

MSF11403

Advanced CAMduct Multiple Machine Configuration Including Using the New "Custom NC"

William Tucker BIM Trainer and Product Specialist, Comfort Systems USA, Inc.

Garrett Tice Technical Advisor, Applied Software / Enceptia

Learning Objectives

- Learn how to Setup up, manage and use multiple plasma cutters for multiple shops
- Learn how to setup multiple Decoilers
- Setup Processes For Nesting with Multiple Machines
- Learn how to use the new "Custom NC" Machine

Description

Many companies have more than one location. In the past we have used one Fabrication database per location. Multiple databases can make it very difficult to share resources within an organization. The Autodesk Fabrication Development team has provided us tools that we can use to share one database between multiple locations. In this class you will learn how setup the Autodesk Fabrication database for CAMduct to work with multiple companies, branches or divisions. The class will cover how to setup and manage multiple plasma cutters / flatbed tables and multiple decoilers. This class will explain how to control nesting for each location and use the correct sheet sizes. You will learn how to setup processes for the correct machine selection and nesting options. This class will also cover how to use the new "Custom NC" machine for CAMduct.

Your AU Experts

William Tucker is currently working at Comfort Systems USA, a Premier Mechanical Systems Installation and Service provider, as BIM Trainer and Product Specialist. CSUSA is a national organization with 23 companies, 6 Sheet Metal Fabrication Shops and 154 users currently sharing the Autodesk Fabrication Products with one database. William is responsible for implementing, training, and advising on best practices for these companies, developing standards within the organization, and providing technology recommendations for the future. In the past, William has trained and Implemented Autodesk Fabrication CADmep, ESTmep, and CAMduct as well as utilized it as a 3D detailing and coordination package. William has been using Autodesk Products for 28 years. William enjoys helping others utilize the software to its fullest extent.

Garrett Tice is a technical advisor specializing in Fabrication software products. He has extensive experience in installing, configuring, and supporting Fabrication CADmep software, Fabrication ESTmep software, Fabrication CAMduct software, Remote Entry software, and Tracker. Garrett has some unique skills, and has experience configuring, troubleshooting, and supporting various manufacturing equipment linked to Fabrication CAMduct software.

Setup up, manage and use multiple plasma cutters

We are supporting 10 sheet metal shops for Comfort Systems, including 14 flatbed tables, 4 different brands and using 3 different post processors.

Setup the machines in groups by company/branch

- We have our machines setup by company name groups.
- Due to some material defaults we may have one machine setup multiple times based on sheet sizes.
 - CSUSA-Corp ONone -CSUSA-SE We have the 5' x 20' sheets set as the default sheet size in the \cap O CSUSE V2900-NE materials section of the database. If we have the 10' sheet as OCSUSE V2900-NE-Edge default the 20' tables will never pull the 20' sheet, they will pull E-CWC OCWC Table One 20ft the 10' sheet. But if we have the 20' sheet set as default, the 10' OCWC Table Two 20ft tables will pull the 10' sheet. DMI Design Mechanical ODMI Full Joint10 Ft ODMI Vulcan 10 Ft Main Insulation DynaTen Material Galvanized <u>à</u> 🖌 🖾 🔁 🗙 🔳 O DynaTen V2900-NE EAS 🐮 📑 Edit Gauge 26 O EAS Vulcan 20 Ft Machine OEAS Vulcan 2x10 Ft Data Value Any -NAMI Any Any **ONAMI-ACS 10FT** Any Thickness 0.0217 **ONAMI-PPI 20FT** Any Wire Gauge 26 ONAMI-PPI 2x10FT Any Cost \$/(lb) 0.450 Any B-RBI Weight (lb)/(sg ft) 0.906 Any ORBI 120 Vulcan 2900 Spiral Area Adjust 0.000 Any O RBI Old Plasma Slit Coil Width 0.000 Any ORBI Vulcan 1000-D Decoiler Yes ORBI Vulcan 20 Ft Flatbed Rotary Shear ORBI Water Jet Width Product Code Length B-RBI-Liner 60.000 GCOILW60G26 × O EAS Vulcan 2x10 Ft 60.000 GCOILW60G26 240.000 5 × ORBI Vulcan 10 Ft < 100 **O RBI Vulcan 10 Ft Liner** -SML **O**SML-Plasma O SML-Plasma 20ft We may also have a machine setup multiple times for edge nesting
 - (Vulcan 2900 with the D6 post processor) 0
- When setting up the tables I had to tic the box for "Restrict Nested Material Sizes to this Size", I had to do this for all flatbed machines due to the material defaults. ⊨-EAS

