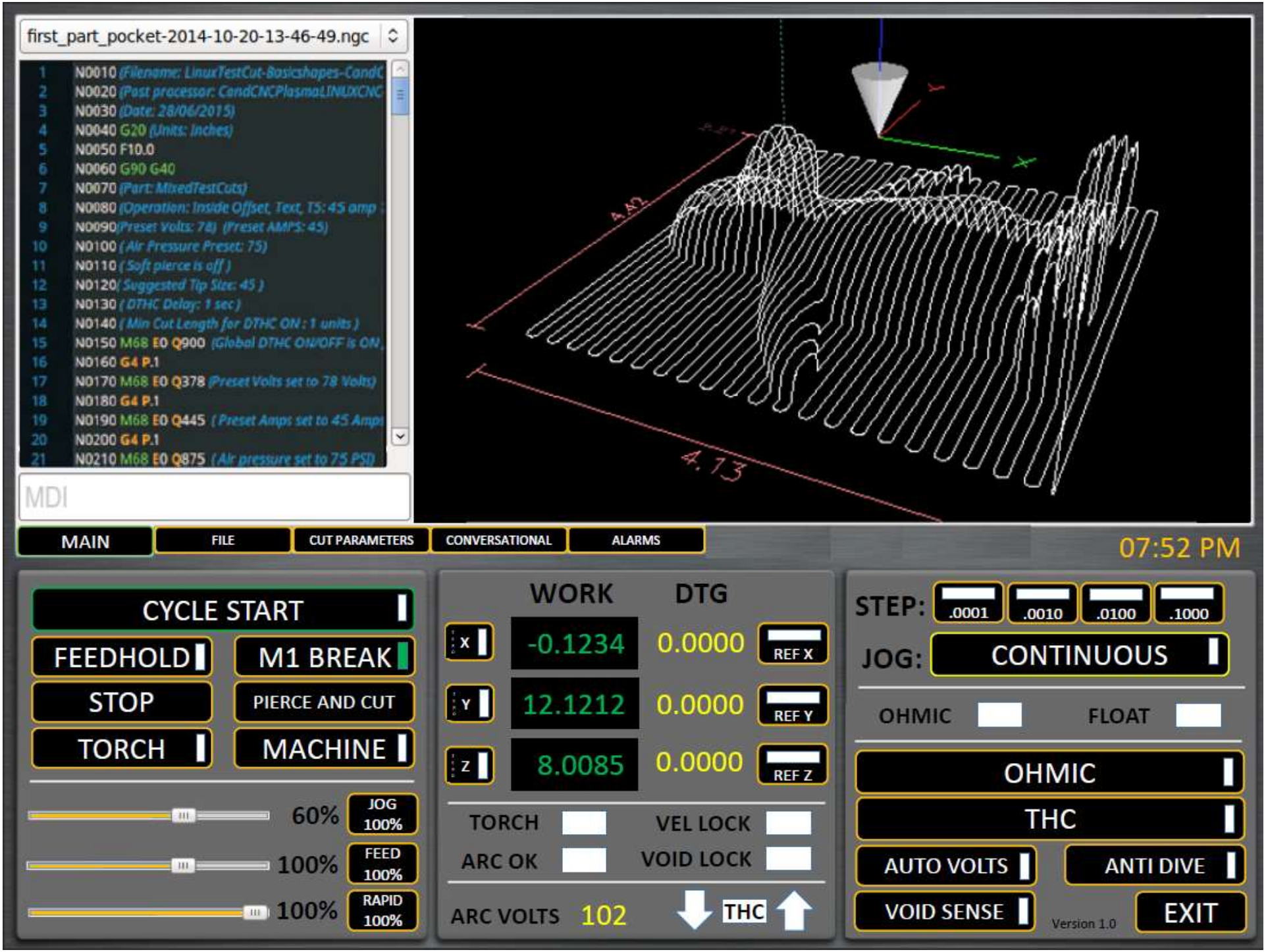
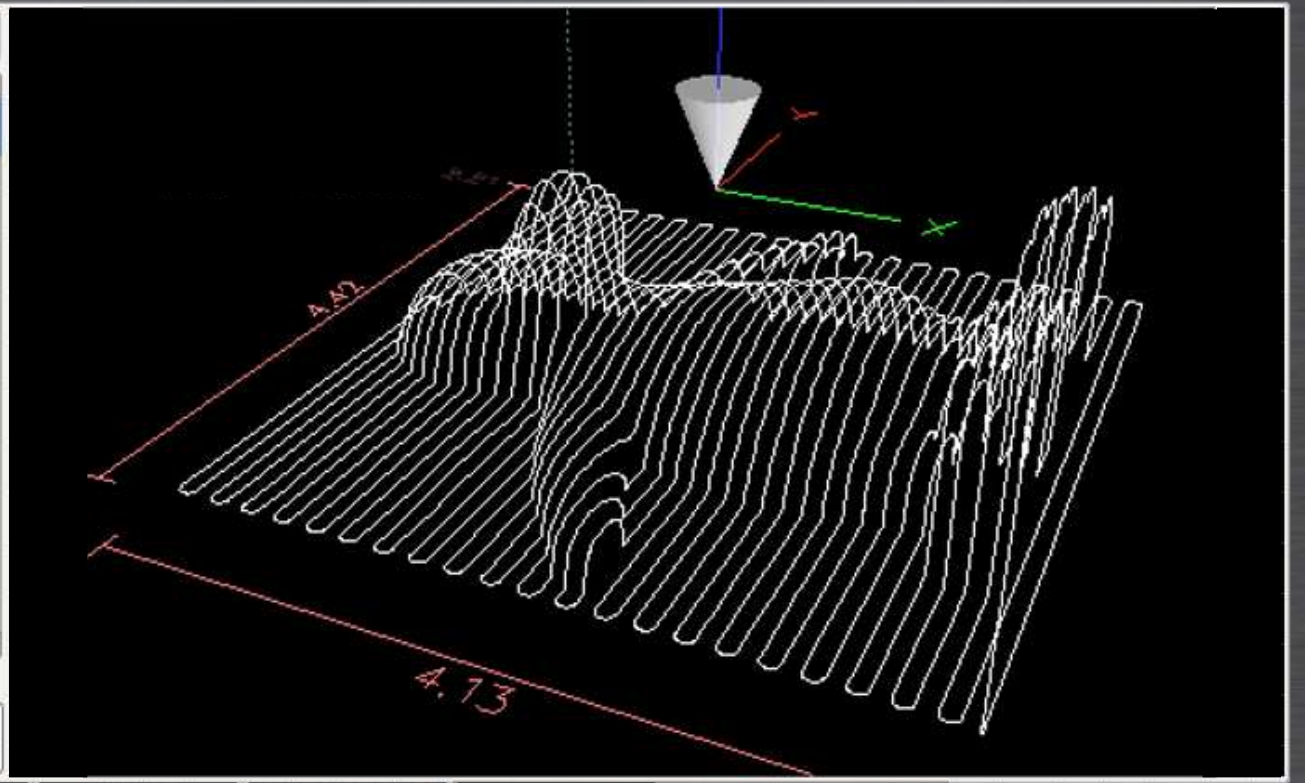

