Nebraska Public Power District
Always there when you need us

NLS2013082
August 22, 2013

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-0001

Subject: Request to Obtain United States Army Corps of Engineers Information Required to Provide Response to March 12, 2012, Request for Information, Enclosure 2, Recommendation 2.1, Flooding
Cooper Nuclear Station, Docket No. 50-298, DPR-46

References: See Attachment 1

Dear Sir or Madam:

On March 12, 2012, the Nuclear Regulatory Commission (NRC) issued Reference 1 to request information associated with Near-Term Task Force Recommendation 2.1: Flooding. Requested Information, Item 1, requires a Flood Hazard Reevaluation (FHR) for plant sites in accordance with the schedule established in Reference 2.

The development of the FHRs for Nebraska Public Power District's (NPPD) Cooper Nuclear Station (CNS) and Omaha Public Power District's (OPPD) Ft. Calhoun Station (FCS) will require an analysis of the six United States Army Corps of Engineers (USACE) Missouri River main stem dams (i.e., USACE Mainstem System). Because of this common flood hazard, NPPD and OPPD (hereinafter referred to as the licensees) are jointly performing the FHR for CNS and FCS. In an attempt to maintain consistency with the USACE flooding analysis of the Missouri River, the licensees have made multiple requests for information to the USACE. In References 3 and 4 (Attachments 2 and 3), the licensees initially requested the USACE provide any available analyses, studies, models, and design data in its records relevant to flooding at CNS and FCS. In response, the USACE provided HEC-HMS hydrologic models downstream of Gavins Point Dam, 2011 high-water data, and the 1975, 1978, and 1997 flooding reports. After discussions with the USACE, the licensees provided information in Reference 5 (Attachment 4) showing how each item of requested information will be used in the FHR analyses. The licensees have not received an official response from the USACE for the remaining items discussed in References 3 and 4.

During a meeting with the USACE in January 2013, the licensees were told that the USACE would provide selected information from analyses conducted by them, but that they would not release information requested in References 3, 4 and 5. In Reference 6 (Attachment 5), the licensees requested this select information including Spillway Design Hydrographs for all six USACE Mainstem System Dams and data from the USACE's 2009-2010 Mainstem System Dam

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Failure Consequences Analysis to include flood inundation maps and associated river flows and flood water surface elevations for the Normal High Pool and Maximum High Pool scenarios. In Reference 7 (Attachment 6), the USACE responded in writing to this request stating:

> *"The USACE security policy limits the release of this data and therefore we cannot release the information. The data has been furnished to the U.S. Nuclear Regulatory Commission with the provision that they are For Official Use Only."*

The lack of access to existing USACE data has caused the licensees to increase the original FHR study scope for CNS and FCS. The increased study scope includes the development of an HEC-RAS Unsteady Flow Model from Gavins Point Dam to Rulo, Nebraska in lieu of the use of an existing USACE model, and a hydrologic adequacy analysis for the USACE Mainstem System in lieu of the use of hydrologic adequacy data from the USACE. The original FHR study scope assumed the use of the data from the USACE Dam Failure Consequences Reports for the six Mainstem System Dams (Attachment 7 - Item 8) to provide information related to the hypothetical sunny day and seismic dam failure scenarios for the USACE Mainstem System. Given the recently published NRC Interim Staff Guidance on dam failure analyses (Reference 8), and the lack of access to the existing USACE dam failure data, the FHR study scope will need to include detailed dam failure analyses for the USACE Mainstem System dams. This will include the development of a HEC-RAS Unsteady Flow Model covering the USACE Mainstem System reach and the investigation of numerous alternative dam failure parameter assumptions and associated flood routings. The USACE has indicated that they are currently developing an HEC-RAS Unsteady Flow Model covering the USACE Mainstem System. Because of the uncertainty of the schedule for the completion of the USACE model and the uncertainty that the USACE will make this model available to the licensees upon completion, we must proceed with the development of a similar model. These scope increases have impacted the schedule for the FHRs.

The licensees have been told by the USACE that all requests for information from the USACE should be made through the NRC. Therefore, the licensees request that the NRC obtain the items in Attachment 7 from the USACE and make them available to the licensees. We request expedited release of Items 1 and 2 by September 15, 2013, and release of Items 3 through 5 by October 15, 2013. Delays in receiving this data will force us to rely on less recent publicly available data to develop the HEC-RAS model and dam failure analyses. The USACE had previously indicated that the information in Item 6 would be available to the licensees. Although the need for this data is decreased due to the decision to increase the scope of the FHR, this information is requested to better understand information previously provided to us by USACE. We understand that the USACE HEC-RAS Unsteady Flow Model covering the USACE Mainstem System (Item 7) will not be available until after December 31, 2013, and request that it be made available to the licensees upon its completion to further verify the results of the HEC-RAS Unsteady Flow Models being developed for the FHRs. Although we have received verbal information from the USACE that Item 8 cannot be released, we request this information since these are the most recent dam failure studies to be completed on the Mainstem System.

Please note that the data provided in response to this request for information is necessary to complete the FHRs for both CNS and FCS. As stated in Reference 8, *"If a Federally owned dam is identified as critical to the flooding reanalysis, the licensee should contact the NRC promptly. The NRC will act as the interface between these agencies and licensees."* Reference 8 also states that *"To the extent that these analyses are applicable, they should be used in the Recommendation 2.1 flooding reanalysis."*

This letter contains no new commitments to the NRC. If you should you have questions, please contact David Van Der Kamp, CNS Licensing Manager, at (402) 825-2904.

