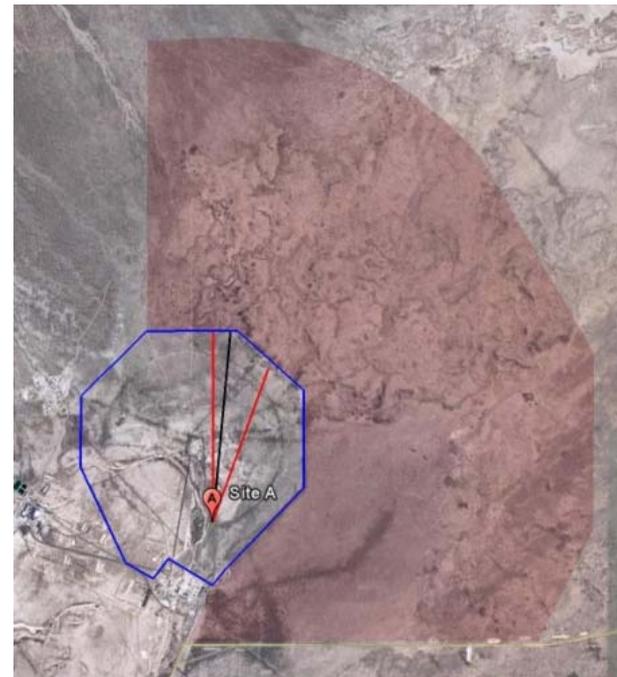


# *StandOff eXperiment (SOX) Range*

**M. Sandvig, J. L. Jones, and D. Norman**

**September 20, 2011**

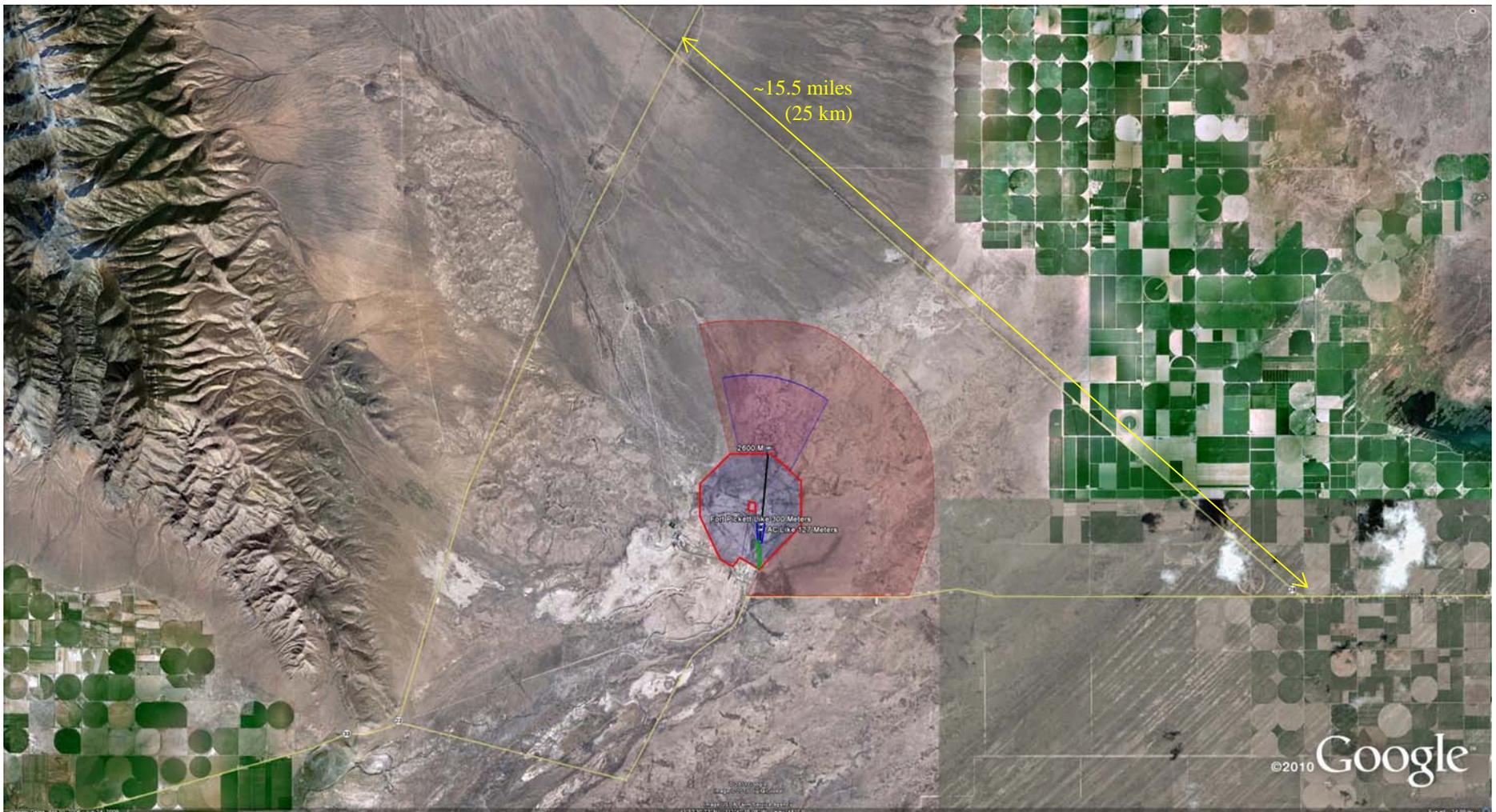


## Outdoor SOX Range Overview

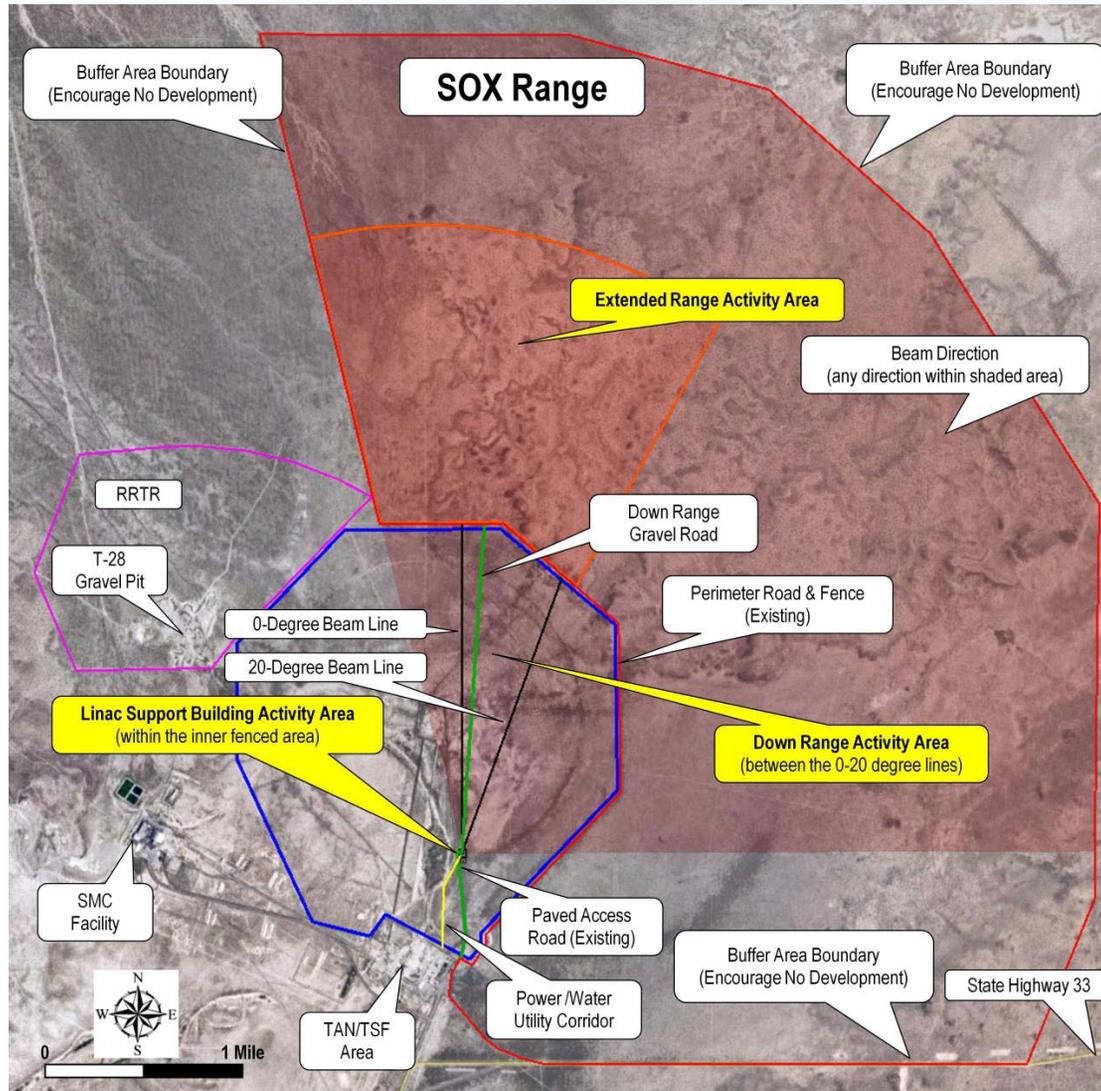
- StandOff eXperiment (SOX) Range: large dedicated, limited access, test area
- Supports first-ever, >10-MeV, open-air, bremstrahlung-based standoff experimentation at a DOE site
- Located at northern part of INL Site (Previously Test Area North [TAN])
- An outdoor test area of ~8.7 km<sup>2</sup> (~3.3 sq. miles + Extended Range)
- Existing ~1.2 m tall perimeter fence of ~11 km (~6.8 miles)
- Allows up to 2.6 km inspection distances within a fenced area; **up to 4.6 km open range**
- Total controlled area ~25 sq. miles
- Supports nuclear material inspection tests



