

USACE Inland Electronic Navigational Charts (IENCs)

Denise R. LaDue

USACE Inland ENC Production Manager

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US Army Corps of Engineers
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USACE Inland Electronic Navigational Charts (IENC)

- History of Navigation on the Western Rivers
- US Inland Navigation Statistics
- Benefits of Electronic Chart Data
- History of USACE IENCs
- Status of USACE IENC Coverage
- USACE Partnering:
 - NOAA
 - U.S. Coast Guard
 - U.S. Power Squadron



History of Navigation on the Western Rivers

- 1824 – Congress authorized the U.S. Army Corps of Engineers to remove snags and other obstructions from the Mississippi and Ohio Rivers
- 1896 – Congress authorized a 9' deep navigation channel on the Lower Mississippi River
- 1907 – Congress adopted a 6' deep navigation channel on the Upper Mississippi River between St. Louis and Minneapolis



19th Century "Dredge"



1902 Maneuver Boat

- 1910 – Congress adopted the Rivers and Harbors Act which authorized the construction of locks and dams on the Ohio River to provide a 9' deep navigation channel
- 1930 – Congress authorized a 9' deep navigation channel on the Upper Mississippi River

U.S. Navigation Statistics*



- 8,200 miles of inland waterways
- 158 lock chambers
- 589 million tons of commodities
 - ▷ 31% coal / coke
 - ▷ 25% petroleum
 - ▷ 18% other raw materials
 - ▷ 12% food & farm products
 - ▷ 8% chemicals
 - ▷ 6% manufactured products

Equivalent Units

22,500 Tons =

One 15 Barge Tow

225 Railroad Cars

900 Large Semi Trucks



Electronic Chart Data for Safe and Efficient Navigation

Disaster at Big Bayou Canot, 22 September 1993



- A towboat pushing six barges, lost in the fog, struck the Big Bayou Canot bridge near Mobile, AL causing the track to misalign by approximately 3 feet.
- Eight minutes later, AMTRAK *Sunset Limited* derailed on the railroad bridge and plunged into the waterway, killing 47 and injuring 103.

An electronic chart system on the towboat could have prevented the accident.



History of USACE Inland ENC's

❖ 2001

- U.S. Congress directed USACE to develop Inland ENC's to cover the Mississippi River and its tributaries
- Pilot projects conducted on the Atchafalaya River & the Mississippi River at Vicksburg
- International Hydrographic Organization S-57, 3.1 data exchange standard used for development

