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SOL (MSHA) V. UNITED NUCLEAR-HOMESTAKE PARTNERS
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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	CIVIL PENALTY PROCEEDING DOCKET NO. CENT 80-45-M ASSESSMENT CONTROL NO. 29-00591-05006
v.	
UNITED NUCLEAR-HOMESTAKE PARTNERS, RESPONDENT	MINE: SECTION 25

DECISION AND ORDER APPROVING SETTLEMENT AND DIRECTING PAYMENT

On July 15, 1980, pursuant to Commission Rule 30, 29 CFR 2700.30, as amended by 45 Fed. Reg. 44301, a motion to approve settlement was filed with the Commission. All parties to the above-captioned proceeding agree to the settlement.

By stipulation and motion, the parties propose to settle this proceeding without a formal hearing. In support of the proposed settlement, the parties have taken into account, and submitted information concerning, the six statutory criteria set forth in section 110(i) of the Act. /*/ Of significant interest were two letters submitted by Respondent, previously reviewed by counsel for Petitioner, which I have included as Appendix I and Appendix II to my Decision.

Due consideration of all factors contained in the record convinces me that the proposal is consistent with the purposes of the Act and should be approved.

Accordingly, it is ORDERED: that the settlement agreement is hereby APPROVED, that the joint motion is hereby GRANTED, and that Respondent shall pay the agreed amount within 40 days of the date of this Order.

Jon D. Boltz
Administrative Law Judge

/*/
Section 110(i) of the Federal Mine Safety and Health Act of 1977, 30 U.S.C. 820(i), reads in pertinent part:

"... In assessing civil monetary penalties, the Commission shall consider the operator's history of previous violations, the appropriateness of such penalty to the size of the business of the operator charged, whether the operator was negligent, the effect on the operator's ability to continue in business, the gravity of the violation, and the demonstrated good faith of the person charged in attempting to achieve rapid compliance after notification of a violation...."

APPENDIX I

August 4, 1980

Jon D. Boltz
Administrative Law Judge

Docket NO. CENT. 80-45-M
A/O No. 29-00591-05006
Section 25 Mine

Dear Judge Boltz:

This letter is written pursuant to your request of July 17, 1980, for clarification on those radiation citiations written against United Nuclear-Homestake Partners' (UN-HP) Section 25 mine during June and July, 1979 (citation members 151645, 152412, 152413, and 152415). These citations were written to indicate a violoation of 30 CFR 57.5-39, the 1 working level standard.

An exceedance of this standard indicates a failure in the mine's ventilation and radon daughter control system. Many things can contribute to a failure in the control systems, the most common of which include 1) barrometric pressure, 2) ventilation bag not installed properly at working area, and 3) ventilation bag restricting air flow by sagging, kinking or getting ripped. Some other less frequent causes for ventilation and radon daughter control system failures include primary and secondary ventilation fan failures, air control doors inadvertantly left open or closed, bulkhead failures, and drilling into old, abandonded stopes, all of which could very easily allow the working levels (WL) in the working area gradually, or very quickly, exceed 1 W.L. Because this is the case, UN-HP enforces a self-imposed restriction of closing down work areas at 0.7 WL until the ventilation is reduced to below that level.

It is part of UN-HP's standard practice procedures for the miner to pull his ventilation bag away from the work area when a face is to be dynamited, to prevent damaging the bag. When the miner than returns to the area to muck out the material, his first task is to return the ventilation bag to the area and purge it with fresh air. UN-HP's most common closure as a result of exceeding the 1 WL standard is the miner forgetting to bring his ventilation bag into his work area (this is the case in 50% of the closures).

UN-HP monitors radon daughters with an instrument called the MDA "instant working level meter". A sample of air can be collected and analyzed for its radon daughter content within a 5-minute period. If the elevated radon daughter content is attributed to the miner not bringing his ventilation bag forward, the area can usually be re-opened again within 20-minutes of being closed. While adjusting the ventilation system in the closed area, the miner is required to wear an approved respirator.

