RENESAS Tool News

RENESAS TOOL NEWS [August 16, 2003: RSO-M3T-NC308WA_1-030816D]

A Note on Using C Compiler M3T-NC308WA

Please take note of the following problem in using the M3T-NC308WA C compiler (with an assembler and integrated development environment) for the M32C/80 and M16C/80 series MCUs:

- On calling a function indirectly

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1. Versions Concerned

M3T-NC308WA V.5.00 Release 1 and V.5.10 Release 1
for the M32C/80 and M16C/80 series MCUs

2. Description

When a function is called indirectly, the data saved at the beginning of the calling function on the stack may not be recovered at its end.

2.1 Conditions

This problem occurs if the following four conditions are satisfied:

(1) Either of the -OR and -OS optimizing options is used.

(2) A function is indirectly called immediately before the return statement in or the end of the calling function.

(3) The function to be called has no arguments passed to the stack.

(4) The calling function has no AUTO variables on the stack.
(If all the AUTO variables declared in the program are deleted by optimizing functions, this condition is met.)

2.2 Example

```
------------------------------------------------
  void (*func)(void);
  long sub1(void);
  void sub2(void);

  int  i;

  void sample(void)
  {
   long  l;      /* Condition (4): variable l is deleted by
                    optimization because it is not referenced
                    after a write to it. */
   func = &sub2;
   l = sub1();
   (*func)();      /* Conditions (2) and (3) */
  }

  void sub2(void)    /* Condition (3) */
  {
   i = 100;
  }
------------------------------------------------
```

3. **Workaround**

Place a dummy asm function immediately after an indirect call to a function within a calling function.

```
------------------------------------------------
  void (*func)(void);
  long sub1(void);
  void sub2(void);

  int  i;

  void sample(void)
  {
   long l;

   func = &sub2;
   l = sub1();
   (*func)();
   asm();     /* Dummy asm function */
```

```
}

void sub2(void)
{
  i = 100;
}
```

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4. **Schedule of Fixing the Problem**

   We plan to fix this problem in our next release of the product.
