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Federal Mine Safety and Health Review Commission
Office of Administrative Law Judges

SECRETARY OF LABOR, MINE SAFETY AND HEALTH ADMINISTRATION (MSHA), PETITIONER v. PHELPS DODGE CORPORATION, RESPONDENT AND UNITED STEELWORKERS UNION, AUTHORIZED MINER REPRESENTATIVE	CIVIL PENALTY PROCEEDING Docket No. WEST 81-236-M A.C. No. 02-00024-05013 H Morenci Mine Mill & Trailing Dam or Disposal

DECISION

Appearances: Linda Bytof, Esq., Office of the Solicitor, U.S. Department of Labor, San Francisco, California, for Petitioner;
James Speer, Esq., and Stephen Pogson, Esq., Evans, Kitchel & Jencks, Phoenix, Arizona, for Respondent;
Angel Rodriguez, President, Morenci Miners Union, Local 616, United Steelworkers, Clifton, Arizona, for the Authorized Miner Representative.

Before: Judge Morris

This case, heard under the provisions of the Federal Mine Safety and Health Act of 1977, 30 U.S.C. 801 et seq., (the "Act") arose from a January 8, 1981 inspection of respondent's Link Belt crane. The Secretary of Labor seeks to impose two civil penalties because respondent used the allegedly defective crane. It is asserted that such use violated the mandatory standard published at 30 C.F.R. 55.9-2 which provides:

> Equipment defects affecting safety shall be corrected before the equipment is used.

Respondent denies that a violation occurred.

The parties offered extensive evidence on the issues. The hearing commenced on March 25, 1982, was adjourned, and later concluded on December 8, 1982 in Phoenix, Arizona.

The Secretary and the respondent submitted post trial briefs. The Union did not file a brief but it concurs in the position urged by the Secretary.

Issues

The issues are whether respondent violated the mandatory standard cited above. The thrust of the case focuses on the condition of the crane boom and the auxiliary transmission.

In the event a violation occurred then a secondary issue is presented as to what civil penalty should be assessed.

Stipulation

At the commencement of the hearing the parties stipulated as follows: respondent is the owner and operator of the Morenci mine, mill and tailings dam; respondent is subject to the Act; the administrative law judge has jurisdiction of this case; authentic copies of the citation were properly served on the operator; respondent is a large operator. The Morenci mine employs approximately 904 employees on three eight-hour shifts seven days per week; in the two year period prior to 1980 the mine had 52 assessed violations of which 50 were paid; imposition of a penalty will not affect the operator's ability to stay in business (Tr. 4-5).

Summary of the evidence

MSHA's evidence: On January 8, 1981 Eugene Pesqueira and Ron Barre, both MSHA inspectors, conducted a complaint inspection of respondent's Link Belt crane No. 2, (hereafter "MC2"). The complaint was that the crane had a faulty transmission as well as a defective boom (Tr. 11, 12, 40, 41, 45). Upon arriving at the worksite the inspector met company officials and miner representatives. They then proceeded to Silver Basin where MC2 was located. The crane was not then operating. (Tr. 12, 13, 34).

The 90 foot boom on MC2, a 45 ton crane (FOOTNOTE 1), consists of four different sections. The inspector observed that 13 lattices of the boom had been painted with an orange fluorscent paint. Laney, the crane operator, said the defective lattices had been

painted at his supervisor's direction (Tr. 13-15). The inspector showed Laney six other faulty lattices that hadn't been painted (Tr. 14). The lattices were bent, bowed, and improperly welded. One was missing (Tr. 14, 19).

While inspecting the boom the inspectors learned from the operator and driver (Laney and Cisneros) that the auxiliary transmission had a tendency to slip when in 2nd gear. The crane would then become free wheeling. (Tr. 28, 36, 37, 80). The hazard is that the crane could roll either direction when picking up weight (Tr. 28-29). After viewing the crane the inspector told the crane operator to discontinue using it and drive it to the shop (Tr. 29, 20).

There were seven B.O. (bad order) lattices in the top section of the crane boom, six in the two center sections, and four in one of the center pieces closest to the butt (Tr. 17-26, Exhibits P1-P12). One of the lattices had two welds on it. The defect of this sleeve was that an odd piece of pipe was serving as a lattice (Tr. 21, 22, P8). One lattice was missing (Tr. 23, Exhibit P10). The bowing and denting of the lattices is caused by mistreatment. Lattices have a tendency to bow if the crane picks up excessive weight (Tr. 26).

In the inspector's opinion a bad hazard exists if there are over two bowed lattices in any section of a boom. A missing, or bowed, lattice can weaken a boom and cause it to collapse. A boom will collapse at its weakest point (Tr. 26-28).

In checking on the safety of the crane MSHA contacted Duke Brown of Marco Crane and Rigging Company of Tucson, Arizona. Brown advised MSHA that the boom is unsafe if there are two or more lattices that should be replaced (Tr. 50, 51, 54). In addition, according to Brown, reinforcing a lattice by welding it with a pipe is not permissible (Tr. 54).

William D. Laney has operated various cranes since 1961. The rated capacities of such cranes have been 25, 35, 45, 82 and 140 ton vehicles (Tr. 56). Laney operated MC2 and others in 1980 and 1981. Respondent had obtained MC2 from the Sterns Rogers Company (Tr. 62-64). Laney had received and reviewed a copy of the operator's manual for MC2. (Tr. 65, 66). The maximum lifting capacity is contained in the manual. Incline, lifting capacity and side pull affect the lifting capacity of a crane (Tr. 66-69).

Damaged lattices reduce the strength in a boom column (Tr. 69, 70). Damaged lattices could cause the boom to collapse (Tr. 70).

