



Serial: RNP-RA/02-0027

MAR 13 2002

United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261/LICENSE NO. DPR-23

REQUEST FOR TECHNICAL SPECIFICATIONS CHANGE REGARDING
SELECTIVE IMPLEMENTATION OF ALTERNATIVE RADIOLOGICAL SOURCE TERM

Ladies and Gentlemen:

In accordance with the provisions of the Code of Federal Regulations, Title 10, Part 50.90, Carolina Power & Light (CP&L) Company is submitting a request for an amendment to the Technical Specifications (TS) for H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2. The proposed amendment would modify the TS requirements for movement of irradiated fuel and performing core alterations.

The basis for the proposed change is a reanalysis of the limiting design basis Fuel Handling Accident (FHA) using an alternative source term (AST) in accordance with 10 CFR 50.67 and Regulatory Guide 1.183, Revision 0, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors," dated July 2000. Therefore, the proposed change also requests NRC approval of the selective implementation of AST methodology for the HBRSEP, Unit No. 2, design basis FHA.

Attachment I provides an affidavit as required by 10 CFR 50.30(b).

Attachment II provides a description of the current condition, a description of the proposed change, and a safety assessment of the proposed change.

Attachment III provides a markup of the TS pages.

Attachment IV provides retyped pages for the proposed TS.

Attachment V provides the key Fuel Handling Accident Analysis inputs and assumptions.

Attachment VI provides the ARCON96 Dispersion Model input file for the FHA inside containment.

A001

Attachment VII provides the ARCON96 Dispersion Model input file for the FHA inside the fuel handling building.

Attachment VIII provides the PAVAN Dispersion Model input file.

Attachment IX provides the PAVAN Dispersion Model printout of the input cards.

Attachment X provides a simplified diagram of the relative plant elevations.

Attachments XI and XII provide annotated figures showing the release/receptor pair locations for the fuel handling accident control room atmospheric dispersion calculations.

A floppy disk has been provided as an enclosure to this submittal. This disk contains meteorological data from 1988 through 1996 in ARCON96 and PAVAN formats.

In accordance with 10 CFR 50.91(b), CP&L is providing the State of South Carolina with a copy of the proposed license amendment.

CP&L requests approval of the proposed License Amendment by September 1, 2002, with the amendment being implemented within 60 days of approval. The approval date was selected to support planning activities for Refueling Outage (RO)-21.

If you have any questions concerning this matter, please contact Mr. C. T. Baucom.

Sincerely,



B. L. Fletcher III
Manager - Regulatory Affairs

CWS/cws

Attachments:

- I. Affidavit
- II. Request For Technical Specifications Change Regarding Selective Implementation of Alternative Radiological Source Term
- III. Markup of Technical Specifications Pages
- IV. Retyped Technical Specifications Pages
- V. Key Fuel Handling Accident Analysis Inputs and Assumptions
- VI. ARCON96 Dispersion Model Input File (FHA Inside Containment)
- VII. ARCON96 Dispersion Model Input File (FHA Inside Fuel Handling Building)
- VIII. PAVAN Dispersion Model Input File
- IX. PAVAN Dispersion Model Printout of Input Cards
- X. Relative Plant Elevations
- XI. Annotated Plot Plan
- XII. Annotated Reactor Auxiliary Building Plans

Enclosure:

Electronic media containing meteorological data from 1988 through 1996 in ARCON96 and PAVAN formats

c:

Mr. T. P. O'Kelley, Director, Bureau of Radiological Health (SC) (w/o Enclosure)

Mr. L. A. Reyes, NRC, Region II (w/o Enclosure)

Mr. A. G. Hansen, NRC, NRR

NRC Resident Inspector, HBRSEP (w/o Enclosure)

Attorney General (SC) (w/o Enclosure)

Affidavit

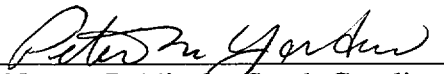
State of South Carolina
County of Darlington

J. W. Moyer, having been first duly sworn, did depose and say that the information contained in letter RNP-RA/02-0027 is true and correct to the best of his information, knowledge and belief; and the sources of his information are officers, employees, contractors, and agents of Carolina Power & Light Company.



Sworn to and subscribed before me

This 13 day of MARCH 2002


Notary Public for South Carolina

My commission expires: Sept 13 2009

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
REQUEST FOR TECHNICAL
SPECIFICATIONS CHANGE REGARDING SELECTIVE
IMPLEMENTATION OF ALTERNATIVE RADIOLOGICAL SOURCE TERM

Description of Current Condition

The current H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2, licensing basis fuel handling accident (FHA), described in the updated Final Safety Analysis Report (UFSAR), Section 15.7.4, is based on the TID-14844 source term.

In December 1999, the NRC issued a new regulation, 10 CFR 50.67, which provides a mechanism for licensed power reactors to replace the traditional accident source term used in the design basis accident analyses with alternative source terms (ASTs). Part 50.67 requires a licensee seeking to use an AST to apply for a license amendment and requires that the application contain an evaluation of the consequences of the affected design basis accidents. Regulatory guidance for the implementation of these ASTs is provided in Regulatory Guide (RG) 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors."

The current HBRSEP, Unit No. 2, Technical Specifications (TS) impose certain conditions on structures, systems and components during the movement of irradiated fuel or when performing core alterations. These conditions requiring the operability of certain structures, systems and components are captured in the Applicability statements of several TS. The typical wording of these Applicability statements is:

"During movement of irradiated fuel assemblies,"
"During movement of irradiated fuel assemblies within containment," and
"During CORE ALTERATIONS."

The TS incorporating these Applicability statements that are encompassed by the requested TS change include:

TS 3.3.6, "Containment Ventilation Isolation Instrumentation,"
TS 3.3.7, "Control Room Emergency Filtration System (CREFS) Actuation Instrumentation,"
TS 3.7.9, "Control Room Emergency Filtration System (CREFS),"
TS 3.7.10, "Control Room Emergency Air Temperature Control (CREATC),"
TS 3.9.3, "Containment Penetrations,"
TS 3.9.6, "Refueling Cavity Water Level," and
TS 3.9.7, "Containment Purge Filter System."

Description of the Proposed Change

Carolina Power and Light (CP&L) Company proposes to revise the HBRSEP, Unit No. 2, licensing basis to selectively implement the AST, described in RG 1.183, through reanalysis of the radiological consequences of a Fuel Handling Accident (FHA). As part of the selective implementation of this AST, the total effective dose equivalent (TEDE) acceptance criterion of 10 CFR 50.67(b)(2) replaces the previous whole body and thyroid dose guidelines of 10 CFR 100.11 and General Design Criterion (GDC)-19 of 10 CFR Part 50, Appendix A, which (based upon this application) is limited to the FHA only.

The following changes to the HBRSEP, Unit No. 2, TS are proposed:

- TS 3.3.6 is revised to delete “During CORE ALTERATIONS” and “During movement of irradiated fuel assemblies within containment” from the Applicabilities associated with Table 3.3.6-1, “Containment Ventilation Isolation Instrumentation.” The remaining Applicabilities are re-lettered, as appropriate.
- TS 3.3.7 is revised to delete “During movement of irradiated fuel assemblies” and “During CORE ALTERATIONS” from the Applicabilities. Following this change, TS 3.3.7 will be Applicable in MODES 1, 2, 3, and 4. Condition D of TS 3.3.7 is also deleted.
- TS 3.7.9 is revised to delete “During CORE ALTERATIONS” from the Applicabilities. Following this change, TS 3.7.9 will be Applicable during MODES 1, 2, 3, and 4, and during movement of irradiated fuel assemblies. Condition C of TS 3.7.9 is revised for consistency with the change in Applicability, and Required Action C.2.1 is deleted. Required Action C.2.2 is renumbered as an editorial change. Condition D of TS 3.7.9 is revised for consistency with the change in Applicability, and Required Action D.1 is deleted. Required Action D.2 is renumbered as an editorial change.
- TS 3.7.10 is revised to delete “During CORE ALTERATIONS” from the Applicabilities. Following this change, TS 3.7.10 will be Applicable during MODES 1, 2, 3, and 4, and during movement of irradiated fuel assemblies. Condition C of TS 3.7.10 is revised for consistency with the change in Applicability, and Required Action C.2.1 is deleted. Required Action C.2.2 is renumbered as an editorial change. Condition D of TS 3.7.10 is revised for consistency with the change in Applicability, and Required Action D.1 is deleted. Required Action D.2 is renumbered as an editorial change.
- TS 3.9.3 is deleted in its entirety.
- TS 3.9.6 is revised to delete “During CORE ALTERATIONS, except during latching and unlatching of control rod drive shafts” from the Applicabilities. Following this

change, TS 3.9.6 will be Applicable during movement of irradiated fuel assemblies within containment. Condition A of TS 3.9.6 is revised by the deletion of Required Action A.1. Required Action A.2 is renumbered as an editorial change.

- TS 3.9.7 is deleted in its entirety.

Safety Assessment

Deletion of “During movement of irradiated fuel assemblies” from the Applicabilities

TS 3.3.6 and TS 3.9.7:

As discussed later in this submittal, the reanalyzed FHA does not credit operation of the containment purge filter system in the mitigation of FHA consequences. Since the FHA reanalysis has determined acceptable results without reliance on the containment purge filter system, this system and the associated automatic actuation features are not required to be operable during movement of irradiated fuel assemblies. Therefore, deletion of “During movement of irradiated fuel assemblies in containment” from the Applicabilities of TS 3.3.6 and TS 3.9.7 is acceptable.

TS 3.3.7:

The reanalysis of the FHA assumes that the Control Room Emergency Filtration System is manually placed in the emergency pressurization mode one hour after the fuel handling accident occurs. Since the FHA reanalysis has determined acceptable results without reliance on automatic actuation of the Control Room Emergency Filtration System, this instrumentation is not required to be operable during the movement of irradiated fuel assemblies. Therefore, deletion of “During movement of irradiated fuel assemblies” from the Applicability of TS 3.3.7 is acceptable.

TS 3.9.3:

The reanalysis of the FHA assumes that FHA activity is released within two hours from the containment with no credit for building holdup or building dilution. In other words, the reanalysis of the FHA assumed that containment penetrations, including the equipment hatch and personnel airlock, were open. Since the FHA reanalysis has determined acceptable results without reliance on containment closure, these requirements are not required to be met during movement of irradiated fuel assemblies. Therefore, deletion of “During movement of irradiated fuel assemblies in containment” from the Applicability of TS 3.9.3 is acceptable.

Deletion of "During CORE ALTERATIONS" from the Applicabilities

The HBRSEP, Unit No. 2, TS define core alterations as: "the movement of any fuel, sources, or reactivity control components, within the reactor vessel with the vessel head removed and fuel in the vessel." Accidents postulated to occur during core alterations include the FHA (UFSAR 15.7.4), boron dilution (UFSAR 15.4.6), and inadvertent loading of a fuel assembly into the improper position (UFSAR 15.4.7). As described in the referenced UFSAR sections, the only accident postulated to occur during core alterations that has the potential to cause a radioactive release is the FHA. Therefore, an Applicability of "During CORE ALTERATIONS" is redundant to an Applicability of "During movement of irradiated fuel assemblies within containment."

TS 3.3.6, TS 3.3.7, TS 3.9.3, and TS 3.9.7:

As previously discussed, the FHA reanalysis has determined acceptable results without reliance on automatic actuation of the Control Room Emergency Filtration System, automatic actuation of the Containment Ventilation Isolation Instrumentation, containment closure, or the operation of the Containment Purge Filter System. Since the only accident postulated to result in a radioactive release during core alterations is the FHA, and since the FHA does not rely on these systems and components to mitigate the postulated release, the operability of these systems and components is not required during core alterations. Therefore, deletion of "During CORE ALTERATIONS" from the Applicabilities is acceptable.

TS 3.7.9 and 3.7.10:

The reanalysis of the FHA assumes that the Control Room Emergency Filtration system is manually placed in the emergency pressurization mode one hour after the fuel handling accident occurs. Therefore, the Applicabilities associated with these specifications will continue to require the operability of the Control Room Emergency Filtration System and the Control Room Emergency Air Temperature Control components during movement of irradiated fuel. Since the only accident postulated to result in a radioactive release during core alterations is the FHA, the requirement to maintain these systems operable during core alterations is duplicative. Therefore, deletion of "During CORE ALTERATIONS" from the Applicabilities is acceptable.

TS 3.9.6:

The reanalysis of the FHA assumes that the refueling cavity water level is ≥ 23 feet above the level of the fuel. The Applicability associated with this specification will continue to require the refueling cavity water level to be maintained ≥ 23 feet above the top of the reactor vessel flange during movement of irradiated fuel assemblies within containment. Since the only accident postulated to result in a radioactive release during core alterations is the FHA, the requirement to maintain this minimum water level during core alterations is duplicative.

Therefore, deletion of “During CORE ALTERATIONS” from this Applicability is acceptable.

Revisions to Conditions and Required Actions

TS 3.3.7 contains guidance on the actions to be taken in the event the Limiting Condition for Operation (LCO) is not met during core alterations and during movement of irradiated fuel assemblies. Specifically, Condition D, Required Action D.1, requires immediate suspension of core alterations and Required Action D.2 requires immediate suspension of movement of irradiated fuel assemblies in the event that the LCO is not met and the Required Action and associated Completion Time for Condition A or B are not met during movement of irradiated fuel assemblies or during core alterations. With the revision to the Applicability discussed above, Condition D and the associated Required Actions are no longer necessary to provide guidance in the remaining Modes of Applicability. Therefore, this change is considered editorial in nature as it maintains consistency with the Applicability.

TS 3.7.9, TS 3.7.10, and TS 3.9.6 contain guidance on the actions to be taken in the event the LCO is not met during core alterations. TS 3.7.9 Condition C, Required Action C.2.1, requires immediate suspension of core alterations in the event that the LCO is not met and the Required Action and associated Completion Time of Condition A are not met during movement of irradiated fuel assemblies or during core alterations. TS 3.7.9 Condition D, Required Action D.1, requires immediate suspension of core alterations in the event that two Control Room Emergency Filtration System trains are inoperable during movement of irradiated fuel assemblies or during core alterations. TS 3.7.10 Condition C, Required Action C.2.1, requires immediate suspension of core alterations in the event that the LCO is not met and the Required Action and associated Completion Time of Condition A are not met during movement of irradiated fuel assemblies or during Core Alterations. TS 3.7.10 Condition D, Required Action D.1, requires immediate suspension of core alterations in the event that two Control Room Emergency Air Temperature Control Water Cooled Condensing Unit trains are inoperable during movement of irradiated fuel assemblies or during core alterations. TS 3.9.6 Condition A, Required Action A.1, requires immediate suspension of core alterations in the event that the LCO is not met during movement of irradiated fuel assemblies or during core alterations. With the revision to the Applicabilities discussed above, the references to core alterations in these Conditions and the Required Actions associated with suspension of core alterations are no longer necessary to provide guidance in the remaining Modes of Applicability. Therefore, these changes are considered editorial in nature as they maintain consistency with the Applicabilities.

Deletion of TS 3.9.3 and TS 3.9.7

With the incorporation of the changes described above, the requirements of TS 3.9.3 and TS 3.9.7 are applicable in no operational modes. Per 10 CFR 50.36, a TS Limiting Condition for Operation must be established for each item meeting one or more of four specific criteria. A discussion of each of these criteria follows:

Criterion 1: Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.

The systems and components specified by TS 3.9.3 and TS 3.9.7 are not described as instrumentation systems in the associated TS Bases, or in the UFSAR. Additionally, during core alterations and movement of irradiated fuel, the reactor coolant pressure boundary is required to be open. Therefore, TS 3.9.3 and TS 3.9.7 do not satisfy the requirements of Criterion 1 for retention in the HBRSEP, Unit No. 2, TS.

Criterion 2: A process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or represents a challenge to the integrity of a fission product barrier.

Containment and containment penetration operability requirements in Modes 1, 2, 3, and 4 are specified by TS 3.6.1, TS 3.6.2, and TS 3.6.3, and are unaffected by the proposed changes. The reanalysis of the FHA assumes that FHA activity is released within two hours from the containment with no credit for building holdup or building dilution. In other words, the reanalysis of the FHA assumed that containment penetrations, including the equipment hatch and personnel airlock, were open. Since the FHA reanalysis has determined acceptable results without reliance on containment closure, control of containment penetrations is not considered to be an initial condition of a design basis accident or transient analysis that assumes the failure of or represents a challenge to the integrity of a fission product barrier during movement of irradiated fuel assemblies within containment or during core alterations.

The reanalyzed FHA does not credit operation of the containment purge filter system in the mitigation of FHA consequences. Since the FHA reanalysis has determined acceptable results without reliance on the containment purge filter system, operability of the system is not considered to be an initial condition of a design basis accident or transient analysis that assumes the failure of or represents a challenge to the integrity of a fission product barrier during movement of irradiated fuel assemblies within containment or during core alterations.

Therefore, TS 3.9.3 and TS 3.9.7 do not satisfy the requirements of Criterion 2 for retention in the HBRSEP, Unit No. 2, TS.

Criterion 3: A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or represents a challenge to the integrity of a fission product barrier.

The Bases associated with TS 3.9.3 state that the containment penetrations satisfy Criterion 3. However, the reanalysis of the FHA assumes that FHA activity is released within two hours from the containment with no credit for building holdup or building dilution. In other words, the reanalysis of the FHA assumed that containment penetrations, including the equipment hatch and personnel airlock, were open. Since the FHA reanalysis has determined acceptable results without reliance on containment closure, containment penetration closure is no longer required to function or actuate to mitigate a design basis accident or transient analysis that assumes the failure of or represents a challenge to the integrity of a fission product barrier.

The Bases associated with TS 3.9.7 state that the containment purge filter system satisfies Criterion 3. However, the reanalyzed FHA does not credit operation of the containment purge filter system in the mitigation of FHA consequences. Since the FHA reanalysis has determined acceptable results without reliance on the containment purge filter system, the system is no longer required to operate to mitigate a design basis accident or transient analysis that assumes the failure of or represents a challenge to the integrity of a fission product barrier.

Therefore, TS 3.9.3 and TS 3.9.7 do not satisfy the requirements of Criterion 3 for retention in the HBRSEP, Unit No. 2, TS.

Criterion 4: A structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety.

Containment and containment penetration operability requirements in Modes 1, 2, 3, and 4 are specified by TS 3.6.1, TS 3.6.2, and TS 3.6.3, and are unaffected by the proposed changes. Containment penetration closure and containment purge filter system operability in Modes other than Modes 1, 2, 3, and 4 are not considered in the HBRSEP, Unit No. 2, probabilistic risk assessment. In addition, the reanalysis of the FHA demonstrates that the dose consequences to the public associated with the postulated FHA are within the regulatory guidelines with no credit taken for containment penetration closure and containment purge filter system operability.

Therefore, TS 3.9.3 and TS 3.9.7 do not satisfy the requirements of Criterion 4 for retention in the HBRSEP, Unit No. 2, TS.

Evaluation of NEI Technical Specification Task Force (TSTF)-51

During preparation of the changes proposed in this submittal, CP&L reviewed TSTF-51, "Revise Containment Requirements During Handling of Irradiated Fuel and Core Alterations," for applicability. According to the justification associated with this generic change, the proposed changes are based on performing analyses that assume a longer decay period to take advantage of the reduced radioiodine inventory available for release in the

event of a fuel handling accident. The reanalysis of the HBRSEP, Unit No. 2, FHA was performed assuming a shorter decay time. Therefore, it is not appropriate for HBRSEP, Unit No. 2, to incorporate TSTF-51.

Defense-in-Depth

The NRC staff has traditionally and conservatively required containment systems to be operable during core alterations and movement of irradiated fuel within containment as a defense-in-depth measure to mitigate the consequences of the postulated FHA. In previous amendments for similar relaxations at other facilities [Safety Evaluation dated April 16, 2001, associated with Duane Arnold Energy Center Amendment No. 237 (ADAMS Accession Number ML011070147)], the NRC staff has requested licensees make appropriate commitments to implement administrative controls to facilitate restoration of containment closure should a FHA occur, consistent with the commitment described in TSTF-51. TSTF-51 requires licensees incorporating the generic change to commit to NUMARC 93-01, Revision 3, Section 11.2.6, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," subheading "Containment – Primary(PWR)/ Secondary(BWR)." The commitment in TSTF-51 was based on a draft version of NUMARC 93-01, Revision 3. When NUMARC 93-01, Revision 3, was approved in July 2000, the guidelines referred to in TSTF-51 were designated as Section 11.3.6.5. Section 11.3.6.5 of NUMARC 93-01 states:

Maintenance activities involving the need for open containment should include evaluation of the capability to achieve containment closure in sufficient time to mitigate potential fission product release. This time is dependent on a number of factors, including the decay heat level and the amount of RCS inventory available.

For BWRs, technical specifications may require secondary containment to be closed under certain conditions, such as during fuel handling and operations with a potential to drain the vessel.

In addition to the guidance in NUMARC 91-06, for plants which obtain license amendments to utilize shutdown safety administrative controls in lieu of Technical Specification requirements on primary or secondary containment operability and ventilation system operability during fuel handling or core alterations, the following guidelines should be included in the assessment of systems removed from service:

- *During fuel handling/core alterations, ventilation systems and radiation monitor availability (as defined in NUMARC 91-06) should be assessed, with respect to filtration and monitoring of releases from the fuel. Following shutdown, radioactivity in the RCS decays fairly rapidly. The basis of the Technical Specification operability amendment is the reduction in doses due to such decay. The goal of maintaining ventilation system and radiation monitor*

availability is to reduce doses even further below that provided by the natural decay, and to avoid unmonitored releases.

- *A single normal or contingency method to promptly close primary or secondary containment penetrations should be developed. Such prompt methods need not completely block the penetration or be capable of resisting pressure. The purpose is to enable ventilation systems to draw the release from a postulated fuel handling accident in the proper direction such that it can be treated and monitored.*

Although this amendment request is not based on TSTF-51, CP&L commits to follow the guidelines in Section 11.3.6.5 of NUMARC 93-01, Revision 3, at HBRSEP, Unit No. 2, during movement of irradiated fuel assemblies within containment. Plant procedures will be revised, as appropriate, to implement these guidelines.

FHA Reanalysis

The HBRSEP, Unit No. 2, FHA analysis evaluates two basic scenarios: the drop of a fuel assembly onto the refueling cavity floor during refueling operations inside the containment vessel, and the drop of a fuel assembly into the spent fuel pit during fuel handling operations in the fuel handling building. The reanalysis of the FHA assumes a shorter post-shutdown decay time than currently analyzed and takes no credit for certain engineered safety features structures, systems and components previously credited to mitigate the consequences of the postulated FHA.

In accordance with the methodology in RG 1.183, the new analysis evaluates the radiological consequences of the FHA in terms of TEDE. The analysis demonstrates that offsite and control room dose consequences associated with the worst-case FHA meet the acceptance criteria established in RG 1.183 and 10 CFR 50.67. Key FHA input assumptions are provided as Attachment V, Table 1. The following describes the highlights of the FHA reanalysis:

- The analysis for the FHA inside the containment vessel does not assume credit for containment penetration closure (assumes containment penetrations including equipment hatch and personnel airlock are open).
- The analysis for the FHA inside the containment vessel does not assume credit for operation of the containment purge filter system.
- The analysis for the FHA in the fuel handling building credits operation of the fuel handling building air cleanup system.

- Neither scenario assumes automatic actuation of the control room emergency filtration system.
- Both scenarios assume that the control room ventilation system is manually placed into the emergency pressurization mode at one hour. Prior to this switch, the activity is assumed to enter the control room at a ventilation intake rate of 400 cfm. During the postulated FHA's first hour, the analysis assumes an additional unfiltered air inleakage rate of 300 cfm. Following the switch to the emergency pressurization mode, the analysis assumes an unfiltered air inleakage rate of 230 cfm, due to actions taken to preclude potential inleakage from the Hagan Room. The control room ventilation system is described in the UFSAR, Sections 6.4.2 and 9.4.2.

The value for assumed control room unfiltered air inleakage (300 cfm from all sources) is based on a qualitative evaluation. Consideration was given to the magnitudes of the known performance parameters of the control room ventilation system. For example, the filtered makeup air flow during pressurization is known to be limited to 400 cfm. Other sites that have measured unfiltered air inleakage (using currently acceptable methods) have generally measured less than 300 cfm from all sources. Outliers exist to this general experience, such as control rooms opening to much larger structures or buildings, but 300 cfm is considered to be a conservative assumption for the HBRSEP, Unit No. 2, control room.

- The refueling cavity water level is required to be maintained a minimum of 23 feet above the reactor vessel flange during movement of irradiated fuel assemblies within containment (TS 3.9.6). Therefore, per RG 1.183, Appendix B, the overall effective decontamination factor is assumed to be 200 for the FHA inside the containment vessel.
- The fuel storage pool water level is required to be maintained a minimum of 21 feet over the top of irradiated fuel assemblies seated in the storage racks during movement of irradiated fuel assemblies in the fuel storage pool. RG 1.183, Appendix B, provides guidance on the determination of the decontamination factor if the depth of water is not 23 feet. Following the methodology recommended by RG 1.183, Appendix B, CP&L has determined that the assumed overall effective decontamination factor should be 138 for the FHA inside the fuel handling building.
- The full core isotopic inventory (Attachment V, Table 2) was determined in accordance with RG 1.183, Section 3.1. The HBRSEP, Unit No. 2, specific isotopic source terms were developed using a bounding approach. The ORIGEN-S computer code (part of the SCALE-4.3 system of codes) was used to develop isotopics for a variety of burnup, enrichment, and burnup rates (power levels). Sensitivity studies were run with various combinations of burnups and enrichments to identify a bounding single assembly isotopic source term. The assembly source term was multiplied by 1.02 to reflect operation prior to shutdown at 102% of rated power

(102% of 2300 MWth). A bounding radial peaking factor of 1.8 was then applied to simulate the effect of this accident for the assembly containing the peak fission product inventory.

Atmospheric Dispersion (λ/Q) Factors

The historical λ/Q data provided in the HBRSEP, Unit No. 2, UFSAR did not meet CP&L's expectations for level of documentation and design bases, and was not considered sufficient for the analysis of the FHA using the AST methodology. The current FHA analysis uses a single control room λ/Q factor for the FHA, regardless of whether the accident occurs in the containment vessel or the fuel handling building. Since new λ/Q factors were required to be generated for the release-receptor pairs that were not previously evaluated, the existing λ/Q factors for the control room were recalculated to place all of these design input λ/Q factors on a common, consistent calculational basis. In addition, HBRSEP, Unit No. 2, specific λ/Q factors for offsite dose consequences were developed. Meteorological data over a nine year period (1988 through 1996) was used in the development of the new λ/Q factors.

For offsite receptor locations, the new λ/Q factors were developed using the PAVAN computer code ("PAVAN: An Atmospheric Dispersion Program for Evaluating Design Bases Accident Releases of Radioactive Materials from Nuclear Power Stations," NUREG/CR-2858, November 1982. RSICC Computer Code Collection No. CCC-445). For onsite receptor locations, the new λ/Q factors were developed using the ARCON96 computer code ("Atmospheric Relative Concentrations in Building Wakes," NUREG/CR-6331, Rev. 1, May 1997. RSICC Computer Code Collection No. CCC-664). New guidance, which supersedes the NUREG/CR-6331 recommendations for using certain default parameters as input, contained in NRC Draft Regulatory Guide DG-1111, "Atmospheric Relative Concentrations for Control Room Radiological Habitability Assessments at Nuclear Power Plants," December 2001, has been implemented. Specifically, the following changes from the default values were made:

1. Surface roughness length, m: A value of 0.2 is used in lieu of the default value of 0.1, and
2. Averaging sector width constant: A value of 4.3 is used in lieu of the default value of 4.0.

Attachment V, Table 4, provides the revised Exclusion Area boundary (EAB) and Low Population Zone (LPZ) λ/Q factors and also provides a comparison to the current values. Attachment V, Table 5, provides the revised control room λ/Q factors and also provides a comparison to the current values.

The release from inside containment is a release via the containment nearest wall (closest point from the containment to the control room) and the release from inside the fuel

handling building is via the plant stack. Both releases are taken as ground releases. The receptor considered for each of the release points is the control room intake which is located on the east wall of the control room at elevation 250' 7" above sea level. Attachment X provides a simplified drawing showing the elevational relationships between the control room intake and the release points.

HBRSEP, Unit No. 2, is located between the 7° West and the 6° West Declination Line at approximately 6°23'. As a result, "plant north" must be adjusted to "true north" by the addition of 6.38°. The azimuthal angles for the two release points from the control room consider this adjustment from "plant north" to "true north" in the calculation of the control room λ/Q factors. The azimuthal angle from the control room intake to the plant stack is 335°, with respect to true north. The azimuthal angle from the control room intake to the containment nearest point is 313°, with respect to true north.

The actual straight-line horizontal distance to the control room intake from the containment nearest point is 116.25 feet, and from the plant stack is 157.25 feet. In the calculation of the control room λ/Q factors, these distances were reduced by five (5) feet to 111.25 feet and 152.25 feet, respectively, for conservatism and measurement uncertainty. UFSAR Figures 1.2.2-1, "Plot Plan," and 1.2.2-5, "General Arrangement Reactor Auxiliary Building Plans," have been included as Attachments XI and XII, respectively. These figures have been annotated to indicate the control room intake location, plant stack location and containment wall.

Meteorological Data

As previously stated, meteorological data over a nine year period (1988 through 1996) was used in the development of the λ/Q factors used in the FHA analysis. The HBRSEP, Unit No. 2, Meteorological Program was established prior to the issuance of RG 1.23, "Onsite Meteorological Programs." Therefore, HBRSEP, Unit No. 2, is not committed to RG 1.23. However, during several upgrades to the Meteorological Program, RG 1.23 was used to provide guidance in developing the upgrades. The Meteorological Program is described in the HBRSEP, Unit No. 2, UFSAR, Section 2.3.3. As discussed in the UFSAR, Section 2.3.3.a, several upgrades occurred during the nine year period of data collection. The following discussions are intended to provide additional information describing the Meteorological Program as it existed during the period of data collection.

1988 through 1992:

During the time period from 1988 through September of 1992, as stated in the UFSAR, Section 2.3.3.a, the primary data collection system consisted of the Westinghouse Environmental Monitoring System. This system converted sensor outputs to a proportional number of discrete pulses that were electronically integrated and recorded on magnetic tape in 15-minute averaging periods. Esterline Angus Twin Strip Chart Recorders were used for providing an analog record of both the upper and lower wind

direction and speed to back up the Westinghouse system. In addition, 15-minute averaged upper and lower level wind speed and direction, both differential temperatures, and ambient temperature parameters were telemetered to the CP&L Raleigh General Office on an hourly basis via voice grade telephone lines to the site, providing the capabilities of remotely detecting malfunctions of these parameters.

The Westinghouse system magnetic tape cassettes were changed and brought back to the general office approximately once per month for translating. Computer programs converted parameter pulse totals into engineering units. The data was then reviewed and checked for consistency with the onsite strip charts and Raleigh-Durham Weather Service data. The edited 15-minute averaged data was then compiled into hourly averages and stored on magnetic history tapes. RG 1.23 data recovery requirements were met by performing scheduled calibrations carried out in accordance with the HBRSEP, Unit No. 2, Emergency Plan.

1992 through 1993:

In September of 1992, the meteorological historical database was converted from the Westinghouse Environmental Monitoring System to a microcomputer system. This microcomputer (ADAC Model #1200), manufactured by ADAC Corporation, was based upon the Digital Equipment Corporation (DEC) LSI-11/23 microcomputer system. Because the system was being adapted to collect electronic signals representing meteorological parameters, the software for the system was developed internally by the CP&L meteorological staff.

The ADAC system software scanned each meteorological sensor input, except precipitation, once every ten seconds. The precipitation input was scanned for a contact closure once per second. Each contact closure represented 0.01 inch of precipitation. All other 10-second scan values were summed for a 15-minute period, then the average value for each meteorological parameter was obtained by performing a 15-minute mathematical average. If during a 15-minute averaging period, more than 33% of the 10-second scan data values (30 individual scans) were not valid, the entire 15-minute averaged interval was then indicated to be unavailable (i.e., set to 9999.00). The ADAC meteorological sensor-system was placed in operational service during 1987. To assure that the methodology employed by the ADAC system provided information consistent with that collected by the Westinghouse sensor-system, both data collection systems were operated simultaneously to provide conclusive proof that major differences did not exist between the two systems.

When the ADAC system became the primary data acquisition system, data was retrieved via a different methodology than that which was used for the Westinghouse sensor-system. A host computer located in the CP&L General Office retrieved the meteorological data from the ADAC sensor-system daily via a Company-owned and operated dedicated microwave link. A backup standard telephone line was also available

for data retrieval if the dedicated circuit was inoperable. This data was reviewed for potential immediate data problems by the General Office meteorological personnel on a daily basis (except weekends and holidays). The data was then uploaded from the host computer to the CP&L mainframe. The ADAC data was then rigorously checked for consistency with the onsite data and Columbia, SC Weather Service data. Erroneous data was then discarded prior to insertion into the historical database. The edited 15-minute averaged data was then stored on magnetic history tapes.

1993 through 1996:

During this time period, the Esterline Angus Twin Strip Chart Recorders were replaced with a Yokogawa Corporation Hybrid Recorder Model HR2300. The Esterline Angus recorders provided analog traces for only the wind speeds and wind directions. The Yokogawa hybrid recorder provides trend traces and hard-copy printouts of 15-minute averaged data for wind speeds, wind directions, ambient air temperature, differential temperatures, and dew-point temperature. An RS232 communications port was provided to allow the hybrid recorder digital 15-minute averaged data to be remotely retrieved via standard telephone lines to the CP&L General Office. Data from the hybrid recorder was compared with the ADAC data as part of the data consistency checks.

Also during this time period, changes were made to allow an approved contractor to perform the data reduction of the HBRSEP, Unit No. 2, meteorological data in lieu of the General Office. With this change, the data was reviewed for potential immediate data problems by the approved contractor personnel on a daily basis (except weekends and holidays). The ADAC data was then rigorously checked for consistency with the onsite data, and periodically with the National Weather Service data if inconsistencies were noted. Erroneous data was then discarded prior to insertion into the historical database. The edited 15-minute averaged data was then stored on magnetic history tapes.

Summary:

Checks of the meteorological data retrieved from the sensor-systems in use during the data collection period against onsite strip charts, hybrid recorder data, Columbia, SC Weather Service data, and National Weather Service data were performed, as appropriate, to ensure that the meteorological data was of high quality. An onsite maintenance and calibration program ensured that the RG 1.23 data recovery requirements were met by performing scheduled calibrations in accordance with the HBRSEP, Unit No. 2, Emergency Plan. In addition, NRC Inspection Report Number 50-261/91-08, issued on April 12, 1991, and NRC Inspection Report Number 50-261/92-23, issued on September 4, 1992, resulted in identification of no violations or deviations.

An electronic copy of the meteorological data used to calculate the λ/Q factors is enclosed on electronic media. The data is provided in the both the ARCON96 format and the PAVAN format.

Dose Consequences

The AST methodology of RG 1.183 was used to evaluate the offsite and control room dose consequences for the FHA, using the RADTRAD, Version 3.02, computer code ("RADTRAD: A Simplified Model for RADionuclide Transport and Removal And Dose Estimation," NUREG/CR-6604, April 1998 and Supplement 1, June 8, 1999). RG 1.183 provides acceptance criteria for the radiological consequences of a FHA. Per RG 1.183, the radiological criteria for the EAB and the outer boundary of the LPZ, and for the control room are provided within 10 CFR 50.67. The control room criterion of 10 CFR 50.67 applies to all accidents. For events with a higher probability of occurrence, such as the fuel handling accident, the postulated EAB and LPZ doses should not exceed the criteria tabulated in Table 6 of RG 1.183. Using the inputs and assumptions previously identified in this submittal results in the following postulated FHA dose consequences:

Item	EAB ⁽¹⁾ (REM TEDE)	LPZ ⁽²⁾ (REM TEDE)	Control Room (REM TEDE)
FHA Inside Containment	5.96	0.30	4.41
FHA Inside Fuel Handling Building	5.70	0.29	0.54
Regulatory Limit	6.3 ⁽³⁾	6.3 ⁽³⁾	5 ⁽⁴⁾

NOTES:

- (1) Worst two hour integrated dose.
- (2) 30-day integrated dose.
- (3) RG 1.183, Table 6, "Accident Dose Criteria."
- (4) 10 CFR 50.67 and 10 CFR 50, Appendix A, Criterion 19.

No Significant Hazards Consideration Determination

Carolina Power & Light (CP&L) Company is proposing a change to the Appendix A, Technical Specifications (TS), of Facility Operating License No. DPR-23, for H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2. This change revises the licensing basis for HBRSEP, Unit No. 2, to selectively implement the Alternative Source Term (AST) described in Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors," in evaluating the radiological consequences of a Fuel Handling Accident (FHA). In addition, revised atmospheric dispersion factors for onsite and offsite dose consequences have been calculated and incorporated in the reanalysis of the FHA. As part of the selective implementation of this

AST, the total effective dose equivalent (TEDE) acceptance criterion of 10 CFR 50.67(b)(2) replaces the previous whole body and thyroid dose guidelines of 10 CFR 100.11 and General Design Criterion (GDC)-19 of 10 CFR Part 50, Appendix A, which (based upon this application) is limited to the FHA only. The selective implementation of the AST supports the following Technical Specification (TS) changes:

1. Deletion of "During CORE ALTERATIONS" from the Applicabilities associated with TS 3.3.6, TS 3.3.7, TS 3.7.9, and 3.7.10,
2. Deletion of "During CORE ALTERATIONS, except during latching and unlatching of control rod drive shafts," from the Applicabilities associated with TS 3.9.6,
3. Deletion of "During movement of irradiated fuel assemblies" from the Applicabilities associated with TS 3.3.6 and TS 3.3.7,
4. Deletion of those requirements specified by TS 3.9.3 and TS 3.9.7, and
5. Revisions to the Conditions and Required Actions of TS 3.3.7, TS 3.7.9, TS 3.7.10, and TS 3.9.6 for consistency with the changes in Applicabilities.

An evaluation of the proposed change has been performed in accordance with 10 CFR 50.91(a)(1) regarding no significant hazards considerations using the standards in 10 CFR 50.92(c). A discussion of these standards as they relate to this amendment request follows:

1. The Proposed Change Does Not Involve a Significant Increase in the Probability or Consequences of an Accident Previously Evaluated.

Implementation of the Alternative Source Term does not affect the design or operation of HBRSEP, Unit No. 2; rather, once the occurrence of an accident has been postulated, the new source term is an input to evaluate the consequences of the postulated accident. A review of the HBRSEP, Unit No. 2, Updated Final Safety Analysis Report (UFSAR) shows that the components and systems affected by the proposed changes are not initiators of any previously analyzed accident. Therefore, there is no significant increase in the probability of any previously analyzed accident.

The implementation of the Alternative Source Term has been evaluated in a revision to the HBRSEP, Unit No. 2, Fuel Handling Accident. Based on the results of this analysis, it has been demonstrated that, with the requested changes to the Technical Specifications, the dose consequences of a postulated Fuel Handling Accident are within the regulatory guidance provided by the NRC for use with the Alternative Source Term. This guidance is presented in 10 CFR 50.67 and Regulatory Guide 1.183. Since automatic actuation of the control room emergency filtration system, automatic actuation of containment ventilation isolation, containment

penetration operability, and the containment purge filter system are not credited in the revised analysis for the Fuel Handling Accident, eliminating these requirements during the movement of irradiated fuel assemblies will not result in a significant increase in the consequences of any previously evaluated accident. In addition, a review of the HBRSEP, Unit No. 2, UFSAR shows that the only accident resulting in dose consequences that is postulated to occur during core alterations is the Fuel Handling Accident. Therefore, the Applicability changes associated with core alterations will not result in a significant increase in the consequences of any previously evaluated accident.

Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. The Proposed Change Does Not Create the Possibility of a New or Different Kind of Accident From Any Previously Evaluated.

The proposed changes are supported by the revised design basis Fuel Handling Accident analysis. The proposed changes do not introduce any new modes of plant operation and do not involve physical modifications to the plant.

Thus, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. The Proposed Change Does Not Involve a Significant Reduction in the Margin of Safety.

The proposed changes are associated with the implementation of a new licensing basis for HBRSEP, Unit No. 2. The new licensing basis implements an Alternative Source Term in accordance with 10 CFR 50.67 and the associated Regulatory Guide 1.183. The results of the revised Fuel Handling Accident analysis, revised in support of this submittal, are subject to revised acceptance criteria. This analysis has been performed using conservative methodologies in accordance with the regulatory guidance. The dose consequences of the limiting Fuel Handling Accident are within the acceptance criteria also found in the regulatory guidance associated with Alternative Source Terms.

The proposed changes continue to ensure that doses at the exclusion area and low population zone boundaries, as well as the control room, are within the corresponding regulatory limits. Specifically, the margin of safety for this accident is considered to be that provided by meeting the applicable regulatory limits, which are conservatively set below the 10 CFR 50.67 limits. With respect to control room personnel doses, the margin of safety (the difference between the 10 CFR 50.67 limits and the regulatory limits defined by 10 CFR 50, Appendix A, Criterion 19 (GDC-19)) continues to be satisfied.

Therefore, because the proposed changes continue to result in dose consequences within the applicable regulatory limits, they do not involve a significant reduction in a margin of safety.

Based on the above discussion, CP&L has determined that the requested change does not involve a significant hazards consideration.

Environmental Impact Consideration

10 CFR 51.22(c)(9) provides criteria for identification of licensing and regulatory actions for categorical exclusion for performing an environmental assessment. A proposed change for an operating license for a facility requires no environmental assessment if operation of the facility in accordance with the proposed change would not (1) involve a significant hazards consideration; (2) result in a significant change in the types or significant increases in the amounts of any effluents that may be released offsite; (3) result in an increase in individual or cumulative occupational radiation exposure. Carolina Power and Light (CP&L) Company has reviewed this request and determined that the proposed change meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment needs to be prepared in connection with the issuance of the amendment. The basis for this determination follows:

Proposed Change

CP&L is proposing a change to the Appendix A, Technical Specifications (TS), of Facility Operating License No. DPR-23, for H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2. This change revises the licensing basis for HBRSEP, Unit No. 2, to selectively implement the Alternative Source Term (AST) described in Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors," in evaluating the radiological consequences of a Fuel Handling Accident (FHA). In addition, revised atmospheric dispersion factors for onsite and offsite dose consequences have been calculated and incorporated in the reanalysis of the FHA. As part of the selective implementation of this AST, the total effective dose equivalent (TEDE) acceptance criterion of 10 CFR 50.67(b)(2) replaces the previous whole body and thyroid dose guidelines of 10 CFR 100.11 and General Design Criterion (GDC)-19 of 10 CFR Part 50, Appendix A, which (based upon this application) is limited to the FHA only. The selective implementation of the AST supports the following TS changes:

1. Deletion of "During CORE ALTERATIONS" from the Applicabilities associated with TS 3.3.6, TS 3.3.7, TS 3.7.9, and 3.7.10,
2. Deletion of "During CORE ALTERATIONS, except during latching and unlatching of control rod drive shafts," from the Applicabilities associated with TS 3.9.6,

3. Deletion of "During movement of irradiated fuel assemblies" from the Applicabilities associated with TS 3.3.6 and TS 3.3.7,
4. Deletion of those requirements specified by TS 3.9.3 and TS 3.9.7, and
5. Revisions to the Conditions and Required Actions of TS 3.3.7, TS 3.7.9, TS 3.7.10, and TS 3.9.6 for consistency with the changes in Applicabilities.

Basis

The proposed change meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9) for the following reasons.

1. As demonstrated in the No Significant Hazards Consideration Determination, the proposed change does not involve a significant hazards consideration.
2. As demonstrated in the No Significant Hazards Consideration Determination, the proposed change does not result in a significant increase in the consequences of an accident previously evaluated and does not result in the possibility of a new or different kind of accident. Therefore, the proposed change does not result in a significant change in the types or significant increases in the amounts of any effluents that may be released offsite.
3. The Alternative Source Term does not affect the design or operation of the facility; rather, once the occurrence of a fuel handling accident has been postulated the Alternative Source Term is an input to evaluate the consequences. The implementation of the Alternative Source Term has been evaluated in the reanalysis of the design basis Fuel Handling Accident. Based on the results of this reanalysis, it has been demonstrated that, with the requested Technical Specifications changes, the dose consequences of the limiting event are within the regulatory guidance provided by the NRC for use with the Alternative Source Term. Therefore, the proposed change does not result in an increase in individual or cumulative occupational radiation exposures.

United States Nuclear Regulatory Commission
Attachment III to Serial: RNP-RA/02-0027
15 Pages

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
REQUEST FOR TECHNICAL
SPECIFICATIONS CHANGE REGARDING SELECTIVE
IMPLEMENTATION OF ALTERNATIVE RADIOLOGICAL SOURCE TERM

MARKUP OF TECHNICAL SPECIFICATIONS PAGES

TABLE OF CONTENTS

3.7	PLANT SYSTEMS (continued)	
3.7.9	Control Room Emergency Filtration System (CREFS) . .	3.7-22
3.7.10	Control Room Emergency Air Temperature Control (CREATC)	3.7-25
3.7.11	Fuel Building Air Cleanup System (FBACS)	3.7-28
3.7.12	Fuel Storage Pool Water Level	3.7-30
3.7.13	Fuel Storage Pool Boron Concentration	3.7-31
3.7.14	New and Spent Fuel Assembly Storage	3.7-32
3.7.15	Secondary Specific Activity	3.7-33
3.8	ELECTRICAL POWER SYSTEMS	3.8-1
3.8.1	AC Sources—Operating	3.8-1
3.8.2	AC Sources—Shutdown and During Movement of Irradiated Fuel Assemblies	3.8-13
3.8.3	Diesel Fuel Oil, and Starting Air	3.8-16
3.8.4	DC Sources—Operating	3.8-19
3.8.5	DC Sources—Shutdown and During Movement of Irradiated Fuel Assemblies	3.8-22
3.8.6	Battery Cell Parameters	3.8-24
3.8.7	AC Instrument Bus Sources—Operating	3.8-28
3.8.8	AC Instrument Bus Sources—Shutdown and During Movement of Irradiated Fuel Assemblies	3.8-30
3.8.9	Distribution Systems—Operating	3.8-32
3.8.10	Distribution Systems—Shutdown and During Movement of Irradiated Fuel Assemblies	3.8-35
3.9	REFUELING OPERATIONS	3.9-1
3.9.1	Boron Concentration	3.9-1
3.9.2	Nuclear Instrumentation	3.9-2
3.9.3	Containment Penetrations	3.9-4
3.9.4	Residual Heat Removal (RHR) and Coolant Circulation—High Water Level	3.9-6
3.9.5	Residual Heat Removal (RHR) and Coolant Circulation—Low Water Level	3.9-8
3.9.6	Refueling Cavity Water Level	3.9-10
3.9.7	Containment Purge Filter System	3.9-11
4.0	DESIGN FEATURES	4.0-1
4.1	Site Location	4.0-1
4.2	Reactor Core	4.0-1
4.3	Fuel Storage	4.0-1
5.0	ADMINISTRATIVE CONTROLS	5.0-1
5.1	Responsibility	5.0-1
5.2	Organization	5.0-2
5.3	Unit Staff Qualifications	5.0-5
5.4	Procedures	5.0-6

(continued)

Containment Ventilation Isolation Instrumentation

3.3.6

Table 3.3.6-1 (page 1 of 1)
Containment Ventilation Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS	TRIP SETPPOINT
1. Manual Initiation	1, 2, 3, 4 (a), (b), (c)	2	SR 3.3.6.6	NA
2. Automatic Actuation Logic and Actuation Relays	1, 2, 3, 4 (a), (b), (c)	2 trains	SR 3.3.6.2 SR 3.3.6.3 SR 3.3.6.5	NA
3. Containment Radiation				
a. Gaseous	(a), (b), (c)	1	SR 3.3.6.1 SR 3.3.6.4 SR 3.3.6.7	(a) b
b. Particulate	(a), (b), (c)	1	SR 3.3.6.1 SR 3.3.6.4 SR 3.3.6.7	(a)
4. Safety Injection	Refer to LCO 3.3.2, "ESFAS Instrumentation," Functions 1.a-f, for all initiation functions and requirements.			

- (a) During CORE ALTERATIONS.
 (b) During movement of irradiated fuel assemblies within containment.
 (c) During Purging.
 (d) Trip Setpoint shall be in accordance with the methodology in the Offsite Dose Calculation Manual.

3.3 INSTRUMENTATION

3.3.7 Control Room Emergency Filtration System (CREFS) Actuation Instrumentation

LCO 3.3.7 The CREFS actuation instrumentation for each Function in Table 3.3.7-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, 4
~~During movement of irradiated fuel assemblies.
 During CORE ALTERATIONS.~~

ACTIONS

-----NOTE-----
 Separate Condition entry is allowed for each Function.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One automatic actuation train inoperable.	A.1 Place one CREFS train in emergency pressurization mode.	7 days
B. Two automatic actuation trains inoperable. OR One radiation monitoring channel inoperable.	B.1 Place one CREFS train in emergency pressurization mode.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time for Condition A or B not met in MODE 1, 2, 3, or 4.	C.1 Be in MODE 3. <u>AND</u>	6 hours
	C.2 Be in MODE 5.	36 hours
D. Required Action and associated Completion Time for Condition A or B not met during movement of irradiated fuel assemblies or during CORE ALTERATIONS.	D.1 Suspend CORE ALTERATIONS. <u>AND</u>	Immediately
	D.2 Suspend movement of irradiated fuel assemblies.	Immediately

SURVEILLANCE REQUIREMENTS

-----NOTE-----
Refer to Table 3.3.7-1 to determine which SRs apply for each CREFS Actuation Function.

SURVEILLANCE	FREQUENCY
SR 3.3.7.1 Perform CHANNEL CHECK.	12 hours
SR 3.3.7.2 Perform COT.	92 days
SR 3.3.7.3 Perform ACTUATION LOGIC TEST.	31 days on a STAGGERED TEST BASIS

(continued)

3.7 PLANT SYSTEMS

3.7.9 Control Room Emergency Filtration System (CREFS)

LCO 3.7.9 Two CREFS trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4
During movement of irradiated fuel assemblies.
During CORE ALTERATIONS.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One CREFS train inoperable.	A.1 Restore CREFS train to OPERABLE status.	7 days
B. Required Action and associated Completion Time of Condition A not met in MODE 1, 2, 3, or 4.	B.1 Be in MODE 3. <u>AND</u> B.2 Be in MODE 5.	6 hours 36 hours
C. Required Action and associated Completion Time of Condition A not met during movement of irradiated fuel assemblies, or <u>during CORE ALTERATIONS.</u>	C.1 Place OPERABLE CREFS train in emergency pressurization mode. <u>OR</u> <u>C.2.1 Suspend CORE ALTERATIONS.</u> <u>AND</u>	Immediately <u>Immediately</u> (continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. (continued)	C.2(2) Suspend movement of irradiated fuel assemblies.	Immediately
D. Two CREFS trains inoperable during movement of irradiated fuel assemblies, or during CORE ALTERATIONS.	D.1 Suspend CORE ALTERATIONS. AND D.2 Suspend movement of irradiated fuel assemblies.	Immediately Immediately
E. Two CREFS trains inoperable in MODE 1, 2, 3, or 4.	E.1 Restore at least one CREFS train to OPERABLE status.	48 hours
F. Required Action and associated Completion Time of Condition E not met in MODE 1, 2, 3, or 4.	F.1 Be in MODE 3. AND F.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.9.1 Operate each CREFS train for ≥ 15 minutes.	31 days

(continued)

Move to previous page

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.7.9.2 Perform required CREFS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with VFTP
SR 3.7.9.3 Verify each CREFS train actuates on an actual or simulated actuation signal.	18 months
SR 3.7.9.4 Verify one CREFS train can maintain a positive pressure of ≥ 0.125 inches water gauge, relative to the outside atmosphere and a positive pressure relative to adjacent building areas during the emergency pressurization mode of operation at a makeup flow rate of ≤ 400 cfm.	18 months on a STAGGERED TEST BASIS

Page is intentionally blank

3.7 PLANT SYSTEMS

3.7.10 Control Room Emergency Air Temperature Control (CREATC)

LC0 3.7.10 Two CREATC Water Cooled Condensing Unit (WCCU) trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4
 During movement of irradiated fuel assemblies,
~~During CORE ALTERATIONS.~~

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One CREATC WCCU train inoperable.	A.1 Restore CREATC WCCU train to OPERABLE status.	30 days
B. Required Action and associated Completion Time of Condition A not met in MODE 1, 2, 3, or 4.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 5.	36 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition A not met during movement of irradiated fuel assemblies, or during CORE ALTERATIONS.	C.1 Place OPERABLE CREATC WCCU train in operation.	Immediately
	OR	
	C.2.1 Suspend CORE ALTERATIONS.	Immediately
	AND	
	C.2.2 Suspend movement of irradiated fuel assemblies.	Immediately
D. Two CREATC WCCU trains inoperable during movement of irradiated fuel assemblies, or during CORE ALTERATIONS.	D.1 Suspend CORE ALTERATIONS.	Immediately
	AND	
	D.2 Suspend movement of irradiated fuel assemblies.	Immediately
E. Two CREATC WCCU trains inoperable in MODE 1, 2, 3, or 4.	E.1 Restore at least one CREATC WCCU train to OPERABLE status.	48 hours
F. Required Action and associated Completion Time of Condition E not met in MODE 1, 2, 3, or 4.	F.1 Be in MODE 3.	6 hours
	AND	
	F.2 Be in MODE 5.	36 hours

Not Used

3.9 REFUELING OPERATIONS

3.9.3 Containment Penetrations

LCO 3.9.3

The containment penetrations shall be in the following status:

- a. The equipment hatch closed and held in place by four bolts;
- b. One door in the air lock closed; and
- c. Each penetration providing direct access from the containment atmosphere to the outside atmosphere either:
 1. closed by a manual or automatic isolation valve, blind flange, or equivalent, or
 2. capable of being closed by an OPERABLE Containment Ventilation Isolation System.

