Y/DZ-769
VISUALS

Y-12

OAK RIDGE
Y-12
PLANT

MARTIN MARIETTA

MANAGED BY
MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE UNITED STATES
DEPARTMENT OF ENERGY

Y-12 SITE OVERVIEW

M. L. Baker

Chemistry and Chemical Engineering Department
Y-12 Development Division

June 14, 1991

For presentation at:
SUBWOG 30 A Meeting
Atomic Weapons Establishment
Aldermaston, England, United Kingdom
July 8-12, 1991

Prepared by the
Oak Ridge Y-12 Plant
Oak Ridge, Tennessee 37831
managed by
Martin Marietta Energy Systems, Inc.
for the
U.S. DEPARTMENT OF ENERGY
under contract DE-AC05-84OR21400

Y-12 CENTRAL FILES
RECORD COPY

Y-12 SITE REVIEW

oak ridge Y-12 plant

Oak Ridge Y-12 Plant
Martin Marietta Energy Systems, Inc.

SUBWOG 30A
Aldermaston, U. K.
July 8-12, 1991

M. L. Baker
Y-12 Development Division

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Martin Marietta Energy Systems manages five facilities for the USDOE

- Oak Ridge Y-12 Plant
- Oak Ridge National Laboratory
- Oak Ridge K-25 Site
- Paducah Gaseous Diffusion Plant
- Portsmouth Gaseous Diffusion Plant

Energy Systems Employment (March 1991)

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Y-12	6568
ORNL	5331
ORGDP	3167
PADUCAH	1825
PORTSMOUTH	2559

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Y-12 PLANT MISSIONS

- Production of Nuclear Weapons Components and Support to the Department of Energy's Weapons Design Laboratories
- Processing of Special Materials
- Support to other Energy System facilities
- Support to other Government Agencies

Major Materials Processed at Y-12

Depleted Uranium
Enriched Uranium
Uranium Alloys
Lithium Salts
Stainless Steel
Beryllium Oxide
Plasma Spray Materials

These materials represent only 7 of 45 material types processed in Y-12.

Y-12 Operations

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Process and convert raw materials to rough shapes

Recover and recycle scrap generated by manufacturing processes

Precision-machine rough shapes

Assemble and weld components

Certify dimensional, mechanical, physical, and chemical properties

Characterize the properties of special and developmental materials

Develo

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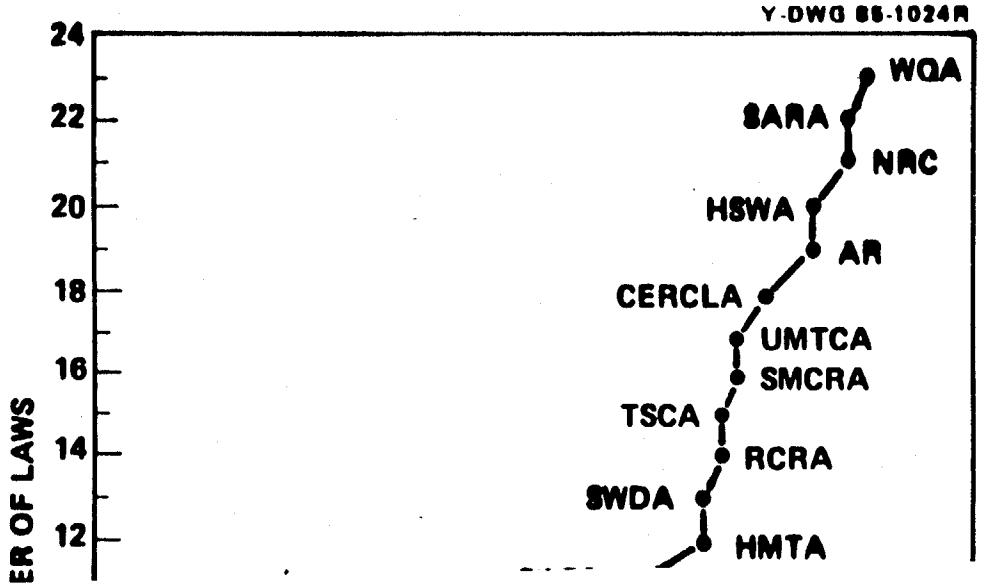
HEALTH AND SAFETY

ENVIRONMENTAL LAWS vs. YEARS (MODIFIED FROM ORNL/OIAPA-15)



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HEALTH AND SAFETY AREAS OF CONCERN

- ✓ CRITICALITY SAFETY
  - MAINTAINING FOCUS/PRIORITY
  - MAINTAINING CURRENCY ON OLD CRITICALITY SAFETY

HEALTH AND SAFETY AREAS OF CONCERN

- ✓ CRITICALITY SAFETY
  - MAINTAINING FOCUS/PRIORITY
  - MAINTAINING CURRENCY ON OLD CRITICALITY SAFETY ANALYSIS
  - INSUFFICIENT NUMBER OF SUPPORT STAFF
- ✓ ASBESTOS
  - LARGE QUANTITIES OF FRIABLE MATERIAL THROUGHOUT PLANT
- ✓ RADIOLOGICAL/CONTAMINATION UPGRADES
  - PACE
  - INSTITUTIONALIZING CULTURE CHANGE

HEALTH AND SAFETY AREAS OF CONCERN

- ✓ COMPLIANCE WITH OSHA
  - OPERATIONS AND CONSTRUCTION
- ✓ INADEQUACY OF SAFETY ANALYSIS SYSTEM
  - LACK OF MANY AS-BUILT DRAWINGS
  - CONFIGURATION CONTROL OF SAFETY SYSTEMS
  - INTEGRATION/CURRENCY OF ALL PROCEDURES

