

Data Tool CO2 Reference Guide

The Data Tool is an online excel spreadsheet report creator developed by Thomas Trebacz (BASC Electrical Eng.) Its interface offers access to process variable metrics from which specific points of interest or 'data sources' are selected as input for subsequent report creation. This reference guide provides a tutorials with examples focused on a ventilation validation use case as well as an introduction to its newest and easiest to use feature: the single click Building CO2 report creator.

DATA TOOL REFERENCE
GUIDE

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INTRODUCTION

The Data Tool is an online excel spreadsheet report creator developed by Thomas Trebacz (BASC Electrical Eng.) Its interface offers access to process variable metrics from which specific points of interest or 'data sources' are selected as input for subsequent report creation. This reference guide provides a tutorials with examples focused on a ventilation validation use case as well as an introduction to its newest and easiest to use feature: the single click Building CO₂ report creator.

This document provides procedures with example queries that:

- a) Provide procedure to easily download CO₂ sensor data for a specified campus building with a single click.
- b) Provide the system CO₂ input as measured by CO₂ sensors located inside supply air plenums of air handlers.
- c) Provide the system CO₂ output as measured by individual room air CO₂ sensors
- d) Provide procedure to easily craft their own reusable custom filter based on the points of interest discovered in the table

DOWNLOAD CO2 REPORT FOR CAMPUS BUILDING WITH A SINGLE CLICK

APOGEE- (MOST BUILDINGS)

The building CO₂ report is built out of data collected from remotely located CO₂ sensors over the span of one week and is only available for the Apogee system.

a) Navigate to the Data Tool in your default browser by clicking this link:

<http://bac-datatool.fm.wvu.edu:443/DataTool/#apogeeView>

b) Left select the “Download Building CO2 Report” drop-down

c) Scroll the menu using mouse wheel until you see your building name appear

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CREATE WITH BAC DATA TOOL ANALYTICS CUSTOM REPORTS

Data Tool Architect/Developer: Thomas Trebacz [BASC]

APOGEE DATABASE | DESIGN DATABASE

Apogee Export Utility

Download Building CO2 Report

Academic Instructional Vest
Birmam Wood Community
Bond Hall
Biology
Morse Hall Chemistry Building
Communications Facility
Commissary
Campus Services
Edens Hall
Environmental Studies
Ross Engineering Technology
Fairhaven Academic
Fine Arts Building
Higginson Hall
Haggard Hall
Humanities Building
Mathes Hall
Old Main
Performing Arts Center
Parks Hall
Physical Plant

