STATEMENT OF MICHAEL CHANDLER

My name is Michael Chandler, [redacted] I was working at the Comanche Peak nuclear power plant construction site [redacted] (the very last)

I can personally attest to and will be supported by documented records of several faults in the electrical phase of construction at Comanche Peak as of January 11, 1980. Having been employed as a journeyman electrician by Brown & Root, Inc. during the latter part of 1979 until January 11, 1980 at Comanche Peak, I worked in the electrical "termination crew" doing the actual physical termination of the wiring and later on the "checkout crew". This latter crew checks the wiring done by the termination crew as to accuracy and proper termination technique. I was required to turn in a written and signed report on each cable checked by me. Some, if not all of these faults can be verified and located through these reports. These faults include improper lug sizing and actual physical alteration of lugs, splicing of cable, patching of damaged cables, improper pin setting on "canon" type plugs, faulty grounding, wiring not properly protected from abrasion, wire tension too high, and improper protection of cables during thermal welding.

Lugs are a wiring device that attach to the ends of wires or cables as an aid to termination and come in a variety of styles and sizes. The "ring type" used at Comanche Peak has a hole in its tongue to accept screws from terminal blocks. These holes can be of varying size dependent upon what diameter or stud size screw the terminal block is engineered for. A stud size six is smaller in diameter in both the threaded portion and the head of the screw than a stud size 8 or 10. The lugs for these, in order to fit the different terminal blocks and screw size and at the same time maintain the amperage capacity they are rated for, are manufactured with a different shaped tongue. For example, #12 copper wire has an amperage rating of 20 amps, and a lug designed to accept the wire must have the same or larger ampacity. The rating of the wire is determined by the diameter of the copper conductor. The rating of a lug is determined by the size and shape of the tongue. It must have a specific area of its surface in contact with the terminal block or its ampacity will be lessened. A lug with its tongue designed for a #10 screw has a hole in its tongue that is larger than the hole in one designed for a #6 or #8 screw. The tongue is also wider and thinner. If a lug designed for a #10 screw is used on a terminal block designed for use with #8 screws, its ampacity is lessened because a #8 screw having a smaller head size only applies pressure to the inner ring of the lug tongue causing a "belling" effect. It causes the outer edges of the tongue to curl outward, also less area under the screw head is in contact with the terminal block because of its larger hole. There are many instances where this has happened at Comanche Peak. Some of these are:

1. Auxiliary Building Reactor #1---Lug designed for an approximate screw size of 3/8" was used on a terminal block designed for #10 screws. This was done with the aid of a steel washer without the use of contact aid to prevent electrolysis between the two dissimilar metals.

f. Switchgear Room. Several lugs designed for 1/4" screws were used on terminal blocks designed for #10 screws.

These two instances stand out in my mind but there are many more in particular concerning the circulating water system and fire control; however without reference materials I cannot be more specific. However, there is at least one instance I can recall--in fact for which I am at least partially responsible. This is the termination of a 1000 MCM cable with the use of a 750 MCM lug that was drilled to accept the larger cable size. It was done after protest by both myself and Dennis Neaves, another journeyman working as my partner on the termination crew. Drilling the lug affected its capacity in two manners: one, it reduced the amount of metal to conduct electricity and it was a bolt type mechanical lug, meaning that the lug was secured to the cable by means of a bolt or set screw in its body. Drilling the lug body had the effect of lessening the number of threads to not more than three or four for the set screw to be screwed into. This was in a Motor Control Center in the Circulating Water system. Any failure in the circulating water system which provides coolant water for the reactor could possibly cause very serious problems.

At least one cable in the Annunciator Logic Panels in the control room for Reactor #1 was spliced in the annunciator panel itself and covered over with other wires to hide it from sight. The cable was too large (it was assumed) to terminate on the fuse block to which it was designated. Upon examination of the fuse block I found the cable terminated to the wrong side of it. Had it been terminated on the correct size the original cable would have fit. The splice was made on the orders of Frank Platt, the General Foreman over termination. Also in the Annunciator panels there were several "Canon" type plugs in which the pins were not seated properly. This can cause the connector pins to be pushed back into the body of the plug causing the pin or pins to have poor contact. The Annunciator Logic Panels give the alarm if any part of the system malfunctions. Any malfunction in the annunciator system can cause no alarm to be given in any emergency to which the plant may be subject.

Portions of the grounding system for the cable trays in the Spreader Room were damaged either by an employee collecting copper or deliberate vandalism. Strands were cut from the cables in several places. The conductors were never cut entirely in two but the removal of a strand of no matter what length reduces the capacity of the conductor.

In the Control Center for Reactor #1 literally hundreds and possibly thousands of wires were brought out of their metal raceway and pulled sharply over their sharp, unprotected edges, making them particularly vulnerable to abrasion and vibration. Every portion of every system in the plant could be adversely affected by this faulty procedure.

At least one cable in the Switchgear Room was damaged while being pulled. Its insulation was nicked in several places and patched with heat shrink tubing instead of being replaced.

In at least two instances wires or cables were too short by only a matter of inches for proper termination. These were pulled very tightly and terminated. They were pulled tight enough that there is the possibility of their being pulled from their lugs. One of these is in the Spreader Room; another is in a Motor Control Center in the Circulating Water System.

"Cad welding," or thermal weld in. of the grounding conductors on the cable trays was done after many cables had already been pulled through them. I could not inspect for damage, but the only protection used on the cables was an asbestos blanket that protected only the cables in the immediate vicinity of the weld.

I am necessarily vague on which particular cabinet or panel or even system to which I refer due to time elapsed and the large number of systems on which I worked. With reference materials the location of these faults could be much more closely identified as could others not mentioned specifically herein.

Signed this 14TH day of June 1982 at [redacted]

Michael Chandler