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The following types of information are being withheld:

- Ex. 1: ☐ Records properly classified pursuant to Executive Order 13526
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- Ex. 3: ☐ Information about the design, manufacture, or utilization of nuclear weapons  
☐ Information about the protection or security of reactors and nuclear materials  
☐ Contractor proposals not incorporated into a final contract with the NRC  
☐ Other \_\_\_\_\_
- Ex. 4: ☐ Proprietary information provided by a submitter to the NRC  
☐ Other \_\_\_\_\_
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☐ Records prepared by counsel in anticipation of litigation (A.W.P. Privilege)  
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- Ex. 6: ☒ Agency employee PII, including SSN, contact information, birthdates, etc.  
☒ Third party PII, including names, phone numbers, or other personal information
- Ex. 7(A): ☐ Copies of ongoing investigation case files, exhibits, notes, ROI's, etc.  
☐ Records that reference or are related to a separate ongoing investigation(s)
- Ex. 7(C): ☐ Special Agent or other law enforcement PII  
☐ PII of third parties referenced in records compiled for law enforcement purposes
- Ex. 7(D): ☐ Witnesses' and Allegers' PII in law enforcement records  
☐ Confidential Informant or law enforcement information provided by other entity
- Ex. 7(E): ☐ Law Enforcement Technique/Procedure used for criminal investigations  
☐ Technique or procedure used for security or prevention of criminal activity
- Ex. 7(F): ☒ Information that could aid a terrorist or compromise security

Other/Comments: OUTSIDE SCOPE

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**From:** Kanney, Joseph  
**Sent:** Friday, March 19, 2010 3:36 PM  
**To:** Criscione, Lawrence  
**Subject:** RE: Taum Sauk Upper Reservoir Failure - December 14, 2005

Thanks Larry - Joe

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**From:** Criscione, Lawrence  
**Sent:** Friday, March 19, 2010 3:32 PM  
**To:** Kanney, Joseph  
**Cc:** Perkins, Richard  
**Subject:** Taum Sauk Upper Reservoir Failure - December 14, 2005

Joe,

Here's some information on the Taum Sauk Upper Reservoir Failure we discussed earlier today. I don't know if it's pertinent to any of the studies you guys are doing (it was essentially a "man-made" event and not an act of nature) but it makes for some interesting reading if nothing else.

I certainly believe that there is a calculable probability of "man-made" dam failure for any pump storage unit. A nuclear plant susceptible to flooding from a reservoir with pump make-up capability should be required to calculate the probability of the catastrophic failure of the reservoir from a human/equipment performance event.

Larry

---

**From:** Criscione, Larry S.  
**Sent:** Monday, December 19, 2005 2:57 PM  
**To:** 'jhodges@mozona.net'; 'atimperm@wvu.edu'  
**Subject:** FW: Johnson Shut-Ins Tsunami

-----Original Message-----

**From:** Criscione, Larry S.  
**Sent:** Monday, December 19, 2005 1:45 PM  
**To:** 'jccriscione@tamu.edu'  
**Subject:** FW: Johnson Shut-Ins Tsunami

-----Original Message-----

**From:** Criscione, Larry S.  
**Sent:** Monday, December 19, 2005 1:08 PM  
**To:** 'Joe Criscione'; 'John Criscione'; 'James W. & Leslie A. Fletcher'; (b)(6); 'Lois Criscione'; (b)(6); 'Morse, Timothy J.'; 'Rebecca Criscione'; 'Scott Hanson'; 'James Duffy'; Kathy Tosh; kelly williams; Kelly A (GE Commercial Finance) Williams; Dee Woods; Shannon Gibson; 'Eugene\_Cross@fpl.com'; 'Kress, Angie'; 'FriarLopez@satx.rr.com'; 'cschultze@ymcaboston.org'  
**Subject:** Johnson Shut-Ins Tsunami

Here's some before and after pictures of the Taum Sauk reservoir and Johnson Shut-ins state park.

---

**From:** Philip, Jacob  
**Sent:** Thursday, July 29, 2010 3:36 PM  
**To:** Coyne, Kevin; Beasley, Benjamin; Perkins, Richard; Kauffman, John; Mitman, Jeffrey; Criscione, Lawrence  
**Cc:** Ott, William; Coe, Doug; Lui, Christiana; Lyons, James  
**Subject:** FW: Dam breach occurred in midst of effort to repair flood gates (July 28).doc  
**Attachments:** Dam breach occurred in midst of effort to repair flood gates (July 28).doc; ATT00002.htm

FYI....Lake Delhi dam failure last weekend...Jake

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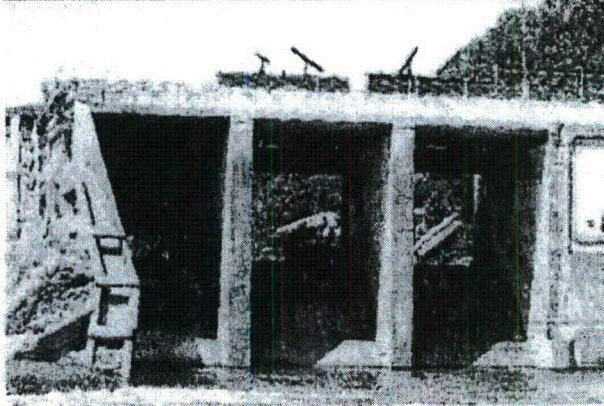
**From:** Baecher Gregory B. [mailto: (b)(6)]  
**Sent:** Thursday, July 29, 2010 3:06 PM  
**To:** Nicholson, Thomas; Philip, Jacob  
**Subject:** Fwd: Dam breach occurred in midst of effort to repair flood gates (July 28).doc

Begin forwarded message:

**From:** BENNETT Tony -HYDRO < (b)(6) >  
**Date:** July 29, 2010 10:42:18 AM EDT  
**To:** ZIELINSKI Andy -HYDRO < (b)(6) >, Mona Bechai  
< (b)(6) >, < (b)(6) >  
**Subject:** Dam breach occurred in midst of effort to repair flood gates (July 28).doc

## Dam breach occurred in midst of effort to repair flood gates

BY TONY LEYS AND ADAM BELZ • TLEYS@DMREG.COM • JULY 28, 2010



JUSTIN HAYWORTH/THE REGISTER

Debris sticks in the dam Tuesday afternoon at Lake Delhi. One of the flood gates was partially closed Saturday when water breached an earthen berm attached to the dam. The other two had recently had equipment replaced.

The owners of the Lake Delhi dam missed a 2009 deadline for making repairs to the structure, but they say the repairs would not have prevented last weekend's disastrous breach of the dam.

A state inspector last year told the Lake Delhi Recreation Association that it had until Dec. 31, 2009, to fix a broken flood gate and some minor concrete problems.

The dam has three flood gates, which are designed to be opened after heavy rains to allow extra water to flow out of the lake. One of the flood gates was partially closed Saturday when water surged over the dam and breached an earthen section of it. Most of the 9-mile lake then drained away down the Maquoketa River.

Jim Willey, president of the Lake Delhi Recreation Association, said Tuesday that his organization moved as fast as it could to get the work completed: "It can only be done when the funding and the contractors are available."

The association, which owns the 88-year-old dam, had a contractor replace the equipment that raises and lowers two of the gates. Work was about to start on the third gate when the flood came, he said. Saturday's breach might have happened more quickly if that project had begun, he said, because workers would have temporarily blocked off the area surrounding the third gate.

Willey said the other two gates were opened further than they were designed to go, and the total amount of water being let through was more than what the dam was designed to release. He said perfectly functioning gates would not have kept the unprecedented floodwaters from going over the dam.

The Iowa Department of Natural Resources, which inspected the dam May 13, 2009, released the report Tuesday. Spokesman Kevin Baskins said it was too early to say whether the partially closed flood gate contributed to the breaching.

"Keep in mind, this was a flood event that had never before been experienced at Lake Delhi since the dam was constructed," he said.

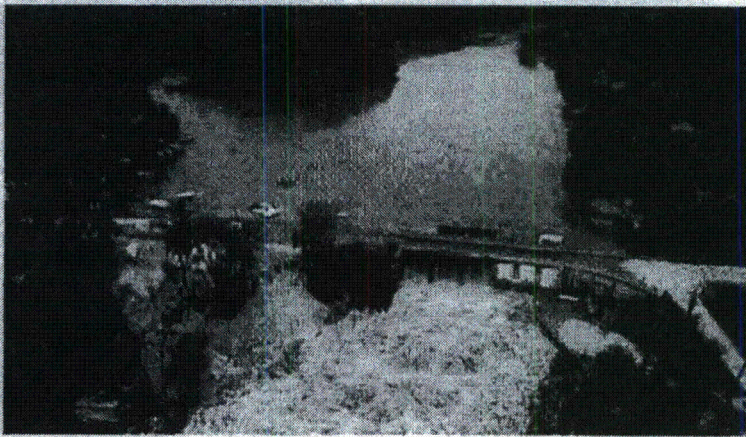
Shortly after the dam was breached, state officials said they didn't think any of the issues found in the inspection



could have led to the calamity. However, they also said then that they thought all three flood gates were wide open.

Overall, the DNR inspector found that the dam was well maintained. But he noted that one of the flood gates was inoperable because of damage from 2008 flooding. He also noted some flaws in the concrete, but indicated they were relatively minor.

## Lake's Views and Revenue Yield to Muck and Fears in Iowa



AP/The Gazette

July 24, 2010: Maquoketa River water surges over the bridge of the Delhi Dam as areas surrounding the Maquoketa River continue to flood.

A 300-foot-long breach in Lake Delhi Dam Saturday sent water spilling downstream and hundreds of people fleeing for safety in eastern Iowa.

David Fink, Lake Delhi dam operation manager, called the breach "a catastrophic release of water."

Stephen Mally for The New York Times

The Lake Delhi dam ruptured over the weekend, leaving the future of a vacation spot uncertain.

By CHRISTINA CAPECCHI

Published: July 26, 2010

DELHI, Iowa — What was a sparkling lake last week is now a muddy graveyard. The skeletons are mangled white boatlifts wedged in rocky sandbars.

After heavy rains forced a dam break over the weekend, people here in eastern Iowa were coming to grips on Monday with the jarring reality that their beloved lake was gone. Lake Delhi, a popular getaway in Delaware County surrounded by waterfront vacation homes, had drained itself to a stream.

The water on the west side of the dam, which was a quarter-mile wide last week, spanned 100 feet on Monday, according to Jeff Driscoll, a state trooper. He said it had dropped a foot in four hours that day.

Now the lakefront homes look out over acres of muck.

"The lake's pretty much dead," said Mike Beatty, 54, who lived here 29 years and was hours from closing on the sale of his uninsured home when the flood destroyed it. "It's just a creek, basically. It's a sickening feeling knowing that you basically lost everything."

When the Lake Delhi dam burst, so did a thriving tourism industry for the region. The nine-mile, 450-acre lake was rimmed by 900 homes and vacation cabins. Most of the owners came from outside the county.

On summer weekends, Lake Delhi (pronounced DEL-high) drew about 3,000 people, said Jim Willey, president of the Lake Delhi Recreation Association. Visitors traveled from other states to sit at its shore, said Beverly Rahe, assistant director of Delaware County Economic Development. "It's a beautiful place," she said. "It was absolutely beautiful."

The lake generated about 10 percent of the county's tax base, which last year totaled \$24.9 million, Jodi Cahalan, a county assessor, said.

Chris Stender, 42, whose home and marina on the lake were damaged by the flood, said he considered that estimate low. No matter, it is hard, he said, to put a price tag on his life and livelihood. "There's no way I'll make it with no work and no water," he said.

About 100 boaters entered the lake from his marina each summer weekend, Mr. Stender said. Now he is getting calls asking to have boats prepared for the winter. "Maybe there'll be water next year," he said.



Tina Maloney, 38, owner of the Pizza Place on the north side of Lake Delhi, said she usually sold 300 pizzas on a Friday night in the summer. She said she was expecting to lose 80 percent of that business, adding, "I'm scared."

One of her employees hung two green signs on Monday that read, "We are open!"

Thousands of fish have been flushed out by the lake's rapid drop — largemouth bass, bluegills, crappie and channel catfish — said Dave Marolf, the fisheries biologist and hatchery manager at the state's Manchester Trout Hatchery. If the dam were rebuilt, he said, the Iowa Department of Natural Resources would be responsible for restocking the lake.

Whether it will be rebuilt is unclear. The dam is privately owned by the Lake Delhi Recreation Association, but the road above it, which the flood obliterated, is county property.

"All we have today is rumors, and they range from yes to no," Mr. Marolf said.

Some locals were skeptical.

"I think there will be a fight with the environmentalists and the corps of engineers, and I don't think it'll be fixed five years from now — if at all," said Billie Zumbach, 58, a bookkeeper from Coggon. "Some rare species will be found, and there'll be a dispute. There'll be months of haggling. That's just the way it is."

Others were more hopeful that the lake would be revived. Marcheta Cooley, 81, a widow who is a retired resort owner, is the second of five generations to enjoy Lake Delhi. It has been home her entire life and is part of her identity, she said as she filed her fingernails.

"I'm positive they'll fix it," she said.

**From:** Criscione, Lawrence  
**Sent:** Friday, January 27, 2012 8:43 AM  
**To:** Beasley, Benjamin; Perkins, Richard; Bensi, Michelle; Philip, Jacob  
**Subject:** FW: January 26, 2012 - Nuclear power proponents tout benefits of Md. reactor project

See the article on the TVA flood protection.

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**From:** NEI SmartBrief [mailto:nei@smartbrief.com]  
**Sent:** Thursday, January 26, 2012 11:17 AM  
**To:** Criscione, Lawrence  
**Subject:** January 26, 2012 - Nuclear power proponents tout benefits of Md. reactor project

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Outside of Scope

### **NRC: TVA's flood-protection devices for reactors are vulnerable**

Sand baskets installed around Tennessee Valley Authority's nuclear plants could fail to protect the facilities against worst-case floods, according to the Nuclear Regulatory Commission. "There is potential for ... debris to damage the baskets or push the individual baskets apart, causing a breach," the agency said. TVA said it will study the NRC's statement to learn its next steps. The Tennessean (Nashville) (1/25)              

Outside of Scope



Outside of Scope

Outside of Scope

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**From:** Criscione, Lawrence  
**Sent:** Monday, June 11, 2012 1:01 PM  
**To:** (b)(6)  
**Subject:** Taum Sauk Article without email  
**Attachments:** Hollenkamp\_etal\_2011-CDABull-Taum\_Sauk\_Case\_History.pdf

# CASE HISTORY SUMMARY

## TAUM SAUK STORAGE DAM FAILURE, LESSONS LEARNED, AND THE REBUILD

Tom Hollenkamp, AmerenUE, St. Louis, Missouri, USA  
Craig Giesmann, AmerenUE, St. Louis, Missouri, USA  
Matt Frerking, AmerenUE, St. Louis, Missouri, USA

**ABSTRACT:** The rockfill dike constructed in 1963 to form the Upper Reservoir at the Taum Sauk Pump Storage Project near Lesterville, MO failed abruptly on December 14, 2005. The Upper Reservoir has been rebuilt as a 2.84 million cubic yard (2.17 million cubic meters) RCC Dam in compliance with FERC Regulations and Missouri environmental permitting regulations. As the project is the largest RCC project constructed in the USA and it has a symmetrical cross-section with relatively low strength RCC, numerous design issues arose during the design process. The overall rebuild presented unique and challenging aspects. This paper summarizes the lessons learned during this historic rebuild.

**RÉSUMÉ:** La digue de rockfill qui a été construit en 1963 avec le but de créer le Réservoir Supérieur au Projet de Stockage de Pompe de Taum Sauk près de Lesterville, Missouri a abruptement échoué le 14 Décembre 2005. Le réservoir supérieur a été reconstruit pour faire un RCC digue en 2,84 millions verges cubes (2,17 millions mètre cube) selon des règlements sur l'environnement et du Missouri FERC. Comme c'est le plus grand projet qui RCC a construit aux États-Unis et, comme il y a une section transversale symétrique avec une force relativement faible de RCC, il y avait

plusieurs défis pendant la conception du projet. La totalité des défis pour cette reconstruction a été unique et intéressante. Ce document résume ce qui a été appris pendant cette reconstruction historique.

**Name of site or structure:**  
Taum Sauk Pump Storage Plant  
(FERC Project No. P-2277)  
Upper Reservoir

**Dam Location:** Reynolds County, MO

**Type of event:** Structural Failure of the Upper Reservoir Dam at the Taum Sauk Pump Storage Plant

**Date of event:** December 14, 2005

**Date of construction:** Started in June 1960 and commercial operation began in December 1963. Rebuild started in October 2007 and commercial operation resumed in April 2010.

