

AUG 16 1984

50-302

Helen L. Spivey
940 NW 5th Terrace
Crystal River, Florida 32629

Dear Ms. Spivey:

This is in reply to your letter to Mr. William Dircks dated July 17, 1984, in which you express concern about the possible effect of proposed nearby mining operations on the Crystal River Unit 3 nuclear power plant.

Explosions due to mining and quarrying have been considered at various nuclear power plant sites. None have indicated that ground motion from the explosions would have any significant effect upon the safety of the nuclear power plant.

In the Crystal River FSAR (p.2-5), it is indicated that the "Crystal River Quarry" (dolomite) is located over 4 miles from the plant and that detonation of the maximum allowable charge (1000 lbs of TNT) would not result in hazardous effects at the plant. Preliminary information on the limerock mine to which you refer indicates that it is located approximately the same distance away. Based on this, we have made a conservative calculation of estimated ground motion resulting from a 10,000 pound explosive charge four miles from the plant.

Our calculations indicate that the resulting ground motion would be only a very small fraction of the design values used in the plant. There is no reason to believe that the Florida Aquifer would result in any significant increase in the estimated ground motion. Your letter mentions the presence of large cracks in the Florida Aquifer. Any such cracks would tend to diminish transmitted motion.

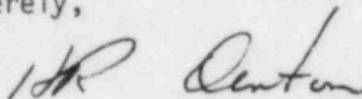
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H PDR

A review of the EIS does not reveal any discussion of the mine in question, but as mentioned previously, the FSAR at page 2-5 does discuss a nearby quarry. The NRC Safety Evaluation at page 2-6 also discusses that mine. The licensee's Environmental Report discusses at pages III-16 and 17, several mines and quarries in the general vicinity of the plant. Copies of these pages are enclosed for your information.

I trust the above satisfies your concerns on these matters.

Sincerely,




Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Enclosures:
As Stated

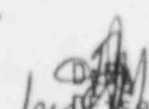
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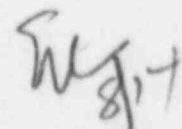
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8/9/84


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D/NRR
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8/15/84

GSB:DE
LReiter*
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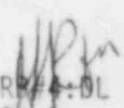
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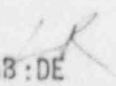

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Original Signed by
H. R. Denton

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

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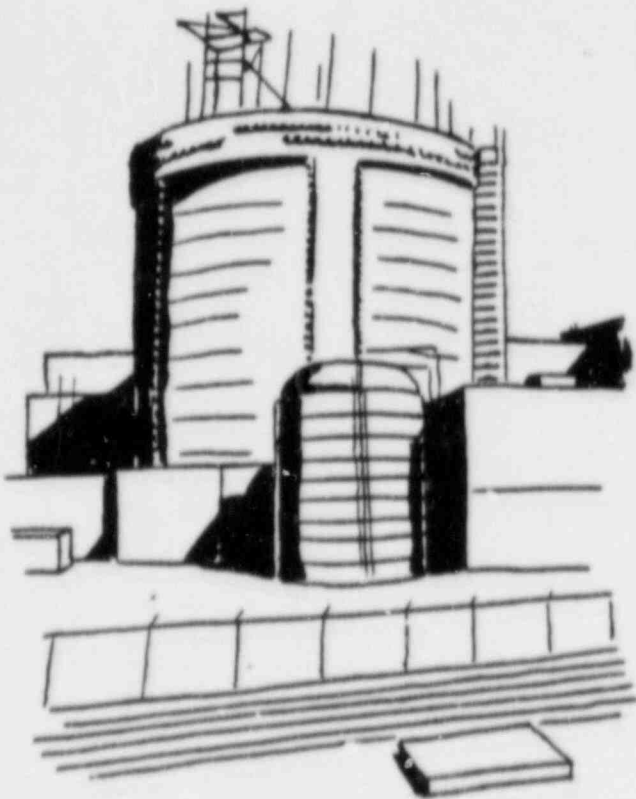
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DOCKET NO. 50-302

OPERATING LICENSE NO. DPR-72

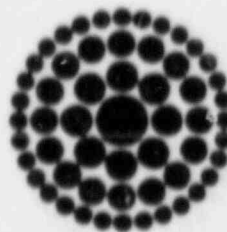
Crystal River Unit 3



FINAL **S**AFETY **A**NALYSIS **R**EPORT

VOLUME 1

7



**Florida
Power**
CORPORATION

Table 2-1. A study was prepared by Gilbert Associates to evaluate the effects of accidental release of these chemicals from the bulk storage area or by a transportation accident on the Crystal River Unit 3 control room. The results of the study showed that an accidental release of ammonia or chlorine could result in concentrations in excess of established toxicity limits being inducted into the control room via the Control Complex Ventilation System. Sulfur dioxide, which will also be used for cooling water treatment at Unit 4, was identified after the study as an additional chemical which could cause a potential hazard in the event of accidental release. Protection for the Crystal River Unit 3 control room is provided to maintain control room habitability in the event of an accidental release of any of the chemicals. This protection is described in Section 9.7.2.1.