first_part_pocket-2014-10-20-13-46-49.ngc
N0010 (Filename: LinuxTestCut-BasicShapes-CandC
N0020 (Post processor: CandCNCPlasmaLINUXCNC
N0030 (Date: 28/06/2015)
N0040 G20 (Units: Inches)
N0050 F10.0
N0060 G90 G40
N0070 (Part: MixedTestCuts)
N0080 (Operation: Inside Offset, Text, T5: 45 amp
N0090 (Preset Volts: 78) (Preset AMPS: 45)
N0100 (Air Pressure Preset: 75)
N0110 (Soft pierce is off)
N0120 (Suggested Tip Size: 45)
N0130 (DTHC Delay: 1 sec)
N0140 (Min Cut Length for DTHC ON : 1 units)
N0150 M68 E0 Q900 (Global DTHC ON/OFF is ON
N0160 G4 P.1
N0170 M68 E0 Q378 (Preset Volts set to 78 Volts)
N0180 G4 P.1
N0190 M68 E0 Q445 (Preset Amps set to 45 Amps
N0200 G4 P.1
N0210 M68 E0 Q875 (Air pressure set to 75 PSI)
MDI
4.52
4.13
MAIN
FILE
CUT PARAMETERS
CONVERSATIONAL
ALARMS
07:52 PM
CYCLE START
FEEDHOLD
M1 BREAK
STOP
PIERCE AND CUT
TORCH
MACHINE
60%
JOG 100%
100%
FEED 100%
100%
RAPID 100%
WORK
DTG
X
-0.1234
0.0000
REF X
Y
12.1212
0.0000
REF Y
Z
8.0085
0.0000
REF Z
TORCH
VEL LOCK
ARC OK
VOID LOCK
ARC VOLTS
102
THC
STEP:
.0001
.0010
.0100
.1000
JOG:
CONTINUOUS
OHMIC
FLOAT
OHMIC
THC
AUTO VOLTS
ANTI DIVE
VOID SENSE
Version 1.0
EXIT

first_part_pocket-2014-10-20-13-46-49.ngc

```
1  N0010 (Filename: LinuxTestCut-Basicshapes-CandC
2  N0020 (Post processor: CandCNCPlasmaLINUXCNC
3  N0030 (Date: 28/06/2015)
4  N0040 G20 (Units: Inches)
5  N0050 F10.0
6  N0060 G90 G40
7  N0070 (Part: MixedTestCuts)
8  N0080 (Operation: Inside Offset, Text, T5: 45 amp
9  N0090(Preset Volts: 78) (Preset AMPS: 45)
10 N0100 ( Air Pressure Preset: 75)
11 N0110 ( Soft pierce is off )
12 N0120( Suggested Tip Size: 45 )
13 N0130 ( DTHC Delay: 1 sec )
14 N0140 ( Min Cut Length for DTHC ON : 1 units )
15 N0150 M68 E0 Q900 (Global DTHC ON/OFF is ON,
16 N0160 G4 P.1
17 N0170 M68 E0 Q378 (Preset Volts set to 78 Volts)
18 N0180 G4 P.1
19 N0190 M68 E0 Q445 ( Preset Amps set to 45 Amps
20 N0200 G4 P.1
21 N0210 M68 E0 Q875 ( Air pressure set to 75 PSI)
```

MDI



MAIN | FILE | CUT PARAMETERS | CONVERSATIONAL | JOG CONTROLS | ALARMS

07:52 PM

CYCLE START

FEEDHOLD | M1 BREAK

STOP | PIERCE AND CUT

TORCH | MACHINE

60% JOG 100%

100% FEED 100%

100% RAPID 100%

WORK

X	-0.1234	REF X
Y	12.1212	REF Y
Z	8.0085	REF Z
A	8.0085	REF A

FLOAT

OHMIC

BREAK AWAY

TORCH | VEL LOCK

ARC OK | VOID LOCK

ARC VOLTS 102 THC

STEP: .0001 | .0010 | .0100 | .1000

JOG: CONTINUOUS

OHMIC

THC

AUTO VOLTS | ANTI DIVE

VOID SENSE

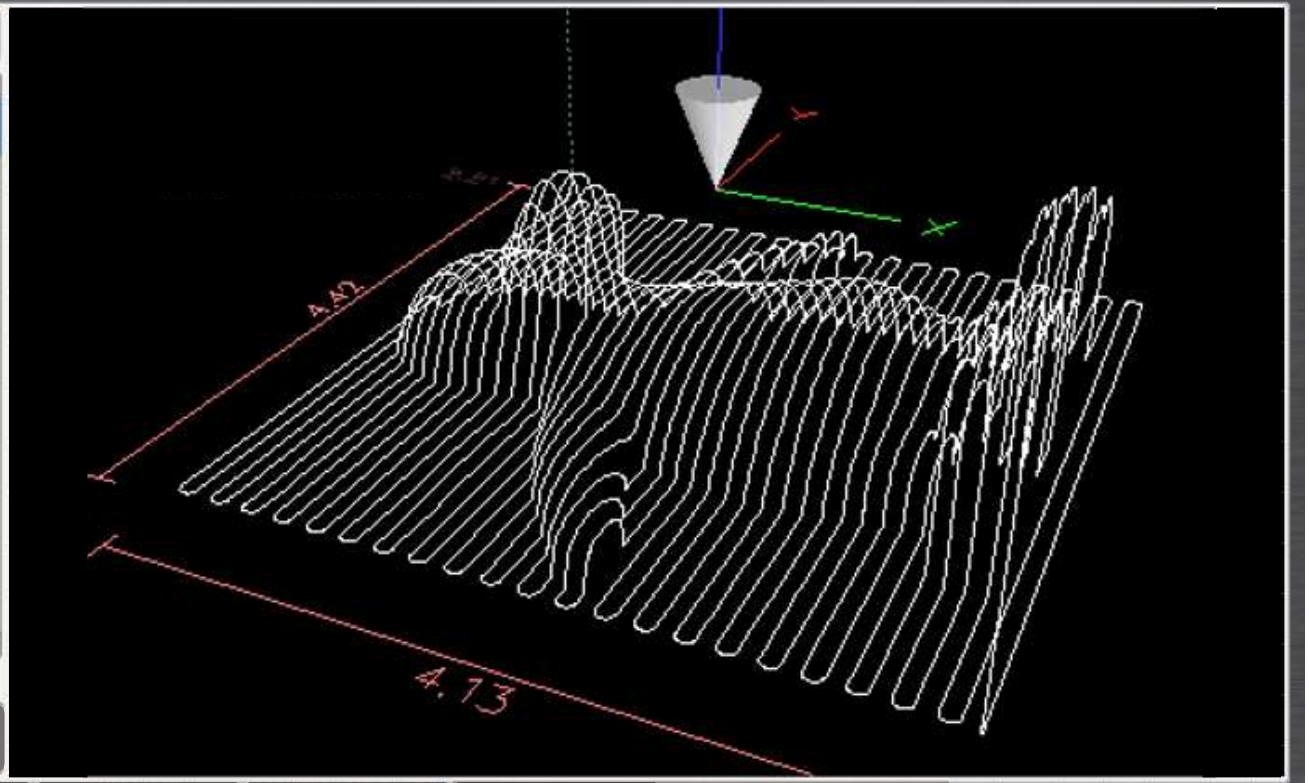
Version 2.0

EXIT

first_part_pocket-2014-10-20-13-46-49.ngc

```
1  N0010 (Filename: LinuxTestCut-Basicshapes-CandC
2  N0020 (Post processor: CandCNCPlasmaLINUXCNC
3  N0030 (Date: 28/06/2015)
4  N0040 G20 (Units: Inches)
5  N0050 F10.0
6  N0060 G90 G40
7  N0070 (Part: MixedTestCuts)
8  N0080 (Operation: Inside Offset, Text, T5: 45 amp
9  N0090(Preset Volts: 78) (Preset AMPS: 45)
10 N0100 ( Air Pressure Preset: 75)
11 N0110 ( Soft pierce is off )
12 N0120( Suggested Tip Size: 45 )
13 N0130 ( DTHC Delay: 1 sec )
14 N0140 ( Min Cut Length for DTHC ON : 1 units )
15 N0150 M68 E0 Q900 (Global DTHC ON/OFF is ON,
16 N0160 G4 P.1
17 N0170 M68 E0 Q378 (Preset Volts set to 78 Volts)
18 N0180 G4 P.1
19 N0190 M68 E0 Q445 ( Preset Amps set to 45 Amps
20 N0200 G4 P.1
21 N0210 M68 E0 Q875 ( Air pressure set to 75 PSI)
```

