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NLS2003068

June 12, 2003

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

Subject: Emergency Plan Implementing Procedures
Cooper Nuclear Station, NRC Docket 50-298, DPR-46

Pursuant to the requirements of 10 CFR 50, Appendix E, Section V, "Implementing Procedures," Nebraska Public Power District is transmitting the following Emergency Plan Implementing Procedures (EPIPs):

EPIP 5.7.17	Revision 32	"Dose Assessment"
EPIP 5.7.20	Revision 17	"Protective Action Recommendations"

Should you have any questions concerning this matter, please contact me.

Sincerely,

J. D. Christensen
Plant Manager

/jr

Enclosures

cc: Regional Administrator w/enclosures (2)
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A045

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The following table identifies those actions committed to by Nebraska Public Power District (NPPD) in this document. Any other actions discussed in the submittal represent intended or planned actions by NPPD. They are described for information only and are not regulatory commitments. Please notify the NL&S Manager at Cooper Nuclear Station of any questions regarding this document or any associated regulatory commitments.

COMMITMENT	COMMITTED DATE OR OUTAGE
NONE	

CNS OPERATIONS MANUAL EPIP PROCEDURE 5.7.17 DOSE ASSESSMENT	USE: REFERENCE ⊛ EFFECTIVE: 5/30/03 APPROVAL: SORC/IQA OWNER: R. J. FISCHER DEPARTMENT: EP

OPERATOR AID 00-03

1. PURPOSE

[ ] 1.1 This procedure provides instructions for performing a dose projection using the CNS-DOSE Computer Program.

[ ] 1.2 This procedure provides a manual backup method for performing dose assessment.

[ ] 1.3 This procedure provides instructions for making a rapid gross estimation of core damage based on in-containment high range radiation monitor readings for primary containment LOCA events.

[ ] 1.4 This procedure provides instructions for obtaining meteorological data from alternate sources if the primary sources are not available. The general order of preference will be PMIS, National Weather Service, and then the use of historically determined default values.

2. PRECAUTIONS AND LIMITATIONS

[ ] 2.1 Actual dose rates will vary as a function of:

[ ] 2.1.1 The total curies released.

[ ] 2.1.2 Release rate.

[ ] 2.1.3 The duration of the release.

[ ] 2.1.4 The isotopic mixture of the release.

[ ] 2.1.5 Meteorological conditions.

[ ] 2.2 Update and refine dose calculations upon significant changes in one or more of the above parameters.

[ ] 2.3 Should a release occur which necessitates rapid decision making concerning the recommendation of protective actions, the guidance contained in Procedure 5.7.20 should be followed.

[ ] 2.4 Attachment 7 should be used to estimate core damage only in cases where the high range in-containment radiation monitors are exposed to coolant or steam (i.e., only for primary containment LOCA situations). For other accident sequences, a Reactor Coolant System (RCS) sample and Core Damage Assessment Program (CORDAM) must be used. The Post-Accident Sampling System (PASS) may be used, as required, to obtain the RCS sample.

[ ] 2.5 If the needed KAMAN monitor(s) is (are) inoperable, Release Rate Determinations shall be performed using Procedure 5.7.16.

3. REQUIREMENTS

[ ] 3.1 Ensure following equipment and materials are available, as needed:

[ ] 3.1.1 COMPUTERIZED DOSE PROJECTION (CNS-DOSE)

[ ] 3.1.1.1 Computer terminals.

[ ] 3.1.1.2 Computer printers.

[ ] 3.1.2 MANUALLY CALCULATED DOSE PROJECTION

[ ] 3.1.2.1 Environs map.

[ ] 3.1.2.2 χ/Q isopleths (off-centerline only).

[ ] 3.1.2.3 Scientific calculator.

[ ] 3.2 A release of airborne radioactive material has or may occur.

[ ] **NOTE** 1 - When Meteorological or Radiological data needed to perform dose assessment is unavailable or "unhealthy", refer to Attachment 5 for alternate sources of data. Health "quality codes" are defined in Attachment 6.

[ ] **NOTE** 2 - If the user is not familiar with the use of PMIS, Attachment 6 provides an overview and instructions on access and selected use of PMIS.

4. COMPUTER DOSE PROJECTION (CNS-DOSE)

[ ] 4.1 To start the dose projection program on a PMIS terminal, enter the turn-on code "DOSE" on a terminal logged into either the Primary or Backup System.

[ ] 4.2 The dose projection program can also be run on a non-PMIS terminal. However, this is reserved for personnel having access to an account on the computer and familiar with its use. To start the dose projection program on a non-PMIS terminal, on either PMIS computer, login to an account that has privileges to run PMIS software and run program [NPPD.EXECUTE]NPDOSEZ.

[ ] 4.3 Each time the program is started or the "New Sample" option is selected, new data will be loaded into the program. Verify that Field 1 correctly indicates the origin of the release and the data displayed is "healthy" and correct. Health "quality codes" are defined in Attachment 6. Alternate sources of meteorological and radiological data needed to run CNS-DOSE or perform a hand-calculation are found in Attachment 5.

[ ] 4.4 Determine if SGT is in the effluent stream and if it is functional. Consult with Radiological, Operations, and Engineering personnel for this determination, if available.

[ ] 4.5 Estimate the duration of release (consult with Operations and/or Engineering for this time estimate) in hours. If the estimated duration of release cannot be determined, use the 4 hour default value.

[ ] NOTE - The Iodine to Noble Gas ratio is very dependent on the answer to the core degraded question and has a significant impact on the resultant dose projection calculations. The core is considered to be degraded if any of the following listed conditions are met OR if they were met and have subsequently dropped below the condition threshold. The answer to the core degraded question is coordinated between Radiological Protection, Chemistry, Operations, and Engineering, if available.

[ ] 4.6 Determine if the core is degraded (fuel cladding loss) as indicated by any of the following conditions:

[ ] 4.6.1 15,000 mrem/hr on SJAE monitor.

[ ] 4.6.2 Reactor Coolant Sample > 300 μCi/gm Dose Equivalent I-131.

[ ] 4.6.3 LOCA with DW Rad Monitor reading > 2500 REM/hr.

[ ] 4.6.4 Non-LOCA with DW Rad Monitor reading > 115 REM/hr.

[ ] 4.6.5 Main Steam Line Radiation Monitor Readings ≥ Hi-Hi Alarm Setpoint.

[ ] 4.6.6 Reactor water level below 0" FZ (Fuel Zone) or cannot be determined.

[ ] 4.7 DETERMINE IF RELEASE PATHWAY IS THROUGH REACTOR BUILDING

[ ] 4.7.1 If release bypasses Reactor Building (i.e., direct venting of drywell or a release from the Turbine Building), then enter N.

[ ] 4.7.2 If release is through Reactor Building, then enter Y.

[ ] 4.8 Make corrections or changes, as necessary.

[ ] 4.9 Use the ENTER key to accept data and move to the next field.

[ ] 4.10 Press the RESULTS option to display the dose projections.

[ ] 4.11 Select either the PRINT or HARD COPY option to make a hard copy of the results.

[ ] 4.12 Select the "New Sample" or "Edit" option to return to the previous display and obtain new data or make additional changes.

[ ] 4.13 Exit the program by entering "Q" or pressing the "CANC" key on PMIS terminals.

[ ] 4.14 Select the "Help" option for additional program operational information.

5. HAND-CALCULATED DOSE PROJECTION (CENTERLINE)

[ ] NOTE - This method reflects the methodology used in the CNS-DOSE Program. It gives only downwind dose values for plume centerline at distances of 1, 2, 5, and 10 miles from the site. For calculating doses at specific receptor locations, the method in Section 6 is used.

[ ] 5.1 Obtain release rate from effluent KAMAN monitor digital readout in μCi/sec and record value in Block 1 on Attachment 3. If KAMAN is inoperable, complete the appropriate attachment of Procedure 5.7.16 and record the noble gas release rate value (μCi/sec) in Block 1 on Attachment 3.

[ ] NOTE - The answer to the question concerning the status of the Standby Gas Treatment System has a significant impact on the resultant dose projection calculation. The answer to this question is coordinated with Radiological, Operations, and Engineering personnel, if available.©

[ ] 5.2 Determine if SGT is in the effluent stream.

[ ] 5.2.1 If SGT is in the effluent stream, enter 0.01 in Block 2 of Attachment 3.

[ ] 5.2.2 If SGT is not in the effluent stream, enter 1 in Block 2 of Attachment 3.

[ ] NOTE - The Iodine to Noble Gas ratio is very dependent on the answer to the core degraded question and has a significant impact on the resultant dose projection calculations. The core is considered to be degraded if any of the following listed conditions are met OR if they were met and have subsequently dropped below the condition threshold. The answer to the core degraded question is coordinated between Radiological Protection, Chemistry, Operations, and Engineering, if available.

[ ] 5.3 Determine if the core is degraded (fuel cladding loss) as indicated by any of the following conditions:

[ ] 5.3.1 15,000 mrem/hr on SJAE monitor.

[ ] 5.3.2 Reactor Coolant Sample > 300 μCi/gm Dose Equivalent I-131.

[ ] 5.3.3 LOCA with DW Rad Monitor reading > 2500 REM/hr.

[ ] 5.3.4 Non-LOCA with DW Rad Monitor reading > 115 REM/hr.

[ ] 5.3.5 Main Steam Line Radiation Monitor Readings ≥ Hi-Hi Alarm Setpoint.

[ ] 5.3.6 Reactor water level below 0" FZ (Fuel Zone) or cannot be determined.

[ ] 5.3.7 If core <u>is</u> degraded, obtain the Iodine to Noble Gas ratio from Table 1 of Attachment 3 and enter that value in Block 3 of Attachment 3.

[ ] 5.3.8 If core <u>is not</u> degraded, enter 1.86E-7 in Block 3 of Attachment 3.

[ ] 5.4 Obtain the Noble Gas energy factor (MeV/dis) based on time since reactor shutdown in hours from Table 2 on Attachment 3 and enter this value in Block 4 on Attachment 3.

[ ] 5.5 Obtain the wind speed in miles per hour (mph) and record the value in Block 5 of Attachment 3. The preferred order of data is listed below <u>based on the height of the release</u> point.

[ ] 5.5.1 If the release is from the ERP, use data in the following preferred order:

[ ] 5.5.1.1 PMIS 100 meter level.

[ ] 5.5.1.2 PMIS 60 meter level.

[ ] 5.5.1.3 National Weather Service. Request wind speed estimate for 100 meter elevation. The telephone number for the NWS may be found in the Emergency Telephone Directory - Federal TAB.

[ ] 5.5.1.4 Historical default wind speed value of 13 mph.

[ ] 5.5.2 If the release is from any other source, use data in the following preferred order:

[ ] 5.5.2.1 PMIS 10 meter *level* of the 100 meter *tower*.

[ ] 5.5.2.2 PMIS 10 meter tower data.©

[ ] 5.5.2.3 PMIS 60 meter data.

[ ] 5.5.2.4 National Weather Service. Request wind speed estimate for 10 meter elevation. The telephone number for the NWS may be found in the Emergency Telephone Directory - Federal TAB.

[ ] 5.5.2.5 Historical default wind speed value of 8 mph.