The presence of industry, transportation, or operations in the vicinity of the site do not pose any potentially significant effects on the safe operation of the nuclear facility. The following sections address specific analyses to establish that the nuclear facility is designed to withstand safely the effects of potential accidents as a result of the presence of other facilities.

1. There is no significant manufacturing, storage or transportation of hazardous material in the 10 mile zone, excluding possible transportation of hazardous material on public highways or railroads within the 10 mile zone.
2. A transportation accident off-site of toxic gas or other hazardous material does not provide significant potential for effects due to the five mile distance from the plant to the nearest road.
3. There are no natural gas pipelines passing or crossing near the plant.
4. There is an oil storage facility in Yankeetown approximately 4.3 miles NW of the plant site, which receives approximately two barges of oil every ten days. The oil storage facility has its own fire protection and fire-fighting equipment and is located within the jurisdiction of the fire department in Inglis-Yankeetown.
5. The Crystal River Quarry is a dolomite quarry located over four miles from the plant. The State of Florida Fire Marshall, the Internal Revenue Service, and county agencies have jurisdiction over the utilization of explosives. The Crystal River Quarry does not store

explosives. The maximum amount of explosives used by the quarry is equivalent to 1,000 pounds of TNT. No hazardous effect is postulated from the use of explosives by the Crystal River Quarry, nor has any explosive shock from the blasting ever been observed at the plant site.

6. Due to the extent of the plant exclusion zone and the 5 mile distance of the closest approach to the plant, off-site hazardous material does not pose significant possibility for affecting plant safety.

2.2.4 POPULATION

The nearest population center of 25,000 or more is Ocala which is located 36 miles ENE of the site. Population centers of 25,000 or more within 100 miles of the site are shown in Figure 2-5 with their corresponding 1973 population estimates. For the purpose of 10CFR100, the calculated low population distance is five miles; however, the distance based on actual population density is 41 miles. For the purpose of this application, the low population zone will be arbitrarily extended to a five mile radius.

The distribution of 1974 population within five miles is mainly in the NNW to NNE and in ESE to SSE quadrants with no known residents within a 3-1/2 mile radius as shown in Figure 2-6. A large portion of the land between the north boundary of the site and the Cross State Barge Canal is under lease to a pulp and paper producer for use as a tree farm until the year 2002. The area within three miles south and east of the site is mostly uninhabited woodland and is expected to remain so through 2020. Population projections to the year 2020 are also shown in Figure 2-6.

Similarly, the population distribution within a 50 mile radius for 1974 and projected for 1980, 1990, 2000, 2010, and 2020 is shown in Figure 2-6.

The methodology used by the University of Florida to determine the population estimation, projection, and distribution is shown below.

The population in the 0-5 mile zone was distributed to the various quadrant sectors within that zone by the Housing Unit Method utilizing a household size of 2.5 persons and confirmed by a field survey of homes in the sectors.

The population in the 5-50 mile zone was calculated by the following method. First, the census enumeration districts in 1970 were placed in their respective sectors; obtaining a 1970 census

July 5, 1974

SAFETY EVALUATION

BY THE

DIRECTORATE OF LICENSING

U. S. ATOMIC ENERGY COMMISSION

IN THE MATTER OF

FLORIDA POWER CORPORATION

CRYSTAL RIVER UNIT 3

DOCKET NO. 50-302

population zone distance, and potential radiological dose consequences of design basis accidents (discussed in Section 15.0 of this report), we have concluded that the exclusion area radius, low population zone, and population center distances meet the guidelines of 10 CFR Part 100, and that the CR-3 site is acceptable.

2.2 Nearby Industrial, Transportation and Military Facilities

There is no significant manufacturing or storage of hazardous materials within a 10 mile radius of the site. There is a dolomite quarry located approximately 4 miles from the site which uses approximately 1000 pounds of TNT equivalent per blasting event, but does not store explosives. There are oil storage facilities at Yankeetown and at Inglis which are located 4.3 miles and 5 miles, respectively, from the site. The two oil fired plants on the site are supplied with oil by approximately 3 barges per week via a 14-mile long channel and intake canal. The Seaboard Coast Line Railroad Company tracks are located approximately 3-1/2 miles east of the site. The closest road, US 19, passes approximately 3 miles from the facility. There are no airports within a 5-mile radius of the plant site. Approximately 8 miles southeast of the site there is a small sod covered airfield which is used by small aircraft. There are no natural gas pipelines passing near the site. There are no missile bases near the site.

