



# **NUCLEAR MATERIALS SAFETY ARENA**

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# **FY 2000 Achievements**

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- **Met All Strategic Goal Measures**
- **Met All Performance Goal Measures**
- **Met All Output Measures**
- **Continue integrated office and Region support**

# Key Challenges

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- **Risk informing activities**
- **Communication**
- **Maintain highly competent staff**
- **Interface with other agencies**

# **Reliability of Data**

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- **Improving event data reporting**
- **Discussed in SECY-00-0217**
- **Documenting verification process**

# Detailed Assessments

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- **Fuel facilities oversight process**
- **Threat assessment**

# **Detailed Assessments (cont'd)**

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- **Event reporting working group**
- **Risk Task Group case studies**

# **Other Related Initiatives**

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- **Communication**
- **Empowerment**

# **Materials Oversight - Phase I**

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- **Multiple extremity overexposures**
- **Diverse Lessons Learned Team**
- **Improvement opportunities**



# **Materials Oversight - Phase II**

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- **Planned initiative to:**
  - **Improve effectiveness & efficiency**
  - **Further risk inform programs**
  - **Control or reduce resources**

# **National Materials Program**

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- **Working Group report (5/30/01)**
- **“Bottom-up” functional analysis**
- **Stakeholder interactions**

# **Integrated Materials Performance Evaluation Program**

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- **Examine and incorporate lessons learned from first round of IMPEP reviews**
- **Examine scope of periodic meetings between IMPEP reviews**

# Supporting Activities

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- **Assess domestic and international developments with respect to radiation protection and health effects**
- **Infrastructure/technical basis for NMSS risk-informed activities**

# Changes from FY 2000

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- **Risk-informed approaches**
- **Sunset TWRS**
- **Evolution of NRC/State relationship**
- **Integrate Planning, Budgeting, & Performance Management (PBPM) feedback**

# **Key Challenges - FY 2001**

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- **Licensing casework**
- **Program changes**
- **Rule development and implementation**
- **Hiring**

# Summary

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- **Met Strategic Plan goals**
- **Using PBPM process to emphasize outcomes**
- **Addressing key challenges**

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Met all Strategic Goal measures:

- **No deaths, no major radiological events**
- **No significant releases, no losses of formula quantity materials**
- **No major environmental impacts**



# Backup Slide 2

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Met all Performance Goal measures for:

- **Loss of materials, accidental criticality,**
- **Overexposures, medical events, releases**
- **Safeguards**

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Met all Output Measures

- **Timeliness of inspections for fuel facility, uranium recovery, and materials licensees**
- **Timeliness of materials licensing reviews, number of uranium recovery licensing reviews**
- **Timeliness of entering events data**

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Met all Output Measures (cont'd)

- **Technical bases for regulatory guidance and decision making**
- **Emergency response performance index**
- **Materials Technical training courses**
- **Timeliness of enforcement**
- **Timeliness of investigations**

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## RES output measures

- **Met target to issue 5 research products that respond to high and medium priority needs**
  - **Draft NUREG-1717 - Exemption Report**
  - **NUREG-0900, Vol. 22 - Report on Abnormal Occurrences**

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RES output measures (cont'd)

- Final report on sealed source risk assessment**
- Historical report on criticality accidents**
- Report to support licensing of Private Fuel Storage**

# Backup Slide 7

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Why RES reduced the materials arena output measures

- **The FY 2001 decrease in the output measure target from 5 RES products to 3 RES products reflects the move of spent fuel work from the Materials to the Waste Arena**

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FY 2000 major accomplishments

- **Completed licensing actions**
  - **3759 materials actions; maintained 2 month inventory of pending actions**
  - **174 fuel cycle and uranium enrichment actions**
  - **108 uranium recovery licensing actions**

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FY 2000 major accomplishments (cont'd)

- **Completed inspections**
  - **1555 materials inspections**
  - **105 fuel cycle and uranium enrichment inspections**
  - **33 uranium recovery inspections**
- **Completed 6 materials licensing NUREGs**
- **Completed 11 materials inspection guides**