APPLICABILITY: During CORE ALTERATIONS,
During movement of irradiated fuel assemblies within containment.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more containment penetrations not in required status.	A.1 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u> A.2 Suspend movement of irradiated fuel assemblies within containment.	Immediately

Containment Penetrations
3.9.3

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.3.1	Verify each required containment penetration is in the required status.	7 days
SR 3.9.3.2	Verify each required containment ventilation valve actuates to the isolation position on an actual or simulated actuation signal.	18 months

Page is intentionally blank

3.9 REFUELING OPERATIONS

3.9.6 Refueling Cavity Water Level

LCO 3.9.6 Refueling cavity water level shall be maintained \geq 23 ft above the top of reactor vessel flange.

APPLICABILITY:

~~During CORE ALTERATIONS, except during latching and unlatching of control rod drive shafts.~~
During movement of irradiated fuel assemblies within containment.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Refueling cavity water level not within limit.	A.1 Suspend CORE ALTERATIONS.	Immediately
	AND A.2 Suspend movement of irradiated fuel assemblies within containment.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.9.6.1 Verify refueling cavity water level is \geq 23 ft above the top of reactor vessel flange.	24 hours

Not Used

Containment Purge Filter System 3.9.7

3.9 REFUELING OPERATIONS

3.9.7 Containment Purge Filter System

LCO 3.9.7

The Containment Purge Filter System shall be OPERABLE and operating.

APPLICABILITY: During CORE ALTERATIONS
During movement of irradiated fuel assemblies in containment.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Containment Purge Filter System inoperable. <u>OR</u> Containment Purge Filter System not in operation.	A.1 Close each penetration providing direct access from the containment atmosphere to the outside atmosphere by a manual or automatic valve, blind flange, or equivalent method. <u>OR</u> A.2.1 Suspend CORE ALTERATIONS. <u>AND</u> A.2.2 Suspend movement of irradiated fuel assemblies within containment.	Immediately Immediately Immediately

Containment Purge Filter System
3.9.7

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.9.7.1 Verify relative humidity of containment atmosphere to be processed by the Containment Purge Filter System is $\leq 70\%$.	1 hour
SR 3.9.7.2 Verify the Containment Purge Filter System is in operation and maintaining containment pressure negative relative to the adjacent auxiliary building areas.	12 hours
SR 3.9.7.3 Perform required Containment Purge Filter System filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP

United States Nuclear Regulatory Commission
Attachment IV to Serial: RNP-RA/02-0027
15 Pages

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
REQUEST FOR TECHNICAL
SPECIFICATIONS CHANGE REGARDING SELECTIVE
IMPLEMENTATION OF ALTERNATIVE RADIOLOGICAL SOURCE TERM

RETYPE TECHNICAL SPECIFICATIONS PAGES

TABLE OF CONTENTS

3.7	PLANT SYSTEMS (continued)	
3.7.9	Control Room Emergency Filtration System (CREFS).....	3.7-22
3.7.10	Control Room Emergency Air Temperature Control (CREATC).....	3.7-25
3.7.11	Fuel Building Air Cleanup System (FBACS).....	3.7-28
3.7.12	Fuel Storage Pool Water Level.....	3.7-30
3.7.13	Fuel Storage Pool Boron Concentration.....	3.7-31
3.7.14	New and Spent Fuel Assembly Storage.....	3.7-32
3.7.15	Secondary Specific Activity.....	3.7-33
3.8	ELECTRICAL POWER SYSTEMS.....	3.8-1
3.8.1	AC Sources—Operating	3.8-1
3.8.2	AC Sources—Shutdown and During Movement of Irradiated Fuel Assemblies.....	3.8-13
3.8.3	Diesel Fuel Oil, and Starting Air.....	3.8-16
3.8.4	DC Sources—Operating	3.8-19
3.8.5	DC Sources—Shutdown and During Movement of Irradiated Fuel Assemblies.....	3.8-22
3.8.6	Battery Cell Parameters.....	3.8-24
3.8.7	AC Instrument Bus Sources—Operating	3.8-28
3.8.8	AC Instrument Bus Sources—Shutdown and During Movement of Irradiated Fuel Assemblies.....	3.8-30
3.8.9	Distribution Systems—Operating	3.8-32
3.8.10	Distribution Systems—Shutdown and During Movement of Irradiated Fuel Assemblies.....	3.8-35
3.9	REFUELING OPERATIONS.....	3.9-1
3.9.1	Boron Concentration.....	3.9-1
3.9.2	Nuclear Instrumentation.....	3.9-2
3.9.3	Not Used.....	3.9-4
3.9.4	Residual Heat Removal (RHR) and Coolant Circulation—High Water Level	3.9-6
3.9.5	Residual Heat Removal (RHR) and Coolant Circulation—Low Water Level	3.9-8
3.9.6	Refueling Cavity Water Level.....	3.9-10
3.9.7	Not Used.....	3.9-11
4.0	DESIGN FEATURES.....	4.0-1
4.1	Site Location	4.0-1
4.2	Reactor Core.....	4.0-1
4.3	Fuel Storage.....	4.0-1
5.0	ADMINISTRATIVE CONTROLS.....	5.0-1
5.1	Responsibility.....	5.0-1
5.2	Organization.....	5.0-2
5.3	Unit Staff Qualifications.....	5.0-5

(continued)

Containment Ventilation Isolation Instrumentation

3.3.6

Table 3.3.6-1 (page 1 of 1)
Containment Ventilation Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS	TRIP SETPPOINT
1. Manual Initiation	1,2,3,4, (a)	2	SR 3.3.6.6	NA
2. Automatic Actuation Logic and Actuation Relays	1,2,3,4, (a)	2 trains	SR 3.3.6.2 SR 3.3.6.3 SR 3.3.6.5	NA
3. Containment Radiation				
a. Gaseous	(a)	1	SR 3.3.6.1 SR 3.3.6.4 SR 3.3.6.7	(b)
b. Particulate	(a)	1	SR 3.3.6.1 SR 3.3.6.4 SR 3.3.6.7	(b)
4. Safety Injection	Refer to LCO 3.3.2, "ESFAS Instrumentation," Functions 1.a-f, for all initiation functions and requirements.			

(a) During Purging.

(b) Trip Setpoint shall be in accordance with the methodology in the Offsite Dose Calculation Manual.

3.3 INSTRUMENTATION

3.3.7 Control Room Emergency Filtration System (CREFS) Actuation Instrumentation

LC0 3.3.7 The CREFS actuation instrumentation for each Function in Table 3.3.7-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

-----NOTE-----
Separate Condition entry is allowed for each Function.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One automatic actuation train inoperable.	A.1 Place one CREFS train in emergency pressurization mode.	7 days
B. Two automatic actuation trains inoperable. OR One radiation monitoring channel inoperable.	B.1 Place one CREFS train in emergency pressurization mode.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time for Condition A or B not met in MODE 1, 2, 3, or 4.	C.1 Be in MODE 3.	6 hours
	AND	
	C.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

-----NOTE-----
Refer to Table 3.3.7-1 to determine which SRs apply for each CREFS Actuation Function.

SURVEILLANCE	FREQUENCY
SR 3.3.7.1 Perform CHANNEL CHECK.	12 hours
SR 3.3.7.2 Perform COT.	92 days
SR 3.3.7.3 Perform ACTUATION LOGIC TEST.	31 days on a STAGGERED TEST BASIS

(continued)

3.7 PLANT SYSTEMS

3.7.9 Control Room Emergency Filtration System (CREFS)

LC0 3.7.9 Two CREFS trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4
During movement of irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One CREFS train inoperable.	A.1 Restore CREFS train to OPERABLE status.	7 days
B. Required Action and associated Completion Time of Condition A not met in MODE 1, 2, 3, or 4.	B.1 Be in MODE 3. AND	6 hours
	B.2 Be in MODE 5.	36 hours
C. Required Action and associated Completion Time of Condition A not met during movement of irradiated fuel assemblies.	C.1 Place OPERABLE CREFS train in emergency pressurization mode. OR	Immediately
	C.2 Suspend movement of irradiated fuel assemblies.	Immediately

(continued)

ACTIONS (continued)

D. Two CREFS trains inoperable during movement of irradiated fuel assemblies.	D.1 Suspend movement of irradiated fuel assemblies.	Immediately
E. Two CREFS trains inoperable in MODE 1, 2, 3, or 4.	E.1 Restore at least one CREFS train to OPERABLE status.	48 hours
F. Required Action and associated Completion Time of Condition E not met in MODE 1, 2, 3, or 4.	F.1 Be in MODE 3. AND	6 hours
	F.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.9.1	Operate each CREFS train for ≥ 15 minutes.	31 days
SR 3.7.9.2	Perform required CREFS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with VFTP
SR 3.7.9.3	Verify each CREFS train actuates on an actual or simulated actuation signal.	18 months
SR 3.7.9.4	Verify one CREFS train can maintain a positive pressure of ≥ 0.125 inches water gauge, relative to the outside atmosphere and a positive pressure relative to adjacent building areas during the emergency pressurization mode of operation at a makeup flow rate of ≤ 400 cfm.	18 months on a STAGGERED TEST BASIS

Page is intentionally blank

3.7 PLANT SYSTEMS

3.7.10 Control Room Emergency Air Temperature Control (CREATC)

LCO 3.7.10 Two CREATC Water Cooled Condensing Unit (WCCU) trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4
During movement of irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One CREATC WCCU train inoperable.	A.1 Restore CREATC WCCU train to OPERABLE status.	30 days
B. Required Action and associated Completion Time of Condition A not met in MODE 1, 2, 3, or 4.	B.1 Be in MODE 3.	6 hours
	AND B.2 Be in MODE 5.	36 hours

(continued)

ACTIONS (continued)

C. Required Action and associated Completion Time of Condition A not met during movement of irradiated fuel assemblies.	C.1	Place OPERABLE CREATC WCCU train in operation.	Immediately
	OR		
	C.2	Suspend movement of irradiated fuel assemblies.	Immediately
D. Two CREATC WCCU trains inoperable during movement of irradiated fuel assemblies.	D.1	Suspend movement of irradiated fuel assemblies.	Immediately
E. Two CREATC WCCU trains inoperable in MODE 1, 2, 3, or 4.	E.1	Restore at least one CREATC WCCU train to OPERABLE status.	48 hours
F. Required Action and associated Completion Time of Condition E not met in MODE 1, 2, 3, or 4.	F.1	Be in MODE 3.	6 hours
	AND		
	F.2	Be in MODE 5.	36 hours

3.9 REFUELING OPERATIONS

3.9.3 Not Used

Page is intentionally blank

3.9 REFUELING OPERATIONS

3.9.6 Refueling Cavity Water Level

LC0 3.9.6 Refueling cavity water level shall be maintained ≥ 23 ft above the top of reactor vessel flange.

APPLICABILITY: During movement of irradiated fuel assemblies within containment.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Refueling cavity water level not within limit.	A.1 Suspend movement of irradiated fuel assemblies within containment.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.9.6.1 Verify refueling cavity water level is ≥ 23 ft above the top of reactor vessel flange.	24 hours

3.9 REFUELING OPERATIONS

3.9.7 Not Used

Page is intentionally blank

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
REQUEST FOR TECHNICAL
SPECIFICATIONS CHANGE REGARDING SELECTIVE
IMPLEMENTATION OF ALTERNATIVE RADIOLOGICAL SOURCE TERM

KEY FUEL HANDLING ACCIDENT ANALYSIS INPUTS AND ASSUMPTIONS

Table 1
Key Fuel Handling Accident Analysis Inputs and Assumptions

Input/Assumption	FHA in Containment	FHA in Fuel Handling Building
Decay Time After Shutdown	56 hours	8 hours
Plant Thermal Power Prior To Shutdown	2346 MWth	2346 MWth
Number of Fuel Assemblies in Core	157	157
Number of Fuel Rods Damaged	204 (one assembly)	204 (one assembly)
Fuel Assembly Burnup	60,000 MWD/MTU	60,000 MWD/MTU
Assembly Radial Peaking Factor	1.8	1.8
Fuel Assembly Enrichment	4.95 w/o (Up to 5.0 w/o bounded by sensitivity study)	4.95 w/o (Up to 5.0 w/o bounded by sensitivity study)
Effective Iodine Decontamination Factor	200 (Based on water depth of 23 feet in Refueling Cavity)	138 (Based on water depth of 21 feet in Spent Fuel Pit)
Noble Gas Decontamination Factor	1	1
Air Handling System Filter Efficiencies	None Assumed	90% (Elemental Iodine) 70% (Organic Iodine)
Release Type	All activity released from fuel gap to pool is instantaneously released to pool. Radioactivity that escapes from the pool to the environment is assumed to be released over a two hour period as a ground level release.	All activity released from fuel gap to pool is instantaneously released to pool. Radioactivity that escapes from the pool to the environment is assumed to be released over a two hour period as a ground level release.
Full Core Isotopic Inventory	See Table 2	See Table 2
Fraction Of Assembly Activity In Gap	RG 1.183, Table 3	RG 1.183, Table 3
Control Room Ventilation Inputs	See Table 3	See Table 3
Meteorology	See Tables 4 and 5	See Tables 4 and 5

Table 2
Full Core Isotopic Inventory

Nuclide	Curies at T=0
I-131	6.20E+07
I-132	9.02E+07
I-133	1.28E+08
I-134	1.41E+08
I-135	1.21E+08
Kr-85	7.30E+05
Kr-85m	1.51E+07
Kr-87	3.03E+07
Kr-88	4.20E+07
Xe-133	1.28E+08
Xe-135	3.68E+07

Table 3
Control Room Ventilation Inputs

Parameter	Value
Control Room Volume	20,124 ft ³
Normal Ventilation Flow Rates	
Filtered Makeup Flow Rate	0 cfm
Filtered Recirculation Flow Rate	0 cfm
Unfiltered Makeup Flow Rate	400 cfm
Unfiltered Inleakage (Total)	300 cfm
Unfiltered Recirculation Flow Rate	Not Modeled
Pressurization Mode Flow Rates	
Filtered Makeup Air Flow Rate	400 cfm
Filtered Recirculation Flow Rate	2600 cfm
Unfiltered Inleakage (Total, Initial)	300 cfm
Hagan Room Unfiltered Air Inleakage (Terminates after 1 hour)	70 cfm
Unfiltered Recirculation Flow Rate	Not Modeled
Filter Efficiencies	
Elemental	95 %
Organic	95 %
Particulate	99 %
Operator Action Time to Switch from Normal to Pressurization Mode	1 hour

Table 4
Offsite Ground Level λ/Q Factors (sec/m^3)

Time Period	FHA in Containment		FHA in Fuel Handling Building	
	EAB	LPZ	EAB	LPZ
0 – 2 hours (New, PAVAN)	1.77E-03	8.92E-05	1.77E-03	8.92E-05
0 – 2 hours (Current Licensing Basis)	8.70E-04	4.5E-05*	8.70E-04	4.5E-05*

* Extracted from Safety Guide 25

Table 5
Onsite Ground Level λ/Q Factors (sec/m^3)

Time Period	FHA in Containment	FHA in Fuel Handling Building
New, ARCON96 Based λ/Q Values (Occupancy Factors Not Included)		
0 – 2 hours	4.11E-03	1.23E-03
2 – 8 hours	2.68E-03	8.93E-04
8 – 24 hours	1.16E-03	3.60E-04
1 – 4 days	8.14E-04	2.58E-04
4 – 30 days	6.76E-04	2.19E-04
Current Licensing Basis λ/Q Values (Values in Parentheses Do Not Include Occupancy Factors)		
0 – 8 hours	2.0E-03 (2.0E-03)	2.0E-03 (2.0E-03)
8 – 24 hours	1.1E-03 (1.1E-03)	1.1E-03 (1.1E-03)
1 – 4 days	3.4E-04 (5.7E-04)	3.4E-04 (5.7E-04)
4 – 30 days	5.8E-05 (1.45E-04)	5.8E-05 (1.45E-04)

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
REQUEST FOR TECHNICAL
SPECIFICATIONS CHANGE REGARDING SELECTIVE
IMPLEMENTATION OF ALTERNATIVE RADIOLOGICAL SOURCE TERM

ARCON96 DISPERSION MODEL INPUT FILE
(FHA Inside Containment)

***** ARCON INPUT *****

Number of Meteorological Data Files = 2

Meteorological Data File Names

C:\1ARCON96\MET88.MET

C:\1ARCON96\MET92.MET

Height of lower wind instrument (m) = 11.0

Height of upper wind instrument (m) = 62.0

Wind speeds entered as miles per hour

Ground-level release

Release height (m) = 7.8

Building Area (m²) = 1817.0

Effluent vertical velocity (m/s) = .00

Vent or stack flow (m³/s) = .00

Vent or stack radius (m) = .00

Direction .. intake to source (deg) = 313

Wind direction sector width (deg) = 90

Wind direction window (deg) = 268 - 358

Distance to intake (m) = 33.9

Intake height (m) = 7.8

Terrain elevation difference (m) = .0

Output file names

RBNPCR.LOG

RBNPCR.CFD

Minimum Wind Speed (m/s) = .5

Surface roughness length (m) = .20

Sector averaging constant = 4.3

Initial value of sigma y = .00

Initial value of sigma z = .00

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
REQUEST FOR TECHNICAL
SPECIFICATIONS CHANGE REGARDING SELECTIVE
IMPLEMENTATION OF ALTERNATIVE RADIOLOGICAL SOURCE TERM

ARCON96 DISPERSION MODEL INPUT FILE
(FHA Inside Fuel Handling Building)

***** ARCON INPUT *****

Number of Meteorological Data Files = 2

Meteorological Data File Names

C:\1ARCON96\MET88.MET

C:\1ARCON96\MET92.MET

Height of lower wind instrument (m) = 11.0

Height of upper wind instrument (m) = 62.0

Wind speeds entered as miles per hour

Ground-level release

Release height (m) = 60.7

Building Area (m²) = 1817.0

Effluent vertical velocity (m/s) = .00

Vent or stack flow (m³/s) = .00

Vent or stack radius (m) = .00

Direction .. intake to source (deg) = 335

Wind direction sector width (deg) = 90

Wind direction window (deg) = 290 - 020

Distance to intake (m) = 46.4

Intake height (m) = 7.5

Terrain elevation difference (m) = .0

Output file names

PSCR.LOG

PSCR.CFD

Minimum Wind Speed (m/s) = .5

Surface roughness length (m) = .20

Sector averaging constant = 4.3

Initial value of sigma y = .00

Initial value of sigma z = .00

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
REQUEST FOR TECHNICAL
SPECIFICATIONS CHANGE REGARDING SELECTIVE
IMPLEMENTATION OF ALTERNATIVE RADIOLOGICAL SOURCE TERM

PAVAN DISPERSION MODEL INPUT FILE

```
1 1111
H.B. ROBINSON UNIT 2 1988-96 AVG. MET. GROUND-LEVEL RELEASE
11.0 METERS 9.3 - 60.8 METERS
UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)
SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS
7 0
2472. 63.9 10.0 11.0
0 0 0 7 68 216 1003
12 9 11 10 19 20 15 5 4 6 5 6 2 2 2 3
187 152 187 280 165 192 296 209 157 237 287 147 114 57 43 39
232 158 135 37 8 0 27 93 252 354 376 151 82 111 128 119
6 2 1 0 0 0 0 1 21 42 26 6 0 1 11 7
0 0 0 0 0 0 0 0 1 0 1 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
6 10 14 13 17 16 16 13 6 7 6 6 7 4 5 1
236 190 193 176 126 116 172 147 133 163 227 156 104 69 44 53
105 114 63 16 5 3 13 37 71 134 143 82 52 63 61 63
4 3 0 0 0 0 0 1 11 14 17 5 5 4 3 5
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
17 18 19 31 37 37 38 16 10 10 12 19 10 8 5 7
305 266 236 240 141 112 187 193 142 230 297 214 126 107 79 103
96 134 76 20 5 2 6 37 66 139 158 66 50 66 46 54
2 5 3 0 0 0 0 2 7 10 13 8 4 10 3 2
0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
264 331 417 443 369 387 382 337 298 346 309 315 279 241 176 195
1615 2572 1806 1188 725 506 662 1243 1291 1374 1167 915 641 421 477 796
653 1387 365 91 36 20 82 198 452 424 350 239 153 178 187 363
36 62 6 1 2 0 1 21 61 54 35 10 14 16 8 22
0 1 0 0 0 0 0 0 2 0 0 0 1 0 1 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
445 502 420 329 267 229 283 768 1352 1296 849 613 483 424 405 509
648 554 353 169 86 60 129 730 1199 1189 730 555 311 262 586 951
54 43 10 6 9 5 15 85 241 163 130 99 19 46 67 219
0 3 0 0 0 0 3 5 28 17 1 2 3 2 0 5
0 1 2 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
332 175 179 109 68 66 111 439 770 757 595 466 450 431 609 693
53 6 16 12 1 1 8 69 99 106 134 85 28 81 204 282
2 1 1 0 0 0 1 0 1 1 2 1 1 0 0 1
0 0 1 0 0 0 0 0 1 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
606 438 372 175 71 68 71 281 449 511 451 416 522 804 1075 1228
30 1 0 1 1 1 0 4 9 10 16 20 4 9 15 138
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
101.0.750 3.50 7.50 12.5 18.5 25.0 55.0
425. 425. 425. 425. 425. 425. 425. 425. 425. 425. 425. 425. 425. 425. 425.
7242.7242.7242.7242.7242.7242.7242.7242.7242.7242.7242.7242.7242.7242.7242.
1.66 1.79 1.46 1.30 1.33 1.75 1.71 1.45 1.48 2.14 1.51 1.46 2.05 2.10 1.90 1.99
0.54 0.58 0.49 0.65 0.42 0.74 0.56 0.54 0.56 0.69 0.54 0.55 0.56 0.92 0.62 0.77
```


H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
REQUEST FOR TECHNICAL
SPECIFICATIONS CHANGE REGARDING SELECTIVE
IMPLEMENTATION OF ALTERNATIVE RADIOLOGICAL SOURCE TERM

PAVAN DISPERSION MODEL PRINTOUT OF INPUT CARDS

```
1 00010 01111 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000
2 H.B. ROBINSON UNIT 2 1988-96 AVG.OUND-LEVEL RELEASE
3 11.0 METERS 9.3 - 60.8 METERS
4 UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)
5 SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS
6 7 76711 0
7 0.500 2472.000 63.900 10.000 11.000
8 0.000 0.000 0.000 7.000 68.000216.000*****
9 12.000 9.000 11.000 10.000 19.000 20.000 15.000 5.000 4.000 6.000 5.000 6.000 2.000 2.000 2.000 3.000
9 187.000152.000187.000280.000165.000192.000296.000209.000157.000237.000287.000147.000114.000 57.000 43.000 39.000
9 232.000158.000135.000 37.000 8.000 0.000 27.000 93.000252.000354.000376.000151.000 82.000111.000128.000119.000
9 6.000 2.000 1.000 0.000 0.000 0.000 0.000 1.000 21.000 42.000 26.000 6.000 0.000 1.000 11.000 7.000
9 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 1.000 0.000 1.000 0.000 0.000 0.000 0.000 0.000
9 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000
9 6.000 10.000 14.000 13.000 17.000 16.000 16.000 13.000 6.000 7.000 6.000 6.000 7.000 4.000 5.000 1.000
9 236.000190.000193.000176.000126.000116.000172.000147.000133.000163.000227.000156.000104.000 69.000 44.000 53.000
9 105.000114.000 63.000 16.000 5.000 3.000 13.000 37.000 71.000134.000143.000 82.000 52.000 63.000 61.000 63.000
9 4.000 3.000 0.000 0.000 0.000 0.000 0.000 1.000 11.000 14.000 17.000 5.000 5.000 4.000 3.000 5.000
9 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000
9 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000
9 17.000 18.000 19.000 31.000 37.000 37.000 38.000 16.000 10.000 10.000 12.000 19.000 10.000 8.000 5.000 7.000
9 305.000266.000236.000240.000141.000112.000187.000193.000142.000230.000297.000214.000126.000107.000 79.000103.000
9 96.000134.000 76.000 20.000 5.000 2.000 6.000 37.000 66.000139.000158.000 66.000 50.000 66.000 46.000 54.000
9 2.000 5.000 3.000 0.000 0.000 0.000 0.000 2.000 7.000 10.000 13.000 8.000 4.000 10.000 3.000 2.000
9 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 1.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000
9 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000
9 264.000331.000417.000443.000369.000387.000382.000337.000298.000346.000309.000315.000279.000241.000176.000195.000
9 *****725.000506.000662.000*****915.000641.000421.000477.000796.000
9 653.000*****365.000 91.000 36.000 20.000 82.000198.000452.000424.000350.000239.000153.000178.000187.000363.000
9 36.000 62.000 6.000 1.000 2.000 0.000 1.000 21.000 61.000 54.000 35.000 10.000 14.000 16.000 8.000 22.000
9 0.000 1.000 0.000 0.000 0.000 0.000 0.000 0.000 2.000 0.000 0.000 0.000 1.000 0.000 1.000 0.000
9 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000
9 445.000502.000420.000329.000267.000229.000283.000768.000*****849.000613.000483.000424.000405.000509.000
9 648.000554.000353.000169.000 86.000 60.000129.000730.000*****730.000555.000311.000262.000586.000951.000
9 54.000 43.000 10.000 6.000 9.000 5.000 15.000 85.000241.000163.000130.000 99.000 19.000 46.000 67.000219.000
9 0.000 3.000 0.000 0.000 0.000 0.000 3.000 5.000 28.000 17.000 1.000 2.000 3.000 2.000 0.000 5.000
```

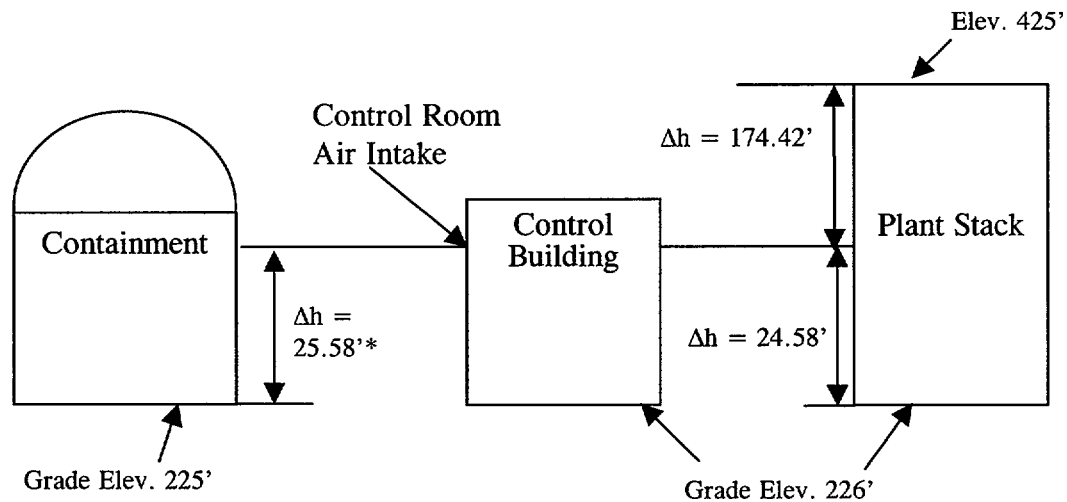
United States Nuclear Regulatory Commission
Attachment IX to Serial: RNP-RA/02-0027
Page 2 of 2

9	0.000	1.000	2.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
9	332.000	175.000	179.000	109.000	68.000	66.000	111.000	439.000	770.000	757.000	595.000	466.000	450.000	431.000	609.000	693.000	
9	53.000	6.000	16.000	12.000	1.000	1.000	8.000	69.000	99.000	106.000	134.000	85.000	28.000	81.000	204.000	282.000	
9	2.000	1.000	1.000	0.000	0.000	0.000	1.000	0.000	1.000	1.000	2.000	1.000	1.000	0.000	0.000	1.000	
9	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
9	606.000	438.000	372.000	175.000	71.000	68.000	71.000	281.000	449.000	511.000	451.000	416.000	522.000	804.000	*****		
9	30.000	1.000	0.000	1.000	1.000	1.000	0.000	4.000	9.000	10.000	16.000	20.000	4.000	9.000	15.000	138.000	
9	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
3.500	7.500	12.500	18.500	25.000	55.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11	425.	425.	425.	425.
425.	425.	425.	425.	425.	425.	425.	425.	425.	11	7242.	7242.	7242.	7242.	7242.	7242.	7242.	7242.
7242.	7242.	7242.	7242.	7242.	12	1.7	1.8	1.5	1.3	1.3	1.8	1.7	1.5	1.5	2.1	1.5	1.5
2.0																	
12	0.5	0.6	0.5	0.6	0.4	0.7	0.6	0.5	0.6	0.7	0.5	0.6	0.6	0.9	0.6	0.8	

NOTE THAT ABOVE PARROTING OF INPUT CONTAINS SOME DATA OVERFLOW IN THE FORTRAN SPECIFIED FIELDS DUE TO THE USE OF 9 YEARS OF DATA.

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
REQUEST FOR TECHNICAL
SPECIFICATIONS CHANGE REGARDING SELECTIVE
IMPLEMENTATION OF ALTERNATIVE RADIOLOGICAL SOURCE TERM

RELATIVE PLANT ELEVATIONS



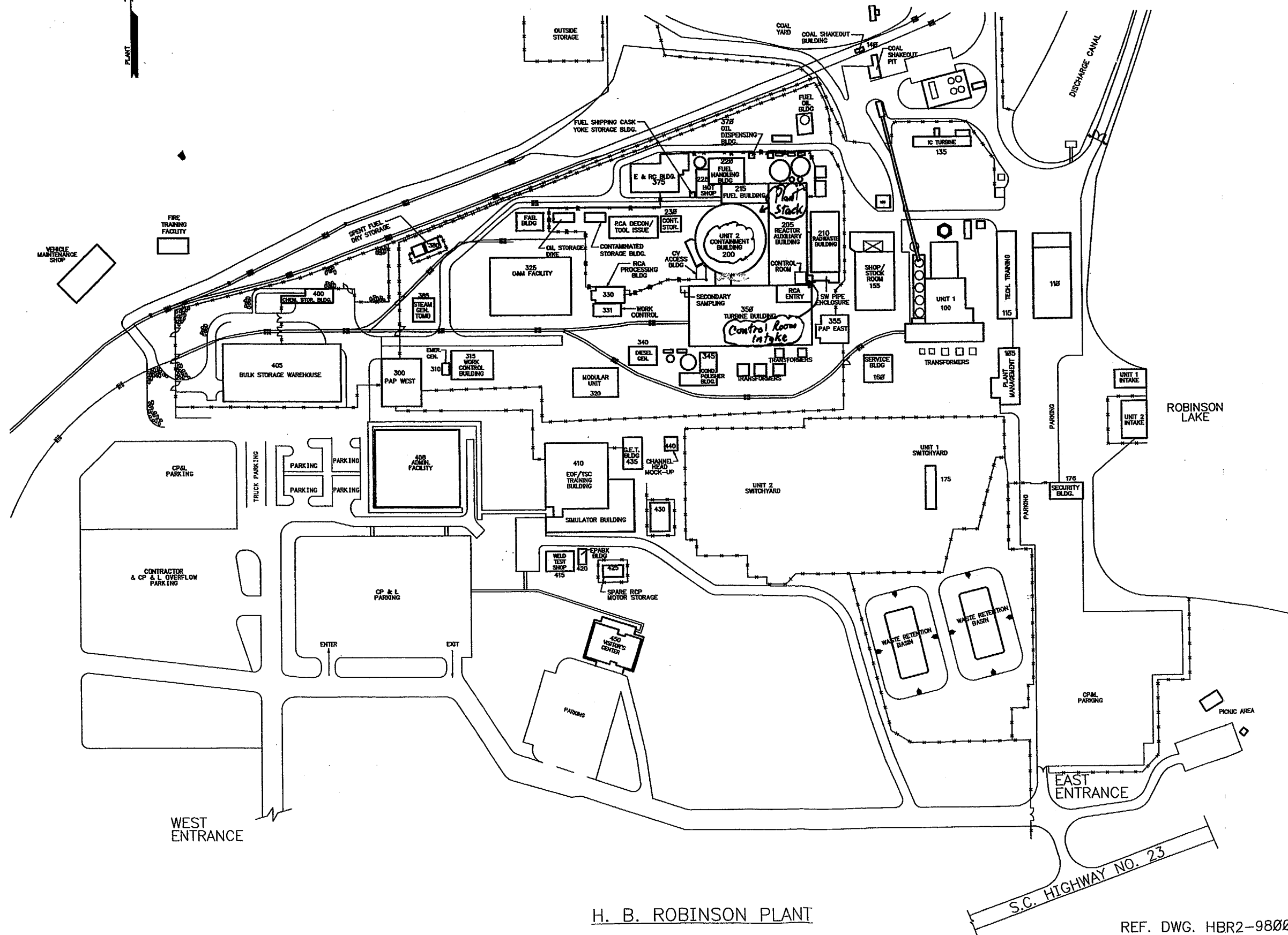
Δh (Containment grade to control room intake) = $25.58' = 7.8 \text{ m}^*$
 Δh (Plant stack grade to control room intake) = $24.58' = 7.5 \text{ m}$
 Δh (Control room intake to plant stack release) = $174.42' = 53.2 \text{ m}$
Plant stack release Δh above grade = $425' - 226' = 199' = 60.7 \text{ m}$

** For conservatism, credit is not taken for the height differential between grade and the CR intake, i.e., the Containment release is assumed to be at the CR intake elevation of 250.58' (7.8 m above grade).*

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
REQUEST FOR TECHNICAL
SPECIFICATIONS CHANGE REGARDING SELECTIVE
IMPLEMENTATION OF ALTERNATIVE RADIOLOGICAL SOURCE TERM

ANNOTATED PLOT PLAN

Plant North varies
from True North
by ~6'23"



REVISION 17

H.B. ROBINSON
UNIT 2
Carolina Power & Light Company
UPDATED FINAL SAFETY ANALYSIS REPORT

PLOT PLAN


FIGURE 1.2.2-1

H. B. ROBINSON PLANT

REF. DWG. HBR2-9800

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
REQUEST FOR TECHNICAL
SPECIFICATIONS CHANGE REGARDING SELECTIVE
IMPLEMENTATION OF ALTERNATIVE RADIOLOGICAL SOURCE TERM

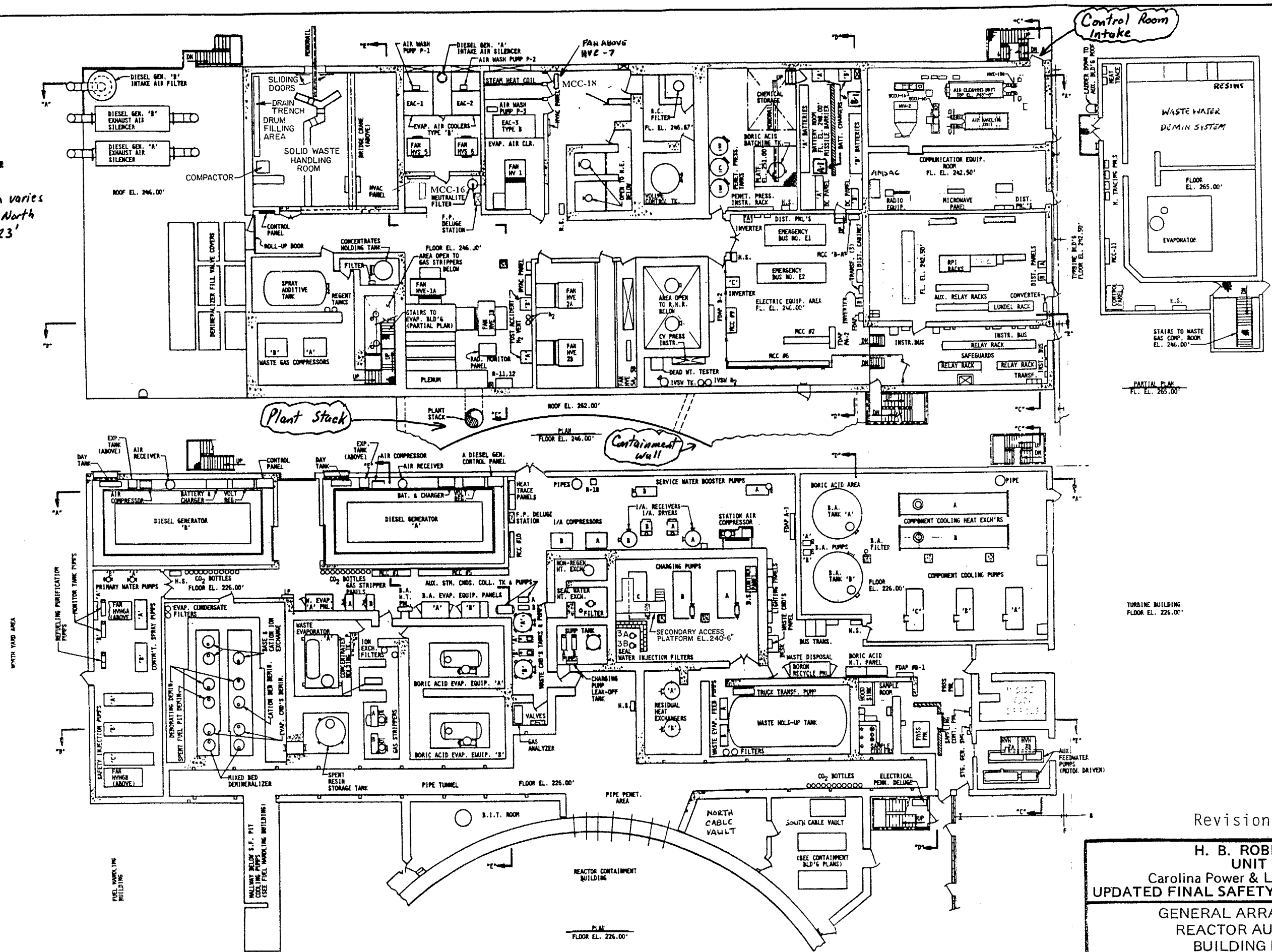
ANNOTATED REACTOR AUXILIARY BUILDING PLANS



 Plant North varies

 from True North

 by ~ 6°23'



Revision No. 14

H. B. ROBINSON
 UNIT 2
 Carolina Power & Light Company
 UPDATED FINAL SAFETY ANALYSIS REPORT
 GENERAL ARRANGEMENT
 REACTOR AUXILIARY
 BUILDING PLANS
 FIGURE 1.2.2 - 5

X/Q CUMULATIVE FREQUENCY DISTRIBUTIONS											
XOQ	1	2	4	8	XOQ	12	24	96	168	360	720
Abv. Lim.	0.	0.	0.	0.	Abv. Lim.	0.	0.	0.	0.	0.	0.
9.120E-03	0.	0.	0.	0.	9.120E-03	0.	0.	0.	0.	0.	0.
8.318E-03	0.	0.	0.	0.	8.318E-03	0.	0.	0.	0.	0.	0.
7.586E-03	0.	0.	0.	0.	7.586E-03	0.	0.	0.	0.	0.	0.
6.918E-03	0.	0.	0.	0.	6.918E-03	0.	0.	0.	0.	0.	0.
6.310E-03	0.	0.	0.	0.	6.310E-03	0.	0.	0.	0.	0.	0.
5.754E-03	13.	7.	7.	5.	5.754E-03	0.	0.	0.	0.	0.	0.
5.248E-03	321.	171.	77.	11.	5.248E-03	0.	0.	0.	0.	0.	0.
4.786E-03	917.	728.	444.	172.	4.786E-03	3.	0.	0.	0.	0.	0.
4.365E-03	2778.	1953.	1142.	562.	4.365E-03	18.	0.	0.	0.	0.	0.
3.981E-03	4454.	3202.	2133.	1174.	3.981E-03	137.	0.	0.	0.	0.	0.
3.631E-03	5857.	4546.	3095.	1889.	3.631E-03	435.	3.	0.	0.	0.	0.
3.311E-03	7109.	5706.	4242.	2816.	3.311E-03	958.	20.	0.	0.	0.	0.
3.020E-03	8684.	6889.	5532.	3909.	3.020E-03	1686.	55.	0.	0.	0.	0.
2.754E-03	9756.	7927.	6799.	5064.	2.754E-03	2557.	208.	0.	0.	0.	0.
2.512E-03	10678.	8912.	7990.	6420.	2.512E-03	3568.	571.	0.	0.	0.	0.
2.291E-03	11654.	9869.	9177.	7819.	2.291E-03	4802.	1162.	0.	0.	0.	0.
2.089E-03	12691.	11471.	10702.	9326.	2.089E-03	6158.	1971.	0.	0.	0.	0.
1.905E-03	13486.	12757.	11987.	10871.	1.905E-03	7660.	2983.	9.	0.	0.	0.
1.738E-03	14227.	14163.	13414.	12435.	1.738E-03	9247.	4202.	76.	0.	0.	0.
1.585E-03	15190.	15499.	14811.	14055.	1.585E-03	10865.	5551.	209.	0.	0.	0.
1.445E-03	15890.	16924.	16280.	15692.	1.445E-03	12563.	7002.	510.	13.	0.	0.
1.318E-03	22049.	21292.	19210.	18424.	1.318E-03	14232.	8617.	1059.	135.	0.	0.
1.202E-03	22663.	22082.	20194.	20157.	1.202E-03	16497.	10564.	1866.	588.	0.	0.
1.096E-03	22695.	22674.	21474.	21763.	1.096E-03	18692.	12521.	3123.	1215.	0.	0.
1.000E-03	22708.	23122.	23667.	23430.	1.000E-03	20474.	14987.	4929.	2470.	241.	0.
9.120E-04	22713.	23434.	24681.	24733.	9.120E-04	22164.	17628.	7451.	4259.	1035.	46.
8.318E-04	22713.	23815.	25478.	26328.	8.318E-04	23857.	19956.	10694.	7057.	2624.	534.
7.586E-04	22714.	24192.	26452.	27319.	7.586E-04	25516.	22222.	14210.	10352.	5714.	2197.
6.918E-04	22714.	27330.	28709.	28985.	6.918E-04	27225.	24549.	17960.	14623.	10839.	5573.
6.310E-04	22714.	27528.	29228.	29788.	6.310E-04	28739.	26789.	21869.	19494.	16448.	12504.
5.754E-04	22714.	27801.	29842.	30572.	5.754E-04	30376.	28957.	26153.	24468.	22275.	21227.
5.248E-04	22714.	27802.	30253.	33028.	5.248E-04	31655.	31138.	30058.	29608.	28280.	28484.
4.786E-04	22714.	27802.	30531.	34075.	4.786E-04	32940.	33316.	33853.	34350.	33980.	34818.
4.365E-04	22714.	27802.	30869.	35009.	4.365E-04	34368.	35436.	37662.	38499.	38816.	40525.
3.981E-04	22714.	27802.	31220.	35659.	3.981E-04	35529.	37198.	41220.	42530.	43646.	45486.
3.631E-04	22714.	27802.	31467.	36517.	3.631E-04	36869.	39027.	44756.	46157.	48727.	50492.
3.311E-04	22714.	27802.	34545.	38736.	3.311E-04	38416.	40767.	48196.	49699.	53190.	54609.
3.020E-04	22714.	27802.	34956.	39368.	3.020E-04	39670.	42588.	51118.	53013.	56586.	59009.
2.754E-04	22714.	27802.	34957.	39783.	2.754E-04	40600.	44159.	53770.	56195.	60019.	62713.
2.512E-04	22714.	27802.	34957.	40147.	2.512E-04	41598.	45712.	56029.	59238.	63158.	65640.
2.291E-04	22714.	27802.	34957.	40379.	2.291E-04	43099.	47181.	58193.	62013.	65761.	67851.
2.089E-04	22714.	27802.	34957.	40704.	2.089E-04	43981.	48687.	60129.	64167.	67858.	69758.
1.905E-04	22714.	27802.	34957.	40974.	1.905E-04	44985.	49846.	62130.	66213.	69773.	71346.
1.738E-04	22714.	27802.	34957.	44200.	1.738E-04	45821.	51261.	63914.	68224.	71583.	72814.
1.585E-04	22714.	27802.	34957.	44414.	1.585E-04	46220.	52431.	65424.	69512.	72738.	73823.
1.445E-04	22714.	27802.	34957.	44762.	1.445E-04	46667.	53375.	66780.	70739.	73502.	74789.
1.318E-04	22714.	27802.	34957.	44762.	1.318E-04	47468.	54279.	68046.	71966.	73960.	75316.
1.202E-04	22714.	27802.	34957.	44762.	1.202E-04	47808.	55243.	69183.	72790.	74564.	75642.
1.096E-04	22714.	27802.	34957.	44762.	1.096E-04	49833.	56326.	70103.	73450.	74969.	75858.

1.000E-04	22714.	27802.	34957.	44762.	1.000E-04	50218.	57476.	70861.	74130.	75338.	75947.
9.120E-05	22714.	27802.	34957.	44762.	9.120E-05	50322.	58280.	71426.	74622.	75657.	75947.
8.318E-05	22714.	27802.	34957.	44762.	8.318E-05	50445.	58770.	72239.	74996.	75830.	75947.
7.586E-05	22714.	27802.	34957.	44762.	7.586E-05	50507.	59214.	72771.	75329.	76031.	75947.
6.918E-05	22714.	27802.	34957.	44762.	6.918E-05	50905.	59777.	73333.	75599.	76271.	75947.
6.310E-05	22714.	27802.	34957.	44762.	6.310E-05	51877.	60540.	73772.	75931.	76299.	75947.
5.754E-05	22714.	27802.	34957.	44762.	5.754E-05	52041.	61662.	74128.	76010.	76311.	75947.
5.248E-05	22714.	27802.	34957.	44762.	5.248E-05	52041.	61892.	74448.	76082.	76327.	75947.
4.786E-05	22714.	27802.	34957.	44762.	4.786E-05	52041.	62148.	74708.	76228.	76378.	75947.
4.365E-05	22714.	27802.	34957.	44762.	4.365E-05	52041.	62283.	75023.	76375.	76387.	75947.
3.981E-05	22714.	27802.	34957.	44762.	3.981E-05	52041.	62397.	75280.	76528.	76387.	75947.
3.631E-05	22714.	27802.	34957.	44762.	3.631E-05	52041.	62442.	75509.	76550.	76387.	75947.
3.311E-05	22714.	27802.	34957.	44762.	3.311E-05	52041.	63883.	75553.	76636.	76387.	75947.
3.020E-05	22714.	27802.	34957.	44762.	3.020E-05	52041.	63926.	75769.	76731.	76387.	75947.
2.754E-05	22714.	27802.	34957.	44762.	2.754E-05	52041.	64158.	75832.	76758.	76387.	75947.
2.512E-05	22714.	27802.	34957.	44762.	2.512E-05	52041.	64158.	75980.	76778.	76387.	75947.
2.291E-05	22714.	27802.	34957.	44762.	2.291E-05	52041.	64158.	76073.	76794.	76387.	75947.
2.089E-05	22714.	27802.	34957.	44762.	2.089E-05	52041.	64158.	76135.	76807.	76387.	75947.
1.905E-05	22714.	27802.	34957.	44762.	1.905E-05	52041.	64158.	76238.	76826.	76387.	75947.
1.738E-05	22714.	27802.	34957.	44762.	1.738E-05	52041.	64158.	76278.	76826.	76387.	75947.
1.585E-05	22714.	27802.	34957.	44762.	1.585E-05	52041.	64158.	76354.	76848.	76387.	75947.
1.445E-05	22714.	27802.	34957.	44762.	1.445E-05	52041.	64158.	76406.	76848.	76387.	75947.
1.318E-05	22714.	27802.	34957.	44762.	1.318E-05	52041.	64158.	76409.	76852.	76387.	75947.
1.202E-05	22714.	27802.	34957.	44762.	1.202E-05	52041.	64158.	76426.	76859.	76387.	75947.
1.096E-05	22714.	27802.	34957.	44762.	1.096E-05	52041.	64158.	76427.	76891.	76387.	75947.
1.000E-05	22714.	27802.	34957.	44762.	1.000E-05	52041.	64158.	76427.	76891.	76387.	75947.
9.120E-06	22714.	27802.	34957.	44762.	9.120E-06	52041.	64158.	76447.	76959.	76387.	75947.
8.318E-06	22714.	27802.	34957.	44762.	8.318E-06	52041.	64158.	76739.	76959.	76387.	75947.
7.586E-06	22714.	27802.	34957.	44762.	7.586E-06	52041.	64158.	76816.	76959.	76387.	75947.
6.918E-06	22714.	27802.	34957.	44762.	6.918E-06	52041.	64158.	76816.	76959.	76387.	75947.
6.310E-06	22714.	27802.	34957.	44762.	6.310E-06	52041.	64158.	76816.	76959.	76387.	75947.
5.754E-06	22714.	27802.	34957.	44762.	5.754E-06	52041.	64158.	76816.	76959.	76387.	75947.
5.248E-06	22714.	27802.	34957.	44762.	5.248E-06	52041.	64158.	76816.	76959.	76387.	75947.
4.786E-06	22714.	27802.	34957.	44762.	4.786E-06	52041.	64158.	76816.	76966.	76387.	75947.
4.365E-06	22714.	27802.	34957.	44762.	4.365E-06	52041.	64158.	76816.	76966.	76387.	75947.
3.981E-06	22714.	27802.	34957.	44762.	3.981E-06	52041.	64158.	76816.	76966.	76387.	75947.
3.631E-06	22714.	27802.	34957.	44762.	3.631E-06	52041.	64158.	76816.	76966.	76387.	75947.
3.311E-06	22714.	27802.	34957.	44762.	3.311E-06	52041.	64158.	76816.	76966.	76387.	75947.
3.020E-06	22714.	27802.	34957.	44762.	3.020E-06	52041.	64158.	76816.	76966.	76387.	75947.
2.754E-06	22714.	27802.	34957.	44762.	2.754E-06	52041.	64158.	76816.	76966.	76387.	75947.
2.512E-06	22714.	27802.	34957.	44762.	2.512E-06	52041.	64158.	76816.	76966.	76387.	75947.
2.291E-06	22714.	27802.	34957.	44762.	2.291E-06	52041.	64158.	76816.	76966.	76387.	75947.
2.089E-06	22714.	27802.	34957.	44762.	2.089E-06	52041.	64158.	76816.	76966.	76387.	75947.
1.905E-06	22714.	27802.	34957.	44762.	1.905E-06	52041.	64158.	76816.	76966.	76387.	75947.
1.738E-06	22714.	27802.	34957.	44762.	1.738E-06	52041.	64158.	76816.	76966.	76387.	75947.
1.585E-06	22714.	27802.	34957.	44762.	1.585E-06	52041.	64158.	76816.	76966.	76387.	75947.
1.445E-06	22714.	27802.	34957.	44762.	1.445E-06	52041.	64158.	76816.	76966.	76387.	75947.
1.318E-06	22714.	27802.	34957.	44762.	1.318E-06	52041.	64158.	76816.	76966.	76387.	75947.
1.202E-06	22714.	27802.	34957.	44762.	1.202E-06	52041.	64158.	76816.	76966.	76387.	75947.
1.096E-06	22714.	27802.	34957.	44762.	1.096E-06	52041.	64158.	76816.	76966.	76387.	75947.
1.000E-06	22714.	27802.	34957.	44762.	1.000E-06	52041.	64158.	76816.	76966.	76387.	75947.
Belw. Lim.	0.	0.	0.	0.	Belw. Lim.	0.	0.	0.	65.	0.	0.

Program Title: ARCON96.

Developed For: U.S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Division of Reactor Program Management

Date: June 25, 1997 11:00 a.m.

NRC Contacts: J. Y. Lee Phone: (301) 415 1080
e-mail: jyl1@nrc.gov
J. J. Hayes Phone: (301) 415 3167
e-mail: jjh@nrc.gov
L. A. Brown Phone: (301) 415 1232
e-mail: lab2@nrc.gov

Code Developer: J. V. Ramsdell Phone: (509) 372 6316
e-mail: j_ramsdell@pn1.gov

Code Documentation: NUREG/CR-6331 Rev. 1

The program was prepared for an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, expressed or implied, or assumes any legal liability or responsibilities for any third party's use, or the results of such use, of any portion of this program or represents that its use by such third party would not infringe privately owned rights.

