Indian Point 2

Radiological Protection

2001 Business Plan

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Submitted: _____ Date: 1/4/00

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Approved: _____ Date: 1/4/00

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RADIATION PROTECTION DEPARTMENT
2001 Business Plan

Senior Manager Sponsor: M. Miele

Introduction

The mission of the Radiation Protection organization is to minimize public and plant personnel exposure to ionizing radiation by keeping all radiation exposure "**A**s **L**ow **A**s **R**easonably **A**chievable". The department performs radiological surveys, controls work in the radiological areas, ships radioactive waste for disposal, maintains optimized plant chemistry, and installs shielding as necessary. The following sections comprise the Radiation Protection Department: Radiological Support, Health Physics, Radiological Waste, and Chemistry.

During the year 2000, the Radiation Protection organization made considerable improvement progress, while continuing to focus on outage activities, and Steam Generator replacement activities. In an effort to build on recent successes, various audits, assessments, condition reports, and industry benchmarking inspections (including NEI Health Physics Forum, Salem 1&2, and North Anna) were reviewed to identify additional *areas where there are opportunities to make a step improvement*. This Radiation Protection Department Business Plan delineates the actions needed to ensure that radiation exposures are significantly reduced.

Making a Step Change!

1. **ALARA** - Indian Point 2 remains in the fourth quartile for pressurized water reactors in terms of accumulated radiation exposure. Significant ALARA improvement is necessary to enable moving up to the next level.
2. **Staffing & Training** - Current departmental staffing levels continue to have an impact on program implementation. Additional training improvements are required.
3. **Efficient Plant Work Support -** The reliance on aging and obsolete equipment as well as inefficient access/egress areas results in reduced ability to support plant work efficiently.
4. **Offsite Monitoring** – Increased precision and efficiency for monitoring and calculating offsite doses are required.
5. **Radioactive Material Control** - Radioactive waste materials in the plant and in storage areas represent potential increased exposure for personnel.
6. **Plant Chemistry -** Emphasis is required to ensure proper chemical environment and protection of the new steam generators. In addition, enhancements to the Closed Cooling Water program need to be implemented.
7. **Standards & Expectations –** Self-evaluations, audits, industry benchmarking, and 'best practice' reviews will enable the identification of future opportunities for continuous improvement, as well as ensure performance measures meet expectations.

Objectives

1. **ALARA** –
    a. Increase ALARA ownership as an overall station goal through the use of a visible ALARA campaign.
    b. Set an aggressive ALARA performance improvement plan and implement over the next 3 years to ensure ALARA performance is moved up to the next level.
2. **Staffing & Training** –
    a. Ensure radiation protection staffing levels enable program implementation excellence.
    b. Ensure chemistry section staffing levels enable program implementation excellence.
    c. Ensure new hires are appropriately trained to enable independent work performance.
    d. Complete the enhancement actions of the Training Improvement Program.
3. **Efficient Plant Work Support –**
    a. Decrease reliance on aging and obsolete equipment through replacement and improvement.
    b. Improve ability to efficiently support plant work through space modifications, better data management and software tools, as well as increased equipment inventories.
4. **Offsite Monitoring –**
    a. Upgrade equipment used for calculating offsite doses to ensure improved precision and efficiency.
    b. Upgrade equipment used for implementing Nuclear Environmental Monitoring.
5. **Radioactive Material Control** –
    a. Significantly reduce shippable radioactive waste source term.
    b. Improve waste processing center on 70’ CSB to increase efficient sorting and processing of waste.
6. **Plant Chemistry –**
    a. Establish an industry recognized closed cooling water chemistry program.
    b. Improve the ability to monitor and assess chemical conditions of plant systems.
    c. Install the new EPRI Chemistry data management system.
7. **Standards & Expectations –**
    a. Improve departmental performance through self-assessments.
    b. Improve departmental performance through an aggressive benchmarking and industry ‘best practice’ assessment process.

Expected Results

1. **ALARA** –
    a. A visible ALARA publicity campaign is implemented.
    b. Developed an aggressive 3-year ALARA performance improvement plan.
    c. Completed modification and install RHR line shielding in 2002.
    d. RCP seal injection filters are modified to allow for faster removal/replacement.

2. **Staffing & Training –**
    a. Radiological Support and Health Physics staffing position vacancies are filled and meet training requirements.
    b. Chemistry staffing positions vacancies for one supervisor, one technical specialist, and three technicians are filled and meet training requirements.
    c. All training material for Radiation Protection is developed, including appropriate OJT guides.

3. **Efficient Plant Work Support –**
    a. New radiological data management system is researched, procured, and tested.
    b. New access/egress system is researched, procured, and installed for the radiological control points.
    c. Portal monitors are installed at the command posts and control points.
    d. Spaces near HP-1 and affiliated radiation protection offices of the 53' NSB are modified to increase efficient plant work support.
    e. New models of Electronic Signs and RP portable instrumentation are procured.

4. **Offsite Monitoring –**
    a. New MIDAS system is researched, procured, and installed to enable more precise and efficient calculations and measurements.
    b. Reuter-Stokes offsite monitor upgrades or replacements are implemented.
    c. Nuclear Environmental Monitoring vehicles (2) are replaced and the boat motor is replaced.

5. **Radioactive Material Control –**
    a. Maintained the shippable radioactive waste inventory at zero.
    b. Improved radioactive material and clean trash sorting areas are implemented for better efficiency, with new monitoring equipment, and improved ventilation.

6. **Plant Chemistry**
    a. Progress is made in achieving the aim of having a Closed Cooling Water system that is a model for the industry.
    b. Improvements are made in the ability to monitor and assess chemical conditions of plant systems through the procurement of laboratory instrumentation and equipment to replace aging or obsolete items.
    c. EPRI Chemworks is installed and providing data management to the Chemistry section.

7. **Standards & Expectations**
    a. Departmental performance is improved through the implementation of improvements based on self-assessment activities.
    b. Departmental performance is improved through the implementation of an aggressive benchmarking and industry ‘best practice’ assessment process.

