AIR TECHNIQUES INTERNATIONAL

Report On The Oak Ridge Filter Test Facility (ORFTF)

DEPARTMENT OF ENERGY · UNITED STATES OF AMERICA ·

Nuclear Air Cleaning Conference

September 2002

Operational Overview - Oak Ridge Filter Test Facility

- Oak Ridge is the last remaining DOE HEPA filter testing facility
- ORFTF is operated by Air Techniques International (ATI) under the Facility Management Surveillance Inspection and Testing (FMSIT) contract through Bechtel-Jacobs LLC and American Technologies, Inc.
- Key Personnel responsible for running the facility include David Crosby (Project Manager) and Julie Davis (Site Supervisor)
- The Oak Ridge Filter Test Facility is organized, qualified, and prepared to accept responsibility to implement Quality Product List (QPL) testing

Why Use the Oak Ridge Filter Test Facility?

- Mandated by the Secretary of Energy (June 4, 2001 Memo from Secretary Abraham)
- With mandate in place, the ORFTF is here to stay
- HEPA testing verification service is provided to all DOE Contractors in the DOE complex on a no charge basis since we are funded
- Oak Ridge personnel endeavor to accommodate all DOE customers and make the use of the facility a simple task

The Secretary of Energy
Washington, DC 20585

June 4, 2001

MEMORANDUM FOR DISTRIBUTION
FROM: SPENCER ABRAHAM

SUBJECT: 100 Percent Quality Assurance Testing of HEPA Filters at The DOE Filter Test FACILITY

The May 1999 Defense Nuclear Facilities Safety Board (Board) Technical Report 23, *HEPA Filters Used In the Department of Energy' s Hazardous Facilities,* raised concerns with the DOE HEPA filter program. In December 1999. Secretary Richardson submitted an Implementation Plan for Defense Nuclear Facilities Safety Board Recommendation 2000-2, which included actions intended to address these concerns. One of the Plan's commitments was to review the benefit of testing 100 percent of HEPA filters at the DOE Filter Test Facility (FTF) in Oak Ridge Tennessee, and also to explore other options in lieu of this approach. The attached background paper provides additional information on the HEPA filter testing, issue (Attachment I). Based on the recommendations of a DOE working group tasked to examine the issue, which were reviewed by the Field Management Council. I am hereby directing the Lead Program Secretarial Officers to immediately implement the attached HEPA filter testing protocols and procedures at their sites (Attachment 2).

Further, I direct the Assistant Secretary for Environment Safety and Health to begin the process to incorporate these important measures in the Departmental directives system or Technical Standards Program in a timely manner to further ensure that these quality assurance testing procedures are assimilated across the DOE Complex. The Department will also ensure that HEPA filter testing guidance will continue to be updated and enhanced as appropriate, and that an assessment program, including associated evaluative criteria is established for continually monitoring and reporting on the implementation, efficacy and appropriateness of these quality assurance protocols and procedures. The Department has committed to maintain operation and funding of the FTF at Oak Ridge. This will be accomplished by funding provided by the Office of Environmenta1 Management until such time as the FTF is required to move, which is expected in approximately two years.

I believe that these actions will help ensure the integrity of confinement ventilation systems intended to protect the environment of our workers and the public. Assuring the quality and integrity of new HEPA filters used in critical safety systems using this graded testing approach is consistent: with and supports comprehensive site Integrated Safety Management programs.

Key Points of Secretary Abraham's Memorandum

- SUBJECT: "IO0 Percent Quality Assurance Testing of HEPA Filters at The DOE Filter Test FACILITY"
- "I am hereby directing the Lead Program Secretarial Officers to immediately implement the attached HEPA filter testing protocols and procedures at their sites (Attachment 2)".
- "The Department has committed to maintain operation and funding of the FTF at Oak Ridge".
- "Further, I direct the Assistant Secretary for Environment Safety and Health to begin the process to incorporate these important measures in the Departmental directives system or Technical Standards Program in a timely manner to further ensure that these quality assurance testing procedures are assimilated across the DOE Complex".