MDI ENTER



MAIN | FILE | CUT PARAMETERS | CONVERSATIONAL | JOG CONTROLS | ALARMS

07:52 PM

CYCLE START

FEEDHOLD | M1 BREAK

STOP | PIERCE AND CUT

TORCH | MACHINE

60% JOG 100%

100% FEED 100%

100% RAPID 100%

HOME ALL

WORK

HOME Y -0.1234 REF ZERO

HOME Y 12.1212 REF ZERO

HOME Y 8.0085 REF ZERO

HOME Y 8.0085 REF ZERO

FLOAT

OHMIC

BREAK AWAY

TORCH VEL LOCK

ARC OK VOID LOCK

ARC VOLTS 102 THC

STEP: .0001 .0010 .0100 .1000

JOG: CONTINUOUS

OHMIC

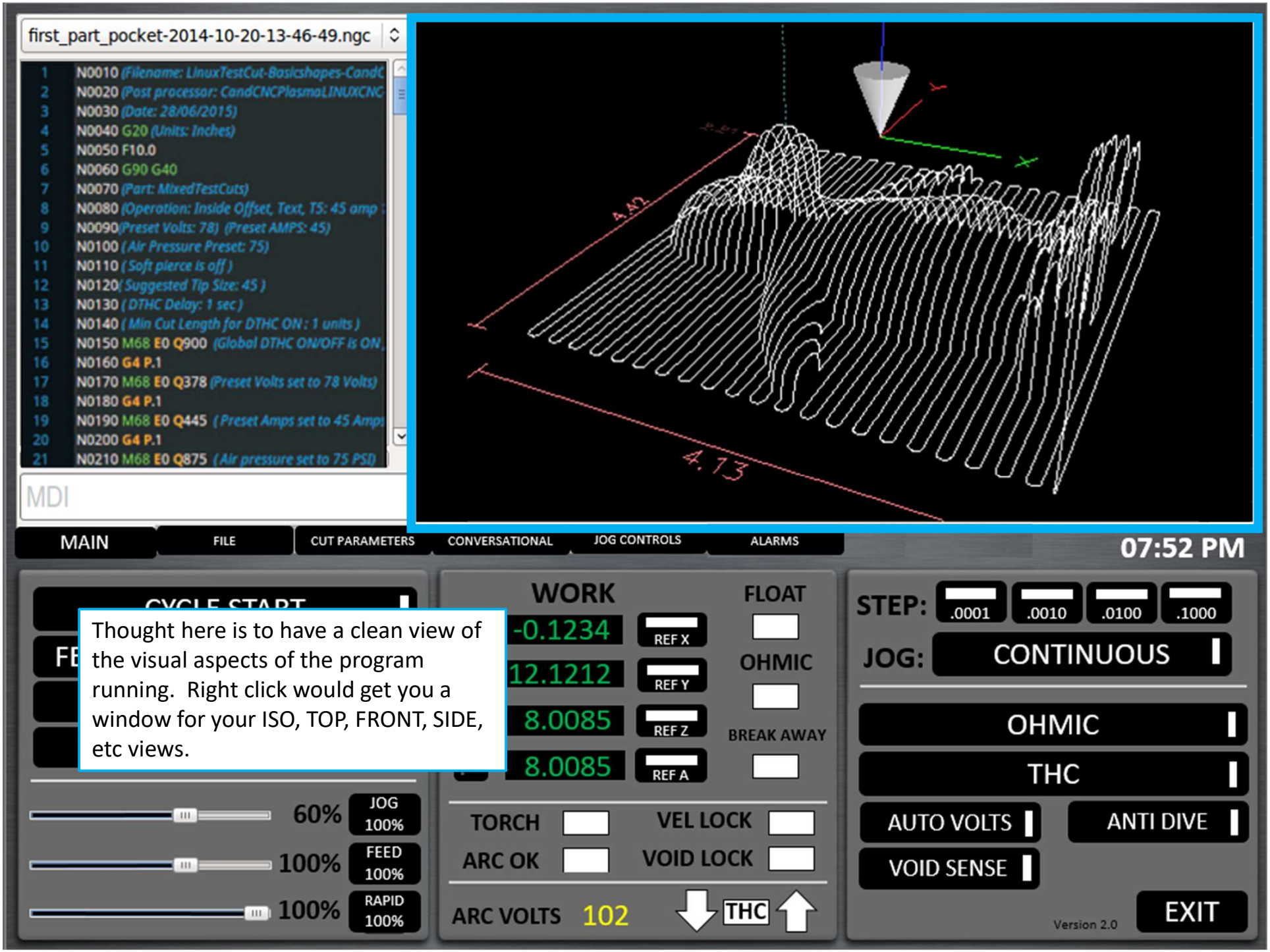
THC

VOID SENSE | AUTO VOLTS | ANTI DIVE

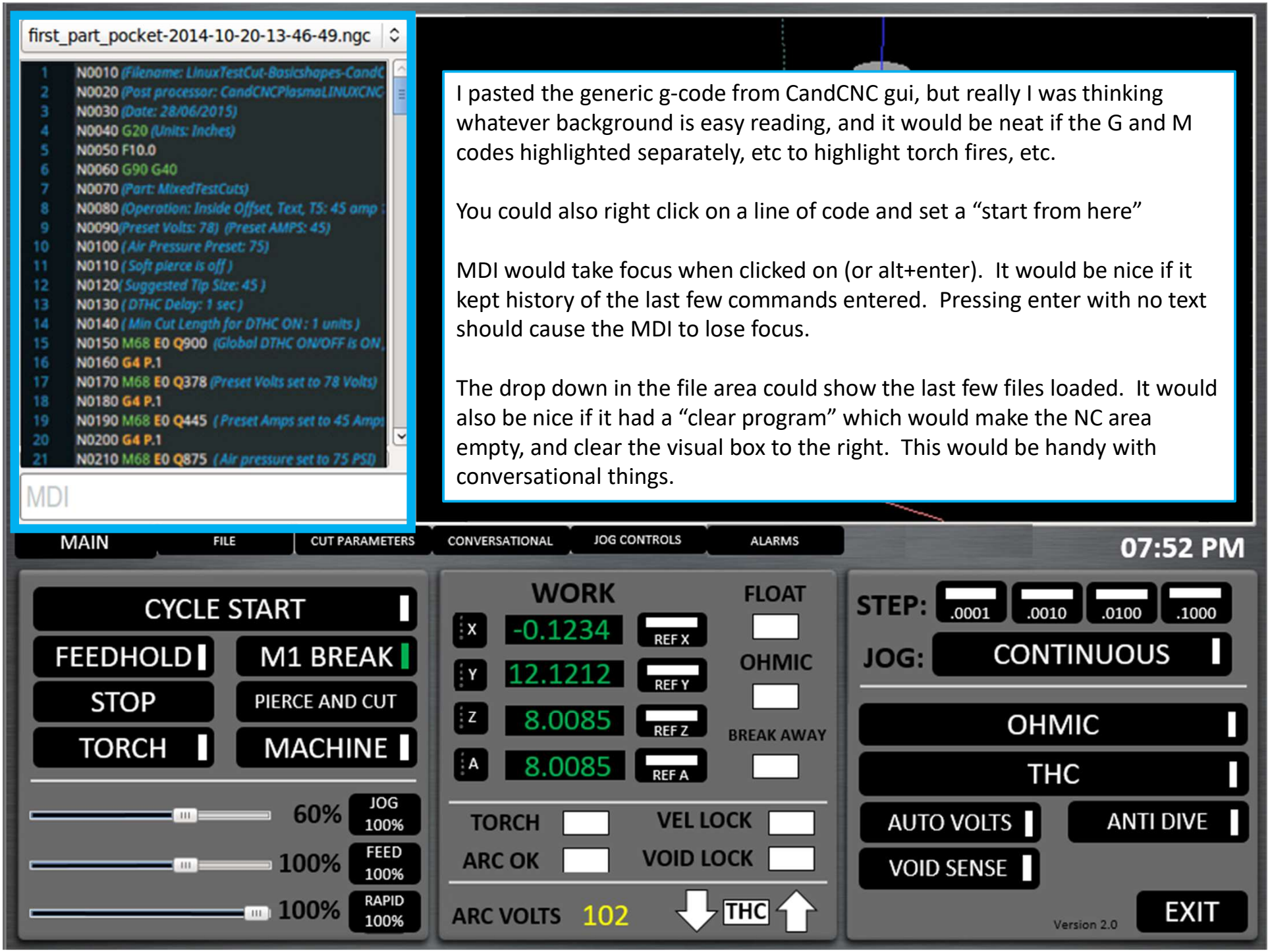
PAUSED REV 60% PAUSED FWD

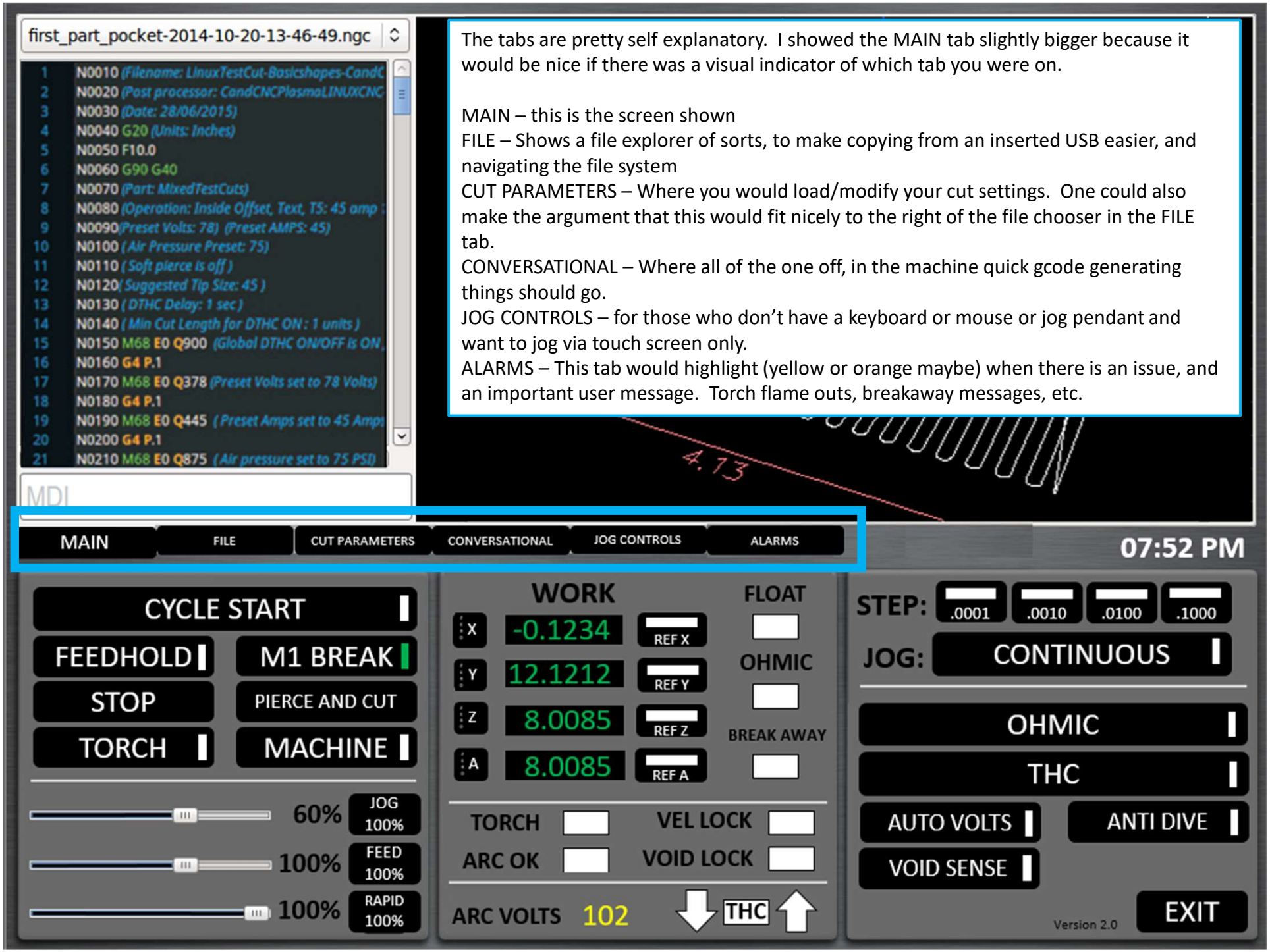
Version 3.5

EXIT



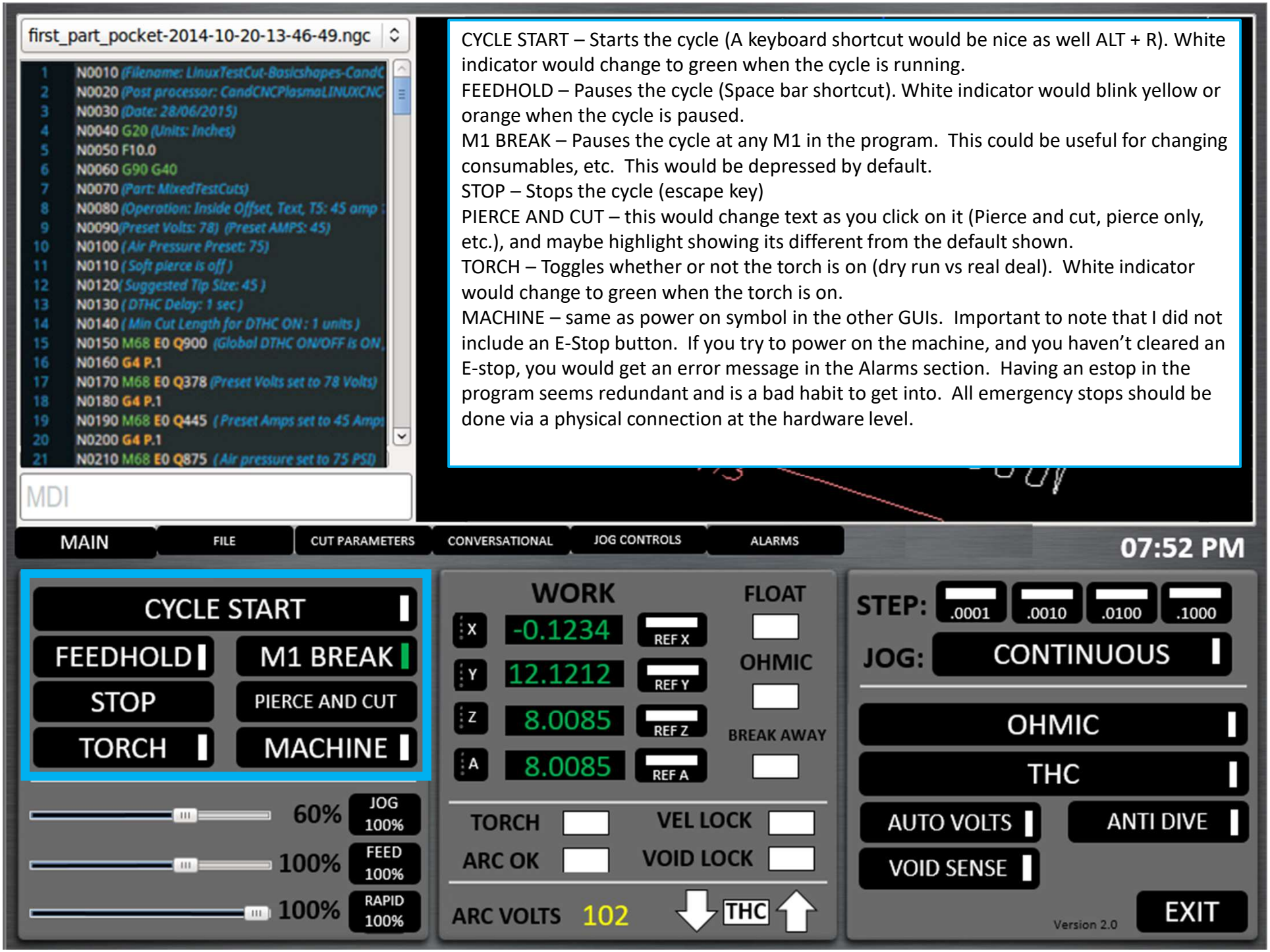
Thought here is to have a clean view of the visual aspects of the program running. Right click would get you a window for your ISO, TOP, FRONT, SIDE, etc views.