# SOX Range Area (Aerial View)



# SOX Areas: Fenced, Extended, and Buffer



# Varitron III



## *Deployed Varitron III*



## ***Testing Area Status***

- Activity based ASE approved in 2009
- ARR conducted in 2009
- NEPA/NESHAP documentation completed (Mar. '11)
- Bids for SOX range construction issued and awarded (Aug. '11)
- Field Preparation work (pads and electrical) proceeding
- Range to be completed (end of Nov. '11)
- Spring FY12 testing planned
- Available for other testing in Summer 2012

## ***Radiation Safety***

- Posted Radiation Area (RA), High Radiation Area (HRA) and Very High Radiation Area (VHRA)
- Intrusion detection system around the HRA
- Fence around the VHRA
- Guards may be used as temporary control
  - Failure of part of intrusion detection system
  - Intrusion detection on the extended range
  - Administrative control in lieu of posting during use of extended range
- Entry into HRA prohibited
- Hard-wired interlock/safety system loop
- Safety radiation monitors placed based on the LINAC configuration

## ***Environmental Issues***

- Environmental Assessment - Finding of No Significant Impact
- Idaho National Laboratory Stand-Off Experiment (SOX) Range Environmental Assessment, DOE/EA-1822
- Available on DOE website
- EA addressed the high doses to plants and animals consistent with DOE O 458.1, Radiation Protection of the Public and Environment
- Consulted with the Shoshone-Bannock Tribe and Idaho Department of Environmental Quality
- Approval from EPA on methodology to calculate diffuse source radionuclide emissions for compliance to 40 CFR 61, Subpart H

## *Pigmy Rabbit and Sage Grouse*

