



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

V. J. Jones

SEP 02 1981

MEMORANDUM TO: Robert L. Tedesco, Assistant Director  
for Licensing, DOL

FROM: Daniel R. Muller, Assistant Director  
for Environmental Technology, DE

SUBJECT: RECENT POPULATION DATA AND PROJECTIONS FOR ST. LUCIE SITE

The Siting Analysis Branch, as a result of its review of the OL application for St. Lucie Unit 2, has recently received more recent population data and projections for the St. Lucie site vicinity than are currently in the FSAR. We have requested that the FSAR be updated and the applicant has agreed to do so. The latest data is based upon the 1980 Census which has very recently become available plus site surveys and discussions with local planning officials. Briefly, the data indicate that there has been substantial growth in the vicinity of St. Lucie from 1970 to 1980, and that a high population growth rate within 10 miles is projected for the future.

The attached table presents the latest cumulative population and population density values around the St. Lucie site for the years 1981, 1983 (estimated year of plant start-up), and for successive census years until year 2020 (estimated end of plant life). The table indicates that the close-in population within 5 and 10 miles towards the end of plant life is projected to equal or exceed the 1970 values for sites such as Limerick and Indian Point.

As you know, population considerations for proposed sites applying for a CP have been published by the staff in Regulatory Guide 4.7, "General Site Suitability Criteria for Nuclear Power Stations" November 1975. This guide states in part as follows:

"If the population density, including weighted transient population, projected at the time of initial operation of a nuclear power station exceeds 500 persons per square mile averaged over any radial distance out to 30 miles (cumulative population at a distance divided by the area at that distance), or the projected population density over the lifetime of the facility exceeds 1000 persons per square mile averaged over any radial distance out to 30 miles, special attention should be given to the consideration of alternative sites with lower population densities."

As indicated by the staff criteria, a site that exceeds these population density "trip" levels can nevertheless be selected and approved if, on balance, it offers advantages compared with available alternative sites when all of the environmental, safety and economic aspects for the proposed site and the alternative sites are considered.

8109230705 810914  
PDR ADOCK 05000389  
A PDR



As shown on the attached table, the population density for the St. Lucie site slightly exceeds the "trip" levels only at the end of plant life, in year 2020 and at distances of 5 and 10 miles. However, Regulatory Guide 4.7 was intended for consideration of proposed and alternative sites at the CP stage only.

In order to gain further insight in this regard, we estimated how the population density near the St. Lucie site might compare in future years with other reactor sites. The staff, in SECY 81-20, performed a survey with respect to population times reactor power level for 93 reactor sites, either operating, under construction or planned. This survey, using 1970 Census data, arranged each site into one of 5 groups labelled "Below Average," "Average," "Slightly Above Average," "Above Average," and "Significantly Above Average." The staff proposed that special probabilistic risk assessment studies be carried out for 11 sites comprising the two highest groups ("Above Average" and "Significantly Above Average").

Making the assumption that the population for all other reactor sites increases at the national growth rate, the classification for the St. Lucie site as a function of time is shown below.

<u>Year</u>	<u>Relative Population Classification</u> <u>Of St. Lucie Site</u>
1970	Average
1981	Average
1983	Average
1990	Slightly Above Average
2000	Slightly Above Average
2010	Above Average
2020	Above Average

On the basis of its population growth rate which is projected, although not for many years, to place it into a category considered appropriate for the performance of a probabilistic risk assessment study, we therefore recommend that consideration be given to requesting that the St. Lucie applicant perform and submit such a study.

We also recommend that the Emergency Preparedness Branch review factor the projected population growth into the review procedures in view of the relatively large number of persons projected to be within the 10-mile plume exposure EPZ towards the end of plant life.



SEP 02 1981

-3-

Finally, the discussion on environmental impact of postulated accidents described in the staff's DES will require revision. We understand that such revisions will be incorporated in the FES.



Daniel R. Muller, Assistant Director  
for Environmental Technology  
Division of Engineering

Attachment:  
As stated

cc: HDenton  
ECase  
DEisenhut  
RVollmer  
TMurley  
BGrimes  
RMattson  
WKreger  
RWHouston  
FPagano  
ATHadani  
FMiraglia  
VNerses  
WRegan  
LSoffer  
ABrauner

ST. LUCIE RESIDENT POPULATION DATA

<u>Dist., miles</u>	1981		1983	
	<u>Cum. Pop.</u>	<u>Density</u> (people/mi <sup>2</sup> )	<u>Cum. Pop.</u>	<u>Density</u> (people/mi <sup>2</sup> )
0-1	0	0	0	0
0-2	186	15.	490	39.
0-3	379	13.	849	30.
0-4	1578	31.	2413	48.
0-5	10,336	132.	12,506	159.
0-10	91,512	291.	98,167	312.
0-20	153,890	122.	196,334	156.
0-30	236,879	84.	267,920	95.

19902000

<u>Dist, miles</u>	<u>Cum. Pop.</u>	<u>Density</u> (people/mi <sup>2</sup> )	<u>Cum. Pop.</u>	<u>Density</u> (people/mi <sup>2</sup> )
0-1	0	0	0	0
0-2	.908	72.	2082	166.
0-3	2303	81.	6050	214.
0-4	8051	160.	18,398	366.
0-5	24,374	310.	42,831	545.
0-10	121,697	387.	163,115	519.
0-20	223,039	177.	307,926	245.
0-30	334,736	118.	439,912	156.

2010

2020

<u>Dist., miles</u>	<u>Cum.Pop.</u>	<u>Density</u> (people/mi <sup>2</sup> )	<u>Cum. Pop.</u>	<u>Density</u> (people/mi <sup>2</sup> )
0-1	0	0	0	0
0-2	2457	196.	2457	196.
0-3	8534	302.	12,338	436.
0-4	27,326	544.	41,348	823.
0-5	59,832	762.	83,588	1064.
0-10	223,486	711.	317,033	1009.
0-20	403,694	321.	548,696	437.
0-30	550,756	195.	711,462	252.



11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60  
61  
62  
63  
64  
65  
66  
67  
68  
69  
70  
71  
72  
73  
74  
75  
76  
77  
78  
79  
80  
81  
82  
83  
84  
85  
86  
87  
88  
89  
90  
91  
92  
93  
94  
95  
96  
97  
98  
99  
100