Sincerely,

Oscar A. Limpias
Vice President - Nuclear and
Chief Nuclear Officer

/bk

Attachments:
1. Reference List
2. Letter from OPPD (John B. Herman) to USACE (Colonel Robert J. Ruch), "Request for Information - Missouri River Flood Studies and Main Stem Dams," dated June 20, 2012 (NED-12-0071 ADM)
3. Letter from NPPD (Roman Estrada) to USACE (Colonel Robert J. Ruch), "Request for Information - Missouri River Flood Studies and Main Stem Dams," dated June 18, 2012
4. Letter from OPPD (Stephen R. Miller) to USACE (Colonel Joel R. Cross), "Additional Information to Support the Request for Information - Missouri River Flood Studies and Mainstem System Dams for Fort Calhoun Station and Cooper Nuclear Station," dated September 17, 2012 (NED-12-0118 ADM)
5. Memorandum from OPPD (Stephen R. Miller) to USACE (Colonel Joel R. Cross), "Request for Information - Missouri River Flood Re-evaluation Studies for Fort Calhoun Station and Cooper Nuclear Station," dated March 20, 2013 (NED-13-074 DEN)
6. Letter from USACE (Joel R. Cross) to OPPD (Stephen R. Miller), dated May 17, 2013
7. Requested Information from United States Army Corps of Engineers for Nebraska Public Power District and Omaha Public Power District

cc: Regional Administrator, w/attachments
USNRC - Region IV

Director, w/attachments
USNRC - Office of Nuclear Reactor Regulation

Cooper Project Manager, w/attachments
USNRC - NRR Project Directorate IV-1

Senior Resident Inspector, w/attachments
USNRC - CNS

Joe Gasper, w/attachments
Omaha Public Power District
jkgasper@oppd.com

CNS Records, w/attachments

NPG Distribution, w/o attachments

ATTACHMENT 1

Reference List

1. NRC Letter, "Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident," dated March 12, 2012, (Accession No. ML12073A348)

2. NRC Letter, "Prioritization of Response Due Dates for Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Flooding Hazard Reevaluations for Recommendation 2.1 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident," dated May 11, 2012 (Accession No. ML12097A509)

3. Letter from OPPD (John B. Herman) to USACE (Colonel Robert J. Ruch), "Request for Information - Missouri River Flood Studies and Main Stem Dams," dated June 20, 2012 (NED-12-0071 ADM)

4. Letter from NPPD (Roman Estrada) to USACE (Colonel Robert J. Ruch), "Request for Information - Missouri River Flood Studies and Main Stem Dams," dated June 18, 2012

5. Letter from OPPD (Stephen R. Miller) to USACE (Colonel Joel R. Cross), "Additional Information to Support the Request for Information - Missouri River Flood Studies and Mainstem System Dams for Fort Calhoun Station and Cooper Nuclear Station," dated September 17, 2012 (NED-12-0118 ADM)

6. Memorandum from OPPD (Stephen R. Miller) to USACE (Colonel Joel R. Cross), "Request for Information - Missouri River Flood Re-evaluation Studies for Fort Calhoun Station and Cooper Nuclear Station," dated March 20, 2013 (NED-13-074 DEN)

7. Letter from USACE (Joel R. Cross) to OPPD (Stephen R. Miller), dated May 17, 2013

8. Interim Staff Guidance JLD-ISG-2013-01, "Guidance for Assessment of Flooding Hazards Due to Dam Failure," Revision 0, July 29, 2013 (Accession No. ML13151A153)

ATTACHMENT 2

OPPD
Omaha Public Power District

444 South 16th Street Mall
Omaha, NE 68102-2247

June 20, 2012
NED-12-0071 ADM

Colonel Robert J. Ruch
District Engineer U.S. Army Corps of Engineers, Omaha District
1616 Capitol Avenue, Suite 9000
Omaha, NE 68102

Dear Colonel Ruch,

SUBJECT: Request for Information - Missouri River Flood Studies and Main Stem Dams

In response to the events at the Fukushima Daiichi Nuclear Power Plant following Japan's March 11, 2011, Great Tohoku Earthquake and subsequent Tsunami, the United States Nuclear Regulatory Commission (NRC) is requesting information from all License holders of Commercial Nuclear Power Reactors pursuant to Title 10 of the Code of Federal Regulations, Section 50.54 (f). The information requested includes a requirement that all licensees report the results of **new comprehensive Flooding Hazard Reevaluation for each reactor site** in accordance with NRC's current guidelines and criteria. The NRC has posted the 50.54f letter detailing this request on its website in the Public Document Area, https://forms.nrc.gov/reading-rm/adams.html, ADAMS Accession No.: ML12056A046.

Omaha Public Power District (OPPD) owns and operates Fort Calhoun Station (FCS). FCS is a Single Unit 500 MWe Pressurized Water Nuclear Reactor located on the west banks of the Missouri River south of Blair, NE. The NRC has directed OPPD to complete and submit its Flooding Hazard Analysis for FCS by March 12, 2014.

In particular, the flood hazard analysis consists of developing the flood levels at FCS due to Probable Maximum Flooding (PMF) in the Missouri River and due to upstream dam failures. The drainage above FCS contains approximately 320,000 square miles of the Missouri River watershed, and a number of United States Army Corp of Engineers (USACE) designed and operated facilities including the Missouri River Main Stem Dam System. Therefore, we are requesting the USACE provide OPPD any available analyses, studies, models, and design data in its records relevant to flooding at FCS. We will utilize this information in the Flooding Hazards Reevaluation responding to the NRC's request for information discussed above. We have identified a need for the following specific items:

1. Original design memorandums for each of the main stem dams.
2. As-built plans and O&M manuals for each main stem dam.
3. Operating rules of gates and releases for each main stem dam.
4. Emergency operation procedures for the main stem dams.
5. Spillway design hydrographs for each main stem dam.
6. Spillway and gate rating curves for each main stem dam.