### 1 SITE, STRUCTURE AND MATERIALS

The Taum Sauk Plant is located in Reynolds County, Missouri, on the East Fork of the Black River, approximately 90 miles (144.84 kilometers) southwest of St. Louis, Missouri. It is a reversible pumped storage project used to supplement the generation and transmission facilities of AmerenUE, having a 450-MW, two-unit pump-turbine. The facilities at Taum Sauk Plant consist of a ridge top Upper

Reservoir, a shaft and tunnel conduit, the Powerhouse and a Lower Reservoir (Figure 1). The Plant's Upper Reservoir is impounded by a dike and the Lower Reservoir is impounded by a dam across the Black River. The Upper Reservoir Dike was 6,562 feet (2,000.10 meters) long and kidney-shaped (Figure 2). The dike was a concrete-faced dumped rockfill dam with a maximum height in the range of 84 feet (25.60 meters) above the reservoir floor (Figure 3). The reservoir floor was generally at El. 1505 feet (459.72 meters) and the 12 feet wide (3.66 meters) crest of the dike was at El. 1589 feet (484.33 meters). A 10 feet high (3.05 meters), 1 foot thick (0.3 meter) reinforced concrete parapet wall on the crest of the dike extended the maximum pool to El. 1599 feet (487.38 meters).



Figure 1: Taum Sauk Plant Overview



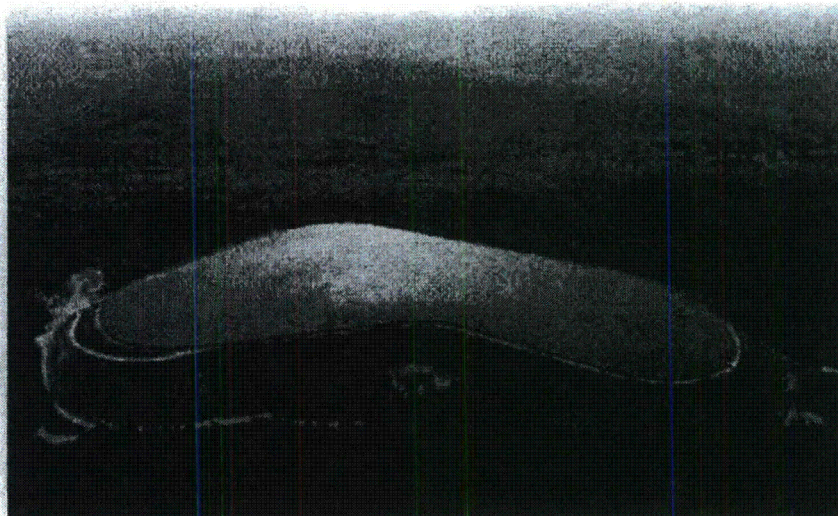


Figure 2: Upper Reservoir View

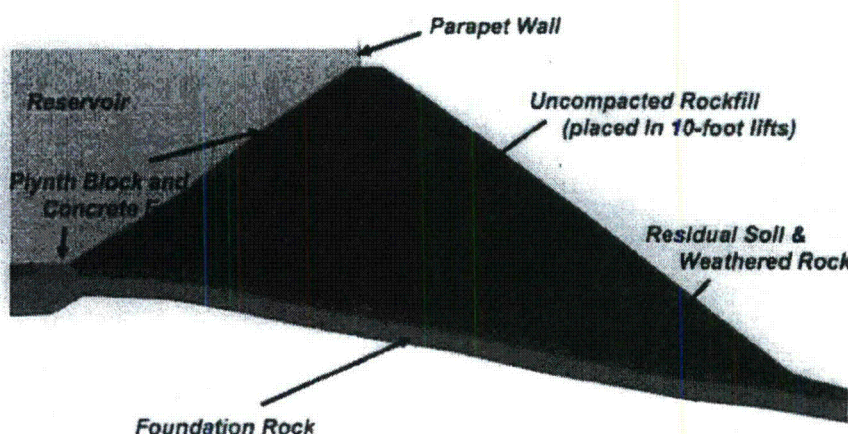


Figure 3: Cross Section of Original Dike

The Upper Reservoir had no spillway and no drainage area. Water filled the reservoir by pumping and direct rainfall. The Powerhouse is located at the upstream end of the Lower Reservoir about 2 miles (3.22 kilometers) from the Upper Reservoir, in a deep, narrow canyon through which a tailrace channel was excavated to connect to the Black River. A concrete and steel-lined shaft and tunnel connects the Powerhouse to the Upper Reservoir.

The Taum Sauk Plant is a peaking and emergency reserve facility. A typical daily summer cycle is to generate in the mid-morning by releasing water from the Upper Reservoir through the turbines to

the Lower Reservoir, pump from the Lower Reservoir to the Upper Reservoir in the afternoon, generate in the evening and pump from the Lower Reservoir to the Upper Reservoir in the early morning. In the fall, winter and spring, the plant typically generates once per day.

The normal maximum level for the Upper Reservoir was El. 1596 feet (486.46 meters). Unit operations and reservoir elevations vary depending on electric demand and are operated under the direction of the load dispatcher in St. Louis. Typically, a full run would lower the level in the Upper Reservoir approximately 60 feet (18.29 meters). A 60 foot (18.29 meter)

drawdown represents approximately 6 to 7 hours of double unit generation. Both units could be put on full load in a few minutes.

The site geology for the Taum Sauk Plant is characterized by Pre-Cambrian rhyolite porphyry and granite porphyry. The igneous rock of the knob and ridge (i.e. Profit Mountain), which accommodates the Upper Reservoir, is rhyolite porphyry, which is fresh high-compressive strength rock moderately to abundantly jointed. The rock surrounding the tunnel is classified as granite porphyry, massive hard rock with infrequent and tight joints, and the bedrock at the Lower Reservoir Dam as hard, dense rhyolite porphyry cut by two closely-spaced sets of near-vertical joints, with only shallow weathering.

## 2 FAILURE DESCRIPTION

At 5:15 AM, on December 14, 2005, the northwest corner of the Dike around the Upper Reservoir breached over a width of about 700 feet (213.36 meters), causing an uncontrolled, rapid release of 1.5 billion gallons (5.7 billion liters) of water down the west slope of Profit Mountain and into the East Fork of the Black River during a 25 minute period. A view of the breach and an overall aerial view of the flow path are shown on Figures 4 & 5. The release flooded a state highway (Route N) and produced significant property and environmental damage to the Johnson Shut-Ins State Park.

Due to a failure of the support system securing the pipes which contain the water level control transmitters, the pipes had shifted and caused a change in the instrumentation elevation. This led to actual water levels being higher than the elevation recorded by the level control transmitters. During the morning of December 14, 2005 the auto stop elevation for the second pump (El. 1594 feet (485.85 meters)) was not reached until overtopping had occurred and the Upper Reservoir Dike was



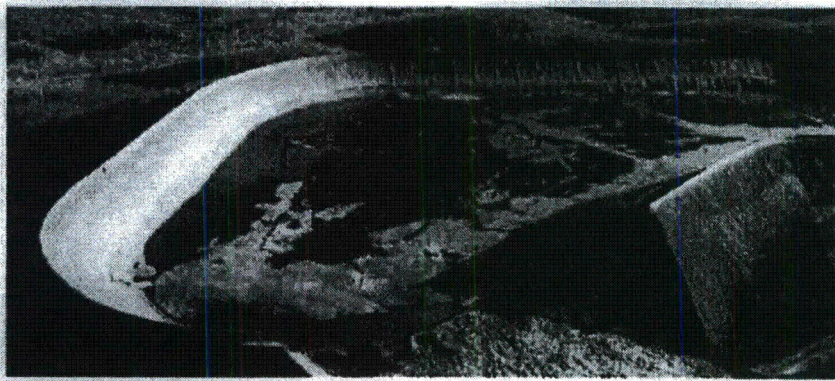


Figure 4: View of Breached Dike

very near to or at a failed condition. The maximum level recorded by the level transmitter was El. 1593.7 feet (485.76 meters) whereas actual peak reservoir level (based on post-incident physical observations) was approximately El. 1597.6 feet (486.95 meters). The level protection system was designed as a backup to the level control system. However, the probes were set above the low point in the Parapet Wall (El. 1597 feet (486.77 meters)). The probes (at the time of the Event) were installed too high (HI @1597.4 feet (486.89 meters) and HI-HI @1597.7 feet (486.98 meters)) to be effective.

### 2.1 Failure Mode

Post-Event forensic investigations were conducted by Paul C. Rizzo Associates, Inc. (RIZZO) and the FERC. The RIZZO investigation concluded that the failure mechanism was a stability failure of the dike in the northeast corner caused by a rapid rise in the phreatic surface and the associated pore pressure at the dike/foundation interface caused by the flow overtopping the parapet wall. Other contributing factors were weak foundation conditions, inadequate shear strength of the material comprising the rock-fill, and assumed poor construction practices and failure to meet the intended design criteria.

The failure of the Upper Reservoir level monitoring instrumentation to function as intended is a primary contributing cause of

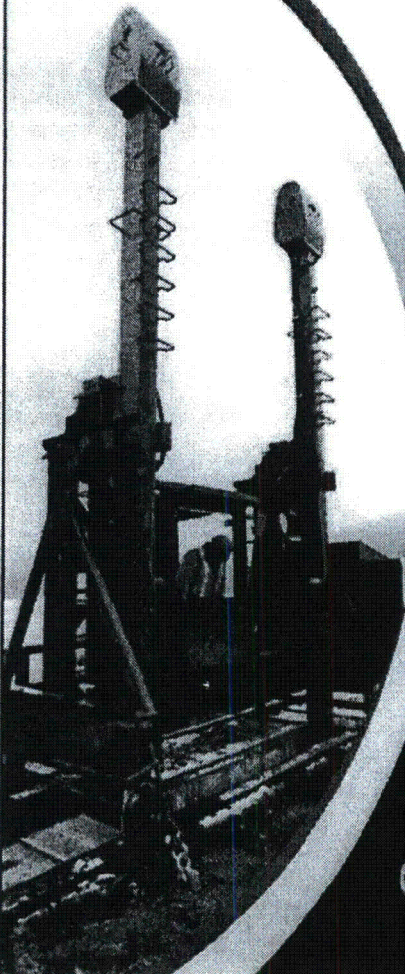

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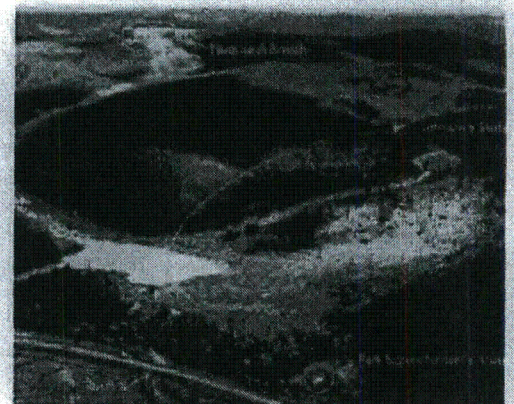


Figure 5: Overview of Scour Path and Park Damage



the Event. The failure of the water level instrumentation to function as intended is due to a failure of the instrumentation support system. The failure of the back-up level protection instrumentation to function as intended is due to a misplacement of the HI and HI-HI level protection instrumentation as a result of human error.

The analysis performed by RIZZO concluded that the root cause of the uncontrolled, rapid release of water from the Upper Reservoir was the breach of the Rockfill Dike – a stability failure at the northwest corner of the Reservoir brought on by a rapid increase in the pore pressure at the dike/foundation interface, stemming from the original design and construction.

The forensic investigation performed by FERC documented similar findings to the RIZZO report leading up to the overtopping of the parapet wall. However, the FERC investigation differed from the RIZZO report on the failure scenario. Per the FERC Investigation report, overtopping of the parapet wall started eroding the dike material on the downstream toe of the parapet wall. The erosion then progressed below the parapet wall, likely causing instability and resulting in the initial loss of one or two parapet wall sections. Subsequent erosion and breach of the rockfill embankment resulted in the approximate 700-foot-wide (213.36 meters) final breach.

#### Failure Mode Event Tree:

- Original Construction Issues:
  - Excess of fines in embankment.
  - Base not properly prepared.
  - No overflow spillway in original design/construction.
- Ameren Organizational Factors:
  - Responsibilities for plant operation and dam safety are not separate.
  - Inadequate awareness of Ameren personnel on dam safety awareness and inspection procedures.


- December 14, 2005 Overtopping:
  - Failed instrument supports caused faulty level indication.
  - Back-up level protection set incorrectly.
  - Probes raised to higher elevation after placed in service. Both probes were above low point of wall.
  - Computer programming error resulted in needing both probes to trip pumps.


- Design and operation did not maintain 2 feet (0.61 meter) of freeboard.
- Staff gauge changed due to settlement of the dike embankment.

## 2.2 Consequences


During a 25 minute period, water flooded and damaged 281 acres (1.14 square kilometers) of the 2,490 acres (10.08 square kilometers) of Johnson's Shut-Ins (Figure 5).

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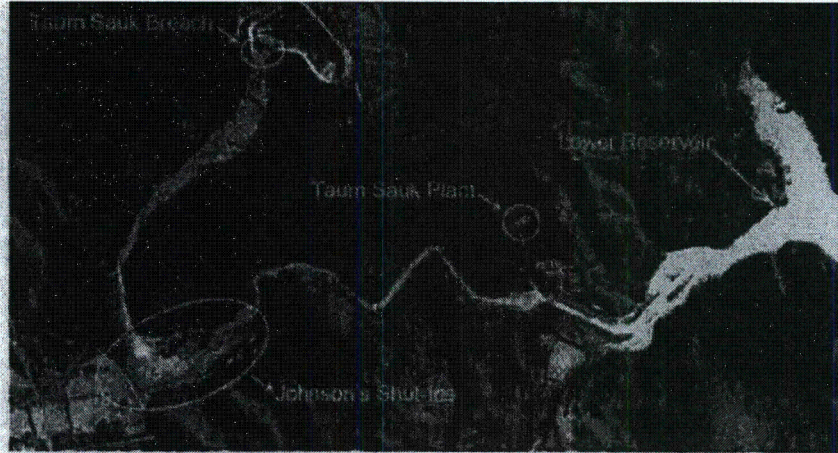


Figure 6: Overview of Breach, Park & Lower Reservoir

The breach closed one road (State Hwy N) and destroyed the Park Superintendent's House; family members suffered various personal injuries; however, no fatalities occurred. The breach produced significant property and environmental damage to the Johnson Shut-Ins State Park and resulted in a significant sediment accumulation in the Taum Sauk Lower Reservoir and East Fork of Black River (Figures 5 & 6).

### 2.3 Post Failure

Investigations were conducted by various private, law enforcement and regulatory agencies after the incident. Organizations that conducted investigations include Paul C. Rizzo Associates, Inc. (RIZZO), the Federal Energy Regulatory Agency (FERC), Missouri Public Service Commission (MPSC), Missouri Highway Patrol, and Missouri Attorney General's Office. The investigations resulted in no criminal charges against Ameren but did require the payment of fines to the FERC. Ameren entered into a Consent Judgment with the State of Missouri to settle all environmental and natural resource damage claims.

### 3 CHANGES AT AMEREN

Several changes were made at Ameren due to the Taum Sauk incident. The October 2, 2006 Settlement Agreement with the FERC required Ameren to establish a Dam Safety Program. AmerenUE developed DSP 001 – Dam Safety Program for FERC Licensed Facilities. This program procedure was approved by the FERC and fully implemented in the fall 2006. As part of the Dam Safety Program, Plant Operations and Dam Safety were separated and the Dam Safety Department was formed. A comprehensive Dam Safety Program has been implemented and a new position, Chief Dam Safety Engineer was created.

The purposes of Ameren's Dam Safety Program are to detect and correct dam safety deficiencies, protect people and property

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from the effects of a failure, protect Ameren's investment in dams, meet all regulatory requirements and provide training on dam safety awareness.

A key component of Ameren's Dam Safety Program is the creation of the position of Chief Dam Safety Engineer. The Chief Dam Safety Engineer acts as a single point of contact with the regulators and is responsible for review and approval of all hydroelectric plant modifications. The Chief Dam Safety Engineer also has the authority to issue a stop work order or to order a plant shut down.

Other components of Ameren's Dam Safety Program include development of a site-specific dam safety training program, development of Surveillance and Monitoring Plans (SMPs) for each site, updated Emergency Action Plans (EAPs), unannounced facility inspections and performance of internal and external Dam Safety Program compliance audits. In addition, the Dam Safety Program requires the Chief Dam Safety Engineer to make an annual report to the Ameren Board of Directors Audit Committee and Ameren Senior Management regarding dam safety issues.

