TRANSITION FROM AFS TO CEDS

THE VIRGINIA EXPERIENCE

AFS

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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

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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

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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

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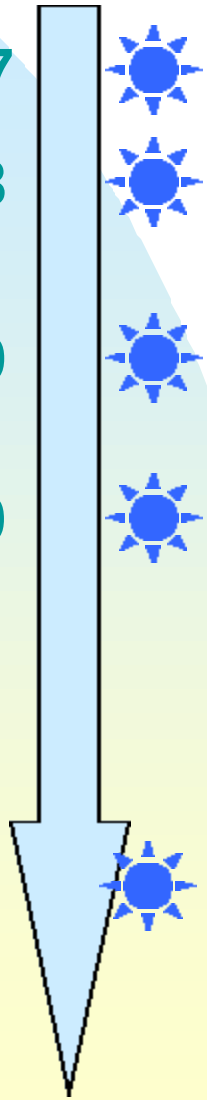
CEDS EI DEVELOPMENT TIMELINE



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

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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 is system (all media): >53,000
- Total air media facilities: ~6,000

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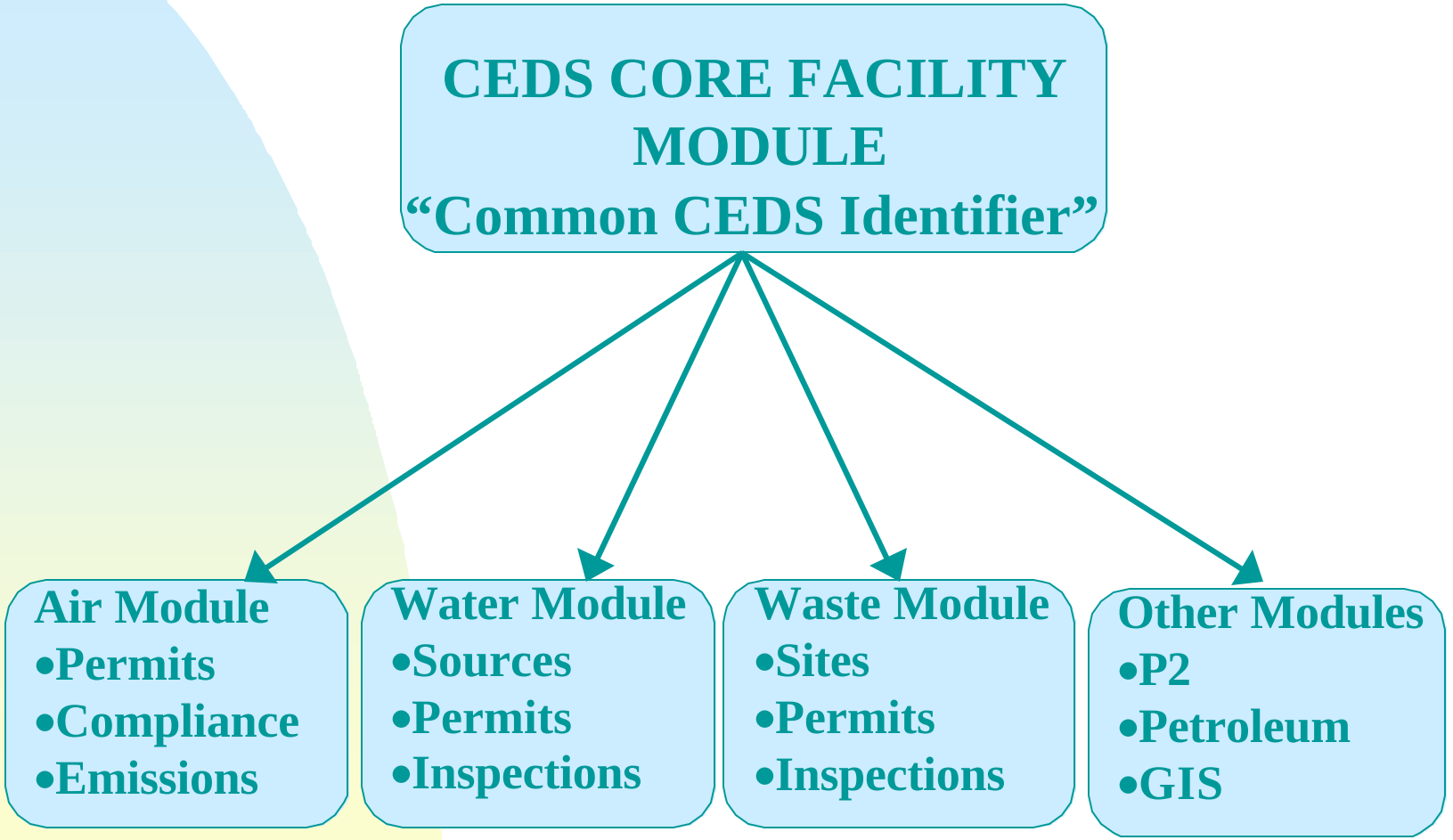
CEDS OVERALL DATA STRUCTURE



