



CRPAQS Initial Data Analysis of Field Program Measurements - Task 6.4 Near-Term and Low Wind Dispersion Measurements of Plumes from Steam Generators During the CRPAQS

Thomas Rappolt, Program Manager
Tracer Environmental Sciences & Technologies, Inc.
970 Los Vallecitos Blvd., Suite 100
San Marcos, CA 92069
Phone: (760) 744-9611 / Fax: (760) 744-8616
www.tracer-est.com

- Research Objectives
- Funding
- Methodology
- Results
- Conclusions

■ Dispersion and Transport Processes

- Identify where fossil energy plumes interact with ambient ammonia in the atmosphere.
- Attain field data pertaining to how plumes disperse in stagnant fog.
- Provide information on the significance of fossil energy plumes to the formation of secondary aerosols.

$$\text{NO}_x + \text{H}_2\text{O} \rightarrow \text{HNO}_3 \text{ (Nitric Acid)}$$

$$\text{HNO}_3 + \text{NH}_3 \rightarrow \text{NH}_4\text{NO}_3 \text{ (Ammonium Nitrate)}$$

	NO_x	NH_3	H_2O			
	*	*	*	*	*	*
	*	*	*	*	*	*
	*	*	*	*	*	*

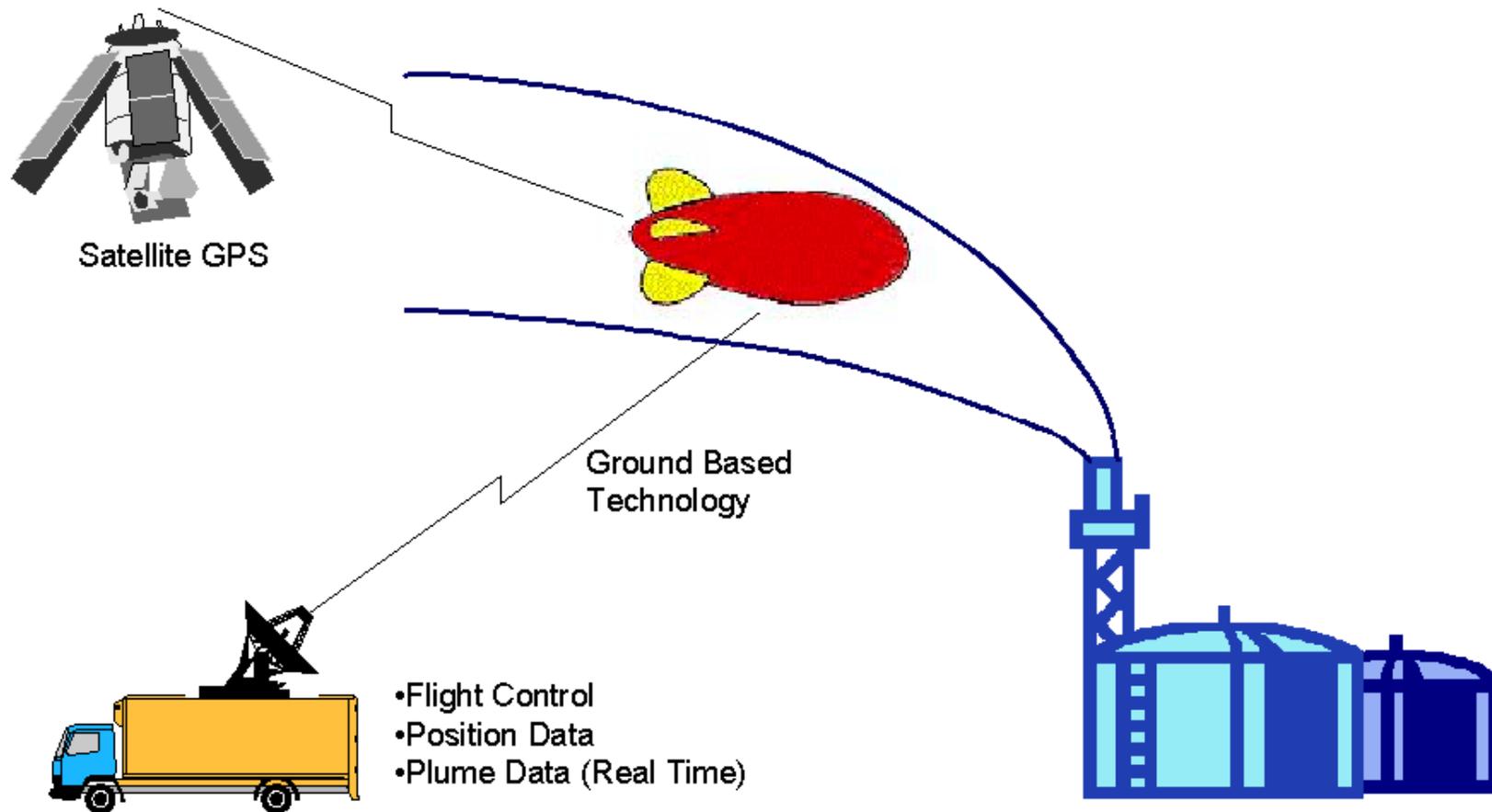


■ Field Program

- United States Department of Energy
- Western States Petroleum Agency
- Tracer ES&T

■ Data Analysis

- California Air Resources Board



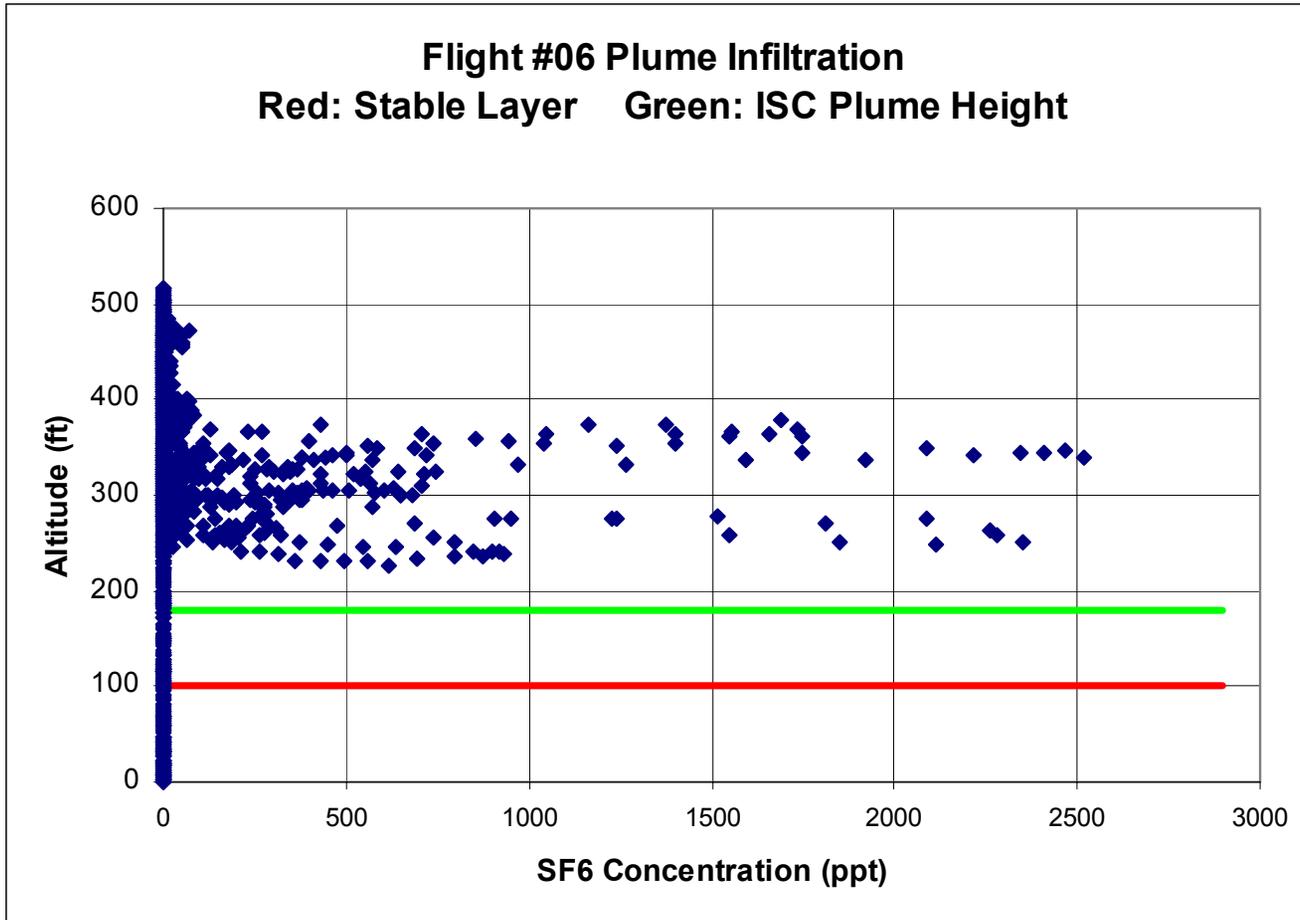
South Belridge Oil Field (West of Bakersfield, CA)