Program Run 12/18/2001 at 19:02:54

***** ARCON INPUT *****

Number of Meteorological Data Files = 2
Meteorological Data File Names
C:\1ARCON96\MET88.MET
C:\1ARCON96\MET92.MET

Height of lower wind instrument (m) = 11.0
Height of upper wind instrument (m) = 62.0
Wind speeds entered as miles per hour

Ground-level release
Release height (m) = 7.8
Building Area (m²) = 1817.0
Effluent vertical velocity (m/s) = .00
Vent or stack flow (m³/s) = .00
Vent or stack radius (m) = .00

Direction .. intake to source (deg) = 313
Wind direction sector width (deg) = 90
Wind direction window (deg) = 268 - 358
Distance to intake (m) = 33.9
Intake height (m) = 7.8
Terrain elevation difference (m) = .0

Output file names
RBNPCR.LOG
RBNPCR.CFD

Minimum Wind Speed (m/s) = .5
Surface roughness length (m) = .20
Sector averaging constant = 4.3

Initial value of sigma y = .00
Initial value of sigma z = .00

Expanded output for code testing not selected

Total number of hours of data processed = 78912
Hours of missing data = 956
Hours direction in window = 16489
Hours elevated plume w/ dir. in window = 0
Hours of calm winds = 6225
Hours direction not in window or calm = 55242

DISTRIBUTION SUMMARY DATA BY AVERAGING INTERVAL

AVER. PER.	1	2	4	8	12	24	96	168	360	720
UPPER LIM.	1.00E-02	1.00E-02	1.00E-02	1.00E-02	1.00E-02	1.00E-02	1.00E-02	1.00E-02	1.00E-02	1.00E-02
LOW LIM.	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06
ABOVE RANGE	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
IN RANGE	22714.	27802.	34957.	44762.	52041.	64158.	76816.	76966.	76387.	75947.
BELOW RANGE	0.	0.	0.	0.	0.	0.	0.	65.	0.	0.
ZERO	55242.	50017.	42599.	32288.	25142.	12774.	375.	0.	0.	0.
TOTAL X/Qs	77956.	77819.	77556.	77050.	77183.	76932.	77191.	77031.	76387.	75947.
% NON ZERO	29.14	35.73	45.07	58.09	67.43	83.40	99.51	100.00	100.00	100.00

95th PERCENTILE X/Q VALUES

	4.11E-03	3.80E-03	3.41E-03	3.04E-03	2.46E-03	1.79E-03	1.06E-03	9.32E-04	8.03E-04	7.27E-04
--	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------

95% X/Q for standard averaging intervals

0 to 2 hours	4.11E-03
2 to 8 hours	2.68E-03
8 to 24 hours	1.16E-03
1 to 4 days	8.14E-04
4 to 30 days	6.76E-04

HOURLY VALUE RANGE

	MAX X/Q	MIN X/Q
CENTERLINE	6.15E-03	7.93E-04
SECTOR-AVERAGE	3.59E-03	4.62E-04

NORMAL PROGRAM COMPLETION

2
C:\1ARCON96\MET88.MET
C:\1ARCON96\MET92.MET
11.00
62.00
2
1
7.80
1817.00
0.00
0.00
0.00
313 90
33.91
7.80
0.00
RBNPCR.LOG
RBNPCR.CFD
.2
0.50
4.30
1 2 4 8 12 24 96 168 360 720
1 2 4 8 11 22 87 152 324 648
0.00 0.00
n

X/Q CUMULATIVE FREQUENCY DISTRIBUTIONS											
XOQ	1	2	4	8	XOQ	12	24	96	168	360	720
Abv. Lim.	0.	0.	0.	0.	Abv. Lim.	0.	0.	0.	0.	0.	0.
9.120E-03	0.	0.	0.	0.	9.120E-03	0.	0.	0.	0.	0.	0.
8.318E-03	0.	0.	0.	0.	8.318E-03	0.	0.	0.	0.	0.	0.
7.586E-03	0.	0.	0.	0.	7.586E-03	0.	0.	0.	0.	0.	0.
6.918E-03	0.	0.	0.	0.	6.918E-03	0.	0.	0.	0.	0.	0.
6.310E-03	0.	0.	0.	0.	6.310E-03	0.	0.	0.	0.	0.	0.
5.754E-03	0.	0.	0.	0.	5.754E-03	0.	0.	0.	0.	0.	0.
5.248E-03	0.	0.	0.	0.	5.248E-03	0.	0.	0.	0.	0.	0.
4.786E-03	0.	0.	0.	0.	4.786E-03	0.	0.	0.	0.	0.	0.
4.365E-03	0.	0.	0.	0.	4.365E-03	0.	0.	0.	0.	0.	0.
3.981E-03	0.	0.	0.	0.	3.981E-03	0.	0.	0.	0.	0.	0.
3.631E-03	0.	0.	0.	0.	3.631E-03	0.	0.	0.	0.	0.	0.
3.311E-03	0.	0.	0.	0.	3.311E-03	0.	0.	0.	0.	0.	0.
3.020E-03	0.	0.	0.	0.	3.020E-03	0.	0.	0.	0.	0.	0.
2.754E-03	0.	0.	0.	0.	2.754E-03	0.	0.	0.	0.	0.	0.
2.512E-03	0.	0.	0.	0.	2.512E-03	0.	0.	0.	0.	0.	0.
2.291E-03	0.	0.	0.	0.	2.291E-03	0.	0.	0.	0.	0.	0.
2.089E-03	0.	0.	0.	0.	2.089E-03	0.	0.	0.	0.	0.	0.
1.905E-03	0.	0.	0.	0.	1.905E-03	0.	0.	0.	0.	0.	0.
1.738E-03	0.	0.	0.	0.	1.738E-03	0.	0.	0.	0.	0.	0.
1.585E-03	348.	160.	54.	13.	1.585E-03	0.	0.	0.	0.	0.	0.
1.445E-03	1429.	934.	475.	153.	1.445E-03	0.	0.	0.	0.	0.	0.
1.318E-03	2243.	1840.	1185.	524.	1.318E-03	10.	0.	0.	0.	0.	0.
1.202E-03	4481.	3546.	2392.	1178.	1.202E-03	106.	0.	0.	0.	0.	0.
1.096E-03	7097.	5518.	3849.	2144.	1.096E-03	376.	0.	0.	0.	0.	0.
1.000E-03	9310.	7288.	5476.	3483.	1.000E-03	894.	0.	0.	0.	0.	0.
9.120E-04	10771.	8764.	7037.	4961.	9.120E-04	1756.	4.	0.	0.	0.	0.
8.318E-04	11742.	9830.	8568.	6537.	8.318E-04	3048.	114.	0.	0.	0.	0.
7.586E-04	13037.	10926.	10026.	8269.	7.586E-04	4467.	426.	0.	0.	0.	0.
6.918E-04	13789.	11904.	11360.	9909.	6.918E-04	6163.	1008.	0.	0.	0.	0.
6.310E-04	14272.	13134.	12667.	11562.	6.310E-04	7843.	2033.	0.	0.	0.	0.
5.754E-04	14753.	14000.	13859.	13150.	5.754E-04	9633.	3529.	23.	0.	0.	0.
5.248E-04	15159.	15716.	15208.	14733.	5.248E-04	11429.	5238.	146.	0.	0.	0.
4.786E-04	15427.	16693.	16251.	16264.	4.786E-04	13214.	7126.	385.	1.	0.	0.
4.365E-04	15701.	17406.	17096.	17649.	4.365E-04	15013.	9085.	695.	150.	0.	0.
3.981E-04	22074.	21948.	20050.	20296.	3.981E-04	16741.	11176.	1334.	382.	0.	0.
3.631E-04	22442.	22714.	21033.	22020.	3.631E-04	18404.	13301.	2423.	903.	79.	0.
3.311E-04	23031.	23254.	21719.	23185.	3.311E-04	21095.	15460.	4067.	1820.	192.	0.
3.020E-04	23244.	23552.	24201.	24794.	3.020E-04	22826.	17709.	6059.	3194.	901.	79.
2.754E-04	23394.	23951.	25392.	25982.	2.754E-04	24356.	20938.	8893.	5079.	2131.	453.
2.512E-04	23562.	24233.	26539.	27637.	2.512E-04	25784.	23265.	12432.	8416.	4431.	1643.
2.291E-04	23705.	24424.	27235.	28500.	2.291E-04	27213.	25474.	16941.	13153.	7982.	4564.
2.089E-04	23806.	27213.	29346.	29924.	2.089E-04	28671.	27579.	21380.	18559.	12971.	9042.
1.905E-04	23863.	28400.	30412.	30733.	1.905E-04	29918.	29574.	26019.	23911.	20130.	16740.
1.738E-04	23908.	28799.	30932.	31384.	1.738E-04	31476.	31630.	30484.	29175.	26815.	25926.
1.585E-04	23948.	28878.	31125.	32182.	1.585E-04	32677.	33552.	34946.	34511.	33475.	33535.
1.445E-04	23977.	28933.	31326.	34338.	1.445E-04	33755.	35337.	39284.	39620.	40464.	41545.
1.318E-04	23992.	28964.	31459.	35773.	1.318E-04	35068.	37054.	42635.	43787.	46215.	47583.
1.202E-04	24002.	28995.	31556.	36405.	1.202E-04	36121.	38678.	46462.	47831.	50790.	52457.
1.096E-04	24006.	29010.	31670.	36890.	1.096E-04	37148.	40214.	49501.	51383.	54500.	56160.

1.000E-04	24008.	29016.	35406.	39551.	1.000E-04	38797.	41938.	52063.	54356.	57760.	59789.
9.120E-05	24008.	29024.	35612.	40006.	9.120E-05	39962.	43420.	54523.	57426.	61094.	63255.
8.318E-05	24008.	29028.	35935.	40471.	8.318E-05	40997.	44880.	56742.	60151.	63983.	66115.
7.586E-05	24008.	29031.	35989.	40591.	7.586E-05	41792.	46269.	58740.	62327.	66380.	68033.
6.918E-05	24008.	29033.	36015.	40770.	6.918E-05	43491.	47566.	60587.	64343.	68215.	69894.
6.310E-05	24008.	29033.	36034.	40868.	6.310E-05	44176.	48593.	62289.	65988.	69602.	71869.
5.754E-05	24008.	29033.	36046.	40960.	5.754E-05	45064.	49713.	63695.	67619.	70714.	72852.
5.248E-05	24008.	29033.	36054.	42253.	5.248E-05	46047.	51091.	64866.	69064.	71745.	73528.
4.786E-05	24008.	29033.	36065.	44850.	4.786E-05	46489.	52318.	66009.	70248.	72558.	73870.
4.365E-05	24008.	29033.	36068.	45305.	4.365E-05	46755.	53326.	67018.	71012.	73496.	74460.
3.981E-05	24008.	29033.	36070.	45339.	3.981E-05	47462.	54274.	67931.	71833.	74072.	75000.
3.631E-05	24008.	29033.	36072.	45356.	3.631E-05	47690.	55019.	68868.	72465.	74461.	75259.
3.311E-05	24008.	29033.	36073.	45376.	3.311E-05	50139.	55928.	69688.	73180.	74848.	75438.
3.020E-05	24008.	29033.	36073.	45396.	3.020E-05	50255.	56858.	70448.	73754.	75102.	75896.
2.754E-05	24008.	29033.	36073.	45400.	2.754E-05	50502.	57629.	71013.	74160.	75399.	75947.
2.512E-05	24008.	29033.	36073.	45401.	2.512E-05	50543.	58622.	71546.	74472.	75596.	75947.
2.291E-05	24008.	29033.	36073.	45410.	2.291E-05	50568.	58994.	72073.	74835.	75760.	75947.
2.089E-05	24008.	29033.	36073.	45412.	2.089E-05	50611.	59215.	72619.	75291.	75921.	75947.
1.905E-05	24008.	29033.	36073.	45413.	1.905E-05	52051.	60201.	73100.	75498.	76111.	75947.
1.738E-05	24008.	29033.	36073.	45415.	1.738E-05	52103.	61164.	73600.	75755.	76180.	75947.
1.585E-05	24008.	29033.	36073.	45415.	1.585E-05	52275.	61772.	73885.	75883.	76250.	75947.
1.445E-05	24008.	29033.	36073.	45415.	1.445E-05	52288.	61908.	74192.	75981.	76268.	75947.
1.318E-05	24008.	29033.	36073.	45415.	1.318E-05	52301.	61993.	74588.	76144.	76283.	75947.
1.202E-05	24008.	29033.	36073.	45415.	1.202E-05	52308.	62018.	74932.	76322.	76312.	75947.
1.096E-05	24008.	29033.	36073.	45415.	1.096E-05	52311.	62064.	75161.	76398.	76354.	75947.
1.000E-05	24008.	29033.	36073.	45415.	1.000E-05	52314.	63779.	75307.	76607.	76356.	75947.
9.120E-06	24008.	29033.	36073.	45415.	9.120E-06	52319.	63863.	75527.	76649.	76382.	75947.
8.318E-06	24008.	29033.	36073.	45415.	8.318E-06	52320.	64102.	75650.	76674.	76387.	75947.
7.586E-06	24008.	29033.	36073.	45415.	7.586E-06	52321.	64109.	75754.	76765.	76387.	75947.
6.918E-06	24008.	29033.	36073.	45415.	6.918E-06	52322.	64113.	75804.	76768.	76387.	75947.
6.310E-06	24008.	29033.	36073.	45415.	6.310E-06	52322.	64131.	75984.	76803.	76387.	75947.
5.754E-06	24008.	29033.	36073.	45415.	5.754E-06	52322.	64135.	76081.	76857.	76387.	75947.
5.248E-06	24008.	29033.	36073.	45415.	5.248E-06	52322.	64136.	76113.	76908.	76387.	75947.
4.786E-06	24008.	29033.	36073.	45415.	4.786E-06	52322.	64141.	76278.	76913.	76387.	75947.
4.365E-06	24008.	29033.	36073.	45415.	4.365E-06	52322.	64143.	76360.	76923.	76387.	75947.
3.981E-06	24008.	29033.	36073.	45415.	3.981E-06	52322.	64144.	76411.	76929.	76387.	75947.
3.631E-06	24008.	29033.	36073.	45415.	3.631E-06	52322.	64144.	76432.	76929.	76387.	75947.
3.311E-06	24008.	29033.	36073.	45415.	3.311E-06	52322.	64145.	76461.	76959.	76387.	75947.
3.020E-06	24008.	29033.	36073.	45415.	3.020E-06	52322.	64145.	76461.	76959.	76387.	75947.
2.754E-06	24008.	29033.	36073.	45415.	2.754E-06	52322.	64145.	76461.	76981.	76387.	75947.
2.512E-06	24008.	29033.	36073.	45415.	2.512E-06	52322.	64145.	76653.	76982.	76387.	75947.
2.291E-06	24008.	29033.	36073.	45415.	2.291E-06	52322.	64145.	76708.	76982.	76387.	75947.
2.089E-06	24008.	29033.	36073.	45415.	2.089E-06	52322.	64145.	76714.	76998.	76387.	75947.
1.905E-06	24008.	29033.	36073.	45415.	1.905E-06	52322.	64145.	76715.	76998.	76387.	75947.
1.738E-06	24008.	29033.	36073.	45415.	1.738E-06	52322.	64145.	76715.	76998.	76387.	75947.
1.585E-06	24008.	29033.	36073.	45415.	1.585E-06	52322.	64145.	76723.	76998.	76387.	75947.
1.445E-06	24008.	29033.	36073.	45415.	1.445E-06	52322.	64145.	76723.	77026.	76387.	75947.
1.318E-06	24008.	29033.	36073.	45415.	1.318E-06	52322.	64145.	76724.	77026.	76387.	75947.
1.202E-06	24008.	29033.	36073.	45415.	1.202E-06	52322.	64145.	76724.	77026.	76387.	75947.
1.096E-06	24008.	29033.	36073.	45415.	1.096E-06	52322.	64145.	76724.	77026.	76387.	75947.
1.000E-06	24008.	29033.	36073.	45415.	1.000E-06	52322.	64145.	76724.	77026.	76387.	75947.
Belw. Lim.	0.	0.	0.	0.	Belw. Lim.	0.	0.	0.	0.	0.	0.

Program Title: ARCON96.

Developed For: U.S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Division of Reactor Program Management

Date: June 25, 1997 11:00 a.m.

NRC Contacts: J. Y. Lee Phone: (301) 415 1080
e-mail: jy11@nrc.gov
J. J. Hayes Phone: (301) 415 3167
e-mail: jjh@nrc.gov
L. A. Brown Phone: (301) 415 1232
e-mail: lab2@nrc.gov

Code Developer: J. V. Ramsdell Phone: (509) 372 6316
e-mail: j_ramsdell@pnl.gov

Code Documentation: NUREG/CR-6331 Rev. 1

The program was prepared for an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, expressed or implied, or assumes any legal liability or responsibilities for any third party's use, or the results of such use, of any portion of this program or represents that its use by such third party would not infringe privately owned rights.

Program Run 12/18/2001 at 19:03:31

***** ARCON INPUT *****

Number of Meteorological Data Files = 2
Meteorological Data File Names
C:\1ARCON96\MET88.MET
C:\1ARCON96\MET92.MET

Height of lower wind instrument (m) = 11.0
Height of upper wind instrument (m) = 62.0
Wind speeds entered as miles per hour

Ground-level release
Release height (m) = 60.7
Building Area (m^2) = 1817.0
Effluent vertical velocity (m/s) = .00
Vent or stack flow (m^3/s) = .00
Vent or stack radius (m) = .00

Direction .. intake to source (deg) = 335
Wind direction sector width (deg) = 90
Wind direction window (deg) = 290 - 020
Distance to intake (m) = 46.4
Intake height (m) = 7.5
Terrain elevation difference (m) = .0

Output file names
PSCR.LOG
PSCR.CFD

Minimum Wind Speed (m/s) = .5
Surface roughness length (m) = .20
Sector averaging constant = 4.3

Initial value of sigma y = .00
Initial value of sigma z = .00

Expanded output for code testing not selected

Total number of hours of data processed = 78912
Hours of missing data = 955
Hours direction in window = 17295
Hours elevated plume w/ dir. in window = 0
Hours of calm winds = 6713
Hours direction not in window or calm = 53949

DISTRIBUTION SUMMARY DATA BY AVERAGING INTERVAL

AVER. PER.	1	2	4	8	12	24	96	168	360	720
UPPER LIM.	1.00E-02	1.00E-02	1.00E-02	1.00E-02	1.00E-02	1.00E-02	1.00E-02	1.00E-02	1.00E-02	1.00E-02
LOW LIM.	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06
ABOVE RANGE	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
IN RANGE	24008.	29033.	36073.	45415.	52322.	64145.	76724.	77026.	76387.	75947.
BELOW RANGE	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
ZERO	53949.	48788.	41487.	31643.	24861.	12787.	467.	5.	0.	0.
TOTAL X/Qs	77957.	77821.	77560.	77058.	77183.	76932.	77191.	77031.	76387.	75947.
% NON ZERO	30.80	37.31	46.51	58.94	67.79	83.38	99.40	99.99	100.00	100.00

95th PERCENTILE X/Q VALUES

	1.23E-03	1.18E-03	1.09E-03	9.78E-04	7.90E-04	5.66E-04	3.35E-04	2.93E-04	2.58E-04	2.35E-04
--	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------

95% X/Q for standard averaging intervals

0 to 2 hours	1.23E-03
2 to 8 hours	8.93E-04
8 to 24 hours	3.60E-04
1 to 4 days	2.58E-04
4 to 30 days	2.19E-04

HOURLY VALUE RANGE

	MAX X/Q	MIN X/Q
CENTERLINE	1.63E-03	1.01E-04
SECTOR-AVERAGE	9.52E-04	5.91E-05

NORMAL PROGRAM COMPLETION

2
C:\1ARCON96\MET88.MET
C:\1ARCON96\MET92.MET
11.00
62.00
2
1
60.70
1817.00
0.00
0.00
0.00
335 90
46.41
7.50
0.00
PSCR.LOG
PSCR.CFD
.2
0.50
4.30
1 2 4 8 12 24 96 168 360 720
1 2 4 8 11 22 87 152 324 648
0.00 0.00
n

1	1111																
H.B. ROBINSON UNIT 2 1988-96 AVG. MET. GROUND-LEVEL RELEASE																	
11.0 METERS 9.3 - 60.8 METERS																	
UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)																	
SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS																	
7	0																
2472.	63.9	10.0	11.0														
0	0	0	7	68	216	1003											
12	9	11	10	19	20	15	5	4	6	5	6	2	2	2	3		
187	152	187	280	165	192	296	209	157	237	287	147	114	57	43	39		
232	158	135	37	8	0	27	93	252	354	376	151	82	111	128	119		
6	2	1	0	0	0	0	1	21	42	26	6	0	1	11	7		
0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
6	10	14	13	17	16	16	13	6	7	6	6	7	4	5	1		
236	190	193	176	126	116	172	147	133	163	227	156	104	69	44	53		
105	114	63	16	5	3	13	37	71	134	143	82	52	63	61	63		
4	3	0	0	0	0	0	1	11	14	17	5	5	4	3	5		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
17	18	19	31	37	37	38	16	10	10	12	19	10	8	5	7		
305	266	236	240	141	112	187	193	142	230	297	214	126	107	79	103		
96	134	76	20	5	2	6	37	66	139	158	66	50	66	46	54		
2	5	3	0	0	0	0	2	7	10	13	8	4	10	3	2		
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
264	331	417	443	369	387	382	337	298	346	309	315	279	241	176	195		
1615	2572	1806	1188	725	506	662	1243	1291	1374	1167	915	641	421	477	796		
653	1387	365	91	36	20	82	198	452	424	350	239	153	178	187	363		
36	62	6	1	2	0	1	21	61	54	35	10	14	16	8	22		
0	1	0	0	0	0	0	0	2	0	0	0	1	0	1	0		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
445	502	420	329	267	229	283	768	1352	1296	849	613	483	424	405	509		
648	554	353	169	86	60	129	730	1199	1189	730	555	311	262	586	951		
54	43	10	6	9	5	15	85	241	163	130	99	19	46	67	219		
0	3	0	0	0	0	3	5	28	17	1	2	3	2	0	5		
0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
332	175	179	109	68	66	111	439	770	757	595	466	450	431	609	693		
53	6	16	12	1	1	8	69	99	106	134	85	28	81	204	282		
2	1	1	0	0	0	1	0	1</									

PRINTOUT OF INPUT CARDS

1	00010	01111	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	2	H.B. ROBINSON UNIT 2 1988-96 AVG.									
MET.	GROUND-LEVEL RELEASE																													
3	11.0 METERS										9.3 - 60.8 METERS																			
4	UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)																													
5	SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS																													
7	0.500	2472.000	63.900	10.000	11.000																									
8	0.000	0.000	0.000	7.000	68.000	216.000	*****																							
9	12.000	9.000	11.000	10.000	19.000	20.000	15.000	5.000	4.000	6.000	5.000	6.000	2.000	2.000	2.000	3.000														
9	187.000	152.000	187.000	280.000	165.000	192.000	296.000	209.000	157.000	237.000	287.000	147.000	114.000	57.000	43.000	39.000														
9	232.000	158.000	135.000	37.000	8.000	0.000	27.000	93.000	252.000	354.000	376.000	151.000	82.000	111.000	128.000	119.000														
9	6.000	2.000	1.000	0.000	0.000	0.000	0.000	1.000	21.000	42.000	26.000	6.000	0.000	1.000	11.000	7.000														
9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000														
9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000														
9	6.000	10.000	14.000	13.000	17.000	16.000	16.000	13.000	6.000	7.000	6.000	6.000	7.000	4.000	5.000	1.000														
9	236.000	190.000	193.000	176.000	126.000	116.000	172.000	147.000	133.000	163.000	227.000	156.000	104.000	69.000	44.000	53.000														
9	105.000	114.000	63.000	16.000	5.000	3.000	13.000	37.000	71.000	134.000	143.000	82.000	52.000	63.000	61.000	63.000														
9	4.000	3.000	0.000	0.000	0.000	0.000	0.000	1.000	11.000	14.000	17.000	5.000	5.000	4.000	3.000	5.000														
9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000														
9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000														
9	17.000	18.000	19.000	31.000	37.000	37.000	38.000	16.000	10.000	10.000	12.000	19.000	10.000	8.000	5.000	7.000														
9	305.000	266.000	236.000	240.000	141.000	112.000	187.000	193.000	142.000	230.000	297.000	214.000	126.000	107.000	79.000	103.000														
9	96.000	134.000	76.000	20.000	5.000	2.000	6.000	37.000	66.000	139.000	158.000	66.000	50.000	66.000	46.000	54.000														
9	2.000	5.000	3.000	0.000	0.000	0.000	0.000	2.000	7.000	10.000	13.000	8.000	4.000	10.000	3.000	2.000														
9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000														
9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000														
9	264.000	331.000	417.000	443.000	369.000	387.000	382.000	337.000	298.000	346.000	309.000	315.000	279.000	241.000	176.000	195.000														
9	*****725.000506.000662.000*****915.000641.000421.000477.000796.000																													
9	653.000	*****	365.000	91.000	36.000	20.000	82.000	198.000	452.000	424.000	350.000	239.000	153.000	178.000	187.000	363.000														
9	36.000	62.000	6.000	1.000	2.000	0.000	1.000	21.000	61.000	54.000	35.000	10.000	14.000	16.000	8.000	22.000														
9	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	2.000	0.000	0.000	0.000	1.000	0.000	1.000	0.000														
9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000														
9	445.000	502.000	420.000	329.000	267.000	229.000	283.000	768.000	*****	*****	849.000	613.000	483.000	424.000	405.000	509.000														
9	648.000	554.000	353.000	169.000	86.000	60.000	129.000	730.000	*****	*****	730.000	555.000	311.000	262.000	586.000	951.000														
9	54.000	43.000	10.000	6.000	9.000	5.000	15.000	85.000	241.000	163.000	130.000	99.000	19.000	46.000	67.000	219.000														
9	0.000	3.000	0.000	0.000	0.000	0.000	3.000	5.000	28.000	17.000	1.000	2.000	3.000	2.000	0.000	5.000														
9	0.000	1.000	2.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000														
9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000														
9	332.000	175.000	179.000	109.000	68.000	66.000	111.000	439.000	770.000	757.000	595.000	466.000	450.000	431.000	609.000	693.000														
9	53.000	6.000	16.000	12.000	1.000	1.000	8.000	69.000	99.000	106.000	134.000	85.000	28.000	81.000	204.000	282.000														
9	2.000	1.000	1.000	0.000	0.000	0.000	1.000	0.000	1.000	1.000	2.000	1.000	1.000	0.000	0.000	1.000														
9	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000														
9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000														
9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000														
9	606.000	438.000	372.000	175.000	71.000	68.000	71.000	281.000	449.000	511.000	451.000	416.000	522.000	804.000	*****	*****														
9	30.000	1.000	0.000	1.000	1.000	1.000	0.000	4.000	9.000	10.000	16.000	20.000	4.000	9.000	15.000	138.000														
9	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000														
9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000														
9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000														
9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000														
3.500	7.500	12.500	18.500	25.000	55.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11	425.	425.	425.	425.	425.	425.	425.									
425.	425.	425.	425.	425.	425.	425.	425.	425.	425.	11	7242.	7242.	7242.	7242.	7242.	7242.	7242.	7242.	7242.	7242.	7242.									
7242.	7242.	7242.	7242.	7242.	12	1.7	1.8	1.5	1.3	1.3	1.8	1.7	1.5	1.5	2.1	1.5	1.5	2.0	2.1	1.9										
2.0																														
12	0.5	0.6	0.5	0.6	0.4	0.7	0.6	0.5	0.6	0.7	0.5	0.6	0.6	0.9	0.6	0.8														

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION										ATMOSPHERIC STABILITY CLASS A									
WIND SPEED (M/S)																			
TOWER RELEASE		N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL	
0.34	0.33	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
1.56	1.53	0.016	0.012	0.014	0.013	0.025	0.026	0.020	0.007	0.005	0.008	0.007	0.008	0.003	0.003	0.003	0.004	0.171	
3.35	3.27	0.244	0.198	0.244	0.365	0.215	0.250	0.386	0.272	0.205	0.309	0.374	0.192	0.149	0.074	0.056	0.051	3.584	
5.59	5.46	0.302	0.206	0.176	0.048	0.010	0.000	0.035	0.121	0.329	0.461	0.490	0.197	0.107	0.145	0.167	0.155	2.950	
8.27	8.08	0.008	0.003	0.001	0.000	0.000	0.000	0.000	0.001	0.027	0.055	0.034	0.008	0.000	0.001	0.014	0.009	0.162	
11.18	10.91	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.003	
24.59	24.01	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
TOTAL		0.57	0.42	0.44	0.43	0.25	0.28	0.44	0.40	0.57	0.83	0.91	0.40	0.26	0.22	0.24	0.22	6.87	

JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION										ATMOSPHERIC STABILITY CLASS B									
WIND SPEED (M/S)																			
TOWER RELEASE		N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL	
0.34	0.33	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
1.56	1.53	0.008	0.013	0.018	0.017	0.022	0.021	0.021	0.017	0.008	0.009	0.008	0.008	0.009	0.005	0.007	0.001	0.192	
3.35	3.27	0.308	0.248	0.252	0.229	0.164	0.151	0.224	0.192	0.173	0.212	0.296	0.203	0.136	0.090	0.057	0.069	3.005	
5.59	5.46	0.137	0.149	0.082	0.021	0.007	0.004	0.017	0.048	0.093	0.175	0.186	0.107	0.068	0.082	0.080	0.082	1.336	
8.27	8.08	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.001	0.014	0.018	0.022	0.007	0.007	0.005	0.004	0.007	0.094	
11.18	10.91	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
24.59	24.01	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
TOTAL		0.46	0.41	0.35	0.27	0.19	0.18	0.26	0.26	0.29	0.41	0.51	0.32	0.22	0.18	0.15	0.16	4.63	

JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION										ATMOSPHERIC STABILITY CLASS C									
WIND SPEED (M/S)																			
TOWER RELEASE		N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL	
0.34	0.33	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
1.56	1.53	0.022	0.023	0.025	0.040	0.048	0.048	0.050	0.021	0.013	0.013	0.016	0.025	0.013	0.010	0.007	0.009	0.383	
3.35	3.27	0.398	0.347	0.308	0.313	0.184	0.146	0.244	0.252	0.185	0.300	0.387	0.279	0.164	0.139	0.103	0.134	3.882	
5.59	5.46	0.125	0.175	0.099	0.026	0.007	0.003	0.008	0.048	0.086	0.181	0.206	0.086	0.065	0.086	0.060	0.070	1.331	
8.27	8.08	0.003	0.007	0.004	0.000	0.000	0.000	0.000	0.003	0.009	0.013	0.017	0.010	0.005	0.013	0.004	0.003	0.090	
11.18	10.91	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	
24.59	24.01	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
TOTAL		0.55	0.55	0.44	0.38	0.24	0.20	0.30	0.32	0.29	0.51	0.63	0.40	0.25	0.25	0.17	0.22	5.69	

JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION										ATMOSPHERIC STABILITY CLASS D									
WIND SPEED (M/S)																			
TOWER RELEASE		N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL	
0.34	0.33	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.009	
1.56	1.53	0.344	0.431	0.544	0.577	0.481	0.504	0.498	0.439	0.388	0.451	0.403	0.411	0.364	0.314	0.229	0.254	6.634	
3.35	3.27	2.105	3.353	2.354	1.549	0.945	0.660	0.863	1.620	1.683	1.791	1.521	1.193	0.836	0.549	0.622	1.038	22.681	
5.59	5.46	0.851	1.808	0.476	0.119	0.047	0.026	0.107	0.258	0.589	0.553	0.456	0.312	0.199	0.232	0.244	0.473	6.750	
8.27	8.08	0.047	0.081	0.008	0.001	0.003	0.000	0.001	0.027	0.080	0.070	0.046	0.013	0.018	0.021	0.010	0.029	0.455	
11.18	10.91	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.000	0.001	0.000	0.001	0.000	0.007	
24.59	24.01	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
TOTAL		3.35	5.68	3.38	2.25	1.48	1.19	1.47	2.35	2.74	2.87	2.43	1.93	1.42	1.12	1.11	1.79	36.54	

JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION										ATMOSPHERIC STABILITY CLASS E									
WIND SPEED (M/S)																			
TOWER RELEASE		N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL	
0.34	0.32	0.004	0.005	0.004	0.003	0.003	0.002	0.003	0.007	0.013	0.013	0.008	0.006	0.005	0.004	0.004	0.005	0.089	
1.56	1.49	0.580	0.654	0.548	0.429	0.348	0.299	0.369	1.001	1.762	1.689	1.107	0.799	0.630	0.553	0.528	0.664	11.959	
3.35	3.20	0.845	0.722	0.460	0.220	0.112	0.078	0.168	0.952	1.563	1.550	0.952	0.723	0.405	0.342	0.764	1.240	11.096	
5.59	5.33	0.070	0.056	0.013	0.008	0.012	0.007	0.020	0.111	0.314	0.212	0.169	0.129	0.025	0.060	0.087	0.285	1.579	
8.27	7.89	0.000	0.004	0.000	0.000	0.000	0.000	0.004	0.007	0.037	0.022	0.001	0.003	0.004	0.003	0.000	0.007	0.090	
11.18	10.66	0.000	0.001	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	
24.59	23.44	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
TOTAL		1.50	1.44	1.03	0.66	0.47	0.39	0.56	2.08	3.69	3.49	2.24	1.66	1.07	0.96	1.38	2.20	24.82	

JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION										ATMOSPHERIC STABILITY CLASS F									
WIND SPEED (M/S)																			
TOWER RELEASE		N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL	
0.34	0.32	0.015	0.008	0.008	0.005	0.003	0.003	0.005	0.020	0.035	0.034	0.027	0.021	0.020	0.019	0.027	0.031	0.282	
1.56	1.49	0.433	0.228	0.233	0.142	0.089	0.086	0.145	0.572	1.004	0.987	0.776	0.607	0.587	0.562	0.794	0.903	8.147	
3.35	3.20	0.069	0.008	0.021	0.016	0.001	0.001	0.010	0.090	0.129	0.138	0.175	0.111	0.037	0.106	0.266	0.368	1.545	
5.59	5.33	0.003	0.001	0.001	0.000	0.000	0.000	0.001	0.000	0.001	0.001	0.003	0.001	0.001	0.000	0.000	0.001	0.016	
8.27	7.89	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	
11.18	10.66	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
24.59	23.44	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
TOTAL		0.52	0.25	0.26	0.16	0.09	0.09	0.16	0.68	1.17	1.16	0.98	0.74	0.64	0.69	1.09	1.30	9.99	

JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION										ATMOSPHERIC STABILITY CLASS G									
WIND SPEED (M/S)																			
TOWER RELEASE		N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL	
0.34	0.32	0.105	0.076	0.065	0.030	0.012	0.012	0.012	0.049	0.078	0.089	0.078	0.072	0.091	0.139	0.186	0.213	1.308	
1.56	1.49	0.790	0.571	0.485	0.228	0.093	0.089	0.093	0.366	0.585	0.666	0.588	0.542	0.680	1.048	1.401	1.601	9.826	
3.35	3.20	0.039	0.001	0.000	0.001	0.001	0.001	0.000	0.005	0.012	0.013	0.021	0.026	0.005	0.012	0.020	0.180	0.338	
5.59	5.33	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	
8.27	7.89	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
11.18	10.66	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
24.59	23.44	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
TOTAL		0.94	0.65	0.55	0.26	0.11	0.10	0.10	0.42	0.67	0.77	0.69	0.64	0.78	1.20	1.61	1.99	11.47	

WIND MEASURED AT 11.0 METERS.
WIND SPEED CORRECTED TO THE RELEASE HEIGHT OF 10.0 METERS.

OVERALL WIND DIRECTION FREQUENCY																	
WIND DIRECTION:		N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
FREQUENCY:		7.9	9.4	6.4	4.4	2.8	2.4	3.3	6.5	9.4	10.0	8.4	6.1	4.6	4.6	5.7	7.9

OVERALL WIND SPEED FREQUENCY AS MEASURED ON THE TOWER:
MAX.WIND SPEED (M/S): 0.335 1.565 3.353 5.588 8.270 11.176 24.587
WIND SPEED FREQUENCY: 1.69 37.31 46.13 13.96 0.89 0.01 0.00

BUILDING AND RELEASE CHARACTERISTICS:
RELEASE HEIGHT: 10.00 METERS
MIXING VOLUME COEFFICIENT: 0.50
BUILDING CROSS-SECTIONAL AREA: 2472.00 SQUARE METERS

BOUNDARY DISTANCES (METERS) FROM THE SOURCE FOR EACH DOWNWIND SECTOR:																	
DOWNWIND SECTOR	S	SSW	SW	WSW	W	WNW	NW	NNW	N	NNE	NE	ENE	E	ESE	SE	SSE	

BOUNDARY 1	425.	425.	425.	425.	425.	425.	425.	425.	425.	425.	425.	425.	425.	425.	425.	425.
BOUNDARY 2	7242.	7242.	7242.	7242.	7242.	7242.	7242.	7242.	7242.	7242.	7242.	7242.	7242.	7242.	7242.	7242.
THE CONVERSION FACTOR APPLIED TO THE WIND SPEED CLASSES IS 0.447																

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

WINDSPEEDS ADJUSTED TO 10.0 METERS.

PERCENT OF THE TIME A GIVEN WINDSPEED IS LOWER:

WINDSPEED (METER/SEC)	CUMULATIVE FREQUENCY (PERCENT)
0.32	1.68
0.33	1.69
1.49	31.62
1.53	39.00
3.20	51.98
3.27	85.13
5.33	86.73
5.46	99.09
7.89	99.19
8.08	99.99
10.66	99.99
10.91	100.00
23.44	100.00
24.01	100.00

WINDSPEED (INTERPOLATED) (METER/SEC)	CUMULATIVE FREQUENCY (PERCENT)
0.32	1.69
1.50	39.00
3.25	85.13
5.44	99.09
8.06	99.99
10.84	100.00
23.44	100.00

LOG-NORMAL INTERPOLATION PERCENTILES

WINDSPEED (METER/SEC)	CUMULATIVE FREQUENCY (PERCENT)
0.27	1.00
0.39	3.00
0.48	5.00
0.65	10.00
0.79	15.00
0.94	20.00
1.08	25.00
1.22	30.00
1.37	35.00
1.52	40.00
1.64	45.00
1.77	50.00

1.90	55.00
2.05	60.00
2.21	65.00
2.40	70.00
2.62	75.00
2.89	80.00
3.30	85.00
3.57	90.00

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

PARAMETER VALUES FOR THE CHI/Q CALCULATIONS FOR THE S SECTOR.										** CHI/Q VALUES (SEC/CUBIC METER)		
STABILITY CLASS	WINDSPEED AT 10.0 METERS	FREQUENCY PERCENT	DISTANCE METERS	TERRAIN HT METERS	HT EFF METERS	PLUME HT METERS	SIGMA-Y METERS	SIGMA-Z METERS	MEANDER-SY METERS	MEANDER	BLDG WAKE	USED
										CA=1236.SQ.METERS		
A	1.5	0.20	425.	0.	0.		86.5	92.7	86.5	2.599E-05	2.478E-05	2.478E-05
A	3.3	3.09	425.	0.	0.		86.5	92.7	86.5	1.213E-05	1.156E-05	1.156E-05
A	5.5	3.84	425.	0.	0.		86.5	92.7	86.5	7.278E-06	6.937E-06	6.937E-06
A	8.1	0.10	425.	0.	0.		86.5	92.7	86.5	4.917E-06	4.687E-06	4.687E-06
B	1.5	0.10	425.	0.	0.		65.0	43.3	65.0	7.398E-05	6.491E-05	6.491E-05
B	3.3	3.91	425.	0.	0.		65.0	43.3	65.0	3.452E-05	3.029E-05	3.029E-05
B	5.5	1.74	425.	0.	0.		65.0	43.3	65.0	2.071E-05	1.817E-05	1.817E-05
B	8.1	0.07	425.	0.	0.		65.0	43.3	65.0	1.400E-05	1.228E-05	1.228E-05
C	1.5	0.28	425.	0.	0.		49.4	28.0	49.4	1.505E-04	1.172E-04	1.172E-04
C	3.3	5.05	425.	0.	0.		49.4	28.0	49.4	7.024E-05	5.470E-05	5.470E-05
C	5.5	1.59	425.	0.	0.		49.4	28.0	49.4	4.215E-05	3.282E-05	3.282E-05
C	8.1	0.03	425.	0.	0.		49.4	28.0	49.4	2.848E-05	2.217E-05	2.217E-05
D	0.3	0.01	425.	0.	0.		34.8	16.2	69.6	8.649E-04	1.018E-03	8.649E-04
D	1.5	4.37	425.	0.	0.		34.8	16.2	69.6	1.853E-04	2.180E-04	1.853E-04
D	3.3	26.73	425.	0.	0.		34.8	16.2	51.0	1.180E-04	1.018E-04	1.018E-04
D	5.5	10.81	425.	0.	0.		34.8	16.2	36.9	9.775E-05	6.105E-05	6.105E-05
D	8.1	0.60	425.	0.	0.		34.8	16.2	34.8	7.012E-05	4.125E-05	4.125E-05
E	0.3	0.05	425.	0.	0.		24.7	11.5	74.2	1.170E-03	1.470E-03	1.170E-03
E	1.5	7.36	425.	0.	0.		24.7	11.5	74.2	2.506E-04	3.151E-04	2.506E-04
E	3.2	10.72	425.	0.	0.		24.7	11.5	46.4	1.870E-04	1.470E-04	1.470E-04
E	5.3	0.89	425.	0.	0.		24.7	11.5	27.9	1.870E-04	8.822E-05	8.822E-05
F	0.3	0.19	425.	0.	0.		17.1	7.2	68.3	2.018E-03	2.690E-03	2.018E-03
F	1.5	5.49	425.	0.	0.		17.1	7.2	68.3	4.324E-04	5.765E-04	4.324E-04
F	3.2	0.88	425.	0.	0.		17.1	7.2	37.8	3.647E-04	2.690E-04	2.690E-04
F	5.3	0.03	425.	0.	0.		17.1	7.2	19.8	4.169E-04	1.614E-04	1.614E-04
G	0.3	1.33	425.	0.	0.		11.8	4.6	70.7	3.094E-03	6.188E-03	3.094E-03
G	1.5	10.03	425.	0.	0.		11.8	4.6	70.7	6.630E-04	1.326E-03	6.630E-04
G	3.2	0.50	425.	0.	0.		11.8	4.6	32.9	6.648E-04	6.188E-04	6.188E-04
G	5.3	0.02	425.	0.	0.		11.8	4.6	14.3	9.177E-04	3.713E-04	3.713E-04

USNRC COMPUTER CODE-PAVAN, VERSION 2.0 RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2 METEOROLOGICAL INSTRUMENTATION
DATA PERIOD: 1988-96 AVG. MET. WIND SENSORS HEIGHT: 11.0 METERS
TYPE OF RELEASE: GROUND-LEVEL RELEASE DELTA-T HEIGHTS: 9.3 - 60.8 METERS
SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)
COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS
PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

SITE EXCLUSION BOUNDARY CALCULATIONS:

S SECTOR BOUNDARY DISTANCE = 425.0 METERS

LATERAL PLUME MEANDER/BUILDING WAKE CREDIT ALLOWED
AS A FUNCTION OF DOWNWIND DISTANCE.
MEANDER CREDIT IS FOR WINDSPEEDS LESS THAN 6 MPS.
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

3.094E-03	2.018E-03	1.170E-03	8.649E-04	6.630E-04	6.188E-04	4.324E-04	3.713E-04	2.690E-04	2.506E-04
1.334	1.524	1.579	1.585	11.613	12.110	17.604	17.621	18.498	25.862
0.10511	0.12007	0.12437	0.12484	0.91482	0.95393	1.38672	1.38803	1.45712	2.03722
1.853E-04	1.614E-04	1.470E-04	1.172E-04	1.018E-04	8.822E-05	6.491E-05	6.105E-05	5.470E-05	4.125E-05
30.231	30.264	40.987	41.269	67.995	68.888	68.988	79.794	84.841	85.437
2.38137	2.38397	3.22870	3.25086	5.35617	5.42656	5.43438	6.28563	6.68323	6.73015
3.282E-05	3.029E-05	2.478E-05	2.217E-05	1.817E-05	1.228E-05	1.156E-05	6.937E-06	4.687E-06	
87.026	90.931	91.130	91.163	92.901	92.967	96.061	99.901	100.000	
6.85530	7.16295	7.17859	7.18120	7.31808	7.32329	7.56706	7.86950	7.87732	

X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(2)= 0.914
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(3)= 1.385
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(4)= 5.352
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(5)= 6.679

K	I	XQSAVE(K,I)	XQINT(K,I)	XQSLOP(K,I)
1	1	-5.77827	-12.39839	-2.15240
1	2	-7.31872	-13.68245	-2.69650
1	3	-7.74620	-13.14578	-2.45272
1	4	-9.19296	-18.16503	-5.56716
1	5	-9.81370	NUMXQ(K)= 5	

BACK EXTRAPOLATION FOR 1 PERCENTILE.

3.715E-03	0.079	1.000
1.806E-03	0.236	3.000
1.258E-03	0.394	5.000

7.463E-04	0.788	10.000
5.111E-04	1.182	15.000
3.821E-04	1.575	20.000
3.060E-04	1.969	25.000
2.539E-04	2.363	30.000
2.158E-04	2.757	35.000
1.869E-04	3.151	40.000
1.641E-04	3.545	45.000
1.458E-04	3.939	50.000
1.307E-04	4.333	55.000
1.181E-04	4.726	60.000
1.074E-04	5.120	65.000
9.395E-05	5.514	70.000
7.757E-05	5.908	75.000
6.468E-05	6.302	80.000

1.056E-03 0.5 6.35

ANNUAL AVERAGE = 2.86E-05

K= 1 FIVEXQ(K)= 1.056E-03 FIVEPR(K)= 6.347

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

PARAMETER VALUES FOR THE CHI/Q CALCULATIONS FOR THE SSW SECTOR.										** CHI/Q VALUES (SEC/CUBIC METER)		
STABILITY CLASS	WINDSPEED METER/SEC AT 10.0 METERS	FREQUENCY PERCENT	DISTANCE METERS	TERRAIN HT METERS	HT EFF PLUME METERS	SIGMA-Y METERS	SIGMA-Z METERS	MEANDER-SY METERS		MEANDER	BLDG WAKE	USED
										CA=1236.SQ.METERS		
A	1.5	0.12	425.	0.	0.	86.5	92.7	86.5		2.599E-05	2.478E-05	2.478E-05
A	3.3	2.11	425.	0.	0.	86.5	92.7	86.5		1.213E-05	1.156E-05	1.156E-05
A	5.5	2.19	425.	0.	0.	86.5	92.7	86.5		7.278E-06	6.937E-06	6.937E-06
A	8.1	0.03	425.	0.	0.	86.5	92.7	86.5		4.917E-06	4.687E-06	4.687E-06
B	1.5	0.14	425.	0.	0.	65.0	43.3	65.0		7.398E-05	6.491E-05	6.491E-05
B	3.3	2.64	425.	0.	0.	65.0	43.3	65.0		3.452E-05	3.029E-05	3.029E-05
B	5.5	1.58	425.	0.	0.	65.0	43.3	65.0		2.071E-05	1.817E-05	1.817E-05
B	8.1	0.04	425.	0.	0.	65.0	43.3	65.0		1.400E-05	1.228E-05	1.228E-05
C	1.5	0.25	425.	0.	0.	49.4	28.0	49.4		1.505E-04	1.172E-04	1.172E-04
C	3.3	3.69	425.	0.	0.	49.4	28.0	49.4		7.024E-05	5.470E-05	5.470E-05
C	5.5	1.86	425.	0.	0.	49.4	28.0	49.4		4.215E-05	3.282E-05	3.282E-05
C	8.1	0.07	425.	0.	0.	49.4	28.0	49.4		2.848E-05	2.217E-05	2.217E-05
D	0.3	0.01	425.	0.	0.	34.8	16.2	69.6		8.649E-04	1.018E-03	8.649E-04
D	1.5	4.59	425.	0.	0.	34.8	16.2	69.6		1.853E-04	2.180E-04	1.853E-04
D	3.3	35.69	425.	0.	0.	34.8	16.2	51.0		1.180E-04	1.018E-04	1.018E-04
D	5.5	19.25	425.	0.	0.	34.8	16.2	36.9		9.775E-05	6.105E-05	6.105E-05
D	8.1	0.86	425.	0.	0.	34.8	16.2	34.8		7.012E-05	4.125E-05	4.125E-05
D	10.9	0.01	425.	0.	0.	34.8	16.2	34.8		5.189E-05	3.053E-05	3.053E-05
E	0.3	0.05	425.	0.	0.	24.7	11.5	74.2		1.170E-03	1.470E-03	1.170E-03
E	1.5	6.97	425.	0.	0.	24.7	11.5	74.2		2.506E-04	3.151E-04	2.506E-04
E	3.2	7.69	425.	0.	0.	24.7	11.5	46.4		1.870E-04	1.470E-04	1.470E-04
E	5.3	0.60	425.	0.	0.	24.7	11.5	27.9		1.870E-04	8.822E-05	8.822E-05
E	7.9	0.04	425.	0.	0.	24.7	11.5	24.7		1.423E-04	5.961E-05	5.961E-05
E	10.7	0.01	425.	0.	0.	24.7	11.5	24.7		1.053E-04	4.411E-05	4.411E-05
F	0.3	0.08	425.	0.	0.	17.1	7.2	68.3		2.018E-03	2.690E-03	2.018E-03
F	1.5	2.43	425.	0.	0.	17.1	7.2	68.3		4.324E-04	5.765E-04	4.324E-04
F	3.2	0.08	425.	0.	0.	17.1	7.2	37.8		3.647E-04	2.690E-04	2.690E-04
F	5.3	0.01	425.	0.	0.	17.1	7.2	19.8		4.169E-04	1.614E-04	1.614E-04
G	0.3	0.81	425.	0.	0.	11.8	4.6	70.7		3.094E-03	6.188E-03	3.094E-03
G	1.5	6.08	425.	0.	0.	11.8	4.6	70.7		6.630E-04	1.326E-03	6.630E-04
G	3.2	0.01	425.	0.	0.	11.8	4.6	32.9		6.648E-04	6.188E-04	6.188E-04

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

SITE EXCLUSION BOUNDARY CALCULATIONS:

SSW SECTOR BOUNDARY DISTANCE = 425.0 METERS

LATERAL PLUME MEANDER/BUILDING WAKE CREDIT ALLOWED
AS A FUNCTION OF DOWNWIND DISTANCE.
MEANDER CREDIT IS FOR WINDSPEEDS LESS THAN 6 MPS.
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

3.094E-03	2.018E-03	1.170E-03	8.649E-04	6.630E-04	6.188E-04	4.324E-04	2.690E-04	2.506E-04	1.853E-04
0.809	0.893	0.944	0.951	7.028	7.042	9.471	9.554	16.520	21.113
0.07597	0.08386	0.08871	0.08930	0.66028	0.66158	0.88971	0.89753	1.55193	1.98342
1.614E-04	1.470E-04	1.172E-04	1.018E-04	8.822E-05	6.491E-05	6.105E-05	5.961E-05	5.470E-05	4.411E-05
21.127	28.814	29.064	64.754	65.351	65.490	84.736	84.778	88.469	88.483
1.98473	2.70692	2.73038	6.08323	6.13928	6.15232	7.96040	7.96431	8.31107	8.31237
4.125E-05	3.282E-05	3.053E-05	3.029E-05	2.478E-05	2.217E-05	1.817E-05	1.228E-05	1.156E-05	6.937E-06
89.343	91.202	91.216	93.853	93.978	94.047	95.629	95.671	97.780	99.972
8.39320	8.56788	8.56918	8.81686	8.82860	8.83511	8.98372	8.98763	9.18578	9.39175
4.687E-06									
100.000									
9.39435									

X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(2)= 0.659
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(3)= 6.079
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(4)= 7.957
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(5)= 8.307

K	I	XQSAVE(K,I)	XQINT(K,I)	XQSLOP(K,I)
2	1	-5.77827	-12.83143	-2.22412
2	2	-7.31872	-12.31145	-2.01434
2	3	-9.19296	-14.83562	-3.64479
2	4	-9.70379	-16.34397	-4.71606
2	5	-9.81370	NUMXQ(K)= 5	

2.694E-03	0.094	1.000
1.264E-03	0.282	3.000
8.642E-04	0.470	5.000
5.118E-04	0.939	10.000
3.746E-04	1.409	15.000
2.970E-04	1.879	20.000
2.463E-04	2.349	25.000
2.103E-04	2.818	30.000
1.833E-04	3.288	35.000
1.623E-04	3.758	40.000
1.454E-04	4.227	45.000
1.315E-04	4.697	50.000
1.198E-04	5.167	55.000
1.099E-04	5.637	60.000
1.010E-04	6.106	65.000
8.804E-05	6.576	70.000
7.728E-05	7.046	75.000
6.828E-05	7.515	80.000
6.057E-05	7.985	85.000
8.238E-04	0.5	5.32

ANNUAL AVERAGE = 2.66E-05

K= 2 FIVEXQ(K)= 8.238E-04 FIVEPR(K)= 5.322

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

PARAMETER VALUES FOR THE CHI/Q CALCULATIONS FOR THE SW SECTOR.										** CHI/Q VALUES (SEC/CUBIC METER)		
STABILITY	WINDSPEED	FREQUENCY	DISTANCE	TERRAIN HT	EFF PLUME HT	SIGMA-Y	SIGMA-Z	MEANDER-SY		MEANDER	BLDG WAKE	USED
CLASS	METER/SEC	PERCENT	METERS	METERS	METERS	METERS	METERS	METERS				
AT 10.0 METERS										CA=1236.SQ.METERS		
A	1.5	0.22	425.	0.	0.	86.5	92.7	86.5		2.599E-05	2.478E-05	2.478E-05
A	3.3	3.78	425.	0.	0.	86.5	92.7	86.5		1.213E-05	1.156E-05	1.156E-05
A	5.5	2.73	425.	0.	0.	86.5	92.7	86.5		7.278E-06	6.937E-06	6.937E-06
A	8.1	0.02	425.	0.	0.	86.5	92.7	86.5		4.917E-06	4.687E-06	4.687E-06
B	1.5	0.28	425.	0.	0.	65.0	43.3	65.0		7.398E-05	6.491E-05	6.491E-05
B	3.3	3.90	425.	0.	0.	65.0	43.3	65.0		3.452E-05	3.029E-05	3.029E-05
B	5.5	1.27	425.	0.	0.	65.0	43.3	65.0		2.071E-05	1.817E-05	1.817E-05
C	1.5	0.38	425.	0.	0.	49.4	28.0	49.4		1.505E-04	1.172E-04	1.172E-04
C	3.3	4.77	425.	0.	0.	49.4	28.0	49.4		7.024E-05	5.470E-05	5.470E-05
C	5.5	1.54	425.	0.	0.	49.4	28.0	49.4		4.215E-05	3.282E-05	3.282E-05
C	8.1	0.06	425.	0.	0.	49.4	28.0	49.4		2.848E-05	2.217E-05	2.217E-05
D	0.3	0.01	425.	0.	0.	34.8	16.2	69.6		8.649E-04	1.018E-03	8.649E-04
D	1.5	8.43	425.	0.	0.	34.8	16.2	69.6		1.853E-04	2.180E-04	1.853E-04
D	3.3	36.52	425.	0.	0.	34.8	16.2	51.0		1.180E-04	1.018E-04	1.018E-04
D	5.5	7.38	425.	0.	0.	34.8	16.2	36.9		9.775E-05	6.105E-05	6.105E-05
D	8.1	0.12	425.	0.	0.	34.8	16.2	34.8		7.012E-05	4.125E-05	4.125E-05
E	0.3	0.06	425.	0.	0.	24.7	11.5	74.2		1.170E-03	1.470E-03	1.170E-03
E	1.5	8.49	425.	0.	0.	24.7	11.5	74.2		2.506E-04	3.151E-04	2.506E-04
E	3.2	7.14	425.	0.	0.	24.7	11.5	46.4		1.870E-04	1.470E-04	1.470E-04
E	5.3	0.20	425.	0.	0.	24.7	11.5	27.9		1.870E-04	8.822E-05	8.822E-05
E	10.7	0.04	425.	0.	0.	24.7	11.5	24.7		1.053E-04	4.411E-05	4.411E-05
F	0.3	0.13	425.	0.	0.	17.1	7.2	68.3		2.018E-03	2.690E-03	2.018E-03
F	1.5	3.62	425.	0.	0.	17.1	7.2	68.3		4.324E-04	5.765E-04	4.324E-04
F	3.2	0.32	425.	0.	0.	17.1	7.2	37.8		3.647E-04	2.690E-04	2.690E-04
F	5.3	0.02	425.	0.	0.	17.1	7.2	19.8		4.169E-04	1.614E-04	1.614E-04
F	7.9	0.02	425.	0.	0.	17.1	7.2	17.1		3.272E-04	1.091E-04	1.091E-04
G	0.3	1.00	425.	0.	0.	11.8	4.6	70.7		3.094E-03	6.188E-03	3.094E-03
G	1.5	7.52	425.	0.	0.	11.8	4.6	70.7		6.630E-04	1.326E-03	6.630E-04

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

SITE EXCLUSION BOUNDARY CALCULATIONS:

SW SECTOR BOUNDARY DISTANCE = 425.0 METERS

LATERAL PLUME MEANDER/BUILDING WAKE CREDIT ALLOWED
AS A FUNCTION OF DOWNWIND DISTANCE.
MEANDER CREDIT IS FOR WINDSPEEDS LESS THAN 6 MPS.
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

3.094E-03	2.018E-03	1.170E-03	8.649E-04	6.630E-04	4.324E-04	2.690E-04	2.506E-04	1.853E-04	1.614E-04
1.001	1.126	1.189	1.201	8.723	12.342	12.666	21.159	29.591	29.611
0.06453	0.07259	0.07665	0.07740	0.56233	0.79568	0.81653	1.36404	1.90764	1.90895
1.470E-04	1.172E-04	1.091E-04	1.018E-04	8.822E-05	6.491E-05	6.105E-05	5.470E-05	4.411E-05	4.125E-05
36.749	37.133	37.153	73.672	73.875	74.158	81.538	86.310	86.351	86.472
2.36911	2.39388	2.39519	4.74948	4.76251	4.78076	5.25658	5.56422	5.56683	5.57465
3.282E-05	3.029E-05	2.478E-05	2.217E-05	1.817E-05	1.156E-05	6.937E-06	4.687E-06		
88.009	91.912	92.134	92.195	93.469	97.250	99.980	100.000		
5.67373	5.92532	5.93966	5.94357	6.02570	6.26947	6.44545	6.44676		

X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(2)= 0.562
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(3)= 4.746
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(4)= 5.560
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(5)= 5.921

K	I	XQSAVE(K,I)	XQINT(K,I)	XQSLOP(K,I)
3	1	-5.77827	-13.03711	-2.25546
3	2	-7.31872	-12.81005	-2.16591
3	3	-9.19296	-22.61616	-8.03779
3	4	-9.81370	-39.80576	-18.82995
3	5	-10.40468	NUMXQ(K)= 5	

BACK EXTRAPOLATION FOR 1 PERCENTILE.

