Callaway2COLPEm Resource

From: Last, George V [george.last@pnl.gov]
Sent: Friday, February 06, 2009 6:38 PM
To: Keller, Tonya K; Olson, Bruce
Cc: Simmons, Mary Ann; Fringer, John
Subject: Callaway Information Needs Table
Attachments: InfoNeedsTable_020608.doc

Hi Bruce,
As promised here is the final revision of the information needs table, incorporating all comments received to date. I am also posting these on the EARRTH Site, and we will be transmitting these to you in a more formal way shortly - perhaps not until Monday. Please let us know if you have any questions or would like to discuss further.

Thanks,
George

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Hearing Identifier: CallawayPlant_Unit2_COL_Public
Email Number: 121

Mail Envelope Properties (C5B209E2.1858B%george.last)

Subject: Callaway Information Needs Table
Sent Date: 2/6/2009 6:38:08 PM
Received Date: 2/6/2009 6:39:14 PM
From: Last, George V

Created By: george.last@pnl.gov

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Files	**Size**	**Date & Time**
MESSAGE	700	2/6/2009 6:39:14 PM
InfoNeedsTable_020608.doc	291904	

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

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Number = number of original information need.
Letter = information need added to the list of original information needs during the site audit.
Red text = further definition of or addition to information needs as a result of site audit conversations.

Info needs #	ER Section	Information Needs	Responsibility/ Submitted By
Acc-		**Accidents**	**PNNL - Van Ramsdell**
Acc-1		Provide a knowledgeable expert who can explain: 1) the definitions of the exclusionary boundary and the low population zone, 2) the relationship of the EAB and LPZ distances for Unit 2 to the EAB and LPZ used for Unit 1, and 3) the distances for calculating the short-term X/Q values in ER Table 2.7-52.	PNNL - Van Ramsdell
Acc-2		Provide a knowledgeable expert who can explain the process used to calculate the 50 percent X/Q values in Table 2.7-52.	PNNL - Van Ramsdell
Acc-3		Provide a knowledgeable expert who can explain the inconsistency in the meteorological data sets used for calculation of the X/Q for long-term dispersion (normal operations) and X/Qs for short-term dispersion (accidents).	PNNL - Van Ramsdell
Acc-4		Provide access to the AEOLUS and DBA calculation packages for staff review.	PNNL - Van Ramsdell
Acc-5		Provide a knowledgeable expert who can discuss the rationale for selecting 2005 meteorological data for severe accident analysis.	PNNL - Van Ramsdell
Acc-6		Provide knowledgeable experts who can discuss the selection of site-specific input to the MACCS2 code.	PNNL - Van Ramsdell
Acc-7		Provide a knowledgeable expert who can discuss the rationale for limiting the time window for severe accident analysis to 24 hrs (ER 7.2.1.3) and other input parameters.	PNNL - Van Ramsdell
Acc-8		Provide knowledgeable experts who can verify that the core damage frequencies listed in the ER include damage from both internally and externally initiated events.	PNNL - Van Ramsdell
Acc-9		Provide knowledgeable experts who can discuss whether the core damage frequencies listed in the ER include damage during plant low-power operation and shutdown conditions as well as during normal operation.	PNNL - Van Ramsdell
Acc-10		Provide access to the MACCS2 calculation package for staff review. (Two weeks before site audit)	PNNL - Van Ramsdell
Acc-11		Provide a water ingestion dose estimate for each severe accident release category.	PNNL - Van Ramsdell
Acc-12		Provide electronic copies of hourly meteorological data for 2003 through 2007.	PNNL - Van Ramsdell

Acc-13		Provide electronic copies of hourly MACCS2 input and output files.	PNNL - Van Ramsdell
Acc-14		Provide estimates of the average individual risk of early fatality and the risk of cancer fatality to area population for each release category to compare with the Commission's safety goals.	PNNL - Van Ramsdell
Acc-15		Provide a knowledgeable expert who can discuss all of the surface water pathway impacts of severe accidents.	PNNL - Van Ramsdell
Acc-16		Provide a knowledgeable expert who can discuss all of the groundwater pathway impacts of severe accidents.	PNNL - Van Ramsdell
Acc-17		Provide knowledgeable experts who can discuss severe accident mitigation alternatives including design alternatives and procedural and training alternatives.	PNNL - Van Ramsdell
Acc-18		Provide a knowledgeable expert who can discuss the SAMDA screening process.	PNNL - Van Ramsdell
Acc-19		Provide knowledgeable experts who can discuss the rationale for assuming that the fire risk is the dominant contributor to external events risks.	PNNL - Van Ramsdell
Acc-20		Provide knowledgeable experts who can discuss the evaluation of the minimum implementation cost of alternatives.	PNNL - Van Ramsdell
Acc-21		Provide knowledgeable experts who can discuss the schedule for and factors to be considered in developing non-hardware alternatives.	PNNL - Van Ramsdell
Acc-22		Provide estimates of the total core damage frequency and population risk estimates for Callaway Unit 1 for use in estimating cumulative risks for the site.	PNNL - Van Ramsdell
Alt-		**Alternatives**	**PNNL - Tom Anderson**
Alt-1	9.2.3	Provide a knowledgeable expert to discuss the costs of the proposed project and energy alternatives such as: • The fixed charge rate for the utility or consortium of utilities • Fuel cost estimates at time of application for the proposed project and for other alternatives • The operation and maintenance cost estimates (fixed component and variable component) at time of application for the proposed project and each alternative • The escalation rates from date of application through facility lifetime (30-year life) for the components of operation and maintenance and fuel for the proposed project and each alternative • The discount rate for the proposed project and each alternative.	PNNL - Tom Anderson
Alt-2		Provide a knowledgeable expert to discuss the viability of the Alternative sites for Callaway Unit 2. Specifically, clarify issues such as: • Constructability within the floodplain • Acquisition of private residential, industrial and/or commercial land • Removal of prime and unique farmland.	PNNL - Tom Anderson

