SECRETARY OF LABOR, Complainant, v. FLUOR CONSTRUCTORS INTERNATIONAL, INC., Respondent.	OSHRC Docket No. 92-2342

DECISION

Before: WEISBERG, Chairman; MONTOYA and GUTTMAN, Commissioners.

BY THE COMMISSION:

In February 1992, the Tennessee Valley Authority ("TVA") hired Fluor Constructors International, Inc., to renovate a steam-generating plant in Gallatin, Tennessee. In the first few months of the project, two swing scaffolds fell because electrical current from arc welders flowed onto the suspension cables and caused them to break. After an inspection, the Secretary of Labor alleged that Fluor violated the general duty clause[1] by failing to "ground the scaffold[s] to the building structure."

[1]29 U.S.C. § 654(a)(1), the general duty clause of the Occupational Safety and Health Act of 1970, 29 U.S.C. §§ 651-678, requires an employer to "furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees."

There is no dispute that severing a swing scaffold's suspension cables during arc welding or cutting is a recognized hazard in the construction industry that could cause serious harm. *See e.g.*, *Tampa Shipyards, Inc.*, 15 BNA OSHC 1533, 1535, 1991-93 CCH OSHD ¶ 29,617, p. 40,097 (No. 86-360, 1992) (elements of general duty clause violation). The only element of a general duty clause violation at issue is whether the Secretary established that grounding the swing scaffolds to the boiler structure would "eliminate or materially reduce the hazard." *Cardinal Operating Co.*, 11 BNA OSHC 1675, 1677, 1983-84 CCH OSHD ¶ 26,652, p.34,086 (No. 80-1500, 1983) (proof of feasible abatement); *see also National Realty & Constr. Co. v. OSHRC*, 489 F.2d 1257, 1267 & n.40 (D.C. Cir. 1973) (proof of likely utility of abatement).

Fluor claims that the Secretary failed to prove that grounding the scaffolds would "materially reduce the hazard in question beyond what could be accomplished by [the] measures already taken by Fluor." *See Pelron Corp.*, 12 BNA OSHC 1833, 1836, 1986-87 CCH OSHD ¶ 27,605, p. 35,872 (No. 82-388, 1986) (experts familiar with industry must establish specific additional measures capable of making material reduction). Fluor acknowledges that the Secretary's grounding proposal is based on an industry standard that addresses the falling hazard associated with performing welding work on wire-suspended metal scaffolds. However, Fluor states that it is complying with the standard and that grounding cables connected to the boiler under renovation for the TVA in this case would violate the standard. Fluor also claims that grounding the scaffolds would create a greater hazard on the boiler project in this case.

Administrative Law Judge Edwin G. Salyers found for the Secretary that the use of grounding cables would materially reduce the hazard rather than increase it. Therefore, he affirmed the citation.

For the reasons that follow, we affirm his decision. The central issue before us is whether the Secretary's grounding proposal would comply with the industry standard in the

circumstances of this case or whether it would violate the industry standard and create a greater hazard.[2]

I. Background

A. The Hazard and Fluor's Abatement Method

Steam-generating plant renovation involves removing and replacing steel tubing, *i.e.,* steel pipes, inside boiler towers. The TVA boiler tower in which Fluor was working was 40 by 40 feet square and 110 feet high. The swing scaffolds that the employees ("boilermakers") were using consisted of aluminum platforms suspended from the boiler roof by steel wire ropes. The boilermakers cut the tubing off the boiler structure by an arc cutting process known as "gouging." In gouging, electricity and forced-air together generate heat sufficient to melt steel. The electricity travels from an "electrode lead" to the steel work piece (the tubing), which is grounded. Under the circumstances here, the boiler itself constitutes a common ground. The arc welder operates as a power source or generator. In sum, "gouging" occurs when an electrical circuit flows from the electrode lead through the work piece to ground.

When gouging is performed from metal swing scaffolds in a metal vessel such as a boiler, undesirable electrical circuits can accidentally be created if precautions are not taken. For example, unless the wire support ropes are insulated from the metal boiler roof at their suspension points, an electrode lead that accidentally touches a wire rope anywhere along its length will cause the wire to conduct electricity up to the boiler. This occurs because the large boiler structure itself constitutes a ground to which the current flows. The current could embrittle and weaken the cable, leading to cable breakage and scaffold failure, or the current could immediately sever the cable and cause immediate scaffold failure. To the same effect, an electrode lead in contact with a platform can cause current to flow from the platform into the support wires through the metal hoists.

