United States
Environmental Protection
Agency

Region 4
345 Courtland Street NE
Atlanta GA 30308

Alabama, Georgia, Florida,
Mississippi, North Carolina,
South Carolina, Tennessee,
Kentucky

EPA

50-390
391

July 26, 1978

Mrs. Susie Keblusek
U. S. Nuclear Regulatory Commission
7920 Norfolk Avenue
Bethesda, Maryland 20555

Re: Watts Bar Nuclear Plant
NPDES No. TN0020168

Dear Mrs. Keblusek:

Enclosed are copies of comments from Dr. Louis G. Williams and Mr. Albert Bates which were received by this office in response to the EPA Public Notice on the subject facility.

Response by your office would be appreciated.

Sincerely yours,

Charles H. Kaplan (vf)

Charles H. Kaplan
Coordinator
Thermal Analysis Unit

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HEAD TO HEAD
LAST PAGE

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PLENTY

THE FARM — 156 DRAKES LANE — SUMMERTOWN, TENNESSEE 38483 — PHONE (615) 964-3574

RE: Application No. TN0020168
Public Notice No. 78TN006
NPDES Permit Application
Tennessee Valley Authority
Watts Bar Units 1 and 2

June 28, 1978

Enforcement Division
Environmental Protection Agency
345 Courtland Street, NE
Atlanta, Georgia 30308
ATTN: Mona Ellison

Dear MS. Ellison,

I received Notice 78TN006 on June 26, 1978. I am submitting this comment before the close of the thirty day period on July 1, 1978. I wish the contents of this comment to be fully addressed before the NPDES permit is issued for this application.

My name is Albert Bates. I reside at 156 Drakes Lane, Summertown, TN, 38483. I make this comment on behalf of PLENTY, a world charitable relief organization, by virtue of our interest in the State of Tennessee and the North American continent as a suitably safe and healthy habitat.

I agree to be subject to examination on all matters contained herein at our own expense. Areas which I contest are those set out in the Application's section 1.e., page 1, Proposed Pollution Abatement Facilities--neutralization and/or sedimentation of plant operating wastes; and PART I, Section A, page 7, EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS--Liquid Radwaste System. The part of the system I am concerned with is outlined on the diagram I enclose.

1. e. Description of Proposed Pollution Abatement Facilities

COMMENT:

The proposed radioactive liquid waste treatment system is one which allows some portion of the radwaste to be discharged into the Tennessee River. This system cannot be considered effective in eliminating radioactive liquid waste from the waste water discharge. Unless an alternate system with proven effectiveness is substituted, all unnaturally radioactive waste water should be gathered and stored for permanent isolation from the biosphere.

The proposed pollution abatement system would certainly result in loss of life and serious debilitating diseases to the population downstream, and within the water-currents of the air-ocean world, now and in ages to come. Permanent degradation of the life-cycle--by permitting sedimentation of persistent, highly toxic radionuclides in the fresh water channels which sustain life--is criminally irresponsible.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS--Liquid Radwaste System

COMMENTS:

(1) Applicant-permittee proposes to limit discharges to the Tennessee River to 15 mg/l average and 20 mg/l maximum liquid radwaste daily. Dilution factors--the mg/l notation--make no indication of the weight, activity, persistence, or biological effectiveness of the suspended solids comprising the liquid radwaste discharge. Such indications are necessary for any realistic assessment of potential damage to biota.

(2) Several hundred different actinides may be contained in the discharge, principal among them being H-3, Ra-226, Cs-137, Sr-90, and I-131 by volume; Y-90,91, Rn-222, Ra 224,225, Th-234, and Cm-242 by activity; Ni-59, Rb-87, I-129, Cs-135, U-233,234,235 236,238, Np-237, Pu-242,244, and Cm-247 by persistence; and C-14, K-42, Po-210, Pu-236, 238, 239, 240, 241, and Am-241 by biological effectiveness. The permit neglects to specify any breakdown of these radionuclides, each of which presents a characteristic individual hazard to health.

(3) The proposed radwaste discharge is carcinogenic, teratogenic, mutagenic, and has non-specific immunity-reducing and life-shortening effects possible at doses well below that expected in drinking water downstream of this discharge. NRC and EPA have calculated health effects, including cancers and genetic diseases, expected in the general population, and found this acceptable. NRC does not have constitutional authority to accept health effects on behalf of unconsenting private citizens. Recent EPA public forums have demonstrated strong public opposition to the imposition of radioactive poisons on future generations. Recent acts of Congress have expressly forbidden release of cancer-causing material to the population. The Tennessee Code forbids intentional poisoning under penalty of life imprisonment.