Alt-3		Provide a knowledgeable expert to discuss the viability of Energy Alternatives. Specifically, clarify issues such as: • Costs and impacts of natural gas line routing and capacity at the intertie location • Costs and impacts of coal rail line routing capacity at the intertie location.	PNNL - Tom Anderson
Alt-4	**ESRP 9.4.1**	Provide a knowledgeable expert to discuss the viability of alternatives to the proposed heat dissipation system. For each viable alternative, address relevant information such as: • Land-use requirements • Water-use requirements • Operating and maintenance experience for similar units • Capital, maintenance, and operating costs • Effect on generating efficiency • Predicted thermal and physical effects (e.g., thermal plume and scouring) • Predicted atmospheric effects (e.g., fogging, icing, and drift) • Predicted operating noise levels • Predicted aesthetic effect (e.g., visual plumes) • Predicted recreational benefits.	PNNL - Tom Anderson
AQ-		**Aquatic Ecology**	**PNNL - Jeff Ward**
AQ-1	**ER 2.4.2.2.3**	Provide access to all cited references (such as MDC 1999)	PNNL - Jeff Ward
AQ-2		Provide one table that describes sampling results for the stream stations, and another table for the Missouri River stations, and a knowledgeable expert and supporting documentation to clarify these tables. (Tables 2.4-7 and 2.4-8)	PNNL - Jeff Ward
AQ-3	**ER 2.4.2.2.3 .3**	Provide a knowledgeable expert and supporting documentation to address the apparent discrepancy between the text and Table 2.4-7 regarding Channel Catfish.	PNNL - Jeff Ward
AQ-4		Provide a knowledgeable expert and supporting maps and documentation to clarify the actual location of collector wells. (ER Figure 4.3-3)	PNNL - Jeff Ward
AQ-5	**ER 5.3.2.2**	Provide a knowledgeable expert and supportive data and information to explain the statement that “an absence of harm” has been observed for aquatic species associated with the Callaway Unit 1 cooling system discharges into the Missouri River (Section 5.3.2.2).	PNNL - Jeff Ward
AQ-6	**ER 5.5.1.2**	The ER states that cooling water discharge characteristics for the planned Unit 2 (and expected impact to receiving water) is expected to be similar to those associated with the existing Unit 1. Provide a knowledgeable expert who can explain current NPDES-required toxicity testing and supporting documentation. For example, it would be helpful to see the results of whole-effluent testing required and conducted for Unit 1 under the existing NPDES permit for the past five years to demonstrate that acute or chronic toxicity has not been observed.	PNNL - Jeff Ward

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AQ-7	**ER 6.0**	Provide a knowledgeable subject matter expert who can discuss the measurement and monitoring programs that have been conducted for Unit 1. Specific areas of interest include the programs that evaluated aquatic resources in the streams and Missouri River near the existing intake and outfall structures, and summaries of thermal and chemical monitoring related to blowdown discharge. Access to annual monitoring reports or reports required by NPDES for the last five years would be helpful, if available. (Environmental Measurements and Monitoring)	PNNL - Jeff Ward
AQ-8	**ER 4.3.2**	Provide access to any mitigation plan for the site and a knowledgeable expert to discuss the plan.	PNNL - Jeff Ward
AQ-9	**ER 4.3.2**	Provide a knowledgeable expert and supporting information to clarify the disposal of dredged materials at the site.	PNNL - Jeff Ward
CR-		**Cultural Resources**	**Numark - Grant Day**
CR-1	2.5.3 4.1.3	Provide a knowledgeable expert and supporting data/information to: • Confirm archaeology and historic and resulting reports have been completed and finalized • Address the survey status of the collector wells system, access road, bridge, water supply pipeline, and transmission lines areas. Provide access to all final reports for review.	Numark - Grant Day
CR-2	2.5.3 4.1.3	Provide knowledgeable expert to confirm all pertinent survey reports are adequate for current SHPO survey standards.	Numark - Grant Day
CR-3	2.5.3 4.1.3	Provide copies of all relevant correspondence between applicant and SHPO, and/or tribes including SHPO comments on definitions of area of potential effects, and all related archaeological and architectural surveys and reports. Provide expert to discuss related archaeological and architectural surveys and reports.	Numark - Grant Day
CR-4	2.5.3 4.1.3	Provide a knowledgeable expert who can describe any archaeological sites that have been recommended for Phase II or Phase III investigations and if any Traditional Cultural Properties been identified and if so provide avoidance or mitigation plans (MOAs or MOUs).	Numark - Grant Day
CR-5	2.5.3	Provide access to all consultation letters with Native American Tribes, and Interested Parties.	Numark - Grant Day
CR-6	2.5.3	Provide a knowledgeable expert and provide supporting information that describes and lists all Tribes that were consulted and how each was selected.	Numark - Grant Day
CR-7	4.1.3 2.5.3	Provide a knowledgeable expert to describe the discovery process for the possible Steamboat wreck sites and any references and discussion of the possibility of steamboat wreck sites in the project area for review.	Numark - Grant Day
CR-8	4.1.3 5.1.3	Provide a knowledgeable expert and provide supporting information to provide a detailed description of the plan for inadvertent discoveries (human remains and all other cultural sites), which is mentioned but not elaborated upon.	Numark - Grant Day
CR-9	5.1.3	Provide a knowledgeable expert to describe how potential impacts resulting from construction and operations on cultural and historic resources were analyzed, as well as if indirect effects were considered to cultural resources located outside the project's footprint including TCPs and above ground structures.	Numark - Grant Day
CR-10	4.1.3	Provide a knowledgeable expert and supporting information to address potential impacts on cultural resources from preconstruction activities.	Numark - Grant Day
G-		**General Information Needs**	**PNNL - George**