---

[2]We note that the hazard at issue is the potential for falling, not electric shock.

To guard against accidentally severing the scaffolds' support wires, Fluor attempted to electrically isolate the scaffolds so that no circuit could be completed if an electrode lead were to contact a platform or a support wire. Plastic-insulated thimbles and plastic-insulated shackles were used to attach the wire ropes to the top of the boiler roof. Fluor also wrapped rubber hoses and duct tape around the wire ropes from the suspension points down to the first 1-2 feet below the roof-holes. Before gouging, each piece of tubing to be removed was tied to keep it from falling onto the ropes or platforms.

Accidental grounding could still occur, however. The top insulation, *i.e.,* thimbles, shackles, hoses and tape, could develop flaws allowing contact between the boiler and the wire ropes. Also, despite being tied, the tubing that had been cut loose during the gouging process could topple onto the ropes, or wire ropes could get hung up on the tubing.

In March 1992, approximately a month after the TVA boiler renovation project began, a scaffold fell because of accidental grounding. Two boilermakers were working from the scaffold when it fell, although they were not seriously injured inasmuch as they were wearing safety harnesses and lanyards connected to lifelines. Fluor's post-accident investigation revealed that a wire rope had contacted the boiler inside the top insulation because the top insulation developed a defect. After this accident, Fluor began attempting to detect flaws in the top insulation and burned areas on the wire ropes through daily visual inspections and daily pre-shift tests.[3] Fluor also replaced the scaffolds' metal guardrails with wooden ones and installed wooden bumpers on the aluminum platforms to keep them from contacting the boiler wall.

However, as the testifying boilermakers pointed out, pre-shift tests might not detect that the top insulation had broken open enough to allow metal-to-metal contact when there was weight and movement on the scaffolds. Visual inspections might not reveal the problem,

---

[3]Fluor used an ohmmeter, which has two electrical leads that can be connected, one, to a wire rope, and the other, to the boiler, to determine whether a scaffold is isolated from ground.

either, because Fluor did not allow the insulation to be taken apart. A.J. Scardino,[4] Fluor's expert witness, agreed that Fluor's isolation system is "only as good as you check it for failure."

Another scaffold fell two months after the first one, in May 1992. One boilermaker fell onto hot tubing and suffered burn injuries while he dangled in his safety harness. Fluor's post-accident investigation revealed that rope strands had burned on a section of the scaffold's wire rope near the boiler roof, higher than anyone ever went during a visual inspection. Fluor's boilermakers who testified at the hearing also testified that a partially burned wire rope was discovered during a visual inspection sometime between the two accidents in March and May. Immediately after the second accident, some boilermakers began to install grounding cables on their scaffolds, but a Fluor superintendent ordered that the grounding cables be removed.

[4]Scardino was president of Sigma Associates, Ltd., a consulting firm for risk management, loss control, and industrial accident reconstruction. He was educated as a safety engineer, received certification as a hazard control manager, and taught university-level courses in industrial safety and basic electricity. He was also a member of the American National Standards Institute ("ANSI") A10 "parent" committee that adopted the standard at issue here (A10.8).

B. The Secretary's Proposal

The Secretary's expert Harry Fisher[5] testified that Fluor should have followed American National Standards Institute ("ANSI") standard A10.8.[6] The standard requires the top insulation and the platform bumpers that Fluor adopted, and the use of 4-foot long

---

[5]Fisher, a consultant mechanical engineer and licensed scaffold inspector, designed swing scaffolds for construction and building-exterior maintenance. He had worked as an engineer for Spider Staging, a Seattle corporation that designs and fabricates swing scaffolds for construction and demolition of structures, including tanks. At Spider, Fisher investigated the causes of scaffold accidents and their prevention and became familiar with the problems associated with scaffold design and application, including problems arising from welding operations. Fisher was a member of the ANSI subcommittee that formulated and recommended the adoption of the standard at issue here (A10.8).

