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Development of International Safeguards Technologies Through Commercial Partnership

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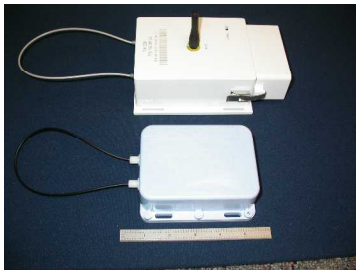
Barry Schoeneman
International Science & Technology

Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

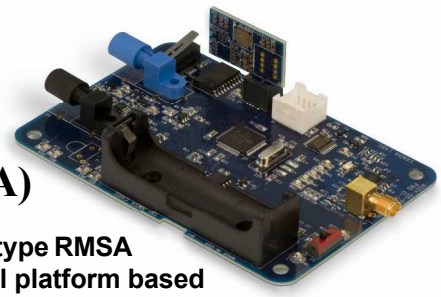
Introduction

- **Mission Focus: Nuclear Threat Reduction**
  - Detecting undeclared state activities and conditions (e.g., IAEA Safeguards)
  - Securing weapons and weapons-useable material
- **Role of Sensors and Seals**
  - T-1/T-1A fiber optic seal used for item monitoring
    - T-1 joint use for the IAEA and the US at the K-Area Complex (KAC) Facility, Savannah River
    - T-1A domestic use only at the KAC Facility
  - Secure Sensor Platform (SSP) supports a variety of low-power sensors for remote monitoring of high value, high risk assets like special nuclear material or weapon components
    - Tiny Gamma-ray Spectrometer (TGS)
    - Authenticated door switch
    - SSP based Remotely Monitored Sealing Array (RMSA) RMSA item monitoring for the IAEA



T-1

T-1A



Pre-prototype RMSA active seal platform based upon the SSP concept

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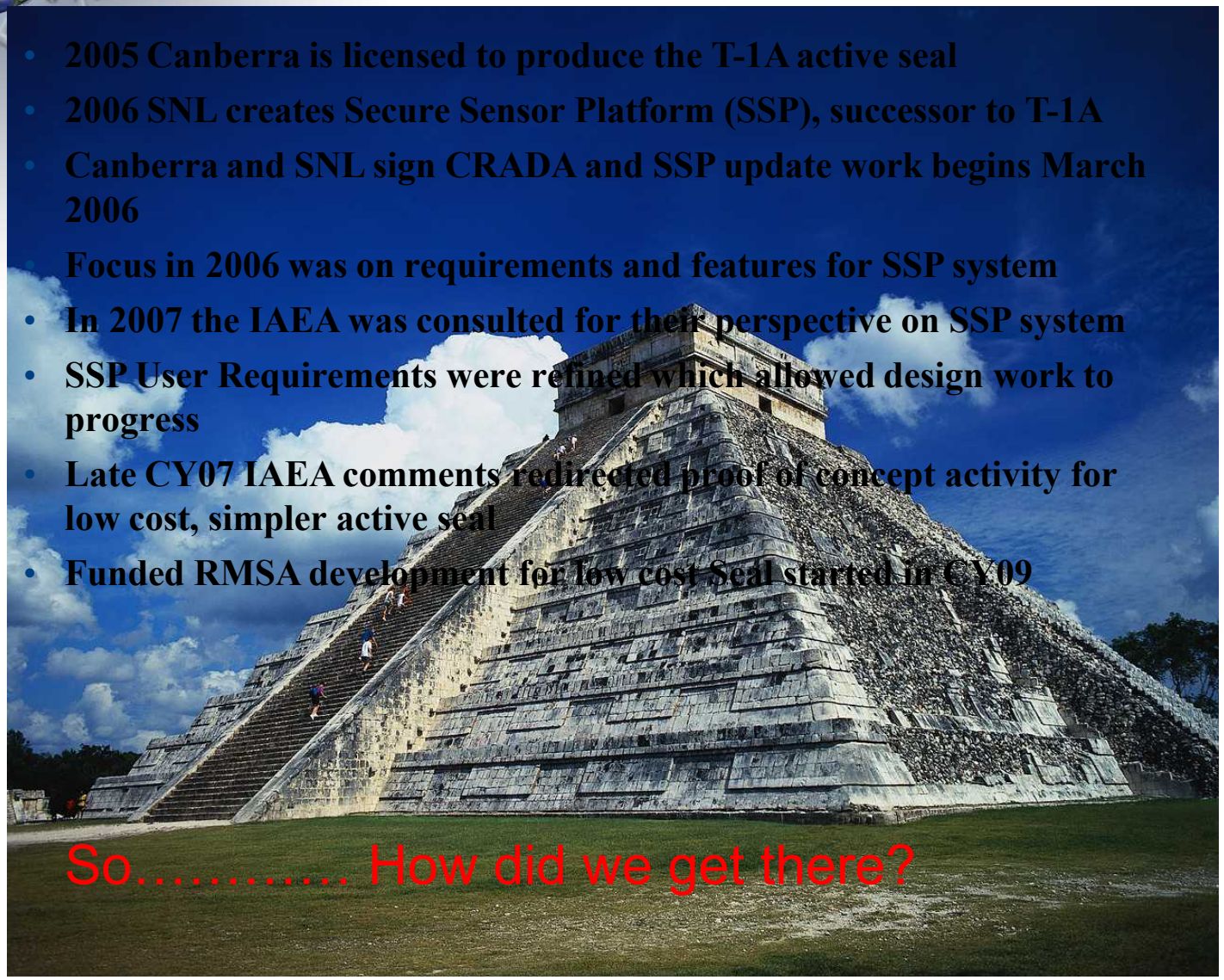
History of Sandia-Canberra Partnership

