O3 - SPAN = 400	djm
05/17/00	08:21	TEI 49C Ozone Calibrator	O3CAL - ZERO = 0	djm
05/17/00	08:21	TEI 49C Ozone Calibrator	O3CAL - SPAN = 400	djm
05/17/00	08:21	TEI 49C Ozone Analyzer	O3 - ZERO = 0	djm
05/17/00	08:21	TEI 49C Ozone Analyzer	O3 - SPAN = 400	djm
05/17/00	08:21	TEI 49C Ozone Calibrator	O3CAL - ZERO = 0	djm
05/17/00	08:21	TEI 49C Ozone Calibrator	O3CAL - SPAN = 400	djm
05/17/00	08:21	TEI 49C Ozone Calibrator	FLCN = 14	djm
05/17/00	08:21	site visit	Completed Checklist O3[TE49C/TE49Cca][CASTNet	djm
05/17/00	08:22	User Logout		djm
05/17/00	08:26	login		ifaust
05/17/00	08:26	manual log entry	demo	ifaust
05/17/00	08:30	manual log entry	this is a test	ifaust
05/17/00	08:32	site visit	Start Checklist - O3[TE49C/TE49Cca][CASTNet	ifaust
05/17/00	08:32	TEI 49C Ozone Analyzer	Offline	ifaust
05/17/00	08:33	TEI 49C Ozone Analyzer	Bypassed taking offline	ifaust
05/17/00	08:33	TEI 49C Ozone Analyzer	Offline	ifaust
05/17/00	08:33	TEI 49 C Ozone Analyzer	Secondary filter replaced	ifaust
05/17/00	08:34	CASTNet Dry Deposition 10 meter	FLW offline	ifaust
05/17/00	08:34	TEI 49C Ozone Analyzer	O3 and FLW online	ifaust
05/17/00	08:37	TEI 49C Ozone Analyzer	O3 - ZERO = 0	ifaust
05/17/00	08:37	TEI 49C Ozone Analyzer	O3 - Invalid SPAN calibration = 390	ifaust
05/17/00	08:37	site visit	Cancelled Checklist - O3[TE49C/TE49Cca][CASTNet	ifaust

Figure 1. The Station Log displays all entries of operations performed at an air quality station.

## Alarms

The *Alarms* window is displayed when first logging into DataView or selecting *Alarms* from the menu bar (see Figure 2). A variety of alarms are presented to quickly pinpoint abnormal data situations. If alarms exist, they will flash in yellow on the *Alarms* window. An alarm may be viewed and/or printed by single-clicking the flashing button. An alarm record is maintained in the station log for every event resulting in an alarm. An event is time-based and may represent various periods when the alarm condition existed.

After reviewing the alarms and taking appropriate action, the alarm record may be removed from the display by dismissing it. Note that this display only alerts the operator of the existence of an alarm condition. Reviewing and/or dismissing alarms does not correct the problem, they just clear the alarm from the screen. Ozone exceedances may be quickly viewed, as they will appear as an alarm on this window. Exceedances (defined by the National Ambient Air Quality Standard as over 85 ppb) are listed according to when and how many occurred).

**Figure 2. The Alarms menu displays immediately after logging onto DataView. Look here for conditions that require correcting or for ozone exceedances.**

Parameter	Date/Time	Interval	Reason	Value	Flags	Dismissed
STP	9/8/00 4:00:00 AM	hourly	Flags	13.9	<-L	False
O3	9/8/00 4:00:00 AM	hourly	Flags	1.2	<	False
O3	9/8/00 8:00:00 AM	hourly	Flags	1.2	<	False
STP	9/8/00 8:00:00 AM	hourly	Flags	13.7	<-L	False
STP	9/8/00 9:00:00 AM	hourly	Flags	14.6	<-L	False
STP	9/8/00 10:00:00 AM	hourly	Flags	15.5	<-L	False
STP	9/8/00 11:00:00 AM	hourly	Flags	16.4	<-L	False
STP	9/8/00 12:00:00 PM	hourly	Flags	17.7	<-L	False
STP	9/8/00 1:00:00 PM	hourly	Flags	18.5	<-L	False
STP	9/8/00 2:00:00 PM	hourly	Flags	17.7	<-L	False
STP	9/8/00 3:00:00 PM	hourly	Flags	16.9	<-L	False
STP	9/8/00 4:00:00 PM	hourly	Flags	17.3	<-L	False
STP	9/8/00 5:00:00 PM	hourly	Flags	16.2	<-L	False
STP	9/8/00 6:00:00 PM	hourly	Flags	15.8	<-L	False
STP	9/8/00 7:00:00 PM	hourly	Flags	16.2	<-L	False
STP	9/8/00 8:00:00 PM	hourly	Flags	15.7	<-L	False
STP	9/8/00 9:00:00 PM	hourly	Flags	14.8	<-L	False

