LM Response to RAI #18 - #20 Introductory Comment:  The Lockheed Martin Nuclear Systems and Solutions' (LM) NuPAC topical report *(NuPAC_ED610000-047-P Rev. A, "Generic Qualification of the NuPAC Platform for Safety-related* Applications")  contains an appendix to describe the platforms compliance with DI&C-ISG-04 Revision 1 (ISG-4).  The criteria contained in ISG-4 can be of two general types: (1) related to the information communicated and its use, and (2) the communications mechanisms.  It is understood that the specific information communicated and its associated use are application specific items, and these ISG-4 criteria may best addressed in application specific reviews (or general application implementation restrictions). The communications mechanism related criteria in ISG-4 were developed with microprocessor based systems in mind; therefore, these criteria may not be the best criteria for the NuPAC FPGAs (Field Programmable Logic Controller) and associated implementation.

# 1  Terms and Acronyms

- FPGA – Field Programmable Gate Array
- PL – Programmable Logic: design, description or implementation of logic intended for implementation in an FPGA.

# 2  Response

The data communicated by the Test Specimen Configuration (TSC) application is not directly applicable to other NuPAC Platform applications.  Therefore, the review of specific data and its associated use are limited to application specific reviews.

The NuPAC Platform communications mechanisms, however, are similar to those developed for microprocessor based systems.  These mechanisms are appropriate for review against the DI&C ISG 04 criteria.  The review of these communications mechanisms are covered in detail in the combined LMGI response to NRC RAIs #18, #19, and #20.  These communication mechanisms are intended to communicate data; potential examples including:

- Plant parameter values such as
    - Pressures
    - Temperatures
    - Power Levels
    - Actuation Commands
- NuPAC Operability Status
    - Instrument in "Normal Operation"
    - Instrument in Bypass Mode
    - Instrument Built In Test Failure
    - Access Door Open