



Nuclear Management Company, LLC
Prairie Island Nuclear Generating Plant
1717 Wakonade Dr. East • Welch MN 55089

May 15, 2001

Prairie Island Technical
Specification TS 6.6.C

U S Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
Docket Nos. 50-282 License Nos. DPR-42
50-306 DPR-60

**Annual Radioactive Effluent and Waste Disposal
Report for January through December 2000**

In accordance with the Prairie Island Technical Specifications, we are submitting one copy of the Radioactive Effluent and Waste Disposal Report covering 2000.

The documents included are as follows:

Off-Site Radiation Dose Assessment, covering January 2000 through December 2000.

Revision 0 of the Annual Radioactive Effluent Report, Supplemental Information, covering 1/3/00 through 12/31/00.

Effluent and Waste Disposal Annual Report Solid Waste and Irradiated Fuel Shipments, covering 1/1/00 through 12/31/00.

No changes were made to Offsite Dose Calculation Manual.

In this letter we have made no new Nuclear Regulatory Commission commitments.

JEK

USNRC
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NUCLEAR MANAGEMENT COMPANY, LLC

Please contact Jack Leveille (651-388-1121, Ext. 4142) if you have any questions related to this letter.



Joel P. Sorensen
Site Vice President
Prairie Island Nuclear Generating Plant

c: Regional Administrator - Region III, NRC
Senior Resident Inspector, NRC
NRR Project Manager, NRC
J E Silberg
State of Minnesota
Attn: Tim Donakowski

Attachments:

1. Off-Site Radioactive Dose Assessment for Nuclear Management Company, LLC
2. Annual Radioactive Effluent Report
3. Effluent and Waste Disposal Annual Report Solid Waste and Irradiated Fuel Shipments

Attachment 1

Nuclear Management Company, LLC

Off-Site Radiation Dose Assessment

**January through December 2000
Prairie Island Nuclear Generating Plant**

NORTHERN STATES POWER COMPANY

PRAIRIE ISLAND NUCLEAR GENERATING PLANT **OFF-SITE RADIATION DOSE ASSESSMENT FOR**

January through December 2000

An Assessment of the radiation dose due to releases from Prairie Island Nuclear Generating Plant during 2000 was performed in accordance with the Offsite Dose Calculations Manual as required by Technical Specifications. Computed doses were well below the 40 CFR Part 190 Standards and 10 CFR Part 50 Appendix I Guidelines.

Off-site dose calculation formulas and meteorological data from the Off-site Dose Calculation Manual were used in making this assessment. Source terms were obtained from the Annual Radioactive Effluent and Waste Disposal Report prepared for NRC review for the year of 2000.

Off-site Doses from Gaseous Release

Computed doses due to gaseous releases are reported in Table 1. Critical receptor location and pathways for organ doses are reported in Table 2. Doses are a small percentage of Appendix I Guidelines.

Off-site Doses from Liquid Release

Computed doses due to liquid releases are reported in Table 1. Critical receptor information is reported in Table 2. Doses, both whole body and organ, are a small percentage of Appendix I Guidelines.

Doses to Individuals Due to Activities Inside the Site Boundary

Occasionally sportsmen enter the Prairie Island site for recreational activities. These individuals are not expected to spend more than a few hours per year within the site boundary. Commercial and recreational river traffic exists through this area.

For purposes of estimating the dose due to recreational and river water transportation activities within the site boundary, it is assumed that the limiting dose within the site boundary would be received by an individual who spends a total of seven days per year on the river just off shore from the plant buildings (ESE at 0.2 miles). The gamma dose from noble gas releases and the whole body and organ doses from the inhalation pathway due to Iodine 131, Iodine-133, tritium and long lived particulates were calculated for this location and occupancy time. These doses were reported in Table 1.

Doses to Individuals Due to Effluent Releases from the ISFSI

Three fuel casks were loaded and placed in the storage facility during the 2000 calendar year. The total number of casks in the ISFSI is twelve. There has been no release of radioactive effluents from the ISFSI.

