PUBLIC SERVICE COMPANY OF COLORADO
FORT ST. VRAIN NUCLEAR GENERATING STATION

CR-UE

Worksheet 1
Issue 14
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NRC-
Eisenhunt

WORKSHEET 1

ASSESSMENT OF RELEASE-MONITORED RELEASE

This attachment is to be used only if the TI-59 calculator program is not used. If the TI-59 is used, Worksheet 2 is to be used.

This attachment is used to determine the following:

a) Estimated noble gas and iodine release and release rate;

b) The estimated whole body and thyroid gamma dose and dose rate at the EAB;

c) Classification of the release;

d) Projected whole body and thyroid gamma dose at the EAB; and

e) Recommended protective action for the general population.

1. Date/Time of beginning of release. _____

2. Date/Time of ending of release. If release is still occurring, enter the Date/Time of the calculation. _____

3. Hours between 1. and 2. _____

4. Collect the following data:

   a) Maximum CPM, RIS-7324-1:
      (RR-93539, red pen) _____ cpm

   b) Sensitivity, RIS-7324-1:
      (I-14, 403-P7) _____ μCi/cc/cpm

   c) Maximum CPM, RIS-7324-2:
      (RR-93539, blue pen) _____ cpm

   d) Sensitivity, RIS-7324-2:
      (I-14, 203-P7) _____ μCi/cc/cpm

   e) Maximum CPM/Min, RIS-73437-1: _____ cpm/min

      NOTE: Maximum CPM/Min must be calculated as:

      $$\frac{(\text{Maximum CPM} - \text{Initial or Intermediate CPM})}{(\text{Elapsed Time (min)})}$$

      from strip chart.

f)   Sensitivity, RIS-73437-1: _____ uCi/cc/cpm/min

g)   Site Area Emergency Limit (as posted):

    1)   <u>6.6E-2</u> uCi/cc noble gas

    2)   <u>6.7E-5</u> uCi/cc^{131}I

h)   Ten Times Technical Specification
    Limits (as posted):

    1)   <u>2.5E-2</u> uCi/cc noble gas

    2)   <u>7.0E-8</u> uCi/cc^{131}I

i)   Exhaust Stack Flow (cfm):
    (I-15, FI-7320) _____ cfm

j)   Exhaust Stack Flow (cc/sec):
    (Step 4i x 4.72E + 2) _____ cc/sec

k)   Average Wind Speed: _____ mph

l)   Wind Direction: From _____ Degrees

    NOTE: North = 0° increasing
    degrees - c.w.

m)   (200 ft. - 20 ft.)
    Differential Temperature: _____ °F

5. Determine sectors affected using Site Sector Map.

    (Figure 2)   Sector(s)   _____

6. Determine Stability Category using Table 1,
Step 4k), and 4m).
                   Stability Category   _____

_____
| |
| Noble Gas Concentration |
|_____|

7. Calculate the exhaust stack noble gas concentration.

a)   RIS-7324-1 concentration = (step 4a) x (step 4b)

$$= (\qquad) \times (\qquad)$$

$$= \underline{\qquad}\ \mu Ci/cc$$

b)   RIS-7324-2 concentration = (step 4c) x (step 4d)

$$= (\qquad) \times (\qquad)$$

$$= \underline{\qquad}\ \mu Ci/cc$$

c)   If either RIS-7324-1 or RIS-7324-2 is off-scale high, record the stack concentration as obtained by local, portable instrument (refer to HPP-56 or Figure 1 for instructions).

Local Indicated Concentration = _____ µCi/cc

d)   Enter the highest of 7a), 7b), or 7c) _____ µCi/cc

```
 _____
|                        |
|  Noble Gas Release Rate |
|_____|
```

8.   Calculate the Source Term, Q (i.e., Noble Gas Release Rate).

Q = (step 7d) x (step 4j) x (1 E -6 Ci/µci)

$$= (\qquad) \times (\qquad) \times (1\ E\ {-}6)$$

$$= \underline{\qquad}\ Ci/sec$$

```
 _____
|                        |
|  Classification of Event |
|_____|
```

9.   Determine weighted noble gas dose conversion
     factor from Table 2.   7.5E+2   Rem/hour
                                                          ‾‾‾‾‾‾
                                                          Ci/m³

10. Determine the EAB dilution factor from Attach-
     ment 1 using the Stability Category (Step 6)
     and wind speed (Step 4k).
                          Dilution Factor = _____ sec/m³

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General Emergency Determination

11. Determine whole body dose rate at the EAB.

    Dose Rate = (step 8) x (step 9) x (step 10)

    = (   ) x (   ) x (   )

    = _____ Rem/hour

    If the resulting dose rate at the EAB is ≥ 1 Rem/hour, the classification of the event is GENERAL EMERGENCY. Inform the Shift Supervisor of the General Emergency condition. Then go directly to Step 14 of this attachment.

Site Area Emergency Determination

12. Criteria for Site Emergency: If Step 7d) is greater than or equal to 6.6E-2 µCi/cc, the classification of the event is SITE AREA EMERGENCY. Inform the Shift Supervisor of the Site Emergency Condition. Then go directly to Step 14 of this attachment.

Radiological Alert Determination

13. Criteria for Radiological Alert: If Step 7d) is greater than or equal to ten times the Technical Specification limit 2.5E-2 µCi/cc, the classification of the event is RADIOLOGICAL ALERT. Inform the Shift Supervisor of the Radiological Alert Condition. Then proceed with Step 14.

| Curies of Noble Gas Released |
---

14. Calculate the curies of noble gas released to present time.

    Curies released = (step 8) x (step 3) x (3.6 E +3 s/hr)

    = (   ) x (   ) x (3.6 E +3)

    = _____ Curies

| Accumulated Whole Body Gamma Dose at EAB |

15. Calculate the dose received at the EAB.

Dose = (step 11) x (step 3)

= (   ) x (   )

= _____ Rem

NOTE: This calculation assumes the recipient was at the EAB for the entire duration of the release.

| Projections |

16. If the release is continuing, consult with the Shift Supervisor and <u>estimate</u> the total number of hours the release will continue (i.e., from beginning to end). If the release has terminated, enter N/A.

Preliminary estimate of release hours _____ hours.

17. Project the totoal whole body gamma dose at the EAB. If the release has terminated, enter N/A.

Projected dose at EAB = (step 11) x (step 16)

= (   ) x (   )

= _____ Rem

131 I Concentration

18. Calculate the exhaust stack ^{131}I concentration.

RIS-73437-1 concentration = (step 4e) x (step 4f)

= (   ) x (   )

= _____ µCi/cc

131I and Total Radioiodine Release Rate

19. Calculate the source term Q (^{131}I release rate).

Q = (step 18) x (step 4j) x (1 E -6)

= (   ) x (   ) x (1 E -6)

= _____ Ci/sec

20. Calculate Q_T for total radioiodine release.

Q_T = (step 19) x (1.05 E + 2)*
= (   ) x (1.05 E + 2)*

= _____ Ci/sec

* Ratio of total radioiodines to ^{131}I in design inventory.

Classification of Event

21. Determine weighted radioiodine dose conversion
factor from Attachment 8. $\underline{5.3E+4}$ $\dfrac{Rem/hour}{Ci/m^3}$

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FORT ST. VRAIN NUCLEAR GENERATING STATION

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General Emergency Determination

22. Determine the thyroid dose rate at the EAB.

   Dose Rate = (step 20) x (step 21) x (step 10)

   = (   ) x (   ) x (   )

   = _____ Rem/hour

If the resulting dose rate at the EAB is ≥ 5 Rem/hour, the classification of the event is GENERAL EMERGENCY. Inform the Shift Supervisor of the General Emergency Condition. Then go directly to Step 25 of this attachment.

Site Area Emergency Determination

23. Criteria for Site Area Emergency: If Step 18 is great than or equal to 6.7E-5 µCi/cc, the classification of the event is SITE EMERGENCY. Inform the Shift Supervisor of the Site Emergency Condition. Then go directly to Step 25 of this attachment.

Radiological Alert Determination

24. Criteria for Radiological Alert: If Step 18 is greater than or equal to ten times the Technical Specification limit 7.0E-8 µCi/cc, the classification of the event is RADIOLOGICAL ALERT. Inform the Shift Supervisor of the Radiological Alert Condition. Then proceed with Step 25.

```
_____
|                                        |
|    Curies of Radioiodine Released      |
|_____|
```

25. Calculate the curies of radioiodine released to present time.

   Curies Released = (step 20) x (step 3) x (3.6 E +3)

   = (   ) x (   ) x (3.6 E +3)

   = _____ curies

| Accumulated Thyroid Dose at EAB |

26. Calculate the dose received at the EAB.

Dose = (step 22) x (step 3)

= (   ) x (   )

= _____ Rem

NOTE: This calculation assumes the recipient was at the EAB for the entire duration of the release.

| Projections |

27. If the release is continuing, consult with the Shift Supervisor and estimate the total number of hours the release will continue (i.e., from beginning to end). If the release has terminated, enter N/A.

Preliminary estimate of release hours _____ hours.

28. Project the total thyroid dose at the EAB. If the release has terminated, enter N/A.

Projected Dose at EAB = (step 22) x (step 27)

= (   ) x (   )

= _____ Rem

29. Determine the recommended protective action for the general population based on the results of steps 17 and 28, refer to RERP-PAG.

30. The whole body gamma dose rate at the EAB is (step 11):   _____ Rem/hour

31. The classification of the event based on noble gases is (step 11 or step 12 or step 13):   _____

32. The noble gas release rate is (step 8):   _____ Ci/sec

33. The accumulated whole body gamma dose at the EAB is (step 15): _____ Rem

34. The total number of curies of noble gas release to the present time is (step 14): _____ Curies

35. The projected whole body gamma dose at the EAB is (step 17): _____ Rem

    Based on projected release duration of (step 16): _____ hours

36. The thyroid dose rate at the EAB is (step 22): _____ Rem/hour

37. *The classification of the event based on radio-iodines is (step 22 or step 23 or step 24): _____

38. The radioiodine release rate is (step 20): _____ Ci/sec

39. The accumulated thyroid dose at the EAB is (step 26): _____ Rem

40. The total number of curies of radioiodine released to the present time is (step 25): _____ Curies

41. The projected thyroid dose at the EAB is (step 28): _____ Rem

    Based on projected release duration of (step 27): _____ hours

    *If this classification differs from the classification in step 31, the higher (i.e., more severe) classification is to be used to determine recommended protective action.

WORKSHEET 1

ASSESSMENT OF RELEASE-MONITORED RELEASE

This attachment is to be used only if the TI-59 calculator program is not used. If the TI-59 is used, Worksheet 2 is to be used.

This attachment is used to determine the following:

a)   Estimated noble gas and iodine release and release rate;

b)   The estimated whole body and thyroid gamma dose and dose rate at the EAB;

c)   Classification of the release;

d)   Projected whole body and thyroid gamma dose at the EAB; and

e)   Recommended protective action for the general population.

1.   Date/Time of beginning of release.   _____

2.   Date/Time of ending of release. If release is still occurring, enter the Date/Time of the calculation.   _____

3.   Hours between 1. and 2.   _____

4.   Collect the following data:

a)   Maximum CPM, RIS-7324-1:
     (RR-93539, red pen)   _____ cpm

b)   Sensitivity, RIS-7324-1:
     (I-14, 403-P7)   _____ μCi/cc/cpm

c)   Maximum CPM, RIS-7324-2:
     (RR-93539, blue pen)   _____ cpm

d)   Sensitivity, RIS-7324-2:
     (I-14, 203-P7)   _____ μCi/cc/cpm

e)   Maximum CPM/Min, RIS-73437-1:   _____ cpm/min

     NOTE: Maximum CPM/Min must be calculated as:

     $$\frac{(Maximum\ CPM\ -\ Initial\ or\ Intermediate\ CPM)}{(Elapsed\ Time\ (min))}$$

     from strip chart.

f)   Sensitivity, RIS-73437-1: _____ µCi/cc/cpm/min

g)   Site Area Emergency Limit (as posted):

1)   <u>6.6E-2</u> µCi/cc noble gas

2)   <u>6.7E-5</u> µCi/cc^{131}I

h)   Ten Times Technical Specification
Limits (as posted):

1)   <u>2.5E-2</u> µCi/cc noble gas

2)   <u>7.0E-8</u> µCi/cc^{131}I

i)   Exhaust Stack Flow (cfm):
(I-15, FI-7320) _____ cfm

j)   Exhaust Stack Flow (cc/sec):
(Step 4i x 4.72E + 2) _____ cc/sec

k)   Average Wind Speed: _____ mph

l)   Wind Direction: From _____ Degrees

NOTE: North = 0° increasing
degrees - c.w.

m)   (200 ft. - 20 ft.)
Differential Temperature: _____ °F

5.   Determine sectors affected using Site Sector Map.

(Figure 2)   Sector(s)   _____

6.   Determine Stability Category using Table 1,
Step 4k), and 4m).
Stability Category   _____

```
 _____
|                                |
|    Noble Gas Concentration     |
|_____|
```

7.   Calculate the exhaust stack noble gas concentration.

a) RIS-7324-1 concentration = (step 4a) x (step 4b)

= (   ) x (   )

= _____ µCi/cc

b) RIS-7324-2 concentration = (step 4c) x (step 4d)

= (   ) x (   )

= _____ µCi/cc

c) If either RIS-7324-1 or RIS-7324-2 is off-scale high, record the stack concentration as obtained by local, portable instrument (refer to HPP-56 or Figure 1 for instructions).

Local Indicated Concentration = _____ µCi/cc

d) Enter the highest of 7a), 7b), or 7c) _____ µCi/cc

> ┌─────────────────────────────┐
> │   Noble Gas Release Rate   │
> └─────────────────────────────┘

8. Calculate the Source Term, Q (i.e., Noble Gas Release Rate).

Q = (step 7d) x (step 4j) x (1 E -6 Ci/µci)

= (   ) x (   ) x (1 E -6)

= _____ Ci/sec

> ┌─────────────────────────────┐
> │   Classification of Event   │
> └─────────────────────────────┘

9. Determine weighted noble gas dose conversion
factor from Table 2. $\dfrac{7.5E+2 \quad \text{Rem/hour}}{Ci/m^3}$

10. Determine the EAB dilution factor from Attachment 1 using the Stability Category (Step 6) and wind speed (Step 4k).

Dilution Factor = _____ sec/m^3

General Emergency Determination

11. Determine whole body dose rate at the EAB.

    Dose Rate = (step 8) x (step 9) x (step 10)

    = (   ) x (   ) x (   )

    = _____ Rem/hour

    If the resulting dose rate at the EAB is ≥ 1 Rem/hour, the classification of the event is GENERAL EMERGENCY. Inform the Shift Supervisor of the General emergency condition. Then go directly to Step 14 of this attachment.

Site Area Emergency Determination

12. Criteria for Site Emergency: If Step 7d) is greater than or equal to 6.6E-2 μCi/cc, the classification of the event is SITE AREA EMERGENCY. Inform the Shift Supervisor of the Site Emergency Condition. Then go directly to Step 14 of this attachment.

Radiological Alert Determination

13. Criteria for Radiological Alert: If Step 7d) is greater than or equal to ten times the Technical Specification limit 2.5E-2 μCi/cc, the classification of the event is RADIOLOGICAL ALERT. Inform the Shift Supervisor of the Radiological Alert Condition. Then proceed with Step 14.

```
 _____
|                                         |
|      Curies of Noble Gas Released        |
|_____|
```

14. Calculate the curies of noble gas released to present time.

    Curies released = (step 8) x (step 3) x (3.6 E +3 s/hr)

    = (   ) x (   ) x (3.6 E +3)

    = _____ Curies

| Accumulated Whole Body Gamma Dose at EAB |
---

15. Calculate the dose received at the EAB.

     Dose = (step 11) x (step 3)

          = (   ) x (   )

          = _____ Rem

NOTE: This calculation assumes the recipient was at the EAB for the entire duration of the release.

| Projections |
---

16. If the release is continuing, consult with the Shift Supervisor and <u>estimate</u> the total number of hours the release will continue (i.e., from beginning to end). If the release has terminated, enter N/A.

          Preliminary estimate of release hours _____ hours.

17. Project the totoal whole body gamma dose at the EAB. If the release has terminated, enter N/A.

          Projected dose at EAB = (step 11) x (step 16)

                                = (   ) x (   )

                                = _____ Rem

```
| _____ |
|                             |
|    131 I Concentration      |
| _____ |
```

18. Calculate the exhaust stack ^{131}I concentration.

RIS-73437-1 concentration = (step 4e) x (step 4f)

= (   ) x (   )

= _____ uCi/cc

```
| _____ |
|                                           |
|   131I and Total Radioiodine Release Rate |
| _____ |
```

19. Calculate the source term Q (^{131}I release rate).

Q = (step 18) x (step 4j) x (1 E -6)

= (   ) x (   ) x (1 E -6)

= _____ Ci/sec

20. Calculate Q_T for total radioiodine release.

Q_T = (step 19) x (1.05 E + 2)*

= (   ) x (1.05 E + 2)*

= _____ Ci/sec

* Ratio of total radioiodines to ^{131}I in design inventory.

```
| _____ |
|                                   |
|     Classification of Event       |
| _____ |
```

21. Determine weighted radioiodine dose conversion
factor from Attachment 8. $\underline{5.3E+4}$ $\dfrac{Rem/hour}{Ci/m^3}$

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FORT ST. VRAIN NUCLEAR GENERATING STATION

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General Emergency Determination

22. Determine the thyroid dose rate at the EAB.

Dose Rate = (step 20) x (step 21) x (step 10)

= (   ) x (   ) x (   )

= _____ Rem/hour

If the resulting dose rate at the EAB is ≥ 5 Rem/hour, the classification of the event is GENERAL EMERGENCY. Inform the Shift Supervisor of the General Emergency Condition. Then go directly to Step 25 of this attachment.

Site Area Emergency Determination

23. Criteria for Site Area Emergency: If Step 18 is great than or equal to 6.7E-5 μCi/cc, the classification of the event is SITE EMERGENCY. Inform the Shift Supervisor of the Site Emergency Condition. Then go directly to Step 25 of this attachment.

Radiological Alert Determination

24. Criteria for Radiological Alert: If Step 18 is greater than or equal to ten times the Technical Specification limit 7.0E-8 μCi/cc, the classification of the event is RADIOLOGICAL ALERT. Inform the Shift Supervisor of the Radiological Alert Condition. Then proceed with Step 25.