Before the MSHA inspection Laney had been instructed by Baughman, his supervisor, to lower the boom to a horizontal position and paint anything he thought was defective and in need of repairs (Tr. 65, 71, 72). Laney had previously marked some safety defects on his pink card (vehicle inspection report). Further, he had expressed some concern over the safety of MC2 to his supervisors or at safety meetings (Tr. 73-75). He had been told that it was not necessary to repeat his complaints (Tr. 75).

On the day of the inspection Laney was operating MC2 at the tailings dam. He was preparing to lay Driscoll pipe (Tr. 75, 76). Between December 1980 and the January 8th inspection Laney had been primarily involved in the Driscoll pipe project (Tr. 76). The day before the inspection they had been working on the decant tank in the same general area (Tr. 77).

Driscoll pipe is small and fairly heavy. It measures 36 inches by approximately 31 feet (Tr. 76, 77). The total weight of the pipe being lifted can vary because of the residual tailings (FOOTNOTE 2) in the pipe (Tr. 77-79).

Laney discussed using the crane with supervisor Baughman. A combination of heavy pipes and muddy conditions at the worksite caused Laney to think the whole job was unsafe (Tr. 87).

After the lattices had been spray painted and inspected by company supervisors Laney received and posted a notice from the company (Exhibit R1) stating that the capacity of the crane was being reduced by one third (Tr. 100, 101).

On the day of the inspection Laney and Cisneros discussed the auxiliary transmission problems with the MSHA inspector. The problem would arise when the crane was backing down a steep ramp in reverse gear. It would then lunge down the hill as if the auxiliary transmission had disengaged (Tr. 80, 84). Instead of moving at a crawl the crane would suddenly be airborne and free wheeling (Tr. 80-83). The auxiliary transmission had jumped out of gear the day before the inspection (Tr. 37, 81, 82). The ramp at the worksite is 200 to 300 feet long; it is also quite steep (Tr. 81, 82). In order to drive the crane it is necessary to engage the four speed main transmission as well as the three speed auxiliary transmission (Tr. 82, 83). Laney believed the transmission jumped out of gear when the main transmission was in reverse (Tr. 83). This sporatic problem existed for a year or

two (Tr. 23, 90). If the auxiliary transmission disengages when carrying pipe two or three pipe fitters could be "wiped out" (Tr. 84). The transmission had been repaired and replaced eight to nine months before the instant inspection. After the repair the problem was intermittent but it got progressively worse (Tr. 90).

Laney reported this condition and the boom condition on his pink card more than once. The company's pink card system had been in effect six or seven months before the inspection. An equipment operator usually fills out a card each day before operating his machine. Occasionally he will fill it out after operating it (Tr. 90-93, 95, 96, 227). In any event the equipment operator should fill out one card each day (Tr. 95, 96). Exhibit R2, a pink card, was filled out by Laney; Exhibit R3 was filled out after Laney talked to the MSHA inspector (Tr. 104, 222).

After the MSHA inspection the transmission was repaired in the company shop. After the repairs, in order to secure MSHA's clearance, Laney road tested MC2 for a distance of about 600 feet. It didn't jump out of gear in these tests (Tr. 228-233, Exhibit R4).

Harold Moody, the district service manager for FMC Corporation, testified at length concerning the Link Belt crane (Tr. 117-173). The FMC operator's manual states that any bent, damaged, or missing lattices should be repaired prior to use. Such a defective condition causes the column effect of the boom to be drastically reduced (Tr. 127). This reduces and can destroy the load capacity of the boom (Tr. 127, 136-137). FMC furnishes and recommends that an operator use an FMC replacement lattice (Tr. 128, 134, Exhibits P1, P14, P15, P16, P17).

The length of the boom, its radius, and its angle determine the boom's maximum capacity under ideal circumstances (Tr. 130-132). All FMC rated crane capacities are based on ideal conditions (Tr. 136-137, 139). The boom angle chart is bolted to the main chord of the boom (Tr. 133-134).

Witness Moody had no opinion whether respondent's crane was safe or unsafe; further, he had no opinion whether it could be safely operated at a reduced capacity (Tr. 151, 167).

Four main chords constitute the main section of the crane. Diagonal pieces, called lattices, connect the four chords together and provide rigidity. The resulting configuration is called a "picture frame" (Tr. 124, 168, 170). Chords, basically straight, will flex to some extent when the crane lifts a weight (Tr. 168).

The main chords can be checked with a stringline test. Such a test would be a means to determine if the chord is within acceptable tolerances contained in the factory specifications (Tr. 169, 170).

When a given weight being lifted by a crane is reduced there is a likelihood of less deflection in the chords (Tr. 156, 157).

FMC builds a safety factor into its booms. All of its capacity charts are based on an 85 percent tipping capacity of the machine (Tr. 171).

In December 1980 the Steelworkers' Safety and Health representative. Larry R. Parsons, handled a grievance concerning one of respondent's cranes. MC2 was not involved, but during the grievance hearing respondent's representative James Armstrong stated that one damaged strut tremendously reduces the lifting capacity of a crane boom (Tr. 179, 183, 184, 191, 193, 194).

Before respondent had any knowledge that an MSHA inspection would occur, various company officials conducted their own inspection of the cranes. Their inspection disclosed some damaged lattices on MC2. The company then posted a notice stating that the capacity of MC2 would thereafter be reduced by one third (Tr. 195, 196, Exhibit R1).

In February, or March, 1980 respondent weighed one section of an Ameron 36 inch tailings pipe. The company sent the Union a copy of the weight slip. It indicated that the pipe, filled with tailings, weighed 45,680 pounds (Tr. 200, 201, P18, P19). The company felt the Ameron pipe load had been within the 17.5 ton limit of the crane (Tr. 202).