[ ] 5.6 Determine the atmospheric stability class ("A" through "G") and record in Block 6 on Attachment 3. The preferred order of data is listed below based on the height of the release point.

[ ] 5.6.1 If the release is from the ERP, use data in the following preferred order:

[ ] 5.6.1.1 Direct PMIS stability class readout.

[ ] 5.6.1.2 PMIS *data* [100 meter (C°) minus 10 meter (C°)] delta-T and the table below to determine stability class.

100 meter (°C) _____ minus 10 meter (°C) _____ = delta-T _____

delta-T °C	≤ -1.71	> -1.71 to ≤ -1.53	> -1.53 to ≤ -1.35	> -1.35 to ≤ -0.45	> -0.45 to ≤ 1.35	> 1.35 to ≤ 3.6	> 3.6
Stability Class	A	B	C	D	E	F	G

[ ] 5.6.1.3 PMIS *data* [60 meter (C°) minus 10 meter (C°)] delta-T and the table below to determine stability class.

60 meter (°C) _____ minus 10 meter (°C) _____ = delta-T _____

delta-T °C	≤ -0.95	> -0.95 to ≤ -.85	> -.85 to ≤ -.75	> -.75 to ≤ -.25	> -.25 to ≤ .75	> .75 to ≤ 2.0	> 2.0
Stability Class	A	B	C	D	E	F	G

[ ] 5.6.1.4 100 meter sigma-theta and the table below to determine stability class.

[ ] 5.6.1.5 60 meter sigma-theta and the table below to determine stability class.

[ ] 5.6.1.6 10 meter sigma-theta and the table below to determine stability class.

[ ] 5.6.1.7 10 meter sigma-theta from back-up (10M) tower and the table below to determine stability class.©

Sigma-theta from 100 M, 60 M, 10 M, or 10 M backup _____

sigma-theta	≥ 22.5	< 22.5 to ≥ 17.5	< 17.5 to ≥ 12.5	< 12.5 to ≥ 7.5	< 7.5 to ≥ 3.8	< 3.8 to ≥ 2.1	< 2.1
Stability Class	A	B	C	D	E	F	G

[ ] 5.6.1.8 NWS data [100 meter (C°) minus 10 meter (C°)] delta-T and the table below to determine stability class. The telephone number for the NWS may be found in the Emergency Telephone Directory - Federal TAB.

100 meter (°C) _____ minus 10 meter (°C) _____ = delta-T _____

delta-T °C	≤ -1.71	> -1.71 to ≤ -1.53	> -1.53 to ≤ -1.35	> -1.35 to ≤ -0.45	> -0.45 to ≤ 1.35	> 1.35 to ≤ 3.6	> 3.6
Stability Class	A	B	C	D	E	F	G

[ ] 5.6.1.9 Historical default 'D'.

[ ] 5.6.2 If the release is from any other source, use data in the following preferred order:

[ ] 5.6.2.1 Direct PMIS stability class readout.

[ ] 5.6.2.2 PMIS *data* [60 meter (C°) minus 10 meter (C°)] delta-T and the table below to determine stability class.

60 meter (°C) _____ minus 10 meter (°C) _____ delta-T _____

delta-T °C	≤ -0.95	> -0.95 to ≤ -.85	> -.85 to ≤ -.75	> -.75 to ≤ -.25	> -.25 to ≤ .75	> .75 to ≤ 2.0	> 2.0
Stability Class	A	B	C	D	E	F	G

[ ] 5.6.2.3 PMIS *data* [100 meter (C°) minus 10 meter (C°)] delta-T and the table below to determine stability class.

100 meter (°C) _____ minus 10 meter (°C) _____ = delta-T _____

delta-T °C	≤ -1.71	> -1.71 to ≤ -1.53	> -1.53 to ≤ -1.35	> -1.35 to ≤ -0.45	> -0.45 to ≤ 1.35	> 1.35 to ≤ 3.6	> 3.6
Stability Class	A	B	C	D	E	F	G

[ ] 5.6.2.4 10 meter sigma-theta and the table below to determine stability class.

[ ] 5.6.2.5 10 meter sigma-theta from back-up (10M) tower and the table below to determine stability class.©

[ ] 5.6.2.6 60 meter sigma-theta and the table below to determine stability class.

[ ] 5.6.2.7 100 meter sigma-theta and the table below to determine stability class.

Sigma-theta from 10 M, 10 M back-up, 60 M, or 100M _____

sigma-theta	≥ 22.5	< 22.5 to ≥ 17.5	< 17.5 to ≥ 12.5	< 12.5 to ≥ 7.5	< 7.5 to ≥ 3.8	< 3.8 to ≥ 2.1	< 2.1
Stability Class	A	B	C	D	E	F	G

[ ] 5.6.2.8 NWS data [60 meter (C°) minus 10 meter (C°)] delta-T and the table below to determine stability class. The telephone number for the NWS may be found in the Emergency Telephone Directory - Federal TAB.

60 meter (°C) _____ minus 10 meter (°C)_____ = delta-T _____

delta-T °C	≤ -0.95	> -0.95 to ≤ -.85	> -.85 to ≤ -.75	> -.75 to ≤ -.25	> -.25 to ≤ .75	> .75 to ≤ 2.0	> 2.0
Stability Class	A	B	C	D	E	F	G

[ ] 5.6.2.9 Historical default 'D'.

[ ] 5.7 Determine if release pathway is through Reactor Building.

[ ] 5.7.1 If release bypasses Reactor Building (for example, direct venting of drywell or a release from the Turbine Building), then enter 1 in Block 7 on Attachment 3.

[ ] 5.7.2 If release is through the Reactor Building, then enter 0.5 in Block 7 on Attachment 3.

[ ] 5.8 Obtain TEDE Noble Gas Dose Conversion Factor from Table 3 of Attachment 3 and record in Block 8 on Attachment 3.

[ ] 5.9 Obtain TEDE Iodine Dose Conversion Factor from Table 3 of Attachment 3 and record in Block 9 on Attachment 3.

[ ] 5.10 Obtain CDE Iodine Dose Conversion Factor from Table 3 of Attachment 3 and record in Block 10 on Attachment 3.

[ ] 5.11 Compute TEDE "sub-calculation" value and record in Block 11 of Attachment 3.

$$\frac{[(\text{Block 1})(\text{Block 4})(\text{Block 8})] + [(\text{Block 1})(\text{Block 2})(\text{Block 3})(\text{Block 7})(\text{Block 9})]}{(\text{Block 5})}$$

[ ] 5.12 Using the appropriate release point (ERP or other) and stability class (Block 6), obtain the mixing factors (χ/Qs) for distances 1, 2, 5, and 10 miles from Table 4 on Attachment 3 and record in Block 12 of Attachment 3.

[ ] 5.13 Compute the TEDE dose rate for each distance and record values in Block 13 on Attachment 3.

(Block 11) x (Block 12)

[ ] 5.14 Estimate the duration of the release (consult with Operations and/or Engineering for this time estimate) in hours and record value in Block 14 on Attachment 3. If the estimated duration of release cannot be determined, use 4 hours as a default value.

[ ] 5.15 Compute integrated TEDE doses for each distance and record values in Blocks 15 on Attachment 3.

(Block 13) x (Block 14)

[ ] 5.16 Compute CDE "sub-calculation" value and record in Block 16 of Attachment 3.

$$\frac{\text{(Block 1)(Block 2)(Block 3)(Block 7)(Block 10)}}{\text{(Block 5)}}$$

[ ] 5.17 Compute the CDE dose rate for each distance and record values in Block 17 on Attachment 3.

(Block 16) x (Block 12)

[ ] 5.18 Compute the CDE dose for each distance and record values in Block 18 on Attachment 3.

(Block 17) x (Block 14)

[ ] 5.19 Refer to Procedure 5.7.1 to determine if an emergency should be declared due to radiological effluent (dose rate or integrated dose to a member of the public) calculated at or beyond 1 mile.

[ ] 5.20 Refer to Procedure 5.7.20 to determine if any protective action recommendations should be made to off-site authorities.

[ ] 5.21 Recalculate dose projections whenever conditions change significantly.

[ ] 5.22 Record name, time, and date at the bottom of Attachment 3.

6. HAND-CALCULATED DOSE PROJECTION (NON-CENTERLINE)

[ ] 6.1 Obtain release rate from effluent KAMAN monitor digital readout in µCi/sec and record value in Block 1 on Attachment 1. If KAMAN is inoperable, complete appropriate attachment of Procedure 5.7.16 and record the noble gas release rate value (µCi/sec) in Block 1 on Attachment 1.

[ ] NOTE - The answer to the question concerning the status of the Standby Gas Treatment System has a significant impact on the resultant dose projection calculation. The answer to this question is coordinated with Radiological, Operations, and Engineering personnel, if available.

[ ] 6.2 Determine if SGT is in the effluent path.

[ ] 6.2.1 If SGT is in effluent path, enter 0.01 in Block 2 on Attachment 1.

[ ] 6.2.2 If SGT is not in effluent path, enter 1 in Block 2 on Attachment 1.

[ ] NOTE - The Iodine to Noble Gas ratio is very dependent on the answer to the core degraded question and has a significant impact on the resultant dose projection calculations. The core is considered to be degraded if any of the following listed conditions are met OR if they were met and have subsequently dropped below the condition threshold. The answer to the core degraded question is coordinated between Radiological Protection, Chemistry, Operations, and Engineering, if available.

[ ] 6.3 Determine if the core is degraded (fuel cladding loss) as indicated by any of the following conditions:

[ ] 6.3.1 15,000 mrem/hr on SJAE monitor.

[ ] 6.3.2 Reactor Coolant Sample > 300 μCi/gm Dose Equivalent I-131.

[ ] 6.3.3 LOCA with DW Rad Monitor reading > 2500 REM/hr.

[ ] 6.3.4 Non-LOCA with DW Rad Monitor reading > 115 REM/hr.

[ ] 6.3.5 Main Steam Line Radiation Monitor readings ≥ Hi-Hi Alarm Setpoint.

[ ] 6.3.6 Reactor water level below 0" FZ (Fuel Zone) or cannot be determined.

[ ] 6.3.7 If core is degraded, obtain the Iodine to Noble Gas ratio from Table 1 of Attachment 1 and enter that value in Block 3 on Attachment 1.

[ ] 6.3.8 If core is not degraded, enter 1.86E-07 in Block 3 on Attachment 1.

[ ] 6.4 Determine the energy factor (MeV/dis) based on time since reactor shutdown in hours and Table 2 on Attachment 1, and enter value in Block 4 on Attachment 1.

[ ] 6.5 Obtain the wind speed in miles per hour (mph) and record the value in Block 5 on Attachment 1. The preferred order of data is listed below based on the height of the release point.

[ ] 6.5.1 If the release is from the ERP, use data in the following preferred order:

[ ] 6.5.1.1 PMIS 100 meter level.

[ ] 6.5.1.2 PMIS 60 meter level.

[ ] 6.5.1.3 National Weather Service. Request wind speed estimate for 100 meter elevation. The telephone number for the NWS may be found in the Emergency Telephone Directory - Federal TAB.

[ ] 6.5.1.4 Historical default wind speed value of 13 mph.