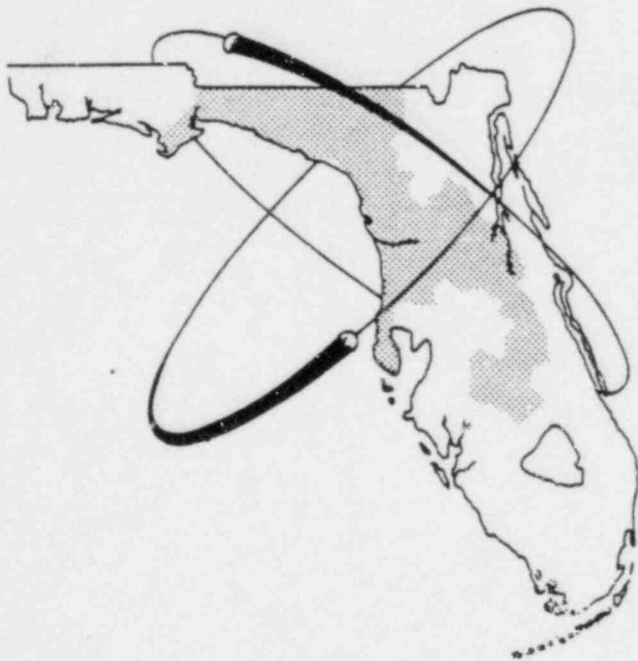
In view of the large exclusion radius and the low industrial activity within 5 miles of the site, we conclude that offsite hazardous materials will not affect the safe operation of CR-3.

Regulatory File Cy.

Received w/LH Dated 1-4-72

DOCKET NO. 50-302

Crystal River Unit 3 Applicant's Environmental Report Operating License Stage



VOLUME 1



Mineral resources in the area include limestone, dolomite and phosphate:

Crushed Stone - Several quarries in the Citrus-Levy County area have intermittently produced crushed limestone, mainly for road construction. The closest to the power plant site, the old Crystal River Quarry, lies 4 miles southeast of the town of Crystal River, 12 miles southeast of the power plant site. The quarry was last mined by Dixie Lime and Stone Company several years ago when Highway U. S. 19-98 was widened to four lanes. A rock face of 132 feet is exposed, the tallest in Florida. The upper 24 feet would probably also be usable for construction aggregate if a local market existed. The quarry is presently idle but still contains much mineable rock too far from markets for exploitation.

Dolomite - Two active open pit dolomite mines exist near the plant site. The Red Level Dolomite Mine adjoins the power plant property on the east, and the Lebanon Station open pit mine is 12 miles northeast. The dolomite is mined mainly as a fertilizer additive. An abandoned mine, probably of the same type, is on the west side of Highway U. S. 19, approximately 9 miles northeast of the plant site.

Phosphate - A north-northwest trending bank of phosphate rock ("hard" rock phosphate) passes through the eastern parts of Citrus and Levy Counties. The phosphate was typically in the form of phosphatized limestone, pebbles, bone fragments, and phosphatic clay. Most of the open pit mines in this area have been abandoned now in favor of the more easily mined deposits to the south in Polk County; however, a small segment of the industry remains and is presently re-mining old spoil sites to recover phosphate ("soft" rock phosphate) from the former waste.

Miscellaneous Other Minerals - Other potential, but presently undeveloped, mineral resources of the general region include: construction sands, glass sands, and heavy mineral concentrates (limenite, leucoxene, rutile, zircon, monazite, stanrolite, and others). Aside from local use in construction, the sands and associated minerals are not presently being exploited in the counties adjoining the plant site. The potential for development has been reviewed recently by Reeves (1970).

Petroleum - To date, three petroleum exploration holes have been drilled in Citrus County, eight in Levy County, and two in the offshore area within 10 miles of the coast. None has yielded commercial quantities of oil or gas.

The closest test was the Mobil #1 Harbond, Inc., located in Section 25, Township 17S, Range 16E, just northwest of Red Level, and adjacent to the Florida Power Corporation property. This test was drilled in 1965 to a depth of 4,794 feet, where it encountered "basement rock." possibly of Ordovician age. It was dry and abandoned.

Although all tests to date have been negative, it can be expected that future exploration holes will be drilled, as many geologic factors are favorable for oil occurrence in the Cretaceous rocks of the Florida West Coast.

d. Hydrology

(1) Surface Water

The hydrology in the area of the Crystal River Plant is reasonably complex. The major streams in the general vicinity of the site are the Withlacoochee

FROM: Helen L. Spivey Crystal River, FL	ACTION CONTROL	DATES	CONTROL NO.
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	INTERIM REPLY	<i>7/14</i>	DATE OF DOCUMENT
	FINAL REPLY	<i>s/ Denton</i>	7/17/84
TO: Dircks	FILE LOCATION	PREPARE FOR SIGNATURE OF: <input type="checkbox"/> CHAIRMAN <input type="checkbox"/> EXECUTIVE DIRECTOR OTHER: Denton	
DESCRIPTION <input checked="" type="checkbox"/> LETTER <input type="checkbox"/> MEMO <input type="checkbox"/> REPORT <input type="checkbox"/> OTHER		SPECIAL INSTRUCTIONS OR REMARKS	
Questions concerning regulations re construction of Crystal River Nuclear Plant			
ASSIGNED TO	DATE	INFORMATION ROUTING	
Denton, HRR	7/20/84	O'Reilly	
Eisenhut	7/20/84	Case/Denton	
<i>Stulz</i>	<i>7/23</i>	L. PPAS	