Log End Date: | Select All

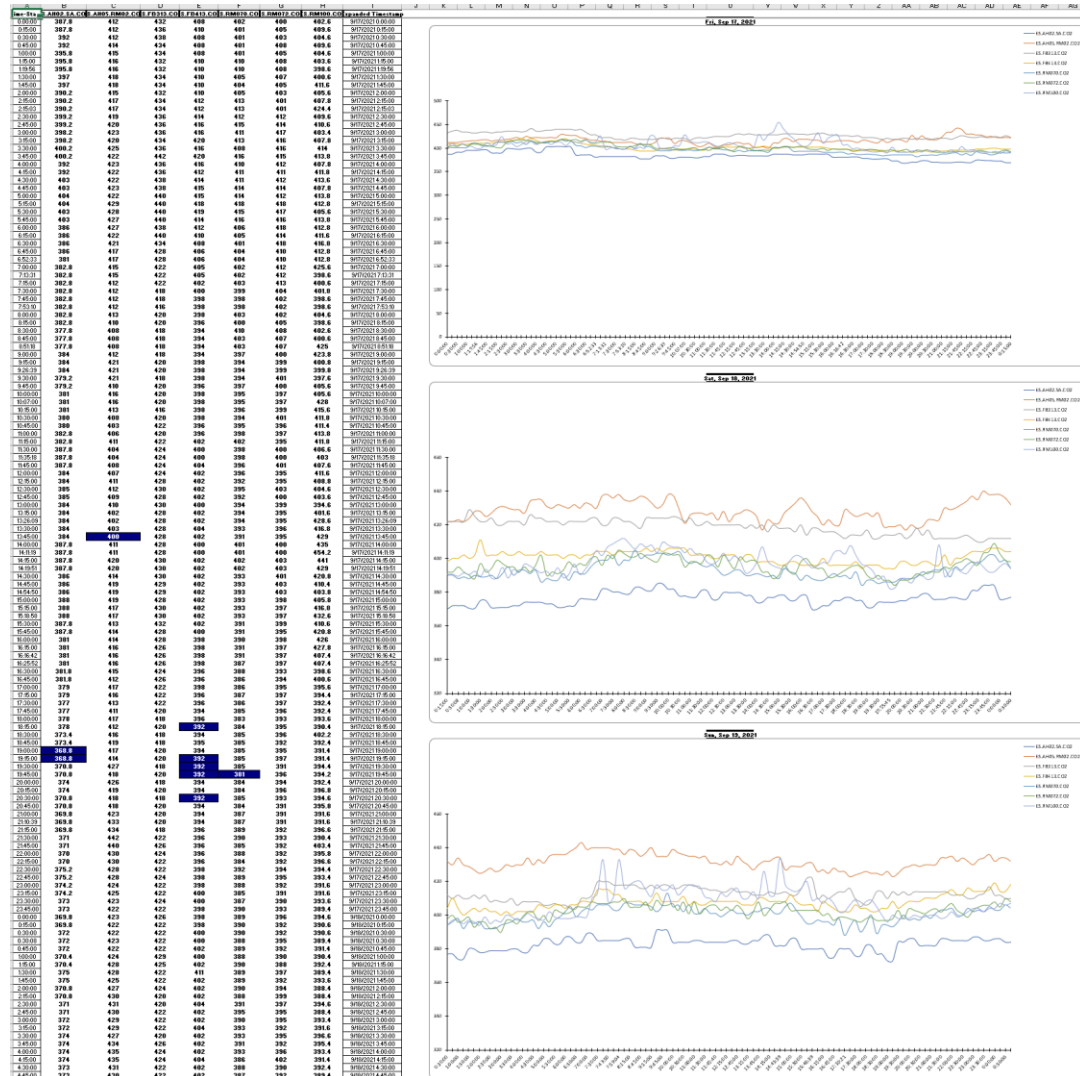
Field Panel Name	Add
D-POWER AHMEC01	Add
D-POWER AHMEC01	Add
D-POWER AIMBC05	Add
D-POWER AIMBC06	Add
D-POWER AIMBC06	Add
D-POWER AIMBC05	Add
D-POWER AIMBC05	Add
D-POWER AIMBC05	Add
D-POWER BHMC70	Add
D-POWER BHMC70	Add
D-POWER BHMC70	Add
D-POWER BHMC70	Add
D-POWER CBPXC05	Add
D-POWER CBPXC05	Add
CB AH03.VFD-POWER CBPXC05	Add

d) Left click your building name and wait while your report is downloaded.

- i. The download operation typically requires no more than 10s to complete however could take longer if the building selected has an extremely large data point population

Data Tool CO₂ Reference Guide

- e) Open your downloaded report in Excel and pan to the right, there you should see a series of daily charts ordered chronologically from oldest on top, to present on bottom.



AIR HANDLER SUPPLY AIR CO₂ FILTER

APOGEE- (MOST BUILDINGS)

The system CO₂ input is measured by CO₂sensors located inside supply air plenums of air handlers. To see all air handler supply air CO₂measurements do the following:

- f) Navigate to the Data Tool in your default browser by clicking this link:
<http://bac-datatool.fm.wvu.edu:443/DataTool/#apogeeView>
- g) Copy and paste **"SA%CO2*"** without quotation marks into the Point Identifier box.
 - i. "SA" stands for system supply air.
 - ii. "%" is a wild card stand-in that accepts any character string between "SA" and "CO2".
 - iii. "*" is an end of name terminator which filters only for point names that end with "CO2".
 - iv. To filter supply air by building add building designator followed by "%" for example:
 - i. For Viking Union use: **"VU.%SA%CO2*"**.
- h) Select the date range by either entering or clicking on the date using the calendar widget.
- i) Push the "Select All" button to select all visible data sources identified in the table or for individual data source selection push the add button next to the Point name of your choice.
- j) Once you have all data sources selected push the "Create Analysis" button.
- k) To select new data sources simply right click on the Point identifier box and choose "Select All" from the menu then start typing or paste your new query.
 - i. Alternatively if you prefer to add additional data sources to the data sources presented in the table then add comma (',') then the text of the desired sub query.

