

# PROSPECTOR™

*The Gold Standard In Toolmaking*

## Version 6.5 Release Summary

January 2008

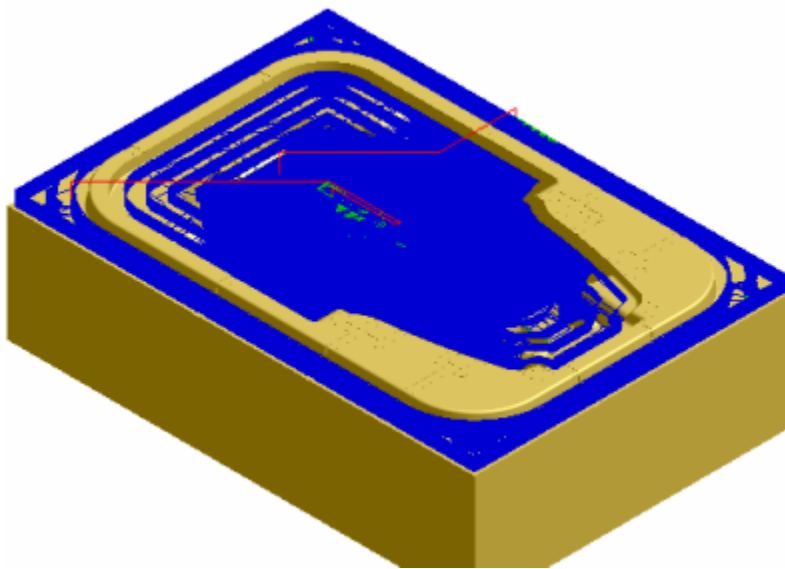
### Overview

Version 6.5 introduces support for multi-core processors to significantly improve the performance of Prospector when generating 3D NC programs. This release also includes important software corrections and customer-driven enhancements. This release summary will briefly review these changes to Prospector. Choose What's New from the Help menu for a more thorough introduction to this release.

### Multi-core Processor Support

Multi-core processors combine two or more independent cores (CPUs) into a single chip. Virtually all desktop systems available today are offered with dual-core processors from Intel and AMD. Quad-core systems with 4 execution cores are also available. To take full advantage of this extra processing capacity, application software has to be written allow for code to execute in separate threads or processes. This is precisely what has been achieved with this release of Prospector. The compute-intensive task of generating 3D programs is broken down into separate tasks that can execute independent of each other. For example a Z-Planar program with 120 levels executing on a dual-core processor will break up the job into 2 separate independent threads. The first thread would be responsible for calculating levels 1-60 while the other thread would work on levels 61-120. Because they are 2 separate threads and are executing on a dual-core processor, the work gets done concurrently. This provides a significant boost in performance especially for large programs with tight tolerances.

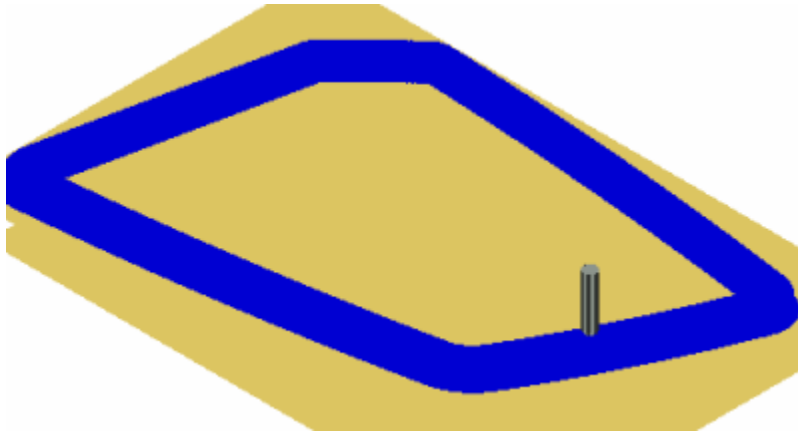
Here are 2 examples of the performance gains possible. Both are exhibits of actual customer-supplied programs processed on a Dell Precision 380 workstation (Pentium D dual-core processors 2.8Gz. with 2 GB RAM):



### Mold Roughing

Part: 64" X 44" X 18"  
Z-Planar With Clear  
Tool: 3.00-D-.250R  
Stock Allowance: .035  
Step Down: 0.1  
Tolerance: .005  
Levels: 90  
Machine Time: 12 hr. 1 min.

Generation Time:  
V6.4 – 22 Min. 5 Sec.  
V6.5 – 10 Min. 24 Sec.



**Electrode Finishing**

Part: 9-1/4" x 6" x 1.25"  
 Radial  
 Tool: 0.25 Ball  
 Stock Allowance: -.008  
 Step Over: 0.005  
 Tolerance: .0002  
 Machine Time: 1 hr. 16 min.