Making a Step Change-1

ALARA –
Radiation exposure is a cornerstone of the NRC Performance Indicator Program. Indian Point 2 remains in lowest quartile for pressurized water reactors in terms of accumulated radiation exposure.

Actions

ISSUE: Significant ALARA improvement is necessary to enable moving up to the next level of performance.

GOAL	ACTIONS	OWNER	EXPECTED COMPLETION DATE	STATUS
1. Implement a high Visibility Publicity campaign.	Research and implement a highly visible communication campaign with all station personnel regarding ALARA. This campaign should be multi-faceted to reiterate the ALARA message.	M. Miele	6/31/01	
2. Perform a self-assessment of IP2 ALARA practices.	Gather a industry wide team to review IP2 ALARA practices, and make recommendations for continued station improvement. Develop 3-year improvement plan.	Vic Nutter	5/30/01	
3. 2001 ALARA performance should be lower than the previous non-outage record of 42 Person-Rem.	Continual scrutiny of work practices, and continued coaching from radiation protection, will create a culture of improving ALARA performance.	Vic Nutter	12/31/01	
4. Modify the RCP Seal Injection filtration.	The RCP seal injection filters must be modified to allow for quicker removal/replacement, similar to the Reactor Coolant filter.	Vic Nutter	12/31/01	

Making a Step Change- 1 – Cont'd

ALARA –
Indian Point 2 remains in lowest quartile for pressurized water reactors in terms of accumulated radiation exposure.

Actions – Cont'd

ISSUE: Significant ALARA improvement is necessary to enable moving up to the next level of performance.

GOAL	ACTIONS	OWNER	EXPECTED COMPLETION DATE	STATUS
5. Store lead and scaffolding in the VC	Develop project plan to implement the placement of lead and scaffolding in the VC.	Ed Salisbury	12/31/01	
6. Reduce RP Dose through an increased use of Passive Monitoring.	Purchase additional passive monitoring devices to improve RP outage ALARA performance	M. Donegan	5/30/01	
7. Prepare for Possible Post SGRP Crud Burst	Evaluate industry experience in relation to possible crud burst in 2002. Prepare action plan to deal with this possibility. (include chemistry assessment of nickel levels)	Vic Nutter Chemistry	12/31/01	
8. Precursor Dose Trigger	Implement a precursor dose that triggers an investigation (at 50 mrem) that would prevent the 100 mr unplanned dose PI.	Mike Donegan	12/31/01	
9. Computerized survey mapping	Introduce the computerized survey mapping system for use by Health Physics	Mike Donegan	12/31/01	

Making a Step Change- 2

Staffing & Training –
Current departmental staffing levels continue to have an impact on program implementation. Additional training improvements are required to ensure that staff expertise is maintained for program excellence.

Actions

ISSUE: Upgrade, maintain, and implement a World-Class Radiation Protection Training Program.

GOAL	ACTIONS	OWNER	EXPECTED COMPLETION DATE	STATUS
1. Complete the remedial actions of the Training Improvement plan for RP.	The workdown curves for Dosimetry, HP and RW should be completed as scheduled.	Mike Donegan Vic Nutter	6/30/01	
2. Train new HP/RW technicians.	All six technicians will complete the core, junior, and technician tasks for their respective area.	Mike Donegan	12/31/01	
3. Continuing training will continue at Industry accepted periodicity.	Dosimetry, Rad Waste, and Health Physics technicians will attend a minimum of 40 hours of continuing training in 2001.	Mike Donegan Vic Nutter	12/31/01	

Making a Step Change- 2 – cont'd

Staffing & Training –
Current departmental staffing levels continue to have an impact on program implementation. Additional training improvements are required.

Actions – cont'd

ISSUE: Current chemistry section staffing levels continue to have an impact on program implementation.

GOAL	ACTIONS	OWNER	EXPECTED COMPLETION DATE	STATUS
Improve chemistry section effectiveness and professionalism by increasing staffing levels.	Hire one supervisor, one technical specialist and three technicians. Schedule training as appropriate for one supervisor, one technical specialist and three technicians.	M. Miele T. Teague	3/31/01 On-going	

Making a Step Change-2 – cont'd

Staffing & Training –
Current departmental staffing levels continue to have an impact on program implementation. Additional training improvements are required.

Actions – cont'd

ISSUE: Continuing training is needed to maintain a high quality technician and professional chemistry staff.

GOAL	ACTIONS	OWNER	EXPECTED COMPLETION DATE	STATUS
Continue to upgrade the knowledge of the chemistry staff.	Coordinate the scheduling of 80 - 100 hours of continuing training for technicians.	D. Willman	12/31/01	
	Ensure that courses identified in the training plans prepared in 2000 for staff positions are scheduled.	T. Teague	12/31/01	

Making a Step Change-3

Efficient Plant Work Support -
The reliance on aging and obsolete equipment as well as inefficient access/egress areas results in reduced ability to support plant work efficiently.

Actions

ISSUE: The Computer systems and Work Spaces that Radiation Protection utilizes for Radiologically Controlled Area access are not user-friendly, and are not laid out for efficient access and egress. There are also redundant bureaucratic requirements in the present Radiological Data Management System. The physical area, as well as the computer system and interfaces, need upgrading.

GOAL	ACTIONS	OWNER	EXPECTED COMPLETION DATE	STATUS
1. Revamp the HP-1 area, allowing for more efficient access and egress.	Procure and implement a modification to the NSB 53' elevation spaces by HP-1.	Mike Donegan	12/31/01	
2. Replace the current RDMS system with an improved, industry tested version.	Procure, V&V, and put a new computer system into production. This system must cover RWP's, Dosimetry, and Training functions.	Vic Nutter	04/30/01	
3. Replace the access/egress function at HP-1	Replace the computer/Rad worker interface with a more user-friendly system, possibly touch screen.	Vic Nutter	04/30/01	

Making a Step Change-3- cont'd

Efficient Plant Work Support -
The reliance on aging and obsolete equipment as well as inefficient access/egress areas results in reduced ability to support plant work efficiently.

Actions – cont'd

ISSUE: Various models of Health Physics Instrumentation is aging, and IP2 must replace certain meters. In addition, new models with improved technology are available to improve the HP core business function.