**Logger Flag Description**

- < Does not meet requirement for valid average
- > Some missing data, but meets requirement for valid average
- A Arithmetic Error (math calculation error)
- B Bad Status
- D Channel Disabled/Off-line
- F Floor Limit Exceeded
- H High Alarm Threshold Exceeded
- h Ozone 8-hour average > 85ppb
- J Rate of Change Alarm Threshold Exceeded
- L Low Alarm Threshold Exceeded
- O Analog Overrange
- P Power Failure
- R Rate of Change Limit Exceeded
- U Analog Underrange
- X Shelter temperature out of limits

## Station Checklists

Weekly station visits and multipoint calibrations are easily performed by following the Checklist Instructions. The Checklist Instructions are provided in electronic format on the DataView computer, and also as hardcopy in the Site Operator's Manual. The checklists are easier to read than the old standard operating procedures. They are much more graphic, keyed to individual tasks, and easily guide the operator through each step of the weekly station visit or multipoint calibration.

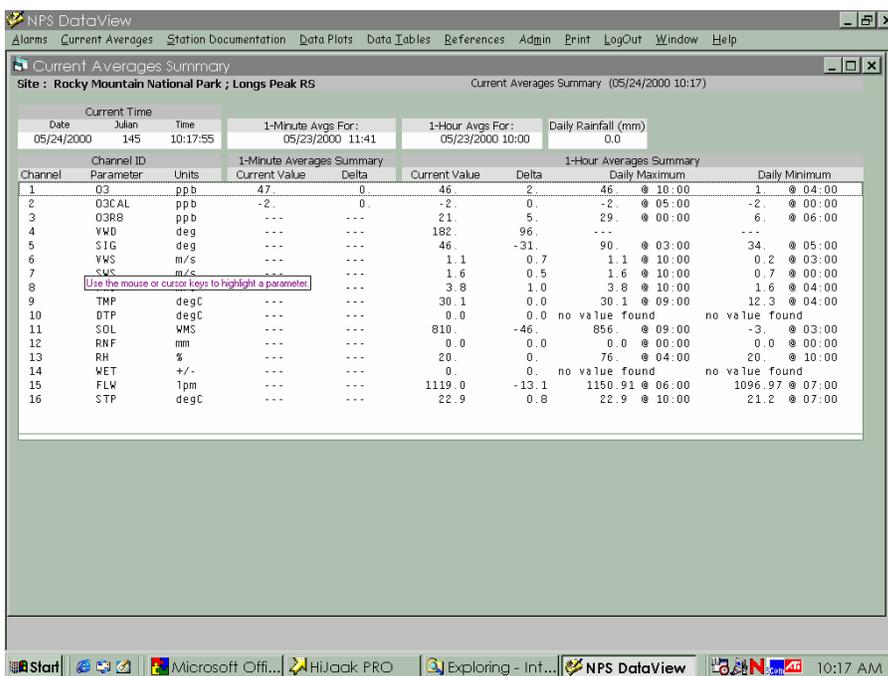
## Current Averages

The *Current Averages Summary* window (see Figure 3) displays current minute and hourly averages (with associated statistics) of all measured parameters:

- Current date and time
- Last polled minute data, date and time
- Last polled hourly data, date, and time
- Daily rainfall
- Current reading
- Most recent minute and hourly averages for each channel
- Delta value (number of minutes or hours since previous reading)
- Daily maximum and daily minimum
- Current minute averages are automatically updated each minute, and hourly averages each hour.

**Figure 3. The Current Averages Summary allows you to view current conditions at your station.**

Viewing the *Current Averages Summary* provides a quick view of how each sensor and analyzer are working. This allows the user to easily see if the data averages are within reasonable limits and see which parameters are operating and which are not. If a parameter is not being measured, or if the datalogger is not receiving it, or the value does not appear to be reasonable for the observed conditions, telephone the Network Operations staff at ARS. The field technicians at ARS have the ability to log onto DataView and directly onto your individual station to see what is occurring. At this point, the field technicians can view the exact DataView screens as appears on your station's computer. Troubleshooting is quick and easy with DataView.