Radiation Effluent Monitoring Sampling Deviations

There were no charcoal or particulate sample collected from the Rad Waste Building Ventilation Monitor for effluent week number 33. These samples are used for evaluation of airborne release, on a weekly basis. The particulate sample is used for quarterly compositing for evaluation of Sr89 and Sr90.

While performing the routine weekly sample collection, the technician noted that the sample holder, for the Rad Waste Building ventilation monitor, was improperly installed. It was determined that the charcoal and particulate filters had not properly collected sample, for effluent week number 33, and would not be used to evaluate the release.

Past week's charcoal and particulate filter counts, from the Rad Waste Building ventilation monitor, were reviewed. No nuclides were identified for the past three weeks. Radiation monitor data from R-35 (Rad Waste Building) was reviewed for week 33 and determined to have no peaks.

The previous week's filter data was determined to be representative and was used to complete the release file.

The dose from this release was minimal and posed no concern for the health and safety of the general public.

CURRENT ODCM REVISION

The Offsite Dose Calculations Manual was not revised this year. The current revision is 15. The revision date is September 7, 1999.

AIRBORNE ABNORMAL RELEASE

There were no abnormal airborne releases for the year 2000.

Table 1

OFF-SITE RADIATION DOSE ASSESSMENT - PRAIRIE ISLAND

PERIOD: JANUARY through DECEMBER 2000

10 CFR Part 50 Appendix I
Guidelines for a 2-unit site per year

Gaseous Releases

Maximum Site Boundry Gamma Air Dose (mrad)	4.12E-02	20
Maximum Site Boundry Beta Air Dose (mrad)	1.41E-01	40
Maximum Off-site Dose to any organ (mrem)*	1.95E-01	30
Offshore Location		
Gamma Dose (mrad)	2.97E-03	
Total Body (mrem)*	2.03E-03	
Organ (mrad)*	4.95E-03	30

Liquid Releases

Maximum Off-site Dose Total Body (mrem)	3.57E-03	6
Maximum Off-site Dose Organ - LIVER (mrem)	4.67E-03	20
Limiting Organ Dose Organ - TOTAL BODY (mrem)	3.57E-03	6

* Long-Lived Particulate, I-131, I-133 and Tritium

Table 2

**OFF-SITE RADIATION DOSE ASSESSMENT - PRAIRIE ISLAND
SUPPLEMENTAL INFORMATION**

PERIOD: JANUARY through DECEMBER 2000

Gaseous Releases

Maximum Site Boundary
Dose Location
(from Building Vents)

Sector		WNW
Distance	(miles)	0.4

Offshore Location
Within Site Boundary

Sector		ESE
Distance	(miles)	0.2
Pathway		Inhalation

Maximum Off-site

Sector		SSE
Distance (miles)		0.6
Pathways		Plume, Ground, Inhalation, Vegetables
Age Group		Child

Liquid Releases

Maximum Off-site Dose
Location Downstream

Pathway	Fish
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Attachment 2

**PRAIRIE ISLAND NUCLEAR GENERATING PLANT
Nuclear Management Company, LLC**

ANNUAL RADIOACTIVE EFFLUENT REPORT

**January 3, 2000 through December 31, 2000
Supplemental Information**

B. Maximum Permissible Concentration

1. Fission and activation gases in gaseous releases:

OLD 10 CFR 20, Appendix B, Table 2, Column 1

2. Iodine and particulates with half lives greater than 8 days in gaseous releases:

OLD 10 CFR 20, Appendix B, Table 2, Column 1

3. Liquid effluents for radionuclides other than dissolved or entrained gases:

OLD 10 CFR 20, Appendix B, Table 2, Column 2

4. Liquid effluent dissolved and entrained gases:

2.0E-04 uCi/ml Total Activity

C. Average Energy

Not applicable to Prairie Island regulatory limits.

