



Construction Permit Application Review SHINE Medical Technologies

Safety Panel 1

December 15, 2015

Panelists

- **Alexander Adams, Jr.**
 - **Chief, Research and Test Reactors Licensing Branch, NRR**
- **Steven Lynch**
 - **Project Manager, NRR**
- **Mary Adams**
 - **Project Manager, NMSS**

Licensing Considerations

- **SHINE seeks to construct commercial non-power utilization and production facilities**
- **Licensing process similar to that of research and test reactors**
- **Developed technology-specific guidance for application review**

Advisory Committee on Reactor Safeguards (ACRS) Review

- **Staff presented at subcommittee and full committee meetings**
- **ACRS recommended issuance of construction permit**
- **Staff adequately addressed questions regarding aircraft impact and facility layup**

Irradiation Unit Licensing

- **Irradiation units represent first subcritical utilization facilities**
- **Staff considered licensing under 10 CFR Part 70**
- **Given similarities to non-power reactors, ultimately reviewed under 10 CFR Part 50**

Irradiation Unit Design Features

- **Thermal power level similar to non-power reactors**
- **Safety considerations include:**
 - **Fission heat removal**
 - **Decay heat generation**
 - **Fission gas release**
 - **Accident scenarios**

Production Facility Licensing

- **Production facility will process irradiated materials containing special nuclear material**
- **Similar to processes at existing fuel cycle facilities**
- **Staff used NUREG-1537 and Interim Staff Guidance**

Proposed Permit Conditions

- **Criticality accident alarm system**
- **Criticality events “not credible”**
- **Criticality safety analyses**
- **Reactivity contributions from fissile isotopes**
- **Radiation shielding and occupancy times**

Acronyms

- **NMSS – Office of Nuclear Material Safety and Safeguards**
- **NRR – Office of Nuclear Reactor Regulation**