- 2005 Canberra is licensed to produce the T-1A active seal
- 2006 SNL creates Secure Sensor Platform (SSP), successor to T-1A
- Canberra and SNL sign CRADA and SSP update work begins March 2006
- Focus in 2006 was on requirements and features for SSP system
- In 2007 the IAEA was consulted for their perspective on SSP system
- SSP User Requirements were refined which allowed design work to progress
- Late CY07 IAEA comments redirected proof of concept activity for low cost, simpler active seal
- Funded RMSA development for low cost Seal started in CY09



Through Collaboration

Resulting in ……..

- **A commercial source for the T-1A seal for the KAC Facility**
- **A four year CRADA to develop the Secure Sensor Platform concept**

Federal Laboratory Consortium Award for Excellence in Technology Transfer

Which resulted in……

- **A Partnership in an IAEA contract to develop the Remotely Monitored Sealing Array (RMSA)**
- **Solution to a problem vs. a solution looking for a problem**
- **The potential for a bright future**

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Benefits of Collaboration

- **Reduced time to prototype with complementary expertise and resources**
  - **Design and security knowledge from SNL**
  - **Commercialization and engineering experience from Canberra**
  - **Existing SNL designs and concepts as a starting point**
- **CRADA fills in the gaps and leverages activities**
- **Rapid and agile response to IAEA request for new SSP based design - RMSA**
- **Combined reputation**
- **Contact base – IAEA, Canberra, Areva, DOE/NNSA**
- **International exposure**
- **Common end point – but different motivation**
  - **SNL: Security technologies deployed ahead of threat capabilities**
  - **Canberra: High profile niche market – low production, high margin**
- **Not germane but of personal importance: Broad–based and Cross-boundary experiences from both perspectives: Government to Commercial and Commercial to Government**

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Summary

- **Highly rewarding experience**
- **The whole is greater than the sum of its parts or more correctly stated - *a whole which is different from the sum of its parts***
- **Opportunities have been realized that may not have been otherwise available**
- **When RMSA is successfully completed, the potential for significant follow-on activities exists**
  - **Domestic (KAC replacement for the T-1A)**
  - **International (EU)**

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