

RHS → TRM → JEXU

A

To: **John R. Roheim**

From: **Richard J. Lahiere, Mark W. Hellums, and H. Wayne Wilson**

Date: **February 17, 1993**

Subject: **RESEARCH REPORT NO. 6930-01-01-93: RECOVERY OF VINYL CHLORIDE FROM OKC PVC REACTOR VENTS WITH VAPOR SEPARATION MEMBRANES**

Interoffice
Communication

VISTA

01487
#1/yr
VCM to Incinerate

er 150,000 pounds of VCM (vinyl chloride monomer) are unreacted na City PVC manufacturing process and are incinerated. Incentives ; VCM lost to incineration are: (1) the economic value of the M (approximately \$22,000), (2) \$15,500 in savings of caustic used ICI acid generated during VCM incineration, (3) possibly reduced intenance, and (4) potentially lower air emissions.

The following report presents pilot test results of a membrane vapor separation process for recovering VCM from OKC reactor vents. Laboratory tests results were presented in a previous research report (RR-6930-01-05-91).

SUMMARY

During seven weeks of pilot testing at OKC, a 1-stage vapor separation membrane system recovered 60-85 volume percent of VCM from a reactor inert gas stream that is normally incinerated. The unit operated successfully during periods of variable feed conditions.

Computer simulations based on the pilot study data showed that a 2-stage membrane system will recover over 98 volume percent (144,000 lbs/year) of vented VCM during summer and winter conditions. A 2-stage membrane unit was recently ordered by OKC and will be installed in mid-1993.

Project development adhered to the environmental technology evaluation protocol:

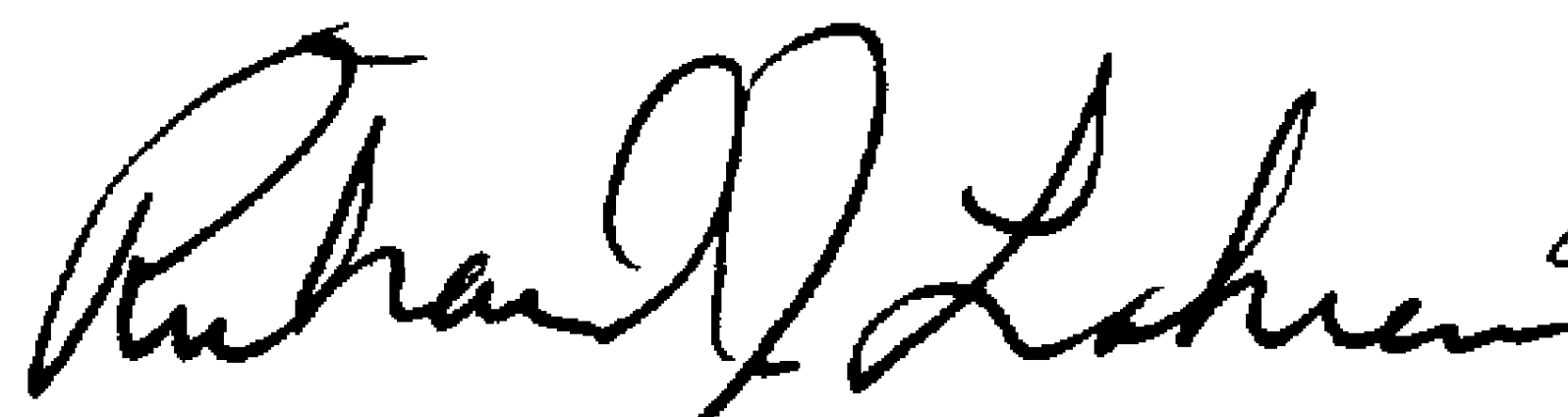
1. Develop concept after discussions with plant engineers, consultant interviews, and literature studies.
2. Lab testing with plant samples (when feasible).
3. On-site pilot evaluation.
4. Design and cost estimate of permanent unit.

FUTURE WORK

The vapor separation membrane system slated for implementation at OKC is relatively small: the design flow is 17 scfm. However, the same technology could be applied possibly to larger Vista processes: (1) VCM removal from

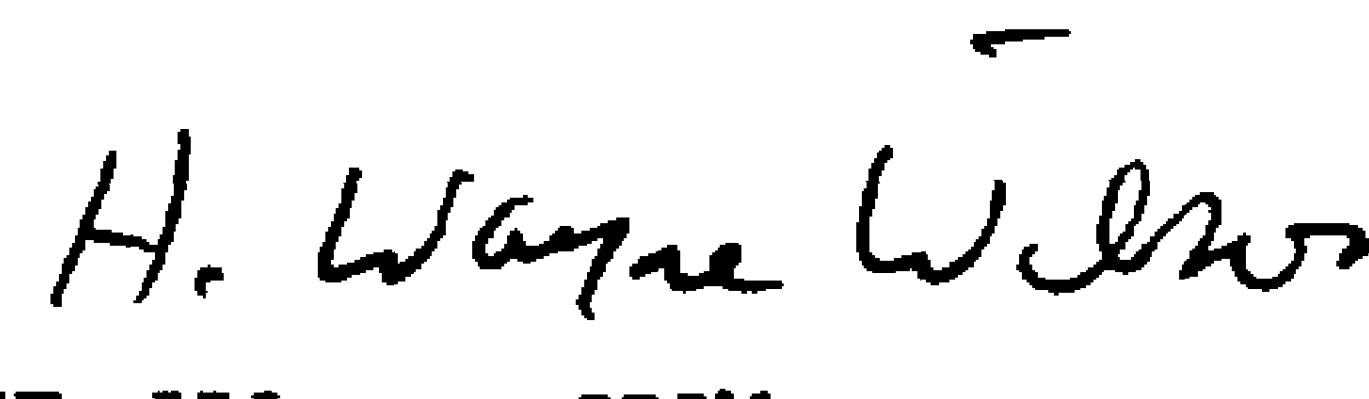
A

LCVCM ship-loading condenser and process vent systems, (2) recovery of VCM from Aberdeen PVC reactor vents, and (3) benzene recovery from Baltimore air stripper vents. R&D will pursue these projects during 1993.

Richard J. Lahiere
Research Group Leader
(512) 331-2413

Mark W. Hellums
Research Engineer
(512) 331-2371

H. Wayne Wilson
Lead Process Engineer

cc:

(letter only) Harold Coleman, Don Wharry, Ed Sones, AUSTIN; Bob Moss, Bob Battles, Paul Klein, OKC; Gary Draper, Chuck Putnik, HOUSTON; Pete Markey, Allie Peek, BALTIMORE; Joe Ware, Jim Biggart, Charlie McDonald, Tim Bennett, LCVCM; Bob Seymour, Ted Nickerson, ABERDEEN

(with report) Rick Quy, Pat Morris, Mark Hellums, Library (2), AUSTIN; Harry Garrison, Steve Vincent, Andy Wiles, OKC; Eric Meyer, HOUSTON; Tony Salah, Ben Drone, Neil Coddington, LCVCM