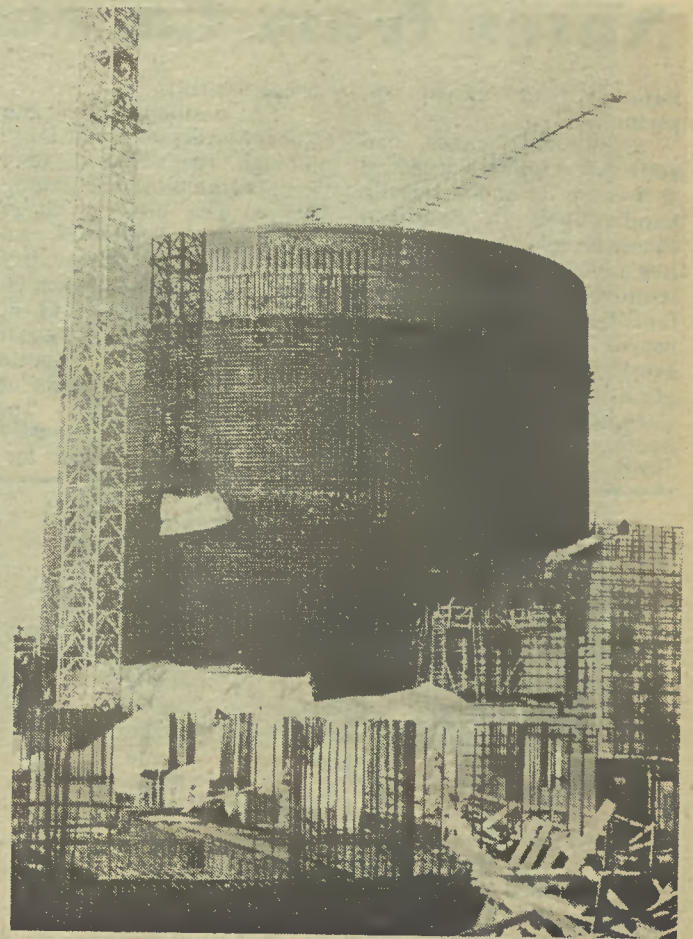
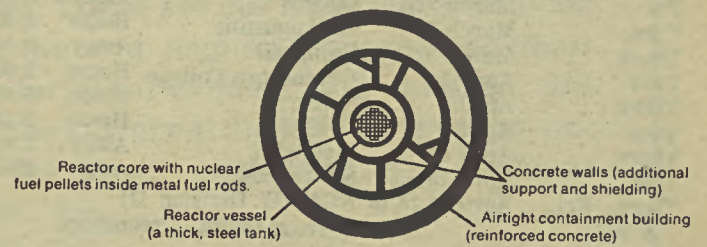


NUCLEAR POWER

FACT AND FICTION



One such containment structure is being built on the Shearon Harris Nuclear Power Plant site. See diagram below for details. (Photo by Cindy Rinker).



Nuclear fuel is separated from the public and the environment by three different barriers. Plant site boundaries add a fourth barrier.

by Cindy Rinker
The possibility of a major nuclear reactor accident and the results of such an accident are major concerns of the public as more and more reactors are built. The words "melt down" and "radioactivity" are being used by the public more easily these days as the dangers of nuclear power are considered by more people.

Radiation, measured in units called millirems, is part of our everyday environment. Emitted from the air, ground, and cosmic rays, it is natural, not man-made. Man-made radiation is found in situations such as jet flights, color television, X-rays and a nuclear power plant. Cosmic rays expose 35 millirems per year to the whole body; an X-ray exposure - 50 millirems per exposure; and living within a 50-mile radius of a nuclear plant, a body is exposed to .02 millirems per year. The cancer toll from routine release of radioactivity from nuclear power plants will be from 0 to 90 by the year 2000. The normal annual expectancy of cancer deaths is 4800 per 3 million people.

Most of the radioactivity in the nuclear reactor is from fragments produced when atoms of uranium are split in the core. Most radioactive material that is outside the reactor is handled when the used fuel is transported and reprocessed, and nuclear waste is disposed of. This handling requires extreme caution.

At every stage in the fuel cycle, a small amount of radioactive material leaks

out. The Nuclear Regulatory Commission, judge of plant safety, puts maximum limits on the levels of these leak-outs. The NRC also limits the amount of radioactivity that workers at a plant can be exposed to.