	O EAS Vulcan 20 Ft O EAS Vulcan 2x10 Ft
Machine Editor ? ×	Machine Editor ? ×
Machine Controller NC Settings Web Cut Ductboard Remark Special Features Name EAS Vulcan 20 Ft Dimensions Rail Axis 240.0 Beam Axis 60.0 Restrict Nested Material Sizes to this Size 🗸	Machine Controller NC Settings Web Cut Ductboard Remark Special Features Name EAS Vulcan 2x10 Ft Dimensions Rail Axis 120.0 Beam Axis 60.0 Restrict Nested Material Sizes to this Size V
Preset Points Origin Go to Park Point Go to Block Point Traverse Rate O	Preset Points



Rotary | Shear | Round L

ACI Mechanical OACI MicroPath

Setup up, manage and use multiple Decoilers

We have 9 sheet metal shops that have coil lines

- 5 Iowa Precision Full Coil Lines
- 1 Engle Coil Line
- 3 Iowa Precision Front End Coil Lines

Running the Iowa Coil Lines before we had the "Multiple Coil Line" feature was a challenge. We had to have a macro running in excel to import the DEC file, manipulate it and then write it back.

Manage and use Multiple Decoilers

Multiple Decoilers is actually pretty straight forward, I will just point out a few of the "Do's and Dont's"

• In the "Installed Decoiler" Interface don't set any Decoiler as default if you are using more than one Decoiler, set it in a Process. I have found conflicts if you have one set as default and try to run a different one in a process.

0-Coil-Line 209-CWC Coil Line 401-CSSE Coil Line 409-SML Engel 413-RBI Coil Line 610-NAMI Coil Line 303-DMI Coil Line 328-DT Coil Line Coil-Line Ocil-Line Delete	Installed Decoi	ler – 🗖 🗙
Cancel	209-CWC Coil Line 401-CSSE Coil Line 409-SML Engel 413-RBI Coil Line 610-NAMI Coil Line 803-DMI Coil Line 828-DT Coil Line Coil-Line Coil-Line	New Delete OK

- If you plan to use the Straight Setup in the Pattern Options of the database, you have a few choices
 - You will have to set it for all coil lines
 - Use profiles and set it up in each profile
 - Set this close and take care of the rest of it with scripts. (This is our preferred method)



Setup Processes for Nesting with Multiple Machines

We have 48 processes for CAMduct. Examples for process types are

- Branch name-"Nest for 20' Table-1"
- Branch name-"Nest for 10' Table-1"
- Branch name-"Send to Decoiler"
- Branch name-"Print Reports"
- Branch name-"Print Part Labels"
- Branch name-"Print Coil Line Labels"
- Branch name-"Print Spiral Labels"
- Branch name-"Execute a Script"

Processes are determined by a company branch's specific needs or shop configuration, I don't think that we have any two companies running the same processes.

Manage Processes for Multiple Shops

This is an example of one of our largest shop's processes

This process is nesting only on a 20' sheet.

- We are not using the default "Automatic Nesting" for any of the companies, we always use specific settings in the process.
- Under the "Process Nesting Options"> Preferences we always assign the flatbed machine that we want to use for that process.
- Under "Process NC for Machines" we also select the machine that we want to use for that process and tick the button "Always Use This Machine".
 - This is also your opportunity to assign a decoiler to use, if you want to process your decoiled duct at the same time you process your flatbed metal. (We process ours straight at the same time that we process our flatbed metal for most of our companies, but not this one.)

Processes ×	Process Nesting Options ? ×	Process NC for Machines ×
Process RBI-NC Only 20Ft 🗸	Rotary Nest Shear Nesting Sheet Order General Nesting Auto Stitching Autonest Options Preferences Multi-Torch Flanged Nests Method	NC Output
Execute Script Before Process		Machine RBI Vulcan 20 Ft (Lockformer 1000D 🗸
Linear Nest	Nest for Machine RBI Vulcan 20 Ft (Lockformer 1000D V Preferred Part Placment	Use this Machine Only when None set Always Use this Machine
Nesting Options	Across Width of Sheet	Write NC for all machines in group
Automatically Nest Item(s)	Along Length of Sheet	Write NC for Rotary Nests
Specify Settings Nesting Options	Smallest Bounding Rectangle	Write Decoiler Output File
Vite NC	Order	0-Coil-Line
Select Machine	Use Item Nest Priorities Group By Item	209-CWC Coil Line 401-CSSE Coil Line
Export Data Fields	Sort Parts by Area	409-SML Engel
Select Exports	Sort Parts by Longest Side	610-NAMI Coil Line
Print Reports		Output Nested Sheet Blanks
Select Reports		Save Sheets as Remnants into Sheet Management
Execute Script After Process		Save Sneets as Remnants into Sneet Management OK
Process OK Cancel	OK Cancel	Cancel



This Process is nesting on a 10' sheet and on the same 20' table, at the same company.