ATTACHMENT 2

DEPARTMENT OF ENERCY PROTOCOLS AND PROCEDURES CONCERNING 100 PERCENT QUALITY ASSURANCE TESTING OF HEPA FILTERS AT THE DOE FILTER TEST Facility (FTF)

The following Protocols and Procedures are intended to ensure that an appropriate level of quality assurance (QA) in the design, integrity and performance of new/replacement HEPA filters used at DOE defense nuclear facilities is achieved and maintained to adequately protect workers and public health and safety. It is further recommended than these protocols and practices be considered for HEPA filters used at non-defense facilities, as appropriate in implementing Facility Integrated Safety Management programs.

(1) Conduct 100 percent QA testing at the DOE Filter Test Facility (FTF) of new HEPA filters that are used in confinement ventilation systems for Category I and Category 2 nuclear facilities that perform a safety function in accident situations, or are designated as important to safety (i.e.. safety class or safety significant equipment per DOE-STD-3009-94).

(2) Conduct 100 percent QA testing at the FTF of HEPA filters necessary for habitability systems, e.g., filters that protect workers who must not evacuate in emergency situations because of the necessity to shutdown or control the situation.

(3) For all other applications where HEPA Filters are used in confinement ventilation systems for radioactive airborne particulates, develop and document an independent tailored filter QA testing program that achieves a high degree of fitness for service. The program should include the testing of a sample of filters at the FTF. The size of the sample to be tested should be large enough to provide sufficient statistical power and significance to the required level of performance.

(4) Periodically analyze and publish FTF data to provide filter reliability and performance information for the complex. The analysis would include vendor, product description and type of deficiency.

(5) Funding for the FTF shall be maintained by DOE Headquarters so as not to discourage usage. Funding will be provided by the Office of Environmental Management until such time as the FTF is required to move, at which time the funding arrangement will be reviewed.

(6) Establish a formal self-assessment program to evaluate the above QA protocols and procedures and determine their continued benefit and cost-effectiveness, and to identify opportunities for improvement and lessons learned. Task the DOE Quality Assurance Working Group to develop and execute an appropriate implementing strategy, including supporting program objectives, evaluative criteria, assessment procedures, and periodic status and assessment reports.

Key Points of Attachment 2

- Conduct 100 percent QA testing at the DOE Filter Test Facility (FTF) of new HEPA filters that are used in confinement ventilation systems for Category I and Category 2 nuclear facilities that perform a safety function in accident situations, or are designated as important to safety (i.e.. safety class or safety significant equipment per DOE-STD-3009-94).
- Conduct 100 percent QA testing at the FTF of HEPA filters necessary for habitability systems, e.g., filters that protect workers who must not evacuate in emergency situations because of the necessity to shutdown or control the situation.
- Funding for the FTF shall be maintained by DOE Headquarters so as not to discourage usage.

Why the Oak Ridge Filter Test Facility?

- The answer is contained in the closing paragraph of Secretary Abraham's June 4, 2001 memorandum.

- "I believe that these actions will help ensure the integrity of confinement ventilation systems intended to protect the environment of our workers and the public. Assuring the quality and integrity of new HEPA filters used in critical safety systems using this graded testing approach is consistent: with and supports comprehensive Site Integrated Safety Management programs".

Operational Overview - Oak Ridge Filter Test Facility

- **Current Customers**

  Argonne National Laboratory – Illinois
  Argonne National Laboratory – Idaho
  Bechtel BWXT Idaho, LLC (BBWI)
  Bechtel BWXT Y-12
  Bechtel Nevada
  BWXT Pantex Plant
  Bechtel Bettis, Inc. Naval Reactor Facility
  Bechtel Jacobs ETTP (K-25)
  Bechtel Jacobs X-10
  Brookhaven National Laboratory
  Duratek X-10
  Dyncorp Tri-Cities Services Inc./Hanford Site