**Generation Time:**  
 V6.4 – 1 Min. 32 Sec.  
 V6.5 – 1 Min. 6 Sec.

In general, multi-core optimization produces much better performance for cases where the geometry is very complex, the programs are large and tolerances are tight. For smaller programs or simpler geometry, the performance is roughly the same or in some cases slightly worse because the overhead of managing multiple threads outweighs the benefits. Across a wide range of programs both small and large, from roughing to finishing, our test results show an increase in performance of roughly 30% on average for a dual-core processor.

When running in multi-core optimized mode, the memory (RAM) used during processing will be greater than previous versions because there multiple threads running concurrently during processing instead of just one. If you find that you are not achieving significant performance gains, use Task Manager to see if your system is in need of additional memory.

The machining strategies that have been optimized for multi-core processors are Z-Planar With Clear, Z-Planar No Clear, Box, Lace, Flow, Radial and Contour Machine. 2D strategies along with Rib, Scribe, Pencil Trace and Spiral are not affected.

*Does My Computer Support Multi-Core Optimization?*

In the Help/About Prospector... dialog there is information about your computer that will let you know if it can take advantage of this new feature:

Total Physical Memory:	523008 KB
Available Physical Memory:	126376 KB
Available Virtual Memory:	1898736 KB
Disk Space:	3787648 KB Free on C:
NC Generator:	Pentium® 4 Optimized
Number of Processors:	1
<input type="checkbox"/> Optimize performance for multi-core.	

**This computer has just 1 processor. It can't support optimizations for multi-core performance so the optimization switch is disabled.**

Total Physical Memory:	1047764 KB
Available Physical Memory:	396632 KB
Available Virtual Memory:	1561276 KB
Disk Space:	2355728 KB Free on C:
NC Generator:	Pentium® 4 Optimized
Number of Processors:	2
<input checked="" type="checkbox"/> Optimize performance for multi-core.	

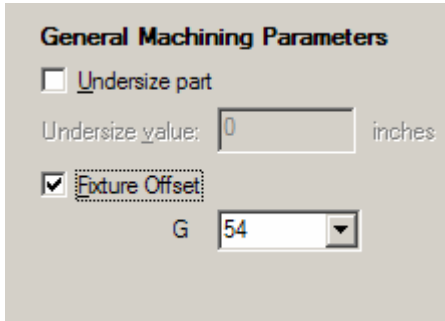
**This computer has 2 processors. It can and is by default operating in the optimal mode for processing on multi-core computers.**

By default Prospector will enable the multi-core processing feature if it detects that your computer has more than 1 processor. If for some reason you wish to disable multi-core optimization, simply disable the switch on the dialog.

## Enhanced CNC Support

### Fixture Offset Support

When a new setup is created, you now have the option to specify a fixture offset for your CNC machine.

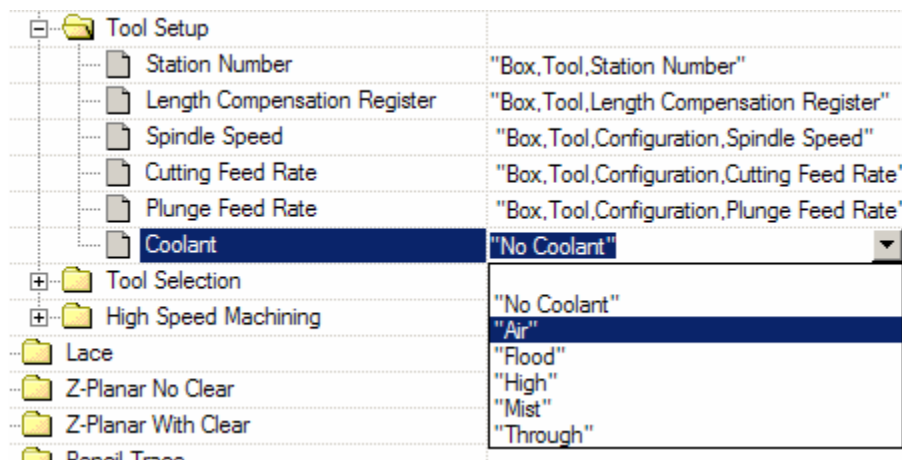


In the General Machining Parameters of the New Setup wizard, enable the switch Fixture Offset and specify which fixture offset you wish to use for the setup.

Every program you post-process within the setup will include this fixture offset information so that the post can output the appropriate G-code to the output file.

### Additional Coolant Options

More coolant options have been added for all program types (2D & 3D).

