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Intended for: W/Q division documentation of Weapons Engineering Training curriculum organization and intent
Report

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JOWOG 31

Weapons Engineering Education & Training

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Objectives – Sustain the “Brain Trust”

- Recruit talented staff
 - Internal cleared staff
 - External cleared and uncleared candidates/college recruits
 - U.S. military veterans/retirees
- Invest in new and early/mid-career staff
 - Consolidate and formalize existing ad-hoc training
 - Leverage and partner throughout the Nuclear Weapons Enterprise to provide relevant, engaging SME led training
- Retain trained and talented staff and future leaders
 - Minimize the loss of the defined pension benefit – Or...
 - Provide prospect for long-term career with potential for advancement
- Shorten the ~5-10 year time line to realize new Weaponeers

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Los Alamos Weapons Engineering Training



- The program must be broad to ensure that today's "portable staff" are enticed to build long term careers at LANL or at least in the Nuclear Weapons Complex
 - *Or change our paradigm to accept the premise that nuclear weapons engineering talent will cycle through without establishing long-term careers*
- LANL is taking action to establish a long-term education program with continuity
- The dwindling pool of LANL Weaponeers is very gray
- A disciplined training program essential to sustain competent LANL Weapons Engineering capabilities
- LANL is not alone – LLNL and SNL face the same basic issues
- LANL must exchange and leverage information and resources to support the national security needs for nuclear weapons

Experienced experts agree that competency as a Weaponeer takes ~5-10 years

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Weapons Engineering Training Environment



- Weapons Engineering Training must:
 - Improve the overall capability of the Division, Directorates and Laboratory
 - Be integrated with mentoring and On-the-Job-Training
 - Be backed and seen as sustainable by leadership
 - Provide a broad and relevant prospective for a viable career
 - Be seen as a way to “get ahead” by new staff
 - Be recorded in the employee’s training record
 - Achieve division leadership acknowledgement as a minimum

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Weapons Engineering Training Draft Curriculum



- Provides history, prospective and current state of the nuclear weapons enterprise, its governance, direction and political landscape
- Will provide, with agreement of sister organizations, SME instructors to facilitate dialog and understanding of the broad community
- Is intended to be a sharable resource with our sister organizations
 - Not comparable to LANL's TITANS Program
 - Not an SNL Weapons Intern Program
 - is leveraging and using other training program information and instructors
 - Is using accessible/available fellows and graybeards to personalize the relevant history
- Actual Training will migrate from the existing ad hoc training

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Weapons Engineering Training Draft Curriculum



General Outline (blue highlights required courses):

100 series: History, Policy and High Level Perspective - 101 very broad, 102 more focused

Course/Level 101 - Genesis and Evolution of Nuclear Weapons

Course/Level 102 - The Nuclear Weapons Enterprise

200 series: Generic Weapons System Design

Course/Level 201 - Nuclear Weapons Design History

Course/Level 202 - Modern Nuclear Weapon Design and Engineering

Weapons Specializations (depending on WE assignments):

300 series: NWE Make-Up & Details, Political and Technical Operating Environment

Course/Level 301 - Developing and Sustaining the Modern Arsenal

Course/Level 302 - Nuclear Weapons in 21st Century

400 series: Nuclear Weapons in the Stockpile and More

Course/Level 401 - Current Nuclear Weapons Systems Detailed Overviews

Course/Level 402 - Current Nuclear Weapons Systems In-Depth

Organized Site Visits to Labs, NNS, Plants, Services, OSD and NNSA will be coordinated and incorporated.

LANL Tours: Bradbury Science Museum Orientation, Historic Windshield Tour, DARHT, Sigma, PF-4, RLUOB

~ 9 Days of Introductory Course Material (without 402 Level and not including hands on courses to be developed)

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Global Security Focused: WE Training Draft Curriculum



General Outline (blue highlights required courses for all WE's):

100 series: History, Policy and High Level Perspective - 101 very broad, 102 more focused

Course/Level 101 - Genesis and Evolution of Nuclear Weapons

Course/Level 102 - The Nuclear Weapons Enterprise

200 series: Generic Weapons System Design

Course/Level 201 - Nuclear Weapons Design History

Course/Level 202 - Modern Nuclear Weapon Design and Engineering

Global Security Specializations (courses assigned by GS line managers depending on WE assignments) :

Course/Level 302 - Nuclear Weapons in 21st Century

Course/Level 303 - Study Hall

Course/Level 304 - Improvised Weapons

Course/Level 305 - Foreign weapons design

Course/Level 306 - Focused advanced homemade explosives course

Course/Level 403 - IND Pathways and indicators

Course/Level 404 - Internet designs/weird bombs

Course/Level 405 - Improvised metallurgy

~ Specialization course lengths will vary and does not include hands on training courses

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Weapons Engineering Educational Facility

