OTHER LOCATIONS	GENERAL OFFICES	ANNISTON
	P. W. Gallier	W. B. Papageorge J. I. Hanvey
	W. A. Kuhn	J. C. Landwehr
	C. F. Luecke	L. C. Lahman
	W. R. Robirds	R. N. Jones
	H. S. Trail	J. N. Carpenter
		A. G. McCarty
		T. W. Lawrence
		J. A. Veazey
		W. F. Taffee

Arcolor Cost Improvement

PROGRESS REPORT
TECHNICAL SERVICES DEPARTMENT
ANNISTON, ALABAMA PLANT

JOB NO. 370:964 **REPORT NO.** 1 **DATE** 8/13/69

TITLE: Automatic Intermediate Still Control

OBJECTIVE: (This report) Define an initial approach (Phase I) which will identify control parameters, and confirm correlation of steam input control to still yields.

PERSONNEL: W. B. Dunlap

REPORTED BY: W. B. Dunlap

SUMMARY: A statistical study of intermediate stills made in 1968 showed manual steam input control by operators to be the controlling variable affecting still yields. A conservative estimate of potential savings from improved control was $79,000 per year.

A Task Force has been set up to devise an adequate still steam control as an integral part of an improved process control system.

Phase I plans have been laid to install instruments to monitor control parameters, assess their effectiveness, accumulate data necessary for eventual automation.

FUTURE WORK:

(1) Obtain approval of a capital expenditure of $2500 for control and monitoring instruments on one still.

(2) Install equipment.

(3) Attempt to control steam input to obtain "good" and "poor" temperature profiles (as defined by the 1968 study).

(4) Relate still yields to control parameters for optimization.

(5) Phase II - Modify and expand the control system as indicated by this work.

DSW 329522

W. B. Dunlap
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ANNISTON
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BACKGROUND

Statistical process analysis studies in the summer of 1968 identified operator manual control of steam input as the over-riding variable for still yields. Until this variable was stabilized other yield improvement efforts would be of doubtful value. "Superior still operation" was tentatively defined in terms of a temperature profile which permitted maximum recovery with minimum decomposition. This work was reported by Pat Chadwick (W. B. Dunlap) in Report No. 1, TSD Job 370-827, September 6, 1968.

An estimate of 150# per batch increase, worth $79,000 annually, was predicted from improved uniformity with stabilization in the upper half of the present operating region.

ORGANIZATION

In consideration of the complexity of this optimization problem, and recognizing that it should be attacked as one element of a larger automation effort, a Task Force was set up to include Process Analysis, Process Engineering and Process Instrumentation personnel: W. B. Dunlap (Chairman), T. W. Lawrence, J. A. Veazey. P. W. Gallier (CED) was called in for consultation.

APPROACH TO SOLUTION

It was decided that insufficient information was available to define an adequate control system at this time. Tentative control parameters were defined. A sequential approach was selected, with Phase I being a data taking, observation and correlation period. Later work based on Phase I will include possible revision and sophistication of control parameters, closing the control loop, and inclusion in an automated control system.

PHASE I CONTROL PARAMETERS

Vapor Temperature

Steam Jacket Pressure

Steam Input Flow

Steam Control <u>versus</u> Condensate Control

PHASE I PROCEDURE

1. Purchase and install necessary control instruments on one still (Still #1).
2. Operate control parameters to maintain experimentally "Good" and "Poor" temperature profiles as defined by the study of 1968.
3. Record all process data, correlate with batch yields, plan toward optimization through statistical techniques.

EQUIPMENT REQUIRED

3 - pen recorder and carrying case
Electronic - pneumatic transducer
DP cell
Pressure transmitter
Flow orifice
Air relay
Pressure regulators (2)
Thermocouple
Tubing and wire

CAPITAL REQUIRED

Allowing for installation cost, contingencies and overhead, a capital project for $2400 will be required. (J. A. Veazey will prepare the AFE)

SCHEDULE

Delivery of materials can be expected 6 weeks after approval of the project. The only interruption of production will occur when the pressure tap is made on the steam jacket.

W. B. Dunlap

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