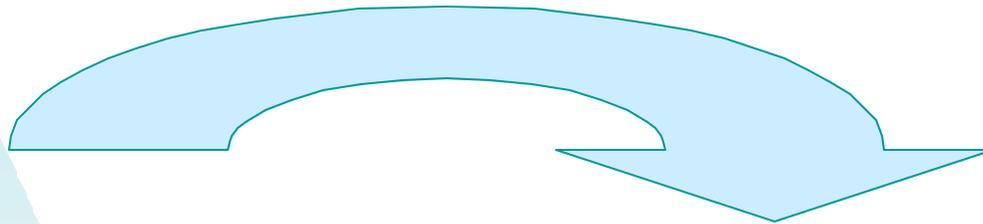


TRANSITION FROM AFS TO CEDS

THE VIRGINIA EXPERIENCE



AFS



TRANSITION FROM AFS TO CEDS - *BACKGROUND*

- Agency-wide systems evaluation
- Determined a new data system was needed
- Purpose of the new system:
 - ◆ Systems consolidation - common platform
 - ◆ Cost & risk reductions
 - ◆ Y2K concerns
 - ◆ Replace obsolete systems
- Comprehensive Environmental Data System

TRANSITION FROM AFS TO CEDS - *AIR INVENTORY HISTORY*

- 1980's - State operated EIS system
- System & hardware became obsolete
- 1991 - Decision made to switch to AIRS/AFS
 - ◆ AFS fully developed & operational
 - ◆ Cost savings over in-house development
- 1993 to 1998 - Used AFS for inventory
- 1997 - Design of CEDS begun
- 2000 - Initial deployment of CEDS & the inventory module

CEDS DEVELOPMENT HISTORY

- Existing systems inventory & evaluation
- Over 100 separate databases identified
- Initial development group established:
 - ◆ Identify & define systems to be included
 - ◆ Define additional system needs
 - ◆ Develop system design document
- Smaller media groups established to further define system
- Initial production system deployed in 2000
- System additions & enhancements continue

CEDS EI DEVELOPMENT TIMELINE

1997



Initial workgroup established to design CEDS

1998



Smaller media groups convened to refine system design - EI development begun

1999



System development continues - AFS data download preparations begun

2000



Inventory module put into production
historical AFS data is loaded (90 to 98)
CEDS populated with inventory data for first time (**AFS emissions shutdown**)

