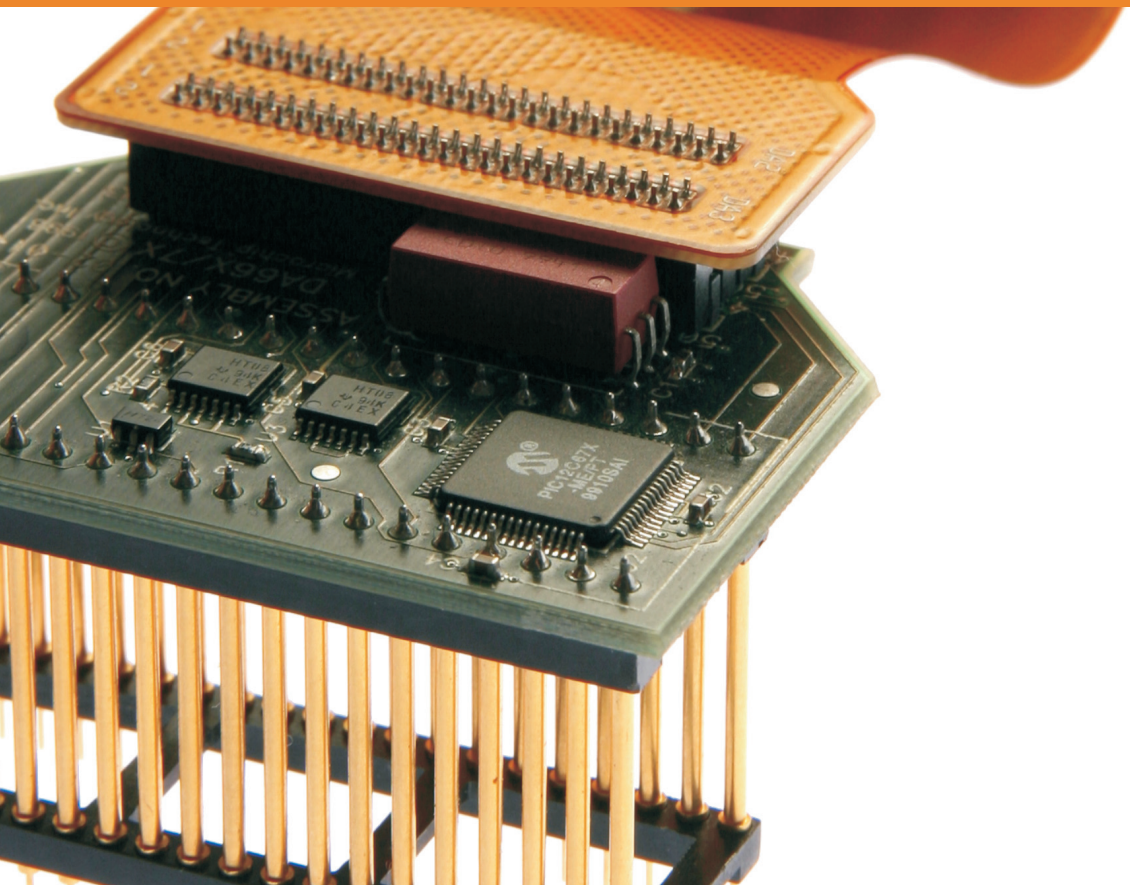
HI-TECH
SOFTWARE

PICC™ STD

ANSI C COMPILER



HI-TECH PICC STD
Version 9.60PL1 Release Notes

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THIS FILE CONTAINS IMPORTANT INFORMATION RELATING TO THIS COMPILER. PLEASE READ IT BEFORE RUNNING THIS SOFTWARE.

Chapter 1

Introduction

1.1 Description

This is a patch level update for version 9.60. It provides fixes for reported bugs and adds support for any new devices released during the interim period.

1.2 Notes

Please note that the version 9.xx command line driver has a different format for options compared with previous versions. Please refer to the user manual for details on using the command line options. During the transitional period, the new command line driver will accept the old-style options, but this should not be relied upon for future versions.

1.3 Previous Versions

This compiler succeeds PICC STD v9.60 which was released in March 2007.