[ ] 6.5.2 If the release is from any other source, use data in the following preferred order:

[ ] 6.5.2.1 PMIS 10 meter *level* of the 100 meter *tower*.

[ ] 6.5.2.2 PMIS 10 meter tower data.©

[ ] 6.5.2.3 PMIS 60 meter data.

[ ] 6.5.2.4 National Weather Service. Request wind speed estimate for 10 meter elevation. The telephone number for the NWS may be found in the Emergency Telephone Directory - Federal TAB.

[ ] 6.5.2.5 Historical default wind speed value of 8 mph.

[ ] 6.6 Determine the wind direction (from) in degrees from PMIS and record in Block 6 on Attachment 1. The preferred order of data is listed below based on the height of the release point. If wind direction is not available from PMIS, call the National Weather Service (NWS) in Valley, NE and request an estimate of wind direction at CNS for the appropriate elevation. The telephone number for the NWS may be found in the Emergency Telephone Directory - Federal TAB.

For ERP releases, use 100 meter data, then 60 meter data.
For all other sources, use 10 meter data, then 60 meter data.

[ ] 6.7 Determine the atmospheric stability class ("A" through "G") and record in Block 7 on Attachment 1. The preferred order of data is listed below based on the height of the release point.

[ ] 6.7.1 If the release is from the ERP, use data in the following preferred order:

[ ] 6.7.1.1 Direct PMIS stability class readout.

[ ] 6.7.1.2 PMIS *data* [100 meter (C°) minus 10 meter (C°)] delta-T and the table below to determine stability class.

100 meter (°C) _____ minus 10 meter (°C) _____ = delta-T _____

delta-T °C	≤ -1.71	> -1.71 to ≤ -1.53	> -1.53 to ≤ -1.35	> -1.35 to ≤ -0.45	> -0.45 to ≤ 1.35	> 1.35 to ≤ 3.6	> 3.6
Stability Class	A	B	C	D	E	F	G

[ ] 6.7.1.3 PMIS *data* [60 meter (C°) minus 10 meter (C°)] delta-T and the table below to determine stability class.

60 meter (°C) _____ minus 10 meter (°C) _____ = delta-T _____

delta-T °C	≤ -0.95	> -0.95 to ≤ -.85	> -.85 to ≤ -.75	> -.75 to ≤ -.25	> -.25 to ≤ .75	> .75 to ≤ 2.0	> 2.0
Stability Class	A	B	C	D	E	F	G

[ ] 6.7.1.4 100 meter sigma-theta and the table below to determine stability class.

[ ] 6.7.1.5 60 meter sigma-theta and the table below to determine stability class.

[ ] 6.7.1.6 10 meter sigma-theta and the table below to determine stability class.

[ ] 6.7.1.7 10 meter sigma-theta from back-up (10M) tower and the table below to determine stability class.©

Sigma-theta from 100 M, 60 M, 10 M, or 10 M backup _____

sigma-theta	≥ 22.5	< 22.5 to ≥ 17.5	< 17.5 to ≥ 12.5	< 12.5 to ≥ 7.5	< 7.5 to ≥ 3.8	< 3.8 to ≥ 2.1	< 2.1
Stability Class	A	B	C	D	E	F	G

[ ] 6.7.1.8 NWS data [100 meter (C°) minus 10 meter (C°)] delta-T and the table below to determine stability class. The telephone number for the NWS may be found in the Emergency Telephone Directory - Federal TAB.

100 meter (°C) _____ minus 10 meter (°C) _____ = delta-T _____

delta-T °C	≤ -1.71	> -1.71 to ≤ -1.53	> -1.53 to ≤ -1.35	> -1.35 to ≤ -0.45	> -0.45 to ≤ 1.35	> 1.35 to ≤ 3.6	> 3.6
Stability Class	A	B	C	D	E	F	G

[ ] 6.7.1.9 Historical default 'D'.

[ ] 6.7.2 If the release is from any other source, use data in the following preferred order:

[ ] 6.7.2.1 Direct PMIS stability class readout.

[ ] 6.7.2.2 PMIS *data* [60 meter (C°) minus 10 meter (C°)] delta-T and the table below to determine stability class.

60 meter (°C) _____ minus 10 meter (°C) _____ = delta-T _____

delta-T °C	≤ -0.95	> -0.95 to ≤ -.85	> -.85 to ≤ -.75	> -.75 to ≤ -.25	> -.25 to ≤ .75	> .75 to ≤ 2.0	> 2.0
Stability Class	A	B	C	D	E	F	G

[ ] 6.7.2.3 PMIS *data* [100 meter (C°) minus 10 meter (C°)] delta-T and the table below to determine stability class.

100 meter (°C) _____ minus 10 meter (°C)_____ = delta-T _____

delta-T °C	≤ -1.71	> -1.71 to ≤ -1.53	> -1.53 to ≤ -1.35	> -1.35 to ≤ -0.45	> -0.45 to ≤ 1.35	> 1.35 to ≤ 3.6	> 3.6
Stability Class	A	B	C	D	E	F	G

[ ] 6.7.2.4 10 meter sigma-theta and the table below to determine stability class.

[ ] 6.7.2.5 10 meter sigma-theta from back-up (10M) tower and the table below to determine stability class.©

[ ] 6.7.2.6 60 meter sigma-theta and the table below to determine stability class.

[ ] 6.7.2.7 100 meter sigma-theta and the table below to determine stability class.

Sigma-theta from 10 M, 10 M back-up, 60 M, or 100M _____

sigma-theta	≥ 22.5	< 22.5 to ≥ 17.5	< 17.5 to ≥ 12.5	< 12.5 to ≥ 7.5	< 7.5 to ≥ 3.8	< 3.8 to ≥ 2.1	< 2.1
Stability Class	A	B	C	D	E	F	G

[ ] 6.7.2.8 NWS data [60 meter (C°) minus 10 meter (C°)] delta-T and the table below to determine stability class. The telephone number for the NWS may be found in the Emergency Telephone Directory - Federal TAB.

60 meter (°C) _____ minus 10 meter (°C) _____ = delta-T _____

delta-T °C	≤ -0.95	> -0.95 to ≤ -.85	> -.85 to ≤ -.75	> -.75 to ≤ -.25	> -.25 to ≤ .75	> .75 to ≤ 2.0	> 2.0
Stability Class	A	B	C	D	E	F	G

[ ] 6.7.2.9 Historical default 'D'.

[ ] 6.8 Determine if release pathway is through Reactor Building.

[ ] 6.8.1 If the release bypasses Reactor Building (for example direct venting of the drywell or a release from the Turbine Building), then enter 1 in Block 8 on Attachment 1.

[ ] 6.8.2 If the release is through Reactor Building, then enter 0.5 in Block 8 on Attachment 1.

[ ] 6.9 Obtain TEDE Noble Gas Dose Conversion Factor from Table 3 of Attachment 1 and record in Block 9 on Attachment 1.

[ ] 6.10 Obtain TEDE Iodine Dose Conversion Factor from Table 3 of Attachment 1 and record in Block 10 on Attachment 1.

[ ] 6.11 Obtain CDE Iodine Dose Conversion Factor from Table 3 of Attachment 1 and record in Block 11 on Attachment 1.

[ ] 6.12 Obtain the mixing factor (χ/Q) for the receptor point or location.

[ ] 6.12.1 Record location or receptor point ID at the top of Attachment 1.

[ ] 6.12.2 Obtain the proper χ/Q isopleth overlay based on stability class and release point.

[ ] 6.12.2.1 Overlays are available in the TSC or EOF for both elevated and ground level releases for each stability class. Use ground level isopleths for all releases which are not from the ERP.

[ ] 6.12.3 Place the isopleth overlay on an Emergency Planning Zone map scaled to 1" per mile. The preferred map is the "Cooper Nuclear Station 20 Mile Plume Exposure" map with sectors, radii, and wind direction labeled. One is posted in the TSC and EOF.

[ ] 6.12.4 Orient the isopleth overlay so the centerline of the isopleth is over the wind direction radius, the open end of the isopleth is downwind, and the asterisk is over CNS.

[ ] 6.12.5 Lightly mark the desired receptor location on the isopleth with a pencil.

[ ] NOTE - All χ/Qs have negative exponents.

[ ] 6.12.6 Using the legend in the lower right hand corner of the isopleth overlay, linearly interpolating as necessary, determine a χ/Q value for the receptor site.

[ ] 6.12.7 Record the χ/Q value in Block 12 on Attachment 1.

[ ] 6.13 Compute TEDE dose rate (REM/hr) and record in Block 13 on Attachment 1.

$$\frac{[(\text{Block 1})(\text{Block 4})(\text{Block 9})]+[(\text{Block 1})(\text{Block 2})(\text{Block 3})(\text{Block 8})(\text{Block 10})]}{(\text{Block 5})} \times (\text{Block 12})$$

[ ] 6.14 Estimate the duration of the release (consult with Operations and/or Engineering for this time estimate) in hours and record the value in Block 14 on Attachment 1. If the estimated duration of release cannot be determined, use 4 hours as a default value.

[ ] 6.15 Compute the integrated TEDE dose (REM) and record in Block 15 on Attachment 1.

(Block 13) x (Block 14)

[ ] 6.16 Compute CDE dose rate (REM/hr) and record in Block 16 on Attachment 1.

$$\frac{(\text{Block 1})(\text{Block 2})(\text{Block 3})(\text{Block 8})(\text{Block 11})}{(\text{Block 5})} \times (\text{Block 12})$$

[ ] 6.17 Compute CDE dose (REM) and record in Block 17 on Attachment 1.

(Block 14) x (Block 16)

[ ] 6.18 Record name, time, and date at the bottom of Attachment 1.

7. CORRELATING OFF-SITE SAMPLE RESULTS WITH DOSE PROJECTIONS©

[ ] **NOTE 1** - This section describes the methodology to be used to correlate CNS-DOSE results (estimated gross iodine concentrations) with gross iodine concentrations sampled in the field.

[ ] **NOTE 2** - This section is to be used by dose assessment personnel in the EOF once field teams have been dispatched and sample results become available.

[ ] **NOTE 3** - Initial dose projections (computer and hand-calculated) are based upon assumed radionuclide concentrations until actual concentrations have been measured. Off-site sample results are used to determine a dose correction factor which may be applied to adjust the CNS-DOSE Program.

