

# **INL Site Wide Safety Case for Natural Phenomena Hazards**

Christopher M Long

February 2020



The INL is a U.S. Department of Energy National Laboratory  
operated by Battelle Energy Alliance

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Idaho Falls, Idaho 83415**

**<http://www.inl.gov>**

**Prepared for the  
U.S. Department of Energy  
Office of Nuclear Energy  
Under DOE Idaho Operations Office  
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**Criticality Safety Engineering Manager**

[insert optional photo(s) here]

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## ***East Snake River Plain***

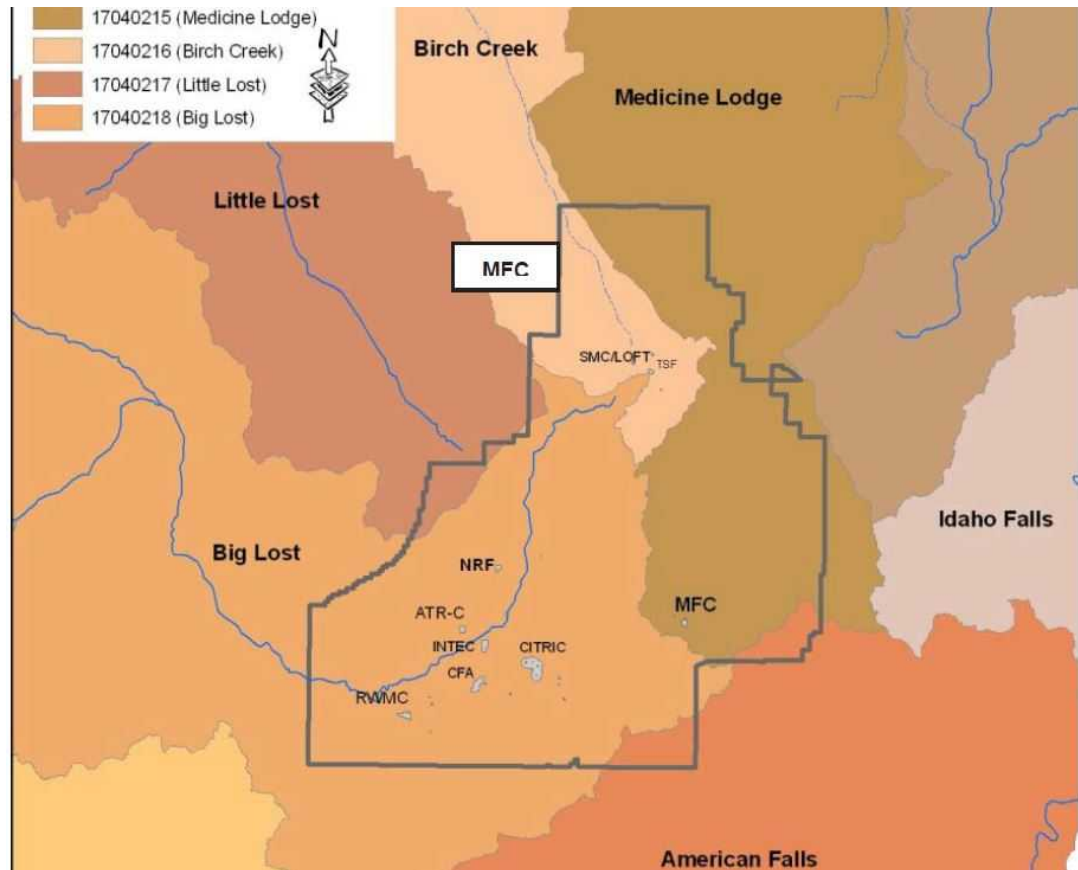
- Common elements of safety case in one INL Safety Analysis Report
- DOE Large Nuclear Facilities
  - Versatile Test Reactor – NEPA
  - Advanced Test Reactor
- INL Areas
  - ATR Complex
  - MFC
  - TAN
  - CITRIC
  - CFA
  - INTEC
  - Commercial Partners

## ***Background - DOE Requirements***

- DOE Directives
  - DOE Order 420.1B, “Facility Safety”
    - DOE STD-1020-2002
    - Performance Categories 1 - 4
  - DOE Order 420.1C, “Facility Safety”
  - DOE STD 1020-2012, 2016
    - Nat’l Phenomena Design Category (NDC) 1 thru 5
    - NDC1, NDC2 building codes
    - NDC5 hand off to NRC Power Rx Reg Guides
- 10-year reviews of hazards and possible updates

