

~~File~~ *See PVC-HOS Section*
File

PROCESS TECHNOLOGY AND ENGINEERING

MONTREAL PLANT

AUGUST 1970 MONTHLY REPORT

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+
LAB

COPY 15 SPFD.

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Springfield

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Springfield

COPY 18

D. DANNA
St. Louis

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J. DARBY
St. Louis

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W. LINDSAY
Vancouver

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Port Plastics

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A.J. LAUCK
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GORDON RINGROSE.

DSW 587646

STLCOPCB4092982

MONSANTO CANADA LIMITED

PT&E HIGHLIGHT REPORT

AUGUST 1970

Styrene Polymers

Startup of the CC line after vacation shutdown went very smoothly. The modifications to the rotary dryer which were completed during the shutdown were 100% successful. Now kettle polymerization rate limits all CC products.

All CC products are at 0.9 water /monomer. Direct steam addition to the jumbo is now at 750 #/batch.

CN 57 was successfully run on the CD line after startup with excellent physical properties. The CN 52 haze was poor probably due to erratic dryer operation. This will be checked on a run in September.

At month end CD600 was being demonstrated with increased RPPS & MW. for a Canadian pipe compound. About a 15% improvement over normal CD600 has been achieved.

LK153-3 (50%-CD600, 50% 40UX) was run at reduced stock temperatures and yielded 10 - 15% impact improvement. Combined with the improvement in base polymers our chances for a Canadian pipe compound are improving.

Our match for Dow 451 has been entirely satisfactory at Consumers Glass for blow moulded Yogourt containers.

Our TS8504 equivalent to Dow 456 was successfully demonstrated at Admiral. Results were excellent in that surface defects encountered earlier with HT-92 & TS-8496 were eliminated. Total compatibility was shown with Dow 456 regrind & Korlin white master-batch.

P.V.C.

Pre - stabilized Opalon 539 has been produced using bisphenol A as the antioxidant.

Opalon 670 has been trialled at Canadian General Tower. They reported roll sticking however subsequent trials on an Oakville calendar show the resin to be totally satisfactory. A slight formulation change at CGT should eliminate this problem.

DSW 587647

STLCOPCB4092983

MONSANTO CANADA LIMITED

PT&E HIGHLIGHT REPORT

AUGUST 1970

P.V.C. Contd..

Comparisons of fisheye levels of our 640, US-650, Gulf Q-1812, & Esso 366 confirmed that our best production fall far short of competition.

A review of our 510B-3 process problems was held in Springfield and conditions for the next trials were specified. These trials will take place after our X24 resin commitments are filled probably about the end of September.

The economics of our homopolymer reflux process show a conversion cost reduction of 0.78¢/lb. Quality remains good and monitoring will continue.

A production trial of P.V.C. compound on a 3-1/2" Styrene extruder (2001 screw) was partially successful. The screw speed could not be reduced sufficiently to lower the stock temperature. Further trials on the 6" variable speed drive extruder will be run in September.

PAPER CHEMICALS

Progress on our technical program continues with the completion of the tall oil rosin storage tank scope and clearance to proceed with the reverse order fumaric acid charging.

The arochlor system has given several problems during the month with boil overs. The system was thoroughly cleaned and maintained and refilled with fresh arochlor. Trouble shooting procedures will be prepared in September.

Preliminary results of a 10% batch size increase looks good. Samples have been sent to St. Louis for an efficiency check.

RUBBER CHEMICALS

Evaluated manufacturing cost res. catalyst usage for S-13 & 77 for manufacturing.

DSW 587648

STLCOPCB4092984

MONSANTO CANADA LIMITED

PT&E HIGHLIGHT REPORT

AUGUST 1970

RUBBER CHEMICALS contd..

Operating instructions were prepared for the 536 run which is now scheduled for October.

Demonstration of a new stop scald formulation using Atlox 3409 emulsion stabilizer was successful.

MALEIC ANHYDRIDE

A technical review was held at Queeny on Aug 17 & 18 with John Parmeter and Dean Robinson in preparation for a MA strategy meeting held in Montreal on Aug 26th. Agreement was reached on the run plan for the present Syndan 205 catalyst pack stressing low space velocities and higher mol ratios benzene. We are proceeding with the evaluation of a 20 M #/yr. expansion of the MA facilities. Payout times of less than 5 years and ROI > 10% are anticipated. Scoping should start in earnest around the end of September.