7. Most recent reservoir elevation-capacity data for each main stem reservoir.
8. Original HEC-2 models for reaches from Fort Peck Dam to Gavins Point Dam, and HEC-RAS model from Gavins Point to Mississippi River used in developing HEC-RAS unsteady model used in USAR study.
9. HEC-RAS unsteady model for USAR study -Fort Peck Dam to Mississippi River.
10. Any recent extreme Precipitation Meteorological Studies performed by or for the USACE within the Missouri River Basin.
11. All available documentation and electronic models developed for the 2004 Upper Mississippi River System Flow Frequency Study.
12. All available documentation and electronic Models for the following Dam Break Studies:
    a. Gavins Point Dam, Missouri River, Critical Infrastructure Security Program, Dam Failure Analyses, H&H Methodology Report and Consequences Summary," dated October 2009, prepared by the Omaha District, Corps of Engineers.
    b. "Fort Randall Dam, Missouri River; Pickstown, South Dakota, Critical Infrastructure Security Program, Dam Failure Analyses, H&H Methodology Report and Consequences Summary," dated February 2010, prepared by the Omaha District, Corps of Engineers.
    c. "Big Bend Dam, Missouri River; Fort Thompson, South Dakota, Critical Infrastructure Protection and Resilience Program, Dam Failure Analyses, H&H Methodology Report and Consequences Summary," dated October 2010, prepared by the Omaha District, Corps of Engineers
    d. "Oahe Dam, Missouri River; Pierre, South Dakota, Critical Infrastructure Security Program, Dam Failure Analyses, H&H Methodology Report and Consequences Summary," dated February 2010, prepared by the Omaha District, Corps of Engineers.
    e. "Garrison Dam, Missouri River, North Dakota, Critical Infrastructure Security Program, Dam Failure Analyses, H&H Methodology Report and Consequences Summary," dated February 2010, prepared by the Omaha District, Corps of Engineers.
    f. "Fort Peck Dam, Missouri River; Montana, Critical Infrastructure Security Program, Dam Failure Analyses, H&H Methodology Report and Consequences Summary," dated February 2010, prepared by the Omaha District, Corps of Engineers.
13. HEC-RAS "Floodway Model" from Gavins Point to Mississippi, preferably reflecting the additional calibration efforts undertaken during the 2011 flood event.
14. HEC-HMS models for basins below Gavins Point
15. Draft HEC-HMS models for basins above Gavins Point still under development
16. Post 2011 flooding LiDAR data
17. 2011 Flooding high-water data

18. Historic hydrology information or flooding reports for Missouri River floods/high runoff years (1952, 1993, 1997, 2011, etc.)
19. 5-year annual inspection reports for the main stem dams
20. Historic aerial/topography/navigation mapping of the Missouri River from Gavins Point Dam to Rulo, Nebraska.

We also request that USACE advise us of any additional information it is aware of (e.g., in-process, planned, proposed) that may be relevant to our hazard reevaluation efforts. Our preference is that you provide as much of this information as possible in an electronic format.

OPPD has retained the services of a Sargent Lundy, Inc. of Chicago IL, and HDR Inc. of Omaha NE to perform the engineering and analysis work associated with this evaluation. It will be necessary to share any information USACE provides us with these consultants.

Please also note that the OPPD is working closely with the Nebraska Public Power District in its Flooding Hazards Reevaluation of Cooper Nuclear Station. We have both selected the Sargent Lundy/HDR team as consultants for this work. NPPD is making a similar request for information in a separate letter.

Thank you again for your assistance. Please contact Joe Gasper at 402-533-7233, jkgasper@oppd.com to make delivery/pick up arrangements or to discuss our request further.

Sincerely,

for

John B. Herman
Division Manager, Nuclear Engineering
Fort Calhoun Station

JBH/JKG:keb

c: J. K. Gasper

ATTACHMENT 3

Nebraska Public Power District
"Always there when you need us"

June18th, 2012

Colonel Robert J. Ruch,
District Engineer U.S. Army Corps of Engineers, Omaha District
1616 Capitol Avenue, Suite 9000
Omaha, NE 68102

RE: Request for Information - Missouri River Flood Studies and Main Stem Dams.

Dear Colonel Ruch,

In Response to the events at the Fukushima Daiichi Nuclear Power Plant following Japan's March 11, 2011, Great Tohoku Earthquake and subsequent Tsunami, the United States Nuclear Regulatory Commission (NRC) is requesting information from all License holders of Commercial Nuclear Power Reactors pursuant to Title 10 of the Code of Federal Regulations, Section 50.54(f). The information requested includes a requirement that all licensees report the results of ***a new comprehensive Flooding Hazard Reevaluation for each reactor site*** *in accordance with NRC's current guidelines and criteria.* The NRC has posted the 50.54f Letter detailing this request on its website in the Public Document Area, https://forms.nrc.gov/reading-rm/adams.html, ADAMS Accession No.: ML12056A046.