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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

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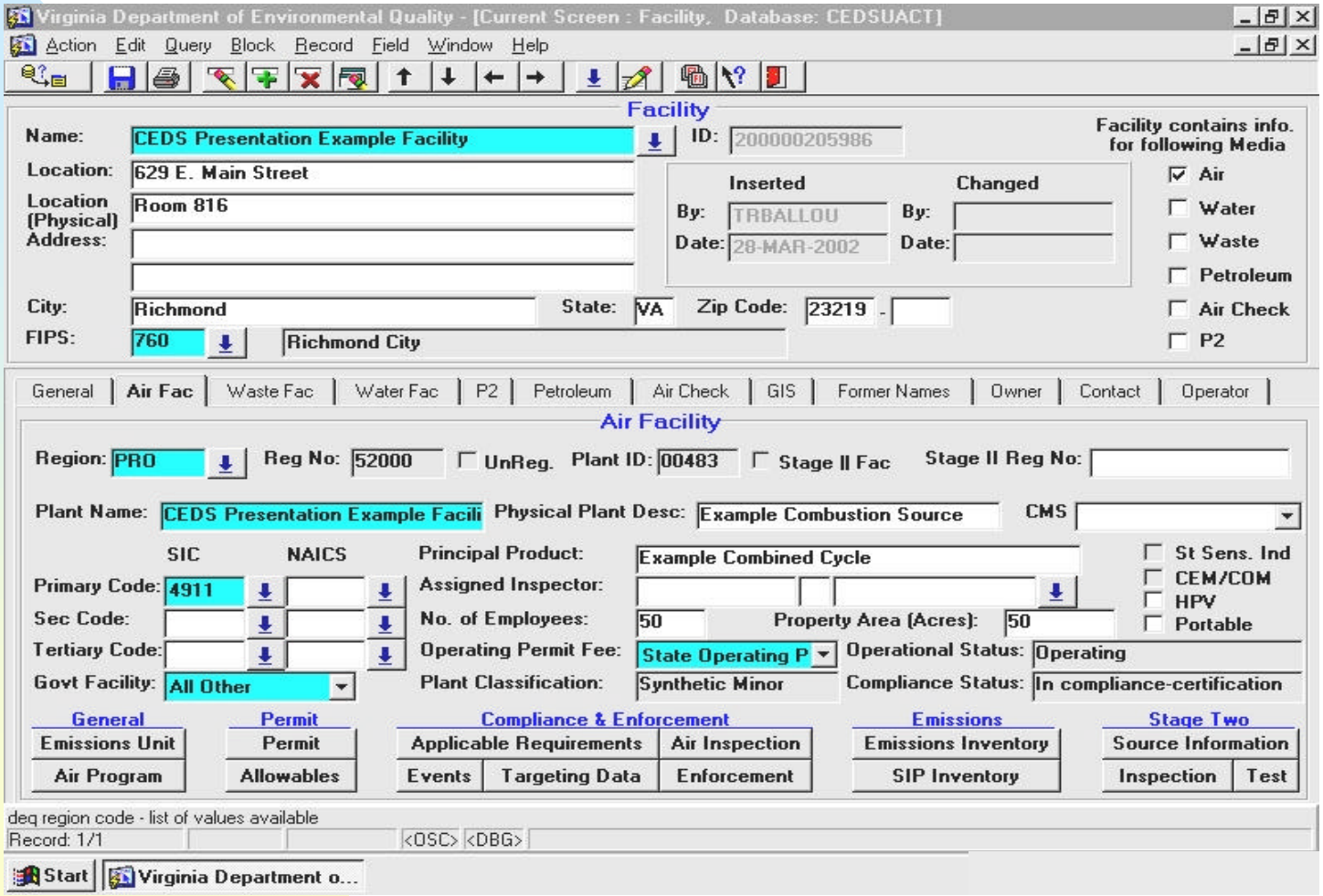
CORE FACILITY & AIR FACILTY SCREEN



