Russ,
TCEQ emails state that you are the point of contact for submitting recommendations concerning the TCEQ Comprehensive Flare Study. Therefore I submit to TCEQ through you these recommendations. I am sure you will forward this email to the correct persons.

Over the past few days I have been reading your 246 page plan for the TCEQ Comprehensive Flare Study scheduled for late September of this year.

The Leak Surveys. Inc. section of the Flare Test Plan dealing with infrared, normal video and still picture coverage calls for only one, fixed observation point at the John Zink test facility with an unstated number or types of cameras or lens focal lengths. I found that odd.

Infrared video and normal video should be covered from at least four locations spread at approximately ninety degrees (90 deg) around the flare under observation for a number of reason addressed later in this email.

The absence of FLIR Corporation participation or representation is also odd because that company is the world leader in infrared imaging technology. How would you respond if FLIR Corp. offered to supply cameras and personnel to document the test from three additional points around the flare at NO COST to TCEQ? I think they may be willing because of the national and international importance of your Flare Test. FLIR personnel may want to talk with you by phone on Monday, August 16th.

Russ, as you know, the TCEQ Comprehensive Flare Study was scheduled for Contract Compliance Review August 9-10, preparation and setup from September 13 to September 15 and scheduled **for execution of the Flare Study during the two weeks from September 16 – to October 1 at the John Zink flare test facility in Tulsa, OK.**
The Plan was published on July 31, 2010 after one year in writing. TCEQ continues to accept comments and recommendations for The Plan until August 16th.
My recommendations are submitted on August 15th.

This TCEQ Flare Study promises to be THE seminal, definitive and comprehensive flare performance study over the next decade. The final report may become an international standard. The resulting infrared video clips will be viewed by decision makers around the world. The infrared video clips will be more compelling than any curve, table or paragraph in the report.

Leak Surveys, Inc, Bud McCorkle and Joshua Furry on page 10 of the Flare Study Plan, appear to be the only two persons bearing responsibility for recording infrared and normal visual imagery of the flare plume and unburned hydrocarbons. They plan to use only one, fixed vantage point and an unknown number and type of cameras or lens focal lengths.

It may be advantageous to TCEQ -- and the tax payers funding the Plan -- for FLIR Corporation to have inputs in the design and operation of this Flare Study Project Plan. Specifically, FLIR Corp. may have inputs concerning how the infrared and normal visual

spectrum cameras are employed, how many cameras are positioned, where they are positioned, which lenses are employed and which IR cameras, HSX or GF320 – or both -- or FLIR prototype IR cameras under development -- , are used.

FLIR Corporation may be the only company with sufficient assets to "loan" TCEQ the infrared camera assets necessary to optimize the capture of visual imagery during the Flare Project.

Again, the current Flare Study Project Plan calls for ONE location for (apparently) ONE infrared camera and visual spectrum camera near the Flare Control Room. Please see the overhead photograph of the test site on page 85 of the report, Appendix A1. The Plan does not say which IR camera Leak Surveys, Inc will use or the focal length of the lens.

Again, the ideal numbers and locations of cameras to record infrared and visual spectrum imagery would be four camera sets positioned approximately ninety degrees apart around the flare. There are a number of reasons for this:

1. **Contrasting background behind the flare plume.** The ideal background is clear, blue (very cold) sky that provides high contrast and high visibility to unburned hydrocarbons above the flare. Broken clouds behind the flare plume can greatly reduce the contrast and the visibility of unburned hydrocarbons. Four cameras around the flare increase the probability of obtaining the high contrast background with resultant high visibility of unburned hydrocarbons.

2. **Wind effects upon the presentation of the flare plume to the camera.** The camera should be at ninety degrees to the direction of the wind that is influencing the shape of the flare plume. Four cameras around the flare increase the probability of obtaining the best imagery of a flare plume shaped by the wind.

3. **Data acquisition reliability is greatly increased.** Four cameras instead of only one greatly increase the probability of capturing desired imagery.

4. **Visual imagery will be the greatest impact from the report.** Numbers, graphs and words are important. And yet, infrared video imagery is most convincing for the public, the taxpayers, the legislators, the oil and gas companies, the decision makers and the check signers. Do you want to leave that only in the hands of two people at Leak Surveys, Inc. using one infrared camera?

Can FLIR Corp. provide cameras, lenses and personnel to equip three additional camera sites for the few days of the Flare Study? Is it in the interest of FLIR Corp. to do so? Will there be additional cost to TCEQ? Can FLIR Corp. fund their Flare Test efforts from the FLIR research, advertising and marketing budgets? Fortunately, there is time remaining to make and execute those decisions. The indirect payoff to FLIR Corp. -- and TCEQ -- may be huge.

Respectively submitted,

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TCEQ- allow flexibility for LSI to maneuver to get a “good” background for the IR work. Revise QAPP to list lens types available.