The Nebraska Public Power District (NPPD) owns and operates Cooper Nuclear Station (CNS). CNS is a Single Unit 800 MWe Boiling Water Nuclear Reactor located on the west banks of the Missouri River south of Brownville, NE. The NRC has directed NPPD to complete and submit its Flooding Hazard Analysis for CNS by March 12, 2014.

In particular the flood hazard analysis consists of developing the flood levels at CNS due to Probable Maximum Flooding (PMF) in the Missouri River and due to upstream dam failures. The drainage above CNS contains approximately 420,000 square miles of the Missouri River watershed, and a number of USACE designed and operated facilities including the Missouri River Main Stem Dam System. Therefore, we are requesting the USACE provide NPPD any available analyses, studies, models, and design data in its records relevant to flooding at CNS. We will utilize this information in the Flooding Hazards Reevaluation in responding to the NRC's Request for Information discussed above. We have identified a need for the following specific items:

1. Original design memorandums for each of the main stem dams.
2. As-built plans and O&M manuals for each main stem dam.
3. Operating rules of gates and releases for each main stem dam.
4. Emergency operation procedures for the main stem dams.
5. Spillway design hydrographs for each main stem dam.

Cooper Nuclear Station – Nebraska Public Power District
72676 – 648A Avenue / P.O. Box 98 / Brownville, NE 68321-0098
Telephone: (402) 825-3811 / **Fax**: (402) 825-5099
http://www.nppd.com

June 18th, 2012
NPPD
Request for Information - Missouri River Flood Studies
and Main Stem Dams

6. Spillway and gate rating curves for each main stem dam.
7. Most recent reservoir elevation-capacity data for each main stem reservoir.
8. Any recent extreme Precipitation Meteorological Studies performed by or for the USACE within the Missouri River Basin.
9. All available documentation and electronic models developed for the 2004 Upper Mississippi River System Flow Frequency Study.
10. All available documentation and electronic Models for the following Dam Break Studies including the steady/unsteady flow HEC-RAS models from Fort peck Dam to the mouth of the Missouri River:
    a. "Gavins Point Dam, Missouri River; Critical Infrastructure Security Program, Dam Failure Analyses, H&H Methodology Report and Consequences Summary," dated October2009, prepared by the Omaha District, Corps of Engineers.
    b. "Fort Randall Dam, Missouri River; Pickstown, South Dakota, Critical Infrastructure Security Program, Dam Failure Analyses, H&H Methodology Report and Consequences Summary," dated February 2010, prepared by the Omaha District, Corps of Engineers.
    c. "Big Bend Dam, Missouri River; Fort Thompson, South Dakota, Critical Infrastructure Protection and Resilience Program, Dam Failure Analyses, H&H Methodology Report and Consequences Summary," dated October 2010, prepared by the Omaha District, Corps of Engineers
    d. "Oahe Dam, Missouri River; Pierre, South Dakota, Critical Infrastructure Security Program, Dam Failure Analyses, H&H Methodology Report and Consequences Summary," dated February 2010, prepared by the Omaha District, Corps of Engineers.
    e. "Garrison Dam, Missouri River, North Dakota, Critical Infrastructure Security Program, Dam Failure Analyses, H&H Methodology Report and Consequences Summary," dated February 2010, prepared by the Omaha District, Corps of Engineers.
    f. "Fort Peck Dam, Missouri River; Montana, Critical Infrastructure Security Program, Dam Failure Analyses, H&H Methodology Report and Consequences Summary," dated February 2010, prepared by the Omaha District, Corps of Engineers.
11. HEC-RAS "Floodway Model" from Gavins Point to Mississippi, preferably reflecting the additional calibration efforts undertaken during the 2011 flood event.
12. HEC-HMS models for basins below Gavins Point
13. Draft HEC-HMS models for basins above Gavins Point still under development
14. Post 2011 flooding LiDAR data
15. 2011 flooding high-water data

June 18th, 2012
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and Main Stem Dams

16. Historic hydrology information or flooding reports for Missouri River floods/high runoff years(1952, 1993, 1997, 2011, etc.)
17. 5-year annual inspection reports for the main stem dams
18. Historic aerial/topography/navigation mapping of the Missouri River from Gavins Point Dam to Rulo, Nebraska.

We also request that USACE advise us of any additional information it is aware of (eg, in-process, planned, proposed) that may be relevant to our hazard reevaluation efforts. Our preference is that you provide as much of this information as possible in an electronic format.

NPPD has retained the services of a Sargent Lundy, Inc. of Chicago, IL and HDR Inc. of Omaha, NE to perform the engineering and analysis work associated with this evaluation. It will be necessary to share any information USACE provides us with these consultants.

Please also note that the NPPD is working closely with the Omaha Public Power District in its Flooding Hazards Evaluation of Ft. Calhoun Nuclear Station. We have both selected the Sargent Lundy/HDR team as consultants for this work. OPPD is making a similar request for information in a separate letter.

Thank you again for your assistance. Please contact Bob Taylor with our Civil Engineering Group at 402-825-2933, rmtaylo@nppd.com to make delivery/pick up arrangements or to discuss our request further.