Chapter 2

New Features

2.1 General

New Processors (9.60PL1) Support for these processors have now been added: 12F519, 16HV785, 16F882.

New Processors (9.60) Support for these processors has now been added: 16F610 and 16HV610.

MPLAB plug-in (9.60) This version of the compiler will install a new revision of the compiler's plug-in for Microchip's MPLAB IDE. This plug-in is suitable for use with all version 9.xx compilers. Once installed, a new selectable language toolsuite will appear. Set the toolsuite to *HI-TECH Universal ToolSuite*. This toolsuite can be used to compile projects using version 9.xx PICC, PICC-Lite, PICC-18 and dsPICC compilers.

Off-line activation (9.60) It is now possible to perform an off-line activation for Mac OSX and Linux versions of the compiler.

New Processors (9.55) Support for the latest processors has been added (12F609, 12HV609, 12F615, 12HV615, 16F616, 16HV616, 16F631, 16F667, 16883, 16F884, 16F886, 16F887).

2.2 Driver

–ECHO option (9.60PL1) The option will echo the command line given to the driver. This can be useful if the command line is generated and being run by an IDE or other build process.

–CHECKSUM option (9.60) This new option can be used to generate a checksum over the contents of an address range and store the result at a nominated address location. The result can be stored in program memory or EEPROM. Sample code has also been provided to demonstrate runtime verification of this checksum.

–RUNTIME=+RAMTEST (9.60) Adding this option to the driver during the link stage will build in a simple checkerboard RAM test to verify the integrity of each cell of general purpose RAM in the targetted device. The tests performed are contained within the library routine `__ram_cell_test`. This module can easily be replaced with a user-defined implementation if the default cell test is insufficient for requirements.

_HTC_EDITION_ (9.60) The driver now defines a new preprocessor symbol to identify whether the compiler in use is a PRO, Standard or Lite edition. The value of `_HTC_EDITION_` in each case is 2, 1 and 0 respectively. Source that tests the value of this symbol can compare against these values or against symbols `__PRO__`, `__STD__` or `__LITE__` definitions in htc.h.

–RUNTIME=+DOWNLOAD (9.55) Adding this option to the driver during the link stage will generate a program that has particular enhancements that make the program more suitable to be dowloaded to a device via a pre-installed bootloader.

Input HEX parameters (9.55) Intel HEX files listed on the driver's command line get merged with the compiled output via Hexmate. Now the driver permits Hexmate's additional specifications to the the input file such as address range restriction and address shifting. As the additional specifications are passed directly to Hexmate they should conform to Hexmate's expected syntax. For example the input `0-ff+1000,generic.hex` will restrict the data being read from generic.hex to that contained between addresses 0 and FFh and merge this data at an address which is shifted up by 1000h.

–SETOPTION enhancement (9.55) From version 9.55, `--SETOPTION` option allows an option file to be passed to any of the intermediate applications employed in the project compilation process. Now, an intermediate application can be dropped from the build process by passing *off* as the file parameter to the application. Note that only Clist and Hexmate are considered non-critical to the build process. Turning off any other application will cause the build to fail.

–FILL=hexcode,data (9.55) Hexmate's -FILL=hexcode,data enhancement is available from the driver's –FILL option. For more details on the ,data enhancement read Hexmate's new features below.

Memory symbols (9.55) New preprocessor symbols are defined by the driver to define the ammount of program memory and EEPROM memory. These symbols are named `_ROMSIZE` and `_EEPROMSIZE` respectively. These symbols are also consistent with the PICC-18 compiler to allow from greater code portability. The existing definition of `EEPROM_SIZE` will be retained

for backward compatibility but is not as portable. Where possible, use the newer _EEPROMSIZE symbol instead.

2.3 Libraries

New routines __ram_cell_test / ram_test_failed (9.60) This routine has been added to the compiler library. These routines are not intended to be called directly from user code but will be called from the generated runtime startup code is to include a RAM integrity test. The cell test will be called repeatedly for every address in general purpose RAM. If the cell test detects a failure on the RAM cell, it can pass the failure code to the failure handling routine. Being library routines, a user can replace either of these routines with more sophisticated implementations to suit their needs.