D. Measurements and approximations of total activity

1. Fission and activation gases in gaseous releases:	Total Nuclide	GeLi GeLi	±25%
2. Iodines in gaseous releases:	Total Nuclide	GeLi GeLi	±25%
3. Particulates in gaseous releases:	Total Nuclide	GeLi GeLi	±25%
4. Liquid effluents	Total Nuclide	GeLi GeLi	±25%

E. Manual Revisions

1. Offsite Dose Calculations Manual latest Revision number:
- 15

Revision date : 9/7/99

1.0 BATCH RELEASES (LIQUID)

1.1 NUMBER OF BATCH RELEASES

1.2 TOTAL TIME PERIOD (HRS)

1.3 MAXIMUM TIME PERIOD (HRS)

1.4 AVERAGE TIME PERIOD (HRS)

1.5 MINIMUM TIME PERIOD (HRS)

1.6 AVERAGE MISSISSIPPI RIVER FLOW (CFS)

QTR: 01	QTR: 02	QTR: 03	QTR: 04
2.80E+01	6.80E+01	1.90E+01	3.90E+01
5.23E+01	1.18E+02	3.45E+01	7.31E+01
5.58E+00	2.52E+00	2.83E+00	2.33E+00
1.87E+00	1.73E+00	1.81E+00	1.87E+00
1.45E+00	1.37E+00	1.57E+00	1.42E+00
1.37E+04	1.88E+04	1.27E+04	1.11E+04

2.0 BATCH RELEASES (AIRBORNE)

2.1 NUMBER OF BATCH RELEASES

2.2 TOTAL TIME PERIOD (HRS)

2.3 MAXIMUM TIME PERIOD (HRS)

2.4 AVERAGE TIME PERIOD (HRS)

2.5 MINIMUM TIME PERIOD (HRS)

QTR: 01	QTR: 02	QTR: 03	QTR: 04
0.00E+00	2.20E+01	0.00E+00	1.30E+01
0.00E+00	3.40E+02	0.00E+00	1.00E+02
0.00E+00	2.47E+01	0.00E+00	2.40E+01
0.00E+00	1.54E+01	0.00E+00	7.72E+00
0.00E+00	2.17E-01	0.00E+00	3.58E-01

3.0 ABNORMAL RELEASES (LIQUID)

3.1 NUMBER OF BATCH RELEASES

3.2 TOTAL ACTIVITY RELEASED (CI)

3.3 TOTAL TRITIUM RELEASED (CI)

QTR: 01	QTR: 02	QTR: 03	QTR: 04
0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.00E+00	0.00E+00	0.00E+00	0.00E+00

4.0 ABNORMAL RELEASES (AIRBORNE)

4.1 NUMBER OF BATCH RELEASES

4.2 TOTAL ACTIVITY RELEASED (CI)

QTR: 01	QTR: 02	QTR: 03	QTR: 04
0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE 1A

GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

	QTR: 01	QTR: 02	QTR: 03	QTR: 04
5.0 FISSION AND ACTIVATION GASES				
5.1 TOTAL RELEASE (CI)	2.48E+00	3.06E-01	1.80E+00	9.94E+01
5.2 AVERAGE RELEASE RATE (UCI/SEC)	3.16E-01	3.89E-02	2.30E-01	1.26E+01
5.3 GAMMA DOSE (MRAD)	9.60E-04	1.26E-04	6.82E-04	3.94E-02
5.4 BETA DOSE (MRAD)	2.80E-03	3.57E-04	2.03E-03	1.36E-01
5.5 PERCENT OF GAMMA TECH SPEC (%)	9.60E-03	1.26E-03	6.82E-03	3.94E-01
5.6 PERCENT OF BETA TECH SPEC (%)	1.40E-02	1.78E-03	1.01E-02	6.80E-01
6.0 IODINES				
6.1 TOTAL I-131 (CI)	0.00E+00	0.00E+00	0.00E+00	2.25E-03
6.2 AVERAGE RELEASE RATE (UCI/SEC)	0.00E+00	0.00E+00	0.00E+00	2.86E-04
7.0 PARTICULATES				
7.1 TOTAL RELEASE (CI)	0.00E+00	2.73E-05	0.00E+00	2.51E-06
7.2 AVERAGE RELEASE RATE (UCI/SEC)	0.00E+00	3.47E-06	0.00E+00	3.19E-07
8.0 TRITIUM				
8.1 TOTAL RELEASE (CI)	5.99E+00	6.43E+00	5.48E+00	4.06E+00
8.2 AVERAGE RELEASE RATE (UCI/SEC)	7.63E-01	8.18E-01	6.97E-01	5.16E-01
9.0 TOTAL IODINE, PARTICULATE AND TRITIUM (UCI/SEC)	7.63E-01	8.18E-01	6.97E-01	5.16E-01
10.0 DOSE FROM IODINE, LLP, AND TRITIUM (MREM)	1.08E-02	2.05E-02	9.86E-03	1.54E-01
11.0 PERCENT OF TECH SPEC (%)	7.19E-02	1.36E-01	6.58E-02	1.03E+00
12.0 GROSS ALPHA (CI)	0.00E+00	0.00E+00	0.00E+00	0.00E+00