GOAL	ACTIONS	OWNER	EXPECTED COMPLETION DATE	STATUS
1. Complete the replacement of portal monitors by placing Gamma 60's at the remaining control points and command posts.	Procure and install portal monitors at HP-1 and the Main Command Posts.	M. Donegan	6/30/01	
2. Health Physics portable instrumentation needs replacements.	Procure, calibrate, and place into field new AMS-4's, and ion chambers.	M. Donegan	11/30/01	
3. Procure a new model of Electronic Dosimetry.	Replace the current DMC-100's with the DMC-2000 model. This model will improve the personnel monitoring capability of IP2.	V. Nutter	11/30/01	
4. Install electronic signs	Install electronic signage in areas of changing radioactive dose rates to better inform workers Of plant radiological conditions.	Vic Nutter	6/30/01	

Making a Step Change- 4

Offsite Monitoring -

Increased precision and efficiency for monitoring and calculating offsite doses are required.

Actions

ISSUE: An upgrade is needed for equipment within the Nuclear Environmental Monitoring section. In addition, the 2/15 equipment identified a need for a modification to the R-45 exhaust path.

GOAL	ACTIONS	OWNER	EXPECTED COMPLETION DATE	STATUS
1. Replace a boat motor, two NEM vehicles, and upgrade Reuter-Stokes in the NEM section.	Replace the boat motor for NEM.	T. Burns	5/30/01	
	Procure two new NEM vehicles.	T. Burns	06/30/00	
	Investigate an upgrading or replacement of Reuter-Stokes.	Vic Nutter	12/31/01	
2. Research, procure, and install a new MIDAS system.	Research, procure, install, and perform the V&V on a new MIDAS system for the EOF.	Vic Nutter	10/30/01	
3. Improve R-45 Monitoring Capabilities.	Perform a modification that re-directs R-45 exhaust into a monitored path when there is containment isolation.	Vic Nutter	11/30/01	

Making a Step Change-5

Radioactive Material Control-

Radioactive waste materials in the plant and in storage areas represent potential increased exposure for personnel.

Actions

ISSUE: Indian Point station must continue its practice of minimizing all shippable Rad Waste onsite. It is not ALARA to store waste, and costs for shipping will only rise in the future.

GOAL	ACTIONS	OWNER	EXPECTED COMPLETION DATE	STATUS
Have no shippable Rad Waste onsite at years end.	Identify and ship all Rad Waste periodically to ensure no shippable Rad Waste is left at years end. Upgrade the 70' CSB Waste Processing Center. This upgrade should include improved ventilation, lighting, and worker efficiencies so that accrued exposure while sorting waste is lowered. Upgrade the Clean Trash facilities to improve efficiency and productivity. This upgrade should include new, larger surface monitoring equipment.	C. English C. English M. Donegan	12/31/01 12/31/01 10/31/01	
Reduce radwaste generation.	Implement a highly visible radwaste minimization program.	M. Miele	06/30/01	

Making a Step Change-6

Plant Chemistry-

Emphasis is required to ensure proper chemical environment and protection of the replaced steam generators. In addition, enhancements to the Closed Cooling Water program need to be implemented.

Actions

ISSUE: Replacement/upgrade of aging or obsolete laboratory and field instrumentation/equipment is needed.

GOAL	ACTIONS	OWNER	EXPECTED COMPLETION DATE	STATUS
Improve the chemical sampling, analyses and monitoring of plant system.	Purchase the following instrumentation and equipment: 1. Plasma spectrometer 2. Three (3) J-style look-up gamma spectroscopy units 3. Three (3) model 747 Canberra lead shield/plug units 4. Two (2) laboratory bench top conductivity meters 5. Six (6) Waltron oxygen analyzers 6. Three (3) fire resistant file cabinets 7. In-line phosphate monitor 8. Solo Swan sodium analyzer 9. GOW MAC binary gas analyzer	T. Teague	3/31/01	
	Install and implement usage of Items 1 - 3.	J. Peters	6/30/01	
	Install and implement usage of Items 4 - 9.	K. Hua	6/30/01	

Making a Step Change- 6- cont'd

Plant Chemistry-

Emphasis is required to ensure proper chemical environment and protection of the replaced steam generators. In addition, enhancements to the Closed Cooling Water program need to be implemented.

Actions – cont'd

ISSUE: Continuing efforts are needed to support enhancements of the Closed Cooling Water Chemistry Program.

GOAL	ACTIONS	OWNER	EXPECTED COMPLETION DATE	STATUS
Establishment of an industry recognized model Closed Cooling Water Chemistry Program.	Purchase the following instrumentation: • Specific ion electrode/test meter for ammonia analysis • Ion chromatograph for azole analyses • Portable electronic corrosion monitoring instrument	T. Teague	3/31/01	
	Install and implement usage of the above instrumentation.	J. McCann	6/30/01	
	Coordinate station efforts to develop plans and implementation procedures for reducing contaminates in Closed Cooling Water systems.	J. McCann	9/30/01	
Install EPRI Chemworks	Install EPRI Chemworks so that it correlates chemistry data for use by the Chemistry section.	T. Teague	11/30/01	

Making a Step Change- 7

Standards & Expectations-

Self-evaluations, audits, industry benchmarking, and 'best practice' reviews will enable the identification of future opportunities for continuous improvement, as well as ensure performance measures meet expectations.

Actions

ISSUE: On-going efforts are needed for continual enhancements regarding standards and expectations of Radiation Protection Programs.