Amin Alameddin (FOOTNOTE 3), a registered professional engineer with an extensive engineering background, testified at length in the case (Tr. 691-818, Exhibit P24). A substantial portion of his employment with MSHA deals with the evaluation of safety hazards as well as the structural analysis of different types of equipment (Tr. 695-697). He has also calculated the structual integrity of similar structures (Tr. 781).

The witness was familiar with the evidence in the case and he was knowledgeable concerning the structure of a tubular boom and its design principle (Tr. 700).

Each member of a boom has a specific function. Chords are designed to carry all of the actual bending movement. Lattices are designed to take the shear forces (Tr. 705, 706).

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Alameddin hadn't seen nor inspected MC2. But its lattice type tubular boom is based on a basic engineering design principle (Tr. 709-714, Exhibits P14, P15).

When a load is lifted, forces are transferred to various members. Each member is designed to carry a certain amount of force or stress. The allowable stress must be below or equal to the yield point (Tr. 716-719).

The stress limit of the member of a boom is based on the assumption that the member is perfectly straight. If a member, designed to carry two axial forces, starts to bow an amount of eccentricity is created (Tr. 719, 720, Exhibit P26). A bend or a bow is always a deformation that constitutes an irregularity in the member itself (Tr. 721, 723). Critical buckling stress is that stress where the material will buckle and fail (Tr. 718, 719). The buckling stress usually exceeds the allowable stress point (Tr. 718, 719). The elasticity limit is when a member, having been stressed, will not return to its original limit (Tr. 725).

Continual loading continues the stresses on a deformed member. In time, with continual loading, a deformed member will break (Tr. 727, 728). This is also true if you reduce the amount of the load (Tr. 728).

Maximum crane load ratings are based on the boom angle, boom length, radius of the load and the center of rotation to the center of the load. Exhibit 14 (page 2) contains different tables for the crane's lifting capacities (Tr. 748, 749). The lifting capacity is limited by the strength of the boom. The tipping load is that point at which the crane will tip even if the outriggers are set (Tr. 750-751). Rated capacities are based on 85 percent of the tipping load (Tr. 750, 751).

Witness Alameddin testified concerning the Secretary's photographs: Exhibit P1 shows a dent and a small bow. This member, as a result of continual loading, is between the elasticity point and the yield point. Continual stress will cause the member to break (Tr. 726). In Exhibit P6 the lattices are beyond the elasticity point. All five are bowed to the outside. These members were either overloaded or the crane was misused (Tr. 728, 729). The situation in Exhibit P6 involves additional stresses going into the chord irrespective of whether there is any measurable deflection in the chord (Tr. 729-730). If a lattice is missing (as in Exhibit P10) it will take 75 percent less stress to buckle the load (Tr. 731-733, Exhibit P27). Conversely, it will buckle with 25 percent of the allowable stress on the original (Tr. 732). A missing lattice causes other members to carry the load (Tr. 733).

Based on the yield point of materials manufacturers of booms set outside limits for permissible deflection. The limit is usually one inch in 36 inches (Tr. 734). Stresses still go into a chord. Even though there is no deflection in the chord in excess of 3/16 of an inch a boom could still buckle with continuous lifting and loading (Tr. 734, 735).

In reply to counsel's hypothetical question witness Alameddin stated that it was not safe to operate MC2 at any load capacity (Tr. 764-765). The lattices, bowed to the outside (Exhibits 6 and 12), show the equipment is unsafe and damaging the chord. A person in the field could not visually and with a stringline test determine whether it was safe to operate the crane at any reduced capacity. A person in the field could not measure the additional stress (Tr. 735, 737, 753-755, 765, 766). In order to measure the stress it is necessary to calculate, look at, and compute every single force on each member (Tr. 736). The only calculation done by Alameddin related to the missing lattice (Tr. 772).

Magniflux, or a dye penetrant, can be used to inspect a boom. Witness Alameddin uses a straight edge rather than a stringline to measure deflection. A stringline has problems if you are measuring horizontally whereas a straight edge gives a more stable line of reference (Tr. 739-741).

It is an established practice to discontinue using a boom and fix any members in the boom that may be damaged. In reviewing the literature the witness did not see any authority indicating that damaged lattices did not have to be immediately fixed before further use of the crane (Tr. 747, 748).

Witness Tony Cisneros also testified as a rebuttal witness. He stated that until his retirement he generally drove MC2, while Laney was its operator. Cisneros drove for about three years. For two years the auxiliary transmission would jump out of gear when it would go down hills in reverse (Tr. 680-683). This was reported to the company on every pink card (Tr. 685, 688). The company supervisors said they would fix the transmission (Tr. 687).

Respondent's evidence

Jackie Cooper, the general foreman of respondent's mechanical department, supervises the department which includes MC2. As a result of an unrelated discipline of an employee and a later grievance involving the No. 6 crane Cooper ordered all booms lowered. He further directed the operators to mark all damage with orange paint. These orders were issued on December 10, 1980. (Tr. 237-243, 283, 284).

On December 26 Cooper asked Don Lunt, (an experienced boiler shop foreman), and Emmet Baughman to accompany him on a visual

inspection of the cranes (Tr. 243-244, 247). These individuals considered and discussed a one third reduction for MC2. Laney and Cooper's supervisor, Bill Horner, concurred in the proposal. The reduction was explained to the crews and a notice (R1), posted in the crane cab, explained the reduction (Tr. 249, 256, Exhibit R1).

Respondent's foremen are expected to know the basic weights being lifted. After the one third reduction, assignments for MC2 were within its capacity (Tr. 255).

After the MSHA inspection, the local FMC representative sent its employee Palmer to the mine. After a visual inspection Palmer stated the company was operating the crane within a safe range. Cooper was confident in this view (Tr. 250, 264, 265, 276, 277). A boom has never failed at this worksite due to the malfunction of a lattice (Tr. 279, 280). The company had never received a complaint that MC2 was unable to safely lift pipe (Tr. 280).

