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AUTH.NAME AUTHOR AFFILIATION
 VAN BRUNT,E.E. Arizona Public Service Co.
 RECIP.NAME RECIPIENT AFFILIATION
 KNIGHTON,G. Licensing Branch 3

SUBJECT: Forwards "Evaluation Time Analysis,10-Mile Emergency
 Planning Zone,AZ Div of Emergency Svcs" & response to 840727
 request for addl info.

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	IE/DEPER/IRB	12	1	1	NRR/DSI/AEB		1	1	
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THE UNIVERSITY OF CHICAGO
DIVISION OF THE PHYSICAL SCIENCES
DEPARTMENT OF CHEMISTRY

RESEARCH REPORT
NO. 1000

BY
J. H. GOLDSTEIN

DEPARTMENT OF CHEMISTRY
UNIVERSITY OF CHICAGO

CHICAGO, ILLINOIS
1955

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Arizona Public Service Company

ANPP-30267-EEVBJr/GEC
August 16, 1984

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
Evacuation Time Analysis
Docket Nos. STN 50-528/529/530
File: 84-056-026; G.1.01.10

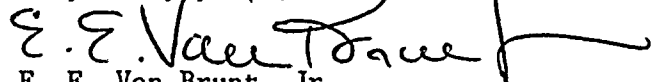
- Reference: (1) Letter from E. E. Van Brunt, Jr., APS, to G. W. Knighton
NRC, dated January 24, 1984 (ANPP-28685). Subject:
Submittal of Time Evacuation Study.
(2) Letter from G. W. Knighton, NRC, to
E. E. Van Brunt, Jr., APS, dated July 27, 1984. Subject:
Request for Additional Information-Evacuation Time
Estimate Analysis for Palo Verde Emergency Plan.

Dear Mr. Knighton:

Attached for your review is the revised PVNGS Evacuation Time Analysis,
10 Mile Emergency Planning Zone, which updates the original study sub-
mitted as an attachment to Reference (1). The revised study incorporates
information in response to Reference (2), your Request for Additional
Information. Also attached is an issue by issue response to the issues
raised in Reference (2).

If you have any questions concerning this matter, please contact Gary
Clyde at (602) 943-7200, extension 6187.