[6]In pertinent part, ANSI A10.8 (1988) (scaffolding safety requirements) states:

> 6.2.9 To reduce the possibility of the welding current arcing through the suspension wire rope during the course of welding from suspended scaffolds, the following precautions shall be taken (see Figure D8):
>
> (1) An insulated thimble shall be used to attach each suspension wire rope to its hanging support . . . .
>
> (2) The suspension wire rope shall be covered with insulating material at least 4 feet above the hoist. . . .
>
> (3) Each hoist shall be covered with protective covers made from insulating material.
>
> (4) In addition to a work lead attachment required by the welding process, a grounding conductor shall be connected from the scaffold to the structure. The size of this conductor shall be equal to or greater than the size of the welding process work lead and shall not be in series with the welding process or the work piece.

insulating sleeves on the wire ropes at platform-level.[7] In addition, the standard requires grounding cables that must run "from the scaffold [platform] to the structure," must be "equal to or greater than the size of the welding process work lead," and must not be "in series with the welding process or the work piece."[8] In the event of electrode lead contact with the aluminum platform,[9] grounding cables would carry almost all the current to ground and virtually eliminate any circuit capable of severing a support cable, according to Fisher, Anthony D. Smith,[10] and Jim E. Lapping.[11]

---

[7]A separate citation item for insulating sleeves has been affirmed by Fluor's stipulation with the Secretary.

[8]Valid ANSI standards are evidence of feasibility. *Puffer's Hardware, Inc. v. Donovan*, 742 F.2d 12, 19 (1st Cir. 1984); *General Dynamics Land Systems Div., Inc.*, 15 BNA OSHC 1275, 1286, 1991-93 CCH OSHD ¶ 29,467, pp. 39,757-58 (No. 83-1293, 1991), *aff'd,* 985 F.2d 560 (6th Cir. 1993) (table). Therefore, to the extent that the ANSI standard might be challenged here, we accept it as a guide. Fluor does not dispute the wisdom of the standard, although Fluor correctly notes that such a standard does not bind us. Fluor's dispute with the Secretary, as discussed, lies in the meaning of the standard.

[9]The insulating sleeves and the hoist insulation that the ANSI standard requires do not create a barrier between the support wires and the aluminum platform; thus, there is still a metal-to-metal path from the aluminum platform to the support wires.

[10]Smith was a boilermaker rather than an electrician, but his opinions as to the electrical hazard and its proper abatement were based on his fifteen years of work experience. We rely on his opinions where corroborated by other testimony.

[11]Lapping, director of safety and health for the AFL-CIO's Building and Construction Trades Department representing fifteen construction-related unions, served as vice chairman of the ANSI A10 "parent" committee that adopted A10.8 (1988) after the ANSI A10.8 subcommittee formulated it and recommended its adoption. In 1974, while serving as director of training with the Occupational Safety and Health Administration ("OSHA"), he assisted in developing safety programs for contractors' associations and organized labor. He set up safety programs for "most of the power companies throughout the United States," including Georgia Power, Florida Power & Light, and Jacksonville Electrical Authority. He was familiar with boiler renovation. He taught electrical safety at university-level and in

(continued...)

Lapping testified that copper grounding cables would reduce the current on the aluminum platforms by 95 percent and that the remaining current that could flow onto the support cables would be "insufficient to cause a cable separation." Fluor's witnesses agreed that the grounding cable would carry the bulk of the current to ground. John W. Pratt, Fluor's electrician superintendent,[12] testified that copper is a "good conductor" that will constitute the "path of least resistance" to ground.[13] Walter R. Pewitt, an experienced Fluor electrician, testified that copper would carry "better than two-thirds" of the current. Scardino, Fluor's expert witness, testified that copper is a "very good conductor." He indicated that "some flow" through a defectively insulated support wire could make it brittle. He agreed with the Secretary's expert witnesses, however, that in the absence of a grounding cable to direct the flow away from the support wire, the whole current can flow into an accidentally grounded support wire and sever it.

II. Discussion

A. The ANSI Standard's "In Series" Language

The initial question is whether the Secretary's grounding proposal would violate the ANSI standard in the circumstances here. The standard requires that the grounding cable connected from the scaffold platform to the structure "shall not be in series with the welding process or the work piece." According to Scardino, boiler renovation typically involves

---

[11](...continued)
OSHA training courses.

[12]Pratt was a journeyman electrician with 35 years of experience, including renovation of power plants. Although Fluor did not offer Pratt as an expert in electricity, Judge Salyers "considered" him an "expert" who would "know electricity backward and forward."

[13]Although Pratt testified that he "wouldn't work on [a scaffold] that was grounded," when Judge Salyers asked him, "You don't buy the theory, then, that the copper ground from the platform to the structure would drain off any high energy[?]" Pratt replied, "Sure it will, Judge."

numerous welding machines[14] whose work leads are connected to the boiler at floor-level to minimize congestion. If grounding cables were connected to the boiler at platform-level, the grounding cable connection would be *in between* the work leads and the electrode leads (held by boilermakers standing on the scaffolds). Scardino testified that under these circumstances a grounding cable connected to a boiler would be "in series" with the gouging circuits in violation of the ANSI standard.[15] A diagram in the ANSI standard ("Figure D8") shows the grounding cable attached *below* both welding process leads.[16] In Scardino's opinion, Figure D8 thereby supports his view.