HEALTH AND SAFETY AREAS OF CONCERN

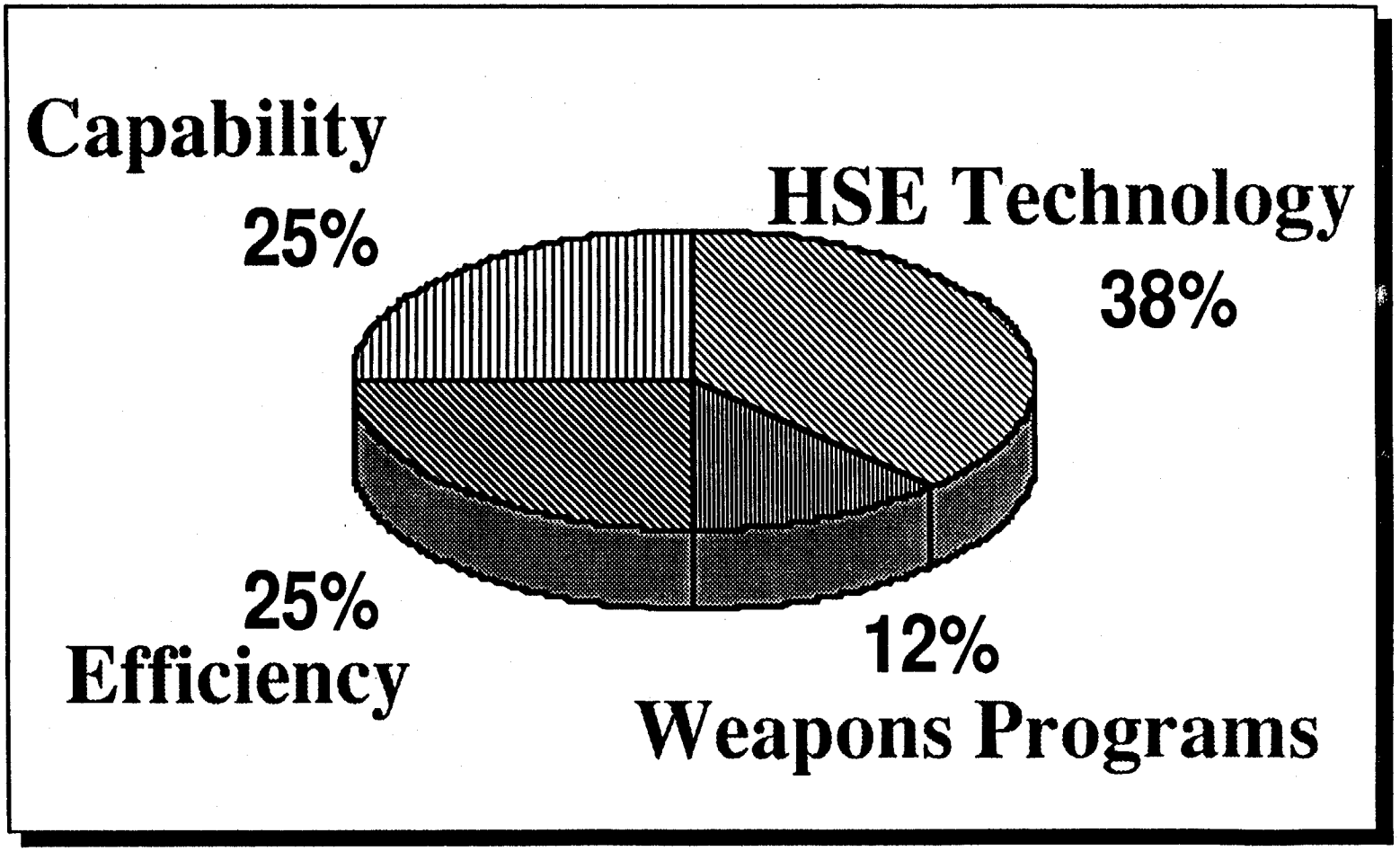
- ✓ NEEDED FIRE PROTECTION UPGRADES
- ✓ TRANSPORTATION SAFETY PROGRAM
- ✓ CONTROL OF CARCINOGENS
- ✓ DRUG USERS IN WORK PLACE

Y-12 Development Division

Like the Plant and Complex as a whole, the Development Division at Y-12 is devoting more resources to compliance and waste minimization.

At the same time, we are constructing a "blueprint" for Y-12's future operations.

Process Development Funding



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TECHNOLOGY DRIVERS

Past	Today	Guidance
WFO	Tech Transfer	DOE, OTT, Y-12
Plant Assist	WFO	DOE, Y-12
Process Development R&D Adv. Dev. Program Mfg. Tech	Plant Assist	Production, Y-12
	Critical Tech	DOE, LABS, Y-12
	Weapons Programs	DOE, LABS. PGM MGT, Y-12
	Waste Min	Waste Stream Managers, Y-12
	Reconfiguration Technology X..... X..... X..... X..... X..... X.....	TASP, Y-12

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Process Assessments

Currently, most Y-12 operations are performing process assessments to identify concerns and highlight areas of opportunity.

Process assessments are being performed on both production and support operations.

Preparing a long range technology plan

- Input expected future requirements
- Develop technology selection criteria
- Generate detailed flowsheets
- Tour production areas
- Get input from production personnel
- Interact with other facilities
- Review Development Programs vs criteria
- Review "supporting technologies,"
  (e.g. Robotics, Automation, CIM, instrumentation, etc.)
- Prepare the final plan

Key Development Areas

- Processing of retired special components
- Potential of direct casting of depleted components
- Evaluation of potential new uranium chemistry alternatives
- Economics of alloy recycle
- Nuclear material accountability
- Automation for minimizing people exposure

Distribution

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Y-12 Central Files ✓