(4) Health, physical security, and life are rights and privileges secured by the federal and state constitutions to all citizens. They may not be deprived without due process, meaning individual legal proceedings against any citizen to be deprived. Issuance of the permit as presently written would serve to deprive unspecified citizens of these rights and privileges and would thereby constitute "state action" within the meaning of § 42 U.S.C.A. 1981-5, the Civil Rights Acts. Moreover, this deprivation would fall unequally upon those with greatest susceptibility or who experienced the greatest exposure by virtue of geographic location or personal lifestyle. Such discrimination would run contrary to the Equal Protection Clause of the U.S. Constitution. EPA and the State of Tennessee are specifically forbidden from awarding the permit.

(5) Deaths to present and future generations projected by EPA and NRC to result from liquid radwaste discharges to the biosphere, insofar as they are committed intentionally by TVA, EPA, and State Public Health are humanicide within the meaning of the Nuremburg proceedings, the U.N. Declaration of Human Rights and subsequent covenants, and international treaties to which the United States is signatory. Humanicide is a crime of state for which individual officers, acting in their official capacity, may be held personally responsible.

(6) EPA and TVA have estimated the dose to an individual maximally exposed to the liquid radwaste discharge after dilution in the Tennessee River to be less than 1 millirem (mrem) per year. While this figure is extremely unrealistic and non-conservative, it can be accepted momentarily for the sake of argument. Recent scientific evidence based upon human experience and laboratory work in vitro at low dose ranges (not mathematically extrapolated downward from A-bomb doses as the older data had been) indicates that 0.1 to 1 mrem increases cellular damage 1%. EPA estimates that radiation causes 22,224 health effects/yr. in the U.S.. Background

radiation is postulated now to be the cause of a very large percentage of all non-accidental deaths in the world population. Increases of even a single mrem yearly can therefore be seen to have significant impact on the public health. This impact is undesired by the majority of its victims. While EPA and State permissible limits are constantly revising downward in light of new evidence of serious risks previously unrecognized, the long-term genetic ramifications of past error are yet multiplying. Where radiation is concerned, there is no safe dose, and no known human tolerance.