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			Last/Mary Ann Simmons
G-1		Provide originals of all ER figures in .jpeg, .png, or .tif format at a resolution of at least 300 dpi, sized correctly, with legends, and legible in black and white. (Figures for wind roses need not be included.)	PNNL - George Last/Mary Ann Simmons
G-2		Provide knowledgeable expert(s) and supporting data and information (including assumptions, calculation package, and consultation letters) in appropriate disciplines to support all statements made and conclusions reached for each subject area throughout the ER.	PNNL - George Last/Mary Ann Simmons
G-3		Make available all references cited in the ER	PNNL - George Last/Mary Ann Simmons
G-4		Provide the background information that supports all statements made and conclusions reached for each subject area for each alternative site (documentation is needed to show due diligence in gathering and using the best readily available information for a reconnaissance-level review).	PNNL - George Last/Mary Ann Simmons
G-5		Provide knowledgeable expert(s) in appropriate disciplines to discuss contents of Tables 10.1-1 and 10.1-2 and assure consistency between the contents of the summary tables and the results of information needs discussions. It is anticipated that this will be addressed in specific breakout sessions for the individual disciplines.	PNNL - George Last/Mary Ann Simmons
G-6		Provide large wall map(s) at the site audit that show key features related to the proposed project, including: • Proposed temporary and permanent facilities • Proposed construction laydown areas • Proposed intake pipeline • Proposed collector wells • Proposed discharge pipeline • Proposed transmission corridor(s) • Property boundaries • Points of interest (e.g., nearby residences, gas pipelines, nearby industries, including quarries/mines) • Proposed rail line spur • Proposed haul roads.	PNNL - George Last/Mary Ann Simmons

G-7		Provide all GIS and/or CAD data/databases used to support the ER analysis and results including existing and proposed conditions as appropriate. The data should generally include, but are not limited to: • All existing and proposed site infrastructure (roads, buildings, intake/discharge pipelines, transmission lines, utility right-of-ways/transmission corridors, power blocks, switchyards, pipeline corridors, cooling and retention ponds, dams, canals, rail lines, monitoring/instrument stations, etc.) • Location data (official property boundary, official unit point location, exclusion area boundary, and other relevant boundaries on-site or regionally) • All surface and groundwater hydrologic data (watershed/subbasin boundaries, stream/river channels, springs, sinkholes, flood boundaries, reservoir boundary, site stormwater drainage, levees, hydrogeologic study boundaries, aquifers, potentiometric contours, well locations, surface water monitoring sites, etc.) • All terrestrial and aquatic ecological data (wetlands, ponds, terrestrial and aquatic sampling sites, wildlife/habitat areas, land use/land cover, and threatened and endangered species locations) • Terrain and bathymetric data (LiDAR, contours, river cross sections, bathymetric point samples, etc.) • Socioeconomic data (sector data at various radii, census blocks with attribute data including low income and minority data, state/county park recreational area boundaries, trails, water trails, wildlife management units, traffic count data, commuter routes, etc.) • Geology and soils data (site and vicinity data, faults, folds, seismic activity, etc.) • Alternative (candidate) site data (point locations, proposed site boundary, proposed infrastructure, etc.).	PNNL- Andre Coleman
G-8		Provide a list that separates the pre-construction and construction impacts (10 CFR 51.45(c)) and assigns to each type of impact (e.g., land use, surface water), an approximate percentage of the overall impacts and the basis for this estimation.	PNNL-George Last /Mary Ann Simmons
H-		**Hydrology**	**Numark - Jim Scherrer**
H-0		Have available for review all references used to support statements made in the hydrology sections of the ER including calculation packages, model input files and modeling result summaries. Include relevant information on groundwater modeling used to assess performance of the water intake system and input files for CORMIX.	Numark - Jim Scherrer
H-1		Provide a knowledgeable expert who can address the temperature variation within the Missouri River (such as the average-maximum and average-minimum temperature of this water body)	Numark - Jim Scherrer
H-2		Provide a knowledgeable expert who can address sediment transport in surface water bodies and wetlands (such as quantities and locations of rate, bed and suspended load fractions and graduation).	Numark - Jim Scherrer
H-3		Provide a knowledgeable expert who can address the design basis flood (including its relationship to 100-year value) and the impacts of those floods on alluvial collector wells and plant operation.	Numark - Jim Scherrer
H-4		Provide a knowledgeable expert who can address the discharge area bathymetry in the floodplain (such as its seasonal characteristics, distribution, and the intake and discharge velocities).	Numark - Jim Scherrer

H-5		Provide a knowledgeable expert who can address the hydrologic system (such as the surface water returns after withdrawal and their quantification). In addition, provide an expert who can address quantification of hydrologic budget data (such as monthly information to supplement annual information).	Numark - Jim Scherrer
H-6		Provide a knowledgeable expert who can address surface water usages (such that the rate of use is defined).	Numark - Jim Scherrer
H-7		Provide a knowledgeable expert who can address plant water usage (including monthly data and during period of low water availability).	Numark - Jim Scherrer
H-8		Provide a knowledgeable expert who can address surface water chemical analysis (including mercury Hg baseline measurements).	Numark - Jim Scherrer
H-9		Provide a knowledgeable expert who can address plant water discharges to surface water bodies including the magnitude and nature of the pollutant discharge in space and time.	Numark - Jim Scherrer
H-10		Provide a knowledgeable expert who can address discharge system (including velocity and temperature differential characteristics).	Numark - Jim Scherrer
H-11		Provide a knowledgeable expert who can address heat dissipation systems (including system performance due to hydrological variations).	Numark - Jim Scherrer
H-12		Provide a knowledgeable expert who can address the nonradioactive effluent treatment facilities (with focus on range of materials within the intake and discharge flow).	Numark - Jim Scherrer
H-13		Provide a knowledgeable expert who can address Construction Phase water quality (and the baseline WQ data being used).	Numark - Jim Scherrer
H-14		Provide a knowledgeable expert who can address Construction Phase surface and groundwater quality (related to interaction with exposed substrate material).	Numark - Jim Scherrer
H-15		Provide a knowledgeable expert who can address ground water levels expected during operation (relative to plant grade, bgs).	Numark - Jim Scherrer
H-16		Provide a knowledgeable expert who can address ground water withdrawals during operation (and quantification as average, high or low volumes).	Numark - Jim Scherrer
H-17		Provide a knowledgeable expert who can address low riverine flow and low groundwater levels during operation (such that analysis of interactions might be considered).	Numark - Jim Scherrer
H-18		Provide a knowledgeable expert who can address area ground water withdrawals by other users occurring during operation (and consideration for monthly withdrawals).	Numark - Jim Scherrer
H-19		Provide a knowledgeable expert who can address impact of Missouri River alluvium groundwater collector wells during operation (and their relationship to wetlands north of Bingell Island).	Numark - Jim Scherrer
H-20		Provide a knowledgeable expert who can address Receiving surface waterbodies for discharge system during operation (such as water flow, temperature, sediment, and 7 day, one in 10 year flows).	Numark - Jim Scherrer
H-21		Provide a knowledgeable expert who can address numerical models for water discharge into receiving surface (including theory, assumptions, basis for parameter values and passage times).	Numark - Jim Scherrer

