

John Day Lock & Dam

Inland Waterways Users Board

Paducah, KY

July 13, 2006

Sheryl A Carrubba, PE

Operations Manager

Channels and Harbors Project

Portland District Corps of Engineers

JOHN DAY LOCK & DAM



Project Overview

- Completed April 1968
- Const. Cost \$ 512,400,000
- Lake Flood Storage 500,000 acre-ft
- Powerhouse 16 units 2,200,000 KW
- Navigation Lock 110 ft, Single Lift,
86 x 369 ft
- Emergency Repairs 2002/2003 \$ 14,000,000

Project Overview

Navigation Lock

Down Stream Lock Gate



Structural Issues

Navigation Lock



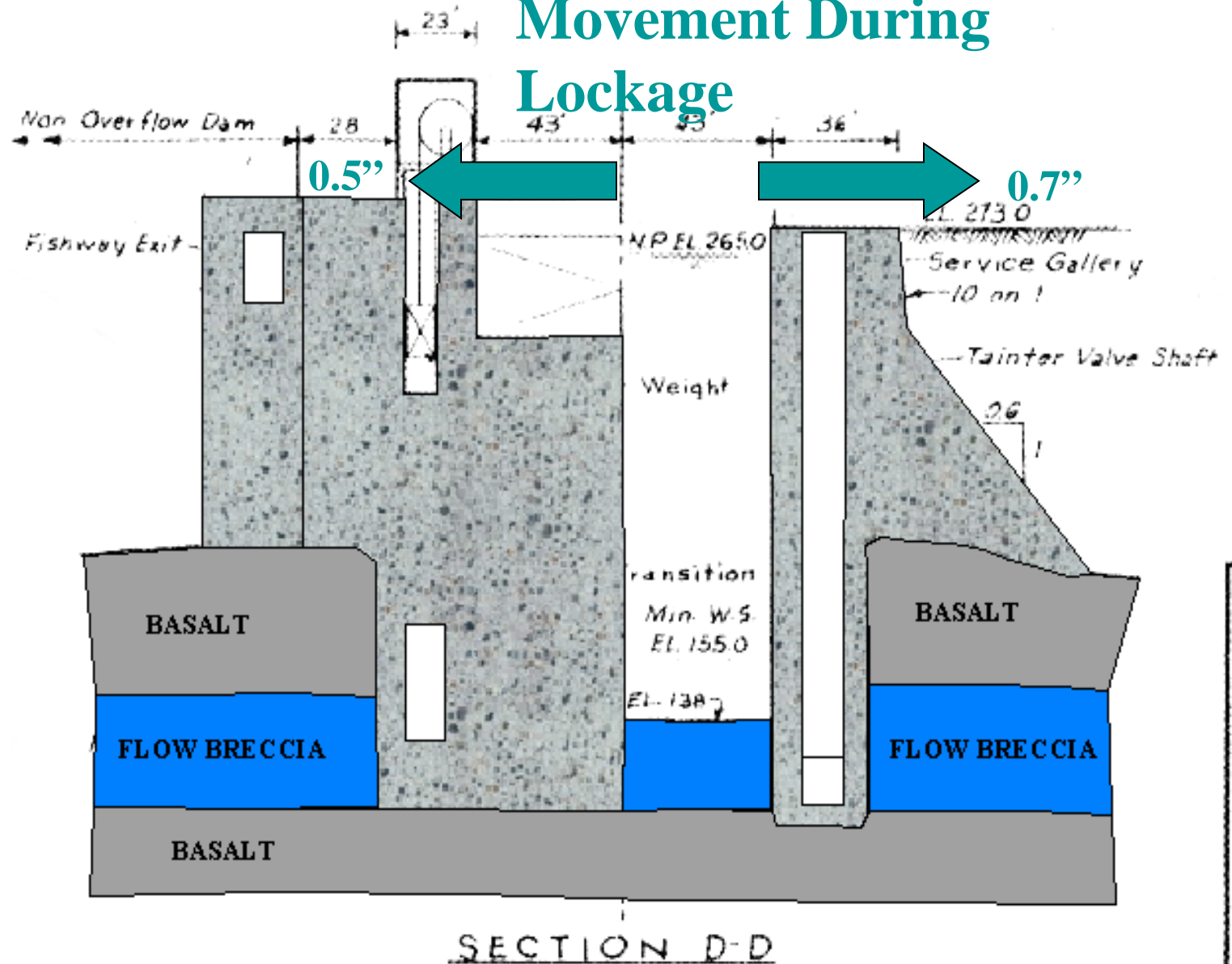
North Wall Now Cracking Like the South Wall