Ameren has developed a comprehensive dam safety training program which provides general and site specific training on dam safety awareness, identification of dam safety deficiencies, inspection and monitoring techniques and regulatory compliance. The dam safety training program was developed with the use of Training Aids for Dam Safety (TADS) developed by the United States Bureau of Reclamation. Training is administered to all plant operations and dam safety and hydro engineering personnel. In addition, the training program is reviewed annually and new or updated training modules are provided on identified topics.

Ameren's Dam Safety Program includes performance of internal

and external audits to determine the effectiveness of the Dam Safety Program. In 2007 and 2008, internal and external audits of the Dam Safety Program were performed. Each of the audits concluded that Ameren continues to effectively implement its Dam Safety Program. The audits also concluded that the Dam Safety Program contains all the elements described in FERC's guidance and that Ameren Senior

management is committed to maintaining dam safety.

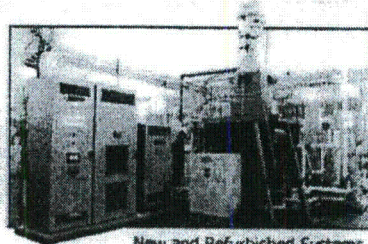
#### 4 TAUM SAUK UPPER RESERVOIR REBUILD

Pursuant to FERC regulations, Ameren has rebuilt the Upper Reservoir to restore the operability of the Taum Sauk Plant. A three dimensional computer rendering of the new Roller Compacted Concrete (RCC) dam is shown in Figure 7.



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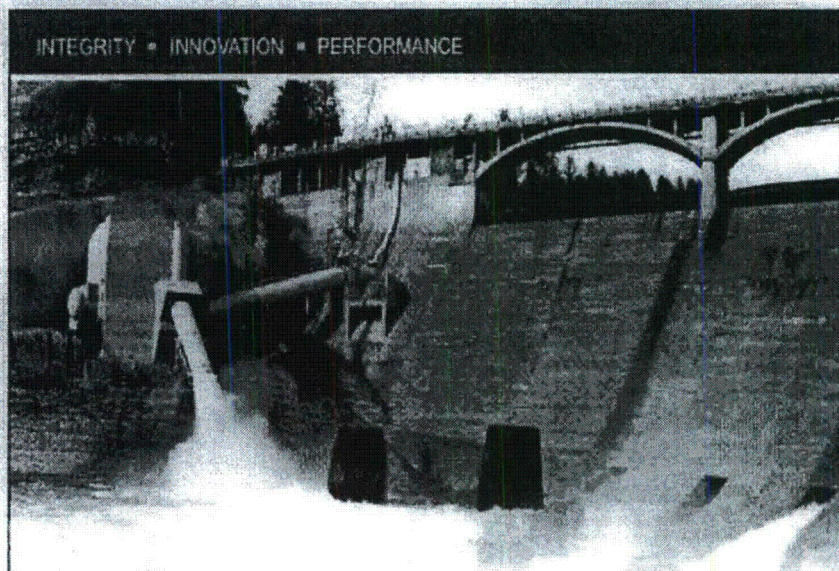
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Contact Riccardo Ricci  
[www.SorensenSystems.com](http://www.SorensenSystems.com)



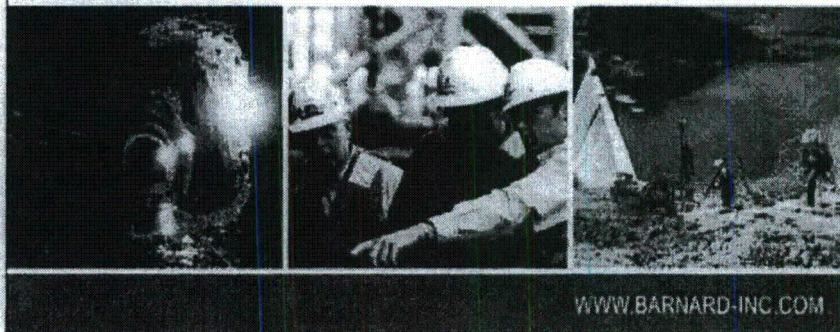
**Table 1: Design Elevations**

Level	Elevation	Basis
Normal Operating Level	1597ft (486.77 m)	Established in the FERC License
Crest of Dam	1601ft (487.98)	4.0 ft (1.22 m) of freeboard
Top of Parapet Wall	1604.5 ft (489.05)	Vehicle Guide Rail
Base of Dam	Varies but generally in the range of EL 1500 ft (457.2 m) and EL 1460 ft (445.01 m)	Suitable rock foundation at or below foundation of original CFRD Dike



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The new RCC Dam was constructed along the same alignment as the original Concrete faced Rockfill Dam constructed in the 1960s to impound the Upper Reservoir. Since the Upper Reservoir is founded on top of Proffit Mountain, it has no watershed. The Probable Maximum Flood (PMF) for the new RCC Dam consists of the rainfall within the reservoir. Therefore, the Hydrology and Hydraulic Criteria are limited to two major factors, the elevation of the crest of the new RCC Dam, including freeboard, and the capacity of the proposed Overflow Release Structure (spillway).

The overall design basis is to rebuild the Upper Reservoir such that it will have the same electric generating capacity as the original Upper Reservoir with a normal pool and overall gross head as established in the FERC License for the Taum Sauk Plant. This leads to elevations for design as shown in Table 1.

Design and construction objectives for the new Upper Reservoir mandated compliance with FERC standards including meeting all current Dam Safety Regulations, good design and construction practices, seismic design, robust instrumentation system with redundancies and use of rock fill from the existing dikes in new concrete for the dam.

Features included in the construction of the new Upper Reservoir Dam include use of RCC, comprehensive foundation preparation, complete grout curtain, foundation drainage system with gallery and an overflow release structure (spillway).

The new Dam is founded on fractured rhyolite with deep weathering features, intrusive granites and weathered diorite dikes.

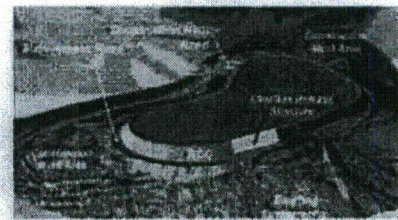


Figure 7: Computer Rendering of New Upper Reservoir



FERC deemed this rock foundation unsuitable for a traditional gravity section, and therefore a symmetrical RCC section was constructed. A cross section of the new RCC dam is indicated in Figure 8.

The subsurface information obtained during the original construction of the dam and additional borings drilled during the design of the new RCC dam indicated the prevalence of weak seams along low angle discontinuities with the foundation rock. At many locations, these weak seams consist of low plasticity clay. Therefore, RIZZO performed sliding stability analyses of the dam assuming the presence of the clay seams at various depths within the foundation rock. RIZZO also calculated the yield acceleration along these potential failure surfaces. The lowest factor of safety is postulated to occur when the clay seam is parallel to the Rock/Dam Interface at an angle of 10 degrees with the horizontal at a reasonable depth below the base of the Dam. For any other angle of the seams (either upward or downward), the factor of safety is higher than the factor of safety for clay seams parallel to the Rock/Dam Interface.

The required friction angle with no cohesion was calculated for various depths to the clay seams. The results of these analyses indicate that a symmetrical RCC dam with 0.6H:1V upstream and downstream slopes constructed along a foundation sloping at 10 degrees or less would meet all FERC stability criteria even if a clay seam with a low friction angle is encountered within 20 feet (6.10 meters) of the base of the dam. A conventional RCC dam section would require RCC/Rock and rock shear strengths considerably higher than a clay seam. For this reason, the new RCC dam now consists of a symmetrical section similar in many ways to a hard fill dam. The initial design contemplated using a conventional gravity dam section with vertical upstream face and

a steep downstream face, which contemplated a relatively high strength RCC and fairly clean aggregate. As preliminary studies revealed significant presence of fines in the existing rockfill dike, it was realized that washing aggregates would demand a costly, difficult operation due to the water treatment equipment required to keep the operation self-contained and in compliance with stringent environmental

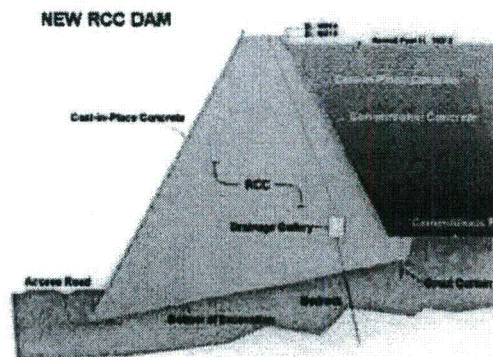
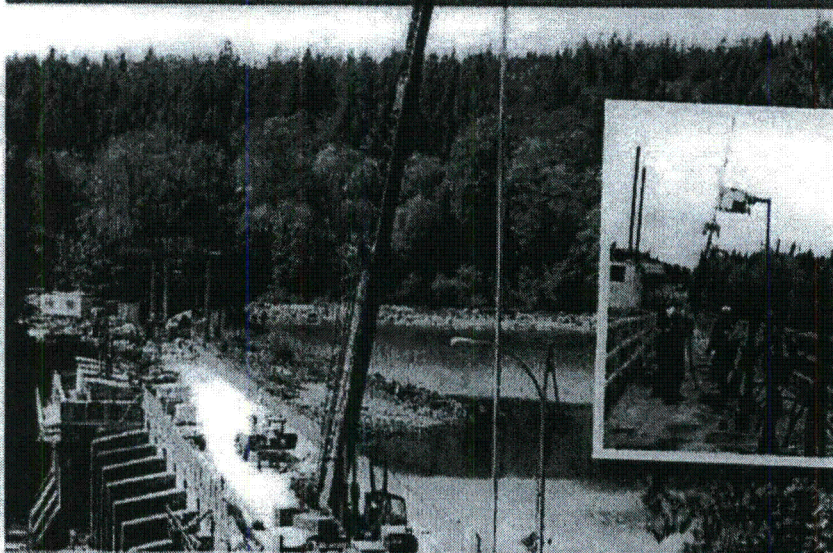


Figure 8: Cross Section of New Upper Reservoir Dam



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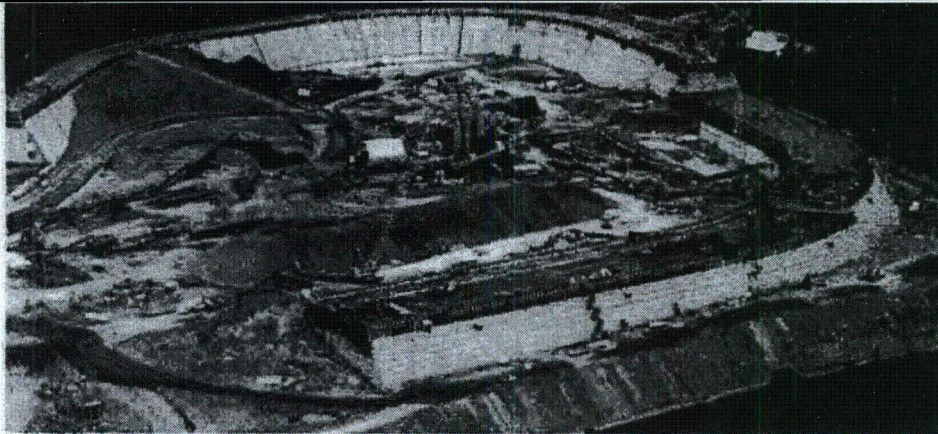
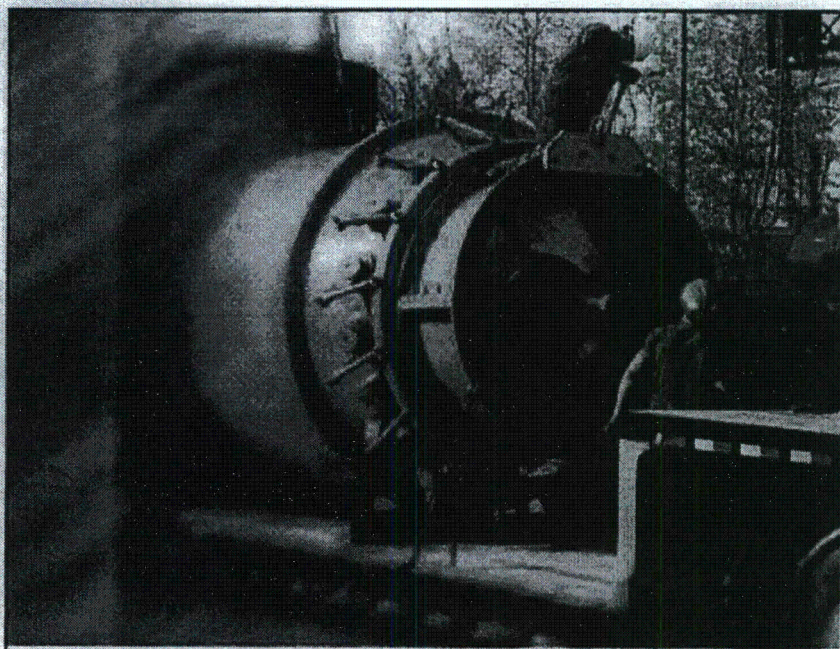


Figure 9: Progress on Rebuild of the New Upper Reservoir (October 29, 2009)



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regulations applicable to the project. It was concluded that a dam section consistent with the difficult foundation conditions and a RCC mix using available aggregate in the rockfill dike, would be the most appropriate solution for the project.

Placement of RCC for the new dam construction was started in October 2007 with the final RCC placement completed in November 2009. A progress photo from October 2008 is provided in Figure 9. A total of 2.84 million cubic yards (2.17 million cubic meters) of RCC was required to complete the dam. The new Dam is the largest RCC Dam in North America and is the first pumped storage project to utilize an RCC water retaining structure. In addition, 356,000 cubic yards (272,181.53 cubic meters) of conventional concrete for facing, bedding mix and dental concrete was required for the dam. A photo showing the completed upper reservoir is provided in Figure 10. The water level control and protection systems for the Upper Reservoir were installed, tested and commissioned prior to starting the Refill Program for the reservoir.

### 5 TAUM SAUK REFILL PROGRAM

A FERC approved Refill Program for the Upper Reservoir was initiated on February 27, 2010. The Refill Program was developed to

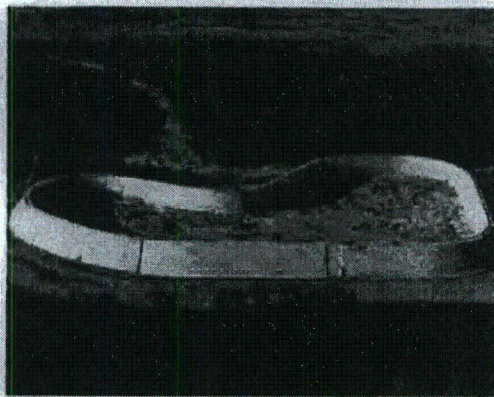


Figure 10: Completed Rebuild of the New Upper Reservoir (November, 2009)



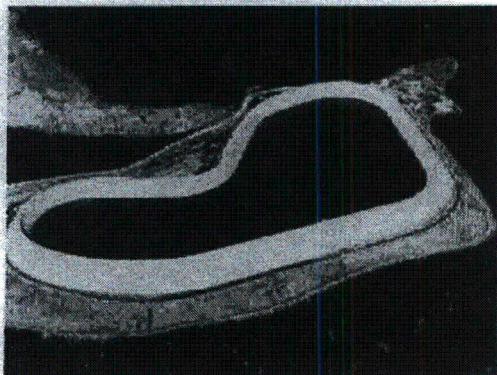


Figure 11: Completed Upper Reservoir During Refill Program (February 28, 2010)

monitor the performance of the dam during the initial refill. The plan included eight steps where the Upper Reservoir water level was incrementally raised and then lowered. At each step of the plan the water level was held and the performance of the dam and dam safety instrumentation was monitored. Additional wet testing of the water level instrumentation was performed during each step of the Refill Program. The final step of the Refill Program was completed on March 20, 2010 with the Upper Reservoir level protection "trip" check at El. 1598.0 feet (487.07 meters). The Upper Reservoir Refill Program was successfully completed in 22 days and the FERC granted

AmerenUE permission to resume commercial operations on April 1, 2010. A photo showing the completed Upper Reservoir during the Refill Program is provided in Figure 11.

### References:

"Forensic Investigation and Root Cause Analysis, December 14, 2005 Incident, Upper Reservoir Dike, Taum Sauk Plant" Paul C. Rizzo Associates, Project No. 06-3551, April, 2006, Vol. 1.

"Report of Findings on the Overtopping and Embankment Breach of the Upper Dam - Taum Sauk Pumped Storage Project, FERC No. 2277, FERC Taum Sauk Investigation Team, April 28, 2006.