3.096E-03	0.064	1.000
1.472E-03	0.193	3.000
1.016E-03	0.322	5.000

5.972E-04	0.645	10.000
4.337E-04	0.967	15.000
3.421E-04	1.289	20.000
2.828E-04	1.612	25.000
2.409E-04	1.934	30.000
2.097E-04	2.256	35.000
1.854E-04	2.579	40.000
1.660E-04	2.901	45.000
1.500E-04	3.223	50.000
1.367E-04	3.546	55.000
1.254E-04	3.868	60.000
1.157E-04	4.190	65.000
1.073E-04	4.513	70.000
9.497E-05	4.835	75.000
7.385E-05	5.157	80.000
5.813E-05	5.480	85.000
3.694E-05	5.802	90.000
7.271E-04	0.5	7.76

ANNUAL AVERAGE = 1.78E-05

K= 3 FIVEXQ(K)= 7.271E-04 FIVEPR(K)= 7.756

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

PARAMETER VALUES FOR THE CHI/Q CALCULATIONS FOR THE WSW SECTOR.										** CHI/Q VALUES (SEC/CUBIC METER)		
STABILITY	WINDSPEED	FREQUENCY	DISTANCE	TERRAIN HT	EFF PLUME HT	SIGMA-Y	SIGMA-Z	MEANDER-SY		MEANDER	BLDG WAKE	USED
CLASS	METER/SEC	PERCENT	METERS	METERS	METERS	METERS	METERS	METERS		CA=1236.SQ.METERS		
AT 10.0 METERS												
A	1.5	0.30	425.	0.	0.	86.5	92.7	86.5		2.599E-05	2.478E-05	2.478E-05
A	3.3	8.29	425.	0.	0.	86.5	92.7	86.5		1.213E-05	1.156E-05	1.156E-05
A	5.5	1.10	425.	0.	0.	86.5	92.7	86.5		7.278E-06	6.937E-06	6.937E-06
B	1.5	0.38	425.	0.	0.	65.0	43.3	65.0		7.398E-05	6.491E-05	6.491E-05
B	3.3	5.21	425.	0.	0.	65.0	43.3	65.0		3.452E-05	3.029E-05	3.029E-05
B	5.5	0.47	425.	0.	0.	65.0	43.3	65.0		2.071E-05	1.817E-05	1.817E-05
C	1.5	0.92	425.	0.	0.	49.4	28.0	49.4		1.505E-04	1.172E-04	1.172E-04
C	3.3	7.11	425.	0.	0.	49.4	28.0	49.4		7.024E-05	5.470E-05	5.470E-05
C	5.5	0.59	425.	0.	0.	49.4	28.0	49.4		4.215E-05	3.282E-05	3.282E-05
D	0.3	0.02	425.	0.	0.	34.8	16.2	69.6		8.649E-04	1.018E-03	8.649E-04
D	1.5	13.12	425.	0.	0.	34.8	16.2	69.6		1.853E-04	2.180E-04	1.853E-04
D	3.3	35.18	425.	0.	0.	34.8	16.2	51.0		1.180E-04	1.018E-04	1.018E-04
D	5.5	2.69	425.	0.	0.	34.8	16.2	36.9		9.775E-05	6.105E-05	6.105E-05
D	8.1	0.03	425.	0.	0.	34.8	16.2	34.8		7.012E-05	4.125E-05	4.125E-05
E	0.3	0.07	425.	0.	0.	24.7	11.5	74.2		1.170E-03	1.470E-03	1.170E-03
E	1.5	9.74	425.	0.	0.	24.7	11.5	74.2		2.506E-04	3.151E-04	2.506E-04
E	3.2	5.00	425.	0.	0.	24.7	11.5	46.4		1.870E-04	1.470E-04	1.470E-04
E	5.3	0.18	425.	0.	0.	24.7	11.5	27.9		1.870E-04	8.822E-05	8.822E-05
F	0.3	0.11	425.	0.	0.	17.1	7.2	68.3		2.018E-03	2.690E-03	2.018E-03
F	1.5	3.23	425.	0.	0.	17.1	7.2	68.3		4.324E-04	5.765E-04	4.324E-04
F	3.2	0.36	425.	0.	0.	17.1	7.2	37.8		3.647E-04	2.690E-04	2.690E-04
G	0.3	0.69	425.	0.	0.	11.8	4.6	70.7		3.094E-03	6.188E-03	3.094E-03
G	1.5	5.18	425.	0.	0.	11.8	4.6	70.7		6.630E-04	1.326E-03	6.630E-04
G	3.2	0.03	425.	0.	0.	11.8	4.6	32.9		6.648E-04	6.188E-04	6.188E-04

USNRC COMPUTER CODE-PAVAN, VERSION 2.0 RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2 METEOROLOGICAL INSTRUMENTATION
DATA PERIOD: 1988-96 AVG. MET. WIND SENSORS HEIGHT: 11.0 METERS
TYPE OF RELEASE: GROUND-LEVEL RELEASE DELTA-T HEIGHTS: 9.3 - 60.8 METERS
SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)
COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS
PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

SITE EXCLUSION BOUNDARY CALCULATIONS:

WSW SECTOR BOUNDARY DISTANCE = 425.0 METERS

LATERAL PLUME MEANDER/BUILDING WAKE CREDIT ALLOWED
AS A FUNCTION OF DOWNWIND DISTANCE.
MEANDER CREDIT IS FOR WINDSPEEDS LESS THAN 6 MPS.
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

3.094E-03	2.018E-03	1.170E-03	8.649E-04	6.630E-04	6.188E-04	4.324E-04	2.690E-04	2.506E-04	1.853E-04
0.690	0.801	0.873	0.891	6.073	6.103	9.330	9.686	19.428	32.546
0.03035	0.03527	0.03844	0.03924	0.26737	0.26867	0.41076	0.42641	0.85529	1.43278
1.470E-04	1.172E-04	1.018E-04	8.822E-05	6.491E-05	6.105E-05	5.470E-05	4.125E-05	3.282E-05	3.029E-05
37.550	38.468	73.646	73.824	74.209	76.903	84.010	84.040	84.632	89.843
1.65309	1.69350	3.24217	3.24999	3.26694	3.38556	3.69843	3.69973	3.72580	3.95523
2.478E-05	1.817E-05	1.156E-05	6.937E-06						
90.139	90.613	98.904	100.000						
3.96827	3.98913	4.35413	4.40237						

X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(2)= 1.431
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(3)= 3.239
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(4)= 3.695

K	I	XQSAVE(K,I)	XQINT(K,I)	XQSLOP(K,I)
4	1	-5.77827	-13.56220	-2.27028
4	2	-8.59338	-12.43169	-1.75375
4	3	-9.19296	-28.44573	-10.42522
4	4	-9.81370	NUMXQ(K)= 4	
		2.453E-03	0.044	1.000
		1.188E-03	0.132	3.000
		8.283E-04	0.220	5.000
		4.934E-04	0.440	10.000
		3.579E-04	0.660	15.000
		2.824E-04	0.880	20.000

2.336E-04	1.101	25.000
1.992E-04	1.321	30.000
1.762E-04	1.541	35.000
1.604E-04	1.761	40.000
1.474E-04	1.981	45.000
1.365E-04	2.201	50.000
1.272E-04	2.421	55.000
1.191E-04	2.641	60.000
1.121E-04	2.862	65.000
1.059E-04	3.082	70.000
9.346E-05	3.302	75.000
6.900E-05	3.522	80.000
4.468E-04	0.5	11.36

ANNUAL AVERAGE = 9.74E-06

K= 4 FIVEXQ(K)= 4.468E-04 FIVEPR(K)=11.358

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

PARAMETER VALUES FOR THE CHI/Q CALCULATIONS FOR THE W SECTOR.										** CHI/Q VALUES (SEC/CUBIC METER)		
STABILITY	WINDSPEED	FREQUENCY	DISTANCE	TERRAIN HT	EFF PLUME HT	SIGMA-Y	SIGMA-Z	MEANDER-SY		MEANDER	BLDG WAKE	USED
CLASS	METER/SEC	PERCENT	METERS	METERS	METERS	METERS	METERS	METERS				
AT 10.0 METERS										CA=1236.SQ.METERS		
A	1.5	0.87	425.	0.	0.	86.5	92.7	86.5		2.599E-05	2.478E-05	2.478E-05
A	3.3	7.60	425.	0.	0.	86.5	92.7	86.5		1.213E-05	1.156E-05	1.156E-05
A	5.5	0.37	425.	0.	0.	86.5	92.7	86.5		7.278E-06	6.937E-06	6.937E-06
B	1.5	0.78	425.	0.	0.	65.0	43.3	65.0		7.398E-05	6.491E-05	6.491E-05
B	3.3	5.80	425.	0.	0.	65.0	43.3	65.0		3.452E-05	3.029E-05	3.029E-05
B	5.5	0.23	425.	0.	0.	65.0	43.3	65.0		2.071E-05	1.817E-05	1.817E-05
C	1.5	1.70	425.	0.	0.	49.4	28.0	49.4		1.505E-04	1.172E-04	1.172E-04
C	3.3	6.49	425.	0.	0.	49.4	28.0	49.4		7.024E-05	5.470E-05	5.470E-05
C	5.5	0.23	425.	0.	0.	49.4	28.0	49.4		4.215E-05	3.282E-05	3.282E-05
D	0.3	0.02	425.	0.	0.	34.8	16.2	69.6		8.649E-04	1.018E-03	8.649E-04
D	1.5	16.99	425.	0.	0.	34.8	16.2	69.6		1.853E-04	2.180E-04	1.853E-04
D	3.3	33.38	425.	0.	0.	34.8	16.2	51.0		1.180E-04	1.018E-04	1.018E-04
D	5.5	1.66	425.	0.	0.	34.8	16.2	36.9		9.775E-05	6.105E-05	6.105E-05
D	8.1	0.09	425.	0.	0.	34.8	16.2	34.8		7.012E-05	4.125E-05	4.125E-05
E	0.3	0.09	425.	0.	0.	24.7	11.5	74.2		1.170E-03	1.470E-03	1.170E-03
E	1.5	12.29	425.	0.	0.	24.7	11.5	74.2		2.506E-04	3.151E-04	2.506E-04
E	3.2	3.96	425.	0.	0.	24.7	11.5	46.4		1.870E-04	1.470E-04	1.470E-04
E	5.3	0.41	425.	0.	0.	24.7	11.5	27.9		1.870E-04	8.822E-05	8.822E-05
F	0.3	0.11	425.	0.	0.	17.1	7.2	68.3		2.018E-03	2.690E-03	2.018E-03
F	1.5	3.13	425.	0.	0.	17.1	7.2	68.3		4.324E-04	5.765E-04	4.324E-04
F	3.2	0.05	425.	0.	0.	17.1	7.2	37.8		3.647E-04	2.690E-04	2.690E-04
G	0.3	0.43	425.	0.	0.	11.8	4.6	70.7		3.094E-03	6.188E-03	3.094E-03
G	1.5	3.27	425.	0.	0.	11.8	4.6	70.7		6.630E-04	1.326E-03	6.630E-04
G	3.2	0.05	425.	0.	0.	11.8	4.6	32.9		6.648E-04	6.188E-04	6.188E-04

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

SITE EXCLUSION BOUNDARY CALCULATIONS:

W SECTOR BOUNDARY DISTANCE = 425.0 METERS

LATERAL PLUME MEANDER/BUILDING WAKE CREDIT ALLOWED
AS A FUNCTION OF DOWNWIND DISTANCE.
MEANDER CREDIT IS FOR WINDSPEEDS LESS THAN 6 MPS.
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

3.094E-03	2.018E-03	1.170E-03	8.649E-04	6.630E-04	6.188E-04	4.324E-04	2.690E-04	2.506E-04	1.853E-04
0.435	0.543	0.634	0.658	3.926	3.972	7.102	7.148	19.440	36.426
0.01232	0.01538	0.01796	0.01862	0.11118	0.11248	0.20112	0.20243	0.55049	1.03151
1.470E-04	1.172E-04	1.018E-04	8.822E-05	6.491E-05	6.105E-05	5.470E-05	4.125E-05	3.282E-05	3.029E-05
40.385	42.089	75.464	75.878	76.661	78.318	84.809	84.901	85.131	90.931
1.14362	1.19186	2.13696	2.14869	2.17085	2.21778	2.40159	2.40420	2.41072	2.57497
2.478E-05	1.817E-05	1.156E-05	6.937E-06						
91.806	92.036	99.632	100.000						
2.59974	2.60625	2.82135	2.83178						

X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(2)= 1.030
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(3)= 2.135
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(4)= 2.399

K	I	XQSAVE(K,I)	XQINT(K,I)	XQSLOP(K,I)
5	1	-5.77827	-13.41720	-2.08361
5	2	-8.59338	-13.40593	-2.07874
5	3	-9.19296	-34.77966	-12.62489
5	4	-9.81370	NUMXQ(K)= 4	
		1.961E-03	0.028	1.000
		1.031E-03	0.085	3.000
		7.495E-04	0.142	5.000
		4.752E-04	0.283	10.000
		3.588E-04	0.425	15.000
		2.917E-04	0.566	20.000

2.473E-04	0.708	25.000
2.154E-04	0.850	30.000
1.912E-04	0.991	35.000
1.722E-04	1.133	40.000
1.567E-04	1.274	45.000
1.439E-04	1.416	50.000
1.330E-04	1.557	55.000
1.237E-04	1.699	60.000
1.156E-04	1.841	65.000
1.086E-04	1.982	70.000
1.023E-04	2.124	75.000
7.471E-05	2.265	80.000
3.193E-04	0.5	17.66

ANNUAL AVERAGE = 6.01E-06

K= 5 FIVEXQ(K)= 3.193E-04 FIVEPR(K)=17.657

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

PARAMETER VALUES FOR THE CHI/Q CALCULATIONS FOR THE WNW SECTOR.

STABILITY CLASS	WINDSPEED METER/SEC AT 10.0 METERS	FREQUENCY PERCENT	DISTANCE METERS	TERRAIN HT METERS	EFF PLUME HT METERS	SIGMA-Y METERS	SIGMA-Z METERS	MEANDER-SY METERS	** CHI/Q MEANDER	VALUES (SEC/CUBIC METER) BLDG WAKE	USED
CA=1236.SQ.METERS											
A	1.5	1.08	425.	0.	0.	86.5	92.7	86.5	2.599E-05	2.478E-05	2.478E-05
A	3.3	10.35	425.	0.	0.	86.5	92.7	86.5	1.213E-05	1.156E-05	1.156E-05
B	1.5	0.86	425.	0.	0.	65.0	43.3	65.0	7.398E-05	6.491E-05	6.491E-05
B	3.3	6.25	425.	0.	0.	65.0	43.3	65.0	3.452E-05	3.029E-05	3.029E-05
B	5.5	0.16	425.	0.	0.	65.0	43.3	65.0	2.071E-05	1.817E-05	1.817E-05
C	1.5	2.00	425.	0.	0.	49.4	28.0	49.4	1.505E-04	1.172E-04	1.172E-04
C	3.3	6.04	425.	0.	0.	49.4	28.0	49.4	7.024E-05	5.470E-05	5.470E-05
C	5.5	0.11	425.	0.	0.	49.4	28.0	49.4	4.215E-05	3.282E-05	3.282E-05
D	0.3	0.03	425.	0.	0.	34.8	16.2	69.6	8.649E-04	1.018E-03	8.649E-04
D	1.5	20.87	425.	0.	0.	34.8	16.2	69.6	1.853E-04	2.180E-04	1.853E-04
D	3.3	27.28	425.	0.	0.	34.8	16.2	51.0	1.180E-04	1.018E-04	1.018E-04
D	5.5	1.08	425.	0.	0.	34.8	16.2	36.9	9.775E-05	6.105E-05	6.105E-05
E	0.3	0.09	425.	0.	0.	24.7	11.5	74.2	1.170E-03	1.470E-03	1.170E-03
E	1.5	12.35	425.	0.	0.	24.7	11.5	74.2	2.506E-04	3.151E-04	2.506E-04
E	3.2	3.24	425.	0.	0.	24.7	11.5	46.4	1.870E-04	1.470E-04	1.470E-04
E	5.3	0.27	425.	0.	0.	24.7	11.5	27.9	1.870E-04	8.822E-05	8.822E-05
F	0.3	0.12	425.	0.	0.	17.1	7.2	68.3	2.018E-03	2.690E-03	2.018E-03
F	1.5	3.56	425.	0.	0.	17.1	7.2	68.3	4.324E-04	5.765E-04	4.324E-04
F	3.2	0.05	425.	0.	0.	17.1	7.2	37.8	3.647E-04	2.690E-04	2.690E-04
G	0.3	0.49	425.	0.	0.	11.8	4.6	70.7	3.094E-03	6.188E-03	3.094E-03
G	1.5	3.67	425.	0.	0.	11.8	4.6	70.7	6.630E-04	1.326E-03	6.630E-04
G	3.2	0.05	425.	0.	0.	11.8	4.6	32.9	6.648E-04	6.188E-04	6.188E-04

USNRC COMPUTER CODE-PAVAN, VERSION 2.0 RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2 METEOROLOGICAL INSTRUMENTATION
DATA PERIOD: 1988-96 AVG. MET. WIND SENSORS HEIGHT: 11.0 METERS
TYPE OF RELEASE: GROUND-LEVEL RELEASE DELTA-T HEIGHTS: 9.3 - 60.8 METERS
SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)
COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS
PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

SITE EXCLUSION BOUNDARY CALCULATIONS:

WNW SECTOR BOUNDARY DISTANCE = 425.0 METERS

LATERAL PLUME MEANDER/BUILDING WAKE CREDIT ALLOWED
AS A FUNCTION OF DOWNWIND DISTANCE.
MEANDER CREDIT IS FOR WINDSPEEDS LESS THAN 6 MPS.
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

3.094E-03	2.018E-03	1.170E-03	8.649E-04	6.630E-04	6.188E-04	4.324E-04	2.690E-04	2.506E-04	1.853E-04
0.488	0.611	0.702	0.731	4.398	4.452	8.010	8.064	20.412	41.280
0.01179	0.01477	0.01698	0.01768	0.10632	0.10762	0.19366	0.19496	0.49349	0.99798
1.470E-04	1.172E-04	1.018E-04	8.822E-05	6.491E-05	6.105E-05	5.470E-05	3.282E-05	3.029E-05	2.478E-05
44.515	46.510	73.794	74.064	74.927	76.005	82.044	82.152	88.407	89.485
1.07619	1.12443	1.78404	1.79056	1.81142	1.83749	1.98349	1.98610	2.13732	2.16339
1.817E-05	1.156E-05								
89.647	100.000								
2.16730	2.41759								

X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(2)= 0.997
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(3)= 1.782
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(4)= 1.981

K	I	XQSAVE(K,I)	XQINT(K,I)	XQSLOP(K,I)
6	1	-5.77827	-13.44810	-2.08577
6	2	-8.59338	-14.75321	-2.64649
6	3	-9.19296	-39.25794	-14.30993
6	4	-9.81370	NUMXQ(K)= 4	
		2.093E-03	0.024	1.000
		1.108E-03	0.073	3.000
		8.085E-04	0.121	5.000
		5.157E-04	0.242	10.000
		3.909E-04	0.363	15.000
		3.189E-04	0.484	20.000

2.711E-04	0.604	25.000
2.367E-04	0.725	30.000
2.106E-04	0.846	35.000
1.899E-04	0.967	40.000
1.700E-04	1.088	45.000
1.529E-04	1.209	50.000
1.386E-04	1.330	55.000
1.267E-04	1.451	60.000
1.165E-04	1.571	65.000
1.077E-04	1.692	70.000
9.260E-05	1.813	75.000
6.347E-05	1.934	80.000
3.113E-04	0.5	20.68

ANNUAL AVERAGE = 7.17E-06

K= 6 FIVEXQ(K)= 3.113E-04 FIVEPR(K)=20.682

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

PARAMETER VALUES FOR THE CHI/Q CALCULATIONS FOR THE NW SECTOR.										** CHI/Q VALUES (SEC/CUBIC METER)		
STABILITY	WINDSPEED	FREQUENCY	DISTANCE	TERRAIN HT	EFF PLUME HT	SIGMA-Y	SIGMA-Z	MEANDER-SY		MEANDER	BLDG WAKE	USED
CLASS	METER/SEC	PERCENT	METERS	METERS	METERS	METERS	METERS	METERS				
AT 10.0 METERS										CA=1236.SQ.METERS		
A	1.5	0.59	425.	0.	0.	86.5	92.7	86.5		2.599E-05	2.478E-05	2.478E-05
A	3.3	11.68	425.	0.	0.	86.5	92.7	86.5		1.213E-05	1.156E-05	1.156E-05
A	5.5	1.07	425.	0.	0.	86.5	92.7	86.5		7.278E-06	6.937E-06	6.937E-06
B	1.5	0.63	425.	0.	0.	65.0	43.3	65.0		7.398E-05	6.491E-05	6.491E-05
B	3.3	6.79	425.	0.	0.	65.0	43.3	65.0		3.452E-05	3.029E-05	3.029E-05
B	5.5	0.51	425.	0.	0.	65.0	43.3	65.0		2.071E-05	1.817E-05	1.817E-05
C	1.5	1.50	425.	0.	0.	49.4	28.0	49.4		1.505E-04	1.172E-04	1.172E-04
C	3.3	7.38	425.	0.	0.	49.4	28.0	49.4		7.024E-05	5.470E-05	5.470E-05
C	5.5	0.24	425.	0.	0.	49.4	28.0	49.4		4.215E-05	3.282E-05	3.282E-05
D	0.3	0.02	425.	0.	0.	34.8	16.2	69.6		8.649E-04	1.018E-03	8.649E-04
D	1.5	15.08	425.	0.	0.	34.8	16.2	69.6		1.853E-04	2.180E-04	1.853E-04
D	3.3	26.13	425.	0.	0.	34.8	16.2	51.0		1.180E-04	1.018E-04	1.018E-04
D	5.5	3.24	425.	0.	0.	34.8	16.2	36.9		9.775E-05	6.105E-05	6.105E-05
D	8.1	0.04	425.	0.	0.	34.8	16.2	34.8		7.012E-05	4.125E-05	4.125E-05
E	0.3	0.08	425.	0.	0.	24.7	11.5	74.2		1.170E-03	1.470E-03	1.170E-03
E	1.5	11.17	425.	0.	0.	24.7	11.5	74.2		2.506E-04	3.151E-04	2.506E-04
E	3.2	5.09	425.	0.	0.	24.7	11.5	46.4		1.870E-04	1.470E-04	1.470E-04
E	5.3	0.59	425.	0.	0.	24.7	11.5	27.9		1.870E-04	8.822E-05	8.822E-05
E	7.9	0.12	425.	0.	0.	24.7	11.5	24.7		1.423E-04	5.961E-05	5.961E-05
F	0.3	0.15	425.	0.	0.	17.1	7.2	68.3		2.018E-03	2.690E-03	2.018E-03
F	1.5	4.38	425.	0.	0.	17.1	7.2	68.3		4.324E-04	5.765E-04	4.324E-04
F	3.2	0.32	425.	0.	0.	17.1	7.2	37.8		3.647E-04	2.690E-04	2.690E-04
F	5.3	0.04	425.	0.	0.	17.1	7.2	19.8		4.169E-04	1.614E-04	1.614E-04
G	0.3	0.37	425.	0.	0.	11.8	4.6	70.7		3.094E-03	6.188E-03	3.094E-03
G	1.5	2.80	425.	0.	0.	11.8	4.6	70.7		6.630E-04	1.326E-03	6.630E-04

USNRC COMPUTER CODE-PAVAN, VERSION 2.0 RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2 METEOROLOGICAL INSTRUMENTATION
DATA PERIOD: 1988-96 AVG. MET. WIND SENSORS HEIGHT: 11.0 METERS
TYPE OF RELEASE: GROUND-LEVEL RELEASE DELTA-T HEIGHTS: 9.3 - 60.8 METERS
SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)
COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS
PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

SITE EXCLUSION BOUNDARY CALCULATIONS:

 NW SECTOR BOUNDARY DISTANCE = 425.0 METERS

LATERAL PLUME MEANDER/BUILDING WAKE CREDIT ALLOWED
AS A FUNCTION OF DOWNWIND DISTANCE.
MEANDER CREDIT IS FOR WINDSPEEDS LESS THAN 6 MPS.
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

3.094E-03	2.018E-03	1.170E-03	8.649E-04	6.630E-04	4.324E-04	2.690E-04	2.506E-04	1.853E-04	1.614E-04
0.373	0.524	0.607	0.628	3.430	7.810	8.126	19.295	34.370	34.410
0.01232	0.01732	0.02005	0.02074	0.11329	0.25799	0.26842	0.63734	1.13531	1.13661
1.470E-04	1.172E-04	1.018E-04	8.822E-05	6.491E-05	6.105E-05	5.961E-05	5.470E-05	4.125E-05	3.282E-05
39.501	41.000	67.126	67.718	68.349	71.585	71.704	79.084	79.123	79.360
1.30478	1.35431	2.21729	2.23685	2.25770	2.36460	2.36851	2.61228	2.61358	2.62141
3.029E-05	2.478E-05	1.817E-05	1.156E-05	6.937E-06					
86.148	86.740	87.253	98.934	100.000					
2.84562	2.86518	2.88212	3.26799	3.30318					

 X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(2)= 1.134
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(3)= 2.215
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(4)= 2.610

K	I	XQSAVE(K,I)	XQINT(K,I)	XQSLOP(K,I)
7	1	-5.77827	-13.21713	-2.02904
7	2	-8.59338	-13.70035	-2.24109
7	3	-9.19296	-27.10197	-8.90444
7	4	-9.81370	NUMXQ(K)= 4	
		1.824E-03	0.033	1.000
		9.674E-04	0.099	3.000
		7.066E-04	0.165	5.000
		4.504E-04	0.330	10.000
		3.411E-04	0.495	15.000
		2.779E-04	0.661	20.000

2.359E-04	0.826	25.000
2.057E-04	0.991	30.000
1.825E-04	1.156	35.000
1.626E-04	1.321	40.000
1.466E-04	1.486	45.000
1.334E-04	1.652	50.000
1.224E-04	1.817	55.000
1.130E-04	1.982	60.000
1.049E-04	2.147	65.000
8.695E-05	2.312	70.000
6.698E-05	2.477	75.000

3.389E-04 0.5 15.14

ANNUAL AVERAGE = 8.60E-06

K= 7 FIVEXQ(K)= 3.389E-04 FIVEPR(K)=15.137

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

PARAMETER VALUES FOR THE CHI/Q CALCULATIONS FOR THE NNW SECTOR.										** CHI/Q VALUES (SEC/CUBIC METER)		
STABILITY CLASS	WINDSPEED METER/SEC AT 10.0 METERS	FREQUENCY PERCENT	DISTANCE METERS	TERRAIN HT METERS	HT EFF PLUME METERS	SIGMA-Y METERS	SIGMA-Z METERS	MEANDER-SY METERS		MEANDER	BLDG WAKE	USED
										CA=1236.SQ.METERS		
A	1.5	0.10	425.	0.	0.	86.5	92.7	86.5		2.599E-05	2.478E-05	2.478E-05
A	3.3	4.19	425.	0.	0.	86.5	92.7	86.5		1.213E-05	1.156E-05	1.156E-05
A	5.5	1.86	425.	0.	0.	86.5	92.7	86.5		7.278E-06	6.937E-06	6.937E-06
A	8.1	0.02	425.	0.	0.	86.5	92.7	86.5		4.917E-06	4.687E-06	4.687E-06
B	1.5	0.26	425.	0.	0.	65.0	43.3	65.0		7.398E-05	6.491E-05	6.491E-05
B	3.3	2.94	425.	0.	0.	65.0	43.3	65.0		3.452E-05	3.029E-05	3.029E-05
B	5.5	0.74	425.	0.	0.	65.0	43.3	65.0		2.071E-05	1.817E-05	1.817E-05
B	8.1	0.02	425.	0.	0.	65.0	43.3	65.0		1.400E-05	1.228E-05	1.228E-05
C	1.5	0.32	425.	0.	0.	49.4	28.0	49.4		1.505E-04	1.172E-04	1.172E-04
C	3.3	3.87	425.	0.	0.	49.4	28.0	49.4		7.024E-05	5.470E-05	5.470E-05
C	5.5	0.74	425.	0.	0.	49.4	28.0	49.4		4.215E-05	3.282E-05	3.282E-05
C	8.1	0.04	425.	0.	0.	49.4	28.0	49.4		2.848E-05	2.217E-05	2.217E-05
D	0.3	0.01	425.	0.	0.	34.8	16.2	69.6		8.649E-04	1.018E-03	8.649E-04
D	1.5	6.75	425.	0.	0.	34.8	16.2	69.6		1.853E-04	2.180E-04	1.853E-04
D	3.3	24.90	425.	0.	0.	34.8	16.2	51.0		1.180E-04	1.018E-04	1.018E-04
D	5.5	3.97	425.	0.	0.	34.8	16.2	36.9		9.775E-05	6.105E-05	6.105E-05
D	8.1	0.42	425.	0.	0.	34.8	16.2	34.8		7.012E-05	4.125E-05	4.125E-05
E	0.3	0.11	425.	0.	0.	24.7	11.5	74.2		1.170E-03	1.470E-03	1.170E-03
E	1.5	15.38	425.	0.	0.	24.7	11.5	74.2		2.506E-04	3.151E-04	2.506E-04
E	3.2	14.62	425.	0.	0.	24.7	11.5	46.4		1.870E-04	1.470E-04	1.470E-04
E	5.3	1.70	425.	0.	0.	24.7	11.5	27.9		1.870E-04	8.822E-05	8.822E-05
E	7.9	0.10	425.	0.	0.	24.7	11.5	24.7		1.423E-04	5.961E-05	5.961E-05
F	0.3	0.30	425.	0.	0.	17.1	7.2	68.3		2.018E-03	2.690E-03	2.018E-03
F	1.5	8.79	425.	0.	0.	17.1	7.2	68.3		4.324E-04	5.765E-04	4.324E-04
F	3.2	1.38	425.	0.	0.	17.1	7.2	37.8		3.647E-04	2.690E-04	2.690E-04
G	0.3	0.75	425.	0.	0.	11.8	4.6	70.7		3.094E-03	6.188E-03	3.094E-03
G	1.5	5.63	425.	0.	0.	11.8	4.6	70.7		6.630E-04	1.326E-03	6.630E-04
G	3.2	0.08	425.	0.	0.	11.8	4.6	32.9		6.648E-04	6.188E-04	6.188E-04

USNRC COMPUTER CODE-PAVAN, VERSION 2.0 RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2 METEOROLOGICAL INSTRUMENTATION
DATA PERIOD: 1988-96 AVG. MET. WIND SENSORS HEIGHT: 11.0 METERS
TYPE OF RELEASE: GROUND-LEVEL RELEASE DELTA-T HEIGHTS: 9.3 - 60.8 METERS
SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)
COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS
PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

SITE EXCLUSION BOUNDARY CALCULATIONS:

NNW SECTOR BOUNDARY DISTANCE = 425.0 METERS

LATERAL PLUME MEANDER/BUILDING WAKE CREDIT ALLOWED
AS A FUNCTION OF DOWNWIND DISTANCE.
MEANDER CREDIT IS FOR WINDSPEEDS LESS THAN 6 MPS.
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

3.094E-03	2.018E-03	1.170E-03	8.649E-04	6.630E-04	6.188E-04	4.324E-04	2.690E-04	2.506E-04	1.853E-04
0.749	1.053	1.167	1.176	6.804	6.884	15.677	17.059	32.442	39.191
0.04874	0.06852	0.07594	0.07654	0.44285	0.44807	1.02035	1.11029	2.11145	2.55077
1.470E-04	1.172E-04	1.018E-04	8.822E-05	6.491E-05	6.105E-05	5.961E-05	5.470E-05	4.125E-05	3.282E-05
53.813	54.133	79.029	80.732	80.992	84.958	85.058	88.924	89.344	90.086
3.50239	3.52325	5.14361	5.25442	5.27137	5.52948	5.53599	5.78759	5.81496	5.86320
3.029E-05	2.478E-05	2.217E-05	1.817E-05	1.228E-05	1.156E-05	6.937E-06	4.687E-06		
93.030	93.130	93.170	93.911	93.931	98.117	99.980	100.000		
6.05483	6.06134	6.06395	6.11218	6.11349	6.38594	6.50717	6.50848		

X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(2)= 2.109
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(3)= 5.140
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(4)= 5.784
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(5)= 6.051

K	I	XQSAVE(K,I)	XQINT(K,I)	XQSLOP(K,I)
8	1	-5.77827	-12.32393	-1.98478
8	2	-8.29147	-12.86746	-2.25231
8	3	-9.19296	-26.57817	-10.65637
8	4	-9.81370	-50.80744	-26.05774
8	5	-10.40468	NUMXQ(K)= 5	
		2.629E-03	0.065	1.000
		1.366E-03	0.195	3.000
		9.853E-04	0.325	5.000
		6.148E-04	0.651	10.000

4.583E-04	0.976	15.000
3.687E-04	1.302	20.000
3.096E-04	1.627	25.000
2.673E-04	1.953	30.000
2.333E-04	2.278	35.000
2.053E-04	2.603	40.000
1.829E-04	2.929	45.000
1.646E-04	3.254	50.000
1.494E-04	3.580	55.000
1.366E-04	3.905	60.000
1.256E-04	4.231	65.000
1.161E-04	4.556	70.000
1.077E-04	4.881	75.000
9.549E-05	5.207	80.000
6.949E-05	5.532	85.000
4.675E-05	5.858	90.000
7.387E-04	0.5	7.68

ANNUAL AVERAGE = 1.97E-05

K= 8 FIVEXQ(K)= 7.387E-04 FIVEPR(K)= 7.682

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

PARAMETER VALUES FOR THE CHI/Q CALCULATIONS FOR THE N SECTOR.										** CHI/Q VALUES (SEC/CUBIC METER)		
STABILITY CLASS	WINDSPEED METER/SEC AT 10.0 METERS	FREQUENCY PERCENT	DISTANCE METERS	TERRAIN HT METERS	HT EFF METERS	PLUME HT METERS	SIGMA-Y METERS	SIGMA-Z METERS	MEANDER-SY METERS	MEANDER	BLDG WAKE CA=1236.SQ.METERS	USED
A	1.5	0.06	425.	0.	0.	0.	86.5	92.7	86.5	2.599E-05	2.478E-05	2.478E-05
A	3.3	2.17	425.	0.	0.	0.	86.5	92.7	86.5	1.213E-05	1.156E-05	1.156E-05
A	5.5	3.48	425.	0.	0.	0.	86.5	92.7	86.5	7.278E-06	6.937E-06	6.937E-06
A	8.1	0.29	425.	0.	0.	0.	86.5	92.7	86.5	4.917E-06	4.687E-06	4.687E-06
A	10.9	0.01	425.	0.	0.	0.	86.5	92.7	86.5	3.639E-06	3.469E-06	3.469E-06
B	1.5	0.08	425.	0.	0.	0.	65.0	43.3	65.0	7.398E-05	6.491E-05	6.491E-05
B	3.3	1.84	425.	0.	0.	0.	65.0	43.3	65.0	3.452E-05	3.029E-05	3.029E-05
B	5.5	0.98	425.	0.	0.	0.	65.0	43.3	65.0	2.071E-05	1.817E-05	1.817E-05
B	8.1	0.15	425.	0.	0.	0.	65.0	43.3	65.0	1.400E-05	1.228E-05	1.228E-05
C	1.5	0.14	425.	0.	0.	0.	49.4	28.0	49.4	1.505E-04	1.172E-04	1.172E-04
C	3.3	1.96	425.	0.	0.	0.	49.4	28.0	49.4	7.024E-05	5.470E-05	5.470E-05
C	5.5	0.91	425.	0.	0.	0.	49.4	28.0	49.4	4.215E-05	3.282E-05	3.282E-05
C	8.1	0.10	425.	0.	0.	0.	49.4	28.0	49.4	2.848E-05	2.217E-05	2.217E-05
C	10.9	0.01	425.	0.	0.	0.	49.4	28.0	49.4	2.107E-05	1.641E-05	1.641E-05
D	0.3	0.01	425.	0.	0.	0.	34.8	16.2	69.6	8.649E-04	1.018E-03	8.649E-04
D	1.5	4.12	425.	0.	0.	0.	34.8	16.2	69.6	1.853E-04	2.180E-04	1.853E-04
D	3.3	17.85	425.	0.	0.	0.	34.8	16.2	51.0	1.180E-04	1.018E-04	1.018E-04
D	5.5	6.25	425.	0.	0.	0.	34.8	16.2	36.9	9.775E-05	6.105E-05	6.105E-05
D	8.1	0.84	425.	0.	0.	0.	34.8	16.2	34.8	7.012E-05	4.125E-05	4.125E-05
D	10.9	0.03	425.	0.	0.	0.	34.8	16.2	34.8	5.189E-05	3.053E-05	3.053E-05
E	0.3	0.14	425.	0.	0.	0.	24.7	11.5	74.2	1.170E-03	1.470E-03	1.170E-03
E	1.5	18.70	425.	0.	0.	0.	24.7	11.5	74.2	2.506E-04	3.151E-04	2.506E-04
E	3.2	16.58	425.	0.	0.	0.	24.7	11.5	46.4	1.870E-04	1.470E-04	1.470E-04
E	5.3	3.33	425.	0.	0.	0.	24.7	11.5	27.9	1.870E-04	8.822E-05	8.822E-05
E	7.9	0.39	425.	0.	0.	0.	24.7	11.5	24.7	1.423E-04	5.961E-05	5.961E-05
F	0.3	0.37	425.	0.	0.	0.	17.1	7.2	68.3	2.018E-03	2.690E-03	2.018E-03
F	1.5	10.65	425.	0.	0.	0.	17.1	7.2	68.3	4.324E-04	5.765E-04	4.324E-04
F	3.2	1.37	425.	0.	0.	0.	17.1	7.2	37.8	3.647E-04	2.690E-04	2.690E-04
F	5.3	0.01	425.	0.	0.	0.	17.1	7.2	19.8	4.169E-04	1.614E-04	1.614E-04
F	7.9	0.01	425.	0.	0.	0.	17.1	7.2	17.1	3.272E-04	1.091E-04	1.091E-04
G	0.3	0.83	425.	0.	0.	0.	11.8	4.6	70.7	3.094E-03	6.188E-03	3.094E-03
G	1.5	6.21	425.	0.	0.	0.	11.8	4.6	70.7	6.630E-04	1.326E-03	6.630E-04
G	3.2	0.12	425.	0.	0.	0.	11.8	4.6	32.9	6.648E-04	6.188E-04	6.188E-04

USNRC COMPUTER CODE-PAVAN, VERSION 2.0 RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2 METEOROLOGICAL INSTRUMENTATION
DATA PERIOD: 1988-96 AVG. MET. WIND SENSORS HEIGHT: 11.0 METERS
TYPE OF RELEASE: GROUND-LEVEL RELEASE DELTA-T HEIGHTS: 9.3 - 60.8 METERS
SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)
COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS
PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

SITE EXCLUSION BOUNDARY CALCULATIONS:

N SECTOR BOUNDARY DISTANCE = 425.0 METERS

LATERAL PLUME MEANDER/BUILDING WAKE CREDIT ALLOWED
AS A FUNCTION OF DOWNWIND DISTANCE.
MEANDER CREDIT IS FOR WINDSPEEDS LESS THAN 6 MPS.
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

3.094E-03	2.018E-03	1.170E-03	8.649E-04	6.630E-04	6.188E-04	4.324E-04	2.690E-04	2.506E-04	1.853E-04
0.826	1.194	1.333	1.338	7.547	7.671	18.319	19.688	38.383	42.504
0.07788	0.11257	0.12564	0.12617	0.71148	0.72322	1.72698	1.85604	3.61850	4.00697
1.614E-04	1.470E-04	1.172E-04	1.091E-04	1.018E-04	8.822E-05	6.491E-05	6.105E-05	5.961E-05	5.470E-05
42.518	59.097	59.236	59.249	77.101	80.434	80.517	86.767	87.154	89.117
4.00827	5.57128	5.58432	5.58562	7.26856	7.58273	7.59055	8.17977	8.21627	8.40138
4.125E-05	3.282E-05	3.053E-05	3.029E-05	2.478E-05	2.217E-05	1.817E-05	1.641E-05	1.228E-05	1.156E-05
89.961	90.874	90.901	92.740	92.796	92.892	93.874	93.888	94.040	96.211
8.48090	8.56694	8.56955	8.74293	8.74814	8.75727	8.84982	8.85112	8.86546	9.07013
6.937E-06	4.687E-06	3.469E-06							
99.696	99.986	100.000							
9.39863	9.42601	9.42731							

X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

HANDCHECK GRAPH:	SLOPE LT -1.0 FOR LOW PERCENTAGES.	XSAVE(2)=	3.615
HANDCHECK GRAPH:	SLOPE LT -1.0 FOR LOW PERCENTAGES.	XSAVE(3)=	5.567
HANDCHECK GRAPH:	SLOPE LT -1.0 FOR LOW PERCENTAGES.	XSAVE(4)=	7.265
HANDCHECK GRAPH:	SLOPE LT -1.0 FOR LOW PERCENTAGES.	XSAVE(5)=	7.579
HANDCHECK GRAPH:	SLOPE LT -1.0 FOR LOW PERCENTAGES.	XSAVE(6)=	8.398
HANDCHECK GRAPH:	SLOPE LT -1.0 FOR LOW PERCENTAGES.	XSAVE(7)=	8.739

K	I	XQSAVE(K,I)	XQINT(K,I)	XQSLOP(K,I)
9	1	-5.77827	-11.59601	-1.83873
9	2	-8.29147	-12.96658	-2.60135
9	3	-8.82482	-13.14099	-2.71089

```
9 4      -9.19296 -18.47916  -6.37633
9 5      -9.33565 -21.76044  -8.66456
9 6      -9.81370 -47.14992 -27.07869
9 7      -10.40468      NUMXQ(K)= 7
2.791E-03      0.094      1.000
1.492E-03      0.283      3.000
1.090E-03      0.471      5.000
6.912E-04      0.943     10.000
5.197E-04      1.414     15.000
4.204E-04      1.885     20.000
3.544E-04      2.357     25.000
3.068E-04      2.828     30.000
2.706E-04      3.300     35.000
2.386E-04      3.771     40.000
2.070E-04      4.242     45.000
1.818E-04      4.714     50.000
1.612E-04      5.185     55.000
1.441E-04      5.656     60.000
1.292E-04      6.128     65.000
1.166E-04      6.599     70.000
1.058E-04      7.070     75.000
8.985E-05      7.542     80.000
6.830E-05      8.013     85.000
4.729E-05      8.485     90.000

1.050E-03      0.5      5.30

ANNUAL AVERAGE = 3.16E-05

K= 9      FIVEXQ(K)= 1.050E-03      FIVEPR(K)= 5.304
```

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

PARAMETER VALUES FOR THE CHI/Q CALCULATIONS FOR THE NNE SECTOR.										** CHI/Q VALUES (SEC/CUBIC METER)		
STABILITY CLASS	WINDSPEED METER/SEC	FREQUENCY PERCENT	DISTANCE METERS	TERRAIN HT METERS	EFF PLUME HT METERS	SIGMA-Y METERS	SIGMA-Z METERS	MEANDER-SY METERS		MEANDER	BLDG WAKE	USED
AT 10.0 METERS										CA=1236.SQ.METERS		
A	1.5	0.08	425.	0.	0.	86.5	92.7	86.5		2.599E-05	2.478E-05	2.478E-05
A	3.3	3.08	425.	0.	0.	86.5	92.7	86.5		1.213E-05	1.156E-05	1.156E-05
A	5.5	4.60	425.	0.	0.	86.5	92.7	86.5		7.278E-06	6.937E-06	6.937E-06
A	8.1	0.55	425.	0.	0.	86.5	92.7	86.5		4.917E-06	4.687E-06	4.687E-06
B	1.5	0.09	425.	0.	0.	65.0	43.3	65.0		7.398E-05	6.491E-05	6.491E-05
B	3.3	2.12	425.	0.	0.	65.0	43.3	65.0		3.452E-05	3.029E-05	3.029E-05
B	5.5	1.74	425.	0.	0.	65.0	43.3	65.0		2.071E-05	1.817E-05	1.817E-05
B	8.1	0.18	425.	0.	0.	65.0	43.3	65.0		1.400E-05	1.228E-05	1.228E-05
C	1.5	0.13	425.	0.	0.	49.4	28.0	49.4		1.505E-04	1.172E-04	1.172E-04
C	3.3	2.99	425.	0.	0.	49.4	28.0	49.4		7.024E-05	5.470E-05	5.470E-05
C	5.5	1.81	425.	0.	0.	49.4	28.0	49.4		4.215E-05	3.282E-05	3.282E-05
C	8.1	0.13	425.	0.	0.	49.4	28.0	49.4		2.848E-05	2.217E-05	2.217E-05
D	0.3	0.01	425.	0.	0.	34.8	16.2	69.6		8.649E-04	1.018E-03	8.649E-04
D	1.5	4.49	425.	0.	0.	34.8	16.2	69.6		1.853E-04	2.180E-04	1.853E-04
D	3.3	17.85	425.	0.	0.	34.8	16.2	51.0		1.180E-04	1.018E-04	1.018E-04
D	5.5	5.51	425.	0.	0.	34.8	16.2	36.9		9.775E-05	6.105E-05	6.105E-05
D	8.1	0.70	425.	0.	0.	34.8	16.2	34.8		7.012E-05	4.125E-05	4.125E-05
E	0.3	0.12	425.	0.	0.	24.7	11.5	74.2		1.170E-03	1.470E-03	1.170E-03
E	1.5	16.84	425.	0.	0.	24.7	11.5	74.2		2.506E-04	3.151E-04	2.506E-04
E	3.2	15.45	425.	0.	0.	24.7	11.5	46.4		1.870E-04	1.470E-04	1.470E-04
E	5.3	2.12	425.	0.	0.	24.7	11.5	27.9		1.870E-04	8.822E-05	8.822E-05
E	7.9	0.22	425.	0.	0.	24.7	11.5	24.7		1.423E-04	5.961E-05	5.961E-05
F	0.3	0.34	425.	0.	0.	17.1	7.2	68.3		2.018E-03	2.690E-03	2.018E-03
F	1.5	9.83	425.	0.	0.	17.1	7.2	68.3		4.324E-04	5.765E-04	4.324E-04
F	3.2	1.38	425.	0.	0.	17.1	7.2	37.8		3.647E-04	2.690E-04	2.690E-04
F	5.3	0.01	425.	0.	0.	17.1	7.2	19.8		4.169E-04	1.614E-04	1.614E-04
G	0.3	0.88	425.	0.	0.	11.8	4.6	70.7		3.094E-03	6.188E-03	3.094E-03
G	1.5	6.64	425.	0.	0.	11.8	4.6	70.7		6.630E-04	1.326E-03	6.630E-04
G	3.2	0.13	425.	0.	0.	11.8	4.6	32.9		6.648E-04	6.188E-04	6.188E-04