# INL Flood Hazards – Riverine & Precipitation

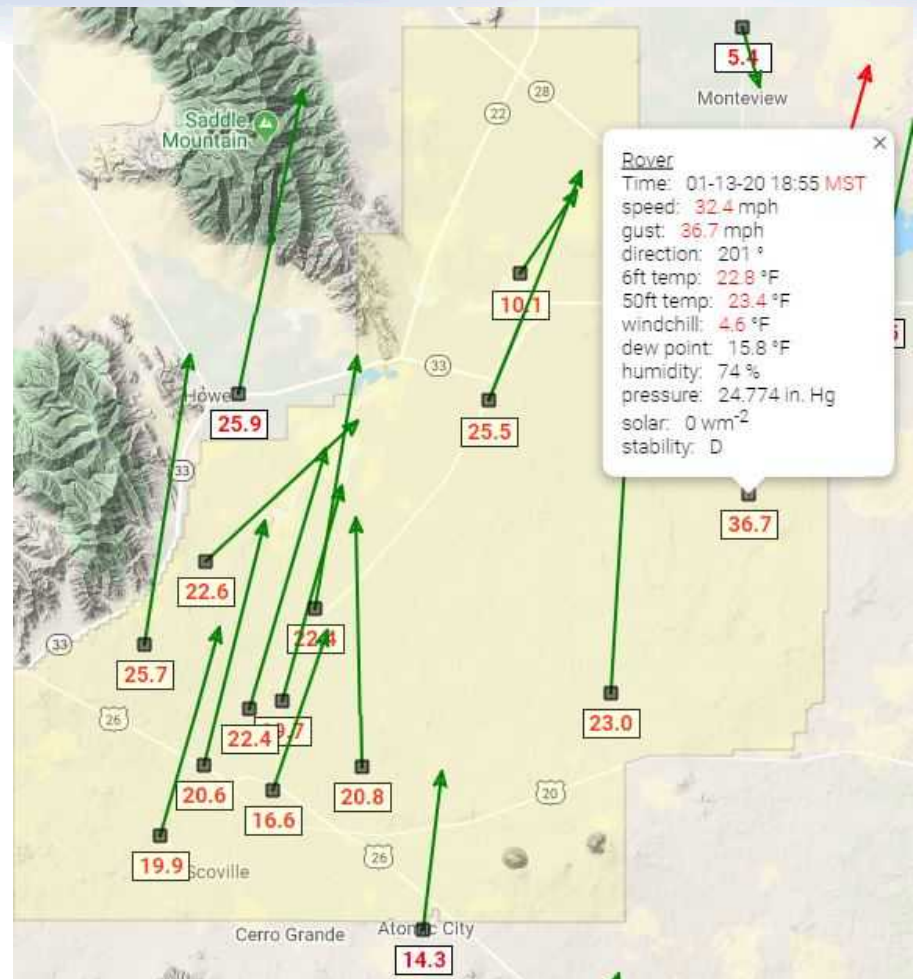
- Water Sheds
  - Medicine Lodge
  - Big Lost River
  - Little Lost River
  - Birch Creek
- Precipitation