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FY 2000 major accomplishments (cont'd)

- **Issued final SRPs-  
MOX,TWRS,UMTRCA Titles I, II**
- **Provided tech assist to DOE for  
Hanford**
- **Analyzed Tokai-mura accident**
- **Completed rules (Parts 39 and 70;  
Part 35 and GL-FY01)**

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FY 2000 major accomplishments (cont'd)

- **Conducted integrated safety & SG exercises with FBI, DOE, FEMA, States, etc.**
- **Developed interagency draft guidance to support sewage sludge activities**
- **Participated in international efforts on realistic health effects**

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FY 2000 major accomplishments (cont'd)

- **Developed streamlined materials license renewal review process**
- **Established foundation for fuel facility oversight process revisions**
- **Completed review of USEC layoff plan, Portsmouth transition plan, and USEC financial status**

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FY 2000 major accomplishments (cont'd)

- **Completed National Initiatives Commission Paper and refined screening process for adversary characteristics**
- **Completed Commission Papers/briefings on semi-annual threat environment**

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FY 2000 major accomplishments (cont'd)

- **Reorganized NMSS Fuel Cycle and Waste Divisions to optimize workload distribution**

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## Reliability of Data

- **FY 2000 data are still preliminary**
- **Issues: lack of uniformity & timeliness in data reporting; incomplete data before 9/3/97**
- **Situation is improving: importance of accurate, complete, and timely data reporting has been, and will continue to be, emphasized within NRC and with Agreement States**

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## Reliability of Data (cont'd)

- **Staff has taken a number of steps to accelerate improvements**
  - **Weekly GAP reviews of materials event info**
  - **IMPEP provides opportunity to review event data, and reinforce proper reporting**
  - **NMED training to States and regions**

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## **Reliability of Data (cont'd)**

- **Steps to accelerate improvements (cont'd)**
  - **Discussions at All Agreement States meetings**
  - **Meetings with CRCPD**
  - **All Agreement State letter reaffirming expectations**



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Observations regarding exceeding performance measures

- **Too early to draw strong conclusions-some data are preliminary**
- **Two safety goal metrics revised to reflect more complete historical data**

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Risk-informing materials activities

- **Case studies**
  - **Test draft screening criteria**
  - **Determine feasibility of developing safety goals**
  - **Provide framework for future risk-informing efforts**
- **Implemented training in risk concepts**
- **Risk-related activities**

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## Phase I Findings

- **Pharmacy - NRC activities did not contribute to overexposure**
- **Manufacturing Facility - NRC activities did not contribute to overexposures. However, NRC observation of Sterility Lab could have identified direct handling of materials, leading to higher doses, earlier.**

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## Phase I Selected Recommendations

- **Inspection program changes**
  - **Meet entry requirements**
  - **Encourage State/NRC inspections**
  - **Include offshift inspections**
  - **Evaluate worker knowledge of risk**
  - **Evaluate extremity dosimetry**

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## **Phase I Selected Recommendations (cont'd)**

- **Licensing program changes**
  - **Site visits**
  - **Expand dosimetry monitoring**

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## **Phase I Selected Recommendations (cont'd)**

- **Other**
  - **National Materials Program**
  - **Corrective Action Programs**
  - **Risk information dissemination**
  - **Flexible work schedule**

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## **National materials program**