2.4 Header files

ADGO SFR bit (9.60PL1) For those devices which define the bit ADGO in the ADCON0 register, an alternate definition, GODONE is now available. This definition should be used in cases where code might expected to be compiled on a variety of chips as this definition is more commonly used in newer devices.

_HTC_EDITION_ identifiers (9.60) The header file htc.h now provides definitions for the possible values that the preprocessor symbol _HTC_EDITION_ could contain. The possible values of this symbol are __PRO__, __STD__ and __LITE__.

__IDLOC7() macro (9.55) A new macro defined in pic.h permits programming of up to seven bits per ID location. This macro should ONLY be used on those devices which support seven bit ID location programming. Other devices should continue to use __IDLOC().

2.5 Hexmate

-ADDRESSING (9.60) This new option will allow the address fields in all input options to be entered in an addressing format other than byte addresses. This is particularly advantageous for the PICC compiler as the program memory is word addressed (use -ADDRESSING=2).

-FILL=hexcode,data (9.55) The -FILL option now accepts additional flags to further customize how a fill code will be applied to unused program memory. The first (and only) flag implemented is ,data. Adding this to the -FILL command will restrict the program filling to act only on areas of program space that already contain data. This facility will cause the records

of the generated output file to all be of the same length and to all align on addresses which are a multiple of that length. No new data records will be generated for regions of program memory that are void. The default length is 16 bytes and can be changed with the `-FORMAT` option. Intel hex files that have been conditioned in this way are optimized for bootloaders.

Data record length (9.55) Now the maximum length of an INHX data record has been increased from 32 to 128 data bytes. The default maximum length of a data record still remains at 16 bytes.

Checksum algorithms (9.55) Previously checksums would only be calculated using an 8 bit summation algorithm. This option has now been enhanced so that one of eight simple algorithms can be selected to perform the computation.

Checksum endianism (9.55) You can now control whether multi-byte checksum result be stored in little-endian or big-endian format. When specifying the width of the checksum, use a negative width to specify little endian format. If no width is specified, the default result will be two bytes wide stored in little endian format.

No output option (9.55) It is now permissible to use the `-O`*`filename`* option without specifying a filename. Leaving *`filename`* blank will suggest that no hex file will be generated. This is useful if hexmate is being used purely for its diagnostic abilities. For example verifying hex file integrity or creating a logfile summary. This is different from not specifying the `-O` option at all, which will send the generated output to *stdout*.

2.6 Sample code

Checksum verification (9.60) A new sample is available that demonstrates how to calculate a checksum over code space and verify this result against the executable's built-in result which was calculated at compile time using the driver's `--CHECKSUM` option.

Bootloader version 3.11 (9.55) An updated bootloader is now distributed. The new bootloader works across a greater range of baud rates, is more reliable, can be compiled into an even smaller code footprint and is simpler to use than the previous bootloader. Combined with other features in this toolsuite release, download applications are no longer required to implement a dummy interrupt routine.

Chapter 3

Changes

3.1 Driver

Driver option `--CHAR` (FUTURE) This option is expected to be discontinued in the the next minor version update. This option is used to change the signed characteristic of the `char` type when this has not been made explicit in the variable's definition. It is recommended that projects using this option, discontinue the use of this option. If using `--char=unsigned`, simply drop this option as the undesignated `char` will default to `unsigned` in this compiler. If using `--char=signed` then any undesignated `char` should be explictly defined as `signed char`.

Driver option `-O` (9.60PL1) If this option was used to specify a path for the generated output files AND the `--OUTDIR` directory specified a path for output files, it was ambiguous which would take precedence. Similarly, if `-O` was used to specify a file format by using a file extension AND `--OUTPUT` was used to specify a file of a differing format, this too would be ambiguous. In light of this confusion, the functionality of `-O` has now changed. Any file extension specified to this option will be ignored. Should the paths specified to `-O` and `--OUTDIR` differ, this will now produce an error.

Startup clearing code (9.60) The generated startup code for clearing bit types and uninitialized variables contains more comments to better describe the memory clearing process.

Address ranges in –FILL and input.hex (9.60) Previously any address range fields defined in a `--FILL` option or when selecting a specific range in an input hexfile had to be entered as byte addesses (which mean multiplying each program address by two). Now address fields are

required to be entered as word addresses which corresponds to the processor's natural form of addressing.