Structural Issues

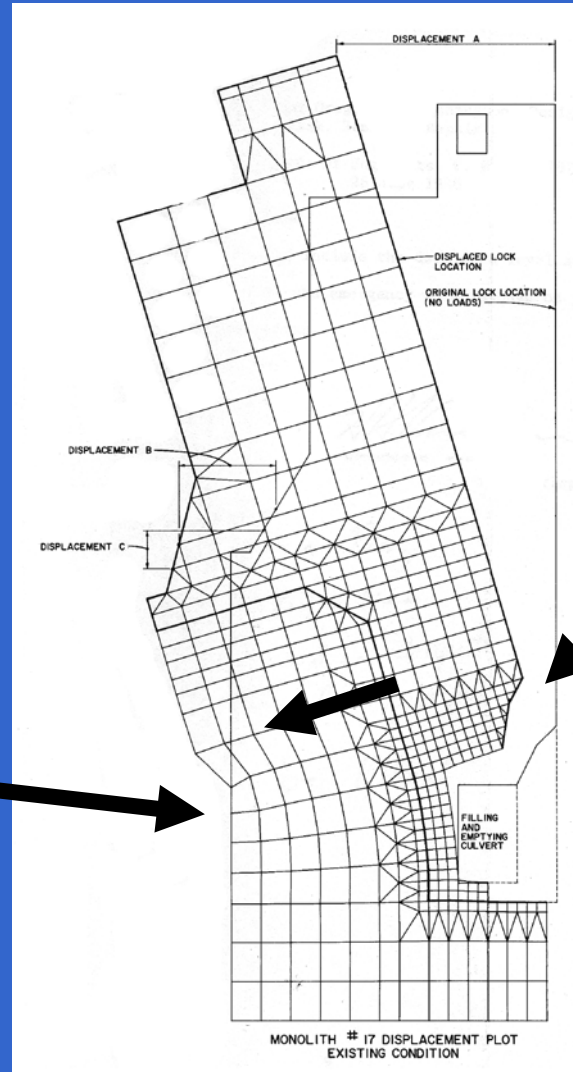


Horizontal Cracking on Monolith bases

Movement During Lockage



Lock Wall Movement Analysis