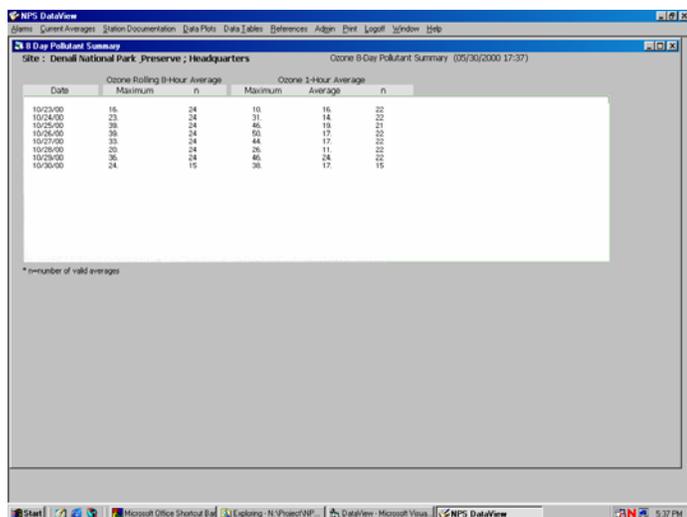


### 8-Day Pollutant Summary

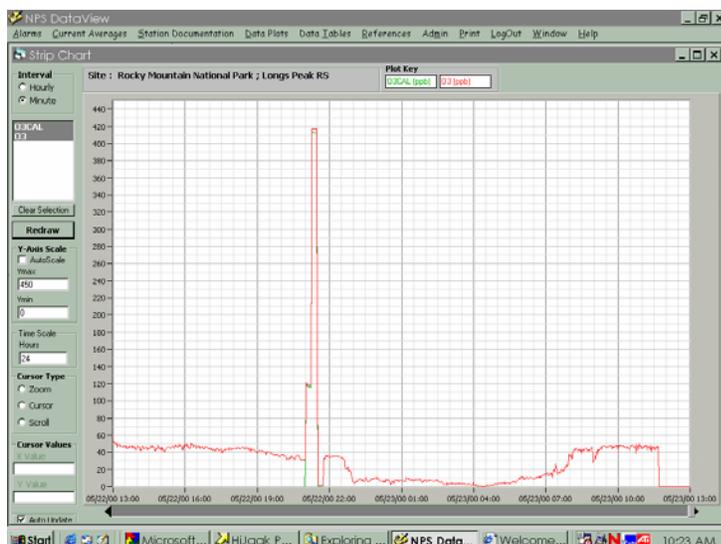
The *8-Day Pollutant Summary* window, available from the *Data Tables* menu, displays the 1-day and 8-day maximum ozone concentrations and average ozone concentration (see Figure 4). The last 8 days of collected ozone data are listed. Viewing this screen may allow the user to determine if the ozone values appear reasonable for actual, observed conditions. It also provides a quick view of day-to-day ozone concentration changes.

### Stackplots

Stackplots are available from the *Data Plots* menu and are plots of hourly data of all collected parameters (see Figure 5). They are an effective way to view the relationships among numerous data types over time.



**Figure 4. The 8-Day Pollutant Summary screen lists both the 8-hour and 1-hour ozone averages.**



**Figure 5. DataView's Stackplot window provides a graphic view of many parameters.**

## Strip Charts

Strip charts are also available from the *Data Plots* menu. They provide a graphic view of a continuous 1-minute or hourly average data plot for one or more gaseous parameters. This plot is ideal for looking at the variations of a parameter over time and provides the user with a variety of plotting options. The strip chart is also a useful tool to watch data during gas analyzer calibrations.

Figure 6. DataView's Strip Chart window provides a graphic view of ozone data.



## Conclusion

By carefully reviewing current and past data, with a knowledge of local conditions, the operator is in the best position to note data or operational inconsistencies that could influence the quality and quantity of station data.

Take the time to look at each menu option and develop the data display tools that best meet our needs. Don't be afraid to experiment and have fun. As always, if you have any questions, ARS Network Operations or Information Management Center staffs are available to help and are just a telephone call away.