MPLAB_ICD symbol (9.60) The defined preprocessor symbol `MPLAB_ICD` is being phased out. The replacement symbol `__MPLAB_ICD__` is now defined and performs exactly the same duty. The new symbol provides better standards conformance and portability across into PICC-18 and dsPICC toolsuites. For a time the old symbol will continue to be defined for maintenance of existing projects, however new projects should not refer to the old symbol.

–MAPFILE option (9.55) This option provided duplication of the `-M` option's functionailty. It has now been removed. Any project which currently uses `--MAPFILE` should now use the equivalent option, `-M`.

EEPROM_SIZE (9.55) A new driver defined preprocessor symbol, `_EEPROMSIZE` supersedes the previous `EEPROM_SIZE` definition. Existing `EEPROM_SIZE` definitions will be retained for maintenance of older projects, however it is advised that new projects should use the `_EEPROMSIZE` symbol.

3.2 Assembler

Object file format (9.55) The object file format has changed since version 9.50 (which used version 3.7). The new object file version is 3.8. The consequence of this is an object file compiled from the version 9.60 toolsuite cannot be linked by the version 9.50 (or prior) toolsuite. However objects compiled by a version 9.50 toolsuite can be linked by the 9.60 toolsuite. If you are distributing objects or library files containing objects compiled by the version 9.60 compiler, be aware that if your customers are using a lesser version of the toolsuite they may also need to obtain an updated linker.

3.3 Hexmate

Input file specifications (9.55) Special conditions for input files such as range-restriction and address shift were requested with the command line syntax *filename,<specs>*. Now the specifications are to be listed before the filename ie. *<specs>,filename*.

Default checksum endianism (9.55) Previously calculating a checksum to store a result of unspecified width, the default result width would be two bytes and the bytes stored in big-endian format. Now the default result will be stored in little-endian format. To select the old behaviour, specify a width of two by adding `w2` to the `-CK` option.

3.4 Chip configuration file

New attributes (9.55) The following new attributes have been added to the chip configuration file to better describe various devices:

- FLASH_READ Defines the number of program words that are read upon an execution of a read from flash memory. Defaults to zero if unspecified.
- FLASH_WRITE Defines the number of words that are transferred to flash memory during execution of a single write to flash. Defaults to zero if unspecified.
- FLASH_ERASE Defines the number of program words that are erase upon execution of a single flash erasure operation. If unspecified, defaults to the FLASH_WRITE value.
- CONFIG Define an address range for device configuration registers if this device differs from the default for that architecture.
- IDLOC Define an address range for user ID locations if these locations differs from the default for this architecture.

3.5 Libraries

pic???-p.libs (9.55) These libraries which contain the routines used for writing to flash have been further classified to describe new PIC variants that employ new techniques for writing to flash. This has allowed further optimization of the flash writing routines for some devices.

3.6 Sample code

PICDEM2+ (9.60PL1) Some changes have been made to this project so that the effective precision of the A2D result has been reduced and reduces noisey samples sending spurious updates to the screen. Also changed the reference to SFR bit `ADGO` to `GODONE` as this is more portable.

PICDEM2+ revision 6 (9.60PL1) Also added preliminary support for building this project for the PICDEM2+ revision 6 board. If compiling for the revision 6 board, define the preprocessor symbol `_PICDEM2_REVISION_` to be 6.

3.7 Documentation

New readme layout (9.55) As the content of the readme file has increased in recent releases, the style of this document has been enhanced to include more formal sections for easier navigation. The PDF version of the readme document now includes bookmarks.

Chapter 4

Limitations

4.1 General

PIC16F59 banking This baseline device implements eight selectable banks of general purpose RAM. This compiler only supports accesses into the first four.

PIC12F519 data flash This baseline device implements 64 bytes of data flash from address 400h to 43Fh. Presently the compiler does not include any facility to access this memory range.

4.2 Preprocessor

Incorrect result for sizeof The result of the `sizeof` preprocessor operator when applied to a pointer will always return 1. Use of the C sizeof operator will return the correct value.

4.3 Parser

Missing parenthesis not detected A missing end parenthesis is not detected in variable declarations when the variable is type cast. For example,

```
static char C @ ((unsigned)&PORTA;
```

This problem does not appear to affect any output code, but may cause problems when using third-party software tools.