Curies of Radioiodine Released

25. Calculate the curies of radioiodine released to present time.

Curies Released = (step 20) x (step 3) x (3.6 E +3)

= (   ) x (   ) x (3.6 E +3)

= _____ curies

| Accumulated Thyroid Dose at EAB |

26. Calculate the dose received at the EAB.

Dose = (step 22) x (step 3)

= (   ) x (   )

= _____ Rem

NOTE: This calculation assumes the recipient was at the EAB for the entire duration of the release.

| Projections |

27. If the release is continuing, consult with the Shift Supervisor and <u>estimate</u> the total number of hours the release will continue (i.e., from beginning to end). If the release has terminated, enter N/A.

Preliminary estimate of release hours _____ hours.

28. Project the total thyroid dose at the EAB. If the release has terminated, enter N/A.

Projected Dose at EAB = (step 22) x (step 27)

= (   ) x (   )

= _____ Rem

29. Determine the recommended protective action for the general population based on the results of steps 17 and 28, refer to RERP-PAG.

30. The whole body gamma dose rate at the EAB is
(step 11):   _____ Rem/hour

31. The classification of the event based on noble
gases is (step 11 <u>or</u> step 12 <u>or</u> step 13):   _____

32. The noble gas release rate is (step 8):   _____ Ci/sec

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33. The accumulated whole body gamma dose at the EAB
    is (step 15): _____ Rem

34. The total number of curies of noble gas release
    to the present time is (step 14): _____ Curies

35. The projected whole body gamma dose at the EAB is
    (step 17): _____ Rem

    Based on projected release duration of (step 16): _____ hours

36. The thyroid dose rate at the EAB is (step 22): _____ Rem/hour

37. *The classification of the event based on radio-
    iodines is (step 22 or step 23 or step 24): _____

38. The radioiodine release rate is (step 20): _____ Ci/sec

39. The accumulated thyroid dose at the EAB is
    (step 26): _____ Rem

40. The total number of curies of radioiodine
    released to the present time is (step 25): _____ Curies

41. The projected thyroid dose at the EAB is
    (step 28): _____ Rem

    Based on projected release duration of (step 27): _____ hours

*If this classification differs from the classification in step
31, the higher (i.e., more severe) classification is to be used
to determine recommended protective action.

WORKSHEET 1

ASSESSMENT OF RELEASE-MONITORED RELEASE

This attachment is to be used only if the TI-59 calculator program is not used. If the TI-59 is used, Worksheet 2 is to be used.

This attachment is used to determine the following:

a) Estimated noble gas and iodine release and release rate;

b) The estimated whole body and thyroid gamma dose and dose rate at the EAB;

c) Classification of the release;

d) Projected whole body and thyroid gamma dose at the EAB; and

e) Recommended protective action for the general population.

1. Date/Time of beginning of release.   _____

2. Date/Time of ending of release. If release is still occurring, enter the Date/Time of the calculation.   _____

3. Hours between 1. and 2.   _____

4. Collect the following data:

a) Maximum CPM, RIS-7324-1: (RR-93539, red pen)   _____ cpm

b) Sensitivity, RIS-7324-1: (I-14, 403-P7)   _____ uCi/cc/cpm

c) Maximum CPM, RIS-7324-2: (RR-93539, blue pen)   _____ cpm

d) Sensitivity, RIS-7324-2: (I-14, 203-P7)   _____ uCi/cc/cpm

e) Maximum CPM/Min, RIS-73437-1:   _____ cpm/min

NOTE: Maximum CPM/Min must be calculated as:

$$\frac{(\text{Maximum CPM} - \text{Initial or Intermediate CPM})}{(\text{Elapsed Time (min)})}$$

from strip chart.

   f)   Sensitivity, RIS-73437-1:   _____ uCi/cc/cpm/min

   g)   Site Area Emergency Limit (as posted):

       1)   <u>6.6E-2</u> uCi/cc noble gas

       2)   <u>6.7E-5</u> uCi/cc ^{131}I

   h)   Ten Times Technical Specification
       Limits (as posted):

       1)   <u>2.5E-2</u> uCi/cc noble gas

       2)   <u>7.0E-8</u> uCi/cc ^{131}I

   i)   Exhaust Stack Flow (cfm):
       (I-15, FI-7320)   _____ cfm

   j)   Exhaust Stack Flow (cc/sec):
       (Step 4i x 4.72E + 2)   _____ cc/sec

   k)   Average Wind Speed: _____ mph

   l)   Wind Direction: From_____Degrees

       NOTE: North = 0° increasing
       degrees - c.w.

   m)   (200 ft. - 20 ft.)
       Differential Temperature: _____ °F

5.   Determine sectors affected using Site Sector Map.

      (Figure 2)   Sector(s)   _____

6.   Determine Stability Category using Table 1,
    Step 4k), and 4m).
                   Stability Category   _____

```
 _____
|                                |
|    Noble Gas Concentration     |
|_____|
```

7.   Calculate the exhaust stack noble gas concentration.

a)   RIS-7324-1 concentration = (step 4a) x (step 4b)

$$= (\qquad) \times (\qquad)$$

$$= \underline{\qquad} \mu Ci/cc$$

b)   RIS-7324-2 concentration = (step 4c) x (step 4d)

$$= (\qquad) \times (\qquad)$$

$$= \underline{\qquad} \mu Ci/cc$$

c)   If either RIS-7324-1 or RIS-7324-2 is off-scale high, record the stack concentration as obtained by local, portable instrument (refer to HPP-56 or Figure 1 for instructions).

Local Indicated Concentration = _____ µCi/cc

d)   Enter the highest of 7a), 7b), or 7c) _____ µCi/cc

```
 _____
|                        |
|  Noble Gas Release Rate |
|_____|
```

8.   Calculate the Source Term, Q (i.e., Noble Gas Release Rate).

$$Q = (\text{step 7d}) \times (\text{step 4j}) \times (1 \text{ E} -6 \text{ Ci}/\mu ci)$$

$$= (\qquad) \times (\qquad) \times (1 \text{ E} -6)$$

$$= \underline{\qquad} Ci/sec$$

```
 _____
|                        |
|  Classification of Event |
|_____|
```

9.   Determine weighted noble gas dose conversion factor from Table 2.   7.5E+2 $\dfrac{\text{Rem/hour}}{\text{Ci/m}^3}$

10. Determine the EAB dilution factor from Attachment 1 using the Stability Category (Step 6) and wind speed (Step 4k).

Dilution Factor = _____ sec/m³

General Emergency Determination

11. Determine whole body dose rate at the EAB.

    Dose Rate = (step 8) x (step 9) x (step 10)

    = (   ) x (   ) x (   )

    = _____ Rem/hour

    If the resulting dose rate at the EAB is ≥ 1 Rem/hour, the classification of the event is GENERAL EMERGENCY. Inform the Shift Supervisor of the General Emergency condition. Then go directly to Step 14 of this attachment.

Site Area Emergency Determination

12. Criteria for Site Emergency: If Step 7d) is greater than or equal to 6.6E-2 μCi/cc, the classification of the event is SITE AREA EMERGENCY. Inform the Shift Supervisor of the Site Emergency Condition. Then go directly to Step 14 of this attachment.

Radiological Alert Determination

13. Criteria for Radiological Alert: If Step 7d) is greater than or equal to ten times the Technical Specification limit 2.5E-2 μCi/cc, the classification of the event is RADIOLOGICAL ALERT. Inform the Shift Supervisor of the Radiological Alert Condition. Then proceed with Step 14.

| Curies of Noble Gas Released |
---

14. Calculate the curies of noble gas released to present time.

    Curies released = (step 8) x (step 3) x (3.6 E +3 s/hr)

    = (   ) x (   ) x (3.6 E +3)

    = _____ Curies

| Accumulated Whole Body Gamma Dose at EAB |
---

15. Calculate the dose received at the EAB.

Dose = (step 11) x (step 3)

= (   ) x (   )

= _____ Rem

NOTE: This calculation assumes the recipient was at the EAB for the entire duration of the release.

| Projections |
---

16. If the release is continuing, consult with the Shift Supervisor and <u>estimate</u> the total number of hours the release will continue (i.e., from beginning to end). If the release has terminated, enter N/A.

Preliminary estimate of release hours _____ hours.

17. Project the totoal whole body gamma dose at the EAB. If the release has terminated, enter N/A.

Projected dose at EAB = (step 11) x (step 16)

= (   ) x (   )

= _____ Rem

```
| 131 I Concentration |
```

18. Calculate the exhaust stack ^{131}I concentration.

RIS-73437-1 concentration = (step 4e) x (step 4f)

= (   ) x (   )

= _____ µCi/cc

```
| 131I and Total Radioiodine Release Rate |
```

19. Calculate the source term Q (^{131}I release rate).

Q = (step 18) x (step 4j) x (1 E -6)

= (   ) x (   ) x (1 E -6)

= _____ Ci/sec

20. Calculate Q_T for total radioiodine release.

Q_T = (step 19) x (1.05 E + 2)*
= (   ) x (1.05 E + 2)*

= _____ Ci/sec

* Ratio of total radioiodines to ^{131}I in design inventory.

```
| Classification of Event |
```

21. Determine weighted radioiodine dose conversion
factor from Attachment 8.   5.3E+4 $\frac{Rem/hour}{Ci/m^3}$

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General Emergency Determination

22. Determine the thyroid dose rate at the EAB.

Dose Rate = (step 20) x (step 21) x (step 10)

= (   ) x (   ) x (   )

= _____ Rem/hour

If the resulting dose rate at the EAB is ≥ 5 Rem/hour, the classification of the event is GENERAL EMERGENCY. Inform the Shift Supervisor of the General Emergency Condition. Then go directly to Step 25 of this attachment.

Site Area Emergency Determination

23. Criteria for Site Area Emergency: If Step 18 is great than or equal to 6.7E-5 µCi/cc, the classification of the event is SITE EMERGENCY. Inform the Shift Supervisor of the Site Emergency Condition. Then go directly to Step 25 of this attachment.

Radiological Alert Determination

24. Criteria for Radiological Alert: If Step 18 is greater than or equal to ten times the Technical Specification limit 7.0E-8 µCi/cc, the classification of the event is RADIOLOGICAL ALERT. Inform the Shift Supervisor of the Radiological Alert Condition. Then proceed with Step 25.

| Curies of Radioiodine Released |
---

25. Calculate the curies of radioiodine released to present time.

Curies Released = (step 20) x (step 3) x (3.6 E +3)

= (   ) x (   ) x (3.6 E +3)

= _____ curies

```
| Accumulated Thyroid Dose at EAB |
```

26. Calculate the dose received at the EAB.

      Dose = (step 22) x (step 3)

          = (   ) x (   )

          = _____ Rem

NOTE: This calculation assumes the recipient was at the EAB for the entire duration of the release.

```
| Projections |
```

27. If the release is continuing, consult with the Shift Supervisor and <u>estimate</u> the total number of hours the release will continue (i.e., from beginning to end). If the release has terminated, enter N/A.

      Preliminary estimate of release hours _____hours.

28. Project the total thyroid dose at the EAB. If the release has terminated, enter N/A.

      Projected Dose at EAB = (step 22) x (step 27)

                        = (   ) x (   )

                        = _____ Rem

29. Determine the recommended protective action for the general population based on the results of steps 17 and 28, refer to RERP-PAG.

30. The whole body gamma dose rate at the EAB is (step 11): _____Rem/hour

31. The classification of the event based on noble gases is (step 11 <u>or</u> step 12 <u>or</u> step 13): _____

32. The noble gas release rate is (step 8): _____Ci/sec

33. The accumulated whole body gamma dose at the EAB
    is (step 15): _____ Rem

34. The total number of curies of noble gas release
    to the present time is (step 14): _____ Curies

35. The projected whole body gamma dose at the EAB is
    (step 17): _____ Rem

    Based on projected release duration of (step 16): _____ hours

36. The thyroid dose rate at the EAB is (step 22): _____ Rem/hour

37. *The classification of the event based on radio-
    iodines is (step 22 or step 23 or step 24): _____

38. The radioiodine release rate is (step 20): _____ Ci/sec

39. The accumulated thyroid dose at the EAB is
    (step 26): _____ Rem

40. The total number of curies of radioiodine
    released to the present time is (step 25): _____ Curies

41. The projected thyroid dose at the EAB is
    (step 28): _____ Rem

    Based on projected release duration of (step 27): _____ hours

*If this classification differs from the classification in step
31, the higher (i.e., more severe) classification is to be used
to determine recommended protective action.

WORKSHEET 1

ASSESSMENT OF RELEASE-MONITORED RELEASE

This attachment is to be used only if the TI-59 calculator program is not used. If the TI-59 is used, Wo ksheet 2 is to be used.

This attachment is used to determine the following:

a)   Estimated noble gas and iodine release and relea,e rate;

b)   The estimated whole body and thyroid gamma dose and dose rate at the EAB;

c)   Classification of the release;

d)   Projected whole body and thyroid gamma dose at the EAB; and

e)   Recommended protective action for the general population.

1.   Date/Time of beginning of release.   _____

2.   Date/Time of ending of release. If release is still occurring, enter the Date/Time of the calculation.   _____

3.   Hours between 1. and 2.   _____

4.   Collect the following data:

a)   Maximum CPM, RIS-7324-1:
(RR-93539, red pen)   _____ cpm

b)   Sensitivity, RIS-7324-1:
(I-14, 403-P7)   _____ µCi/cc/cpm

c)   Maximum CPM, RIS-7324-2:
(RR-93539, blue pen)   _____ cpm

d)   Sensitivity, RIS-7324-2:
(I-14, 203-P7)   _____ µCi/cc/cpm

e)   Maximum CPM/Min, RIS-73437-1:   _____ cpm/min

NOTE: Maximum CPM/Min must be calculated as:

$$\frac{(\text{Maximum CPM} - \text{Initial or Intermediate CPM})}{(\text{Elapsed Time (min)})}$$

from strip chart.

f) Sensitivity, RIS-73437-1: _____ uCi/cc/cpm/min

g) Site Area Emergency Limit (as posted):

   1) <u>6.6E-2</u> uCi/cc noble gas

   2) <u>6.7E-5</u> uCi/cc^{131}I

h) Ten Times Technical Specification
   Limits (as posted):

   1) <u>2.5E-</u> uCi/cc noble gas·

   2) <u>7.0E-8</u> uCi/cc^{131}I

i) Exhaust Stack Flow (cfm):
   (I-15, FI-7320)   _____ cfm

j) Exhaust Stack Flow (cc/sec):
   (Step 4i x 4.72E + 2)   _____ cc/sec

k) Average Wind Speed: _____ mph

l) Wind Direction: From_____ Degrees

   NOTE: North = 0° increasing
   degrees - c.w.

m) (200 ft. - 20 ft.)
   Differential Temperature: _____ °F

5. Determine sectors affected using Site Sector Map.

   (Figure 2)   Sector(s)   _____

6. Determine Stability Category using Table 1,
   Step 4k), and 4m).
                              Stability Category   _____

   | Noble Gas Concentration |

7. Calculate the exhaust stack noble gas concentration.

a)   RIS-7324-1 concentration = (step 4a) x (step 4b)

= (   ) x (   )

= _____ µCi/cc

b)   RIS-7324-2 concentration = (step 4c) x (step 4d)

= (   ) x (   )

= _____ µCi/cc

c)   If either RIS-7324-1 or RIS-7324-2 is off-scale high, record the stack concentration as obtained by local, portable instrument (refer to HPP-56 or Figure 1 for instructions).

Local Indicated Concentration = _____ µCi/cc

d)   Enter the highest of 7a), 7b), or 7c) _____ µCi/cc

| Noble Gas Release Rate |
---

8.   Calculate the Source Term, Q (i.e., Noble Gas Release Rate).

Q = (step 7d) x (step 4j) x (1 E -6 Ci/µci)

= (   ) x (   ) x (1 E -6)

= _____ Ci/sec

| Classification of Event |
---

9.   Determine weighted noble gas dose conversion factor from Table 2.   7.5E+2   Rem/hour
                                                                                                     Ci/m³

10.   Determine the EAB dilution factor from Attachment 1 using the Stability Category (Step 6) and wind speed (Step 4k).

Dilution Factor = _____ sec/m³

General Emergency Determination

11. Determine whole body dose rate at the EAB.

    Dose Rate = (step 8) x (step 9) x (step 10)

    = (   ) x (   ) x (   )

    = _____ Rem/hour

    If the resulting dose rate at the EAB is $\geq$ 1 Rem/hour, the classification of the event is GENERAL EMERGENCY. Inform the Shift Supervisor of the General Emergency condition. Then go directly to Step 14 of this attachment.

Site Area Emergency Determination

12. Criteria for Site Emergency: If Step 7d) is greater than or equal to 6.6E-2 µCi/cc, the classification of the event is SITE AREA EMERGENCY. Inform the Shift Supervisor of the Site Emergency Condition. Then go directly to Step 14 of this attachment.

Radiological Alert Determination

13. Criteria for Radiological Alert: If Step 7d) is greater than or equal to ten times the Technical Specification limit 2.5E-2 µCi/cc, the classification of the event is RADIOLOGICAL ALERT. Inform the Shift Supervisor of the Radiological Alert Condition. Then proceed with Step 14.

Curies of Noble Gas Released

14. Calculate the curies of noble gas released to present time.

    Curies released = (step 8) x (step 3) x (3.6 E +3 s/hr)

    = (   ) x (   ) x (3.6 E +3)

    = _____ Curies

| Accumulated Whole Body Gamma Dose at EAB |
---

15. Calculate the dose received at the EAB.

> Dose = (step 11) x (step 3)
>
> = (   ) x (   )
>
> = _____ Rem

NOTE: This calculation assumes the recipient was at the EAB for the entire duration of the release.

| Projections |
---

16. If the release is continuing, consult with the Shift Supervisor and <u>estimate</u> the total number of hours the release will continue (i.e., from beginning to end). If the release has terminated, enter N/A.

> Preliminary estimate of release hours _____ hours.

17. Project the totoal whole body gamma dose at the EAB. If the release has terminated, enter N/A.

> Projected dose at EAB = (step 11) x (step 16)
>
> = (   ) x (   )
>
> = _____ Rem

| 131 I Concentration |

18. Calculate the exhaust stack ^{131}I concentration.

RIS-73437-1 concentration = (step 4e) x (step 4f)

= (   ) x (   ) .