"Upper Reservoir Refill Plan, Revision 5" Paul C. Rizzo Associates, Inc., Project No. 06-3551, March 5, 2010.

"Dam Performance and Instrumentation Report" Paul C. Rizzo Associates, Inc., Project No. 06-3551, March, 2010.

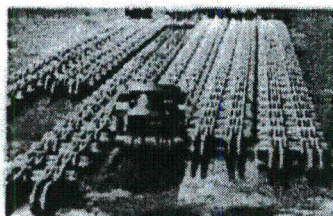
"Final Design and Construction Report" Paul C. Rizzo Associates, Inc., Project No. 06-3551, March, 2010.

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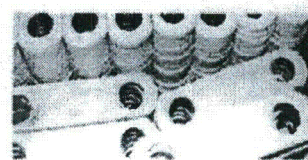
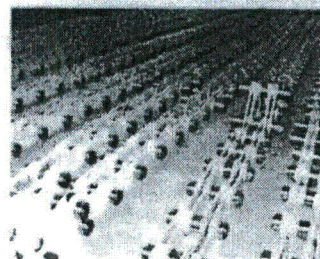
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F: +1 617 242 2205  
E: jeanne@mavos.cz



---

**From:** Perkins, Richard  
**Sent:** Tuesday, July 24, 2012 4:01 PM  
**To:** Criscione, Lawrence  
**Subject:** FW: SUNSI review to protect the public interest

(b)(5)

Rich

---

**From:** Perkins, Richard  
**Sent:** Tuesday, July 24, 2012 3:55 PM  
**To:** Lane, John  
**Subject:** RE: SUNSI review to protect the public interest

It is.

This wording is part of the MD 3.4 "Objectives". The directive goes on to define more accurately what is meant by 'SUNSI information'.

(b)(5)

## **Policy**

(3.4-01)

The U.S. Nuclear Regulatory Commission makes as much information as possible available to the public relating to its health and safety mission, in accordance with its legal responsibilities to protect specific types of information. It is the intent of NRC to routinely make information publicly available that is anticipated to be of interest to the public to make it unnecessary for persons to file a request for the information under the Freedom of Information Act (FOIA).

SUNSI includes allegation information, investigative information, security-related information, proprietary information, Privacy Act/personally identifiable information (PII), and Federal, State, foreign government, and international agency controlled information. SUNSI also includes sensitive internal information, such as attorney-client privilege, attorney work product, predecisional enforcement information or adjudicatory information, intra-agency communications with other Government agencies, and drafts, particularly draft inspection reports and draft audit reports. While documents containing such information may eventually be approved for release by the appropriate authority, some of this information may never be approved for release outside of the NRC. (B)

Those familiar with FOIA reviews will find the above language familiar.

Staff guidance for screening documents for information that could be useful to a terrorist is located at <http://www.internal.nrc.gov/NRC/Guidance/>. This SUNSI review is a security/sensitivity review to determine whether a document should be released to the public. Detailed SUNSI guidance is located at <http://www.internal.nrc.gov/sunsi/>, and the staff is to certify by entering the text "SUNSI Review Complete" in the Agencywide Documents Access and Management System (ADAMS) Keyword field that the review has been made when it submits a document to the Document Processing Center for public release through the ADAMS Public Library.

(b)(5)

And finally, the MD states:

This directive and handbook do not govern public disclosure of information requested under the FOIA, or information subject to disclosure under the Privacy Act, the Government in the Sunshine Act, the Federal Advisory Committee Act, or NRC management directives (MDs) that govern the release of other types of documents and information. (012)

Please let me know if you would like to discuss this more. I'd be happy to.

Richard

Richard H. Perkins, P.E.  
Nuclear Regulatory Commission  
Office of Nuclear Regulatory Research  
Division of Risk Analysis  
Operating Experience and Generic Issues Branch



---

**From:** Lane, John  
**Sent:** Tuesday, July 24, 2012 2:30 PM  
**To:** Perkins, Richard  
**Subject:** SUNSI review to protect the public interest

From the M.D. 3.4 "A SUNSI review is performed before public release of a document through the ADAMS Public Library to determine if the document contains information the loss, misuse, modification, or unauthorized access of which could reasonably be foreseen to *harm the public interest*, the commercial or financial interest of the entity or individual to whom the information pertains, the conduct of NRC and Federal programs, or the personal privacy of individuals."

(b)(5)

**From:** Criscione, Lawrence  
**Sent:** Tuesday, September 18, 2012 12:45 PM  
**To:** Perkins, Richard  
**Subject:** FW: September 18, 2012 - NEI is optimistic on prospects of used-fuel talks in Congress

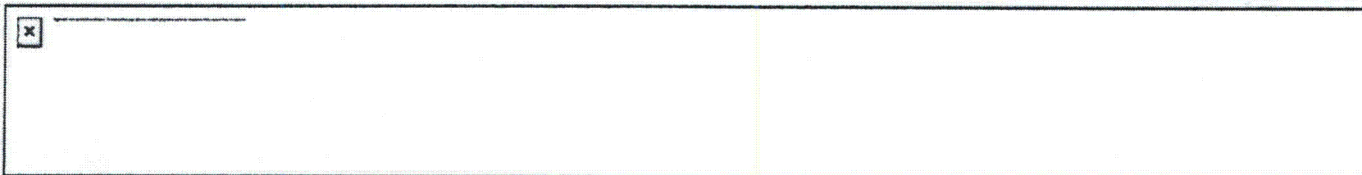
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**From:** NEI SmartBrief [mailto:nei@smartbrief.com]  
**Sent:** Tuesday, September 18, 2012 11:16 AM  
**To:** Criscione, Lawrence  
**Subject:** September 18, 2012 - NEI is optimistic on prospects of used-fuel talks in Congress



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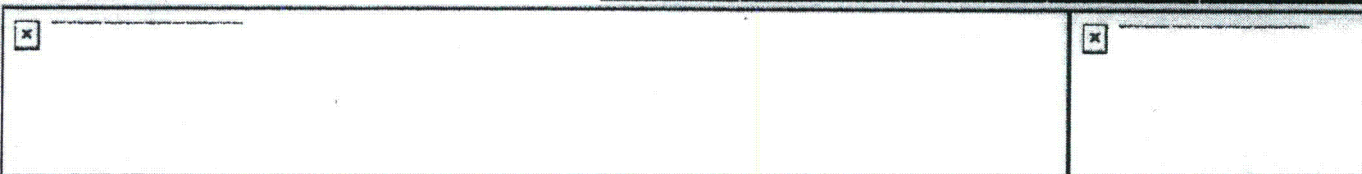
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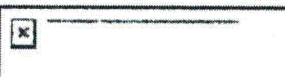
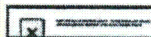
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## **NRC improperly concealed details on flooding risk, expert says**

Richard Perkins, a Nuclear Regulatory Commission reliability and risk engineer, wrote in a letter to the NRC Office of Inspector General that the agency illegally blocked portions of a report detailing the flooding risk to reactor sites downstream of dams. An NRC spokesman said the flooding report has been rolled into the agency's "very robust" body of work on lessons learned post-Fukushima. The Hill/E2Wire (9/17)

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Outside of Scope

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**From:** Criscione, Lawrence  
**Sent:** Tuesday, September 18, 2012 7:36 PM  
**To:** nathan\_mccray@epw.senate.gov  
**Subject:** Please forward to Senator Boxer's staff  
**Attachments:** Jocassee Dam Failure Concerns.pdf

This is publicly available as  
ML13256A372

Nathan,

I listed Senator Boxer as a "Cc:" on the attached letter because she is the Chairman of the EPW committee. Could you please forward the attached letter to someone on the senator's staff? If you are not able to do that, please let me know so I can send a hardcopy.

I am assuming that if I were to send a hard copy of this letter to the senator's office it would eventually get routed on to you.

Thank you,  
Larry Criscione

**From:** Criscione, Lawrence  
**Sent:** Tuesday, September 18, 2012 6:25 PM  
**To:** Macfarlane, Allison; 'clerner@osc.gov'; Bell, Hubert; Lee, David; Zabler, Marian; Wiggins, Jim  
**Cc:** 'matt\_buckham@demint.senate.gov'; 'homeland.security@mail.house.gov'; 'michael.kiko@mail.house.gov'; 'peter.spencer@mail.house.gov'; 'valerie\_manak@epw.senate.gov'; 'nathan\_mccray@epw.senate.gov'; 'devon.hill@mail.house.gov'; 'gracela.tatane@mail.house.gov'; 'stephen.salsbury@mail.house.gov'; 'jim\_mcgee@hsgac.senate.gov'; 'marty.gelfand@mail.house.gov'; 'vic.edgerton@mail.house.gov'; 'michal.freedhoff@mail.house.gov'; Bernhard, Rudolph; Ferrante, Fernando; Hanna, John; Kanney, Joseph; Kozak, Laura; Loveless, David; Marksberry, Don; Mitman, Jeffrey; Passehl, Dave; Schmidt, Wayne; Vaughn, Stephen; Wood, Jeffery; Zoulis, Antonios; Galloway, Melanie; Giitter, Joseph; Leeds, Eric; Wilson, George; Perkins, Richard; Bensi, Michelle; Philip, Jacob; Sancaktar, Selim; Ottenberg, Geoffrey; Ellis, Kevin; Beasley, Benjamin; Demoss, Gary; Coyne, Kevin; Coe, Doug; Correia, Richard  
**Subject:** Inadequately Sized Flood Wall at Oconee Nuclear Station Could Lead to Fukushima Scenario in the Event of a Failure of the Lake Jocassee Dam

Chairman Macfarlane,

Please see the attached letter. I apologize for its length but it is written for a broad audience and concerns some technically complex issues with six years of regulatory background.

The risk that a core meltdown will occur at the Oconee Nuclear Station (ONS) is ten times greater than at similarly designed US reactor plants and the risk of a containment breach leading to significant public dose is 500 times greater.

ONS lies eleven miles downstream of the Lake Jocassee Dam. Since 2006 the NRC has known of a harrowing liability: a failure of Jocassee Dam would lead to all three reactors at ONS melting down within 10 hours and a potential breach of the containment buildings within 68 hours. This is very similar to the events which occurred at Fukushima Dai-ichi in 2011.

I am not directly involved with this issue. My involvement stems from concerns of a co-worker that serious safety concerns regarding ONS are being illegally withheld from the public under the guise of "Security-Related Information". My knowledge of this issue comes entirely from a cursory review of documents in ADAMS. From that review it is clear that:



- Despite knowing about the significant risk posed by a failure of Jocassee Dam since 2006, no efforts have yet been taken to substantially lower those risks. Although interim actions are being taken at Duke Energy, they are not of a nature that significantly lowers the risks to a par with typical US reactor plants.
- Most of the documents pertaining to this safety concern are not publicly available due to being stamped "Security-Related Information". However, none of these documents discuss security topics at all. Terrorism, sabotage, vandalism or any other intruder or insider threat are not mentioned. These documents deal wholly with the failure of Jocassee Dam due to natural phenomena or latent engineering/construction flaws.
- The annual risk of core damage at ONS is on the order of  $1E-4$ /year and the annual risk of core damage followed by containment failure is on the order of  $1E-5$ /year.

The items below are also apparent from the documents I have reviewed, although it is possible these items have been done and I have merely not located the documents affirming them:

1. After six years, the NRC does not have an accurate risk model of ONS which takes into account the liabilities posed by a failure of Jocassee Dam.
2. After six years, the NRC does not have an accurate assessment of the probability that ONS operators can prevent a containment failure in the 49 to 58 hours between the recession of the flood waters and the failure of the containment structures.
3. The original due date for constructing adequate flood protection was November 30, 2011. After the Fukushima Dai-ichi accident, instead of being prioritized this due date has been extended to 2016. That's ten years after we first became aware of the liability.

Please note that the above three items are conjecture on my part as I have not been involved in any of the NRC discussions concerning this issue and it is likely there are many documents in ADAMS which I failed to find and review. However, from the documents I have reviewed, it is apparent to me that the above statements are true. The technical staff involved in this issue (i.e. whose names appear on the ADAMS documents) are Eric Leeds, Joseph Giitter, Melanie Galloway, George Wilson, Jeff Mitman as well as others. I have not spoken to any of these people other than Jeff Mitman and my short conversation with Jeff last Thursday was merely to get an understanding of the current status of the Jocassee Dam/ONS flood protection issue (i.e. I didn't want to bother writing to you if they have broken ground and actually started installing adequate flood protection). These individuals should be able to inform you of the specifics of the Jocassee Dam issue. I have copied them on this email and encourage them to inform you of any items in my letter which are not accurate. It is not my intent to misrepresent anybody, but being an outsider on this issue it is possible that I have.

The purpose of the attached letter is to (1) bring to your attention the issues regarding Jocassee Dam, (2) inform our congressional oversight committees of concerns I have that the NRC is not addressing the liabilities at ONS in a timely manner, and (3) bring to your attention that I support Richard Perkins' allegation that the issues surrounding Jocassee Dam have been inappropriately categorized as "Security-Related Information".

Although as an agency we tend to refer to them in the same breath, security and safety are separate issues. All manmade structures, no matter how well built, can be destroyed by some level of terrorist action if left unprotected. The solutions to terrorist threats are security measures that assess the credible threat and that guard access to critical areas sufficient to the assessed threat level. Construction margins and "defense-in-depth" modifications are the solutions to safety concerns not security concerns. The issues regarding Jocassee Dam are about construction margins – that is, is the dam constructed to typical margins (supporting a  $2.8E-4$ /year failure rate) or to some type of exceptional margins. They have nothing to do with the necessity of whether or not security measures need to be taken to avert a terrorist threat. If the fact that ONS lies 11 miles downstream of Jocassee Dam makes it a security liability, then separate from the safety concerns discussed in my letter the NRC and the Department of Homeland Security need to secretively address security measures to protect the dam. After six years it is unacceptable to withhold vital safety liabilities from public disclosure solely because there may have been a possibility of a security threat. If there is a security vulnerability, then I would hope that it was addressed within months of us becoming aware

of this issue in 2006. If anyone within the NRC believes there is still an unaddressed security liability, then separate from the safety solutions (e.g. building an adequately sized flood wall) the NRC should be ensuring that appropriate protective measures are in place to protect Jocassee Dam – merely withholding basic information regarding nuclear safety from public view is not the way to address a security threat.

V/r,

Lawrence S. Criscione, PE  
NRC/RES/DRA/OEGIB

(b)(6)



---

**From:** Criscione, Lawrence  
**Sent:** Tuesday, September 18, 2012 7:40 PM  
**To:** valerie\_manak@epw.senate.gov  
**Subject:** Please forward to Senator Inhofe  
**Attachments:** Jocassee Dam Failure Concerns.pdf

This is publicly available as ML13256A372
--

Valerie,

I listed Senator Inhofe as a "Cc:" on the attached letter because he is the Ranking Member of the Senate Committee on the Environment and Public Works. Could you please forward the attached letter to someone on the senator's staff? If you are not able to do that, please let me know so I can send a hardcopy.

Thank you,  
Larry Criscione

**From:** Criscione, Lawrence  
**Sent:** Tuesday, September 18, 2012 6:25 PM  
**To:** Macfarlane, Allison; 'clerner@osc.gov'; Bell, Hubert; Lee, David; Zabler, Marian; Wiggins, Jim  
**Cc:** 'matt\_buckham@demint.senate.gov'; 'homeland.security@mail.house.gov'; 'michael.kiko@mail.house.gov'; 'peter.spencer@mail.house.gov'; 'valerie\_manak@epw.senate.gov'; 'nathan\_mccray@epw.senate.gov'; 'devon.hill@mail.house.gov'; 'gracela.tatane@mail.house.gov'; 'stephen.salsbury@mail.house.gov'; 'jim\_mcgee@hsgac.senate.gov'; 'marty.gelfand@mail.house.gov'; 'vic.edgerton@mail.house.gov'; 'michal.freedhoff@mail.house.gov'; Bernhard, Rudolph; Ferrante, Fernando; Hanna, John; Kanney, Joseph; Kozak, Laura; Loveless, David; Marksberry, Don; Mitman, Jeffrey; Passehl, Dave; Schmidt, Wayne; Vaughn, Stephen; Wood, Jeffery; Zoulis, Antonios; Galloway, Melanie; Glitter, Joseph; Leeds, Eric; Wilson, George; Perkins, Richard; Bens, Michelle; Philip, Jacob; Sancaktar, Selim; Ottenberg, Geoffrey; Ellis, Kevin; Beasley, Benjamin; Demoss, Gary; Coyne, Kevin; Coe, Doug; Correia, Richard  
**Subject:** Inadequately Sized Flood Wall at Oconee Nuclear Station Could Lead to Fukushima Scenario in the Event of a Failure of the Lake Jocassee Dam

Chairman Macfarlane,

Please see the attached letter. I apologize for its length but it is written for a broad audience and concerns some technically complex issues with six years of regulatory background.