POLLUTION

A second sampling pump was received and installed in the Hydrogenation sewer. We found that the ketone concentration was too low (under .02%) to justify recovery on a payout basis.

GORDON RINGROSE

DSW 587649

STLCOPCB4092985

PT&E AUGUST 1970 MONTHLY REPORT

STYRENE POLYMERS

DEPT. 10 - CD LINE J C BLANCHARD

JOB NO. 2539 - CN Product Maintenance

After the start-up on August 10th. short runs of CN-57 and CN-52 were made. Izod impact was much better on this 3700-gallon product and on the next jumbo run the temperature cycle will be modified to try to duplicate this.

The CN-52 haze was poor (5-8 versus spec of 4), probably due to batch by batch drying. This is an unfortunate side effect of debattling the drying by replacing the centrifuge torque controller with a weir-box.

JOB NO. 2543 - LN IC Product Maintenance

The line was then switched to LNIC. The new IP transfer pump gave 20-25 minute transfers as did the old confirming that the Mocan advantage here is due to the 8-inch short IP outlet. However after ten batches there was a severe buildup in the pump so that the monomer flush system may be required.

JOB NO. 2542 - LNIC Improvements

At month end CD-600 was being demonstrated with increased RPPS and MW(CQ-50-10-5) to achieve impacts necessary for the pipe market. Terpinolene adjustments increased the bead RPPS to 2.1 max. (Terp I = 25 lbs.) but further increases had no effect on RPPS and decreased spec. visc. (even though terpI +terp II was cut to 40 lbs. total.) The latter was unfortunate and unexpected.

The polystyrene with which the Asadene 35 NFA rubber will be wrapped was tested for hardspot generation. A trial of this rubber will come on the next LNIC run.

Programming began for a joint CI/LINC XC-3 program. This will simplify the IP changeover procedure.

A duct was installed on the CD dryer air exhaust to quantify dust losses.

DSW 587650

STLCOPCB4092986

DEPT. 11 - CC LINE - J.C. Blanchard.

JOB NO. 2544 - CC Product Maintenance.

Startup of the CC line on 3 August went very smoothly. The modifications to the rotary dryer (mechanical alignment, dams reduction) completely debottlenecked the drying train. Even on CC-38 the kettle now limits and the drying rate must be reduced to maintain continuous operation with good haze and volatiles.

JOB NO. 2531 - CC Improvements.

Step increases in steam injected into CC batches during charging are being made. We currently charge 750 lbs./batch.

All CC products are at 0.9 W/M ratio.

DEPT. 15 - COMPOUNDING - J. Neate

JOB NO. 2562 - Extrusion Improvements.

The ventilating fan for the extruder cutter booth was installed. It works fine.

A steam/water mixer was installed on No. 3 extruder to allow screw cooling/heating. Plugs will now be removed to increase the surface area exposed. Suitable temperatures have eliminated vent flow and surging when at maximum rates.

FINISHED GOODS - P. Dupuis

JOB NO. 2600 - MTS Assistance for Rustrex

A satisfactory lubed blow-moulding material for yogurt containers (PEX-268A) was demonstrated. Evaluation of optimum lubricant (of the glycerol stearate type) and required level is being established by MFI comparison with Dow 451.

JOB NO. 2563 - Cryovac Improvements.

TS-2365 for Cryovac is now fully acceptable. The RM should be allowed to rise to spec levels as soon as marketing deem advisable.

Our Ethylbenzene status was determined in response to a query from Cryovac. Several antifog agents are being sought for use on their sheet line.

DSW 587651

STLCOPCB4092987

JOB NO. 2800 - MTS Assistance for Lustran.

Inability to mould LNI-410 resulted in a serious complaint from Electrolux. We plan to recommend LNI-440 to them and MTS will demonstrate the molding conditions required.

A trial extrusion of LK-153 at reduced stock temperatures (RPM reduced to 110 - 120) gave impact increases of 10 - 15%. Combined with the improvement in base polymers we should improve our chances for pipe approval. However the Banbury alternative should be persued.

