

*memo on observing
trial burn by CKE*

MEMORANDUM

TO: File, Los Alamos National Lab, Part B.

FROM: C. Kelley Crossman *CKC*

DATE: September 10, 1986

SUBJECT: Trial Burn of Controlled Air Incinerator

The trial burn of the LANL CAI was conducted on Sept 2-9, 1986. I observed the activity on Sept 4-6, 1986. Sept 2-3 were used to start up the CAI, Sept 4-5 was the liquid waste burn and sample, Sept 6-7 was the solid waste burn and sample and Sept 8-9 was the shutdown period.

On Sept 4, I first stopped in at the DOE office and briefed Jim Phoenix, Don Gallegos and Charlene Esparza-Baca. I provided them with a copy of the RCRA incinerator inspection checklist and explained that LANL was now vulnerable for inspection using that checklist but that I was there as an observer.

I then went to TA-50 and met Leon Bourdine and briefed him on my purpose. I also provided him a copy of the incinerator inspection checklist. Bourdine gave me a copy of the revised burn plan (attached). I then met with Ralph Koenig and John Vavruska of LANL who were in charge of the burn, John A. Chapman, Clean Air Engineering, the sampling contractor, and Phil Swent, EPA Region 6 incinerator inspector and sampling specialist.

We toured the facility and saw the waste preparation, incinerator, effluent scrubber system and the sampling setup. The remainder of the day was spent watching the control panel and discussing incinerator operation with Koenig and Vavruska. Near the end of the day the trial burn was interrupted while a HEPA filter was replaced.

On Sept 5, I went directly to the CAI where the second day of liquid waste burn was in progress. No apparent differences or unplanned events occurred.

On Sept 6, I observed part of the first day burn of the solid waste surrogate. The waste burn appeared to progress as planned but several problems occurred with the peripheral equipment. The caustic (NaOH) neutralization solution pump was replaced, as was a feed line later. The burn was using approximately equal amounts of caustic and waste, causing the caustic solution to be used immediately after mixing, while it was still hot. This appeared to affect the plastic parts of the neutralization system. A second HEPA filter replacement occurred during the early part of this burn sequence. Bourdine speculated that the HEPAs were loading with salt from the neutralization reaction.

On Sept 7, Bourdine called and briefed me that the second day of solid waste burn was complete with no major problems.



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CKC

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OBSERVATIONS:

The pH of the ECS was difficult to control, giving wide swings between 2 and 12.
The NaOH consumption was quite high at the chlorine loading being used.
The HEPA filter loading may be an operational limitation LANL will consider significant, limiting their chlorine burn rate.
When feeding solids they reported some box handling problems in the feed system.
This has no affect on the DRE.
The PCC temperature showed a steady rise rate while burning the liquid waste.

LANL TRIAL BURN

The text on pages 3 and 16 describe the CAI as an "incineration research system". The New Mexico Hazardous Waste Regulations do not provide for permitting of R & D activities in regard to RCRA wastes. Any research which involves physical changes to the CAI will have to be processed as a major or minor permit modification under HWMR-2 Section 302.M or 302.O. No R & D activities shall be permitted if burning of RCRA wastes is involved.

The text on page 6 states that the operating parameters will be negotiated between LANL and EPA. HWMR-2, Section 302.E.1.b. (10) states that the EID Director shall set the operating requirements.

Table 1 on page 7 proposes a nine minute delay parameter for CO out of tolerance before waste feed is cut off. No justification is provided as to why this long of a time is acceptable. The explanation on page 8 that this was acceptable for other incinerators is not justification for this application without details of the circumstances and reasoning leading to the other decisions.

The text on page 13 describes the waste burner as an LV-2 injector. Attachment B indicates there is no LV-2 injector. What is the correct nomenclature of the injector?

The text on page 16 states that the sampling is intended to determine HCl removal efficiency. Table 2 and 3 do not indicate all sources of chloride will be sampled and analyzed. Makeup water and caustic solution are two possible sources of chloride ignored. The ECS sump should be sampled for Chloride before and after each run. The text on page 19 indicates ECS blowdown will be composited. No justification of

this compositing is provided. HWMR-2 Section 302.E.2.b.(5)(e) allows for computation of HCl removal efficiency as an alternate parameter. This approach may only be used if sufficient accurate data are collected.

Table 4 on page 29 lists reference methods for analysis different from EPA approved methods in SW 846. EPA approved methods must be used if available. Alternative methods must be described.

The text on page 33 describes the trial burn protocol and is summarized in Table 8 on page 37. The protocol shows only two variables will be demonstrated, solid and liquid wastes of unvarying composition and secondary combustion chamber temperature. No attempt will be made to show operating ranges on any other variable. HWMR-2, Section 302.E.2.b.(10) requires that the operating permit conditions be based on the trial burn results. Therefore limitations in the final permit will restrict waste incineration to the most conservative parameters demonstrated.

The text on page 33 states that wastes of viscosity greater than 500 SSU will not be incinerated. Table 3 does not indicate waste viscosity will be analyzed. Table 4 does not list a viscosity test. No data are presented in Attachment B to indicate the waste injector can accommodate liquids of that viscosity.

The text on page 38 states that the simulated solid waste is representative of the laboratory waste, e.g. small bottles of organic chemicals in lab pack boxes of sawdust. This description is not borne out by the permit application description on page which describes lab packing in vermiculite. A detailed, clear description of what "Solid wastes" will probably consist of, how they will be compiled, handled

,documented, etc. should be provided. Special consideration should be addressed to sealed containers of highly combustible wastes which rupture and flash burn in the incinerator.

The text on page 41 proposes concentration limitations of 1000 ppm on three constituents for which the DRE will not be demonstrated. No justification for this proposed limit is provided. If 99,99% DRE is presumed, detectable amounts of wastes would still be routinely released at these levels.

The text on page 48 states that LANL will incinerate test residual wastes. Until the test burn data are analyzed and the DRE is computed, wastes close to CCl_4 in ease of destruction should not be incinerated. Waste CCl_4 should be stored until incineration approval is obtained.

The text on page 48 states that the emergency waste cut off system will be tested monthly. HWMR-2, Section 206,D.8.g.(3) requires the system be tested weekly unless adequate justification is provided for lesser testing. No justification for monthly operational testing is provided. HWMR-2, Sections 302.E.2.b.(2)(g) 302.E.2.b.(3), 302.E.2.b.(5)(c) and 302.E.2.b.(3), 302,E.2.b.(6)(j) are justification to require a demonstration of the waste cutoff system for each of the parameters so monitored. No demonstration of waste cutoff operation is proposed.

The text on page 50 makes no mention of a suspense date for submittal of the trial burn results. HWMR-2, Section 302.E.2.b.(7) requires all data and the final report be submitted within 90 days of the completion of the trial burn. This includes results and data which may be unfavorable to LANL.

Attachment A is a very skeletal QA/QC plan. No reference to SW 846 requirements is made. No details of what exactly will be checked or by whom. No report of the findings is proposed. The proposed forms are illegible and not reproducible. Does LANL wish to replace Attachment A with the QC plan in the DOE letter of May 7, 1986?

Attachment B is largely illegible and not reproducible. This limits its usefulness for evaluating the proposed trial burn and precludes its reproduction as part of the permit.

Attachment C is illegible and not reproducible. It cannot be used to confirm fan characteristics.