-RES

From: Ralph Meyer
To: Patrick Baranowsky
Date: 2/10/06 10:26AM
Subject: Notes for Commissioner on Argonne Hot Cells

Pat,

At Farouk's request, I simplified some of the charts and kept the more complicated ones as backup details. The final result is attached.

Ralph

CC: Farouk Eltawila; Harold Scott; John Voglewede; Michelle Flanagan; Mike Billone

A-40

ANL Cladding Research

50.46(b) LOCA Criteria – Spent Fuel Criteria for Transportation

We Need

- LOCA Data on Irradiated and Unirradiated Zircaloy, M5, and ZIRLO
- Spent Fuel Data on Irradiated and Unirradiated Zircaloy, M5, and ZIRLO

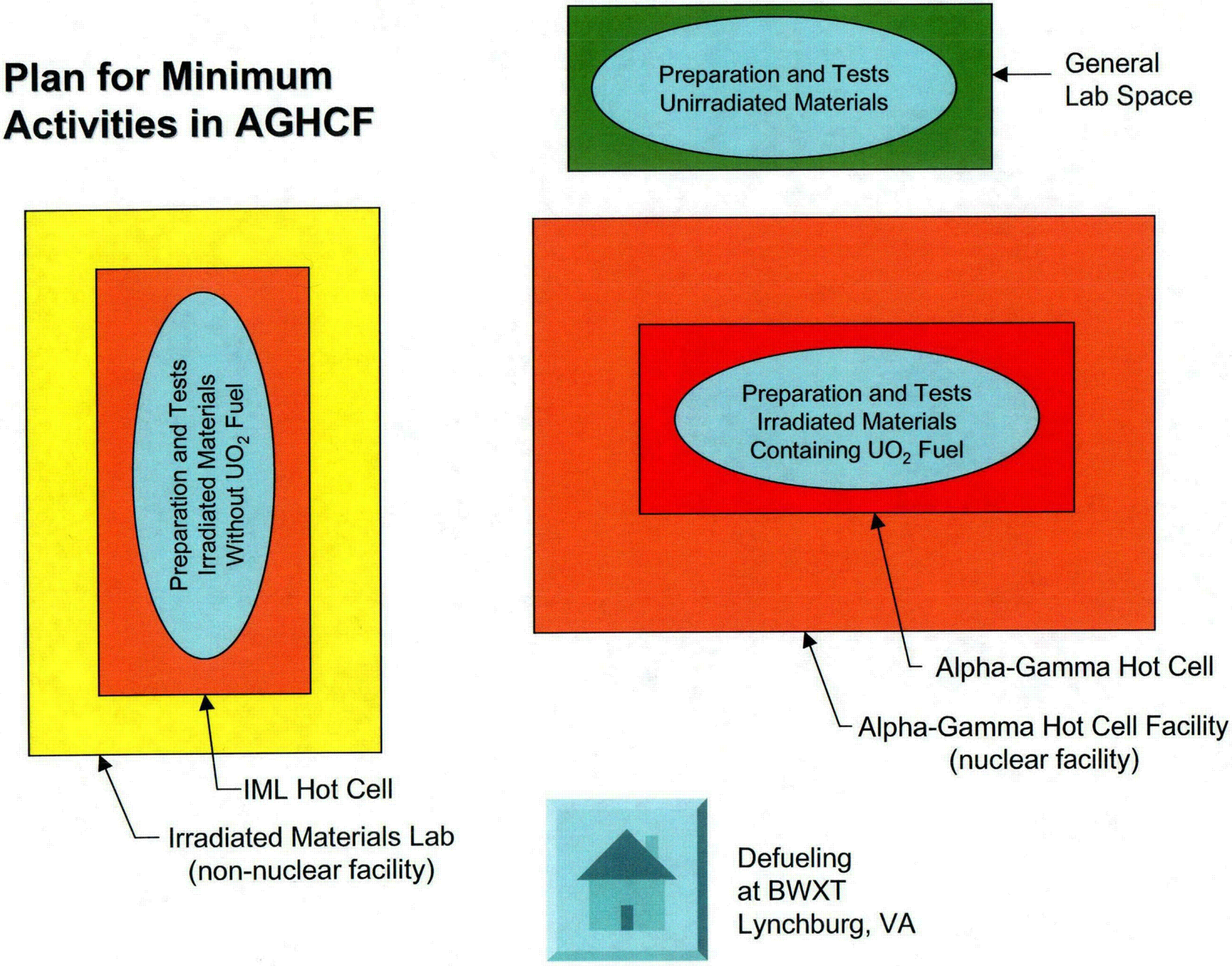
We Have

- Most of the LOCA Data on Unirradiated Zircaloy, M5, and ZIRLO
- Most of the LOCA Data on Irradiated Zircaloy
- Most of the Spent Fuel Data on Irradiated and Unirradiated Zircaloy

What's Missing

- LOCA Data on Irradiated M5 and ZIRLO
- Additional LOCA Data on Irradiated Zircaloy
- Additional LOCA Data on Unirradiated Zircaloy, M5, and ZIRLO
- Spent Fuel Data on Irradiated and Unirradiated M5 and ZIRLO
- Additional Spent Fuel Data on Irradiated Zircaloy

Plan for Minimum Activities in AGHCF



Detailed List of What We Have

- Techniques and Equipment are all Developed and Calibrated
- High-Burnup Zircaloy-2 and -4 rods are in AGHCF, and M5 is on the way
- LOCA Embrittlement data on Irradiated and Pre-Hydrided Zircaloy-4
- LOCA Embrittlement data on Unirradiated Zircaloy-4, M5, ZIRLO, and E110
- LOCA Integral Tests on Irradiated and Unirradiated Zircaloy-2
- Spent Fuel Creep Tests on Irradiated Zircaloy-4
- Spent Fuel Mechanical Property Tests on Irradiated Zircaloy-4
- General Understanding of all Phenomena
- Draft LOCA Criteria and partial Spent Fuel Criteria