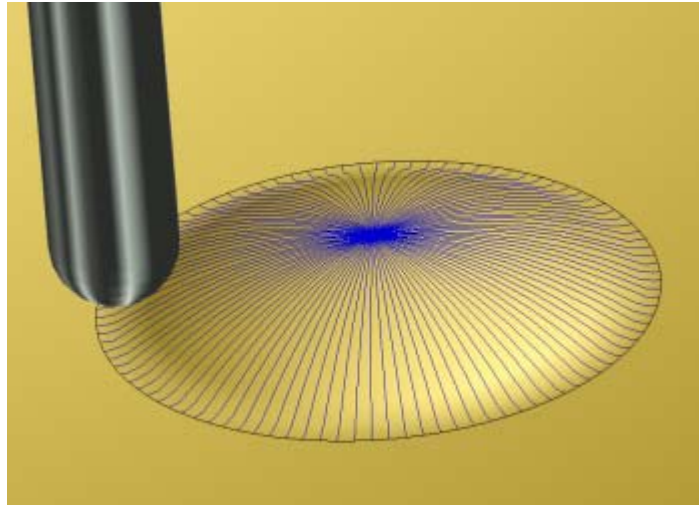


Coolant options can be set in your PowerSource database or on a program-by-program basis by choosing the coolant option on the Finish page of the New Program wizard. You may find it more convenient to setup your coolant use in PowerSource based the type of machining you're doing and the strategy (i.e. always use Through the tool coolant for plunge roughing).

The additional coolant types and use of fixture offsets may require revisions to your post processor(s). If you find the output missing or needing alteration, please contact Customer Service.

## Radial Machining

Radial machining has been enhanced to allow a single point to be used for the secondary curve. This is useful for cutting spherical shapes as shown below.



## Automatic Block Size Calculation

When a new project is created, the default size for the block is computed based on the part geometry. A new variable has been added to PowerSource under Application Settings called Block Oversize:

Configurations	Property	Value
[-] Cutting Strategy Selection	Arc Tolerance	0.001
[+] P20	Filter Surface Data	"No"
[+] Mild Steel	Filter Surface Tolerance	0.001
[+] Application Settings	Linear Interpolate Rapids	"Yes"
	Block Oversize	0.05
	[+] Program Editing	
	[+] High Speed Machining	

The default block size is calculated by finding the exact bounding box that encloses all the part data. Then this Block Oversize value is added to all sides of the box to arrive at the final default size.

## Maintenance – Software Corrections

In certain discrete cases for Z-Planar With Clearing, small interior corners of a level could be omitted on upper levels of the job during clearing. These areas would get cleared on a lower level thus causing the tool to enter a high concentration of stock possibly resulting in tool breakage.

When using spiral clearing with Z-Planar programs, certain cases of tool size and part conditions that resulted in numerous islands could cause excessive memory usage.

Very small radii for circular lead-in and lead-out for Z-Planar programs could cause a crash.

When using very small tools and tight tolerances, radial programs could skip areas of the bounding curve.

### **Customer Closed Track IDs**

Track is the electronic database system that records all customer and internally generated requests for corrections and enhancements. When you report a problem or request an enhancement, our customer service representatives will input your request into the Track system and give you a Track ID number. When we complete a release, we set the status on all records in the Track database that have been addressed to closed. In the table below is a listing of all Track items addressed by this release:

<b>ID</b>	<b>Customer</b>	<b>Synopsis</b>
2368	SofTech	Add an option to set the color of the block.
4219	SofTech	Add a block oversize setting for calculating the initial block size.
4329	JM Mold Inc.	Add additional coolant types.
5114	Grand Traverse Plastics	Add a block oversize setting for calculating the initial block size.
5512	Spartech Inc.	Add additional coolant types.
5983	SofTech	Enhance radial machining to be able to use a single point as one of the input curves.
6562	Spartech Inc.	Very small circular leads (.0005") can cause Prospector to crash when generating programs.
6565	MSI Mold Builders	Add additional coolant types.
6567	National Pattern	Some of the counter-bored holes in this Parasolid model are not being recognized.
6568	Mangas Tool & Die	Z-Planar program is not completely clearing some of the upper levels of this part.
6571	Strohwig Industries	Z-Planar program is not correctly machining the walls of this part.
6572	MSI Mold Builders	Add support for specifying fixture offsets (G54-G59).
6573	Mangas Tool & Die	Z-Planar program is not completely clearing some of the upper levels of this part.
6574	Oakwood	Z-Planar program runs the computer out of memory during spiral clearing.
6575	National Pattern	Z-Planar program is not completely clearing some of the upper levels of this part.
6576	MSI Mold Builders	Radial program is missing cuts along the curves in some areas of the program.
6577	SofTech	Missing "What's This?" help for some items in UI.