H-22		Provide a knowledgeable expert who can address thermal monitoring of discharge during phases of pre-application, pre-operational, and operation (such that bathymetry can be shown relative to sample locations at all thermal, hydrological, or aquatic biological monitoring stations).	Numark - Jim Scherrer
H-23		Provide a knowledgeable expert who can address hydrological monitoring programs and its attendant sediment transport expectation during phases of pre-application, pre-operational, and operation (such that expected transported sediment can be quantified). This includes groundwater flow monitoring programs.	Numark - Jim Scherrer
H-24		Provide a knowledgeable expert who can address chemical monitoring programs during phases of pre-application, pre-operation, and operation (such that details of the analytical procedure and its quality assurance program can be documented).	Numark - Jim Scherrer
H-25		Provide a knowledgeable expert who can discuss Burns & McDonnell (2008a). Modeling the Thermal Component of the Wastewater Discharge Plume from Units 1 and 2 of the Callaway Nuclear Power Plant, February 2008.	Numark - Jim Scherrer
H-26		Provide a knowledgeable expert who can discuss Burns & McDonnell (2008). Phase II Hydrogeologic Investigation Report, Collector Well Siting Study, June 2008.	Numark - Jim Scherrer
H-27		Provide a knowledgeable expert who can discuss and provide all input assumptions and data for all models such as that for thermal plume analysis, groundwater modeling, water budget, and surface water runoff.	Numark - Jim Scherrer
HP-		**Health Physics - Radiological Health/Waste Systems/Decommissioning**	**PNNL - Bob Scherpelz**
HP-1		Provide a knowledgeable expert to discuss the models, assumptions and input data used to arrive at estimates of doses to construction workers (examples: GIS layer of site and compass sectors; locations of workers on the construction site receiving exposures).	PNNL - Bob Scherpelz
HP-2		Provide a knowledgeable expert to discuss the models, assumptions and input data used to arrive at estimates of doses to the general population (examples: location of milk goat, which was not mentioned in Table 5.4-6).	PNNL - Bob Scherpelz
HP-3		Provide a knowledgeable expert to discuss the models, assumptions and input data used to arrive at estimates of doses to biota other than humans (examples: selection of surrogate species, calculation input values for the species and effluent concentrations)	PNNL - Bob Scherpelz
HP-4		Provide access to the Offsite Dose Calculation Manuals for Unit 1 and for Unit 2 for review.	PNNL - Bob Scherpelz
HP-5		Provide access to electronic copies of input and output files for the following models: XDCALC, LADTAP-II, GASPAR-II. Also provide a knowledgeable expert to discuss the input and output of the code calculations, and access to the calculation packages used to support dose calculations	PNNL - Bob Scherpelz
HP-6		Provide information on the XDCALC computer code, including the software manual with instructions for input and description of output.	PNNL - Bob Scherpelz
HP-7		Provide for review the annual reports of the Callaway Radiological Environmental Monitoring Program. The last	PNNL - Bob

		five years of environmental monitoring reports at the Callaway site should be included.	Scherpelz
HP-8		Provide a knowledgeable expert to discuss the models, assumptions and input data used to arrive at estimates of radioactive releases through the liquid, gaseous and solid waste systems.	PNNL - Bob Scherpelz
HP-9		Provide data on transit times for liquid effluent to receptors.	PNNL - Bob Scherpelz/
HP-10		Provide a knowledgeable staff member to discuss radioactive waste systems (example: waste minimization plans as specified in ESRP.	PNNL - Bob Scherpelz/
LU-1		**Land Use**	**PNNL - Kristi Branch**
LU-2		Provide knowledgeable expert who can discuss utility corridors near the site (re: Figure 2.2-7).	PNNL - Kristi Branch
LU-3		Provide knowledgeable expert who can discuss whether borrow pits will be created and/or expanded.	PNNL - Kristi Branch
LU-4		Provide knowledgeable expert who can discuss historical use patterns on the Reform Conservation Area.	PNNL - Kristi Branch
LU-5		Provide knowledgeable expert to discuss the disposition of dredge spoils for any dredging to deepen the barge slip.	PNNL - Kristi Branch
LU-6		Provide knowledgeable expert to discuss potential for land use change from the development of RV/mobile home parks to house construction workers and the historical experience with land use changes that occurred in response to housing demand for workers associated with Unit 1 (both construction and operation).	PNNL - Kristi Branch
LU-7		Provide knowledgeable expert to discuss land use impacts from any modifications to the water supply/discharge system, including the collector well system (re: Figure 4.1-2 and prime farmland).	PNNL - Kristi Branch
LU-8		Provide a knowledgeable expert who can discuss modifications to the haul road and modifications to access roads and parking areas to accommodate construction traffic to and from the site (for example, on p. 4-67, the ER states that two new site access roads connecting Route 428 and Route 459 will be built).	PNNL - Kristi Branch
Met-		**Meteorology/Air Quality**	**Numark - Steve Hanna**
Met-1		Provide a knowledgeable expert and supporting data/information to explain the logic for conclusions reached in the ER (e.g., “impacts are small” or “onsite conditions are similar to those at other regional sites”). Details should be addressed, such as criteria for the decision, inputs used and methodologies, analysis of outputs, and statistical methods applied.	Numark - Steve Hanna
Met-2		Provide a knowledgeable expert and supporting data/information to explain why the meteorological analyses are done separately for the two measurement levels on the meteorological tower.	Numark - Steve Hanna
Met-3		Provide a knowledgeable expert and supporting data/information (e.g., input and output files, and assumptions) to support all transport and dispersion model runs.	Numark - Steve Hanna

