

**Joint Response of Members of the Navajo Transmission
System Engineering and Operating Committee
to Commissioner Mayes' Letter
dated January 3, 2005**

I. Introduction:

The Navajo Transmission System Engineering and Operating Committee ("E&O Committee") is comprised of representatives of Arizona Public Service Company ("APS"), Los Angeles Department of Water and Power ("LADWP"), Nevada Power Company ("NPC"), Salt River Project ("SRP"), Tucson Electric Power Company ("TEP"), United States Bureau of Reclamation ("USBR"), and the Western Area Power Administration ("WAPA") as transmission agent for USBR. These entities jointly own and/or operate various utility properties, including the Westwing Substation located in northwest Maricopa County, Arizona. APS is the Operating Agent for the Westwing Substation. LADWP and NPC do not have any ownership interest in the Westwing Substation and are therefore not joining in this response.

The E&O Committee meets on a regularly scheduled basis every six months and minutes are kept of E&O Committee meetings. In response to a request by the Arizona Corporation Commission ("Commission"), E&O Committee meeting minutes and other materials were forwarded to the Commission for review in connection with its investigation of the transformer fire at the Westwing Substation that occurred in July 2004.

On January 3, 2005, Commissioner Kristen K. Mayes sent a letter to Mr. William Post (APS), Mr. James Pignatelli (TEP), Mr. Richard Silverman (SRP) and Mr. Tyler Carlson (WAPA) (the "Commissioner Mayes letter") that posed a series of questions regarding the substance of the minutes of the E&O Committee's meetings from April 2003 to April 2004 and other material that was included in the December 2, 2004 submission by APS.

This joint response from APS, SRP, TEP, and USBR as the Westwing Substation owners and WAPA as the transmission agent for USBR may be separately supplemented by the Committee's individual utility participants.

The questions posed by Commissioner Mayes are set forth below in the order they appear in Commissioner Mayes' letter. The Committee's corresponding responses follow each set of questions.

II. Questions and Responses:

Commissioner Mayes Letter:

“In a Sept. 2, 2003 capital budget item (Exhibit 109-23 attached to the Sept. 25, 2003 Minutes) an APS representative warns that two transformers are ‘in close proximity’ and that ‘a single fire could cascade into the failure of multiple transformers, similar to the fire at the Vincent substation.’ The budget item, recommending the placement of firewalls at West Wing, goes on to state that ‘Loss of as little as two transformers causes the loss of T1 or T4 for approximately a year and a replacement cost of 2M per transformer phase (\$4M+ per event). West Wing does not have a fire suppression system for transformer fires. Fire fighters will likely elect to let the transformers burn themselves out.’ Given these dire warnings and even predictions that fire fighters would likely allow the transformers to burn out, why did the West Wing owners not make firewall an urgent priority? Additionally, given the budget item’s admission that there was no fire suppression capability at West Wing, did any of the owners contact local fire officials to discuss a fire fighting strategy and did any of the owners discuss the possibility of installing fire suppression at West Wing? Remarkably, both of these predictions turned out to be accurate.”

Response:

The priority of retrofitting the Westwing Substation with firewalls was determined by the E&O Committee based on (i) test results indicating the transformers were in good condition, (ii) existing plans to perform extensive work on the transformers, which would reduce the likelihood of transformer failure, and (iii) a shared belief that under existing conditions, transformer fires were extremely rare.

The discussions during the September 25, 2003 E&O Committee did consider the potential impacts of a destructive failure of one of the transformer phases. The Westwing Substation owners agreed during that meeting that: (i) firewalls should be installed; and (ii) further efforts were needed to develop the appropriate design for the firewalls. At that meeting, the E&O Committee members also decided to establish a subcommittee to provide input to and review of the firewalls design while the owners completed other work already under way at the Westwing Substation, including extensive overhauls of the transformers. This course of action was deemed most appropriate because of concerns regarding the potential for a bushing failure or a Load Tap Changer (“LTC”) failure which would be reduced as a result of the overhauls. In addition to normal testing performed by the owners, prior to the overhaul, the owners performed testing of the transformers and the oil to develop an overhaul plan. During the overhauls, the owners regasketed oil fittings, changed bad bushings, rebuilt oil pumps, overhauled the LTCs, and added LTC oil filtration, all which greatly improved the overall health of the transformers. TEP also had started its process of maintaining the spare phase to T7 before the fire started. The engineer responsible for Exhibit 109-23 also made the presentation at the September 25, 2003 meeting and was satisfied with the decision of the

owners to further investigate design of the firewalls and ensure that the project was done right rather than simply as quickly as possible.

There was no communication between the owners of the Westwing Substation and the local fire officials nor any discussion of installing fire suppression at the Westwing Substation because as stated above, the owners believed that the transformers were in good condition and that the probability of a failure resulting in a fire was extremely low.

Commissioner Mayes Letter:

“It is evident from several emails written by APS representatives on the E&O Committee that delays in the formation of the sub-committee tasked with reviewing the design of the firewalls proposed for West Wing were caused by the failure of the Western Area Power Authority to name a representative to the sub-committee. It appears that WAPA failed to name an individual to the sub-committee from September through July 2004, when the fire ultimately engulfed West Wing. Why did WAPA delay in naming this representative? Were those delays related to budgetary concerns? Did WAPA have to gain Congressional approval for any additional expenses related to its stake in West Wing? Was a WAPA designee ever appointed to the sub-committee?”

