Introduction to Rolls-Royce Civil Nuclear

7 January 2010
Non-proprietary

Points of discussion

- Context: Generic licensing submittal for ***SPINLINE 3***
- Overview:
  - Rolls-Royce plc
  - Rolls-Royce business units
  - Delivery of ***SPINLINE 3*** in the U.S.
- Rolls-Royce Civil Nuclear business unit
  - Data Systems & Solutions, LLC
  - Rolls-Royce Civil Nuclear SAS

Context:
Generic licensing submittal for ***SPINLINE 3***

- Rolls-Royce is seeking U.S. Nuclear Regulatory Commission (NRC) generic approval for use of the ***SPINLINE 3*** digital safety instrumentation and control platform in nuclear safety I&C systems in any U.S. commercial nuclear power plant, research reactor, or nuclear fuel cycle facility.

Note: Rolls-Royce Civil Nuclear SAS is the applicant.

Overview: Rolls-Royce plc

- Rolls-Royce is a global business providing integrated power systems for use on land, at sea and in the air. Rolls-Royce products and systems are supported by Long-Term Service Agreements.

- Rolls-Royce has business units that operate in four markets:
  - Civil aerospace
  - Defense aerospace
  - Marine
  - Energy

Rolls-Royce business units

- Rolls-Royce has business units aligned to the four markets we serve (described in the appendix)

- Rolls-Royce Civil Nuclear
  - Was created as a separate business unit in 2008,
  - For Instrumentation and Controls, has operations and legal entities in the U.S. and France:
    - U.S.: Data Systems & Solutions, LLC doing business as Rolls-Royce Civil Nuclear
    - France: Rolls-Royce Civil Nuclear SAS

Delivery of *SPINLINE 3* in the U.S.

- Data Systems & Solutions LLC (DS&S), doing business as (dba) Rolls-Royce Civil Nuclear, will be the business entity for delivery of ***SPINLINE 3*** systems in the U.S.

- Rolls-Royce Civil Nuclear SAS, based in France, is the supplier and dedicator / qualifier of ***SPINLINE 3*** hardware and software and the supplier of integrated systems.

Rolls-Royce Civil Nuclear (1/2)

- In July 2008, Rolls-Royce Civil Nuclear was established as a new business unit to bring a single focus for Rolls-Royce's global civil nuclear activities

- Capabilities of the business include:
  - Engineering design,
  - Supply chain management,
  - Manufacturing,
  - Digital instrumentation and control systems supply,
  - Licensing and safety reviews,
  - Installation & commissioning of nuclear island systems & equipment,
  - Operational management and through life support.

Rolls-Royce Civil Nuclear (2/2)

- Rolls-Royce has the largest nuclear skills base of any UK company
  - Around 2,000 specialist nuclear-focused employees in the UK, France and the U.S.
  - It also has the UK's most substantial nuclear supply chain, comprising around 260 proven suppliers
- Rolls-Royce's instrumentation & control capability for civil nuclear markets is based on established entities in the U.S. and France
  - Data Systems & Solutions, LLC
  - Rolls-Royce Civil Nuclear SAS

Data Systems & Solutions, LLC (USA)
History

- Before 1999: Operated as an SAIC business unit located in Huntsville, AL and in Chattanooga, TN
- January 1999: DS&S formed as a 50:50 Joint Venture between SAIC and Rolls-Royce, including above locations
- March 2007: DS&S became a wholly-owned subsidiary of Rolls-Royce.
- January 2009: Data Systems & Solutions, LLC in above locations became part of the Rolls-Royce Civil Nuclear business

Data Systems & Solutions, LLC
Products and Services

- Plant Process Computers (PPCs) and related nuclear applications
- Digital Annunciator Management System
- Safety Parameter Display System (SPDS)
- Security Management Systems
- Rolls-Royce Civil Nuclear SAS I&C products and systems delivered to U.S. based customers

Rolls-Royce Civil Nuclear SAS (France)

History

- Before 2003: Systemes et Electronique de Surete, nuclear unit of Schneider Electric Industries SAS, located in Grenoble, France
- January 2003: Data Systems & Solutions (DS&S) acquired the unit and incorporated it as a wholly-owned French subsidiary, Data Systems & Solutions SAS.
- March 2007: DS&S became a wholly-owned subsidiary of Rolls-Royce.
- January 2009: Data Systems & Solutions SAS became part of the Rolls-Royce Civil Nuclear business and was renamed Rolls-Royce Civil Nuclear SAS.

Rolls-Royce Civil Nuclear SAS
Products and Services (1/2)

- ***SPINLINE 3*** digital safety instrumentation and control platform:
  - Reactor protection systems,
  - Nuclear Instrumentation Systems (NIS),
  - Diesel generator load-sequencer,
  - Diverse trip systems
- Control Rod Control System for pressurized water reactors (PWRs)
- ***SPINLINE 3*** is managed under the Rolls-Royce Civil Nuclear SAS 10 CFR 50 Appendix B QA program

Rolls-Royce Civil Nuclear SAS
Products and Services (2/2)

- Other I&C systems and hardware, including:
  - Ex-core neutron detectors,
  - Boron meter,
  - Reactivity meter,
  - Rod position Indication system,
  - Pressurizer heater controller
  - Reactor trip circuit breakers

- Aftermarket services, obsolescence management, on-site and factory service and repair, and training

Appendix

Description of Rolls-Royce business sectors

Rolls-Royce business units (2/4)

- Civil Aerospace
  - Powering aircraft from small helicopters and general aviation aircraft, to business jets and the world's largest airliners, Rolls-Royce offers the industry's broadest range of engines.
  - More than 600 airlines rely on Rolls-Royce power, including nine of the world's top ten.

- Defense Aerospace
  - Rolls-Royce provides engines and services for combat jets, helicopters, transports, trainers, tactical aircraft, and unmanned aerial vehicles, including two of the world's largest combat programs: Eurofighter Typhoon and the F-35 Joint Strike Fighter

Rolls-Royce business units (3/4)

- Marine
  - Submarines: Rolls-Royce has been involved in the UK naval nuclear program since its inception in the 1950s and we are the design authority for the Royal Navy's naval nuclear plant.
  - Naval: Rolls-Royce involvement in naval propulsion spans 50 years and has seen us pioneer some of the most important technological advances in marine propulsion.
  - Commercial: Rolls-Royce delivers a wide range of propulsion and shipboard systems for merchant, offshore and fishing vessels.

Rolls-Royce business units (4/4)

- Energy
  - Rolls-Royce has supplied more than 15,000 units to customers in nearly 120 countries and is investing in new products and capabilities for the oil and gas industry and for distributed electricity generation.
  - Examples include:
    - Advanced aero-derivative gas turbines
    - Centrifugal compressors for gas transmission and oil and gas process applications
    - Complete automation and control solutions