- This is about the same as the 20' sheet but remember in "Setup the machines in groups by company/branch" I explained that we did not set the 20' sheet as default. We would never be able to use it. Now with the 20' set as default this "Machine will use a 10' sheet".
 - Note: if you are using profiles, you do have the option for assigning default sheets per profile.

Processes ×	Process Nesting Options ? ×	Process NC for Machines
Process RBI_NC Only 10Ft 💙 🔳 🗙	Rotary Nest Shear Nesting Sheet Order General Nesting Auto Stitching Autonest Options	NC Output Machine RBI Vulcan 10 Ft (Lockformer 1000D V
Execute Script Before Process	Preferences Multi-Torch Flanged Nests Method Nest for Machine RBI Vulcan 10 Ft (Lockformer 1000D Preferred Part Placment	Use this Machine Only when None set
Nesting Options Automatically Nest Item(s) Specify Settings Nesting Options	Across Width of Sheet Along Length of Sheet Smallest Bounding Rectangle	Write NC for all machines in group Write NC for Rotary Nests Write Decoiler Output File
V Write NC Select Machine	Order Use Item Nest Priorities Group By Item	
Export Data Fields Select Exports	Sort Parts by Area Sort Parts by Longest Side	413-RBI Coil Line 610-NAMI Coil Line 803-DMI Coil Line
Print Reports Select Reports		Output Nested Sheet Blanks Save Sheets as Remnants into Sheet Management
Execute Script After Process		ОК
Process OK Cancel	OK Cancel	Cancel

This process is for sending duct to the decoiler only:

- Notice for this process I am not assigning any nesting options, I am only selecting "Write NC" and selecting a machine.
- For the machine I am selecting a machine named "None" and the button ticked for "Always Use this Machine". I also have the decoiler selected that I want to use.

Process NC for Machine	es ×
NC Output	
Machine None (D6 Post Processor)	× (
Use this Machine Only when None set Always Use this Machine	
Write NC for all machines in group	
Write NC for Rotary Nests	
Write Decoiler Output File	
O-Coil-Line 209-CWC Coil Line 401-CSSE Coil Line 409-SML Engel 413-RBI Coil Line 610-NMI Coil Line 803-DMI Coil Line Output Nested Sheet Blanks Save Sheets as Remnants into Sheet Manage	gement
	ОК
	Cancel

Proces	ses ×
Process RBI-Coil Line D	EC 🗸 🖬 🗙
Execute Script Before Process	
Linear Nest	
	Nesting Options
Automatically Nest Item(s)	
 Specify Settings 	Nesting Options
Write NC	
	Select Machine
Export Data Fields	
	Select Exports
Print Reports	
	Select Reports
Execute Script After Process	2
Process	OK Cancel

• For the "None" Machine, I have a table setup as a 0.0 Length and 0.0 Width and the button ticked for "Restrict Nested Material Sizes to this Size", this will not let any flatbed parts get processed at this time.



Installed Machines	
Flatbed Rotary Shear Round Linear Rectangular Linear Ancillaries	Machine Group Setup Tools Machine Group New New Delete Include
Machine Editor	? ×
Machine Controller NC Settings Web Cut Ductboard R Name None Dimensions Rail Axis 0.0 Beam Axi Restrict Nested Material Sizes	
Preset Points Origin Go to Park Point Go to Block Point Traverse Rate Dual Tables Alternate between tables	 ✓ 0.0 Setup
Rip Cut Along Rail Axis Along Beam Axis	Setup Setup



Learn how to use the new "Custom NC" Machine

The "Custom NC" will allow users or manufactures to modify existing CNC post processors to change some features, add new tools, or create post processors for new CNC machines.

I will show an example where I have modified the Lockformer 1000D post processor for a waterjet cutter to add a marking tool to mark the "Item Number" and "Part Index Numbers" on the insulation.