Very truly yours,

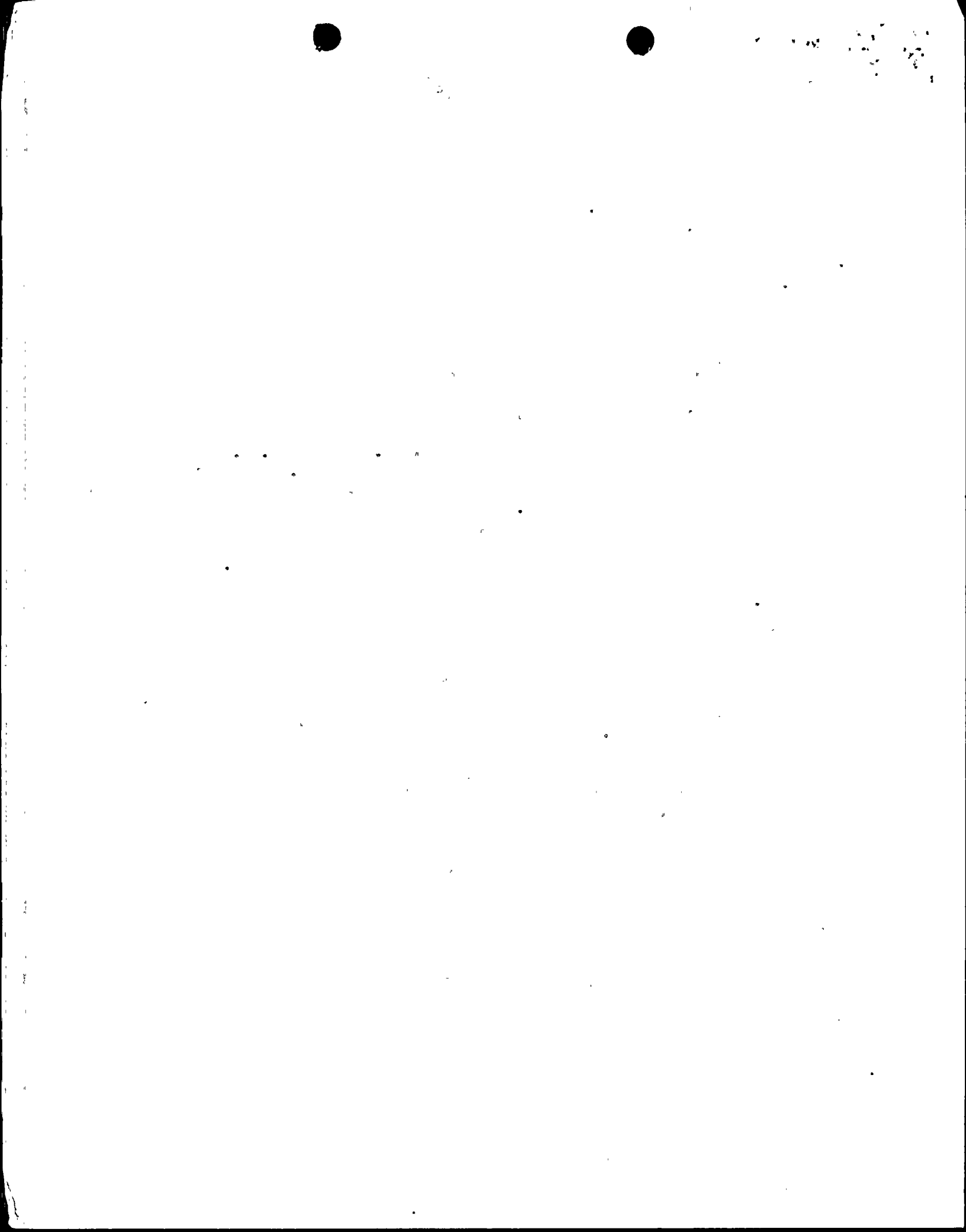


E. E. Van Brunt, Jr.
APS Vice President
Nuclear Production
ANPP Project Director

EEVBJr/GEC/mb
Attachments

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PDR ADDCK 05000528
F PDR

A045
11



STATE OF ARIZONA)
) ss.
COUNTY OF MARICOPA)

I, Edwin E. Van Brunt, Jr., represent that I am Vice President, Nuclear Production of Arizona Public Service Company, 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.

Edwin E. Van Brunt

Edwin E. Van Brunt, Jr.

Sworn to before me this 16th day of August, 1984.

Nora E. Meador

Notary Public

My Commission Expires:

My Commission Expires April 6, 1987

100



Mr. George Knighton
Evacuation Time Analysis
ANPP- 30267
Page 2

cc: E. A. Licitra (w/a)
A. C. Gehr (w/a)
P. D. Robinson (w/a)
R. Zimmerman (w/a)

PALO VERDE
REQUEST FOR ADDITIONAL INFORMATION
REGARDING EMERGENCY PREPAREDNESS OPEN ITEM J(6)

1. The submittal (ANPP-28685-WFQ/KEJ), dated January 24, 1984, provided by APS was reviewed by the staff, and the following issues require resolutions:
 - (a) The citation of the source for the evacuation speed equation used in the Palo Verde Evacuation Time Study (Study) is erroneous. The actual evacuation speed equation used is a modified version of the cited reference. The applicant should reflect this information in the Study.
 - (b) Because the evacuation speed equation used in the Evacuation Time Study is a modified one, the applicant should reflect in the Study that the equation is only valid when demand is less than capacity.
 - (c) The applicant's concept of density (i.e., number of vehicles per mile) assumes the nominal length of a car is 10 feet and that there will be maintained a distance of 10 feet between each car for each 10 miles per hour. Such assumptions lead to erroneous times to clear the last vehicle from a given segment of roadway under consideration; this is because empirical data indicates that people do not generally drive that close to each other. Therefore, the applicant should choose another approach that compensates for this fact. One example would be to utilize a two second time interval between successive vehicles.

RESPONSE:

- (a) Page 3, Section C, paragraph 2 of the Evacuation Time Analysis has been changed to reflect that the formula is a modified version of the formula listed in the Federal Highway Administration Traffic Assignment Manual.
- (b) Page 3, Section C, paragraph 2 of the Evacuation Time Analysis makes special note that this modified formula is only valid when capacity exceeds demand.
- (c) The length of an average vehicle and the separation per ten miles per hour (refer to page 3, Section C, paragraph 4) were increased from ten to twenty feet. This method was suggested during a conference call between APS and NRC staffs by Mr. Urbanik, your consultant. The time for evacuation changed as reflected in the table (Results of Evacuation Time Analysis/ Normal and Adverse Conditions) on page V-7.