USNRC COMPUTER CODE-PAVAN, VERSION 2.0 RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2 METEOROLOGICAL INSTRUMENTATION
DATA PERIOD: 1988-96 AVG. MET. WIND SENSORS HEIGHT: 11.0 METERS
TYPE OF RELEASE: GROUND-LEVEL RELEASE DELTA-T HEIGHTS: 9.3 - 60.8 METERS
SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)
COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS
PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

SITE EXCLUSION BOUNDARY CALCULATIONS:

NNE SECTOR BOUNDARY DISTANCE = 425.0 METERS

LATERAL PLUME MEANDER/BUILDING WAKE CREDIT ALLOWED
AS A FUNCTION OF DOWNWIND DISTANCE.
MEANDER CREDIT IS FOR WINDSPEEDS LESS THAN 6 MPS.
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

3.094E-03	2.018E-03	1.170E-03	8.649E-04	6.630E-04	6.188E-04	4.324E-04	2.690E-04	2.506E-04	1.853E-04
0.883	1.223	1.348	1.354	7.992	8.122	17.955	19.332	36.167	40.662
0.08864	0.12274	0.13526	0.13588	0.80202	0.81506	1.80188	1.94006	3.62952	4.08056
1.614E-04	1.470E-04	1.172E-04	1.018E-04	8.822E-05	6.491E-05	6.105E-05	5.961E-05	5.470E-05	4.125E-05
40.675	56.120	56.250	74.098	76.215	76.306	81.814	82.035	85.023	85.724
4.08186	5.63184	5.64487	7.43601	7.64850	7.65762	8.21034	8.23251	8.53233	8.60273
3.282E-05	3.029E-05	2.478E-05	2.217E-05	1.817E-05	1.228E-05	1.156E-05	6.937E-06	4.687E-06	
87.530	89.647	89.725	89.855	91.595	91.777	94.856	99.454	100.000	
8.78393	8.99641	9.00423	9.01727	9.19195	9.21020	9.51915	9.98063	10.03538	

X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(2)= 3.626
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(3)= 5.628
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(4)= 7.432
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(5)= 8.529
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(6)= 8.993

K	I	XQSAVE(K,I)	XQINT(K,I)	XQSLOP(K,I)
10	1	-5.77827	-11.68392	-1.88910
10	2	-8.29147	-12.87399	-2.55180
10	3	-8.82482	-12.92564	-2.58435
10	4	-9.19296	-21.31216	-8.39083
10	5	-9.81370	-37.57670	-20.25963
10	6	-10.40468	NUMXQ(K)= 6	
		2.887E-03	0.100	1.000
		1.512E-03	0.301	3.000

1.092E-03	0.502	5.000
6.817E-04	1.004	10.000
5.074E-04	1.505	15.000
4.072E-04	2.007	20.000
3.411E-04	2.509	25.000
2.937E-04	3.011	30.000
2.578E-04	3.512	35.000
2.227E-04	4.014	40.000
1.934E-04	4.516	45.000
1.699E-04	5.018	50.000
1.508E-04	5.519	55.000
1.349E-04	6.021	60.000
1.214E-04	6.523	65.000
1.099E-04	7.025	70.000
9.642E-05	7.527	75.000
7.218E-05	8.028	80.000
5.476E-05	8.530	85.000

1.095E-03 0.5 4.98

ANNUAL AVERAGE = 4.77E-05

K= 10 FIVEXQ(K)= 1.095E-03 FIVEPR(K)= 4.982

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

PARAMETER VALUES FOR THE CHI/Q CALCULATIONS FOR THE NE SECTOR.										** CHI/Q VALUES (SEC/CUBIC METER)		
STABILITY CLASS	WINDSPEED METER/SEC	FREQUENCY PERCENT	DISTANCE METERS	TERRAIN HT METERS	HT EFF METERS	PLUME HT METERS	SIGMA-Y METERS	SIGMA-Z METERS	MEANDER-SY METERS	MEANDER	BLDG WAKE CA=1236.SQ.METERS	USED
AT 10.0 METERS												
A	1.5	0.08	425.	0.	0.		86.5	92.7	86.5	2.599E-05	2.478E-05	2.478E-05
A	3.3	4.47	425.	0.	0.		86.5	92.7	86.5	1.213E-05	1.156E-05	1.156E-05
A	5.5	5.85	425.	0.	0.		86.5	92.7	86.5	7.278E-06	6.937E-06	6.937E-06
A	8.1	0.40	425.	0.	0.		86.5	92.7	86.5	4.917E-06	4.687E-06	4.687E-06
A	10.9	0.02	425.	0.	0.		86.5	92.7	86.5	3.639E-06	3.469E-06	3.469E-06
B	1.5	0.09	425.	0.	0.		65.0	43.3	65.0	7.398E-05	6.491E-05	6.491E-05
B	3.3	3.53	425.	0.	0.		65.0	43.3	65.0	3.452E-05	3.029E-05	3.029E-05
B	5.5	2.23	425.	0.	0.		65.0	43.3	65.0	2.071E-05	1.817E-05	1.817E-05
B	8.1	0.26	425.	0.	0.		65.0	43.3	65.0	1.400E-05	1.228E-05	1.228E-05
C	1.5	0.19	425.	0.	0.		49.4	28.0	49.4	1.505E-04	1.172E-04	1.172E-04
C	3.3	4.62	425.	0.	0.		49.4	28.0	49.4	7.024E-05	5.470E-05	5.470E-05
C	5.5	2.46	425.	0.	0.		49.4	28.0	49.4	4.215E-05	3.282E-05	3.282E-05
C	8.1	0.20	425.	0.	0.		49.4	28.0	49.4	2.848E-05	2.217E-05	2.217E-05
D	0.3	0.01	425.	0.	0.		34.8	16.2	69.6	8.649E-04	1.018E-03	8.649E-04
D	1.5	4.81	425.	0.	0.		34.8	16.2	69.6	1.853E-04	2.180E-04	1.853E-04
D	3.3	18.17	425.	0.	0.		34.8	16.2	51.0	1.180E-04	1.018E-04	1.018E-04
D	5.5	5.45	425.	0.	0.		34.8	16.2	36.9	9.775E-05	6.105E-05	6.105E-05
D	8.1	0.54	425.	0.	0.		34.8	16.2	34.8	7.012E-05	4.125E-05	4.125E-05
E	0.3	0.10	425.	0.	0.		24.7	11.5	74.2	1.170E-03	1.470E-03	1.170E-03
E	1.5	13.22	425.	0.	0.		24.7	11.5	74.2	2.506E-04	3.151E-04	2.506E-04
E	3.2	11.36	425.	0.	0.		24.7	11.5	46.4	1.870E-04	1.470E-04	1.470E-04
E	5.3	2.02	425.	0.	0.		24.7	11.5	27.9	1.870E-04	8.822E-05	8.822E-05
E	7.9	0.02	425.	0.	0.		24.7	11.5	24.7	1.423E-04	5.961E-05	5.961E-05
F	0.3	0.32	425.	0.	0.		17.1	7.2	68.3	2.018E-03	2.690E-03	2.018E-03
F	1.5	9.26	425.	0.	0.		17.1	7.2	68.3	4.324E-04	5.765E-04	4.324E-04
F	3.2	2.09	425.	0.	0.		17.1	7.2	37.8	3.647E-04	2.690E-04	2.690E-04
F	5.3	0.03	425.	0.	0.		17.1	7.2	19.8	4.169E-04	1.614E-04	1.614E-04
G	0.3	0.93	425.	0.	0.		11.8	4.6	70.7	3.094E-03	6.188E-03	3.094E-03
G	1.5	7.02	425.	0.	0.		11.8	4.6	70.7	6.630E-04	1.326E-03	6.630E-04
G	3.2	0.25	425.	0.	0.		11.8	4.6	32.9	6.648E-04	6.188E-04	6.188E-04

USNRC COMPUTER CODE-PAVAN, VERSION 2.0 RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2 METEOROLOGICAL INSTRUMENTATION
DATA PERIOD: 1988-96 AVG. MET. WIND SENSORS HEIGHT: 11.0 METERS
TYPE OF RELEASE: GROUND-LEVEL RELEASE DELTA-T HEIGHTS: 9.3 - 60.8 METERS
SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)
COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS
PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

SITE EXCLUSION BOUNDARY CALCULATIONS:

NE SECTOR BOUNDARY DISTANCE = 425.0 METERS

LATERAL PLUME MEANDER/BUILDING WAKE CREDIT ALLOWED
AS A FUNCTION OF DOWNWIND DISTANCE.
MEANDER CREDIT IS FOR WINDSPEEDS LESS THAN 6 MPS.
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

3.094E-03	2.018E-03	1.170E-03	8.649E-04	6.630E-04	6.188E-04	4.324E-04	2.690E-04	2.506E-04	1.853E-04
0.934	1.254	1.352	1.359	8.379	8.628	17.890	19.976	33.191	38.001
0.07823	0.10503	0.11324	0.11379	0.70171	0.72257	1.49821	1.67289	2.77964	3.18245
1.614E-04	1.470E-04	1.172E-04	1.018E-04	8.822E-05	6.491E-05	6.105E-05	5.961E-05	5.470E-05	4.125E-05
38.032	49.395	49.582	67.747	69.771	69.864	75.312	75.328	79.951	80.496
3.18506	4.13668	4.15233	5.67362	5.84309	5.85091	6.30717	6.30847	6.69564	6.74126
3.282E-05	3.029E-05	2.478E-05	2.217E-05	1.817E-05	1.228E-05	1.156E-05	6.937E-06	4.687E-06	3.469E-06
82.955	86.489	86.567	86.769	88.995	89.259	93.727	99.580	99.984	100.000
6.94723	7.24315	7.24966	7.26661	7.45302	7.47519	7.84932	8.33947	8.37336	8.37467

X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(2)= 1.497
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(3)= 2.777
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(4)= 5.670
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(5)= 6.692
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(6)= 7.239

K	I	XQSAVE(K,I)	XQINT(K,I)	XQSLOP(K,I)
11	1	-5.77827	-12.05436	-1.98441
11	2	-7.74620	-12.36369	-2.12689
11	3	-8.29147	-13.49780	-2.71922
11	4	-9.19296	-20.89670	-7.39287
11	5	-9.81370	-31.44891	-14.43168
11	6	-10.40468	NUMXQ(K)= 6	
		2.974E-03	0.084	1.000
		1.524E-03	0.251	3.000

1.090E-03	0.419	5.000
6.712E-04	0.837	10.000
4.958E-04	1.256	15.000
3.933E-04	1.675	20.000
3.239E-04	2.094	25.000
2.750E-04	2.512	30.000
2.353E-04	2.931	35.000
2.003E-04	3.350	40.000
1.731E-04	3.769	45.000
1.516E-04	4.187	50.000
1.341E-04	4.606	55.000
1.197E-04	5.025	60.000
1.076E-04	5.444	65.000
9.017E-05	5.862	70.000
6.969E-05	6.281	75.000
5.445E-05	6.700	80.000
3.455E-05	7.118	85.000
9.663E-04	0.5	5.97

ANNUAL AVERAGE = 2.70E-05

K= 11 FIVEXQ(K)= 9.663E-04 FIVEPR(K)= 5.970

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

PARAMETER VALUES FOR THE CHI/Q CALCULATIONS FOR THE ENE SECTOR.										** CHI/Q VALUES (SEC/CUBIC METER)		
STABILITY	WINDSPEED	FREQUENCY	DISTANCE	TERRAIN HT	EFF PLUME HT	SIGMA-Y	SIGMA-Z	MEANDER-SY		MEANDER	BLDG WAKE	USED
CLASS	METER/SEC	PERCENT	METERS	METERS	METERS	METERS	METERS	METERS				
AT 10.0 METERS										CA=1236.SQ.METERS		
A	1.5	0.13	425.	0.	0.	86.5	92.7	86.5		2.599E-05	2.478E-05	2.478E-05
A	3.3	3.14	425.	0.	0.	86.5	92.7	86.5		1.213E-05	1.156E-05	1.156E-05
A	5.5	3.23	425.	0.	0.	86.5	92.7	86.5		7.278E-06	6.937E-06	6.937E-06
A	8.1	0.13	425.	0.	0.	86.5	92.7	86.5		4.917E-06	4.687E-06	4.687E-06
B	1.5	0.13	425.	0.	0.	65.0	43.3	65.0		7.398E-05	6.491E-05	6.491E-05
B	3.3	3.33	425.	0.	0.	65.0	43.3	65.0		3.452E-05	3.029E-05	3.029E-05
B	5.5	1.75	425.	0.	0.	65.0	43.3	65.0		2.071E-05	1.817E-05	1.817E-05
B	8.1	0.11	425.	0.	0.	65.0	43.3	65.0		1.400E-05	1.228E-05	1.228E-05
C	1.5	0.41	425.	0.	0.	49.4	28.0	49.4		1.505E-04	1.172E-04	1.172E-04
C	3.3	4.57	425.	0.	0.	49.4	28.0	49.4		7.024E-05	5.470E-05	5.470E-05
C	5.5	1.41	425.	0.	0.	49.4	28.0	49.4		4.215E-05	3.282E-05	3.282E-05
C	8.1	0.17	425.	0.	0.	49.4	28.0	49.4		2.848E-05	2.217E-05	2.217E-05
D	0.3	0.01	425.	0.	0.	34.8	16.2	69.6		8.649E-04	1.018E-03	8.649E-04
D	1.5	6.73	425.	0.	0.	34.8	16.2	69.6		1.853E-04	2.180E-04	1.853E-04
D	3.3	19.56	425.	0.	0.	34.8	16.2	51.0		1.180E-04	1.018E-04	1.018E-04
D	5.5	5.11	425.	0.	0.	34.8	16.2	36.9		9.775E-05	6.105E-05	6.105E-05
D	8.1	0.21	425.	0.	0.	34.8	16.2	34.8		7.012E-05	4.125E-05	4.125E-05
E	0.3	0.10	425.	0.	0.	24.7	11.5	74.2		1.170E-03	1.470E-03	1.170E-03
E	1.5	13.10	425.	0.	0.	24.7	11.5	74.2		2.506E-04	3.151E-04	2.506E-04
E	3.2	11.86	425.	0.	0.	24.7	11.5	46.4		1.870E-04	1.470E-04	1.470E-04
E	5.3	2.12	425.	0.	0.	24.7	11.5	27.9		1.870E-04	8.822E-05	8.822E-05
E	7.9	0.04	425.	0.	0.	24.7	11.5	24.7		1.423E-04	5.961E-05	5.961E-05
F	0.3	0.34	425.	0.	0.	17.1	7.2	68.3		2.018E-03	2.690E-03	2.018E-03
F	1.5	9.96	425.	0.	0.	17.1	7.2	68.3		4.324E-04	5.765E-04	4.324E-04
F	3.2	1.82	425.	0.	0.	17.1	7.2	37.8		3.647E-04	2.690E-04	2.690E-04
F	5.3	0.02	425.	0.	0.	17.1	7.2	19.8		4.169E-04	1.614E-04	1.614E-04
G	0.3	1.18	425.	0.	0.	11.8	4.6	70.7		3.094E-03	6.188E-03	3.094E-03
G	1.5	8.89	425.	0.	0.	11.8	4.6	70.7		6.630E-04	1.326E-03	6.630E-04
G	3.2	0.43	425.	0.	0.	11.8	4.6	32.9		6.648E-04	6.188E-04	6.188E-04

USNRC COMPUTER CODE-PAVAN, VERSION 2.0 RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2 METEOROLOGICAL INSTRUMENTATION
DATA PERIOD: 1988-96 AVG. MET. WIND SENSORS HEIGHT: 11.0 METERS
TYPE OF RELEASE: GROUND-LEVEL RELEASE DELTA-T HEIGHTS: 9.3 - 60.8 METERS
SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)
COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS
PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

SITE EXCLUSION BOUNDARY CALCULATIONS:

ENE SECTOR BOUNDARY DISTANCE = 425.0 METERS

LATERAL PLUME MEANDER/BUILDING WAKE CREDIT ALLOWED
AS A FUNCTION OF DOWNWIND DISTANCE.
MEANDER CREDIT IS FOR WINDSPEEDS LESS THAN 6 MPS.
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

3.094E-03	2.018E-03	1.170E-03	8.649E-04	6.630E-04	6.188E-04	4.324E-04	2.690E-04	2.506E-04	1.853E-04
1.183	1.527	1.625	1.634	10.526	10.953	20.914	22.731	35.833	42.566
0.07216	0.09315	0.09907	0.09964	0.64193	0.66801	1.27548	1.38629	2.18539	2.59602
1.614E-04	1.470E-04	1.172E-04	1.018E-04	8.822E-05	6.491E-05	6.105E-05	5.961E-05	5.470E-05	4.125E-05
42.588	54.451	54.857	74.415	76.531	76.659	81.767	81.810	86.384	86.598
2.59733	3.32082	3.34559	4.53838	4.66743	4.67525	4.98681	4.98942	5.26839	5.28143
3.282E-05	3.029E-05	2.478E-05	2.217E-05	1.817E-05	1.228E-05	1.156E-05	6.937E-06	4.687E-06	
88.009	91.343	91.472	91.643	93.395	93.502	96.644	99.872	100.000	
5.36746	5.57082	5.57865	5.58907	5.69597	5.70249	5.89411	6.09096	6.09878	

X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(2)= 1.274
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(3)= 2.183
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(4)= 4.535
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(5)= 5.265
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(6)= 5.567

K	I	XQSAVE(K,I)	XQINT(K,I)	XQSLOP(K,I)
12	1	-5.77827	-12.36379	-2.06693
12	2	-7.74620	-13.36704	-2.51600
12	3	-8.29147	-13.87716	-2.76887
12	4	-9.19296	-23.77431	-8.61916
12	5	-9.81370	-44.59494	-21.47364
12	6	-10.40468	NUMXQ(K)= 6	

BACK EXTRAPOLATION FOR 1 PERCENTILE.

3.419E-03 0.061 1.000

1.736E-03	0.183	3.000
1.238E-03	0.305	5.000
7.598E-04	0.610	10.000
5.610E-04	0.915	15.000
4.481E-04	1.220	20.000
3.626E-04	1.525	25.000
3.015E-04	1.830	30.000
2.569E-04	2.135	35.000
2.204E-04	2.440	40.000
1.915E-04	2.744	45.000
1.685E-04	3.049	50.000
1.498E-04	3.354	55.000
1.343E-04	3.659	60.000
1.213E-04	3.964	65.000
1.102E-04	4.269	70.000
9.853E-05	4.574	75.000
7.547E-05	4.879	80.000
5.855E-05	5.184	85.000
3.546E-05	5.489	90.000

8.771E-04 0.5 8.20

ANNUAL AVERAGE = 2.17E-05

K= 12 FIVEXQ(K)= 8.771E-04 FIVEPR(K)= 8.198

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

PARAMETER VALUES FOR THE CHI/Q CALCULATIONS FOR THE E SECTOR.										** CHI/Q VALUES (SEC/CUBIC METER)		
STABILITY CLASS	WINDSPEED METER/SEC	FREQUENCY PERCENT	DISTANCE METERS	TERRAIN HT METERS	HT EFF METERS	PLUME HT METERS	SIGMA-Y METERS	SIGMA-Z METERS	MEANDER-SY METERS	MEANDER	BLDG WAKE	USED
AT 10.0 METERS										CA=1236.SQ.METERS		
A	1.5	0.06	425.	0.	0.		86.5	92.7	86.5	2.599E-05	2.478E-05	2.478E-05
A	3.3	3.21	425.	0.	0.		86.5	92.7	86.5	1.213E-05	1.156E-05	1.156E-05
A	5.5	2.31	425.	0.	0.		86.5	92.7	86.5	7.278E-06	6.937E-06	6.937E-06
B	1.5	0.20	425.	0.	0.		65.0	43.3	65.0	7.398E-05	6.491E-05	6.491E-05
B	3.3	2.93	425.	0.	0.		65.0	43.3	65.0	3.452E-05	3.029E-05	3.029E-05
B	5.5	1.46	425.	0.	0.		65.0	43.3	65.0	2.071E-05	1.817E-05	1.817E-05
B	8.1	0.14	425.	0.	0.		65.0	43.3	65.0	1.400E-05	1.228E-05	1.228E-05
C	1.5	0.28	425.	0.	0.		49.4	28.0	49.4	1.505E-04	1.172E-04	1.172E-04
C	3.3	3.55	425.	0.	0.		49.4	28.0	49.4	7.024E-05	5.470E-05	5.470E-05
C	5.5	1.41	425.	0.	0.		49.4	28.0	49.4	4.215E-05	3.282E-05	3.282E-05
C	8.1	0.11	425.	0.	0.		49.4	28.0	49.4	2.848E-05	2.217E-05	2.217E-05
D	0.3	0.01	425.	0.	0.		34.8	16.2	69.6	8.649E-04	1.018E-03	8.649E-04
D	1.5	7.85	425.	0.	0.		34.8	16.2	69.6	1.853E-04	2.180E-04	1.853E-04
D	3.3	18.04	425.	0.	0.		34.8	16.2	51.0	1.180E-04	1.018E-04	1.018E-04
D	5.5	4.31	425.	0.	0.		34.8	16.2	36.9	9.775E-05	6.105E-05	6.105E-05
D	8.1	0.39	425.	0.	0.		34.8	16.2	34.8	7.012E-05	4.125E-05	4.125E-05
D	10.9	0.03	425.	0.	0.		34.8	16.2	34.8	5.189E-05	3.053E-05	3.053E-05
E	0.3	0.10	425.	0.	0.		24.7	11.5	74.2	1.170E-03	1.470E-03	1.170E-03
E	1.5	13.59	425.	0.	0.		24.7	11.5	74.2	2.506E-04	3.151E-04	2.506E-04
E	3.2	8.75	425.	0.	0.		24.7	11.5	46.4	1.870E-04	1.470E-04	1.470E-04
E	5.3	0.53	425.	0.	0.		24.7	11.5	27.9	1.870E-04	8.822E-05	8.822E-05
E	7.9	0.08	425.	0.	0.		24.7	11.5	24.7	1.423E-04	5.961E-05	5.961E-05
F	0.3	0.44	425.	0.	0.		17.1	7.2	68.3	2.018E-03	2.690E-03	2.018E-03
F	1.5	12.66	425.	0.	0.		17.1	7.2	68.3	4.324E-04	5.765E-04	4.324E-04
F	3.2	0.79	425.	0.	0.		17.1	7.2	37.8	3.647E-04	2.690E-04	2.690E-04
F	5.3	0.03	425.	0.	0.		17.1	7.2	19.8	4.169E-04	1.614E-04	1.614E-04
G	0.3	1.95	425.	0.	0.		11.8	4.6	70.7	3.094E-03	6.188E-03	3.094E-03
G	1.5	14.69	425.	0.	0.		11.8	4.6	70.7	6.630E-04	1.326E-03	6.630E-04
G	3.2	0.11	425.	0.	0.		11.8	4.6	32.9	6.648E-04	6.188E-04	6.188E-04

USNRC COMPUTER CODE-PAVAN, VERSION 2.0 RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2 METEOROLOGICAL INSTRUMENTATION
DATA PERIOD: 1988-96 AVG. MET. WIND SENSORS HEIGHT: 11.0 METERS
TYPE OF RELEASE: GROUND-LEVEL RELEASE DELTA-T HEIGHTS: 9.3 - 60.8 METERS
SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)
COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS
PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

SITE EXCLUSION BOUNDARY CALCULATIONS:

E SECTOR BOUNDARY DISTANCE = 425.0 METERS

LATERAL PLUME MEANDER/BUILDING WAKE CREDIT ALLOWED
AS A FUNCTION OF DOWNWIND DISTANCE.
MEANDER CREDIT IS FOR WINDSPEEDS LESS THAN 6 MPS.
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

3.094E-03	2.018E-03	1.170E-03	8.649E-04	6.630E-04	6.188E-04	4.324E-04	2.690E-04	2.506E-04	1.853E-04
1.954	2.392	2.493	2.503	17.191	17.304	29.966	30.754	44.344	52.194
0.09054	0.11082	0.11548	0.11598	0.79646	0.80167	1.38829	1.42479	2.05443	2.41813
1.614E-04	1.470E-04	1.172E-04	1.018E-04	8.822E-05	6.491E-05	6.105E-05	5.961E-05	5.470E-05	4.125E-05
52.222	60.973	61.255	79.291	79.825	80.022	84.327	84.412	87.957	88.351
2.41944	2.82485	2.83789	3.67349	3.69826	3.70739	3.90684	3.91075	4.07500	4.09325
3.282E-05	3.053E-05	3.029E-05	2.478E-05	2.217E-05	1.817E-05	1.228E-05	1.156E-05	6.937E-06	
89.758	89.786	92.712	92.769	92.881	94.344	94.485	97.693	100.000	
4.15843	4.15973	4.29531	4.29791	4.30313	4.37091	4.37743	4.52604	4.63294	

X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(2)= 1.387
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(3)= 2.052
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(4)= 3.670
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(5)= 4.072
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(6)= 4.292

K	I	XQSAVE(K,I)	XQINT(K,I)	XQSLOP(K,I)
13	1	-5.77827	-12.46007	-2.14167
13	2	-7.74620	-15.34454	-3.45219
13	3	-8.29147	-15.57795	-3.56643
13	4	-9.19296	-32.41053	-12.96852
13	5	-9.81370	-51.57900	-23.96948
13	6	-10.40468	NUMXQ(K)= 6	

BACK EXTRAPOLATION FOR 1 PERCENTILE.

4.670E-03	0.046	1.000
-----------	-------	-------

2.350E-03	0.139	3.000
1.670E-03	0.232	5.000
1.022E-03	0.463	10.000
7.534E-04	0.695	15.000
6.016E-04	0.927	20.000
5.025E-04	1.158	25.000
4.317E-04	1.390	30.000
3.497E-04	1.622	35.000
2.902E-04	1.853	40.000
2.453E-04	2.085	45.000
2.095E-04	2.316	50.000
1.813E-04	2.548	55.000
1.585E-04	2.780	60.000
1.399E-04	3.011	65.000
1.244E-04	3.243	70.000
1.114E-04	3.475	75.000
9.652E-05	3.706	80.000
6.721E-05	3.938	85.000
4.230E-05	4.170	90.000
9.657E-04	0.5	10.79

ANNUAL AVERAGE = 3.03E-05

K= 13 FIVEXQ(K)= 9.657E-04 FIVEPR(K)=10.792

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

PARAMETER VALUES FOR THE CHI/Q CALCULATIONS FOR THE ESE SECTOR.											
STABILITY	WINDSPEED	FREQUENCY	DISTANCE	TERRAIN HT	EFF PLUME HT	SIGMA-Y	SIGMA-Z	MEANDER-SY	** CHI/Q VALUES (SEC/CUBIC METER)		
CLASS	METER/SEC	PERCENT	METERS	METERS	METERS	METERS	METERS	METERS	MEANDER	BLDG WAKE	USED
AT 10.0 METERS											
CA=1236.SQ.METERS											
A	1.5	0.06	425.	0.	0.	86.5	92.7	86.5	2.599E-05	2.478E-05	2.478E-05
A	3.3	1.61	425.	0.	0.	86.5	92.7	86.5	1.213E-05	1.156E-05	1.156E-05
A	5.5	3.13	425.	0.	0.	86.5	92.7	86.5	7.278E-06	6.937E-06	6.937E-06
A	8.1	0.03	425.	0.	0.	86.5	92.7	86.5	4.917E-06	4.687E-06	4.687E-06
B	1.5	0.11	425.	0.	0.	65.0	43.3	65.0	7.398E-05	6.491E-05	6.491E-05
B	3.3	1.95	425.	0.	0.	65.0	43.3	65.0	3.452E-05	3.029E-05	3.029E-05
B	5.5	1.78	425.	0.	0.	65.0	43.3	65.0	2.071E-05	1.817E-05	1.817E-05
B	8.1	0.11	425.	0.	0.	65.0	43.3	65.0	1.400E-05	1.228E-05	1.228E-05
C	1.5	0.23	425.	0.	0.	49.4	28.0	49.4	1.505E-04	1.172E-04	1.172E-04
C	3.3	3.02	425.	0.	0.	49.4	28.0	49.4	7.024E-05	5.470E-05	5.470E-05
C	5.5	1.86	425.	0.	0.	49.4	28.0	49.4	4.215E-05	3.282E-05	3.282E-05
C	8.1	0.28	425.	0.	0.	49.4	28.0	49.4	2.848E-05	2.217E-05	2.217E-05
D	0.3	0.01	425.	0.	0.	34.8	16.2	69.6	8.649E-04	1.018E-03	8.649E-04
D	1.5	6.80	425.	0.	0.	34.8	16.2	69.6	1.853E-04	2.180E-04	1.853E-04
D	3.3	11.88	425.	0.	0.	34.8	16.2	51.0	1.180E-04	1.018E-04	1.018E-04
D	5.5	5.02	425.	0.	0.	34.8	16.2	36.9	9.775E-05	6.105E-05	6.105E-05
D	8.1	0.45	425.	0.	0.	34.8	16.2	34.8	7.012E-05	4.125E-05	4.125E-05
E	0.3	0.09	425.	0.	0.	24.7	11.5	74.2	1.170E-03	1.470E-03	1.170E-03
E	1.5	11.97	425.	0.	0.	24.7	11.5	74.2	2.506E-04	3.151E-04	2.506E-04
E	3.2	7.40	425.	0.	0.	24.7	11.5	46.4	1.870E-04	1.470E-04	1.470E-04
E	5.3	1.30	425.	0.	0.	24.7	11.5	27.9	1.870E-04	8.822E-05	8.822E-05
E	7.9	0.06	425.	0.	0.	24.7	11.5	24.7	1.423E-04	5.961E-05	5.961E-05
F	0.3	0.42	425.	0.	0.	17.1	7.2	68.3	2.018E-03	2.690E-03	2.018E-03
F	1.5	12.17	425.	0.	0.	17.1	7.2	68.3	4.324E-04	5.765E-04	4.324E-04
F	3.2	2.29	425.	0.	0.	17.1	7.2	37.8	3.647E-04	2.690E-04	2.690E-04
G	0.3	3.02	425.	0.	0.	11.8	4.6	70.7	3.094E-03	6.188E-03	3.094E-03
G	1.5	22.70	425.	0.	0.	11.8	4.6	70.7	6.630E-04	1.326E-03	6.630E-04
G	3.2	0.25	425.	0.	0.	11.8	4.6	32.9	6.648E-04	6.188E-04	6.188E-04

USNRC COMPUTER CODE-PAVAN, VERSION 2.0 RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2 METEOROLOGICAL INSTRUMENTATION
DATA PERIOD: 1988-96 AVG. MET. WIND SENSORS HEIGHT: 11.0 METERS
TYPE OF RELEASE: GROUND-LEVEL RELEASE DELTA-T HEIGHTS: 9.3 - 60.8 METERS
SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)
COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS
PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

SITE EXCLUSION BOUNDARY CALCULATIONS:

ESE SECTOR BOUNDARY DISTANCE = 425.0 METERS

LATERAL PLUME MEANDER/BUILDING WAKE CREDIT ALLOWED
AS A FUNCTION OF DOWNWIND DISTANCE.
MEANDER CREDIT IS FOR WINDSPEEDS LESS THAN 6 MPS.
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

3.094E-03	2.018E-03	1.170E-03	8.649E-04	6.630E-04	6.188E-04	4.324E-04	2.690E-04	2.506E-04	1.853E-04
3.020	3.441	3.529	3.539	26.235	26.489	38.657	40.943	52.913	59.716
0.13946	0.15888	0.16297	0.16340	1.21149	1.22323	1.78508	1.89067	2.44339	2.75756
1.470E-04	1.172E-04	1.018E-04	8.822E-05	6.491E-05	6.105E-05	5.961E-05	5.470E-05	4.125E-05	3.282E-05
67.112	67.338	79.223	80.521	80.634	85.659	85.716	88.736	89.188	91.051
3.09910	3.10953	3.65834	3.71831	3.72352	3.95556	3.95817	4.09765	4.11851	4.20455
3.029E-05	2.478E-05	2.217E-05	1.817E-05	1.228E-05	1.156E-05	6.937E-06	4.687E-06		
92.999	93.055	93.338	95.116	95.229	96.838	99.972	100.000		
4.29449	4.29710	4.31014	4.39226	4.39748	4.47178	4.61648	4.61778		

X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(2)= 1.210
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(3)= 1.783
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(4)= 2.441
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(5)= 3.655
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(6)= 4.094
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(7)= 4.291

K	I	XQSAVE(K,I)	XQINT(K,I)	XQSLOP(K,I)
14	1	-5.77827	-12.03307	-2.09164
14	2	-7.31872	-13.60987	-2.79122
14	3	-7.74620	-16.51855	-4.17581
14	4	-8.29147	-18.27039	-5.06499
14	5	-9.19296	-30.44886	-11.86029
14	6	-9.81370	-56.58886	-26.88456
14	7	-10.40468	NUMXQ(K)= 7	

BACK EXTRAPOLATION FOR 1 PERCENTILE.
BACK EXTRAPOLATION FOR 3 PERCENTILE.

6.076E-03	0.046	1.000
3.107E-03	0.139	3.000
2.226E-03	0.231	5.000
1.378E-03	0.462	10.000
1.023E-03	0.693	15.000
8.217E-04	0.924	20.000
6.892E-04	1.154	25.000
5.734E-04	1.385	30.000
4.835E-04	1.616	35.000
4.080E-04	1.847	40.000
3.332E-04	2.078	45.000
2.771E-04	2.309	50.000
2.305E-04	2.540	55.000
1.905E-04	2.771	60.000
1.595E-04	3.002	65.000
1.351E-04	3.232	70.000
1.154E-04	3.463	75.000
9.651E-05	3.694	80.000
6.933E-05	3.925	85.000
4.580E-05	4.156	90.000
1.301E-03	0.5	10.83
ANNUAL AVERAGE = 3.89E-05		
K= 14	FIVEXQ(K)= 1.301E-03	FIVEPR(K)=10.828

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

PARAMETER VALUES FOR THE CHI/Q CALCULATIONS FOR THE SE SECTOR.										** CHI/Q VALUES (SEC/CUBIC METER)		
STABILITY CLASS	WINDSPEED METER/SEC	FREQUENCY PERCENT	DISTANCE METERS	TERRAIN METERS	HT EFF METERS	PLUME HT METERS	SIGMA-Y METERS	SIGMA-Z METERS	MEANDER-SY METERS	MEANDER	BLDG WAKE	USED
AT 10.0 METERS										CA=1236.SQ.METERS		
A	1.5	0.05	425.	0.	0.		86.5	92.7	86.5	2.599E-05	2.478E-05	2.478E-05
A	3.3	0.98	425.	0.	0.		86.5	92.7	86.5	1.213E-05	1.156E-05	1.156E-05
A	5.5	2.90	425.	0.	0.		86.5	92.7	86.5	7.278E-06	6.937E-06	6.937E-06
A	8.1	0.25	425.	0.	0.		86.5	92.7	86.5	4.917E-06	4.687E-06	4.687E-06
B	1.5	0.11	425.	0.	0.		65.0	43.3	65.0	7.398E-05	6.491E-05	6.491E-05
B	3.3	1.00	425.	0.	0.		65.0	43.3	65.0	3.452E-05	3.029E-05	3.029E-05
B	5.5	1.38	425.	0.	0.		65.0	43.3	65.0	2.071E-05	1.817E-05	1.817E-05
B	8.1	0.07	425.	0.	0.		65.0	43.3	65.0	1.400E-05	1.228E-05	1.228E-05
C	1.5	0.11	425.	0.	0.		49.4	28.0	49.4	1.505E-04	1.172E-04	1.172E-04
C	3.3	1.79	425.	0.	0.		49.4	28.0	49.4	7.024E-05	5.470E-05	5.470E-05
C	5.5	1.04	425.	0.	0.		49.4	28.0	49.4	4.215E-05	3.282E-05	3.282E-05
C	8.1	0.07	425.	0.	0.		49.4	28.0	49.4	2.848E-05	2.217E-05	2.217E-05
D	0.3	0.01	425.	0.	0.		34.8	16.2	69.6	8.649E-04	1.018E-03	8.649E-04
D	1.5	3.99	425.	0.	0.		34.8	16.2	69.6	1.853E-04	2.180E-04	1.853E-04
D	3.3	10.82	425.	0.	0.		34.8	16.2	51.0	1.180E-04	1.018E-04	1.018E-04
D	5.5	4.24	425.	0.	0.		34.8	16.2	36.9	9.775E-05	6.105E-05	6.105E-05
D	8.1	0.18	425.	0.	0.		34.8	16.2	34.8	7.012E-05	4.125E-05	4.125E-05
D	10.9	0.02	425.	0.	0.		34.8	16.2	34.8	5.189E-05	3.053E-05	3.053E-05
E	0.3	0.07	425.	0.	0.		24.7	11.5	74.2	1.170E-03	1.470E-03	1.170E-03
E	1.5	9.19	425.	0.	0.		24.7	11.5	74.2	2.506E-04	3.151E-04	2.506E-04
E	3.2	13.30	425.	0.	0.		24.7	11.5	46.4	1.870E-04	1.470E-04	1.470E-04
E	5.3	1.52	425.	0.	0.		24.7	11.5	27.9	1.870E-04	8.822E-05	8.822E-05
F	0.3	0.48	425.	0.	0.		17.1	7.2	68.3	2.018E-03	2.690E-03	2.018E-03
F	1.5	13.82	425.	0.	0.		17.1	7.2	68.3	4.324E-04	5.765E-04	4.324E-04
F	3.2	4.63	425.	0.	0.		17.1	7.2	37.8	3.647E-04	2.690E-04	2.690E-04
G	0.3	3.25	425.	0.	0.		11.8	4.6	70.7	3.094E-03	6.188E-03	3.094E-03
G	1.5	24.39	425.	0.	0.		11.8	4.6	70.7	6.630E-04	1.326E-03	6.630E-04
G	3.2	0.34	425.	0.	0.		11.8	4.6	32.9	6.648E-04	6.188E-04	6.188E-04

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

SITE EXCLUSION BOUNDARY CALCULATIONS:

SE SECTOR BOUNDARY DISTANCE = 425.0 METERS

LATERAL PLUME MEANDER/BUILDING WAKE CREDIT ALLOWED
AS A FUNCTION OF DOWNWIND DISTANCE.
MEANDER CREDIT IS FOR WINDSPEEDS LESS THAN 6 MPS.
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

3.094E-03	2.018E-03	1.170E-03	8.649E-04	6.630E-04	6.188E-04	4.324E-04	2.690E-04	2.506E-04	1.853E-04
3.245	3.723	3.791	3.797	28.188	28.528	42.346	46.975	56.164	60.157
0.18646	0.21390	0.21781	0.21813	1.61949	1.63905	2.43294	2.69887	3.22682	3.45626
1.470E-04	1.172E-04	1.018E-04	8.822E-05	6.491E-05	6.105E-05	5.470E-05	4.125E-05	3.282E-05	3.053E-05
73.453	73.567	84.390	85.910	86.023	90.266	92.059	92.240	93.284	93.307
4.22016	4.22668	4.84850	4.93584	4.94235	5.18613	5.28911	5.29954	5.35950	5.36081
3.029E-05	2.478E-05	2.217E-05	1.817E-05	1.228E-05	1.156E-05	6.937E-06	4.687E-06		
94.305	94.350	94.418	95.802	95.871	96.846	99.750	100.000		
5.41817	5.42077	5.42468	5.50420	5.50811	5.56417	5.73103	5.74537		

X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(2)= 1.618
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(3)= 2.430
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(4)= 4.217
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(5)= 4.845
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(6)= 5.285
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(7)= 5.414

K	I	XQSAVE(K,I)	XQINT(K,I)	XQSLOP(K,I)
15	1	-5.77827	-11.65330	-2.02550
15	2	-7.31872	-12.76386	-2.54445
15	3	-7.74620	-16.39521	-4.38591
15	4	-8.82482	-18.45477	-5.57911
15	5	-9.19296	-33.55754	-14.67668
15	6	-9.81370	-90.45144	-49.84428
15	7	-10.40468	NUMXQ(K)= 7	

BACK EXTRAPOLATION FOR 1 PERCENTILE.
BACK EXTRAPOLATION FOR 3 PERCENTILE.

6.298E-03	0.057	1.000
3.252E-03	0.172	3.000
2.339E-03	0.287	5.000
1.454E-03	0.575	10.000
1.083E-03	0.862	15.000
8.701E-04	1.149	20.000
7.302E-04	1.436	25.000
6.221E-04	1.724	30.000
5.299E-04	2.011	35.000
4.598E-04	2.298	40.000
3.858E-04	2.585	45.000
3.157E-04	2.873	50.000
2.625E-04	3.160	55.000
2.212E-04	3.447	60.000
1.885E-04	3.734	65.000
1.623E-04	4.022	70.000
1.392E-04	4.309	75.000
1.174E-04	4.596	80.000
9.669E-05	4.884	85.000
6.435E-05	5.171	90.000
1.604E-03	0.5	8.70

ANNUAL AVERAGE = 4.63E-05

K= 15 FIVEXQ(K)= 1.604E-03 FIVEPR(K)= 8.703

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

PARAMETER VALUES FOR THE CHI/Q CALCULATIONS FOR THE SSE SECTOR.										** CHI/Q VALUES (SEC/CUBIC METER)		
STABILITY CLASS	WINDSPEED METER/SEC	FREQUENCY PERCENT	DISTANCE METERS	TERRAIN HT METERS	EFF PLUME HT METERS	SIGMA-Y METERS	SIGMA-Z METERS	MEANDER-SY METERS		MEANDER	BLDG WAKE	USED
AT 10.0 METERS										CA=1236.SQ.METERS		
A	1.5	0.05	425.	0.	0.	86.5	92.7	86.5		2.599E-05	2.478E-05	2.478E-05
A	3.3	0.64	425.	0.	0.	86.5	92.7	86.5		1.213E-05	1.156E-05	1.156E-05
A	5.5	1.97	425.	0.	0.	86.5	92.7	86.5		7.278E-06	6.937E-06	6.937E-06
A	8.1	0.12	425.	0.	0.	86.5	92.7	86.5		4.917E-06	4.687E-06	4.687E-06
B	1.5	0.02	425.	0.	0.	65.0	43.3	65.0		7.398E-05	6.491E-05	6.491E-05
B	3.3	0.88	425.	0.	0.	65.0	43.3	65.0		3.452E-05	3.029E-05	3.029E-05
B	5.5	1.04	425.	0.	0.	65.0	43.3	65.0		2.071E-05	1.817E-05	1.817E-05
B	8.1	0.08	425.	0.	0.	65.0	43.3	65.0		1.400E-05	1.228E-05	1.228E-05
C	1.5	0.12	425.	0.	0.	49.4	28.0	49.4		1.505E-04	1.172E-04	1.172E-04
C	3.3	1.70	425.	0.	0.	49.4	28.0	49.4		7.024E-05	5.470E-05	5.470E-05
C	5.5	0.89	425.	0.	0.	49.4	28.0	49.4		4.215E-05	3.282E-05	3.282E-05
C	8.1	0.03	425.	0.	0.	49.4	28.0	49.4		2.848E-05	2.217E-05	2.217E-05
D	0.3	0.00	425.	0.	0.	34.8	16.2	69.6		8.649E-04	1.018E-03	8.649E-04
D	1.5	3.22	425.	0.	0.	34.8	16.2	69.6		1.853E-04	2.180E-04	1.853E-04
D	3.3	13.16	425.	0.	0.	34.8	16.2	51.0		1.180E-04	1.018E-04	1.018E-04
D	5.5	6.00	425.	0.	0.	34.8	16.2	36.9		9.775E-05	6.105E-05	6.105E-05
D	8.1	0.36	425.	0.	0.	34.8	16.2	34.8		7.012E-05	4.125E-05	4.125E-05
E	0.3	0.06	425.	0.	0.	24.7	11.5	74.2		1.170E-03	1.470E-03	1.170E-03
E	1.5	8.41	425.	0.	0.	24.7	11.5	74.2		2.506E-04	3.151E-04	2.506E-04
E	3.2	15.72	425.	0.	0.	24.7	11.5	46.4		1.870E-04	1.470E-04	1.470E-04
E	5.3	3.62	425.	0.	0.	24.7	11.5	27.9		1.870E-04	8.822E-05	8.822E-05
E	7.9	0.08	425.	0.	0.	24.7	11.5	24.7		1.423E-04	5.961E-05	5.961E-05
F	0.3	0.40	425.	0.	0.	17.1	7.2	68.3		2.018E-03	2.690E-03	2.018E-03
F	1.5	11.46	425.	0.	0.	17.1	7.2	68.3		4.324E-04	5.765E-04	4.324E-04
F	3.2	4.66	425.	0.	0.	17.1	7.2	37.8		3.647E-04	2.690E-04	2.690E-04
F	5.3	0.02	425.	0.	0.	17.1	7.2	19.8		4.169E-04	1.614E-04	1.614E-04
G	0.3	2.70	425.	0.	0.	11.8	4.6	70.7		3.094E-03	6.188E-03	3.094E-03
G	1.5	20.30	425.	0.	0.	11.8	4.6	70.7		6.630E-04	1.326E-03	6.630E-04
G	3.2	2.28	425.	0.	0.	11.8	4.6	32.9		6.648E-04	6.188E-04	6.188E-04

USNRC COMPUTER CODE-PAVAN, VERSION 2.0 RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2 METEOROLOGICAL INSTRUMENTATION
DATA PERIOD: 1988-96 AVG. MET. WIND SENSORS HEIGHT: 11.0 METERS
TYPE OF RELEASE: GROUND-LEVEL RELEASE DELTA-T HEIGHTS: 9.3 - 60.8 METERS
SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)
COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS
PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

SITE EXCLUSION BOUNDARY CALCULATIONS:

SSE SECTOR BOUNDARY DISTANCE = 425.0 METERS

LATERAL PLUME MEANDER/BUILDING WAKE CREDIT ALLOWED
AS A FUNCTION OF DOWNWIND DISTANCE.
MEANDER CREDIT IS FOR WINDSPEEDS LESS THAN 6 MPS.
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

3.094E-03	2.018E-03	1.170E-03	8.649E-04	6.630E-04	6.188E-04	4.324E-04	2.690E-04	2.506E-04	1.853E-04
2.701	3.097	3.159	3.164	23.463	25.745	37.200	41.862	50.276	53.499
0.21300	0.24422	0.24914	0.24949	1.85031	2.03020	2.93359	3.30121	3.96474	4.21894
1.614E-04	1.470E-04	1.172E-04	1.018E-04	8.822E-05	6.491E-05	6.105E-05	5.961E-05	5.470E-05	4.125E-05
53.516	69.237	69.352	82.511	86.131	86.147	92.148	92.231	93.933	94.297
4.22024	5.45996	5.46908	6.50674	6.79223	6.79353	7.26674	7.27326	7.40753	7.43621
3.282E-05	3.029E-05	2.478E-05	2.217E-05	1.817E-05	1.228E-05	1.156E-05	6.937E-06	4.687E-06	
95.190	96.066	96.115	96.148	97.190	97.272	97.917	99.884	100.000	
7.50660	7.57569	7.57960	7.58221	7.66433	7.67085	7.72169	7.87682	7.88594	

X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

HANDCHECK GRAPH:	SLOPE LT -1.0 FOR LOW PERCENTAGES.	XSAVE(2)=	2.028
HANDCHECK GRAPH:	SLOPE LT -1.0 FOR LOW PERCENTAGES.	XSAVE(3)=	2.931
HANDCHECK GRAPH:	SLOPE LT -1.0 FOR LOW PERCENTAGES.	XSAVE(4)=	5.456
HANDCHECK GRAPH:	SLOPE LT -1.0 FOR LOW PERCENTAGES.	XSAVE(5)=	6.503
HANDCHECK GRAPH:	SLOPE LT -1.0 FOR LOW PERCENTAGES.	XSAVE(6)=	6.788
HANDCHECK GRAPH:	SLOPE LT -1.0 FOR LOW PERCENTAGES.	XSAVE(7)=	7.263

K	I	XQSAVE(K,I)	XQINT(K,I)	XQSLOP(K,I)
16	1	-5.77827	-11.45436	-1.98563
16	2	-7.38781	-12.06509	-2.28384
16	3	-7.74620	-14.80609	-3.73329
16	4	-8.82482	-15.50680	-4.17065
16	5	-9.19296	-18.95141	-6.44600
16	6	-9.33565	-24.91355	-10.44277
16	7	-9.70379	NUMXQ(K)= 7	

BACK EXTRAPOLATION FOR 1 PERCENTILE.

