

From: Michael Masnik
To: Andrew Kugler
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Subject: Slides for the Commissioner Merifield Briefing

Attached are the slides that were presented at the October 5, 2004 briefing of Commissioner Merrifield on EPA's final phase II regulations to establish requirements for cooling water intake structures for existing facilities.

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USEPA Final Regulations to Establish Requirements for Cooling Water Intake Structures Phase II - Existing Facilities

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RLEP/DRIP/NRR

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What do the Regulations Address?

- ▶ *Constitutes Phase II regulations of EPA's section 316(b) regulation development program.*
- ▶ *Implements requirements for existing power facilities that employ intake structures that withdraw large amounts of cooling water.*
- ▶ *Establishes performance standards that are projected to reduce impingement mortality by 80 to 95 % and entrainment by 60 to 90 %.*
- ▶ *Published in 69 FR 41575 on 9 Jul 04, effective 7 Sep 04*



What is 316(b)?

- ▶ *Section in the Clean Water Act, seeks to “restore and maintain the chemical, physical, and biological integrity of the nation’s waters.”*
- ▶ *316(b) addresses adverse impact caused by the withdrawal of water (not discharge).*
- ▶ *Section 316(b) requires that cooling water intake structures reflect the “best technology available” for minimizing adverse environmental impact.*
- ▶ *EPA interprets 316(b) to consider not only technologies but also their effects on and benefits to the waters from which the cooling water is withdrawn.*



History

- ▲ *In 1977 Courts remanded a final rule under 316(b) that addressed cooling water intake structures.*
- ▲ *From 1977 through today NPDES permit authorities have made decisions implementing section 316(b) on a case-by-case basis.*
- ▲ *Consent decree required EPA to take final action on Phase II regulations by 16 Feb 2004.*



Applicability

- ▲ *Existing facilities (may apply to an early site permit application)*
- ▲ *Have a NPDES permit issued under section 402 of the Clean Water Act.*
- ▲ *Withdraw waters from the U.S.*
- ▲ *>50 MGD water withdrawn*
- ▲ *> 25% of water withdrawn for cooling*
- ▲ *Applicable to approximately 540 facilities in US*



Structure of Rule

- ▲ *Performance Standards*
 - ▲ *Impingement*
 - ▲ *Entrainment*
 - ▲ *Vary based on source water type*
- ▲ *Compliance Alternatives*
 - ▲ *Five compliance alternatives to establish Best Technology Available*



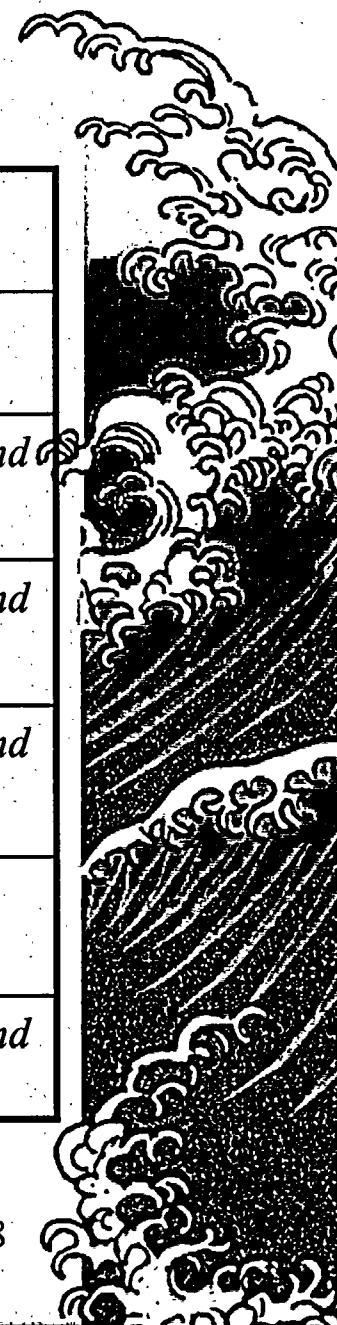
Performance Standards

- ▲ *Identified 5 waterbody types*
 - ▲ *Oceans*
 - ▲ *Lakes and reservoirs*
 - ▲ *Rivers and streams*
 - ▲ *Great Lakes*
 - ▲ *Estuaries and tidal*
- ▲ *For each waterbody type specified a unique performance standard established*
- ▲ *Stand alone standard for intake approach velocity*
 - ▲ *Less than or equal to 0.5 ft/sec*



Performance Standards

<u><i>Waterbody Type</i></u>	<u><i>Design Intake Flow</i></u>	<u><i>Type of Performance Standard</i></u>
<i>Freshwater River or Stream</i>	<i>Less than or equal to 5% of mean annual flow</i>	<i>Impingement mortality only</i>
	<i>Greater than 5% of mean annual flow</i>	<i>Impingement mortality and entrainment</i>
<i>Estuary or Tidal River</i>		<i>Impingement mortality and entrainment</i>
<i>Ocean</i>		<i>Impingement mortality and entrainment</i>
<i>Lakes and Reservoirs</i>	<i>Normal thermal stratification intact</i>	<i>Impingement mortality</i>
<i>Great Lakes</i>		<i>Impingement mortality and entrainment</i>



