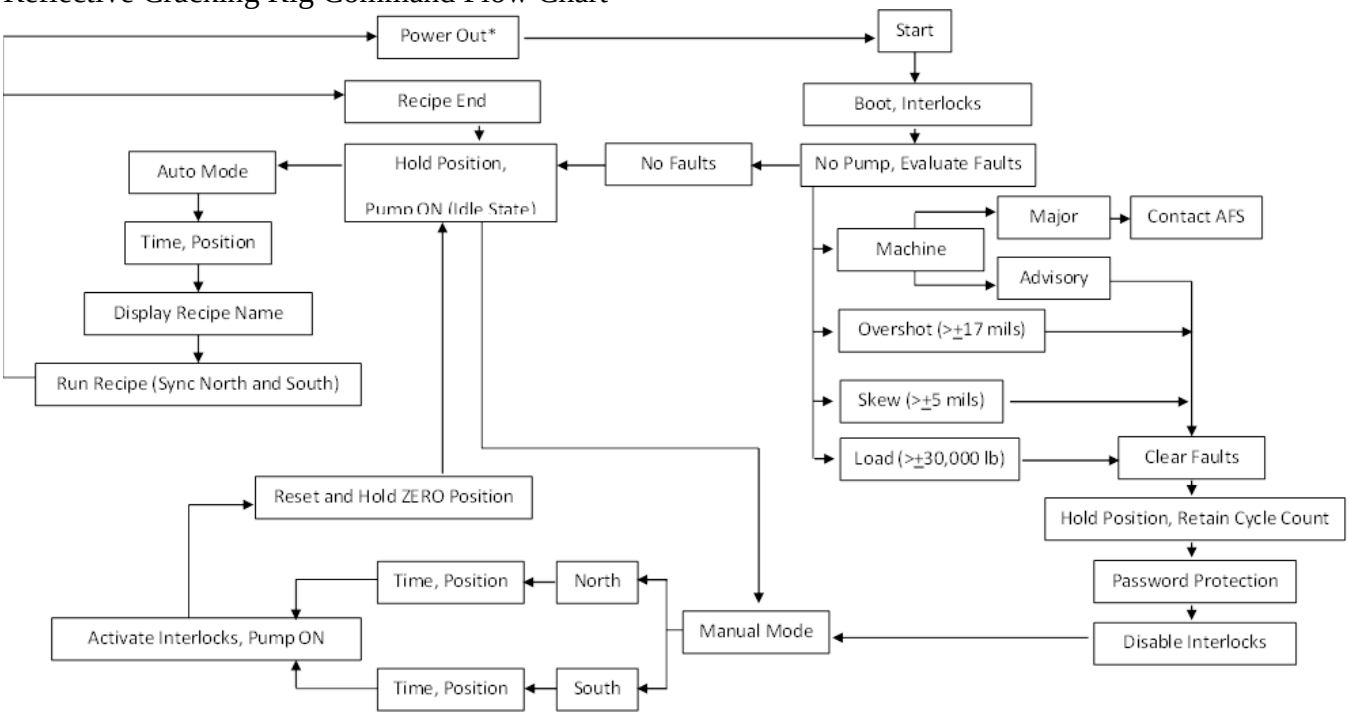
Temperature: N/A

Reflective Cracking:
On January 17, 2012, when the hydraulic system was started up, pumps were manually loaded to full pressure. Due to a power interruption during the holidays, the Delta "Hold Position Command" was lost. Hydraulic Energy at the Pressure ports of the servo valves migrated into the work ports. This created the skew offset side to side (North vs. South) of ~ 0.100". When detected, the hydraulic system was then turned off. The position skew correction was then accomplished manually. The manual jog function set up typically for manual moves without asphalt on concrete (not a true correction speed) was @0.05 mils/sec. This correction speed was too fast, and the resulting tensile stress at the bottom of the asphalt layer exceeded the material's tensile strength. A crack was formed in the vicinity of south edge (tension zone). Recorded data show that the crack initiation took about 20 sec. The crack then propagated in both horizontal and vertical directions. Shortly after, a full-depth (5") crack in the asphalt layer was observed directly above the joint. Due to the compression zone in the north portion of the asphalt layer, the crack stopped at 4' from the north edge. Since the position correction was done manually, there were no hard limits active to shut down the hydraulic system. Based upon the core taken from the pavement, it was concluded the north 4' AC layer was still intact. However, to resume testing on the uncracked pavement, the hydraulic control system software needs to be modified and enhanced. A flowchart was then developed, as shown on the following page.

AFS is working on changes to the program after meeting with them. They will come to the NAPTF to install and test the changes as soon as they are completed, probably in late February. Testing will resume on the uncracked pavement in early March.2012

Reflective Cracking Rig Command Flow Chart



*Retain Cycle Count

<u>A confirmation message should be displayed before execution of each step.</u>

Procure, Install, and Test Pavement Instrumentation Sensors

On the Reflective Cracking project, the issues with surface gage connection to the IoTech data acquisition system were recognized and a resolution was found. Accordingly, the FAA placed an order to purchase a device that will be used for connecting the surface gage to the IoTech.