Sincerely,

Roman M Estrada

Roman Estrada
Design Engineering Manager
Cooper Nuclear Station

Cooper Nuclear Station – Nebraska Public Power District
72676 – 648A Avenue / P.O. Box 98 / Brownville, NE 68321-0098
Telephone: (402) 825-3811 / **Fax**: (402) 825-5099
http://www.nppd.com

ATTACHMENT 4

OPPD
Omaha Public Power District

444 South 16th Street Mall
Omaha, NE 68102-2247

September 17, 2012
NED-12-0118 ADM

Colonel Joel R. Cross
District Engineer U.S. Army Corps of Engineers, Omaha District
1616 Capitol Avenue, Suite 9000
Omaha, NE 68102

Dear Colonel Cross:

Subject: Additional Information to Support the Request for Information - Missouri River Flood Studies and Mainstem System Dams for Fort Calhoun Station and Cooper Nuclear Station

Reference: 1. Letter from OPPD (John B. Herman) to USACE Omaha District (Colonel Robert J. Ruch), "Request for Information - Missouri River Flood Studies and Main Stem Dams" dated June 20, 2012 (NED-12-0071)
2. Letter from NPPD (Roman Estrada) to USACE Omaha District (Colonel Robert J. Ruch), "Request for Information - Missouri River Flood Studies and Main Stem Dams" dated June 18, 2012

Thank you for your delivery of the HEC- HMS models, the 2011 high-water data and the 1975, 1978 and 1997 flooding reports in response to our request for USACE analyses, studies, models and design data pertaining to the Missouri River Mainstem System dams (References 1 and 2). In those letters we listed 18 items of information which are needed to perform the analyses to prepare the Flood Hazard Reevaluation report which must be submitted to the NRC by March 12, 2014 for both stations. We are in urgent need of the remaining information so that we can expeditiously proceed with the required analysis.

To clarify the reason we requested this information we have prepared the attached table showing how each item of requested information will be used in the Flooding Hazard Reevaluation analyses. The table also includes:

- a description of the level of impact on the project (schedule) if the information cannot be provided,
- notes from our July 5, 2012 meeting concerning the USACE's ability to provide the information,
- an estimated amount of time required to deliver the information (as discussed in our July 5, 2012 meeting) and
- the impact on the project if this information cannot be delivered.

We understand you have received verbal feedback from the NRC staff that this information may not be necessary for completion of the Flood Hazard Reevaluations mandated by the NRC. We were told by a member of your staff that this is hindering USACE approval to provide us with the NRC staff indicated to us that they believe that this information is necessary for completion of the Flood Hazard Reevaluations at the Fort Calhoun and Cooper Nuclear Stations. We would be happy to coordinate a meeting or conference call between appropriate members of your staff and the NRC staff to discuss this if necessary. Please let us know if you wish to pursue either or both actions.

If you do not wish to pursue further discussions with NRC staff, please provide us a written response outlining which items will be provided, and if the item cannot be provided in the time frame identified during our July 5, 2012 meeting, the date when you will provide the information. Your response is necessary so that we can proceed with the contingency actions identified in the attached table and inform the NRC of the potential impact on our submittal schedule.

Thank you again for your assistance. Please contact Joe Gasper, Project Manager -Fukushima Response, at 402-533-7233, jkgasper@oppd.com to discuss our request further.

Sincerely,

Stephen R. Miller
Manager, Design Engineering Nuclear
Fort Calhoun Station

SRM/JKG:keb

c: J. K. Gasper

Table: USACE – Request For Information – Clarification Summary

Information Requested in OPPD and NPPD Requests	Analysis for which requested data is needed	Impact on Project (schedule) if information is not provided*	USACE Response Provided during 7/5/2012 Meeting	Estimated USACE Delivery Time (from 07/05/2012)	Impact on Project Schedule if Data not Received
1. Original Design Memorandums	• PMF Calculation - Spillway Design Hydrograph (SDH) at GAPT to be used in conjunction with PMF below GAPT • PMF Calculation – Evaluate assumption of SDH at Gavins Point vs. PMF from stochastic methods of basin above GAPT • Dam Breach Calculation – SDH for main stem dams; characterization of upper basin response for developing runoff from PMP events • Verification of HEC-RAS Dam Breach model inputs	High	Will need Headquarters USACE (HQ) approval, (see #5 below)	Likely will take 3 to 4 months minimum	• Separate HMS model or equivalent hydrologic analysis will have to be developed to estimate rainfall/runoff relationship for the upper basin above GAPT (~280,000 mi2) resulting in a 3 month delay in the project.

Table: USACE – Request For Information – Clarification Summary (Continued)

Information Requested in OPPD and NPPD Requests	Analysis for which requested data is needed	Impact on Project (schedule) if information is not provided*	USACE Response Provided during 7/5/2012 Meeting	Estimated USACE Delivery Time (from 07/05/2012)	Impact on Project Schedule if Data not Received
2. As-built plans and O&M Manuals	• Assess dam design for evaluation of Sunny Day Breach Requirement • Dam characteristics and dimensions needed to evaluate breach failure modes and parameters • Verification of HEC-RAS Dam Breach model inputs	High	Will need HQ approval	Likely will take 3 to 4 months minimum	• Site visit will be required to approximate dam dimensions for breach parameters resulting in a 1 month delay in the project • Conservative assumptions will be made and discussed with USACE at later date resulting in a 1 month delay in the project.
3. Operating Rules of gates and releases	• Dam Breach Calculation – Evaluate dam release / system storage optimization for best case/worst case response time for cascading dam failure • Verification of HEC-RAS Dam Breach model input (see 10)	Medium	Will need HQ approval	Likely will take 3 to 4 months minimum	• Conservative assumptions will be made and discussed with USACE at later date resulting in a 1 month delay in the project.