I will look at the existing machine first:

- Go to the file menu and select Setup > Installed Machines
- I am selecting the unmodified machine named "AU-2015 LF-10 Ft Liner" to show that I do not have a "Marking" Tool available.





- I will now create a new machine based off of this existing machine.
 - 1. With the existing Machine selected "AU-2015 LF-10 Ft Liner".
 - 2. Select Custom
 - 3. Select "Yes" to create a copy of the existing machine.
 - 4. I am going to rename that Machine to *"New AU-2015 LF-10 Ft Liner"*





- I will now add the "Marking" Tool the new Machine
 - 1. With the "New AU-2015 LF-10 Ft Liner" Machine selected
 - 2. Click to "Tools"
 - 3. Select "Add Tool"
 - 4. Scroll to the "Marking" Group
 - 5. Select "Marking Scribe"
 - 6. Select the arrow at the bottom to add the tool
 - 7. We now have the tool added to the machine
 - 8. Select "OK" to accept the "Edit Tool Properties"

Installed M	achines		
Flatbed Rotary Shear Round Linear Rectangular Linear / Installed Machines O Default Plasma Table My Machines O New NC Vulcan 10 Ft WJ O Untitled O Vulcan 10 Ft WJ Test-2 O AU-2015 LF-10 Ft Liner Redit Tools for Machine [New AU-2015 LF- Beveling Cuting Grooving Grooving Special Printing Special Nucle Tool Tapping Undefined Close	2	Pu Special: Cutting: V mma er dder be at um ter	

- We have added the new "Marking" tool, we now need to configure the tool
 - Select the "Scribe" tool
 - Select "Setup"





- We are in the "Tools Details" Editor and we need to add a "Textsize" to the Global tools.
 - 1. Select "Globals"
 - 2. Type "Text" into the filter field
 - 3. Select "Text Size"
 - 4. Select the arrow at the bottom to add the "Text Size" object
 - 5. We now have the "Test Size" object in the global section, select ok to accept it
 - 6. Give the "Text Size" a value, I am using 2 just for this demonstration

Tools Details for Mac	hine [New	AU-2015 LF-10	Ft — 🗆 🔼 🗡
Globals		1	Globals
Description	Value		Details
Tool Lower Time Tool Raise Time	0.000		Conditions
Nestina Marain	0.000 6		ОК
TextSize	2.000		
-	Edit Too	l Properties	Cancel
text Globals: Available A Additional Text Travel T Text Marking Offset Text Marking Tort Text Size Text Width Factor		Selected Tool Lower Time Tool Raise Time Nesting Margin Text Size	
4	⇒	\	
		0	K Cancel
		///	

- 7. Select ok for "Tool Details for Machine"
- 8. Select "Close" for "Edit Tools for Machine"
- 9. Select "Check" to check that all materials have tool data applied
- 10. Select "OK" for "Installed Machines"



- Now that we have our tool setup we need to tell the tool what we want scribe with it
 - 1. With the "New AU-2015 LF-10 Ft Liner" machine selected
 - 2. Select "Setup"
 - 3. You will notice that you now have a new tab "Auto Marking Settings", select the tab.
 - 4. Check the box for "Apply Auto Marking Data"
 - 5. In the "Item Data Fields" select "Item + Index"
 - 6. Select the arrow at the bottom to add "Item + Index" to the list
 - 7. We now have the "Item + Index" in our list



• The machine should now be setup to mark the "Item Number" + "Part Index Number".



We now need to setup a process to metal and insulation at the same time
 To start with, I want to assign my liner to use that new machine





- 1. I am creating a new process
- 2. I will name the process "Nest Galv"
- 3. Check the boxes for "Automatic Nesting" and "Specific Setting"
- 4. Select "Nesting Options"
- 5. Select the "Preferences Tab"
- 6. Select the table that you use for your metal
- 7. Select the "Method Tab"
- 8. Check the box for "Nest Insulation Developments"
- 9. Click "OK" to accept the changes for the "Process Nesting Options"

Job Contents Item Fo	Quick	Setup 1	Automatic	Manual Nest	
-	Processes	Processes	Nesting		
Execute Script Before Script Before Script Before Script Setting	Item(s) s Nesti	ng Options		? × Sheet Order	Process Nesting Options ? Rotary Nest Shear Nesting Sheet Order General Nesting Auto Stitching Topest Options Preferences Multi-Torch Flanged Method Batching None ✓ Main Nesting Method: ✓ Method Row Nesting Rectangular Nesting Edge Nesting Edge Nesting Edge Nesting
Print Reports	C. al Nesting		Flanged Nests		□ NFP Nesting
Execute Script Af	 Across Width of Along Length of Smallest Bound 	Sheet Sheet			 ✓ Try to Fill Gaps after main nesting Advanced ✓ Nest Insulation Developments
	Order Use Item Nest Pr Group By Item Sort Parts by Ar Sort Parts by Lo	ea	ОК	Cancel	OK Cancel