On the other hand, Fisher and Lapping both interpreted the "in series" language of the ANSI standard to mean that a grounding cable must not be made out of a work lead. That is, an employer must not ground a platform through the welding machine by connecting the work lead to the platform, then connecting the platform to the work piece with another copper cable. As Fisher testified, "We want the ground lead of the welding machine to go directly to the work and then parallel to that, we want the scaffold to have its own lead going directly to the work," and, "what we don't want is a series of connections of the ground lead to the work through the scaffold." Lapping testified that *both* the Figure D8 set-up (where the grounding cable is below the electrode lead and the work lead) *and* the boiler set-up (where the grounding cables are between the two gouging process leads) are *not* "in series" and thus *not* in violation of the ANSI standard because "the current is not flowing through

---

[14]At its peak, Fluor's project involved 20-30 simultaneously operating machines.

[15]Pratt gave similar testimony.

[16]Figure D8 shows an insulated *and* grounded swing scaffold on the outside of a brick-faced building that has an inner skeletal steel structure (as indicated where a segment of the bricks is shown cut away). At ground-level outside the building, an electrode lead from a welding machine is shown contacting a skeletal steel column at platform-level. Below the electrode lead is the work lead, clamped to the steel column and leading back to the welding machine. Shown below the work lead on the column is a "stage (platform ground)."

the scaffold, and through the work at the same time." Lapping and Fisher explained that the work leads can be attached anywhere on a steel structure and the entire structure will constitute a ground.[17] This accords with Scardino's testimony that the work leads make "the entire shell wall" of the boiler structure a "common ground." In short, the experts agreed that the boiler is a "ground."

We reject Fluor's interpretation of ANSI's "in series" language on the basis of Lapping's and Fisher's testimony and on the basis of the definition of a series circuit. "Series" in electrical usage is "an arrangement of the parts of or elements in an electric circuit whereby the whole current passes through each part or element without dividing or branching." *Webster's Third New International Dictionary, Unabridged,* 2073 (1986).[18] The series of connections that Fisher described ("the ground lead to the work through the scaffold") would be a series circuit under the definition because the scaffold platform would become part of the welding process. Take the platform out of this "arrangement of parts" or "elements" and the grounding circuit would be broken. The grounding set-up that the Secretary proposes for Fluor's boiler does not create a series circuit because, as Lapping put it, "the current is not flowing through the scaffold, and through the work at the same time." If the grounding cable is removed, the gouging process or circuit still operates.

---

[17]Lapping and Fisher testified that the brick building in D-8 could just as well have been shown surrounding the suspended scaffold, putting the scaffold inside it, and the brickwork could have been shown entirely removed, to display the whole steel structure underneath. This steel structure would be functionally the same as a boiler. In Fisher's words, "it doesn't matter what it is" — metal boiler or skeletal-steel building — as long as "[i]t's a steel structure." Lapping testified that where the work leads are "hooked on the structure" in relation to the scaffold-grounds is "immaterial" because as soon as you hook [the work leads] to the structure of the boiler, the entire boiler is going to zero potential, and is at ground."

[18]"In a series circuit all the components or elements are connected end to end and carry the same current." *McGraw-Hill Encyclopedia of Physics,* 163 (2d ed. 1993).

Finally, Fluor argues that "everyone in the industry" follows its view. However, we have reviewed the transcript pages relied on, and, on balance, do not find that they support Fluor's proposition. To the extent that there is industry practice evidence in the record, it supports the Secretary's position.

Scardino testified that "industry practice recognizes the use of a ground on the scaffold" in vessels "as being a hazard itself." That is, Scardino testified in effect that industry practice is different in vessels than in buildings and other structures. However, the one quotation from a welding textbook to which Scardino referred does not draw any distinction between vessels and buildings or any other large structures.[19] Pratt testified that he had not seen grounding cables in power plants where he had worked.[20] By contrast, Lapping testified that the safety programs of most power companies in the United States require compliance with ANSI for boiler work, and his testimony that "[i]t's not different than outages, any different than work in refineries, chemical plants or any other installation where there's turnarounds or outages" is supported by his explanation, discussed above, that grounding cables can be attached anywhere on a steel structure.[21] Fisher testified that Spider

---

[19]Scardino, as noted above, certainly testified as an expert to his own views, but his reference to other industry sources was limited to written material by a vice president of the American Welding Society and the quotation on which Scardino drew did not state that scaffold grounding was contrary to the ANSI standard or unsafe. It only stated that "when large weldments like ships, buildings or structural parts are involved, it is normal to have the work terminal of many welding machines connected to it."