The risk that a core meltdown will occur at the Oconee Nuclear Station (ONS) is ten times greater than at similarly designed US reactor plants and the risk of a containment breach leading to significant public dose is 500 times greater.

ONS lies eleven miles downstream of the Lake Jocassee Dam. Since 2006 the NRC has known of a harrowing liability: a failure of Jocassee Dam would lead to all three reactors at ONS melting down within 10 hours and a potential breach of the containment buildings within 68 hours. This is very similar to the events which occurred at Fukushima Dai-ichi in 2011.

I am not directly involved with this issue. My involvement stems from concerns of a co-worker that serious safety concerns regarding ONS are being illegally withheld from the public under the guise of "Security-Related Information". My knowledge of this issue comes entirely from a cursory review of documents in ADAMS. From that review it is clear that:

- Despite knowing about the significant risk posed by a failure of Jocassee Dam since 2006, no efforts have yet been taken to substantially lower those risks. Although interim actions are being taken at Duke Energy, they are not of a nature that significantly lowers the risks to a par with typical US reactor plants.
- Most of the documents pertaining to this safety concern are not publicly available due to being stamped "Security-Related Information". However, none of these documents discuss security topics at all. Terrorism, sabotage, vandalism or any other intruder or insider threat are not mentioned. These documents deal wholly with the failure of Jocassee Dam due to natural phenomena or latent engineering/construction flaws.
- The annual risk of core damage at ONS is on the order of  $1E-4$ /year and the annual risk of core damage followed by containment failure is on the order of  $1E-5$ /year.

The items below are also apparent from the documents I have reviewed, although it is possible these items have been done and I have merely not located the documents affirming them:

1. After six years, the NRC does not have an accurate risk model of ONS which takes into account the liabilities posed by a failure of Jocassee Dam.
2. After six years, the NRC does not have an accurate assessment of the probability that ONS operators can prevent a containment failure in the 49 to 58 hours between the recession of the flood waters and the failure of the containment structures.
3. The original due date for constructing adequate flood protection was November 30, 2011. After the Fukushima Dai-ichi accident, instead of being prioritized this due date has been extended to 2016. That's ten years after we first became aware of the liability.

Please note that the above three items are conjecture on my part as I have not been involved in any of the NRC discussions concerning this issue and it is likely there are many documents in ADAMS which I failed to find and review. However, from the documents I have reviewed, it is apparent to me that the above statements are true. The technical staff involved in this issue (i.e. whose names appear on the ADAMS documents) are Eric Leeds, Joseph Gitter, Melanie Galloway, George Wilson, Jeff Mitman as well as others. I have not spoken to any of these people other than Jeff Mitman and my short conversation with Jeff last Thursday was merely to get an understanding of the current status of the Jocassee Dam/ONS flood protection issue (i.e. I didn't want to bother writing to you if they have broken ground and actually started installing adequate flood protection). These individuals should be able to inform you of the specifics of the Jocassee Dam issue. I have copied them on this email and encourage them to inform you of any items in my letter which are not accurate. It is not my intent to misrepresent anybody, but being an outsider on this issue it is possible that I have.

The purpose of the attached letter is to (1) bring to your attention the issues regarding Jocassee Dam, (2) inform our congressional oversight committees of concerns I have that the NRC is not addressing the liabilities at ONS in a timely manner, and (3) bring to your attention that I support Richard Perkins' allegation that the issues surrounding Jocassee Dam have been inappropriately categorized as "Security-Related Information".

Although as an agency we tend to refer to them in the same breath, security and safety are separate issues. All manmade structures, no matter how well built, can be destroyed by some level of terrorist action if left unprotected. The solutions to terrorist threats are security measures that assess the credible threat and that guard access to critical areas sufficient to the assessed threat level. Construction margins and "defense-in-depth" modifications are the solutions to safety concerns not security concerns. The issues regarding Jocassee Dam are about construction margins – that is, is the dam constructed to typical margins (supporting a  $2.8E-4$ /year failure rate) or to some type of exceptional margins. They have nothing to do with the necessity of whether or not security measures need to be taken to avert a terrorist threat. If the fact that ONS lies 11 miles downstream of Jocassee Dam makes it a security liability, then separate from the safety concerns discussed in my letter the NRC and the Department of Homeland Security need to secretively address security measures to protect the dam. After six years it is unacceptable to withhold vital safety liabilities from public disclosure solely because there may have been a possibility of a security threat. If there is a security vulnerability, then I would hope that it was addressed within months of us becoming aware of this issue in 2006. If anyone within the NRC believes there is still an unaddressed security liability, then separate from



the safety solutions (e.g. building an adequately sized flood wall) the NRC should be ensuring that appropriate protective measures are in place to protect Jocassee Dam – merely withholding basic information regarding nuclear safety from public view is not the way to address a security threat.

V/r,

Lawrence S. Criscione, PE  
NRC/RES/DRA/OEGIB

(b)(6)

**From:** Spencer, Peter <Peter.Spencer@mail.house.gov>  
**Sent:** Tuesday, September 18, 2012 7:44 PM  
**To:** Criscione, Lawrence  
**Subject:** Re: Please forward to Congressman Upton

I work for him. The appropriate staff will receive it. Thanks, P

Sent from BlackBerry

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**From:** Criscione, Lawrence [mailto:Lawrence.Criscione@nrc.gov]  
**Sent:** Tuesday, September 18, 2012 07:42 PM  
**To:** Spencer, Peter  
**Subject:** Please forward to Congressman Upton

Peter,

I listed Congressman Upton as a "Cc:" on the attached letter because he is the Chairman of the House Energy and Commerce Committee. Could you please forward the attached letter to someone on the congressman's staff? If you are not able to do that, please let me know so I can send a hardcopy.

I am assuming that if I were to send a hard copy of this letter to the congressman's office it would eventually get routed on to you.

Thank you,  
Larry Criscione

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**From:** Criscione, Lawrence  
**Sent:** Tuesday, September 18, 2012 6:25 PM  
**To:** Macfarlane, Allison; 'clerner@osc.gov'; Bell, Hubert; Lee, David; Zobler, Marian; Wiggins, Jim  
**Cc:** 'matt\_buckham@demint.senate.gov'; 'homeland.security@mail.house.gov'; 'michael.kiko@mail.house.gov'; 'peter.spencer@mail.house.gov'; 'valerie\_manak@epw.senate.gov'; 'nathan\_mccray@epw.senate.gov'; 'devon.hill@mail.house.gov'; 'gracela.tatane@mail.house.gov'; 'stephen.salsbury@mail.house.gov'; 'jim\_mcgee@hsgac.senate.gov'; 'marty.gelfand@mail.house.gov'; 'vic.edgerton@mail.house.gov'; 'michal.freedhoff@mail.house.gov'; Bernhard, Rudolph; Ferrante, Fernando; Hanna, John; Kanney, Joseph; Kozak, Laura; Loveless, David; Marksberry, Don; Miltman, Jeffrey; Passehl, Dave; Schmidt, Wayne; Vaughn, Stephen; Wood, Jeffery; Zoulis, Antonios; Galloway, Melanie; Giitter, Joseph; Leeds, Eric; Wilson, George; Perkins, Richard; Bensl, Michelle; Philip, Jacob; Sancaktar, Selim; Ottenberg, Geoffrey; Ellis, Kevin; Beasley, Benjamin; Demoss, Gary; Coyne, Kevin; Coe, Doug; Correia, Richard  
**Subject:** Inadequately Sized Flood Wall at Oconee Nuclear Station Could Lead to Fukushima Scenario in the Event of a Failure of the Lake Jocassee Dam

Chairman Macfarlane,

Please see the attached letter. I apologize for its length but it is written for a broad audience and concerns some technically complex issues with six years of regulatory background.

The risk that a core meltdown will occur at the Oconee Nuclear Station (ONS) is ten times greater than at similarly designed US reactor plants and the risk of a containment breach leading to significant public dose is 500 times greater.



access to critical areas sufficient to the assessed threat level. Construction margins and "defense-in-depth" modifications are the solutions to safety concerns not security concerns. The issues regarding Jocassee Dam are about construction margins – that is, is the dam constructed to typical margins (supporting a 2.8E-4/year failure rate) or to some type of exceptional margins. They have nothing to do with the necessity of whether or not security measures need to be taken to avert a terrorist threat. If the fact that ONS lies 11 miles downstream of Jocassee Dam makes it a security liability, then separate from the safety concerns discussed in my letter the NRC and the Department of Homeland Security need to secretively address security measures to protect the dam. After six years it is unacceptable to withhold vital safety liabilities from public disclosure solely because there may have been a possibility of a security threat. If there is a security vulnerability, then I would hope that it was addressed within months of us becoming aware of this issue in 2006. If anyone within the NRC believes there is still an unaddressed security liability, then separate from the safety solutions (e.g. building an adequately sized flood wall) the NRC should be ensuring that appropriate protective measures are in place to protect Jocassee Dam – merely withholding basic information regarding nuclear safety from public view is not the way to address a security threat.

V/r,

Lawrence S. Griscione, PE  
NRC/RES/DRA/OEGIB

(b)(6)

**From:** McGee, Jim (HSGAC) <Jim\_McGee@hsgac.senate.gov>  
**Sent:** Tuesday, September 18, 2012 7:45 PM  
**To:** Criscione, Lawrence  
**Subject:** RE: Please forward to Senator Lieberman's staff

Lawrence,

Thanks for this.

I can send it on to Sen. Lieberman's personal staff, but it would likely be routed back to me. This is an important issue. We've got a lot going on presently, but I'll try to spend some time of this tomorrow, and perhaps follow up with a phone call

Regards,

Jim McGee  
Professional Staff/Investigations  
Senate Committee on Homeland Security and Governmental Affairs  
202-224-2627

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**From:** Criscione, Lawrence [mailto:Lawrence.Criscione@nrc.gov]  
**Sent:** Tuesday, September 18, 2012 7:33 PM  
**To:** McGee, Jim (HSGAC)  
**Subject:** Please forward to Senator Lieberman's staff

Jim,

I listed Senator Lieberman as a "Cc:" on the attached letter because he is the Chairman of the HSGAC. Could you please forward the attached letter to someone on the senator's staff? If you are not able to do that, please let me know so I can send a hardcopy.

I am assuming that if I were to send a hard copy of this letter to the senator's office it would eventually get routed on to you.

Thank you,  
Larry Criscione

---

**From:** Criscione, Lawrence  
**Sent:** Tuesday, September 18, 2012 6:25 PM  
**To:** Macfarlane, Allison; 'clerner@osc.gov'; Bell, Hubert; Lee, David; Zobler, Marian; Wiggins, Jim  
**Cc:** 'matt\_buckham@demint.senate.gov'; 'homeland.security@mail.house.gov'; 'michael.kiko@mail.house.gov'; 'peter.spencer@mail.house.gov'; 'valerie\_manak@epw.senate.gov'; 'nathan\_mccray@epw.senate.gov'; 'devon.hill@mail.house.gov'; 'gracela.tatane@mail.house.gov'; 'stephen.salsbury@mail.house.gov'; 'jim\_mcghee@hsgac.senate.gov'; 'marty.gelfand@mail.house.gov'; 'vic.edgerton@mail.house.gov'; 'michal.freedhoff@mail.house.gov'; Bernhard, Rudolph; Ferrante, Fernando; Hanna, John; Kanney, Joseph; Kozak, Laura; Loveless, David; Marksberry, Don; Miltman, Jeffrey; Passehl, Dave; Schmidt, Wayne; Vaughn, Stephen; Wood, Jeffery; Zoulis, Antonios; Galloway, Melanie; Glitter, Joseph; Leeds, Eric; Wilson, George; Perkins, Richard; Bensl, Michelle; Philip, Jacob; Sancaktar, Selim; Ottenberg, Geoffrey; Ellis, Kevin; Beasley, Benjamin; Demoss, Gary; Coyne, Kevin; Coe, Doug; Correia, Richard



**Subject:** Inadequately Sized Flood Wall at Oconee Nuclear Station Could Lead to Fukushima Scenario in the Event of a Failure of the Lake Jocassee Dam

Chairman Macfarlane,

Please see the attached letter. I apologize for its length but it is written for a broad audience and concerns some technically complex issues with six years of regulatory background.

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ONS lies eleven miles downstream of the Lake Jocassee Dam. Since 2006 the NRC has known of a harrowing liability: a failure of Jocassee Dam would lead to all three reactors at ONS melting down within 10 hours and a potential breach of the containment buildings within 68 hours. This is very similar to the events which occurred at Fukushima Dai-ichi in 2011.

I am not directly involved with this issue. My involvement stems from concerns of a co-worker that serious safety concerns regarding ONS are being illegally withheld from the public under the guise of "Security-Related Information". My knowledge of this issue comes entirely from a cursory review of documents in ADAMS. From that review it is clear that:

- Despite knowing about the significant risk posed by a failure of Jocassee Dam since 2006, no efforts have yet been taken to substantially lower those risks. Although interim actions are being taken at Duke Energy, they are not of a nature that significantly lowers the risks to a par with typical US reactor plants.
- Most of the documents pertaining to this safety concern are not publicly available due to being stamped "Security-Related Information". However, none of these documents discuss security topics at all. Terrorism, sabotage, vandalism or any other intruder or insider threat are not mentioned. These documents deal wholly with the failure of Jocassee Dam due to natural phenomena or latent engineering/construction flaws.
- The annual risk of core damage at ONS is on the order of  $1E-4$ /year and the annual risk of core damage followed by containment failure is on the order of  $1E-5$ /year.

The items below are also apparent from the documents I have reviewed, although it is possible these items have been done and I have merely not located the documents affirming them:

1. After six years, the NRC does not have an accurate risk model of ONS which takes into account the liabilities posed by a failure of Jocassee Dam.
2. After six years, the NRC does not have an accurate assessment of the probability that ONS operators can prevent a containment failure in the 49 to 58 hours between the recession of the flood waters and the failure of the containment structures.
3. The original due date for constructing adequate flood protection was November 30, 2011. After the Fukushima Dai-ichi accident, instead of being prioritized this due date has been extended to 2016. That's ten years after we first became aware of the liability.

Please note that the above three items are conjecture on my part as I have not been involved in any of the NRC discussions concerning this issue and it is likely there are many documents in ADAMS which I failed to find and review. However, from the documents I have reviewed, it is apparent to me that the above statements are true. The technical staff involved in this issue (i.e. whose names appear on the ADAMS documents) are Eric Leeds, Joseph Giitter, Melanie Galloway, George Wilson, Jeff Mitman as well as others. I have not spoken to any of these people other than Jeff Mitman and my short conversation with Jeff last Thursday was merely to get an understanding of the current status of the Jocassee Dam/ONS flood protection issue (i.e. I didn't want to bother writing to you if they have broken ground and actually started installing adequate flood protection). These individuals should be able to inform you of the specifics of the Jocassee Dam issue. I have copied them on this email and encourage them to inform you of any items in my letter

which are not accurate. It is not my intent to misrepresent anybody, but being an outsider on this issue it is possible that I have.

The purpose of the attached letter is to (1) bring to your attention the issues regarding Jocassee Dam, (2) inform our congressional oversight committees of concerns I have that the NRC is not addressing the liabilities at ONS in a timely manner, and (3) bring to your attention that I support Richard Perkins' allegation that the issues surrounding Jocassee Dam have been inappropriately categorized as "Security-Related Information".

Although as an agency we tend to refer to them in the same breath, security and safety are separate issues. All manmade structures, no matter how well built, can be destroyed by some level of terrorist action if left unprotected. The solutions to terrorist threats are security measures that assess the credible threat and that guard access to critical areas sufficient to the assessed threat level. Construction margins and "defense-in-depth" modifications are the solutions to safety concerns not security concerns. The issues regarding Jocassee Dam are about construction margins – that is, is the dam constructed to typical margins (supporting a  $2.8E-4$ /year failure rate) or to some type of exceptional margins. They have nothing to do with the necessity of whether or not security measures need to be taken to avert a terrorist threat. If the fact that ONS lies 11 miles downstream of Jocassee Dam makes it a security liability, then separate from the safety concerns discussed in my letter the NRC and the Department of Homeland Security need to secretively address security measures to protect the dam. After six years it is unacceptable to withhold vital safety liabilities from public disclosure solely because there may have been a possibility of a security threat. If there is a security vulnerability, then I would hope that it was addressed within months of us becoming aware of this issue in 2006. If anyone within the NRC believes there is still an unaddressed security liability, then separate from the safety solutions (e.g. building an adequately sized flood wall) the NRC should be ensuring that appropriate protective measures are in place to protect Jocassee Dam – merely withholding basic information regarding nuclear safety from public view is not the way to address a security threat.