5.633E-03	0.079	1.000
2.895E-03	0.237	3.000
2.075E-03	0.394	5.000
1.281E-03	0.789	10.000
9.484E-04	1.183	15.000
7.586E-04	1.577	20.000
6.338E-04	1.971	25.000
5.345E-04	2.366	30.000
4.595E-04	2.760	35.000
3.836E-04	3.154	40.000
3.148E-04	3.549	45.000
2.628E-04	3.943	50.000
2.226E-04	4.337	55.000
1.907E-04	4.732	60.000
1.651E-04	5.126	65.000
1.438E-04	5.520	70.000
1.245E-04	5.914	75.000
1.087E-04	6.309	80.000
9.220E-05	6.703	85.000
6.947E-05	7.097	90.000
1.766E-03	0.5	6.34

ANNUAL AVERAGE = 5.83E-05

K= 16 FIVEXQ(K)= 1.766E-03 FIVEPR(K)= 6.340

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

PARAMETER VALUES FOR THE CHI/Q CALCULATIONS FOR THE ALL SECTOR.										** CHI/Q VALUES (SEC/CUBIC METER)		
STABILITY CLASS	WINDSPEED METER/SEC	FREQUENCY PERCENT	DISTANCE METERS	TERRAIN METERS	HT EFF METERS	PLUME HT METERS	SIGMA-Y METERS	SIGMA-Z METERS	MEANDER-SY METERS	MEANDER	BLDG WAKE	USED
AT 10.0 METERS										CA=1236.SQ.METERS		
A	1.5	0.17	425.	0.	0.	0.	86.5	92.7	86.5	2.599E-05	2.478E-05	2.478E-05
A	3.3	3.58	425.	0.	0.	0.	86.5	92.7	86.5	1.213E-05	1.156E-05	1.156E-05
A	5.5	2.95	425.	0.	0.	0.	86.5	92.7	86.5	7.278E-06	6.937E-06	6.937E-06
A	8.1	0.16	425.	0.	0.	0.	86.5	92.7	86.5	4.917E-06	4.687E-06	4.687E-06
A	10.9	0.00	425.	0.	0.	0.	86.5	92.7	86.5	3.639E-06	3.469E-06	3.469E-06
B	1.5	0.19	425.	0.	0.	0.	65.0	43.3	65.0	7.398E-05	6.491E-05	6.491E-05
B	3.3	3.00	425.	0.	0.	0.	65.0	43.3	65.0	3.452E-05	3.029E-05	3.029E-05
B	5.5	1.34	425.	0.	0.	0.	65.0	43.3	65.0	2.071E-05	1.817E-05	1.817E-05
B	8.1	0.09	425.	0.	0.	0.	65.0	43.3	65.0	1.400E-05	1.228E-05	1.228E-05
C	1.5	0.38	425.	0.	0.	0.	49.4	28.0	49.4	1.505E-04	1.172E-04	1.172E-04
C	3.3	3.88	425.	0.	0.	0.	49.4	28.0	49.4	7.024E-05	5.470E-05	5.470E-05
C	5.5	1.33	425.	0.	0.	0.	49.4	28.0	49.4	4.215E-05	3.282E-05	3.282E-05
C	8.1	0.09	425.	0.	0.	0.	49.4	28.0	49.4	2.848E-05	2.217E-05	2.217E-05
C	10.9	0.00	425.	0.	0.	0.	49.4	28.0	49.4	2.107E-05	1.641E-05	1.641E-05
D	0.3	0.01	425.	0.	0.	0.	34.8	16.2	34.8	1.730E-03	1.018E-03	1.018E-03
D	1.5	6.63	425.	0.	0.	0.	34.8	16.2	34.8	3.707E-04	2.180E-04	2.180E-04
D	3.3	22.68	425.	0.	0.	0.	34.8	16.2	34.8	1.730E-04	1.018E-04	1.018E-04
D	5.5	6.75	425.	0.	0.	0.	34.8	16.2	34.8	1.038E-04	6.105E-05	6.105E-05
D	8.1	0.45	425.	0.	0.	0.	34.8	16.2	34.8	7.012E-05	4.125E-05	4.125E-05
D	10.9	0.01	425.	0.	0.	0.	34.8	16.2	34.8	5.189E-05	3.053E-05	3.053E-05
E	0.3	0.09	425.	0.	0.	0.	24.7	11.5	24.7	3.509E-03	1.470E-03	1.470E-03
E	1.5	11.96	425.	0.	0.	0.	24.7	11.5	24.7	7.519E-04	3.151E-04	3.151E-04
E	3.2	11.10	425.	0.	0.	0.	24.7	11.5	24.7	3.509E-04	1.470E-04	1.470E-04
E	5.3	1.58	425.	0.	0.	0.	24.7	11.5	24.7	2.105E-04	8.822E-05	8.822E-05
E	7.9	0.09	425.	0.	0.	0.	24.7	11.5	24.7	1.423E-04	5.961E-05	5.961E-05
E	10.7	0.00	425.	0.	0.	0.	24.7	11.5	24.7	1.053E-04	4.411E-05	4.411E-05
F	0.3	0.28	425.	0.	0.	0.	17.1	7.2	17.1	8.071E-03	2.690E-03	2.690E-03
F	1.5	8.15	425.	0.	0.	0.	17.1	7.2	17.1	1.730E-03	5.765E-04	5.765E-04
F	3.2	1.54	425.	0.	0.	0.	17.1	7.2	17.1	8.071E-04	2.690E-04	2.690E-04
F	5.3	0.02	425.	0.	0.	0.	17.1	7.2	17.1	4.843E-04	1.614E-04	1.614E-04
F	7.9	0.00	425.	0.	0.	0.	17.1	7.2	17.1	3.272E-04	1.091E-04	1.091E-04
G	0.3	1.31	425.	0.	0.	0.	11.8	4.6	11.8	1.856E-02	6.188E-03	6.188E-03
G	1.5	9.83	425.	0.	0.	0.	11.8	4.6	11.8	3.978E-03	1.326E-03	1.326E-03
G	3.2	0.34	425.	0.	0.	0.	11.8	4.6	11.8	1.856E-03	6.188E-04	6.188E-04
G	5.3	0.00	425.	0.	0.	0.	11.8	4.6	11.8	1.114E-03	3.713E-04	3.713E-04

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

SITE EXCLUSION BOUNDARY CALCULATIONS:
DIRECTION-INDEPENDENT (S.R.P 2.3.4) MODEL.
MINIMUM BOUNDARY DISTANCE = 425.0 METERS.
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

6.188E-03	2.690E-03	1.470E-03	1.326E-03	1.018E-03	6.188E-04	5.765E-04	3.713E-04	3.151E-04	2.690E-04
1.308	1.589	1.678	11.504	11.513	11.851	19.998	20.000	31.959	33.504
1.30750	1.58908	1.67773	11.50422	11.51334	11.85097	19.99844	19.99974	31.95891	33.50367
2.180E-04	1.614E-04	1.470E-04	1.172E-04	1.091E-04	1.018E-04	8.822E-05	6.491E-05	6.105E-05	5.961E-05
40.138	40.153	51.249	51.633	51.635	74.317	75.895	76.087	82.837	82.927
40.13766	40.15331	51.24950	51.63276	51.63536	74.31659	75.89524	76.08687	82.83688	82.92683
5.470E-05	4.411E-05	4.125E-05	3.282E-05	3.053E-05	3.029E-05	2.478E-05	2.217E-05	1.817E-05	1.641E-05
86.809	86.813	87.268	88.599	88.605	91.610	91.781	91.871	93.207	93.208
86.80893	86.81284	87.26780	88.59877	88.60529	91.61007	91.78084	91.87079	93.20697	93.20827
1.228E-05	1.156E-05	6.937E-06	4.687E-06	3.469E-06					
93.302	96.886	99.836	99.997	100.000					
93.30213	96.88572	99.83575	99.99740	100.00000					

X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

ERROR IN NORMAL TRANSFORMATION FOR A(35)= 100.00000
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(2)= 11.502
BACK EXTRAPOLATION FOR 1 PERCENTILE.

7.217E-03	1.000	1.000
3.693E-03	3.000	3.000
2.589E-03	5.000	5.000
1.499E-03	10.000	10.000
9.896E-04	15.000	15.000
6.986E-04	20.000	20.000
5.182E-04	25.000	25.000
3.963E-04	30.000	30.000
3.091E-04	35.000	35.000
2.442E-04	40.000	40.000
1.945E-04	45.000	45.000

1.555E-04	50.000	50.000
1.391E-04	55.000	55.000
1.289E-04	60.000	60.000
1.193E-04	65.000	65.000
1.098E-04	70.000	70.000
9.889E-05	75.000	75.000
7.909E-05	80.000	80.000
6.095E-05	85.000	85.000
4.766E-05	90.000	90.000
2.589E-03	5.0	5.00

K= 17 FIVEXQ(K)= 2.589E-03 FIVEPR(K)= 5.000

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

SITE EXCLUSION BOUNDARY CALCULATIONS:

FIVE PERCENT OVERALL SITE LIMIT
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

3.094E-03	2.018E-03	1.170E-03	8.649E-04	6.630E-04	6.188E-04	4.324E-04	3.713E-04	2.690E-04	2.506E-04
1.308	1.589	1.678	1.687	11.513	11.851	19.998	20.000	21.544	33.504
1.30750	1.58908	1.67773	1.68685	11.51334	11.85097	19.99844	19.99974	21.54450	33.50366
1.853E-04	1.614E-04	1.470E-04	1.172E-04	1.091E-04	1.018E-04	8.822E-05	6.491E-05	6.105E-05	5.961E-05
40.138	40.153	51.249	51.633	51.635	74.317	75.895	76.087	82.837	82.927
40.13765	40.15329	51.24949	51.63274	51.63535	74.31658	75.89523	76.08685	82.83687	82.92683
5.470E-05	4.411E-05	4.125E-05	3.282E-05	3.053E-05	3.029E-05	2.478E-05	2.217E-05	1.817E-05	1.641E-05
86.809	86.813	87.268	88.599	88.605	91.610	91.781	91.871	93.207	93.208
86.80894	86.81286	87.26782	88.59879	88.60532	91.61010	91.78087	91.87083	93.20701	93.20831
1.228E-05	1.156E-05	6.937E-06	4.687E-06	3.469E-06					
93.302	96.886	99.836	99.997	100.000					
93.30217	96.88577	99.83581	99.99745	100.00010					

X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

ERROR IN NORMAL TRANSFORMATION FOR A(35)= 100.00010

K	I	XQSAVE(K,I)	XQINT(K,I)	XQSLOP(K,I)
18	1	-5.77827	-8.88611	-1.39715
18	2	-8.29147	-8.64725	-0.83593
18	3	-9.19296	-8.32084	-1.33593
18	4	-9.81370	-8.87774	-0.83757
18	5	-12.27067	NUMXQ(K)= 5	

BACK EXTRAPOLATION FOR 1 PERCENTILE.

3.570E-03	1.000	1.000
1.915E-03	3.000	3.000
1.377E-03	5.000	5.000
8.290E-04	10.000	10.000
5.884E-04	15.000	15.000

4.481E-04	20.000	20.000
3.547E-04	25.000	25.000
2.876E-04	30.000	30.000
2.423E-04	35.000	35.000
2.170E-04	40.000	40.000
1.950E-04	45.000	45.000
1.756E-04	50.000	50.000
1.581E-04	55.000	55.000
1.421E-04	60.000	60.000
1.273E-04	65.000	65.000
1.133E-04	70.000	70.000
9.889E-05	75.000	75.000
7.909E-05	80.000	80.000
6.095E-05	85.000	85.000
4.767E-05	90.000	90.000

1.377E-035.05.00

K= 18FIVEXQ(K)= 1.377E-03FIVEPR(K)= 5.000

K	HIGHPR	PR	GRNDVT(K)
1	-2.81521	0.24373	7.87732
2	-1.82315	3.41406	9.39436
3	-2.96977	0.14902	6.44676
4	-3.18167	0.07322	4.40237
5	-3.39712	0.03405	2.83178
6	-3.40843	0.03268	2.41759
7	-3.38989	0.03496	3.30319
8	-3.01546	0.12830	6.50848
9	-2.85909	0.21244	9.42731
10	-2.82939	0.23319	10.03538
11	-2.88018	0.19873	8.37467
12	-2.91490	0.17791	6.09878
13	-2.85812	0.21309	4.63294
14	-2.72235	0.32411	4.61778
15	-2.62375	0.43485	5.74537
16	-2.57624	0.49942	7.88595

K	HOURS(K)	TOTHRs
1	21.35069	21.35069
2	299.07210	320.42270
3	13.05394	333.47670
4	6.41393	339.89060
5	2.98297	342.87360
6	2.86235	345.73590
7	3.06285	348.79880
8	11.23951	360.03830
9	18.60947	378.64780
10	20.42755	399.07530
11	17.40856	416.48390
12	15.58474	432.06860
13	18.66639	450.73500
14	28.39170	479.12670
15	38.09248	517.21920
16	43.74879	560.96800

K	FIVEXQ	SVANN	SLTIME	TIMINT	I	TIME	XQT
1	1.056E-03	2.855E-05	-0.4306	-6.5548	1	8.0	-7.45020

2	8.238E-04	2.659E-05	-0.4095	-6.8177	2	16.0	-7.74865
					3	72.0	-8.39628
					4	624.0	-9.32612
					1	8.0	-7.66921
3	7.271E-04	1.783E-05	-0.4422	-6.9200	2	16.0	-7.95304
					3	72.0	-8.56893
					4	624.0	-9.45319
					1	8.0	-7.83954
4	4.468E-04	9.737E-06	-0.4563	-7.3971	2	16.0	-8.14606
					3	72.0	-8.81119
					4	624.0	-9.76614
					1	8.0	-8.34600
5	3.193E-04	6.013E-06	-0.4737	-7.7209	2	16.0	-8.66229
					3	72.0	-9.34861
					4	624.0	-10.33401
					1	8.0	-8.70606
6	3.113E-04	7.170E-06	-0.4497	-7.7629	2	16.0	-9.03443
					3	72.0	-9.74698
					4	624.0	-10.77001
					1	8.0	-8.69811
7	3.389E-04	8.596E-06	-0.4382	-7.6861	2	16.0	-9.00983
					3	72.0	-9.68625
					4	624.0	-10.65741
					1	8.0	-8.59731
8	7.387E-04	1.970E-05	-0.4322	-6.9111	2	16.0	-8.90105
					3	72.0	-9.56014
					4	624.0	-10.50643
					1	8.0	-7.80983
9	1.050E-03	3.159E-05	-0.4178	-6.5694	2	16.0	-8.10941
					3	72.0	-8.75948
					4	624.0	-9.69281
					1	8.0	-7.43826
10	1.095E-03	4.770E-05	-0.3737	-6.5581	2	16.0	-7.72789
					3	72.0	-8.35636
					4	624.0	-9.25869
					1	8.0	-7.33521
11	9.663E-04	2.704E-05	-0.4265	-6.6464	2	16.0	-7.59424
					3	72.0	-8.15632
					4	624.0	-8.96333
					1	8.0	-7.53329
12	8.771E-04	2.165E-05	-0.4414	-6.7329	2	16.0	-7.82891
					3	72.0	-8.47038
					4	624.0	-9.39137
					1	8.0	-7.65086
13	9.657E-04	3.033E-05	-0.4127	-6.6565	2	16.0	-7.95684
					3	72.0	-8.62079
					4	624.0	-9.57405
					1	8.0	-7.65086

14	1.301E-03	3.892E-05	-0.4185	-6.3544	1	8.0	-7.51476
					2	16.0	-7.80084
					3	72.0	-8.42160
					4	624.0	-9.31286
15	1.604E-03	4.629E-05	-0.4228	-6.1421	1	8.0	-7.22472
					2	16.0	-7.51482
					3	72.0	-8.14431
					4	624.0	-9.04811
16	1.766E-03	5.826E-05	-0.4069	-6.0569	1	8.0	-7.02129
					2	16.0	-7.31436
					3	72.0	-7.95031
					4	624.0	-8.86338
17	2.589E-03	5.826E-05	-0.4525	-5.6428	1	8.0	-6.90296
					2	16.0	-7.18499
					3	72.0	-7.79696
					4	624.0	-8.67561
18	1.377E-03	5.826E-05	-0.3772	-6.3260	1	8.0	-6.58371
					2	16.0	-6.89735
					3	72.0	-7.57794
					4	624.0	-8.55509
					1	8.0	-7.11046
					2	16.0	-7.37193
					3	72.0	-7.93932
					4	624.0	-8.75394

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

RELATIVE CONCENTRATION (X/Q) VALUES (SEC/CUBIC METER)									
VERSUS									
AVERAGING TIME									
HOURS PER YEAR MAX									
0-2 HR X/Q IS									
EXCEEDED									
DOWNWIND									
SECTOR	(METERS)	0-2 HOURS	0-8 HOURS	8-24 HOURS	1-4 DAYS	4-30 DAYS	ANNUAL AVERAGE	IN SECTOR	SECTOR
S	425.	1.06E-03	5.81E-04	4.31E-04	2.26E-04	8.91E-05	2.86E-05	21.4	S
SSW	425.	8.24E-04	4.67E-04	3.52E-04	1.90E-04	7.84E-05	2.66E-05	299.1	SSW
SW	425.	7.27E-04	3.94E-04	2.90E-04	1.49E-04	5.74E-05	1.78E-05	13.1	SW
WSW	425.	4.47E-04	2.37E-04	1.73E-04	8.71E-05	3.25E-05	9.74E-06	6.4	WSW
W	425.	3.19E-04	1.66E-04	1.19E-04	5.85E-05	2.10E-05	6.01E-06	3.0	W
WNW	425.	3.11E-04	1.67E-04	1.22E-04	6.21E-05	2.35E-05	7.17E-06	2.9	WNW
NW	425.	3.39E-04	1.85E-04	1.36E-04	7.05E-05	2.74E-05	8.60E-06	3.1	NW
NNW	425.	7.39E-04	4.06E-04	3.01E-04	1.57E-04	6.17E-05	1.97E-05	11.2	NNW
N	425.	1.05E-03	5.88E-04	4.40E-04	2.35E-04	9.53E-05	3.16E-05	18.6	N
NNE	425.	1.09E-03	6.52E-04	5.03E-04	2.87E-04	1.28E-04	4.77E-05	20.4	NNE
NE	425.	9.66E-04	5.35E-04	3.98E-04	2.10E-04	8.34E-05	2.70E-05	17.4	NE
ENE	425.	8.77E-04	4.76E-04	3.50E-04	1.80E-04	6.95E-05	2.17E-05	15.6	ENE
E	425.	9.66E-04	5.45E-04	4.09E-04	2.20E-04	9.03E-05	3.03E-05	18.7	E
ESE	425.	1.30E-03	7.28E-04	5.45E-04	2.90E-04	1.18E-04	3.89E-05	28.4	ESE
SE	425.	1.60E-03	8.93E-04	6.66E-04	3.53E-04	1.41E-04	4.63E-05	38.1	SE
SSE	425.	1.77E-03	1.00E-03	7.58E-04	4.11E-04	1.71E-04	5.83E-05	43.7	SSE
MAX X/Q		1.77E-03					TOTAL HOURS AROUND SITE:	561.0	
SRP 2.3.4	425.	2.59E-03	1.38E-03	1.01E-03	5.12E-04	1.93E-04	5.83E-05		
SITE LIMIT		1.38E-03	8.17E-04	6.29E-04	3.56E-04	1.58E-04	5.83E-05		

THE FIVE-PERCENT-FOR-THE-ENTIRE-SITE X/Q IS LIMITING.

NOTE: VALUES ON THIS PAGE ARE APPROXIMATIONS ONLY.
CHECK THE REASONABLENESS OF THE ENVELOPES
COMPUTED FOR THE 0-2 HOUR VALUES. FOR ANY
FAULTY ENVELOPES, ADJUST THE ABOVE VALUES.

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

PARAMETER VALUES FOR THE CHI/Q CALCULATIONS FOR THE S SECTOR.										** CHI/Q VALUES (SEC/CUBIC METER)		
STABILITY CLASS	WINDSPEED METER/SEC	FREQUENCY PERCENT	DISTANCE METERS	TERRAIN HT METERS	HT EFF METERS	PLUME HT METERS	SIGMA-Y METERS	SIGMA-Z METERS	MEANDER-SY METERS	MEANDER	BLDG WAKE	USED
AT 10.0 METERS										CA=1236.SQ.METERS		
A	1.5	0.20	7242.	0.	0.	0.	1000.0	1000.0	1000.0	2.083E-07	2.083E-07	2.083E-07
A	3.3	3.09	7242.	0.	0.	0.	1000.0	1000.0	1000.0	9.723E-08	9.719E-08	9.719E-08
A	5.5	3.84	7242.	0.	0.	0.	1000.0	1000.0	1000.0	5.834E-08	5.831E-08	5.831E-08
A	8.1	0.10	7242.	0.	0.	0.	1000.0	1000.0	1000.0	3.942E-08	3.940E-08	3.940E-08
B	1.5	0.10	7242.	0.	0.	0.	842.0	953.7	842.0	2.595E-07	2.593E-07	2.593E-07
B	3.3	3.91	7242.	0.	0.	0.	842.0	953.7	842.0	1.211E-07	1.210E-07	1.210E-07
B	5.5	1.74	7242.	0.	0.	0.	842.0	953.7	842.0	7.265E-08	7.261E-08	7.261E-08
B	8.1	0.07	7242.	0.	0.	0.	842.0	953.7	842.0	4.909E-08	4.906E-08	4.906E-08
C	1.5	0.28	7242.	0.	0.	0.	639.4	371.0	639.4	8.782E-07	8.768E-07	8.768E-07
C	3.3	5.05	7242.	0.	0.	0.	639.4	371.0	639.4	4.098E-07	4.092E-07	4.092E-07
C	5.5	1.59	7242.	0.	0.	0.	639.4	371.0	639.4	2.459E-07	2.455E-07	2.455E-07
C	8.1	0.03	7242.	0.	0.	0.	639.4	371.0	639.4	1.661E-07	1.659E-07	1.659E-07
D	0.3	0.01	7242.	0.	0.	0.	450.2	110.6	511.8	1.717E-05	1.937E-05	1.717E-05
D	1.5	4.37	7242.	0.	0.	0.	450.2	110.6	511.8	3.680E-06	4.151E-06	3.680E-06
D	3.3	26.73	7242.	0.	0.	0.	450.2	110.6	478.9	1.835E-06	1.937E-06	1.835E-06
D	5.5	10.81	7242.	0.	0.	0.	450.2	110.6	454.0	1.162E-06	1.162E-06	1.162E-06
D	8.1	0.60	7242.	0.	0.	0.	450.2	110.6	450.2	7.915E-07	7.853E-07	7.853E-07
E	0.3	0.05	7242.	0.	0.	0.	320.2	67.2	407.7	3.633E-05	4.544E-05	3.633E-05
E	1.5	7.36	7242.	0.	0.	0.	320.2	67.2	407.7	7.785E-06	9.736E-06	7.785E-06
E	3.2	10.72	7242.	0.	0.	0.	320.2	67.2	358.6	4.131E-06	4.544E-06	4.131E-06
E	5.3	0.89	7242.	0.	0.	0.	320.2	67.2	325.7	2.729E-06	2.726E-06	2.726E-06
F	0.3	0.19	7242.	0.	0.	0.	221.0	40.8	311.7	7.834E-05	1.059E-04	7.834E-05
F	1.5	5.49	7242.	0.	0.	0.	221.0	40.8	311.7	1.679E-05	2.268E-05	1.679E-05
F	3.2	0.88	7242.	0.	0.	0.	221.0	40.8	257.7	9.476E-06	1.059E-05	9.476E-06
F	5.3	0.03	7242.	0.	0.	0.	221.0	40.8	225.9	6.485E-06	6.352E-06	6.352E-06
G	0.3	1.33	7242.	0.	0.	0.	152.5	24.7	256.8	1.567E-04	2.389E-04	1.567E-04
G	1.5	10.03	7242.	0.	0.	0.	152.5	24.7	256.8	3.358E-05	5.120E-05	3.358E-05
G	3.2	0.50	7242.	0.	0.	0.	152.5	24.7	189.9	2.119E-05	2.389E-05	2.119E-05
G	5.3	0.02	7242.	0.	0.	0.	152.5	24.7	157.0	1.538E-05	1.434E-05	1.434E-05

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

LOW POPULATION ZONE CALCULATIONS:

S SECTOR BOUNDARY DISTANCE = 7242.0 METERS

LATERAL PLUME MEANDER/BUILDING WAKE CREDIT ALLOWED
AS A FUNCTION OF DOWNWIND DISTANCE.
MEANDER CREDIT IS FOR WINDSPEEDS LESS THAN 6 MPS.
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

1.567E-04	7.834E-05	3.633E-05	3.358E-05	2.119E-05	1.717E-05	1.679E-05	1.434E-05	9.476E-06	7.785E-06
1.334	1.524	1.579	11.607	12.104	12.110	17.604	17.621	18.498	25.862
0.10511	0.12007	0.12437	0.91435	0.95346	0.95393	1.38672	1.38803	1.45712	2.03722
6.352E-06	4.131E-06	3.680E-06	2.726E-06	1.835E-06	1.162E-06	8.768E-07	7.853E-07	4.092E-07	2.593E-07
25.895	36.618	40.987	41.881	68.607	79.413	79.695	80.290	85.338	85.437
2.03982	2.88455	3.22870	3.29910	5.40440	6.25565	6.27781	6.32474	6.72233	6.73015
2.455E-07	2.083E-07	1.659E-07	1.210E-07	9.719E-08	7.261E-08	5.831E-08	4.906E-08	3.940E-08	
87.026	87.224	87.257	91.163	94.258	95.995	99.835	99.901	100.000	
6.85530	6.87094	6.87355	7.18120	7.42497	7.56185	7.86428	7.86950	7.87732	

X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(2)= 0.913
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(3)= 3.226
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(4)= 5.401
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(5)= 6.252

K	I	XQSAVE(K,I)	XQINT(K,I)	XQSLOP(K,I)
1	1	-8.76125	-15.38315	-2.15298
1	2	-10.30170	-20.50152	-4.32161
1	3	-12.51256	-17.83953	-2.88161
1	4	-13.20823	-23.25153	-6.24898
1	5	-13.66575	NUMXQ(K)= 5	

BACK EXTRAPOLATION FOR 1 PERCENTILE.

1.882E-04	0.079	1.000
9.143E-05	0.236	3.000
6.371E-05	0.394	5.000

3.778E-05	0.788	10.000
2.211E-05	1.182	15.000
1.360E-05	1.575	20.000
9.198E-06	1.969	25.000
6.617E-06	2.363	30.000
4.971E-06	2.757	35.000
3.857E-06	3.151	40.000
3.260E-06	3.545	45.000
2.836E-06	3.939	50.000
2.495E-06	4.333	55.000
2.215E-06	4.726	60.000
1.981E-06	5.120	65.000
1.725E-06	5.514	70.000
1.391E-06	5.908	75.000
5.346E-05	0.5	6.35

ANNUAL AVERAGE = 1.28E-07

K= 1 FIVEXQ(K)= 5.346E-05 FIVEPR(K)= 6.347

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

PARAMETER VALUES FOR THE CHI/Q CALCULATIONS FOR THE SSW SECTOR.										** CHI/Q VALUES (SEC/CUBIC METER)		
STABILITY	WINDSPEED	FREQUENCY	DISTANCE	TERRAIN HT	EFF PLUME HT	SIGMA-Y	SIGMA-Z	MEANDER-SY		MEANDER	BLDG WAKE	USED
CLASS	METER/SEC	PERCENT	METERS	METERS	METERS	METERS	METERS	METERS				
AT 10.0 METERS										CA=1236.SQ.METERS		
A	1.5	0.12	7242.	0.	0.	1000.0	1000.0	1000.0		2.083E-07	2.083E-07	2.083E-07
A	3.3	2.11	7242.	0.	0.	1000.0	1000.0	1000.0		9.723E-08	9.719E-08	9.719E-08
A	5.5	2.19	7242.	0.	0.	1000.0	1000.0	1000.0		5.834E-08	5.831E-08	5.831E-08
A	8.1	0.03	7242.	0.	0.	1000.0	1000.0	1000.0		3.942E-08	3.940E-08	3.940E-08
B	1.5	0.14	7242.	0.	0.	842.0	953.7	842.0		2.595E-07	2.593E-07	2.593E-07
B	3.3	2.64	7242.	0.	0.	842.0	953.7	842.0		1.211E-07	1.210E-07	1.210E-07
B	5.5	1.58	7242.	0.	0.	842.0	953.7	842.0		7.265E-08	7.261E-08	7.261E-08
B	8.1	0.04	7242.	0.	0.	842.0	953.7	842.0		4.909E-08	4.906E-08	4.906E-08
C	1.5	0.25	7242.	0.	0.	639.4	371.0	639.4		8.782E-07	8.768E-07	8.768E-07
C	3.3	3.69	7242.	0.	0.	639.4	371.0	639.4		4.098E-07	4.092E-07	4.092E-07
C	5.5	1.86	7242.	0.	0.	639.4	371.0	639.4		2.459E-07	2.455E-07	2.455E-07
C	8.1	0.07	7242.	0.	0.	639.4	371.0	639.4		1.661E-07	1.659E-07	1.659E-07
D	0.3	0.01	7242.	0.	0.	450.2	110.6	511.8		1.717E-05	1.937E-05	1.717E-05
D	1.5	4.59	7242.	0.	0.	450.2	110.6	511.8		3.680E-06	4.151E-06	3.680E-06
D	3.3	35.69	7242.	0.	0.	450.2	110.6	478.9		1.835E-06	1.937E-06	1.835E-06
D	5.5	19.25	7242.	0.	0.	450.2	110.6	454.0		1.162E-06	1.162E-06	1.162E-06
D	8.1	0.86	7242.	0.	0.	450.2	110.6	450.2		7.915E-07	7.853E-07	7.853E-07
D	10.9	0.01	7242.	0.	0.	450.2	110.6	450.2		5.857E-07	5.811E-07	5.811E-07
E	0.3	0.05	7242.	0.	0.	320.2	67.2	407.7		3.633E-05	4.544E-05	3.633E-05
E	1.5	6.97	7242.	0.	0.	320.2	67.2	407.7		7.785E-06	9.736E-06	7.785E-06
E	3.2	7.69	7242.	0.	0.	320.2	67.2	358.6		4.131E-06	4.544E-06	4.131E-06
E	5.3	0.60	7242.	0.	0.	320.2	67.2	325.7		2.729E-06	2.726E-06	2.726E-06
E	7.9	0.04	7242.	0.	0.	320.2	67.2	320.2		1.876E-06	1.842E-06	1.842E-06
E	10.7	0.01	7242.	0.	0.	320.2	67.2	320.2		1.388E-06	1.363E-06	1.363E-06
F	0.3	0.08	7242.	0.	0.	221.0	40.8	311.7		7.834E-05	1.059E-04	7.834E-05
F	1.5	2.43	7242.	0.	0.	221.0	40.8	311.7		1.679E-05	2.268E-05	1.679E-05
F	3.2	0.08	7242.	0.	0.	221.0	40.8	257.7		9.476E-06	1.059E-05	9.476E-06
F	5.3	0.01	7242.	0.	0.	221.0	40.8	225.9		6.485E-06	6.352E-06	6.352E-06
G	0.3	0.81	7242.	0.	0.	152.5	24.7	256.8		1.567E-04	2.389E-04	1.567E-04
G	1.5	6.08	7242.	0.	0.	152.5	24.7	256.8		3.358E-05	5.120E-05	3.358E-05
G	3.2	0.01	7242.	0.	0.	152.5	24.7	189.9		2.119E-05	2.389E-05	2.119E-05

USNRC COMPUTER CODE-PAVAN, VERSION 2.0 RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2 METEOROLOGICAL INSTRUMENTATION
DATA PERIOD: 1988-96 AVG. MET. WIND SENSORS HEIGHT: 11.0 METERS
TYPE OF RELEASE: GROUND-LEVEL RELEASE DELTA-T HEIGHTS: 9.3 - 60.8 METERS
SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)
COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS
PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

LOW POPULATION ZONE CALCULATIONS:

SSW SECTOR BOUNDARY DISTANCE = 7242.0 METERS

LATERAL PLUME MEANDER/BUILDING WAKE CREDIT ALLOWED
AS A FUNCTION OF DOWNWIND DISTANCE.
MEANDER CREDIT IS FOR WINDSPEEDS LESS THAN 6 MPS.
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

1.567E-04	7.834E-05	3.633E-05	3.358E-05	2.119E-05	1.717E-05	1.679E-05	9.476E-06	7.785E-06	6.352E-06
0.809	0.893	0.944	7.022	7.036	7.042	9.471	9.554	16.520	16.534
0.07597	0.08386	0.08871	0.65968	0.66099	0.66158	0.88971	0.89753	1.55193	1.55324
4.131E-06	3.680E-06	2.726E-06	1.842E-06	1.835E-06	1.363E-06	1.162E-06	8.768E-07	7.853E-07	5.811E-07
24.221	28.814	29.411	29.453	65.143	65.156	84.403	84.653	85.513	85.527
2.27543	2.70692	2.76297	2.76688	6.11973	6.12103	7.92912	7.95258	8.03340	8.03471
4.092E-07	2.593E-07	2.455E-07	2.083E-07	1.659E-07	1.210E-07	9.719E-08	7.261E-08	5.831E-08	4.906E-08
89.218	89.357	91.216	91.341	91.411	94.047	96.156	97.738	99.931	99.972
8.38146	8.39450	8.56918	8.58091	8.58743	8.83511	9.03326	9.18187	9.38784	9.39175
3.940E-08									
100.000									
9.39435									

X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(2)= 0.659
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(3)= 2.704
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(4)= 6.116
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(5)= 7.925
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(6)= 9.384

K	I	XQSAVE(K,I)	XQINT(K,I)	XQSLOP(K,I)
2	1	-8.76125	-15.81768	-2.22516
2	2	-10.30170	-20.21644	-3.99962
2	3	-12.51256	-16.02922	-1.82575
2	4	-13.20823	-18.44430	-3.38878

```
2 5      -13.66575 -59.19108 -32.28498
2 6      -16.65743      NUMXQ(K)= 6
1.364E-04      0.094      1.000
6.396E-05      0.282      3.000
4.374E-05      0.470      5.000
2.006E-05      0.939     10.000
1.079E-05      1.409     15.000
6.806E-06      1.879     20.000
4.694E-06      2.349     25.000
3.564E-06      2.818     30.000
3.147E-06      3.288     35.000
2.818E-06      3.758     40.000
2.550E-06      4.227     45.000
2.328E-06      4.697     50.000
2.140E-06      5.167     55.000
1.979E-06      5.637     60.000
1.839E-06      6.106     65.000
1.621E-06      6.576     70.000
1.436E-06      7.046     75.000
1.280E-06      7.515     80.000
1.028E-06      7.985     85.000
3.780E-07      8.455     90.000

4.169E-05      0.5      5.32

ANNUAL AVERAGE = 1.20E-07

K= 2      FIVEXQ(K)= 4.169E-05      FIVEPR(K)= 5.322
```

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

PARAMETER VALUES FOR THE CHI/Q CALCULATIONS FOR THE SW SECTOR.										** CHI/Q VALUES (SEC/CUBIC METER)		
STABILITY	WINDSPEED	FREQUENCY	DISTANCE	TERRAIN HT	EFF PLUME HT	SIGMA-Y	SIGMA-Z	MEANDER-SY		MEANDER	BLDG WAKE	USED
CLASS	METER/SEC	PERCENT	METERS	METERS	METERS	METERS	METERS	METERS				
AT 10.0 METERS										CA=1236.SQ.METERS		
A	1.5	0.22	7242.	0.	0.	1000.0	1000.0	1000.0		2.083E-07	2.083E-07	2.083E-07
A	3.3	3.78	7242.	0.	0.	1000.0	1000.0	1000.0		9.723E-08	9.719E-08	9.719E-08
A	5.5	2.73	7242.	0.	0.	1000.0	1000.0	1000.0		5.834E-08	5.831E-08	5.831E-08
A	8.1	0.02	7242.	0.	0.	1000.0	1000.0	1000.0		3.942E-08	3.940E-08	3.940E-08
B	1.5	0.28	7242.	0.	0.	842.0	953.7	842.0		2.595E-07	2.593E-07	2.593E-07
B	3.3	3.90	7242.	0.	0.	842.0	953.7	842.0		1.211E-07	1.210E-07	1.210E-07
B	5.5	1.27	7242.	0.	0.	842.0	953.7	842.0		7.265E-08	7.261E-08	7.261E-08
C	1.5	0.38	7242.	0.	0.	639.4	371.0	639.4		8.782E-07	8.768E-07	8.768E-07
C	3.3	4.77	7242.	0.	0.	639.4	371.0	639.4		4.098E-07	4.092E-07	4.092E-07
C	5.5	1.54	7242.	0.	0.	639.4	371.0	639.4		2.459E-07	2.455E-07	2.455E-07
C	8.1	0.06	7242.	0.	0.	639.4	371.0	639.4		1.661E-07	1.659E-07	1.659E-07
D	0.3	0.01	7242.	0.	0.	450.2	110.6	511.8		1.717E-05	1.937E-05	1.717E-05
D	1.5	8.43	7242.	0.	0.	450.2	110.6	511.8		3.680E-06	4.151E-06	3.680E-06
D	3.3	36.52	7242.	0.	0.	450.2	110.6	478.9		1.835E-06	1.937E-06	1.835E-06
D	5.5	7.38	7242.	0.	0.	450.2	110.6	454.0		1.162E-06	1.162E-06	1.162E-06
D	8.1	0.12	7242.	0.	0.	450.2	110.6	450.2		7.915E-07	7.853E-07	7.853E-07
E	0.3	0.06	7242.	0.	0.	320.2	67.2	407.7		3.633E-05	4.544E-05	3.633E-05
E	1.5	8.49	7242.	0.	0.	320.2	67.2	407.7		7.785E-06	9.736E-06	7.785E-06
E	3.2	7.14	7242.	0.	0.	320.2	67.2	358.6		4.131E-06	4.544E-06	4.131E-06
E	5.3	0.20	7242.	0.	0.	320.2	67.2	325.7		2.729E-06	2.726E-06	2.726E-06
E	10.7	0.04	7242.	0.	0.	320.2	67.2	320.2		1.388E-06	1.363E-06	1.363E-06
F	0.3	0.13	7242.	0.	0.	221.0	40.8	311.7		7.834E-05	1.059E-04	7.834E-05
F	1.5	3.62	7242.	0.	0.	221.0	40.8	311.7		1.679E-05	2.268E-05	1.679E-05
F	3.2	0.32	7242.	0.	0.	221.0	40.8	257.7		9.476E-06	1.059E-05	9.476E-06
F	5.3	0.02	7242.	0.	0.	221.0	40.8	225.9		6.485E-06	6.352E-06	6.352E-06
F	7.9	0.02	7242.	0.	0.	221.0	40.8	221.0		4.479E-06	4.292E-06	4.292E-06
G	0.3	1.00	7242.	0.	0.	152.5	24.7	256.8		1.567E-04	2.389E-04	1.567E-04
G	1.5	7.52	7242.	0.	0.	152.5	24.7	256.8		3.358E-05	5.120E-05	3.358E-05

USNRC COMPUTER CODE-PAVAN, VERSION 2.0 RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2 METEOROLOGICAL INSTRUMENTATION
DATA PERIOD: 1988-96 AVG. MET. WIND SENSORS HEIGHT: 11.0 METERS
TYPE OF RELEASE: GROUND-LEVEL RELEASE DELTA-T HEIGHTS: 9.3 - 60.8 METERS
SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)
COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS
PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

LOW POPULATION ZONE CALCULATIONS:

SW SECTOR BOUNDARY DISTANCE = 7242.0 METERS

LATERAL PLUME MEANDER/BUILDING WAKE CREDIT ALLOWED
AS A FUNCTION OF DOWNWIND DISTANCE.
MEANDER CREDIT IS FOR WINDSPEEDS LESS THAN 6 MPS.
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

1.567E-04	7.834E-05	3.633E-05	3.358E-05	1.717E-05	1.679E-05	9.476E-06	7.785E-06	6.352E-06	4.292E-06
1.001	1.126	1.189	8.711	8.723	12.342	12.666	21.159	21.179	21.199
0.06453	0.07259	0.07665	0.56158	0.56233	0.79568	0.81653	1.36404	1.36535	1.36665
4.131E-06	3.680E-06	2.726E-06	1.835E-06	1.363E-06	1.162E-06	8.768E-07	7.853E-07	4.092E-07	2.593E-07
28.337	36.769	36.971	73.490	73.531	80.911	81.296	81.417	86.189	86.472
1.82682	2.37042	2.38345	4.73774	4.74035	5.21616	5.24093	5.24875	5.55640	5.57465
2.455E-07	2.083E-07	1.659E-07	1.210E-07	9.719E-08	7.261E-08	5.831E-08	3.940E-08		
88.009	88.231	88.292	92.195	95.976	97.250	99.980	100.000		
5.67373	5.68807	5.69198	5.94357	6.18734	6.26947	6.44545	6.44676		

X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(2)= 0.561
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(3)= 2.368
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(4)= 4.734
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(5)= 5.212
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(6)= 6.442

K	I	XQSAVE(K,I)	XQINT(K,I)	XQSLOP(K,I)
3	1	-8.76125	-16.02506	-2.25700
3	2	-10.30170	-20.44427	-3.99972
3	3	-12.51256	-16.93610	-2.23066
3	4	-13.20823	-29.61541	-9.81761
3	5	-13.66575	-59.57309	-28.25769
3	6	-16.65743	NUMXQ(K)= 6	

BACK EXTRAPOLATION FOR 1 PERCENTILE.

1.568E-04	0.064	1.000
-----------	-------	-------

7.452E-05	0.193	3.000
5.140E-05	0.322	5.000
2.763E-05	0.645	10.000
1.530E-05	0.967	15.000
9.875E-06	1.289	20.000
6.948E-06	1.612	25.000
5.169E-06	1.934	30.000
4.000E-06	2.256	35.000
3.396E-06	2.579	40.000
3.030E-06	2.901	45.000
2.731E-06	3.223	50.000
2.482E-06	3.546	55.000
2.271E-06	3.868	60.000
2.090E-06	4.190	65.000
1.933E-06	4.513	70.000
1.667E-06	4.835	75.000
1.226E-06	5.157	80.000
5.856E-07	5.480	85.000
2.623E-07	5.802	90.000
3.678E-05	0.5	7.76

ANNUAL AVERAGE = 8.27E-08

K= 3 FIVEXQ(K)= 3.678E-05 FIVEPR(K)= 7.756

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

PARAMETER VALUES FOR THE CHI/Q CALCULATIONS FOR THE WSW SECTOR.										** CHI/Q VALUES (SEC/CUBIC METER)		
STABILITY CLASS	WINDSPEED METER/SEC AT 10.0 METERS	FREQUENCY PERCENT	DISTANCE METERS	TERRAIN HT METERS	HT EFF METERS	PLUME HT METERS	SIGMA-Y METERS	SIGMA-Z METERS	MEANDER-SY METERS	MEANDER	BLDG WAKE CA=1236.SQ.METERS	USED
A	1.5	0.30	7242.	0.	0.	0.	1000.0	1000.0	1000.0	2.083E-07	2.083E-07	2.083E-07
A	3.3	8.29	7242.	0.	0.	0.	1000.0	1000.0	1000.0	9.723E-08	9.719E-08	9.719E-08
A	5.5	1.10	7242.	0.	0.	0.	1000.0	1000.0	1000.0	5.834E-08	5.831E-08	5.831E-08
B	1.5	0.38	7242.	0.	0.	0.	842.0	953.7	842.0	2.595E-07	2.593E-07	2.593E-07
B	3.3	5.21	7242.	0.	0.	0.	842.0	953.7	842.0	1.211E-07	1.210E-07	1.210E-07
B	5.5	0.47	7242.	0.	0.	0.	842.0	953.7	842.0	7.265E-08	7.261E-08	7.261E-08
C	1.5	0.92	7242.	0.	0.	0.	639.4	371.0	639.4	8.782E-07	8.768E-07	8.768E-07
C	3.3	7.11	7242.	0.	0.	0.	639.4	371.0	639.4	4.098E-07	4.092E-07	4.092E-07
C	5.5	0.59	7242.	0.	0.	0.	639.4	371.0	639.4	2.459E-07	2.455E-07	2.455E-07
D	0.3	0.02	7242.	0.	0.	0.	450.2	110.6	511.8	1.717E-05	1.937E-05	1.717E-05
D	1.5	13.12	7242.	0.	0.	0.	450.2	110.6	511.8	3.680E-06	4.151E-06	3.680E-06
D	3.3	35.18	7242.	0.	0.	0.	450.2	110.6	478.9	1.835E-06	1.937E-06	1.835E-06
D	5.5	2.69	7242.	0.	0.	0.	450.2	110.6	454.0	1.162E-06	1.162E-06	1.162E-06
D	8.1	0.03	7242.	0.	0.	0.	450.2	110.6	450.2	7.915E-07	7.853E-07	7.853E-07
E	0.3	0.07	7242.	0.	0.	0.	320.2	67.2	407.7	3.633E-05	4.544E-05	3.633E-05
E	1.5	9.74	7242.	0.	0.	0.	320.2	67.2	407.7	7.785E-06	9.736E-06	7.785E-06
E	3.2	5.00	7242.	0.	0.	0.	320.2	67.2	358.6	4.131E-06	4.544E-06	4.131E-06
E	5.3	0.18	7242.	0.	0.	0.	320.2	67.2	325.7	2.729E-06	2.726E-06	2.726E-06
F	0.3	0.11	7242.	0.	0.	0.	221.0	40.8	311.7	7.834E-05	1.059E-04	7.834E-05
F	1.5	3.23	7242.	0.	0.	0.	221.0	40.8	311.7	1.679E-05	2.268E-05	1.679E-05
F	3.2	0.36	7242.	0.	0.	0.	221.0	40.8	257.7	9.476E-06	1.059E-05	9.476E-06
G	0.3	0.69	7242.	0.	0.	0.	152.5	24.7	256.8	1.567E-04	2.389E-04	1.567E-04
G	1.5	5.18	7242.	0.	0.	0.	152.5	24.7	256.8	3.358E-05	5.120E-05	3.358E-05
G	3.2	0.03	7242.	0.	0.	0.	152.5	24.7	189.9	2.119E-05	2.389E-05	2.119E-05

USNRC COMPUTER CODE-PAVAN, VERSION 2.0 RUN DATE: 12/12/97 .

PLANT NAME: H.B. ROBINSON UNIT 2 METEOROLOGICAL INSTRUMENTATION
DATA PERIOD: 1988-96 AVG. MET. WIND SENSORS HEIGHT: 11.0 METERS
TYPE OF RELEASE: GROUND-LEVEL RELEASE DELTA-T HEIGHTS: 9.3 - 60.8 METERS
SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)
COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS
PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

LOW POPULATION ZONE CALCULATIONS:

WSW SECTOR BOUNDARY DISTANCE = 7242.0 METERS

LATERAL PLUME MEANDER/BUILDING WAKE CREDIT ALLOWED
AS A FUNCTION OF DOWNWIND DISTANCE.
MEANDER CREDIT IS FOR WINDSPEEDS LESS THAN 6 MPS.
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

1.567E-04	7.834E-05	3.633E-05	3.358E-05	2.119E-05	1.717E-05	1.679E-05	9.476E-06	7.785E-06	4.131E-06
0.690	0.801	0.873	6.055	6.085	6.103	9.330	9.686	19.428	24.432
0.03035	0.03527	0.03844	0.26657	0.26788	0.26867	0.41076	0.42641	0.85529	1.07560
3.680E-06	2.726E-06	1.835E-06	1.162E-06	8.768E-07	7.853E-07	4.092E-07	2.593E-07	2.455E-07	2.083E-07
37.550	37.728	72.906	75.600	76.518	76.548	83.655	84.040	84.632	84.928
1.65309	1.66091	3.20958	3.32821	3.36862	3.36992	3.68278	3.69973	3.72580	3.73884
1.210E-07	9.719E-08	7.261E-08	5.831E-08						
90.139	98.431	98.904	100.000						
3.96827	4.33328	4.35413	4.40237						

X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(2)= 0.266
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(3)= 3.207
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(4)= 4.330

K	I	XQSAVE(K,I)	XQINT(K,I)	XQSLOP(K,I)
4	1	-8.76125	-16.98856	-2.39960
4	2	-10.30170	-18.96058	-3.10726
4	3	-13.20823	-52.73366	-21.35055
4	4	-16.14660	NUMXQ(K)= 4	
		1.226E-04	0.044	1.000
		5.697E-05	0.132	3.000
		3.891E-05	0.220	5.000
		2.000E-05	0.440	10.000
		1.289E-05	0.660	15.000
		9.319E-06	0.880	20.000

7.188E-06	1.101	25.000
5.781E-06	1.321	30.000
4.789E-06	1.541	35.000
4.054E-06	1.761	40.000
3.490E-06	1.981	45.000
3.046E-06	2.201	50.000
2.688E-06	2.421	55.000
2.394E-06	2.641	60.000
2.149E-06	2.862	65.000
1.942E-06	3.082	70.000
1.401E-06	3.302	75.000
7.523E-07	3.522	80.000
4.169E-07	3.742	85.000
2.375E-07	3.962	90.000

1.746E-05 0.5 11.36

ANNUAL AVERAGE = 6.73E-08

K= 4 FIVEXQ(K)= 1.746E-05 FIVEPR(K)=11.358

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

PARAMETER VALUES FOR THE CHI/Q CALCULATIONS FOR THE W SECTOR.										** CHI/Q VALUES (SEC/CUBIC METER)		
STABILITY	WINDSPEED	FREQUENCY	DISTANCE	TERRAIN HT	EFF PLUME HT	SIGMA-Y	SIGMA-Z	MEANDER-SY		MEANDER	BLDG WAKE	USED
CLASS	METER/SEC	PERCENT	METERS	METERS	METERS	METERS	METERS	METERS				
	AT 10.0 METERS									CA=1236.SQ.METERS		
A	1.5	0.87	7242.	0.	0.	1000.0	1000.0	1000.0		2.083E-07	2.083E-07	2.083E-07
A	3.3	7.60	7242.	0.	0.	1000.0	1000.0	1000.0		9.723E-08	9.719E-08	9.719E-08
A	5.5	0.37	7242.	0.	0.	1000.0	1000.0	1000.0		5.834E-08	5.831E-08	5.831E-08
B	1.5	0.78	7242.	0.	0.	842.0	953.7	842.0		2.595E-07	2.593E-07	2.593E-07
B	3.3	5.80	7242.	0.	0.	842.0	953.7	842.0		1.211E-07	1.210E-07	1.210E-07
B	5.5	0.23	7242.	0.	0.	842.0	953.7	842.0		7.265E-08	7.261E-08	7.261E-08
C	1.5	1.70	7242.	0.	0.	639.4	371.0	639.4		8.782E-07	8.768E-07	8.768E-07
C	3.3	6.49	7242.	0.	0.	639.4	371.0	639.4		4.098E-07	4.092E-07	4.092E-07
C	5.5	0.23	7242.	0.	0.	639.4	371.0	639.4		2.459E-07	2.455E-07	2.455E-07
D	0.3	0.02	7242.	0.	0.	450.2	110.6	511.8		1.717E-05	1.937E-05	1.717E-05
D	1.5	16.99	7242.	0.	0.	450.2	110.6	511.8		3.680E-06	4.151E-06	3.680E-06
D	3.3	33.38	7242.	0.	0.	450.2	110.6	478.9		1.835E-06	1.937E-06	1.835E-06
D	5.5	1.66	7242.	0.	0.	450.2	110.6	454.0		1.162E-06	1.162E-06	1.162E-06
D	8.1	0.09	7242.	0.	0.	450.2	110.6	450.2		7.915E-07	7.853E-07	7.853E-07
E	0.3	0.09	7242.	0.	0.	320.2	67.2	407.7		3.633E-05	4.544E-05	3.633E-05
E	1.5	12.29	7242.	0.	0.	320.2	67.2	407.7		7.785E-06	9.736E-06	7.785E-06
E	3.2	3.96	7242.	0.	0.	320.2	67.2	358.6		4.131E-06	4.544E-06	4.131E-06
E	5.3	0.41	7242.	0.	0.	320.2	67.2	325.7		2.729E-06	2.726E-06	2.726E-06
F	0.3	0.11	7242.	0.	0.	221.0	40.8	311.7		7.834E-05	1.059E-04	7.834E-05
F	1.5	3.13	7242.	0.	0.	221.0	40.8	311.7		1.679E-05	2.268E-05	1.679E-05
F	3.2	0.05	7242.	0.	0.	221.0	40.8	257.7		9.476E-06	1.059E-05	9.476E-06
G	0.3	0.43	7242.	0.	0.	152.5	24.7	256.8		1.567E-04	2.389E-04	1.567E-04
G	1.5	3.27	7242.	0.	0.	152.5	24.7	256.8		3.358E-05	5.120E-05	3.358E-05
G	3.2	0.05	7242.	0.	0.	152.5	24.7	189.9		2.119E-05	2.389E-05	2.119E-05

USNRC COMPUTER CODE-PAVAN, VERSION 2.0 RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2 METEOROLOGICAL INSTRUMENTATION
DATA PERIOD: 1988-96 AVG. MET. WIND SENSORS HEIGHT: 11.0 METERS
TYPE OF RELEASE: GROUND-LEVEL RELEASE DELTA-T HEIGHTS: 9.3 - 60.8 METERS
SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)
COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS
PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

LOW POPULATION ZONE CALCULATIONS:

W SECTOR BOUNDARY DISTANCE = 7242.0 METERS

LATERAL PLUME MEANDER/BUILDING WAKE CREDIT ALLOWED
AS A FUNCTION OF DOWNWIND DISTANCE.
MEANDER CREDIT IS FOR WINDSPEEDS LESS THAN 6 MPS.
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

1.567E-04	7.834E-05	3.633E-05	3.358E-05	2.119E-05	1.717E-05	1.679E-05	9.476E-06	7.785E-06	4.131E-06
0.435	0.543	0.634	3.903	3.949	3.972	7.102	7.148	19.440	23.399
0.01232	0.01538	0.01796	0.11051	0.11182	0.11248	0.20112	0.20243	0.55049	0.66260
3.680E-06	2.726E-06	1.835E-06	1.162E-06	8.768E-07	7.853E-07	4.092E-07	2.593E-07	2.455E-07	2.083E-07
40.385	40.800	74.175	75.832	77.535	77.627	84.118	84.901	85.131	86.006
1.14362	1.15535	2.10046	2.14739	2.19562	2.19823	2.38204	2.40420	2.41072	2.43548
1.210E-07	9.719E-08	7.261E-08	5.831E-08						
91.806	99.402	99.632	100.000						
2.59974	2.81483	2.82135	2.83178						

X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(2)= 0.110
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(3)= 1.142
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(4)= 2.098
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(5)= 2.812

K	I	XQSAVE(K,I)	XQINT(K,I)	XQSLOP(K,I)
5	1	-8.76125	-18.08873	-2.54418
5	2	-10.30170	-18.92494	-2.81739
5	3	-12.51256	-19.05176	-2.87311
5	4	-13.20823	-61.12928	-23.56155
5	5	-16.14660	NUMXQ(K)= 5	
		8.981E-05	0.028	1.000
		4.094E-05	0.085	3.000
		2.718E-05	0.142	5.000
		1.468E-05	0.283	10.000

1.004E-05	0.425	15.000
7.588E-06	0.566	20.000
6.070E-06	0.708	25.000
5.036E-06	0.850	30.000
4.286E-06	0.991	35.000
3.718E-06	1.133	40.000
3.266E-06	1.274	45.000
2.902E-06	1.416	50.000
2.604E-06	1.557	55.000
2.356E-06	1.699	60.000
2.146E-06	1.841	65.000
1.966E-06	1.982	70.000
1.647E-06	2.124	75.000
8.707E-07	2.265	80.000
4.757E-07	2.407	85.000
2.676E-07	2.549	90.000
8.575E-06	0.5	17.66