- **Program elements**
- **Options**
- **Resources**

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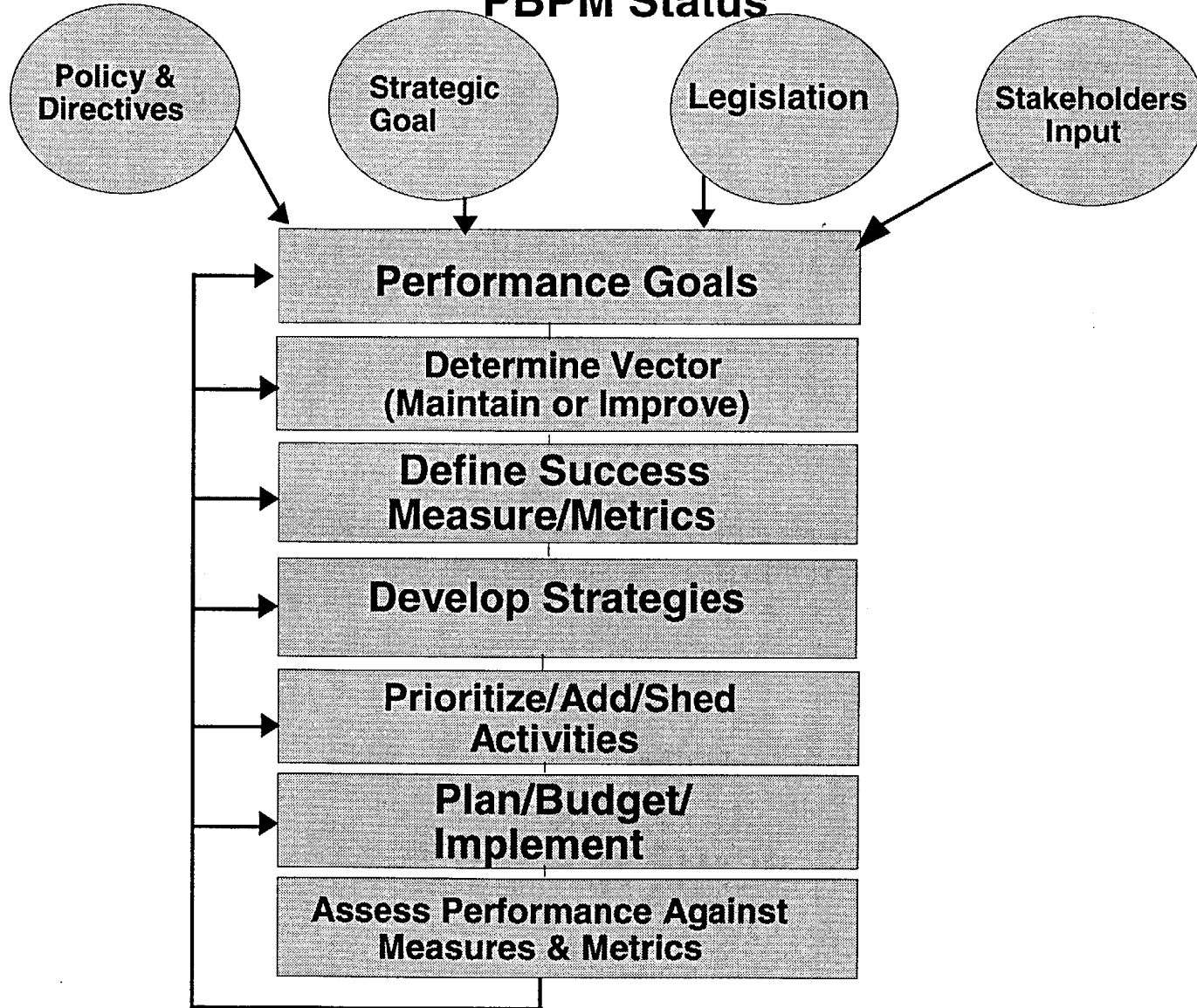
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Continuing support for radiation standards

- **REIRS**
- **ISOE**
- **BEIR-VII**
- **NCRP/ICRP**
- **UNSCEAR**
- **CRPPH**



# Backup Slide 26 PBPM Status



# **Backup Slide 27**

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## **Key Challenges for FY 2001**

- **Licensing casework**
  - **MOX licensing**
  - **Veterans' Affairs Master Materials License**
  - **USEC's Paducah GDP high assay upgrade project**
- **Program changes - National Materials Program**

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## **Key Challenges for FY 2001 (cont'd)**

- **Rule development**
  - **Part 40 rule**
  - **Part 41 rule**

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## **Key Challenges for FY 2001 (cont'd)**

