University of Michigan
Space Physics Research Laboratory

TIDI	CAGE No.	0TK63
Instrument Language Compiler	Drawing No.	055-3634
	Project	TIDI
Installation and Usage Guide	Contract No.	NASW-5-5049
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REVISION RECORD

Rev	Description	Date	Approval
A	Official Release	4 Jul 1998	

APPROVAL RECORD

Function	Name	Signature	Date
Originator	S. Rowe		
Software Manager	D. Gell		
Flight Software	S. Musko		
Instrument Scientist	W. Skinner		
Program Manager	C. Edmonson		
Systems Engineer			
R&QA	John Eder		

Table of Contents

1. References

1. Musko, S., "TIDI Flight Software Requirements Specification", SPRL File 055-3320, 15 January 1997

2. Gell, D., "TIDI Instrument Command Language Compiler Specification and User's Guide", SPRL File 055-3564, 5 May 1998

2. Installation

The TICL compiler is distributed in the form of a UNIX TAR file, ticl.tar. To install the compiler and its accouterments, follow the following steps:

1) Change directory to the root of the place that you want to install the source, test, data and documentation directories.

2) Untar the file using the UNIX command

```
tar -xf ticl.tar
```

3) Change directory to the source directory

4) Copy the correct Makefile for your platform into Makefile. For example, for HP-UX, give the command **`cp Makefile.hpux Makefile`** or **`ln –s Makefile.hpux Makefile`**

5) Build the executable using the UNIX make command. Note that there should be no errors or warnings produced during compilation. HP-UX will produce a warning that the compiler may not be compatible with older versions of the operating system. This is okay.

6) Move the executable into a place where the users can access it. We recommend **`/usr/local/bin/`**

7) Define the environment variables that are needed by the compiler:

INSTRUMENT_PARAMETER_FILE needs to point to the tab-delimited text version of the instrument parameter spreadsheet. A current version of the spreadsheet file can be found in <installDir>/data/iptab.tbl

TICL_CONFIG_FILE needs to point to the file containing the semi-constants. See the section below on the contents of this file. A current version of the configuration file can be found in <installDir>/data/config.dat.

Typically, these environment variables are defined in the user's .cshrc, .bashrc or .profile file. You can either define them to point to the files provided, or you can move the files to a common place (e.g., /usr/local/data) and set the environment variables appropriately.

8) Change directory to the test directory

9) Check that the compiler is properly configured by compiling a large example program:

```
ticl everythingGood
```

There should be no errors or warnings produced by this command. If there are, make sure that you have defined both of the environment variables from step 7 correctly.

10) Install the control versions of the test software with the following command:

```
perl makeBaseline.pl
```

This command will compile all the ticl test suite programs and install them into either the goodStuff/ or badStuff subdirectories of the test directory. **It is very important that these files pass an inspection to verify that they are correct**.

10) Run the test suite with the following command:

```
perl ticlTest.pl
```

If there are any errors, then there is a problem with the installation.

3. Usage

To get complete usage information, run the compiler with the -help flag:

```
ticl -help
```

Appendix A, The TICL_CONFIG_FILE

The environment variable TICL_CONFIG_FILE points to a text file containing certain values that may change over the course of the life of the instrument. If the environment variable is not defined, then the compiler will produce a warning and use the default values indicated below. We recommend that this file is stored in a publicly accessible place like `/usr/local/lib/ticlConfig.dat`

The actual contents of the file are described (in order) here. If new data needs to be stored in it, the TICL compiler source files ticlConfig.* will need to be changed accordingly.

Item	Format	Default Value	Units
fw1Rate	double	50	MS per delta position
fw1Constant	double	100	MS
fw2Rate	double	50	MS per delta position
fw2Constant	double	100	MS
Elevation Offset	double	20.35	Degrees
SC Altitude	int	625	KM
Default FW position	int	1	Wheel position
Default elevation	double	23.0	Degrees
Settling time	int	40	MS
telescope M0	double	40.555	
telescope M1	double	66.594	
telescope M2	double	-7.6119	
telescope M3	double	1.0158	
telescope M4	double	-0.057214	
telescope M5	double	0.0011393	