= _____ uCi/cc

| 131I and Total Radioiodine Release Rate |

19. Calculate the source term Q (^{131}I release rate).

Q = (step 18) x (step 4j) x (1 E -6)

= (   ) x (   ) x (1 E -6)

= _____ Ci/sec

20. Calculate Q_T for total radioiodine release.

Q_T = (step 19) x (1.05 E + 2)*

= (   ) x (1.05 E + 2)*

= _____ Ci/sec

* Ratio of total radioiodines to ^{131}I in design inventory.

| Classification of Event |

21. Determine weighted radioiodine dose conversion
factor from Attachment 8.   5.3E+4 $\frac{Rem/hour}{Ci/m^3}$

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General Emergency Determination

22. Determine the thyroid dose rate at the EAB.

> Dose Rate = (step 20) x (step 21) x (step 10)
>
> = (   ) x (   ) x (   )
>
> = _____ Rem/hour

If the resulting dose rate at the EAB is ≥ 5 Rem/hour, the classification of the event is GENERAL EMERGENCY. Inform the Shift Supervisor of the General Emergency Condition. Then go directly to Step 25 of this attachment.

Site Area Emergency Determination

23. Criteria for Site Area Emergency: If Step 18 is great than or equal to 6.7E-5 µCi/cc, the classification of the event is SITE EMERGENCY. Inform the Shift Supervisor of the Site Emergency Condition. Then go directly to Step 25 of this attachment.

Radiological Alert Determination

24. Criteria for Radiological Alert: If Step 18 is greater than or equal to ten times the Technical Specification limit 7.0E-8 µCi/cc, the classification of the event is RADIOLOGICAL ALERT. Inform the Shift Supervisor of the Radiological Alert Condition. Then proceed with Step 25.

> | Curies of Radioiodine Released |

25. Calculate the curies of radioiodine released to present time.

> Curies Released = (step 20) x (step 3) x (3.6 E +3)
>
> = (   ) x (   ) x (3.6 E +3)
>
> = _____ curies

```
| Accumulated Thyroid Dose at EAB |
```

26. Calculate the dose received at the EAB.

    Dose = (step 22) x (step 3)

    = (   ) x (   )

    = _____ Rem

    NOTE: This calculation assumes the recipient was at the EAB for the
          entire duration of the release.

```
| Projections |
```

27. If the release is continuing, consult with the Shift Supervisor
    and estimate the total number of hours the release will continue
    (i.e., from beginning to end). If the release has terminated,
    enter N/A.

         Preliminary estimate of release hours _____ hours.

28. Project the total thyroid dose at the EAB. If the release has
    terminated, enter N/A.

         Projected Dose at EAB = (step 22) x (step 27)

         = (   ) x (   )

         = _____ Rem

29. Determine the recommended protective action for the general
    population based on the results of steps 17 and 28, refer to
    RERP-PAG.

30. The whole body gamma dose rate at the EAB is
    (step 11):   _____ Rem/hour

31. The classification of the event based on noble
    gases is (step 11 or step 12 or step 13):   _____

32. The noble gas release rate is (step 8):   _____ Ci/sec

33. The accumulated whole body gamma dose at the EAB
    is (step 15): _____ Rem

34. The total number of curies of noble gas release
    to the present time is (step 14): _____ Curies

35. The projected whole body gamma dose at the EAB is
    (step 17): _____ Rem

    Based on projected release duration of (step 16): _____ hours

36. The thyroid dose rate at the EAB is (step 22): _____ Rem/hour

37. *The classification of the event based on radio-
    iodines is (step 22 or step 23 or step 24): _____

38. The radioiodine release rate is (step 20): _____ Ci/sec

39. The accumulated thyroid dose at the EAB is
    (step 26): _____ Rem

40. The total number of curies of radioiodine
    released to the present time is (step 25): _____ Curies

41. The projected thyroid dose at the EAB is
    (step 28): _____ Rem

    Based on projected release duration of (step 27): _____ hours

*If this classification differs from the classification in step
31, the higher (i.e., more severe) classification is to be used
to determine recommended protective action.

WORKSHEET 1

ASSESSMENT OF RELEASE-MONITORED RELEASE

This attachment is to be used only if the TI-59 calculator program is not used. If the TI-59 is used, Worksheet 2 is to be used.

This attachment is used to determine the following:

a)   Estimated noble gas and iodine release and release rate;

b)   The estimated whole body and thyroid gamma dose and dose rate at the EAB;

c)   Classification of the release;

d)   Projected whole body and thyroid gamma dose at the EAB; and

e)   Recommended protective action for the general population.

1.   Date/Time of beginning of release.   _____

2.   Date/Time of ending of release. If release is still occurring, enter the Date/Time of the calculation.   _____

3.   Hours between 1. and 2.   _____

4.   Collect the following data:

a)   Maximum CPM, RIS-7324-1: (RR-93539, red pen)   _____ cpm

b)   Sensitivity, RIS-7324-1: (I-14, 403-P7)   _____ µCi/cc/cpm

c)   Maximum CPM, RIS-7324-2: (RR-93539, blue pen)   _____ cpm

d)   Sensitivity, RIS-7324-2: (I-14, 203-P7)   _____ µCi/cc/cpm

e)   Maximum CPM/Min, RIS-73437-1:   _____ cpm/min

NOTE: Maximum CPM/Min must be calculated as:

$$\frac{(\text{Maximum CPM} - \text{Initial or Intermediate CPM})}{(\text{Elapsed Time (min)})}$$

from strip chart.

f) Sensitivity, RIS-73437-1: _____µCi/cc/cpm/min

g) Site Area Emergency Limit (as posted):

1) <u>6.6E-2</u> µCi/cc noble gas

2) <u>6.7E-5</u> µCi/cc^{131}I

h) Ten Times Technical Specification
    Limits (as posted):

1) <u>2.5E-2</u> µCi/cc noble gas

2) <u>7.0E-8</u> µCi/cc^{131}I

i) Exhaust Stack Flow (cfm):
    (I-15, FI-7320)   _____cfm

j) Exhaust Stack Flow (cc/sec):
    (Step 4i x 4.72E + 2)   _____cc/sec

k) Average Wind Speed: _____mph

l) Wind Direction: From_____Degrees

    NOTE: North = 0° increasing
    degrees - c.w.

m) (200 ft. - 20 ft.)
    Differential Temperature: _____°F

5. Determine sectors affected using Site Sector Map.

    (Figure 2)   Sector(s)   _____

6. Determine Stability Category using Table 1,
    Step 4k), and 4m).
                             Stability Category   _____

    ┌─────────────────────────────┐
    │ Noble Gas Concentration   │
    └─────────────────────────────┘

7. Calculate the exhaust stack noble gas concentration.

a) RIS-7324-1 concentration = (step 4a) x (step 4b)

$$= (\quad\quad) \times (\quad\quad)$$

$$= \underline{\hspace{2cm}} \mu Ci/cc$$

b) RIS-7324-2 concentration = (step 4c) x (step 4d)

$$= (\quad\quad) \times (\quad\quad)$$

$$= \underline{\hspace{2cm}} \mu Ci/cc$$

c) If either RIS-7324-1 or RIS-7324-2 is off-scale high, record the stack concentration as obtained by local, portable instrument (refer to HPP-56 or Figure 1 for instructions).

Local Indicated Concentration = _____ $\mu Ci/cc$

d) Enter the highest of 7a), 7b), or 7c) _____ $\mu Ci/cc$

| Noble Gas Release Rate |
---

8. Calculate the Source Term, Q (i.e., Noble Gas Release Rate).

$$Q = (\text{step 7d}) \times (\text{step 4j}) \times (1\ E\ -6\ Ci/\mu ci)$$

$$= (\quad\quad) \times (\quad\quad) \times (1\ E\ -6)$$

$$= \underline{\hspace{2cm}} Ci/sec$$

| Classification of Event |
---

9. Determine weighted noble gas dose conversion factor from Table 2. $\dfrac{7.5E+2}{Ci/m^3}$ Rem/hour

10. Determine the EAB dilution factor from Attachment 1 using the Stability Category (Step 6) and wind speed (Step 4k).

Dilution Factor = _____ sec/m^3

General Emergency Determination

11. Determine whole body dose rate at the EAB.

Dose Rate = (step 8) x (step 9) x (step 10)

= (   ) x (   ) x (   )

= _____ Rem/hour

If the resulting dose rate at the EAB is ≥ 1 Rem/hour, the classification of the event is GENERAL EMERGENCY. Inform the Shift Supervisor of the General Emergency condition. Then go directly to Step 14 of this attachment.

Site Area Emergency Determination

12. Criteria for Site Emergency: If Step 7d) is greater than or equal to 6.6E-2 µCi/cc, the classification of the event is SITE AREA EMERGENCY. Inform the Shift Supervisor of the Site Emergency Condition. Then go directly to Step 14 of this attachment.

Radiological Alert Determination

13. Criteria for Radiological Alert: If Step 7d) is greater than or equal to ten times the Technical Specification limit 2.5E-2 µCi/cc, the classification of the event is RADIOLOGICAL ALERT. Inform the Shift Supervisor of the Radiological Alert Condition. Then proceed with Step 14.

```
| Curies of Noble Gas Released |
```

14. Calculate the curies of noble gas released to present time.

Curies released = (step 8) x (step 3) x (3.6 E +3 s/hr)

= (   ) x (   ) x (3.6 E +3)

= _____ Curies

Accumulated Whole Body Gamma Dose at EAB

15. Calculate the dose received at the EAB.

    Dose = (step 11) x (step 3)

    = (   ) x (   )

    = _____ Rem

NOTE: This calculation assumes the recipient was at the EAB for the entire duration of the release.

Projections

16. If the release is continuing, consult with the Shift Supervisor and <u>estimate</u> the total number of hours the release will continue (i.e., from beginning to end). If the release has terminated, enter N/A.

    Preliminary estimate of release hours _____ hours.

17. Project the totoal whole body gamma dose at the EAB. If the release has terminated, enter N/A.

    Projected dose at EAB = (step 11) x (step 16)

    = (   ) x (   )

    = _____ Rem

---

131 I Concentration

18. Calculate the exhaust stack ^{131}I concentration.

RIS-73437-1 concentration = (step 4e) x (step 4f)

= (   ) x (   )

= _____ µCi/cc

131I and Total Radioiodine Release Rate

19. Calculate the source term Q (^{131}I release rate).

Q = (step 18) x (step 4j) x (1 E -6)

= (   ) x (   ) x (1 E -6)

= _____ Ci/sec

20. Calculate Q_T for total radioiodine release.

Q_T = (step 19) x (1.05 E + 2)*

= (   ) x (1.05 E + 2)*

= _____ Ci/sec

* Ratio of total radioiodines to ^{131}I in design inventory.

Classification of Event

21. Determine weighted radioiodine dose conversion
factor from Attachment 8.   _5.3E+4_   Rem/hour
                                                              $\overline{Ci/m^3}$

General Emergency Determination

22. Determine the thyroid dose rate at the EAB.

    Dose Rate = (step 20) x (step 21) x (step 10)

    $\qquad$ = (   ) x (   ) x (   )

    $\qquad$ = _____ Rem/hour

    If the resulting dose rate at the EAB is ≥ 5 Rem/hour, the classification of the event is GENERAL EMERGENCY. Inform the Shift Supervisor of the General Emergency Condition. Then go directly to Step 25 of this attachment.

Site Area Emergency Determination

23. Criteria for Site Area Emergency: If Step 18 is great than or equal to 6.7E-5 µCi/cc, the classification of the event is SITE EMERGENCY. Inform the Shift Supervisor of the Site Emergency Condition. Then go directly to Step 25 of this attachment.

Radiological Alert Determination

24. Criteria for Radiological Alert: If Step 18 is greater than or equal to ten times the Technical Specification limit 7.0E-8 µCi/cc, the classification of the event is RADIOLOGICAL ALERT. Inform the Shift Supervisor of the Radiological Alert Condition. Then proceed with Step 25.

Curies of Radioiodine Released

25. Calculate the curies of radioiodine released to present time.

    Curies Released = (step 20) x (step 3) x (3.6 E +3)

    $\qquad$ = (   ) x (   ) x (3.6 E +3)

    $\qquad$ = _____ curies

```
| Accumulated Thyroid Dose at EAB |
```

26. Calculate the dose received at the EAB.

    Dose = (step 22) x (step 3)

    = (   ) x (   )

    = _____ Rem

    NOTE: This calculation assumes the recipient was at the EAB for the
    entire duration of the release.

```
| Projections |
```

27. If the release is continuing, consult with the Shift Supervisor
    and estimate the total number of hours the release will continue
    (i.e., from beginning to end). If the release has terminated,
    enter N/A.

    Preliminary estimate of release hours _____ hours.

28. Project the total thyroid dose at the EAB. If the release has
    terminated, enter N/A.

    Projected Dose at EAB = (step 22) x (step 27)

    = (   ) x (   )

    = _____ Rem

29. Determine the recommended protective action for the general
    population based on the results of steps 17 and 28, refer to
    RERP-PAG.

30. The whole body gamma dose rate at the EAB is
    (step 11):   _____ Rem/hour

31. The classification of the event based on noble
    gases is (step 11 or step 12 or step 13):   _____

32. The noble gas release rate is (step 8):   _____ Ci/sec

33. The accumulated whole body gamma dose at the EAB
    is (step 15):   _____ Rem

34. The total number of curies of noble gas release
    to the present time is (step 14):   _____ Curies

35. The projected whole body gamma dose at the EAB is
    (step 17):   _____ Rem

    Based on projected release duration of (step 16): _____ hours

36. The thyroid dose rate at the EAB is (step 22):   _____ Rem/hour

37. *The classification of the event based on radio-
    iodines is (step 22 or step 23 or step 24):   _____

38. The radioiodine release rate is (step 20):   _____ Ci/sec

39. The accumulated thyroid dose at the EAB is
    (step 26):   _____ Rem

40. The total number of curies of radioiodine
    released to the present time is (step 25):   _____ Curies

41. The projected thyroid dose at the EAB is
    (step 28):   _____ Rem

    Based on projected release duration of (step 27): _____ hours

*If this classification differs from the classification in step
31, the higher (i.e., more severe) classification is to be used
to determine recommended protective action.

WORKSHEET 2

ASSESSMENT OF RELEASE USING TI-59 CALCULATOR PROGRAM-MONITORED RELEASE

This attachment is only to be used if the TI-59 calculator program is used. If the program is not used, use Worksheet 1.

This attachment is used to determine the following:

a) Estimated noble gas and radioiodine release and release rate;

b) Estimated whole body and thyroid gamma dose and dose rate at the EAB;

c) Classification of the release;

d) Projected whole body and thyroid gamma dose at the EAB; and

e) Recommended protective action for the general population.

1. Collect the following data:

a) Date/Time of beginning of release: _____

b) Date/Time of ending of release. If release is still occurring, enter the Date/Time of the calculation: _____

c) Hours between 1a) and 1b): _____ hours
(STO 11)

d) Maximum CPM, RIS-7324-1: _____ cpm
(RR-93539, red pen) (STO 03)

e) Sensitivity RIS-7324-1: _____ µCi/cc/cpm
(I-14, 403-P7) (STO 04)

f) Maximum CPM, RIS-7324-2: _____ cpm
(RR-93539, blue pen) (STO 05)

g) Sensitivity, RIS-7324-2: _____ µCi/cc/cpm
(I-14, 203-P7) (STO 06)

*h) Maximum mR/hr, Cutie Pie-2520 Probe: _____ mR/hr
(STO 01)

i) Maximum mR/hr, E-500-GM Probe   _____ mR/hr
                                                       (STO 02)

j) Maximum CPM/MIN, RIS-73437-1:   _____ cpm/min
                                                       (STO 07)

NOTE: Maximum CPM/Min must be calculated as:

(Maximum CPM - Initial or Intermediate CPM)
(Elapsed Time (min)   )

from strip chart.

k) Sensitivity, RIS-73437-1:   _____ uCi/cc/cpm/min
                                                     (STO 08)

l) Site Emergency Limit
(as posted):   1) 6.6E-2   μCi/cc noble
                                                        gas

                  2) 6.7E-5   μCi/cc ^{131}I

m) Ten Times Technical Specification
Limits (as posted):   1) 5.3E-2   μCi/cc noble
                                                        gas

                  2) 7.0E-8   μCi/cc ^{131}I

n) Exhaust Stack Flow (cfm):
(I-15, FI-7320)   _____ cfm
                                                      (STO 09)

o) Average Wind Speed: _____ mph

p) Wind Direction:

NOTE: North = 0° increasing degrees-c.w. From _____ Degrees

q) (200 ft. - 20 ft.) Differential
Temperature   _____ °F

*Steps 1h) and 1i) used only if RIS-7324-1 or RIS-7324-2
off-scale high.

2. Determine sectors affected using Site
Sector Map (Figure 2):
                        Sector(s)   _____

3. Determine Stability Category using
Table 1 and Steps 1o) and 1q).
                  Stability Category   _____

4.   Determine the EAB dilution factor from
      Attachment 1 using the Stability
      Category (Step 3) and wind speed
      (Step 1o).

                          Dilution Factor   _____ sec/m³
                                                         (STO 10)

5.   If the release is continuing, consult with the
      Shift Supervisor and estimate the total number
      of hours the release will continue (i.e., from
      beginning to end). If the release have termi-
      nated, enter 0.

      Preliminary estimate of release hours _____ hours. (STO 12)

6.   Prepare the TI-59 for data entry.

      a)   Place TI-59 in printer/security cradle.

      b)   Plug in printer/security cradle.

      c)   Turn on printer/security cradle and TI-59.

      d)   Depress "TRACE" button on printer.

      e)   Obtain the magnetic card labeled "FSV Off-Site
            Dose Calculation (RERP) - Monitored Release."

      f)   Read magnetic card into TI-59.

            1)   Depress |1| , |INV| , |2nd| , |WRITE| keys.

            2)   Insert magnetic card into right side of TI-59.
                  Card should be right side up with the "1" in
                  the upper left-hand corner.

            3)   "1" will be displayed if the card was read
                  properly -continue with Step 7. If a flashing
                  number is displayed, the card was not read
                  properly. Obtain the other magnetic card
                  with the same title and repeat Step 6f).

7. Input the necessary data into the indicated TI-59 storage registers.

    a)   Step 1c) = |STO| 11

    b)   Step 1d) = |STO| 03

    c)   Step 1e) = |STO| 04

    d)   Step 1f) = |STO| 05

    e)   Step 1g) = |STO| 06

    f)   Step 1h) = |STO| 01

    g)   Step 1i) = |STO| 02

    h)   Step 1j) = |STO| 07

    i)   Step 1k) = |STO| 08

    j)   Step 1n) = |STO| 09

    k)   Step 4) = |STO| 10

    l)   Step 5) = |STO| 12

8. Run Dose Assessment Program

    a)   Depress |R/S| key.

    b)   Wait until a number is displayed. A flashing number indicates
         improper execution of the program. Depress |CLR| and |RST|
         keys and repeat Steps 7 and 8.