[20]Pratt was not presented as an expert on industry practice and the scope of his review of industry practice was limited to work for three or four power companies in the southeastern United States.

[21]Lapping, in testifying that most of the power companies in the United States, whose safety programs he had set up, require compliance with the ANSI standard, did not expressly state that grounding cables are required for compliance. However, we read his testimony to mean that grounding cables are required because he testified that the ANSI standard means that

(continued...)

Staging, a swing scaffold supplier with which he had been associated, includes a provision in its customer manual that calls for scaffold grounding where Spider products are used to conduct boiler repairs. In fact, we note that ANSI compliance was recommended on the manufacturer's sticker that came with Fluor's scaffolds. Fisher also testified that he has designed grounded platforms for boiler renovation.

In sum, in view of the above we reject Fluor's arguments that the Secretary's proposal would be at odds with the ANSI standard and that industry practice accords with its view of the meaning of the ANSI standard as relevant to the facts here.

B. Fluor's Claims of Greater Hazard

We turn now to the remaining matter for consideration, whether the Secretary's grounding proposal creates a greater hazard. Fluor's argument that potential for increased harm will be created by the Secretary's proposal has several prongs.

First, at least implicit in Fluor's position is the proposition that a hazard will result because a series circuit will be created and the ANSI standard will be violated. As discussed above, we find that a series circuit will not be created.

Second, Fluor argues that grounding will create a new hazard because an electrode lead that accidentally touches a grounded platform always creates a circuit flowing to ground by means of the grounding cable. In terms of the danger or damage testified to, however, the testimony focused on the gouging of a hole in the platform surface. Fisher testified that "you simply damage the deck a little bit."[22] Fluor electrician Pewitt testified that the employees

---

[21](...continued)
scaffold grounding is required in boiler renovation. He also testified: "My opinion is that the recognized industry practice through the manufacturers, any source that I've ever had contact with[,] is that the ground[ing cable] is the . . . best way . . . to ensure that the suspension cables are not arced through."

[22]He also testified that the ANSI subcommittee was aware of the gouging potential in recommending grounding, and viewed it as a lesser hazard.

on the platform would not be at risk when a hole is burned in its surface. Both parties thus agreed that the hole in the scaffold deck would not endanger the boilermakers.

Fluor argues, in reliance principally on its expert Scardino's testimony, that "some" electrical current can flow upwards into a suspension wire and embrittle it. However, if the platform were not connected to ground with a grounding cable when the electrode lead touched the platform, as the Secretary recommends, *all* of the current would flow into the suspension wire. Thus, to the extent there is a hazard from current flow, the Secretary's grounding proposal limits the hazard.

Third, Fluor argues that grounding will create a new hazard because, as Scardino put it, the grounding cables are "bonding [the] scaffold[s] back into the system." Scardino and Pratt testified that putting the grounding cables between the electrode leads and the work leads would energize the scaffolds. Scardino attributed the energization to "stray current or reverse flow going back into the scaffold" from the boiler wall by means of the grounding cable. That is, as we infer from the testimony, there is an equalization of electrical potential between the boiler and a grounded platform. We note that the Secretary's expert Fisher agreed that, in general (whether in a boiler or in Figure D8), "electrical potential is there in the [scaffold] once the grounding [cable] has been put in place." The parties' experts agreed, however, and the record as a whole shows, that whether the grounding cables are attached above the work leads in a boiler or below them as shown in Figure D8, the steel structure (boiler or building) is a ground. Any stray current or reverse flow can only be momentary, therefore, to equalize the platform's electrical potential with the boiler wall, which the experts agree is ground.[23] There is no testimony that this stray current or reverse flow will

[23]Scardino's acknowledgment that the boiler wall is a common ground is not inconsistent with his testimony that a grounding cable in a boiler is "bonding [the] scaffold back into the system." The verb "to bond" is defined as "to make secure and adequate electrical connection between (two or more conductors) either to ensure free passage of current . . . or to maintain uniformity of electric potential." *Webster's Third New International Dictionary, Unabridged,*

(continued...)

produce a problem. Thus, insofar as this record shows, grounding cables do not create a greater hazard even though they electrically bond the platform to the boiler wall.