ANNUAL AVERAGE = 2.65E-08

K= 5 FIVEXQ(K)= 8.575E-06 FIVEPR(K)=17.657

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

PARAMETER VALUES FOR THE CHI/Q CALCULATIONS FOR THE WNW SECTOR.										** CHI/Q VALUES (SEC/CUBIC METER)				
STABILITY CLASS	WINDSPEED METER/SEC AT 10.0 METERS	FREQUENCY PERCENT	DISTANCE METERS	TERRAIN METERS	HT METERS	EFF METERS	PLUME METERS	HT METERS	SIGMA-Y METERS	SIGMA-Z METERS	MEANDER-SY METERS	MEANDER	BLDG WAKE CA=1236.SQ.METERS	USED
A	1.5	1.08	7242.	0.	0.	0.	1000.0	1000.0	1000.0	2.083E-07	2.083E-07	2.083E-07		
A	3.3	10.35	7242.	0.	0.	0.	1000.0	1000.0	1000.0	9.723E-08	9.719E-08	9.719E-08		
B	1.5	0.86	7242.	0.	0.	0.	842.0	953.7	842.0	2.595E-07	2.593E-07	2.593E-07		
B	3.3	6.25	7242.	0.	0.	0.	842.0	953.7	842.0	1.211E-07	1.210E-07	1.210E-07		
B	5.5	0.16	7242.	0.	0.	0.	842.0	953.7	842.0	7.265E-08	7.261E-08	7.261E-08		
C	1.5	2.00	7242.	0.	0.	0.	639.4	371.0	639.4	8.782E-07	8.768E-07	8.768E-07		
C	3.3	6.04	7242.	0.	0.	0.	639.4	371.0	639.4	4.098E-07	4.092E-07	4.092E-07		
C	5.5	0.11	7242.	0.	0.	0.	639.4	371.0	639.4	2.459E-07	2.455E-07	2.455E-07		
D	0.3	0.03	7242.	0.	0.	0.	450.2	110.6	511.8	1.717E-05	1.937E-05	1.717E-05		
D	1.5	20.87	7242.	0.	0.	0.	450.2	110.6	511.8	3.680E-06	4.151E-06	3.680E-06		
D	3.3	27.28	7242.	0.	0.	0.	450.2	110.6	478.9	1.835E-06	1.937E-06	1.835E-06		
D	5.5	1.08	7242.	0.	0.	0.	450.2	110.6	454.0	1.162E-06	1.162E-06	1.162E-06		
E	0.3	0.09	7242.	0.	0.	0.	320.2	67.2	407.7	3.633E-05	4.544E-05	3.633E-05		
E	1.5	12.35	7242.	0.	0.	0.	320.2	67.2	407.7	7.785E-06	9.736E-06	7.785E-06		
E	3.2	3.24	7242.	0.	0.	0.	320.2	67.2	358.6	4.131E-06	4.544E-06	4.131E-06		
E	5.3	0.27	7242.	0.	0.	0.	320.2	67.2	325.7	2.729E-06	2.726E-06	2.726E-06		
F	0.3	0.12	7242.	0.	0.	0.	221.0	40.8	311.7	7.834E-05	1.059E-04	7.834E-05		
F	1.5	3.56	7242.	0.	0.	0.	221.0	40.8	311.7	1.679E-05	2.268E-05	1.679E-05		
F	3.2	0.05	7242.	0.	0.	0.	221.0	40.8	257.7	9.476E-06	1.059E-05	9.476E-06		
G	0.3	0.49	7242.	0.	0.	0.	152.5	24.7	256.8	1.567E-04	2.389E-04	1.567E-04		
G	1.5	3.67	7242.	0.	0.	0.	152.5	24.7	256.8	3.358E-05	5.120E-05	3.358E-05		
G	3.2	0.05	7242.	0.	0.	0.	152.5	24.7	189.9	2.119E-05	2.389E-05	2.119E-05		

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

LOW POPULATION ZONE CALCULATIONS:

WNW SECTOR BOUNDARY DISTANCE = 7242.0 METERS

LATERAL PLUME MEANDER/BUILDING WAKE CREDIT ALLOWED
AS A FUNCTION OF DOWNWIND DISTANCE.
MEANDER CREDIT IS FOR WINDSPEEDS LESS THAN 6 MPS.
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

1.567E-04	7.834E-05	3.633E-05	3.358E-05	2.119E-05	1.717E-05	1.679E-05	9.476E-06	7.785E-06	4.131E-06
0.488	0.611	0.702	4.369	4.423	4.452	8.010	8.064	20.412	23.648
0.01179	0.01477	0.01698	0.10563	0.10693	0.10762	0.19366	0.19496	0.49349	0.57170
3.680E-06	2.726E-06	1.835E-06	1.162E-06	8.768E-07	4.092E-07	2.593E-07	2.455E-07	2.083E-07	1.210E-07
44.515	44.785	72.069	73.147	75.142	81.182	82.044	82.152	83.231	89.485
1.07619	1.08271	1.74233	1.76840	1.81663	1.96264	1.98349	1.98610	2.01217	2.16339
9.719E-08	7.261E-08								
99.838	100.000								
2.41368	2.41759								

X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(2)= 0.106
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(3)= 1.075
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(4)= 1.740
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(5)= 2.411

K	I	XQSAVE(K,I)	XQINT(K,I)	XQSLOP(K,I)
6	1	-8.76125	-18.15543	-2.55469
6	2	-10.30170	-19.07016	-2.85224
6	3	-12.51256	-20.99634	-3.69004
6	4	-13.20823	-59.08058	-21.73449
6	5	-16.14660	NUMXQ(K)= 5	
		9.710E-05	0.024	1.000
		4.452E-05	0.073	3.000
		2.992E-05	0.121	5.000
		1.617E-05	0.242	10.000

1.108E-05	0.363	15.000
8.385E-06	0.484	20.000
6.716E-06	0.604	25.000
5.578E-06	0.725	30.000
4.753E-06	0.846	35.000
4.128E-06	0.967	40.000
3.625E-06	1.088	45.000
3.125E-06	1.209	50.000
2.727E-06	1.330	55.000
2.405E-06	1.451	60.000
2.139E-06	1.571	65.000
1.917E-06	1.692	70.000
1.291E-06	1.813	75.000
7.275E-07	1.934	80.000
4.222E-07	2.055	85.000
2.516E-07	2.176	90.000
8.112E-06	0.5	20.68

ANNUAL AVERAGE = 4.22E-08

K= 6 FIVEXQ(K)= 8.112E-06 FIVEPR(K)=20.682

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

PARAMETER VALUES FOR THE CHI/Q CALCULATIONS FOR THE NW SECTOR.										** CHI/Q VALUES (SEC/CUBIC METER)		
STABILITY CLASS	WINDSPEED METER/SEC AT 10.0 METERS	FREQUENCY PERCENT	DISTANCE METERS	TERRAIN METERS	HT EFF METERS	PLUME HT METERS	SIGMA-Y METERS	SIGMA-Z METERS	MEANDER-SY METERS	MEANDER	BLDG WAKE CA=1236.SQ.METERS	USED
A	1.5	0.59	7242.	0.	0.	0.	1000.0	1000.0	1000.0	2.083E-07	2.083E-07	2.083E-07
A	3.3	11.68	7242.	0.	0.	0.	1000.0	1000.0	1000.0	9.723E-08	9.719E-08	9.719E-08
A	5.5	1.07	7242.	0.	0.	0.	1000.0	1000.0	1000.0	5.834E-08	5.831E-08	5.831E-08
B	1.5	0.63	7242.	0.	0.	0.	842.0	953.7	842.0	2.595E-07	2.593E-07	2.593E-07
B	3.3	6.79	7242.	0.	0.	0.	842.0	953.7	842.0	1.211E-07	1.210E-07	1.210E-07
B	5.5	0.51	7242.	0.	0.	0.	842.0	953.7	842.0	7.265E-08	7.261E-08	7.261E-08
C	1.5	1.50	7242.	0.	0.	0.	639.4	371.0	639.4	8.782E-07	8.768E-07	8.768E-07
C	3.3	7.38	7242.	0.	0.	0.	639.4	371.0	639.4	4.098E-07	4.092E-07	4.092E-07
C	5.5	0.24	7242.	0.	0.	0.	639.4	371.0	639.4	2.459E-07	2.455E-07	2.455E-07
D	0.3	0.02	7242.	0.	0.	0.	450.2	110.6	511.8	1.717E-05	1.937E-05	1.717E-05
D	1.5	15.08	7242.	0.	0.	0.	450.2	110.6	511.8	3.680E-06	4.151E-06	3.680E-06
D	3.3	26.13	7242.	0.	0.	0.	450.2	110.6	478.9	1.835E-06	1.937E-06	1.835E-06
D	5.5	3.24	7242.	0.	0.	0.	450.2	110.6	454.0	1.162E-06	1.162E-06	1.162E-06
D	8.1	0.04	7242.	0.	0.	0.	450.2	110.6	450.2	7.915E-07	7.853E-07	7.853E-07
E	0.3	0.08	7242.	0.	0.	0.	320.2	67.2	407.7	3.633E-05	4.544E-05	3.633E-05
E	1.5	11.17	7242.	0.	0.	0.	320.2	67.2	407.7	7.785E-06	9.736E-06	7.785E-06
E	3.2	5.09	7242.	0.	0.	0.	320.2	67.2	358.6	4.131E-06	4.544E-06	4.131E-06
E	5.3	0.59	7242.	0.	0.	0.	320.2	67.2	325.7	2.729E-06	2.726E-06	2.726E-06
E	7.9	0.12	7242.	0.	0.	0.	320.2	67.2	320.2	1.876E-06	1.842E-06	1.842E-06
F	0.3	0.15	7242.	0.	0.	0.	221.0	40.8	311.7	7.834E-05	1.059E-04	7.834E-05
F	1.5	4.38	7242.	0.	0.	0.	221.0	40.8	311.7	1.679E-05	2.268E-05	1.679E-05
F	3.2	0.32	7242.	0.	0.	0.	221.0	40.8	257.7	9.476E-06	1.059E-05	9.476E-06
F	5.3	0.04	7242.	0.	0.	0.	221.0	40.8	225.9	6.485E-06	6.352E-06	6.352E-06
G	0.3	0.37	7242.	0.	0.	0.	152.5	24.7	256.8	1.567E-04	2.389E-04	1.567E-04
G	1.5	2.80	7242.	0.	0.	0.	152.5	24.7	256.8	3.358E-05	5.120E-05	3.358E-05

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

LOW POPULATION ZONE CALCULATIONS:

NW SECTOR BOUNDARY DISTANCE = 7242.0 METERS

LATERAL PLUME MEANDER/BUILDING WAKE CREDIT ALLOWED
AS A FUNCTION OF DOWNWIND DISTANCE.
MEANDER CREDIT IS FOR WINDSPEEDS LESS THAN 6 MPS.
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

1.567E-04	7.834E-05	3.633E-05	3.358E-05	1.717E-05	1.679E-05	9.476E-06	7.785E-06	6.352E-06	4.131E-06
0.373	0.524	0.607	3.409	3.430	7.810	8.126	19.295	19.334	24.425
0.01232	0.01732	0.02005	0.11261	0.11329	0.25799	0.26842	0.63734	0.63864	0.80680
3.680E-06	2.726E-06	1.842E-06	1.835E-06	1.162E-06	8.768E-07	7.853E-07	4.092E-07	2.593E-07	2.455E-07
39.501	40.093	40.211	66.337	69.573	71.072	71.112	78.492	79.123	79.360
1.30478	1.32433	1.32824	2.19122	2.29811	2.34765	2.34895	2.59273	2.61358	2.62141
2.083E-07	1.210E-07	9.719E-08	7.261E-08	5.831E-08					
79.952	86.740	98.421	98.934	100.000					
2.64096	2.86518	3.25104	3.26799	3.30319					

X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(2)= 0.112
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(3)= 0.637
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(4)= 1.303
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(5)= 2.189
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(6)= 3.248

K	I	XQSAVE(K,I)	XQINT(K,I)	XQSLOP(K,I)
7	1	-8.76125	-18.00297	-2.52079
7	2	-10.30170	-18.22037	-2.59195
7	3	-11.76333	-18.78123	-2.81709
7	4	-12.51256	-19.91846	-3.32815
7	5	-13.20823	-47.91943	-17.21612
7	6	-16.14660	NUMXQ(K)= 6	
		8.124E-05	0.033	1.000
		3.696E-05	0.099	3.000

2.481E-05	0.165	5.000
1.396E-05	0.330	10.000
9.784E-06	0.495	15.000
7.510E-06	0.661	20.000
5.983E-06	0.826	25.000
4.946E-06	0.991	30.000
4.197E-06	1.156	35.000
3.621E-06	1.321	40.000
3.105E-06	1.486	45.000
2.700E-06	1.652	50.000
2.375E-06	1.817	55.000
2.109E-06	1.982	60.000
1.888E-06	2.147	65.000
1.244E-06	2.312	70.000
7.508E-07	2.477	75.000
4.659E-07	2.643	80.000
2.962E-07	2.808	85.000
1.925E-07	2.973	90.000
9.705E-06	0.5	15.14

ANNUAL AVERAGE = 3.92E-08

K= 7 FIVEXQ(K)= 9.705E-06 FIVEPR(K)=15.137

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

PARAMETER VALUES FOR THE CHI/Q CALCULATIONS FOR THE NNW SECTOR.										** CHI/Q VALUES (SEC/CUBIC METER)		
STABILITY CLASS	WINDSPEED METER/SEC AT 10.0 METERS	FREQUENCY PERCENT	DISTANCE METERS	TERRAIN HT METERS	HT EFF METERS	PLUME HT METERS	SIGMA-Y METERS	SIGMA-Z METERS	MEANDER-SY METERS	MEANDER	BLDG WAKE CA=1236.SQ.METERS	USED
A	1.5	0.10	7242.	0.	0.	0.	1000.0	1000.0	1000.0	2.083E-07	2.083E-07	2.083E-07
A	3.3	4.19	7242.	0.	0.	0.	1000.0	1000.0	1000.0	9.723E-08	9.719E-08	9.719E-08
A	5.5	1.86	7242.	0.	0.	0.	1000.0	1000.0	1000.0	5.834E-08	5.831E-08	5.831E-08
A	8.1	0.02	7242.	0.	0.	0.	1000.0	1000.0	1000.0	3.942E-08	3.940E-08	3.940E-08
B	1.5	0.26	7242.	0.	0.	0.	842.0	953.7	842.0	2.595E-07	2.593E-07	2.593E-07
B	3.3	2.94	7242.	0.	0.	0.	842.0	953.7	842.0	1.211E-07	1.210E-07	1.210E-07
B	5.5	0.74	7242.	0.	0.	0.	842.0	953.7	842.0	7.265E-08	7.261E-08	7.261E-08
B	8.1	0.02	7242.	0.	0.	0.	842.0	953.7	842.0	4.909E-08	4.906E-08	4.906E-08
C	1.5	0.32	7242.	0.	0.	0.	639.4	371.0	639.4	8.782E-07	8.768E-07	8.768E-07
C	3.3	3.87	7242.	0.	0.	0.	639.4	371.0	639.4	4.098E-07	4.092E-07	4.092E-07
C	5.5	0.74	7242.	0.	0.	0.	639.4	371.0	639.4	2.459E-07	2.455E-07	2.455E-07
C	8.1	0.04	7242.	0.	0.	0.	639.4	371.0	639.4	1.661E-07	1.659E-07	1.659E-07
D	0.3	0.01	7242.	0.	0.	0.	450.2	110.6	511.8	1.717E-05	1.937E-05	1.717E-05
D	1.5	6.75	7242.	0.	0.	0.	450.2	110.6	511.8	3.680E-06	4.151E-06	3.680E-06
D	3.3	24.90	7242.	0.	0.	0.	450.2	110.6	478.9	1.835E-06	1.937E-06	1.835E-06
D	5.5	3.97	7242.	0.	0.	0.	450.2	110.6	454.0	1.162E-06	1.162E-06	1.162E-06
D	8.1	0.42	7242.	0.	0.	0.	450.2	110.6	450.2	7.915E-07	7.853E-07	7.853E-07
E	0.3	0.11	7242.	0.	0.	0.	320.2	67.2	407.7	3.633E-05	4.544E-05	3.633E-05
E	1.5	15.38	7242.	0.	0.	0.	320.2	67.2	407.7	7.785E-06	9.736E-06	7.785E-06
E	3.2	14.62	7242.	0.	0.	0.	320.2	67.2	358.6	4.131E-06	4.544E-06	4.131E-06
E	5.3	1.70	7242.	0.	0.	0.	320.2	67.2	325.7	2.729E-06	2.726E-06	2.726E-06
E	7.9	0.10	7242.	0.	0.	0.	320.2	67.2	320.2	1.876E-06	1.842E-06	1.842E-06
F	0.3	0.30	7242.	0.	0.	0.	221.0	40.8	311.7	7.834E-05	1.059E-04	7.834E-05
F	1.5	8.79	7242.	0.	0.	0.	221.0	40.8	311.7	1.679E-05	2.268E-05	1.679E-05
F	3.2	1.38	7242.	0.	0.	0.	221.0	40.8	257.7	9.476E-06	1.059E-05	9.476E-06
G	0.3	0.75	7242.	0.	0.	0.	152.5	24.7	256.8	1.567E-04	2.389E-04	1.567E-04
G	1.5	5.63	7242.	0.	0.	0.	152.5	24.7	256.8	3.358E-05	5.120E-05	3.358E-05
G	3.2	0.08	7242.	0.	0.	0.	152.5	24.7	189.9	2.119E-05	2.389E-05	2.119E-05

USNRC COMPUTER CODE-PAVAN, VERSION 2.0 RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2 METEOROLOGICAL INSTRUMENTATION
DATA PERIOD: 1988-96 AVG. MET. WIND SENSORS HEIGHT: 11.0 METERS
TYPE OF RELEASE: GROUND-LEVEL RELEASE DELTA-T HEIGHTS: 9.3 - 60.8 METERS
SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)
COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS
PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

LOW POPULATION ZONE CALCULATIONS:

NNW SECTOR BOUNDARY DISTANCE = 7242.0 METERS

LATERAL PLUME MEANDER/BUILDING WAKE CREDIT ALLOWED
AS A FUNCTION OF DOWNWIND DISTANCE.
MEANDER CREDIT IS FOR WINDSPEEDS LESS THAN 6 MPS.
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

1.567E-04	7.834E-05	3.633E-05	3.358E-05	2.119E-05	1.717E-05	1.679E-05	9.476E-06	7.785E-06	4.131E-06
0.749	1.053	1.167	6.795	6.875	6.884	15.677	17.059	32.442	47.063
0.04874	0.06852	0.07594	0.44225	0.44746	0.44807	1.02035	1.11029	2.11145	3.06308
3.680E-06	2.726E-06	1.842E-06	1.835E-06	1.162E-06	8.768E-07	7.853E-07	4.092E-07	2.593E-07	2.455E-07
53.813	55.515	55.615	80.512	84.477	84.798	85.218	89.084	89.344	90.086
3.50239	3.61319	3.61971	5.24008	5.49819	5.51905	5.54642	5.79802	5.81496	5.86320
2.083E-07	1.659E-07	1.210E-07	9.719E-08	7.261E-08	5.831E-08	4.906E-08	3.940E-08		
90.186	90.226	93.170	97.356	98.097	99.960	99.980	100.000		
5.86972	5.87232	6.06395	6.33640	6.38464	6.50587	6.50717	6.50848		

X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(2)= 0.442
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(3)= 1.019
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(4)= 2.109
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(5)= 3.499
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(6)= 5.236
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(7)= 5.494
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(8)= 6.333

K	I	XQSAVE(K,I)	XQINT(K,I)	XQSLOP(K,I)
8	1	-8.76125	-16.23731	-2.26690
8	2	-10.30170	-16.36859	-2.31703
8	3	-10.99488	-17.19325	-2.67261
8	4	-11.76333	-18.69230	-3.41044
8	5	-12.51256	-19.15938	-3.66821
8	6	-13.20823	-44.57874	-19.33637


```
8 7      -13.66575 -69.32851 -34.81759
8 8      -16.14660      NUMXQ(K)= 8
1.301E-04      0.065      1.000
6.160E-05      0.195      3.000
4.241E-05      0.325      5.000
2.458E-05      0.651     10.000
1.744E-05      0.976     15.000
1.309E-05      1.302     20.000
1.035E-05      1.627     25.000
8.489E-06      1.953     30.000
6.985E-06      2.278     35.000
5.753E-06      2.603     40.000
4.831E-06      2.929     45.000
4.120E-06      3.254     50.000
3.549E-06      3.580     55.000
3.066E-06      3.905     60.000
2.674E-06      4.231     65.000
2.351E-06      4.556     70.000
2.083E-06      4.881     75.000
1.857E-06      5.207     80.000
1.044E-06      5.532     85.000
3.875E-07      5.858     90.000

3.045E-05      0.5      7.68

ANNUAL AVERAGE = 1.06E-07

K= 8      FIVEXQ(K)= 3.045E-05      FIVEPR(K)= 7.682
```

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

PARAMETER VALUES FOR THE CHI/Q CALCULATIONS FOR THE N SECTOR.										** CHI/Q VALUES (SEC/CUBIC METER)		
STABILITY	WINDSPEED	FREQUENCY	DISTANCE	TERRAIN HT	EFF PLUME HT	SIGMA-Y	SIGMA-Z	MEANDER-SY		MEANDER	BLDG WAKE	USED
CLASS	METER/SEC	PERCENT	METERS	METERS	METERS	METERS	METERS	METERS		CA=1236.SQ.METERS		
AT 10.0 METERS												
A	1.5	0.06	7242.	0.	0.	1000.0	1000.0	1000.0		2.083E-07	2.083E-07	2.083E-07
A	3.3	2.17	7242.	0.	0.	1000.0	1000.0	1000.0		9.723E-08	9.719E-08	9.719E-08
A	5.5	3.48	7242.	0.	0.	1000.0	1000.0	1000.0		5.834E-08	5.831E-08	5.831E-08
A	8.1	0.29	7242.	0.	0.	1000.0	1000.0	1000.0		3.942E-08	3.940E-08	3.940E-08
A	10.9	0.01	7242.	0.	0.	1000.0	1000.0	1000.0		2.917E-08	2.916E-08	2.916E-08
B	1.5	0.08	7242.	0.	0.	842.0	953.7	842.0		2.595E-07	2.593E-07	2.593E-07
B	3.3	1.84	7242.	0.	0.	842.0	953.7	842.0		1.211E-07	1.210E-07	1.210E-07
B	5.5	0.98	7242.	0.	0.	842.0	953.7	842.0		7.265E-08	7.261E-08	7.261E-08
B	8.1	0.15	7242.	0.	0.	842.0	953.7	842.0		4.909E-08	4.906E-08	4.906E-08
C	1.5	0.14	7242.	0.	0.	639.4	371.0	639.4		8.782E-07	8.768E-07	8.768E-07
C	3.3	1.96	7242.	0.	0.	639.4	371.0	639.4		4.098E-07	4.092E-07	4.092E-07
C	5.5	0.91	7242.	0.	0.	639.4	371.0	639.4		2.459E-07	2.455E-07	2.455E-07
C	8.1	0.10	7242.	0.	0.	639.4	371.0	639.4		1.661E-07	1.659E-07	1.659E-07
C	10.9	0.01	7242.	0.	0.	639.4	371.0	639.4		1.229E-07	1.227E-07	1.227E-07
D	0.3	0.01	7242.	0.	0.	450.2	110.6	511.8		1.717E-05	1.937E-05	1.717E-05
D	1.5	4.12	7242.	0.	0.	450.2	110.6	511.8		3.680E-06	4.151E-06	3.680E-06
D	3.3	17.85	7242.	0.	0.	450.2	110.6	478.9		1.835E-06	1.937E-06	1.835E-06
D	5.5	6.25	7242.	0.	0.	450.2	110.6	454.0		1.162E-06	1.162E-06	1.162E-06
D	8.1	0.84	7242.	0.	0.	450.2	110.6	450.2		7.915E-07	7.853E-07	7.853E-07
D	10.9	0.03	7242.	0.	0.	450.2	110.6	450.2		5.857E-07	5.811E-07	5.811E-07
E	0.3	0.14	7242.	0.	0.	320.2	67.2	407.7		3.633E-05	4.544E-05	3.633E-05
E	1.5	18.70	7242.	0.	0.	320.2	67.2	407.7		7.785E-06	9.736E-06	7.785E-06
E	3.2	16.58	7242.	0.	0.	320.2	67.2	358.6		4.131E-06	4.544E-06	4.131E-06
E	5.3	3.33	7242.	0.	0.	320.2	67.2	325.7		2.729E-06	2.726E-06	2.726E-06
E	7.9	0.39	7242.	0.	0.	320.2	67.2	320.2		1.876E-06	1.842E-06	1.842E-06
F	0.3	0.37	7242.	0.	0.	221.0	40.8	311.7		7.834E-05	1.059E-04	7.834E-05
F	1.5	10.65	7242.	0.	0.	221.0	40.8	311.7		1.679E-05	2.268E-05	1.679E-05
F	3.2	1.37	7242.	0.	0.	221.0	40.8	257.7		9.476E-06	1.059E-05	9.476E-06
F	5.3	0.01	7242.	0.	0.	221.0	40.8	225.9		6.485E-06	6.352E-06	6.352E-06
F	7.9	0.01	7242.	0.	0.	221.0	40.8	221.0		4.479E-06	4.292E-06	4.292E-06
G	0.3	0.83	7242.	0.	0.	152.5	24.7	256.8		1.567E-04	2.389E-04	1.567E-04
G	1.5	6.21	7242.	0.	0.	152.5	24.7	256.8		3.358E-05	5.120E-05	3.358E-05
G	3.2	0.12	7242.	0.	0.	152.5	24.7	189.9		2.119E-05	2.389E-05	2.119E-05

USNRC COMPUTER CODE-PAVAN, VERSION 2.0 RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2 METEOROLOGICAL INSTRUMENTATION
DATA PERIOD: 1988-96 AVG. MET. WIND SENSORS HEIGHT: 11.0 METERS
TYPE OF RELEASE: GROUND-LEVEL RELEASE DELTA-T HEIGHTS: 9.3 - 60.8 METERS
SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)
COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS
PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

LOW POPULATION ZONE CALCULATIONS:

N SECTOR BOUNDARY DISTANCE = 7242.0 METERS

LATERAL PLUME MEANDER/BUILDING WAKE CREDIT ALLOWED
AS A FUNCTION OF DOWNWIND DISTANCE.
MEANDER CREDIT IS FOR WINDSPEEDS LESS THAN 6 MPS.
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

1.567E-04	7.834E-05	3.633E-05	3.358E-05	2.119E-05	1.717E-05	1.679E-05	9.476E-06	7.785E-06	6.352E-06
0.826	1.194	1.333	7.541	7.666	7.671	18.319	19.688	38.383	38.397
0.07788	0.11257	0.12564	0.71095	0.72268	0.72322	1.72698	1.85604	3.61850	3.61980
4.292E-06	4.131E-06	3.680E-06	2.726E-06	1.842E-06	1.835E-06	1.162E-06	8.768E-07	7.853E-07	5.811E-07
38.411	54.990	59.111	62.444	62.831	80.682	86.933	87.071	87.914	87.942
3.62111	5.18411	5.57259	5.88675	5.92325	7.60619	8.19542	8.20845	8.28797	8.29058
4.092E-07	2.593E-07	2.455E-07	2.083E-07	1.659E-07	1.227E-07	1.210E-07	9.719E-08	7.261E-08	5.831E-08
89.906	89.989	90.901	90.957	91.053	91.067	92.906	95.077	96.059	99.544
8.47569	8.48351	8.56955	8.57476	8.58389	8.58519	8.75857	8.96323	9.05579	9.38429
4.906E-08	3.940E-08	2.916E-08							
99.696	99.986	100.000							
9.39863	9.42601	9.42731							

X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(2)= 1.725
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(3)= 3.615
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(4)= 5.569
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(5)= 7.602
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(6)= 8.192
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(7)= 9.381

K	I	XQSAVE(K,I)	XQINT(K,I)	XQSLOP(K,I)
9	1	-8.76125	-15.49294	-2.12759
9	2	-10.99488	-16.12029	-2.42433
9	3	-11.76333	-18.32696	-3.65217

9	4	-12.51256	-19.44746	-4.35599
9	5	-13.20823	-29.57287	-11.42515
9	6	-13.66575	-69.47514	-40.08460
9	7	-16.65743	NUMXQ(K)= 7	
	1.391E-04	0.094		1.000
	6.739E-05	0.283		3.000
	4.685E-05	0.471		5.000
	2.766E-05	0.943		10.000
	1.989E-05	1.414		15.000
	1.540E-05	1.885		20.000
	1.229E-05	2.357		25.000
	1.016E-05	2.828		30.000
	8.613E-06	3.300		35.000
	7.266E-06	3.771		40.000
	5.951E-06	4.242		45.000
	4.958E-06	4.714		50.000
	4.189E-06	5.185		55.000
	3.563E-06	5.656		60.000
	2.991E-06	6.128		65.000
	2.537E-06	6.599		70.000
	2.171E-06	7.070		75.000
	1.872E-06	7.542		80.000
	1.334E-06	8.013		85.000
	5.454E-07	8.485		90.000
	4.487E-05	0.5		5.30

ANNUAL AVERAGE = 1.75E-07

K= 9 FIVEXQ(K)= 4.487E-05 FIVEPR(K)= 5.304

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

PARAMETER VALUES FOR THE CHI/Q CALCULATIONS FOR THE NNE SECTOR.										** CHI/Q VALUES (SEC/CUBIC METER)		
STABILITY CLASS	WINDSPEED METER/SEC AT 10.0 METERS	FREQUENCY PERCENT	DISTANCE METERS	TERRAIN HT METERS	HT EFF METERS	PLUME HT METERS	SIGMA-Y METERS	SIGMA-Z METERS	MEANDER-SY METERS	MEANDER	BLDG WAKE CA=1236.SQ.METERS	USED
A	1.5	0.08	7242.	0.	0.	0.	1000.0	1000.0	1000.0	2.083E-07	2.083E-07	2.083E-07
A	3.3	3.08	7242.	0.	0.	0.	1000.0	1000.0	1000.0	9.723E-08	9.719E-08	9.719E-08
A	5.5	4.60	7242.	0.	0.	0.	1000.0	1000.0	1000.0	5.834E-08	5.831E-08	5.831E-08
A	8.1	0.55	7242.	0.	0.	0.	1000.0	1000.0	1000.0	3.942E-08	3.940E-08	3.940E-08
B	1.5	0.09	7242.	0.	0.	0.	842.0	953.7	842.0	2.595E-07	2.593E-07	2.593E-07
B	3.3	2.12	7242.	0.	0.	0.	842.0	953.7	842.0	1.211E-07	1.210E-07	1.210E-07
B	5.5	1.74	7242.	0.	0.	0.	842.0	953.7	842.0	7.265E-08	7.261E-08	7.261E-08
B	8.1	0.18	7242.	0.	0.	0.	842.0	953.7	842.0	4.909E-08	4.906E-08	4.906E-08
C	1.5	0.13	7242.	0.	0.	0.	639.4	371.0	639.4	8.782E-07	8.768E-07	8.768E-07
C	3.3	2.99	7242.	0.	0.	0.	639.4	371.0	639.4	4.098E-07	4.092E-07	4.092E-07
C	5.5	1.81	7242.	0.	0.	0.	639.4	371.0	639.4	2.459E-07	2.455E-07	2.455E-07
C	8.1	0.13	7242.	0.	0.	0.	639.4	371.0	639.4	1.661E-07	1.659E-07	1.659E-07
D	0.3	0.01	7242.	0.	0.	0.	450.2	110.6	511.8	1.717E-05	1.937E-05	1.717E-05
D	1.5	4.49	7242.	0.	0.	0.	450.2	110.6	511.8	3.680E-06	4.151E-06	3.680E-06
D	3.3	17.85	7242.	0.	0.	0.	450.2	110.6	478.9	1.835E-06	1.937E-06	1.835E-06
D	5.5	5.51	7242.	0.	0.	0.	450.2	110.6	454.0	1.162E-06	1.162E-06	1.162E-06
D	8.1	0.70	7242.	0.	0.	0.	450.2	110.6	450.2	7.915E-07	7.853E-07	7.853E-07
E	0.3	0.12	7242.	0.	0.	0.	320.2	67.2	407.7	3.633E-05	4.544E-05	3.633E-05
E	1.5	16.84	7242.	0.	0.	0.	320.2	67.2	407.7	7.785E-06	9.736E-06	7.785E-06
E	3.2	15.45	7242.	0.	0.	0.	320.2	67.2	358.6	4.131E-06	4.544E-06	4.131E-06
E	5.3	2.12	7242.	0.	0.	0.	320.2	67.2	325.7	2.729E-06	2.726E-06	2.726E-06
E	7.9	0.22	7242.	0.	0.	0.	320.2	67.2	320.2	1.876E-06	1.842E-06	1.842E-06
F	0.3	0.34	7242.	0.	0.	0.	221.0	40.8	311.7	7.834E-05	1.059E-04	7.834E-05
F	1.5	9.83	7242.	0.	0.	0.	221.0	40.8	311.7	1.679E-05	2.268E-05	1.679E-05
F	3.2	1.38	7242.	0.	0.	0.	221.0	40.8	257.7	9.476E-06	1.059E-05	9.476E-06
F	5.3	0.01	7242.	0.	0.	0.	221.0	40.8	225.9	6.485E-06	6.352E-06	6.352E-06
G	0.3	0.88	7242.	0.	0.	0.	152.5	24.7	256.8	1.567E-04	2.389E-04	1.567E-04
G	1.5	6.64	7242.	0.	0.	0.	152.5	24.7	256.8	3.358E-05	5.120E-05	3.358E-05
G	3.2	0.13	7242.	0.	0.	0.	152.5	24.7	189.9	2.119E-05	2.389E-05	2.119E-05

USNRC COMPUTER CODE-PAVAN, VERSION 2.0 RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2 METEOROLOGICAL INSTRUMENTATION
DATA PERIOD: 1988-96 AVG. MET. WIND SENSORS HEIGHT: 11.0 METERS
TYPE OF RELEASE: GROUND-LEVEL RELEASE DELTA-T HEIGHTS: 9.3 - 60.8 METERS
SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)
COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS
PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

LOW POPULATION ZONE CALCULATIONS:

NNE SECTOR BOUNDARY DISTANCE = 7242.0 METERS

LATERAL PLUME MEANDER/BUILDING WAKE CREDIT ALLOWED
AS A FUNCTION OF DOWNWIND DISTANCE.
MEANDER CREDIT IS FOR WINDSPEEDS LESS THAN 6 MPS.
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

1.567E-04	7.834E-05	3.633E-05	3.358E-05	2.119E-05	1.717E-05	1.679E-05	9.476E-06	7.785E-06	6.352E-06
0.883	1.223	1.348	7.986	8.116	8.122	17.955	19.332	36.167	36.180
0.08864	0.12274	0.13526	0.80140	0.81444	0.81506	1.80188	1.94006	3.62952	3.63082
4.131E-06	3.680E-06	2.726E-06	1.842E-06	1.835E-06	1.162E-06	8.768E-07	7.853E-07	4.092E-07	2.593E-07
51.625	56.120	58.237	58.458	76.306	81.814	81.944	82.645	85.633	85.724
5.18079	5.63184	5.84432	5.86648	7.65762	8.21034	8.22338	8.29377	8.59360	8.60273
2.455E-07	2.083E-07	1.659E-07	1.210E-07	9.719E-08	7.261E-08	5.831E-08	4.906E-08	3.940E-08	
87.530	87.608	87.737	89.855	92.933	94.674	99.273	99.454	100.000	
8.78393	8.79175	8.80478	9.01727	9.32622	9.50090	9.96238	9.98063	10.03538	

X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(2)= 0.800
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(3)= 1.800
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(4)= 3.626
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(5)= 5.628
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(6)= 7.654
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(7)= 8.207

K	I	XQSAVE(K,I)	XQINT(K,I)	XQSLOP(K,I)
10	1	-8.76125	-15.47341	-2.14709
10	2	-10.30170	-15.65732	-2.22344
10	3	-10.99488	-16.34572	-2.55173
10	4	-11.76333	-18.20062	-3.58464
10	5	-12.51256	-19.49737	-4.40186
10	6	-13.20823	-30.66586	-12.21883
10	7	-13.66575	NUMXQ(K)= 7	

1.448E-04	0.100	1.000
6.942E-05	0.301	3.000
4.798E-05	0.502	5.000
2.790E-05	1.004	10.000
1.971E-05	1.505	15.000
1.500E-05	2.007	20.000
1.180E-05	2.509	25.000
9.642E-06	3.011	30.000
8.087E-06	3.512	35.000
6.593E-06	4.014	40.000
5.407E-06	4.516	45.000
4.510E-06	5.018	50.000
3.814E-06	5.519	55.000
3.176E-06	6.021	60.000
2.655E-06	6.523	65.000
2.242E-06	7.025	70.000
1.911E-06	7.527	75.000
1.347E-06	8.028	80.000
4.811E-05	0.5	4.98

ANNUAL AVERAGE = 2.22E-07

K= 10 FIVEXQ(K)= 4.811E-05 FIVEPR(K)= 4.982

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

PARAMETER VALUES FOR THE CHI/Q CALCULATIONS FOR THE NE SECTOR.										** CHI/Q VALUES (SEC/CUBIC METER)		
STABILITY	WINDSPEED	FREQUENCY	DISTANCE	TERRAIN HT	EFF PLUME HT	SIGMA-Y	SIGMA-Z	MEANDER-SY		MEANDER	BLDG WAKE	USED
CLASS	METER/SEC	PERCENT	METERS	METERS	METERS	METERS	METERS	METERS				
AT 10.0 METERS										CA=1236.SQ.METERS		
A	1.5	0.08	7242.	0.	0.	1000.0	1000.0	1000.0		2.083E-07	2.083E-07	2.083E-07
A	3.3	4.47	7242.	0.	0.	1000.0	1000.0	1000.0		9.723E-08	9.719E-08	9.719E-08
A	5.5	5.85	7242.	0.	0.	1000.0	1000.0	1000.0		5.834E-08	5.831E-08	5.831E-08
A	8.1	0.40	7242.	0.	0.	1000.0	1000.0	1000.0		3.942E-08	3.940E-08	3.940E-08
A	10.9	0.02	7242.	0.	0.	1000.0	1000.0	1000.0		2.917E-08	2.916E-08	2.916E-08
B	1.5	0.09	7242.	0.	0.	842.0	953.7	842.0		2.595E-07	2.593E-07	2.593E-07
B	3.3	3.53	7242.	0.	0.	842.0	953.7	842.0		1.211E-07	1.210E-07	1.210E-07
B	5.5	2.23	7242.	0.	0.	842.0	953.7	842.0		7.265E-08	7.261E-08	7.261E-08
B	8.1	0.26	7242.	0.	0.	842.0	953.7	842.0		4.909E-08	4.906E-08	4.906E-08
C	1.5	0.19	7242.	0.	0.	639.4	371.0	639.4		8.782E-07	8.768E-07	8.768E-07
C	3.3	4.62	7242.	0.	0.	639.4	371.0	639.4		4.098E-07	4.092E-07	4.092E-07
C	5.5	2.46	7242.	0.	0.	639.4	371.0	639.4		2.459E-07	2.455E-07	2.455E-07
C	8.1	0.20	7242.	0.	0.	639.4	371.0	639.4		1.661E-07	1.659E-07	1.659E-07
D	0.3	0.01	7242.	0.	0.	450.2	110.6	511.8		1.717E-05	1.937E-05	1.717E-05
D	1.5	4.81	7242.	0.	0.	450.2	110.6	511.8		3.680E-06	4.151E-06	3.680E-06
D	3.3	18.17	7242.	0.	0.	450.2	110.6	478.9		1.835E-06	1.937E-06	1.835E-06
D	5.5	5.45	7242.	0.	0.	450.2	110.6	454.0		1.162E-06	1.162E-06	1.162E-06
D	8.1	0.54	7242.	0.	0.	450.2	110.6	450.2		7.915E-07	7.853E-07	7.853E-07
E	0.3	0.10	7242.	0.	0.	320.2	67.2	407.7		3.633E-05	4.544E-05	3.633E-05
E	1.5	13.22	7242.	0.	0.	320.2	67.2	407.7		7.785E-06	9.736E-06	7.785E-06
E	3.2	11.36	7242.	0.	0.	320.2	67.2	358.6		4.131E-06	4.544E-06	4.131E-06
E	5.3	2.02	7242.	0.	0.	320.2	67.2	325.7		2.729E-06	2.726E-06	2.726E-06
E	7.9	0.02	7242.	0.	0.	320.2	67.2	320.2		1.876E-06	1.842E-06	1.842E-06
F	0.3	0.32	7242.	0.	0.	221.0	40.8	311.7		7.834E-05	1.059E-04	7.834E-05
F	1.5	9.26	7242.	0.	0.	221.0	40.8	311.7		1.679E-05	2.268E-05	1.679E-05
F	3.2	2.09	7242.	0.	0.	221.0	40.8	257.7		9.476E-06	1.059E-05	9.476E-06
F	5.3	0.03	7242.	0.	0.	221.0	40.8	225.9		6.485E-06	6.352E-06	6.352E-06
G	0.3	0.93	7242.	0.	0.	152.5	24.7	256.8		1.567E-04	2.389E-04	1.567E-04
G	1.5	7.02	7242.	0.	0.	152.5	24.7	256.8		3.358E-05	5.120E-05	3.358E-05
G	3.2	0.25	7242.	0.	0.	152.5	24.7	189.9		2.119E-05	2.389E-05	2.119E-05

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

LOW POPULATION ZONE CALCULATIONS:

NE SECTOR BOUNDARY DISTANCE = 7242.0 METERS

LATERAL PLUME MEANDER/BUILDING WAKE CREDIT ALLOWED
AS A FUNCTION OF DOWNWIND DISTANCE.
MEANDER CREDIT IS FOR WINDSPEEDS LESS THAN 6 MPS.
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

1.567E-04	7.834E-05	3.633E-05	3.358E-05	2.119E-05	1.717E-05	1.679E-05	9.476E-06	7.785E-06	6.352E-06
0.934	1.254	1.352	8.372	8.621	8.628	17.890	19.976	33.191	33.222
0.07823	0.10503	0.11324	0.70116	0.72202	0.72257	1.49821	1.67289	2.77964	2.78225
4.131E-06	3.680E-06	2.726E-06	1.842E-06	1.835E-06	1.162E-06	8.768E-07	7.853E-07	4.092E-07	2.593E-07
44.585	49.395	51.419	51.434	69.600	75.048	75.235	75.779	80.403	80.496
3.73387	4.13668	4.30615	4.30745	5.82875	6.28501	6.30065	6.34628	6.73344	6.74126
2.455E-07	2.083E-07	1.659E-07	1.210E-07	9.719E-08	7.261E-08	5.831E-08	4.906E-08	3.940E-08	2.916E-08
82.955	83.033	83.236	86.769	91.236	93.462	99.315	99.580	99.984	100.000
6.94723	6.95375	6.97070	7.26661	7.64074	7.82716	8.31731	8.33947	8.37336	8.37467

X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

HANDCHECK GRAPH:	SLOPE LT -1.0 FOR LOW PERCENTAGES.	XSAVE(2)=	0.700
HANDCHECK GRAPH:	SLOPE LT -1.0 FOR LOW PERCENTAGES.	XSAVE(3)=	1.497
HANDCHECK GRAPH:	SLOPE LT -1.0 FOR LOW PERCENTAGES.	XSAVE(4)=	2.777
HANDCHECK GRAPH:	SLOPE LT -1.0 FOR LOW PERCENTAGES.	XSAVE(5)=	4.133
HANDCHECK GRAPH:	SLOPE LT -1.0 FOR LOW PERCENTAGES.	XSAVE(6)=	5.825
HANDCHECK GRAPH:	SLOPE LT -1.0 FOR LOW PERCENTAGES.	XSAVE(7)=	6.281
HANDCHECK GRAPH:	SLOPE LT -1.0 FOR LOW PERCENTAGES.	XSAVE(8)=	8.314

K	I	XQSAVE(K,I)	XQINT(K,I)	XQSLOP(K,I)
11	1	-8.76125	-15.66588	-2.18314
11	2	-10.30170	-16.25520	-2.42298
11	3	-10.99488	-17.50230	-2.99742
11	4	-11.76333	-19.76782	-4.18068
11	5	-12.51256	-19.79486	-4.19626
11	6	-13.20823	-32.08230	-12.02444

```
11 7      -13.66575 -44.76961 -20.30817
11 8      -16.65743      NUMXQ(K)= 8
      1.500E-04      0.084      1.000
      7.189E-05      0.251      3.000
      4.973E-05      0.419      5.000
      2.872E-05      0.837     10.000
      1.984E-05      1.256     15.000
      1.469E-05      1.675     20.000
      1.117E-05      2.094     25.000
      8.873E-06      2.512     30.000
      7.065E-06      2.931     35.000
      5.513E-06      3.350     40.000
      4.408E-06      3.769     45.000
      3.593E-06      4.187     50.000
      2.974E-06      4.606     55.000
      2.495E-06      5.025     60.000
      2.117E-06      5.444     65.000
      1.773E-06      5.862     70.000
      1.166E-06      6.281     75.000
      5.972E-07      6.700     80.000
      3.148E-07      7.118     85.000
      1.707E-07      7.537     90.000

      4.355E-05      0.5      5.97

ANNUAL AVERAGE = 1.37E-07

K= 11      FIVEXQ(K)= 4.355E-05      FIVEPR(K)= 5.970
```

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

PARAMETER VALUES FOR THE CHI/Q CALCULATIONS FOR THE ENE SECTOR.										** CHI/Q VALUES (SEC/CUBIC METER)		
STABILITY	WINDSPEED	FREQUENCY	DISTANCE	TERRAIN HT	EFF PLUME HT	SIGMA-Y	SIGMA-Z	MEANDER-SY		MEANDER	BLDG WAKE	USED
CLASS	METER/SEC	PERCENT	METERS	METERS	METERS	METERS	METERS	METERS				
AT 10.0 METERS										CA=1236.SQ.METERS		
A	1.5	0.13	7242.	0.	0.	1000.0	1000.0	1000.0		2.083E-07	2.083E-07	2.083E-07
A	3.3	3.14	7242.	0.	0.	1000.0	1000.0	1000.0		9.723E-08	9.719E-08	9.719E-08
A	5.5	3.23	7242.	0.	0.	1000.0	1000.0	1000.0		5.834E-08	5.831E-08	5.831E-08
A	8.1	0.13	7242.	0.	0.	1000.0	1000.0	1000.0		3.942E-08	3.940E-08	3.940E-08
B	1.5	0.13	7242.	0.	0.	842.0	953.7	842.0		2.595E-07	2.593E-07	2.593E-07
B	3.3	3.33	7242.	0.	0.	842.0	953.7	842.0		1.211E-07	1.210E-07	1.210E-07
B	5.5	1.75	7242.	0.	0.	842.0	953.7	842.0		7.265E-08	7.261E-08	7.261E-08
B	8.1	0.11	7242.	0.	0.	842.0	953.7	842.0		4.909E-08	4.906E-08	4.906E-08
C	1.5	0.41	7242.	0.	0.	639.4	371.0	639.4		8.782E-07	8.768E-07	8.768E-07
C	3.3	4.57	7242.	0.	0.	639.4	371.0	639.4		4.098E-07	4.092E-07	4.092E-07
C	5.5	1.41	7242.	0.	0.	639.4	371.0	639.4		2.459E-07	2.455E-07	2.455E-07
C	8.1	0.17	7242.	0.	0.	639.4	371.0	639.4		1.661E-07	1.659E-07	1.659E-07
D	0.3	0.01	7242.	0.	0.	450.2	110.6	511.8		1.717E-05	1.937E-05	1.717E-05
D	1.5	6.73	7242.	0.	0.	450.2	110.6	511.8		3.680E-06	4.151E-06	3.680E-06
D	3.3	19.56	7242.	0.	0.	450.2	110.6	478.9		1.835E-06	1.937E-06	1.835E-06
D	5.5	5.11	7242.	0.	0.	450.2	110.6	454.0		1.162E-06	1.162E-06	1.162E-06
D	8.1	0.21	7242.	0.	0.	450.2	110.6	450.2		7.915E-07	7.853E-07	7.853E-07
E	0.3	0.10	7242.	0.	0.	320.2	67.2	407.7		3.633E-05	4.544E-05	3.633E-05
E	1.5	13.10	7242.	0.	0.	320.2	67.2	407.7		7.785E-06	9.736E-06	7.785E-06
E	3.2	11.86	7242.	0.	0.	320.2	67.2	358.6		4.131E-06	4.544E-06	4.131E-06
E	5.3	2.12	7242.	0.	0.	320.2	67.2	325.7		2.729E-06	2.726E-06	2.726E-06
E	7.9	0.04	7242.	0.	0.	320.2	67.2	320.2		1.876E-06	1.842E-06	1.842E-06
F	0.3	0.34	7242.	0.	0.	221.0	40.8	311.7		7.834E-05	1.059E-04	7.834E-05
F	1.5	9.96	7242.	0.	0.	221.0	40.8	311.7		1.679E-05	2.268E-05	1.679E-05
F	3.2	1.82	7242.	0.	0.	221.0	40.8	257.7		9.476E-06	1.059E-05	9.476E-06
F	5.3	0.02	7242.	0.	0.	221.0	40.8	225.9		6.485E-06	6.352E-06	6.352E-06
G	0.3	1.18	7242.	0.	0.	152.5	24.7	256.8		1.567E-04	2.389E-04	1.567E-04
G	1.5	8.89	7242.	0.	0.	152.5	24.7	256.8		3.358E-05	5.120E-05	3.358E-05
G	3.2	0.43	7242.	0.	0.	152.5	24.7	189.9		2.119E-05	2.389E-05	2.119E-05

USNRC COMPUTER CODE-PAVAN, VERSION 2.0 RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2 METEOROLOGICAL INSTRUMENTATION
DATA PERIOD: 1988-96 AVG. MET. WIND SENSORS HEIGHT: 11.0 METERS
TYPE OF RELEASE: GROUND-LEVEL RELEASE DELTA-T HEIGHTS: 9.3 - 60.8 METERS
SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)
COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS
PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

LOW POPULATION ZONE CALCULATIONS:

ENE SECTOR BOUNDARY DISTANCE = 7242.0 METERS

LATERAL PLUME MEANDER/BUILDING WAKE CREDIT ALLOWED
AS A FUNCTION OF DOWNWIND DISTANCE.
MEANDER CREDIT IS FOR WINDSPEEDS LESS THAN 6 MPS.
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

1.567E-04	7.834E-05	3.633E-05	3.358E-05	2.119E-05	1.717E-05	1.679E-05	9.476E-06	7.785E-06	6.352E-06
1.183	1.527	1.625	10.516	10.944	10.953	20.914	22.731	35.833	35.855
0.07216	0.09315	0.09907	0.64137	0.66744	0.66801	1.27548	1.38629	2.18539	2.18669
4.131E-06	3.680E-06	2.726E-06	1.842E-06	1.835E-06	1.162E-06	8.768E-07	7.853E-07	4.092E-07	2.593E-07
47.718	54.451	56.567	56.609	76.167	81.276	81.682	81.896	86.470	86.598
2.91019	3.32082	3.44988	3.45248	4.64527	4.95683	4.98160	4.99463	5.27360	5.28143
2.455E-07	2.083E-07	1.659E-07	1.210E-07	9.719E-08	7.261E-08	5.831E-08	4.906E-08	3.940E-08	
88.009	88.137	88.308	91.643	94.785	96.537	99.765	99.872	100.000	
5.36746	5.37528	5.38571	5.58907	5.78070	5.88760	6.08444	6.09096	6.09878	

X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

HANDCHECK GRAPH:	SLOPE LT -1.0 FOR LOW PERCENTAGES.	XSAVE(2)=	0.641
HANDCHECK GRAPH:	SLOPE LT -1.0 FOR LOW PERCENTAGES.	XSAVE(3)=	1.274
HANDCHECK GRAPH:	SLOPE LT -1.0 FOR LOW PERCENTAGES.	XSAVE(4)=	2.183
HANDCHECK GRAPH:	SLOPE LT -1.0 FOR LOW PERCENTAGES.	XSAVE(5)=	3.318
HANDCHECK GRAPH:	SLOPE LT -1.0 FOR LOW PERCENTAGES.	XSAVE(6)=	4.642
HANDCHECK GRAPH:	SLOPE LT -1.0 FOR LOW PERCENTAGES.	XSAVE(7)=	4.953

K	I	XQSAVE(K,I)	XQINT(K,I)	XQSLOP(K,I)
12	1	-8.76125	-15.80098	-2.20948
12	2	-10.30170	-17.07005	-2.71936
12	3	-10.99488	-18.91632	-3.54579
12	4	-11.76333	-20.09971	-4.13241
12	5	-12.51256	-20.73297	-4.47732
12	6	-13.20823	-37.83480	-14.65312
12	7	-13.66575	NUMXQ(K)= 7	

BACK EXTRAPOLATION FOR 1 PERCENTILE.

