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May 7, 1991

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Licensee Event Report #90-003-1, Docket #050237 is being submitted as required by Technical Specification 6.6, NUREG 1022 and 10 CFR 50.73(a)(2)(ii)(B). This revised report provides an update concerning corrective actions taken regarding this event.

E. D. Eenigenburg
Station Manager
Dresden Nuclear Power Station

EDE/ade

Enclosure

cc: A. Bert Davis, Regional Administrator, Region III
File/NRC
File/Numerical

(ZDVR/203)

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LICENSEE EVENT REPORT (LER)

Form Rev 2.0

Facility Name (1)	Docket Number (2)	Page (3)
Dresden Nuclear Power Station, Unit 2/3	0 5 0 0 0 2 3 7	1 of 0 9

Title (4) Potential for Exceeding Leakage Design Basis During Containment Air Sampling Process Due to Management Deficiency

Event Date (5)			LER Number (6)			Report Date (7)			Other Facilities Involved (8)	
Month	Day	Year	Year	Sequential Number	Revision Number	Month	Day	Year	Facility Names	Docket Number(s)
0 6	2 8	9 0	9 0	0 0 3	0 1	0 7	2 7	9 0	Dresden Unit 3	0 5 0 0 0 2 4 9

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)			
N	___ 20.402(b)	___ 20.405(c)	___ 50.73(a)(2)(iv)	___ 73.71(b)
POWER LEVEL (10) 0 9 9	___ 20.405(a)(1)(i)	___ 50.36(c)(1)	___ 50.73(a)(2)(v)	___ 73.71(c)
	___ 20.405(a)(1)(ii)	___ 50.36(c)(2)	___ 50.73(a)(2)(vii)	___ Other (Specify in Abstract below and in Text)
	___ 20.405(a)(1)(iii)	___ 50.73(a)(2)(i)	___ 50.73(a)(2)(viii)(A)	
	___ 20.405(a)(1)(iv)	X 50.73(a)(2)(ii)	___ 50.73(a)(2)(viii)(B)	
	___ 20.405(a)(1)(v)	___ 50.73(a)(2)(iii)	___ 50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

Name	TELEPHONE NUMBER
R. Skoglund, Technical Staff System Engineer Ext. 2543	AREA CODE 8 1 5 9 4 2 - 2 9 2 0

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)

___ Yes (If yes, complete EXPECTED SUBMISSION DATE) ___ X NO

Expected Submission Date (15): Month ___ Day ___ Year ___

ABSTRACT (Limit to 1400 spaces, i.e, approximately fifteen single-space typewritten lines) (16)

At 1400 hours on June 28, 1990, with Unit 2 operating at 99% power and Unit 3 operating at 48% power, an Assistant Technical Staff Supervisor discovered that the current methodology for performing primary containment air sampling potentially violated Technical Specification 3.7.A.a.(3) primary containment leakage requirements. Sample pumps exhausting into the secondary containment (one per unit) were being utilized for this purpose and were being left unattended with no automatic isolation capability for approximately one hour daily. The safety significance was mitigated by secondary containment and the Standby Gas Treatment System. Prompt corrective actions were initiated, including relocating the sample point on each unit to provide automatic isolation capability. This is the first discovery of a containment integrity concern involving performance of containment air sampling.

PLANT AND SYSTEM IDENTIFICATION:

General Electric - Boiling Water Reactor - 2527 MWt rated core thermal power.

Nuclear Tracking System (NTS) tracking code numbers are identified in the text as (XXX-XXX-XX-XXXXX).

