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 AUTH. NAME AUTHOR AFFILIATION
 VAN BRUNT, E.E. Arizona Public Service Co. 3 m/p
 RECIP. NAME RECIPIENT AFFILIATION
 SPENCER, G.S. Region 5, San Francisco, Reactor Construction & Engineer

SUBJECT: Final deficiency rept re cable splice on non-Class IE single conductor 350 KCMIL, 600v power cable from Rockbestos Reel A-478. Actions implemented to assure that only qualified Rockbestos power cable utilized for Class IE circuits.

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ARIZONA



PUBLIC SERVICE COMPANY

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November 5, 1980
ANPP-16691-BSK/JAR

U. S. Nuclear Regulatory Commission
Region V
Walnut Creek Plaza - Suite 202
1990 North California Boulevard
Walnut Creek, California 94596

Attention: Mr. G. S. Spencer, Chief
Reactor Construction and
Engineering Support Branch

Subject: A 50.55(e) Potentially Reportable Deficiency
Relating to Class 1E, 600V, Power Cable
Final Report
File: 80-019-026

Reference: (1) Letter ANPP-15090-JAR, dated March 24, 1980
(DER 80-4)
(2) Interim Report, ANPP-15507-BSK/JAR, dated
May 23, 1980
(3) Interim Report, ANPP-16084-BSK/JAR, dated
August 4, 1980

Dear Sir:

Attached, is our final written report of the potentially reportable deficiency, under 10CFR50.55(e), relating to Class 1E, 600V, Power Cable supplied by Rockbestos Company. A preliminary written report and subsequent interim reports were transmitted by Reference (1), (2) and (3), respectively.

At the time of discovery, the disposition and/or location of factory repaired cable was not known. However, as a result of extensive investigation, evaluation and testing, Rockbestos has presented documentation demonstrating qualification of repaired and unrepaired 600V Class IE cables. The documentation eliminates any concern that a potential may have existed for a common mode failure on a redundant system because of the presence of unqualified factory repairs. If the condition were to remain undetected, it would not have constituted a significant deficiency; therefore, this condition is considered not reportable.

Very truly yours,

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

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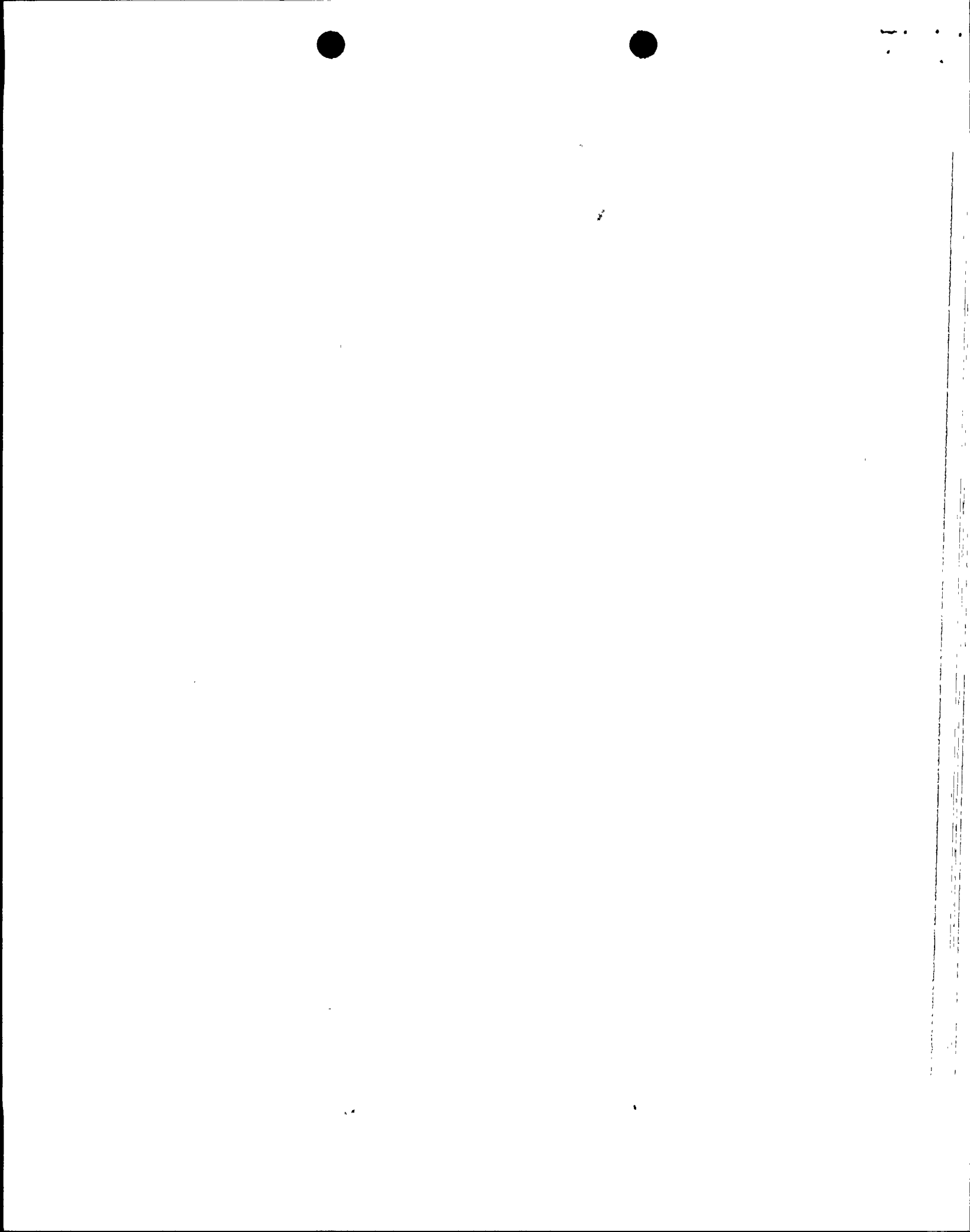
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U. S. Nuclear Regulatory Commission
Attention: Mr. G. S. Spencer, Chief
ANPP-16691-BSK/JAR
November 5, 1980
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cc: Victor Stello, Jr., Director
Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
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FINAL REPORT
POTENTIAL REPORTABLE DEFICIENCY 50.55(e)
ARIZONA PUBLIC SERVICE COMPANY (APS)
PVNGS UNIT #1