Table: USACE – Request For Information – Clarification Summary (Continued)

Information Requested in OPPD and NPPD Requests	Analysis for which requested data is needed	Impact on Project (schedule) if information is not provided*	USACE Response Provided during 7/5/2012 Meeting	Estimated USACE Delivery Time (from 07/05/2012)	Impact on Project Schedule if Data not Received
4. Emergency Operation Plan	• Dam Breach Calculation – Evaluate dam release / system storage optimization for best case/worst case response time for cascading dam failure. • Verification of HEC-RAS Dam Breach model inputs (see 10)	Medium	USACE indicated that they have no written protocol to address dam failure.	N/A	• N/A

Table: USACE – Request For Information – Clarification Summary (Continued)

Information Requested in OPPD and NPPD Requests	Analysis for which requested data is needed	Impact on Project (schedule) if information is not provided*	USACE Response Provided during 7/5/2012 Meeting	Estimated USACE Delivery Time (from 07/05/2012)	Impact on Project Schedule if Data not Received
5. Spillway Design Hydrograph data	• PMF Calculation - Spillway design hydrograph (SDH) at GAPT to be used in conjunction with PMF below GAPT • PMF Calculation – Evaluate assumption of SDH at Gavins Point vs. PMF from stochastic methods of basin above GAPT • Dam Breach Calculation - SDH for main stem dams; characterization of upper basin response for developing runoff from PMP events • Verification of HEC-RAS Dam Breach model inputs	High	Will need HQ approval. All are available electronically with the exception of Fort Peck. Will check on Fort Peck availability	Likely will take 3 to 4 months minimum	• Separate HMS model or equivalent hydrologic analysis will have to be developed to estimate rainfall/runoff relationship for the upper basin above GAPT (~280,000 mi2) resulting in a 3 months in the project.

Table: USACE – Request For Information – Clarification Summary (Continued)

Information Requested in OPPD and NPPD Requests	Analysis for which requested data is needed	Impact on Project (schedule) if information is not provided*	USACE Response Provided during 7/5/2012 Meeting	Estimated USACE Delivery Time (from 07/05/2012)	Impact on Project Schedule if Data not Received
6. Spillway gate rating curves for each Mainstem dam	• Dam Breach Calculation – Evaluate dam release / system storage optimization for best case/worst case response time for cascading dam failure • Verification of rating curves for of HEC-RAS Dam Breach model (see 10) inputs	Medium	Curves are represented in existing HEC-RAS Dam Breach model - Garrison, Oahe, and Fort Peck outlet works not included (minor discharges)	Can provide electronic spreadsheets – no HQ approval required. Likely 1 to 2 months	• Develop rating curves resulting in a 1 month delay in the project. • Conservative assumptions will be made and discussed with USACE at later date resulting in a 1 month delay in the project.
7. Most recent reservoir stage-capacity data	• Dam Breach Calculation – Evaluate dam release / system storage optimization for best case/worst case response time for cascading dam failure. • Verification of HEC-RAS Dam Breach model inputs (see 10)	Medium	Available	Likely 1 month	• Develop stage storage relationship resulting in a 1 month delay in the project. • Conservative assumptions will be made and discussed with USACE at later date resulting in a 1 month delay in the project.

Table: USACE – Request For Information – Clarification Summary (Continued)

Information Requested in OPPD and NPPD Requests	Analysis for which requested data is needed	Impact on Project (schedule) if information is not provided*	USACE Response Provided during 7/5/2012 Meeting	Estimated USACE Delivery Time (from 07/05/2012)	Impact on Project Schedule if Data not Received
8. Any recent extreme precipitation studies	• Development of Probable Maximum Precipitation data	Low	Joint study with BOR report available, as well as isohyetals developed for more recent storm events (no depth duration yet for those events)	Likely 1 to 2 months	• N/A
9. All documentation and models for 2004 FFS study	• PMF Calculation – 2004 FFS Study Model, considered as best available information, required to route GAPT SDH and basin below GAPT PMF to FCS and CNS • Dam Breach Calculation – 2004 FFS Study Model required to route dam breach below GAPT if HEC-RAS Dam Breach model (see 10) cannot be obtained • Verification of HEC-RAS unsteady and dam breach model inputs	High	Will not provide, but can provide specific elements as requested and required for verification (topographic information, source, etc.)	Not provided, individual requests estimated (by HDR) to take 1-2 months.	• Project schedule assumed receipt of HEC-RAS Dam Breach model (see 10). If model cannot be obtained, elements of 2004 FFS model will be used to route dam breach below GAPT resulting in a 2 month delay in the project. • Project schedule assumed necessary elements of 2004 FFS HEC-RAS unsteady model would be available. If unavailable, HEC-RAS Steady model (see 11) will require significant modification to execute required unsteady simulations. A minimum of 3 months delay in the project is anticipated..

Table: USACE – Request For Information – Clarification Summary (Continued)

Information Requested in OPPD and NPPD Requests	Analysis for which requested data is needed	Impact on Project (schedule) if information is not provided*	USACE Response Provided during 7/5/2012 Meeting	Estimated USACE Delivery Time (from 07/05/2012)	Impact on Project Schedule if Data not Received
10. Documentation and electronic model files for HEC-RAS Dam Breach model and associated studies.	• Dam Breach Calculation - Use in dam breach routing of cascading failure to FCS and CNS • Verification HEC-RAS Dam Breach model inputs	High	Will require HQ approval, results and inundation mapping may not be provided. Model development documentation will be provided. No scenario files/results likely will be provided.	Likely will take 3 to 4 months minimum	• Project schedule assumed receipt of dam breach routing model. If dam breach and 2004 FFS model cannot be obtained, significant modification to HEC-RAS floodway model will be required to execute dam breach routing downstream of GAPT. In addition, construction of unsteady model and dam breach for entire reach above GAPT to Ft Peck, including incorporation of main stem dam reservoirs, gates, etc. A minimum of a 6 month delay in the project is anticipated.

