

# *Continuous Improvement*

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## MAINTAINING PRODUCT QUALITY WHEN YOU DON'T MAKE THE PRODUCT

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Maintenance Division

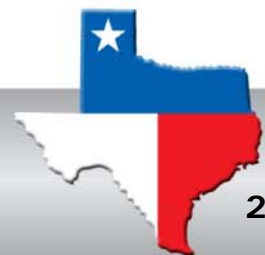


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## ■ SUMMARY

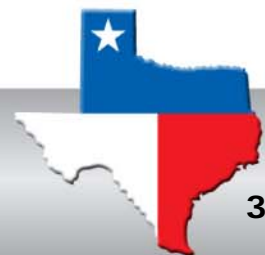
- Background
- System Overview
- Reliability Data
- Quality - Challenges
- Maintaining Product Quality
  - ◆ Power Supply
  - ◆ Obsolete Relay
  - ◆ Pump Diaphragm



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- **Plant Experience, Background**
  - Started in Production area
  - Moved to Quality (Inspection)
  - Electronics
  - Management (Maintenance)
    - ◆ Technical Procedures
    - ◆ System Support
    - ◆ Work Planning
    - ◆ System Training

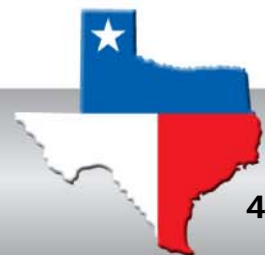


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## ■ **System Overview**

- Radiation Alarm Monitoring System (RAMS)
  - ◆ Designed as a workplace monitoring system that provides audible and visible notification of a release of radioactive material.
  - ◆ Consists of multiple computer systems reporting to a central location
  - ◆ Work areas contain dedicated electronics and Continuous Air Monitors (CAMs)

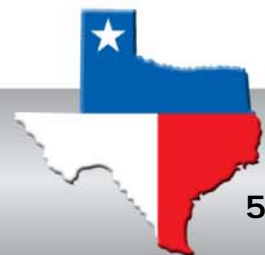


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## ■ **System Overview**

- Two types of CAMs are used to monitor and sample workplace air
- Entire system is a combination of in-house design and fabrication and commercial off-the-shelf equipment
- Overall System
  - ◆ 80% in house design and build
  - ◆ 20% commercially available