- CREATE WITH TRE-BAC DATA TOOL ANALYTICS CUSTOM REPORTS -

Data Tool Auth

APOGEE DATABASE

DESIGN DATABASE

Apogee Export Utility

Create Analysis

Magnitude Sort

Enter filter text here

Click the box and select start date

Click box below select end date

De-select All

Point Identifier: SA%CO2

Log Start Date: Aug 18 2021 00:00:00

Log End Date: Aug 19 2021 00:00:00

1-93 of 93

Page Size: 10 25 50 100 500 1000

Record Count	Point Name	Field Panel Name	
158	AW.AH04.RM204.OSA.CO2.OFFSET	AWMBC67	<div style="border: 1px solid red; padding: 2px;">Remove</div>
129	HH.AH02.SA.CO2	HHPXCM62	<div style="border: 1px solid red; padding: 2px;">Remove</div>
110	AW.AH03.RM210.OSA.CO2.OFFSET	AWMBC67	<div style="border: 1px solid red; padding: 2px;">Remove</div>
98	SA.AH04.RM140.CO2	SAPXCM01	<div style="border: 1px solid red; padding: 2px;">Remove</div>
78	ET.OSA.CO2.VIRT	ETPXCM27	<div style="border: 1px solid red; padding: 2px;">Remove</div>
78	HH.AH01.SA.CO2	HHPXCM61	<div style="border: 1px solid red; padding: 2px;">Remove</div>
77	AH.AH04.SA.CO2	AHPXCM16	<div style="border: 1px solid red; padding: 2px;">Remove</div>
73	MH.AH02.SA.CO2	MHPXCM01	<div style="border: 1px solid red; padding: 2px;">Remove</div>
67	VU.AH05.SA.CO2	VUPXCM76	<div style="border: 1px solid red; padding: 2px;">Remove</div>
65	SA.AH01.RM122.CO2	SAPXCM01	<div style="border: 1px solid red; padding: 2px;">Remove</div>
63	CF.AH01.SA.CO2	CFMBC51	<div style="border: 1px solid red; padding: 2px;">Remove</div>
61	HH.AH02.SA.CO2.STPT	HHPXCM62	<div style="border: 1px solid red; padding: 2px;">Remove</div>
58	HG.AH02.SA.CO2	HGPXCM04	<div style="border: 1px solid red; padding: 2px;">Remove</div>
56	ET.AH01.OSA.CO2	ETPXCM26	<div style="border: 1px solid red; padding: 2px;">Remove</div>
56	MH.AH05.SA.CO2	MHPXCM04	<div style="border: 1px solid red; padding: 2px;">Remove</div>
56	SA.AH02.RM124.CO2	SAPXCM01	<div style="border: 1px solid red; padding: 2px;">Remove</div>

DESIGO- (CARVER AND FRASER HALL)

The system supply air CO₂ input is measured by CO₂ sensors located inside supply air plenums of air handlers. To see all air handler system supply air CO₂ measurements including setpoints do the following:

- Navigate to <http://bac-datatool.fm.wvu.edu:443/DataTool/#desigoView>
- Copy and paste “**AH%CO2**” without quotation marks into the Point Identifier box.
 - “AH” stands for Air Handler.
 - To filter system supply air by building add building designator followed by “%” for example:
 - For Carver use: “**CV%AH%CO2**”.
- Select the date range by either entering or clicking on the date using the calendar widget.
- Push the “Select All” button to select all visible data sources identified in the table or for individual data source selection push the add button next to the Point name of your choice.
- Once you have all data sources selected push the “Create Analysis” button.

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APOGEE DATABASE DESIGNO DATABASE

Designo Export Utility

Create Analysis Magnitude Sort

Point Identifier: AH%CO2 Log Start Date: Aug 18 2021 00:00:00 Log End Date: Aug 19 2021 00:00:00 De-select All