Qualified arrays generate error The compiler generates an error when compiling complicated qualified arrays, e.g.:

```
const char * const * const listnames[] = {menu0, menu1};
```

The error is not issued if the array is not qualified, or for arrays of more basic types.

Structure initialization Locally defined structures cannot be initialized.

Divide-assign/Modulus-assign by over-sized constant Using the `/=` or `%=` operators to assign a quotient or remainder to a variable, where the divisor in the operation is a constant value which exceeds the maximum capacity of the resultant data type will parse incorrectly and could result in an error. If the division and the assignment appear as two separate operators, the problem does not occur. eg.:

```
unsigned char x;   // maximum value for this data type is 255
unsigned int y;   // maximum value for this data type is 65535
x /= 9999;   // Div-assign with over-sized constant, result may be in error
y /= 9999;   // Constant is within capacity of 'y', will parse correctly
x = x / 9999;   // Assignment, division separate, will parse correctly
```

4.4 Code Generator

Functions returning ROM structure For Highend devices (17Cxxx), a function cannot return a copy of a structure which resides in ROM.

Indirect function calls For Highend devices (17Cxxx), certain indirect function calls with more than one byte of argument may produce incorrect code. Indirect function calls should not be used on Baseline devices.

Functions as arguments to printf The argument list to printf or sprintf should not include function calls. For example,

```
printf("x = %f, sin(x) = %f\n", x, sin(x*3.141592/180.0));
```

This code demonstrates a workaround:

```
y = sin(x*3.141592/180.0);
printf("x = %f, sin(x) = %f\n", x, y);
```

Error on initialization of complex structures Any structure using structures within a structure or union cannot be directly initialized. For example, using the following types where a structure is a member of a union, initialization of the structure's bitfields will generate an error.

```
typedef struct {
    unsigned b0:1, b1:1, b2:1, b3:1, b4:1, b5:1, b6:1, b7:1
} byte_bits;
typedef union {
    byte_bits    bits;
    char         byte;
} byte_or_bits;
```

This will generate a compiler error:

```
byte_or_bits example = { {1,0,1,1,0,1,0,0 } };
```

Instead, use a single value:

```
byte_or_bits example = { 0b10110100 };
```

Multiple block variable declaration Functions which have variables declared within multiple blocks where code within the block requires the use of temporary memory, may get corrupted when compiled with global optimizations. A workaround is to move the inner variable declaration outsize of the block.

Void pointer size Void pointers are one byte in size and may not be large enough to point to all objects.

4.5 Libraries

Minimum floating point value The floating point math libraries cannot perform operations predictably on numbers below the order of `1e-35`. The result is either correct or zero.

Chapter 5

Bug Fixes

The following are descriptions of bugs that were present in the previous version(s) of the compiler and have been fixed in this release.

5.1 General

Product activation (9.60PL1) (Windows only) Some installed compilers became unusable after certain Microsoft Windows system updates had been installed. Some compilers installed on the Windows XP operating system de-activated, reporting that they were not installed correctly after the updates had been applied. Although the problems were only exhibited on the XP operating system, compilers installed on other variants of Windows could have potentially de-activated in the same way.

5.2 Driver

Memory clearing (9.60PL1) In rare circumstances, compiling a project for a midrange PIC with no common memory may have generated defective startup code. If this circumstance had occurred, it would have been easily detected as the program would have not been able to reach the start of `main`.

Overlap idata_0 (9.60PL1) If compiling for some baseline devices, link time warning number 596 may have been generated claiming that segment `idata_0` had been overlapped. This has now been fixed.

Psects in COMBANK class (9.60) Psects to be linked in the COMBANK memory class may have missed out on allocated space if psects linked in the overlayed BANK0 class had already filled the COMBANK address range. This resulted in a *Can't find space...in segment COMBANK* linker error. Now the psects of the COMBANK class have first priority when being linked so that this scenario is now avoided.

Memory clearing in BANK0 (9.60) In rare circumstances the clearing of memory in bank 0 may not have occurred on some Baseline or Midrange PIC devices. This scenario was dependant on the size of various psects. This event may have been triggered if the size size of `rbit_0` psect was greater than zero bytes AND the size of the `COMBANK` class minus `temp` psect was greater than the size of `rbit_0` psect but less than (`rbit_0` plus `rbss_0`).