GOAL	ACTIONS	OWNER	EXPECTED COMPLETION DATE	STATUS
1. Improve RP performance through benchmarking.	A. Participate in a benchmarking trip or evaluation involving Dosimetry during the 1st quarter.	L. Glander	3/31/01	
	B. Participate in a benchmarking trip or evaluation involving Radiation Work Coverage during the 2nd quarter.	M. Donegan	6/30/01	
	C. Participate in a benchmarking trip or evaluation involving ALARA during the 3rd quarter.	E. Salisbury	9/30/01	
	D. Participate in a benchmarking trip or evaluation concerning Radioactive Waste during the 3rd quarter.	C. English	09/30/01	
2. Improve RP performance through Self-Assessments.	A. Conduct a Self-Assessment of the Dosimetry Program during the 2nd quarter.	L. Glander	6/31/01	
	B. Conduct a Self-Assessment of Radiation Work Coverage during the 3rd quarter.	M. Donegan	9/30/01	
	C. Conduct a Self-Assessment of the ALARA Program during the 4th quarter.	E. Salisbury	12/31/01	
	D. Conduct a Self-Assessment of the Radioactive Waste Program during the 4th quarter.	C. English	12/31/01	
3. Perform Integrated Departmental Self-Assessment.	Compile self-assessments, audits, inspections, benchmarking studies, and third-party reviews into an integrated Radiation Protection Department Self Assessment.	M. Dampf	12/31/01	

Making a Step Change- 7- cont'd

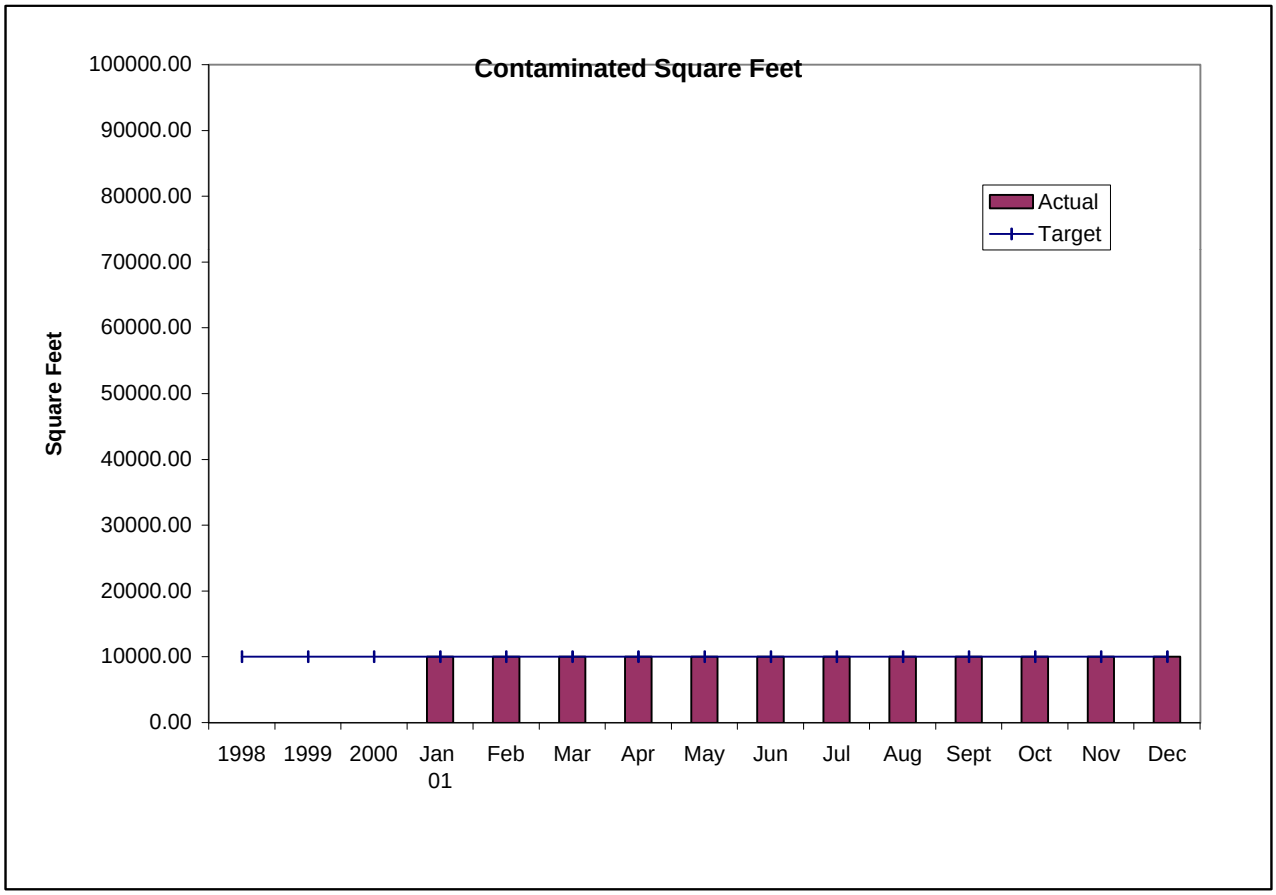
Standards & Expectations-

Self-evaluations, audits, industry benchmarking, and 'best practice' reviews will enable the identification of future opportunities for continuous improvement, as well as ensure performance measures meet expectations.

Actions- cont'd

ISSUE: On-going efforts are needed for continual enhancements regarding standards and expectations of Chemistry Programs.

GOAL	ACTIONS	OWNER	EXPECTED COMPLETION DATE	STATUS
1. Improve section performance through Self-Assessments.	A. Conduct a Self-Assessment of the Primary Chemistry Program during the 1st quarter.	K. Hua	3/31/01	
	B. Conduct a Self-Assessment of the Closed Cooling Water Chemistry Program during the 2nd quarter.	J. Peters	6/30/01	
	C. Conduct a Self-Assessment of the Secondary Chemistry Program during the 3rd quarter.	D.Willman	9/30/01	
	D. Conduct a Self-Assessment of the Radiological Effluents Program during the 4th quarter.	J. McCann	12/31/01	
2. Improve section performance through benchmarking.	A. Participate in a benchmarking trip or evaluation on laboratory and radiological practices during the 1st quarter.	J. Peters	3/31/01	
	B. Participate in a benchmarking trip or evaluation on in-line and laboratory instrumentation during the 2nd quarter.	J. McCann	6/30/01	
	C. Participate in a benchmarking trip or evaluation on laboratory quality control during the 3rd quarter.	K. Hua	9/30/01	
	D. Participate in a benchmarking trip or evaluation on startup/shutdown chemistry during the 4th quarter.	D. Willman	12/31/01	