9. Determine the recommended protective action for the general
    population based on RERP-PAG.

| SUMMARY |

10. a) The whole body gamma dose rate at the
         EAB is(RCL 19):   _____ Rem/hour

     b) The classification of the event based
         on noble gases is: _____

         1)   If Step 10a) ≥ 1 Rem/hour,
               GENERAL EMERGENCY.

         2)   If RCL 17 ≥ 1.6.6E-2 μCi/cc (Step 1 1)1),
               SITE AREA EMERGENCY1.

         3)   If RCL 17 ≥ 1.2.5E-2 μCi/cc
               (Step 1m)1) and ≤ 6.6E-21. μCi/cc,
               RADIOLOGICAL ALERT.

     c) The noble gas release rate is (RCL 18):   _____ Ci/sec

     d) The accumulated whole body gamma dose
         at the EAB is (RCL 21):   _____ Rem

     e) The total number of curies of noble
         gas released to the present time
         is (RCL 20):   _____ Ci

     f) The projected whole body gamma
         dose at the EAB is (RCL 22):   _____ Rem

     g) The thyroid dose rate at the EAB
         is (RCL 27):   _____ Rem/hour

    *h) The classiication of the event
         based on radioiodines is: _____

         1)   If Step 10g) ≥ 5 Rem/hour,
               GENERAL EMERGENCY.

         2)   If RCL 23 ≥ 1.6.7E-5 μCi/cc
               (Step 1 1)2),
               SITE AREA EMERGENCY.1.

         3)   If RCL 23 ≥ 1.7.0E-8 μCi/cc
               (Step 1m)2) and
               < 6.7E-51. μCi/cc,
               RADIOLOGICAL ALERT.

     i) The radioiodine release rate
         is (RCL 26):   _____ Ci/sec

j)   The accumulated thyroid dose at
     the EAB is (RCL 29): _____ Rem

k)   The total number of curies of
     radioiodine released to the
     present time is (RCL 28): _____ Ci

l)   The projected thyroid dose at
     the EAB is (RCL 30): _____ Rem

     Based on projected release duration
     of (RCL 12): _____ hours

*If this classification differs from the classification in Step 10b),
the higher (i.e., more severe) classification is to be used to
determine recommended protective actions.

WORKSHEET 2

ASSESSMENT OF RELEASE USING TI-59 CALCULATOR PROGRAM-MONITORED RELEASE

This attachment is only to be used if the TI-59 calculator program is used. If the program is not used, use Worksheet 1.

This attachment is used to determine the following:

a) Estimated noble gas and radioiodine release and release rate;

b) Estimated whole body and thyroid gamma dose and dose rate at the EAB;

c) Classification of the release;

d) Projected whole body and thyroid gamma dose at the EAB; and

e) Recommended protective action for the general population.

1. Collect the following data:

a) Date/Time of beginning of release: _____

b) Date/Time of ending of release. If release is still occurring, enter the Date/Time of the calculation: _____

c) Hours between 1a) and 1b): _____ hours (STO 11)

d) Maximum CPM, RIS-7324-1: (RR-93539, red pen) _____ cpm (STO 03)

e) Sensitivity RIS-7324-1: (I-14, 403-P7) _____ uCi/cc/cpm (STO 04)

f) Maximum CPM, RIS-7324-2: (RR-93539, blue pen) _____ cpm (STO 05)

g) Sensitivity, RIS-7324-2: (I-14, 203-P7) _____ uCi/cc/cpm (STO 06)

*h) Maximum mR/hr, Cutie Pie-2520 Probe: _____ mR/hr (STO 01)

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i) Maximum mR/hr, E-500-GM Probe _____ mR/hr
(STO 02)

j) Maximum CPM/MIN, RIS-73437-1: _____ cpm/min
(STO 07)

NOTE: Maximum CPM/Min must be calculated as:

(Maximum CPM - Initial or Intermediate CPM)
(Elapsed Time (min))

from strip chart.

k) Sensitivity, RIS-73437-1: _____ µCi/cc/cpm/min
(STO 08)

l) Site Emergency Limit
(as posted): 1) 6.6E-2 µCi/cc noble
gas

2) 6.7E-5 µCi/cc ^{131}I

m) Ten Times Technical Specification
Limits (as posted): 1) 5.3E-2 µCi/cc noble
gas

2) 7.0E-8 µCi/cc ^{131}I

n) Exhaust Stack Flow (cfm):
(I-15, FI-7320) _____ cfm
(STO 09)

o) Average Wind Speed: _____ mph

p) Wind Direction:

NOTE: North = 0° increasing degrees-c.w. From _____ Degrees

q) (200 ft. - 20 ft.) Differential
Temperature _____ °F

*Steps 1h) and 1i) used only if RIS-7324-1 or RIS-7324-2
off-scale high.

2. Determine sectors affected using Site
Sector Map (Figure 2):
Sector(s) _____

3. Determine Stability Category using
Table 1 and Steps 1o) and 1q).
Stability Category _____

4. Determine the EAB dilution factor from
    Attachment 1 using the Stability
    Category (Step 3) and wind speed
    (Step 1o).

                          Dilution Factor   _____ sec/m³
                                                       (STO 10)

5. If the release is continuing, consult with the
    Shift Supervisor and estimate the total number
    of hours the release will continue (i.e., from
    beginning to end). If the release have termi-
    nated, enter 0.

    Preliminary estimate of release hours _____ hours. (STO 12)

6. Prepare the TI-59 for data entry.

    a) Place TI-59 in printer/security cradle.

    b) Plug in printer/security cradle.

    c) Turn on printer/security cradle and TI-59.

    d) Depress "TRACE" button on printer.

    e) Obtain the magnetic card labeled "FSV Off-Site
        Dose Calculation (RERP) - Monitored Release."

    f) Read magnetic card into TI-59.

        1) Depress |I| , |INV| , |2nd| , |WRITE| keys.

        2) Insert magnetic card into right side of TI-59.
            Card should be right side up with the "1" in
            the upper left-hand corner.

        3) "1" will be displayed if the card was read
            properly -continue with Step 7. If a flashing
            number is displayed, the card was not read
            properly. Obtain the other magnetic card
            with the same title and repeat Step 6f).

7. Input the necessary data into the indicated TI-59 storage registers.

   a) Step 1c) = |STO| 11

   b) Step 1d) = |STO| 03

   c) Step 1e) = |STO| 04

   d) Step 1f) = |STO| 05

   e) Step 1g) = |STO| 06

   f) Step 1h) = |STO| 01

   g) Step 1i) = |STO| 02

   h) Step 1j) = |STO| 07

   i) Step 1k) = |STO| 08

   j) Step 1n) = |STO| 09

   k) Step 4) = |STO| 10

   l) Step 5) = |STO| 12

8. Run Dose Assessment Program

   a) Depress |R/S| key.

   b) Wait until a number is displayed. A flashing number indicates improper execution of the program. Depress |CLR| and |RST| keys and repeat Steps 7 and 8.

9. Determine the recommended protective action for the general population based on RERP-PAG.

| SUMMARY |

10. a) The whole body gamma dose rate at the
EAB is(RCL 19):   _____ Rem/hour

   b) The classification of the event based
   on noble gases is: _____

   1) If Step 10a) ≥ 1 Rem/hour,
   GENERAL EMERGENCY.

   2) If RCL 17 ≥ 1.6.6E-2 µCi/cc (Step 1 1)1),
   SITE AREA EMERGENCY1.

   3) If RCL 17 ≥ 1.2.5E-2 µCi/cc
   (Step 1m)1) and ≤ 6.6E-21. µCi/cc,
   RADIOLOGICAL ALERT.

   c) The noble gas release rate is (RCL 18): _____ Ci/sec

   d) The accumulated whole body gamma dose
   at the EAB is (RCL 21):   _____ Rem

   e) The total number of curies of noble
   gas released to the present time
   is (RCL 20):   _____ Ci

   f) The projected whole body gamma
   dose at the EAB is (RCL 22):   _____ Rem

   g) The thyroid dose rate at the EAB
   is (RCL 27):   _____ Rem/hour

   *h) The classification of the event
   based on radioiodines is: _____

   1) If Step 10g) ≥ 5 Rem/hour,
   GENERAL EMERGENCY.

   2) If RCL 23 ≥ 1.6.7E-5 µCi/cc
   (Step 1 1)2),
   SITE AREA EMERGENCY.1.

   3) If RCL 23 ≥ 1.7.0E-8 µCi/cc
   (Step 1m)2) and
   < 6.7E-51. µCi/cc,
   RADIOLOGICAL ALERT.

   i) The radioiodine release rate
   is (RCL 26):   _____ Ci/sec

j) The accumulated thyroid dose at
the EAB is (RCL 29): _____ Rem

k) The total number of curies of
radioiodine released to the
present time is (RCL 28): _____ Ci

l) The projected thyroid dose at
the EAB is (RCL 30): _____ Rem

Based on projected release duration
of (RCL 12): _____ hours

*If this classification differs from the classification in Step 10b),
the higher (i.e., more severe) classification is to be used to
determine recommended protective actions.

WORKSHEET 2

ASSESSMENT OF RELEASE USING TI-59 CALCULATOR PROGRAM-MONITORED RELEASE

This attachment is only to be used if the TI-59 calculator program is used. If the program is **not** used, use Worksheet 1.

This attachment is used to determine the following:

    a) Estimated noble gas and radioiodine release and release rate;

    b) Estimated whole body and thyroid gamma dose and dose rate at the EAB;

    c) Classification of the release;

    d) Projected whole body and thyroid gamma dose at the EAB; and

    e) Recommended protective action for the general population.

1. Collect the following data:

    a) Date/Time of beginning of release: _____

    b) Date/Time of ending of release. If release is still occurring, enter the Date/Time of the calculation: _____

    c) Hours between 1a) and 1b): _____ hours (STO 11)

    d) Maximum CPM, RIS-7324-1: (RR-93539, red pen) _____ cpm (STO 03)

    e) Sensitivity RIS-7324-1: (I-14, 403-P7) _____ uCi/cc/cpm (STO 04)

    f) Maximum CPM, RIS-7324-2: (RR-93539, blue pen) _____ cpm (STO 05)

    g) Sensitivity, RIS-7324-2: (I-14, 203-P7) _____ uCi/cc/cpm (STO 06)

    *h) Maximum mR/hr, Cutie Pie-2520 Probe: _____ mR/hr (STO 01)

    i)   Maximum mR/hr, E-500-GM Probe   _____ mR/hr
                           (STO 02)

    j)   Maximum CPM/MIN, RIS-73437-1:   _____ cpm/min
                           (STO 07)

        NOTE: Maximum CPM/Min must be calculated as:

             (Maximum CPM - Initial or Intermediate CPM)
             (Elapsed Time (min)   )

        from strip chart.

    k)   Sensitivity, RIS-73437-1:   _____ uCi/cc/cpm/min
                           (STO 08)

    l)   Site Emergency Limit
        (as posted):   1) 6.6E-2 _____ uCi/cc noble gas

                                  2) 6.7E-5 _____ uCi/cc ^{131}I

    m)   Ten Times Technical Specification
        Limits (as posted):   1) 5.3E-2 _____ uCi/cc noble gas

                                  2) 7.0E-8 _____ uCi/cc ^{131}I

    n)   Exhaust Stack Flow (cfm):
        (I-15, FI-7320)   _____ cfm
                           (STO 09)

    o)   Average Wind Speed: _____ mph

    p)   Wind Direction:

NOTE: North = 0° increasing degrees-c.w. From _____ Degrees

    q)   (200 ft. - 20 ft.) Differential
        Temperature   _____ °F

*Steps 1h) and 1i) used only if RIS-7324-1 or RIS-7324-2 off-scale high.

2.   Determine sectors affected using Site
     Sector Map (Figure 2):
                         Sector(s)   _____

3.   Determine Stability Category using
     Table 1 and Steps 1o) and 1q).
                   Stability Category   _____

4. Determine the EAB dilution factor from
Attachment 1 using the Stability
Category (Step 3) and wind speed
(Step 1o).

                         Dilution Factor   _____ sec/m³
                                              (STO 10)

5. If the release is continuing, consult with the
Shift Supervisor and estimate the total number
of hours the release will continue (i.e., from
beginning to end). If the release have termi-
nated, enter 0.

   Preliminary estimate of release hours _____ hours. (STO 12)

6. Prepare the TI-59 for data entry.

   a)   Place TI-59 in printer/security cradle.

   b)   Plug in printer/security cradle.

   c)   Turn on printer/security cradle and TI-59.

   d)   Depress "TRACE" button on printer.

   e)   Obtain the magnetic card labeled "FSV Off-Site
        Dose Calculation (RERP) - Monitored Release."

   f)   Read magnetic card into TI-59.

        1)   Depress |I| , |INV| , |2nd| , |WRITE| keys.

        2)   Insert magnetic card into right side of TI-59.
             Card should be right side up with the "1" in
             the upper left-hand corner.

        3)   "1" will be displayed if the card was read
             properly -continue with Step 7. If a flashing
             number is displayed, the card was not read
             properly. Obtain the other magnetic card
             with the same title and repeat Step 6f).

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7. Input the necessary data into the indicated TI-59 storage registers.

   a) Step 1c) = |STO| 11

   b) Step 1d) = |STO| 03

   c) Step 1e) = |STO| 04

   d) Step 1f) = |STO| 05

   e) Step 1g) = |STO| 06

   f) Step 1h) = |STO| 01

   g) Step 1i) = |STO| 02

   h) Step 1j) = |STO| 07

   i) Step 1k) = |STO| 08

   j) Step 1n) = |STO| 09

   k) Step 4) = |STO| 10

   l) Step 5) = |STO| 12

8. Run Dose Assessment Program

   a) Depress |R/S| key.

   b) Wait until a number is displayed. A flashing number indicates improper execution of the program. Depress |CLR| and |RST| keys and repeat Steps 7 and 8.

9. Determine the recommended protective action for the general population based on RERP-PAG.

| SUMMARY |

10. a) The whole body gamma dose rate at the
EAB is(RCL 19): _____ Rem/hour

b) The classification of the event based
on noble gases is: _____

1) If Step 10a) ≥ 1 Rem/hour,
GENERAL EMERGENCY.

2) If RCL 17 ≥ 1.6.6E-2 µCi/cc (Step 1 1)1),
SITE AREA EMERGENCY1.

3) If RCL 17 ≥ 1.2.5E-2 µCi/cc
(Step 1m)1) and ≤ 6.6E-21. µCi/cc,
RADIOLOGICAL ALERT.

c) The noble gas release rate is (RCL 18): _____ Ci/sec

d) The accumulated whole body gamma dose
at the EAB is (RCL 21): _____ Rem

e) The total number of curies of noble
gas released to the present time
is (RCL 20): _____ Ci

f) The projected whole body gamma
dose at the EAB is (RCL 22): _____ Rem

g) The thyroid dose rate at the EAB
is (RCL 27): _____ Rem/hour

*h) The classification of the event
based on radioiodines is: _____

1) If Step 10g) ≥ 5 Rem/hour,
GENERAL EMERGENCY.

2) If RCL 23 ≥ 1.6.7E-5 µCi/cc
(Step 1 1)2),
SITE AREA EMERGENCY.1.

3) If RCL 23 ≥ 1.7.0E-8 µCi/cc
(Step 1m)2) and
< 6.7E-51. µCi/cc,
RADIOLOGICAL ALERT.

i) The radioiodine release rate
is (RCL 26): _____ Ci/sec

j) The accumulated thyroid dose at
    the EAB is (RCL 29):   _____ Rem

k) The total number of curies of
    radioiodine released to the
    present time is (RCL 28):   _____ Ci

1) The projected thyroid dose at
    the EAB is (RCL 30):   _____ Rem

    Based on projected release duration
    of (RCL 12):   _____ hours

*If this classification differs from the classification in Step 10b),
the higher (i.e., more severe) classification is to be used to
determine recommended protective actions.

WORKSHEET 2

ASSESSMENT OF RELEASE USING TI-59 CALCULATOR PROGRAM-MONITORED RELEASE

This attachment is only to be used if the TI-59 calculator program is used. If the program is not used, use Worksheet 1.

This attachment is used to determine the following:

a) Estimated noble gas and radioiodine release and release rate;

b) Estimated whole body and thyroid gamma dose and dose rate at the EAB;

c) Classification of the release;

d) Projected whole body and thyroid gamma dose at the EAB; and

e) Recommended protective action for the general population.

1. Collect the following data:

a) Date/Time of beginning of release: _____

b) Date/Time of ending of release. If release is still occurring, enter the Date/Time of the calculation: _____

c) Hours between 1a) and 1b): _____ hours
   (STO 11)

d) Maximum CPM, RIS-7324-1: _____ cpm
   (RR-93539, red pen) (STO 03)

e) Sensitivity RIS-7324-1: _____ uCi/cc/cpm
   (I-14, 403-P7) (STO 04)

f) Maximum CPM, RIS-7324-2: _____ cpm
   (RR-93539, blue pen) (STO 05)

g) Sensitivity, RIS-7324-2: _____ uCi/cc/cpm
   (I-14, 203-P7) (STO 06)

*h) Maximum mR/hr, Cutie Pie-2520 Probe: _____ mR/hr
   (STO 01)

i)   Maximum mR/hr, E-500-GM Probe   _____mR/hr
                                                          (STO 02)

j)   Maximum CPM/MIN, RIS-73437-1:   _____cpm/min
                                                          (STO 07)

      NOTE: Maximum CPM/Min must be calculated as:

             (Maximum CPM - Initial or Intermediate CPM)
             (Elapsed Time (min)   )

             from strip chart.

k)   Sensitivity, RIS-73437-1:   _____µCi/cc/cpm/min
                                                          (STO 08)

l)   Site Emergency Limit
      (as posted):   1) 6.6E-2 _____µCi/cc noble
                                                           gas

                                       2) 6.7E-5 _____µCi/cc ^{131}I

m)   Ten Times Technical Specification
      Limits (as posted):   1) 5.3E-2 _____µCi/cc noble
                                                           gas

                                       2) 7.0E-8 _____µCi/cc ^{131}I

n)   Exhaust Stack Flow (cfm):
      (I-15, FI-7320)   _____cfm
                                                          (STO 09)

o)   Average Wind Speed: _____mph

p)   Wind Direction:

NOTE: North = 0° increasing degrees-c.w. From _____Degrees

q)   (200 ft. - 20 ft.) Differential
      Temperature   _____°F

*Steps 1h) and 1i) used only if RIS-7324-1 or RIS-7324-2
off-scale high.

2. Determine sectors affected using Site
    Sector Map (Figure 2):
                              Sector(s)   _____

3. Determine Stability Category using
    Table 1 and Steps 1o) and 1q).
                              Stability Category _____

4. Determine the EAB dilution factor from
   Attachment 1 using the Stability
   Category (Step 3) and wind speed
   (Step 1o).

