UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 – 0001

June 14, 2010

MEMORANDUM TO: ACRS Members

FROM: Jorge L. Cruz-Ayala, Staff Engineer ***/RA/***
Reactor Safety Branch A
ACRS

SUBJECT: CERTIFICATION OF THE MINUTES OF THE ACRS SUBCOMMITTEE ON RG 1.62, "MANUAL INITIATION OF PROTECTIVE ACTIONS", DECEMBER 17, 2009, ROCKVILLE, MARYLAND

The minutes of the subject meeting were certified on May 20, 2010, as the official record of the proceedings of that meeting. A copy of the certified minutes is attached.

Attachments: As stated.

Cc w/o attachment:

E. Hackett
C. Santos
A. Dias

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MEMORANDUM TO: Jorge L. Cruz-Ayala
Reactor Safety Branch A
ACRS

FROM: Charles Brown, Chairman ***/RA/***
Digital I&C Subcommittee

SUBJECT: CERTIFICATION OF THE MINUTES OF THE ACRS SUBCOMMITTEE ON RG 1.62, "MANUAL INITIATION OF PROTECTIVE ACTIONS", DECEMBER 17, 2009, ROCKVILLE, MARYLAND

I hereby certify, to the best of my knowledge and belief, that the minutes of the subject meeting held on December 17, 2009, are an accurate record of the proceedings.

/RA/ 5/20/2010
Charles Brown, Chairman *Date*
Digital I&C Subcommittee

Certified: 05/20/201- Issued: 05/24, 2010
Certified by: Charles Brown

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
MINUTES OF ACRS DIGITAL INSTRUMENTATION AND CONTROL SYSTEMS SUBCOMMITTEE MEETING
DECEMBER 17, 2009
ROCKVILLE, MARYLAND

The Advisory Committee on Reactor Safeguards (ACRS) Digital Instrumentation and Control Systems (DI&C) Subcommittee held a meeting on December 17, 2009 in Room T-2B1, 11545 Rockville Pike, Rockville, MD. The purpose of this meeting was to review and discuss Draft Final Revision 1 of Regulatory Guide 1.62 (RG 1.62), "Manual Initiation of Protective Actions." Christina Antonescu was the designated Federal Official for this meeting. The Subcommittee received requests for time to make oral statements from the public. The Subcommittee Chairman convened the meeting on December 17, 2009 at 8:30 a.m. and adjourned the meeting at 11:45 a.m.

ATTENDEES:

ACRS Members
C. Brown, Chairman
G. Apostolakis
D. Bley
J. Sieber

ACRS Staff
C. Antonescu, Designated Federal Official
J. Cruz-Ayala, ACRS staff

NRC Staff
K. Nguyen, RES
I. Jung, NRO
T. Jackson, NRO
E. Eagle, NRO
D. Desaulniers, NRO
B. Marcus, NRR
W. Kemper, NRR
P. Loesen, NRR

Others
C. Martin, DNFSB
T. Hayes, Westinghouse
K. Scanola, NAE
K. Mashio, MNES
J. Kinsey, INL
S. Small, AREVA
G. Clefton, NEI
K. Koyama, HGNE
M. Burzynski, AREVA

This meeting was open to members of the public. The presentation slides and handouts used during this portion of the meeting are attached to transcript.

Opening Remarks and Objectives:

Mr. Charles Brown, Chairman of the ACRS DI&C Subcommittee, convened the meeting at 8:30 a.m. The purpose of the meeting was to review and discuss RG 1.62, "Manual Initiation of Protective Actions." The presenters included representatives from the NRC's Office of Regulatory Research (RES).

RES Staff Presentation to the ACRS Digital Instrumentation and Control Systems Subcommittee:

Mr. Khoi Nguyen from the Office of RES, Division of Engineering, Digital Instrumentation and Control Systems Branch, presented information on the background and subsequent changes to RG 1.62. He also provided the Subcommittee with an overview of the public comments that were received (both those that were incorporated into the current revision and those that were not).

Mr. Nguyen began his presentation by giving a brief history of RG 1.62. He stated that RG 1.62 has not been updated since October 1973 and it currently endorses IEEE Std. 279-1971. Mr. Nguyen explained that RG 1.62 was being changed to reference the latest standard endorsed by the NRC which is IEEE Standard 603-1991 (IEEE 603-1991) as stated in 10 CFR 50.55a(h). RG 1.62 is being revised to expand its scope to address manual initiation of protective actions for digital control systems and to incorporate guidance for diversity and defense-in-depth (D3) in digital computer-based instrumentation and control systems (BTP 7-19) with respect to manual initiation of protective actions.