**TABLE 1C
GASEOUS EFFLUENTS - GROUND LEVEL RELEASES (CI)**

13.0 FISSION AND ACTIVATION GASES

NUCLIDE	UNITS	CONTINUOUS MODE				BATCH MODE			
		QTR: 01	QTR: 02	QTR: 03	QTR: 04	QTR: 01	QTR: 02	QTR: 03	QTR: 04
KR-85	CI	3.62E-04			3.21E+00				1.80E+00
KR-85M	CI	5.79E-04	2.79E-04						
KR-87	CI	2.17E-04							
KR-88	CI	9.42E-04							
XE-131M	CI	3.62E-04			2.96E-01				4.01E-03
XE-133	CI	2.48E+00	2.99E-01	1.80E+00	9.08E+01		1.54E-03		2.08E+00
XE-133M	CI	9.42E-04			3.92E-01				3.39E-02
XE-135	CI	1.45E-03	4.86E-03		7.00E-01				1.18E-02
XE-138	CI	2.17E-04							
TOTALS	CI	2.48E+00	3.04E-01	1.80E+00	9.54E+01	0.00E+00	1.54E-03	0.00E+00	3.93E+00

14.0 IODINES

NUCLIDE	UNITS	CONTINUOUS MODE				BATCH MODE			
		QTR: 01	QTR: 02	QTR: 03	QTR: 04	QTR: 01	QTR: 02	QTR: 03	QTR: 04
I-131	CI				2.25E-03				1.57E-06
I-133	CI				8.41E-05				1.27E-06
TOTALS	CI	0.00E+00	0.00E+00	0.00E+00	2.33E-03	0.00E+00	0.00E+00	0.00E+00	2.84E-06

TABLE 1C
GASEOUS EFFLUENTS - GROUND LEVEL RELEASES (CONTINUED)

15.0 PARTICULATES

NUCLIDE	UNITS	CONTINUOUS MODE				BATCH MODE			
		QTR: 01	QTR: 02	QTR: 03	QTR: 04	QTR: 01	QTR: 02	QTR: 03	QTR: 04
CS-134	CI						3.18E-06		1.37E-06
CS-137	CI						2.41E-05		1.14E-06
TOTALS	CI	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.73E-05	0.00E+00	2.51E-06

