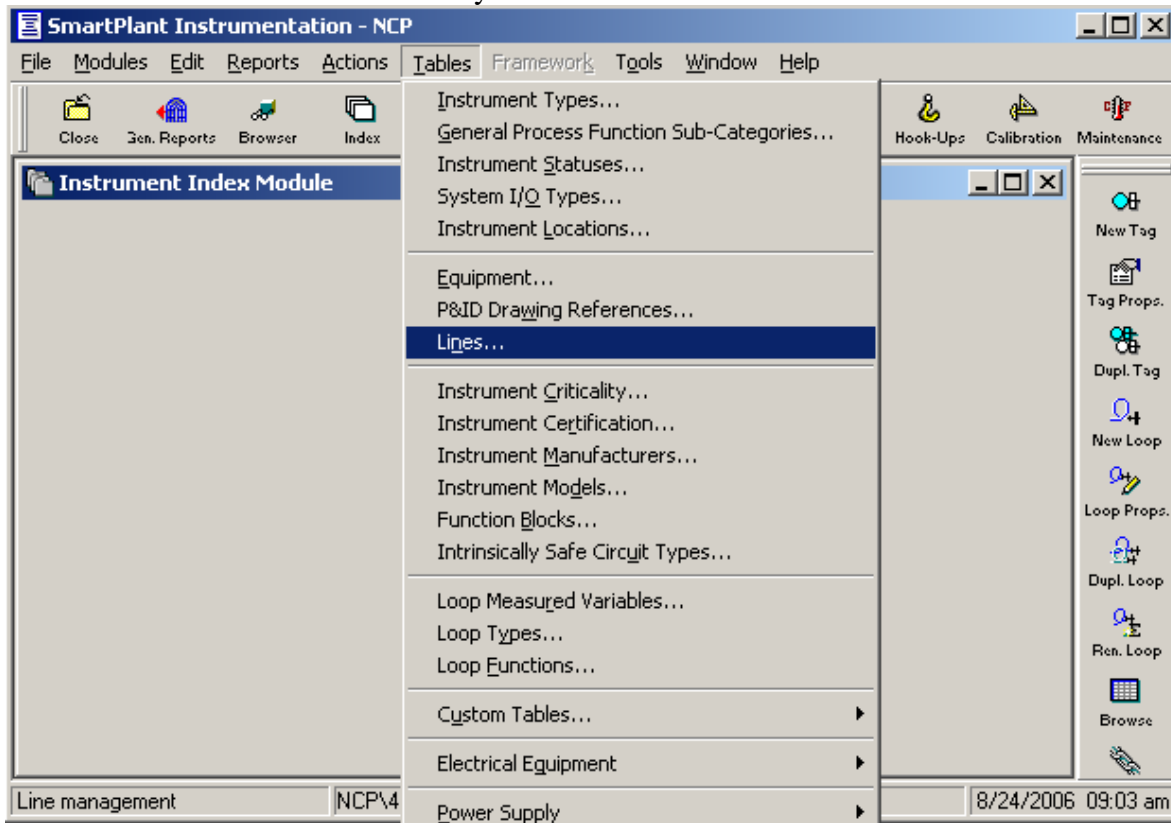


LTUF DISCUSSION - Using Analyzers in SmartPlant Instrumentation

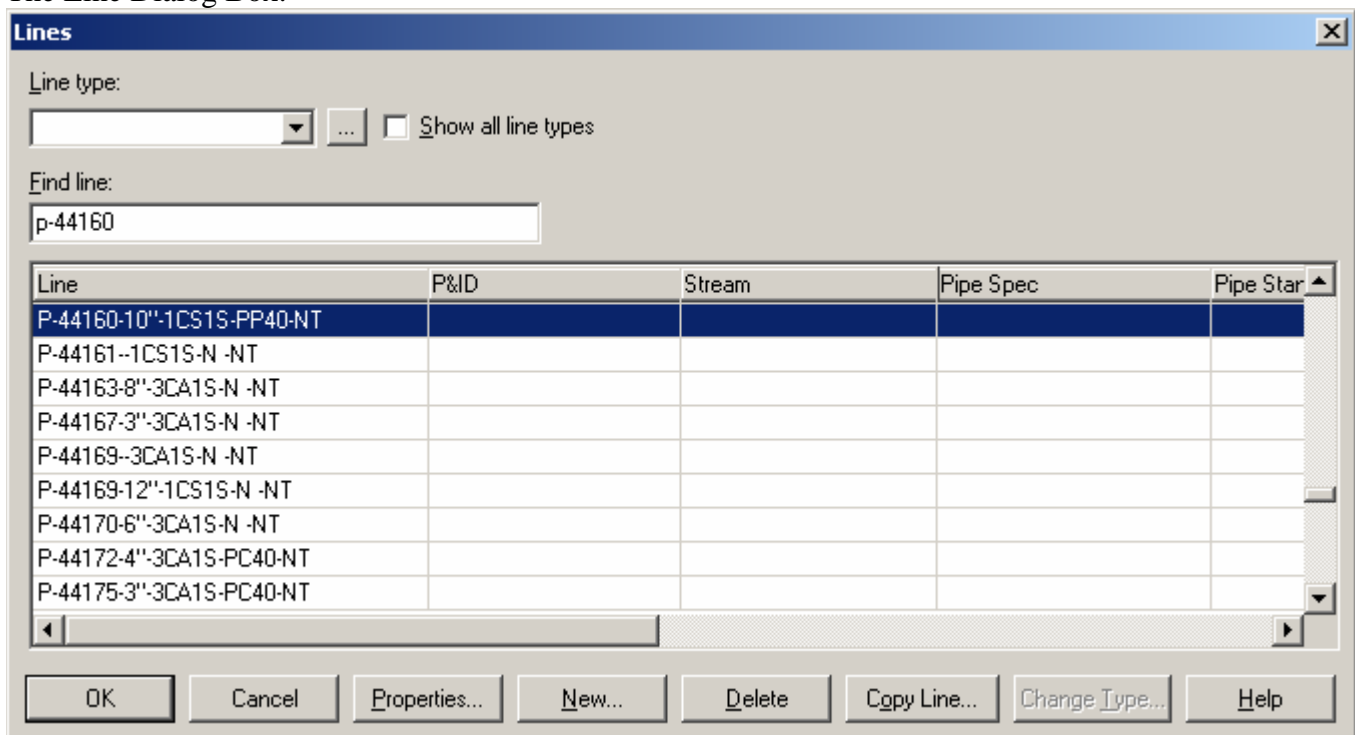
To create Stream based Analyzer Datasheets