Met-4	ER 2.7.1.1	Provide a knowledgeable expert and supporting data/information (such as detailed topo maps) to explain the logic behind the statement that "drainage is expected to be minimal."	Numark - Steve Hanna
Met-5	ER 2.7.1.2	Provide a knowledgeable expert to clarify statements such as "macro-scale diffusion" and "diffusion is worst."	Numark - Steve Hanna
Met-6	ER 2.7.2	Provide a knowledgeable expert and access to specific references (documents, dates, sampler locations, and sampler data and analysis, standard, and sampling results) that can support the statement that the area "is listed as being better than national standards." (Regional air quality)	Numark - Steve Hanna
Met-7	ER 2.7.4	Provide a knowledgeable expert and supporting data and information to explain: 1) details on the Callaway met tower and instruments (photo, period of record, types of instruments, types of data archived, QA/QC methods, and so on), 2) the use of only three years (2004-2006) of met data, 3) the use of "monthly design wet bulb temperature." (Local meteorology). Also, provide a tour of the meteorological tower and supporting structures.	Numark - Steve Hanna
Met-8		Provide a knowledgeable expert and supporting data and information to explain the phrase "heavy rains occur infrequently," to clarify the discussion of precip wind roses, and to discuss general conclusions that apply across the data. (p. 2-496)	Numark - Steve Hanna
Met-9	ER 2.7.4.3	Provide a knowledgeable expert and supporting data and information to clearly explain the method of estimating mixing depth and to explain what is meant by "temperature inversion" and how the persistence numbers are calculated. (Mixing depth)	Numark - Steve Hanna
Met-10	ER 2.7.4.4	Provide a knowledgeable expert and supporting data and information to explain the data, scientific interpretation, and logic in reaching conclusions regarding the dominant wind direction and similarities between the on-site data and the NWS sites near Callaway (including wind roses and the use of wind speed data to estimate the site roughness length). (Wind speed and direction)	Numark - Steve Hanna
Met-11	ER 2.7.4.6	Provide a knowledgeable expert and supporting data and information to discuss the stability method used (determined by the temperature difference between two levels (10 and 60 m) on a tower), the stability persistence for the 10 m separate from 60 m levels, and the conclusion that an inversion persists for a full day. Also, provide access to all hourly met data for this period. (Atmospheric stability persistence)	Numark - Steve Hanna
Met-12	ER 2.7.5	Provide access to a detailed topo map and a knowledgeable expert to discuss the possible drainage wind effects at night. (Maximum terrain heights and top maps)	Numark - Steve Hanna
Met-13	ER 2.7.6	Provide a knowledgeable expert and supporting data and information to explain: • Estimates of atmospheric dispersion factors • The use of the ABS code XDCALC • What is meant by "mixed mode release" including source locations, elevations, release rates, momentum and buoyancy flux, and nearby building dimensions • The logic behind the statement that "building wake credit was taken" • The logic behind decisions regarding nearest cow, gardens, etc. (all approximately 4 km) • The basis for concluding that the data from an earlier period "agree well" or are "very similar" to those from the 2004-2006 period (using standard statistical tests) • How the 50th percentile dispersion factors were calculated with AEOLUS3 (including the input and output	Numark - Steve Hanna

		files and model options chosen).	
Met 14		Provide a knowledgeable expert and supporting data and information to explain these tables of wind speed and direction joint frequency distributions for stability relative to estimating inversion strength and stability. (Tables 2.7-36 through 37. (pages 2-540 through 2-554)	Numark - Steve Hanna
Met-15	ER 5.3.3.1.1	Provide a knowledgeable expert and supporting data and information to discuss: • The version number and the exact citation for SACTI • How SACTI uses the two sets of met input files (from the 10 m and 90 m levels) • The effects that CTs have on cloud formation and precipitation • Low frequency combinations of conditions that might have a major environmental impact • The logic behind why the ESWS CTs are "not considered further in this analysis" • The rationale for concluding that "impacts from elevated plumes would be small" • The possibility of plume interaction (thermodynamics and kinematics) • The detailed outputs of SACTI and the logic behind conclusions of "small" or "no impact" or "insignificant increases" • Conclusions for the ESWS CTs particularly relative to near-field impacts • The high RH relative to ground level fog • The design wet bulb temperature for the cooling towers • The source of inputs in Tables 5.3-4 and 5.3-5. (Heat dissipation to atmosphere from CT plume).	Numark - Steve Hanna
NP-		**Need for Power**	**PNNL - Tom Anderson**
NP-1	8.2.1	Provide a knowledgeable expert to discuss the status of the State's review of the IRP. Specifically, clarify issues such as: • Recent discussions with the PSC about revising the IRP • Expected schedule for IRP approvals • Current PSC issues with the IRP and their resolution.	PNNL - Tom Anderson
NP-2	8.2.1	Provide a knowledgeable expert to discuss how Callaway Unit 2 is integrated into the NERC/SERC Long-Term Reliability Assessment.	PNNL - Tom Anderson
NP-3	8.2.1	Provide a knowledgeable expert to discuss customers for the power to be generated; specifically, clarify issues such as: • Identification of expected customers (or firm power sales) for the power to be supplied by the proposed facility and any signed agreements for the purchase of the power • Estimation of forecasted power sales by the applicant in the relevant service area (Note: this information is likely to be business sensitive and/or proprietary information).	PNNL - Tom Anderson
BC-		**Benefit - Cost**	**PNNL - Kristi Branch**
BC-1	10.4	Provide a knowledgeable expert to discuss the projected costs and cost components/factors for the construction and operation of the project and the sources upon which these projections are based. Be prepared to explain how	PNNL - Kristi Branch