NRC Facilities with Once Through Cooling

Once-Through Cooling (61 Units, 38 Sites)

<i>Ocean</i>	<i>Estuaries/Tidal</i>	<i>Great Lakes</i>	<i>Lake/Reservoir</i>	<i>River/Stream</i>
Crystal River Diablo Canyon 1,2 Millstone 2,3 Pilgrim San Onofre 2,3 Seabrook St. Lucie 1,2	Brunswick 1,2 Calvert Cliffs 1,2 Indian Point 2,3 Oyster Creek Salem 1,2 Surry 1,2	Cook 1,2 FitzPatrick Ginna Kewaunee Nine Mile 1 Point Beach 1,2	Arkansas 1 Browns Ferry 1,2,3 ⁽¹⁾ Clinton Comanche Peak 1,2 McGuire 1,2 North Anna 1,2 Oconee 1,2,3 Peach Bottom 2,3 ⁽²⁾ Robinson Sequoyah 1,2 ⁽¹⁾ Summer	Cooper Dresden 2,3 ⁽³⁾ Ft. Calhoun Monticello ⁽¹⁾ Prairie Island 1,2 ⁽¹⁾ Quad Cities 1,2 ⁽²⁾ Waterford Vermont Yankee ⁽¹⁾

- (1) May use "helper" cooling towers to reduce water temperature prior to discharge.
- (2) Installed helper cooling towers/cooling ponds are effectively abandoned in place.
- (3) Cooling system can be operated in closed-cycle mode using cooling ponds and helper cooling towers



NRC Facilities with Closed-Cycle Cooling

Closed-Cycle Cooling (38 Units, 27 Sites)

<i>Estuaries/Tidal</i>	<i>Great Lakes</i>	<i>Lake/Reservoir</i>	<i>River/Stream</i>
<i>Hope Creek</i> <i>South Texas 1,2</i>	<i>Davis Besse</i> <i>Fermi 2</i> <i>Nine Mile 2</i> <i>Palisades</i> <i>Perry</i>	<i>Arkansas 2</i> <i>Catawba 1,2</i> <i>Shearon Harris</i> <i>Watts Bar</i> <i>Wolf Creek</i>	<i>Beaver Valley 1,2</i> <i>Braidwood 1,2</i> <i>Byron 1,2</i> <i>Callaway</i> <i>Columbia</i> <i>Duane Arnold</i> <i>Grand Gulf</i> <i>Hatch 1,2</i> <i>La Salle 1,2</i> <i>Limerick 1,2</i> <i>River Bend</i> <i>Susquehanna 1,2</i> <i>TMI 1</i> <i>Vogtle 1,2</i> <i>Farley 1,2</i>



NRC Facilities with Uncertain Status Relative to the Phase II Regulations

Closed-Cycle Cooling - Alternate Makeup Water Source (5 Units, 2 Sites)

<i>Palo Verde 1,2,3</i>	<i>City of Phoenix sewage treatment plant outfall</i>
<i>Turkey Point 3,4</i>	<i>Cooling canals maintained by ground water inflow</i>



Compliance Alternatives

- ▲ *Reduce flow to a level commensurate with closed-cycle cooling/reduce approach velocity to 0.5 ft/sec or less. Having closed cycle cooling demonstrates compliance.*
- ▲ *Demonstrate that facilities existing design/operational/restoration measures meet the minimum performance standards.*
- ▲ *Demonstrate that facilities planned design/operation/restoration measures will meet the minimum performance standards.*
- ▲ *Install and properly operate and maintain pre-approved technology.*
 - ▲ *Wedgewire screens*
- ▲ *Site-Specific cost determination.*
 - ▲ *Cost-cost test*
 - ▲ *Cost-benefit test*



Impact on NRC Activities

- ✦ *NRC staff coordinated with EPA – rule specifically precludes conflict with NRC safety requirements.*
- ✦ *Some mitigation strategies may have safety implications*
- ✦ *May have impact on NEPA reviews – NRC staff has developed language to insert in EISs to address Phase II requirements.*
- ✦ *May provide more data for site specific environmental reviews.*
- ✦ *May have impact on North Anna ESP*



Concerns

- ▲ *Baseline determination of impingement and entrainment for preparing Comprehensive Demonstration Studies.*
 - ▲ *Concept of “worst technology available”*
- ▲ *Timing of Reviews – linked to NPDES permit reviews*
- ▲ *Resources to Conduct Reviews*
- ▲ *Cost of Program*



Future

- ▲ *Impact on rule of court challenges uncertain*
- ▲ *EPA comments on future NRC environmental assessments*
- ▲ *Issue of restoration*