First, working With the Line Number

1. Add the Line to INtools. One way is in the Index Module.

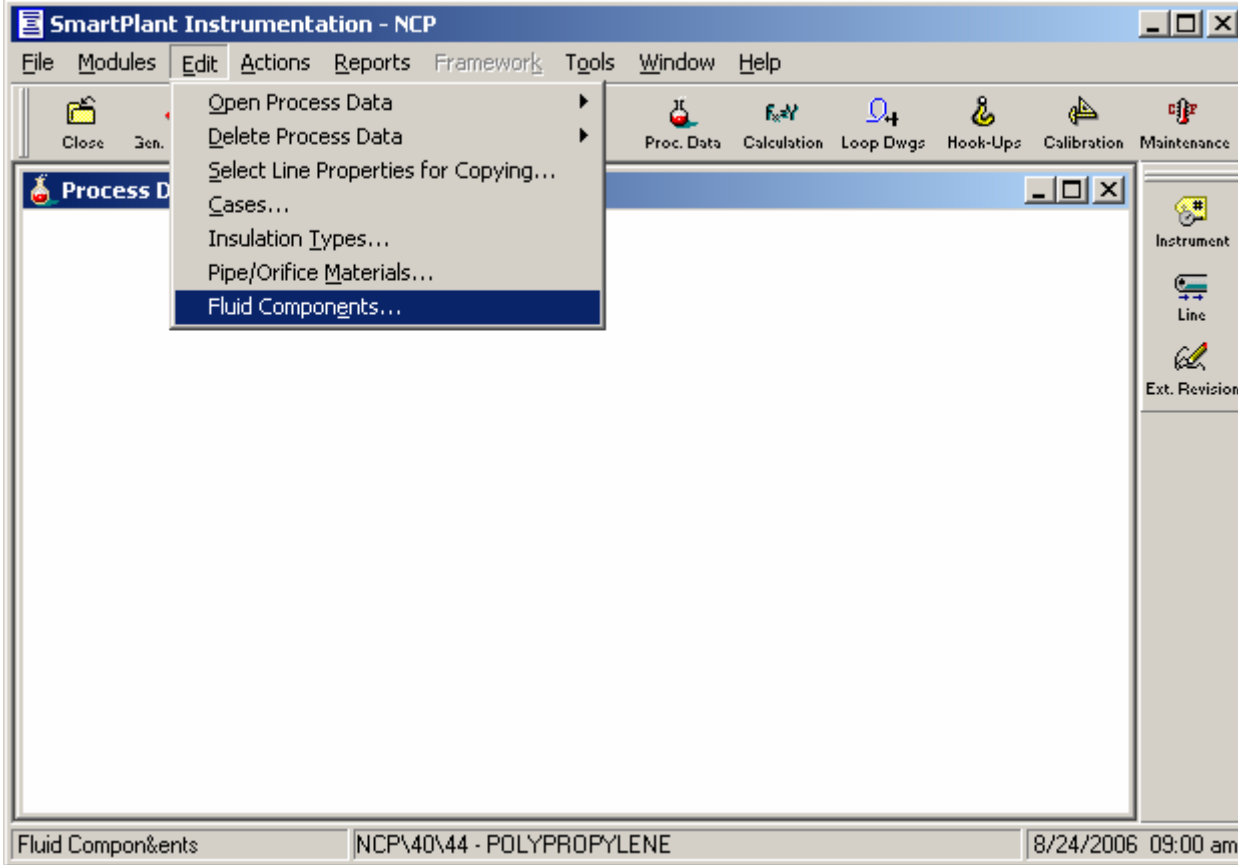


The Line Dialog Box.

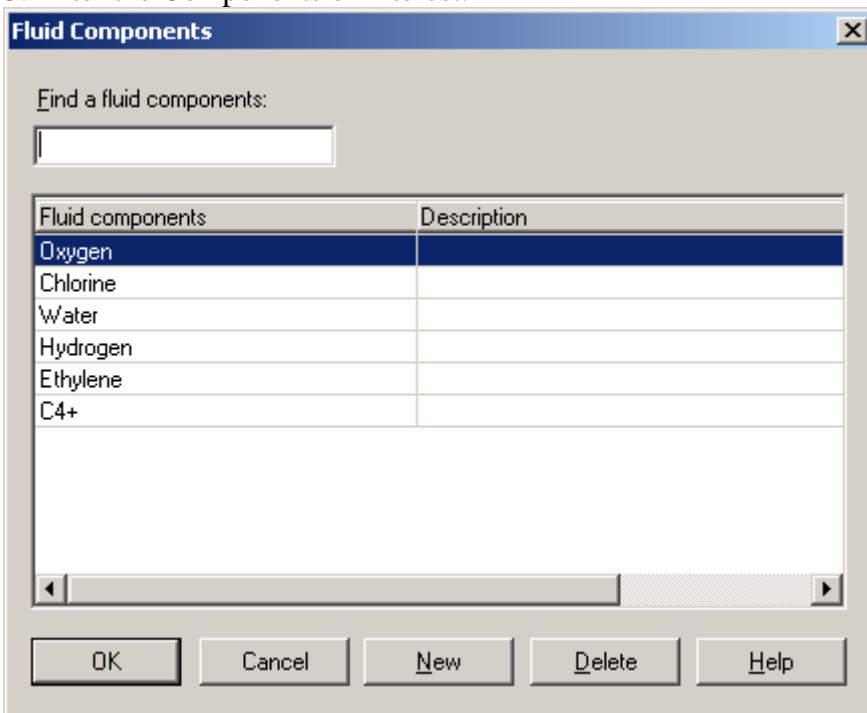


LTUF DISCUSSION - Using Analyzers in SmartPlant Instrumentation

2. Once the Line is added, the Fluid components must be associated with it. Open the Process Data module and pick the Fluid Components item of the Edit menu.