I. Description of Deficiency

A non-Class 1E, single conductor, 350 KCMIL, 600V power cable from Rockbestos Reel No. A-478, was being prepared for cable pulling on November 16, 1979. A discovery of a discontinuity in the periodic footage marks on the cable jacket led to the removal of this section and revealed an unexpected "Cable Splice", i.e., two lengths of completed cable had been joined to produce one continuous length. The technical specifications for this cable did not address factory repairs in any respect. Investigation of this finding revealed that the insulation repair material utilized by the supplier, Rockbestos, from the inception of production of cables for Palo Verde until November, 1979, was Union Carbide Compound 4201, also known as KXL-420. This material was never specifically tested for the Class 1E qualification.

In addition, the insulation repair material appeared to be undercured, i.e., not cross-linked. It was also found that multiconductor cables were not spliced by joining two lengths of completed cable to produce one continuous length, but individual insulated conductors of multiconductor cables, as required, were spliced and then their insulations and overall jacket repaired. In both cases, the material used in insulation repair by the vendor, was different than the material used in LOCA and fire resistance test samples subjected to qualification testing in compliance to Purchase Specification 10407-13-EM-058.

Stop Work Order 80-SW-1 was initiated by APS and issued by Bechtel on March 5, 1980 to stop the installation of Rockbestos Class 1E cables. Class 1E cables already delivered to PVNGS were quarantined. On March 7, 1980, NCR E-X-399 was issued against the previously pulled Rockbestos cable in Class 1E circuits.

II. Analysis of Safety Implications

Although this deficiency was discovered in a non-Class 1E cable, it was considered a significant issue because all of the 600V power cable is purchased as Class 1E, regardless of its application, except that the cable needed for Class 1E application is color coded.



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The Class 1E, 600V, cables supplied by Rockbestos are part of the Class 1E, AC 480V and DC 125V power systems and, therefore, supply power to safety-related electrical equipment. The loss of cable due to the failure of one of these repairs before or during a design basis event could result in the degradation of the function of that system.

At the time of discovery, the disposition and/or location of repaired cable was not known. However, as a result of extensive investigation, evaluation and testing, Rockbestos has presented documentation demonstrating qualification of repaired and unrepaired 600V, Class 1E, cables. The documentation eliminates any concern that a potential may have existed for a common mode failure on a redundant system because of the presence of unqualified factory repairs. If the condition were to remain undetected, it would not have constituted a significant deficiency; therefore, this condition is considered not reportable.

III. Corrective Action

The following specific actions have been implemented by Bechtel to assure that only fully qualified Rockbestos power cable has been utilized for Class 1E circuits.

1. In the Containment Building, 600V power Class 1E circuits will use cable produced under new Rockbestos procedure for PVNGS which bans splicing and insulation rework, and identifies reels containing jacket rework through traceability records and reel tag coding. Also, cable codes for Class 1E circuits inside the containment will have a "C" designator on construction pull cards and on the reels to assure the usage of proper cables. This conservative policy is being followed even though Rockbestos has presented documentation demonstrating qualification of unrepaired and repaired, cured and uncured, single conductor and multiconductor Class 1E cable for use inside and outside containment.
2. Outside the Containment Building, 600V power Class 1E circuits will use:
 - a. Cable produced after April 1, 1980 which is not spliced, does not have insulation rework, and jacket reworked reels are identified and traceable. (Bechtel Log No. E-058-13 and E058-40)



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- b. Cable produced prior to October 1, 1979 which may contain cured or uncured KXL-420 insulation repair material. Repaired cables were tested and passed IEEE-383 qualification requirements. (Bechtel Log No. E058-39)

- c. Cable produced October, 1979 to April 1, 1980 which may contain cured KXL-760 repair material were tested and passed IEEE-383 qualification requirements. (Bechtel Log No. E058-39)