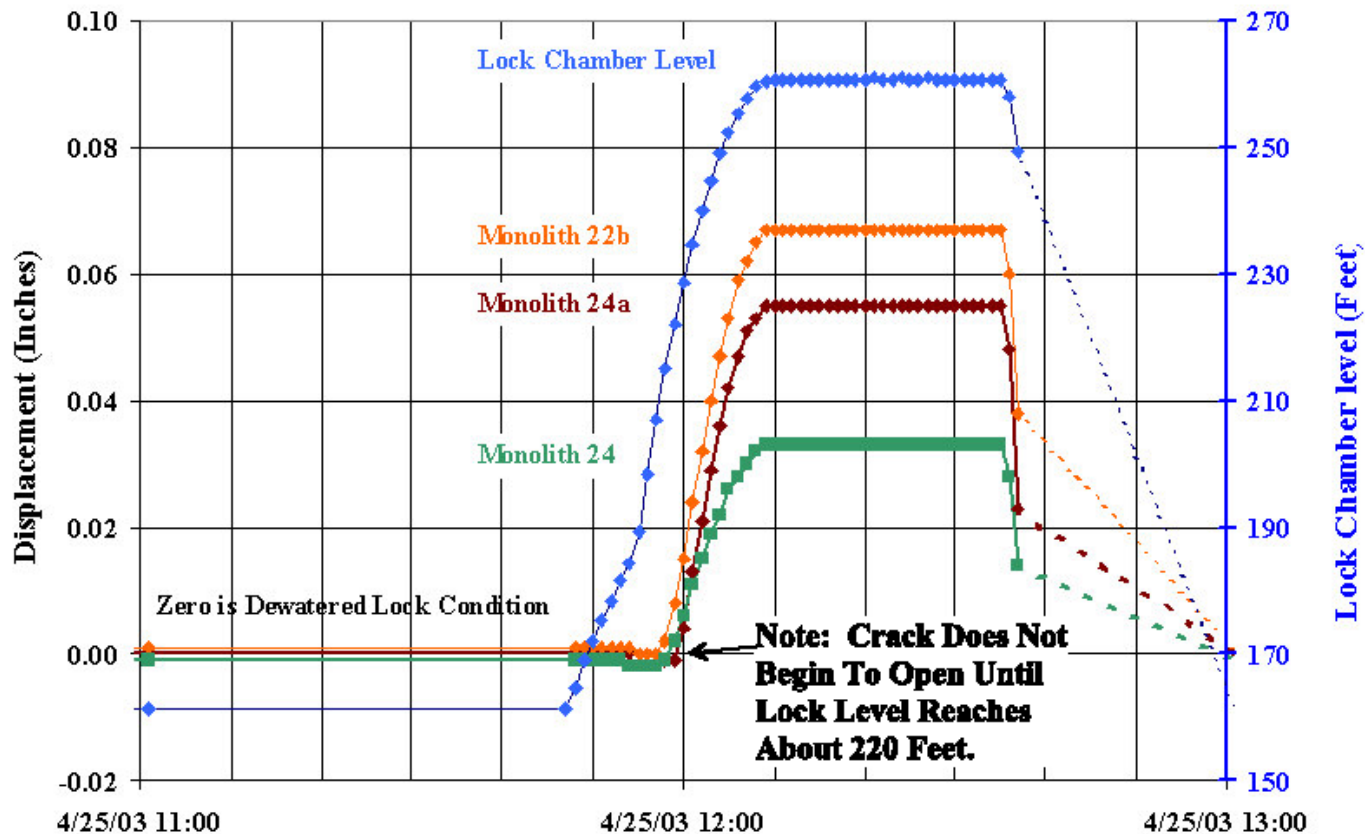


**Flow Breccia
Deforms**

**Lock
Wall Crack**

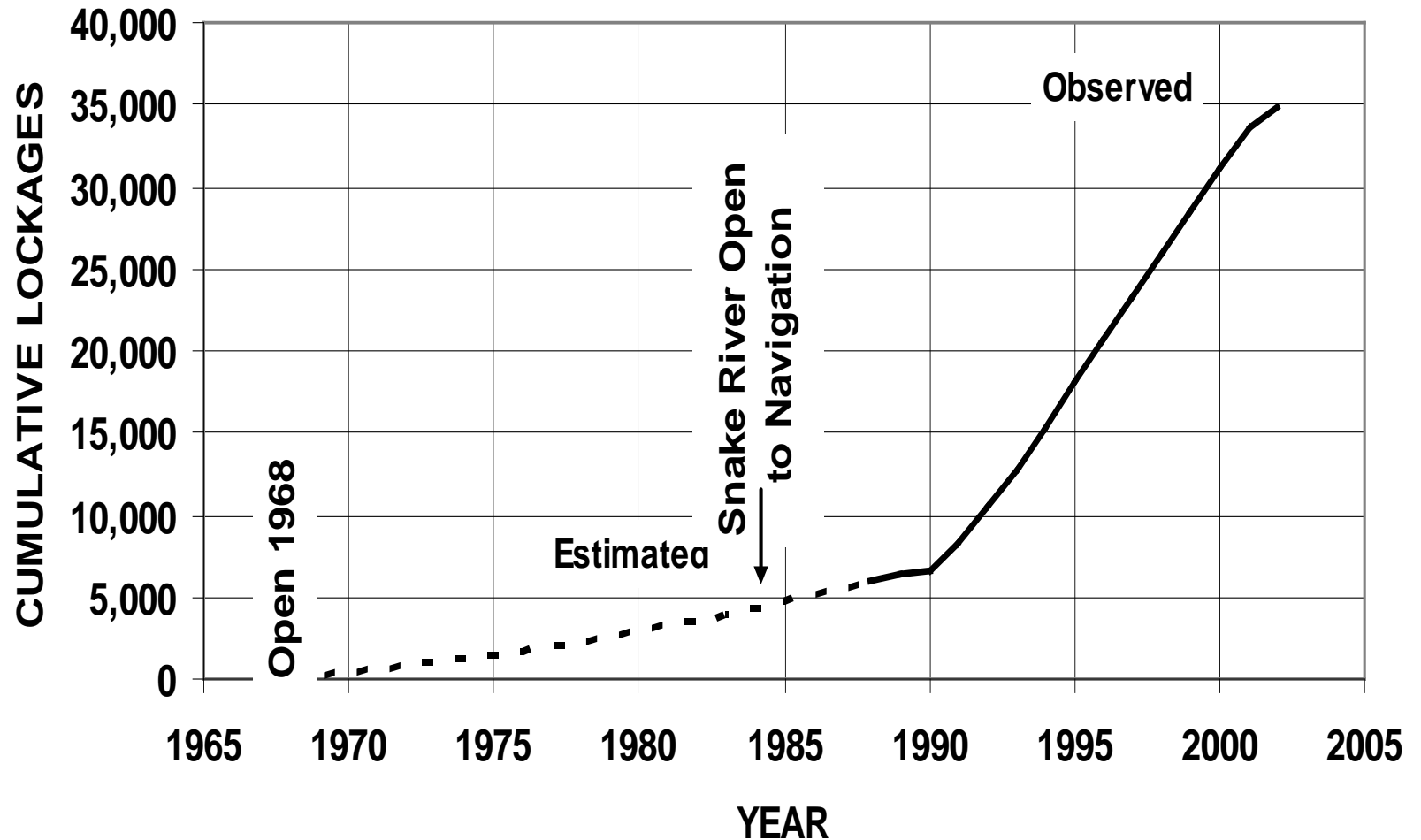
North Wall Un-repaired Crack

Details Of Movement Across North Navigation Lock Wall Chamber Crack



JOHN DAY DAM

CUMULATIVE NUMBER OF LOCKAGES (LOADING CYCLES)