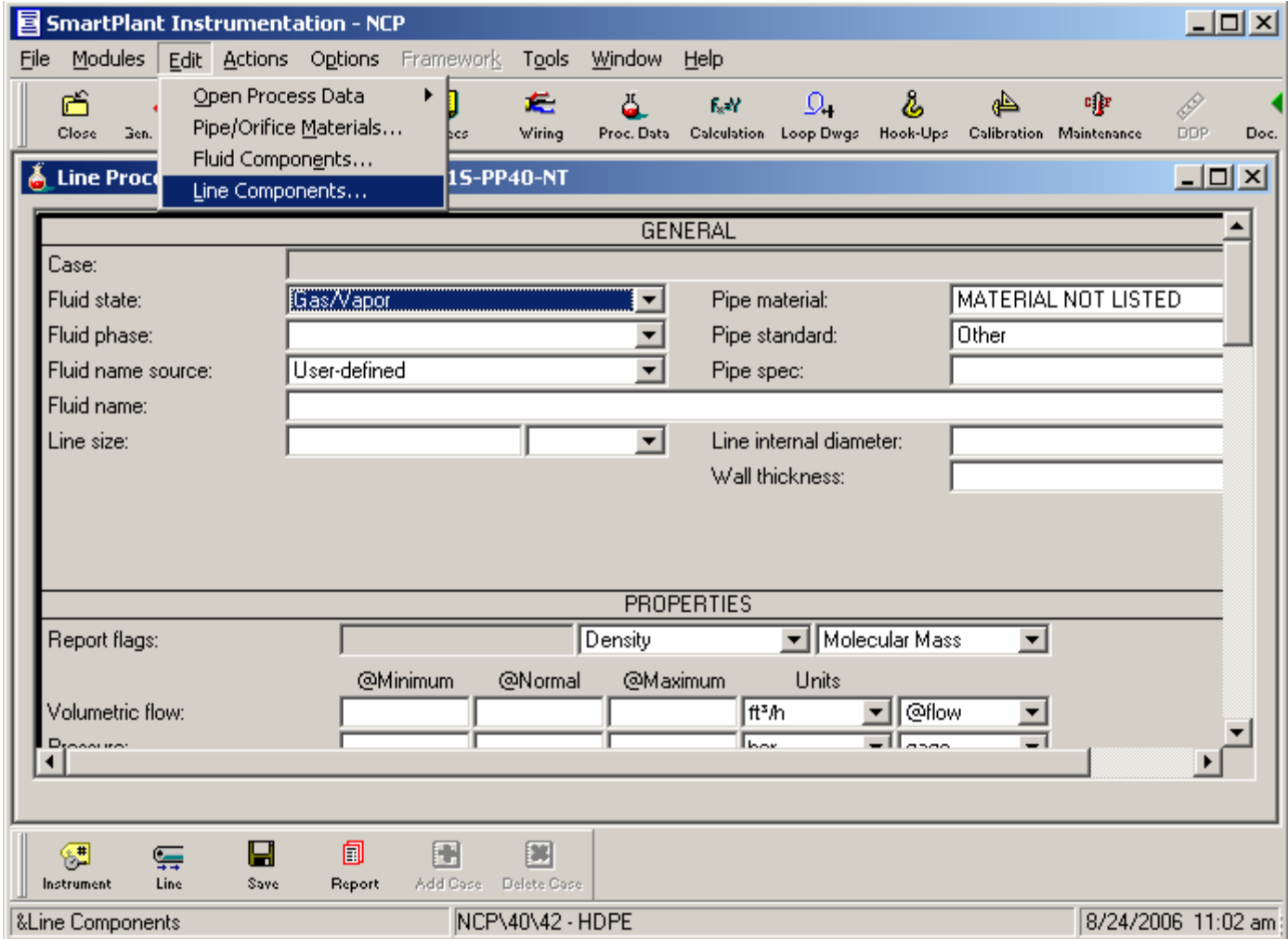


3. Enter the Components of Interest.

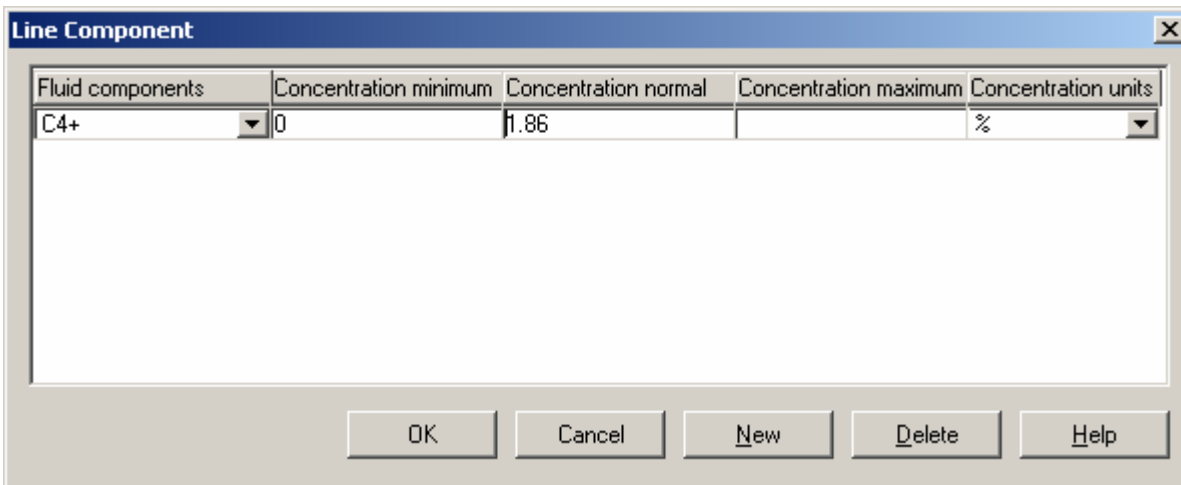


LTUF DISCUSSION - Using Analyzers in SmartPlant Instrumentation

4. Open the Process data for the Line, and select the Line Components item from the Edit menu.



Add One or more Components of Interest.

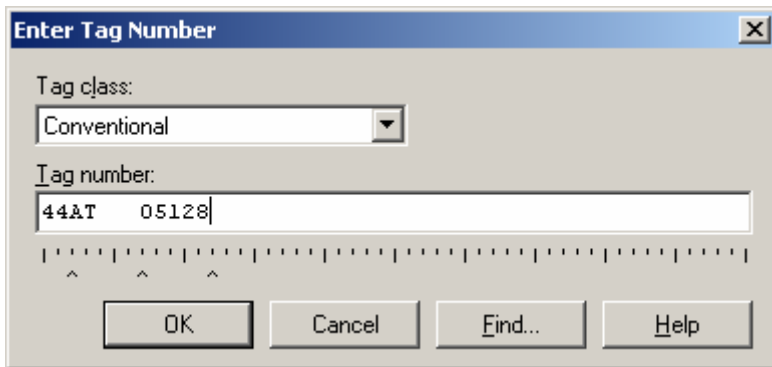


Close and Save the Process Data changes.

LTUF DISCUSSION - Using Analyzers in SmartPlant Instrumentation

Adding the New Tags

1. Add “AT” to the Index and make sure that the line is associated to the instrument along with the Loop, P&ID, Service, Location, I/O, and Status.
2. Open the Process Data module.
3. Click on the Instrument button to open the Process data for the “AT”.