A concept of safety was designed by industry and the Federal government which fixed safety in 3 levels in the nuclear reactor:

- 1) almost all radioactive material is contained in uranium fuel pellets enclosed in metal rods.
- 2) the rods are sealed inside a steel pressure vessel and coolant piping.
- 3) all of the above is enclosed in an air-tight containment structure which confines and traps radioactive material.

The containment structures at the Shearon Harris Nuclear Power Plant, 240 feet high and 130 feet in diameter, will have reinforced concrete walls 4.5 feet thick and a dome 2.5 feet thick.

For a large part of the radioactive material to be released into the environment the fuel itself would have to melt. This is what is called a melt down. There must be adequate cooling to prevent the fuel core from melting. If the main cooling system ruptured, then the water in the system, being under high pressure, would be rapidly expelled if a large break occurred, leaving the core dry. Residual decay heat (from decaying fragments of the uranium atoms being split) would begin to melt the core unless more cooling water was supplied. If not enough cooling water was in

time, then the core might melt into a mass hot enough to burn its way through the pressure vessel and containment building. Radioactive material would be released and cause considerable deaths, illness, and property damage. So far, no major melt down has occurred.

In 1975 a reactor safety study was published that analyzed many potential melt down accidents and the probabilities of them. Some of the results of the study:

With 100 nuclear plants in operation, among the 15 million people living within 25 miles of a nuclear plant, two fatalities and 20 injuries are expected each year due to reactor accidents. The worst possible reactor accident would produce 3,300 fatalities, 45,000 illnesses, and 14 billion dollars in property damage. The most common accident involving the release of radioactive material has a one-half percent chance per year of occurring.

Though the conclusions of this study are not as grim as some people would have them be, there are certain facts that should be kept in mind about this study. Not all types of accidents could possibly be identified; deficiencies in the design of the plants themselves were not analyzed; and human error was not adequately considered.

Radioactivity and melt down will be studied by laymen now that nuclear power is to be a definite part of the future. The public is now intent upon finding out if the rewards of nuclear power plants outweigh the risks.

Dillard: a presidential aide

If a student happens to wander into the presidential suite on the second floor of Johnson Hall, she will be greeted by a bright smile from Mrs. Madge Dillard, personal secretary to Dr. John Weems. Her enthusiasm for her work and dedication to Meredith College are refreshing and inspiring.

A Raleigh native with a background in government work, Mrs. Dillard has served in her present position since 1973. Coordinating Dr. Weems' calendar with his personal activities and planning his travel arrangements are among her duties.

"I have really enjoyed watching Dr. Weems work and watching his envisions for Meredith College unfold. I

have a great respect for his ability. He is a positive thinker. I enjoy coming to work every morning because of the great camaraderie among the people here."

"I love to call Mrs. Weems the 'first lady of Meredith.' She is so supportive of everything her husband wants to do," Mrs. Dillard explains. She works with Mrs. Weems in preparing the invitations for the freshman and senior class banquets each year.

"I am definitely a family-minded person. My husband is my inspiration," she says. She is the mother of a Meredith alumna, another daughter, and two sons and has four grandchildren. She enjoys handwork, especially embroidery, and cooking.



Mrs. Dillard, Administrative Secretary to the President.

Tie a Yellow Ribbon

by Vicki L. Miguel,
Executive Committee, SGA
A new symbol to the

Iranian hostages that
Americans have not forgotten
them is showing up in

Washington, D.C. Yellow ribbons are being tied on the trees as a reminder that we still want our American hostages. The symbol oriented from Tony Orlando's song of a prisoner who comes home after serving his time. He writes a letter to his sweetheart to "Tie a Yellow Ribbon around the old Oak Tree" if she still loves him. The yellow ribbons are catching on so that SGA, under the suggestion of Dean White, is tying yellow ribbons around Meredith's trees at the March 21 SGA meeting at 10:00 in Jones Auditorium.

Another item on the agenda is revoting on a special angel as Meredith's mascot. (First vote proved too close to determine a winner and many students requested to see additional sketches.) Also a seven minute film on Meredith College which is presented to interested high school students will be viewed by Meredith students at the meeting.

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