EVENT IDENTIFICATION:

Potential for Exceeding Leakage Design Basis During Containment Air Sampling Process Due to Management Deficiency

A. CONDITIONS PRIOR TO EVENT:

Unit(s): 2(3) Event Date: June 28, 1990 Event Time: 1400 hours

Reactor Mode(s): N(N) Mode Name: Run(Run) Power Level(s): 99%(48%)

Reactor Coolant System (RCS) Pressure(s): 1003(958) psig

B. DESCRIPTION OF EVENT:

Technical Specification (TS) 4.6.D.1 requires that primary containment [NH] air sampling be performed once per day. This has been accomplished by a number of methods since initial plant startup. Originally a Nuclear Measurements Corporation (NMC) Continuous Air Monitor (CAM) [IK], installed on the primary containment Drywell Manifold Air Sample System [IK] on the 545 foot elevation of the Reactor Building [NG], was used. In approximately 1973, the CAM was relocated to the 517 foot elevation of the Reactor Building. Due to moisture intrusion problems, the CAM was abandoned in 1983. Both CAM locations had automatic Primary Containment automatic isolation [JM]. The primary backup method for obtaining Drywell Air Samples was to use the Drywell Manifold Air Sample System. The Drywell Manifold Air Sample System has twenty-two 1/2 inch inlet lines, each of which has two normally closed manual isolation valves (8507-500 through 8507-521) to establish primary containment. See Figure 1 for a diagram of the original as-built Drywell Manifold Sample System. As secondary backup to the CAM and primary backup to the Drywell Manifold Air Sample System, one of the inlet lines would be disconnected from the manifold and reconnected to a RaDeco Air Sampler. The RaDeco Air Sampler exhausted to the Reactor Building (a part of secondary containment). See Figure 2 for a diagram of the Drywell Manifold Sample System using the RaDeco Air Sampler. A Radiation Protection Technician (RPT) would establish a flow of approximately 2 Standard Cubic Feet per Minute (SCFM) using the RaDeco Air Sampler for approximately one hour across the sample holder to obtain the sample. During the sampling period, the RPT would not remain in continuous attendance at the RaDeco Air Sampler. Thus, on frequent occasions there existed an unattended 1/2 inch opening from primary containment to secondary containment [NG] for approximately one hour per day. This represented a condition which could increase the primary containment leakage beyond the two percent per day of primary containment volume design basis assumption located in the bases of Technical Specification 3/4.7.

No record of a plant modification for changing the location of the CAMs were available nor is there a record of a modification to abandon the CAMs. Records for temporary system alterations involving the CAMs could not be located. Records of modifications, temporary system alterations or work requests for attaching or detaching the RaDeco Air Sampler to the Drywell Manifold Air Sample System were also unavailable. The RaDeco Air Sampler would be connected to the sample line as part of the normal evolution of obtaining the air sample. The RaDeco Air Sampler was used from approximately 1978 until 1989 without a written procedure. DRP 1350-3, Revision 0, Sampling the Drywell Manifold System Using the RaDeco Air Sampler, was approved on May 25, 1989. Contrary to the requirements of Dresden Administrative Procedure (DAP) 10-2, Title 10 of the Code of Federal Regulations (CFR) Part 50.59 Review Screening and Safety Evaluation, a safety evaluation was not performed for the creation of this new procedure.

At 1400 hours on June 28, 1990, with Units 2 and 3 operating at 99% and 48% of rated core thermal power respectively, during the On-Site Review of proposed Revision 1 to DRP 1350-3, an Assistant Technical Staff Supervisor determined that the integrity of primary containment was challenged while obtaining Drywell Air Samples with the RaDeco Air Sampler.

C. APPARENT CAUSE OF EVENT:

This event is reported in accordance with 10 CFR 50.73(a)(2)(ii)(B), which requires the reporting of any condition that was outside the design basis of the plant.

The proximate cause of this event was attributed to design deficiency in that the existing sampling configuration did not provide for the automatic containment isolation function. The root cause behind this unauthorized design was attributed to management deficiency in that this configuration change was implemented without proper engineering review and without proper procedural controls. Prior to September, 1986, Procedure DAP 7-4, Control of Temporary System Alterations, was entitled Control of Jumpers or Lifted Leads. As implied by the earlier title, the procedure was not applicable to mechanical work. A contributing cause was the initial lack of a station procedure to obtain drywell air samples with the RaDeco Air Sampler. During the creation of a new procedure, DAP 10-2 requires that a safety evaluation be performed in accordance with 10 CFR 50.59. This evaluation would have provided for a review of the procedure for impact on primary containment.