TABLE 1A

LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

	QTR: 01	QTR: 02	QTR: 03	QTR: 04
16.0 VOLUME OF WASTE PRIOR TO DILUTION (LITERS)	2.79E+07	3.81E+07	3.87E+07	5.67E+07
17.0 VOLUME OF DILUTION WATER (LITERS)	2.12E+11	8.36E+10	2.60E+11	2.06E+11
18.0 FISSION AND ACTIVATION PRODUCTS				
18.1 TOTAL RELEASES W/O H-3, RADGAS, ALPHA (CI)	9.26E-03	7.51E-02	3.24E-02	2.74E-02
18.2 AVERAGE DILUTION CONCENTRATION (UCI/ML)	4.36E-11	8.98E-10	1.24E-10	1.33E-10
19.0 TRITIUM				
19.1 TOTAL RELEASE (CI)	1.05E+02	1.65E+02	1.34E+02	1.78E+02
19.2 AVERAGE DILUTION CONCENTRATION (UCI/ML)	4.92E-07	1.97E-06	5.16E-07	8.67E-07
20.0 DISSOLVED AND ENTRAINED GASES				
20.1 TOTAL RELEASE (CI)	1.01E-04	4.19E-03	2.02E-04	2.72E-03
20.2 AVERAGE DILUTION CONCENTRATION (UCI/ML)	4.76E-13	5.02E-11	7.77E-13	1.33E-11
21.0 GROSS ALPHA (CI)	0.00E+00	0.00E+00	0.00E+00	0.00E+00
22.0 TOTAL TRITIUM, FISSION & ACTIVATION PRODUCTS (UCI/ML)	4.92E-07	1.97E-06	5.16E-07	8.67E-07
23.0 TOTAL BODY DOSE (MREM)	2.66E-04	1.71E-03	3.57E-04	1.24E-03
24.0 CRITICAL ORGAN				
24.1 DOSE (MREM)	2.66E-04	1.71E-03	3.57E-04	1.24E-03
24.2 ORGAN	TOT BODY	TOT BODY	TOT BODY	TOT BODY
25.0 PERCENT OF TECHNICAL SPECIFICATIONS LIMIT (%)	8.86E-03	5.69E-02	1.19E-02	4.14E-02
26.0 PERCENT OF CRITICAL ORGAN TECH SPEC LIMIT (%)	8.86E-03	5.69E-02	1.19E-02	4.14E-02

27.0 INDIVIDUAL LIQUID EFFLUENT

NUCLIDE	UNITS	CONTINUOUS MODE				BATCH MODE			
		QTR: 01	QTR: 02	QTR: 03	QTR: 04	QTR: 01	QTR: 02	QTR: 03	QTR: 04
AG-108M	CI						2.24E-06		1.35E-05
AG-110M	CI					4.00E-04	3.37E-03	1.16E-03	3.21E-03
BE-7	CI					6.98E-05		1.61E-05	4.15E-05
CO-57	CI						2.32E-06	3.32E-06	2.23E-06
CO-58	CI					9.90E-05	2.11E-02	2.85E-03	6.05E-03
CO-60	CI					2.72E-04	3.37E-03	1.04E-03	2.24E-03
CR-51	CI						5.16E-03	5.69E-04	2.11E-04
CS-134	CI		1.53E-05		8.40E-06				9.68E-05
CS-137	CI		3.29E-04		6.58E-06	8.28E-06	8.39E-06	3.84E-06	5.68E-05
FE-55	CI		2.62E-04			4.44E-03	2.46E-02	2.38E-02	8.75E-03
FE-59	CI						4.73E-04	9.13E-05	9.64E-05
I-131	CI				7.34E-06				7.75E-04
I-133	CI								2.38E-06
LA-140	CI						1.62E-06		5.65E-06
MN-54	CI					1.08E-06	9.23E-05	3.89E-05	9.19E-05
NA-24	CI						3.88E-07		
NB-95	CI						7.43E-04	2.75E-04	2.70E-04
NB-97	CI					6.72E-07	1.02E-05	1.40E-06	
RH-105	CI						1.39E-05	6.36E-06	
SB-122	CI						3.56E-04		3.59E-05
SB-124	CI					1.57E-04	4.25E-03	3.53E-04	7.45E-04
SB-125	CI					3.77E-03	6.34E-03	1.72E-03	4.11E-03
SB-126	CI						1.97E-05		
SC-46	CI							1.15E-06	
SN-113	CI					1.79E-05	3.30E-04	1.69E-04	3.15E-04

(CONTINUED)