first_part_pocket-2014-10-20-13-46-49.ngc
N0010 (Filename: LinuxTestCut-Basicshapes-CandC
N0020 (Post processor: CandCNCPlasmaLINUXCNC
N0030 (Date: 28/06/2015)
N0040 G20 (Units: Inches)
N0050 F10.0
N0060 G90 G40
N0070 (Part: MixedTestCuts)
N0080 (Operation: Inside Offset, Text, T5: 45 amp
N0090 (Preset Volts: 78) (Preset AMPS: 45)
N0100 (Air Pressure Preset: 75)
N0110 (Soft pierce is off)
N0120 (Suggested Tip Size: 45)
N0130 (DTHC Delay: 1 sec)
N0140 (Min Cut Length for DTHC ON : 1 units)
N0150 M68 E0 Q900 (Global DTHC ON/OFF is ON
N0160 G4 P.1
N0170 M68 E0 Q378 (Preset Volts set to 78 Volts)
N0180 G4 P.1
N0190 M68 E0 Q445 (Preset Amps set to 45 Amp
N0200 G4 P.1
N0210 M68 E0 Q875 (Air pressure set to 75 PSI)
MDI
I pasted the generic g-code from CandCNC gui, but really I was thinking whatever background is easy reading, and it would be neat if the G and M codes highlighted separately, etc to highlight torch fires, etc.
You could also right click on a line of code and set a “start from here”
MDI would take focus when clicked on (or alt+enter). It would be nice if it kept history of the last few commands entered. Pressing enter with no text should cause the MDI to lose focus.
The drop down in the file area could show the last few files loaded. It would also be nice if it had a “clear program” which would make the NC area empty, and clear the visual box to the right. This would be handy with conversational things.
MAIN
FILE
CUT PARAMETERS
CONVERSATIONAL
JOG CONTROLS
ALARMS
07:52 PM
CYCLE START
FEEDHOLD
M1 BREAK
STOP
PIERCE AND CUT
TORCH
MACHINE
60%
JOG 100%
100%
FEED 100%
100%
RAPID 100%
WORK
FLOAT
X
-0.1234
REF X
Y
12.1212
REF Y
OHMIC
Z
8.0085
REF Z
BREAK AWAY
A
8.0085
REF A
TORCH
VEL LOCK
ARC OK
VOID LOCK
ARC VOLTS
102
THC
STEP:
.0001
.0010
.0100
.1000
JOG:
CONTINUOUS
OHMIC
THC
AUTO VOLTS
ANTI DIVE
VOID SENSE
Version 2.0
EXIT