Mr. Nguyen described the changes to the regulatory positions, which were to replace system-level actuation with division-level actuation in Regulatory Positions 1, 2, and 3, and reference IEEE 603-1991 in Position 6. He also described the two new Regulatory Positions created to reference Branch Technical Position 7-19 (BTP 7-19) and allow an optional manual initiation that satisfies both requirements of IEEE 603-1991 and BTP 7-19 guidance.

Mr. Nguyen explained the basis for the scope expansion. He mentioned that RG 1.62 was being revised in large part to include guidance that addresses diversity and defense-in-depth for DI&C equipment with respect to manual initiation of protective actions. He mentioned that BTP 7-19 guidance is incorporated into RG 1.62 because of the changes nuclear power plants are implementing to their DI&C equipment, going from analog to digital technology.

The Staff also discussed the relationship between Interim Staff Guidance (ISG) ISG-02, ISG-05 and RG 1.62 and presented Appendix 18-A of SRP, which supersedes section 3 of ISG-05. ACRS Members noted that RG 1.62 did not provide guidance regarding time required or time available for operator actions.

Mr. Nguyen presented a summary of the public comments and their resolutions after discussing the relationship between ISG-02, ISG-05 and RG 1.62. This item concluded staff's briefing on RG 1.62.

Mr. Ken Scarola, on behalf of Mitsubishi Heavy Industries, expressed his concern regarding RG 1.62, which now enforces division-level actuation rather than system-level actuation. He stated that this guidance may complicate the human factors aspect of some initiation systems, such as a two out of four buttons initiation mechanism.

Mr. Shelby Small of AREVA also expressed his concern about requiring division-level actuation for manual initiation of protective systems. He suggested putting emphasis on duplicating automatic functionality in RG 1.62 instead of specifying which type of actuation level to be allowed.

Member Comments:

Chairman Brown expressed concern that the Scope section of RG 1.62 needed more clarification for its intended use. He also stated that there is some inconsistent terminology among ISG-002, ISG-005, Appendix 18-A, BTP 7-19 and RG 1.62 for digital instrumentation and control systems guidance relating to the time available and time required for operator action during an anticipated operational occurrence or a postulated accident. Chairman Brown recommended to NRC staff to revise RG 1.62 so that it clarifies that system-level actuation of all divisions is acceptable, if and only if this actuation meets all the requirements of IEEE-603.

BACKGROUND MATERIALS PROVIDED TO THE SUBCOMMITTEE PRIOR TO THIS MEETING:

1. Proposed Revision 1 to Draft Final Regulatory Guide (RG) 1.62, "Manual Initiation of Protective Action," October 2009.

2. Draft Regulatory Guide DG-1190, "Manual Initiation of Protective Action," December 2008.

3. Redline strikeout comparison between DG-1190 and Revision 1 of RG 1.62.

4. Resolution of Public Comments received on Draft Regulatory Guide DG-1190, "Manual Initiation of Protective Actions," October 2009.

5. Summary of Changes to Regulatory Guide 1.62, "Manual Initiation of Protective Actions."

6. IEEE Std 603-1991, "IEEE Standard Criteria for Safety Systems for Nuclear Power Generating Stations," Institute of Electrical and Electronics Engineers, Piscataway, NJ, 1991, and the correction sheet, dated January 30, 1995

7. NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants (LWR Edition)," Branch Technical Position 7-19, "Guidance for Evaluation of Diversity and Defense-In-Depth in Digital Computer-Based Instrumentation and Control Systems," U.S. Nuclear Regulatory Commission, Washington, DC, March 2007.

8. IEEE Std. 279-1971, "Criteria for Protection Systems for Nuclear Power Generating Stations," Institute of Electrical and Electronics Engineers, Piscataway, NJ, 1971.

9. SECY-93-087, "Policy, Technical, and Licensing Issues Pertaining to Evolutionary and Advanced Light-Water Reactor (ALWR) Designs," U.S. Nuclear Regulatory Commission, Washington, DC, April 2, 1993.

10. Final Regulatory Guide (RG) 1.62 Revision 0, "Manual Initiation of Protective Action," October 1973.

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Note: Additional details of this meeting can be obtained from a transcript of this meeting available for downloading or viewing on the Internet at http://www.nrc.gov/reading-rm/doc-collections/acrs/tr/subcommittee/2009/ or purchase from Neal R. Gross and Co., Inc., (Court Reporters and Transcribers) 1323 Rhode Island Avenue, NW, Washington, DC 20005 (202) 234-4433.