Respectfully submitted,

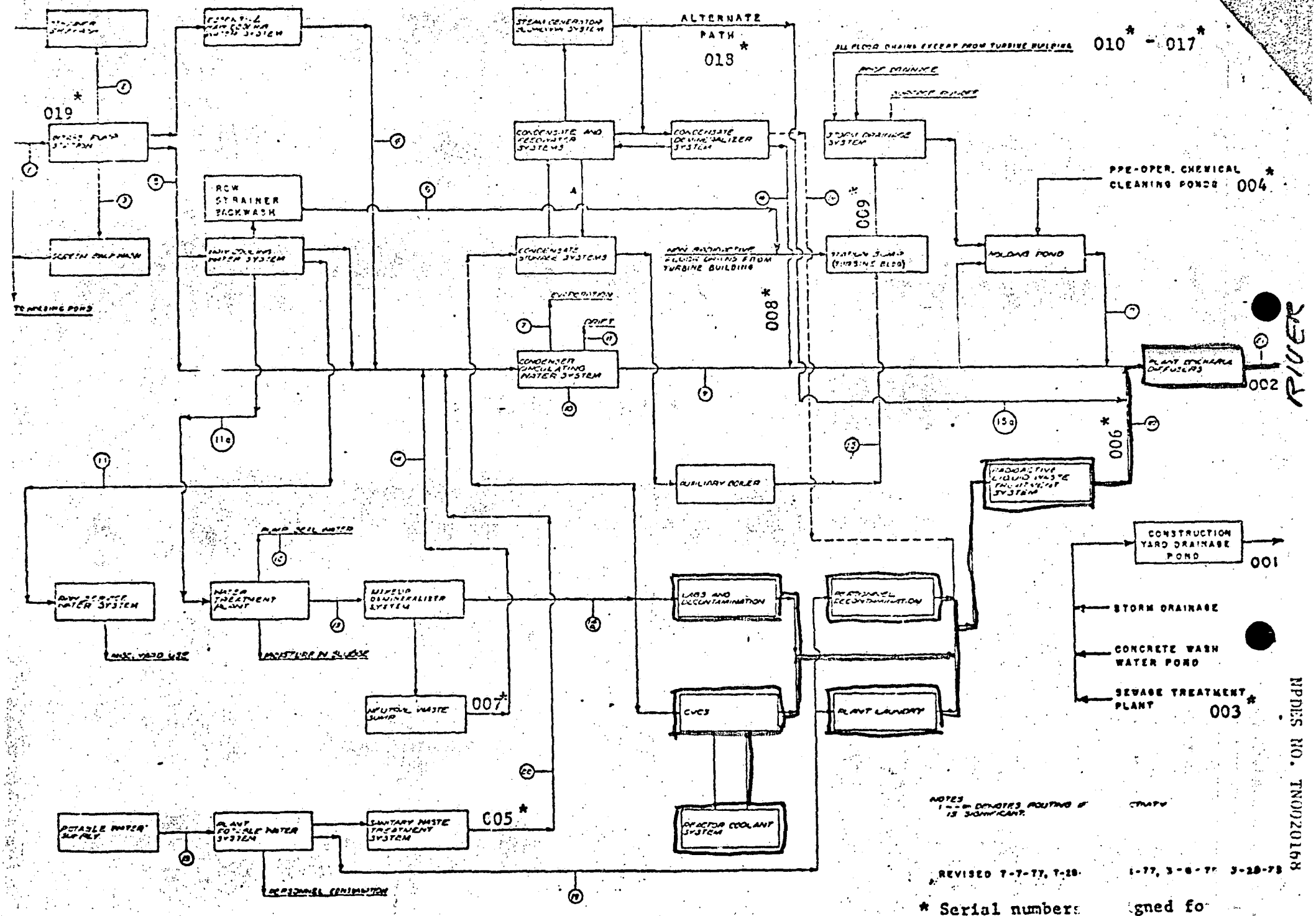
Albert Bates

Albert Bates

cc:f

Water Quality Control Board
Tennessee Department of Public Health
621 Cordell Hull Building
Nashville, TN 37219

Mr. David Freeman
Tennessee Valley Authority
TVA Towers
Knoxville, TN



WATTS BAR NUCLEAR PLANT – WATER USE DIAGRAM

Rivers, bays and oceans change low-level radiation (nuclear fission products) into high-level concentrations and, therefore, high human risks for cancers and unwanted genetic changes. These fission products also bring about unhealthy changes in the natural aquatic biota from biological magnification in aquatic food webs. These kind of changes tend to make humans the endangered species of our planet, the earth.

PUBLIC HEARING DEMOCRACY

TVA's Draft Environmental Statement concerning the construction of Yellow Creek Nuclear Plant near Iuka, Miss. (Docket numbers STN 50-566 and STN 50-567, as of June 1977, NRC.

To:— Second phaseof this hearing dealing with radiological health and safety, July 6, 1978, at Tishomingo County Courthouse, Iuka, Mississippi.

And to:— U. S. Environmental Protection Agency, Region IV, Water Enforcement Branch, 345 Courtland Street, Atlanta, Ga. 30308.

Regarding the proposal for issuance of Pollutant Discharge System Permit for Yellow Creek Nuclear Plant (and Watts Bar-NPDES TN0020168).

From:— Louis G. WILLIAMS, Ph. D., Aquatic Ecologist, Dept. of Biology, P. O. Box 1927, University, Alabama 35486.

In the United States nuclear power plants are allowed to discharge low-level liquid radwastes and radioactive gases respectively into public waterways and the atmosphere. The intermediate liquid radwastes must be shipped to NRC-approved sites for burial (however, some sites have been closed since they were found badly leaking). The high-level radwastes, such as spent reactor fuels and wastes from atomic weapons development and production are not buried. These are stored in water in tanks at nuclear plants or at special storage sites. At this time there is no approved method for their permanent disposal for the U. S.

This statement concerns the discharge of low-level liquid radwastes to the Tennessee River and its tributaries and my own radioanalysis of river samples which show high concentrations of fission products by aquatic organisms and bottom sediments in the Tennessee River, particularly into Pickwick Lake. This reservoir would receive more radwastes from the proposed Yellow Creek Nuclear Plant.

Many managers of liquid wastes operate under the assumption that dilution is the solution to pollution. However, many substances do not stay diluted but instead tend to build to high concentrations in sediment fractions and in aquatic food webs by biological magnification. The organisms have not read the impact statements. This phenomenon is particularly the situation for fission products ^{90}strontium and ^{137}cesium, having physical half lives of about 3 decades and variable biological half lives.

My studies at the Oak Ridge National Laboratory and at the R. A. Taft Sanitary Engineering Center in Cincinnati, prior to 1966 and at the University of Alabama since 1967 clearly indicate that many radionuclides from various terrestrial radioactive waste burial sites do move into waterways, such as from the Conasauga shale burial sites at Oak Ridge, Tenn. These intermediate level wastes from sites such as those at Oak Ridge and low-level liquid radwastes from current operating nuclear power plants of the Tennessee River pose a threat to human health because they can get into humans when their high concentrations following concentration in the waterway are released into public drinking water supplies, following dieoff of dense populations of phytoplankton-zooplankton communities, or from eating fishes with high concentrations of fission products.

Impact statements simply have not addressed this problem. Studies of many people with today's cancers have been recently correlated with low-level exposures 15 to 30 years ago. Cancers from X-radiation in hospitals have payoff benefits, but there are no benefit from drinking, eating, or inhaling radioactive substances from the environment from radwastes.