[ ] 7.1 FIELD TEAM SAMPLE TO CNS-DOSE COMPARISON

[ ] 7.1.1 Radiological Assessment Supervisor shall:

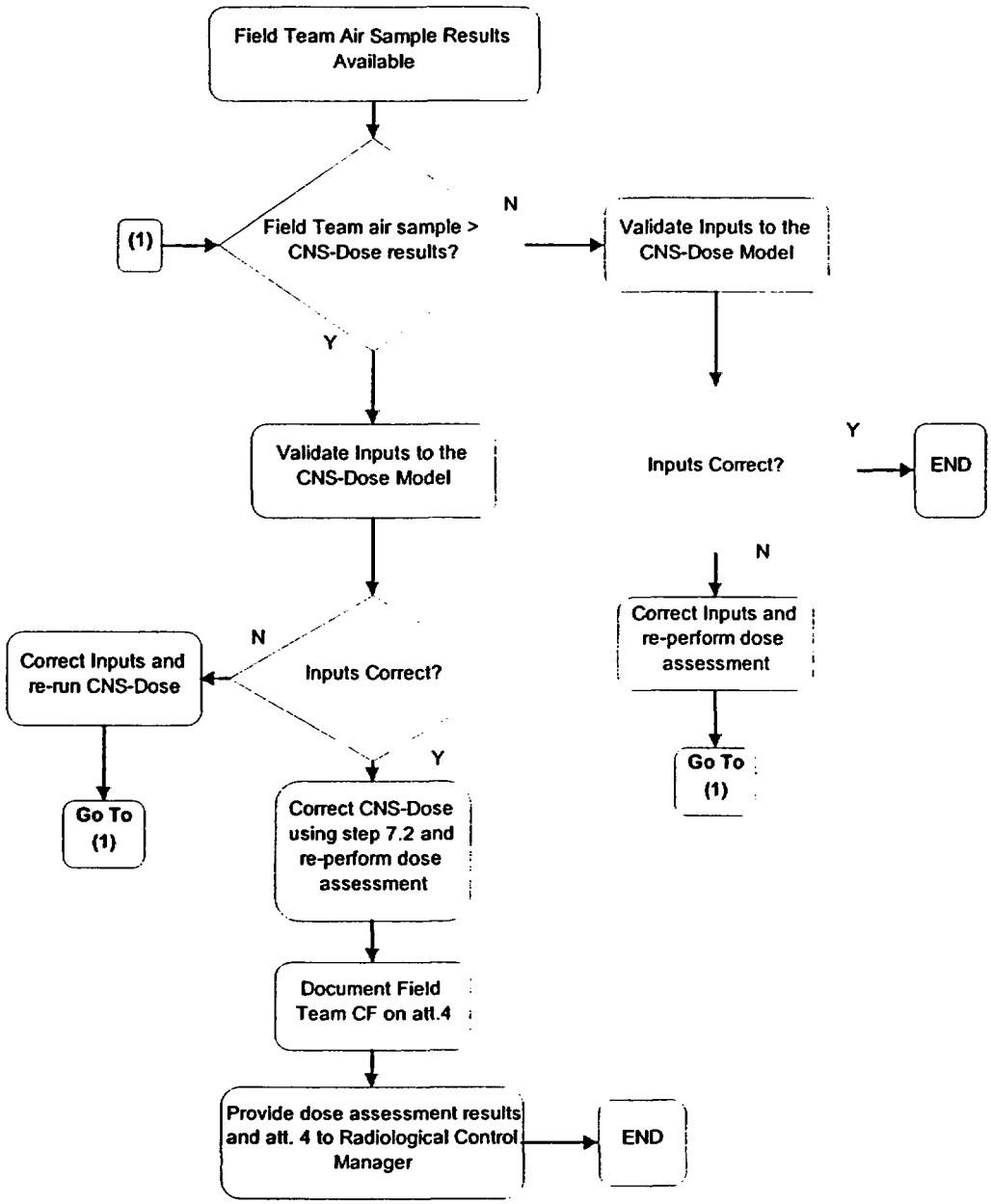
[ ] **NOTE 1** - Prior to comparing field team air sample results, ensure that the time of the field team air sample and the time of "CNS-DOSE" dose assessment are comparable.

[ ] **NOTE 2** - If the field team air sample is reported from a distance other than 1, 2, 5, or 10 miles, use the appropriate stability class/release point isopleth to determine what CNS-DOSE predicted iodine air sample results would be at that distance prior to performing the field team sample comparison.

[ ] 7.1.1.1 Compare the field team iodine air sample concentrations with the predicted CNS-Dose iodine air sample concentrations using the decision tree in Step 7.1.2.

[ ] 7.1.1.2 Radiological Control Manager shall review the field team corrected dose assessment results and communicate any recommendations to change PARs or Classification to the Emergency Director.

[ ] 7.1.2 Field Adjust Decision Tree.



[ ] 7.2 APPLYING FIELD TEAM CORRECTION TO CNS-DOSE

[ ] 7.2.1 Apply the correction to CNS-Dose using the "Field Adjust" OPTION of CNS-DOSE.

[ ] 7.2.1.1 At the MAIN CNS-DOSE screen, select option "Field Adjust".

[ ] 7.2.1.2 Enter the radius distance from CNS in miles at the prompt (1, 2, 5, and 10 are the only options).

[ ] 7.2.1.3 Enter the gross iodine concentration (in μCi/cc) obtained from the field at the prompt.

[ ] 7.2.1.4 After obtaining new Results from CNS-DOSE, compare new PARs to any PARs previously transmitted to off-site authorities.

8. CORE DAMAGE ESTIMATE USING IN-CONTAINMENT HI-RANGE RADIATION MONITORS

[ ] NOTE 1 - Attachment 7 is only used for core damage estimates where the in-containment radiation monitors are exposed to coolant or steam (i.e., only for primary containment LOCA situations). For other accident sequences, a Reactor Coolant System (RCS) sample and Core Damage Assessment Program (CORDAM) must be used. The Post-Accident Sampling System (PASS) may be used, as required, to obtain the RCS sample.

[ ] NOTE 2 - The release from the core may bypass the containment, be retained in the primary system, or not be uniformly mixed. Therefore, a low containment radiation reading does not guarantee a lack of core damage. The levels of damage indicated by the value in Attachment 7 are considered minimum levels unless there are inconsistent monitor readings.

[ ] NOTE 3 - Inconsistent monitor readings may be due to the uneven mixing in containment (e.g., steam rising to the top of the dome). It may take hours for uniform mixing.

[ ] 8.1 The Chem/RP Coordinator or designee shall perform following steps to determine an estimate of core damage, if decisions must be made which are based on core conditions and PASS results are not available.

[ ] 8.1.1 Obtain highest in-containment hi-range radiation monitor reading from RMA-RM-40A(B), DRYWELL RAD MONITOR, and record in Block 1 on Attachment 7.

[ ] 8.1.2 Complete the calculations on Attachment 7.

[ ] 8.1.3 Report results to the TSC Director.

ATTACHMENT 1 HAND-CALCULATED DOSE PROJECTION (NON-CENTERLINE)

Location or Receptor ID: _____

(1) Noble Gas Release Rate from KAMAN or 5.7.16 (μCi/Sec)	(2) Release Path through SBGT? Yes = 0.01; No = 1	(3) Iodine/Noble Gas Ratio (from Table 1)	(4) Energy Factor (from Table 2)	(5) Wind Speed (mph) ERP = 13; Other = 8	(6) Wind Direction (° from)	(7) Stability Class Default = D	(8) Release through Reactor Building? No = 1; Yes = 0.5

For Columns 5, 6, and 7, use PMIS, NWS, or Defaults.

Conversion Factors (from Table 3)	
TEDE Noble Gas	(9)
TEDE Iodine	(10)
CDE Iodine	(11)

Mixing Factor (from Isopleths)
(12)

TEDE Dose Rate (13): _____ (REM/hr)	Duration (Hours) Default = 4 hrs	TEDE Dose (REM) (Block 13) x (Block 14)
$\frac{[(\text{Block 1})(\text{Block 4})(\text{Block 9})]+[(\text{Block 1})(\text{Block 2})(\text{Block 3})(\text{Block 8})(\text{Block 10})]}{(\text{Block 5})} \times (\text{Block 12})$	(14)	(15)

CDE Dose Rate (16): _____ (REM/hr)	CDE Dose (REM) (Block 14) x (Block 16)
$\frac{[(\text{Block 1})(\text{Block 2})(\text{Block 3})(\text{Block 8})(\text{Block 11})]}{(\text{Block 5})} \times (\text{Block 12})$	(17)

Name/Time/Date: _____ / _____ / _____

TABLE 1 - IODINE TO NOBLE GAS RATIO VS. TIME SINCE SHUTDOWN

TIME SINCE SHUTDOWN (hrs)	IODINE/NOBLE GAS RATIO	
	NON-DEGRADED CORE	DEGRADED CORE
$t < 1$	1.86 E-7	2.71 E-1
$1 \leq t < 2$	1.86 E-7	3.57 E-1
$2 \leq t < 4$	1.86 E-7	3.41 E-1
$4 \leq t < 10$	1.86 E-7	2.81 E-1
$10 \leq t < 30$	1.86 E-7	2.30 E-1
$30 \leq t < 100$	1.86 E-7	1.65 E-1
$100 \leq t$	1.86 E-7	1.40 E-1

TABLE 2 - ENERGY FACTORS

TIME SINCE SHUTDOWN (hrs)	ENERGY FACTOR (MeV/dis)
$t < 1$	0.75
$1 \leq t < 2$	0.60
$2 \leq t < 4$	0.40
$4 \leq t < 10$	0.25
$10 \leq t < 30$	0.15
$30 \leq t < 100$	0.09
$100 \leq t$	0.07

TABLE 3 - DOSE CONVERSION FACTORS

	NON-DEGRADED CORE	DEGRADED CORE
TEDE Noble Gas	1.48 E-3	9.19 E-4
TEDE Iodine	8.77 E-2	2.98 E-2
CDE Iodine	2.04 E 0	4.96 E-1

ATTACHMENT 2	TRANSIT TIMES AND EFFECTIVE AGES OF NOBLE GASES AT RECEPTOR SITES

1. Effective Age is defined as time elapsed (hrs) since shutdown. For off-site locations, the effective age of the isotopic mixture may be obtained through summarizing following components:

[ ] 1.1 The effective age at the time of release onset.

[ ] 1.2 The transit time from the release point to the receptor site (refer to Section 2 below).

2. CALCULATION OF TRANSIT TIME FROM THE RELEASE POINT TO THE RECEPTOR LOCATION

[ ] 2.1 Estimate the downwind distance (miles) to the receptor location.

[ ] 2.2 Divide the distance in miles by the 100m meter level wind speed (mph) to determine the plume transit time.

(1) RECEPTOR SITE DOWNWIND DISTANCE (miles)	(2) 100 METER LEVEL WIND SPEED (mph)	(3) PLUME TRANSIT TIME (hrs) (1) ÷ (2)

3. DETERMINATION OF EFFECTIVE AGES AT RECEPTOR SITES

(1) EFFECTIVE AGE OF MIXTURE AT TIME OF RELEASE ONSET (hrs)	(2) TRANSIT TIME FROM RELEASE POINT TO RECEPTOR LOCATION (hrs)	(3) EFFECTIVE AGE OF ISOTOPIC MIXTURE AT RECEPTOR LOCATION (hrs) (1) + (2)

Name/Time/Date: _____ / _____ / _____

ATTACHMENT 3 HAND-CALCULATED DOSE PROJECTION (CENTERLINE)

(1) Noble Gas Release Rate from KAMAN or 5.7.16 (μCi/Sec)	(2) Release Path through SBGT? Yes = 0.01; No = 1	(3) Iodine/Noble Gas Ratio (from Table 1)	(4) Energy Factor (MeV/dis) (from Table 2)	(5) Wind Speed (mph) Defaults ERP = 13; Other = 8	(6) Stability Class Default = D	(7) Release through Reactor Building? No = 1; Yes = 0.5

For Columns 5 and 6, use PMIS, NWS, or Defaults.