In the course of its operations respondent maintains a daily schedule control form (R5). Among other data the form identifies the crew and the work order (Tr. 259, 295, 298, 299, Exhibit R5). The control schedule sheet is the only one identifying the work project for the motor cranes (Tr. 298). This form is filled out in pencil when Cooper reviews it with his foreman before the start of a shift (Tr. 292, 293). The exhibit shows Laney was working on motor crane No. 3 on January 7, 1981 (Tr. 263).

All pink cards (vehicle safety inspection form) are turned into Cooper's office, although he doesn't receive a card each day for each crane (Tr. 326-328). Cooper produced at the hearing all of the pink slips for MC2 subsequent to October, 1980 (Tr. 328-330). Laney, who is responsible as the crane operator, signed 28 of the 30 pink slips (Tr. 331, 332).

The pink cards reflect the following: one slip, dated December 15, 1980 and signed by Laney, refers to the lattice on boom (Tr. 349). On December 19, bad lattice is noted on the boom (Tr. 350). On December 22 Laney reported the boom lattice was bent. On December 29 and January 8, 1981 the lattice was marked B.O. (bad order). It was also noted on the cards under dates of December 28, 1980, December 29, 1980 and January 8, 1981, that the auxiliary transmission was jumping out of low range (Tr. 349-350). The report dated December 28, 1980 was Laney's first written report indicating the transmission was defective (Tr. 245-266). On the following day Cooper became aware of the notation indicating there was a transmission problem. Bradford, at Cooper's direction, checked the problem and presented Cooper

with a repair order (Exhibit R6). Work orders go through planning, to scheduling, and then to the garage for the actual repairs (Tr. 266-269, 352). Before the repairs were undertaken the MSHA inspection intervened. The crane was not out of service until the MSHA withdrawal order (Tr. 271, 275, 341, 342).

Chappell, the repair shop general foreman, advised Cooper that they could find nothing wrong with the transmission. The repair order indicates the gear boxes were checked and found to be "okey." The shift control linkage was also "okey." The garage completed its repairs in four hours. The only repair noted on the form was an increase in the poppet ball spring tension. There were no other repairs to the transmission from January 12, 1981 to the time of the hearing (Tr. 271, 347, 348, Exhibit R6).

After the work by the repair shop Cooper ordered road tests. In a road test on January 13, 1981 Tipton and DeLeon could not get MC2 to jump out of gear. The following day Laney and Cisneros had the same result (Tr. 344, Exhibits R4, R7).

William Horner, assistant mechanical superintendent and Cooper's supervisor, was familiar with the R.O. Saeny grievance of December 1980 involving a crane, not MC2 (Tr. 396-398). The grievance involved the failure of an employee to report damage to company equipment. The Steelworkers filed the grievance. As a result of the hearing on the grievance, in mid December, Cooper directed that all crane booms should be thoroughly inspected by their respective operators. The operators were to report any damage or improper conditions in the booms. Laney, as the operator, spray painted MC2. (Tr. 400, 401).

Approximately on January 4, 1981, before the MSHA inspection, the company asked Marco Equipment to estimate the repair costs and to proceed with the boom repairs (Tr. 403). In the interim Cooper, under Horner's supervision and involvement, ordered a one third reduction in all modes of operating MC2. (Tr. 403, 409). Laney completely agreed. One factor leading to the one third reduction evolved when Laney lifted, without incident, a 26 ton crusher main frame. On that lift the crane boom was extended at 80 feet (Tr. 406). The company's notice of the one third reduction was posted in the crane. From the time of the reduction until the MSHA inspection, the crane was operated at the reduced capacity.

The Marco Company had been scheduled to inspect the boom on MC2 on January 13, 1981. But due to the MSHA inspection of January 8, 1981, the Marco representative accelerated his inspection (Tr. 410-412).

Buck Palmer, Marco's field representative, arrived on

January 9. Repairs to the boom were made by Marco in accordance with Horner's instructions (Tr. 413). After abatement of the citation MC2 was returned to service (Tr. 416).

Witness Horner was familiar with the vehicle safety inspection reports (pink slips) on MC2. The claimed defects did not appear until after the operators painted the booms. (Tr. 406, 408). In December 1980 some pink slips mentioned the transmission. The transmission report lead to a subsequent work order to repair it. From the time of the initial pink slip report on the transmission the crane was working on level ground in the Silver Basin tailings dam project (Tr. 41, 419). The handwritten complaint on Exhibit P20 (FOOTNOTE 4) stated that the auxiliary transmission was jumping out of low gear (Tr. 420).

The repair shop found nothing mechanically wrong with the transmission. A routine road test, which consisted of driving the crane up a long steep grade, failed to reveal a problem with either transmission (Tr. 420, 421, 425). The road test sought to simulate the conditions under which the problem had been reported (Tr. 425, 426).

Horner, a former mine master mechanic, is familiar with transmissions. He indicated that the poppet ball spring on the transmission was repaired. But that spring does not keep the transmission in gear. Further, it had no adverse effect on the operation of the transmission (Tr. 420, 429, 430). Nothing in the transmission was found to be in need of repair and the crane was returned to service (Tr. 431). A transmission will jump out of gear if it is not fully and properly engaged by the operator (Tr. 431).

The hearing on the R.O. Saeny grievance focused on the failure of the crane operator to report damage to the equipment. At the hearing respondent's representative Armstrong stated that unreported damage could lead to a serious condition. He did not state that any specific number of damaged lattices would render a crane unsafe (Tr. 432, 433).

According to witness Horner the auxiliary transmission of MC2 does not have a reverse gear (Tr. 820).

Gordon L. Palmer, a person experienced in booms, testified. He operates the boom repair service for the Marco Company (Tr. 525-527, 532).