		and why these costs compare to other proposed NPPs and what has been done to provide bounding estimates of these costs and whether they are expressed in current or constant dollars.	
BC-2	10.4	Provide a knowledgeable expert to discuss projected current-dollar estimates of the annual tax benefits expected to be paid because of constructing and operating the new operating unit over the lifetime of the new plant. The discussion should Include historic and expected property taxes paid to Callaway County (and other tax recipient counties), expected annual sales taxes paid to the State of Missouri, and any expected corporate taxes paid to jurisdictions affected by the plant.	PNNL - Kristi Branch
BC-3	10.4	Provide a knowledgeable expert to explain and discuss how the Federal incentives provided by the Energy Policy Act of 2005 are expected to specifically mitigate projected construction and operations costs over the life of the proposed facility. Quantify the anticipated amount of Federal incentives likely to apply to the proposed action from the following: • Production tax credit for the first advanced reactors brought on line in the United States • Federal risk insurance benefits expected as part of the Nuclear Power 2010 Partnership. Describe the expected impact of these incentives in terms of their role in making the project economically viable, and the impact on the proposed action in case Callaway Unit 2 does not qualify for some or all of the incentives.	PNNL - Kristi Branch
BC-4	10.4	Provide a knowledgeable expert to discuss the important conclusions to be drawn from the summary in Table 10.4.1.	PNNL - Kristi Branch
BC-5	10.4.1	Provide a knowledgeable expert to discuss the benefits of the project that might be non-quantifiable or non-monetary, and to discuss whether and how the forecasted benefits from electricity consumption have been independently verified	PNNL - Kristi Branch
NRHH		**Non-Rad Human Health/Noise**	**PNNL - Bob Scherpelz/Amoret Bunn**
NRHH-1	4.4.1 and 4.7	Provide a knowledgeable expert to discuss public and occupational health, and noise associated with pre-construction and construction activities. Discussion to include examples or controls that would be imposed to mitigate air emissions during construction activities; specific references to air quality and noise limit regulations; distance to nearest accessible area that could be impacted by noise (e.g., closest resident to the fence line); schedule for construction activities (e.g., will construction be 24/7?); peak noise levels during construction activities.	PNNL - Amoret Bunn
NRHH-2	5.3.4.1	If available, provide access to any correspondence with the Missouri Department of Health and Senior Services regarding public health concerns from thermophilic microorganisms (etiological agents) from cooling waters.	PNNL - Amoret Bunn
NRHH-3	5.3.4.1	Provide a knowledgeable expert to discuss potential thermophilic microorganism impacts from cooling water discharge to the Missouri River. Discussion to include the proximity and types of recreational activities occurring near the cooling water discharge. (ER Section 5.3.4.1)	PNNL - Amoret Bunn
NRHH-4	5.3.4.1	Provide a knowledgeable expert to discuss occupational health in association with operation and maintenance activities of cooling towers and protection of workers from thermophilic microorganisms. Discussion to include examples of personal protective equipment or activities implemented when working in and around the cooling towers. (ER Section 5.3.4.1)	PNNL - Amoret Bunn

NRHH-5	5.6.3	Provide a knowledgeable expert to discuss the following associated with the transmission system: ozone, electrostatic effects (electric shock), and conformance with NESC concerning steady-state currents. (ER Section 5.6.3)	PNNL - Amoret Bunn
NRHH-6	7.7	Provide a knowledgeable expert to discuss cumulative health impacts of construction and operation. Discuss other activities existing or planned in the area that should be considered in cumulative impacts. (ER Section 7.7)	PNNL - Amoret Bunn
SE-		**Socioeconomics/EJ**	**PNNL - Kristi Branch**
SE-1		Provide a knowledgeable expert to discuss the "baseline" population forecasting methods and assumptions.	PNNL - Kristi Branch
SE-2		Provide a knowledgeable expert to discuss sources of tax information and budgets (e.g., 2-368).	PNNL - Kristi Branch
SE-3		Provide a knowledgeable expert who can discuss the distribution of tax payments on Unit 1 in quantitative terms and their impacts on neighboring jurisdictions and service levels.	PNNL - Kristi Branch
SE-4		Provide a knowledgeable expert who can discuss how the service levels in the various jurisdictions compare to national or state standards and to pertinent officials' assessments of adequacy.	PNNL - Kristi Branch
SE-5		Provide a knowledgeable expert who can discuss the residential patterns and commuting routes of workers on Unit 1, both historic construction and current operations workers.	PNNL - Kristi Branch
SE-6		Provide knowledgeable expert to discuss status of developing County Planning Commissions.	PNNL - Kristi Branch
SE-7		Provide a knowledgeable expert to discuss the source of information about the characteristics and life-style attributes of minority populations in the region of interest (ROI) and nearby communities beyond census data.	PNNL - Kristi Branch
SE-8		Provide a knowledgeable expert and supporting data and information to describe the results of the noise analysis, in terms of the noise levels at the site boundaries (in addition to the general rules about sound attenuation).	PNNL - Kristi Branch
SE-9		Provide a knowledgeable expert to discuss the projected composition of the workforce during the construction phase, the distribution between construction, operations, and security personnel during the construction phase, and the shift schedules of these different groups (and the availability of data from the construction and operation of Unit 1 that might inform the analysis).	PNNL - Kristi Branch
SE-10		Provide a knowledgeable expert who can discuss the traffic analysis, including traffic from both workers and materials entering and exiting the site, the numbers of vehicles expected to be on each of the major access routes and their affect on traffic congestion, LOS, and to identify and discuss the impacts of this traffic on affected populations, including the impacts of the workforce onsite during outages.	PNNL - Kristi Branch
SE-11		Provide a knowledgeable expert who can discuss the local populations that will be affected by the construction activities, particularly those within 10-15 miles of the site.	PNNL - Kristi Branch
SE-12		Provide a knowledgeable expert to discuss the basis for the assumptions and calculations concerning the residential location and characteristics of the construction workforce and the impact of their employment on the	PNNL - Kristi Branch