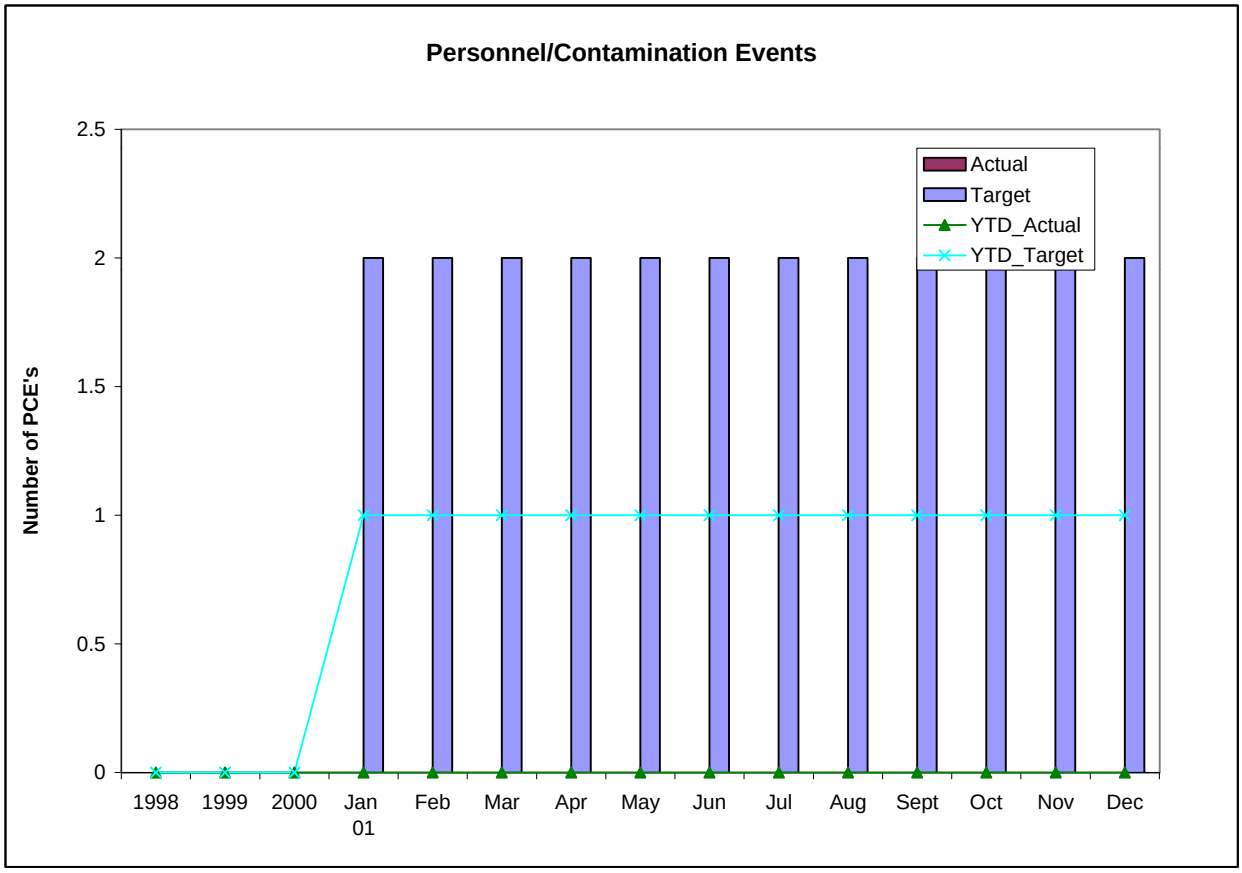
Month	1998	1999	2000	Jan 01	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Actual				10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000
Target	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000
Status															

INDICATOR DESCRIPTION

The total number of square feet of contaminated area in the RCS excluding inaccessible and non-recoverable areas, drywell, steam affected areas.

PWR best perfomers maintain areas below 5%.