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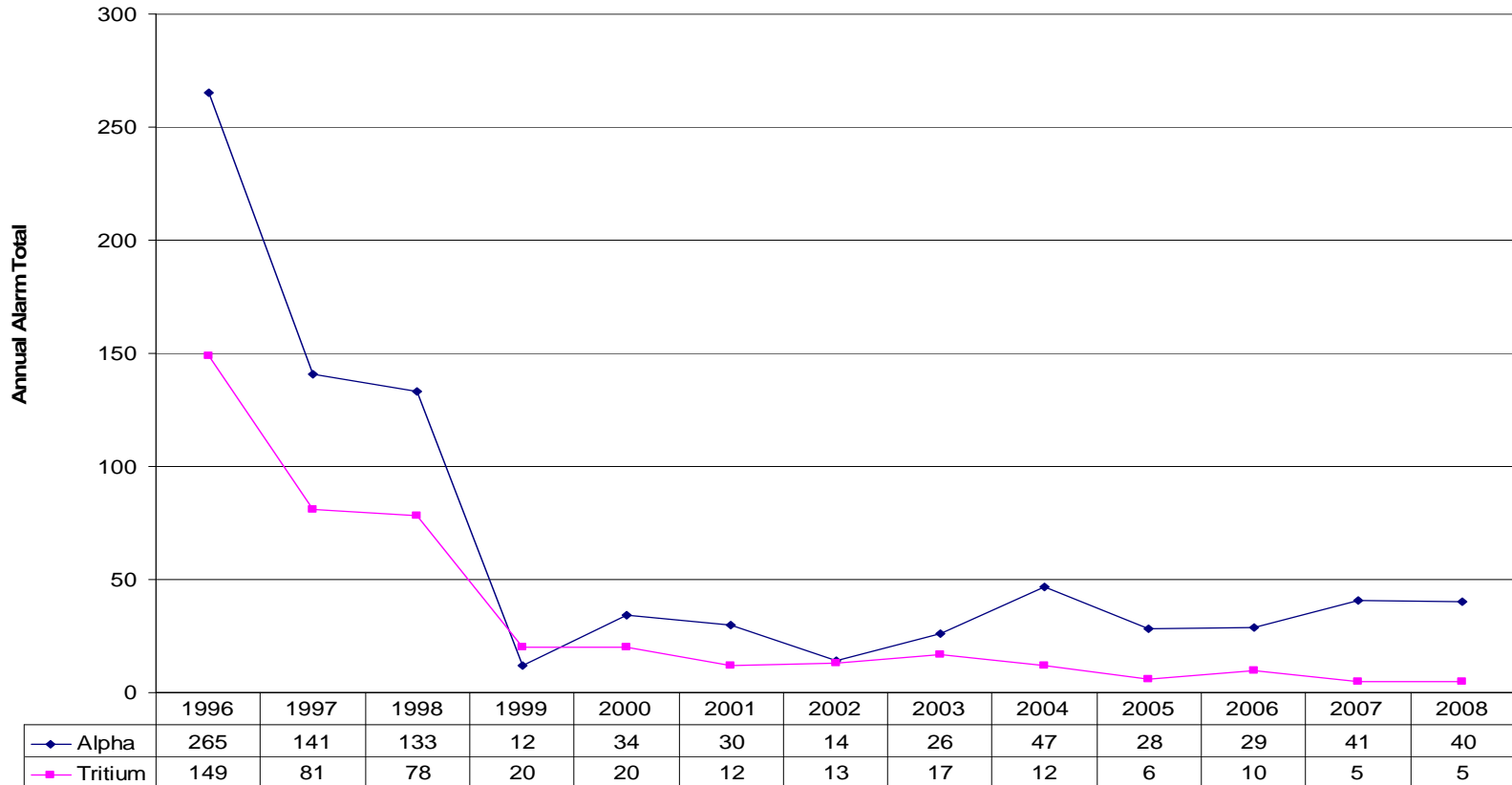
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- **System Reliability**
  - System must be operational 24/7
  - Fail-Safe design
    - ◆ Alerts workers to leave the area
    - ◆ Monitors for various equipment failures
  - 2007 monitoring data
    - ◆ Over 1.7 million running hours



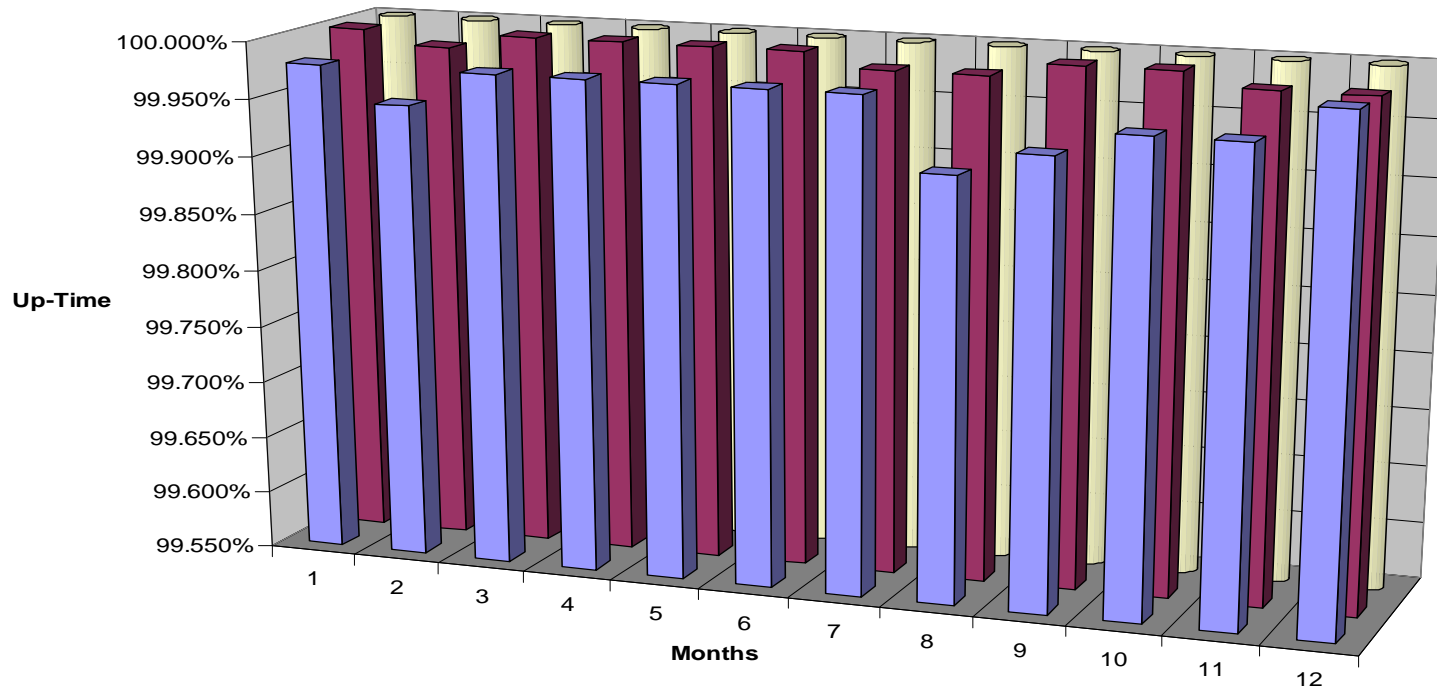
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RAMS Annual Events  
Alpha/Tritium Evacuation Alarms