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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.)

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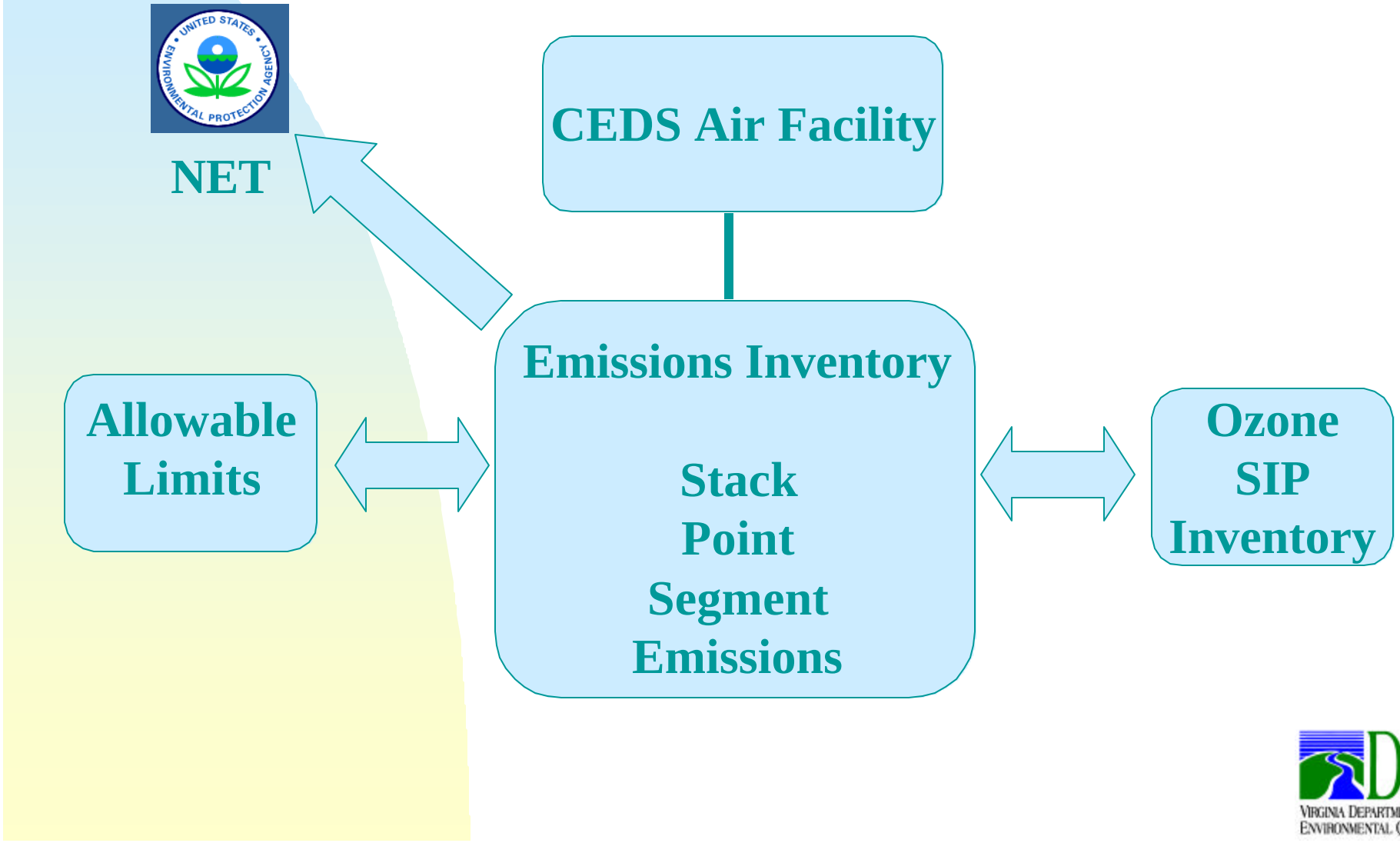
CEDS EMISSIONS INVENTORY MODULE



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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.)