When DRP 1350-3, Revision 0, was created in May 1989, it was inadequately reviewed to assure its correctness and validity. A safety evaluation was not performed as is required by DAP 10-2, due to personnel error. This would have allowed its detection of the problem in May 1989 rather than in June 1990.

D. SAFETY ANALYSIS OF EVENT:

Calculations performed to determine the effects of the 1/2 inch opening in primary containment discharging to secondary containment show that with primary containment at a postulated design basis Loss of Coolant Accident (LOCA) value of 48 psig, a leakage of 4.73% per day could occur. When added to the TS 3.7.A.2.a(3) allowed leakage of 1.6% per day, a total leakage of 6.33% per day is obtained. It should be noted that no credit is taken for Operator action to close the manual sampling valves in this analysis. This is compared with the design basis leakage reported in the bases of the Technical Specifications of 2.0% per day.

Using the methodology of Regulatory Guide 1.3, "Assumptions Used for Evaluating the Potential Radiological Consequences of a Loss of Coolant Accident for Boiling Water Reactors," a conservative value of 90% for the Standby Gas Treatment System (SGTS) [BH] particulate, elemental and organic iodine filtration efficiency, and the drywell accident pressure profile contained in Figure 5.2.3:2 of the Final Safety Analysis Report (FSAR), the radiological effects of a design basis LOCA were calculated and compared to 10 CFR 100 limits. The results obtained were:

Variable	Calculated (90% SGTS)	10 CFR 100 Limit
2-hour Site Boundary (Thyroid)	4.58 rem	300 rem
30-day Low Population Zone (Thyroid)	74.28 rem	300 rem

Similar calculations were performed for comparison to 10 CFR 50 Appendix A General Design Criteria (GDC) 19, "Control Room," and NUREG-0800, "Standard Review Plan," Section 6.4, "Control Room Habitability System," limits. Two different calculations were performed. One assumed a SGTS efficiency of 90% (which is used in design basis calculations) and another assumed a SGTS efficiency of 98% (which is conservative with respect to all SGTS efficiency test results obtained to date). The results obtained were:

Variable	Calculated (90% SGTS)	Calculated (98% SGTS)	Limit
30-day Operator (Thyroid)	69.8 rem	19 rem	30 rem
30-day Operator (Whole Body)	0.62 rem	small	5 rem

Based upon the above result, the 10 CFR 100, 10 CFR 50 Appendix A, and NUREG-0800 regulatory release limits were not violated with the 1/2 inch opening in primary containment.

E. CORRECTIVE ACTIONS:

The following corrective actions were initiated.

1. Temporary Procedure Change (TPC) 90-286 was approved on June 28, 1990 to revise DRP 1350-3 to require that: 1) the RPT establish radio communications with the control room before opening the two manual primary containment isolation valves when using the RaDeco Air Sampler, 2) the RPT remain in attendance at the ReDeco Air Sampler during the time that the manual primary containment isolation valves were open, and 3) if instructed by the Control Room, the RPT would immediately close the manual primary containment isolation valves. A permanent revision to DRP 1350-03 was completed on November 1, 1990 to incorporate these requirements.

2. A Temporary System Alteration and 10 CFR 50.59 safety evaluation were performed on June 28, 1990 per DAP 7-4 to utilize the RaDeco Air Sampler to obtain drywell atmosphere samples on each unit. The Temporary System Alterations will be incorporated in minor design changes for each unit in order to make them a permanent part of plant equipment. Engineering design work for these minor design changes will be completed by January 1, 1992 (237-200-90-06407).

3. CAMs were installed on both Units to meet the FSAR commitment for continuous air monitoring. The CAMs are located on the 517' elevation. The moisture intrusion problem that made the CAMs inoperable in the early 1980s is being eliminated by a moisture separator and heat tracing. An air dryer is being used as a secondary method to remove the moisture.