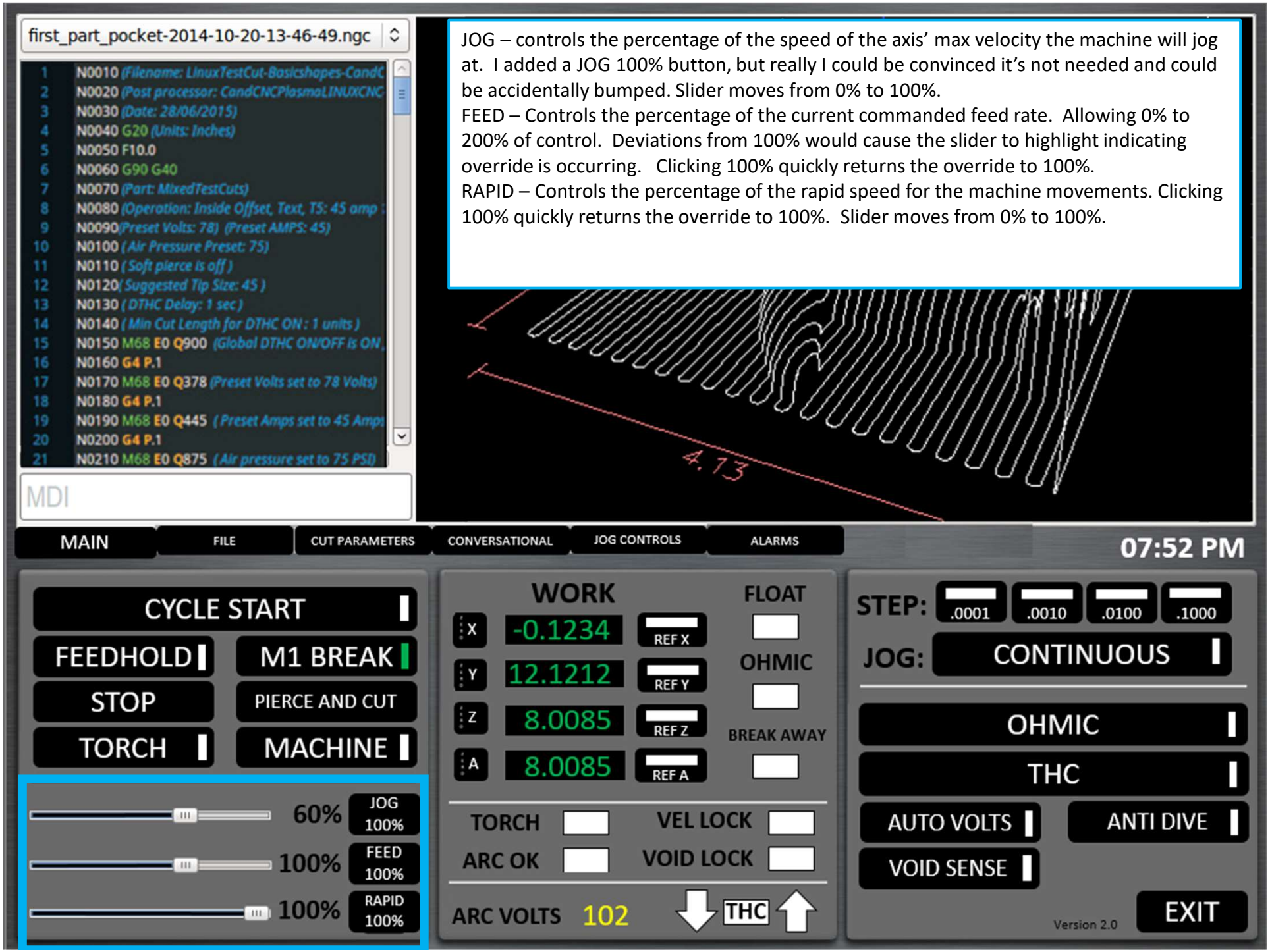


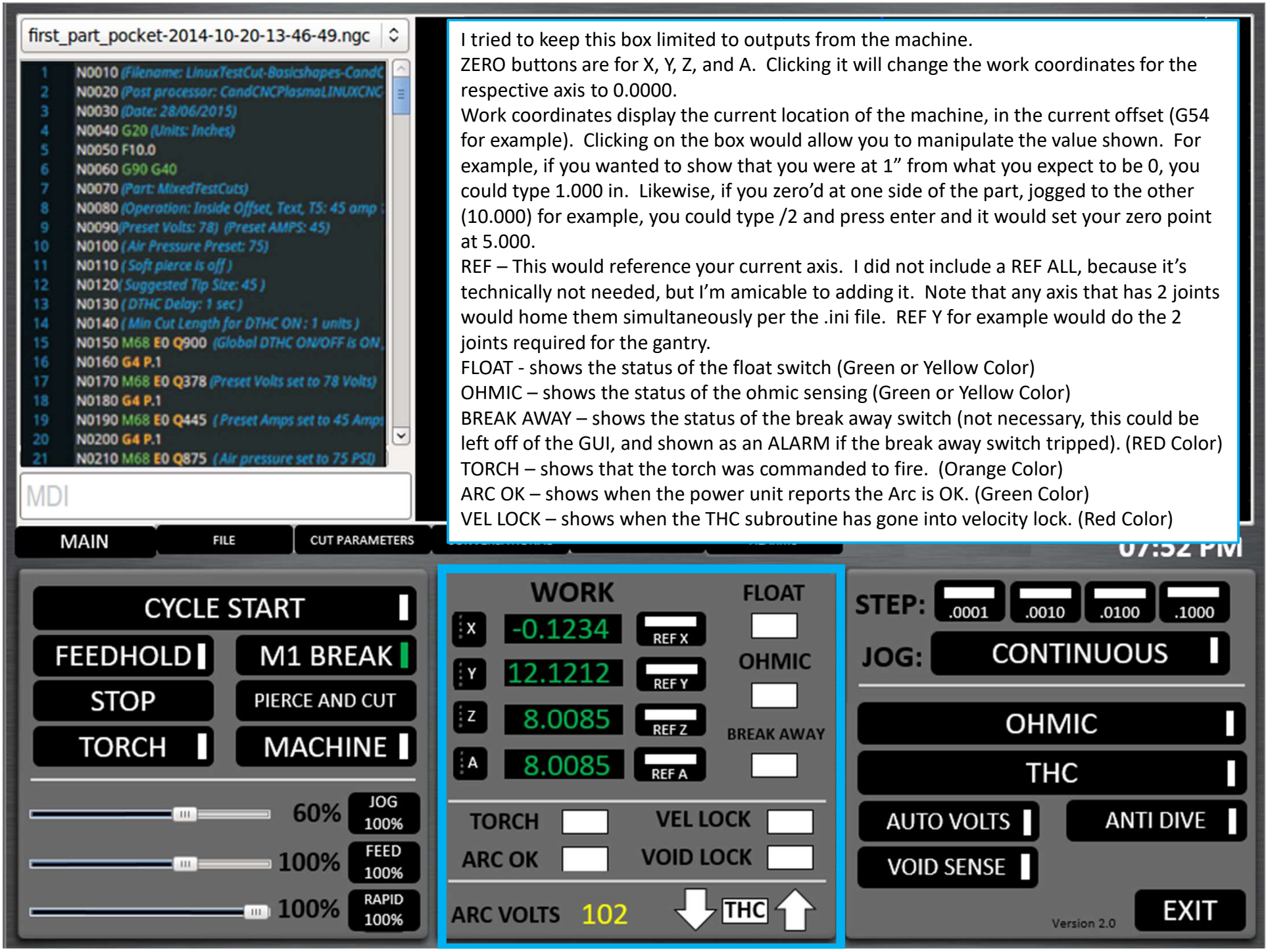
The tabs are pretty self explanatory. I showed the MAIN tab slightly bigger because it would be nice if there was a visual indicator of which tab you were on.

MAIN – this is the screen shown
FILE – Shows a file explorer of sorts, to make copying from an inserted USB easier, and navigating the file system
CUT PARAMETERS – Where you would load/modify your cut settings. One could also make the argument that this would fit nicely to the right of the file chooser in the FILE tab.
CONVERSATIONAL – Where all of the one off, in the machine quick gcode generating things should go.
JOG CONTROLS – for those who don't have a keyboard or mouse or jog pendant and want to jog via touch screen only.
ALARMS – This tab would highlight (yellow or orange maybe) when there is an issue, and an important user message. Torch flame outs, breakaway messages, etc.



CYCLE START – Starts the cycle (A keyboard shortcut would be nice as well ALT + R). White indicator would change to green when the cycle is running.
FEEDHOLD – Pauses the cycle (Space bar shortcut). White indicator would blink yellow or orange when the cycle is paused.
M1 BREAK – Pauses the cycle at any M1 in the program. This could be useful for changing consumables, etc. This would be depressed by default.
STOP – Stops the cycle (escape key)
PIERCE AND CUT – this would change text as you click on it (Pierce and cut, pierce only, etc.), and maybe highlight showing its different from the default shown.
TORCH – Toggles whether or not the torch is on (dry run vs real deal). White indicator would change to green when the torch is on.
MACHINE – same as power on symbol in the other GUIs. Important to note that I did not include an E-Stop button. If you try to power on the machine, and you haven't cleared an E-stop, you would get an error message in the Alarms section. Having an estop in the program seems redundant and is a bad habit to get into. All emergency stops should be done via a physical connection at the hardware level.


JOG – controls the percentage of the speed of the axis' max velocity the machine will jog at. I added a JOG 100% button, but really I could be convinced it's not needed and could be accidentally bumped. Slider moves from 0% to 100%.
FEED – Controls the percentage of the current commanded feed rate. Allowing 0% to 200% of control. Deviations from 100% would cause the slider to highlight indicating override is occurring. Clicking 100% quickly returns the override to 100%.
RAPID – Controls the percentage of the rapid speed for the machine movements. Clicking 100% quickly returns the override to 100%. Slider moves from 0% to 100%.
first_part_pocket-2014-10-20-13-46-49.ngc
MDI
4.13
MAIN
FILE
CUT PARAMETERS
CONVERSATIONAL
JOG CONTROLS
ALARMS
07:52 PM
CYCLE START
FEEDHOLD
M1 BREAK
STOP
PIERCE AND CUT
TORCH
MACHINE
60%
JOG 100%
100%
FEED 100%
100%
RAPID 100%
WORK
FLOAT
X
-0.1234
REF X
Y
12.1212
REF Y
OHMIC
Z
8.0085
REF Z
BREAK AWAY
A
8.0085
REF A
TORCH
VEL LOCK
ARC OK
VOID LOCK
ARC VOLTS
102
THC
STEP:
.0001
.0010
.0100
.1000
JOG:
CONTINUOUS
OHMIC
THC
AUTO VOLTS
ANTI DIVE
VOID SENSE
Version 2.0
EXIT



I tried to keep this box limited to outputs from the machine.

ZERO buttons are for X, Y, Z, and A. Clicking it will change the work coordinates for the respective axis to 0.0000.

Work coordinates display the current location of the machine, in the current offset (G54 for example). Clicking on the box would allow you to manipulate the value shown. For example, if you wanted to show that you were at 1" from what you expect to be 0, you could type 1.000 in. Likewise, if you zero'd at one side of the part, jogged to the other (10.000) for example, you could type /2 and press enter and it would set your zero point at 5.000.

REF – This would reference your current axis. I did not include a REF ALL, because it's technically not needed, but I'm amicable to adding it. Note that any axis that has 2 joints would home them simultaneously per the .ini file. REF Y for example would do the 2 joints required for the gantry.

