UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING APPEAL BOARD

In the Matter of DUKE POWER COMPANY, et. al (Catawba Nuclear Station, Units 1 and 2)	))))	Docket Nos. 50-413 OL 50-414 OL

AFFIDAVIT OF ERASTACE N. FIELDS

I, ERASTACE N. FIELDS, being duly sworn, depose and state:

1. I am currently an Electrical Engineer with the Site Analysis Branch, Division of Engineering of the Nuclear Regulatory Commission (NRC). In my position, I am responsible for reviewing environmental reports and preparing cost/benefit analyses for environmental impact statements. A copy of my professional qualifications is attached to this affidavit.

2. The purpose of this affidavit is to address the allegations that economic benefit will not be derived from the operation of the Catawba Unit No. 1.

3. Considerable capital costs have been incurred in the construction of the Catawba Nuclear Unit. Inability now to operate this plant to produce electrical energy would translate into a major loss in capital investment and also a loss of an economical supply of energy.

4. The Argonne National Laboratory (ANL) has prepared NUREG/CR-4012, "Replacement Energy Costs for Nuclear Electricity Generating Units in the United States." This report estimates the near-term replacement energy costs for outages of all 108 U.S. commercial nuclear reactors that are operating or expected to be operating by the summer of 1986.

5. This replacement cost was calculated using a probabilistic computer model which considered a variety of variables including, fuel and operation and maintenance costs for all generating units, random forced outage rates, variation in system load from hour to hour and from day to day, generating unit efficiencies, unit loading order and other practical operation conditions. The methodology employed by ANL represents the state of the art in production cost analysis and is the most effective way to determine the cost of operation.

6. It is technically improper and not meaningful to compare the cost of operating the Catawba unit to average system cost or cost of individual generating units. Further, it is not appropriate to consider capital cost (as embedded in "bus bar" estimates) since these costs are "sunk" and will be incurred whether or not the unit is allowed to operate.

7. The ANL study estimates (Table 4.6.9 attached) that for the five-season period beginning the summer of 1985 and ending summer of 1986, replacement

energy cost resulting from the unavailability of the Catawba unit will range from $401 thousand per day to $574 thousand per day (constant 1984 dollars.) This represents an average daily replacement cost of $474 thousand (constant 1984 dollars).

8. Although this economic penalty is applicable to the Catawba unit during short-term shutdowns, with some simple adjustment it may be applied to the instant case of long-term or permanent shutdown. The ANL study excludes scheduled maintenance/refueling outages. If it is assumed that a three month maintenance/refueling procedure will occur every 18 months of plant operation then the average daily economic penalty is reduced by 16.6 percent (3/18 X 100). This results in an average economic penalty to the system of $395 thousand per day attributable to the unavailability of the Catawba unit. The inclusion of maintenance/refueling outage time during this 18 month period results in a average capacity factor of about 61.7%. If further modification were made to reflect a more conservative lifetime capacity factor of about 55 percent, then the daily average economic penalty from the unavailability of Catawba will amount to (55/61.7) X $395 thousand or $352 thousand (constant 1984 dollars)

9. The $352 thousand daily economic penalty is a societal cost which will be borne by one or more segments of the public, i.e., taxpayer, rate-payers and/or shareholders. The relative proportion of the burden is a matter which would be decided by local regulatory authorities.

10. As demonstrated above, the allegation that operation of the Catawba Unit No. 1 is uneconomical is without technical merit. A delay in the operation of the Catawba unit will result in economic harm to the Duke Power Company and its customers.

Subscribed and sworn to before me this 21st day of December, 1984.

Erastace N. Fields

Notary Public

My commission expires: July 1, 1986

Professional Qualifications
Erastace N. Fields
U.S. Nuclear Regulatory Commission

I, Erastace N. Fields, am an Electrical Engineer with the Site Analysis Branch, Division of Engineering, Office of Nuclear Reactor Regulation. Prior to joining the NRC in May 1980, I was employed as an Electrical Engineer with the U.S. Department of Energy's Economic Regulatory Commission from October 1978 through April 1980. From February 1969 through September 1978, I served with the staff of the Bureau of Power of the U.S. Federal Power Commission (currently, the Federal Energy Regulatory Commission).

My professional responsibilities have primarily involved demand and energy forecasting, analysis of the adequacy of electric utility communication facilities, production cost studies, specific and generic evaluation of electric system reliability and analysis and evaluation of power system disturbances including the preparation of reports for public dissemination.

I have provided testimony, in formal licensing hearings, on topics related to the need for power from proposed generating facilities. These hearing proceedings have included the Hartsville, Pilgrim and Indian Point Nuclear Stations and the Davis Pumped Storage Hydroelectric Project.

I received a BSEE degree from the Howard University's School of Engineering in 1969.

TABLE 4.69 Replacement Energy Data for Catawba 1

Reactor Name:	Catawba 1	Unit Size (MW):	1,145
Utility:	Duke Power Co.	Heat Rate (Btu/kWh):	10,641
Power Pool:	19	Variable Fuel Cost (¢/10^6 Btu):	39
NERC Region:	SERC	Operating Status:	Planned

Season and Year	Seasonal Operating Statistics[a]			Seasonal Production-Cost Increase Due to Short-Term Shutdown[b]		
	Generation to be Replaced (10^6 kWh)	Capacity Factor (%)	% of Season in Service	Total ($\$10^6$)	Average per kWh Replaced (mills/kWh)	Average per Day ($\$10^3$/d)
Fall 1984	-	-	-	-	-	-
Winter 1984/85	-	-	-	-	-	-
Spring 1985	-	-	-	-	-	-
Summer 1985	1843	73.5	100.0	42.0	22.8	460
Fall 1985	1859	74.1	100.0	52.4	28.2	574
Winter 1985/86	1838	73.3	100.0	36.6	19.9	401
Spring 1986	1857	74.1	100.0	46.7	25.2	512
Summer 1986	1839	73.3	100.0	38.5	21.0	422

[a]Assuming no scheduled maintenance or refueling outages for this reactor but normal maintenance for all other units.

[b]For portion of season unit is in service, in undiscounted 1984 dollars.