UN-HP's Ventilation Department is very thoroughly trained in evaluating conditions underground which may be contributing to elevated radon daughter concentrations. As the Ventilation Technician makes his rounds obtaining the working level concentrations in the individual work areas and employee accumulation points and travelways, he is continuously noting the condition of the ventilation and radon daughter control systems. Should he find an area exceeding UN-HP's 0.7 WL limit, he immediately closes the area and has any employees in the area withdrawn. The Ventilation Technician, fitted with an approved respirator, evaluates the situation and makes a determination as to what can be done to alleviate the problem. After seeing that the miner and backup personnel are fitted with respirators an attempt is made to correct the ventilation problem. After the area concentration is reduce to below 0.7 WL the miner and backup personnel are allowed to continue on with production work. The time of closure, work required to alleviate the problem, and time of re-opening are recorded and filed away for further evaluation. As previously indicated most areas are re-opened after about 20 minutes of being closed.

UN-HP currently monitors every work area at least once each shift, if the area is active that shift. The concentration observed that shift is averaged with the last radon daughter concentration observed in the area for determining each employee's personal exposure. The amount of time each employee spends in individual work areas, including lunchrooms, travelways and on ventilation work, is recorded on a daily basis and is accurate to the nearest one-half hour. The time an individual spends in a particular area is combined with the average WL concentration observed in that area for the same time period. Therefore, a true time weighted exposure is determined for each employee working for UN-HP. UN-HP utilizes a computer for determining their employee exposures to radon daughters. The daily concentrations observed in each work area are fed into the computer the day following sample collection. UN-HP's payroll is based on a twice per month basis. Therefore, when each employee's time is fed into the computer to determine the amount that person is to be paid for the two week period just worked, his time in each individual work area is also combined with the WL concentrations observed during the same period. Accumulated exposures are, therefore, updated twice each month.

The radiation citations issued in this case against Section 25 during June and July, 1979, while at relatively high levels are exceptions to normal operating experience for the reasoning below. UN-HP had just begun to experience ventilation difficulties of an unusual nature which took several days to remedy. Bulkheads, airdoors, larger ventilation fans, and a more diverse ventilation bag system had to be installed. An additional large fan had to be installed on an adjoining property belonging to Kerr-McGee Nuclear Corporation, and some time delays were experienced there due to Kerr-McGee having to build additional bulkheads in some haulage ways. All of this was experienced due to apparent leakage from longholes inadvertantly penetrating some old workings. All production in this area was

stopped for several days. Only ventilation work was performed until WL concentrations in that area were reduced to below 0.7 WL. No employees were overexposed to the 4 working months standard as a result of these exceedances to the 1 WL standard.

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If you have any questions, or would like further clasification on how UN-HP handles their radon daughter monitoring program, please don't hesitate to contact me.

Very truly yours,

UNITED NUCLEAR-HOMESTAKE PARTNERS

Edward E. Kennedy
Director of Environmental Affairs

Wayne E. Bingham
PICKERING & BINGHAM
Attys. for UN-HP

APPENDIX II

August 11, 1980

Jon D. Boltz
Administrative Law Judge

Docket No. CENT. 80-45-M
A/O No. 29-00591-05006
Section 25 Mine

Dear Judge Boltz:

This letter is written to clarify what radon and radon daughters are and where they are found in nature, as well as describing what working levels and working level months are and how they are arrived at.

Small amounts of uranium and its radioactive daughter products including radium and radon are found everywhere in nature. We know of no substance which is free from them. Radon is present in the outdoor and indoor air everywhere on earth. Radon is not a mysterious substance, but is a well-studied, well-understood chemical element. Radon is a chemically inert gaseous element in the same family of chemical elements as helium, argon, and neon. Being chemically inert radon can have no biological effects on organisms.

Radon is produced as a gas when radium 226 (a radioactive decay product of uranium 238) decays naturally over long periods of time. Radon has a half-life of 3.8 days; in 3.8 days, 50 percent of the decay activity remains. When radon gas decays to its daughter products, a positively charged alpha particle is formed. These charged particles are called radon daughters.

Uranium ores are found in regions in which a geochemical concentration of the normal universal uranium distribution has taken place during an earlier geological period. Naturally there is also a proportionally increased concentration of radium and its gaseous daughter product, radon. In uranium mining, the underground environmental concentration of radon is kept low by intensive power ventilation which forces large quantities of fresh, outside air through the underground workings. This action dilutes and expels the radon gas which diffuses into the mine air from the ore bodies, as well as from the waste rock.