2001

&

2002

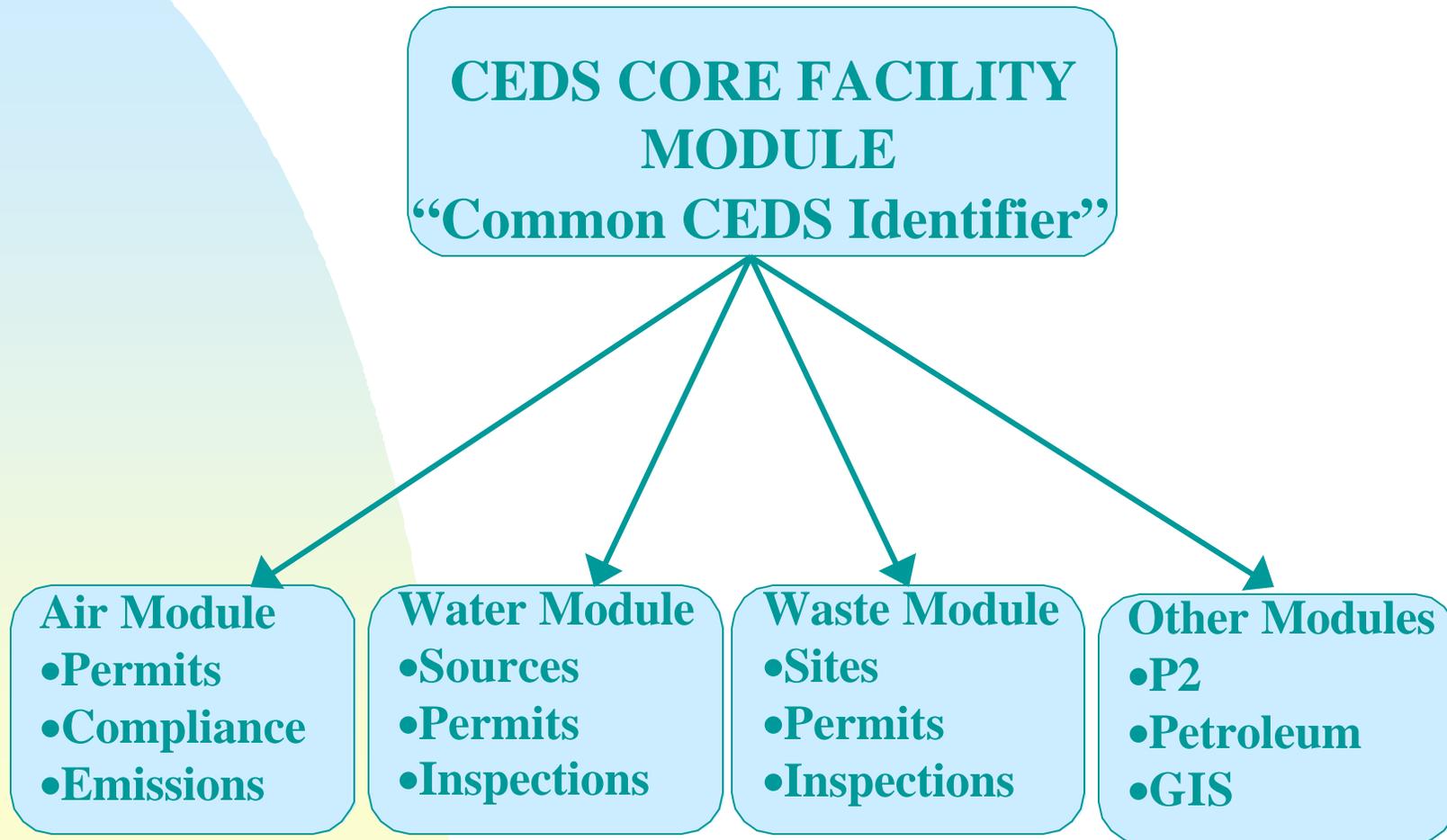


First inventory update completed in CEDS -
Inventory module enhanced and new sub-modules added

CEDS DESIGN & DATA STRUCTURE

- ORACLE-based data system
- Centralized redundant databases
- Regions linked by telecommunications links
- Core “facility” data module
- Media specific modules linked through common identifiers (IDs)
- Major modules: air, water, waste, others
- Total facilities in system (all media): >53,000
- Total air media facilities: ~6,000

CEDS OVERALL DATA STRUCTURE



CEDS AIR PROGRAM MODULES

- Air facility data module (tied to the core)
- General Module - Data on emissions units & air programs
- Permit Module - Data on permits, events, conditions, & limits
- Compliance Module - Data on inspections, compliance, targeting, & enforcement
- Stage II - Data on gas stations with vapor recovery equipment
- Emissions Inventory - Data on emissions

CORE FACILITY & AIR FACILTY SCREEN

Virginia Department of Environmental Quality - [Current Screen : Facility, Database: CEDSUACT]

Action Edit Query Block Record Field Window Help

Facility

Name: **CEDS Presentation Example Facility** ID: 200000205986

Location: 629 E. Main Street

Location (Physical) Address: Room 816

City: Richmond State: VA Zip Code: 23219

FIPS: 760 Richmond City

Facility contains info. for following Media

Air
 Water
 Waste
 Petroleum
 Air Check
 P2

Inserted By: TRBALLOU Date: 28-MAR-2002
 Changed By: Date:

General | **Air Fac** | Waste Fac | Water Fac | P2 | Petroleum | Air Check | GIS | Former Names | Owner | Contact | Operator

Air Facility

Region: PRO Reg No: 52000 UnReg. Plant ID: 00483 Stage II Fac Stage II Reg No:

Plant Name: CEDS Presentation Example Facili Physical Plant Desc: Example Combustion Source CMS

SIC: 4911 NAICS: Principal Product: Example Combined Cycle

Assigned Inspector:

No. of Employees: 50 Property Area (Acres): 50

Operating Permit Fee: State Operating P Operational Status: Operating

Plant Classification: Synthetic Minor Compliance Status: In compliance-certification

St Sens. Ind
 CEM/COM
 HPV
 Portable

General | **Permit** | Compliance & Enforcement | Emissions | Stage Two

Emissions Unit	Permit	Applicable Requirements	Air Inspection	Emissions Inventory	Source Information
Air Program	Allowables	Events	Targeting Data	SIP Inventory	Inspection
			Enforcement		Test

deq region code - list of values available

Record: 1/1 <OSC> <DBG>

Start Virginia Department o...

CEDS EMISSIONS INVENTORY DESIGN

- AFS data model used as a starting point:
 - ◆ Institutional knowledge of data structure
 - ◆ Opinion of AFS generally favorable
 - ◆ Consistent with established data collection procedures & data submission to EPA
- Enhancements on the AFS model in CEDS
 - ◆ Main inventory module on one form & scrollable screen
 - ◆ SIP related emissions data separate from annual inventory
 - ◆ Others (link to allowable limits, etc.)

CEDS EMISSIONS INVENTORY MODULE



NET

CEDS Air Facility

Emissions Inventory

Stack
Point
Segment
Emissions

Allowable
Limits

Ozone
SIP
Inventory

CEDS EMISSIONS INVENTORY DESIGN *(CONTINUED)*

- Main emissions inventory form (one screen)
- Reporting & administrative functions:
 - ◆ facility roadmap
 - ◆ Summary & detailed emissions reports
 - ◆ Increment or remove inventory years
 - ◆ Expedited update function
- Inventory data levels:
 - ◆ Stack (physical stack characteristics)
 - ◆ Point (emissions unit operating info.)
 - ◆ Segment and Emissions (fuels, emissions, & control info.)

EMISSIONS INVENTORY - STACK & POINT

Virginia Department of Environmental Quality - [Emissions Inventory]

Action Edit Query Block Record Field Window Help

Registration Number: 52000 **Air Facility** County - Plant ID:

Plant Name: CEDS Presentation Example Facility Inventory Year:

Stack #: Point #: Seg#: Last Annual Update:

Road Map Pollutant Emissions Rpt Consolidated Rpt Increment Year Remove Year Update Express

Stack

Stack #: Stack Description:

Stack Height (Ft): Exit Gas Flow Rate (ACFM): GEP Stack Height (Ft):

Stack Diameter (Ft): Exit Gas Velocity (Ft/Sec): GEP Bldg Length (Ft):

Plume Height (Ft): Exit Gas Temp (F): GEP Bldg Width (Ft):

Stack Type: Elevation (Ft above MSL): GEP Bldg Height (Ft):

Permitted Equipment UTM: Zone: Horizontal Coord: Vertical Coord:

Rough Terrain Indicator Last Updated By: Last Updated Date:

Point

Point #: Point Description:

Normal Operating Schedule	PCT Annual Throughput	Air Program	Subpart	<input type="checkbox"/> Permitted Equipment	<input type="checkbox"/> State Sensitive Indicator
Hours Per Day: <input type="text"/>	Dec- Feb: <input type="text"/>	<input type="text"/>	<input type="text"/>	Space Heat (%): <input type="text"/>	
Days Per Week: <input type="text"/>	Mar - May: <input type="text"/>	<input type="text"/>	<input type="text"/>	Design Capacity: <input type="text"/>	
Hours Per Year: <input type="text"/>	Jun - Aug: <input type="text"/>	<input type="text"/>	<input type="text"/>	Design Capacity Units: <input type="text"/>	<input type="button" value="↓"/>
	Sep - Nov: <input type="text"/>	<input type="text"/>	<input type="text"/>	Per Unit of Measure: <input type="text"/>	<input type="button" value="↓"/>

Record: 1/1 <OSC> <DBG>

EMISSIONS INVENTORY - SEGMENT & EMISSIONS

Virginia Department of Environmental Quality - [Emissions Inventory]

Action Edit Query Block Record Field Window Help

Registration Number: 52000 **Air Facility** County - Plant ID:

Plant Name: CEDS Presentation Example Facility Inventory Year:

Stack #: Point #: Seg#: Last Annual Update:

Road Map Pollutant Emissions Rpt Consolidated Rpt Increment Year Remove Year Update Express

Copy From Segment Last Updated By: Last Updated Date:

Segment

Seg #	Segment Description	SCC	Actual Annual Throughput	Annual Throughput Units	Comments	Ma: Oper Rati

Estimated Actual Emissions

Pollutant	Method	Factor	Value	Unit	A/S	Primary Control

Calculate Emissions

Segment number. Record: 1/1 <DSC> <DBG>

Start Virginia Department o...

CEDS EMISSIONS INVENTORY DESIGN *(CONTINUED)*

- Links to SIP inventory & allowable limits screens
- SIP Emissions inventory screen:
 - ◆ Rule effectiveness & daily emissions
 - ◆ These emissions automatically calculated
- Allowable limits Screen:
 - ◆ Store allowable emissions & operating limits at all inventory levels (plant to segment)
 - ◆ Also displays actual emissions for QA, audit, & compliance purposes

EMISSIONS INVENTORY - OZONE SIP

Virginia Department of Environmental Quality - [Air Sip: SIP Emissions Inventory]

Action Edit Query Block Record Field Window Help

SIP Emissions Inventory

Registration Number: 52000 County - Plant ID: 760-00483
 Plant Name: CEDS Presentation Example Fa Inventory Year: []

Stack #	Stack Description	Point #	Point Description	Segment #	Segment Description

Pollutant	Rule Eff. %	Emis Type	Value	Unit	Method

SIP Summary Report

Segment number. Record: 1/1 <OSC> <DBG>

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EMISSIONS INVENTORY - ALLOWABLE LIMITS

Virginia Department of Environmental Quality - [Form air_all: Air Allowable Emissions]

Action Edit Query Block Record Field Window Help

Air Allowable Limits and Emissions

Registration Number: 52000 County - Plant ID:

Plant Name: CEDS Presentation Example Facility Inventory Year:

Stack #: Point #: Segment #:

Plant

Pollutant	Actual Emissions (tpy)	Pollutant	Allowable Value	Unit	Effective Date	Updated By	Updated Date	Potential to Emit Value	Unit

Stack

Stack #: Stack Description:

Pollutant	Actual Emissions (tpy)	Pollutant	Allowable Value	Unit	Effective Date	Updated By	Updated Date	Potential to Emit Value	Unit

Record: 1/1 <OSC> <DBG>



CONCLUSIONS & LESSONS LEARNED

- Clearly identify system & module needs
- Involve staff with knowledge & experience in inventory systems
- Pay constant attention to development process
- Be persistent & insistent that job be done right
- Develop daily working relationship with module programmers

CONCLUSIONS & LESSONS LEARNED *(CONTINUED)*

- Always think of data transfer considerations
- Be prepared for failures & setbacks
- Don't try to make the system do too much
- Don't design system in a way that changes basic business functions
- Use contractors with environmental systems experience (if possible)
- Keep system & module design groups down to a workable size (with the right people)