- **Rule implementation**
  - **GL rule implementation and GL tracking system**
  - **Part 35 implementation**
  - **SRP guidance for implementation of new Part 70**
- **Hiring entry level HP staff**

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## **New Agreement States**

- **Minnesota** - **July 2002**
- **Pennsylvania** - **Mid FY 2003**
- **Wisconsin** - **Late FY 2003**
- **Utah mill agreement** - **Late FY 2003**

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## Impact of new Agreement States

- **New Agreement States projected for FY03; resource reduction occurs in FY04 (does not reflect potential NMP impacts)**
- **Variable costs: significant FTE reductions made to licensing, inspection, event response, allegation resources**

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## Impact of new Agreement States (cont'd)

- **Fixed costs: rulemaking, guidance, tech assistance to States, GL program, info technology, and national databases (don't change due to new Agreement States)**
- **Agency overhead**

**NUCLEAR MATERIALS SAFETY ARENA**  
(measures from FY 2001 Green Book dated February 2000)<sup>1</sup>

<b>STRATEGIC GOAL MEASURES</b>	<b>FY 2000 PERFORMANCE</b>
No deaths resulting from acute radiation exposures from civilian uses of source, byproduct, or special nuclear materials, or deaths from other hazardous materials used or produced from licensed material.	Zero
No more than six events per year that result in significant radiation or hazardous material exposures from the loss or use of source, byproduct, and special nuclear materials.	Zero
No events resulting in releases of radioactive material from civilian use of source, byproduct, or special nuclear materials that cause an adverse impact on the environment.	Zero
No losses, thefts, or diversion of formula quantities of strategic special nuclear material; radiological sabotages; or unauthorized enrichment of special nuclear material regulated by the NRC.	Zero
No unauthorized disclosures or compromise of classified information causing damage to national security.	Zero

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<sup>1</sup>This chart does not reflect recent changes that were proposed for some of the measures/targets based on comments received during the Commission's review of the draft FY 2002 Green Book.



<b>PERFORMANCE GOAL MEASURES (SAFETY GOAL)<sup>2</sup></b>	<b>FY 2000 PERFORMANCE</b>
No more than 356 losses of licensed material.	201 (preliminary data)
No occurrences of accidental criticality.	Zero
No more than 19 events per year resulting in radiation overexposures from radioactive material that exceed applicable regulatory limits.	11 (preliminary data)
No more than 43 medical events per year.	29 (preliminary data)
No more than 39 releases per year to the environment of radioactive material from operating facilities that exceed the regulatory limits.	2 (preliminary data)
No more than five substantiated cases per year of attempted malevolent use of source, byproduct, or special nuclear material.	2
No breakdowns of physical protection or material control and accounting systems resulting in a vulnerability to radiological sabotage, theft, diversion, or unauthorized enrichment of special nuclear material.	Zero
No breakdowns of physical protection that result in a vulnerability to radiological sabotage, theft, diversion, or loss of special nuclear materials or radioactive waste.	Zero
No events that occur during NRC regulated operations that cause impacts on the environment that cannot be mitigated within applicable regulatory limits, using methods that are within available licensee resources and are not cost prohibitive.	Zero

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<sup>2</sup>Since this chart displays measures from FY 2001 Green Book dated February 2000, it does not reflect the Commission's subsequent direction to round the measures or the staff's proposed changes in SECY-00-0217.