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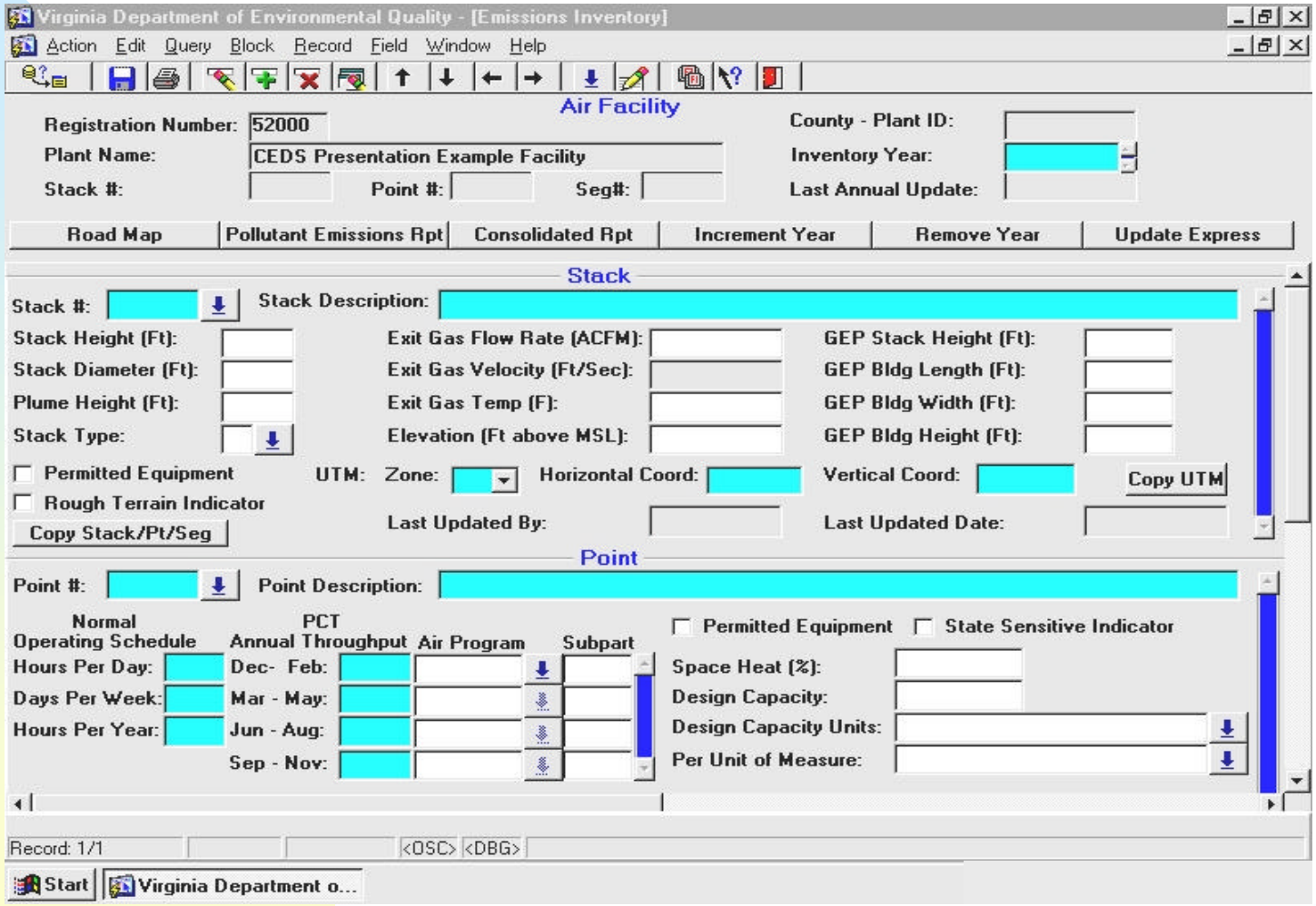
EMISSIONS INVENTORY - STACK & POINT



