1.7 Hydraulic Cart HRAM Manual Manipulation

This procedure has been prepared to cover the manipulation of the hydraulic ram C-2 using the "manual" move functions on the controller. "Manual" here refers to the manual control buttons and not to physical contact with the equipment. The ram is moved under the control of the cart processor in response to the "UP" and "DOWN" buttons on the controlling VI. "VI" here refers to the National Instruments "Virtual Instrument" program used to affect the control.

1) This work can be performed under control of the "Commissioning Tool" VI. Alternatively, it can be done using the using the hydraulic controls VI supplied by Jerry Zimmerman.

2) This work should not be attempted remotely. This is a testing and setup operation that must be performed with an operator near the cart to observe its behavior.

3) There is a known bug in the DAQ/Controls communication to the hydraulic cart such that the "UP" and "DOWN" buttons can on occasion "stick." This means that the button action expected by the program (button active only when pushed) fails and the button locks in either the "DOWN" or "UP" state. This seems to be intrinsic to the commercial software. Because the motion of the RAM is slow, we have accepted an operational work-around in that we use these controls only when the operator is present. If the button sticks, we power off the cart. That clears the error and re-establishes the normal operation.

4) IF THE CART HAS NO GLYCOL (Or of the glycol volume is "open" as in the case where one is hooked to an open reservoir) then you can move the hydraulic ram C-2 between its upper and lower limit switches ZSH-1 and ZSH-2 with impunity.

5) IF THE CART HAS GLYCOL (sealed): then you can only move the hydraulic ram C-2 down until it has pushed the pneumatic ram C-3 up to its mechanical limit. Beyond this point the pressure rises rapidly with additional C-2 movement.