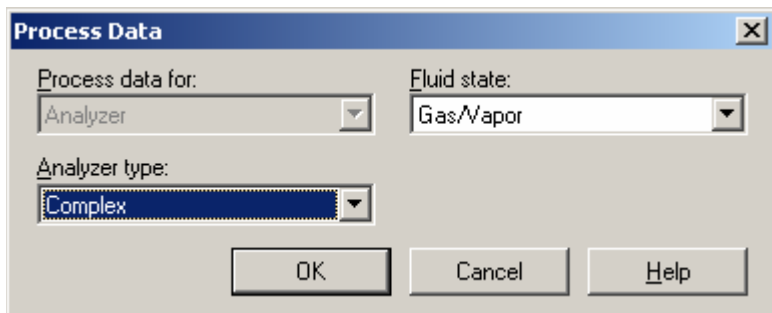
Enter Tag Number

Tag class:
Conventional

Tag number:
44AT 05128

OK Cancel Find... Help

4. Set the Fluid State and select Complex.



Process Data

Process data for: Analyzer Fluid state: Gas/Vapor

Analyzer type: Complex

OK Cancel Help

5. Add the Stream and Component tags by clicking the “ADD” button next to each box. “A” is the instrument type for the Stream, and “AS” is the instrument type for the component. Make sure that each tag is associated with the loop and has data for the Service, P&ID (both provided from Loop), Line number, Status and Location. Add all components of interest for each stream with the associated stream selected.

LTUF DISCUSSION - Using Analyzers in SmartPlant Instrumentation

Tag Number Properties

General | Power Supply | Custom Tables

Loop data
Loop number: 44A05128 Loop service: 44Y56 PRG COL GAS TO 44Y57A/B
Associate...
New Loop...

Tag number properties

Tag class: Conventional	Old tag number:	Note...
Number: 44A 05128	Internal loop order: 3	
Service: 44Y56 PRG COL GAS TO 44Y57A/B	Equipment:	
Instrument type: PROCESS ANALYZER STREAM A	Line: P-44160-10"-1CS1S-PP40-NT	
Status: New - by Contractor	P&ID: NCP-44-P1-EF-513	
Location: Field	Manufacturer:	
System I/O type:	Model:	
Certification:	Intrinsically safe circuit type:	

Requires power supply Update document numbers

OK Cancel Apply New... Delete Previous Next Help

Tag Number Properties

General | Power Supply | Custom Tables

Loop data
Loop number: 44A05128 Loop service: 44Y56 PRG COL GAS TO 44Y57A/B
Associate...
New Loop...

Tag number properties

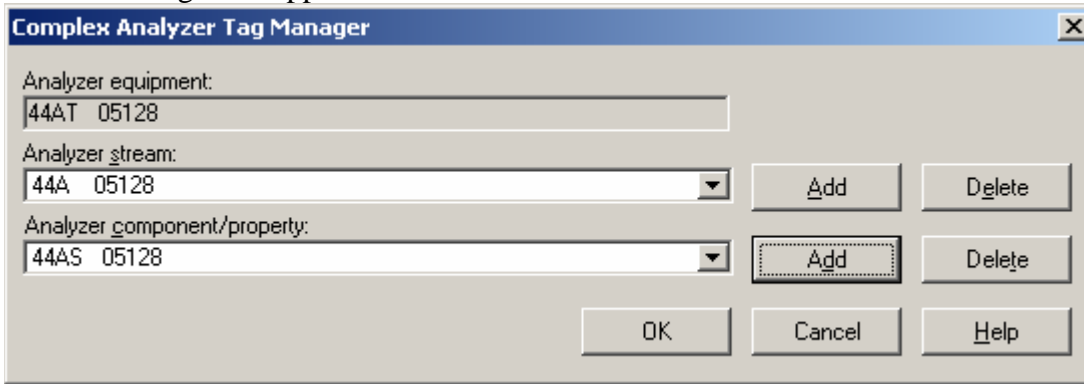
Tag class: Conventional	Old tag number:	Note...
Number: 44AS 05128	Internal loop order: 1	
Service: 44Y56 PRG COL GAS TO 44Y57A/B	Equipment:	
Instrument type: ANALYZER STREAM INDICATION AS	Line: P-44160-10"-1CS1S-PP40-NT	
Status: New - by Contractor	P&ID: NCP-44-P1-EF-513	
Location: Analyzer Shelter	Manufacturer:	
System I/O type:	Model:	
Certification:	Intrinsically safe circuit type:	

Requires power supply Update document numbers

OK Cancel Apply New... Delete Previous Next Help

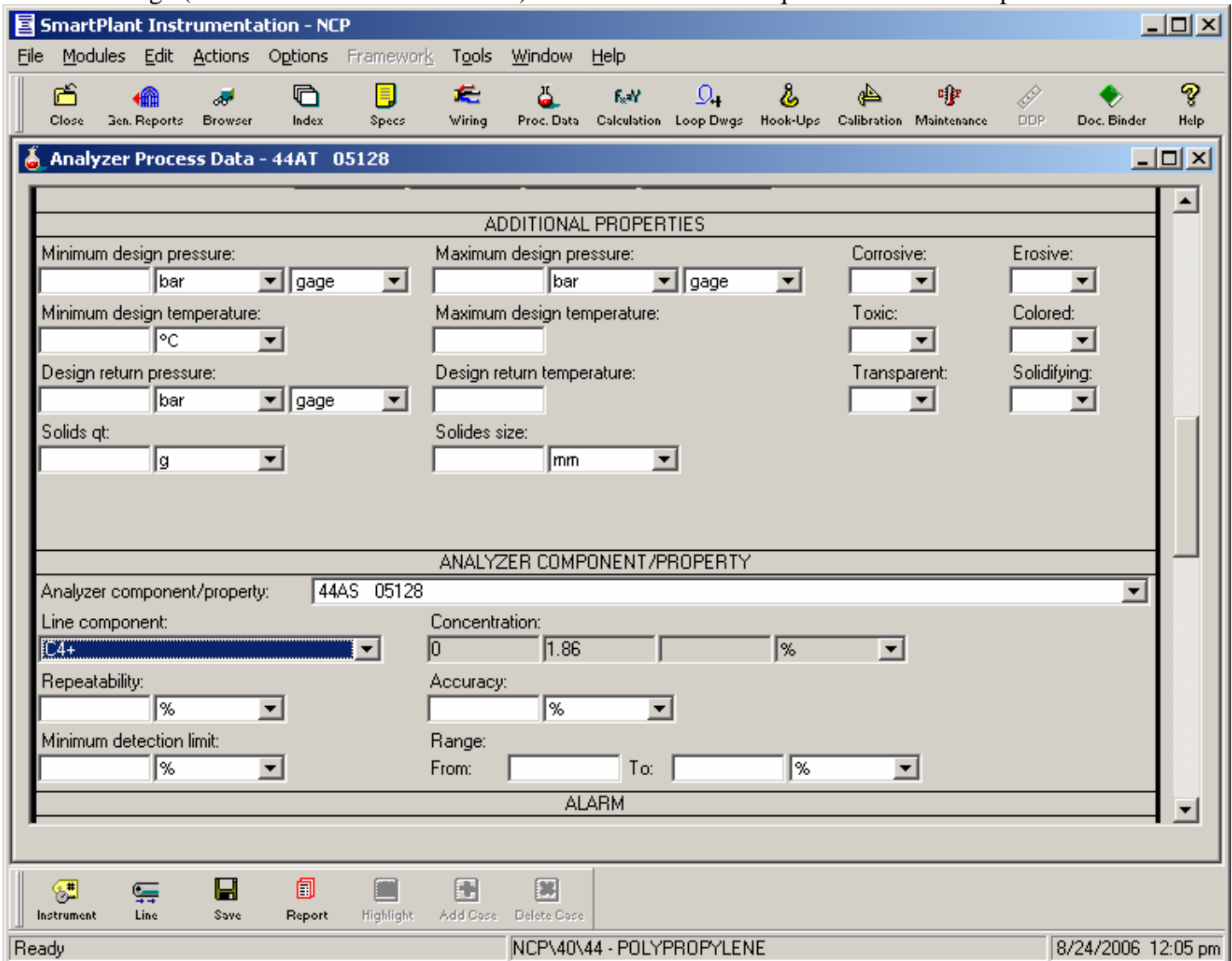
LTUF DISCUSSION - Using Analyzers in SmartPlant Instrumentation