When the radon gas decays to its daughter products and forms positively charged particles, those particles actively seek out negatively charged particles such as can be found in dust particles, water droplets, smoke, etc. When these materials with attached radionuclides are inhaled by the miner, the radiation from them is delivered to those sites in the nose, pharynx, and trachio-bronchial tree where the particles are deposited. Extensive studies

have been conducted in this area and exposure regulations have been altered to better protect those employees working under these conditions.

Current Mine Safety and Health Administration standards require that 1) no person shall be permitted to receive an exposure in excess of 4 working level months in any calendar year (30 CFR 57.5-39), and 2) except as provided by standard 30 CFR 57.5-5, persons shall not be exposed to air containing concentrations of radon daughters exceeding 1 working level in active workings (30 CFR 57.5-39).

At the highest level of radon concentration which is now permitted in any active working area by a uranium mine operator the radon concentration corresponds to a negligible partial pressure. Thus 100 picocuries of radon per liter of air which can support at most one working level (1WL) of radon daughter products, contains less than one atom of radon per 1015 atoms -- that is per thousand million million atoms -- of oxygen and nitrogen. The radon daughter products have a maximium concentration in 1 WL air which is more than 100-fold smaller; that is one atom per 100,00 million million atoms of oxygen and nitrogen.

The "Working Level" (WL) is a special unit of radon daughter concentration in air. One WL is any combination of radon daughters in 1 liter of air that will ultimately release 1.3 x 105 MeV (million electron volts) of alpha energy during radioactive decay to lead-210. When an atom of radon or its daughter product decays, an expenditure of energy is realized. By collecting a known volume of air through a very fine filter, and observing the radioactive decay of the particles collected on the filter by the energy that is released, the radon daughter concentration can be calculated in working levels. A working level is a concentration of radon daughter products in the area, and does not indicate a person's exposure.

The "Working Level Month" (WLM) is the special unit used for indicating a person's cumulative exposure in which the hours worked is 173 hours (40 hours per week times 4-1/3 weeks per month). Four WLM has been determined to be the maximum allowable annual exposure. The method in which this annual limit was arrived at is discussed below:

> In 1967, the Federal Radiation Council unanimously recommended one WL as a safe continuous level, which meant that 12 WLM was the maximum annual exposure. Report No. 8 Revised titled "Guidance for the Control of Radiation Hazards in Uranium Mining, September, 1967, a Staff Report of the Federal Radiation Council" gives the full explanation and justification for supporting the 12 WLM standard. In 1971, the EPA which assumed the responsibility of the federal radiation council, had the standard reduced by a factor of 3, to 4 WLM per year. The reason given for the reduction was to throw in an additional factor of safety because the 12 WLM was felt to be inadequate it was determined that few or no health effects could be seen above a

lifetime occupational exposure of 120 WLM, and that an extremely small portion of uranium miners work in underground uranium mines for more than 30 years. Therefore, with a maximum allowable annual exposure of 4 WLM for 30 years, no miner would be allowed to receive in excess of 120 WLM in his lifetime.

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An employee's annual exposure is determined by knowing the time he spends in each working area, lunch area, and travelway and the average radon daughter concentrations observed in those areas occupied. If an employee was to work in an underground environment exhibiting 1 WL radon daughter concentration, eight hours a day for 4 months he would be exposed to 4 WLM over that time period. An average concentration of 0.3 WL, 8-hours a day, over a 12-month period would also result in 4 WLM annual exposure. It can, therefore, easily be seen that short duration exposures to concentrations exceeding 1 WL does not pose an imminent threat to over-exposing an individual to 4 WLM per year. If, near the end of the year, an employee is approaching the 4 WLM limit, he can be moved to areas within the mine exhibiting lower radon daughter concentrations, or he can be taken out of the mine and allowed to work on the surface collecting his regular underground pay.

I hope these comments help to clarify what some of the terms and standards of the MSHA regulations mean. If I can be of any further assistance on these matters, please don't hesitate to contact me.

Very truly yours,

UNITED NUCLEAR-HOMESTAKE PARTNERS

Edward E. Kennedy
Director of Environmental Affairs

Wayne E. Bingham
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