\* source: U.S. Geological Survey

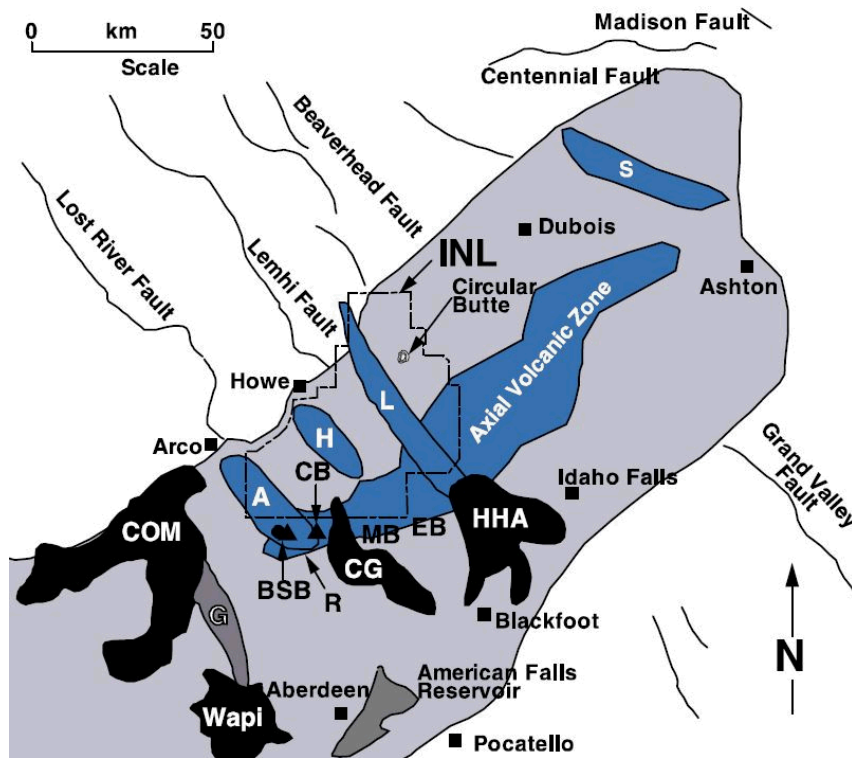
# Wind

- Straight line winds exceed tornadic winds
- NOAA maintained INL met towers
  - DOE approved QA



Source: NOAA Mesonet Jan 13, 2020

# Volcanic Rift Zones and Seismic Faults

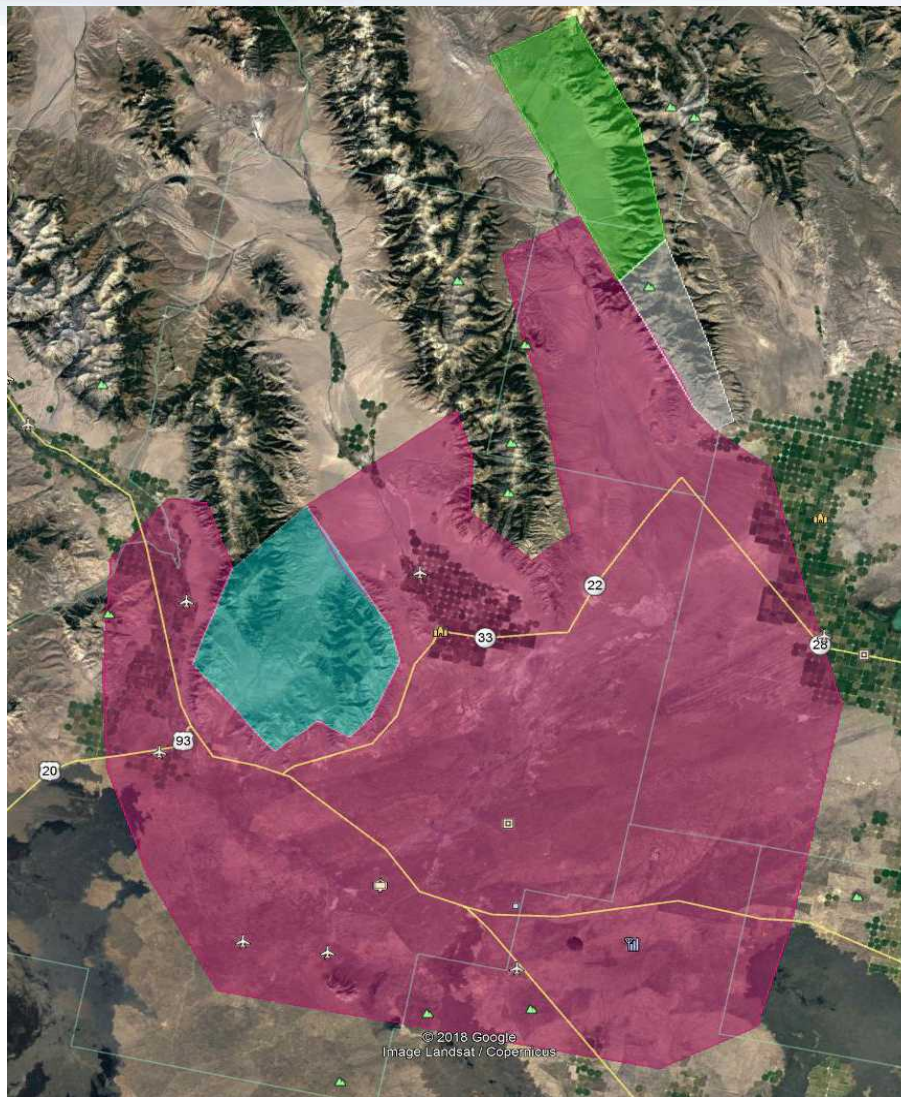


- Standards for VHA in flux
- Current hazard from PSHA in CY2000
- SSHAC3 to complete at end of FY2021
- Seismic monitoring stations

\*source: INEL-94/0276

# Light Detection & Ranging (LiDAR) FY19

- Completed
  - Area of interest >2000 mi<sup>2</sup>
  - Adds for SSHAC3
    - Beaverhead
    - Arco Hills
  - Ground survey
  - ~8TB data



\*source: Google Maps