4. It was determined that there were three lines associated with the Drywell Manifold Air Sample System which were provided with automatic primary containment isolation capability in the event that primary containment isolation was required. Work Request (WR) 93808 (completed on June 30, 1990) and WR 93835 (completed on July 3, 1990) were generated to move the sample points used by the RaDeco Air Sampler to sample line 25, on both units, which has automatic isolation capability. See Figure 3 for a diagram of this configuration. These sample point relocations were reviewed prior to implementation in accordance with 10 CFR 50.59, and were controlled per DAP 7-4. TPC 90-293 (which superceded TPC 90-286) was approved on July 6, 1990 to revise DRP 1350-3 to require that only sample point 25 (which has automatic isolation) be used with the RaDeco Air Sampler. DRP 1350-3 was revised to permanently incorporate TPC 90-293 on November 1, 1990.

5. It was determined that a previous revision to DAP 10-2 permitted a blanket exclusion for performing safety evaluations for several classes of station procedures. Previous revisions to the Dresden Chemical Procedures, Dresden Radiation Protection Procedures, and Dresden Sample Building Procedures were reviewed to determine if additional safety evaluations were needed. Safety evaluations for six Dresden Sample Building Procedures and one Dresden Chemical Procedure were determined to need enhancements to improve their clarity. Four Dresden Radiation Protection Procedures required safety evaluation revisions in order to fully address relevant safety concerns. In addition, eight Dresden Electrical Procedures, one Dresden Electrical Surveillance Procedure, one Dresden Instrument Procedure, and one Dresden Instrument Surveillance Procedure required further screening and enhanced safety evaluations. These activities have been completed.

6. Procedure DAP 9-02, Procedure and Revision Processing, was revised on November 30, 1990 to improve the screening process for procedures. Further, Procedure DAP 10-02 was revised to further enhance the 10CFR50.59 Safety Evaluation and Screening processes.

7. Procedure DAP 7-11, Drywell Entry (Initial or at Power), was revised on July 20, 1990 to require the use of sample point 25 to obtain a drywell atmosphere sample.

8. Other station procedures which involve sampling and other routine practices were reviewed to assure that primary containment integrity is maintained.

9. The adequacy of drywell sampling line labeling and the accuracy of the piping drawings was reviewed.

10. During the investigation of this event, it was determined that the Drywell Manifold Air Sample System contains non-safety related piping which is not isolatable from primary containment except by local operator action during use. The Nuclear Engineering Department has reviewed and evaluated the Drywell Manifold Air Sample System. The evaluation provides the station with several options, one of which was to utilize the system as originally designed to facilitate locating sources of leakage within the Primary Containment drywell, using the twenty-two 1/2 inch lines. The inboard manual isolation valves have been locked closed, and should the system be approved for use, a requirement will be provided to maintain a person at the manual isolation valves while taking samples. This person would be in communication with the Control Room, and could close the manual isolation valves at the sample point when instructed by the Control Room, in the event of a Primary Containment Group II isolation. The inboard manual isolation valves would also be locked closed upon completion of sampling. Approval to operate the Drywell Manifold Air Sample System will be sought from the NRC, and a submittal will be made by June 30, 1991 (237-200-90-06406). Containment atmosphere samples are currently being performed daily utilizing the corrected Radeco Sample Pump Configuration shown in figure 3, which employs a sample point equipped with automatic isolation valves. The Radiation Protection Department is currently comparing the daily samples with the data being taken from the CAMs.