Operational Overview - Oak Ridge Filter Test Facility

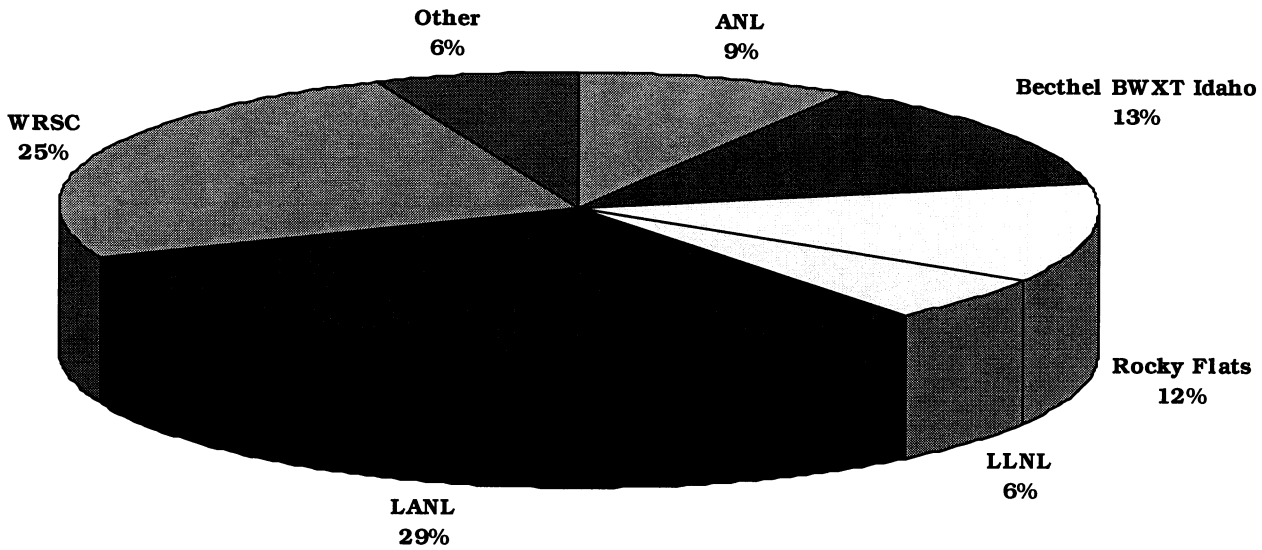
- **Current Customers (cont.)**

  Fluor Federal Services/Hanford Site
  IT Corporation K-25
  Kaiser-Hill Company L.L.C./Rocky Flats Closure Site
  Lawrence Livermore National Laboratory
  Los Alamos National Laboratory/Johnson Controls
  Sandia National Laboratory
  UT Battelle/Oak Ridge National Laboratory
  West Valley Nuclear Services
  Westinghouse Savannah River Company