OUTPUT MEASURES				
Output/Baseline	FY 1999 Target	FY 1999 Actual	FY 2000 Target	FY 2000 Actual
<p>Timeliness of fuel facility safety and safeguards inspections.</p> <p>(FY 1998: 100 percent on time.)</p>	<p>Complete 90 percent of the core safety and safeguards inspections scheduled in the Fuel Cycle Master Inspection Plan on time.</p>	<p>98 percent completed on time.</p>	<p>Complete 90 percent of the core safety and safeguards inspections scheduled in the Fuel Cycle Master Inspection Plan on time.</p>	<p>100 percent completed on time.</p>
<p>Uranium Recovery Licensing Actions.</p> <p>(FY 1998: The number of reviews met the budget estimate.)</p>	<p>Conduct reviews such that the number of application reviews completed meets or exceeds the budget estimates.</p>	<p>Number of application reviews did not meet or exceed budget estimates. 93 of the target 94 reviews were completed in FY 1999 (99 percent). Redirection of staff effort to higher priority workload.</p>	<p>Conduct reviews such that the number of application reviews completed meets or exceeds the budget estimates.</p>	<p>The number of reviews met the budget estimate.</p>
<p>Safety inspections of uranium recovery facilities.</p> <p>(FY 1998: Completed 43, exceeded target of 40 inspections. Completed 108 percent of inspections planned)</p>	<p>Completed 80 percent of the inspections planned annually.</p>	<p>22 of the target 25 inspections were completed in FY 1999 (88 percent).</p>	<p>Completed 80 percent of the inspections planned annually.</p>	<p>Completed 95 percent of inspections planned.</p>

OUTPUT MEASURES				
Output/Baseline	FY 1999 Target	FY 1999 Actual	FY 2000 Target	FY 2000 Actual
<p>Timeliness of reviews of applications for new materials licenses, license renewals, and sealed source and device designs.</p> <p>(FY 1998: Completed 82 percent of reviews [new applications and amendments] within 90 days. Completed 94 percent of renewals and reviews [sealed source and device] within 180 days.)</p>	<p>Complete 80 percent of the reviews for new applications, and amendments, within 90 days. For license renewals and sealed source and device reviews received after October 1, 1997, complete 80 percent of the reviews for license renewals and sealed source and device reviews within 180 days.</p>	<p>Completed 86 percent of reviews [new applications and amendments] within 90 days.</p> <p>Completed 66 percent of renewals and reviews [sealed source and device] within 180 days. Redirected focus to completion of cases over 180 days old; successfully eliminated these old cases.</p>	<p>Complete 80 percent of the reviews for new applications, and amendments, within 90 days. For license renewals and sealed source and device reviews received after October 1, 1997, complete 80 percent of the reviews for license renewals and sealed source and device reviews within 180 days.</p>	<p>Completed 95 percent of reviews [new applications and amendments] within 90 days.</p> <p>Completed 92 percent of renewals and reviews [sealed source and device] within 180 days.</p>
<p>Timeliness of safety inspections of materials licensees.</p> <p>(FY 1998: Less than 1 percent overdue.)</p>	<p>Complete core inspections with less than 10 percent overdue as defined in Inspection Manual Chapter 2800.</p>	<p>Completed core inspection with less than 1 percent overdue.</p>	<p>Complete core inspections with less than 10 percent overdue as defined in Inspection Manual Chapter 2800.</p>	<p>Completed core inspection with 2.6 percent overdue.</p>

OUTPUT MEASURES				
Output/Baseline	FY 1999 Target	FY 1999 Actual	FY 2000 Target	FY 2000 Actual
<p>The Nuclear Materials Events Database (NMED) which contains information about nuclear materials events reported to the NRC by NRC licensees and Agreement States, will be maintained by entering materials event information in a timely manner.</p> <p>(FY 1998: Materials event information entered within the specified time 90 percent of the time.)</p>	<p>Materials event information from morning reports, event notifications, and preliminary notifications of occurrences will be entered into NMED within 2 working days from the date of the document 90 percent of the time, and NMED records will be updated within 2 working weeks of the date of receipt 90 percent of the time.</p>	<p>Materials event information entered into NMED within 2 working days greater than 90 percent of the time.</p> <p>Three out of four quarters NMED records were updated within 2 working weeks greater than 90 percent of the time (3<sup>rd</sup> quarter=80 percent).</p>	<p>Materials event information from morning reports, event notifications, and preliminary notifications of occurrences will be entered into NMED within 2 working days from the date of the document 90 percent of the time, and NMED records will be updated within 2 working weeks of the date of receipt 90 percent of the time.</p>	<p>Materials event information entered into NMED within 2 working days 99 percent of the time.</p> <p>Updated NMED records within 2 working weeks 99 percent of the time.</p>