6. The new tags will appear in the boxes. Click OK.



The image shows a dialog box titled "Complex Analyzer Tag Manager". It contains three input fields: "Analyzer equipment:" with the value "44AT 05128", "Analyzer stream:" with a dropdown menu showing "44A 05128", and "Analyzer component/property:" with a dropdown menu showing "44AS 05128". To the right of the "Analyzer stream:" field are "Add" and "Delete" buttons. To the right of the "Analyzer component/property:" field are "Add" and "Delete" buttons. At the bottom of the dialog are "OK", "Cancel", and "Help" buttons.

7. Now select the component half way down the Process Datasheet. Select the line component, and enter the measured range (can be done later on datasheet). Enter other data as required and close the process datasheet.



The image shows the "SmartPlant Instrumentation - NCP" software interface. The main window is titled "Analyzer Process Data - 44AT 05128". The interface is divided into several sections:

- ADDITIONAL PROPERTIES:** This section contains various design and material properties, each with a text input field and a dropdown menu for units or type. The properties include:
 - Minimum design pressure: [] bar [] gage
 - Maximum design pressure: [] bar [] gage
 - Corrosive: []
 - Erosive: []
 - Minimum design temperature: [] °C
 - Maximum design temperature: []
 - Toxic: []
 - Colored: []
 - Design return pressure: [] bar [] gage
 - Design return temperature: []
 - Transparent: []
 - Solidifying: []
 - Solids qt: [] g
 - Solides size: [] mm
- ANALYZER COMPONENT/PROPERTY:** This section contains fields for:
 - Analyzer component/property: 44AS 05128
 - Line component: [] (highlighted)
 - Concentration: [0] [1.86] [] %
 - Repeatability: [] %
 - Accuracy: [] %
 - Minimum detection limit: [] %
 - Range: From: [] To: [] %
- ALARM:** This section is currently empty.

The bottom of the interface features a toolbar with icons for "Instrument", "Line", "Save", "Report", "Highlight", "Add Case", and "Delete Case". The status bar at the bottom shows "Ready", "NCP\40\44 - POLYPROPYLENE", and the date/time "8/24/2006 12:05 pm".

LTUF DISCUSSION - Using Analyzers in SmartPlant Instrumentation

8. Open the Specification Module, and open the spec for the AT. Remember – these are legitimate Tag Numbers so they can have Specification Sheets. Fill in the required data.
9. Repeat for each Stream Tag
10. Repeat with each Component of Interest

LTUF DISCUSSION - Using Analyzers in SmartPlant Instrumentation

The different versions of Smart Plant Instrumentation 7

SPI V7 Service Pack 8 - SmartPlant Instrumentation 07.00.08.02

SPI V7 Service Pack 7 - SmartPlant Instrumentation 07.00.07.05

SPI V7 Service Pack 6 - SmartPlant Instrumentation 07.00.06.02

SPI V7 Service Pack 5 - SmartPlant Instrumentation 07.00.05.06

SPI V7 Service Pack 4 - SmartPlant Instrumentation 07.00.04.02

SPI V7 Service Pack 3 - SmartPlant Instrumentation 07.00.03.03

SPI V7 Service Pack 2 - SmartPlant Instrumentation 07.00.02.21

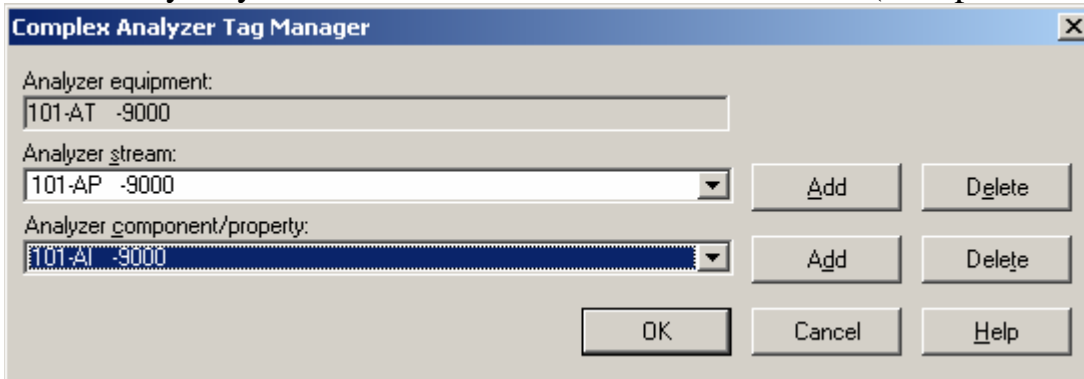
SPI V7 Service Pack 1 - SmartPlant Instrumentation 07.00.01.09

Now – discussion of a bug discovered in version 07.00.03.03 and fixed by version 07.00.06.02. The problem was that users could use the Browser Module to change the Instrument Type from FieldBus to “something else” and the system would create an orphan tag in the database that could not be modified or deleted within SPI.

Please stress to your users:

** The Browser module does not have a means to delete the Component of Interest or the Process Stream(s) Tag

** The only way to do this is in the Process Data Module (Complex Analyzer Tag Manager)



If a Stream Tag is deleted (or disassociated from the Analyzer), then the Component of Interest is no longer editable (or able to be deleted). One of the issues that would cause this is related to the issue of FieldBus Tags, in SPI versions prior to 07.00.06.02. The FieldBus can not be changed normally back to any other I/O type in the Index or in the Properties. However this could be changed in the Browser Module and create orphan tags.

