

February 9, 2001

Mr. Jose M. Las Navas  
c/Santiago Estevez 29 2°  
28019 Madrid, Spain

Dear Mr. Las Navas:

This letter is in response to your letter dated December 29, 2000, to Mr. Marvin E. Gunn at the U.S. Nuclear Regulatory Commission (NRC), regarding the development of the Las Navas Instruments Company's Vickers hardness testing equipment. Your inquiry was received and reviewed by the Office of Nuclear Regulatory Research (RES).

The NRC generally does not review or endorse specific apparatus for in-plant use. We have approved specific techniques proposed by licensees but that is not a product endorsement process.

The reactor pressure vessel (RPV) beltline region is of primary concern to the NRC with regards to embrittlement caused by exposure to high energy neutrons from the core. The NRC has issued regulations and guidelines on radiation embrittlement of reactor vessel materials to ensure that the integrity of the reactor vessel is maintained over the duration of its operating license. Changes in the fracture toughness properties of the reactor vessel materials are monitored through surveillance programs. Surveillance capsules are located in each vessel between the core and the RPV, in close proximity to the beltline region. These capsules contain representative samples of the RPV materials. They are exposed to the neutron irradiation and thermal environment of the RPV beltline region and simulate the exposure conditions of the actual beltline materials. These specimens are removed periodically for testing, including hardness testing, to assure the regulations are being, and will be satisfied.

As you know, surface measurements of hardness can be influenced by many factors. The beltline region is clad by a stainless steel overlay. Therefore, in-situ hardness testing of the RPV beltline is not practical in the U.S., because it would require removal of an area of this stainless steel cladding on the inner diameter of the RPV to access the ferritic RPV material for testing. Removing this overlay is not viewed as a generally acceptable practice.

Sincerely,

**/RA/ by**

Michael E. Mayfield, Director  
Division of Engineering Technology  
Office of Nuclear Regulatory Research

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Michael E. Mayfield, Director

Division of Engineering Technology  
Office of Nuclear Regulatory Research

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\*See previous concurrence

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