10F222/0 ID locations (9.60) The user ID locations were being linked at the wrong address for the PIC10F220 and PIC10F222.

PIC17 reset bits (9.60) The `--runtime=+resetbits` feature used to save the reset condition indicator bits during startup, saved the wrong bits for PIC17 devices.

Indirect access in PIC17 (9.60) In some cases (also dependent on potential optimizations occurring later in the build process), indirect data access would not have worked for PIC17 devices.

Language fallback (9.55) If the compiler generated a message in a language other than English, for which the languages messaging file contained no translation, the English message should have been generated. This was not happening. Instead, the result would be an error claiming, *An error, warning or message was generated, but no description is available*.

Interrupt context with 16F873/4 (9.55) Fixed a problem that affected only the 16F873 and 16F874 devices where their W register could be corrupted during and interrupt if being debugged with the MPLAB ICD2.

PIC17 linker options (9.55) A number of issues have been found in the driver generated linker options when compiling for PIC17 series devices. These issues may result in *Can't find space* messages relating to common memory; or wrongly positioned psects which may cause erroneous program behaviour.

Powerup psect (9.55) An issue has been found concerning the placement of the powerup psect. When defined, this psect may overlap with others generating an error message from the linker.

Memory summary (9.55) The percentage values displayed by the driver after successful compilation are sometimes incorrect. The values displayed in the map file are valid.

Linux activation (9.55) When using a system language setting under Linux (say through the `LANG` or `LANGUAGE` environment variables), all activations will fail.

5.3 Code Generator

Bank selection near shift (9.60PL1) A bank selection may have been avoided (by conditional execution paths) near a left or right shift of a banked variable where the result of the shift was not assigned back to the variable, but used as part of a larger computation. eg. `charvar1 = charvar2 ^ (bankedchar>>1);`

Inefficient code for 80000000h (9.60PL1) Some statements that used the constant value 80000000h resulted in particularly inefficent code sequences to be produced. The generated code would have worked but was costly in terms of program memory.

Reading eeprom-qualified variables (9.60PL1) In multi-bank devices, attempts to read the contents of *eeprom* variables while a bank other than zero was selected may have returned an erroneous zero value.

IRP selection across function call (9.60PL1) If code required an indirect data access immediately before and immediately after a function call, the second access would reset IRP to the selection required for the first access. This caused a problem if the two accesses were to differing sides of the 100h address boundary.

Pointer to signed long (9.60) Fixed a *Can't generate code error* that resulted from a code sequence that looked like this:

```
if((*signedLongPointer += constant) == x)
```

Copying of const structures (9.60) Copying the contents of a structure in program memory to a structure in RAM would generate a *Can't generate code* error if the structure was greater than 4 bytes in size. This has now been fixed.

Pointers to const structures (9.60) Fixed a *Can't generate code* error that resulted from an increment or decrement of a pointer to a structure in program memory if the structure was greater than 255 bytes in size.

if(temp32>>24 != x) (9.60) Testing the result of a 32 bit variable right-shifted by 24 bit positions returned the wrong result. This was only the case where the result from the right shift was used for comparative purposes. Assigning the value of this right-shift to a variable may have assigned a correct value.

Bit assign bank selection (9.55) Corrected the following scenario:

```
static bankX bitX1,bitX2;
static bankY bitY;
bitX1 |= bitY; // if bitY==0, bankY remains selected
bitX2 = 0;    // assumed bankX was selected, assignment failed
```

Bitfield inversion (9.55) A syntax error may be generated when a single bit bitfield is XORed with 1 and written back to itself in the structure.

Can't generate code for function pointers (9.55) The following code will incorrectly cause a CGC error:

```
void (*func_ptr)(void);
void main(void){
   (*func_ptr)();
}
```

5.4 Assembler

IORLW 0 removal (9.60) In some cases this instruction is used to assert the Z status flag based on the contents of the working register. If a `CLRF` instruction appeared between the `IORLW` and the instruction that actually loaded the working register it was possible that the `IORLW` would be optimized away erroneously.