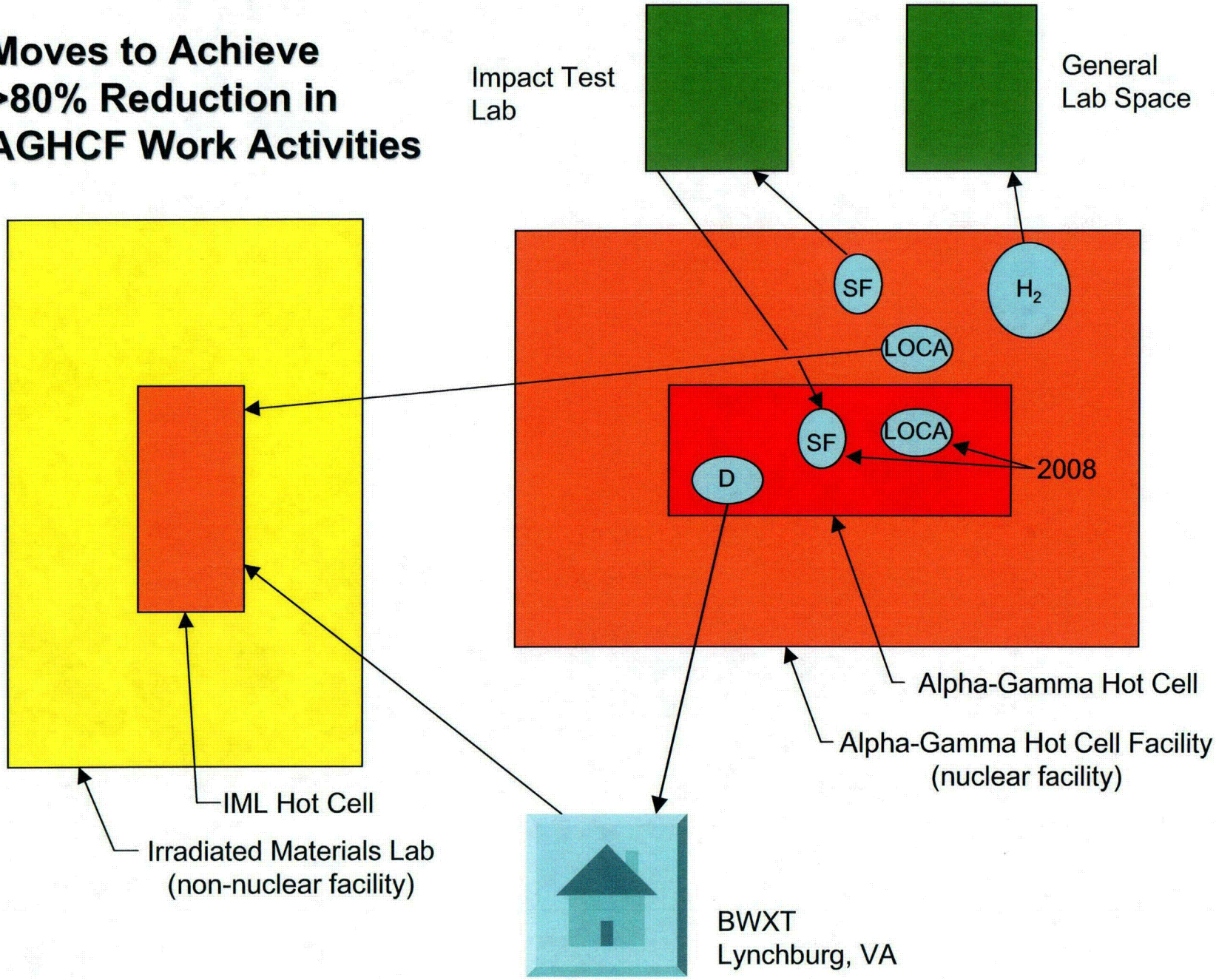
Detailed List of What is Missing

- Cooling Rate Effect using Pre-Hydrided Zircaloy, M5, and ZIRLO
- Time-to-Breakaway-Oxidation for Unirradiated Zircaloy, M5, and ZIRLO
- LOCA Embrittlement data on Irradiated and Pre-Hydrided M5 and ZIRLO
- LOCA Integral Tests on Irrad. and Unirradiated Zircaloy-4, M5, and ZIRLO
- Spent Fuel Mechanical Property Tests on Irradiated M5 and ZIRLO
- Spent Fuel Integral Crush and Bend Tests on Zircaloy-4, M5, and ZIRLO
- Confirmed LOCA and Spent Fuel Criteria

Realignment of Work in Alpha-Gamma-Hot-Cell Facility

- Immediately moved ~80% of work activities out of AGHCF
- Testing of defueled cladding to be done in IML hot cell (non-nuclear facility)
- No testing or defueling in AGHCF for ~18 months while achieving compliance
- Storage and shipping activities will be permitted in AGHCF
- New shipment of M5-clad fuel will be received in AGHCF
- Requested shipment of ZIRLO-clad fuel may also be received in AGHCF
- Zircaloy-clad fuel now in AGHCF will be available for transfer and shipping
- Defueling (D) during ~18-month period at BWXT in Lynchburg, VA
- Integral LOCA and Spent Fuel (SF) testing in AGHCF in 2008
- No other U.S. lab is equipped to do this testing
- If another U.S. lab tries, they will face same DOE requirements as AGHCF
- Studsvik (Sweden) could do the testing, but shipping costs very high
- Negotiations active in week of February 6 to complete work at ANL as above
- Decisions and further planning soon

Moves to Achieve >80% Reduction in AGHCF Work Activities



2/10/06