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**RAMS Reliability 2008**  
 Total Average = Alpha 99.964% - Tritium 99.996%



	1	2	3	4	5	6	7	8	9	10	11	12
Alpha	99.979%	99.949%	99.979%	99.979%	99.979%	99.979%	99.979%	99.918%	99.938%	99.959%	99.959%	99.990%
Tritium	100.000%	99.988%	100.000%	100.000%	100.000%	100.000%	99.988%	99.988%	100.000%	100.000%	99.988%	99.988%
Alpha/Tritium Goal	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%



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## ■ **Quality - Challenges**

- In-house design allows efficiency when dealing with technology improvements
  - ◆ Faster design changes
  - ◆ Substitute component approvals
  - ◆ Allows plant to maintain existing system longer
- Vendor supplied equipment is supported for a shorter period of time
  - ◆ Encourages equipment replacement
  - ◆ Our company is only one of many customers
  - ◆ Vendor can/will increase support costs as equipment gets older



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- **Maintaining Product Quality (When You Don't Make the Product)**
  - CAM Power Supply
    - ◆ Vendor designed CAM to be dust-tight (sealed unit)
    - ◆ Internal Power Supply made by company which did **NOT** intend it to be sealed
    - ◆ Heat build up inside sealed CAM caused power supplies to fail early
    - ◆ Contacted power supply manufacture and they developed a “High Temp” version which we now use inside all of the CAMs

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- **Maintaining Product Quality (When You Don't Make the Product)**
  - CAM Internal Relay
    - ◆ Vendor designed CAM to use a commonly available relay (in the early 1990's)
      - Relay contacts oxidize over time
      - This component is the number one failure item for this CAM during scheduled Preventive Maintenance
    - ◆ Relay no longer manufactured by the company and all available supplies have manufacturing date of 1990's
    - ◆ Plant required to design a like-for-like replacement to keep existing CAMs running

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- **Maintaining Product Quality (When You Don't Make the Product)**
  - CAM Pump Diaphragm
    - ◆ Internal pump required to run continuously while CAM is installed
    - ◆ Vendor decided to change the rubber diaphragm material
      - Cut down on manufacturing costs
      - Used cheaper rubber made in China
      - Did not tell the customer (Pantex)
    - ◆ Pumps started failing in-service, when in the past they had ran for years before requiring replacement
    - ◆ Contacted manufacture and requested “better” diaphragm
      - Currently testing two types of rubber for reliability

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## ■ **Summary**

- Continuous improvement is truly “continuous”
- Utilize in-house talent and expertise when available
- Improvement requires constant communication
  - ◆ Pantex re-implemented a RAMS Steering Committee
    - Comprised of members across the plant from six divisions to improve our system

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**Questions?**

**Thank you!**