Conversion Factors (from Table 3)	
TEDE Noble Gas	(8)
TEDE Iodine	(9)
CDE Iodine	(10)

TEDE Sub-Calculation (11): _____

$$\frac{[(\text{Block 1})(\text{Block 4})(\text{Block 8})]+[(\text{Block 1})(\text{Block 2})(\text{Block 3})(\text{Block 7})(\text{Block 9})]}{(\text{Block 5})}$$

Mixing Factors (from Table 4)	
1 Mile	(12)
2 Mile	(12)
5 Mile	(12)
10 Mile	(12)

TEDE RATE (REM/hr) (Block 11 x Block 12)	
1 Mile	(13)
2 Mile	(13)
5 Mile	(13)
10 Mile	(13)

Duration (hours) Default = 4 hrs
(14)

TEDE Dose (REM) (Block 13 x Block 14)	
1 Mile	(15)
2 Mile	(15)
5 Mile	(15)
10 Mile	(15)

CDE Sub-Calculation (16): _____

$$\frac{[(\text{Block 1})(\text{Block 2})(\text{Block 3})(\text{Block 7})(\text{Block 10})]}{(\text{Block 5})}$$

CDE Rate (REM/hr) (Block 16 x Block 12)	
1 Mile	(17)
2 Mile	(17)
5 Mile	(17)
10 Mile	(17)

CDE Dose (REM) (Block 14 x Block 17)	
1 Mile	(18)
2 Mile	(18)
5 Mile	(18)
10 Mile	(18)

Name/Time/Date: _____ / _____ / _____

TABLE 1 - IODINE TO NOBLE GAS RATIO VS. TIME SINCE SHUTDOWN

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$2 \leq t < 4$	1.86 E-7	3.41 E-1
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$10 \leq t < 30$	1.86 E-7	2.30 E-1
$30 \leq t < 100$	1.86 E-7	1.65 E-1
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$4 \leq t < 10$	0.25
$10 \leq t < 30$	0.15
$30 \leq t < 100$	0.09
$100 \leq t$	0.07

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	NON-DEGRADED CORE	DEGRADED CORE
TEDE Noble Gas	1.48 E-3	9.19 E-4
TEDE Iodine	8.77 E-2	2.98 E-2
CDE Iodine	2.04 E 0	4.96 E-1

TABLE 4 - PLUME CENTERLINE X/Q'S (MIXING FACTORS)

RELEASE POINT	STABILITY CLASS	A	B	C	D	E	F	G
ERP (ELEVATED)	1 MILE	2.87E-6	6.04E-6	1.17E-5	8.35E-6	1.03E-6	2.35E-11	1.31E-23
	2 MILE	7.94E-7	1.78E-6	4.55E-6	8.21E-6	4.98E-6	8.12E-8	5.62E-13
	5 MILE	1.50E-7	3.42E-7	1.18E-6	3.77E-6	4.66E-6	1.09E-6	5.67E-9
	10 MILE	4.51E-8	1.03E-7	4.58E-7	1.82E-6	3.13E-6	1.44E-6	4.00E-8
OTHER THAN ERP (GROUND LEVEL)	1 MILE	3.01E-6	6.90E-6	1.73E-5	5.10E-5	1.09E-4	3.07E-4	7.67E-4
	2 MILE	8.03E-7	1.84E-6	5.15E-6	1.78E-5	3.86E-5	1.09E-4	2.71E-4
	5 MILE	1.50E-7	3.44E-7	1.21E-6	4.98E-6	1.25E-5	3.52E-5	8.81E-5
	10 MILE	4.51E-8	1.03E-7	4.63E-7	2.07E-6	6.43E-6	1.81E-5	4.52E-5

1. CORRECTION FACTOR DETERMINATIONS USING OFF-SITE SAMPLING DATA

(1) SAMPLE LOCATION	(2) SAMPLE TIME	(3) FIELD GROSS IODINE CONCENTRATION (μCi/cc)	(4) CNS-DOSE IODINE CONCENTRATION (μCi/cc)	(5) CORRECTION FACTOR (CF) (3) ÷ (4)

Name/Time/Date: _____ / _____ / _____

2. Route completed form to Emergency Preparedness Department.

NOTE 1 - When the normal source of meteorological data (PMIS MET screen) is not available or is "unhealthy", attempt to obtain the data by PMIS point ID. If PMIS is not available, call the National Weather Service (NWS) in Valley, NE to obtain the data. The telephone number is contained in the Emergency Telephone Directory - Federal TAB. If the NWS cannot be contacted, use default values.

NOTE 2 - If the user is not familiar with the use of PMIS, Attachment 6 provides an overview and instructions on access and selected use of PMIS.

NOTE 3 - The Turn-On-Code "VALUE" is used to display single point values and qualities.

NOTE 4 - The Turn-On-Code "MET" is used to display most meteorological point values and stability classes.

PMIS POINT ID	DESCRIPTION
MET001	100M LVL SIGMA THETA (15 MIN AVE)
MET004	100M LVL TEMPERATURE
MET005	DELTA TEMPERATURE (100M-10M)
MET006	100M LVL WIND DIR. (15 MIN AVE)
MET007	100M LVL WIND SPEED (15 MIN AVE)
MET009	60M LVL SIGMA THETA (15 MIN AVE)
MET012	60M LVL TEMPERATURE
MET013	DELTA TEMPERATURE (100M-60M)
MET014	60M LVL WIND DIR. (15 MIN AVE)
MET015	60M LVL WIND SPEED (15 MIN AVE)
MET017	10M LVL SIGMA THETA (15 MIN AVE)
MET020	10M LVL TEMPERATURE
MET021	DELTA TEMPERATURE (60M-10M)
MET023	10M LVL WIND DIR. (15 MIN AVE)
MET024	10M LVL WIND SPEED (15 MIN AVE)
MET027	PRECIPITATION (15 MIN PERIOD)
MET028	10M TWR SIGMA THETA (15 MIN AVE)
MET029	10M TWR TEMPERATURE
MET030	10M TWR WIND DIR. (15 MIN AVE)
MET031	10M TWR WIND SPEED (15 MIN AVE)
N8000	RX BLDG EFFLUENT FLOW AVE
N8001	TURB BLDG EFF HI RAD MON AVE
N8002	TURB BLDG EFF NORM RAD MON AVE
N8003	TURB BLDG FLOW AVE
N8004	AOG & RW EFF HI RAD MON AVE
N8005	AOG & RW EFF NORM RAD MON AVE
N8006	RX BLDG EFF RAD MON AVE
N8007	AOG & RW BLDG EFF FLOW AVE
N8010	ERP HI RAD MON AVE
N8011	ERP NORMAL RAD MON AVE
N8012	ERP FLOW AVE
N8013	SGT FLOW TO ERP AVE

1. PLANT MANAGEMENT INFORMATION SYSTEM (PMIS)

1.1 The PMIS System (PMIS) is a set of programs and hardware provided by NPPD that make use of VMS functions and additional peripherals (Data Concentrators) which provides access to plant parameters.

2. PMIS COMPUTERS

2.1 PMIS computers share a common set of peripherals (disk drives, tape drives, terminals, etc.) and software.

3. VMS OPERATING SYSTEM

3.1 The VMS Operating System (VMS) is the host operating system for the PMIS computers. It is a set of programs that interface with the computer hardware and peripherals, and allows the computers to recognize and process commands.

4. PMIS MODES

4.1 PMIS has three operational modes, Primary, Primary/Backup, and Backup, and will operate on either computer in one of the three modes. A computer with PMIS operating in either the Primary or Primary/Backup Mode is referred to as the Primary System and the one with PMIS operating in the Backup Mode is referred to as the Backup System.

4.2 The Primary and Primary/Backup Modes provide full PMIS capabilities, consisting (in part) of data acquisition and conversion, data display, data archiving, alarm processing, self monitoring, and many other functions that perform specialized calculations and displays.

4.3 The Backup Mode monitors the Primary System, transfers information necessary to keep the Backup System files and tables up-to-date, and automatically changes to the Primary Mode when a loss of the Primary System is detected (referred to as a FAILOVER). Although many functions are available on the Backup System, their use is discouraged because the lack of real-time data results in the display of inaccurate information (CNS-DOSE is an exception).

5. PMIS ACCESS

5.1 Access to PMIS is gained through various video display terminals, printer/plotters, and printers, including color graphic Information Display Terminals (IDTs) dedicated exclusively for PMIS access in the Control Room, TSC, and EOF.

5.2 The IDTs and printers are selectively connected to either computer through a switching device controlled by PMIS. At system start or during a FAILOVER, all terminals and printers are switched to the Primary System. However, the SWITCH position may be changed at any time after that.

6. SCREEN FORMAT

6.1 When a terminal is under control of PMIS (instead of VMS), the screen display will be in a standard format consisting of four areas, OCA, GGDA, SSA, and FKA.

6.2 The OCA (Operator Communication Area) consists of the top two (one and two lines on the screen. This area is generally used to prompt-for and receive user inputs and display advisory and warning messages. In addition, some displays that require only one or two lines of screen use the OCA for display. Also (though technically not part of the OCA), the current date and time (updated once a second) is displayed at the right side of the screen on lines 1 and 2.

6.3 The GGDA (General and Graphic Display Area) consists of lines 4 through 47 and is used for most displays. In addition, some displays (chiefly functions requiring significant editing) also prompt-for and receive user inputs in the GGDA.

6.4 The SSA (SPDS Status Area) consists of lines 45 through 48 and contain four boxes that represent (by color code) the status of the SPDS (Safety Parameter Display System), which is a software system that monitors selected plant parameters and determines overall plant safety status.

6.5 The FKA (Function Key Area) consists of the bottom two (50 and 51) lines of the screen. The FKA is used to indicate which of the definable function keys are enabled. It also indicates which mode PMIS is in, the Plant Mode, and whether or not a PMIS "event" has occurred.

7. SCREEN-COPY FUNCTION

7.1 The screen-copy function, which is activated by pressing the HARD COPY key, provides full screen reproduction in color on a printer located in the same general area as the terminal.

8. PRINTER

8.1 The printers are connected to a specific computer and are generally accessed when a "...PRINT..." option is selected and a "logical name" is entered.

9. LOGICAL NAME

9.1 Printers and terminals are usually referenced by "logical names", in the format of TT00, TT01, etc. (IDTs), and LA00, LA01, etc. (printers). The "logical name" for a device can usually be found on a tag on the device.

10. RESET FUNCTION

10.1 This function, which is activated by pressing the RESET key (PC keyboard) or CONTROL-RESET keys (IDT keyboard), clears the screen, sounds the bell, and resets internal parameters to the default settings, producing the same effect as a re-boot or turning power off and on.

11. IDE FIELD

11.1 User input to PMIS Programs is through an open IDE (Interactive Data Entry) field on the terminal. An open IDE field is denoted by a yellow box that appears in the OCA or GGDA area. Anything typed on the keyboard will be echoed in the box. Erasing or back-spacing is accomplished with the DEL key. All entries into an IDE field must be terminated by pressing the ENTER key unless the field is overfilled or a function key is pressed (the terminal automatically adds a carriage return character in those cases).