1.743E-04	0.061	1.000
8.446E-05	0.183	3.000
5.883E-05	0.305	5.000
3.493E-05	0.610	10.000
2.365E-05	0.915	15.000
1.759E-05	1.220	20.000
1.310E-05	1.525	25.000
1.010E-05	1.830	30.000
8.061E-06	2.135	35.000
6.425E-06	2.440	40.000
5.211E-06	2.744	45.000
4.306E-06	3.049	50.000
3.607E-06	3.354	55.000
3.023E-06	3.659	60.000
2.563E-06	3.964	65.000
2.196E-06	4.269	70.000
1.897E-06	4.574	75.000
1.299E-06	4.879	80.000
4.072E-05	0.5	8.20

ANNUAL AVERAGE = 1.15E-07

K= 12 FIVEXQ(K)= 4.072E-05 FIVEPR(K)= 8.198

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

PARAMETER VALUES FOR THE CHI/Q CALCULATIONS FOR THE E SECTOR.										** CHI/Q VALUES (SEC/CUBIC METER)		
STABILITY	WINDSPEED	FREQUENCY	DISTANCE	TERRAIN HT	EFF PLUME HT	SIGMA-Y	SIGMA-Z	MEANDER-SY		MEANDER	BLDG WAKE	USED
CLASS	METER/SEC	PERCENT	METERS	METERS	METERS	METERS	METERS	METERS				
AT 10.0 METERS										CA=1236.SQ.METERS		
A	1.5	0.06	7242.	0.	0.	1000.0	1000.0	1000.0		2.083E-07	2.083E-07	2.083E-07
A	3.3	3.21	7242.	0.	0.	1000.0	1000.0	1000.0		9.723E-08	9.719E-08	9.719E-08
A	5.5	2.31	7242.	0.	0.	1000.0	1000.0	1000.0		5.834E-08	5.831E-08	5.831E-08
B	1.5	0.20	7242.	0.	0.	842.0	953.7	842.0		2.595E-07	2.593E-07	2.593E-07
B	3.3	2.93	7242.	0.	0.	842.0	953.7	842.0		1.211E-07	1.210E-07	1.210E-07
B	5.5	1.46	7242.	0.	0.	842.0	953.7	842.0		7.265E-08	7.261E-08	7.261E-08
B	8.1	0.14	7242.	0.	0.	842.0	953.7	842.0		4.909E-08	4.906E-08	4.906E-08
C	1.5	0.28	7242.	0.	0.	639.4	371.0	639.4		8.782E-07	8.768E-07	8.768E-07
C	3.3	3.55	7242.	0.	0.	639.4	371.0	639.4		4.098E-07	4.092E-07	4.092E-07
C	5.5	1.41	7242.	0.	0.	639.4	371.0	639.4		2.459E-07	2.455E-07	2.455E-07
C	8.1	0.11	7242.	0.	0.	639.4	371.0	639.4		1.661E-07	1.659E-07	1.659E-07
D	0.3	0.01	7242.	0.	0.	450.2	110.6	511.8		1.717E-05	1.937E-05	1.717E-05
D	1.5	7.85	7242.	0.	0.	450.2	110.6	511.8		3.680E-06	4.151E-06	3.680E-06
D	3.3	18.04	7242.	0.	0.	450.2	110.6	478.9		1.835E-06	1.937E-06	1.835E-06
D	5.5	4.31	7242.	0.	0.	450.2	110.6	454.0		1.162E-06	1.162E-06	1.162E-06
D	8.1	0.39	7242.	0.	0.	450.2	110.6	450.2		7.915E-07	7.853E-07	7.853E-07
D	10.9	0.03	7242.	0.	0.	450.2	110.6	450.2		5.857E-07	5.811E-07	5.811E-07
E	0.3	0.10	7242.	0.	0.	320.2	67.2	407.7		3.633E-05	4.544E-05	3.633E-05
E	1.5	13.59	7242.	0.	0.	320.2	67.2	407.7		7.785E-06	9.736E-06	7.785E-06
E	3.2	8.75	7242.	0.	0.	320.2	67.2	358.6		4.131E-06	4.544E-06	4.131E-06
E	5.3	0.53	7242.	0.	0.	320.2	67.2	325.7		2.729E-06	2.726E-06	2.726E-06
E	7.9	0.08	7242.	0.	0.	320.2	67.2	320.2		1.876E-06	1.842E-06	1.842E-06
F	0.3	0.44	7242.	0.	0.	221.0	40.8	311.7		7.834E-05	1.059E-04	7.834E-05
F	1.5	12.66	7242.	0.	0.	221.0	40.8	311.7		1.679E-05	2.268E-05	1.679E-05
F	3.2	0.79	7242.	0.	0.	221.0	40.8	257.7		9.476E-06	1.059E-05	9.476E-06
F	5.3	0.03	7242.	0.	0.	221.0	40.8	225.9		6.485E-06	6.352E-06	6.352E-06
G	0.3	1.95	7242.	0.	0.	152.5	24.7	256.8		1.567E-04	2.389E-04	1.567E-04
G	1.5	14.69	7242.	0.	0.	152.5	24.7	256.8		3.358E-05	5.120E-05	3.358E-05
G	3.2	0.11	7242.	0.	0.	152.5	24.7	189.9		2.119E-05	2.389E-05	2.119E-05

USNRC COMPUTER CODE-PAVAN, VERSION 2.0 RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2 METEOROLOGICAL INSTRUMENTATION
DATA PERIOD: 1988-96 AVG. MET. WIND SENSORS HEIGHT: 11.0 METERS
TYPE OF RELEASE: GROUND-LEVEL RELEASE DELTA-T HEIGHTS: 9.3 - 60.8 METERS
SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)
COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS
PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

LOW POPULATION ZONE CALCULATIONS:

E SECTOR BOUNDARY DISTANCE = 7242.0 METERS

LATERAL PLUME MEANDER/BUILDING WAKE CREDIT ALLOWED
AS A FUNCTION OF DOWNWIND DISTANCE.
MEANDER CREDIT IS FOR WINDSPEEDS LESS THAN 6 MPS.
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

1.567E-04	7.834E-05	3.633E-05	3.358E-05	2.119E-05	1.717E-05	1.679E-05	9.476E-06	7.785E-06	6.352E-06
1.954	2.392	2.493	17.180	17.293	17.304	29.966	30.754	44.344	44.372
0.09054	0.11082	0.11548	0.79596	0.80117	0.80167	1.38829	1.42479	2.05443	2.05573
4.131E-06	3.680E-06	2.726E-06	1.842E-06	1.835E-06	1.162E-06	8.768E-07	7.853E-07	5.811E-07	4.092E-07
53.123	60.973	61.508	61.592	79.628	83.933	84.215	84.609	84.637	88.182
2.46115	2.82485	2.84962	2.85353	3.68914	3.88859	3.90162	3.91987	3.92118	4.08543
2.593E-07	2.455E-07	2.083E-07	1.659E-07	1.210E-07	9.719E-08	7.261E-08	5.831E-08	4.906E-08	
88.379	89.786	89.842	89.955	92.881	96.089	97.552	99.859	100.000	
4.09455	4.15973	4.16234	4.16755	4.30313	4.45174	4.51952	4.62642	4.63294	

X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(2)= 0.795
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(3)= 1.387
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(4)= 2.052
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(5)= 2.822
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(6)= 3.686
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(7)= 3.885

K	I	XQSAVE(K,I)	XQINT(K,I)	XQSLOP(K,I)
13	1	-8.76125	-15.54268	-2.17361
13	2	-10.30170	-18.25431	-3.29821
13	3	-10.99488	-21.70319	-4.86515
13	4	-11.76333	-23.06285	-5.53065
13	5	-12.51256	-23.64131	-5.83388
13	6	-13.20823	-47.01797	-18.90546
13	7	-13.66575	NUMXQ(K)= 7	

BACK EXTRAPOLATION FOR 1 PERCENTILE.

2.380E-04	0.046	1.000
1.185E-04	0.139	3.000
8.378E-05	0.232	5.000
5.089E-05	0.463	10.000
3.736E-05	0.695	15.000
2.792E-05	0.927	20.000
2.116E-05	1.158	25.000
1.675E-05	1.390	30.000
1.245E-05	1.622	35.000
9.570E-06	1.853	40.000
7.527E-06	2.085	45.000
5.896E-06	2.316	50.000
4.710E-06	2.548	55.000
3.826E-06	2.780	60.000
3.124E-06	3.011	65.000
2.579E-06	3.243	70.000
2.152E-06	3.475	75.000
1.763E-06	3.706	80.000
4.806E-05	0.5	10.79

ANNUAL AVERAGE = 1.16E-07

K= 13 FIVEXQ(K)= 4.806E-05 FIVEPR(K)=10.792

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

PARAMETER VALUES FOR THE CHI/Q CALCULATIONS FOR THE ESE SECTOR.										** CHI/Q VALUES (SEC/CUBIC METER)		
STABILITY CLASS	WINDSPEED AT 10.0 METERS	FREQUENCY PERCENT	DISTANCE METERS	TERRAIN METERS	HT EFF METERS	PLUME HT METERS	SIGMA-Y METERS	SIGMA-Z METERS	MEANDER-SY METERS	MEANDER	BLDG WAKE	USED
										CA=1236.SQ.METERS		
A	1.5	0.06	7242.	0.	0.	0.	1000.0	1000.0	1000.0	2.083E-07	2.083E-07	2.083E-07
A	3.3	1.61	7242.	0.	0.	0.	1000.0	1000.0	1000.0	9.723E-08	9.719E-08	9.719E-08
A	5.5	3.13	7242.	0.	0.	0.	1000.0	1000.0	1000.0	5.834E-08	5.831E-08	5.831E-08
A	8.1	0.03	7242.	0.	0.	0.	1000.0	1000.0	1000.0	3.942E-08	3.940E-08	3.940E-08
B	1.5	0.11	7242.	0.	0.	0.	842.0	953.7	842.0	2.595E-07	2.593E-07	2.593E-07
B	3.3	1.95	7242.	0.	0.	0.	842.0	953.7	842.0	1.211E-07	1.210E-07	1.210E-07
B	5.5	1.78	7242.	0.	0.	0.	842.0	953.7	842.0	7.265E-08	7.261E-08	7.261E-08
B	8.1	0.11	7242.	0.	0.	0.	842.0	953.7	842.0	4.909E-08	4.906E-08	4.906E-08
C	1.5	0.23	7242.	0.	0.	0.	639.4	371.0	639.4	8.782E-07	8.768E-07	8.768E-07
C	3.3	3.02	7242.	0.	0.	0.	639.4	371.0	639.4	4.098E-07	4.092E-07	4.092E-07
C	5.5	1.86	7242.	0.	0.	0.	639.4	371.0	639.4	2.459E-07	2.455E-07	2.455E-07
C	8.1	0.28	7242.	0.	0.	0.	639.4	371.0	639.4	1.661E-07	1.659E-07	1.659E-07
D	0.3	0.01	7242.	0.	0.	0.	450.2	110.6	511.8	1.717E-05	1.937E-05	1.717E-05
D	1.5	6.80	7242.	0.	0.	0.	450.2	110.6	511.8	3.680E-06	4.151E-06	3.680E-06
D	3.3	11.88	7242.	0.	0.	0.	450.2	110.6	478.9	1.835E-06	1.937E-06	1.835E-06
D	5.5	5.02	7242.	0.	0.	0.	450.2	110.6	454.0	1.162E-06	1.162E-06	1.162E-06
D	8.1	0.45	7242.	0.	0.	0.	450.2	110.6	450.2	7.915E-07	7.853E-07	7.853E-07
E	0.3	0.09	7242.	0.	0.	0.	320.2	67.2	407.7	3.633E-05	4.544E-05	3.633E-05
E	1.5	11.97	7242.	0.	0.	0.	320.2	67.2	407.7	7.785E-06	9.736E-06	7.785E-06
E	3.2	7.40	7242.	0.	0.	0.	320.2	67.2	358.6	4.131E-06	4.544E-06	4.131E-06
E	5.3	1.30	7242.	0.	0.	0.	320.2	67.2	325.7	2.729E-06	2.726E-06	2.726E-06
E	7.9	0.06	7242.	0.	0.	0.	320.2	67.2	320.2	1.876E-06	1.842E-06	1.842E-06
F	0.3	0.42	7242.	0.	0.	0.	221.0	40.8	311.7	7.834E-05	1.059E-04	7.834E-05
F	1.5	12.17	7242.	0.	0.	0.	221.0	40.8	311.7	1.679E-05	2.268E-05	1.679E-05
F	3.2	2.29	7242.	0.	0.	0.	221.0	40.8	257.7	9.476E-06	1.059E-05	9.476E-06
G	0.3	3.02	7242.	0.	0.	0.	152.5	24.7	256.8	1.567E-04	2.389E-04	1.567E-04
G	1.5	22.70	7242.	0.	0.	0.	152.5	24.7	256.8	3.358E-05	5.120E-05	3.358E-05
G	3.2	0.25	7242.	0.	0.	0.	152.5	24.7	189.9	2.119E-05	2.389E-05	2.119E-05

USNRC COMPUTER CODE-PAVAN, VERSION 2.0 RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2 METEOROLOGICAL INSTRUMENTATION
DATA PERIOD: 1988-96 AVG. MET. WIND SENSORS HEIGHT: 11.0 METERS
TYPE OF RELEASE: GROUND-LEVEL RELEASE DELTA-T HEIGHTS: 9.3 - 60.8 METERS
SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)
COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS
PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

LOW POPULATION ZONE CALCULATIONS:

ESE SECTOR BOUNDARY DISTANCE = 7242.0 METERS

LATERAL PLUME MEANDER/BUILDING WAKE CREDIT ALLOWED
AS A FUNCTION OF DOWNWIND DISTANCE.
MEANDER CREDIT IS FOR WINDSPEEDS LESS THAN 6 MPS.
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

1.567E-04	7.834E-05	3.633E-05	3.358E-05	2.119E-05	1.717E-05	1.679E-05	9.476E-06	7.785E-06	4.131E-06
3.020	3.441	3.529	26.226	26.480	26.489	38.657	40.943	52.913	60.309
0.13946	0.15888	0.16297	1.21106	1.22279	1.22323	1.78508	1.89067	2.44339	2.78493
3.680E-06	2.726E-06	1.842E-06	1.835E-06	1.162E-06	8.768E-07	7.853E-07	4.092E-07	2.593E-07	2.455E-07
67.112	68.411	68.467	80.352	85.377	85.603	86.054	89.075	89.188	91.051
3.09910	3.15906	3.16167	3.71048	3.94252	3.95295	3.97381	4.11329	4.11851	4.20455
2.083E-07	1.659E-07	1.210E-07	9.719E-08	7.261E-08	5.831E-08	4.906E-08	3.940E-08		
91.108	91.390	93.338	94.947	96.725	99.859	99.972	100.000		
4.20715	4.22019	4.31014	4.38444	4.46657	4.61127	4.61648	4.61778		

X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(2)= 1.210
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(3)= 1.783
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(4)= 2.441
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(5)= 3.096
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(6)= 3.707
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(7)= 3.939
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(8)= 4.608

K	I	XQSAVE(K,I)	XQINT(K,I)	XQSLOP(K,I)
14	1	-8.76125	-15.01722	-2.09203
14	2	-10.30170	-20.49454	-4.52203
14	3	-10.99488	-23.35773	-5.88496
14	4	-11.76333	-26.04819	-7.25056
14	5	-12.51256	-28.52160	-8.57547
14	6	-13.20823	-42.45962	-16.38075

14 7 -13.66575 -85.07481 -40.62440
14 8 -16.65743 NUMXQ(K)= 8

BACK EXTRAPOLATION FOR 1 PERCENTILE.
BACK EXTRAPOLATION FOR 3 PERCENTILE.

3.078E-04	0.046	1.000
1.574E-04	0.139	3.000
1.127E-04	0.231	5.000
6.976E-05	0.462	10.000
5.182E-05	0.693	15.000
4.160E-05	0.924	20.000
3.489E-05	1.154	25.000
2.652E-05	1.385	30.000
2.012E-05	1.616	35.000
1.547E-05	1.847	40.000
1.163E-05	2.078	45.000
8.967E-06	2.309	50.000
6.905E-06	2.540	55.000
5.258E-06	2.771	60.000
4.078E-06	3.002	65.000
3.134E-06	3.232	70.000
2.402E-06	3.463	75.000
1.867E-06	3.694	80.000
1.201E-06	3.925	85.000
4.286E-07	4.156	90.000
6.588E-05	0.5	10.83

ANNUAL AVERAGE = 2.34E-07

K= 14 FIVEXQ(K)= 6.588E-05 FIVEPR(K)=10.828

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

PARAMETER VALUES FOR THE CHI/Q CALCULATIONS FOR THE SE SECTOR.										** CHI/Q VALUES (SEC/CUBIC METER)		
CLASS	METER/SEC	PERCENT	METERS	METERS	METERS	SIGMA-Y	SIGMA-Z	MEANDER-SY		MEANDER	BLDG WAKE	USED
AT 10.0 METERS										CA=1236.SQ.METERS		
A	1.5	0.05	7242.	0.	0.	1000.0	1000.0	1000.0		2.083E-07	2.083E-07	2.083E-07
A	3.3	0.98	7242.	0.	0.	1000.0	1000.0	1000.0		9.723E-08	9.719E-08	9.719E-08
A	5.5	2.90	7242.	0.	0.	1000.0	1000.0	1000.0		5.834E-08	5.831E-08	5.831E-08
A	8.1	0.25	7242.	0.	0.	1000.0	1000.0	1000.0		3.942E-08	3.940E-08	3.940E-08
B	1.5	0.11	7242.	0.	0.	842.0	953.7	842.0		2.595E-07	2.593E-07	2.593E-07
B	3.3	1.00	7242.	0.	0.	842.0	953.7	842.0		1.211E-07	1.210E-07	1.210E-07
B	5.5	1.38	7242.	0.	0.	842.0	953.7	842.0		7.265E-08	7.261E-08	7.261E-08
B	8.1	0.07	7242.	0.	0.	842.0	953.7	842.0		4.909E-08	4.906E-08	4.906E-08
C	1.5	0.11	7242.	0.	0.	639.4	371.0	639.4		8.782E-07	8.768E-07	8.768E-07
C	3.3	1.79	7242.	0.	0.	639.4	371.0	639.4		4.098E-07	4.092E-07	4.092E-07
C	5.5	1.04	7242.	0.	0.	639.4	371.0	639.4		2.459E-07	2.455E-07	2.455E-07
C	8.1	0.07	7242.	0.	0.	639.4	371.0	639.4		1.661E-07	1.659E-07	1.659E-07
D	0.3	0.01	7242.	0.	0.	450.2	110.6	511.8		1.717E-05	1.937E-05	1.717E-05
D	1.5	3.99	7242.	0.	0.	450.2	110.6	511.8		3.680E-06	4.151E-06	3.680E-06
D	3.3	10.82	7242.	0.	0.	450.2	110.6	478.9		1.835E-06	1.937E-06	1.835E-06
D	5.5	4.24	7242.	0.	0.	450.2	110.6	454.0		1.162E-06	1.162E-06	1.162E-06
D	8.1	0.18	7242.	0.	0.	450.2	110.6	450.2		7.915E-07	7.853E-07	7.853E-07
D	10.9	0.02	7242.	0.	0.	450.2	110.6	450.2		5.857E-07	5.811E-07	5.811E-07
E	0.3	0.07	7242.	0.	0.	320.2	67.2	407.7		3.633E-05	4.544E-05	3.633E-05
E	1.5	9.19	7242.	0.	0.	320.2	67.2	407.7		7.785E-06	9.736E-06	7.785E-06
E	3.2	13.30	7242.	0.	0.	320.2	67.2	358.6		4.131E-06	4.544E-06	4.131E-06
E	5.3	1.52	7242.	0.	0.	320.2	67.2	325.7		2.729E-06	2.726E-06	2.726E-06
F	0.3	0.48	7242.	0.	0.	221.0	40.8	311.7		7.834E-05	1.059E-04	7.834E-05
F	1.5	13.82	7242.	0.	0.	221.0	40.8	311.7		1.679E-05	2.268E-05	1.679E-05
F	3.2	4.63	7242.	0.	0.	221.0	40.8	257.7		9.476E-06	1.059E-05	9.476E-06
G	0.3	3.25	7242.	0.	0.	152.5	24.7	256.8		1.567E-04	2.389E-04	1.567E-04
G	1.5	24.39	7242.	0.	0.	152.5	24.7	256.8		3.358E-05	5.120E-05	3.358E-05
G	3.2	0.34	7242.	0.	0.	152.5	24.7	189.9		2.119E-05	2.389E-05	2.119E-05

USNRC COMPUTER CODE-PAVAN, VERSION 2.0 RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2 METEOROLOGICAL INSTRUMENTATION
DATA PERIOD: 1988-96 AVG. MET. WIND SENSORS HEIGHT: 11.0 METERS
TYPE OF RELEASE: GROUND-LEVEL RELEASE DELTA-T HEIGHTS: 9.3 - 60.8 METERS
SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)
COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS
PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

LOW POPULATION ZONE CALCULATIONS:

SE SECTOR BOUNDARY DISTANCE = 7242.0 METERS

LATERAL PLUME MEANDER/BUILDING WAKE CREDIT ALLOWED
AS A FUNCTION OF DOWNWIND DISTANCE.
MEANDER CREDIT IS FOR WINDSPEEDS LESS THAN 6 MPS.
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

1.567E-04	7.834E-05	3.633E-05	3.358E-05	2.119E-05	1.717E-05	1.679E-05	9.476E-06	7.785E-06	4.131E-06
3.245	3.723	3.791	28.182	28.523	28.528	42.346	46.975	56.164	69.460
0.18646	0.21390	0.21781	1.61918	1.63873	1.63905	2.43294	2.69887	3.22682	3.99073
3.680E-06	2.726E-06	1.835E-06	1.162E-06	8.768E-07	7.853E-07	5.811E-07	4.092E-07	2.593E-07	2.455E-07
73.453	74.974	85.796	90.039	90.153	90.334	90.357	92.149	92.263	93.307
4.22016	4.30750	4.92932	5.17309	5.17961	5.19004	5.19134	5.29432	5.30084	5.36081
2.083E-07	1.659E-07	1.210E-07	9.719E-08	7.261E-08	5.831E-08	4.906E-08	3.940E-08		
93.352	93.420	94.418	95.394	96.778	99.682	99.750	100.000		
5.36342	5.36733	5.42468	5.48074	5.56026	5.72712	5.73103	5.74537		

X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

HANDCHECK GRAPH:	SLOPE LT -1.0 FOR LOW PERCENTAGES.	XSAVE(2)=	1.617
HANDCHECK GRAPH:	SLOPE LT -1.0 FOR LOW PERCENTAGES.	XSAVE(3)=	2.430
HANDCHECK GRAPH:	SLOPE LT -1.0 FOR LOW PERCENTAGES.	XSAVE(4)=	4.217
HANDCHECK GRAPH:	SLOPE LT -1.0 FOR LOW PERCENTAGES.	XSAVE(5)=	4.926
HANDCHECK GRAPH:	SLOPE LT -1.0 FOR LOW PERCENTAGES.	XSAVE(6)=	5.169
HANDCHECK GRAPH:	SLOPE LT -1.0 FOR LOW PERCENTAGES.	XSAVE(7)=	5.357
HANDCHECK GRAPH:	SLOPE LT -1.0 FOR LOW PERCENTAGES.	XSAVE(8)=	5.723

K	I	XQSAVE(K,I)	XQINT(K,I)	XQSLOP(K,I)
15	1	-8.76125	-14.63689	-2.02571
15	2	-10.30170	-19.12744	-4.12401
15	3	-10.99488	-23.16445	-6.17117
15	4	-12.51256	-28.74659	-9.40518
15	5	-13.20823	-45.43256	-19.50500
15	6	-13.66575	-158.55240	-88.96120

15 7 -15.22001 -85.94799 -43.89830
15 8 -16.65743 NUMXQ(K)= 8

BACK EXTRAPOLATION FOR 1 PERCENTILE.
BACK EXTRAPOLATION FOR 3 PERCENTILE.

3.190E-04	0.057	1.000
1.647E-04	0.172	3.000
1.184E-04	0.287	5.000
7.364E-05	0.575	10.000
5.482E-05	0.862	15.000
4.406E-05	1.149	20.000
3.697E-05	1.436	25.000
3.027E-05	1.724	30.000
2.334E-05	2.011	35.000
1.855E-05	2.298	40.000
1.430E-05	2.585	45.000
1.078E-05	2.873	50.000
8.317E-06	3.160	55.000
6.538E-06	3.447	60.000
5.222E-06	3.734	65.000
4.228E-06	4.022	70.000
3.356E-06	4.309	75.000
2.517E-06	4.596	80.000
1.915E-06	4.884	85.000
1.166E-06	5.171	90.000
8.123E-05	0.5	8.70
ANNUAL AVERAGE = 2.08E-07		
K= 15 FIVEXQ(K)= 8.123E-05 FIVEPR(K)= 8.703		

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

PARAMETER VALUES FOR THE CHI/Q CALCULATIONS FOR THE SSE SECTOR.										** CHI/Q VALUES (SEC/CUBIC METER)		
STABILITY	WINDSPEED	FREQUENCY	DISTANCE	TERRAIN HT	EFF PLUME HT	SIGMA-Y	SIGMA-Z	MEANDER-SY		MEANDER	BLDG WAKE	USED
CLASS	METER/SEC	PERCENT	METERS	METERS	METERS	METERS	METERS	METERS				
AT 10.0 METERS										CA=1236.SQ.METERS		
A	1.5	0.05	7242.	0.	0.	1000.0	1000.0	1000.0		2.083E-07	2.083E-07	2.083E-07
A	3.3	0.64	7242.	0.	0.	1000.0	1000.0	1000.0		9.723E-08	9.719E-08	9.719E-08
A	5.5	1.97	7242.	0.	0.	1000.0	1000.0	1000.0		5.834E-08	5.831E-08	5.831E-08
A	8.1	0.12	7242.	0.	0.	1000.0	1000.0	1000.0		3.942E-08	3.940E-08	3.940E-08
B	1.5	0.02	7242.	0.	0.	842.0	953.7	842.0		2.595E-07	2.593E-07	2.593E-07
B	3.3	0.88	7242.	0.	0.	842.0	953.7	842.0		1.211E-07	1.210E-07	1.210E-07
B	5.5	1.04	7242.	0.	0.	842.0	953.7	842.0		7.265E-08	7.261E-08	7.261E-08
B	8.1	0.08	7242.	0.	0.	842.0	953.7	842.0		4.909E-08	4.906E-08	4.906E-08
C	1.5	0.12	7242.	0.	0.	639.4	371.0	639.4		8.782E-07	8.768E-07	8.768E-07
C	3.3	1.70	7242.	0.	0.	639.4	371.0	639.4		4.098E-07	4.092E-07	4.092E-07
C	5.5	0.89	7242.	0.	0.	639.4	371.0	639.4		2.459E-07	2.455E-07	2.455E-07
C	8.1	0.03	7242.	0.	0.	639.4	371.0	639.4		1.661E-07	1.659E-07	1.659E-07
D	0.3	0.00	7242.	0.	0.	450.2	110.6	511.8		1.717E-05	1.937E-05	1.717E-05
D	1.5	3.22	7242.	0.	0.	450.2	110.6	511.8		3.680E-06	4.151E-06	3.680E-06
D	3.3	13.16	7242.	0.	0.	450.2	110.6	478.9		1.835E-06	1.937E-06	1.835E-06
D	5.5	6.00	7242.	0.	0.	450.2	110.6	454.0		1.162E-06	1.162E-06	1.162E-06
D	8.1	0.36	7242.	0.	0.	450.2	110.6	450.2		7.915E-07	7.853E-07	7.853E-07
E	0.3	0.06	7242.	0.	0.	320.2	67.2	407.7		3.633E-05	4.544E-05	3.633E-05
E	1.5	8.41	7242.	0.	0.	320.2	67.2	407.7		7.785E-06	9.736E-06	7.785E-06
E	3.2	15.72	7242.	0.	0.	320.2	67.2	358.6		4.131E-06	4.544E-06	4.131E-06
E	5.3	3.62	7242.	0.	0.	320.2	67.2	325.7		2.729E-06	2.726E-06	2.726E-06
E	7.9	0.08	7242.	0.	0.	320.2	67.2	320.2		1.876E-06	1.842E-06	1.842E-06
F	0.3	0.40	7242.	0.	0.	221.0	40.8	311.7		7.834E-05	1.059E-04	7.834E-05
F	1.5	11.46	7242.	0.	0.	221.0	40.8	311.7		1.679E-05	2.268E-05	1.679E-05
F	3.2	4.66	7242.	0.	0.	221.0	40.8	257.7		9.476E-06	1.059E-05	9.476E-06
F	5.3	0.02	7242.	0.	0.	221.0	40.8	225.9		6.485E-06	6.352E-06	6.352E-06
G	0.3	2.70	7242.	0.	0.	152.5	24.7	256.8		1.567E-04	2.389E-04	1.567E-04
G	1.5	20.30	7242.	0.	0.	152.5	24.7	256.8		3.358E-05	5.120E-05	3.358E-05
G	3.2	2.28	7242.	0.	0.	152.5	24.7	189.9		2.119E-05	2.389E-05	2.119E-05

USNRC COMPUTER CODE-PAVAN, VERSION 2.0 RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2 METEOROLOGICAL INSTRUMENTATION
DATA PERIOD: 1988-96 AVG. MET. WIND SENSORS HEIGHT: 11.0 METERS
TYPE OF RELEASE: GROUND-LEVEL RELEASE DELTA-T HEIGHTS: 9.3 - 60.8 METERS
SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)
COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS
PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

LOW POPULATION ZONE CALCULATIONS:

SSE SECTOR BOUNDARY DISTANCE = 7242.0 METERS

LATERAL PLUME MEANDER/BUILDING WAKE CREDIT ALLOWED
AS A FUNCTION OF DOWNWIND DISTANCE.
MEANDER CREDIT IS FOR WINDSPEEDS LESS THAN 6 MPS.
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

1.567E-04	7.834E-05	3.633E-05	3.358E-05	2.119E-05	1.717E-05	1.679E-05	9.476E-06	7.785E-06	6.352E-06
2.701	3.097	3.159	23.459	25.740	25.745	37.200	41.862	50.276	50.292
0.21300	0.24422	0.24914	1.84996	2.02985	2.03020	2.93359	3.30121	3.96474	3.96604
4.131E-06	3.680E-06	2.726E-06	1.842E-06	1.835E-06	1.162E-06	8.768E-07	7.853E-07	4.092E-07	2.593E-07
66.013	69.237	72.857	72.939	86.098	92.098	92.214	92.578	94.280	94.297
5.20576	5.45996	5.74544	5.75196	6.78962	7.26283	7.27195	7.30063	7.43490	7.43621
2.455E-07	2.083E-07	1.659E-07	1.210E-07	9.719E-08	7.261E-08	5.831E-08	4.906E-08	3.940E-08	
95.190	95.239	95.272	96.148	96.793	97.834	99.802	99.884	100.000	
7.50660	7.51051	7.51312	7.58221	7.63305	7.71517	7.87030	7.87682	7.88594	

X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(2)= 1.848
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(3)= 2.931
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(4)= 5.456
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(5)= 6.786
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(6)= 7.259

K	I	XQSAVE(K,I)	XQINT(K,I)	XQSLOP(K,I)
16	1	-8.76125	-14.46254	-1.99444
16	2	-10.30170	-17.71205	-3.55205
16	3	-10.99488	-20.92849	-5.25291
16	4	-12.51256	-22.62604	-6.31246
16	5	-13.20823	-32.61722	-13.00924
16	6	-13.66575	NUMXQ(K)= 6	

2.860E-04 0.079 1.000

BACK EXTRAPOLATION FOR 1 PERCENTILE.

1.466E-04	0.237	3.000
1.049E-04	0.394	5.000
6.463E-05	0.789	10.000
4.778E-05	1.183	15.000
3.818E-05	1.577	20.000
3.060E-05	1.971	25.000
2.334E-05	2.366	30.000
1.845E-05	2.760	35.000
1.418E-05	3.154	40.000
1.074E-05	3.549	45.000
8.333E-06	3.943	50.000
6.595E-06	4.337	55.000
5.307E-06	4.732	60.000
4.331E-06	5.126	65.000
3.556E-06	5.520	70.000
2.862E-06	5.914	75.000
2.329E-06	6.309	80.000
1.914E-06	6.703	85.000
1.359E-06	7.097	90.000

8.922E-05 0.5 6.34

ANNUAL AVERAGE = 3.11E-07

K= 16 FIVEXQ(K)= 8.922E-05 FIVEPR(K)= 6.340

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

PARAMETER VALUES FOR THE CHI/Q CALCULATIONS FOR THE ALL SECTOR.										** CHI/Q VALUES (SEC/CUBIC METER)		
STABILITY	WINDSPEED	FREQUENCY	DISTANCE	TERRAIN HT	EFF PLUME HT	SIGMA-Y	SIGMA-Z	MEANDER-SY		MEANDER	BLDG WAKE	USED
CLASS	METER/SEC	PERCENT	METERS	METERS	METERS	METERS	METERS	METERS				
AT 10.0 METERS										CA=1236.SQ.METERS		
A	1.5	0.17	7242.	0.	0.	1000.0	1000.0	1000.0		2.083E-07	2.083E-07	2.083E-07
A	3.3	3.58	7242.	0.	0.	1000.0	1000.0	1000.0		9.723E-08	9.719E-08	9.719E-08
A	5.5	2.95	7242.	0.	0.	1000.0	1000.0	1000.0		5.834E-08	5.831E-08	5.831E-08
A	8.1	0.16	7242.	0.	0.	1000.0	1000.0	1000.0		3.942E-08	3.940E-08	3.940E-08
A	10.9	0.00	7242.	0.	0.	1000.0	1000.0	1000.0		2.917E-08	2.916E-08	2.916E-08
B	1.5	0.19	7242.	0.	0.	842.0	953.7	842.0		2.595E-07	2.593E-07	2.593E-07
B	3.3	3.00	7242.	0.	0.	842.0	953.7	842.0		1.211E-07	1.210E-07	1.210E-07
B	5.5	1.34	7242.	0.	0.	842.0	953.7	842.0		7.265E-08	7.261E-08	7.261E-08
B	8.1	0.09	7242.	0.	0.	842.0	953.7	842.0		4.909E-08	4.906E-08	4.906E-08
C	1.5	0.38	7242.	0.	0.	639.4	371.0	639.4		8.782E-07	8.768E-07	8.768E-07
C	3.3	3.88	7242.	0.	0.	639.4	371.0	639.4		4.098E-07	4.092E-07	4.092E-07
C	5.5	1.33	7242.	0.	0.	639.4	371.0	639.4		2.459E-07	2.455E-07	2.455E-07
C	8.1	0.09	7242.	0.	0.	639.4	371.0	639.4		1.661E-07	1.659E-07	1.659E-07
C	10.9	0.00	7242.	0.	0.	639.4	371.0	639.4		1.229E-07	1.227E-07	1.227E-07
D	0.3	0.01	7242.	0.	0.	450.2	110.6	450.2		1.952E-05	1.937E-05	1.937E-05
D	1.5	6.63	7242.	0.	0.	450.2	110.6	450.2		4.183E-06	4.151E-06	4.151E-06
D	3.3	22.68	7242.	0.	0.	450.2	110.6	450.2		1.952E-06	1.937E-06	1.937E-06
D	5.5	6.75	7242.	0.	0.	450.2	110.6	450.2		1.171E-06	1.162E-06	1.162E-06
D	8.1	0.45	7242.	0.	0.	450.2	110.6	450.2		7.915E-07	7.853E-07	7.853E-07
D	10.9	0.01	7242.	0.	0.	450.2	110.6	450.2		5.857E-07	5.811E-07	5.811E-07
E	0.3	0.09	7242.	0.	0.	320.2	67.2	320.2		4.627E-05	4.544E-05	4.544E-05
E	1.5	11.96	7242.	0.	0.	320.2	67.2	320.2		9.914E-06	9.736E-06	9.736E-06
E	3.2	11.10	7242.	0.	0.	320.2	67.2	320.2		4.627E-06	4.544E-06	4.544E-06
E	5.3	1.58	7242.	0.	0.	320.2	67.2	320.2		2.776E-06	2.726E-06	2.726E-06
E	7.9	0.09	7242.	0.	0.	320.2	67.2	320.2		1.876E-06	1.842E-06	1.842E-06
E	10.7	0.00	7242.	0.	0.	320.2	67.2	320.2		1.388E-06	1.363E-06	1.363E-06
F	0.3	0.28	7242.	0.	0.	221.0	40.8	221.0		1.105E-04	1.059E-04	1.059E-04
F	1.5	8.15	7242.	0.	0.	221.0	40.8	221.0		2.367E-05	2.268E-05	2.268E-05
F	3.2	1.54	7242.	0.	0.	221.0	40.8	221.0		1.105E-05	1.059E-05	1.059E-05
F	5.3	0.02	7242.	0.	0.	221.0	40.8	221.0		6.629E-06	6.352E-06	6.352E-06
F	7.9	0.00	7242.	0.	0.	221.0	40.8	221.0		4.479E-06	4.292E-06	4.292E-06
G	0.3	1.31	7242.	0.	0.	152.5	24.7	152.5		2.638E-04	2.389E-04	2.389E-04
G	1.5	9.83	7242.	0.	0.	152.5	24.7	152.5		5.653E-05	5.120E-05	5.120E-05
G	3.2	0.34	7242.	0.	0.	152.5	24.7	152.5		2.638E-05	2.389E-05	2.389E-05
G	5.3	0.00	7242.	0.	0.	152.5	24.7	152.5		1.583E-05	1.434E-05	1.434E-05

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

LOW POPULATION ZONE CALCULATIONS:
DIRECTION-INDEPENDENT (S.R.P 2.3.4) MODEL.
MINIMUM BOUNDARY DISTANCE = 7242.0 METERS.
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

2.389E-04	1.059E-04	5.120E-05	4.544E-05	2.389E-05	2.268E-05	1.937E-05	1.434E-05	1.059E-05	9.736E-06
1.308	1.589	11.416	11.504	11.842	19.989	19.998	20.000	21.544	33.504
1.30750	1.58908	11.41557	11.50422	11.84185	19.98931	19.99844	19.99974	21.54450	33.50367
6.352E-06	4.544E-06	4.292E-06	4.151E-06	2.726E-06	1.937E-06	1.842E-06	1.363E-06	1.162E-06	8.768E-07
33.519	44.615	44.618	51.252	52.831	75.512	75.602	75.606	82.356	82.739
33.51931	44.61550	44.61811	51.25210	52.83075	75.51199	75.60194	75.60585	82.35586	82.73911
7.853E-07	5.811E-07	4.092E-07	2.593E-07	2.455E-07	2.083E-07	1.659E-07	1.227E-07	1.210E-07	9.719E-08
83.194	83.201	87.083	87.274	88.605	88.776	88.866	88.867	91.872	95.456
83.19407	83.20058	87.08269	87.27431	88.60529	88.77605	88.86600	88.86731	91.87209	95.45567
7.261E-08	5.831E-08	4.906E-08	3.940E-08	2.916E-08					
96.792	99.742	99.836	99.997	100.000					
96.79186	99.74190	99.83575	99.99740	100.00000					

X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

ERROR IN NORMAL TRANSFORMATION FOR A(35)= 100.00000
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(2)= 11.413
BACK EXTRAPOLATION FOR 1 PERCENTILE.

2.789E-04	1.000	1.000
1.423E-04	3.000	3.000
9.959E-05	5.000	5.000
5.750E-05	10.000	10.000
3.576E-05	15.000	15.000
2.361E-05	20.000	20.000
1.653E-05	25.000	25.000
1.201E-05	30.000	30.000
9.179E-06	35.000	35.000
7.584E-06	40.000	40.000
6.306E-06	45.000	45.000

5.260E-06	50.000	50.000
4.387E-06	55.000	55.000
3.648E-06	60.000	60.000
3.014E-06	65.000	65.000
2.464E-06	70.000	70.000
1.983E-06	75.000	75.000
1.402E-06	80.000	80.000
1.034E-06	85.000	85.000
7.924E-07	90.000	90.000
9.959E-05	5.0	5.00

K= 17 FIVEXQ(K)= 9.959E-05 FIVEPR(K)= 5.000

USNRC COMPUTER CODE-PAVAN, VERSION 2.0 RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2 METEOROLOGICAL INSTRUMENTATION
DATA PERIOD: 1988-96 AVG. MET. WIND SENSORS HEIGHT: 11.0 METERS
TYPE OF RELEASE: GROUND-LEVEL RELEASE DELTA-T HEIGHTS: 9.3 - 60.8 METERS
SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)
COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS
PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

LOW POPULATION ZONE CALCULATIONS:

FIVE PERCENT OVERALL SITE LIMIT
BUILDING WAKE CREDIT ALLOWED: C= 0.5 A= 2472. D= 63.9
CORRECTION FACTORS USED IN THE ANNUAL AVERAGE CALCULATIONS.

BELOW ARE PRINTED THE ORDERED VALUES OF CHI/Q AND THE FREQUENCY WITH WHICH THAT VALUE IS REACHED OR EXCEEDED.
THE TOP NUMBER IS THE CHI/Q. THE MIDDLE NUMBER IS THE FREQUENCY NORMALIZED TO THIS SECTOR.
THE THIRD NUMBER IS THE FREQUENCY WITH RESPECT TO ALL TIME.

1.567E-04	7.834E-05	3.633E-05	3.358E-05	2.119E-05	1.717E-05	1.679E-05	1.434E-05	9.476E-06	7.785E-06
1.308	1.589	1.678	11.504	11.842	11.851	19.998	20.000	21.544	33.504
1.30750	1.58908	1.67773	11.50422	11.84185	11.85098	19.99844	19.99974	21.54450	33.50366
6.352E-06	4.292E-06	4.131E-06	3.680E-06	2.726E-06	1.842E-06	1.835E-06	1.363E-06	1.162E-06	8.768E-07
33.519	33.522	44.618	51.252	52.831	52.921	75.602	75.606	82.356	82.739
33.51931	33.52192	44.61811	51.25209	52.83075	52.92069	75.60192	75.60583	82.35586	82.73912
7.853E-07	5.811E-07	4.092E-07	2.593E-07	2.455E-07	2.083E-07	1.659E-07	1.227E-07	1.210E-07	9.719E-08
83.194	83.201	87.083	87.274	88.605	88.776	88.866	88.867	91.872	95.456
83.19408	83.20061	87.08273	87.27435	88.60532	88.77608	88.86604	88.86735	91.87213	95.45572
7.261E-08	5.831E-08	4.906E-08	3.940E-08	2.916E-08					
96.792	99.742	99.836	99.997	100.000					
96.79191	99.74195	99.83581	99.99745	100.00010					

X/Q PERCENTILES
(BASED ON THE UPPER ENVELOPE OF THE
ORDERED X/Q-FREQUENCY VALUES, AND AS
PLOTTED ON A LOG-NORMAL GRAPH.)

PERCENT OF TIME CHI/Q IS EQUALED OR EXCEEDED
CHI/Q WITH RESPECT TO WHEN THE WIND BLOWS
SEC/CUBIC METER THE TOTAL TIME INTO THIS SECTOR ONLY

ERROR IN NORMAL TRANSFORMATION FOR A(35)= 100.00010
HANDCHECK GRAPH: SLOPE LT -1.0 FOR LOW PERCENTAGES. XSAVE(2)= 11.502

K	I	XQSAVE(K,I)	XQINT(K,I)	XQSLOP(K,I)
18	1	-8.76125	-12.10703	-1.50411
18	2	-10.30170	-12.56638	-1.88682
18	3	-11.76333	-12.31295	-1.29138
18	4	-13.20823	-11.86225	-1.94150
18	5	-13.66575	-12.65895	-1.08384
18	6	-17.04947	NUMXQ(K)= 6	

BACK EXTRAPOLATION FOR 1 PERCENTILE.

1.828E-04	1.000	1.000
9.351E-05	3.000	3.000
6.557E-05	5.000	5.000

3.795E-05	10.000	10.000
2.465E-05	15.000	15.000
1.706E-05	20.000	20.000
1.244E-05	25.000	25.000
9.373E-06	30.000	30.000
7.386E-06	35.000	35.000
6.229E-06	40.000	40.000
5.283E-06	45.000	45.000
4.493E-06	50.000	50.000
3.821E-06	55.000	55.000
3.241E-06	60.000	60.000
2.733E-06	65.000	65.000
2.284E-06	70.000	70.000
1.881E-06	75.000	75.000
1.377E-06	80.000	80.000
1.034E-06	85.000	85.000
7.925E-07	90.000	90.000
6.557E-05	5.0	5.00

K= 18 FIVEXQ(K)= 6.557E-05 FIVEPR(K)= 5.000

K	HIGHPR	PR	GRNDVT(K)
1	-2.81413	0.24456	7.87732
2	-1.85003	3.21547	9.39436
3	-2.96884	0.14947	6.44676
4	-3.19394	0.07018	4.40237
5	-3.44486	0.02857	2.83178
6	-3.45679	0.02733	2.41759
7	-3.44280	0.02879	3.30319
8	-3.04951	0.11461	6.50848
9	-2.89932	0.18699	9.42731
10	-2.86389	0.20924	10.03538
11	-2.90476	0.18377	8.37467
12	-2.93128	0.16879	6.09878
13	-2.86082	0.21128	4.63294
14	-2.72121	0.32523	4.61778
15	-2.62255	0.43638	5.74537
16	-2.57624	0.49942	7.88595

K	HOURS(K)	TOTHR
1	21.42327	21.42327
2	281.67500	303.09830
3	13.09362	316.19190
4	6.14764	322.33950
5	2.50312	324.84270
6	2.39452	327.23720
7	2.52192	329.75910
8	10.04017	339.79930
9	16.38047	356.17970
10	18.32961	374.50930
11	16.09852	390.60780
12	14.78639	405.39420
13	18.50818	423.90240
14	28.48987	452.39230
15	38.22719	490.61950
16	43.74879	534.36830

K	FIVEXQ	SVANN	SLTIME	TIMINT	I	TIME	XQT
---	--------	-------	--------	--------	---	------	-----

1	5.346E-05	1.278E-07	-0.7199	-9.3375	1	8.0	-10.83457
					2	16.0	-11.33358
					3	72.0	-12.41639
					4	624.0	-13.97104
2	4.169E-05	1.196E-07	-0.6982	-9.6012	1	8.0	-11.05300
					2	16.0	-11.53692
					3	72.0	-12.58700
					4	624.0	-14.09465
3	3.678E-05	8.273E-08	-0.7272	-9.7065	1	8.0	-11.21853
					2	16.0	-11.72255
					3	72.0	-12.81624
					4	624.0	-14.38652
4	1.746E-05	6.734E-08	-0.6628	-10.4961	1	8.0	-11.87443
					2	16.0	-12.33388
					3	72.0	-13.33085
					4	624.0	-14.76225
5	8.575E-06	2.653E-08	-0.6891	-11.1890	1	8.0	-12.62197
					2	16.0	-13.09962
					3	72.0	-14.13608
					4	624.0	-15.62419
6	8.112E-06	4.218E-08	-0.6272	-11.2874	1	8.0	-12.59163
					2	16.0	-13.02638
					3	72.0	-13.96978
					4	624.0	-15.32425
7	9.705E-06	3.925E-08	-0.6572	-11.0874	1	8.0	-12.45394
					2	16.0	-12.90947
					3	72.0	-13.89793
					4	624.0	-15.31711
8	3.045E-05	1.059E-07	-0.6751	-9.9314	1	8.0	-11.33529
					2	16.0	-11.80325
					3	72.0	-12.81870
					4	624.0	-14.27662
9	4.487E-05	1.746E-07	-0.6618	-9.5531	1	8.0	-10.92920
					2	16.0	-11.38792
					3	72.0	-12.38330
					4	624.0	-13.81242
10	4.811E-05	2.222E-07	-0.6414	-9.4974	1	8.0	-10.83112
					2	16.0	-11.27568
					3	72.0	-12.24035
					4	624.0	-13.62537
11	4.355E-05	1.372E-07	-0.6870	-9.5654	1	8.0	-10.99391
					2	16.0	-11.47007
					3	72.0	-12.50329
					4	624.0	-13.98675
12	4.072E-05	1.153E-07	-0.6997	-9.6238	1	8.0	-11.07883
					2	16.0	-11.56384
					3	72.0	-12.61625

13	4.806E-05	1.156E-07	-0.7192	-9.4445	4	624.0	-14.12726
					1	8.0	-10.93991
					2	16.0	-11.43839
					3	72.0	-12.52005
					4	624.0	-14.07305
14	6.588E-05	2.339E-07	-0.6727	-9.1614	1	8.0	-10.56026
					2	16.0	-11.02655
					3	72.0	-12.03838
					4	624.0	-13.49112
15	8.123E-05	2.076E-07	-0.7119	-8.9247	1	8.0	-10.40514
					2	16.0	-10.89862
					3	72.0	-11.96942
					4	624.0	-13.50683
16	8.922E-05	3.111E-07	-0.6749	-8.8566	1	8.0	-10.25996
					2	16.0	-10.72775
					3	72.0	-11.74282
					4	624.0	-13.20021
17	9.959E-05	3.111E-07	-0.6880	-8.7376	1	8.0	-10.16823
					2	16.0	-10.64511
					3	72.0	-11.67989
					4	624.0	-13.16559
18	6.557E-05	3.111E-07	-0.6381	-9.1901	1	8.0	-10.51709
					2	16.0	-10.95942
					3	72.0	-11.91923
					4	624.0	-13.29728

USNRC COMPUTER CODE-PAVAN, VERSION 2.0

RUN DATE: 12/12/97

PLANT NAME: H.B. ROBINSON UNIT 2

METEOROLOGICAL INSTRUMENTATION

DATA PERIOD: 1988-96 AVG. MET.

WIND SENSORS HEIGHT: 11.0 METERS

TYPE OF RELEASE: GROUND-LEVEL RELEASE

DELTA-T HEIGHTS: 9.3 - 60.8 METERS

SOURCE OF DATA: UPDATED FSAR, TABLE 2.3.3-3 (REVISION NO. 13)

COMMENTS: SITE-SPECIFIC TERRAIN ADJUSTMENT FACTORS

PROGRAM: PAVAN, 10/76, 8/79 REVISION, IMPLEMENTATION OF REGULATORY GUIDE 1.145

		RELATIVE CONCENTRATION (X/Q) VALUES (SEC/CUBIC METER)					HOURS PER YEAR MAX		
		VERSUS					0-2 HR X/Q IS		
		AVERAGING TIME							
DOWNWIND	DISTANCE						ANNUAL AVERAGE	IN SECTOR	DOWNWIND
SECTOR	(METERS)	0-2 HOURS	0-8 HOURS	8-24 HOURS	1-4 DAYS	4-30 DAYS			SECTOR
S	7242.	5.35E-05	1.97E-05	1.20E-05	4.05E-06	8.56E-07	1.28E-07	21.4	S
SSW	7242.	4.17E-05	1.58E-05	9.76E-06	3.42E-06	7.56E-07	1.20E-07	281.7	SSW
SW	7242.	3.68E-05	1.34E-05	8.11E-06	2.72E-06	5.65E-07	8.27E-08	13.1	SW
WSW	7242.	1.75E-05	6.97E-06	4.40E-06	1.62E-06	3.88E-07	6.73E-08	6.1	WSW
W	7242.	8.57E-06	3.30E-06	2.05E-06	7.26E-07	1.64E-07	2.65E-08	2.5	W
WNW	7242.	8.11E-06	3.40E-06	2.20E-06	8.57E-07	2.21E-07	4.22E-08	2.4	WNW
NW	7242.	9.70E-06	3.90E-06	2.47E-06	9.21E-07	2.23E-07	3.92E-08	2.5	NW
NNW	7242.	3.05E-05	1.19E-05	7.48E-06	2.71E-06	6.31E-07	1.06E-07	10.0	NNW
N	7242.	4.49E-05	1.79E-05	1.13E-05	4.19E-06	1.00E-06	1.75E-07	16.4	N
NNE	7242.	4.81E-05	1.98E-05	1.27E-05	4.83E-06	1.21E-06	2.22E-07	18.3	NNE
NE	7242.	4.36E-05	1.68E-05	1.04E-05	3.71E-06	8.43E-07	1.37E-07	16.1	NE
ENE	7242.	4.07E-05	1.54E-05	9.50E-06	3.32E-06	7.32E-07	1.15E-07	14.8	ENE
E	7242.	4.81E-05	1.77E-05	1.08E-05	3.65E-06	7.73E-07	1.16E-07	18.5	E
ESE	7242.	6.59E-05	2.59E-05	1.63E-05	5.91E-06	1.38E-06	2.34E-07	28.5	ESE
SE	7242.	8.12E-05	3.03E-05	1.85E-05	6.33E-06	1.36E-06	2.08E-07	38.2	SE
SSE	7242.	8.92E-05	3.50E-05	2.19E-05	7.95E-06	1.85E-06	3.11E-07	43.7	SSE
MAX X/Q		8.92E-05					TOTAL HOURS AROUND SITE: 534.4		
SRP 2.3.4		7242.	9.96E-05	3.84E-05	2.38E-05	8.46E-06	1.92E-06	3.11E-07	
SITE LIMIT			6.56E-05	2.71E-05	1.74E-05	6.66E-06	1.68E-06	3.11E-07	

THE FIVE-PERCENT-FOR-THE-ENTIRE-SITE X/Q IS LIMITING.

NOTE: VALUES ON THIS PAGE ARE APPROXIMATIONS ONLY.
CHECK THE REASONABLENESS OF THE ENVELOPES
COMPUTED FOR THE 0-2 HOUR VALUES. FOR ANY
FAULTY ENVELOPES, ADJUST THE ABOVE VALUES.