DOE-ID NEPA CX DETERMINATION
Idaho National Laboratory

CX Posting No.: DOE-ID-INL-18-002

SECTION A. Project Title: Wireless Test Bed Upgrades

SECTION B. Project Description and Purpose:

Idaho National Laboratory (INL) operates a comprehensive wireless test bed (WTB) across the INL Site. The WTB allows users to test high-frequency, ultra-high-frequency, cellular, satellite, microwave, and other devices and hardware. The WTB includes Tier 1, end-to-end second and third generation cellular networks with fixed and mobile towers, WIMAX (mobile and fixed) WiFi, Zigbee, and Bluetooth networks, and miles of microwave and optical fiber. The WTB allows customers to study, model, and perform unbiased, full-scale tests to illustrate the impacts of wireless failures in industrial processes.

To meet customer demands, WTB system performance needs to be improved and supplementary feature functionality needs added. The proposed action supplies Circuit Switched Fall Back (CSFB) functionality to the WTB. The CSFB feature functionality enables WTB customers to place voice calls and short messages by routing call traffic from the Long Term Evolution (LTE) Networks Mobility Management Entity (MME) to the to the Global System for Mobile Communications (GSM) and Universal Mobile Telecommunications Service (UMTS) Network Mobile Switching Center Server (MSS). The circuit switched functionality of the GSM and UMTS Networks then process the voice call or message, mirroring the latest features and functionality of a typical commercial LTE Network.

To implement the CSFB functionality, the proposed action upgrades the Digital Switching Home Location Register (HLR) platform hardware and software to the New Technology-HLR Front End hardware and software platform. The project also retrofits the Home Subscriber Server to provide the platform for the New Technology-HLR Front End functionality. The LTE Networks MME, the UMTS Network Radio Network Controller and the GSM Networks Base Station Controller will have new features, and a new datafill will support CSFB functionality. To facilitate the CSFB voice call and short message service flow, the proposed work adds a new interface between the MME and the MSS.

The scope of work also upgrades the WTB GSM and UMTS Mobile Switching Center Server (MSS) from the MSS Digital Switching platform to the Open MSS Advanced Telecommunications Computing Architecture platform and moves the MSS hardware from Central Facilities Area (CFA) building 609 (CFA-609) to the Switch Room at Gate 1, Shelter 3. The Advanced Telecommunications Computing Architecture platform consolidates the MSS footprint from the multi-cabinet configuration into a single equipment rack, uses less floor space, and reduces power consumption.

The All new equipment will be located at Gate 1, Shelter 3. De-installation of old equipment will occur at CFA 609, Rm 200.

New Technology-HLR Front End

CSFB functionality requires an upgrade to the New Technology-HLR Front End and addition of an expansion backplane and blades within the Home Subscriber Server enclosure. After installation of the backplane and blades, the project will re-integrate the New Technology-HLR Front End into the Network. Upon successful completion of the Acceptance Test Procedure, the GSM/UMTS subscriber database, including all subscriber services (both basic and supplementary), will be migrated from the Digital Switching Home Location Register to the New Technology-HLR Front End.

Circuit Switched Fall Back (CSFB)

The proposed action establishes a new interface between the LTE Network MME and the GSM Network MSS to facilitate the CSFB voice call and short message service flow. The project will perform pre and post upgrade drive testing to validate CSFB functionality on INL LTE cellular sites.

Open MSS Advanced Telecommunications Computing Architecture

To implement the Open MSS functionality, the proposed action installs MSS Advanced Telecommunications Computing Architecture hardware into a new equipment rack at Gate 1, Shelter 3. Following installation, new datafill will be loaded, and the MSS will be configured and re-integrated into the Media Gateway (MGW) and the Network and will include the Base Station Controller (BSC), Traffica and the future capability for NetAct Integration with compatible software. The Contractor shall ensure the network connectivity to the MGW (CFA 609, Room 200) will be tested and ready prior to the agreed integration date. The Open MSS hardware and software upgrade is a prerequisite for the HLR, CSFB and BTS Upgrade (HCB) Project.

SECTION C. Environmental Aspects or Potential Sources of Impact:

Generating and Managing Waste

This work is expected to generate small amounts of common trash and construction-related waste such as scrap metal. All scrap metal will be recycled to the extent practicable.

Using, Reusing, and Conserving Natural Resources

Replacement of the old equipment will result in energy savings.

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SECTION D. Determine Recommended Level of Environmental Review, Identify Reference(s), and State Justification: Identify the applicable categorical exclusion from 10 Code of Federal Regulation (CFR) 1021, Appendix B, give the appropriate justification, and the approval date.

For Categorical Exclusions (CXs), the proposed action must not: (1) threaten a violation of applicable statutory, regulatory, or permit requirements for environmental, safety, and health, or similar requirements of Department of Energy (DOE) or Executive Orders; (2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment or facilities; (3) disturb hazardous substances, pollutants, contaminants, or Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)-excluded petroleum and natural gas products that pre-exist in the environment such that there would be uncontrolled or unpermitted releases; (4) have the potential to cause significant impacts on environmentally sensitive resources (see 10 CFR 1021). In addition, no extraordinary circumstances related to the proposal exist that would affect the significance of the action. In addition, the action is not "connected" to other action actions (40 CFR 1508.25(a)(1) and is not related to other actions with individually insignificant but cumulatively significant impacts (40 CFR 1608.27(b)(7)).

References: 10 CFR 1021, Appendix B to Subpart D, B1.7 "Electronic equipment" and B1.31 "Installation or relocation of machinery and equipment."

Justification: Project activities are consistent with 10 CFR 1021, Appendix B to Subpart D, B1.7 "Acquisition, installation, operation, modification, and removal of electricity transmission control and monitoring devices for grid demand and response, communication systems, data processing equipment, and similar electronic equipment" and

B1.31 "Installation or relocation and operation of machinery and equipment (including, but not limited to, laboratory equipment, electronic hardware, manufacturing machinery, maintenance equipment, and health and safety equipment), provided that uses of the installed or relocated items are consistent with the general missions of the receiving structure. Covered actions include modifications to an existing building, within or contiguous to a previously disturbed or developed area, that are necessary for equipment installation and relocation. Such modifications would not appreciably increase the footprint or height of the existing building or have the potential to cause significant changes to the type and magnitude of environmental impacts."

Is the project funded by the American Recovery and Reinvestment Act of 2009 (Recovery Act) ☒ Yes ☐ No

Approved by Jason Sturm, DOE-ID NEPA Compliance Officer on: 1/18/2018