Parameters on the autoclave systems which are monitored by the DCS are:

1. Autoclave pressure
2. DUF_6 pressure in the pigtail
3. Condensate level in the autoclave drain nozzles (Redundant)
4. Conductivity of the autoclave condensate (Redundant)
5. Conductivity of the steam sample condensate
6. Temperature of the autoclave
7. Pressure switches between the rupture discs and the pressure relief valves on the autoclaves

Automatic responses by the DCS to abnormal parameter readings are as follows:

1. If the autoclave pressure exceeds approximately 10 psig, the steam supply valve and the UF_6 supply valve close automatically, alarms initiate and causes for the alarms are displayed in the control room. The steam and UF_6 valves provide containment.

2. A continued pressure rise in the autoclave to approximately 15 psig causes automatic closure of the steam sample containment valve, the condensate discharge containment valve and the UF_6 cylinder valve, initiates an alarm in the control room, and displays the causes of the alarm.

3. Indication of a high level of water in the autoclave condensate drain nozzle by either of the level probes in the nozzle closes the steam supply valve, initiates an alarm in the control room and displays the alarm cause.

4. Indication of high conductivity in the autoclave condensate closes the steam supply valve, initiates an alarm in the control room and displays the alarm cause.

5. If the UF_6 pressure in the pigtail increases from its normal preset parameter, the steam supply valve closes, an alarm will initiate in the control room and the alarm cause is displayed.

In addition to the above automatic responses, interruption of power results in closing the four containment valves on the autoclave.

When a cylinder of DUF_6 has had its contents fed to the surge tank pressure of approximately 15 psig, no more UF_6 will feed out of the cylinder. At this pressure and at normal autoclave temperatures, approximately 180 pounds of DUF_6 remain in the cylinder. This residual "heel" can be readily reduced to less than 50 pounds while the UF_6 is still in the vapor phase by using the UF_6 Reduction Facility's evacuation system.

The evacuation system transfers the "heel" of UF_6 from a cylinder located in an autoclave to a cold receiving cylinder under vacuum. The evacuation system consists of an electrically heated and controlled manifold between the autoclaves and the receiving cylinder, automatic and manual valves, receiving cylinder scales, and a cylinder enclosure for heat removal. A vacuum pump, oil trap, and chemical traps remove non-condensable gases from the receiving cylinder. The oil trap prevents oil from entering the receiving cylinder, and the chemical traps prevent contact of UF_6 with vacuum pump oil. Figure 16-2 shows a schematic of the evacuation system.

The cylinder to be heeled will normally have just had its contents fed to the process, although on occasion a cold cylinder will be placed in an autoclave and connected to the UF_6 discharge line in the normal manner. The receiving cylinder will be connected to the heated manifold via an electrically heated pigtail. When the receiving cylinder valve is opened, the UF_6 from the hot cylinder transfers into the receiving cylinder where it is solidified. The weight of material in the receiving cylinder is continuously monitored to prevent overfill.

After the UF_6 cylinder is emptied, both the UF_6 feed valve at the autoclave and the autoclave steam supply valve are closed. The pigtail is purged with nitrogen back into the UF_6 cylinder several times. As the cylinder cools, any residual UF_6 vapor condenses and the pressure in the cylinder drops below atmospheric pressure. The cylinder valve is closed using the remote operated motorized closer, the autoclave is opened, and the pigtail and extension handle on the cylinder valve is disconnected from the empty cylinder.

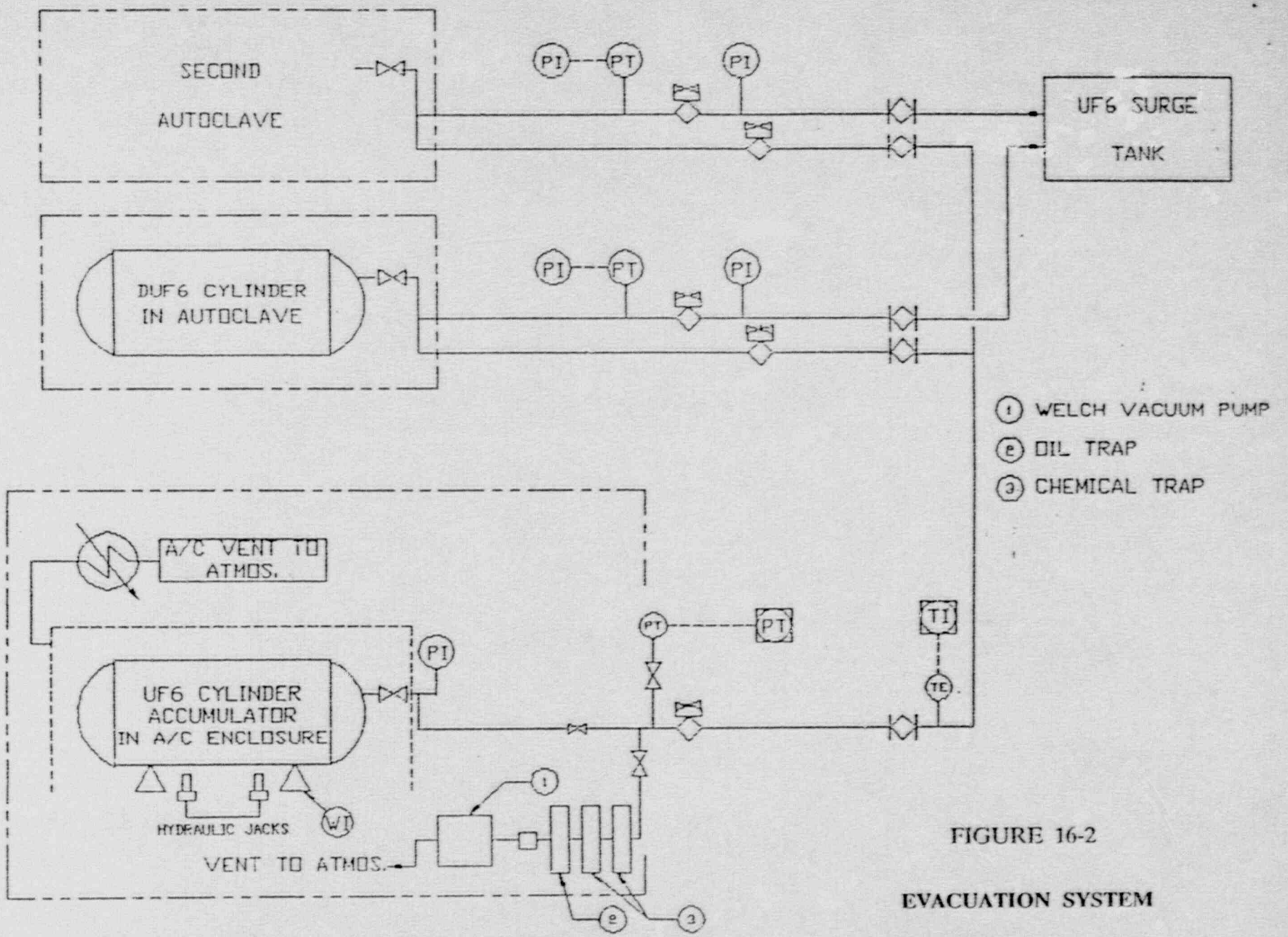

FIGURE 16-2

EVACUATION SYSTEM