		local and area economy and employment, including the use of the RIMS II multipliers, assumptions about who would fill the indirect jobs, and consequences for area demographics. This discussion should cover where the workforce during construction is assumed to originate and where they are assumed to reside, including those expected to be weekly commuters (i.e., residing in the ROI during the work week), including how this relates to the survey information referenced on p. 4-71. It would also include discussing the numbers of different types of workers over the construction period, including those estimated to reside currently in the ROI. A graph and tables showing the numbers of these different groups over time and the estimated number of people, families, and school age children estimated to be in the local communities and counties of the EIA due to the project would be particularly helpful.	
SE-13		Provide a knowledgeable expert to discuss when site-specific workforce estimates are expected to be available (see p. 4-70-71).	PNNL - Kristi Branch
SE-14		Provide a knowledgeable expert to discuss the assumptions about the residential location choices of the construction phase workforce including the basis of those assumptions and how they compare with evidence from the construction of Unit 1. In particular, discuss how many temporary and in migrating workers would be distributed into the communities in Callaway County. Provide information about the sources of the assumptions/estimates of distribution of workers into the migration categories and of the total wages and wage rates presented in the ER (see p. 4-73).	PNNL - Kristi Branch
SE-15		Provide a knowledgeable expert to discuss how housing prices and availability, including temporary housing, were affected during the construction of Unit 1, particularly in Callaway County, and how they are likely to be affected by the construction of Unit 2, particularly in the residential neighborhoods and communities closest to the site.	PNNL - Kristi Branch
SE-16		Provide a knowledgeable expert who can discuss expenditures for plant construction and operation other than wages that would occur in the EIA, and their effect on local employment, income, and tax receipts.	PNNL - Kristi Branch
SE-17		Provide a knowledgeable expert to discuss how the increased demand due to project-related populations and activities, and tax revenues would affect impacts (e.g., schools in Boone County).	PNNL - Kristi Branch
SE-18		Provide a knowledgeable expert to discuss the analysis of potential pathways by which it was determined that minority and low-income populations would not be affected disproportionately by adverse impacts.	PNNL - Kristi Branch
SE-19		Provide a knowledgeable expert to discuss when the estimated 363 operations phase workers for Unit 2 would arrive on site, including whether a majority of them would start work during the construction phase of the project, and how this would affect the assessment of operations-phase impacts.	PNNL - Kristi Branch
SE-20		Provide a knowledgeable expert to discuss the challenges for area communities to adjust to the rapid decline in employment following the construction phase and how this affects the characterization of impacts of the operations phase	PNNL - Kristi Branch
SE-21		Provide a knowledgeable expert to discuss the basis for the conclusions about the magnitude of impacts assigned to the EIA from employment, income, taxes, and housing, with particular attention to consistency between construction and operations phases.	PNNL - Kristi Branch
ST-		**Site and Technical Oversight**	**PNNL - Steve Maheras**

ST-1		Provide a knowledgeable expert to clarify the status of environmentally related authorizations required by Federal, State, regional, local, and affected Native American tribal agencies.	PNNL - George Last/Mary Ann Simmons
ST-2		Provide a knowledgeable expert to discuss the site location (such as the township, range and section numbers).	PNNL - George Last/Mary Ann Simmons
ST-3		Make aerial photographs and perspective drawings of the site available (such as high-oblique aerial views that show the facility and the site boundary).	PNNL - George Last/Mary Ann Simmons
ST-4		Provide a knowledgeable expert and topographic maps to describe the construction zone and land to be cleared (including transmission line and transportation corridors).	PNNL - George Last/Mary Ann Simmons
ST-5		Provide knowledgeable experts to discuss the measures and control/operational procedures to limit potential impacts (such as noise, erosion, dust, traffic, waste, surface-water, and groundwater).	PNNL - George Last/Mary Ann Simmons
ST-6		Provide a knowledgeable expert to discuss possible buildup of radionuclides in the environment, such as in sediments.	PNNL - George Last/Mary Ann Simmons
T-		**Transportation**	**PNNL - Steve Maheras**
T-1	**ER 5.11.2**	Provide a knowledgeable expert and supporting data and information to support the decay heat generation rate of 5.450 kW. (Section 5.11.2)	PNNL - Steve Maheras
T-2		Provide access to the Transportation Calculation Package for the calculations in ER Sections 3.8, 5.11, and 7.4 (including the basis for the number of shipments, the TRAGIS output files, RADTRAN 5.6 input and output files, spreadsheets used to perform the nonradiological transportation analyses, and reference citations for the data used in RADTRAN 5.6).	PNNL - Steve Maheras
T-3	**ER 5.11**	Provide a knowledgeable expert and supporting data and information to discuss the transportation calculations and provide references for the "RADTRAN Input from NRC Models" contained in Table 5.11-3, and "Additional RADTRAN Input Parameters" in Table 5.11-8.	PNNL - Steve Maheras
T-4		Provide a knowledgeable expert and supporting data and information to discuss the transportation calculations in Section 7.4 and possible under-reporting due to the use of the Motor Carrier Management Information System.	PNNL - Steve Maheras
T-5		Provide a knowledgeable expert to explain how release fractions are used in the transportation accident analyses and provide the assumptions to support the selection of these release fractions (for example, describe the release fraction for Category 8 accidents in Table 7.4-5 compared to the original source for this data (NUREG/CR-6672, Table 7.31, p. 7-73). (ER Section 7.4)	PNNL - Steve Maheras
T-6		Provide a knowledgeable expert and supporting data and information to discuss assumptions for the pre-	PNNL - Steve