The kind of radionuclides, such as ^{60}cobalt, uranium, radium, and plutonium, are quite different from the fission products from current nuclear reactors. Their half lives are very long, such as 24,000 years for the most toxic substance on earth PLUTONIUM. The cycling of nuclear waste products in land, water, air, and biomass is very complex, especially when the wastes have been buried with chelating agents, such as EDTA such as the burial sites at Oak Ridge.

Even though the cooling system is "closed" current nuclear plants normally discharge a lot of radwaste water to waterways that contain unwanted radionuclides formed as products of fission of ^{235}uranium and from becoming radioactive following neutron bombardment while a part of the reactor core or the cooling system. The practise of using EDTA chelation for cleaning or decontamination, because of its strong metal-bonding properties, also contributes to the radionuclides becoming more hazardous when they are discharged into public waterways.

I was the senior author of an article published on November 25, 1960, dealing with organic materials as monitoring tools for radionuclides in the public waterways. This article reports on methods developed to detect trace levels of radionuclides.

MORE ON THE REVERSE SIDE

This article in SCIENCE and several others in Limnology & Oceanography and in Ecology and other journals demonstrate methods of analysis of the raw water itself for dissolved radionuclides. In concentrating trace amounts of nuclides from large volumes of sample, particularly where evaporation, precipitation, or ion-exchange techniques are used, the stable salt concentrations in the diluting medium interfere with the subsequent separation of the specific radionuclides. To avoid these difficulties a technique utilizing dead organic and living biological concentrations under natural stream conditions was investigated. Radioanalysis of algae from natural aquatic habitats has shown a greater variety and higher concentration of radionuclides than an analysis of the water in which the algae live. Average concentration factors are about 7000 times, but under ideal or optimum conditions they may concentrate several hundred thousand times.

This technique for working with radionuclides in natural waterways was modified to measure the methylation uptake of low trace mercury in the Tennessee River. Presently bottom sediments and ooze deposits in Pickwick Lake are loaded with both nonradioactive mercury, and several fission products. These have an adverse effect on this aquatic ecosystem.

Shortly after the first commercial nuclear power plant went into operation at Shipping Port, Pa., on the Ohio River, I was able to detect fission products in the river. This was also done in the Hutson and the Columbia Rivers in the early days of nuclear power development.

The Nuclear Regulatory Commission allows current nuclear plants to dispose of low-level liquid radwastes to rivers, lakes and oceans, but no monitoring of their fate (to my knowledge) is done to determine their fate in the aquatic ecosystem, where many of them become concentrated to hazardous levels to both humans and the aquatic organisms when the ecosystem is distrubed.

A large filamentous green alga, Pithophora, with a high toleration for most freshwater environments, was grown free of silt and interfering radionuclides, packaged into liter-size polyethylene bags, with each bag having 400 evenly spaced pores about 800 micrometers in diameter. Phytoplankton was also used, but the small size of the pores, 70 micrometers, necessary to retain them, reduced the rate of water exchange, but the phytoplankton, because of the ratio of the surface area to water, do take up huge amounts of selective radionuclides. Laboratory controlled growth culture studies confirmed this.

The proposed Yellow Creek Nuclear Plant would be adding more producers of waste fission products to the Tennessee River, while taking out some of the river and putting it into the atmosphere for cooling a nuclear plant can only magnify a system of too much production of nuclear garbage than the aquatic ecosystems of the Tennessee River and downstream Ohio and Mississippi can bear.

Recent studies by others indicate that about 90 percent of cancers have environmental causes. Should we wait for 10 to 20 years to establish that low-level liquid radwastes will greatly increase the incidence of cancer?

For environmental purposes when dealing with radiological problems the public must be told that we should talk less about radiation and more about radioactive substances that get in the bodies of living organisms where they continually put out ionizing radiation, which should not be compared with small doses of X-radiation, which are of short durations, while radioactive substances inside of organisms have biological half lives that may be of long-term duration.

Ionizing radiations do produce unwanted hereditary changes, which are irreversible and accumulative. There is no threshold below which there is not an effect. Do we have a right to give future generations an environment that will be intolerable? Isn't the problem that mankind is becoming the endangered species? How can we estimate the costs of medical care from cancers and genetic defects? These are not included in impact statements, but they do result in large medical expenses to some people. How can an impact statement quantify the potential cause of cancer and birth defects?

When some flagellate protozoa substitute the fission product, 90strontium for calcium, their motile organelles fail to properly develop and their survival is greatly reduced. Since the advent of fission products in waterways from air test fallout, and nuclear power plants, the diversity of river planktonic organisms has been greatly reduced. How much of this is a result of low-level radwastes?

The Fire at Browns Ferry pointed out that the citizens did not know of ANY emergency evacuation plan for this near disaster. Contaminants from nuclear power plants do result in adverse environments for living organisms Can we wait or should we wait until something like a candle at Browns Ferry communicates to us?