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 FACIL: STN-50-528 Palo Verde Nuclear Station, Unit 1, Arizona Public Service Co. 05000528
 STN-50-529 Palo Verde Nuclear Station, Unit 2, Arizona Public Service Co. 05000529
 STN-50-530 Palo Verde Nuclear Station, Unit 3, Arizona Public Service Co. 05000530
 AUTH. NAME: AUTHOR AFFILIATION
 VAN BRUNT, E.E. Arizona Public Service Co.
 RECIP. NAME: RECIPIENT AFFILIATION
 KNIGHTON, G. Licensing Branch 3

SUBJECT: Responds to SSER 5 (NUREG-0857) requesting addl info re meteorological affect of Palo Verde hills. Data for primary meteorological tower representative of meteorology in emergency planning zone.

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 TITLE: Licensing Submittal: PSAR/FSAR Amdts & Related Correspondence

NOTES: Standardized plant. 05000528
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	RGN5	3 3		RM/DDAMI/MIB	1 0
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Arizona Public Service Company

P.O. BOX 21666 • PHOENIX, ARIZONA 85036

January 3, 1984
ANPP-28525 - WFQ/KEJ

Director of Nuclear Reactor Regulation
Attention: Mr. George Knighton, Chief
Licensing Branch No. 3
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Units 1, 2 and 3
Docket Nos. STN-50-528/529/530
File: 83-056-026; G.1.01.10

Reference: (1) Letter from E. E. Van Brunt, Jr., APS to G. Knighton, NRC
dated August 30, 1983 (ANPP-27683 ACR/WFQ)

(2) NUREG-0857, Supplement No. 5, "Safety Evaluation Report"
Related to the Operation of Palo Verde Nuclear Generating
Station, PVNGS Units 1, 2 and 3 dated November, 1983

Dear Mr. Knighton:

The referenced (1) letter provided a discussion of our capability to characterize meteorological conditions in the vicinity (up to 10-miles of the plant site).

Section 13.3.2.3, Item H(3) of the referenced (2) SER, requests that APS provide additional information concerning the potential affect of the Palo Verde Hills, located approximately five (5) miles to the west and north of the site, on local meteorological conditions. Specifically, additional information is required which: (1) discusses why meteorological conditions would not be affected, or (2) describes supplemental measures to compensate for these variations in elevation.

The attachment discusses why metoreological conditions would not be affected by the Palo Verde Hills and responds to the referenced (2) SER Request.

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Mr. George Knighton, Chief
File: 83-056-026; G.1.01.10
Page Two

If you have any questions concerning this information, please contact me.

Very truly yours,

E. E. Van Brunt oar

E. E. Van Brunt, Jr.
APS Vice President
Nuclear Projects Management
ANPP Project Director

EEVB/KEJ/sls

Attachments

cc: A. C. Gehr (w/a)
E. Licitra (w/a)



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January 3, 1983
ANPP-28525 - WFQ/KEJ

STATE OF ARIZONA)
) ss.
COUNTY OF MARICOPS)

I, A. Carter Rogers, represent that I am Nuclear Engineering Manager of Arizona Public Service Company, that the foregoing document has been signed by me for Edwin E. Van Brunt, Jr., Vice President Nuclear Projects, on behalf of Arizona Public Service Company with full authority so to do, that I have read such document and know its contents, and that to the best of my knowledge and behalf, the statements made therein are true.

A. Carter Rogers
A. Carter Rogers

Sworn to before me this 30th day of December, 1983

Nora E. Meador
Notary Public

My Commission expires:

My Commission Expires April 6, 1987



THE UNIVERSITY OF CHICAGO

ATTACHMENT

- o Further clarification of the effect of terrain, specifically the Palo Verde Hills located approximately five (5) miles to the west and north of the site, on the representativeness of data measured from the PVNGS Meteorological Tower System for an area within a 10-mile radius of the PVNGS plant site.

As noted in the referenced letter, the terrain in the region of the PVNGS site is generally flat, with an approximate elevation of 950 feet MSL. The Palo Verde Hills, a small range of hills with a maximum elevation of 2,172 feet MSL, are located to the west and north of the site. Additionally, other small scattered hills are contained in the site area (approximately two (2) miles from the site), with peak elevations of 1,100 feet MSL.

Terrain effects on the PVNGS site and local meteorology result from two (2) influences:

- (1) the mountainous terrain to the north of the site which includes the Big Horn, Vulture, Wickenburg, Date Creek and the Santa Maria Mountains, located approximately at distances of 20 to 100 miles north of the PVNGS, and
- (2) the resulting north-to-south sloping terrain from Prescott, Arizona to an area well to the south of the PVNGS. Thus, at night when stable atmospheric conditions are prevalent at the site, drainage wind flows from the north can occur due to the influences of this sloping terrain. The Palo Verde Hills are not expected to have any significant effect on the drainage wind-flow patterns observed at the site during stable atmospheric conditions, or affect the representativeness of data measured from the Meteorological Tower System for an area within a 10-mile radius of the PVNGS plant site.

Additionally, any local wind-flow patterns, such as katabatic (nighttime downslope) and anabatic (daytime upslope) which may develop due to the terrain of the Palo Verde Hills are also expected to have no significant effect on the representativeness of any data measured from the Meteorological Tower system for an area within a 10-mile radius of the PVNGS plant site.

The maximum effective elevation of the Palo Verde Hills is 1,225 feet (2,172-950) from which the PVNGS is located at a distance of five (5) miles (26,400 feet). Therefore, a factor of 21.6 is calculated ($26,400 / 1,225$) that relates effective elevation to separation distance. Thus, any winds from the west through north directions which encounter the Palo Verde Hills will not significantly affect the data measured at the PVNGS Meteorological Tower. A general rule of thumb for specifying an "open" exposure has been a distance of $5 \text{ to } 10 \times H$ from the obstruction (where H is the height of the obstruction)(Reference A).

The exposure, siting and specifications of the meteorological instruments, sampling and averaging times and data collection procedures used at PVNGS meet the intent of the position of Regulatory Guides 1.23 and 1.97. These elements are specifically described in Section 2.3.3 of the FSAR.

To conclude, the data for the primary meteorological tower at PVNGS is representative of the meteorology in the Emergency Planning Zone (EPZ). This data can be accurately used to develop atmospheric diffusion parameters that, with an appropriate dispersion model, can be used to estimate potential radiation doses to the public resulting from releases of radioactive materials to the atmosphere or to evaluate the potential dose to the public as a result of hypothetical reactor accidents.

Reference A) Hilfiker, R. C., "Exposure of Instruments", in Air Pollution Training Manual, Training Course 411, USEPA Air Pollution Training Institute, Research Triangle Park, NC (August 1973)

The first part of the report discusses the general situation of the country and the progress of the work. It also mentions the results of the various investigations and the conclusions drawn from them. The second part of the report deals with the specific details of the work, including the methods used, the results obtained, and the conclusions reached. The third part of the report discusses the future work and the plans for the next year.