V/r,

Lawrence S. Criscione, PE  
NRC/RES/DRA/OEGIB

(b)(6)



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**From:** Criscione, Lawrence  
**Sent:** Tuesday, September 18, 2012 7:49 PM  
**To:** michael.kiko@mail.house.gov  
**Subject:** Please forward to Representative Issa's staff  
**Attachments:** Jocassee Dam Failure Concerns.pdf

Michael,

I listed Representative Issa as a "Cc:" on the attached letter because he is the Chairman of the House Committee on Oversight and Government Affairs. Could you please forward the attached letter to someone on the congressman's staff? If you are not able to do that, please let me know so I can send a hardcopy.

Thank you,  
Larry Criscione

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**From:** Criscione, Lawrence  
**Sent:** Tuesday, September 18, 2012 6:25 PM  
**To:** Macfarlane, Allison; 'clerner@osc.gov'; Bell, Hubert; Lee, David; Zobler, Marian; Wiggins, Jim  
**Cc:** 'matt\_buckham@demint.senate.gov'; 'homeland.security@mail.house.gov'; 'michael.kiko@mail.house.gov'; 'peter.spencer@mail.house.gov'; 'valerie\_manak@epw.senate.gov'; 'nathan\_mccray@epw.senate.gov'; 'devon.hill@mail.house.gov'; 'gracela.tatane@mail.house.gov'; 'stephen.salsbury@mail.house.gov'; 'jim\_mcgee@hsgac.senate.gov'; 'marty.gelfand@mail.house.gov'; 'vic.edgerton@mail.house.gov'; 'michal.freedhoff@mail.house.gov'; Bernhard, Rudolph; Ferrante, Fernando; Hanna, John; Kanney, Joseph; Kozak, Laura; Loveless, David; Marksberry, Don; Miltman, Jeffrey; Passehl, Dave; Schmidt, Wayne; Vaughn, Stephen; Wood, Jeffery; Zoulis, Antonios; Galloway, Melanie; Glitter, Joseph; Leeds, Eric; Wilson, George; Perkins, Richard; Bensi, Michelle; Philip, Jacob; Sancaktar, Selim; Ottenberg, Geoffrey; Ellis, Kevin; Beasley, Benjamin; Demoss, Gary; Coyne, Kevin; Coe, Doug; Correla, Richard  
**Subject:** Inadequately Sized Flood Wall at Oconee Nuclear Station Could Lead to Fukushima Scenario in the Event of a Failure of the Lake Jocassee Dam

Chairman Macfarlane,

Please see the attached letter. I apologize for its length but it is written for a broad audience and concerns some technically complex issues with six years of regulatory background.

The risk that a core meltdown will occur at the Oconee Nuclear Station (ONS) is ten times greater than at similarly designed US reactor plants and the risk of a containment breach leading to significant public dose is 500 times greater.

ONS lies eleven miles downstream of the Lake Jocassee Dam. Since 2006 the NRC has known of a harrowing liability: a failure of Jocassee Dam would lead to all three reactors at ONS melting down within 10 hours and a potential breach of the containment buildings within 68 hours. This is very similar to the events which occurred at Fukushima Dai-ichi in 2011.

I am not directly involved with this issue. My involvement stems from concerns of a co-worker that serious safety concerns regarding ONS are being illegally withheld from the public under the guise of "Security-Related Information". My knowledge of this issue comes entirely from a cursory review of documents in ADAMS. From that review it is clear that:

- Despite knowing about the significant risk posed by a failure of Jocassee Dam since 2006, no efforts have yet been taken to substantially lower those risks. Although interim actions are being taken at Duke Energy, they are not of a nature that significantly lowers the risks to a par with typical US reactor plants.
- Most of the documents pertaining to this safety concern are not publicly available due to being stamped "Security-Related Information". However, none of these documents discuss security topics at all. Terrorism, sabotage, vandalism or any other intruder or insider threat are not mentioned. These documents deal wholly with the failure of Jocassee Dam due to natural phenomena or latent engineering/construction flaws.
- The annual risk of core damage at ONS is on the order of  $1E-4$ /year and the annual risk of core damage followed by containment failure is on the order of  $1E-5$ /year.

The items below are also apparent from the documents I have reviewed, although it is possible these items have been done and I have merely not located the documents affirming them:

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Please note that the above three items are conjecture on my part as I have not been involved in any of the NRC discussions concerning this issue and it is likely there are many documents in ADAMS which I failed to find and review. However, from the documents I have reviewed, it is apparent to me that the above statements are true. The technical staff involved in this issue (i.e. whose names appear on the ADAMS documents) are Eric Leeds, Joseph Giltter, Melanie Galloway, George Wilson, Jeff Mitman as well as others. I have not spoken to any of these people other than Jeff Mitman and my short conversation with Jeff last Thursday was merely to get an understanding of the current status of the Jocassee Dam/ONS flood protection issue (i.e. I didn't want to bother writing to you if they have broken ground and actually started installing adequate flood protection). These individuals should be able to inform you of the specifics of the Jocassee Dam issue. I have copied them on this email and encourage them to inform you of any items in my letter which are not accurate. It is not my intent to misrepresent anybody, but being an outsider on this issue it is possible that I have.

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V/r,

Lawrence S. Criscione, PE  
NRC/RES/DRA/OEGIB

(b)(6)

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**From:** Criscione, Lawrence  
**Sent:** Tuesday, September 18, 2012 7:52 PM  
**To:** devon.hill@mail.house.gov  
**Subject:** Please forward to Representative Cummings' staff  
**Attachments:** Jocassee Dam Failure Concerns.pdf

This is publicly available as ML13256A372
--

Devon,

I listed Representative Cummings as a "Cc:" on the attached letter because he is the Ranking Member of the House Committee on Oversight and Government Reform. Could you please forward the attached letter to someone on the congressman's staff? If you are not able to do that, please let me know so I can send a hardcopy.

Thank you,  
Larry Criscione

---

**From:** Criscione, Lawrence  
**Sent:** Tuesday, September 18, 2012 6:25 PM  
**To:** Macfarlane, Allison; 'clerner@osc.gov'; Bell, Hubert; Lee, David; Zobler, Marian; Wiggins, Jim  
**Cc:** 'matt\_buckham@demint.senate.gov'; 'homeland.security@mail.house.gov'; 'michael.kiko@mail.house.gov'; 'peter.spencer@mail.house.gov'; 'valerie\_manak@epw.senate.gov'; 'nathan\_mccray@epw.senate.gov'; 'devon.hill@mail.house.gov'; 'gracela.tatane@mail.house.gov'; 'stephen.salsbury@mail.house.gov'; 'jim\_mcgee@hsgac.senate.gov'; 'marty.gelfand@mail.house.gov'; 'vic.edgerton@mail.house.gov'; 'michal.freedhoff@mail.house.gov'; Bernhard, Rudolph; Ferrante, Fernando; Hanna, John; Kanney, Joseph; Kozak, Laura; Loveless, David; Marksberry, Don; Mitman, Jeffrey; Passehl, Dave; Schmidt, Wayne; Vaughn, Stephen; Wood, Jeffery; Zoulis, Antonios; Galloway, Melanie; Glitter, Joseph; Leeds, Eric; Wilson, George; Perkins, Richard; Bensl, Michelle; Philip, Jacob; Sancaktar, Selim; Ottenberg, Geoffrey; Ellis, Kevin; Beasley, Benjamin; Demoss, Gary; Coyne, Kevin; Coe, Doug; Correia, Richard  
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3. The original due date for constructing adequate flood protection was November 30, 2011. After the Fukushima Dai-ichi accident, instead of being prioritized this due date has been extended to 2016. That's ten years after we first became aware of the liability.

Please note that the above three items are conjecture on my part as I have not been involved in any of the NRC discussions concerning this issue and it is likely there are many documents in ADAMS which I failed to find and review. However, from the documents I have reviewed, it is apparent to me that the above statements are true. The technical staff involved in this issue (i.e. whose names appear on the ADAMS documents) are Eric Leeds, Joseph Giitter, Melanie Galloway, George Wilson, Jeff Mitman as well as others. I have not spoken to any of these people other than Jeff Mitman and my short conversation with Jeff last Thursday was merely to get an understanding of the current status of the Jocassee Dam/ONS flood protection issue (i.e. I didn't want to bother writing to you if they have broken ground and actually started installing adequate flood protection). These individuals should be able to inform you of the specifics of the Jocassee Dam issue. I have copied them on this email and encourage them to inform you of any items in my letter which are not accurate. It is not my intent to misrepresent anybody, but being an outsider on this issue it is possible that I have.

The purpose of the attached letter is to (1) bring to your attention the issues regarding Jocassee Dam, (2) inform our congressional oversight committees of concerns I have that the NRC is not addressing the liabilities at ONS in a timely manner, and (3) bring to your attention that I support Richard Perkins' allegation that the issues surrounding Jocassee Dam have been inappropriately categorized as "Security-Related Information".

Although as an agency we tend to refer to them in the same breath, security and safety are separate issues. All manmade structures, no matter how well built, can be destroyed by some level of terrorist action if left unprotected. The solutions to terrorist threats are security measures that assess the credible threat and that guard access to critical areas sufficient to the assessed threat level. Construction margins and "defense-in-depth" modifications are the solutions to safety concerns not security concerns. The issues regarding Jocassee Dam are about construction margins – that is, is the dam constructed to typical margins (supporting a  $2.8E-4$ /year failure rate) or to some type of exceptional margins. They have nothing to do with the necessity of whether or not security measures need to be taken to avert a terrorist threat. If the fact that ONS lies 11 miles downstream of Jocassee Dam makes it a security liability, then separate from the safety concerns discussed in my letter the NRC and the Department of Homeland Security need to secretively address security measures to protect the dam. After six years it is unacceptable to withhold vital safety liabilities from public disclosure solely because there may have been a possibility of a security threat. If there is a security vulnerability, then I would hope that it was addressed within months of us becoming aware of this issue in 2006. If anyone within the NRC believes there is still an unaddressed security liability, then separate from

the safety solutions (e.g. building an adequately sized flood wall) the NRC should be ensuring that appropriate protective measures are in place to protect Jocassee Dam – merely withholding basic information regarding nuclear safety from public view is not the way to address a security threat.

V/r,

Lawrence S. Criscione, PE  
NRC/RES/DRA/OEGIB

(b)(6)



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**From:** Salsbury, Stephen <Stephen.Salsbury@mail.house.gov>  
**Sent:** Wednesday, September 19, 2012 10:01 AM  
**To:** Criscione, Lawrence  
**Subject:** RE: Please forward to Representative Waxman

Larry,

The message has been passed along to our energy team. Thanks.

Stephen

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**From:** Criscione, Lawrence [mailto:Lawrence.Criscione@nrc.gov]  
**Sent:** Tuesday, September 18, 2012 7:47 PM  
**To:** Salsbury, Stephen  
**Subject:** Please forward to Representative Waxman

Stephen,

I listed Representative Waxman as a "Cc:" on the attached letter because he is the Ranking Member of the House Energy and Commerce Committee. Could you please forward the attached letter to someone on the congressman's staff? If you are not able to do that, please let me know so I can send a hardcopy.

Thank you,  
Larry Criscione

---

**From:** Criscione, Lawrence  
**Sent:** Tuesday, September 18, 2012 6:25 PM  
**To:** Macfarlane, Allison; 'clerner@osc.gov'; Bell, Hubert; Lee, David; Zobler, Marian; Wiggins, Jim  
**Cc:** 'matt\_buckham@demint.senate.gov'; 'homeland.security@mail.house.gov'; 'michael.kiko@mail.house.gov'; 'peter.spencer@mail.house.gov'; 'valerie\_manak@epw.senate.gov'; 'nathan\_mccray@epw.senate.gov'; 'devon.hill@mail.house.gov'; 'gracela.tatane@mail.house.gov'; 'stephen.salsbury@mail.house.gov'; 'jim\_mcgee@hsgac.senate.gov'; 'marty.gelfand@mail.house.gov'; 'vic.edgerton@mail.house.gov'; 'michal.freedhoff@mail.house.gov'; Bernhard, Rudolph; Ferrante, Fernando; Hanna, John; Kanney, Joseph; Kozak, Laura; Loveless, David; Marksberry, Don; Mitman, Jeffrey; Passehl, Dave; Schmidt, Wayne; Vaughn, Stephen; Wood, Jeffery; Zoulis, Antonios; Galloway, Melanie; Glitter, Joseph; Leeds, Eric; Wilson, George; Perkins, Richard; Bensi, Michelle; Philip, Jacob; Sancaktar, Selim; Ottenberg, Geoffrey; Ellis, Kevin; Beasley, Benjamin; Demoss, Gary; Coyne, Kevin; Coe, Doug; Correia, Richard  
**Subject:** Inadequately Sized Flood Wall at Oconee Nuclear Station Could Lead to Fukushima Scenario in the Event of a Failure of the Lake Jocassee Dam

Chairman Macfarlane,

Please see the attached letter. I apologize for its length but it is written for a broad audience and concerns some technically complex issues with six years of regulatory background.

The risk that a core meltdown will occur at the Oconee Nuclear Station (ONS) is ten times greater than at similarly designed US reactor plants and the risk of a containment breach leading to significant public dose is 500 times greater.

ONS lies eleven miles downstream of the Lake Jocassee Dam. Since 2006 the NRC has known of a harrowing liability: a failure of Jocassee Dam would lead to all three reactors at ONS melting down within 10 hours and a potential breach of the containment buildings within 68 hours. This is very similar to the events which occurred at Fukushima Dai-ichi in 2011.

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- Despite knowing about the significant risk posed by a failure of Jocassee Dam since 2006, no efforts have yet been taken to substantially lower those risks. Although interim actions are being taken at Duke Energy, they are not of a nature that significantly lowers the risks to a par with typical US reactor plants.
- Most of the documents pertaining to this safety concern are not publicly available due to being stamped "Security-Related Information". However, none of these documents discuss security topics at all. Terrorism, sabotage, vandalism or any other intruder or insider threat are not mentioned. These documents deal wholly with the failure of Jocassee Dam due to natural phenomena or latent engineering/construction flaws.
- The annual risk of core damage at ONS is on the order of  $1E-4$ /year and the annual risk of core damage followed by containment failure is on the order of  $1E-5$ /year.

The items below are also apparent from the documents I have reviewed, although it is possible these items have been done and I have merely not located the documents affirming them:

1. After six years, the NRC does not have an accurate risk model of ONS which takes into account the liabilities posed by a failure of Jocassee Dam.
2. After six years, the NRC does not have an accurate assessment of the probability that ONS operators can prevent a containment failure in the 49 to 58 hours between the recession of the flood waters and the failure of the containment structures.
3. The original due date for constructing adequate flood protection was November 30, 2011. After the Fukushima Dai-ichi accident, instead of being prioritized this due date has been extended to 2016. That's ten years after we first became aware of the liability.

Please note that the above three items are conjecture on my part as I have not been involved in any of the NRC discussions concerning this issue and it is likely there are many documents in ADAMS which I failed to find and review. However, from the documents I have reviewed, it is apparent to me that the above statements are true. The technical staff involved in this issue (i.e. whose names appear on the ADAMS documents) are Eric Leeds, Joseph Glitter, Melanie Galloway, George Wilson, Jeff Mitman as well as others. I have not spoken to any of these people other than Jeff Mitman and my short conversation with Jeff last Thursday was merely to get an understanding of the current status of the Jocassee Dam/ONS flood protection issue (i.e. I didn't want to bother writing to you if they have broken ground and actually started installing adequate flood protection). These individuals should be able to inform you of the specifics of the Jocassee Dam issue. I have copied them on this email and encourage them to inform you of any items in my letter which are not accurate. It is not my intent to misrepresent anybody, but being an outsider on this issue it is possible that I have.

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V/r,

Lawrence S. Criscione, PE  
NRC/RES/DRA/OEGIB

(b)(6)

**From:** Criscione, Lawrence  
**Sent:** Wednesday, September 19, 2012 10:05 AM  
**To:** Beasley, Benjamin  
**Subject:** NRC Safety Culture  
**Attachments:** Jocassee Dam Failure Concerns.pdf

This is publicly available as  
ML 13256A372

Ben,

Please feel free to share this email with whomever you believe might be interested.

You asked me today why I didn't first work within the agency to raise my concerns to you. That is a very fair question and I hope by the end of this email I've answered it.

I'd like to state up front that I have no concerns whatsoever bringing issues to you, Rich or Doug. I'm not as comfortable with Brian and Jennifer, but that is only because I am not as familiar with them and has nothing to do with them personally.