On January 9, 1981 Palmer inspected MC2. The inspection consisted of a visual walkdown over the entire boom, lacing by lacing. Stringline tests failed to establish any vertical or horizontal distortion. The chords were true and there was no distortion to the picture frames (Tr. 530-531).

Palmer, who is not a graduate engineer, relies on visual inspection and stringline tests to check the integrity of a boom. There are no calculations that can be made to determine whether a boom is unsafe (Tr. 533, 534).

Palmer found that several spray painted lacings were outside the limits of the manufacturer's recommended tolerances. Most of the bowed lattices were located in the tip area which contains the greatest concentration of lattices. (Tr. 540-542). The damage indicated that the block may have been swinging into the lacings (Tr. 541).

Lattices hold the chords and picture frames together. They maintain the integrity and alignment of the boom. The chords, acting as a column, carry the load when the boom is in the air. The lifting of an object causes a slight bowing or flexing of the chords. The chords return to their true position when the object being lifted is released (Tr. 543, 544).

The chords were not out of alignment. This indicates there was nothing outside the realm of specifications pulling against the boom or pushing the chords in and out (Tr. 544). The picture frames were within the manufacturer's specifications. On January 9 Palmer did not do a structural load test but the 26 ton lift was within the manufacturer's load chart. The crane would have passed a load test before the lattices were replaced (Tr. 544-548). Nothing suggested to Palmer that the crane was unsafe (Tr. 548).

Horner instructed Palmer to bring the condition of the crane to one hundred percent of the factory specifications (Tr. 550). On January 9 the chords, the picture frames and all sections were within factory specifications. Half of the lattices that were painted should not have been (Tr. 546, 550). If the lattices were not performing their function distortion would appear in the chords (Tr. 551). Link Belt cranes have a safety factor of 15 percent over the rated capacity (Tr. 552).

Witness Palmer denies ever telling MSHA inspectors that MC2 was unsafe. Likewise, he denies ever stating that a boom with two damaged lattices should go out of service (Tr. 553, 554).

After the necessary repairs were made by Palmer an independent testing laboratory tested the boom and certified the

crane back into service (Tr. 549). Certification is a standard procedure (Tr. 566). The company, known as Diversified Inspections, a testing laboratory, used a dye penetrant test, a magniflex on the lattices, and a 10 percent structural overload test (Tr. 566-568). These are accepted tests and more accurate than a visual test. Palmer did not do any of the three tests performed by Diversified (Tr. 568-570). Nor did Palmer do any sort of calculations to determine the stress placed on each boom member (Tr. 569-570).

Palmer found that 17 or 18 lattices were deformed (Tr. 577-578, 589, 592). Fifteen lattices were probably bowed less than an inch. Two or three were in excess of that figure (Tr. 588). Three of the deformed lattices were in a 36 inch span; 14 were within a one inch span (Tr. 592).

The three deformed lattices with a deflection exceeding factory specifications were on the left side of a 20 foot section in one of the middle sections of the boom. One section had a missing lattice near the point section (Tr. 593, 594).

In determining factory specifications witness Palmer relied on the manufacturer's servicegram appearing in Exhibit P15 on page 6, paragraph C. The servicegram states that lattices or diagonals with a uniformed curvature not in excess of the ratio of one inch in three feet may be straightened (Tr. 595-596). Palmer believes those lattices needing repairs are those kinked beyond their integrity (Tr. 600). A lattice bowed beyond the manufacturer's specifications will affect the integrity of the boom (Tr. 604). However, if a lattice is bowed less than one inch the integrity of the boom is not affected (Tr. 606). Palmer's opinion, supported by his three years of design engineering, is based on his 25 years of experience. He does not rely on any literature nor the procedures of any manufacturer (Tr. 608, 609).

Discussion

Certainly the evidence here does not want for credibility issues.

In this case the gravamen of a violation of 55.9-2 focuses on whether there is an equipment defect and whether that defect affected the safety of the equipment.

At the outset I find there was an equipment defect in the crane boom. The uncontroverted evidence establishes that the crane boom had one missing lattice and an additional 17 or 18 lattices were deformed in varying degrees. Having found that there was an equipment defect we will now consider the pivitol question of whether the defects affected the safety of the crane.

On the issues concerning the boom I credit MSHA's evidence. The credibility issues of whether the boom defect affected its

safety principally clash in the testimony of MSHA's witness Alameddin and respondent's witness Palmer. I credit Alameddin's opinion, in part due to his substantial educational background (Tr. 692, 693, Curriculum Vitae in P24), and his experience (Tr. 695-697). He was familiar with the structure here, namely, a tubular boom and its design principle (Tr. 700). Witness Alameddin, as noted in the summary of the evidence, had reviewed the testimony in the case and he reached certain unequivocal opinions to the effect that it was unsafe to use MC2 with any weight attached to the boom (Tr. 453-455, 764-765). It was further unsafe to operate at any reduced lifting capacity such as the reduced one third capacity set by respondent (Tr. 765).

Witness Alameddin also pointed out the inherent difficulties with Palmer's stringline test method (Tr. 739-741). Alameddin further reviewed the literature in the field and he found no literature indicating that damaged lattices did not have to be fixed before further use of the crane (Tr. 747).

On the other hand, I am not persuaded by respondent's contrary evidence. It's principal witness, Palmer, has considerable field experience. But he basically relies on visual inspection and a stringline test. Palmer, as a certified welder, would no doubt be adept at repairing the boom. But as a high school graduate and lacking a degree in engineering he simply lacks the necessary expertise in this case (Tr. 539, 563). In addition, I believe that the boom on the 45 ton crane would be unsafe even under the conditions found by Palmer.