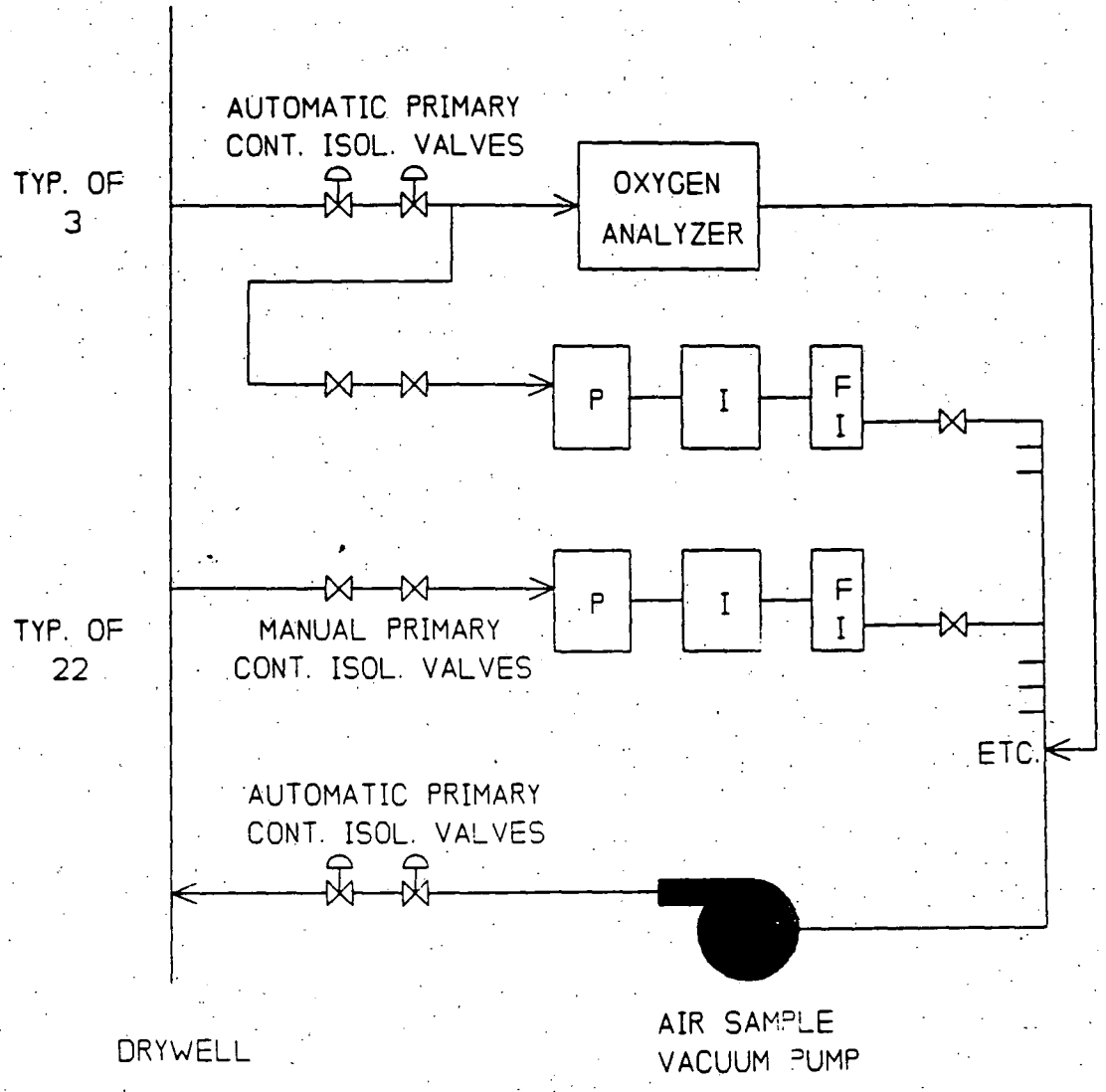
F. PREVIOUS EVENTS:

LER/Docket Numbers	Title
82-043/050237	Suppression Chamber Sightglass Found Valved In and Vented

A suppression chamber vent valve was left open due to personnel error, which resulted in a 0.25 inch pathway from primary containment to the secondary containment. Corrective actions included a modification to remove the vent valve and review of the event in Operator retraining classes.

G. COMPONENT FAILURE DATA:

There were no component failures during this event; therefore, this section is not applicable.

