



Arizona Nuclear Power Project

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

ANPP-32651-EEVB/WFQ
May 16, 1985

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Units 1, 2, and 3
Docket Nos. STN 50-528(License No. NPF-34)/529/530
Salt Drift Monitoring
File: 85-004-419.06

Reference: Letter from E. E. Van Brunt, Jr., ANPP, to G. Knighton, NRC
(ANPP-32275) Dated March 29, 1985, Subject: Salt Drift Monitoring

Dear Mr. Knighton:

The reference letter provided changes which have been made to the Salt Deposition and Impact Monitoring Plan (Revision 3) submitted to the NRC by APS, letter dated September 26, 1983. Item 3a of the reference letter discussed that only cotton yield was to be determined since that crop is the most significant crop grown close to PVNGS. Attached for your information is a discussion of the justification for the limitation of crop yield sampling to cotton.

If you have any questions, please contact Mr. W. F. Quinn of my staff.

Very truly yours,

EE Van Brunt/JSK

E. E. Van Brunt, Jr.
Executive Vice President
Project Director

EEVB/WFQ/slh
Attachment

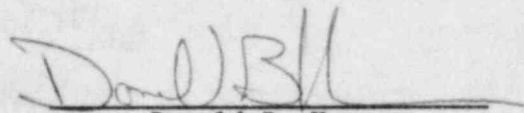
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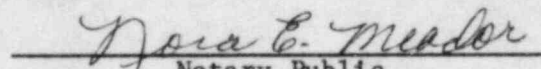
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STATE OF ARIZONA)
) ss.
COUNTY OF MARICOPA)

I, Donald B. Karner, represent that I am Assistant Vice President, Nuclear Production of Arizona Nuclear Power Project, that the foregoing document has been signed by me on behalf of Arizona Public Service Company with full authority to do so, that I have read such document and know its contents, and that to the best of my knowledge and belief, the statements made therein are true.


Donald B. Karner

Sworn to before me this 16 day of May, 1985.


Notary Public

My Commission Expires:

My Commission Expires April 6, 1987

JUSTIFICATION FOR LIMITATION OF CROP YIELD SAMPLING TO COTTON

One of the program objectives of the "Salt Deposition and Impact Monitoring Plan" has been modified from "estimation of . . . yield of cotton and other significant agricultural crops" in Revision 3 to "measures . . . yield of cotton." This restriction of yield determinations to cotton was intended to remove any ambiguity from the program plan for the operating plant and represents a formalization of the program as practiced for the past two years, such practice having been adopted based on field experience.

1. Cotton is the predominant crop grown in the plant vicinity. In the summer of 1983, cotton was grown at six of the thirteen cultivated sites, alfalfa at two (including one control site 18 miles distant), sorghum and watermelon at one each, and the remaining three fallow. Over the 1984 summer season, cotton was grown at ten of the locations, alfalfa only at the control site, and two sites were fallow. For the current (1985) sampling season, alfalfa will again be grown at the control site and one other, cotton at eight locations and three will be fallow. The history of crops grown at the agricultural sampling locations clustered within about five miles of the plant clearly demonstrates that cotton is the most significant crop grown in the cultivated areas closest to the plant.
2. Alfalfa is the only other crop with continuing representation in local plantings on the thirteen agricultural sites over the three year program history; it is sampled and analyzed for tissue salt content where grown. However, sampling alfalfa for yield is extremely difficult, and it is more than likely that reliable yield data cannot be obtained. The commitment of a substantial amount of time and the coordination required with individual farmers required to assure success, makes it impractical to perform meaningful yield monitoring.
 - a. Alfalfa is harvested about six to eight times each season when it reaches a height deemed by the farmer to be suited for cutting. To determine the yield of a field of alfalfa that is comparable with that obtained by the farmer and consistent from year to year, it is necessary to sample the field each time immediately before it is harvested. Since the day of harvesting is determined by each farmer based on the crop height, amount of flowering, weather and market forecasts, field conditions, equipment availability and a variety of other factors, it is not possible to obtain enough advance notice to schedule a field team to sample this crop; to be a day late (or even to arrive on harvesting day) is to miss that segment of the yield data altogether. The crop yield would be determined as the sum of the cuttings per unit area over the growing season; thus, the loss of sample from a single cutting would invalidate the yield estimate for an entire crop year. To assure a successful sampling for yield would require the availability of a sampling team on standby for perhaps a week on either side of each expected harvesting date.
 - b. Yield changes from year to year can also result from a decision by the farm operator to extend or shorten the interval between successive harvests in any growing season for a variety of reasons, which might include equipment failures, adverse weather or field conditions, for example.

These effects are quite apart from influences on yield resulting from such farm practices as fertilization, soil conditioning, irrigation and insect control as well as those resulting from unfavorable weather conditions which would also be observable in the single yield measurements on cotton.

3. The investigations of the University of Arizona (Foster et al, 1984) indicated clearly that the effects on alfalfa, barley and cantaloupe yields of foliar salt deposition were non-existent at dosages of 370 pounds per acre-year or less. In the case of field-grown alfalfa, the effects, if any, on yield were questionable at dosages of 740 pounds per acre-year. These dosages are several orders of magnitude greater than those predicted to occur at the nearest cultivated site and thus no yield effects whatsoever would be anticipated to be observed there or at the greater distances at which alfalfa, barley and melons might be grown from time to time. The U of A study was more ambiguous about the relationship between dosage and cotton yield, with assertions of possible yield reductions at relatively lower dosages of simulated drift relative to cotton sprayed with distilled water.

In summary, considering the infrequent occurrence of alfalfa and other crops relative to cotton within about five miles of the plant, the impracticality of adequately sampling alfalfa for yield, and the documented insensitivity of alfalfa, barley and melons to foliar deposition it was concluded that the salt drift monitoring program at Palo Verde should continue to restrict its yield determinations to cotton only, and should document such a restriction formally in the current revision to that monitoring program plan.