21 December 1990

To: HAL Staff
Re: Hardware Inventory

As part of the configuration management plan for the ST-8000A, I have been forced to review our previous hardware inventory procedure. "Confused" is the kindest description I can give.

To this date, the HAL inventory procedure for screws, nuts, washers, and "miscellaneous" hardware has been to bulk-purchase the required items and treat them as "production supplies". Such hardware was not assigned HAL part numbers, not entered into the inventory computer (at least not prices or quantities), and usually not included on assembly and sub-assembly parts lists. Screws, nuts, and washers are very low-cost per-piece items and the assumption that costing and counting were not cost effective is still a valid statement. However, the lack of part numbers and assembly parts-list inclusion has created a great deal of confusion. In particular, lack of inventory management and uniform design criteria for hardware has caused:

    1. Inventory of a multitude of similar but different variations on what may have been assumed to be the "same part". For example, we presently stock many variations of similar screw size/length/head/color combinations, some used on only one product.

    2. Maintaining stock of any given item has been "hit-and-miss" - items are ordered only when "someone" notices that the bin is empty. Too often, the "bulk stock" has also been depleted and we must then rush-order small-quantity stock, or revise production procedures to use "similar" parts that are in stock.

    3. Many items were purchased in very large quantities, used on one product, and then forgotten with the result that we now have many "strange" hardware items that are not used.

    4. When re-ordering, one or more parameters have been confused with the result that a slightly different item is received, probably useful in one product, but possibly not in others. This is particularly true in regard to screw head style and color. Binder, Pan, and Truss screw heads are not the same, but have been thoroughly confused in the past; "CAD-2" (GOLD color) is not the same as "Standard CAD" plating (SILVER color).

A few years back, an attempt was made to categorize hardware and assign part numbers in the "880-xxxxx" series. Unfortunately, the assignment was not in agreement with the HAL Part Number Assignment plan, did not include all hardware, and in many cases listed the wrong description for some items. The "880" numbers were listed only in the inventory computer (no quantities or prices) and on only 4 sub-assembly parts lists. For these reasons, I have surveyed and classified all hardware I can find and assigned (or re-assigned) a new series of part numbers. The new system will distinguish these variations if it is used by all. It is very important that design, inventory, purchasing, production, and documentation personnel understand and use the correct part numbers for all hardware items.

Attached is a reprint of two pages of the HAL Parts Numbering Standard (December 21, 1990 version). These pages describe how a hardware part number is to be constructed. Note that screws of different materials and colors have <u>different</u> part numbers; one cannot be substituted for the other. Also note that there is a different part number for each screw head style.

Screw Head Style and Lengths:

Both screw head styles and length measurements have previously been used incorrectly. Attached is a diagram showing head styles and how screw lengths are measured. Use thus diagram!

Part Descriptions:

The part description must be as complete as possible, but still fit within the available data field. Avoid abbreviations whenever possible. Accepted abbreviations are shown in the HAL Part Numbering Standard. If abbreviations are required, <u>use these abbreviations and no others</u>! Also note the order in which the description is written. This is also standardized. The description is written in the order that it would normally be spoken. For example:

410-06052 = 6-32 x 5/16" Flat Head Phillips Screw (GOLD)   [long]
      = 6-32x5/16 FH PHL SCR (G)   [short]

Finally, two hardware part number conversion tables are attached. The first, "HDWRCRF.WK1", is a cross-reference to convert "old" 880-series to "New" 400-series numbers. This lists <u>all</u> of the hardware items I could locate in inventory and production areas as of December 20, 1990.

The second, "HDWRCRF1.WK1", serves as both a cross-reference to "old" 880-series P/N's <u>and</u> as a model for new inventory listings and descriptions to be used. This list includes all items of the first list <u>plus</u> new hardware that will be required for the ST-8000A. Use this list for all new computer entries, new and up-dated parts lists, and new designs. Note the descriptions. Use these or their abbreviated form, <u>in the order given</u>.

I hope this change will help resolve a long-standing confused situation.

G. W. Henry
Configuration Manager