27.0 INDIVIDUAL LIQUID EFFLUENT

NUCLIDE	UNITS	CONTINUOUS MODE				BATCH MODE			
		QTR: 01	QTR: 02	QTR: 03	QTR: 04	QTR: 01	QTR: 02	QTR: 03	QTR: 04
SR-90	CI			6.09E-06					
SR-92	CI					2.14E-06	4.20E-05	2.67E-05	6.59E-05
TC-99M	CI								2.62E-05
TE-123M	CI					3.55E-05	5.01E-04	2.70E-05	1.10E-06
TE-125M	CI						3.11E-03		
W-187	CI						1.08E-05	9.71E-06	1.24E-05
ZN-65	CI						6.66E-05	3.39E-06	
ZR-95	CI						4.87E-04	1.57E-04	1.48E-04
TOTALS	CI	0.00E+00	6.06E-04	6.09E-06	2.23E-05	9.26E-03	7.45E-02	3.23E-02	2.74E-02

28.0 DISSOLVED AND ENTRAINED GASES

NUCLIDE	UNITS	CONTINUOUS MODE				BATCH MODE			
		QTR: 01	QTR: 02	QTR: 03	QTR: 04	QTR: 01	QTR: 02	QTR: 03	QTR: 04
XE-133	CI				9.48E-06	1.01E-04	4.17E-03	2.02E-04	2.68E-03
XE-133M	CI						1.19E-05		2.00E-05
XE-135	CI					6.25E-07	1.56E-05		1.54E-05
TOTALS	CI	0.00E+00	0.00E+00	0.00E+00	9.48E-06	1.01E-04	4.19E-03	2.02E-04	2.71E-03

Attachment 3

**PRAIRIE ISLAND NUCLEAR GENERATING PLANT
Nuclear Management Company, LLC**

**EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS**

January 1, 2000 through December 31, 2000

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
 NORTHERN STATES POWER

Period: 1/01/00 to 12/31/00
 License No. DPR-42/60

**EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
 SOLID WASTE AND IRRADIATED FUEL SHIPMENTS**

**A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL
 (NOT IRRADIATED FUEL)**

1. Solid Waste Total Volumes and Total Curie Quantities:

TYPE OF WASTE	UNITS	PERIOD TOTALS (0.00 E00)	EST. TOTAL ERROR, % (0.00 E00)	CONTAINER DISPOSAL VOL (ft ³) (LIST)
A. Resins	m ³ ft ³ Ci	_____ _____ _____	_____	_____ _____ _____
B. Dry-Compacted	m ³ ft ³ Ci	_____ _____ _____	_____	_____ _____ _____
C. Non-Compacted DAW Demolition Material	m ³ ft ³ Ci	6.95E+01 2.46E+03 8.41E-01	2.5E+01	_____ 94 7.5
D. Filter Media	m ³ ft ³ Ci	_____ _____ _____	_____	_____ _____ _____
S. Other (furnish description) Combined package (resins/filters) Dried Sludge/Soil	m ³ ft ³ Ci	1.67E+01 5.91E+02 2.80E+00	2.5E+01	_____ 179.4 7.5

NOTE:	The solid waste information provided in this report is the volume and activity of the low-level waste leaving the Prairie Island site. No allowance is made for off-site volume reduction prior to disposal.
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PRAIRIE ISLAND NUCLEAR GENERATING PLANT
NORTHERN STATES POWER

Period: 1/01/00 to 12/31/00
License No. DPR-42/60

**EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS**

**A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL
(NOT IRRADIATED FUEL) [continued]**

3. Solid Waste Disposition:

<u>Number of Shipments</u>	<u>Mode</u>	<u>Destination</u>
2	Truck	Barnwell Disposal Facility
3	Truck	Duratek, Inc.

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
NORTHERN STATES POWER

Period: 1/01/00 to 12/31/00
License No. DPR-42/60

**EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS**

C. PROCESS CONTROL PROGRAM CHANGES

TITLE: Process Control for Solidification/Dewatering of Radioactive
Waste from Liquid Systems

Current Revision Number: 8 Effective Date: 08/25/1999

NOTE:	If the effective date of the PCP is within the period covered by this report, then a description and justification of the changes to the PCP is required (T.S.6.5.D). Attach the sidelined pages to this report.
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Changes/Justification: N/A