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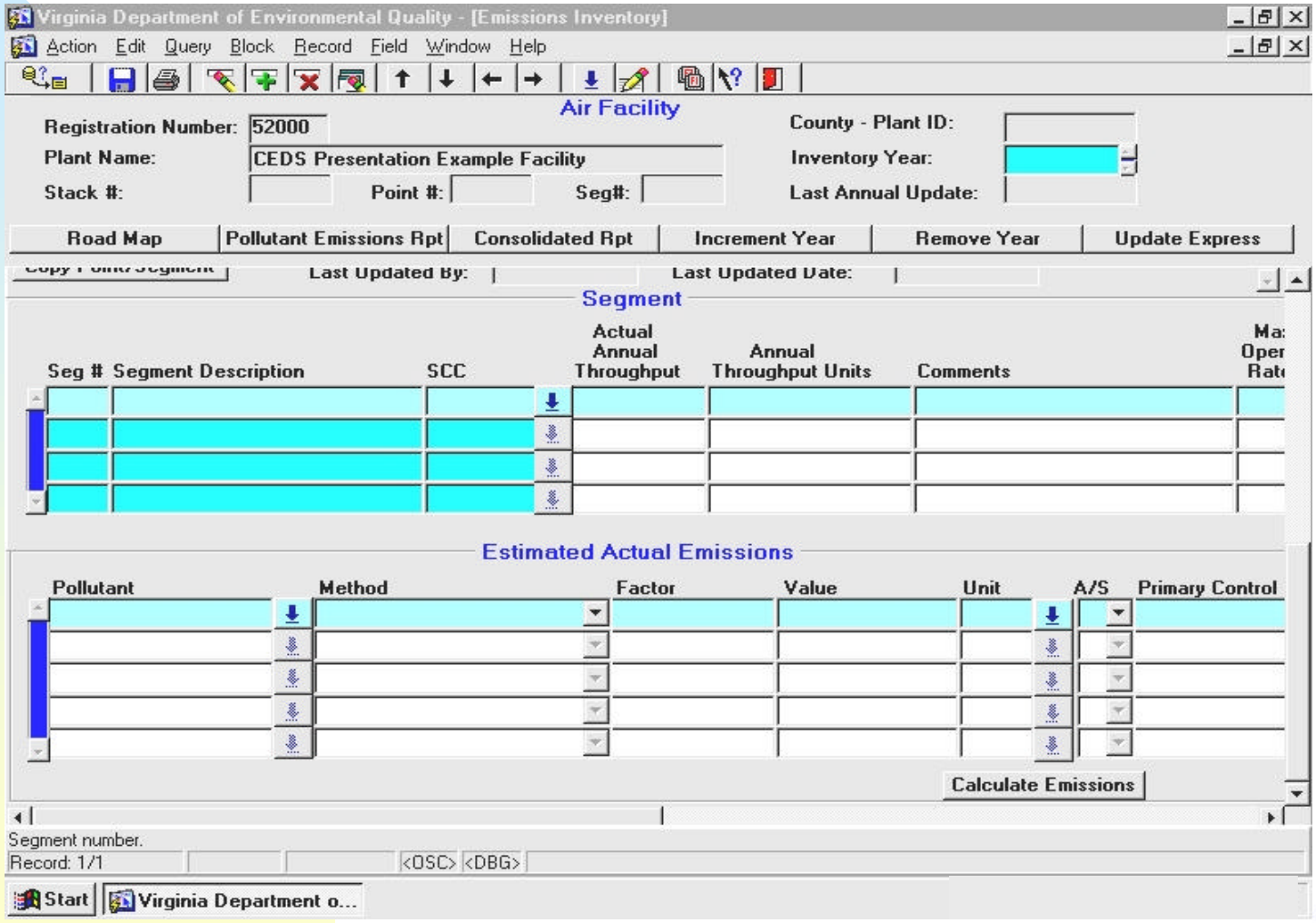
EMISSIONS INVENTORY - SEGMENT & EMISSIONS