ANALYSIS

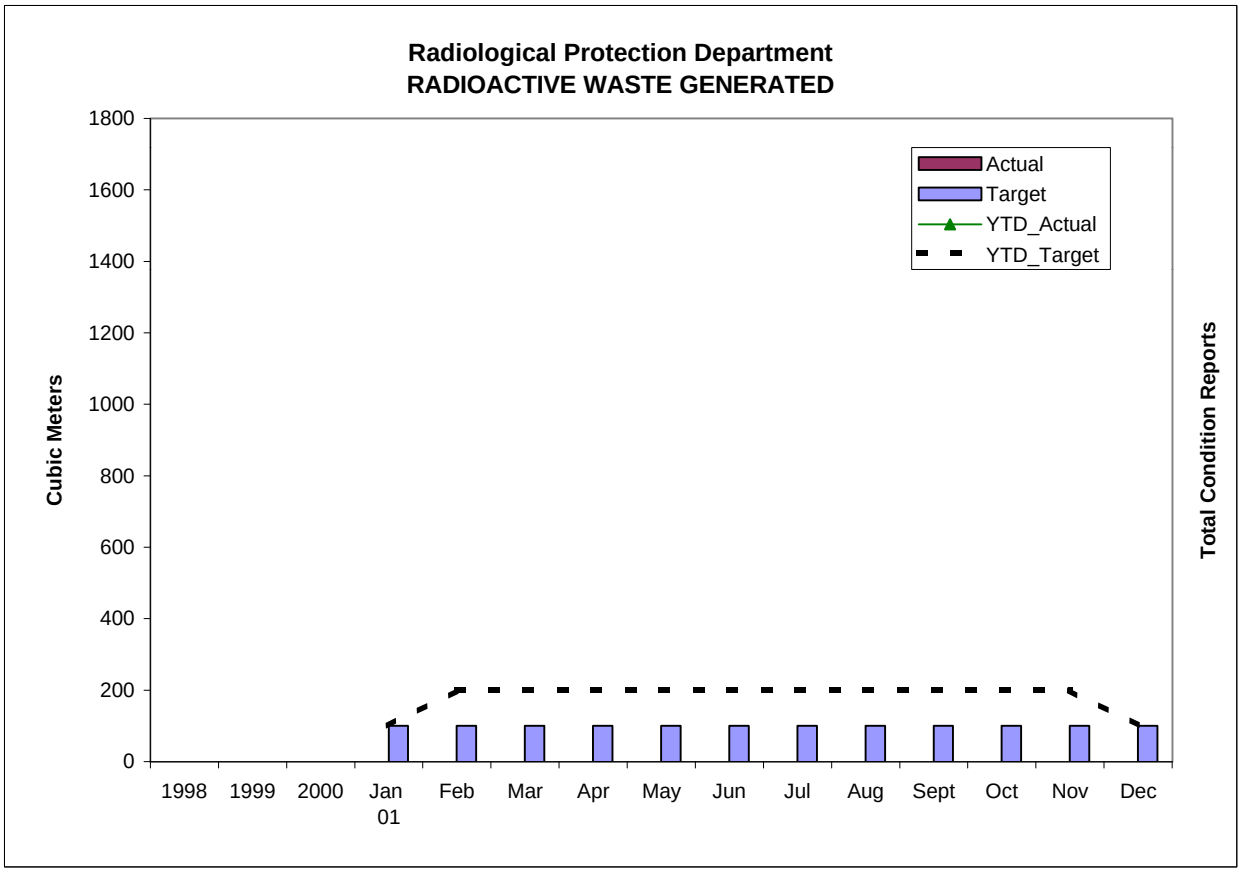


Month	1998	1999	2000	Jan 01	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Actual															
Target				2	2	2	2	2	2	2	2	2	2	2	2
YTD_Actual															
YTD_Target				1	1	1	1	1	1	1	1	1	1	1	1
Status															

INDICATOR DESCRIPTION

This indicator monitors the number of personnel contaminiation events. The numerical value is based upon outage and non-outage.
APCE is defined as contamination on personnel or contamination on personal clothing or articles in excess of limits.

ANALYSIS

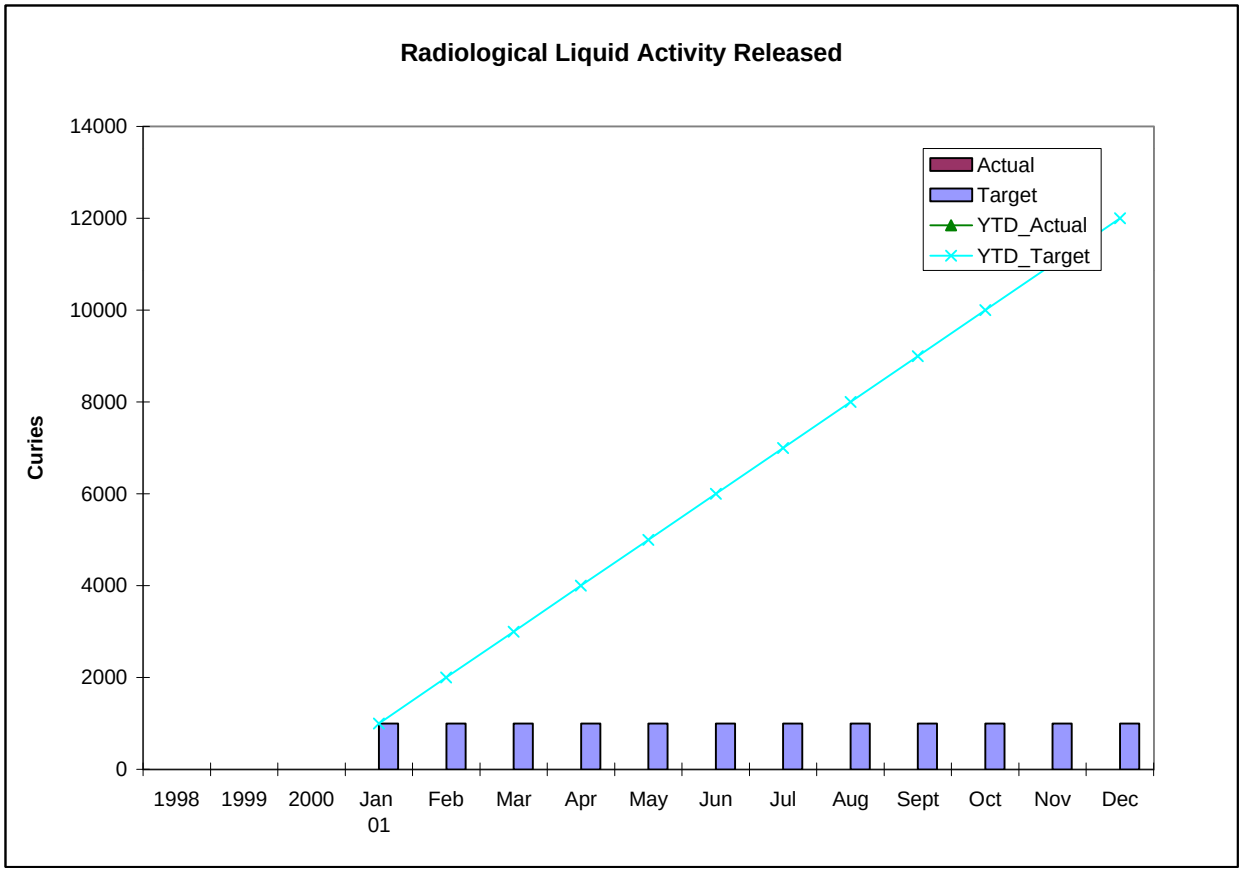


Month	1998	1999	2000	Jan 01	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Actual															
Target				100	100	100	100	100	100	100	100	100	100	100	100
YTD_Actual															
YTD_Target				100	200	200	200	200	200	200	200	200	200	200	100
Status															

INDICATOR DESCRIPTION

The total number (in cubic meters) of Radioactive Waste Generated (both wet and dry wastes).

