UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION RELATED TO THE USE OF ALTERNATIVE MATERIALS IN THE REACTOR COOLANT SYSTEM

COMMONWEALTH EDISON COMPANY

BYRON STATION, UNIT 1, AND BRAIDWOOD STATION, UNIT 1

DOCKET NOS. STN 50-454 AND STN 50-456

1.0 INTRODUCTION

By letter dated December 20, 1996, the Commonwealth Edison Company (ComEd, the licensee), requested approval under the provisions of 10 CFR 50.55a(a)(3) to use the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code), Section IX, Code Cases 2142-1 and 2143-1 on the Reactor Coolant System (RCS) for Byron, Unit 1, and Braidwood, Unit 1.* These two Code Cases classify nickel base weld metals that closely match and are intended for welding Alloy 690. Code Case 2142-1 establishes welding classifications and other requirements for a bare wire filler metal. Code Case 2143-1 establishes welding classifications and other requirements for a coated electrode.

The subject Code Cases are non-nuclear code cases and are not reviewed and approved generically for incorporation into the NRC Regulatory Guides; therefore, they may not be used by licensees without prior specific NRC staff review and approval.

2.0 EVALUATION

Code Case 2142-1 lists the Unified Numbering System (UNS) designation (UNS N06052) for a weld filler metal commercially known as "INCO 52," conforming to the American Welding Society (AWS) Specification A5.14. It establishes the F-No. of this weld metal as F-No. 43 for both procedure and performance qualification purposes. Code Case 213 -1 lists appropriate AWS and UNS specifications conforming to AWS Specification A5.11 for a coated electrode commercially known as "INCO 152" and establishes F-No. 43 for this material for welding purposes. By this set of specifications and F-No. assignments,

*Although 10 CFR 50.55a references only the applicable portions of Sections III and XI of the ASME Boiler and Pressure Vessel Code, ASME Section III requires in NB-2400 that all welding material used in the construction and repair of ASME Code Class 1 components and material conform to the requirements for other welding material as permitted in Section IX.

these materials are completely described for welding purposes as similar in their welding characteristics to many other Code nickel base weld metals. Thus, these two weld metals are exempted from the requirements for specific procedure and performance qualifications for non-Code materials, which will permit the licensee to use a large number of existing welding procedures and performance qualifications, eliminating any additional difficulty or hardship associated with separate procedures for non-Code welding materials, which would have no compensating increase in level of quality or safety.

Therefore, this will permit the licensee to use a large number of welding procedures and performance qualifications previously qualified for F-No. 43 materials. This would eliminate the hardship associated with performing additional separate procedure qualifications which would be without any compensating increase in the level of quality and safety.

Industry studies and service experience have found these materials to have superior corrosion resistance when compared to Alloy 600 material in current use. The subject weld consumables are preferred for welding applications involving alloy 690 in order to match the corrosion resistance of the Alloy 690 base metal, thereby providing an acceptable level of quality and safety because of the superior corrosion resistance.

The staff has previously reviewed and approved the use of Code Cases 2142 and 2143 in V. C. Summer Nuclear Station and Crystal River Nuclear Plant, Unit 3. According to the licensee, no substantive changes occurred between the original approved Code Cases and the current renewed ones.

3.0 CONCLUSION

The staff concludes that the use of the subject weld metals is acceptable as a substitute for other weld metals when the licensee has determined that their use could enhance the safety of the reactor coolant system. Additionally, the staff finds that the Code Cases appropriately identify and classify these same two weld metals for welding purposes, thereby eliminating the burden that would be imposed by the requirement for special procedure and performance qualifications for non-Code materials. The staff finds that imposition of additional procedure and performance qualifications would not result in any increase in quality or safety.

The staff has reviewed the licensee's request and supporting information and concludes that the use of the subject Code Cases as an alternative to the ASME Code, Section IX, requirements will provide an acceptable level of quality and safety and is authorized pursuant to 10 CFR 50.55a(a)(3)(i).

Principal Contributor: H. Conrad

Date: May 29, 1997