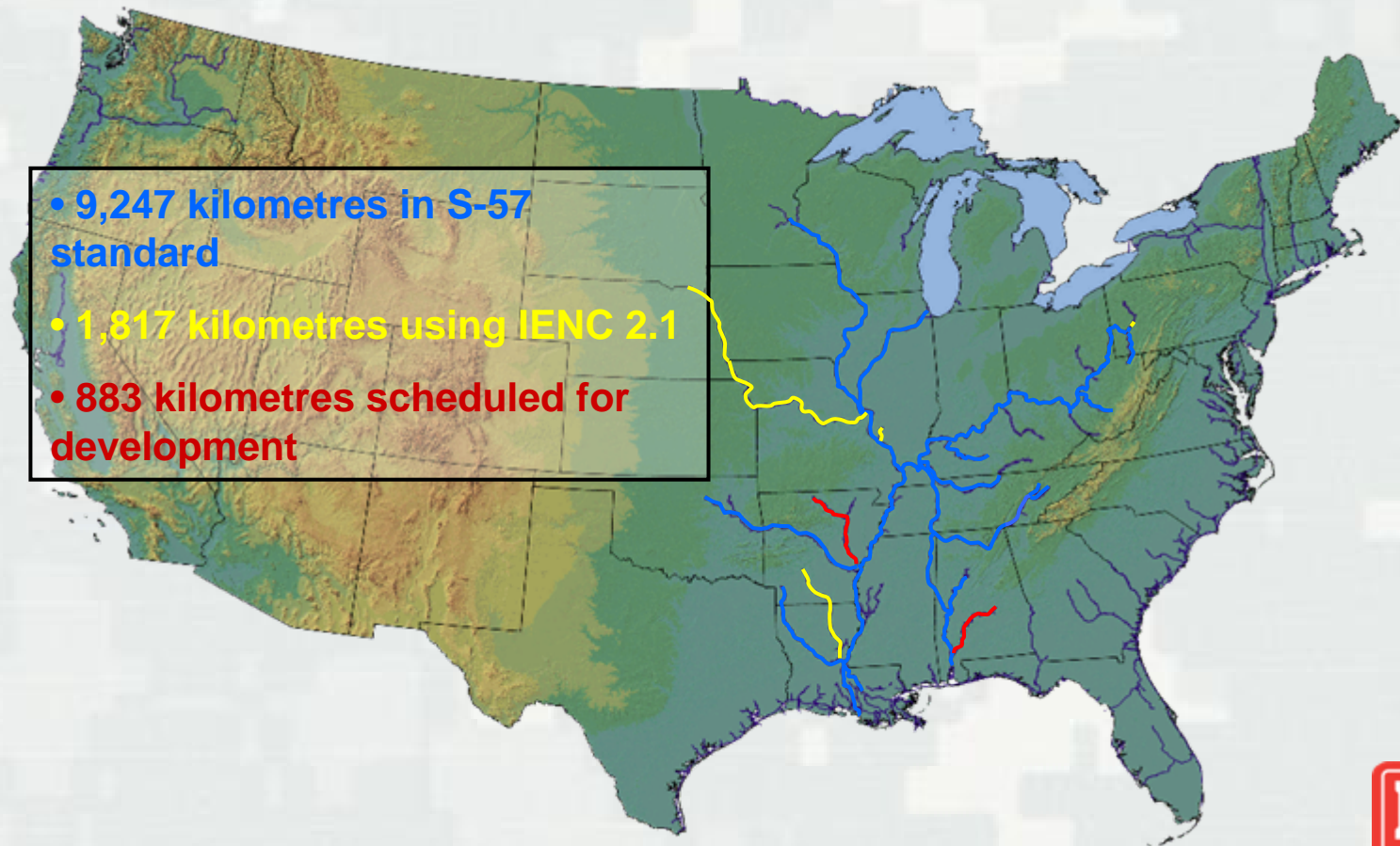
❖ 2002 – 2009

- Continued development and maintenance of Inland ENC's covering over 10,100 kilometres of Inland Waterways



Inland ENC Coverage in USA

11,955 kilometres of inland waterways are scheduled for Inland ENC coverage



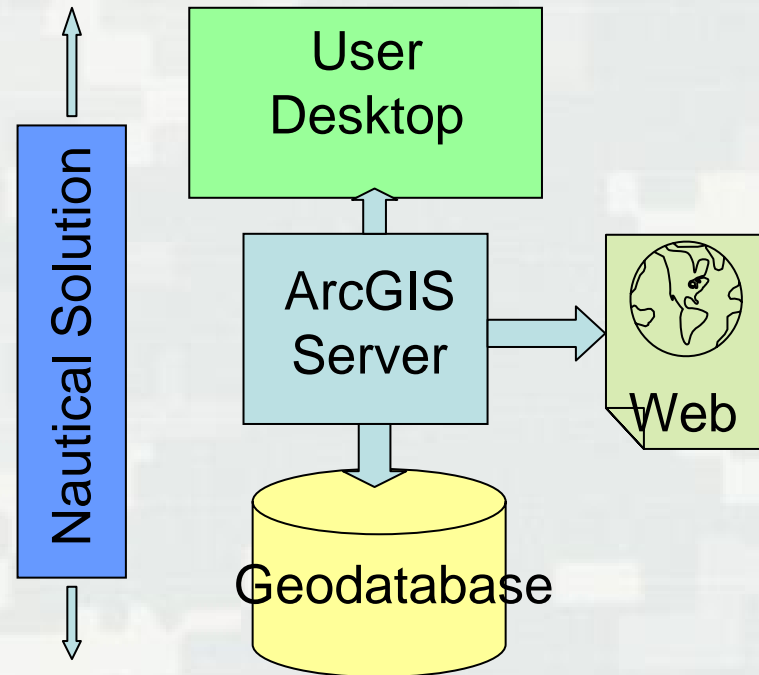
Status of USACE IENC Development

- Ninety-three (93) Inland ENC's, totaling 9,247 km, produced using IHO S-57 3.1 standard
(Allegheny, Arkansas, Atchafalaya, Black Warrior, Cumberland, Green, Illinois, Kanawha, Mississippi, Mobile, Monongahela, Ohio, Red, Tennessee and Tombigbee Rivers, Tenn-Tom Waterway)
- Eleven (11) Inland ENC's, totaling 1,817 km, produced using Inland ENC Product Spec. 2.1
(Missouri, Kaskaskia and Ouachita Rivers)
- 883 km of uncharted waterways are scheduled for development using Inland ENC Product Spec. 2.1 or 2.2 in 2011
(Alabama and White Rivers)
- Existing (93) IENCs will be updated to Inland ENC Product Spec. 2.2 when software tools are made available