MOVF x,W removal (9.60) An optimization that removed a `MOVF` *x*`,W` instruction when the working register was known to already contain the same value as *x* should not be performed if *x* was `INDF`.

Unknown op `else/elsif` (9.60) The assembler did not recognise these directives and would produce an *unknown op* error if used.

Crash on `endm` (9.60) In rare cases, the assembler optimizer would crash if the source contained an `endm` directive. Whether the crash occured or not was dependent on the code sequences that surrounded the directive.

IRP removal (9.55) A bug in the assembler may incorrectly remove instructions that clear the `IRP` (indirect data access) bit prior to accessing the `INDF` register. This bug will only occur for code that indirectly accesses objects in bank 2 or 3; that is compiled with the assembler optimizer enabled; and contains a code sequence that sequentially clears, sets then clears again the `IRP` bit, however not all such code sequences will trigger this bug.

Removal of bank selection instructions (9.55) Several instances of the assembler optimizer removing instructions that select the required RAM bank have been found and corrected.

ORG directive (9.55) The ORG directive was not being processed correctly. Although correctly displayed in the assembler list file, the output following the directive was not being offset by the specified amount.

5.5 Parser

#pragma regsused (9.60) This pragma was broken in the beta release (version 9.55) and has been corrected.

Structures in unions (9.55) Initialization of a structure that was the first member of a union would result in unnecessary errors. This initialization is now possible.

5.6 Preprocessor

Numbers adjoining definitions (9.55) When a number immediately preceded a preprocessor-defined symbol, and the two were not separated by white-space, and the preprocessor symbol started with the characters A-F, the preprocessor would fail to expand that symbol.

5.7 Linker

Linker % operator produces incorrect address (9.55) The % operator in the linker options which can allow placement of a psect at an address being a multiple of the % operand does not always work for some values of the operand.

5.8 Libraries

16F688 EEPROM routines (9.60PL1) The eeprom access functions would not have worked if compiling for the 16F688 device. The equivalent macro forms would not have been affected.

Fixup errors in persist.c (9.55) When a persistent psect was linked at the top of a RAM bank, fixup errors may be produced for the `__Hxxx` style symbols used in these routines.

5.9 Header files

pic16f685.h (9.60PL1) Definitions for SFR bits SSPIE and SSPIF were not visible for the 16F677 device.

5.10 Hexmate

-STRING crash (9.55) In some cases when -STRING was used incorrectly, Hexmate would crash rather that producing an error.

-FIND did not find (9.55) It was possible for the -FIND feature to fail to detect a particular code sequence if the opcode spanned over an address which was a multiple of 64.

Used memory log (9.55) If generating a logfile, used memory summaries may have included large ranges of unused memory. For this to occur a hex data source needed to have a segment of data aligned up to an address which was a (multiple of 64) minus 1, and the next address used was a multiple of 64 and was from the same hex data source. This did not affect the generated hex file in any way, only the used memory summary for that data source (in the log file) was affected.

32-Bit Checksums (9.55) If generating a 32 bit wide checksum, the result would always be zero.

Extra extended record (9.55) If a data record was being output and it was to be less than the maximum length of a data record and the record is followed by an extended address record specifying a +2 upper-address shift or greater, the first data record would be preceded by an erroneous extended address record.

5.11 Chip Configuration File

16F882 EEPROM (9.60PL1) The 16F882 has only 128 bytes of EEPROM but the device file detailed that it had 256 bytes. This has been corrected.

ICD2 ranges (9.60PL1) The ICD and/or ICD2 reserved memory resources were incorrectly defined for the 16F627A, 16F628A, 16F685, 16F689 and 16F690 devices. The reserved memory resources were not defined for 16F610, 16HV610, 16F616 and 16HV616.

Chapter 6

Addendum

6.1 Microchip errata

Refer to Microchip's website to there are any known errata issues relevant to the device that you are targeting.

6.2 Updates

Monitor HI-TECH Software's web site or subscribe to *Announcements* on HI-TECH Software's on-line forums for information relating to new versions or patches. Intermediate fixes to issues reported within this release will be posted to the *Known issues* forum relevant to this compiler. Note that the known issues will only be accessable to forum users once they have logged-in.