		construction and construction material estimates. (ER Section 10.2.2)	Maheras
T-7		Provide a knowledgeable expert and supporting data and information to clarify how the numbers of shipments of unirradiated fuel, irradiated fuel, and radioactive waste were estimated.	PNNL - Steve Maheras
T-8		Provide a knowledgeable expert and supporting data and information to clarify how the numbers of shipments and impacts were normalized to the 1100 MW(e) reactor. (ER Sections 5.7.8, 5.11 and 7.4)	PNNL - Steve Maheras
T-9		Provide a knowledgeable expert and supporting data to clarify how to partition the number of construction workers into the pre-construction and construction periods.	PNNL - Steve Maheras
TE-		**Terrestrial Ecology**	**Numark - Sally Mayasich**
TE-0	ER 2.4.1.1	Provide a knowledgeable expert to describe USGS 2005 Land Use and Land Cover (LULC) mapping for the ecological investigation area and the 2006 National Agricultural Imagery Program (NAIP) aerial photo interpretation of existing land cover with field reconnaissance on the site, especially in habitat areas that may be utilized by important species. Also, provide LULC and NAIP materials used in determining cover types. (Terrestrial Habitats)	Numark - Sally Mayasich
TE-1	ER 2.4.1.2.1 .3	Provide a knowledgeable expert and supporting references to support the statement that historically, Indiana bats have been observed in the vicinity and the site is within their habitat range. Provide access to Clawson (2003) and MDC (2007d).	Numark - Sally Mayasich
TE-2		References: Make available all cited references.	Numark - Sally Mayasich
TE-3		Provide a knowledgeable expert to discuss the methods used to quantify habitat distribution onsite, methods and locations of wildlife and plant surveys, and methods used and expertise of persons identifying species sighted, heard, or trapped, especially threatened and endangered (T&E) species.	Numark - Sally Mayasich
TE-4	ER 2.4.1.2.4	Provide a knowledgeable expert and supporting data and information to discuss running buffalo clover relative to suitable habitat in cover types known to be present at Callaway (e.g., forest-grassland interfaces and stream corridors), and efforts taken to survey this and state-listed species.	Numark - Sally Mayasich
TE-5	ER 2.4.1.4	Provide a knowledgeable expert and supporting data and information/references to support the statement “The only disease vector known to occur on the AmerenUE property is the deer tick (*Ixodes scapularis*) which has been known to transmit Lyme disease to humans.”	Numark - Sally Mayasich
TE-6	ER 2.4.1.4	Provide a knowledgeable expert and supporting data and information/references to support the statement “No pest species are known to be widespread or cause serious problems at the AmerenUE property and surrounding ecological investigation area.”	Numark - Sally Mayasich
TE-7	ER 2.4.2.1.1 .4	Provide a knowledgeable expert and supporting data and information to discuss jurisdictional wetlands and the status of whether the Army Corps or other stakeholder agencies concur with the findings of the wetland delineation.	Numark - Sally Mayasich
TE-8	ER 4.3.1.3	Provide a knowledgeable expert and supporting data and information/references to discuss all (local, state and federal) permitting aspects associated with construction impacts to wetlands, streams, and rivers, and any state or local guidance documents.	Numark - Sally Mayasich

TE-9	ER 4.3.1.3	Provide a knowledgeable expert and supporting data and information/references to discuss how collector well sites were determined to ensure adequate water supply while limiting potential environmental impacts, including possible location of all three collector wells on the land side of the levee to reduce wetland impacts?	Numark - Sally Mayasich
TE-10	ER 4.3.1.3	Provide a knowledgeable expert and supporting data and information/references to discuss the potential impacts to the Mollie Dosier Chute associated with culvert construction. For instance, was this area included in the preoperational sampling? Is there any reason to believe that T&E species might exist there?	Numark - Sally Mayasich
TE-11	ER 5.2.1.3	Provide a knowledgeable expert to describe how the site wetland hydrology relates to the aquifers affected by the Collector Well System, for example what do groundwater model results predict in terms of water level changes below wetland areas and the associated effects.	Numark - Sally Mayasich
TE-12	ER 5.3.3.2.4	Provide a knowledgeable expert to discuss local birds as well as major flyways for migratory birds.	Numark - Sally Mayasich
TE-13		Provide a knowledgeable expert to discuss salt deposition and effects on vegetation. Include isopleths maps.	Numark - Sally Mayasich
TE-14		Provide a knowledgeable expert to discuss how vegetation management will be implemented, including herbicides to be used and vegetation removal methods	Numark - Sally Mayasich
TE-15	ER 6.5.1.1	Provide a knowledgeable expert and supporting data and information to discuss the logic behind the decision to conduct/not conduct pre-operational/operational monitoring related to terrestrial and wetland resources, and if conducted, what each program will entail (both in schedule and scope).	Numark - Sally Mayasich
TE-16		Provide a knowledgeable expert to clarify the status of the transmission line corridor construction, whether important species surveys have been conducted in these corridors, and the transmission line impacts to wildlife.	Numark - Sally Mayasich
TE-17		Provide a knowledgeable expert to discuss cumulative impacts of preconstruction, construction and operation on ecologically important species on the site. Discuss what other activities are in the area or planned for the area that should be considered in cumulative impacts.	Numark - Sally Mayasich
TL-		**Transmission Lines**	**PNNL - Kristi Branch**
TL-1		Provide a knowledgeable expert to clarify the status of the transmission line corridor construction described on p. 2-13 of the ER and its relationship to decisions regarding the transmission corridor extension/modifications associated with Unit 2, particularly about the timing of the Loose-Creek connection and its relationship to the transmission line modifications contemplated for Unit 2.	PNNL - Kristi Branch
TL-2		Provide a knowledgeable expert to discuss all aspects of the transmission corridors and switchyards for Unit 2, including the siting process (what is meant by an “extension”) and the attributes and management of the corridor, including, for example, seasonal access for maintenance and whether widening the corridor will affect the Reform Conservation area, and to review how the construction of a new corridor is addressed in different chapters of the ER, and to clarify what is meant on p. 3-133 by the statement that “{The transmission corridor siting is currently undergoing evaluation by the Midwest Independent Transmission System Operator (MISO) and has not been established. Therefore, construction of the transmission line required for the Callaway Plant Unit 2, as well as all	PNNL - Kristi Branch

		impacts, are considered independent from the Callaway Plant Unit 2 project..."}	