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DOCKETED
USNAC

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Senator John W. Warner
Senate Office Building
Washington, D.C. 20510

OFFICE OF SECRETARY
DOCKETING & SERVICE
BRANCH

Dear Senator Warner:

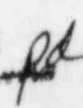
It has been recently made public that the Nuclear Regulatory Commission intends to amend and update the rules governing the nuclear industry. Though we have not read a complete draft of these proposed changes, it has been brought to our attention that one or more rule changes will have a detrimental effect on the coal industry, specifically, how the industry collects data, using nuclear wireline geophysical equipment lowered into uncased, small-diameter drill holes, during coal exploration.

The coal industry has historically relied on drilling, either by continuous coring or some other means, to collect valuable information on the thickness, quality, and mining conditions of coal seams. It is a very valuable tool for mechanically sampling coal. Information collected by drilling is unfortunately dependent on a number of factors that are not fully controllable by the exploration specialist. The most important factors are the drill operator and his experience in drilling coal, the condition of the drill, and the nature of the rock strata, including coal, that drilling will penetrate. Many minor factors also affect the quality of information collected. Something as seemingly unimportant as what a driller did the previous night or what he ate for breakfast can adversely affect the quality of information collected.

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ACKNOWLEDGED BY  JUL 12 1985

The introduction and use of nuclear and electric wireline logging technology has greatly increased the reliability of drill hole data. The single most important logging tool presently available to the coal exploration specialist is the high resolution density log. Density logs can confirm or disprove physical drill hole information, and since it is a calibrated log, can do this systematically and uniformly from drill hole to drill hole.

A density logging tool is a collection of integrated circuitry which processes electronic pulses generated when gamma radiation strikes a photomultiplier tube. The source of this radiation is a low-energy, radioactive material placed a few inches from this tube. Gamma radiation emitted from this source, commonly Americium 241, bombards the surrounding rock strata and is shielded from direct emission onto the photomultiplier tube. Backscatter of gamma radiation from the rock strata is ultimately recorded as a chart (analog) or digitized and recorded on magnetic tape.

The key in this discussion is that a low-energy, radioactive source is needed, primarily because the spacing between source and receiver (photomultiplier) is small. This spacing must remain small in order to resolve small variations in strata thicknesses encountered in coal exploration and to define contacts between different rock types. Resolution with this type of tool, and indeed other wireline tools, is source to receiver spacing dependent.

It turns out that a trade-off must be made to achieve this higher resolution. A low-energy, radioactive source, as its name suggests, produces gamma radiation too low in energy to penetrate anything with any mass. It is, therefore, only useful in open hole situations. The energy is too low to penetrate steel casing, making this log useless in cased holes. Density tools using higher energy sources are used from time-to-time in cased holes as a last resort. These tools must separate the receiver farther from the source to insure all direct gamma radiation is shielded, causing a considerable reduction in resolution.

In summary, the high resolution density log is an invaluable tool to me as a coal geologist, to AMVEST Corporation, as a leading producer of coal in Virginia, and to the coal industry nationwide. It lends a degree of credibility to exploration data unachievable by any currently practiced exploration method.

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We believe that the Nuclear Regulatory Commission was ill-informed and possibly ignorant of how this type of logging is being used in our industry when the draft rules were written. We believe that implementation of the rules that affect open hole nuclear logging will be very costly to the coal industry and force it to abandon one of its most important exploration tools, a tool for which there is no non-nuclear substitute.

As senator of a major coal-producing state, we ask you to share our concerns with other senators. We ask that you discuss these draft rules with the Chairman of the Nuclear Regulatory Commission, Mr. Nunzio Palladino. The deadline for submitting written comments is July 8, 1985.

We appreciate your efforts in working for practical and realistic regulations which will not force us to abandon this extremely useful exploration tool.

Sincerely,



Robert C. Hills
Senior Project Geologist

tj

cc: Carl W. Smith
AMVEST Corporation

Nunzio Palladino