1-24 of 24 Page Size: 10 25 50 100 500 1000

Record Count	Point Name	Point Description	
168	CV_AH08_CO2	CVPXCM05_Local_IO_CV_AH08_CO2_TL_COV	Remove
162	CV_AH03_CO2	CVPXCM02_Local_IO_CV_AH03_CO2_TL_15	Remove
162	CV_AH03_CO2	CVPXCM02_Local_IO_CV_AH03_CO2_TL_COV	Remove
160	CV_AH01_CO2	CVPXCM01_Local_IO_CV_AH01_CO2_TL_15	Remove
160	CV_AH01_CO2	CVPXCM01_Local_IO_CV_AH01_CO2_TL_COV	Remove
158	CV_AH04_CO2	CVPXCM02_Local_IO_CV_AH04_CO2_TL_15	Remove
158	CV_AH04_CO2	CVPXCM02_Local_IO_CV_AH04_CO2_TL_COV	Remove
158	CV_AH09_CO2	CVPXCM06_Local_IO_CV_AH09_CO2_TL_COV	Remove
158	CV_AH09_CO2	CVPXCM06_Local_IO_CV_AH09_CO2_TL_15	Remove
154	CV_AH07_CO2	CVPXCM03_Local_IO_CV_AH07_CO2_TL_15	Remove
154	CV_AH07_CO2	CVPXCM03_Local_IO_CV_AH07_CO2_TL_COV	Remove
152	CV_AH06_CO2	CVPXCM03_Local_IO_CV_AH06_CO2_TL_15	Remove
152	CV_AH06_CO2	CVPXCM03_Local_IO_CV_AH06_CO2_TL_COV	Remove
80	CV_AH02_CO2_SPT	CVPXCM01_Local_IO_CV_AH02_CO2_SPT_TL_15	Remove
79	FR_AH02_CO2_SETPT	FRPXCM01_Local_IO_FR_AH02_CO2_SETPT_TL_15	Remove
79	FR_AH01_CO2_SETPT	FRPXCM01_Local_IO_FR_AH01_CO2_SETPT_TL_15	Remove
12	CV_AH05_CO2	CVPXCM04_Local_IO_CV_AH05_CO2_TL_COV	Remove
11	FR_AH01_ref_CO2	FRPXCM01_Local_IO_FR_AH01_ref_CO2_TL_COV	Remove
7	FR_AH03_ref_CO2	FRPXCM01_Local_IO_FR_AH03_ref_CO2_TL_COV	Remove

ROOM AIR CO₂ PPM FILTER

APOGEE- (MOST BUILDINGS)

- a) Navigate to the Data Tool in your default browser by clicking this link:
<http://bac-datatool.fm.wvu.edu:443/DataTool/#apogeeView>
- b) Copy and paste **"RM%CO2*"** without quotation marks into the Point Identifier box.
 - i. To filter room air by building add building designator followed by "%" for example:
 - a) For Viking Union use: **"VU%RM%CO2*"**.
- c) Select the date range by either entering or clicking on the date using the calendar widget.
- d) Push the "Select All" button to select all visible data sources identified in the table or for individual data source selection push the add button next to the Point name of your choice.
- e) Once you have all data sources selected push the "Create Analysis" button.
- f) To select new data sources simply right click on the Point identifier box and choose "Select All" from the menu then start typing or paste your new query.
 - i. Alternatively if you prefer to add additional data sources to the data sources presented in the table then add comma (',') then the text of the desired sub query.

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Data Tool

Apogee Export Utility

Point Identifier:
 Log Start Date:
 Log End Date:

1-3 of 3
 Page Size:

Record Count	Point Name	Field Panel Name	
1616	VU.AH04.RM605.CO2	VUPXCM76	<input type="button" value="Add"/>
57	VU.AH01.RM590.CO2	VUPXCM73	<input type="button" value="Add"/>
57	VU.AH01.RM690.CO2	VUPXCM73	<input type="button" value="Add"/>

DESIGO- (CARVER AND FRASER HALL)

- a) Navigate to <http://bac-datatool.fm.wvu.edu:443/DataTool/#desigoView>
- b) Copy and paste “**RM%CO2**” without quotation marks into the Point Identifier box.
 - a. “RM” stands for Room.
 - b. To filter room air by building add building designator followed by “%” for example:
 - i. For Carver use: “**CV%RM%CO2**”.
- c) Select the date range by either entering or clicking on the date using the calendar widget.
- d) Push the “Select All” button to select all visible data sources identified in the table or for individual data source selection push the add button next to the Point name of your choice.
- e) Once you have all data sources selected push the “Create Analysis” button.
- f)

- CREATE WITH TRE-BAC DATA TOOL ANALYTICS CUSTOM REPORTS -

Data Tool Author: Thomas Trebacz

APOGEE DATABASE

DESIGO DATABASE

Desigo Export Utility

Create Analysis

Point Identifier: Log Start Date: Log End Date:

1-12 of 12 Page Size:

Record Count	Point Name	Point Description	
3042	CV_TB221_RM_CO2	CVPXCM06_Local_IO_CV_TB221_RM_CO2_TL_COV	<input type="button" value="Remove"/>
3042	CV_TB221_RM_CO2	CVPXCM06_Local_IO_CV_TB221_RM_CO2_TL_15	<input type="button" value="Remove"/>
782	CV_CB201B_RM_CO2	CVPXCM04_Local_IO_CV_CB201B_RM_CO2_TL_COV	<input type="button" value="Remove"/>
736	CV_CB201A_RM_CO2	CVPXCM04_Local_IO_CV_CB201A_RM_CO2_TL_COV	<input type="button" value="Remove"/>
81	CV_TB103_RM_CO2	CVPXCM02_Local_IO_CV_TB103_RM_CO2_TL_15	<input type="button" value="Remove"/>
81	CV_TB104_RM_CO2	CVPXCM02_Local_IO_CV_TB104_RM_CO2_TL_15	<input type="button" value="Remove"/>
71	CV_TB265_RM_CO2	CVPXCM01_Local_IO_CV_TB265_RM_CO2_TL_15	<input type="button" value="Remove"/>
71	CV_TB264_RM_CO2	CVPXCM01_Local_IO_CV_TB264_RM_CO2_TL_15	<input type="button" value="Remove"/>
71	CV_TB181A_RM_CO2	CVPXCM01_Local_IO_CV_TB181A_RM_CO2_TL_15	<input type="button" value="Remove"/>
70	CV_TB272_RM_CO2	CVPXCM01_Local_IO_CV_TB272_RM_CO2_TL_15	<input type="button" value="Remove"/>
70	CV_TB207_RM_CO2	CVPXCM01_Local_IO_CV_TB207_RM_CO2_TL_15	<input type="button" value="Remove"/>
70	CV_TB181B_RM_CO2	CVPXCM01_Local_IO_CV_TB181B_RM_CO2_TL_15	<input type="button" value="Remove"/>

HOW TO CRAFT YOUR OWN REUSABLE CO₂ DATA FILTER

- Open any text editor such as notepad
- Navigate to Data Tool and select either Apogee or Designo
- Copy and paste "CO₂" into Point Identifier
- Left click on 500 next to Page Size

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APOGEE DATABASE **DESIGNO DATABASE**

Apogee Export Utility

Magnitude Sort

Point Identifier: CO₂ Log Start Date: Log End Date: Select All

1-50 of 454 Page Size: 10 25 50 100 500 1000

Record Count	Point Name	Field Panel Name	
0	AH.AH01.CO2.LS	AH.MBC16	Add
0	AH.AH01.CO2.SPT	AH.MBC16	Add
0	AL.AH01.CO2V	AIMBC65	Add

- Using mouse scroll wheel scroll until you see desired data source point name

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APOGEE DATABASE **DESIGNO DATABASE**

Apogee Export Utility

Magnitude Sort

Point Identifier: CO₂ Log Start Date: Log End Date: Select All

1-50 of 454 Page Size: 10 25 50 100 500 1000

Record Count	Point Name	Field Panel Name	
0	AH.AH01.CO2.LS	AH.MBC16	Add
0	AH.AH01.CO2.SPT	AH.MBC16	Add
0	AL.AH01.CO2V	AIMBC65	Add
0	AL.AH01.RA.CO2	AIMBC65	Add
0	AL.AH01.RM.CO2.TOT.CNT	AIMBC66	Add
0	AL.AH01.RM273.CO2	AIMBC65	Add
0	AL.AH01.RM273.CO2.V	AIMBC65	Add
0	AL.AH01.RM277.CO2	AIMBC65	Add
0	AL.AH01.RM277.CO2.V	AIMBC65	Add
0	AL.AH01.RM297.CO2	AIMBC65	Add
0	AL.AH01.RM297.CO2.V	AIMBC65	Add
0	AL.AH01.RM360.CO2	AIMBC65	Add
0	AL.AH01.RM360.CO2.V	AIMBC65	Add
0	AL.AH01.RM362.CO2	AIMBC65	Add
0	AL.AH01.RM362.CO2.V	AIMBC65	Add
0	AL.AH01.RM364.CO2	AIMBC65	Add
0	AL.AH01.RM364.CO2.V	AIMBC65	Add
0	AL.AH01.SA.CO2	AIMBC65	Add
0	AL.AH01.SA.CO2.STPT	AIMBC65	Add
0	AW.AH03.CO2.SPT	AW.MBC67	Add