Lastly, Fluor points out that the Secretary's proposal is contrary to logic because it grounds a scaffold which Fluor had undertaken to isolate, and, as a related proposition, because the Secretary's proposal would make it possible for an accident to occur upon a single failure, where Fluor's method requires two failures.[24] The argument that the Secretary's proposal critically reduces the tolerance for failure has an attractive ring, but it must be put in careful perspective. On brief, Fluor states that "[the Secretary's experts] admitted, however, that the Secretary's proposed abatement method also presented the risk of scaffold failure due to electrical arcing, Tr. 204, 235, and it is undisputed that this would require only a single event to occur (contact between the electrode lead and the suspension cables)." Nevertheless, we note the following exchange with the Secretary's expert Fisher (at Tr. 235, a transcript page relied on by Fluor):

> Q. If you ground a scaffold, and the stinger touches the wire, wouldn't that cause a failure of the hoist line?

---

[23](...continued)
250 (1986). The verb "to ground" is defined as "to connect electrically with a ground." *Webster's Third New International Dictionary, Unabridged,* 1002 (1986). Herbert L. Snapp, the compliance officer, testified that bonding is the same as grounding when the bond carries the electrical energy from a scaffold to a building structure that constitutes ground. The scaffold bond "carr[ies] off any current or voltage that may [have] come onto the scaffold" because a "bonding jumper" between two metal objects carries any electricity built up on one object to the other, such that "they will both be equal" or have the "same potential." We, therefore, conclude that there is no practical difference between bonding and grounding in this case.

[24]Fluor cites the testimony of electrician Pewitt: "It takes two things to burn that [support] cable in two. You've got to have an energy source and a ground. If you [deliberately] put the ground in there[,] it doesn't take but one thing."

> A. Yes, it would, and that's why we cover the wire rope with an insulating material above and below the hoist to try to prevent that.[25]

Similarly, where there is "stinger" (*i.e.,* electrode lead) contact with the platform, Scardino testified that "[t]here would be, then, no way [to have current on a wire rope] unless there would be a breach [in the roof-level insulation]." This means that any potential for risk to a wire rope in the Secretary's system requires the same two events as in Fluor's system, electrode lead contact with the platform when there is a wire rope with defective roof-level insulation. *However,* in the Secretary's system there is admittedly far less risk from these two things *because the platform is grounded*. As all experts agreed, copper cable would carry away to the boiler (ground) two-thirds to 95% of the current. The record of accidents in Fluor's system establishes the practical inability to maintain electrical isolation of the scaffolds with insulation despite Fluor's considerable efforts. Under these circumstances, the combination of insulation and grounding proposed by the Secretary and mandated by ANSI is superior.

In sum, we find based on this record that the use of grounding cables does not create a greater hazard than Fluor's isolation system. We find that Fluor's system is hazardous because of the chronic difficulty in maintaining the integrity of the insulation used to isolate the support ropes from contact with the boiler. We find that the Secretary's grounding system materially reduces the hazard. We find that Fluor failed to rebut the Secretary's evidence that compliance with ANSI would control the current and prevent the wire ropes from being

---

[25]As discussed, this further insulation is required under the ANSI standard and Fluor stipulated that it should be employed, *see supra* note 7.

weakened and severed.[26] We therefore find that the Secretary's system is a feasible means of abatement.

III. Order

Accordingly, we affirm the general duty item requiring grounding and, there being no argument regarding penalty issues, we affirm Judge Salyers' assessment of $2,625 as proposed.

/s/
Stuart E. Weisberg
Chairman

/s/
Velma Montoya
Commissioner

/s/
Daniel Guttman
Commissioner

Date: April 18, 1997

[26]Under the general duty clause, an employer may defend by showing that its own abatement method was as effective as the one proposed by the Secretary. *Waldon Healthcare Center*, 16 BNA OSHC 1052, 1063, 1993-95 CCH OSHD ¶ 30,021, p. 41,156 (No. 89-2804, 1993). However, an employer must provide all the protection that is feasible and capable of producing a material reduction in a hazard, even if the hazard's elimination would not be achieved. *Litton Systems, Inc.*, 10 BNA OSHC 1179, 1182, 1982 CCH OSHD ¶ 25,817, p. 32,270 (No. 76-900, 1981).