Response:

Neither the E&O Committee minutes nor APS’ materials should be read to imply that the timing of WAPA’s designation of a subcommittee representative had any impact on the ability of the Westwing Substation owners to have anticipated, prevented or responded to the fire at the Westwing Substation. Even if the technical design subcommittee had been formed and met immediately following the September 2003 E&O Committee meeting, there was insufficient time to complete the project design, implement an RFP, schedule required outages, and complete construction to have the firewalls in service at the Westwing Substation for the summer of 2004 especially in light of to the extensive engineering and design required to retrofit equipment in existing substations and the need to address certain unique features of the firewalls and the Westwing Substation.

WAPA does not believe that it delayed in naming a representative to the design subcommittee. In addition, the timing of the participation of the WAPA representative was not related to any budgetary concerns. WAPA did not have to obtain Congressional approval for additional expenditures related to the Westwing Substation. To clarify, WAPA has no ownership interest of its own in the Navajo Project or the Westwing Substation. Instead, WAPA acts as the transmission agent and technical consultant to the USBR, which holds the ownership interest in the Navajo Project and the Westwing Substation.

Commissioner Mayes Letter:

“The APS memo accompanying the E&O Minutes states that after March 2004, APS' Design Engineering department recommended postponing a meeting of the subcommittee until the summer of 2004 because other projects took precedence over the firewalls proposal. Again, given the urgency indicated in the September 2003 budget proposal, and given APS' own predictions of the devastation that would be wrought by a fire at West Wing, why was this recommendation of further delay heeded?”

Response:

During the spring of 2004, the APS Design Engineering department was working on a design for installing firewalls at the Four Corners Power Plant. Like the Westwing Substation, Four Corners had certain space limitations that required the use of removable firewalls to facilitate maintenance and protect the operating capability of the transformers. Because the design for Four Corners would serve as a good model for the Westwing Substation design, the E&O Committee believed it was prudent to wait until the Four Corners design was further along before proceeding further with the Westwing Substation design. At the time the owners decided to proceed with a review of firewall installation at the Westwing Substation, there was insufficient time to complete the project design, implement an RFP, schedule required outages, and complete construction to have the firewalls in service at the Westwing Substation for the summer of 2004.

Commissioner Mayes Letter:

“The APS memo accompanying the E&O Minutes also asserts that no member of the Committee ever indicated that they were opposed to the firewalls. And yet, in an April 23, 2003 email from Don LaMontagne to Bob Smith and other members of the E&O Committee, Mr. LaMontagne states that a colleague was working on a presentation that will show ‘scenarios as to what happens if transformer X catches on fire; what other transformers are at risk. It should put their minds at rest.’ If there was a need to ‘put their minds at rest’ doesn't this e-mail indicate that members of the E&O Committee were in fact objecting to the firewalls? If so, what were those objections?”

Response:

The E&O Committee members were not objecting to the construction of firewalls at the Westwing Substation but were inquiring as to how many firewalls were required. The April 23, 2003 e-mail was addressing questions raised by several members of the E&O Committee during the previous day's meeting concerning the need to have firewalls between each individual phase of each transformer or whether it would be sufficient to install firewalls only between each of the three phase transformer banks. Don Lamontagne's response to Bob Smith's e-mail was suggesting that a drawing had been developed that would clarify the need for installing firewalls between all individual phases. There was no opposition to the concept of firewalls, only questions concerning the design.

Commissioner Mayes Letter:

“Between the initial date of proposal of the firewalls and the September, 2003 E&O meeting, cost estimates of the firewalls at West Wing nearly doubled. It was also at the September 2003 E&O Meeting that SRP AND TEP raised questions about the firewalls. Were these questions tied to the increased cost estimates of the firewalls?”

Response:

No. The questions that SRP and TEP raised in the September 2003 Committee meeting were not related to the increased cost estimates for the firewalls. As explained above, SRP and TEP had questions concerning the design of the firewalls. The increase in the cost estimate for installing the firewalls between April 2003 and September 2003 was a result of more detailed analysis and the realization that to avoid reducing the operating capability (rating) of the transformers at the Westwing Substation, special design, construction, and installation would be required to deal with the close proximity of the transformers.

Commissioner Mayes Letter:

“What specifically were the questions raised by TEP and SRP at the September, 2003 E&O Meeting referenced in the minutes from that meeting?”

Response:

At the September, 2003 meeting, TEP raised questions concerning the potential impact of installing firewalls on the operating capability of the transformers due to decreased cooling capability, the impacts the walls would have on performing maintenance, oil retention should a spill occur, and how an oil fire would be restricted in the cable trench. SRP raised questions to ensure that experience gained from designing the Kyrene firewalls would be incorporated at the Westwing Substation. These included allowing for adequate transformer cooling, maintenance access and electrical clearances and taking steps to control burning oil to keep a fire from spreading to adjacent transformers, structures and cable trenches. The Westwing Substation owners (and WAPA) agreed that further information was needed to determine and evaluate the operational and reliability impacts of retrofitting firewalls in the existing transformers at the Westwing Substation.

Commissioner Mayes Letter:

“The APS memo states that more than 14,000 man-hours and more than two million dollars were spent inspecting and refurbishing major equipment at West Wing from April 2003 through July 2004. How many of these man-hours and dollars were spent after or as a result of the June 14th event on APS' system?”

Response:

Approximately 520 man-hours and \$132,000 were spent to replace the 230kV breaker that failed on June 14, 2004 and to add redundant AR relays on two lines at the Westwing Substation. The rest of the more than 14,000 man-hours and two million dollars referenced in the December 2, 2004 memo were spent before June 14, 2004.