

**ARIZONA PUBLIC SERVICE COMPANY**

**PALO VERDE NUCLEAR GENERATING STATION  
ANNUAL ENVIRONMENTAL OPERATING REPORT  
FOR 1991**

**APRIL 1992**

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## I. INTRODUCTION

The Palo Verde Nuclear Generating Station (PVNGS) is located in Maricopa County, Arizona, approximately 50 miles west of the Phoenix metropolitan area. The PVNGS site comprises approximately 4050 acres. Site elevations range from 890 feet above mean sea level at the southern boundary to 1030 feet above mean sea level at the northern boundary. The station consists of three pressurized water reactor electrical generating units with a nominal generating capacity of 1270 MWe per unit.

PVNGS was issued low power operating licenses NPF-34, NPF-46 and NPF-65 for Units 1, 2 and 3 by the United States Nuclear Regulatory Commission (NRC) on December 31, 1984, December 9, 1985, and March 25, 1987, respectively. The Unit 1 full power operating license NPF-41 was issued June 1, 1985. The Unit 2 full power operating license NPF-51 was issued April 24, 1986. The Unit 3 full power operating license NPF-74 was issued November 25, 1987. Appendix B to these operating licenses is entitled the "Environmental Protection Plan (Non-Radiological)". The Environmental Protection Plans (EPP) of each of the current operating licenses are identical.

The EPP is to provide for protection of environmental values during construction and operation of the nuclear facility. The principal objectives of the EPP are as follows:

- (1) Verify that the station is operated in an environmentally acceptable manner, as established by the FES (Final Environmental Statement) and other NRC environmental impact assessments.
- (2) Coordinate NRC requirements and maintain consistency with other Federal, State and local requirements for environmental protection.
- (3) Keep NRC informed of the environmental effects of facility construction and operation and of actions taken to control those effects.

This report is intended to satisfy the requirements of Section 5.4.1 of the EPP regarding the submittal of an Annual Environmental Operating Report to the Commission. This report describes the activities during the year 1991 related to the PVNGS EPP. For purposes of this report, reference to the EPP is considered to be the EPP of NPF-41, NPF-51 and NPF-74.



## II. ENVIRONMENTAL MONITORING SUMMARIES AND ANALYSIS

### A. Cultural Resources

Section 4.2.1 of the EPP requires that an archaeological survey be performed when final alignment of the PVNGS-to-Saguaro transmission line is completed. As of the date of this report, plans for this transmission line have been placed on indefinite hold. Therefore, there has been no further activity in this area of the EPP.

### B. Terrestrial Ecology Monitoring

Section 4.2.2 of the EPP requires that the provisions of the Salt Deposition and Impact Monitoring Plan (Revision 4, May 1985) be implemented by the onset of commercial operation of the first unit. The EPP further stipulates that the monitoring plan continue for a minimum of three full years after the onset of operation of all three units or until shown to not be necessary. Unit 3 (the last unit licensed at PVNGS) began commercial operation in November 1987. Therefore the minimum required monitoring period was satisfied as of November 1990. However, APS elected to continue the salt deposition monitoring program for an additional year. As communicated in a letter from William F. Conway, APS, to NRC, dated December 30, 1991, the salt deposition monitoring program was discontinued at the end of 1991.

Since its inception in 1983, the objective of the Salt Deposition Monitoring Program for PVNGS has been to identify any evidence of adverse impacts of the cooling tower drift emissions on the environment around the plant. The initial programmatic concern was directed at ensuring that crops cultivated on adjacent farm lands were not adversely affected by these emissions. The enclosed report, Annual Report for PVNGS Salt Deposition Monitoring Program, January - December 1991, describes the results of the sampling activities conducted during the period of January through December 1991 and presents an analysis of this data. The media sampled include cooling tower basin water, deposited soluble and insoluble minerals (salt), soils, and vegetation (indigenous and cultivated).

Results for the various media sampled in the 1991 Salt Deposition Monitoring Program have been compared with corresponding preoperational values. There are indications that the cooling tower emissions have affected the deposition samples from close-in monitoring sites. This is particularly true for deposition samples at locations close to the towers and out to a distance of about one mile from the center of the Unit 2 tower cluster. The 1990 results, as presented in last year's annual report, produced similar findings. The 1991 operations of



PVNGS has not extended the range of influence of cooling tower drift emissions beyond that observed in 1990 and has had no significant effects on the off site environment.

The results of the Salt Deposition Impact Monitoring Program over the intervening years failed to find any evidence that crops on nearby farms were adversely affected by cooling tower drift emissions. The monitoring program studies of the native vegetation have also confirmed the absence of impacts of drift deposition on these species.

### **III. PLANT DESIGN AND OPERATION CHANGES**

Section 3.1 of the EPP allows changes in station design or operation or the performance of tests or experiments affecting the environment provided that such changes, tests or experiments do not constitute an unreviewed environmental question and do not require a change to the EPP. Changes, tests or experiments in which all measurable nonradiological effects are confined to the on-site areas previously disturbed during site preparation and plant construction or in which the environment is not affected are exempt from the evaluation and reporting requirements of Section 3.1. Section 3.2 of the EPP also exempts changes, tests, or experiments which are required to comply with other Federal, State or local environmental regulations.

The following changes in station design and operation were evaluated during 1991 and found not to involve any unreviewed environmental issues.

A small area (less than one acre) of previously undisturbed land within the property boundaries was disturbed to install lights around the PVNGS sludge landfill areas. This action was carried out so as to minimize habitat destruction.

A change in circulating water total dissolved solids specifications was made to further improve water utilization and reduce evaporation pond flows. This change has the potential to increase salt deposition from cooling tower drift, but the impact on off site areas is estimated to be less than the normal deviation identified during preoperational monitoring.





#### **IV. EPP NONCOMPLIANCES**

There were no instances of noncompliance with the EPP identified during 1991.

#### **V. NONROUTINE REPORTS**

There were no nonroutine reports required by Section 5.4.2 of the EPP submitted during 1991.

#### **VI. ENCLOSURE**

Annual Report for PVNGS Salt Deposition Monitoring Program, January - December 1991,  
Halliburton NUS Environmental Corporation, April 1992.