- Now I will set the process to write the NC
 - 1. Check the box for "Write NC"
 - 2. Click "Select Machine"
 - 3. Assign the machine that you use for your metal
 - 4. Tick the button for "Always Use this Machine"
 - 5. If you want to send your decoiled duct select the decoiler that you want to use
 - 6. Select "OK" to accept the changes
 - 7. Select "OK" for the "Processes"

	Processes	
	Process Nest Galv 🗸	
Exec	ute Script Before Process	
Linea	ır Nest	
	Nesting Options	
	natically Nest Item(s)	
	pecify Settings Nesting Options	
✓ Write	NC 1 Select Machine	
Exp	Process NC for Machines	×
Print	NC Output 3 Machine Default Plasma Table (D6 Post Prov Use this Machine Only when None set Always Use this Machine Write NC for all machines in group Write NC for Rotary Nests Write Decoiler Output File Default 5	
	Output Nested Sheet Blanks	
	Save Sheets as Remnants into Sheet Management	
	6 ок	
	Canc	el



- Quick Takeoff Square Bend /iew 1 Top Shaded+Lines A) Top Width 24.000 Service Supply Air Ø. B) Depth 12.000 0, Rectangula C) Btm Width Equal А **1** D) Top Extensi... 4 000 • E) Bottom Exte... 4.000 tout ₽ Qty 1 1 Ą Item No LP27 Round Bo Material Galvanized · 26 ÷ Double Wall <u>م</u> b Ŷ Section None Specification -2 WG In Line Equ C2=Standing S&D \Box Insul Spec Acoustic Liner 1 Insulation Inside - Accoustic x 1.000 -L. End of Line Equipment Connector #1 Standing S&D ÷ Connector #2 Standing S&D <u>م</u> -Seam #1 PITTS-S ÷ Items 3D Viewer Item No Custom Data #27 Name Size Cut T 🛿 LP27 24.000 x 12.000 Mach Square Benc angers Quick Takeoff Original MASTER FULL 📭 🖌 🗡 🗸
- Let's test the machine by adding a 24x12 square elbow with 1" liner to the takeoff, I am giving mine a number of "LP27"

- Let's process the square elbow
 - 1. Click and hold "Setup Process"
 - 2. Drag down to your new process and let off of the mouse button, this should process the elbow
 - 3. Click to the "Job Contents" tab
 - 4. Click on the "Nest" tab and you should see 2 nest sheets
 - 5. This sheet should be you insulation nest
 - 6. This should be the metal nest
- Double click on the insulation nest and select "OK" for the warning





• You should now see the text on the parts with the item number and part index numbers





- Let's look at the machine customization
- Select File > Setup > Installed Machines
 - 1. Select the "New AU-2015 LF-10 Ft Liner" machine
 - 2. Select "Tools"
 - 3. Select "Configuration"

Installed Machines		
Flatbed Rotary Shear Round Linear Rectangular Linear Ancillaries	Machine	Group
- Installed Machines	Setup	💣 New
O Default Plasma Table	n Tools	× Delete
□ → My Machines		
-O Untitled	New	수 Include
- QVulcan 10 Ft Plasma	Custom	📼 Exclude
E-Test-2		
- 🛇 AU-2015 LF-10 Ft Liner	× Delete	
Copy of WT-Vulcan 10 Ft Liner NTVC	Check	
• New AU-2015 LF-10 Ft Liner	A Print	
Edit Tools for Machine [New AU-2015 LF-10 f Cuting Cuting Cuting Cuting Cuting Cuting Cuting Cuting Configuration Special Configuration Special Cutop Cuting Configuration Setup Add Tool Configuration Site Fill Missing Tool Data Close		
	ОК	Cancel





We are now in the Machine: Configuration editor where you can modify and test the code

- 1. This is the "Machine Motion Configuration", this dialog contains settings that let you specify the NC code for controlling general machine behaviors, such as:
 - Arc Centers: Absolute, Relative
 - Motion: Absolute, Relative, Arc, Linear, Clockwise, Counter Clockwise
 - Feed Rate
 - Units
 - Kerf
 - Offset Origin
 - Program Start\End
 - Rapid Traverse
 - Subroutines
 - Block Numbers
 - Cut Start
 - Part Start
 - Remarks