The warning message received in the Browser module is misleading. It tells you that the FieldBus Virtual Tag will be deleted - do you want to proceed. What really happens (in older versions of SPI) is that the Stream Tag would be deleted.

LTUF DISCUSSION - Using Analyzers in SmartPlant Instrumentation

When this deletes the Stream Tag the datasheet for the Stream Tag is deleted, and the Component of Interest Tag(s) no longer have a tie-down point. These Tags are then unable to be deleted by tools in SPI and they can not be (re) associated with another Stream Tag. They are orphans that you can not manipulate using the pull down menus with in SPI. Our efforts have found that you need to use SQL code to resolve this problem.

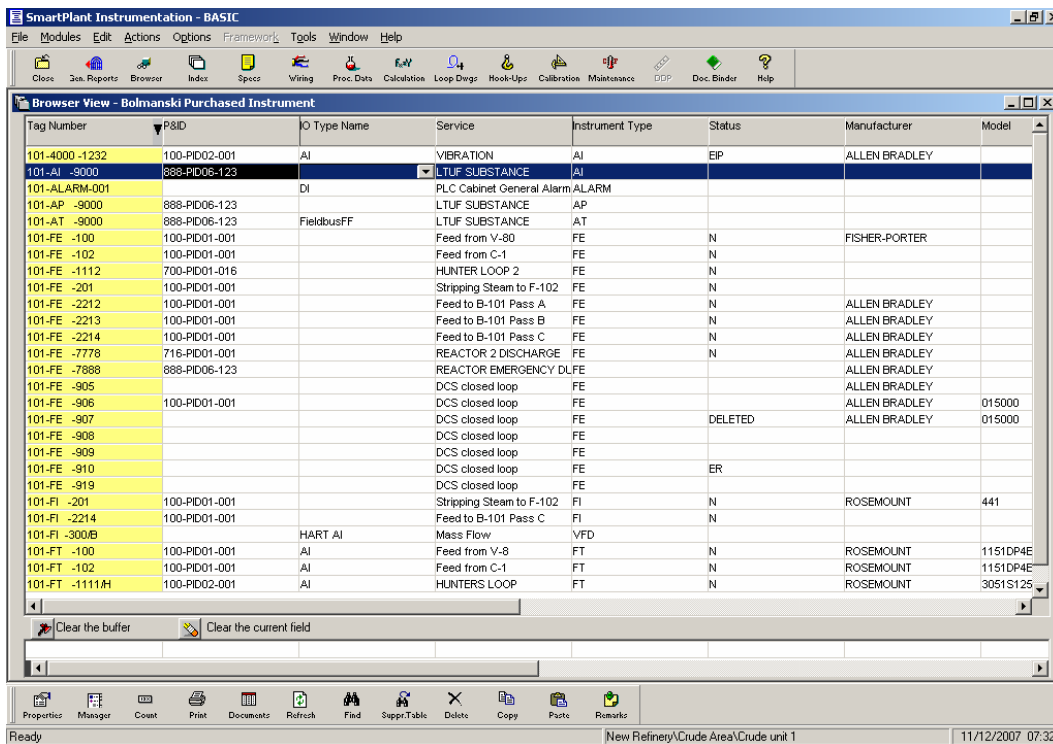
Actually there are 2 solutions using SQL code.

The first one is the hardest, and requires that the Component of Interest be manually changed to link to a new Stream Tag.

We opted to delete the orphan entity (Component Tag of Interest) and allow it to be recreated using the SPI Process Data Module Interface. Since Stream Tags are handled by SPI the same way, this workaround can be used to delete Stream Tags also.

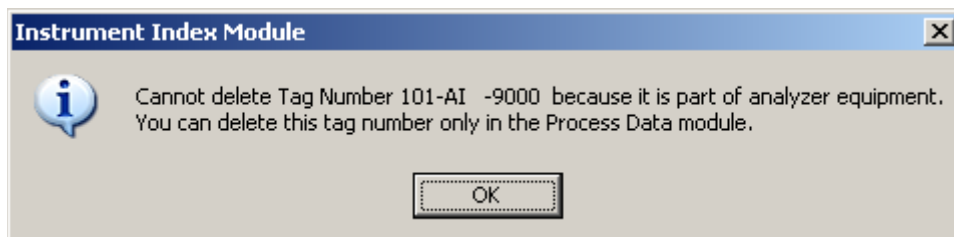
Example:

From a Browser – you CAN NOT delete the AI



The screenshot shows the 'SmartPlant Instrumentation - BASIC' application window. The main area displays a table titled 'Browser View - Bolmanski Purchased Instrument'. The table has columns for Tag Number, P&ID, IO Type Name, Service, Instrument Type, Status, Manufacturer, and Model. The row for Tag Number 101-AI -9000 is highlighted in blue, indicating it is selected. The 'Status' column for this tag is 'EIP'. Other tags in the table include 101-ALARM-001 (DI), 101-AP -9000 (AI), 101-AT -9000 (FieldbusFF), and various FE (Feed) and FI (Feed) tags.

Tag Number	P&ID	IO Type Name	Service	Instrument Type	Status	Manufacturer	Model
101-4000 -1232	100-PID02-001	AI	VIBRATION	AI	EIP	ALLEN BRADLEY	
101-AI -9000	888-PID06-123	AI	LTUF SUBSTANCE	AI			
101-ALARM-001		DI	PLC Cabinet General Alarm	ALARM			
101-AP -9000	888-PID06-123		LTUF SUBSTANCE	AP			
101-AT -9000	888-PID06-123	FieldbusFF	LTUF SUBSTANCE	AT			
101-FE -100	100-PID01-001		Feed from V-80	FE	N	FISHER-PORTER	
101-FE -102	100-PID01-001		Feed from C-1	FE	N		
101-FE -1112	700-PID01-016		HUNTER LOOP 2	FE	N		
101-FE -201	100-PID01-001		Stripping Steam to F-102	FE	N		
101-FE -2212	100-PID01-001		Feed to B-101 Pass A	FE	N	ALLEN BRADLEY	
101-FE -2213	100-PID01-001		Feed to B-101 Pass B	FE	N	ALLEN BRADLEY	
101-FE -2214	100-PID01-001		Feed to B-101 Pass C	FE	N	ALLEN BRADLEY	
101-FE -7778	716-PID01-001		REACTOR 2 DISCHARGE	FE	N	ALLEN BRADLEY	
101-FE -7888	888-PID06-123		REACTOR EMERGENCY DLFE	FE		ALLEN BRADLEY	
101-FE -905			DCS closed loop	FE		ALLEN BRADLEY	
101-FE -906	100-PID01-001		DCS closed loop	FE		ALLEN BRADLEY	015000
101-FE -907			DCS closed loop	FE	DELETED	ALLEN BRADLEY	015000
101-FE -908			DCS closed loop	FE			
101-FE -909			DCS closed loop	FE			
101-FE -910			DCS closed loop	FE	ER		
101-FE -919			DCS closed loop	FE			
101-FI -201	100-PID01-001		Stripping Steam to F-102	FI	N	ROSEMOUNT	441
101-FI -2214	100-PID01-001		Feed to B-101 Pass C	FI	N		
101-FI -300/B		HART AI	Mass Flow	VFD			
101-FT -100	100-PID01-001	AI	Feed from V-8	FT	N	ROSEMOUNT	1151DP4E
101-FT -102	100-PID01-001	AI	Feed from C-1	FT	N	ROSEMOUNT	1151DP4E
101-FT -1111/H	100-PID02-001	AI	HUNTERS LOOP	FT	N	ROSEMOUNT	3051S125