12. TURN-ON-CODE

12.1 The Turn-On-Code (TOC) is the mechanism by which commands are issued to PMIS. This is a one to eight character code which is interpreted by PMIS and a corresponding command is issued.

13. PMIS DATABASE

13.1 All plant parameters (or additional data based on plant or PMIS parameters) that are processed by PMIS SYSTEM are defined in the PMIS DATABASE, which is a file that specifies the origin of the data, the frequency at which it is processed, the type of processing to be performed, etc. Each parameter is referred to as a "point" and is identified by a one to eight character name or POINT-ID (PID).

14. PMIS DATA PROCESSING

14.1 Some PMIS points are processed by scanning plant sensors (through the Data Concentrator) while others are calculated based on the values of previously processed points or PMIS parameters. All points values are then assigned a quality code stored in the Current Value Table (CVT).

14.2 Data in the CVT is considered to be "real-time" and representative of current plant and system conditions.

14.3 At regular intervals (and other special circumstances), point values are also stored in an Archive File, which provides ~ 24 hours of on-line historical information.

15. PMIS DATA ACCESS

15.1 All point values in the CVT and Archive File are accessed by the POINT-ID.

16. QUALITY CODES

16.1 The Quality Code, assigned when point values are assigned, represents the general status and "health" of the point, and determines how it is used by PMIS Programs. The following is a list of PMIS quality codes and related information.

CODE	DESCRIPTION	COLOR	HEALTH
UNK	Value unknown - not yet processed	White	Bad
DEL	Processing has been disabled	Magenta	Bad
NCAL	Value cannot be calculated	Magenta	Bad
INVL	Data concentrator error	Magenta	Bad
RDER	Data concentrator error	Magenta	Bad
OIC	Data concentrator error	Magenta	Bad
BAD	Outside instrument range	Magenta	Bad
STAG	Point failed stagnation check	Magenta	Bad
UDEF	Undefined (spare)	Magenta	Bad
REDU	Fails redundant point check	Magenta	Bad
HALM	Above high alarm limit	Red	Good
LALM	Below low alarm limit	Red	Good
HWRN	Above high warning limit	Yellow	Good
LWRN	Below low warning limit	Yellow	Good
ALM	State/Change-of-State alarm	Red	Good
SUB	Value has been substituted	Blue	Good
DALM	Alarm checking has been disabled	Green	Good
INHB	Alarm inhibited by cut-out point	Green	Good
GOOD	Passes all other checks	Green	Good

16.2 Not listed above is quality code OSUB (Operator Substituted), which is treated the same as SUB, and indicates that the value was substituted within that program. OSUB is not used in the CVT.

17. PMIS LOGIN

17.1 If the current date and time is displayed in the OCA and is being updated about once a second:

17.1.1 If "ENTER PASSWORD..." is displayed on line 2, press the ENTER key.

17.1.2 If "SELECT FUNC. KEY OR TURN ON CODE..." and an open IDE field is displayed on line 2, the IDT is logged into PMIS. No further action is necessary.

17.1.3 If a display is operating, press the CANC key.

17.1.4 If terminal does not respond or does not meet any of the above criteria, press the XOFF key once. The terminal should be automatically reset (screen clears and the bell sounds) after about 30 seconds, and either the "ENTER PASSWORD..." or "...TURN-ON-CODE..." prompt should be displayed. Refer to the applicable previous step for more instruction.

17.2 If the current date and time is NOT displayed or is displayed but is not being updated:

17.2.1 Press the RESET key (PC keyboard) or CONTROL-RESET keys (IDT keyboard), wait at least 10 seconds, and press the ENTER key. If the date and time appear and began updating, refer to the previous (date and time updating) step.

17.2.2 If a "$" is displayed at the left of the screen, enter "LO" and press the ENTER key. After the "...LOGGED OFF..." message is displayed, press the ENTER key again.

17.2.3 After "Username:" is displayed, enter "PMIS" and press the ENTER key. A welcome message followed by "PMIS LOGGED OUT..." will be displayed. Do not press any keys for 5 minutes or until the PMIS login display appears. When the "ENTER PASSWORD..." prompt is issued, refer to the previous (date and time updating) step and login to PMIS.

17.3 If neither of the above criteria is met or the specified sequence of events does not occur, contact the Nuclear Information Services (NIS) Department for assistance.

18. ACTIVATING A TURN-ON-CODE

18.1 If a display is currently operating in the area of the screen that the desired TOC requires, press the CANC key.

18.2 When "SELECT FUNC. KEY OR TURN ON CODE..." is displayed followed by an open IDE field, enter one of following:

18.2.1 A TOC (i.e., "GROUP" -- activates the Group Display Program; the program will then prompt the user to select a menu option).

18.2.2 A TOC followed by a space and optional text (i.e., "PLOT ARM1" -- activates the Real-Time Plot Program and plots the group "ARM1" without further user input; note that optional text is recognized by only selected TOCs).

18.2.3 Press one of the programmable function keys on the right hand key pad or top row of function keys (i.e., blue "GROUP DISP" key -- functions the same as the first example).

18.3 Refer to the FKA for the function keys that are enabled and their descriptions. Use other options as provided by each program.

18.4 To exit a program, use the specified exit option (if provided) or press the CANC function key.

19. DETERMINING TO WHICH SYSTEM A TERMINAL IS CONNECTED

The PMIS System to which a terminal is connected is indicated by the "CONSOLE =..." on the bottom line of the FKA as follows:

CONSOLE = PRIMARY	--	Connected to the Primary System operating in the Primary Mode.
CONSOLE = PRIM/BAC	--	Connected to the Primary System operating in the Primary/Backup Mode.
CONSOLE = BACKUP	--	Connected to the Backup System.
CONSOLE = UNKNOWN	--	PMIS is in a transition or unknown state.

20. SWITCHING A DEVICE TO THE OTHER SYSTEM

20.1 On a terminal located in the same area as the device to be switched and connected to either PMIS System, activate the TOC "SWITCH".

20.2 A list of all devices that can be switched from that terminal will be displayed. Included will be their logical names, description, and the CPU to which the device is connected.

20.3 To switch a device, press function key F1 and then enter the logical name at the prompt.

20.4 If the device is an IDT, it will be logged off PMIS.

20.5 If the device being switched is a terminal other than the one running SWITCH, both are connected to the same system and a TOC is currently active, a message will be displayed to that effect, and the user will be asked if it is to be switched anyway. If the answer is not YES, the device is not switched.

NOTE - This attachment is only used for core damage estimates where the in-containment radiation monitors are exposed to coolant or steam (i.e., only for primary containment LOCA situations). For other accidents sequences, utilize the Post-Accident Sampling System (PASS) and Core Damage Assessment Program (CORDAM).

(1) HIGHEST DRYWELL RAD MONITOR READING (RMA-RM-40A,B)	(2) 100% CORE MELT FACTOR	(3) CORE MELT FRACTION (1) ÷ (2)	(4) PERCENT CORE MELT (3) x 100	(5) PERCENT CLAD FAILURE (4) x 10
	2.44E+6			

Report the results of the core damage estimate (Blocks 4 and 5) to the TSC Director.

Name/Time/Date: _____ / _____ / _____

1. DISCUSSION

1.1 This procedure covers dose projection. Dose projection represents calculation of an accumulated dose at some time in the future if current conditions continue.

1.2 The CNS-DOSE Computer Program is a software application operated on the PMIS computers. It makes use of current meteorological and radiological data from PMIS and manually entered data to perform dose projection for the area surrounding CNS. CNS-DOSE is the primary method of dose projection.

1.2.1 The PMIS Computer System consists of two computers operating in a Primary and Backup Mode. Historical data may be obtained from either system; however, current data may be obtained only from the Primary System.

1.2.2 Personal unfamiliar with the operation of PMIS should reference procedures governing the operation of PMIS or refer to Attachment 6.

1.3 The manual dose projection methods in this procedure are intended to be used when CNS-DOSE is unavailable. Where possible, data used is from the same source as that used by the computer programs. The hand calculations are divided into two sections. Section 5 is intended to be used by the on-shift personnel for centerline dose projections. Section 6 is intended for dose assessment personnel in projecting non-centerline values.

1.4 The correlation methodology as described in Section 8 provides EOF dose assessment personnel with a means of correlating field team iodine concentration data with CNS-DOSE projected iodine concentration. Such a correlation is necessary to determine if initial Protective Action Recommendations (PARs) were adequate to protect the health and safety of the public.

1.5 Containment radiation level provides a measure of core damage, because it is an indication of the inventory of airborne fission products (i.e., noble gases, a fraction of the halogens, and a much smaller fraction of the particulates) released from the fuel to the containment (refer to NEDO-22215, Pages 1 and 2; NEDC 02-009).

2. REFERENCES

2.1 TECHNICAL SPECIFICATIONS

2.1.1 Technical Specification Bases B.3.3.6.1(2.d), Main Steam Line Radiation - High.

2.2 CODES AND STANDARDS

2.2.1 EPA 400-R-92-001, May 1992, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents.

2.2.2 Health Physics Journal, November 1981, Noble Gas Dose Rate Conversion Factors.

2.2.3 ICRP 59, Working Breathing Rate.

2.2.4 NRC Regulatory Guide 1.23, Proposed Revision 1, September 1980, Meteorological Programs in Support of Nuclear Power Plants.

2.2.5 NRC Regulatory Guide 1.109, Revision 1, October 1977, Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10CFR50, Appendix I, Iodine Inhalation Dose Factors.

2.2.6 NRC Regulatory Guide 1.111, July 1977, Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water-Cooled Reactors.

2.2.7 NRC Regulatory Guide 1.145, August 1979, Atmospheric Dispersion Models for Potential Accident Consequence Assessments at Nuclear Power Plants.

2.3 DRAWINGS (MAPS)

2.3.1 Cooper Nuclear Station 50 Mile Emergency Planning Zone, Revision 2, 50 Mile Radius.

2.3.2 NPPD Drawing CNS-MI-102, Atmospheric Dispersion Model (EPM2) Special Receptor Points, 10 Mile Radius.

2.3.3 NPPD Drawing CNS-MI-03, Preselected Radiological Sampling and Monitoring Points in the Vicinity of Cooper Nuclear Station, 10 Mile Radius.

2.3.4 NPPD Drawing 2.2 (P3-A-45), Revision 1, Cooper Nuclear Station Site and Property Boundary, 1 Mile Radius.

2.4 VENDOR MANUALS

2.4.1 CNS Number 0984, PMIS Operator's Manual - SAIC Document 502-85500107-72.

2.5 PROCEDURES

2.5.1 Emergency Plan Implementing Procedure 5.7.1, Emergency Classification.

2.5.2 Emergency Plan Implementing Procedure 5.7.16, Release Rate Determination.

2.5.3 Emergency Plan Implementing Procedure 5.7.20, Protective Action Recommendations.

2.6 MISCELLANEOUS

2.6.1 Engineering Evaluation EE 02-056, Elimination of Meteorological Instrumentation System Strip Chart Recorder References.

2.6.2 General Electric Corporation, NEDO-22215, Procedures for the Determination of the Extent of Core Damage Under Accident Conditions.