		Mach	nine: Configur	ation [C:/Use	ers/Public/D	ocuments/Au	itode	esk/I	/Fabricat	ion 2016/	/Imperi	ial Cont	ent/V3.0	B/CNC/L-	1151.CN	IC]			_ □
															4	+	I « <		≫ ▶
Code	Value	Minimum Length	Decimal Places	Leading Zeros	Trailing Zeros	Trailing Point	P ^				_	1							
Absolute Arc							-	18											
G	90.100	1	1	No	Yes	Yes	N	18											
Absolute Mo	tion							18											
G	90	1		No			Þ	18											
Auto Load								18											
Block Number								18				1							
N	10	4		Yes			P P						\mathbb{P}	1/1	6				
Clockwise A	rc Motion							18					N						
3	2	2		Yes			P												
ĸ	Calculated field	1	3	No	Yes	Yes	×												
(Calculated field	1	3	No	Yes	Yes	Y												
	Calculated field	1	3	No	Yes	Yes													
	Calculated field	1	3	No	Yes	Yes	J												
	kwise Arc Motion	2						18											
	3 Calculated field	2	3	Yes No	Yes	Yes	N X	18											
	Calculated field Calculated field	1	3	No	Yes	Yes Yes	()	18											
·	Calculated field	1	3	No	Yes	Yes		18											
	Calculated field	1	3	No	Yes	Yes	J	<											
Cut Start	Calculated lield		5	140	165	165	_												
CUT START	Calculated field						c	GC	00X43.215	SY15.130									
							N	(0	CUT START	()									
Height Contro	ol Disable							MO	103										
Height Contro	ol Enable								0.00										
Imperial Unit									01X43.335										
G	70	1		No			_ ► ~		01X43.335										
<							>		01X43.215										
							_		01X43.215	5Y15.130									
Vater Jet Cutting	9		2				~		105 500X42.375	V15.298									
ode Value	Minimum Length	Decimal Places	Leading Zeros	Trailing Zeros	Trailing Point	Paramater	^		CUT START										
E Feed Rate		Decimarriaceo	Louding Loros	Training Loros	riding rom	- dramater	- 11		103	6									
= 0.000	1	3	No	Yes	Yes	TI03=Feed Rate			0.00										
3 Pierce		-						GO	01X42.135	SY15.466									
VI 3	2		Yes			None		GO	01X43.335	SY15.466									
G 4	2		Yes			None			01X43.335										
P 0.250	1	2	No	Yes	Yes	None			01X43.335	SY15.624									
VI 5	2		Yes			None			105										
Tool Desele	ct								00X43.335										
M 6	2		Yes 3			None			CUT START	<u>(</u>)									
T O	2		Yes 🙂			None		MO	103										
Tool Off							_		Write NC										
M 5	2		Yes			None	_	L	write NC										
Tool On	0		Vee			Nene	~	-				_	_	_			_	_	
<							>											OK	Car

2. This is the tool selection drop-down list to display and select each of the tools that are included with this machine. Only the tools that have been added to the selected machine are displayed in this list.



- 3. This dialog contains settings that let you specify NC code for the following tool-specific behaviors for each of the tool types that are included on the currently selected machine
 - Pierce
 - Tool Deselect
 - Tool Off
 - Tool On
 - Tool Select
- 4. This dialog displays an NC view of the nested sheets for the current job. The buttons located along the top of this pane provide a variety of options for stepping through the machine motion. For example, you can go to Previous Sheet/Next Sheet, Start\End, Backwards, Forwards. The buttons located along the top of this pane provide a variety of options for stepping through the machine motion. For example, you can go to Start\End, Backwards, Forwards
- 5. This area is the machine cut path, notice that we have our new scribed text.
- 6. "M03" is the code for "Tool On"
- 7. "M05" is the code for "Tool Off"
- 8. If you want to modify the code you can write the NC again from here to test it.
 - If you want to modify any of the parameters
 - Right click on the line and select edit

Edit Selected Fie	eld: Counter C ×							
Description	Description Value							
Code	X							
Value	Calculated field							
Minimum Length	1							
Decimal Places	3							
Leading Zeros								
Trailing Zeros								
Trailing Point								
Parameter	Х							
_	Change Type Value 🗸							
Change Context								
	OK Cancel							





Personal Notes:



Personal Notes:



Personal Notes:

