5.2 Secondary Cooling System

A system schematic diagram of the secondary cooling system of the UFTR is shown in Figure 5-5. This figure depicts two sources of water for his secondary cooling system: the deep rock well, used during principal operation; and the city water used as a back-up system during operation above 1 kW (thermal). The well water is pumped by a submersible, 10 horsepower pump. The nominal design specifications of this pump are as follows:

Manufacturer:	Goulds Pumps, Inc.
Pump Series:	225 GPM Series H, 10 H.P.
Pump Model:	3 stg. Model 225H103F
Operation/Control:	Pump on-off from the reactor console

The deep well is 238 ft. deep with a casing diameter of 3", the static water level is approximately 87 ft. below grade. The well pump has approximately 200 gpm pumping capacity for this arrangement. The well water flows through a basket strainer, with a stainless steel mesh of approximately 1/16". This water flows into the shell side of the heat exchanger and subsequently into the storm sewer as depicted in Figure 5-5.

There is a sample flow valve in the heat exchanger discharge line which continuously bleeds a small sample flow into the hold-up sample tank. A second sample valve normally kept closed is used for actual sample collection.

5. Demineralizer,

6. Sampling valve.

This test tank is primarily used for experimental purposes. If necessary, the tank can be drained and lifted out of the way with the bridge crane. All water drained from this tank will go directly to the reactor sink and the holdup tanks where it will be monitored. It will then be released to the University of Florida Sanitary Sewage System if, as expected, the activity level is below those established by the Radiation Control Office. If activity levels exceed those established by the Radiation Control Office, then the water will be held up in the reactor sink until activity levels have decayed sufficiently to allow release.

9.2.3 Demineralized Water Makeup System

Demineralized water is used as makeup to the primary coolant system. The makeup system consists of two demineralizers in series that are filled with Amberlite IRN-150, Purolite NRW-37 or other equivalent nuclear-grade resin as is the demineralizer in the primary loop. The unit has a hose with a connection that can be made to the primary tank when water is needed. As indicated, the schematic of the makeup system is shown in Figure 9-1. The makeup connection for the primary system is found on the side of the coolant storage tank, and is located on the top of what is called the "ice chute."

9.2.4 Purification System

The purification loop is provided with a separate pump in order to maintain a continuous purification flow. The purification pump is interlocked with the primary coolant pump in a manner which shuts off the purification pump when the primary coolant pump is running.

The arrangement of the purification loop provides the system with continuous monitoring of the resistivity of the primary water and the functioning of the Amberlite IRN-150, Purolite NRW-37 or other equivalent nuclear-type resin(H-OH; H control) in the purification system. The in-line, wall-mounted resistivity bridge is set up to accept two conductivity cell signals--one before the demineralizer and the other after the ceramic filter. A schematic diagram of the primary loop purification system is presented in Figure 9-2, showing the feed and bleed nature of the system and its various components.(5)

9.2.5 Potable and Sanitary Water System

The UFTR Building does have potable and sanitary water system connections. Tap water and a utility sink are located in the northwest corner of the reactor cell. A "back flow preventer," as required by the National Plumbing Code, is installed in the city water line ahead of any industrial type use of this water.

9.3 Process Auxiliaries

9.3.1 Compressed Air System

An air compressor and associated system components is located in the Air Conditioner Equipment Room on the north side of the Reactor Building. This system