FLOAT - shows the status of the float switch (Green or Yellow Color)

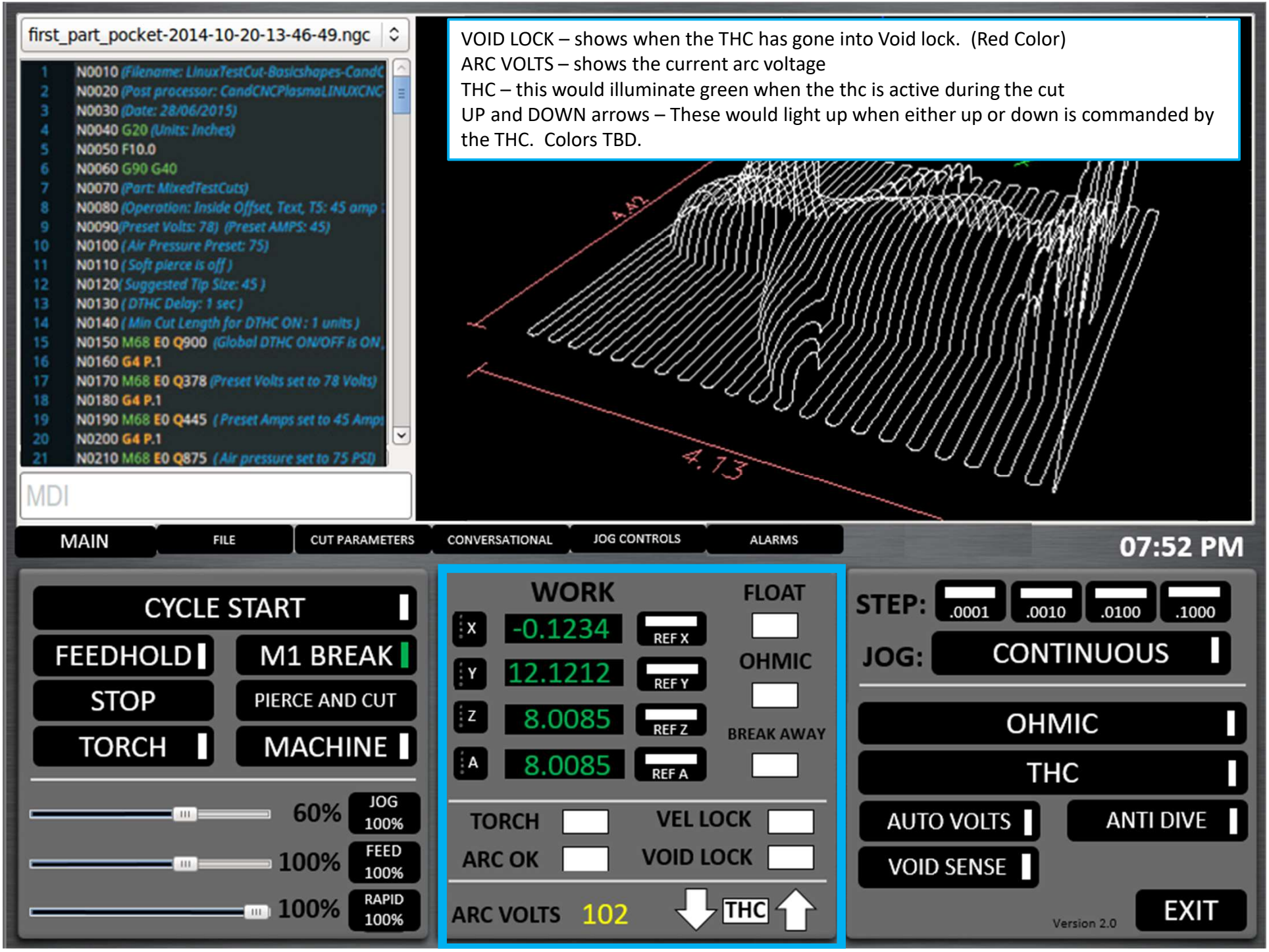
OHMIC – shows the status of the ohmic sensing (Green or Yellow Color)

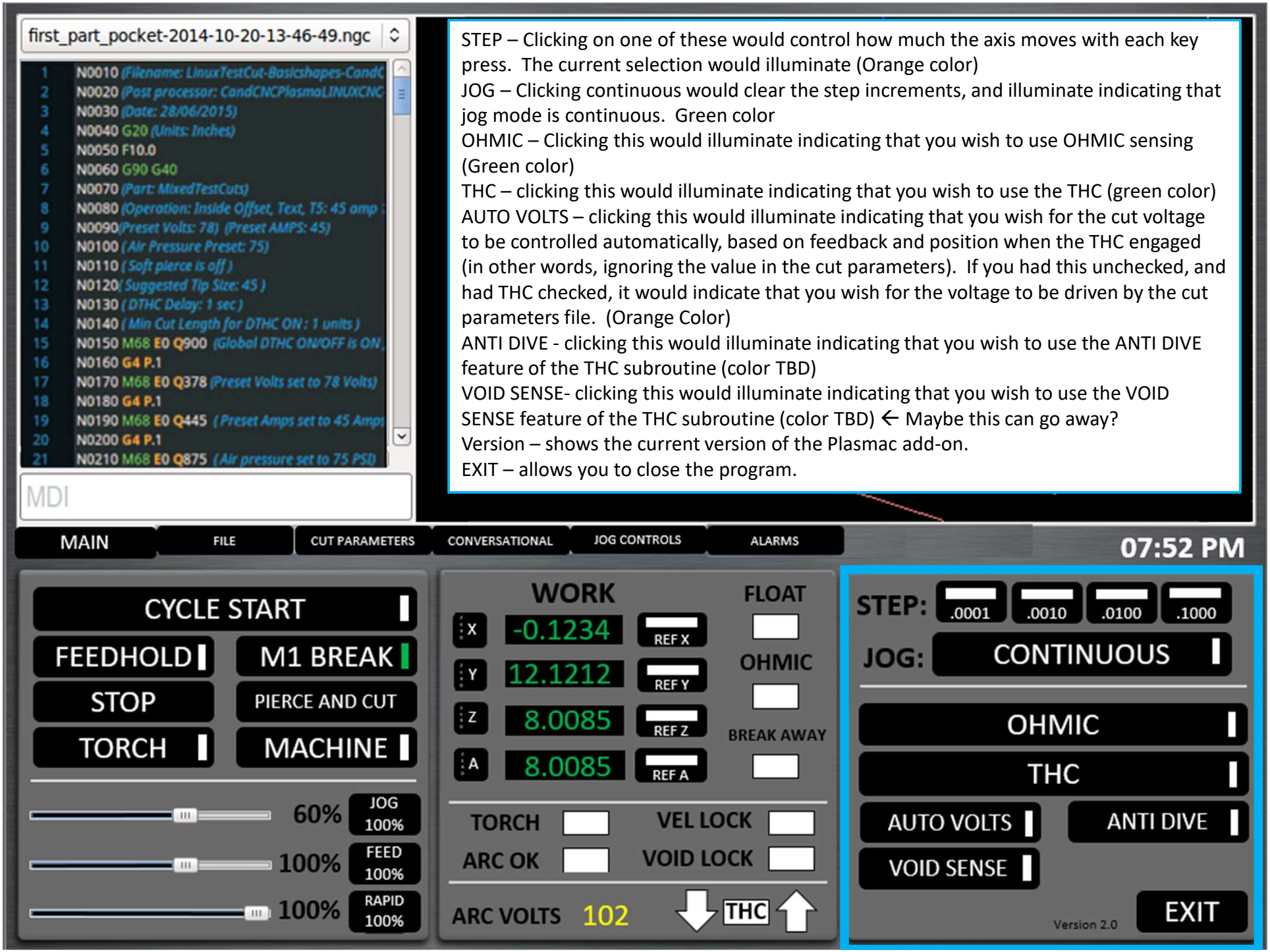
BREAK AWAY – shows the status of the break away switch (not necessary, this could be left off of the GUI, and shown as an ALARM if the break away switch tripped). (RED Color)

TORCH – shows that the torch was commanded to fire. (Orange Color)

