

S E R V I C E N O T E

SUPERSEDES: NONE

5071A Primary Frequency Standard**Serial Numbers:** 3132A00101 / 3228A00179**Unusual Power-Up sequencing can cause pseudo “Fatal Error” message****Introduction:**

The 5071A has extensive microprocessor control over all the hardware functions critical to the operation and maintenance of the instrument and its internal assemblies. One of the most critical assemblies is the Cesium Beam Tube (CBT). The microprocessor has an exacting algorithm to monitor and operate this assembly. In addition, there are several health monitors that execute several times per second and check to see if the CBT is operating properly. If not, the microprocessor usually shuts down the CBT in order to protect it against damage.

One of the critical parameters monitored by the microprocessor is the internal oven temperature of the CBT. This cannot be allowed to run past its upper limit, or the Cesium in the CBT will be consumed long before its useful life. Such an over-temperature condition is carefully monitored.

In the power-up algorithm, the microprocessor checks the CBT oven temperatures as it warms up and verifies that it begins to cut back at the proper point. This must occur before the instrument can lock up.

Continued

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ADMINISTRATIVE INFORMATION

SERVICE NOTE CLASSIFICATION:

INFORMATION ONLY

AUTHOR:

ENTITY:

ADDITIONAL INFORMATION:

DC

0200

Symptoms:

Under normal turn-on conditions, it is very unlikely for any problems to occur.

However, when servicing or troubleshooting the instrument, this error could show up under the following conditions:

1. The battery is disconnected (wires physically disconnected).
2. The power is removed and re-applied during certain phases of the power-up sequence.

If the error message “Fatal Error: CBT Oven Overrange” occurs, this is not necessarily a fault.

Theory:

There is a critical phase in the power up sequence where the CBT Oven temperature is above its optimum point just prior to cutting back. If power is interrupted at this point and the power then re-applied, the oven voltage could be set to zero since the CBT oven temperature is too hot. If the locking sequence finishes before the oven gets cool enough to require any oven voltage then a Fatal Error will occur, and the instrument would be placed into a Fatal Error mode.

Solution:

If this error occurs under the same or similar conditions noted above, Do the following:

1. Disconnect power from the instrument.
2. Allow 1 or 2 minutes to elapse, allowing the CBT oven to cool down.
3. Re-apply power.

If the problem does persist, or occurs under normal operation, then refer to other documentation for service information.

Since this problem does not occur under normal operating or initial startup conditions, no future corrections are planned or suggested.