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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

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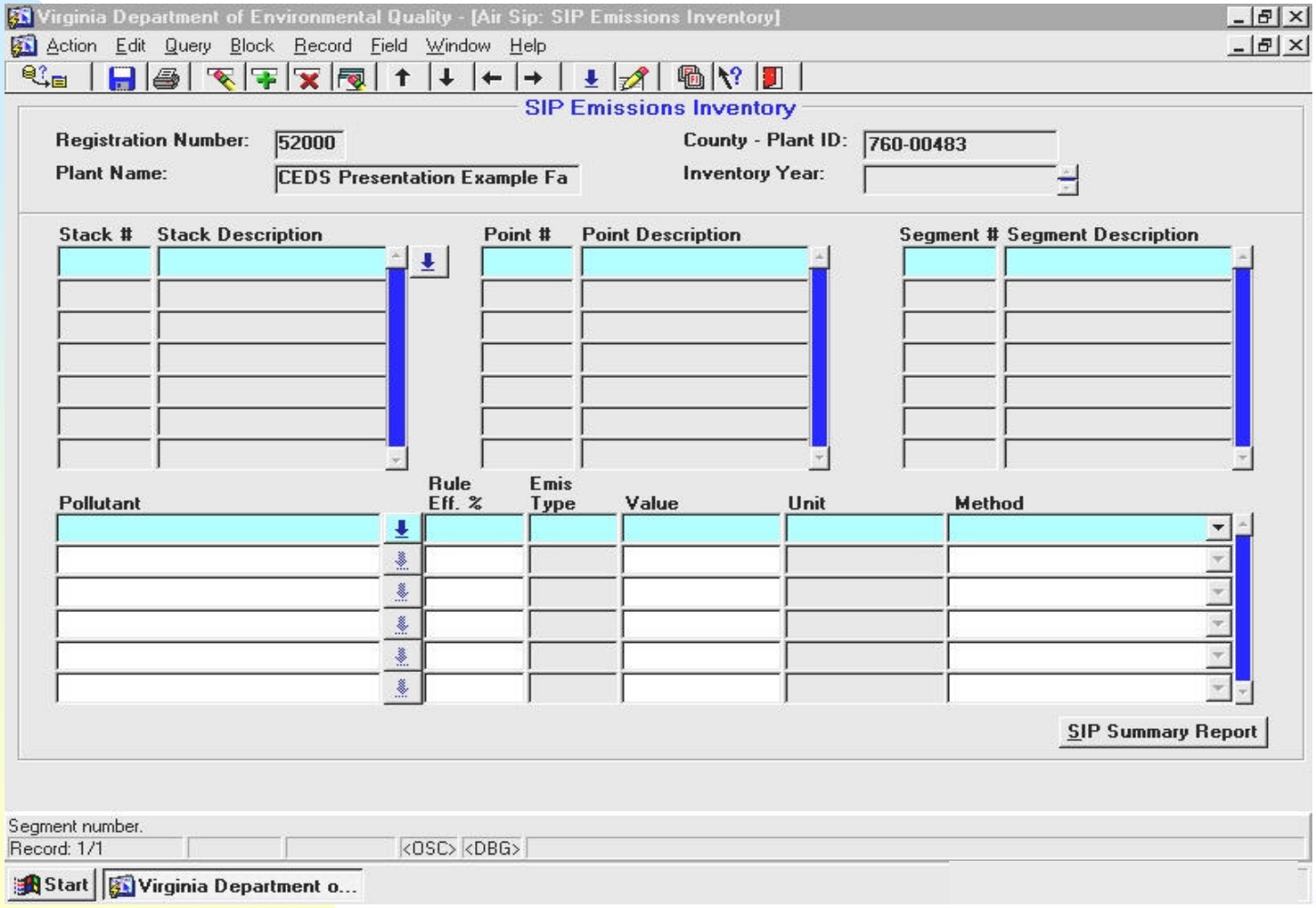
EMISSIONS INVENTORY - OZONE SIP