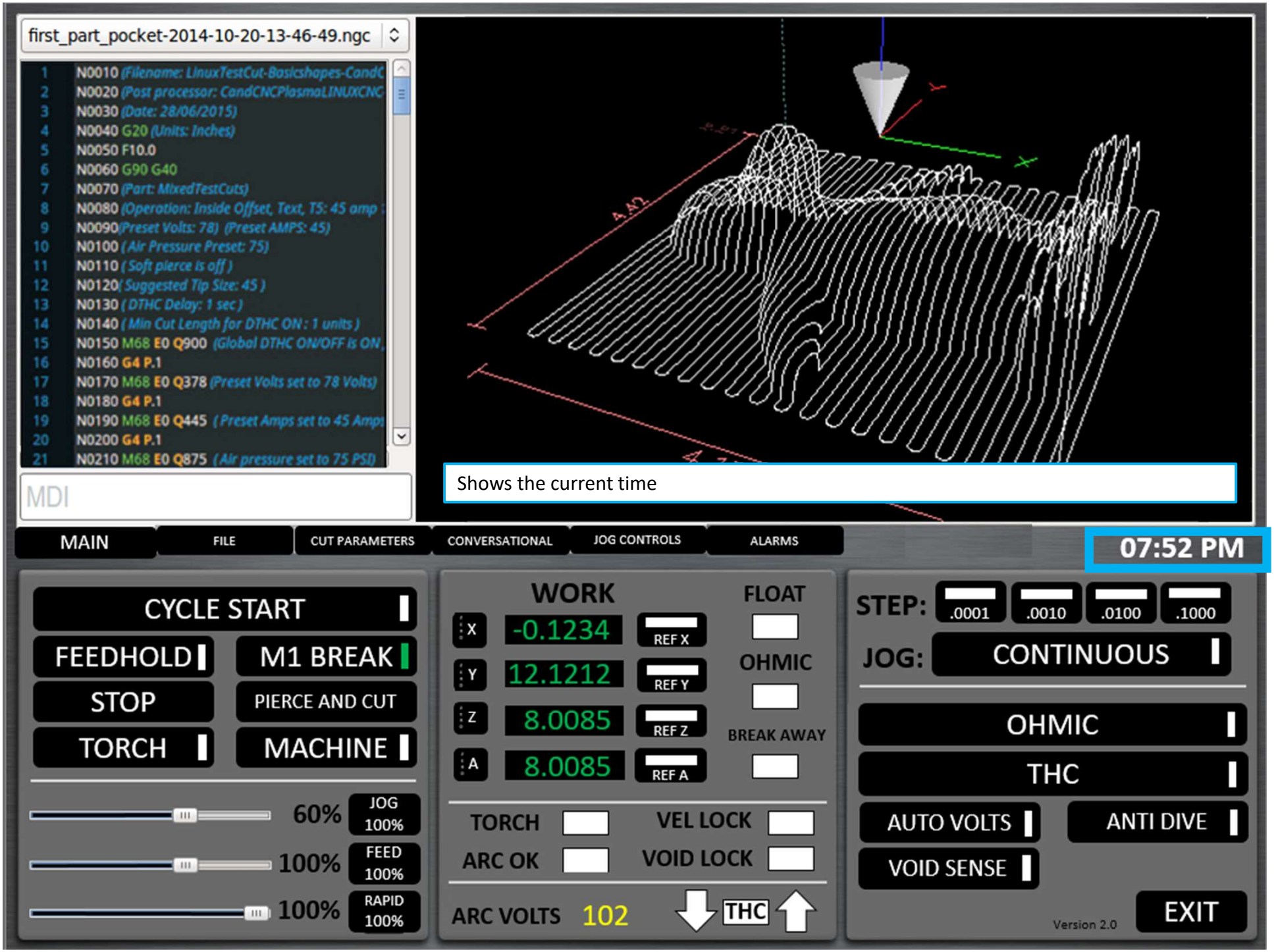
ARC OK – shows when the power unit reports the Arc is OK. (Green Color)

VEL LOCK – shows when the THC subroutine has gone into velocity lock. (Red Color)


VOID LOCK – shows when the THC has gone into Void lock. (Red Color)
ARC VOLTS – shows the current arc voltage
THC – this would illuminate green when the thc is active during the cut
UP and DOWN arrows – These would light up when either up or down is commanded by the THC. Colors TBD.
first_part_pocket-2014-10-20-13-46-49.ngc
MDI
4.13
MAIN
FILE
CUT PARAMETERS
CONVERSATIONAL
JOG CONTROLS
ALARMS
07:52 PM
CYCLE START
FEEDHOLD
M1 BREAK
STOP
PIERCE AND CUT
TORCH
MACHINE
60%
JOG 100%
100%
FEED 100%
100%
RAPID 100%
WORK
FLOAT
X -0.1234
REF X
Y 12.1212
REF Y
OHMIC
Z 8.0085
REF Z
BREAK AWAY
A 8.0085
REF A
TORCH
VEL LOCK
ARC OK
VOID LOCK
ARC VOLTS 102
THC
STEP: .0001 .0010 .0100 .1000
JOG: CONTINUOUS
OHMIC
THC
AUTO VOLTS
ANTI DIVE
VOID SENSE
Version 2.0
EXIT



STEP – Clicking on one of these would control how much the axis moves with each key press. The current selection would illuminate (Orange color)
JOG – Clicking continuous would clear the step increments, and illuminate indicating that jog mode is continuous. Green color
OHMIC – Clicking this would illuminate indicating that you wish to use OHMIC sensing (Green color)
THC – clicking this would illuminate indicating that you wish to use the THC (green color)
AUTO VOLTS – clicking this would illuminate indicating that you wish for the cut voltage to be controlled automatically, based on feedback and position when the THC engaged (in other words, ignoring the value in the cut parameters). If you had this unchecked, and had THC checked, it would indicate that you wish for the voltage to be driven by the cut parameters file. (Orange Color)
ANTI DIVE - clicking this would illuminate indicating that you wish to use the ANTI DIVE feature of the THC subroutine (color TBD)
VOID SENSE- clicking this would illuminate indicating that you wish to use the VOID SENSE feature of the THC subroutine (color TBD) ← Maybe this can go away?
Version – shows the current version of the Plasmac add-on.
EXIT – allows you to close the program.


first_part_pocket-2014-10-20-13-46-49.ngc
1 N0010 (Filename: LinuxTestCut-Basicshapes-CandC
2 N0020 (Post processor: CandCNCPlasmaLINUXCNC
3 N0030 (Date: 28/06/2015)
4 N0040 G20 (Units: Inches)
5 N0050 F10.0
6 N0060 G90 G40
7 N0070 (Part: MixedTestCuts)
8 N0080 (Operation: Inside Offset, Text, T5: 45 amp
9 N0090 (Preset Volts: 78) (Preset AMPS: 45)
10 N0100 (Air Pressure Preset: 75)
11 N0110 (Soft pierce is off)
12 N0120 (Suggested Tip Size: 45)
13 N0130 (DTHC Delay: 1 sec)
14 N0140 (Min Cut Length for DTHC ON : 1 units)
15 N0150 M68 E0 Q900 (Global DTHC ON/OFF is ON
16 N0160 G4 P.1
17 N0170 M68 E0 Q378 (Preset Volts set to 78 Volts)
18 N0180 G4 P.1
19 N0190 M68 E0 Q445 (Preset Amps set to 45 Amps
20 N0200 G4 P.1
21 N0210 M68 E0 Q875 (Air pressure set to 75 PSI)
MDI
Shows the current time
MAIN
FILE
CUT PARAMETERS
CONVERSATIONAL
JOG CONTROLS
ALARMS
07:52 PM
CYCLE START
FEEDHOLD
M1 BREAK
STOP
PIERCE AND CUT
TORCH
MACHINE
60%
JOG 100%
100%
FEED 100%
100%
RAPID 100%
WORK
X -0.1234
Y 12.1212
Z 8.0085
A 8.0085
REF X
REF Y
REF Z
REF A
FLOAT
OHMIC
BREAK AWAY
TORCH
ARC OK
VEL LOCK
VOID LOCK
ARC VOLTS 102
THC
STEP: .0001 .0010 .0100 .1000
JOG: CONTINUOUS
OHMIC
THC
AUTO VOLTS
ANTI DIVE
VOID SENSE
Version 2.0
EXIT