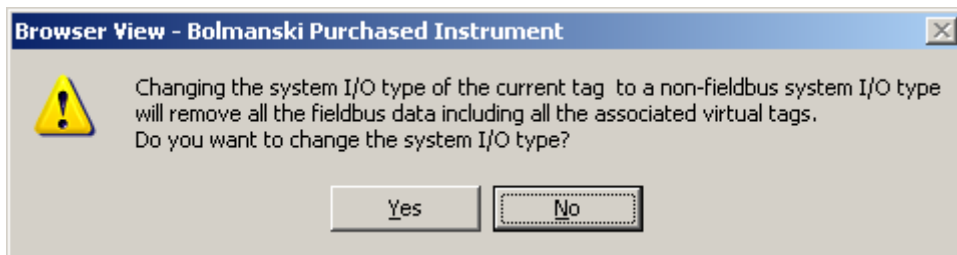
LTUF DISCUSSION - Using Analyzers in SmartPlant Instrumentation

But if you change the IO TYPE

The screenshot shows the 'SmartPlant Instrumentation - BASIC' application window. The main area displays a table titled 'Browser View - Bolmanski Purchased Instrument'. The table has columns for Tag Number, P&ID, IO Type Name, Service, Instrument Type, Status, Manufacturer, and Model. The row for tag 101-AT -9000 is highlighted, showing it is currently a FieldbusFF instrument. The status is 'EIP' and the manufacturer is 'ALLEN BRADLEY'. Below the table are buttons for 'Clear the buffer' and 'Clear the current field'. The bottom status bar shows 'Ready', 'New Refinery\Crude Area\Crude unit 1', and the date/time '11/12/2007 07:34'.

Tag Number	P&ID	IO Type Name	Service	Instrument Type	Status	Manufacturer	Model
101-4000 -1232	100-PID02-001	AI	VIBRATION	AI	EIP	ALLEN BRADLEY	
101-AI -9000	888-PID06-123		LTUF SUBSTANCE	AI			
101-ALARM-001		DI	PLC Cabinet General Alarm	ALARM			
101-AP -9000	888-PID06-123		LTUF SUBSTANCE	AP			
101-AT -9000	888-PID06-123	FieldbusFF	LTUF SUBSTANCE	AT			
101-FE -100	100-PID01-001		Feed from V-80	FE	N	FISHER-PORTER	
101-FE -102	100-PID01-001		Feed from C-1	FE	N		
101-FE -1112	700-PID01-016		HUNTER LOOP 2	FE	N		
101-FE -201	100-PID01-001		Stripping Steam to F-102	FE	N		
101-FE -2212	100-PID01-001		Feed to B-101 Pass A	FE	N	ALLEN BRADLEY	
101-FE -2213	100-PID01-001		Feed to B-101 Pass B	FE	N	ALLEN BRADLEY	
101-FE -2214	100-PID01-001		Feed to B-101 Pass C	FE	N	ALLEN BRADLEY	
101-FE -7778	716-PID01-001		REACTOR 2 DISCHARGE	FE	N	ALLEN BRADLEY	
101-FE -7888	888-PID06-123		REACTOR EMERGENCY DLFE	FE		ALLEN BRADLEY	
101-FE -905			DCS closed loop	FE		ALLEN BRADLEY	
101-FE -906	100-PID01-001		DCS closed loop	FE		ALLEN BRADLEY	015000
101-FE -907			DCS closed loop	FE	DELETED	ALLEN BRADLEY	015000
101-FE -908			DCS closed loop	FE			
101-FE -909			DCS closed loop	FE			
101-FE -910			DCS closed loop	FE	ER		
101-FE -919			DCS closed loop	FE			
101-FI -201	100-PID01-001		Stripping Steam to F-102	FI	N	ROSEMOUNT	441
101-FI -2214	100-PID01-001		Feed to B-101 Pass C	FI	N		
101-FI -300/B		HART AI	Mass Flow	VFD			
101-FT -100	100-PID01-001	AI	Feed from V-8	FT	N	ROSEMOUNT	1151DP4E
101-FT -102	100-PID01-001	AI	Feed from C-1	FT	N	ROSEMOUNT	1151DP4E
101-FT -1111/H	100-PID02-001	AI	HUNTERS LOOP	FT	N	ROSEMOUNT	3051S125

This is the error message that would cause the grief in earlier versions



Most of the time the Users will select YES.

LTUF DISCUSSION - Using Analyzers in SmartPlant Instrumentation

As mentioned before, this is now fixed in SPI 07.00.06.02. because the AI did not disappear. In prior versions of SPI the AI (or any ANALYZER COMPONENT/PROPERTY) would just disappear and prompt the INtools Administrator to lose lots of sleep.

The screenshot displays the 'SmartPlant Instrumentation - BASIC' application window. The main area is titled 'Browser View - Bolmanski Purchased Instrument' and contains a table with the following columns: Tag Number, P&ID, IO Type Name, Service, Instrument Type, Status, Manufacturer, and Model. The table lists various instruments such as VIBRATION, LTUF SUBSTANCE, DI, and FE, with their respective P&IDs and manufacturers like ALLEN BRADLEY and ROSEMOUNT. The status of some instruments is 'EIP', 'N', or 'DELETED'. Below the table, there are buttons for 'Clear the buffer' and 'Clear the current field'. The bottom status bar shows 'Ready', the file path 'New Refinery\Crude Area\Crude unit 1', and the date/time '11/12/2007 07:44'.