   Dilution Factor _____ sec/m³
   (STO 10)

5. If the release is continuing, consult with the
   Shift Supervisor and <u>estimate</u> the total number
   of hours the release will continue (i.e., from
   beginning to end). If the release have termi-
   nated, enter 0.

   Preliminary estimate of release hours _____ hours. (STO 12)

6. Prepare the TI-59 for data entry.

   a) Place TI-59 in printer/security cradle.

   b) Plug in printer/security cradle.

   c) Turn on printer/security cradle <u>and</u> TI-59.

   d) Depress "TRACE" button on printer.

   e) Obtain the magnetic card labeled "FSV Off-Site
      Dose Calculation (RERP) - Monitored Release."

   f) Read magnetic card into TI-59.

      1) Depress |I| , |INV| , |2nd| , |WRITE| keys.

      2) Insert magnetic card into right side of TI-59.
         Card should be right side up with the "1" in
         the upper left-hand corner.

      3) "1" will be displayed if the card was read
         properly -continue with Step 7. If a flashing
         number is displayed, the card was not read
         properly. Obtain the other magnetic card
         with the same title and repeat Step 6f).

7. Input the necessary data into the indicated TI-59 storage registers.

a) Step 1c) = |STO| 11

b) Step 1d) = |STO| 03

c) Step 1e) = |STO| 04

d) Step 1f) = |STO| 05

e) Step 1g) = |STO| 06

f) Step 1h) = |STO| 01

g) Step 1i) = |STO| 02

h) Step 1j) = |STO| 07

i) Step 1k) = |STO| 08

j) Step 1n) = |STO| 09

k) Step 4) = |STO| 10

l) Step 5) = |STO| 12

8. Run Dose Assessment Program

a) Depress |R/S| key.

b) Wait until a number is displayed. A flashing number indicates improper execution of the program. Depress |CLR| and |RST| keys and repeat Steps 7 and 8.

9. Determine the recommended protective action for the general population based on RERP-PAG.

| SUMMARY |

10. a) The whole body gamma dose rate at the
        EAB is (RCL 19):   _____ Rem/hour

     b) The classification of the event based
        on noble gases is: _____

        1)   If Step 10a) ≥ 1 Rem/hour,
              GENERAL EMERGENCY.

        2)   If RCL 17 ≥ 1.6.6E-2 µCi/cc (Step 1 1)1),
              SITE AREA EMERGENCY1.

        3)   If RCL 17 ≥ 1.2.5E-2 µCi/cc
              (Step 1m)1) and ≤ 6.6E-21. µCi/cc,
              RADIOLOGICAL ALERT.

     c) The noble gas release rate is (RCL 18):   _____ Ci/sec

     d) The accumulated whole body gamma dose
        at the EAB is (RCL 21):   _____ Rem

     e) The total number of curies of noble
        gas released to the present time
        is (RCL 20):   _____ Ci

     f) The projected whole body gamma
        dose at the EAB is (RCL 22):   _____ Rem

     g) The thyroid dose rate at the EAB
        is (RCL 27):   _____ Rem/hour

    *h) The classiication of the event
        based on radioiodines is: _____

        1)   If Step 10g) ≥ 5 Rem/hour,
              GENERAL EMERGENCY.

        2)   If RCL 23 ≥ 1.6.7E-5 µCi/cc
              (Step 1 1)2),
              SITE AREA EMERGENCY.1.

        3)   If RCL 23 ≥ 1.7.0E-8 µCi/cc
              (Step 1m)2) and
              < 6.7E-51. µCi/cc,
              RADIOLOGICAL ALERT.

     i) The radioiodine release rate
        is (RCL 26):   _____ Ci/sec

j)   The accumulated thyroid dose at
      the EAB is (RCL 29):   _____ Rem

k)   The total number of curies of
      radioiodine released to the
      present time is (RCL 28):   _____ Ci

1)   The projected thyroid dose at
      the EAB is (RCL 30):   _____ Rem

      Based on projected release duration
      of (RCL 12):   _____ hours

*If this classification differs from the classification in Step 10b),
the higher (i.e., more severe) classification is to be used to
determine recommended protective actions.

WORKSHEET 2

ASSESSMENT OF RELEASE USING TI-59 CALCULATOR PROGRAM-MONITORED RELEASE

This attachment is only to be used if the TI-59 calculator program is used. If the program is not used, use Worksheet 1.

This attachment is used to determine the following:

a) Estimated noble gas and radioiodine release and release rate;

b) Estimated whole body and thyroid gamma dose and dose rate at the EAB;

c) Classification of the release;

d) Projected whole body and thyroid gamma dose at the EAB; and

e) Recommended protective action for the general population.

1. Collect the following data:

a) Date/Time of beginning of release: _____

b) Date/Time of ending of release. If release is still occurring, enter the Date/Time of the calculation: _____

c) Hours between 1a) and 1b): _____ hours
(STO 11)

d) Maximum CPM, RIS-7324-1: _____ cpm
(RR-93539, red pen) (STO 03)

e) Sensitivity RIS-7324-1: _____ µCi/cc/cpm
(I-14, 403-P7) (STO 04)

f) Maximum CPM, RIS-7324-2: _____ cpm
(RR-93539, blue pen) (STO 05)

g) Sensitivity, RIS-7324-2: _____ µCi/cc/cpm
(I-14, 203-P7) (STO 06)

*h) Maximum mR/hr, Cutie Pie-2520 Probe: _____ mR/hr
(STO 01)

i)   Maximum mR/hr, E-500-GM Probe _____ mR/hr
(STO 02)

j)   Maximum CPM/MIN, RIS-73437-1: _____ cpm/min
(STO 07)

NOTE: Maximum CPM/Min must be calculated as:

(Maximum CPM - Initial or Intermediate CPM)
(Elapsed Time (min)   )

from strip chart.

k)   Sensitivity, RIS-73437-1: _____ µCi/cc/cpm/min
(STO 08)

l)   Site Emergency Limit
(as posted):   1) 6.6E-2_____ µCi/cc noble
gas

2) 6.7E-5_____ µCi/cc ^{131}I

m)   Ten Times Technical Specification
Limits (as posted):   1) 5.3E-2_____ µCi/cc noble
gas

2) 7.0E-8_____ µCi/cc ^{131}I

n)   Exhaust Stack Flow (cfm):
(I-15, FI-7320)   __ _____ cfm
(STO 09)

o)   Average Wind Speed: _____ mph

p)   Wind Direction:

NOTE: North = 0° increasing degrees-c.w. From _____ Degrees

q)   (200 ft. - 20 ft.) Differential
Temperature   _____ °F

*Steps lh) and li) used only if RIS-7324-1 or RIS-7324-2
off-scale high.

2.   Determine sectors affected using Site
Sector Map (Figure 2):
Sector(s)   _____

3.   Determine Stability Category using
Table 1 and Steps lo) and lq).
Stability Category   _____

4. Determine the EAB dilution factor from
    Attachment 1 using the Stability
    Category (Step 3) and wind speed
    (Step 1o).

                        Dilution Factor _____ sec/m³
                                                 (STO 10)

5. If the release is continuing, consult with the
    Shift Supervisor and estimate the total number
    of hours the release will continue (i.e., from
    beginning to end). If the release have termi-
    nated, enter 0.

    Preliminary estimate of release hours _____ hours. (STO 12)

6. Prepare the TI-59 for data entry.

    a) Place TI-59 in printer/security cradle.

    b) Plug in printer/security cradle.

    c) Turn on printer/security cradle and TI-59.

    d) Depress "TRACE" button on printer.

    e) Obtain the magnetic card labeled "FSV Off-Site
        Dose Calculation (RERP) - Monitored Release."

    f) Read magnetic card into TI-59.

        1) Depress |I| , |INV| , |2nd| , |WRITE| keys.

        2) Insert magnetic card into right side of TI-59.
            Card should be right side up with the "1" in
            the upper left-hand corner.

        3) "1" will be displayed if the card was read
            properly -continue with Step 7. If a flashing
            number is displayed, the card was not read
            properly. Obtain the other magnetic card
            with the same title and repeat Step 6f).

7. Input the necessary data into the indicated TI-59 storage registers.

    a) Step 1c) = |STO| 11

    b) Step 1d) = |STO| 03

    c) Step 1e) = |STO| 04

    d) Step 1f) = |STO| 05

    e) Step 1g) = |STO| 06

    f) Step 1h) = |STO| 01

    g) Step 1i) = |STO| 02

    h) Step 1j) = |STO| 07

    i) Step 1k) = |STO| 08

    j) Step 1n) = |STO| 09

    k) Step 4) = |STO| 10

    l) Step 5) = |STO| 12

8. Run Dose Assessment Program

    a) Depress |R/S| key.

    b) Wait until a number is displayed. A flashing number indicates improper execution of the program. Depress |CLR| and |RST| keys and repeat Steps 7 and 8.

9. Determine the recommended protective action for the general population based on RERP-PAG.

| SUMMARY |

10. a) The whole body gamma dose rate at the
         EAB is(RCL 19):   _____ Rem/hour

     b) The classification of the event based
         on noble gases is: _____

         1)   If Step 10a) ≥ 1 Rem/hour,
               GENERAL EMERGENCY.

         2)   If RCL 17 ≥ 1.6.6E-2 μCi/cc (Step 1 1)1),
               SITE AREA EMERGENCY1.

         3)   If RCL 17 ≥ 1.2.5E-2 μCi/cc
               (Step 1m)1) and ≤ 6.6E-21. μCi/cc,
               RADIOLOGICAL ALERT.

     c) The noble gas release rate is (RCL 18):   _____ Ci/sec

     d) The accumulated whole body gamma dose
         at the EAB is (RCL 21):   _____ Rem

     e) The total number of curies of noble
         gas released to the present time
         is (RCL 20):   _____ Ci

     f) The projected whole body gamma
         dose at the EAB is (RCL 22):   _____ Rem

     g) The thyroid dose rate at the EAB
         is (RCL 27):   _____ Rem/hour

    *h) The classiication of the event
         based on radioiodines is: _____

         1)   If Step 10g) ≥ 5 Rem/hour,
               GENERAL EMERGENCY.

         2)   If RCL 23 ≥ 1.6.7E-5 μCi/cc
               (Step 1 1)2),
               SITE AREA EMERGENCY.1.

         3)   If RCL 23 ≥ 1.7.0E-8 μCi/cc
               (Step 1m)2) and
               < 6.7E-51. μCi/cc,
               RADIOLOGICAL ALERT.

     i) The radioiodine release rate
         is (RCL 26):   _____ Ci/sec

j) The accumulated thyroid dose at
    the EAB is (RCL 29):   _____ Rem

k) The total number of curies of
    radioiodine released to the
    present time is (RCL 28):   _____ Ci

l) The projected thyroid dose at
    the EAB is (RCL 30):   _____ Rem

    Based on projected release duration
    of (RCL 12):   _____ hours

*If this classification differs from the classification in Step 10b),
the higher (i.e., more severe) classification is to be used to
determine recommended protective actions.

WORKSHEET 3

ASSESSMENT OF RELEASE-UNMONITORED RELEASE

This attachment is to be used only if the TI-59 calculator program is not used. If the TI-59 program is used, Worksheet 4 is to be used.

This attachment is used to determine the following due to an unmonitored release via the Reactor Building Louvers or the PCRV Relief Valves:

a) Estimated whole body and thyroid gamma dose and dose rate at the EAB;

b) Classification of the release;

c) Projected whole body and thyroid gamma dose at the EAB; and

d) Recommended protective action for the general population.

1. Date/Time of beginning of release _____

2. Date/Time of ending of release. If release is still occurring, enter the Date/Time of the calculation. _____

3. Hours between 1. and 2. _____ hours

4. Collect the following data:

   a) Maximum CPM, RIS-9301:
      (RR-93256, Pt. 10) _____ cpm

   b) Sensitivity RIS-9301: _____ µCi/cc/cpm

   c) Primary coolant ^{131}I equivalent
      circulating inventory: _____ Ci

   d) Primary coolant ^{131}I equivalent
      plateout inventory: _____ Ci

   e) Primary Coolant Volume: _____ scc

   f) Site Emergency Limit (as posted): 1) <u>6.6E-2</u> µCi/cc noble gas

                                         2) <u>6.7E-5</u> µCi/cc ^{131}I

   g) Ten times Technical Specification Limits
      (as posted):   1) <u>2.5E-2</u> µCi/cc noble gas

                                 2)   <u>7.0E-8</u> $\mu Ci/cc$ ^{131}I

h)   Average Wind Speed: _____mph

i)   Wind Direction   From   _____Degrees

      NOTE: North = 0° increasing degrees - c.w.

j)   (200 ft. - 20 ft.)
       Differential Temperature   _____°F

5. Determine sectors affected using Site Sector Map
    (Figure 2):
                          Sector(s) _____

6. Determine Stability Category using Table 1,
    Step 4i and Step 4j:
                Stability Category _____

7. Calculate the release noble gas concentration:

      RIS-9301 concentration = (step 4a) x (step 4b)

                        = (   ) x (   )

                        = _____$\mu Ci/cc$

8. Calculate the source term, Q_{ng} (noble gas release rate):

    a)   Reactor Building Louvers

        Q_{ng} = (step 7) x (5.8 E +7)* x (1 E -6 Ci/uci)
            = (   ) x (5.8 E +7)* x (1 E -6)

            = _____Ci/sec

       *Release rate (cc/sec) from louvers (FSAR, Section 14.11.2.6).

    b)   PCRV Safety Valves

        Q_{ng} = (step 7) x (1.9 E +7)** x (1 E -6)

          = (   ) x (1.9 E +7)** x (1 E -6)

         = _____Ci/sec

      **Release rate (cc/sec) from both PCRV safeties
        (FSAR, Section 6 .8).

Classification of Event

9. Determine weighted noble gas dose
   conversion factor from Table 2: $\underline{7.5E+2}$ $\dfrac{\text{Rem/hour}}{\text{Ci/m}^3}$

10. Determine the EAB atmospheric dilution factor
    from Attachment 1 using Steps 6 and 4h:

    Dilution Factor _____ sec/m^3

    <u>General Emergency Determination</u>

11. Determine the whole body dose rate at the EAB:

    a)   Reactor Building Louvers

    Dose Rate = (step 8a) x (step 9) x (step 10)

         = (   ) x (   ) x (   )

         = _____ Rem/hour

    b)   PCRV Safety Valves

    Dose Rate = (step 8b) (step 9) x (step 10)

         = (   ) x (   ) x (   )

         = _____ Rem/hour

12. If the resulting dose rate at the EAB is ≥ 1 Rem/hour, the
    classification of the event is GENERAL EMERGENCY. Inform the
    Shift Supervisor of the General Emergency Condition. Then go
    directly to Step 15.

    <u>Site 1.Areal. Emergency Determination</u>

13. If 1.Step 8a. or 8b. is greater than or equal to 9.6E-1 Ci/sec,
    the classification of event is SITE AREA EMERGENCY. Inform the
    Shift Supervisor of the Site Areal. Emergency Condition. Then
    go directly to Step 15.

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Radiological Alert Determination

14. If 1.Step 8a. or 8b. is greater than or equal to ten times the Technical Specification limit 3.7E-1 Ci/sec1., the classification of the event is RADIOLOGICAL ALERT. Inform the Shift Supervisor of the Radiological Alert Condition. Then proceed with Step 15.

> ```
> _____
> |                                  |
> |   Curies of Noble Gas Released   |
> |_____|
> ```

15. Calculate the curies of noble gas released to present time.

    a) Reactor Building Louvers

    Curies Released = (step 8a) x (step 3) x (3.6 E +3)

    $$= (\quad\quad) \times (\quad\quad) \times (3.6\ E\ +3)$$

    $$= \underline{\quad\quad\quad} \text{Curies}$$

    b) PCRV Safety Valves

    Curies Released = (step 8b) x (step 3) x (3.6 E +3)

    $$= (\quad\quad) \times (\quad\quad) \times (3.6\ E\ +3)$$

    $$= \underline{\quad\quad\quad} \text{Curies}$$

> ```
> _____
> |                                                  |
> |   Accumulated Whole Body Gamma Dose at EAB       |
> |_____|
> ```

16. Calculate the dose received at the EAB.

    a) Reactor Building Louvers

    Dose = (step 11a) x (step 3)

    $$= (\quad\quad) \times (\quad\quad)$$

    $$= \underline{\quad\quad\quad} \text{Rem}$$

b)   PCRV Safety Valves

Dose = (step 11b) x (step 3)

= (   ) x (   )

= _____ Rem

NOTE: This calculation assumes the recipient was at the
EAB for the entire duration of the release.

```
 _____
|                   |
|    Projections    |
|_____|
```

17. If the release is continuing, consult with the Shift Supervisor
and estimate the total number of hours the release will continue
(i.e., from beginning to end). If the release has terminated,
enter N/A.

Preliminary estimate of release hours _____ hour(s).

18. Project the total whole body gamma dose at the EAB. If the
release has terminated, enter N/A.

a)   Reactor Building Louvers

Projected Dose at EAB = (step 11a) x (step 17)

= (   ) x (   )

= _____ Rem

b)   PCRV Safety Valves

Projected Dose at EAB = (step 11b) x (step 17)

= (   ) x (   )

= _____ Rem

19. Calculate the release ^{131}I equivalent concentration (Reactor Building Louvers or PCRV Safety Valves).

    ^{131}I Equivalent Concentration =

    $\qquad$ (step 4c) + (step 4d) x (5.7 E -3)*** + (step 4e)

    $\qquad$ =($\qquad$) + ($\qquad$) x (5.7 E -3)*** + ($\qquad$)

    $\qquad$ = _____ Ci/cc

    ***Amount of plateout ^{131}I equivalent released (FSAR, Section 14.11.2.7.1).

20. Calculate the source term, Q (^{131}I equivalent release rate).

    a)   Reactor Building Louvers

         Q = (step 19) x (5.8 E +7)

            = ($\qquad$) x (5.8 E +7)

            = _____ Ci/sec

    b)   PCRV Safety Valves

         Q = (step 19) x (1.9 E + 7)

            = ($\qquad$) x (1.9 E +7)

            = _____ Ci/sec

    ┌─────────────────────────┐
    │   │
    │   Classification of Event   │
    │   │
    └─────────────────────────┘

21. Determine ^{131}I dose conversion factor
    from Attachment 8. $\underline{1.2E+6}$ $\dfrac{\text{Rem/hour}}{\text{Ci/m}^3}$

22. Determine the thyroid dose rate at the EAB.

    a)   Reactor Building Louvers

         Dose Rate = (step 20a) x (step 21) x (step 10)

                   = ($\qquad$) x ($\qquad$) x ($\qquad$)

                   = _____ 1.Rem/hour1.

b)   PCRV Safety Valves

Dose Rate = (step 20b) x (step 21) x (step 10)

= (   ) x (   ) x (   )

= _____ Rem/hour

General Emergency Determination

23. If the resulting dose rate at the EAB is ≥ 5 Rem/hour, the classification of the event is GENERAL EMERGENCY. Inform the Shift Supervisor of the General Emergency Condition. Then go directly to Step 26 of this attachment.