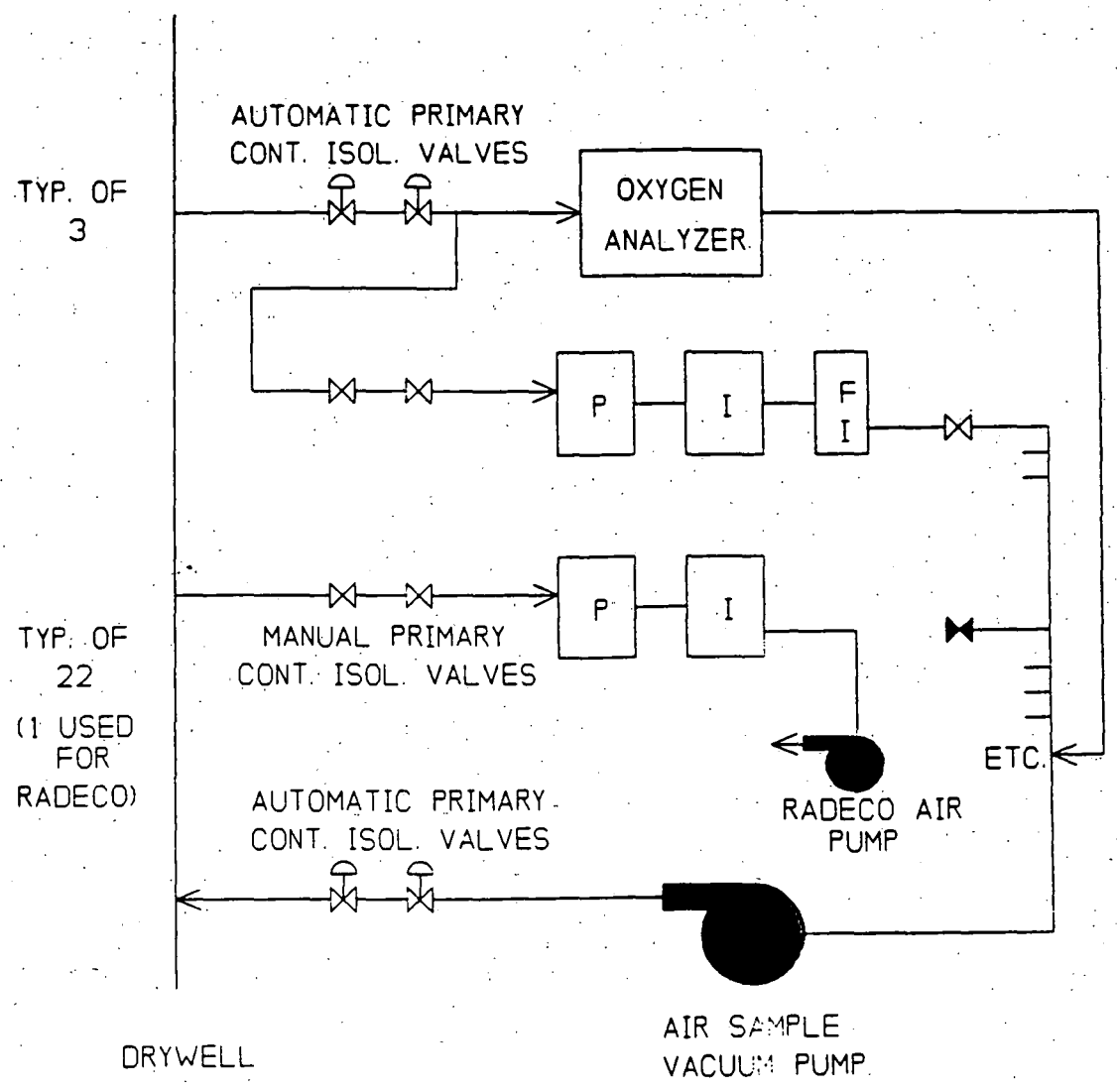


P = PARTICULATE FILTER

I = IODINE FILTER

FI = FLOW METER

FIGURE 1. ORIGINAL CONSTRUCTION SAMPLING CONFIGURATION

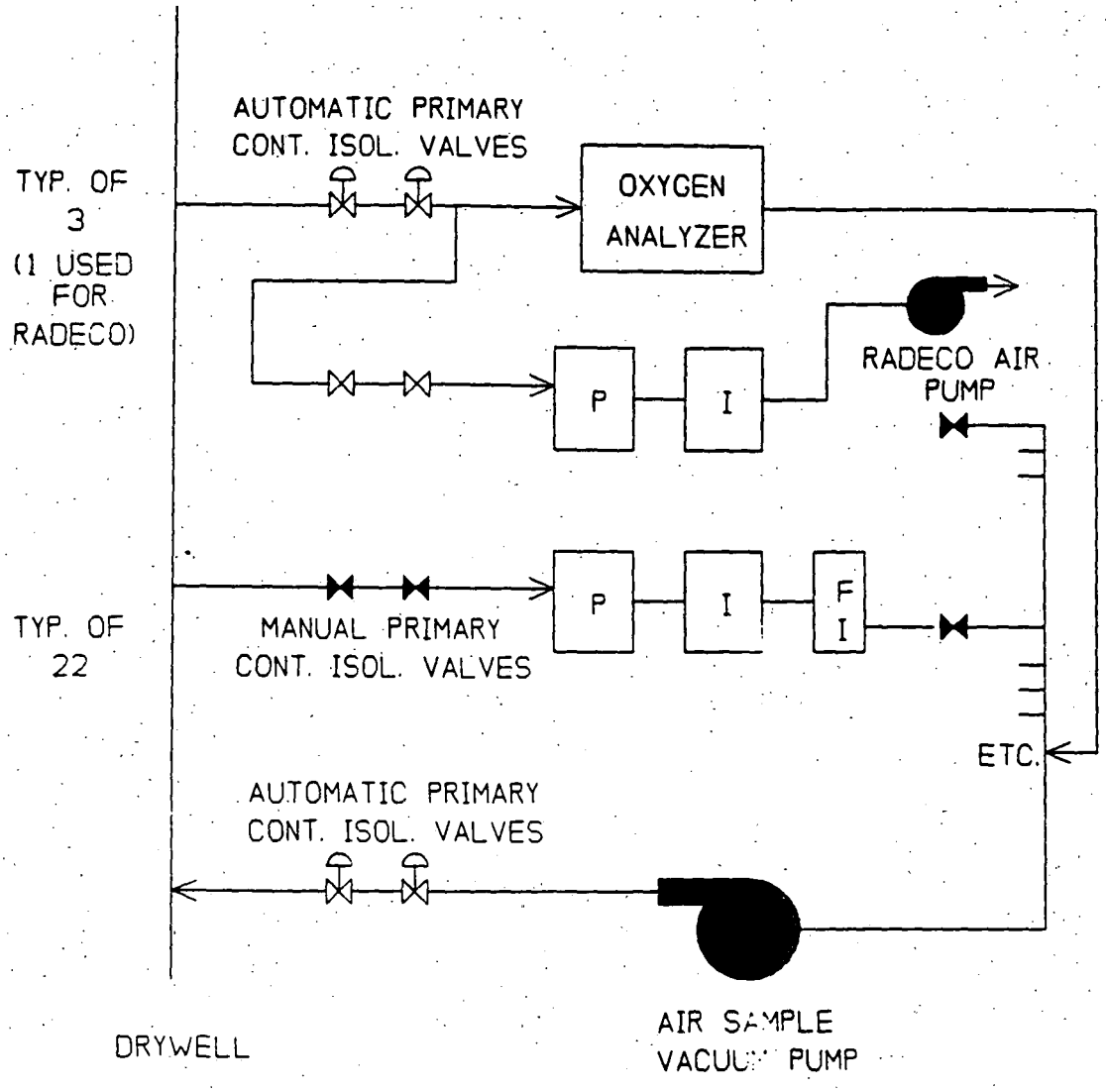


P = PARTICULATE FILTER

I = IODINE FILTER

FI = FLOW METER

FIGURE 2. RADECO SAMPLE PUMP OPERATION



P = PARTICULATE FILTER

I = IODINE FILTER

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FIGURE 3. CORRECTED RADECO SAMPLE PUMP CONFIGURATION