- Select data source by left clicking on desired data source point name and you should see desired row turn blue

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APOGEE DATABASE **DESIGNO DATABASE**

Apogee Export Utility

Magnitude Sort

Point Identifier: CO₂ Log Start Date: Log End Date: Select All

1-50 of 454 Page Size: 10 25 50 100 500 1000

Record Count	Point Name	Field Panel Name	
0	AH.AH01.CO2.LS	AH.MBC16	Add
0	AH.AH01.CO2.SPT	AH.MBC16	Add
0	AL.AH01.CO2V	AIMBC65	Add
0	AL.AH01.RA.CO2	AIMBC65	Add
0	AL.AH01.RM.CO2.TOT.CNT	AIMBC66	Add
0	AL.AH01.RM273.CO2	AIMBC65	Add
0	AL.AH01.RM273.CO2.V	AIMBC65	Add
0	AL.AH01.RM277.CO2	AIMBC65	Add
0	AL.AH01.RM277.CO2.V	AIMBC65	Add
0	AL.AH01.RM297.CO2	AIMBC65	Add
0	AL.AH01.RM297.CO2.V	AIMBC65	Add

- With the desired field in blue left click on notepad you opened in part a and you should see that point name paste itself for you else select paste from right click menu.

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Apogee Export Utility

Point Identifier: CO2 Log Start Date: Log End Date: Select All

Record Count: 1-50 of 454 Page Size: 10 25 50 100 500 1000

Record Count	Point Name	Field Panel Name
0	AH.AH01.CO2.LS	AH.MBC16
0	AH.AH01.CO2.SPT	AH.MBC16
0	AI.AH01.CO2.V	AI.MBC65
0	AI.AH01.RA.CO2	AI.MBC65
0	AI.AH01.RM.CO2.TOT.CNT	AI.MBC66
0	AI.AH01.RM273.CO2	AI.MBC65
0	AI.AH01.RM273.CO2.V	AI.MBC65
0	AI.AH01.RM277.CO2	AI.MBC65
0	AI.AH01.RM277.CO2.V	AI.MBC65
0	AI.AH01.RM297.CO2	AI.MBC65
0	AI.AH01.RM297.CO2.V	AI.MBC65
0	AI.AH01.RM360.CO2	AI.MBC65
0	AI.AH01.RM360.CO2.V	AI.MBC65

*Untitled - Notepad
File Edit Format View Help
AI.AH01.RM360.CO2.V

AI.AH01.RM360.CO2

AI.AH01.RM360.CO2.V

*Untitled - Notepad
File Edit Format View Help
AI.AH01.RM360.CO2.V

- h) Now add a comma (',') in notepad and make another selection than repeat the process of pasting that selection after the comma

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Apogee Export Utility

Point Identifier: CO2 Log Start Date: Log End Date: Select All

Record Count: 1-50 of 454 Page Size: 10 25 50 100 500 1000

Record Count	Point Name	Field Panel Name
0	AH.AH01.CO2.LS	AH.MBC16
0	AH.AH01.CO2.SPT	AH.MBC16
0	AI.AH01.CO2.V	AI.MBC65

*Untitled - Notepad
File Edit Format View Help
AI.AH01.RM360.CO2.V, AH.AH01.CO2.SPT

- i) Repeat this process as many times as necessary until all desired points are found then save the notepad with a name of your choosing such as "DataToolRocks.txt".
- j) You have just created and saved your first custom query filter.

Data Tool CO₂ Reference Guide

- k) To use the custom query simply copy it from your text file to the Point identifier and left click on any part of the page and you will see the custom query take effect.

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APOGEE DATABASE **DESIGO DATABASE**

Apogee Export Utility

Magnitude Sort

Point Identifier: ALAH01.RM360.CO2.V:AH-AH01 Log Start Date: Log End Date: Select All

1-2 of 2 Page Size: 10 25 50 100 500 1000

Record Count	Point Name	Field Panel Name
0	AH-AH01.CO2.SPT	AH-MBC16
0	ALAH01.RM360.CO2.V	AIMBC65