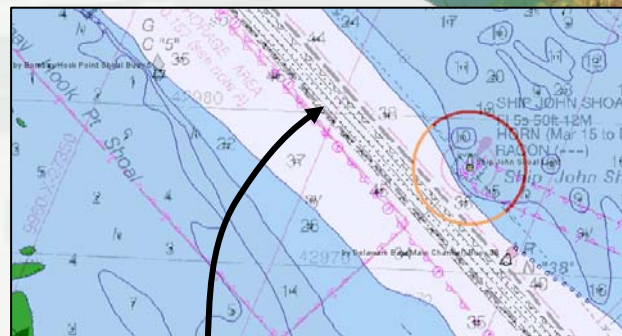
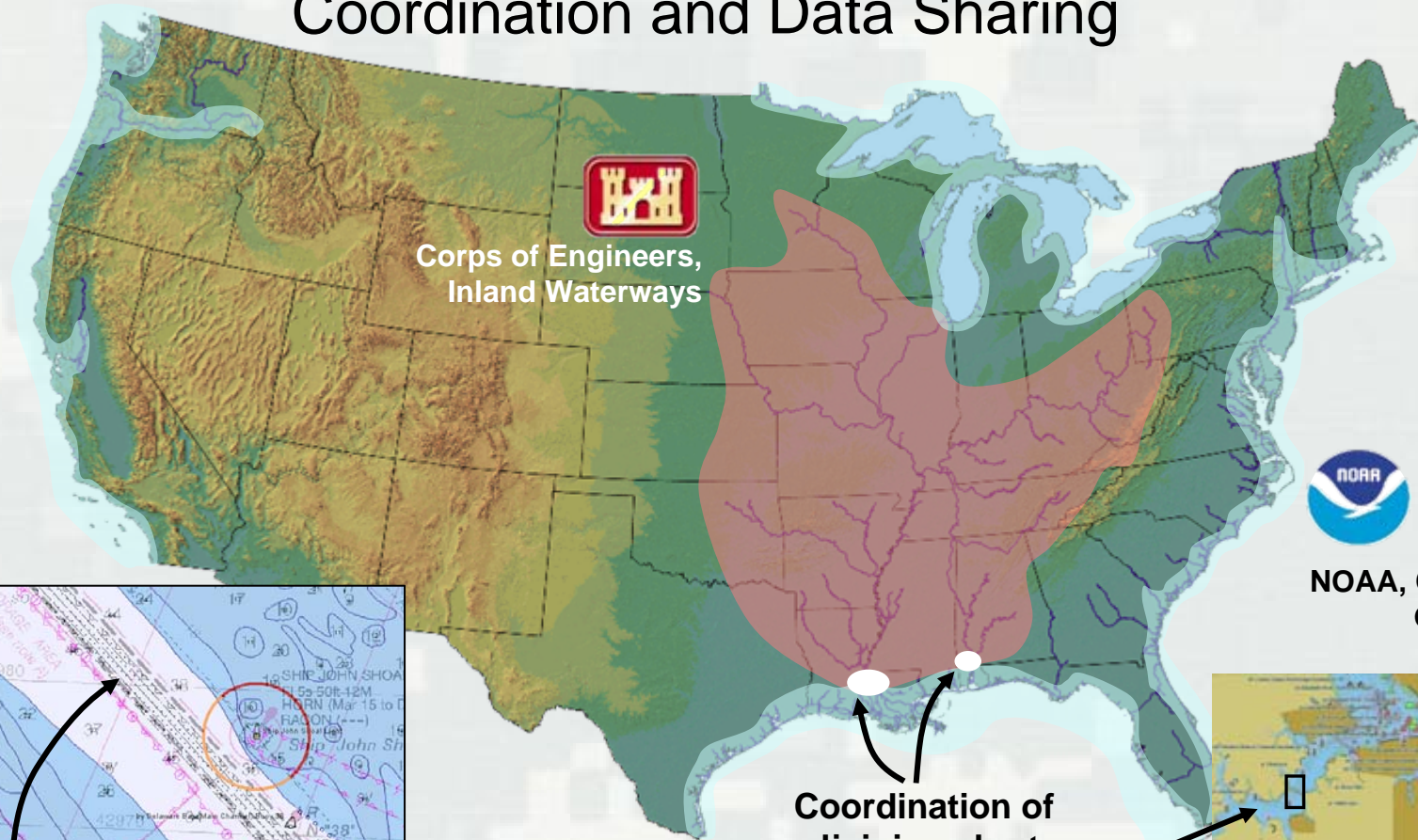
ESRI Nautical Solution

- ❖ Centralized Data, not multiple databases
- ❖ Production of navigational products from same data
- ❖ Validate Data
- ❖ Ability to migrate to new IHO Standards (S-101)
- ❖ Harmonized data model (SDSFIE and Nautical)
- ❖ Web distribution for all customers