Respondent's evidence: Witness Palmer found 17 deformed lattices and a missing lattice (Tr. 577-578). The service manuals received in evidence show the complexity of the HC-108B carrier mounted crane. The service manual states in part in Exhibit P-15, page 1 (3rd page in exhibit) as follows:

> (c) It is very important to maintain the supporting lattice work on a tower, boom or jib section in good condition. Damaged lattice allow deflection of the main chord tubes under load so that they are no longer in line; this destroys the true column effect of the boom. The result is reduced boom strength and capacity.

Further, the FMC service manual states, in part, in Exhibit P16, on page 2 of 6 as follows:

> Lattice, Diagonals, and Picture Frame Repair Lattice, picture frame angles, and diagonals must be kept in good condition to hold the chords in proper alignment. Bent lattice cause deflection of the main chord angles so they are no longer "in line", thus reducing and partially destroying the load capacity of the boom.

> A good percentage of damaged lattice can be straightened by conventional methods. If the damage to the lattice is beyond repair by straightening, such as a severe twist or kink, it must be replaced.

Further, the photographs (Exhibit P1-P12) support Alameddin's testimony.

In sum, I am persuaded by the Secretary's evidence and not persuaded by respondent's contrary evidence.

Respondent, in its brief (pages 13, 14) initially urges that the historical facts support its case. These facts are that the crane proved itself in normal usage by lifting a crusher main frame. Further, crane operator Laney could muster no evidence indicating that the boom had a defect.

In my view the lifting of the crusher mainframe was accomplished, fortunately, without any adverse effect. In its defective condition, the boom could have collapsed when it lifted the 26 ton weight. I agree that Laney failed to establish (before he painted the boom) that there were any defects that affected its safety. However, I would not anticipate that a crane operator would have the expertise to know whether or not the boom was defective.

Respondent in its post trial brief, (page 12 et seq.) further states that 14 or 15 of the 19 lattices may have had a "ding" or slight "bend" but it is the condition of the boom and all 154 lattices as a whole that controls. Respondent argues that since the chords, and picture frames in combination with the lattices were within factory tolerances then there was no defect "affecting safety" and hence no violation.

I disagree. Witness Alameddin's testimony addresses these issues: each member has specific work to do, (Tr. 705), to carry its share (Tr. 716); each member is designed to carry axial forces (Tr. 706); if a member starts bowing an amount of eccentricity is created (Tr. 720, Exhibit P26); a bend or a bow is always a deformation that is an irregularity in the bow itself (Tr. 721-723); elasticity limit is where a member will not go back to its original shape (Tr. 725); the dent and bow in P1, P2, P6, P12 will eventually break from continual stressing (Tr. 726); a break will occur when you have continued loading on a deformed member (Tr. 727-728), also this is true even though you reduce the amount of the load (Tr. 728); in P6 there are additional stresses going into the chord regardless of any measurable deflection (Tr. 729-730, 734); even though there is no deflection in the chord in excess of 3/16 of an inch the boom could still buckle with continuous lifting and loading (Tr. 735); in P6 and P12 five lattices were all bowed to the outside, this was unsafe and damaging the chord though it is difficult to measure (Tr. 735); the zone on P26 (illustrative drawing) between elasticity point and yield point will change because more lifting will increase the stress, and ultimately the member will break (Tr. 736); the missing lattice (P10) increases the length of the free

span; calculating this as 2L (L/R is slenderness ratio) it takes 75 per less stress to buckle the load (Tr. 731-733).

Respondent further attacks Alameddin's testimony for various reasons. These follow:

Alameddin had not inspected the crane and he lacked firsthand knowledge of it. I agree. But an expert witness is not required to have first hand knowledge. Nanda v. Ford Motor Company, 509 F.2d 213, 221 (7th Circuit). In fact, hypothetical questions as were used in this case, are no longer necessary. Rule 702, Federal Rules of Evidence. In any event it is clear that Alameddin reviewed all of the data including photographs and the prior testimony in the case. This is sufficient for him to form an intelligent opinion.

Respondent asserts Alameddin's calculations did not address the boom as a whole but that he based his opinion on a hypothetical analysis as to the location of a single lattice but he didn't know where the lattice was located.

I agree that Alameddin performed a minimal amount of mathematical calculations. However, at issue is his ultimate opinion and its factual basis. That opinion is reflected in this decision. The verbatim testimony appears in the transcript at pages 735, 753-755, 759, 764-765.

Respondent objects to Alameddin giving sweeping conclusions about the crane as a whole when he could not address the lifting capacity of the crane.

In my view that the lifting capacity of the crane and whether the crane is unsafe due to its defects are totally different. In order to render an opinion on the lifting capacity of the crane the witness stated he would want to inspect the crane, measure everything on it, check for extra stresses such as from a bowed member (as in exhibit P6, if all members bowed there is strain on the chord). Also, he would want to know the tensil strength, yield point, configuration and angle of the boom, width of lattice metal, angle of the taper of the boom; further, he would want to know about the gantry and about the cable. Further, witness Alameddin disavowed any attempt to render an opinion on the lifting capacity of the crane (Tr. 795). In short, he was not testifying to the precise load the crane would carry before it buckled (Tr. 803). Further, he had analyzed other structures based on the same design principle and he did not need to know the weight of a load to give an intelligent answer concerning whether the crane was safe to operate (Tr. 807).

But the witness explains that he did not need all of the precise information, blueprints, etc. to render an opinion as to whether a crane is safe to operate. (Tr. 800). The additional detail is only necessary for a full structural analysis. Here, there were too many deflections. This rendered the crane unsafe for use (Tr. 800, 801).

Respondent declares that in previous cases opinions rendered by Alameddin had only followed after he had made a personal inspection. I concur the evidence confirms respondent's statement. However, this argument addresses the weight to be given Alameddin's testimony. As previously noted, I find his testimony credible.