Site 1.Areal. Emergency Determination

24. If 1.Step 20a. or 20b. is greater than or equal to 9.8E-4 Ci/sec, the classification of the event is SITE AREA EMERGENCY. Inform the Shift Supervisor of the Site Areal. Emergency Condition. Then go directly to Step 26 of this attachment.

Radiological Alert Determination

25. If Step 19 is greater than or equal to ten times the Technical Specification limit 1.1.0E-7 Ci/sec,1. the classification of the event is RADIOLOGICAL ALERT. Inform the Shift Supervisor of the Radiological Alert Condition. Then proceed with Step 26.

┌───┐
│   │
│   Curies of ^{131}I Equivalent Released │
│   │
└───┘

26. Calculate the curies of ^{131}I equivalent released to present time.

a)   Reactor Building Louvers

Curies Released = (step 20a) x (step 3) x (3.6 E +3 s/hr)

= (   ) x (   ) x (3.6 E +3)

= _____ Curies

b)   PCRV Safety Valves

Curies Released = (step 20b) x (step 3) x (3.6 E +3)

= (   ) x (   ) x (3.6 E +3)

= _____ Curies

```
|                                         |
|     Accumulated Thyroid Dose at EAB     |
|                                       . |
```

27. Calculate the dose received at the EAB.

a)   Reactor Building Louvers

Dose =
= (step 22a) x (step 3)

= _____ Rem

b)   PCRV Safety Valves

Dose = (step 22b) x (step 3)

= (   ) x (   )

= _____ Rem

NOTE: This calculation assumes the recipient was at the
EAB for the entire duration of the release.

```
|                     |
|     Projections     |
|                     |
```

28. If the release is continuing, consult with the Shift Supervisor
and estimate the total number of hours the release will continue
(i.e., from beginning to end). If the release has terminated,
enter N/A.

Preliminary estimate of release hours _____ hour(s).

29. Project the total thyroid dose at the EAB. If the release has terminated, enter N/A.

    a)   Reactor Building Louvers

        Projected Dose at EAB = (step 22a) x (step 28)

                    = (   ) x (   )

                    = _____ Rem

    b)   PCRV Safety Valves

        Projected Dose at EAB = (step 22b) x (step 28)

                    = (   ) x (   )

                    = _____ Rem

30. Determine the recommended protective action for the general population based on the results of Steps 18 and 29. Refer to RERP-PAG.

| Summary |
---

31. The whole body gamma dose rate at the EAB is (Step 11a or 11b):   _____ Rem/hr

32. The classification of the event based on noble gases is (Step 12 or Step 13 or Step 14):   _____

33. The noble gas release rate is (Step 8a or 8b):   _____ Ci/sec

34. The accumulated whole body gamma dose at the EAB is (Step 16a or 16b):   _____ Rem

35. The total number of curies of noble gas released to the present time is (Step 15a or 15b):   _____ Curies

36. The projected whole body gamma dose at the EAB is (Step 18a or 18b):   _____ Rem

37. Based on projected release duration of (Step 17):

_____ hours

38. The thyroid dose rate at the EAB is
(Step 22a or 22b):

_____ Rem/hour

39. *The classification of the event based on
^{131}I equivalent is (Step 23 or
Step 24 or Step 25):

_____

40. The ^{131}I equivalent release rate is (Step 20a
or 20b):

_____ Ci/sec

41. The accumulated thyroid dose at the EAB
is (Step 27a or 27b):

_____ Rem

42. The total number of curies of ^{131}I
equivalent released to the present time is
(Step 26a or 26b):

_____ Curies

43. The projected thyroid dose at the EAB is
(Step 29a or 29b):

_____ Rem

Based on projected release duration of
(Step 28):

_____ hours

*If this classification differs from the classification in Step
31, the higher (i.e., more severe) classification is to be used
to determine recommended protective action.

WORKSHEET 3

ASSESSMENT OF RELEASE-UNMONITORED RELEASE

This attachment is to be used only if the TI-59 calculator program is not used. If the TI-59 program is used, Worksheet 4 is to be used.

This attachment is used to determine the following due to an unmonitored release via the Reactor Building Louvers or the PCRV Relief Valves:

a) Estimated whole body and thyroid gamma dose and dose rate at the EAB;

b) Classification of the release;

c) Projected whole body and thyroid gamma dose at the EAB; and

d) Recommended protective action for the general population.

1. Date/Time of beginning of release   _____

2. Date/Time of ending of release. If release is still occurring, enter the Date/Time of the calculation.   _____

3. Hours between 1. and 2.   _____ hours

4. Collect the following data:

   a) Maximum CPM, RIS-9301:
      (RR-93256, Pt. 10)   _____ cpm

   b) Sensitivity RIS-9301:   _____ µCi/cc/cpm

   c) Primary coolant ^{131}I equivalent circulating inventory: _____ Ci

   d) Primary coolant ^{131}I equivalent plateout inventory: _____ Ci

   e) Primary Coolant Volume: _____ scc

   f) Site Emergency Limit (as posted): 1) <u>6.6E-2</u> µCi/cc noble gas

                                         2) <u>6.7E-5</u> µCi/cc ^{131}I

   g) Ten times Technical Specification Limits (as posted): 1) <u>2.5E-2</u> µCi/cc noble gas

2) <u>7.0E-8</u> µCi/cc ^{131}I

h) Average Wind Speed: _____ mph

i) Wind Direction From _____ Degrees

NOTE: North = 0° increasing degrees - c.w.

j) (200 ft. - 20 ft.)
Differential Temperature _____ °F

5. Determine sectors affected using Site Sector Map
(Figure 2):

Sector(s) _____

6. Determine Stability Category using Table 1,
Step 4i and Step 4j:

Stability Category _____

7. Calculate the release noble gas concentration:

RIS-9301 concentration = (step 4a) x (step 4b)

= (   ) x (   )

= _____ µCi/cc

8. Calculate the source term, Q_{ng} (noble gas release rate):

a) Reactor Building Louvers

Q_{ng} = (step 7) x (5.8 E +7)* x (1 E -6 Ci/µci)

= (   ) x (5.8 E +7)* x (1 E -6)

= _____ Ci/sec

*Release rate (cc/sec) from louvers (FSAR, Section 14.11.2.6).

b) PCRV Safety Valves

Q_{ng} = (step 7) x (1.9 E +7)** x (1 E -6)

= (   ) x (1.9 E +7)** x (1 E -6)

= _____ Ci/sec

**Release rate (cc/sec) from both PCRV safeties
(FSAR, Section 6 .8).

Classification of Event

9. Determine weighted noble gas dose
   conversion factor from Table 2: $\underline{7.5E+2}$ $\dfrac{\text{Rem/hour}}{Ci/m^3}$

10. Determine the EAB atmospheric dilution factor
    from Attachment 1 using Steps 6 and 4h:

    Dilution Factor   _____ sec/m³

    General Emergency Determination

11. Determine the whole body dose rate at the EAB:

    a)   Reactor Building Louvers

    Dose Rate = (step 8a) x (step 9) x (step 10)

          = (   ) x (   ) x (   )

          = _____ Rem/hour

    b)   PCRV Safety Valves

    Dose Rate = (step 8b) (step 9) x (step 10)

          = (   ) x (   ) x (   )

          = _____ Rem/hour

12. If the resulting dose rate at the EAB is ≥ 1 Rem/hour, the
    classification of the event is GENERAL EMERGENCY. Inform the
    Shift Supervisor of the General Emergency Condition. Then go
    directly to Step 15.

    Site 1.Areal. Emergency Determination

13. If 1.Step 8a. or 8b. is greater than or equal to 9.6E-1 Ci/sec,
    the classification of event is SITE AREA EMERGENCY. Inform the
    Shift Supervisor of the Site Areal. Emergency Condition. Then
    go directly to Step 15.

Radiological Alert Determination

14. If 1.Step 8a. or 8b. is greater than or equal to ten times the Technical Specification limit 3.7E-1 Ci/sec1., the classification of the event is RADIOLOGICAL ALERT. Inform the Shift Supervisor of the Radiological Alert Condition. Then proceed with Step 15.

> Curies of Noble Gas Released

15. Calculate the curies of noble gas released to present time.

    a) Reactor Building Louvers

       Curies Released = (step 8a) x (step 3) x (3.6 E +3)

       = (   ) x (   ) x (3.6 E +3)

       = _____ Curies

    b) PCRV Safety Valves

       Curies Released = (step 8b) x (step 3) x (3.6 E +3)

       = (   ) x (   ) x (3.6 E +3)

       = _____ Curies

> Accumulated Whole Body Gamma Dose at EAB

16. Calculate the dose received at the EAB.

    a) Reactor Building Louvers

       Dose = (step 11a) x (step 3)

       = (   ) x (   )

       = _____ Rem

b)   PCRV Safety Valves

Dose = (step 11b) x (step 3)

= (   ) x (   )

= _____ Rem

NOTE: This calculation assumes the recipient was at the
EAB for the entire duration of the release.

```
 _____
|                  |
|   Projections    |
|_____|
```

17. If the release is continuing, consult with the Shift Supervisor
and estimate the total number of hours the release will continue
(i.e., from beginning to end). If the release has terminated,
enter N/A.

Preliminary estimate of release hours _____ hour(s).

18. Project the total whole body gamma dose at the EAB. If the
release has terminated, enter N/A.

a)   Reactor Building Louvers

Projected Dose at EAB = (step 11a) x (step 17)

= (   ) x (   )

= _____ Rem

b)   PCRV Safety Valves

Projected Dose at EAB = (step 11b) x (step 17)

= (   ) x (   )

= _____ Rem

19. Calculate the release ^{131}I equivalent concentration (Reactor Building Louvers or PCRV Safety Valves).

    ^{131}I Equivalent Concentration =

    (step 4c) + (step 4d) x (5.7 E -3) *** ÷ (step 4e)

    =(   ) + (   ) x (5.7 E -3) *** ÷ (   )

    = _____ Ci/cc

    ***Amount of plateout ^{131}I equivalent released (FSAR, Section 14.11.2.7.1).

20. Calculate the source term, Q (^{131}I equivalent release rate).

    a) Reactor Building Louvers

        Q = (step 19) x (5.8 E +7)

        = (   ) x (5.8 E +7)

        = _____ Ci/sec

    b) PCRV Safety Valves

        Q = (step 19) x (1.9 E + 7)

        = (   ) x (1.9 E +7)

        = _____ Ci/sec

    ┌─────────────────────────────┐
    │   │
    │   Classification of Event │
    │   │
    └─────────────────────────────┘

21. Determine ^{131}I dose conversion factor
    from Attachment 8.

    $\dfrac{1.2E+6 \quad \text{Rem/hour}}{\text{Ci/m}^3}$

22. Determine the thyroid dose rate at the EAB.

    a) Reactor Building Louvers

        Dose Rate = (step 20a) x (step 21) x (step 10)

        = (   ) x (   ) x (   )

        = _____ 1.Rem/hour1.

b)   PCRV Safety Valves

Dose Rate = (step 20b) x (step 21) x (step 10)

= (   ) x (   ) x (   )

= _____ Rem/hour

<u>General Emergency Determination</u>

23. If the resulting dose rate at the EAB is ≥ 5 Rem/hour, the classification of the event is GENERAL EMERGENCY. Inform the Shift Supervisor of the General Emergency Condition. Then go directly to Step 26 of this attachment.

<u>Site 1.Areal. Emergency Determination</u>

24. If 1.Step 20a. or 20b. is greater than or equal to 9.8E-4 Ci/sec, the classification of the event is SITE AREA EMERGENCY. Inform the Shift Supervisor of the Site Areal. Emergency Condition. Then go directly to Step 26 of this attachment.

<u>Radiological Alert Determination</u>

25. If Step 19 is greater than or equal to ten times the Technical Specification limit 1.1.0E-7 Ci/sec,1. the classification of the event is RADIOLOGICAL ALERT. Inform the Shift Supervisor of the Radiological Alert Condition. Then proceed with Step 26.

Curies of ^{131}I Equivalent Released

26. Calculate the curies of ^{131}I equivalent released to present time.

a)   Reactor Building Louvers

Curies Released = (step 20a) x (step 3) x (3.6 E +3 s/hr)

= (   ) x (   ) x (3.6 E +3)

= _____ Curies

b)   PCRV Safety Valves

Curies Released = (step 20b) x (step 3) x (3.6 E +3)

= (   ) x (   ) x (3.6 E +3)

= _____ Curies

```
|_____|
|                                    |
|   Accumulated Thyroid Dose at EAB  |
|_____|
```

27. Calculate the dose received at the EAB.

a)   Reactor Building Louvers

Dose =
     = (step 22a) x (step 3)

     = _____ Rem

b)   PCRV Safety Valves

Dose = (step 22b) x (step 3)

     = (   ) x (   )

     = _____ Rem

NOTE: This calculation assumes the recipient was at the
       EAB for the entire duration of the release.

```
|_____|
|                     |
|     Projections     |
|_____|
```

28. If the release is continuing, consult with the Shift Supervisor
and _estimate_ the total number of hours the release will continue
(i.e., from beginning to end). If the release has terminated,
enter N/A.

Preliminary estimate of release hours _____ hour(s).

29. Project the total thyroid dose at the EAB. If the release has terminated, enter N/A.

    a) Reactor Building Louvers

       Projected Dose at EAB = (step 22a) x (step 28)

       = (   ) x (   )

       = _____ Rem

    b) PCRV Safety Valves

       Projected Dose at EAB = (step 22b) x (step 28)

       = (   ) x (   )

       = _____ Rem

30. Determine the recommended protective action for the general population based on the results of Steps 18 and 29. Refer to RERP-PAG.

    _____
    | Summary |
    |_____|

31. The whole body gamma dose rate at the EAB is (Step 11a or 11b): _____ Rem/hr

32. The classification of the event based on noble gases is (Step 12 or Step 13 or Step 14): _____

33. The noble gas release rate is (Step 8a or 8b): _____ Ci/sec

34. The accumulated whole body gamma dose at the EAB is (Step 16a or 16b): _____ Rem

35. The total number of curies of noble gas released to the present time is (Step 15a or 15b): _____ Curies

36. The projected whole body gamma dose at the EAB is (Step 18a or 18b): _____ Rem

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37. Based on projected release duration of (Step 17):

_____ nours

38. The thyroid dose rate at the EAB is
(Step 22a or 22b):

_____ Rem/hour

39. *The classification of the event based on
^{131}I equivalent is (Step 23 <u>or</u>
Step 24 <u>or</u> Step 25):

_____

40. The ^{131}I equivalent release rate is (Step 20a
or 20b):

_____ Ci/sec

41. The accumulated thyroid dose at the EAB
is (Step 27a or 27b):

_____ Rem

42. The total number of curies of ^{131}I
equivalent released to the present time is
(Step 26a or 26b):

_____ Curies

43. The <u>projected</u> thyroid dose at the EAB is
(Step <u>29a</u> or 29b):

_____ Rem

Based on projected release duration of
(Step 28):

_____ hours

*If this classification differs from the classification in Step
31, the higher (i.e., more severe) classification is to be used
to determine recommended protective action.

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WORKSHEET 4

ASSESSMENT OF RELEASE USING TI-59 CALCULATOR PROGRAM-UNMONITORED RELEASE

This attachment is only to be used if the TI-59 calculator program is used. If the program is not used, use Worksheet 3.

This attachment is used to determine the following due to an unmonitored release via the Reactor Building Louvers or the PCRV Relief Valves:

a) Estimated whole body and thyroid gamma dose and dose rates at the EAB;

b) Classification of the release;

c) Projected whole body and thyroid gamma dose at the EAB; and

d) Recommended protective action for the general population.

1. Collect the following data:

a) Date/Time of beginning of release: _____

b) Date/Time of ending of release. If release is still occurring, enter the Date/Time of the calculation: _____

c) Hours between 1a) and 1b): _____ hours
(STO 07)

d) Maximum CPM, RIS-9301: _____ cpm
(RR-93256, Pt. 10) (STO 01)

e) Sensitivity RIS-9301: _____ uCi/cc/cpm
(STO 02)

f) Primary Coolant ^{131}I equivalent _____ Ci
circulating inventory: (posted) (STO 03)

g) Primary Coolant ^{131} equivalent _____ Ci
plateout inventory: (posted) (STO 04)

*h) Primary Coolant Volume: (posted) _____ cc
(STO 05)

i)   Site Emergency Limit: (posted) 1) 6.6E-2 _____ µCi/cc noble gas

2) 6.7E-5 _____ µCi/cc ^{131}I

j)   Ten Times Technical Specification
Limits (posted):

1) 2.5E-2 _____ µCi/cc noble gas

2) 7.0E-8 _____ µCi/cc ^{131}I

k)   Average Wind Speed: _____ mph

l)   Wind Direction:

NOTE: North = 0° increasing degrees-c.w. From _____ Degrees

m)   (200 ft. - 20 ft.) Differential
Temperature _____ °F

2.   Determine sectors affected using Site
Sector Map (Figure 2):

Sector(s) _____

3.   Determine Stability Category using
Table 1 and Steps 1l) and 1m).

Stability Category _____

4.   Determine the EAB dilution factor from
Attachment 1 using the Stability
Category (Step 3) and wind speed
(Step 1k).

Dilution Factor _____ sec/m³
(STO 06)

5.   If the release is continuing, consult with the
Shift Supervisor and estimate the total number
of hours the release will continue (i.e., from
beginning to end). If the release has termi-
nated, enter 0.

Preliminary estimate of release hours _____ hours.(STO 08)

6.   Prepare the TI-59 for data entry.

a)   Place TI-59 in printer/security cradle.

b)   Plug in printer/security cradle.

c)   Turn on printer/security cradle and TI-59.

d)   Depress "TRACE" button on printer.

e)   Obtain the magnetic card labeled "FSV Off-Site Dose Calculation (RERP) - Unmonitored Release."

f)   Read magnetic card into TI-59.

1)   Depress $|\overline{I}|$, $|\overline{INV}|$, $|\overline{2nd}|$, $|\overline{WRITE}|$ keys.