I did not address my concerns through the Non-Concurrence Process and the Differing Professional Opinions process for two reasons:

1. I have not been directly involved with the Jocassee/Oconee issue so I don't think the NCP or DPO apply.
2. Although I certainly could have used them despite them not applying, I don't think they are effective. Melanie Galloway and Jeff Mitman weren't paid attention to, and I cannot imagine that from my periphery position I would fare any better. Also I used the NCP before and found it to be worthless since the questions I sought answers to in the NCP were ignored in the response.

I have listened to many complaints over the past year from people involved in the Jocassee Dam issue. More than just Richard Perkins, Jake Phillips and Tom Nicholson. I've heard complaints from several of the regional SRA's and multiple GS14/15's in NRR. They have all been along the same vein: instead of addressing the liability at Oconee, we are working to downplay it and conceal it. I believe that had I used the NCP or DPO, my concerns would have been downplayed in the same manner as Jeff's and Melanie's and it would have been stamped "Security-Sensitive" or "Pre-Decisional" in order to prevent release.

As you know, I am convinced a serious incident at Callaway Plant occurred on October 21, 2003. On that day, the Operations Manager of the plant (who is now the Plant Director) knowingly delayed inserting the control rods for forty minutes in order to cover up the fact that his department had inadvertently allowed the reactor to shut down and had failed to notice it for over an hour. This incident was covered up by the operators for 3½ years. After being brought to the attention of the NRC, we have spent the past five years working to downplay it for the utility. And we have used every trick in the book:

1. Bogusly withholding the handwritten logs from FOIA release because someone could do a handwriting analysis and determine who was on watch (this was actually the reason given to me in my FOIA appeal) even though the watchbill (i.e. the actual names of the people on watch and their positions) had been already released through FOIA in its entirety with no redaction
2. Rejecting 10CFR2.206 requests claiming that the incident had already been investigated when part of the complaint (and documented in the complaint in detail) was that the investigation had major flaws



3. Refusing to answer specific questions but instead providing irrelevant and broad answers expounding upon how the risk of an accident was low even though the specific questions pertained to the competence and integrity of the personnel (at what risk threshold is lying to the NRC okay?).
4. "Forgetting" to follow the processes. Forgetting to offer the petitioner the chance to address the Petition Review Board. Forgetting to inform the allegor that his allegation had been investigated and closed three months earlier.

We tend to internally give ourselves the benefit of the doubt, but it's clear to me that something much more nefarious is at work. It is human tendency to discount "whistleblowers". It is human tendency to believe that, like Chicken Little, they are making a big deal out of nothing. It's human tendency to downplay problems. It's human tendency to "Never attribute to malice what incompetence might explain". However, not everything is bureaucratic incompetence. Operators sometimes do lie to cover up their mistakes. Utilities will fudge the risk numbers to delay or avoid making modifications. And bureaucrats will liberally apply FOIA exemptions to discourage public second guessing. As individuals, people within this agency succumb to the human tendency to avoid confronting problems to which they do not know solutions, and the bulk result is that we, as an agency, have a culture of bureaucratic disinterest that suppresses dissent just as thoroughly as a culture of retaliation and backlash would.

Richard went public with his concerns because he believed that the NRC only pays attention to public pressure. That is, although we have many mechanisms to hear out the concerns of our staffers, unless something is coming down from above (i.e. a congressional oversight committee) we hear but do not listen. From my experience, I have to agree.

I have used the Open Door policy in the past. I've talked to Doug Coe, Roy Zimmerman, Eric Leeds, Mike Weber, Marty Virgilio, David Lee, Cheryl McCrary, Elmo Collins, Commissioner Ostendorff and Chairman Jaczko regarding my concerns with the way that Region IV has handled the Callaway 2003-10-21 incident. Those discussions were successful in the sense that the incident was documented in an Information Notice (something that is not very controversial). However, those discussions were wholly unsuccessful in getting the NRC to recognize that its processes to investigate and address the event were not properly functioning. And I believe that if I were to use the Open Door policy to address the Jocassee Dam/Oconee issue, I might have a moderate impact in getting the due dates for Duke Energy's modifications moved forward from 2017 (a date I got from a source in NRR but which might have already been moved to 2016). However, I do not believe I would have any impact with regard to this agency recognizing that:

1. we allow too much credence to protecting the "good name" of utilities when it comes to releasing information and this greatly impedes us in meeting our obligation to conduct business in a transparent manner.
2. when faced with an awkward problem for which we do not have a ready solution, we succumb to the tendency to downplay it instead of actively seeking the necessary information to correct it.

Although I do not believe that last item applies to Research or New Reactors, I have observed it time and again with regards to NRR and the Regions (i.e. the offices that deal with operating reactors with teams of lawyers to challenge petitions, allegations, citations and violations). It's easier to ignore the public, the power plant worker or the NRC staffer than it is to confront the utility.

We have a great "Safety Conscious Work Environment" at this agency. I feel free to address concerns internally without fear of retaliation. But there is more to Safety Culture than SCWE. Safety Culture also embodies an "Open and Collaborative Work Environment", "Problem Identification and Resolution" and "Duty of Care".

With regard to "Open and Collaborative Work Environment" I believe we do a good job most of the time in the sense that most issues never result in a DPO or NCP. But I think we have failed in OCWE with regard to the Jocassee/Oconee issue. Richard Perkins' concerns regarding the mislabeling of documents as "Security-Related" and the handling of the NCP's from Melanie Galloway and Jeff Mitman are proof to me of that.

With regard to PI&R, I continue to be amazed that the agency does not have a Corrective Action Program. At the utility, the attached letter to the Chairman would instead have been a condition report. At the utility, when someone felt the

need to address a serious issue to the Site Vice President, they did not write him a letter and copy the board of directors. They did not write an open letter to the Quality Insurance Department and share it with the press. They instead wrote a strong condition report which brought their concerns to the attention of everyone at the utility who was paying attention. But the NRC has no such program. If you have systemic concerns regarding how the agency is handling something, your choices for addressing it are limited. A well functioning PI&R process is transparent, has firm due dates, has accountability for completion of actions and has an organizational review of high-level issues at multiple stages (e.g. pre-investigation, post-investigation, and follow-up after corrective actions have been in place for some time). We don't even have a PI&R process so in terms of that aspect of Safety Culture we greatly lag the utilities which we regulate.

*"Human experience shows that people, not organizations or management systems, get things done."* To have a strong Safety Culture you need to have people – not everybody, but at least some – whom you can trust to get things done. You cannot hobble yourself with directives, policies and procedures. Management directives do not get things done; it is the people who use them. Your organization needs to have a "Duty of Care" where the leaders understand the mission and understand that in a changing environment they need the flexibility to adjust their processes to meet the mission. I have not seen this at the NRC. We rigidly use our processes to withhold transparency and to bureaucratically dismiss awkward concerns. And we allow these same processes to hobble us when we encounter a situation we know to be wrong. We allow our processes to hobble us in actively correcting problems which we know we should not be accepting and adapting to.

So to answer your question of why I did not take my concerns internally up my chain of command in Research, it is because given the state of the NRC's Safety Culture I believed that the only way to get my concerns addressed was to seek a sympathetic congressional oversight committee to bring public attention to the problem. The problem is not Jocassee Dam. The problem is:

1. A persistent culture of "non-transparency" at NRR and the regional offices which survives by abusing the FOIA exemptions.
2. A bureaucratic tendency to dismiss awkward issues instead of seeking answers and transparently exposing the known facts.

Roy Zimmerman reminds people "There is more to regulation than enforcement". Our enforcement options are pathetic. Our fines are nothing compared to the daily and monthly revenues from reactor plants. Our greatest weapon is transparency: transparently sharing the facts and our analysis with the public and elected leaders.

Lastly, one of the reasons I didn't approach you is because my concerns don't involve the Office of Research. From my three years with the agency, I have seen much that troubles me, but none of it is present in the Office of Research. If I ever have a concern with you or anyone in my chain of command, be assured that you will know about it before anyone else. If I ever believe we are downplaying an unacceptable condition, you will know. To me, GI 204 and the rest of the GI's I've encountered are prime examples of us seeking answers to address and understand potentially significant issues. I might not like the bureaucratic pace, but that is wholly different from downplaying and ignoring. By the way the NRC is structured, there is not much we can do in terms of getting timely action from other offices. However, there is much we can do with regard to maintaining high standards for answering and closing GI's and from what I've seen we have done an excellent job at that.

Although I believe that someone in NRR could have raised the concerns which I did (and I know several people who have the exact same concerns with regard to the way we are handling Jocassee/Oconee), to a large extent it is BECAUSE I am in Research that I felt comfortable raising those concerns. There is more to SCWE than not firing people. There are more subtle ways to retaliate against people. And although I have no way of knowing why none of my compatriots in NRR came forward earlier (other than the NCP's), I do know that if I were in NRR or Region II I would have been much less likely to send the letter which I sent.

If anyone inside or outside of Research would like to speak with me about this email or my letter to Chairman Macfarlane, please let them know I'm willing to talk to them.

V/r,  
Larry

**From:** Criscione, Lawrence

**Sent:** Tuesday, September 18, 2012 6:25 PM

**To:** Macfarlane, Allison; 'clerner@osc.gov'; Bell, Hubert; Lee, David; Zobler, Marian; Wiggins, Jim

**Cc:** 'matt\_buckham@demint.senate.gov'; 'homeland.security@mail.house.gov'; 'michael.kiko@mail.house.gov';

'peter.spencer@mail.house.gov'; 'valerie\_manak@epw.senate.gov'; 'nathan\_mccray@epw.senate.gov';

'devon.hill@mail.house.gov'; 'gracela.tatane@mail.house.gov'; 'stephen.salsbury@mail.house.gov';

'jim\_mcgee@hsgac.senate.gov'; 'marty.gelfand@mail.house.gov'; 'vic.edgerton@mail.house.gov';

'michal.freedhoff@mail.house.gov'; Bernhard, Rudolph; Ferrante, Fernando; Hanna, John; Kanney, Joseph; Kozak, Laura; Loveless, David; Marksberry, Don; Mitman, Jeffrey; Passehl, Dave; Schmidt, Wayne; Vaughn, Stephen; Wood, Jeffery; Zoulis, Antonios; Galloway, Melanie; Glitter, Joseph; Leeds, Eric; Wilson, George; Perkins, Richard; Bensj, Michelle; Philip, Jacob; Sancaktar, Selim; Ottenberg, Geoffrey; Ellis, Kevin; Beasley, Benjamin; Demoss, Gary; Coyne, Kevin; Coe, Doug; Correia, Richard

**Subject:** Inadequately Sized Flood Wall at Oconee Nuclear Station Could Lead to Fukushima Scenario in the Event of a Failure of the Lake Jocassee Dam

Chairman Macfarlane,

Please see the attached letter. I apologize for its length but it is written for a broad audience and concerns some technically complex issues with six years of regulatory background.

The risk that a core meltdown will occur at the Oconee Nuclear Station (ONS) is ten times greater than at similarly designed US reactor plants and the risk of a containment breach leading to significant public dose is 500 times greater.

ONS lies eleven miles downstream of the Lake Jocassee Dam. Since 2006 the NRC has known of a harrowing liability: a failure of Jocassee Dam would lead to all three reactors at ONS melting down within 10 hours and a potential breach of the containment buildings within 68 hours. This is very similar to the events which occurred at Fukushima Dai-ichi in 2011.

I am not directly involved with this issue. My involvement stems from concerns of a co-worker that serious safety concerns regarding ONS are being illegally withheld from the public under the guise of "Security-Related Information". My knowledge of this issue comes entirely from a cursory review of documents in ADAMS. From that review it is clear that:

- Despite knowing about the significant risk posed by a failure of Jocassee Dam since 2006, no efforts have yet been taken to substantially lower those risks. Although interim actions are being taken at Duke Energy, they are not of a nature that significantly lowers the risks to a par with typical US reactor plants.
- Most of the documents pertaining to this safety concern are not publicly available due to being stamped "Security-Related Information". However, none of these documents discuss security topics at all. Terrorism, sabotage, vandalism or any other intruder or insider threat are not mentioned. These documents deal wholly with the failure of Jocassee Dam due to natural phenomena or latent engineering/construction flaws.
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The items below are also apparent from the documents I have reviewed, although it is possible these items have been done and I have merely not located the documents affirming them:

1. After six years, the NRC does not have an accurate risk model of ONS which takes into account the liabilities posed by a failure of Jocassee Dam.



2. After six years, the NRC does not have an accurate assessment of the probability that ONS operators can prevent a containment failure in the 49 to 58 hours between the recession of the flood waters and the failure of the containment structures.
3. The original due date for constructing adequate flood protection was November 30, 2011. After the Fukushima Dai-ichi accident, instead of being prioritized this due date has been extended to 2016. That's ten years after we first became aware of the liability.

Please note that the above three items are conjecture on my part as I have not been involved in any of the NRC discussions concerning this issue and it is likely there are many documents in ADAMS which I failed to find and review. However, from the documents I have reviewed, it is apparent to me that the above statements are true. The technical staff involved in this issue (i.e. whose names appear on the ADAMS documents) are Eric Leeds, Joseph Giitter, Melanie Galloway, George Wilson, Jeff Mitman as well as others. I have not spoken to any of these people other than Jeff Mitman and my short conversation with Jeff last Thursday was merely to get an understanding of the current status of the Jocassee Dam/ONS flood protection issue (i.e. I didn't want to bother writing to you if they have broken ground and actually started installing adequate flood protection). These individuals should be able to inform you of the specifics of the Jocassee Dam issue. I have copied them on this email and encourage them to inform you of any items in my letter which are not accurate. It is not my intent to misrepresent anybody, but being an outsider on this issue it is possible that I have.

The purpose of the attached letter is to (1) bring to your attention the issues regarding Jocassee Dam, (2) inform our congressional oversight committees of concerns I have that the NRC is not addressing the liabilities at ONS in a timely manner, and (3) bring to your attention that I support Richard Perkins' allegation that the issues surrounding Jocassee Dam have been inappropriately categorized as "Security-Related Information".

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V/r,

Lawrence S. Criscione, PE

NRC/RES/DRA/OEGIB

(b)(6)

**From:** Criscione, Lawrence  
**Sent:** Wednesday, September 19, 2012 11:29 AM  
**To:** Pete.king@mail.house.gov  
**Subject:** FW: Inadequately Sized Flood Wall at Oconee Nuclear Station Could Lead to Fukushima Scenario in the Event of a Failure of the Lake Jocassee Dam  
**Attachments:** Jocassee Dam Failure Concerns.pdf; References.pdf

---

**From:** Criscione, Lawrence  
**Sent:** Tuesday, September 18, 2012 6:25 PM  
**To:** Macfarlane, Allison; 'clerner@osc.gov'; Bell, Hubert; Lee, David; Zobler, Marian; Wiggins, Jim  
**Cc:** 'matt\_buckham@demint.senate.gov'; 'homeland.security@mail.house.gov'; 'michael.kiko@mail.house.gov'; 'peter.spencer@mail.house.gov'; 'valerie\_manak@epw.senate.gov'; 'nathan\_mccray@epw.senate.gov'; 'devon.hill@mail.house.gov'; 'gracela.tatane@mail.house.gov'; 'stephen.salsbury@mail.house.gov'; 'jim\_mcgee@hsgac.senate.gov'; 'marty.gelfand@mail.house.gov'; 'vic.edgerton@mail.house.gov'; 'michal.freedhoff@mail.house.gov'; Bernhard, Rudolph; Ferrante, Fernando; Hanna, John; Kanney, Joseph; Kozak, Laura; Loveless, David; Marksberry, Don; Mitman, Jeffrey; Passehl, Dave; Schmidt, Wayne; Vaughn, Stephen; Wood, Jeffery; Zoulls, Antonios; Galloway, Melanie; Giltter, Joseph; Leeds, Eric; Wilson, George; Perkins, Richard; Bensi, Michelle; Philip, Jacob; Sancaktar, Selim; Ottenberg, Geoffrey; Ellis, Kevin; Beasley, Benjamin; Demoss, Gary; Coyne, Kevin; Coe, Doug; Correia, Richard  
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- Despite knowing about the significant risk posed by a failure of Jocassee Dam since 2006, no efforts have yet been taken to substantially lower those risks. Although interim actions are being taken at Duke Energy, they are not of a nature that significantly lowers the risks to a par with typical US reactor plants.
- Most of the documents pertaining to this safety concern are not publicly available due to being stamped "Security-Related Information". However, none of these documents discuss security topics at all. Terrorism, sabotage, vandalism or any other intruder or insider threat are not mentioned. These documents deal wholly with the failure of Jocassee Dam due to natural phenomena or latent engineering/construction flaws.
- The annual risk of core damage at ONS is on the order of 1E-4/year and the annual risk of core damage followed by containment failure is on the order of 1E-5/year.