Respondent objects to Alameddin testifying that the lattices had an effect on the chords and that it was so small that Palmer would have found it "very difficult to measure." He claimed, however, he could see it from the photographs. At the same time respondent argues no basis in fact upon which to conclude that the chords were other than straight.

This foregoing argument confuses different aspects of the testimony. Not only Witness Alameddin but the judge can clearly see the bowed and kinked lattices. See Exhibits P1, P2, P3, P6, P7, P8, P10, P11. The point is, given the circumstances here, there apparently was not any deflection in the chord. But not withstanding that fact the boom, in Alameddin's opinion, could still buckle (Tr. 734). I find that opinion to be credible.

Respondent states that Alameddin never designed a boom and never worked on booms. True, the witness has not designed a boom. But he had done a number of evaluations on structural analysis for different components and different structures including head frames, drum construction, drum design, dragline boom collapse, stability problems, evaluation of a storage bin design, et cetera (Tr. 696). Also, in accordance with his training as an engineer, he was familiar with the structure of a tubular boom and with its engineering design (Tr. 700). Alameddin's testimony on the whole demonstrates his knowledge of the field.

Respondent, in its brief, recasts its objection to Alameddin's lack of first hand knowledge of MC2. But I find that he demonstrated a thorough knowledge of the facts of the case. He had been present at the December 1982 hearing and had reviewed the transcripts of March 1982 hearing (Tr. 700).

In sum, I find that Alameddin had an extensive factual foundation to render his opinion.

Respondent claims that the legal test of whether the condition of the boom affected its safety is geared to the

judgment of the people whose experience in the industry put them in the best position to evaluate the situation (Brief, page 26). Therefore, respondent's evidence should prevail. In support of its position respondent cites the Commission decision of Alabama By Products Corporation, 4 FMSHRC 2128 (1982). The cited case involves, by analogy, a regulation similar to 55.9-2.

Respondent misconstrues the Commission decision. In Alabama By-Products the operator was arguing that a similar regulation, (30 C.F.R. 75.1725(a)), was unconstitutionally vague on its face. In disposing of this argument the Commission ruled that "the alleged violative condition is appropriately measured against the standard of whether a reasonably prudent person familiar with factual circumstances surrounding the allegedly hazardous condition including any facts peculiar to the mining industry, would recognize a hazard warranting corrective action within the purview of the applicable regulation" Alabama By Products at 2129. Respondent's evidence is not entitled to any type of preferential consideration over the Secretary's evidence. It is the complete record that is to be evaluated. On that basis I conclude that a violation occurred.

Further, various portions of respondent's evidence are at times contradictory. Respondent claims that since there was nothing unsafe about the crane at full capacity, and it necessarily followed there was nothing unsafe at two-thirds capacity (Brief, page 27). Respondent's position is contradicted by the fact that it voluntarily reduced the crane's capacity before the MSHA inspection.

Respondent's contentions that the crane was safe at full capacity and necessarily at two-thirds capacity are rejected. The citation should be affirmed.

Auxiliary Transmission

The evidence on this issue is contained in the summary of the evidence. To briefly encapsulate it:

When in low gear the auxiliary transmission on MC2 would periodically jump out of gear. The operator and driver complained to the MSHA inspectors in January 1981 and also advised the company by noting the defect on the vehicle safety inspection forms (pink slips). This hazardous condition existed for a year or two.

Respondent's pink forms show Laney's first report was dated December 28, 1980. This was after the booms had been painted.

The company began transmission repairs. The repair shop found no transmission defect and two road tests failed to reproduce the complained of condition. The vehicle was returned to service and no repairs were thereafter made to the transmission.

Discussion

It is my view that if the auxiliary transmission unintentionally slipped out of gear while the crane was being operated there would be a violation of the regulation. But on the issues cocerning the auxiliary transmission I credit respondent's evidence. I reach this conclusion based on several factors: Laney and Cisneros both indicated the transmission problem had existed for sometime, certainly as long as a year. Also I agree that such a condition, if it existed, would be exceedingly hazardous to the crane operator, the crane driver and persons in the immediate vicinity. Such an unsafe condition would be one that would be quickly reported. Laney was never hesistant about reporting defective conditions on MC2. But the vehicle report forms do not contain a reference to the auxiliary transmission until December 28, 1980 when the following notation appears: "Aux. transmission jumping out of low range" Also appearing on the form is the notation of "W.O.CG." (Exhibit P20 (FOOTNOTE 5), 12/28/1980).

If a transmission defect existed, one would think it would appear on the report forms before December 28, 1980.

I am further persuaded by witness Horner's testimony. As a former qualified master mechanic he was familiar with transmissions. The repairs in the shop (increasing tension on the poppet ball) did not affect the transmission. In addition, no defect was found in the transmission.

The Secretary's post trial brief (page 2) urges that a transmission slipping out gear is a defect within the meaning of Section 57.9-2. In support of his position he cites the writer's decision in Allied Chemical Corporation, 4 FMSHRC 503 (1982). The cited case, pending on review, is not as broad as the Secretary claims. The view I expressed is necessarily limited by the facts. In Allied Chemical a violation was found to to exist because large soft steel bolts in two different chocks were missing. Obviously, the manufacturer included steel bolts for a purpose. Hence, the statement appears in the decision that Allied violated the standard because the steel bolts were missing.

In this case the evidence fails to show there were missing, worn, or damaged transmission parts. I am further persuaded by respondent's contrary evidence. In short, I do find that there was a defect. Accordingly, that portion of the citation relating to the auxiliary transmission should be vacated.

Issues raised in the Hearing

Respondent renewed its objections to the presentation of witness Alameddin as a rebuttal witness (Brief, page 22). It is asserted that Alameddin should properly have been presented in the Secretary's case in brief. Since he was not so presented the non-rebuttal testimony should be excluded (Tr. 701).