OUTPUT MEASURES				
Output/Baseline	FY 1999 Target	FY 1999 Actual	FY 2000 Target	FY 2000 Actual
Technical bases for safety and regulatory guidance and decision-making.	<p>Issue 6 research products that respond to high and medium priority needs from the Commission and NRC's licensing organizations.</p> <p>Develop, maintain, or improve one engineering code/model for use by RES and licensing organizations for regulatory analyses/decision-making.</p>	<p>Completed 6 research products.</p> <p>Maintained 2 codes.</p>	<p>Issue 5 research products that respond to high and medium priority needs from the Commission and NRC's licensing organizations.</p>	<p>Completed 5 research products.</p>
Emergency Response Performance Index.	<p>90 percent (Overall target output measure of 90% is for the following program functions: Response Organization Staffing, Response Facility Availability, Communications Reliability, Response Organization Training, 24-Hour Notification Point, Timeliness of Activation Decision, and Timeliness of Activation)</p>	<p>99.5 percent (Overall actual output measure of 99.5% is for the following program functions: Response Organization Staffing, Response Facility Availability, Communications Reliability, Response Organization Training, 24-Hour Notification Point, Timeliness of Activation Decision, and Timeliness of Activation)</p>	<p>90 percent (Overall target output measure of 90% is for the following program functions: Response Organization Staffing, Response Facility Availability, Communications Reliability, Response Organization Training, 24-Hour Notification Point, Timeliness of Activation Decision, and Timeliness of Activation)</p>	<p>99.3 percent (Overall actual output measure of 99.3% is for the following program functions: Response Organization Staffing, Response Facility Availability, Communications Reliability, Response Organization Training, 24-Hour Notification Point, Timeliness of Activation Decision, and Timeliness of Activation)</p>

OUTPUT MEASURES				
Output/Baseline	FY 1999 Target	FY 1999 Actual	FY 2000 Target	FY 2000 Actual
Numbers and types of materials technical training courses offered. (FY 1998: 100 percent of cumulative needs met.)	Numbers and types of courses offered will meet 90 percent of cumulative needs identified by offices and regions in semiannual needs surveys.	100 percent of the cumulative identified needs were met.	Numbers and types of courses offered will meet 90 percent of cumulative needs identified by offices and regions in semiannual needs surveys.	100 percent of the cumulative identified needs were met.
Timeliness in completing enforcement actions.  (FY 1998: Enforcement case average of 67.1 days for 90 percent of cases. Enforcement case average of 80.6 days for 100 percent of cases. <sup>1</sup> )	90 percent of materials enforcement cases will average 90 days or less. 100 percent of materials enforcement will average 120 days or less. <sup>1</sup>	Enforcement case average 75.2 days for 90 percent of cases. Enforcement case average of 90.6 days for 100 percent of cases. <sup>1</sup>	90 percent of materials enforcement cases will average 90 days or less. 100 percent of materials enforcement will average 120 days or less.	Enforcement case average of 53.2 days for 90 percent of cases. Enforcement case average of 63.2 days for 100 percent of cases.
Timeliness in completing investigations.  (FY 1998: Completed cases, on average, in 6.3 months. 7.8 percent of cases open for more than 12 months.)	Complete cases, on average, in 9 months or less. Maintain the average number of cases within the active case inventory for more than 12 months, at 9 percent or less.	Completed cases, on average, in 6.3 months. 12.6 percent of cases open for more than 12 months due to circumstances outside of NRC's control (Department of Justice involvement).	Complete cases, on average, in 9 months or less. Maintain the average number of cases within the active case inventory for more than 12 months, at 9 percent or less.	Completed cases, on average, in 5.5 months. 7 percent of cases open for more than 12 months.

1. Prior to FY 2000, the calculations did not differentiate between reactors and materials cases.