Partnering: NOAA

Coordination and Data Sharing



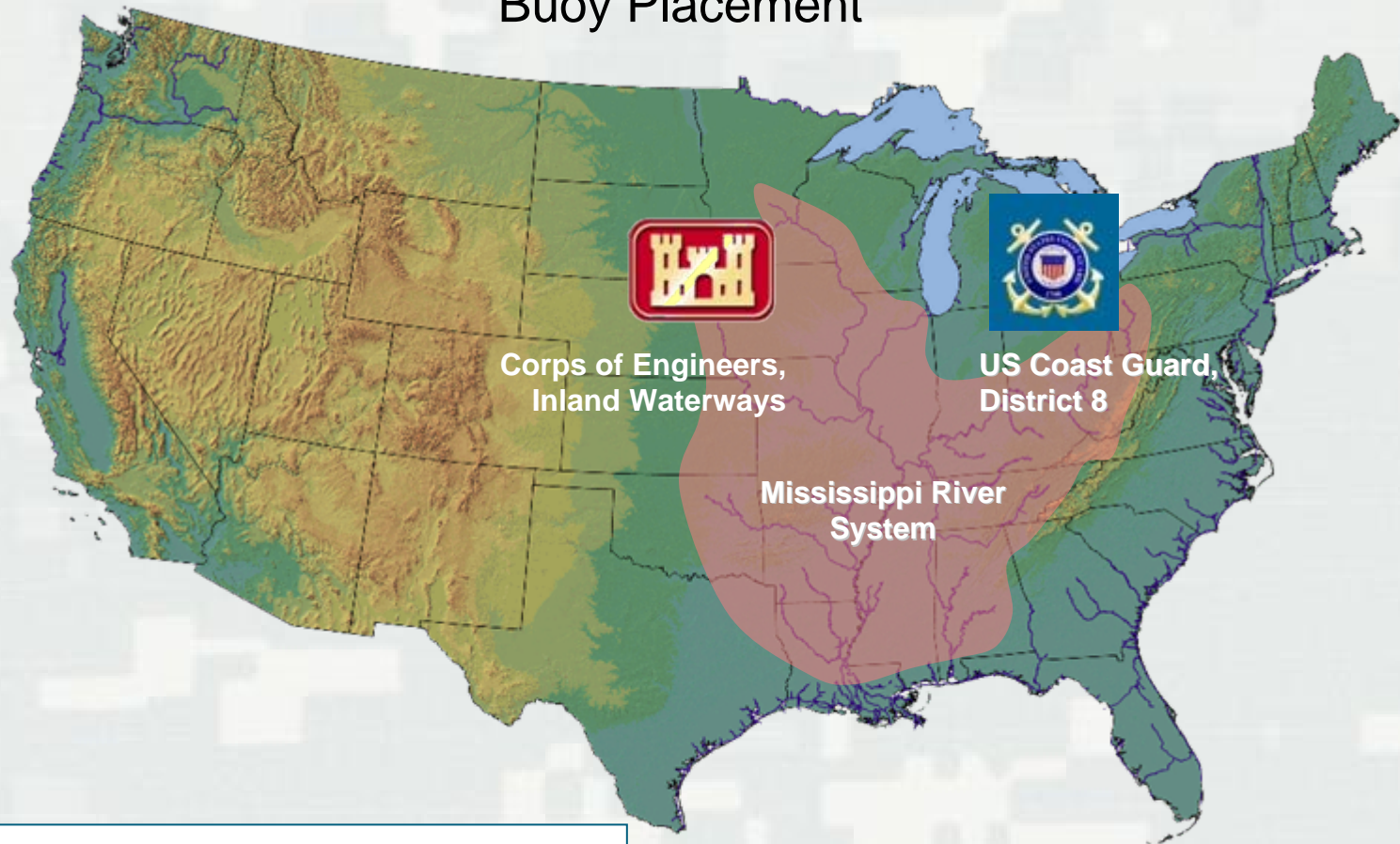
**More consistent and reliable
channel data from Corps for
NOAA charts**



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Partnering: USCG

Buoy Placement



USCG working with the USACE to provide up-to-date buoy locations. Buoys are presently not included on most IENCs.



Partnering: U.S. Power Squadron (USPS)

Cooperative Charting Agreement



USPS members to perform field checks and report errors or inaccuracies in Inland ENC's, similar to their cooperative charting arrangement with NOAA.

Field checks and observations to include the following features:

**Non-navigable
river or tributary**

Land Region

Bridge

**Overhead
pipeline**

Light

Overhead cable

**Permanently
moored vessel**

Storage tank

Support pylon

River Gauge

Marina

Dock/wharf

Conveyor

Marine fender

**Submarine
cable**

Revetment

Boat ramp

Mooring facility

Wrecks

Day mark

Ferry route



Questions?



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