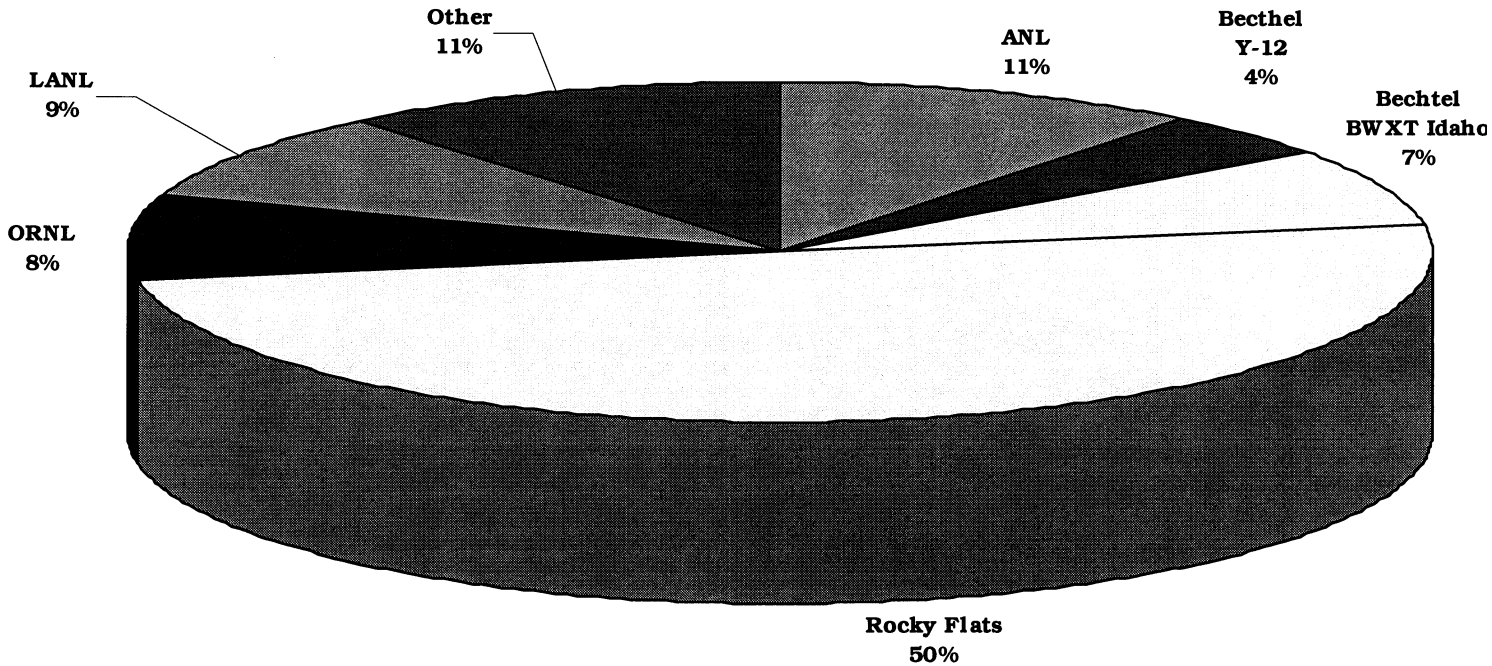
%Workload by Customer - FY 2000 - FY 2002 1st Half

Customer	FY 2000	Customer	FY 2001	Customer	FY2002
ANL	8.5%	ANL	10.6%	ANL	6.2%
Bechtel BWXT Idaho	13.2%	Becthel Y-12	4.3%	Becthel Y-12	5.0%
Rocky Flats	11.8%	Bechtel BWXT Idaho	7.5%	Rocky Flats	26.6%
LLNL	5.6%	Rocky Flats	49.9%	ORNL	14.2%
LANL	29.4%	ORNL	7.9%	LANL	17.9%
WRSC	25.0	LANL	8.6%	WSRC	23.2%
Other	6.4%	Other	11.1%	Other	6.9%