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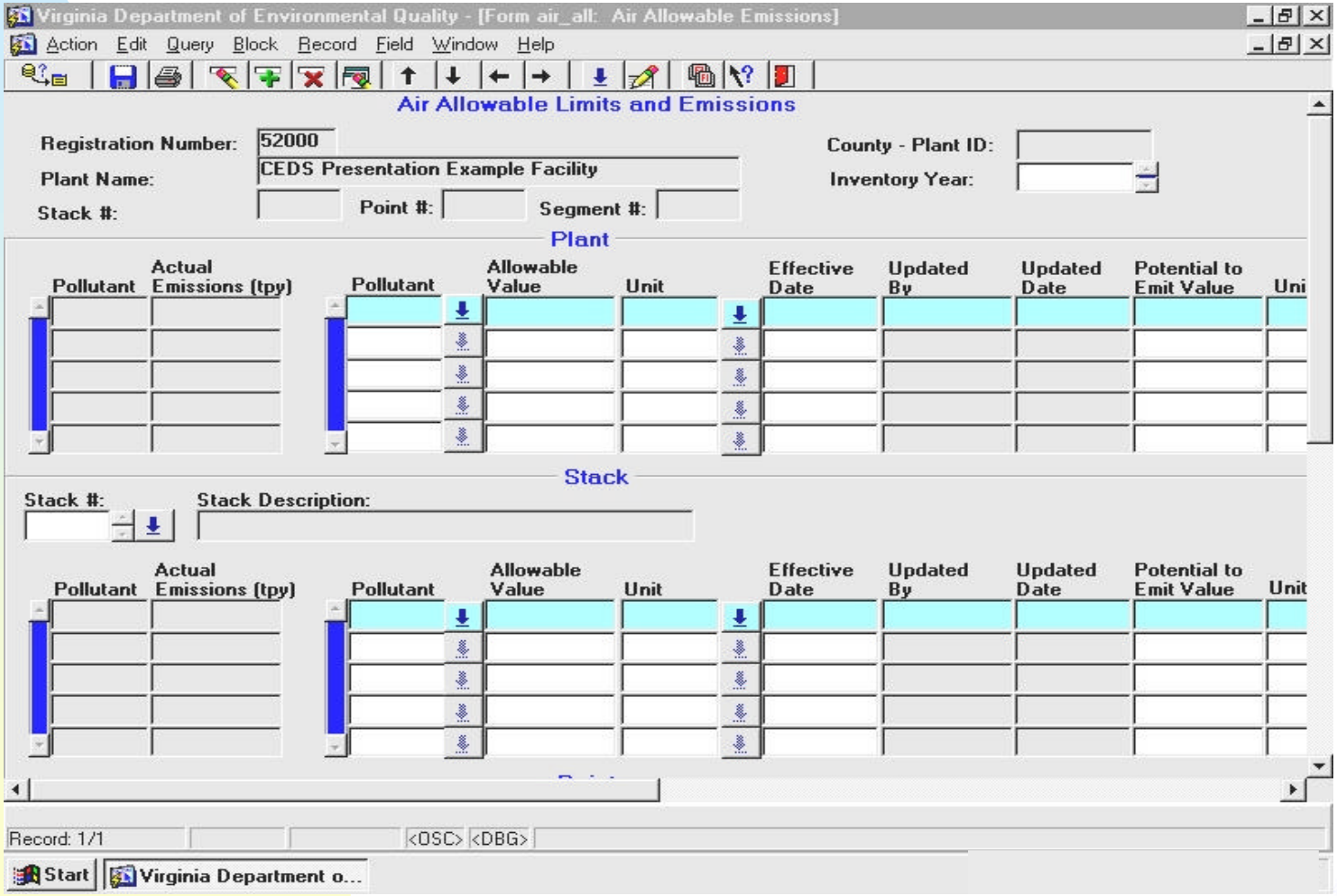
EMISSIONS INVENTORY - ALLOWABLE LIMITS



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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

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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)

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