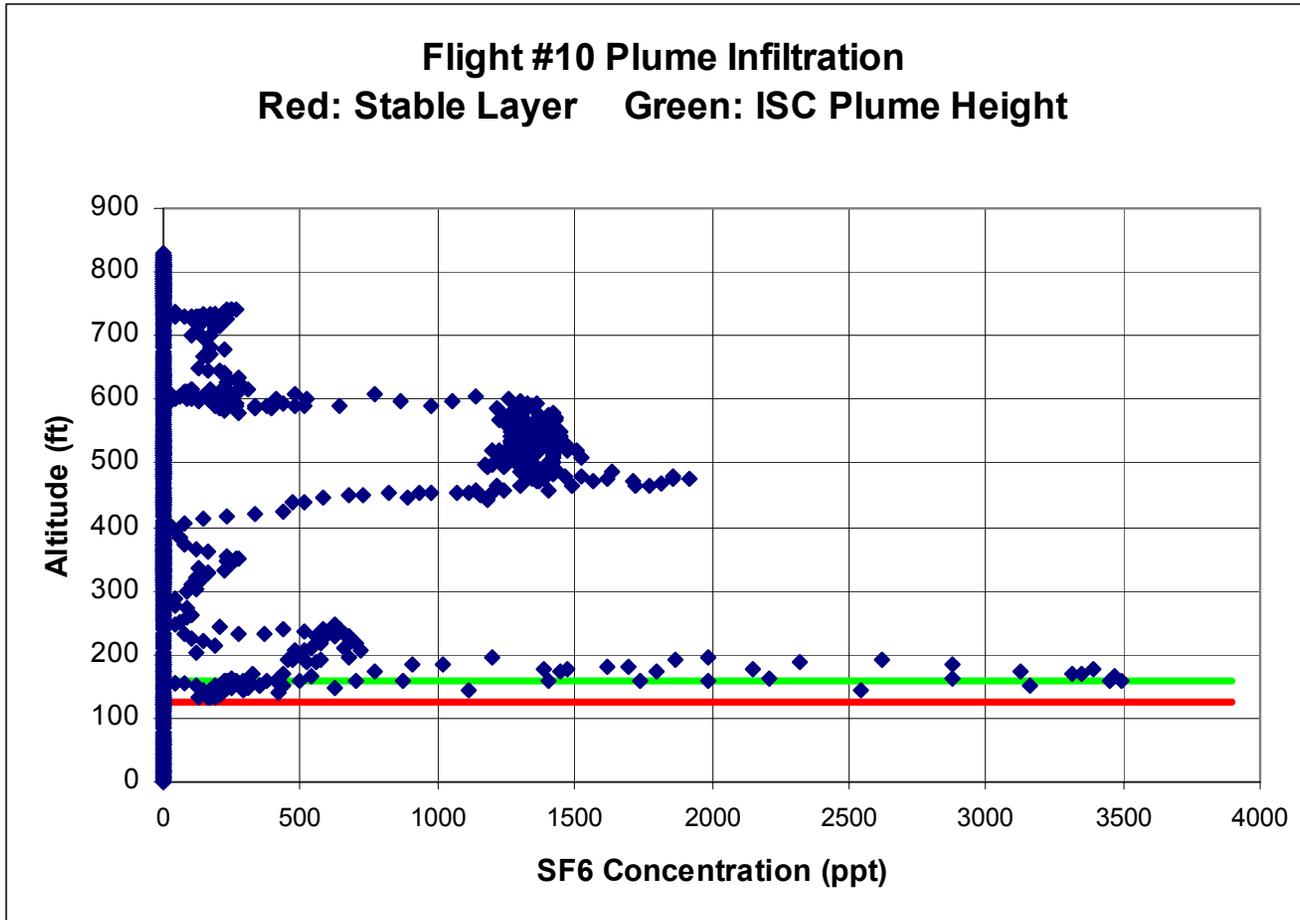


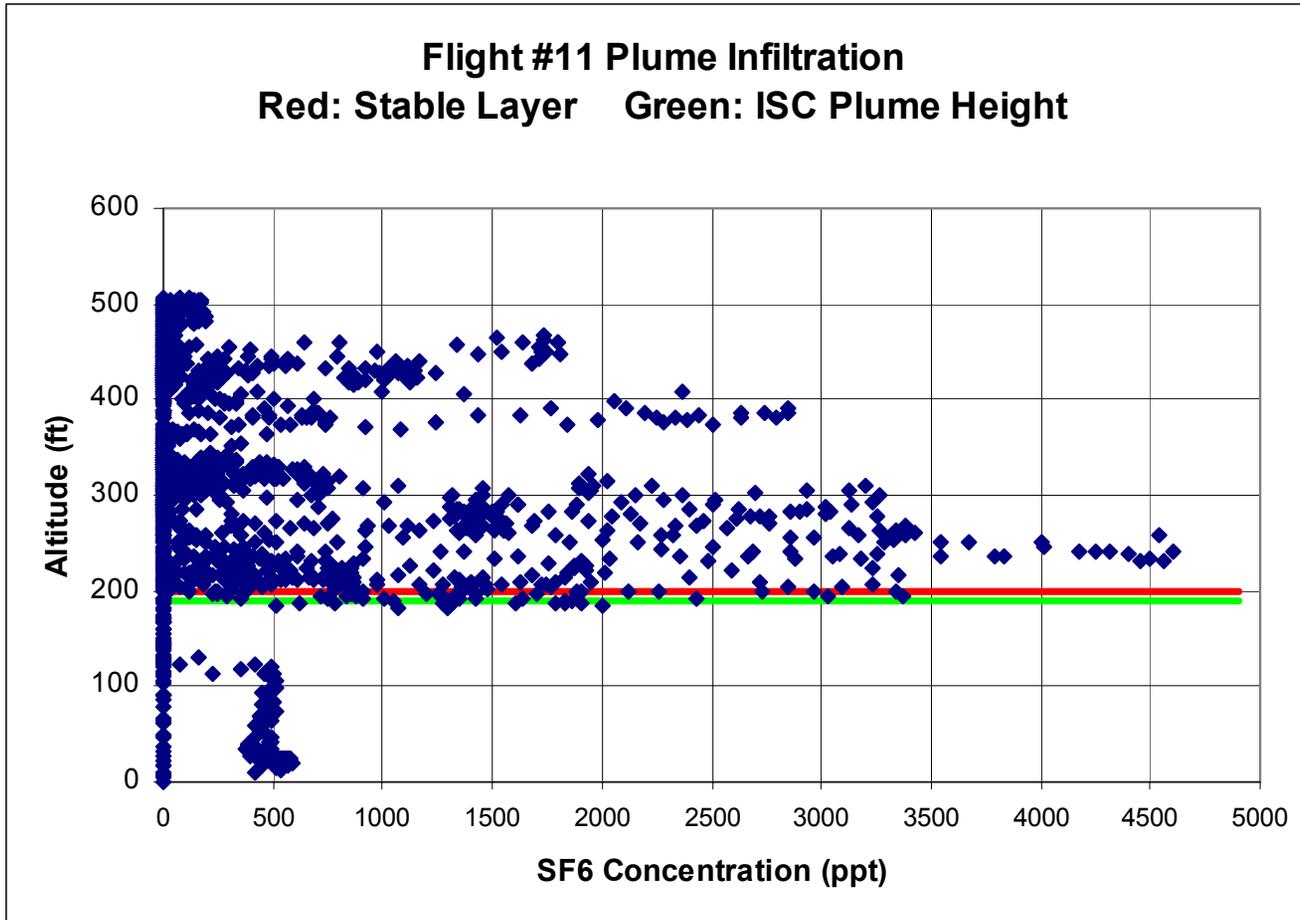


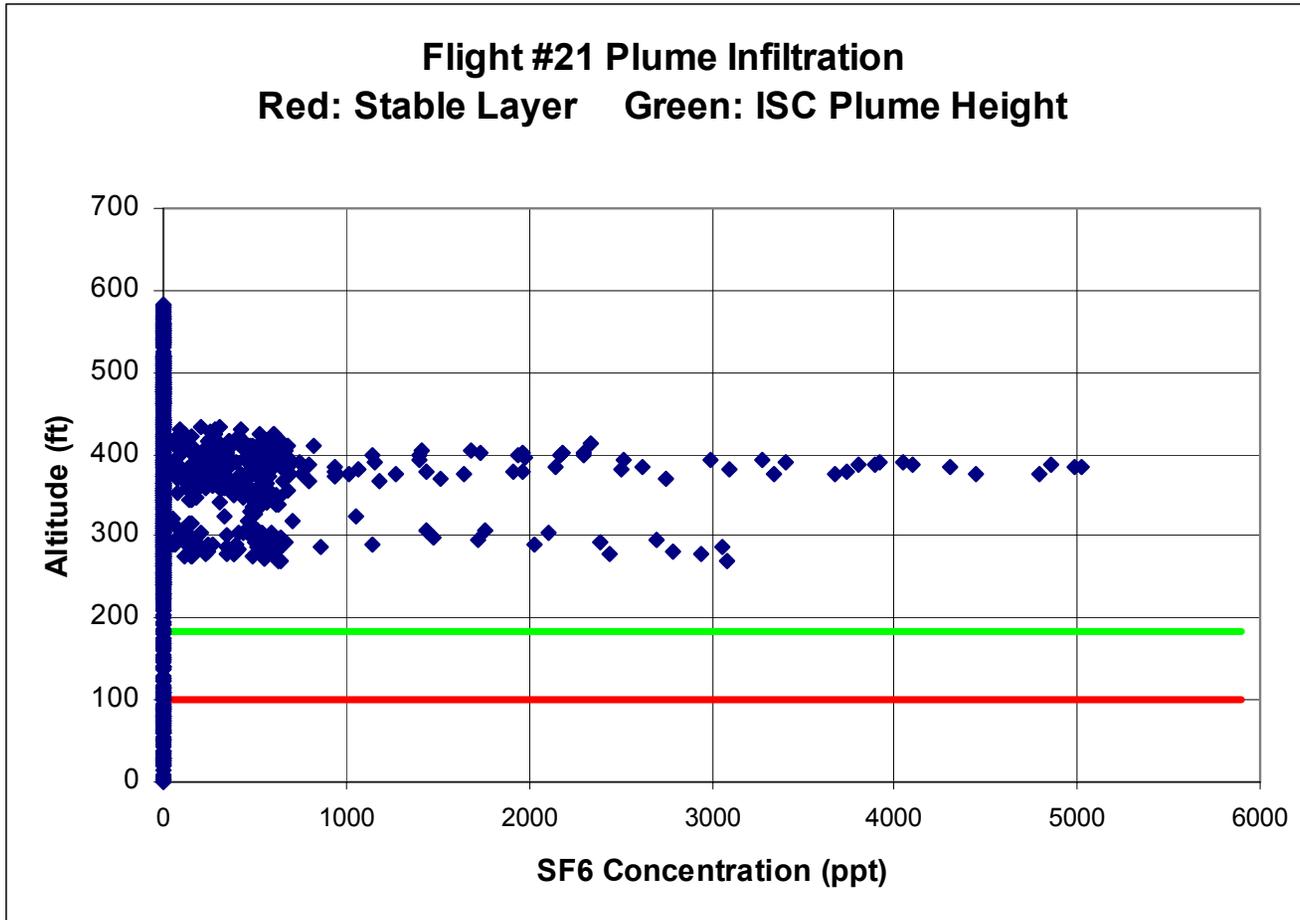
■ 28 Flights

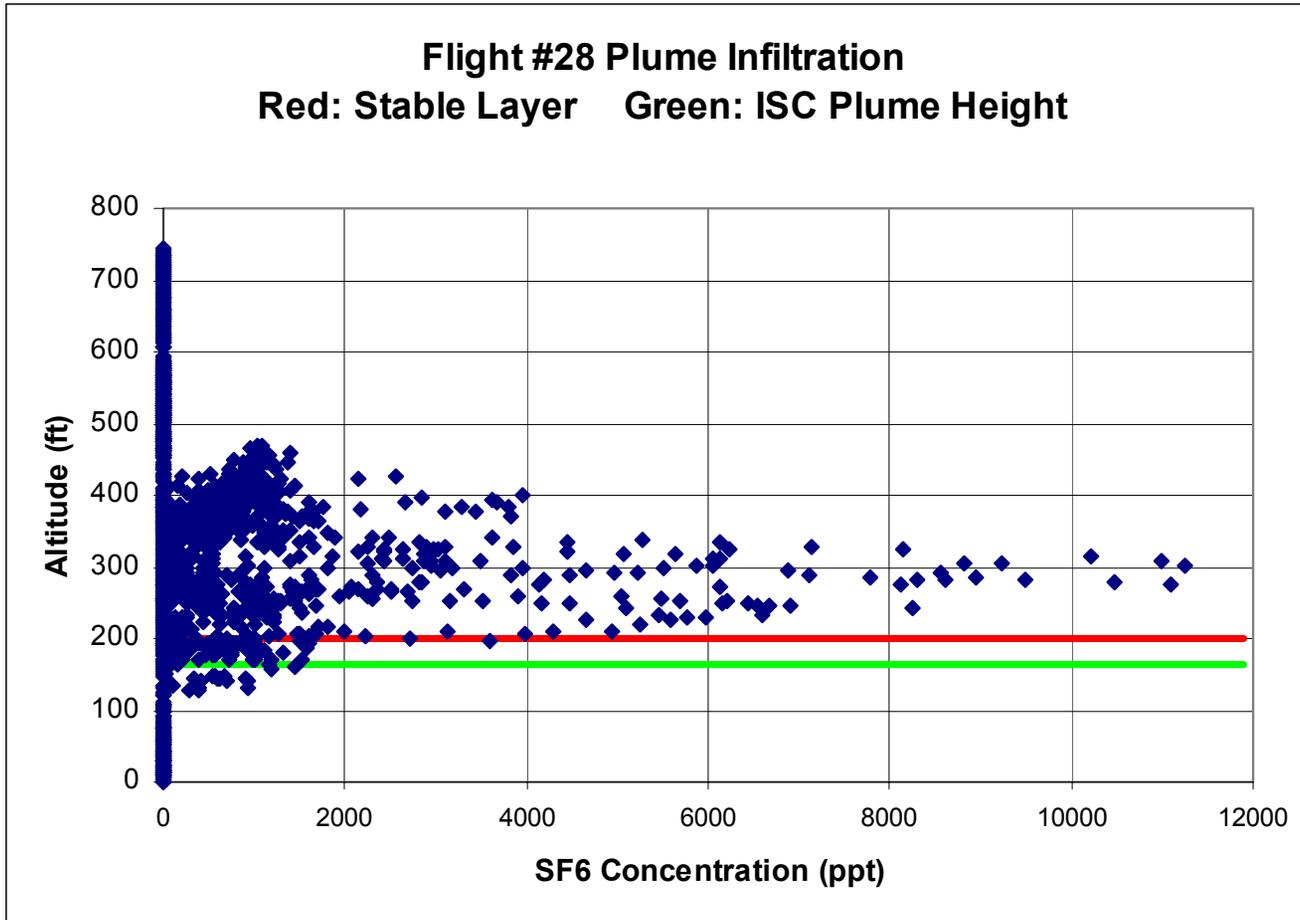
Date	No. of Flights	General Conditions
12/16/2000	3	Clear, light winds
12/17/2000	4	Cool, low ceiling
12/18/2000	1	Low, thin fog, cool
01/04/2001	6	Clear, light winds
01/05/2001	4	Clear, light winds
01/06/2001	4	Clear, very dry
01/07/2001	1	Clear, light winds
01/31/2001	2	Clear, warm, some high winds
02/01/2001	3	Very clear, light winds











- Observations show tracer plume is entrained significantly into stable layers aloft, well above the ISCST model predictions.
- While vertical dispersion rates of plumes are over predicted by models, actual plume heights are significantly under predicted by ISCST, even in the presence of a low lifted inversion.