Table: USACE – Request For Information – Clarification Summary (Continued)

Information Requested in OPPD and NPPD Requests	Analysis for which requested data is needed	Impact on Project (schedule) if information is not provided*	USACE Response Provided during 7/5/2012 Meeting	Estimated USACE Delivery Time (from 07/05/2012)	Impact on Project Schedule if Data not Received
11. HEC-RAS Floodway Model from Gavins to Mississippi with 2011 calibration	• Basis of design calculation • PMF Calculation – Model required to route GAPT SDH and basin below GAPT PMF to FCS and CNS if 2004 FFS model cannot be obtained (see 9) • Dam Breach Calculation - Model required to route dam breach if dam breach studies model (see 10) or 2004 FFS model (see 9) cannot be obtained • Verification of HEC-RAS steady state, unsteady, and dam breach model inputs	Low – if 2004 FFS can be obtained. High – if 2004 FFS and dam breach model cannot be obtained.	2007 Floodway model – may have been edited by states, but they will provide base model. Some calibration done to 2011 events, but they mostly used breach model because of quicker turnaround. 'Calibrated' model to 2011 will not be provided.	Likely 1 to 2 months	• Project schedule assumed receipt of 2004 FFS unsteady model. Model will require significant modification to execute required unsteady simulations resulting in a 3 month delay in the project. • Project schedule assumed receipt of dam breach routing model. If dam breach and 2004 FFS model cannot be obtained, significant modification to HEC-RAS floodway model will be required to execute dam breach routing downstream of GAPT. In addition, construction of unsteady model and dam breach for entire reach above GAPT to Ft Peck, including incorporation of main stem dam reservoirs, gates, etc. A minimum of a 6 month delay in the project is anticipated.

Table: USACE – Request For Information – Clarification Summary (Continued)

Information Requested in OPPD and NPPD Requests	Analysis for which requested data is needed	Impact on Project (schedule) if information is not provided*	USACE Response Provided during 7/5/2012 Meeting	Estimated USACE Delivery Time (from 07/05/2012)	Impact on Project Schedule if Data not Received
12. HEC-HMS models for basins below Gavins	• PMF Calculation – Model to be used for basin response in support of PMF calculation below GAPT to FCS and FCS to NCS	High	Will provide latest copies of model files	Model received 08/17/2012	• N/A
13. Draft HEC-HMS models for basins above Gavins	• PMF Calculation – Evaluate basin response above GAPT compared to assumption of SDH at GAPT	Medium	Will not provide	N/A	• N/A
14. Post 2011 Flooding LiDAR data	• PMF and Dam Breach Calculation Verification of steady state, unsteady, and breach routing model inputs	Medium	Will be provided. Coverage is Ft. Peck on down. Cross-section provided as well	September/October 2012	• N/A
15. 2011 Flooding HW marks	• PMF and Dam Breach Calculation Verification of steady state, unsteady, and breach routing model inputs	Medium	GIS shape file is available and will be provided	Information received 08/17/2012	• N/A

Table: USACE – Request For Information – Clarification Summary (Continued)

Information Requested in OPPD and NPPD Requests	Analysis for which requested data is needed	Impact on Project (schedule) if information is not provided*	USACE Response Provided during 7/5/2012 Meeting	Estimated USACE Delivery Time (from 07/05/2012)	Impact on Project Schedule if Data not Received
16. Historic hydrology information or flooding reports on Missouri.	• PMF Calculation – Evaluate basin response compared to computed PMF	Low	Several exist: 52, 75, 78, 84, 93, 97, 2011 and will be provided	Information received on 8/17/2012 for 1975, 1978, and 1997. Awaiting information on 1952, 1993, and 2011.	• N/A
17. 5-year periodic inspection reports	• Assess dam design for evaluation and defense of Sunny Day Breach Requirement / Credibility • Verification of model input values	Medium	Will check on what can be provided. Concern over terminology based on previous NRC discussions	4+ months	• Conservative assumptions will be made and discussed with USACE at later date resulting in a 1 month delay in the project.
18. Historic aerial/topography/ navigation mapping on Missouri River Gavins to Rulo.	• Geomorphologic Assessment per NUREG/CR-7046, Section 3.8.	Medium	Lots of data available both electronic and hard copy. Some of the hard copy files have begun conversion and are geo-referenced. They will deliver available electronic files and we can request hard copies to supplement if needed.	At July 5, 2012 Meeting, USACE committed to deliver electronic format of requested aerials, with supplemental hard copies that could be requested following review of electronic data. Subsequent USACE response was that this mapping is available elsewhere and they will not provide.	• Pre-dam information may only exist with USACE. Project delay of up to 1 month due to multiple state/local agency contacts (DNR, FSA, USDA, etc.) required to obtain historic aerial photographs

ATTACHMENT 5

Memorandum

Date: March 20, 2013 NED-13-074 DEN

From: Stephen R. Miller

To: Colonel Joel R. Cross

Subject: Request for Information - Missouri River Flood Re-evaluation Studies for Fort Calhoun Station and Cooper Nuclear Station

Thank you for your staff's participation in our meeting of January 25, 2013 regarding USACE data related to the Fort Calhoun Station and the Cooper Nuclear Station Flood Hazard Re-evaluation Studies. These studies have been requested by the Nuclear Regulatory Commission (NRC) and must be submitted to the NRC by March 12, 2014 for both stations.