ANALYSIS

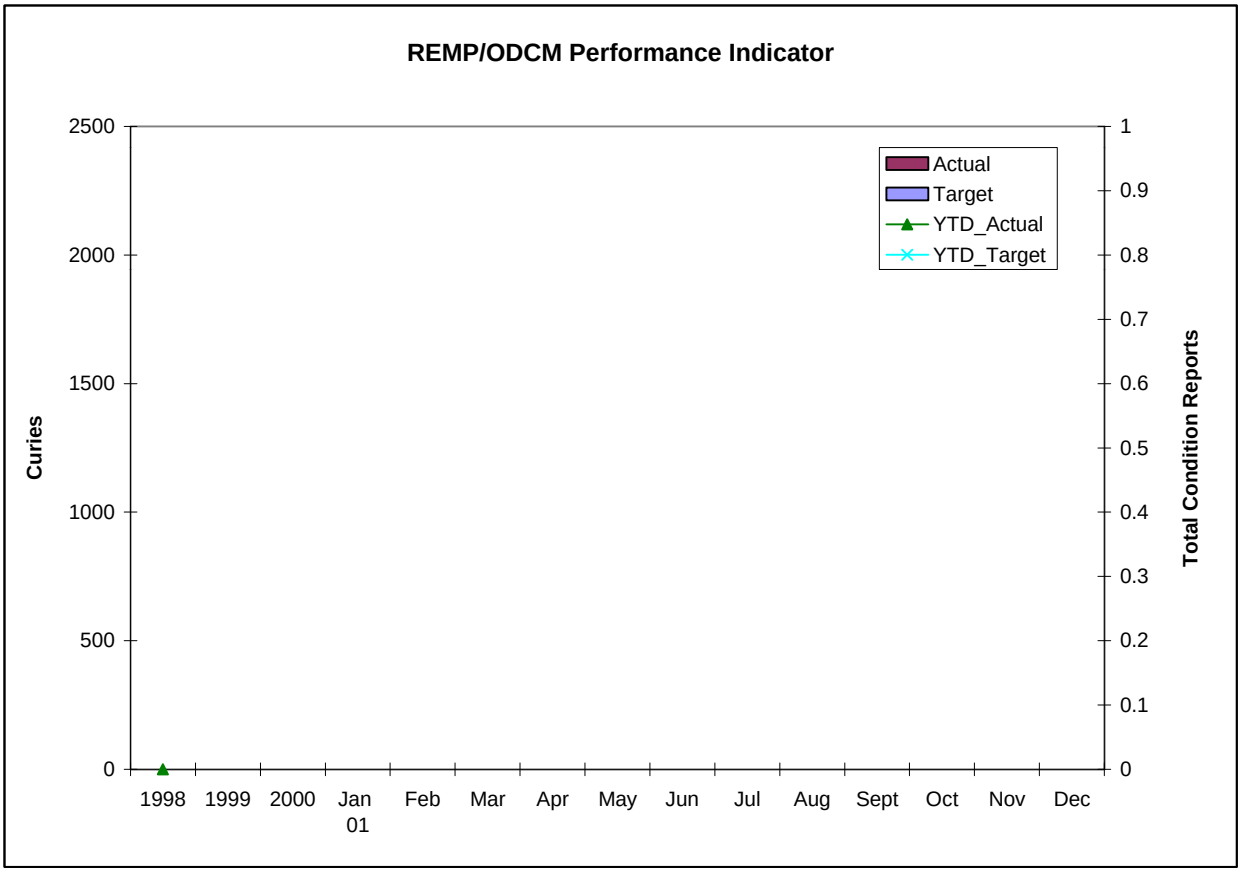


Month	1998	1999	2000	Jan 01	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Actual															
Target				1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
YTD_Actual															
YTD_Target				1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000
Status															

INDICATOR DESCRIPTION

This indicator tracks the activity in Curies for noble gases released from Radwaste to the environment.