2.6.3 NEDC 99-034, Control Room, EAB, and LPZ Doses Following a CRDA.

2.6.4 NEDC 02-004, Estimation of the Steam Jet Air Ejector Radiation Monitor, RMP-RM-150A(B), Readings Following a 1% Fuel Clad release (Degraded Core) in the Reactor Coolant System.

2.6.5 NEDC 02-009, Estimation of Primary Containment High Range Monitor, RMA-RM-40A(B), Readings Following 1% Clad Failure in the RCS Under Non-LOCA Conditions.

2.6.6 NEDO-31400, Safety Evaluation for Eliminating the BWR MSIV Closure Function and Scram Function for the MSL Rad Monitors.

2.6.7 NRC Inspection Report 89-35.

2.6.8 ® NRC Inspection Report 91-12, Emergency Preparedness Annual Inspection Report. Affects Section 7 and NOTE prior to Step 5.2.

2.6.9 NRC Inspection Report 92-14, Emergency Preparedness Annual Inspection Report.

2.6.10 ® RCR 2002-2632, Incorporation of the Backup 10 Meter Tower MET Data. Affects Steps 5.5.2.2, 5.6.2.5, 6.5.2.2, 6.7.1.7, and 6.7.2.5.

2.6.11 ® TIP Action Plan 5.2.2.1, Revision 1, Action 1. Major revision 6/28/02 to clarify Control Room tasks. Generic nature of TIP Action does not support cross-referencing of specific steps.

1. PURPOSE

This procedure provides a basis for relating actual or projected dose or plant conditions to the EPA Protective Action Guides (PAGs) to determine the appropriate Protective Action Recommendations (PARs) to be made to the County or State governments.

2. PRECAUTIONS AND LIMITATIONS

[ ] 2.1 Conditions beyond the scope of this procedure may exist which, in the opinion of the Emergency Director, override the criteria contained in this procedure.

[ ] 2.2 Both plant conditions and off-site release of radioactive material are considered in the determination of PARs.

[ ] 2.3 Initial PARs and changes to PARs shall be communicated as "Initial" notifications to State/County agencies within 15 minutes.

3. REQUIREMENTS

[ ] 3.1 PARs are warranted for the following:

[ ] 3.1.1 Projected Total Effective Dose Equivalent (TEDE) and Committed Dose Equivalent (CDE) (Thyroid) dose have been calculated per Procedure 5.7.17 and exceed 0.1 rem TEDE or 0.5 rem CDE (Thyroid) at or beyond the boundary of the Owner Controlled Area (OCA); or

[ ] 3.1.2 A GENERAL EMERGENCY has been declared.

4. PAR DETERMINATION

[ ] **CAUTION** 1 - The Emergency Director can not delegate the responsibility for approving PARs.

[ ] **CAUTION** 2 - If determined that PARs are warranted or any changes to PARs are warranted, an "Initial" notification to State and County governmental agencies shall be made within 15 minutes per Procedure 5.7.6.

[ ] **NOTE** - The Radiological Control Manager and EOF Director assist and advise the Emergency Director in formulation of the appropriate PAR.

[ ] 4.1 The Emergency Director shall perform the following in determination of PARs:

[ ] 4.1.1 DETERMINE PARs based on available information from plant conditions and off-site dose estimates.

[ ] 4.1.1.1 If a release greater than ODAM release limits has occurred or is occurring, perform the following:

[ ] a. Direct that off-site dose estimates per Procedure 5.7.17 be calculated and results promptly provided to the Emergency Director.

[ ] b. Consider results of off-site dose estimates in determining PARs.

[ ] 4.1.1.2 If emergency classification is GENERAL EMERGENCY and off-site dose estimates are not available, perform the following:

[ ] a. Issue PARs to States/Counties based on available plant condition information.

[ ] b. Provide follow up off-site dose estimates and any changes in PARs to States/Counties promptly following receipt of information per Procedure 5.7.6.

[ ] 4.1.2 If CNS DOSE is available, use CNS DOSE PARs and go to Step 4.1.4.

[ ] 4.1.3 If CNS DOSE is not available, DETERMINE most restrictive PAR based on plant conditions and off-site dose estimates using Attachment 1, Protective Action Recommendation Flowchart, and Attachment 2, Affected Sector Determination.

[ ] 4.1.4 If dose at 10 miles is projected to meet or exceed 1 rem TEDE or 5 rem CDE (Thyroid), then make a PAR to the off-site agencies as follows:

[ ] 4.1.4.1 Estimate the distance beyond the 10 mile EPZ at which the projected or actual dose is ≤ 1 rem TEDE and ≤ 5 rem CDE (Thyroid), and recommend evacuation to that distance in the affected sectors.

[ ] 4.1.4.2 Include in the remarks section of the CNS Notification Report Form (Procedure 5.7.6) that "Projected Dose at or beyond 10 miles exceeds evacuation criteria. Recommend evacuation out to _____ miles in sectors _____".

[ ] 4.1.5 Ensure correct PARs are written on CNS Notification Report Form (Procedure 5.7.6) for States/Counties.

[ ] 4.1.5.1 If CNS DOSE is not available, determine affected sectors using Attachment 2.

[ ] 4.1.6 Approve PARs by signing CNS Notification Report Form (Procedure 5.7.6).

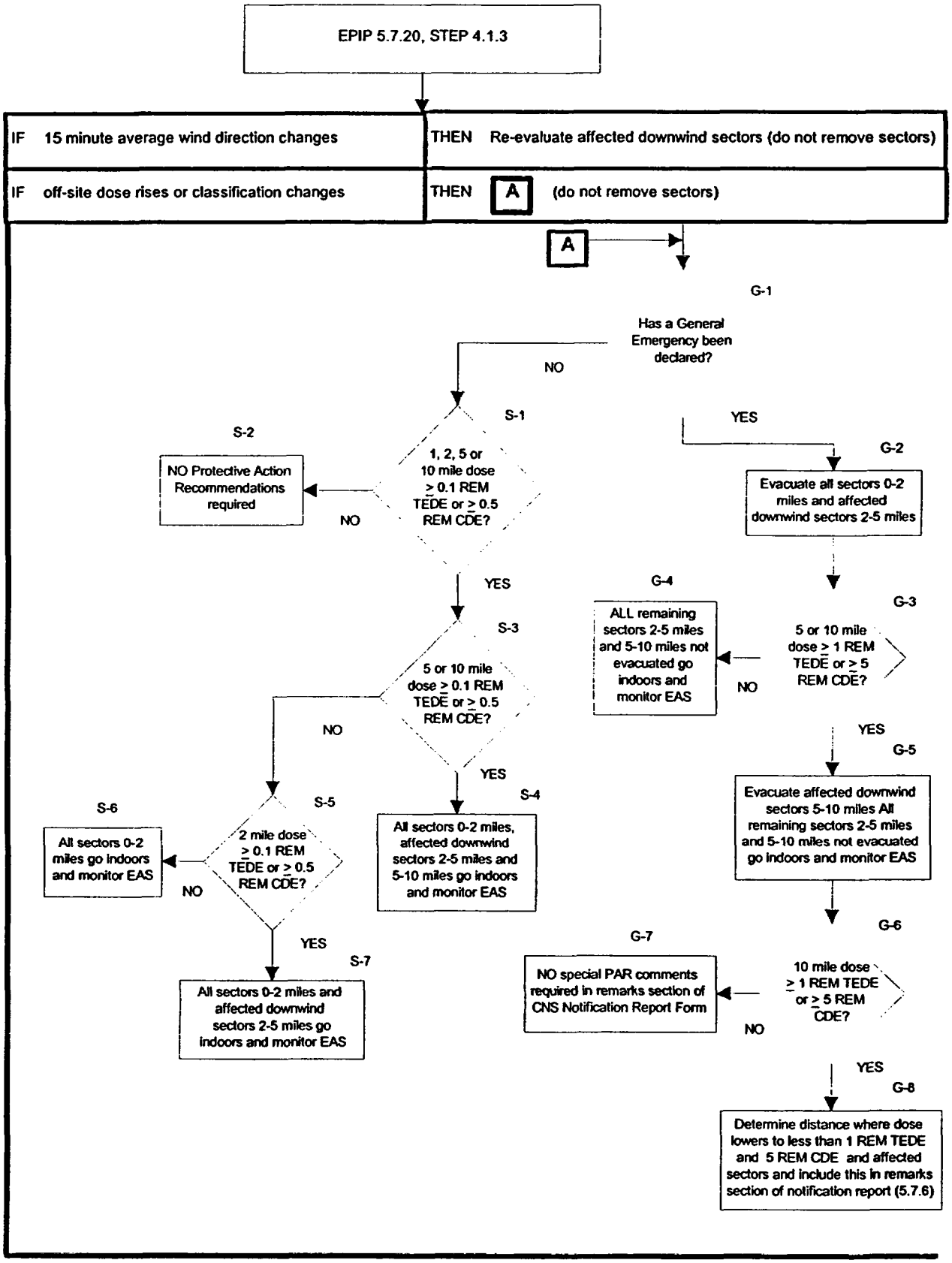
[ ] 4.1.7 Verify notifications are performed to States/Counties within 15 minutes of the approval of PARs.

5. MAKING THE PROTECTIVE ACTION RECOMMENDATION

[ ] 5.1 If State, Federal, or Local dose assessment personnel are present in the EOF and are conducting independent dose assessments, these personnel MAY be consulted or their results reviewed in the process of making a PAR.

[ ] 5.2 If Nebraska and Missouri State Representatives are present in the EOF, official communication of the PAR will be made to these individuals. The Emergency Director will make the PAR to these authorities verbally and should provide written information concurrently via the Cooper Nuclear Station Notification Report (Attachment 3 of Procedure 5.7.6).

[ ] 5.3 If Nebraska and Missouri State Representatives are not present in the EOF, official communication of the PAR is via the Cooper Nuclear Station Notification Report (Attachment 3 of Procedure 5.7.6). The Emergency Director will ensure the person making off-site notifications is immediately notified of the PAR for inclusion on the Off-Site Notification Form.


EPIP 5.7.20, STEP 4.1.3
IF 15 minute average wind direction changes
THEN Re-evaluate affected downwind sectors (do not remove sectors)
IF off-site dose rises or classification changes
THEN A (do not remove sectors)
A
G-1
Has a General Emergency been declared?
NO
YES
S-1
1, 2, 5 or 10 mile dose ≥ 0.1 REM TEDE or ≥ 0.5 REM CDE?
S-2
NO Protective Action Recommendations required
NO
YES
G-2
Evacuate all sectors 0-2 miles and affected downwind sectors 2-5 miles
G-3
5 or 10 mile dose ≥ 1 REM TEDE or ≥ 5 REM CDE?
G-4
ALL remaining sectors 2-5 miles and 5-10 miles not evacuated go indoors and monitor EAS
NO
YES
G-5
Evacuate affected downwind sectors 5-10 miles All remaining sectors 2-5 miles and 5-10 miles not evacuated go indoors and monitor EAS
S-3
5 or 10 mile dose ≥ 0.1 REM TEDE or ≥ 0.5 REM CDE?
NO
YES
S-4
All sectors 0-2 miles, affected downwind sectors 2-5 miles and 5-10 miles go indoors and monitor EAS
S-5
2 mile dose ≥ 0.1 REM TEDE or ≥ 0.5 REM CDE?
S-6
All sectors 0-2 miles go indoors and monitor EAS
NO
YES
S-7
All sectors 0-2 miles and affected downwind sectors 2-5 miles go indoors and monitor EAS
G-6
10 mile dose ≥ 1 REM TEDE or ≥ 5 REM CDE?
G-7
NO special PAR comments required in remarks section of CNS Notification Report Form
NO
YES
G-8
Determine distance where dose lowers to less than 1 REM TEDE and 5 REM CDE and affected sectors and include this in remarks section of notification report (5.7.6)

1. Determine the affected sectors using the chart below and the following:

[ ] 1.1.1 Wind speed and direction can be obtained from PMIS (primary), meteorological instrumentation in the Control Room (1st alternate), or National Weather Service (backup).