The judge ruled that the complete testimony of witness Alameddin was generally admissible (Tr. 701-704). Further, the judge indicated he would grant respondent an opportunity to meet any issues raised in the rebuttal (Tr. 703, 704). No request was made.

The Administrative Procedure Act (A.P.A.), 5 U.S.C. 551 et seq. adopted by Commission Rule 1, 29 C.F.R. 2700.1, sets forth the procedural rights of the parties under the Mine Safety Act. The A.P.A. provides, in part, at 5 U.S.C. 556 as follows: "A party is entitled to present his case or defense by oral or documentary evidence, to submit rebuttal evidence, and to conduct such cross examination as may be required for a full and true disclosure of the facts." Hearings before administrative agencies do not require strictness in the observation of the rules of evidence if fundamental fairness is observed. Rosedale Coal Co., v. Director of U.S. Bureau of Mines, 247 F.2d 299 (C.A. 4, 1957). In the instant case respondent had the opportunity to present evidence to meet all issues raised by Alameddin's testimony. Respondent's objections are again overruled.

At the hearing the judge received, subject to respondent's objections, the testimony of witness Alameddin as to findings developed from literature in the field pertaining to damaged crane booms (Tr. 742-748).

Under Rule 703 of the Federal Rules of Evidence the pertinent inquiry is whether the facts are of a type reasonably relied on by experts in the particular field. Since the answer is affirmative the evidence was properly received and respondent's objections are overruled Bauman v. Centex Corp., 611 F.2d 1115, 1120 (5th Circuit).

Respondent's post trial brief renews its objection made at the trial that the testimony of witness Moody should be excluded. The basis of the objection was that the Secretary failed to disclose Moody as a witness in the case (Tr. 113-117).

There may well have been discovery sought in other cases about the same time involving the parties (CENT 80-349-M and WEST 81-296-M). But the judge permitted Moody to testify because there had been "No discovery sought or ordered by the Commission in this case" (Tr. 114). While there was a combined notice of hearing there was no order consolidating the cases. I adhere to my original ruling and permit the testimony of witness Moody.

At the trial the judge refused certain of the Secretary's exhibits (Refused Exhibits P29, P30, P31). The ruling involved the scope of Rule 803.18, Federal Rules of Evidence. (Tr. 815-818). Since the Secretary did not renew his objection in his post trial brief it is not unnecessary to review the ruling in this decision.

Civil Penalty

The six criteria for assessing a penalty are set forth in 30 U.S.C. 820(i). The parties stipulated that the operator had 52 assessed violations in the two year period prior to 1980. A penalty would be appropriate and would not affect the operator's ability to continue in business. I consider the operator was negligent because it knew there was a boom problem about December 10 when the boom was lowered and the fluorescent paint was applied. But no remedial action was taken for the boom repair until the MSHA inspection on January 8, 1981. The gravity is severe since a boom collapse would be an extreme hazard to employees operating the equipment and others in the vicinity. Respondent demonstrated extreme good faith in the situation.

On balance I deem that a civil penalty of $1,000 is appropriate.

Briefs

The Solicitor and respondent's counsel have filed detailed briefs which have been most helpful in analyzing the record and defining the issues in the case. I have reviewed and considered these excellent briefs. However, to the extent they are inconsistent with this decision, they are rejected.

Conclusions of Law

Consistent with the facts found true in the narrative portions of this decision, the following conclusions of law are made:

1. The Commission has jurisdiction to hear and determine the issues raised in this case.

2. Respondent violated the safety standard published at 30 C.F.R. 55.9-2 as it relates to the crane boom as alleged in Citation 379902. That portion of the citation should be affirmed and a civil penalty of $1,000 should be assessed.

3. Respondent did not violate the safety standard published at 30 C.F.R. 55.9-2 as it relates to the auxiliary transmission as alleged in Citation 379902. That portion of the citation should be vacated and all penalties proposed therefor should be vacated.

Accordingly, I enter the following:

ORDER

1. Citation 379902 as it relates to the crane boom is affirmed. A penalty of $1,000 is assessed.

2. Citation 379902 as it relates to the auxiliary transmission is vacated. All penalties therefor are vacated.

John J. Morris
Administrative Law Judge

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~FOOTNTOE_ONE
1 The 45 ton designation refers to lift capacity. It means the crane has a capacity to lift 45 tons if the boom is at its minimum length, and it is on level ground with the outriggers set (Tr. 15, 107).

~FOOTNTOE_TWO
2 Tailings: the residual remaining after copper has been reclaimed from the basic ore (Tr. 77-78).

~FOOTNTOE_THREE
3 Respondent's objections to Alameddin testifying as a rebuttal witness are discussed, infra.

~FOOTNTOE_FOUR
4 Exhibit P20 consists of 29 separate vehicle safety inspection forms. They are also referred to as "pink slips." The initial form is dated October 25, 1980 and the last form is dated January 8, 1981.

~FOOTNOTE_FIVE

5 At this point an explanation of Exhibit P20 is in order: The exhibit is designated by a single number and it consists of 29 separate report forms each bearing different dates. Each form contains a line for the operator to sign and a place to enter the date and type of equipment involved. The format also lists 13 specific items to be checked under the "OK" or the "B.O." column. The exhibit received in evidence, contains reports for MC2 beginning October 11, 1980. In 1980 are October 11, 22, 23, 24, 25, 26, 27, 28, 29, 30. November 11, 14, 17, 18, 25, 30. December 1, 15, 16, 19, 22, 26, 27, 28, 29, 20, 31. Exhibits 20 also contains vehicle inspection reports for January 2 and 8, 1981. Exhibits R2 and R3 are two vehicle inspection forms submitted on the day of the inspection. Only one appears in Exhibit P20. Exhibit P20 is a record kept in the ordinary course of business. I further find it to be authentic and credible.