2)   Insert magnetic card into right side of TI-59. Card should be right side up with the "1" in the upper left-hand corner.

3)   "1" will be displayed if the card was read properly - continue with Step 6f)4). If a flashing number is displayed, the card was not read properly. Obtain the other magnetic card with the same title and repeat Step 6f).

4)   Depress $|\overline{2}|$, $|\overline{INV}|$, $|\overline{2nd}|$, $|\overline{WRITE}|$ keys.

5)   Insert card into right side of TI-59. Card should be upside down with the "2" in the lower left-hand corner.

6)   "2" will be displayed if the card was read properly - continue with Step 7. If a flashing number is displayed, the card was not read properly. Obtain the other magnetic card with the same title and repeat Step 6f).

7. Input the necessary data into the indicated TI-59 storage registers.

    a) Step 1c) = |STO| 07

    b) Step 1d) = |STO| 01

    c) Step 1e) = |STO| 02

    d) Step 1f) = |STO| 03

    e) Step 1g) = |STO| 04

    f) Step 1h) = |STO| 05

    g) Step 4   = |STO| 06

    h) Step 5   = |STO| 08

8. Run Dose Assessment Program.

    a) Depress |R/S| key.

    b) Wait until a number is displayed. A flashing number indicates
        improper execution of the program. Depress |CLR| and |RST|
        keys and repeat Steps 7 and 8.

9. Determine the recommended protective action for the general
    population. Refer to RERP-PAG.

| SUMMARY |

10. a) The release path is: _____

      1)   Reactor Building Louvers

      2)   PCRV Reliefs

   b) The whole body gamma dose at the
      EAB is (RCL 12 for louvers,
      RCL 13 for reliefs).   _____ rem/hour

   c) The classification of the event
      based on noble gases is: _____

      1)   If Step 10b) $\geq$ 1 Rem/hour,
           GENERAL EMERGENCY.

      2)   1.If Step 10c) $\geq$ 9.6E-1 Ci/sec
           SITE AREA EMERGENCY1.

      3)   1.If Step 10c) $\geq$ 3.7E-1 Ci/sec
           and $\leq$ 9.6E-1 Ci/sec,1.
           RADIOLOGICAL ALERT.

      4)   1.If RCL 11 $\geq$ 9.6E-1 Ci/sec,
           SITE AREA EMERGENCY1.

      5)   1.If RCL 11 > 3.7E-1 Ci/sec
           and < 9.6E-1 Ci/sec,
           RADIOLOGICAL ALERT1.

   e) The accumulated whole body gamma dose
      at the EAB is (RCL 16 for louvers,
      RCL 17 for reliefs):   _____ Rem

   f) The total number of curies of noble
      gas released to the present time
      is (RCL 14 for louvers, RCL 15
      for reliefs):   _____ Ci

   g) The projected whole body gamma
      dose at the EAB is (RCL 18 for louvers,
      RCL 19 for reliefs):   _____ Rem

      Based on a projected release duration
      of (RCL 08):   _____ hours

h) The thyroid dose rate at the EAB
is (RCL 24 for louvers, RCL 25
for reliefs): _____Rem/hour

i) The ^{131} equivalent release rate is
(RCL 22 for louvers, RCL 23
for reliefs): _____Ci/sec

*j) The classiication of the event
based on ^{131}I equivalent is: _____

1) If Step 10h) ≥ 5 Rem/hour,
GENERAL EMERGENCY.

2) 1.If Step 10i) ≥ 9.8E-4C Ci/sec
SITE AREA EMERGENCY1.

3) 1.If Step 10i) ≥ 1.0E-7 Ci/sec
and < 9.8E-4 Ci/sec1.
RADIOLOGICAL ALERT.

k) The accumulated thyroid dose at the EAB
is (RCL 28 for louvers, RCL 29 for
reliefs): _____Rem

l) The total number of curies of ^{131}I
equivalent released to the present
time is (RCL 26 for louvers,
RCL 27 for reliefs): _____Ci

m) The projected thyroid dose at the EAB
is (RCL 30 for louvers, RCL 31
for reliefs): _____Rem

Based on projected release duration
of (RCL 08): _____hours

*If this classification differs from the classification in Step 10b),
the higher (i.e., more severe) classification is to be used to
determine recommended protective actions.

WORKSHEET 4

ASSESSMENT OF RELEASE USING TI-59 CALCULATOR PROGRAM-UNMONITORED RELEASE

This attachment is only to be used if the TI-59 calculator program is used. If the program is not used, use Worksheet 3.

This attachment is used to determine the following due to an unmonitored release via the Reactor Building Louvers or the PCRV Relief Valves:

a) Estimated whole body and thyroid gamma dose and dose rates at the EAB;

b) Classification of the release;

c) Projected whole body and thyroid gamma dose at the EAB; and

d) Recommended protective action for the general population.

1. Collect the following data:

a) Date/Time of beginning of release: _____

b) Date/Time of ending of release. If release is still occurring, enter the Date/Time of the calculation: _____

c) Hours between 1a) and 1b): _____ hours
(STO 07)

d) Maximum CPM, RIS-9301: _____ cpm
(RR-93256, Pt. 10) (STO 01)

e) Sensitivity RIS-9301: _____ µCi/cc/cpm
(STO 02)

f) Primary Coolant ^{131}I equivalent _____ Ci
circulating inventory: (posted) (STO 03)

g) Primary Coolant ^{131} equivalent _____ Ci
plateout inventory: (posted) (STO 04)

*h) Primary Coolant Volume: (posted) _____ cc
(STO 05)

i)   Site Emergency Limit: (posted) 1) 6.6E-2 _____ µCi/cc noble
                                                         gas

                                      2) 6.7E-5 _____ µCi/cc ^{131}I

j)   Ten Times Technical Specification
     Limits (posted):

                                      1) 2.5E-2 _____ µCi/cc noble
                                                         gas

                                      2) 7.0E-8 _____ µCi/cc ^{131}I

k)   Average Wind Speed: _____ mph

l)   Wind Direction:

NOTE: North = 0° increasing degrees-c.w. From _____ Degrees

m)   (200 ft. - 20 ft.) Differential
     Temperature   _____ °F

2.   Determine sectors affected using Site
     Sector Map (Figure 2):

                          Sector(s)   _____

3.   Determine Stability Category using
     Table 1 and Steps 1l) and 1m).

                          Stability Category   _____

4.   Determine the EAB dilution factor from
     Attachment 1 using the Stability
     Category (Step 3) and wind speed
     (Step 1k).

                          Dilution Factor   _____ sec/m³
                                                         (STO 06)

5.   If the release is continuing, consult with the
     Shift Supervisor and estimate the total number
     of hours the release will continue (i.e., from
     beginning to end). If the release has termi-
     nated, enter 0.

     Preliminary estimate of release hours _____ hours. (STO 08)

6.   Prepare the TI-59 for data entry.

a)   Place TI-59 in printer/security cradle.

b)   Plug in printer/security cradle.

c)   Turn on printer/security cradle <u>and</u> TI-59.

d)   Depress "TRACE" button on printer.

e)   Obtain the magnetic card labeled "FSV Off-Site
     Dose Calculation (RERP) - Unmonitored Release."

f)   Read magnetic card into TI-59.

1)   Depress |$\overline{\underline{1}}$| , |$\overline{INV}$| , |$\overline{2nd}$| , |$\overline{WRITE}$| keys.

2)   Insert magnetic card into right side of TI-59.
     Card should be right side up with the "1" in
     the upper left-hand corner.

3)   "1" will be displayed if the card was read
     properly - continue with Step 6f)4). If a flashing
     number is displayed, the card was not read
     properly. Obtain the other magnetic card
     with the same title and repeat Step 6f).

4)   Depress |$\overline{\underline{2}}$| , |$\overline{INV}$| , |$\overline{2nd}$| , |$\overline{WRITE}$| keys.

5)   Insert card into right side of TI-59.
     Card should be <u>upside down</u> with the "2" in
     the lower left-hand corner.

6)   "2" will be displayed if the card was read
     properly - continue with Step 7. If a flashing
     number is displayed, the card was not read
     properly. Obtain the other magnetic card
     with the same title and repeat Step 6f).

7.   Input the necessary data into the indicated TI-59 storage registers.

   a)   Step 1c) = |STO| 07

   b)   Step 1d) = |STO| 01

   c)   Step 1e) = |STO| 02

   d)   Step 1f) = |STO| 03

   e)   Step 1g) = |STO| 04

   f)   Step 1h) = |STO| 05

   g)   Step 4   = |STO| 06

   h)   Step 5   = |STO| 08

8.   Run Dose Assessment Program.

   a)   Depress |R/S| key.

   b)   Wait until a number is displayed. A flashing number indicates
        improper execution of the program. Depress |CLR| and |RST|
        keys and repeat Steps 7 and 8.

9.   Determine the recommended protective action for the general
     population. Refer to RERP-PAG.

| SUMMARY |

10. a) The release path is: _____

      1)   Reactor Building Louvers

      2)   PCRV Reliefs

     b) The whole body gamma dose at the
         EAB is (RCL 12 for louvers,
         RCL 13 for reliefs).   _____ rem/hour

     c) The classification of the event
         based on noble gases is: _____

      1)   If Step 10b) $\geq$ 1 Rem/hour,
           GENERAL EMERGENCY.

      2)   1.If Step 10c) $\geq$ 9.6E-1 Ci/sec
           SITE AREA EMERGENCY1.

      3)   1.If Step 10c) $\geq$ 3.7E-1 Ci/sec
           and $\leq$ 9.6E-1 Ci/sec,1.
           RADIOLOGICAL ALERT.

      4)   1.If RCL 11 $\geq$ 9.6E-1 Ci/sec,
           SITE AREA EMERGENCY1.

      5)   1.If RCL 11 > 3.7E-1 Ci/sec
           and < 9.6E-1 Ci/sec,
           RADIOLOGICAL ALERT1.

     e) The accumulated whole body gamma dose
         at the EAB is (RCL 16 for louvers,
         RCL 17 for reliefs):   _____ Rem

     f) The total number of curies of noble
         gas released to the present time
         is (RCL 14 for louvers, RCL 15
         for reliefs):   _____ Ci

     g) The projected whole body gamma
         dose at the EAB is (RCL 18 for louvers,
         RCL 19 for reliefs):   _____ Rem

         Based on a projected release duration
         of (RCL 08):   _____ hours

h) The thyroid dose rate at the EAB
is (RCL 24 for louvers, RCL 25
for reliefs): _____ Rem/hour

i) The ^{131} equivalent release rate is
(RCL 22 for louvers, RCL 23
for reliefs): _____ Ci/sec

*j) The classiication of the event
based on ^{131}I equivalent is: _____

   1) If Step 10h) ≥ 5 Rem/hour,
      GENERAL EMERGENCY.

   2) 1.If Step 10i) ≥ 9.8E-4C Ci/sec
      SITE AREA EMERGENCY1.

   3) 1.If Step 10i) ≥ 1.0E-7 Ci/sec
      and < 9.8E-4 Ci/sec1.
      RADIOLOGICAL ALERT.

k) The accumulated thyroid dose at the EAB
is (RCL 28 for louvers, RCL 29 for
reliefs): _____ Rem

l) The total number of curies of ^{131}I
equivalent released to the present
time is (RCL 26 for louvers,
RCL 27 for reliefs): _____ Ci

m) The <u>projected</u> thyroid dose at the EAB
is (RCL 30 for louvers, RCL 31
for reliefs): _____ Rem

Based on projected release duration
of (RCL 08): _____ hours

*If this classification differs from the classification in Step 10b),
the higher (i.e., more severe) classification is to be used to
determine recommended protective actions.

Datasheet 1 - Data Logger (or IBM) Monitored Release

A. Projection - Option 2

1. Current and release start date and time:

    a) __/__/__

    b) ___ : ___

2. Projected end of release date and time:

    a) __/__/__

    b) ___ : ___

3. Radiation Monitor Values, Noble Gas

    a) RT-7324, 1   _____ cpm

    b) RT-7324. 2   _____ cpm

    If one of the above is offscale or inoperative:

    a) E-500 or Cutie Pie?   _____

    b) Instrument Reading   _____ mR/hr

4. Exhaust Stack Flow Rate   _____ cfm

5. Radioiodine Monitor Values; RT-73437, 1

    a) Initial Reading from chart   _____ cpm

    b) Intermediate Reading from chart   _____ cpm

    c) Peak or Current Reading from chart   _____ cpm

    d) Time between a and b   _____ minutes

    e) Time between b and c   _____ minutes

6. Wind Direction (preferred sampling point is 10 meter instrument on 60 meter meteorological tower)

    _____ °

7.   Wind Speed (Preferred sampling point
      is 10 meter instrument on 60 meter
      meteorological tower)

      _____mph

8.   Distance between upper and lower
      temperature instruments

      _____meters

9.   Delta Temperature between
      temperature instruments

      _____°F

10.   Standard Deviation (Sigma Theta) of
      Wind Direction - 15 min. average

      _____

B.   Puff - Option 2

      1.   Current and release start date and
            time:

            a) __/__/__

            b) ___: ___

      2.   End of Puff date and time (not to
            exceed 15 minutes after B.1)

            a) __/__/__

            b) ___:. ___

C.   Total for All Puffs - Option 3

      Change option and execute DF 41-0-0.

Datasheet 1 - Data Logger (or IBM) Monitored Release

A. Projection - Option 2

    1. Current and release start date and time:

        a) __/__/__

        b) ___ : ___

    2. Projected end of release date and time:

        a) __/__/__

        b) ___ : ___

    3. Radiation Monitor Values, Noble Gas

        a) RT-7324, 1   _____ cpm

        b) RT-7324. 2   _____ cpm

        If one of the above is offscale or inoperative:

        a) E-500 or Cutie Pie?   _____

        b) Instrument Reading   _____ mR/hr

    4. Exhaust Stack Flow Rate   _____ cfm

    5. Radioiodine Monitor Values; RT-73437, 1

        a) Initial Reading from chart   _____ cpm

        b) Intermediate Reading from chart _____ cpm

        c) Peak or Current Reading from chart _____ cpm

        d) Time between a and b   _____ minutes

        e) Time between b and c   _____ minutes

    6. Wind Direction (preferred sampling point is 10 meter instrument on 60 meter meteorological tower)

        _____ °

7. Wind Speed (Preferred sampling point
    is 10 meter instrument on 60 meter
    meteorological tower)

                                                   _____mph

8. Distance between upper and lower
    temperature instruments

                                                   _____meters

9. Delta Temperature between
    temperature instruments

                                                   _____°F

10. Standard Deviation (Sigma Theta) of
    Wind Direction - 15 min. average

                                                   _____

B. Puff - Option 2

    1. Current and release start date and
        time:

                                              a) __/__/__

                                              b) ___: ___

    2. End of Puff date and time (not to
        exceed 15 minutes after B.1)

                                              a) __/__/__

                                              b) ___: ___

C. Total for All Puffs - Option 3

    Change option and execute DF 41-0-0.

Datasheet 1 - Data Logger (or IBM) Monitored Release

A.   Projection - Option 2

    1.   Current and release start date and
          time:

                                                    a) __/__/__

                                                    b) ___ : ___

    2.   Projected end of release date and
          time:

                                                    a) __/__/__

                                                    b) ___ : ___

    3.   Radiation Monitor Values, Noble Gas

          a) RT-7324, 1   _____ cpm

          b) RT-7324. 2   _____ cpm

          If one of the above is offscale or
          inoperative:

          a) E-500 or Cutie Pie?   _____

          b) Instrument Reading   _____ mR/hr

    4.   Exhaust Stack Flow Rate   _____ cfm

    5.   Radioiodine Monitor Values; RT-73437, 1

          a) Initial Reading from chart   _____ cpm

          b) Intermediate Reading from chart   _____ cpm

          c) Peak or Current Reading from chart   _____ cpm

          d) Time between a and b   _____ minutes

          e) Time between b and c   _____ minutes

    6.   Wind Direction (preferred sampling
          point is 10 meter instrument on 60
          meter meteorological tower)

                                                    _____ °

7. Wind Speed (Preferred sampling point is 10 meter instrument on 60 meter meteorological tower)

_____mph

8. Distance between upper and lower temperature instruments

_____meters

9. Delta Temperature between temperature instruments

_____°F

10. Standard Deviation (Sigma Theta) of Wind Direction - 15 min. average

_____

B. Puff - Option 2

1. Current and release start date and time:

a) ___/___/___

b) ___ : ___

2. End of Puff date and time (not to exceed 15 minutes after B.1)

a) ___/___/___

b) ___ : ___

C. Total for All Puffs - Option 3

Change option and execute DF 41-0-0.

Datasheet 1 - Data Logger (or IBM) Monitored Release

A.   Projection - Option 2

1.   Current and release start date and time:

       a)   __/__/__

       b)   ___: ___

2.   Projected end of release date and time:

       a)   __/__/__

       b)   ___: ___

3.   Radiation Monitor Values, Noble Gas

       a)   RT-7324, 1   _____cpm

       b)   RT-7324, 2   _____cpm

       If one of the above is offscale or inoperative:

       a)   E-500 or Cutie Pie?   _____

       b)   Instrument Reading   _____mR/hr

4.   Exhaust Stack Flow Rate   _____cfm

5.   Radioiodine Monitor Values; RT-73437, 1

       a)   Initial Reading from chart   _____cpm

       b)   Intermediate Reading from chart   _____cpm

       c)   Peak or Current Reading from chart   _____cpm

       d)   Time between a and b   _____minutes

       e)   Time between b and c   _____minutes

6.   Wind Direction (preferred sampling point is 10 meter instrument on 60 meter meteorological tower)

                               _____°

7. Wind Speed (Preferred sampling point
   is 10 meter instrument on 60 meter
   meteorological tower)

   _____ mph

8. Distance between upper and lower
   temperature instruments

   _____ meters

9. Delta Temperature between
   temperature instruments

   _____ °F

10. Standard Deviation (Sigma Theta) of
    Wind Direction - 15 min. average

    _____

B. Puff - Option 2

   1. Current and release start date and
      time:

      a) ___/___/___

      b) ___ : ___

   2. End of Puff date and time (not to
      exceed 15 minutes after B.1)

      a) ___/___/___

      b) ___ : ___

C. Total for All Puffs - Option 3

   Change option and execute DF 41-0-0.