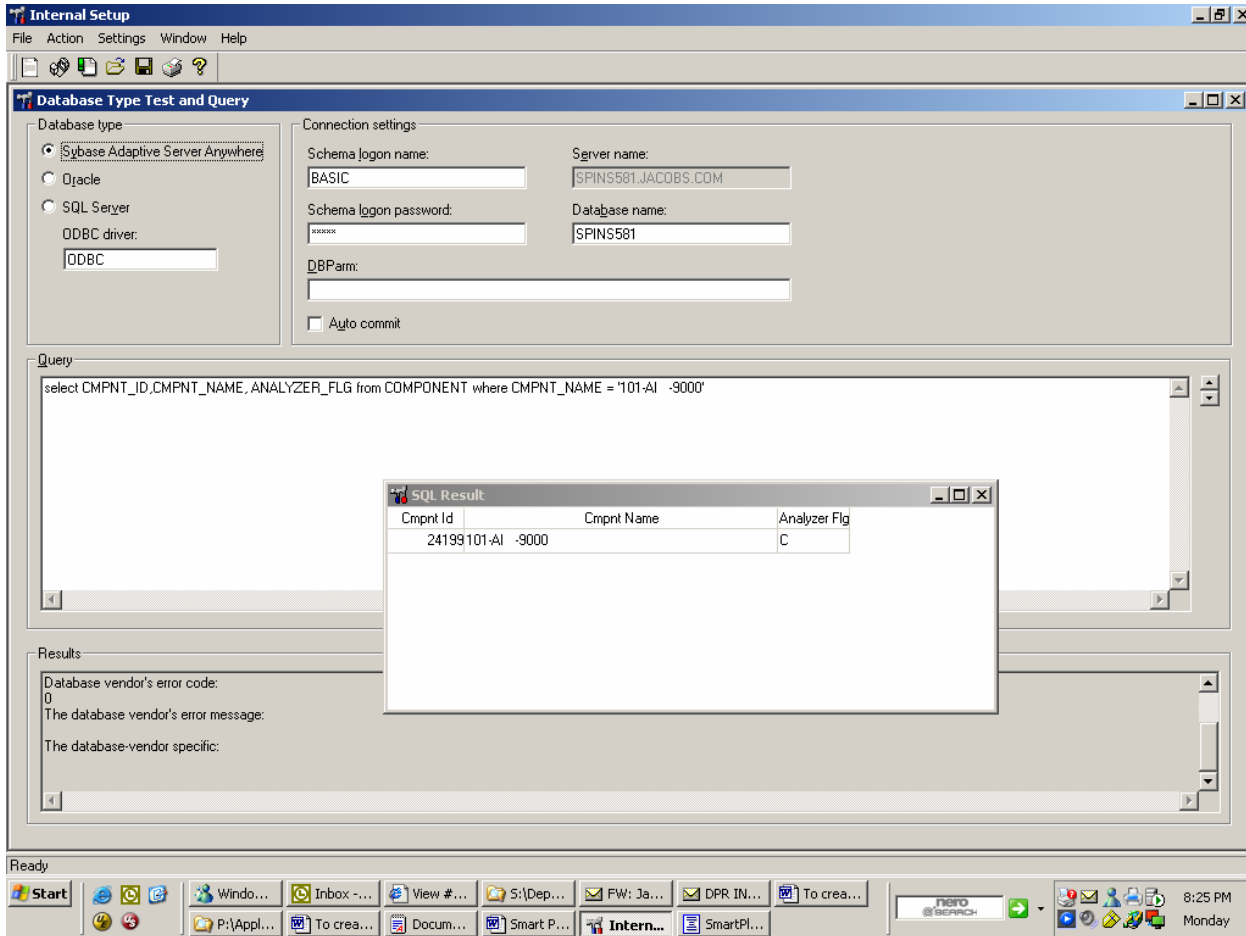
Tag Number	P&ID	IO Type Name	Service	Instrument Type	Status	Manufacturer	Model
101-4000 -1232	100-PID02-001	AI	VIBRATION	AI	EIP	ALLEN BRADLEY	
101-AI -9000	888-PID06-123		LTUF SUBSTANCE	AI			
101-ALARM-001		DI	PLC Cabinet General Alarm	ALARM			
101-AP -9000	888-PID06-123		LTUF SUBSTANCE	AP			
101-AT -9000	888-PID06-123	SI	LTUF SUBSTANCE	AT			
101-FE -100	100-PID01-001		Feed from V-80	FE	N	FISHER-PORTER	
101-FE -102	100-PID01-001		Feed from C-1	FE	N		
101-FE -1112	700-PID01-016		HUNTER LOOP 2	FE	N		
101-FE -201	100-PID01-001		Stripping Steam to F-102	FE	N		
101-FE -2212	100-PID01-001		Feed to B-101 Pass A	FE	N	ALLEN BRADLEY	
101-FE -2213	100-PID01-001		Feed to B-101 Pass B	FE	N	ALLEN BRADLEY	
101-FE -2214	100-PID01-001		Feed to B-101 Pass C	FE	N	ALLEN BRADLEY	
101-FE -7778	716-PID01-001		REACTOR 2 DISCHARGE	FE	N	ALLEN BRADLEY	
101-FE -7888	888-PID06-123		REACTOR EMERGENCY DLFE	FE		ALLEN BRADLEY	
101-FE -905			DCS closed loop	FE		ALLEN BRADLEY	
101-FE -906	100-PID01-001		DCS closed loop	FE		ALLEN BRADLEY	015000
101-FE -907			DCS closed loop	FE	DELETED	ALLEN BRADLEY	015000
101-FE -908			DCS closed loop	FE			
101-FE -909			DCS closed loop	FE			
101-FE -910			DCS closed loop	FE	ER		
101-FE -919			DCS closed loop	FE			
101-FI -201	100-PID01-001		Stripping Steam to F-102	FI	N	ROSEMOUNT	441
101-FI -2214	100-PID01-001		Feed to B-101 Pass C	FI	N		
101-FI -300/B		HART AI	Mass Flow	VFD			
101-FT -100	100-PID01-001	AI	Feed from V-8	FT	N	ROSEMOUNT	1151DP4E
101-FT -102	100-PID01-001	AI	Feed from C-1	FT	N	ROSEMOUNT	1151DP4E
101-FT -1111.H	100-PID02-001	AI	HUNTERS LOOP	FT	N	ROSEMOUNT	3051S125

LTUF DISCUSSION - Using Analyzers in SmartPlant Instrumentation

For Your information – the following was found to be the problem:

From Internal Setup:

```
select CMPNT_ID,CMPNT_NAME, ANALYZER_FLG from COMPONENT where  
CMPNT_NAME = '101-AI -9000'
```



Analyzer Flag definitions

"" = NULL = not an Analyzer Type Instrument

M = Master Component Tag

S = Stream Component

C = Component of Interest

You must remove the "C" value from this record to be able to delete it in the Browser Module, and then use the Process Data Module to recreate the proper "replacement tag".

LTUF DISCUSSION - Using Analyzers in SmartPlant Instrumentation

Two suggestions to change this value:

- 1) Use the Component Table Import in the import module to insert a NULL
- 2) Use SQL Code (which includes the commands to disable and enable triggers)

Please get with Intergraph to get the specific commands for your version of SPI.

Questions & Answers