The items below are also apparent from the documents I have reviewed, although it is possible these items have been done and I have merely not located the documents affirming them:

1. After six years, the NRC does not have an accurate risk model of ONS which takes into account the liabilities posed by a failure of Jocassee Dam.
2. After six years, the NRC does not have an accurate assessment of the probability that ONS operators can prevent a containment failure in the 49 to 58 hours between the recession of the flood waters and the failure of the containment structures.
3. The original due date for constructing adequate flood protection was November 30, 2011. After the Fukushima Dai-ichi accident, instead of being prioritized this due date has been extended to 2016. That's ten years after we first became aware of the liability.

Please note that the above three items are conjecture on my part as I have not been involved in any of the NRC discussions concerning this issue and it is likely there are many documents in ADAMS which I failed to find and review. However, from the documents I have reviewed, it is apparent to me that the above statements are true. The technical staff involved in this issue (i.e. whose names appear on the ADAMS documents) are Eric Leeds, Joseph Giltter, Melanie Galloway, George Wilson, Jeff Mitman as well as others. I have not spoken to any of these people other than Jeff Mitman and my short conversation with Jeff last Thursday was merely to get an understanding of the current status of the Jocassee Dam/ONS flood protection issue (i.e. I didn't want to bother writing to you if they have broken ground and actually started installing adequate flood protection). These individuals should be able to inform you of the specifics of the Jocassee Dam issue. I have copied them on this email and encourage them to inform you of any items in my letter which are not accurate. It is not my intent to misrepresent anybody, but being an outsider on this issue it is possible that I have.

The purpose of the attached letter is to (1) bring to your attention the issues regarding Jocassee Dam, (2) inform our congressional oversight committees of concerns I have that the NRC is not addressing the liabilities at ONS in a timely manner, and (3) bring to your attention that I support Richard Perkins' allegation that the issues surrounding Jocassee Dam have been inappropriately categorized as "Security-Related Information".

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V/r,

Lawrence S. Criscione, PE  
NRC/RES/DRA/OEGIB

(b)(6)



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**From:** Criscione, Lawrence  
**Sent:** Wednesday, September 19, 2012 1:03 PM  
**To:** nicole.johnson@mail.house.gov  
**Subject:** FW: Inadequately Sized Flood Wall at Oconee Nuclear Station Could Lead to Fukushima Scenario in the Event of a Failure of the Lake Jocassee Dam  
**Attachments:** Jocassee Dam Failure Concerns.pdf; References.pdf

Please forward the attach documents to the members of Representative Thompson's staff who handle issues regarding the security of critical infrastructure (particularly dams and nuclear reactor plants).

Thank you,  
Larry Criscione

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**From:** Criscione, Lawrence  
**Sent:** Tuesday, September 18, 2012 6:25 PM  
**To:** Macfarlane, Allison; 'clerner@osc.gov'; Bell, Hubert; Lee, David; Zobler, Marian; Wiggins, Jim  
**Cc:** 'matt\_buckham@demint.senate.gov'; 'homeland.security@mail.house.gov'; 'michael.kiko@mail.house.gov'; 'peter.spencer@mail.house.gov'; 'valerie\_manak@epw.senate.gov'; 'nathan\_mccray@epw.senate.gov'; 'devon.hill@mail.house.gov'; 'gracela.tatane@mail.house.gov'; 'stephen.salsbury@mail.house.gov'; 'jim\_mcgee@hsgac.senate.gov'; 'marty.gelfand@mail.house.gov'; 'vic.edgerton@mail.house.gov'; 'michal.freedhoff@mail.house.gov'; Bernhard, Rudolph; Ferrante, Fernando; Hanna, John; Kanney, Joseph; Kozak, Laura; Loveless, David; Marksberry, Don; Mitman, Jeffrey; Passehl, Dave; Schmidt, Wayne; Vaughn, Stephen; Wood, Jeffery; Zoulis, Antonios; Galloway, Melanie; Giltter, Joseph; Leeds, Eric; Wilson, George; Perkins, Richard; Bensi, Michelle; Philip, Jacob; Sancaktar, Selim; Ottenberg, Geoffrey; Ellis, Kevin; Beasley, Benjamin; Demoss, Gary; Coyne, Kevin; Coe, Doug; Correia, Richard  
**Subject:** Inadequately Sized Flood Wall at Oconee Nuclear Station Could Lead to Fukushima Scenario In the Event of a Failure of the Lake Jocassee Dam

Chairman Macfarlane,

Please see the attached letter. I apologize for its length but it is written for a broad audience and concerns some technically complex issues with six years of regulatory background.

The risk that a core meltdown will occur at the Oconee Nuclear Station (ONS) is ten times greater than at similarly designed US reactor plants and the risk of a containment breach leading to significant public dose is 500 times greater.

ONS lies eleven miles downstream of the Lake Jocassee Dam. Since 2006 the NRC has known of a harrowing liability: a failure of Jocassee Dam would lead to all three reactors at ONS melting down within 10 hours and a potential breach of the containment buildings within 68 hours. This is very similar to the events which occurred at Fukushima Dai-ichi in 2011.

I am not directly involved with this issue. My involvement stems from concerns of a co-worker that serious safety concerns regarding ONS are being illegally withheld from the public under the guise of "Security-Related Information". My knowledge of this issue comes entirely from a cursory review of documents in ADAMS. From that review it is clear that:

- Despite knowing about the significant risk posed by a failure of Jocassee Dam since 2006, no efforts have yet been taken to substantially lower those risks. Although interim actions are being taken at Duke Energy, they are not of a nature that significantly lowers the risks to a par with typical US reactor plants.

- Most of the documents pertaining to this safety concern are not publicly available due to being stamped "Security-Related Information". However, none of these documents discuss security topics at all. Terrorism, sabotage, vandalism or any other intruder or insider threat are not mentioned. These documents deal wholly with the failure of Jocassee Dam due to natural phenomena or latent engineering/construction flaws.
- The annual risk of core damage at ONS is on the order of  $1E-4$ /year and the annual risk of core damage followed by containment failure is on the order of  $1E-5$ /year.

The items below are also apparent from the documents I have reviewed, although it is possible these items have been done and I have merely not located the documents affirming them:

1. After six years, the NRC does not have an accurate risk model of ONS which takes into account the liabilities posed by a failure of Jocassee Dam.
2. After six years, the NRC does not have an accurate assessment of the probability that ONS operators can prevent a containment failure in the 49 to 58 hours between the recession of the flood waters and the failure of the containment structures.
3. The original due date for constructing adequate flood protection was November 30, 2011. After the Fukushima Dai-ichi accident, instead of being prioritized this due date has been extended to 2016. That's ten years after we first became aware of the liability.

Please note that the above three items are conjecture on my part as I have not been involved in any of the NRC discussions concerning this issue and it is likely there are many documents in ADAMS which I failed to find and review. However, from the documents I have reviewed, it is apparent to me that the above statements are true. The technical staff involved in this issue (i.e. whose names appear on the ADAMS documents) are Eric Leeds, Joseph Giltter, Melanie Galloway, George Wilson, Jeff Mitman as well as others. I have not spoken to any of these people other than Jeff Mitman and my short conversation with Jeff last Thursday was merely to get an understanding of the current status of the Jocassee Dam/ONS flood protection issue (i.e. I didn't want to bother writing to you if they have broken ground and actually started installing adequate flood protection). These individuals should be able to inform you of the specifics of the Jocassee Dam issue. I have copied them on this email and encourage them to inform you of any items in my letter which are not accurate. It is not my intent to misrepresent anybody, but being an outsider on this issue it is possible that I have.

The purpose of the attached letter is to (1) bring to your attention the issues regarding Jocassee Dam, (2) inform our congressional oversight committees of concerns I have that the NRC is not addressing the liabilities at ONS in a timely manner, and (3) bring to your attention that I support Richard Perkins' allegation that the issues surrounding Jocassee Dam have been inappropriately categorized as "Security-Related Information".

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V/r,

Lawrence S. Criscione, PE  
NRC/RES/DRA/OEGIB

(b)(6)



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**From:** Criscione, Lawrence  
**Sent:** Wednesday, September 19, 2012 1:05 PM  
**To:** Dave\_Smith@carper.senate.gov; Komaki.foster@mail.house.gov  
**Subject:** FW: Inadequately Sized Flood Wall at Oconee Nuclear Station Could Lead to Fukushima Scenario in the Event of a Failure of the Lake Jocassee Dam  
**Attachments:** Jocassee Dam Failure Concerns.pdf; References.pdf

I read a news report today that Senate Carper and Representative Edwards were concerned with the NRC withholding information on safety issues. Please forward these documents to the members of their staffs which are looking into those concerns.

Thank you,  
Larry Criscione

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**From:** Criscione, Lawrence  
**Sent:** Tuesday, September 18, 2012 6:25 PM  
**To:** Macfarlane, Allison; 'clerner@osc.gov'; Bell, Hubert; Lee, David; Zobler, Marian; Wiggins, Jim  
**Cc:** 'matt\_buckham@demint.senate.gov'; 'homeland.security@mail.house.gov'; 'michael.kiko@mail.house.gov'; 'peter.spencer@mail.house.gov'; 'valerie\_manak@epw.senate.gov'; 'nathan\_mccray@epw.senate.gov'; 'devon.hill@mail.house.gov'; 'gracela.tatane@mail.house.gov'; 'stephen.salsbury@mail.house.gov'; 'jim\_mcgee@hsgac.senate.gov'; 'marty.gelfand@mail.house.gov'; 'vic.edgerton@mail.house.gov'; 'michal.freedhoff@mail.house.gov'; Bernhard, Rudolph; Ferrante, Fernando; Hanna, John; Kanney, Joseph; Kozak, Laura; Loveless, David; Marksberry, Don; Mitman, Jeffrey; Passehl, Dave; Schmidt, Wayne; Vaughn, Stephen; Wood, Jeffery; Zoulls, Antonios; Galloway, Melanie; Glitter, Joseph; Leeds, Eric; Wilson, George; Perkins, Richard; Bensl, Michelle; Philip, Jacob; Sançaktar, Selim; Ottenberg, Geoffrey; Ellis, Kevin; Beasley, Benjamin; Demoss, Gary; Coyne, Kevin; Coe, Doug; Correia, Richard  
**Subject:** Inadequately Sized Flood Wall at Oconee Nuclear Station Could Lead to Fukushima Scenario in the Event of a Failure of the Lake Jocassee Dam

Chairman Macfarlane,

Please see the attached letter. I apologize for its length but it is written for a broad audience and concerns some technically complex issues with six years of regulatory background.

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- Most of the documents pertaining to this safety concern are not publicly available due to being stamped "Security-Related Information". However, none of these documents discuss security topics at all. Terrorism, sabotage, vandalism or any other intruder or insider threat are not mentioned. These documents deal wholly with the failure of Jocassee Dam due to natural phenomena or latent engineering/construction flaws.
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Please note that the above three items are conjecture on my part as I have not been involved in any of the NRC discussions concerning this issue and it is likely there are many documents in ADAMS which I failed to find and review. However, from the documents I have reviewed, it is apparent to me that the above statements are true. The technical staff involved in this issue (i.e. whose names appear on the ADAMS documents) are Eric Leeds, Joseph Glitter, Melanie Galloway, George Wilson, Jeff Mitman as well as others. I have not spoken to any of these people other than Jeff Mitman and my short conversation with Jeff last Thursday was merely to get an understanding of the current status of the Jocassee Dam/ONS flood protection issue (i.e. I didn't want to bother writing to you if they have broken ground and actually started installing adequate flood protection). These individuals should be able to inform you of the specifics of the Jocassee Dam issue. I have copied them on this email and encourage them to inform you of any items in my letter which are not accurate. It is not my intent to misrepresent anybody, but being an outsider on this issue it is possible that I have.

The purpose of the attached letter is to (1) bring to your attention the issues regarding Jocassee Dam, (2) inform our congressional oversight committees of concerns I have that the NRC is not addressing the liabilities at ONS in a timely manner, and (3) bring to your attention that I support Richard Perkins' allegation that the issues surrounding Jocassee Dam have been inappropriately categorized as "Security-Related Information".

Although as an agency we tend to refer to them in the same breath, security and safety are separate issues. All manmade structures, no matter how well built, can be destroyed by some level of terrorist action if left unprotected. The solutions to terrorist threats are security measures that assess the credible threat and that guard access to critical areas sufficient to the assessed threat level. Construction margins and "defense-in-depth" modifications are the solutions to safety concerns not security concerns. The issues regarding Jocassee Dam are about construction margins – that is, is the dam constructed to typical margins (supporting a  $2.8E-4$ /year failure rate) or to some type of exceptional margins. They have nothing to do with the necessity of whether or not security measures need to be taken to avert a terrorist threat. If the fact that ONS lies 11 miles downstream of Jocassee Dam makes it a security liability, then separate from the safety concerns discussed in my letter the NRC and the Department of Homeland Security need to secretively address security measures to protect the dam. After six years it is unacceptable to withhold vital safety liabilities from public disclosure solely because there may have been a possibility of a security threat. If there is a security vulnerability, then I would hope that it was addressed within months of us becoming aware of this issue in 2006. If anyone within the NRC believes there is still an unaddressed security liability, then separate from

the safety solutions (e.g. building an adequately sized flood wall) the NRC should be ensuring that appropriate protective measures are in place to protect Jocassee Dam – merely withholding basic information regarding nuclear safety from public view is not the way to address a security threat.

V/r,

Lawrence S. Criscione, PE  
NRC/RES/DRA/OEGIB

(b)(6)



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**From:** Criscione, Lawrence  
**Sent:** Wednesday, September 19, 2012 1:07 PM  
**To:** Matt\_Rimkunas@LGraham.senate.gov; Matthew\_Rimkunas@Graham.senate.gov  
**Subject:** FW: Inadequately Sized Flood Wall at Oconee Nuclear Station Could Lead to Fukushima Scenario in the Event of a Failure of the Lake Jocassee Dam  
**Attachments:** Jocassee Dam Failure Concerns.pdf; References.pdf

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**From:** Criscione, Lawrence  
**Sent:** Wednesday, September 19, 2012 12:00 PM  
**To:** 'Matthew\_Rimkunas@LGraham.senate.gov'; 'David\_Bibeau@Collins.senate.gov'; 'SC03DCintern1@mail.house.gov'  
**Subject:** FW: Inadequately Sized Flood Wall at Oconee Nuclear Station Could Lead to Fukushima Scenario in the Event of a Failure of the Lake Jocassee Dam

Senator Graham, Senator Collins and Representative Duncan were all copied on the attached letter. Please ensure the appropriate members of their staffs get the attached letter concerning the Oconee Nuclear Station and Jocassee Dam.

I am not seeking assistance from any of them but would be happy to work with their staffs if this is an issue of concern with them. Since this is an issue which concerns either their state or their committee, I am providing this letter as a courtesy. I am working within the NRC to address this, but congressional inquiries are sometimes vital to get the NRC to pay attention.

Thank you,  
Larry Criscione

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**From:** Criscione, Lawrence  
**Sent:** Tuesday, September 18, 2012 6:25 PM  
**To:** Macfarlane, Allison; 'clerner@osc.gov'; Bell, Hubert; Lee, David; Zobler, Marian; Wiggins, Jim  
**Cc:** 'matt\_buckham@demint.senate.gov'; 'homeland.security@mail.house.gov'; 'michael.kiko@mail.house.gov'; 'peter.spencer@mail.house.gov'; 'valerie\_manak@epw.senate.gov'; 'nathan\_mccray@epw.senate.gov'; 'devon.hill@mail.house.gov'; 'gracela.tatane@mail.house.gov'; 'stephen.salsbury@mail.house.gov'; 'jim\_mcghee@hsgac.senate.gov'; 'marty.gelfand@mail.house.gov'; 'vic.edgerton@mail.house.gov'; 'michal.freedhoff@mail.house.gov'; Bernhard, Rudolph; Ferrante, Fernando; Hanna, John; Kanney, Joseph; Kozak, Laura; Loveless, David; Marksberry, Don; Mitman, Jeffrey; Passehl, Dave; Schmidt, Wayne; Vaughn, Stephen; Wood, Jeffery; Zoulis, Antonios; Galloway, Melanie; Glitter, Joseph; Leeds, Eric; Wilson, George; Perkins, Richard; Bensi, Michelle; Philip, Jacob; Sancaktar, Selim; Ottenberg, Geoffrey; Ellis, Kevin; Beasley, Benjamin; Demoss, Gary; Coyne, Kevin; Coe, Doug; Correia, Richard  
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V/r,

Lawrence S. Criscione, PE  
NRC/RES/DRA/OEGIB

(b)(6)