Datasheet 1 - Data Logger (or IBM) Monitored Release

A. Projection - Option 2

1. Current and release start date and time:

    a) ___/___/___

    b) ___ : ___

2. Projected end of release date and time:

    a) ___/___/___

    b) ___ : ___

3. Radiation Monitor Values, Noble Gas

    a) RT-7324, 1   _____ cpm

    b) RT-7324. 2   _____ cpm

    If one of the above is offscale or inoperative:

    a) E-500 or Cutie Pie?   _____

    b) Instrument Reading   _____ mR/hr

4. Exhaust Stack Flow Rate   _____ cfm

5. Radioiodine Monitor Values; RT-73437, 1

    a) Initial Reading from chart   _____ cpm

    b) Intermediate Reading from chart   _____ cpm

    c) Peak or Current Reading from chart   _____ cpm

    d) Time between a and b   _____ minutes

    e) Time between b and c   _____ minutes

6. Wind Direction (preferred sampling point is 10 meter instrument on 60 meter meteorological tower)

                                                      _____ °

7. Wind Speed (Preferred sampling point is 10 meter instrument on 60 meter meteorological tower)

_____ mph

8. Distance between upper and lower temperature instruments

_____ meters

9. Delta Temperature between temperature instruments

_____ °F

10. Standard Deviation (Sigma Theta) of Wind Direction - 15 min. average

_____

B. Puff - Option 2

1. Current and release start date and time:

a) ___/___/___

b) ___ : ___

2. End of Puff date and time (not to exceed 15 minutes after B.1)

a) ___/___/___

b) ___ : ___

C. Total for All Puffs - Option 3

Change option and execute DF 41-0-0.

Datasheet 2 - Data Logger (or IBM) Unmonitored Release)

1. Date and Time of beginning of release

a) ___/___/___

b) ___ : ___

2. Time of Louvers closed

___ : ___

3. Maximum CPM, RIS-9301

_____ cpm

4. a) Primary coolant I-131 equivalent circulating inventory

_____ Ci

b) Primary coolant I-131 equivalent plateout inventory

_____ Ci

5. Primary Coolant Volume

_____ scc

6. a) PCRV Pressure Before Release

_____ psig

b) PCRV Pressure After Release

_____ psig

7. Wind Direction (prefererd sampling point is 10 meter instrumentation on 60 meter meteorological tower)

_____ °

8. Wind speed (preferred sampling point is 10 meter instrumenation on 60 meter meteorological tower)

_____ mph

9. Distance between upper and lower temperature instruments

    _____meters

10. Delta Temperature between temperature instruments

    _____ °F

11. Standard Deviation (Sigma Theta) of wind Direction - 15 min. average

    _____

Datasheet 2 - Data Logger (or IBM) Unmonitored Release)

1. Date and Time of beginning of release

   a) ___/___/___

   b) ___: ___

2. Time of Louvers closed

   ___: ___

3. Maximum CPM, RIS-9301

   _____cpm

4. a) Primary coolant I-131 equivalent circulating inventory

   _____Ci

   b) Primary coolant I-131 equivalent plateout inventory

   _____Ci

   5. Primary Coolant Volume

   _____scc

6. a) PCRV Pressure Before Release

   _____psig

   b) PCRV Pressure After Release

   _____psig

7. Wind Direction (preferero sampling point is 10 meter instrumentation on 60 meter meteorological tower)

   _____°

8. Wind speed (preferred sampling point is 10 meter instrumenation on 60 meter meteorological tower)

   _____mph

9. Distance between upper and lower temperature instruments

    _____ meters

10. Delta Temperature between temperature instruments

    _____ °F

11. Standard Deviation (Sigma Theta) of wind Direction - 15 min. average

    _____

PUBLIC SERVICE COMPANY OF COLORADO
FORT ST. VRAIN NUCLEAR GENERATING STATION

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PRELIMINARY ASSESSMENT OF PLANT CONDITIONS
TECHNICAL ADVISOR

1. Brief description of event _____

_____

2. Date/Time of event _____

_____

3. Date/Time of assessment_____

4. If the data logger is operating, obtain the Demand Function Printout (or print specified displays):

   NOTE: All screens accessible on Display 900

   Helium Inventory_____

   DF 69-0-0_____

   DF 76-0-0_____

   DF 77-1-0_____

   Post Trip Review_____

PRIMARY SYSTEM

5. Current Reactor Power_____

6. Rod Runback Occur (Y/N)_____

   If   yes,   record   positions
   2B_____   4A_____

7. If shutdown, are all rods fully inserted (Y/N)_____

8. Circulators Operating   A B C D   MODE:
   Steam Feedwater Cond. Firewater

9. Purification Train   A B   To: Storage,
    PCRV, or Ventilation

10. Is heat removal capability adequate at
    this time (Y/N)_____

SECONDARY SYSTEM

11. Loops Operating   I   II

12. Feed to S/G's: Norm FW____ Emer. FW____
    Emer. Cond.____ Firewater____

13. Status of Aux. Boilers _____

Remarks

Time   Description

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PRELIMINARY ASSESSMENT OF PLANT CONDITIONS
TECHNICAL ADVISOR

1. Brief description of event _____

   _____

2. Date/Time of event _____

   _____

3. Date/Time of assessment_____

4. If the data logger is operating, obtain the Demand Function Printout (or print specified displays):

   NOTE: All screens accessible on Display 900

   Helium Inventory_____

   DF 69-0-0_____

   DF 76-0-0_____

   DF 77-1-0_____

   Post Trip Review_____

PRIMARY SYSTEM

5. Current Reactor Power_____

6. Rod Runback Occur (Y/N)_____

   If   yes,   record   positions
   2B_____   4A_____

7. If shutdown, are all rods fully inserted (Y/N)_____

8. Circulators Operating A B C D   MODE: Steam Feedwater Cond. Firewater

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9. Purification Train   A   B   To: Storage,
   PCRV, or Ventilation

10. Is heat removal capability adequate at
    this time (Y/N)_____

SECONDARY SYSTEM

11. Loops Operating   I   II

12. Feed to S/G's: Norm FW____ Emer. FW____
    Emer. Cond.____ Firewater____

13. Status of Aux. Boilers _____

Remarks

Time   Description

PUBLIC SERVICE COMPANY OF COLORADO
FORT ST. VRAIN NUCLEAR GENERATING STATION

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Checklist 1
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Page 1 of 1

EMERGENCY COORDINATOR'S CHECKLIST

1. Initiate Emergency Procedure actions.   _____

2. Technical Advisor notified. _____

3. Obtain preliminary assessment of release.   _____

4. Obtain meteorological data.   _____

5. Initiate protective actions for station personnel.   _____

6. Contact management and confirm classification.   _____

7. Complete Notifications Form.   _____

    NOTIFICATION OF UNUSUAL EVENT - Attachment 1   _____

8. Make Notifications (Attachment 2, Page 2)

    NOTIFICATION OF UNUSUAL EVENT

           State EOC   _____

           Governor's Office or Mansion   _____

           NRC's Operations Center   _____

PUBLIC SERVICE COMPANY OF COLORADO
FORT ST. VRAIN NUCLEAR GENERATING STATION

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Checklist 1
Issue 14
Page 1 of 1

EMERGENCY COORDINATOR'S CHECKLIST

1. Initiate Emergency Procedure actions. _____

2. Technical Advisor notified. _____

3. Obtain preliminary assessment of release. _____

4. Obtain meteorological data. _____

5. Initiate protective actions for station personnel. _____

6. Contact management and confirm classification. _____

7. Complete Notifications Form. _____

   NOTIFICATION OF UNUSUAL EVENT - Attachment 1 _____

8. Make Notifications (Attachment 2, Page 2)

   NOTIFICATION OF UNUSUAL EVENT

       State EOC _____

       Governor's Office or Mansion _____

       NRC's Operations Center _____

PUBLIC SERVICE COMPANY OF COLORADO
FORT ST. VRAIN NUCLEAR GENERATING STATION

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Checklist 2 - Data Logger Monitored Release

NOTE:

Initialize the summing screen by entering option 4 and running DF 41-0-0. This should be done for the first calculation only.

1. "DEMAND FUNCTION OVERVIEW" key, located cursor on DF 41-0-0 and "XMIT CURSOR."
_____

2. Step 1 brings up display 941. Follow steps on this display. They lead the user from screen to screen through the basic program steps. Always utilize program "OPTION 2" when performing calculations for record keeping or dose reporting purposes. This "OPTION" reverts to a "1" after the Demand Function is run and must be reset to a "2" each time.
_____

3. Perform a "duration of release" calculation utilizing the projected or estimated end of release time. Utilize 2 hours from current as a default value whenever this value isn't known.
*_____

4. Print displays from this calculation.
_____

5. Display results and print
_____

_____

*NOTE: Be certain to reset option to "2" after performance of a calculation.

6. Perform a "puff" calculation utilizing a projected ending time 15 minutes from the current time shown on step 3 of this checklist. Release start time should be the same as current time.

    * _____

7. Print displays from step 6.

    _____

8. Display results and print

    _____

9. Set "OPTION" to "3" and rerun DF 41-0-0

    _____

10. Print Display 951 which tabulates the results

    _____

SUMMARY OF DISPLAYS TO PRINT

Step No.	Displays	Verification
4.	944, 942, 948, 951	_____
5.	945, 947	_____
7.	944, 942	_____
8.	945, 947	_____
10.	949	_____

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Checklist 2 - Data Logger Monitored Release

NOTE:

Initialize the summing screen by entering option 4 and running DF 41-0-0. This should be done for the first calculation only.

1. "DEMAND FUNCTION OVERVIEW" key, located cursor on DF 41-0-0 and "XMIT CURSOR." _____

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* _____

3. Perform a "duration of release" calculation utilizing the projected or estimated end of release time. Utilize 2 hours from current as a default value whenever this value isn't known. _____

4. Print displays from this calculation. _____

5. Display results and print _____

*NOTE: Be certain to reset option to "2" after performance of a calculation.

6. Perform a "puff" calculation utilizing a projected ending time 15 minutes from the current time shown on step 3 of this checklist. Release start time should be the same as current time.

                * _____

7. Print displays from step 6.

                  _____

8. Display results and print

                  _____

9. Set "OPTION" to "3" and rerun DF 41-0-0

                  _____

10. Print Display 951 which tabulates the results

                  _____

SUMMARY OF DISPLAYS TO PRINT

Step No.	Displays	Verification
4.	944, 942, 948, 951	_____
5.	945, 947	_____
7.	944, 942	_____
8.	945, 947	_____
10.	949	_____

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Checklist 2 - Data Logger Monitored Release

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3. Perform a "duration of release" calculation utilizing the projected or estimated end of release time. Utilize 2 hours from current as a default value whenever this value isn't known.

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*NOTE: Be certain to reset option to "2" after performance of a calculation.

6. Perform a "puff" calculation utilizing a projected ending time 15 minutes from the current time shown on step 3 of this checklist. Release start time should be the same as current time.

* _____

7. Print displays from step 6.

_____

8. Display results and print

_____

9. Set "OPTION" to "3" and rerun DF 41-0-0

_____

10. Print Display 951 which tabulates the results

_____

SUMMARY OF DISPLAYS TO PRINT

Step No.	Displays	Verification
4.	944, 942, 948, 951	_____
5.	945, 947	_____
7.	944, 942	_____
8.	945, 947	_____
10.	949	_____

Checklist 2 - Data Logger Monitored Release

NOTE:

Initialize the summing screen by entering option 4 and running DF 41-0-0. This should be done for the first calculation only.

1. "DEMAND FUNCTION OVERVIEW" key, located cursor on DF 41-0-0 and "XMIT CURSOR."

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4. Print displays from this calculation.

5. Display results and print

*NOTE: Be certain to reset option to "2" after performance of a calculation.

PUBLIC SERVICE COMPANY OF COLORADO

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Page 2 of 2

6. Perform a "puff" calculation utilizing a projected ending time 15 minutes from the current time shown on step 3 of this checklist. Release start time should be the same as current time.

* _____

7. Print displays from step 6.

_____

8. Display results and print

_____

9. Set "OPTION" to "3" and rerun DF 41-0-0

_____

10. Print Display 951 which tabulates the results

_____

SUMMARY OF DISPLAYS TO PRINT

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7.	944, 942	_____
8.	945, 947	_____
10.	949	_____

PUBLIC SERVICE COMPANY OF COLORADO
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Checklist 2 - Data Logger Monitored Release

NOTE:

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option 4 and running DF 41-0-0. This
should be done for the first calculation
only.

1. "DEMAND FUNCTION OVERVIEW" key, located
   cursor on DF 41-0-0 and "XMIT CURSOR."

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   steps on this display. They lead the user
   from screen to screen through the basic
   program steps. Always utilize program
   "OPTION 2" when performing calculations
   for record keeping or dose reporting
   purposes. This "OPTION" reverts to a "1"
   after the Demand Function is run and must
   be reset to a "2" each time.

   *

3. Perform a "duration of release"
   calculation utilizing the projected or
   estimated end of release time. Utilize 2
   hours from current as a default value
   whenever this value isn't known.

4. Print displays from this calculation.

5. Display results and print

*NOTE: Be certain to reset option to "2" after performance of a
         calculation.

6. Perform a "puff" calculation utilizing a projected ending time 15 minutes from the current time shown on step 3 of this checklist. Release start time should be the same as current time.

    *_____

7. Print displays from step 6.

    _____

8. Display results and print

    _____

9. Set "OPTION" to "3" and rerun DF 41-0-0

    _____

10. Print Display 951 which tabulates the results

    _____

SUMMARY OF DISPLAYS TO PRINT

Step No.	Displays	Verification
4.	944, 942, 948, 951	_____
5.	945, 947	_____
7.	944, 942	_____
8.	945, 947	_____
10.	949	_____

NOTIFICATION OF UNUSUAL EVENT

A. The Emergency Coordinator and first management contact will complete the following information jointly:

1. Name and identity of caller _____

2. Date of Event _____ Time of Event _____

3. General Category of Event

   _____ Unplanned Radiological Release to Reactor Building

   _____ Fuel Failure

   _____ Fire

   _____ Natural Phenomenon (circle one)

        Earthquake   Flood   Tornado   Winds

   _____ Unusual Hazards (circle one)

        Aircraft   Explosion   Toxic Material

        Other (Specify) _____

   _____ Spent Fuel Incident

4. Description of Event _____

   _____

5. Actions Taken _____

   _____

6. Status:

   _____ Under control by onsite staff, no offsite assistance anticipated.

   _____ Under control by onsite staff. Will keep State and NRC advised.

7. At the present time, the event does not involve offsite release or the potential for offsite releases that would affect the general health and safety of the public.

B.   The Emergency Coordinator will make notifications as follows:

Contact with State EOC   and Governor's Office
or Mansion

1.   READ the following statement verbatim:

"THIS IS A NOTIFICATION OF AN UNUSUAL EVENT AT THE FORT ST. VRAIN NUCLEAR GENERATING STATION. THIS NOTIFICATION DOES NOT REQUIRE ACTIVATION OF EMERGENCY RESPONSE CENTERS. THIS NOTIFICATION REQUIRES VERIFICATION OF RECEIPT BY THE STATE. VERIFY BY CALLING   "

2.   READ all the information recorded in Step A (Page 1 of this ATTACHMENT).

3.   RECORD the following information:

Name of State EOC contact_____Date/Time _____

Name of Governor's Office/Mansion Contact_____

Date/Time_____

Call back verification from State EOC, Date/Time _____

Call back verification from Governor's Office/Mansion

Date/Time_____

Contact with NRC Operations Center (Hot Line or _

(If NRC Hot Line and Land Line are inoperative, use HP Network line.)

1.   READ the following statement verbatim:

"THIS IS NOTIFICATION OF A SIGNIFICANT EVENT AT THE FORT ST. VRAIN NUCLEAR GENERATING STATION AT PLATTEVILLE, COLORADO. THIS NOTIFICATION APPEARS TO BE REQUIRED PURSUANT TO 10CFR50.72, ITEM NUMBER 1. THIS NOTIFICATION DOES NOT REQUIRE ACTIVATION OF FEDERAL OR STATE EMERGENCY RESPONSE ORGANIZATIONS."

2.   READ the NRC Operations Center all of the information recorded in Step A (Page 1 of this Attachement).

3.   RECORD the following information:

Name of NRC Contact_____Date/Time _____

NOTIFICATION OF UNUSUAL EVENT

A. The Emergency Coordinator and first management contact will complete the following information jointly:

1. Name and identity of caller_____

2. Date of Event_____ Time of Event_____

3. General Category of Event

_____ Unplanned Radiological Release to Reactor Building

_____ Fuel Failure

_____ Fire

_____ Natural Phenomenon (circle one)

Earthquake   Flood   Tornado   Winds

_____ Unusual Hazards (circle one)

Aircraft   Explosion   Toxic Material

Other (Specify)_____

_____ Spent Fuel Incident

4. Description of Event _____

_____

5. Actions Taken _____

_____

6. Status:

_____ Under control by onsite staff, no offsite assistance anticipated.

_____ Under control by onsite staff. Will keep State and NRC advised.

7. At the present time, the event does not involve offsite release or the potential for offsite releases that would affect the general health and safety of the public.

B. The Emergency Coordinator will make notifications as follows:

| Contact with State EOC   Governor's Office
| or Mansion |

1. READ the following statement verbatim:

   "THIS IS A NOTIFICATION OF AN UNUSUAL EVENT AT THE
   FORT ST. VRAIN NUCLEAR GENERATING STATION. THIS
   NOTIFICATION DOES NOT REQUIRE ACTIVATION OF
   EMERGENCY RESPONSE CENTERS. THIS NOTIFICATION
   REQUIRES VERIFICATION OF RECEIPT BY THE STATE.
   VERIFY BY CALLING   ."

2. READ all the information recorded in Step A (Page 1 of
   this ATTACHMENT).

3. RECORD the following information:

   Name of State EOC contact_____Date/Time _____

   Name of Governor's Office/Mansion Contact_____

                    Date/Time_____

   Call back verification from State EOC, Date/Time _____

   Call back verification from Governor's Office/Mansion

                    Date/Time_____

_____

| Contact with NRC Operations Center (Hot Line or |
|_____ |

(If NRC Hot Line and Land Line are inoperative, use HP Network line.)

1. READ the following statement verbatim:

   "THIS IS NOTIFICATION OF A SIGNIFICANT EVENT AT THE
   FORT ST. VRAIN NUCLEAR GENERATING STATION AT
   PLATTEVILLE, COLORADO. THIS NOTIFICATION APPEARS TO
   BE REQUIRED PURSUANT TO 10CFR50.72, ITEM NUMBER 1.
   THIS NOTIFICATION DOES NOT REQUIRE ACTIVATION OF
   FEDERAL OR STATE EMERGENCY RESPONSE ORGANIZATIONS."

2. READ the NRC Operations Center all of the information
    recorded in Step A (Page 1 of this Attachement).

3. RECORD the following information:

    Name of NRC Contact_____Date/Time _____