Interim Structural Repairs

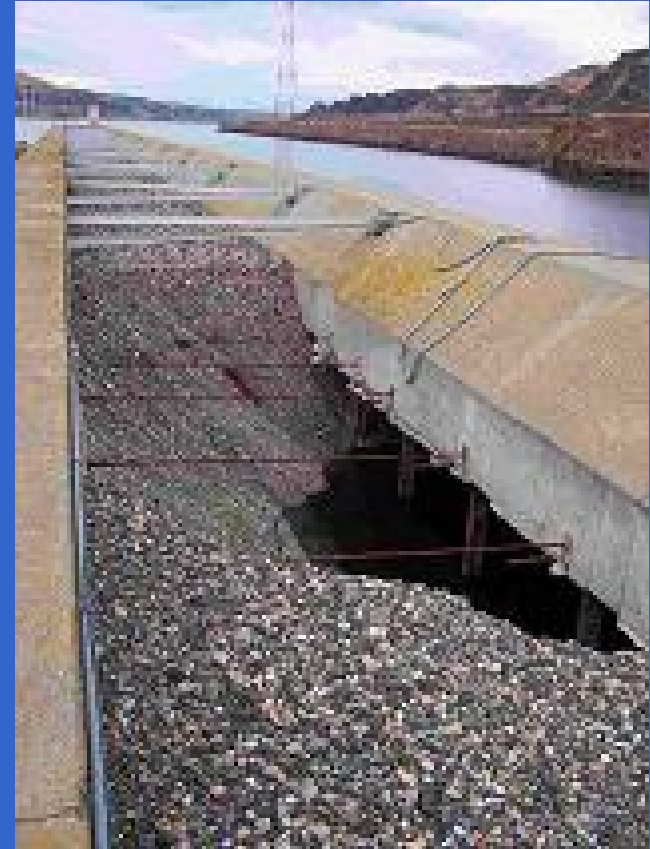


- Concrete Monolith Repairs to Cracked Monoliths 8 and 27
- Emergency Repairs – 3 Months of Design and a Forced Outage for 1 month.
 - Cost of Emergency Repairs for 2 of the 30 monoliths – \$14 Million
 - Water Still Leaking from Foundation Through Anchors.

Additional Structural Issues

Downstream Guidewall

- Actively Failing Due to Corrosion and Material Loss
- Designed as a Sheet Pile Cell with Concrete Cap
- Sheet Pile Gone – Actively Losing Material
- Loss of Navigation
- Estimate \$2M repair



John Day Est. Schedule

- FY06
 - Purchase Ropes Assemblies.
 - Cost = \$350k (Advertising Contract)
- FY07
 - Install new ropes & bearings,
 - Purchase critical spares
 - Begin Major Rehab Report Mainly Scoping
- FY 08 – FY 2010
 - Continue Major Rehab Report – define problems and alternative solutions
- FY 2011+ Begin Major Rehab repairs
 - High Cost

ONGOING Structural Repairs on Columbia Snake System



North Jetty – 2.5 mi long (4.02 km)

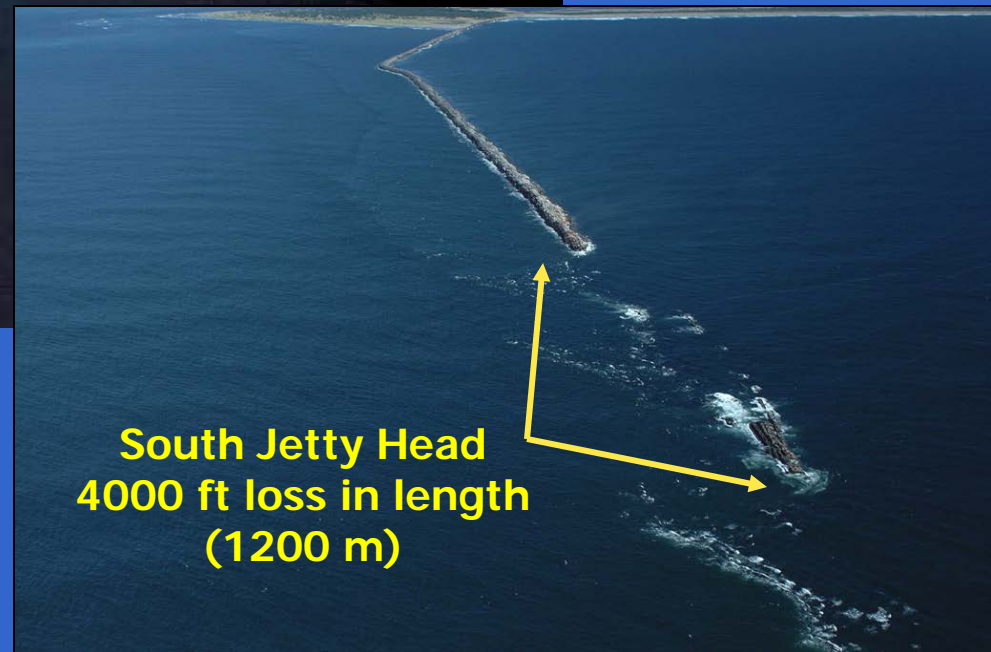
South Jetty – 6.6 mi long (10.62 km)

Spur Jetty – 0.3 mi long (0.48 km)

Mouth of the Columbia River

Interim Jetty Repairs

Approx. \$23M



**South Jetty Head
4000 ft loss in length
(1200 m)**

QUESTIONS ??