We understand that the information and data requested in our letter of September 17, 2011 "Additional Information to Support the Request for Information - Missouri River Flood Studies and Mainstem System Dams for Fort Calhoun Station and Cooper Nuclear Station" currently cannot be released.

We are requesting the following data, to assist us fulfilling the NRC request:

- Spillway Design Hydrographs for all six Missouri River Mainstem System Dams, and
- Flood inundation maps, including associated river flows and flood water surface elevations, for the Normal High Pool and Maximum High Pool Scenarios.

Thank you again for your assistance. Please contact Joe Gasper, Project Manager – Fukushima Response, at 402-533-7233, jkgasper@oppd.com if you have any questions related to this request.

Sincerely,

Stephen R. Miller
Manager, Design Engineering Nuclear
Fort Calhoun Station

OPPD
Omaha Public Power District

ATTACHMENT 6

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

REPLY TO
ATTENTION OF

MAY 17 2013

District Commander

Mr. Stephen R. Miller
Manager, Design Engineering Nuclear
OPPD, Fort Calhoun Station
444 South 16th Street Mall
Omaha, Nebraska 68102-2247

Dear Mr. Miller,

On March 20, 2013, the U.S. Army Corps of Engineers (USACE), Omaha District received a request for information for the Missouri River Flood re-evaluation studies for Fort Calhoun Station and Cooper Nuclear to include Spillway Design Hydrographs for all six Missouri River Mainstem System Dams and flood inundation maps, including associated river flows and flood water surface elevations, for the Normal High Pool and Maximum High Pool scenarios.

The USACE security policy limits the release of this data and therefore we cannot release the information. The data has been furnished to the U.S. Nuclear Regulatory Commission with the provision that they are For Official Use Only.

If you have questions or need further assistance concerning this information, please contact Ms. Kim Thomas at 402-995-2448 or email at Kimberly.s.thomas@usace.army.mil.

Sincerely,

Joel R. Cross
Colonel, Corps of Engineers
District Commander

ATTACHMENT 7

Requested Information from United States Army Corps of Engineers for Nebraska Public Power District and Omaha Public Power District

1. Any available LiDAR or other topographic data along the Missouri River above Gavins Point Dam.

2. Reservoir Bathymetry and Spillway Design Flood Inflow and Outflow Hydrographs for all six Missouri River United States Army Corps of Engineers (USACE) Mainstem System dams.

3. Most current Missouri River Mainstem Reservoir System regulation statistics (including individual data for each reservoir), i.e. – pool elevation, outflows, inflows, power generation, and evaporation, for the period from 1967 to the present.

4. Any available estimates/studies on the expected debris types and loads during floods for the Mainstem System Reservoirs and the Missouri River from Gavins Point Dam to Rulo, Nebraska.

5. Any additional or updated information, including original design memorandums, to the publicly available Missouri River Master Water Control Manual dated March 2006 for the following Mainstem Dams data:

    a. Dam geometry (e.g. height, width, slopes, top width)
    b. Dam embankment materials
    c. Dam foundation and abutment types
    d. Outflow rating curves for emergency spillway, outlet works, power plants (pool/tailwater elevation vs. discharge)
    e. Reservoir storage capacity (reservoir elevation-capacity data) curves
    f. Pool and release probability curves

    Assuming there are no updates, we will rely on the data from the 2006 Master Manual for the FHR.

6. Data from the 2009-2010 USACE analysis of the Missouri River Mainstem System dam failure consequences to include:

    a. Inundation mapping at Fort Calhoun Station (FCS) and Cooper Nuclear Station (CNS) for each dam failure scenario analyzed

b. Dam failure flood water surface elevations at FCS and CNS for each dam failure scenario analyzed

c. Dam failure hydrographs for each dam failure scenario analyzed

d. Flood lead time information (time from the initiation of the event to peak flooding at FCS and CNS) for each dam failure scenario analyzed

7. Missouri River HEC-RAS Unsteady Flow Model from Ft. Peck to Rulo, NE (currently under development by the USACE).

8. The following reports:

a. "Gavins Point Dam, Missouri River, Critical Infrastructure Security Program, Dam Failure Analyses, H&H Methodology Report and Consequences Summary," dated October 2009, prepared by the Omaha District, Corps of Engineers

b. "Fort Randall Dam, Missouri River; Pickstown, South Dakota, Critical Infrastructure Security Program, Dam Failure Analyses, H&H Methodology Report and Consequences Summary," dated February 2010, prepared by the Omaha District, Corps of Engineers

c. "Big Bend Dam, Missouri River; Fort Thompson, South Dakota, Critical Infrastructure Protection and Resilience Program, Dam Failure Analyses, H&H Methodology Report and Consequences Summary," dated October 2010, prepared by the Omaha District, Corps of Engineers

d. "Oahe Dam, Missouri River; Pierre, South Dakota, Critical Infrastructure Security Program, Dam Failure Analyses, H&H Methodology Report and Consequences Summary," dated February 2010, prepared by the Omaha District, Corps of Engineers

e. "Garrison Dam, Missouri River; North Dakota, Critical Infrastructure Security Program, Dam Failure Analyses, H&H Methodology Report and Consequences Summary," dated February 2010, prepared by the Omaha District, Corps of Engineers

f. "Fort Peck Dam, Missouri River; Montana, Critical Infrastructure Security Program, Dam Failure Analyses, H&H Methodology Report and Consequences Summary," dated February 2010, prepared by the Omaha District, Corps of Engineers