ANALYSIS

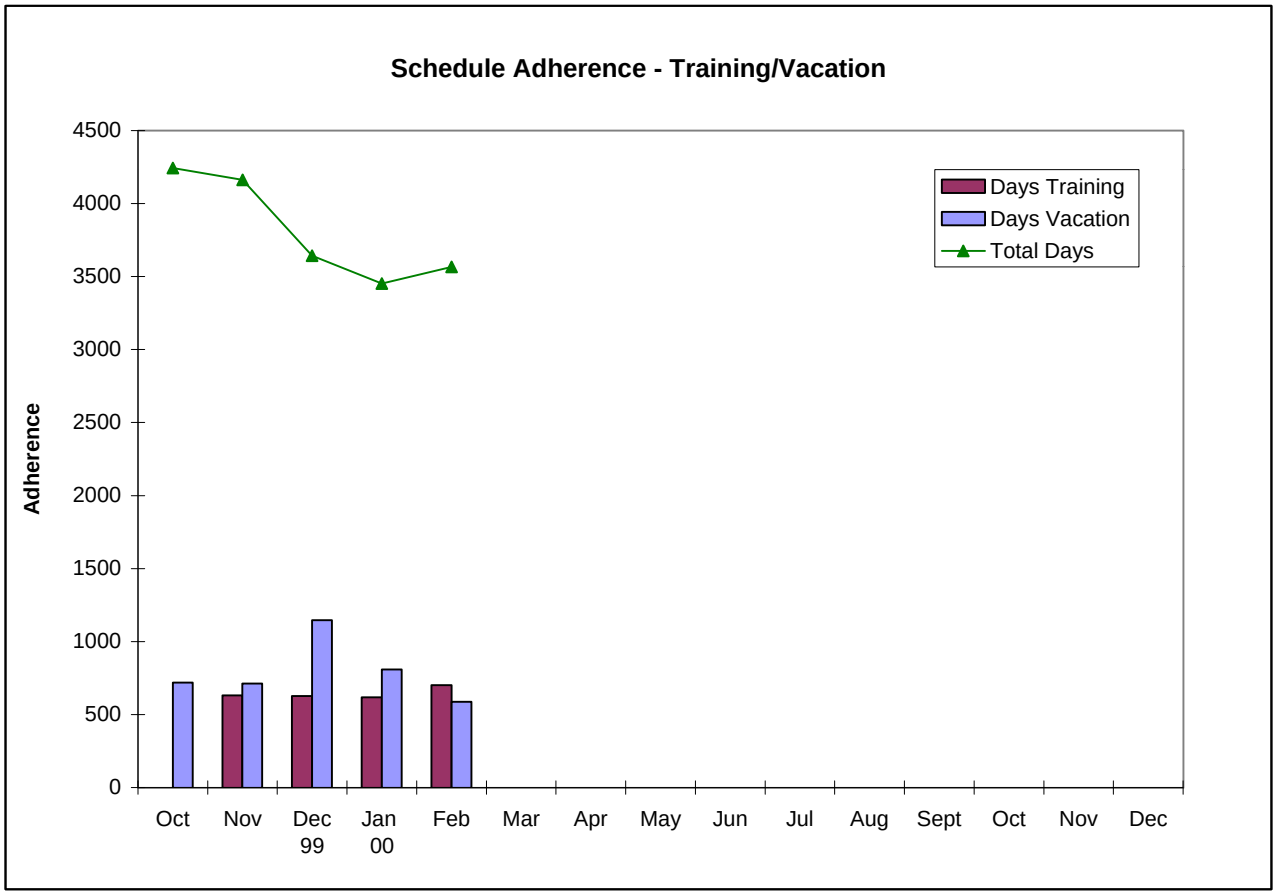


Month	1998	1999	2000	Jan 01	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Actual															
Target															
YTD_Actual	.														
YTD_Target															
Status															

INDICATOR DESCRIPTION

This indicator tracks the activity in Curies for noble gases released via gaseous effluents to the environment.

ANALYSIS

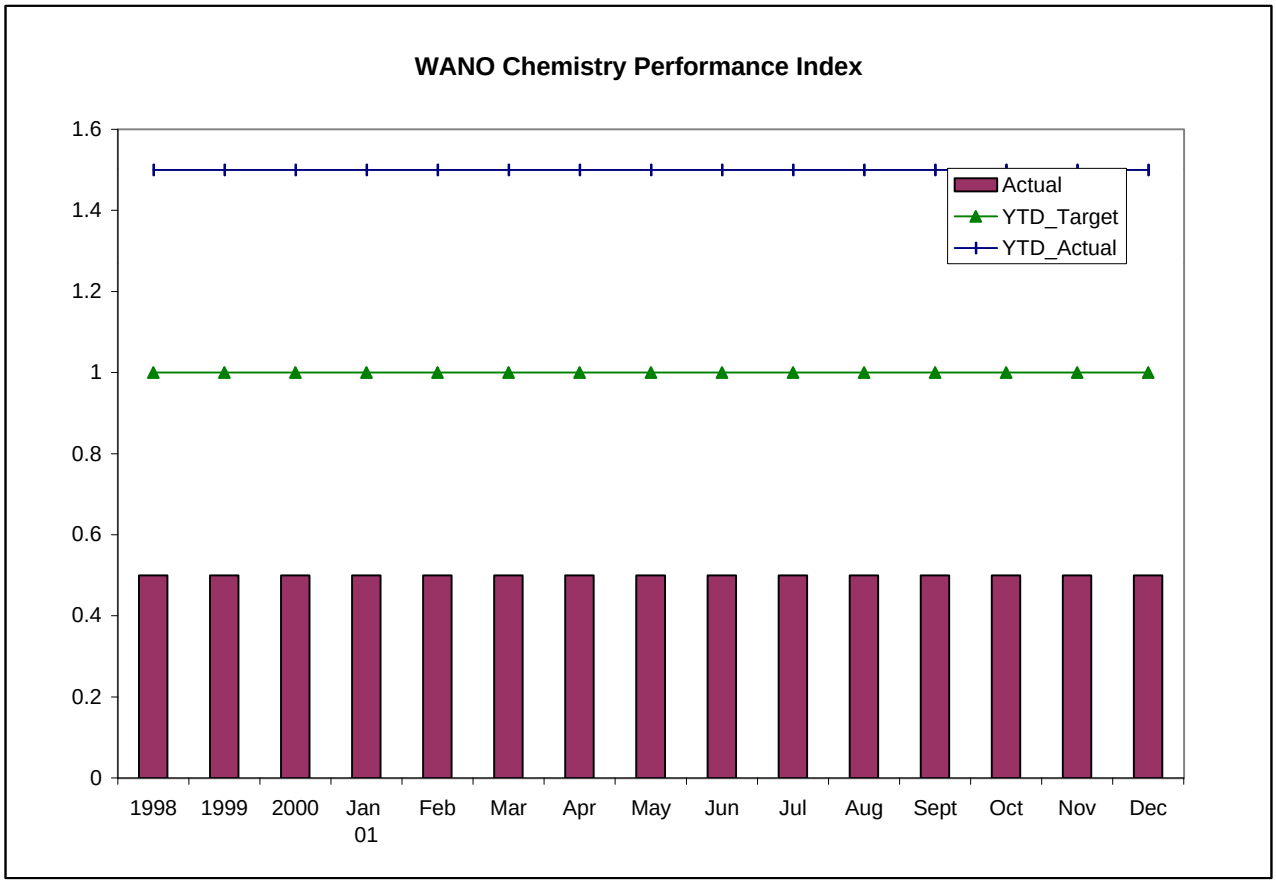


Month	Oct	Nov	Dec 99	Jan 00	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Days Training		632	626	619	702										
Days Vacation	720	713	1147	809	587										
Total Days	4244	4163	3642	3452	3567										

INDICATOR DESCRIPTION

Presents the number of missed training days and follows vacation days?????

ANALYSIS



Month	1998	1999	2000	Jan 01	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Actual	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
YTD_Actual	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
YTD_Target	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Status															

INDICATOR DESCRIPTION

The chemistry performace indicator compares the concentration of slected impurities and corrosion products to a limiting value. These limiting values, developed by INPO, are the industry medians for each pararmeter based on data collected in 1993. As a result, if a plant is at or below the 1993 industry median performance for all components of the index, its value would be 1.0.

ANALYSIS