[ ] 1.1.1.1 Fifteen minute average should be used.

[ ] 1.1.1.2 If National Weather Service is used, obtain 15 minute average data, if available, or 15 previous 1 minute readings.

[ ] 1.1.2 If the wind direction is > 360°, the wind direction is determined by subtracting 360° from the indicated number. Wind direction should be rounded to the nearest whole number.

[ ] 1.1.3 Wind direction is always given as "wind from" (an easterly wind, or wind direction 90°, means that the wind is blowing from east to west).

[ ] 1.1.4 When determining the sectors affected, the adjacent sectors on both sides of the actual downwind sector are included. Three sectors will typically be listed.

[ ] 1.1.5 The below table is designed to add an additional sector if the wind direction is within 3° of a sector edge.

[ ] 1.1.6 If wind shift is observed following an initial PAR issue, then add affected sectors from wind shift to existing/initial PAR sectors. (Do not delete sectors.)

[ ] 1.1.7 Determine the affected sectors from the below table.

WIND FROM °	SECTORS AFFECTED	WIND FROM °	SECTORS AFFECTED	WIND FROM °	SECTORS AFFECTED
351 to 9	H, J, K	126 to 144	P, Q, R	261 to 279	D, E, F
10 to 13	H, J, K, L	145 to 148	P, Q, R, A	280 to 283	D, E, F, G
14 to 31	J, K, L	149 to 166	Q, R, A	284 to 301	E, F, G
32 to 35	J, K, L, M	167 to 170	Q, R, A, B	302 to 305	E, F, G, H
36 to 54	K, L, M	171 to 189	R, A, B	306 to 324	F, G, H
55 to 58	K, L, M, N	190 to 193	R, A, B, C	325 to 328	F, G, H, J
59 to 76	L, M, N	194 to 211	A, B, C	329 to 346	G, H ,J
77 to 80	L, M, N, P	212 to 215	A, B, C, D	347 to 350	G, H, J, K
81 to 99	M, N, P	216 to 234	B, C, D		
100 to 103	M, N, P, Q	235 to 238	B, C, D, E	There is no O Sector	
104 to 121	N, P, Q	239 to 256	C, D, E		
122 to 125	N, P, Q, R	257 to 260	C, D, E, F	There is no I Sector	

EPA 400 PROTECTIVE ACTION GUIDES (PAGs) FOR THE EARLY PHASE OF A NUCLEAR INCIDENT

PROTECTIVE ACTION	PROJECTED DOSE (PAG)	COMMENTS
Evacuation	1 rem TEDE rem[2,3] or 5 rem CDE (Thyroid)	Evacuation or, for some situations, sheltering[1,4] should normally be initiated at 1 rem. Further guidance is provided in Section 2.3.1 of EPA 400.

[1] Sheltering (i.e., "Go indoors and monitor EBS") may be the preferred protective action when it will provide protection equal to or greater than evacuation, based on consideration of factors, such as, source term characteristics, and temporal or other site-specific conditions (refer to Section 2.3.1 of EPA 400).

[2] The sum of the effective dose equivalent resulting from exposure to external sources and the committed effective dose equivalent (CDE) incurred from all significant inhalation pathways during the early phase. Committed dose equivalents to the thyroid and to the skin may be 5 and 50 times larger, respectively.

[3] Evacuation will be recommended by NPPD for areas with projected TEDE dose of > 1 rem or CDE (Thyroid) dose of > 5 rem.

[4] Go indoors and monitor EAS/EBS can be recommended by NPPD for areas with projected dose > 0.1 rem TEDE, but < 1.0 rem TEDE or > 0.5 rem CDE (Thyroid), but < 5 rem CDE (Thyroid).

ATTACHMENT 4	COOPER NUCLEAR STATION 10 MILE EMERGENCY PREPAREDNESS ZONE MAP

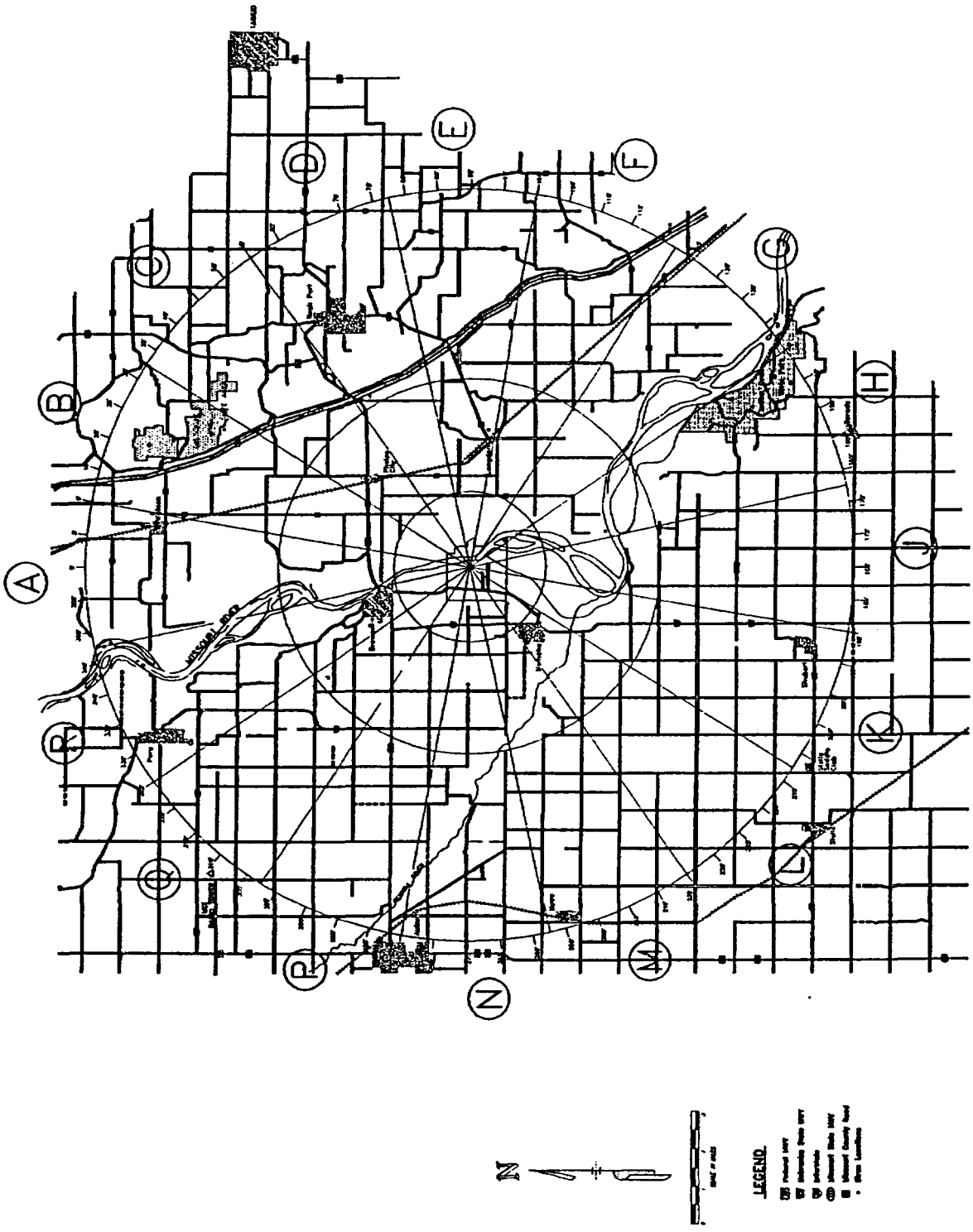


Figure 2

Information contained in Attachment 1, Protective Action Recommendation Flowchart, and Attachment 2, Affected Sector Determination, may be reformatted and placed on HARDCARDS similar to EOP Flowcharts. These PAR HARDCARDS will be controlled per this attachment. This information will be word for word but may be formatted differently using different font sizes or color backgrounds to assist the visual presentation.

Each PAR HARDCARD will be labeled with a PAR HARDCARD REVISION DATA box that will list the latest revision and the date of the revision of the HARDCARD. This data will match the information below:

PAR HARDCARD REVISION DATA		
PROCEDURE	HARDCARD REVISION NUMBER	DATE OF LAST HARDCARD REVISION
EPIP 5.7.20, Attachment 5	Revision 0	5/23/03

It is not necessary that the HARDCARD revision number be revised with each revision of this procedure. However, if the HARDCARD is revised or if Attachment 1 or 2 are revised, then Attachment 5 must be revised to reflect the new PAR HARDCARD Revision Data with the new information.

PAR HARDCARD distribution will be made to following locations:

PAR HARDCARD Locations:

1. Control Room
2. Simulator
3. Emergency Operations Facility
4. Technical Support Center
5. Alternate Emergency Operations Facility
6. Emergency Preparedness Office

1. DISCUSSION

1.1 Dose estimates are calculated according to the dose assessment methodology described in Procedure 5.7.17. These dose estimates are referred to as projected dose. A protective action is an action taken to avoid or reduce a projected dose when the benefits derived from such action are sufficient to offset any undesirable features of the protective action.

1.2 Protective action recommendations are automatic at a GENERAL EMERGENCY and may be warranted at lesser classifications due to off-site dose estimates.

1.3 Protective action recommendations are required in the event that the projected dose at ≥ 10 miles is ≥ 1 rem TEDE or 5 rem CDE (Thyroid). Distance determination may be performed using the hand calculation methodology in EPIP 5.7.17, Dose Assessment, and isopleth overlays. This function is performed by EOF Dose Assessment personnel.

2. REFERENCES

2.1 CODES AND STANDARDS

2.1.1 Environmental Protection Agency EPA 400-R-92-001, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, May 1992.

2.1.2 NPPD Emergency Plan for CNS.

2.1.3 NUREG BR-0150, Volume 1, Revision 1.

2.1.4 NUREG 0654/FEMA-REP-1, Revision 1, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants.

2.1.5 Reactor Safety Study, Appendix VI, WASH 1400, October 1975.

2.2 PROCEDURES

2.2.1 Emergency Plan Implementing Procedure 5.7.6, Notification.

2.2.2 Emergency Plan Implementing Procedure 5.7.17, Dose Assessment.

2.3 MISCELLANEOUS

2.3.1 Evacuation Time Estimates for Nebraska and Missouri.

2.3.2 RCR 2002-0260, Action 2.

2.3.3 RCR 2001-0181, Action 3.