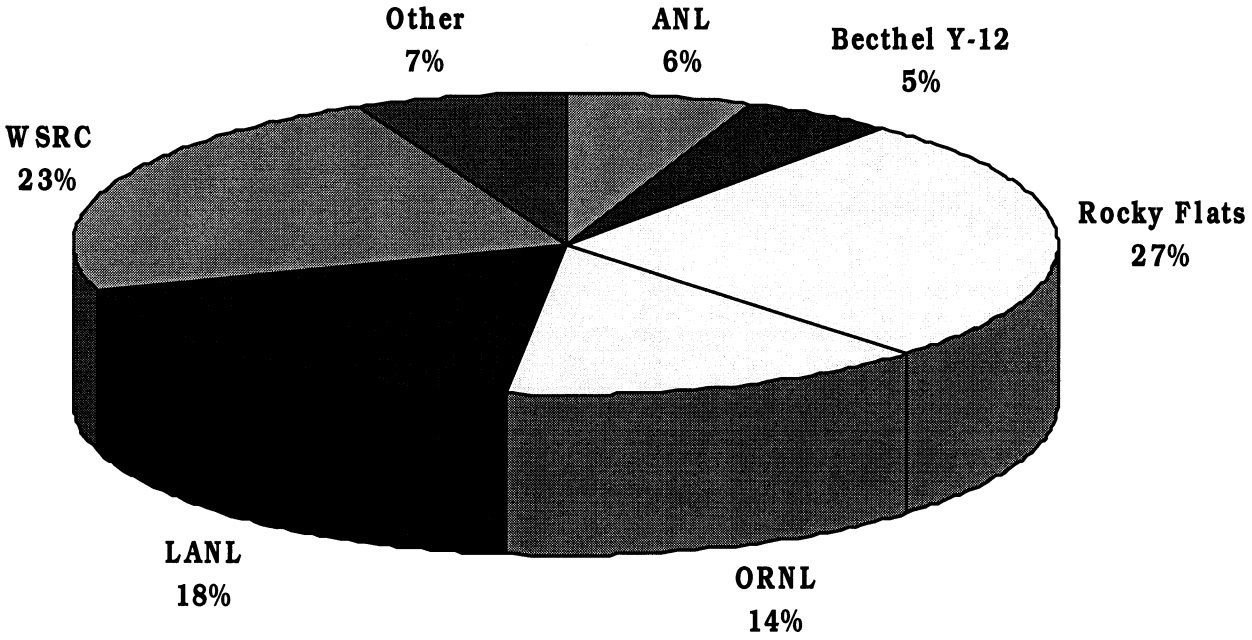
%Workload by Customer - FY 2000



%Workload by Customer – FY 2001



%Workload by Customer - FY 2002 1st Half



Summary of Filters Tested Since 1996

Fiscal Year	Number Tested	Number Rejected	Percentage Rejected
1996	2,643	**493**	**18.7%**
1997	2,916	**102**	**3.5%**
1998	2,305	**68**	**3.0%**
1999	2,362	**37**	**1.6%**
2000	3,597	**354**	**9.8%**
2001	2,722	**217**	**8.0%**
2002 a)	1,004	**65**	**6.5%**
Total	17,549	**1,336**	**7.6%**

Filters are rejected at the ORFTF for up to five different reasons

Summary Of Filter Rejections

Fiscal Year	Resistance	Penetration	Mfg. Defects	P.O./Spec Discrepancy	Shipping Damage	Total
1996	371	70	35	17	0	493
1997	59	20	7	16	0	102
1998	1	28	3	34	2	68
1999	0	31	6	0	0	37
2000	0	43	36	270	5	354
2001	0	30	174	9	4	217
2002 *	0	12	47	4	2	65
Total	431	234	308	350	13	1,336

The biggest consistent cause for filter rejections is manufacturing defects

FY2002 Challenges In Satisfying DOE Customers

- Location in a secure area continues to require additional efforts in the receiving and shipping of filters
- The electrostatic precipitation emission control system has been a consistent problem and requires major work resulting in no back up for testing filters rated >300 cfm
- Internal and External Assessments have required a large proportion of the FTF personnel's time equating to >0.25 worker-year
- Assessments have also required extensive time for Bechtel Jacobs and American Technologies personnel
- 24 year old equipment continues to require extensive maintenance
- New equipment must be seriously considered by DOE

IF DOE Decides To Continue The QPL System

- The U.S Army is currently performing the QPL testing if requested and paid for in advance, because the program is not funded
- The U.S. Army may discontinue this service at the end of the calendar year (12/02)
- No decision has been made by DOE to re-institute Quality Products List (QPL) testing after the US Army discontinues this service
- DOE owns QPL equipment, but it is sitting in crates at the ETTP Site and has not been used in years - condition uncertain
- DOE requires QPL filters in accordance with DOE Standards
- In order to consolidate this equipment with the ORFTF, suitable space must be located
- The equipment will need to be transported, inspected, installed, and upgraded
- All manufacturers providing filters to DOE must comply with the QPL requirements

In Summary - ORFTF Is Fulfilling Its Mission!

- Filter testing workload is uncertain at this time
- Management continues to streamline the process for increased efficiency and minimum turn-around
- The most consistent cause for filter rejection has been manufacturing defects
- Maintaining the old equipment in top condition has been a challenge, and new equipment must be given serious consideration
- With improved work processes, the ORFTF is maintaining the target testing turn-around of 10 working days days
- An aggressive project plan must be developed and approved if the QPL test program is to be implemented
- Demolition of K-1024 building will result in the relocation of the Filter Test Facility providing an opportunity to consolidate test and QPL equipment

A lot of great changes have occurred at the ORFTF recently, and more are planned

Any Questions? - We Are Here To Serve You

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