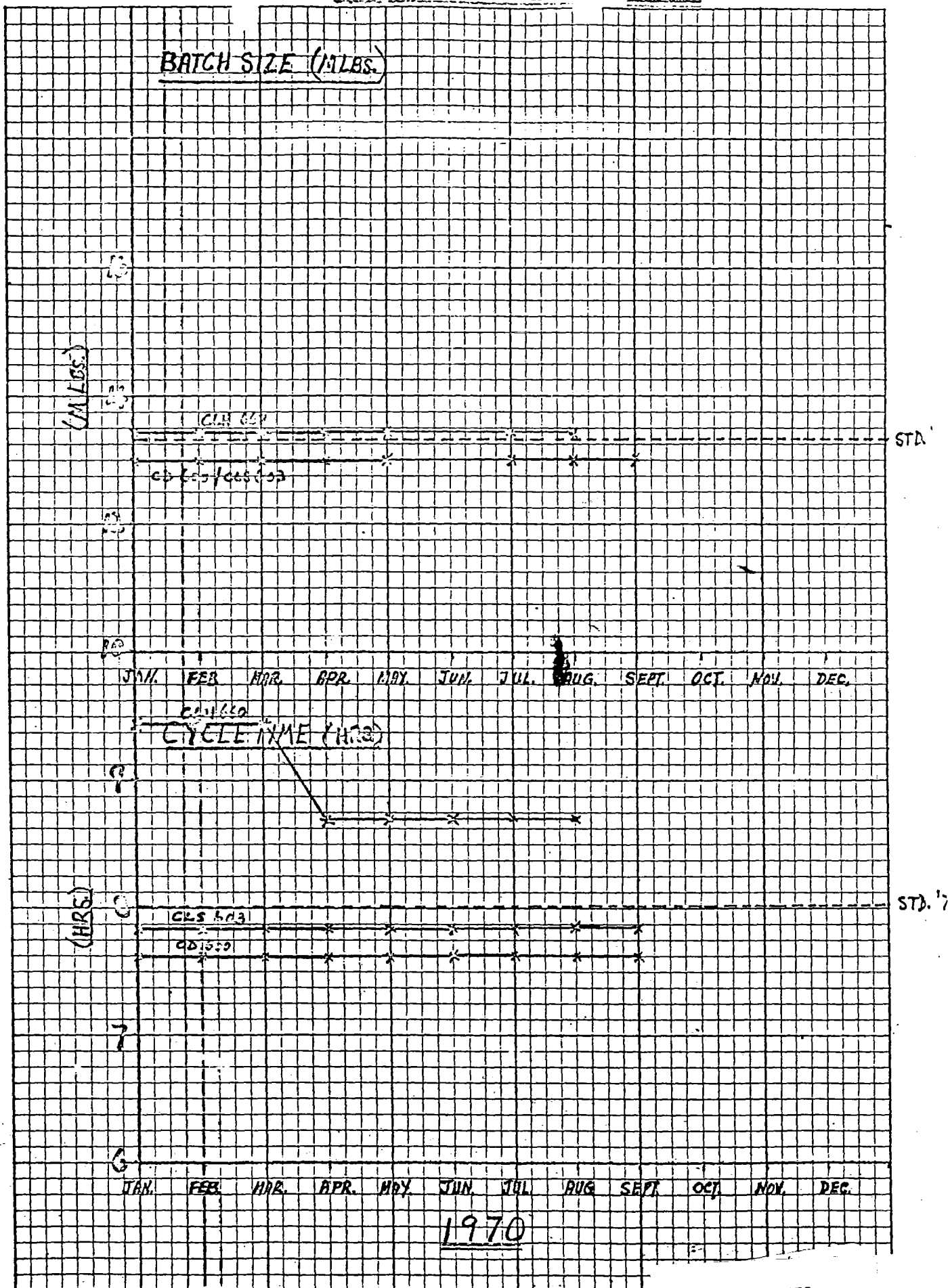
J.R. Wearing.

DSW 587652

STLCOPCB4092988

8 X 6 TO THE INCH
MADE IN CANADA

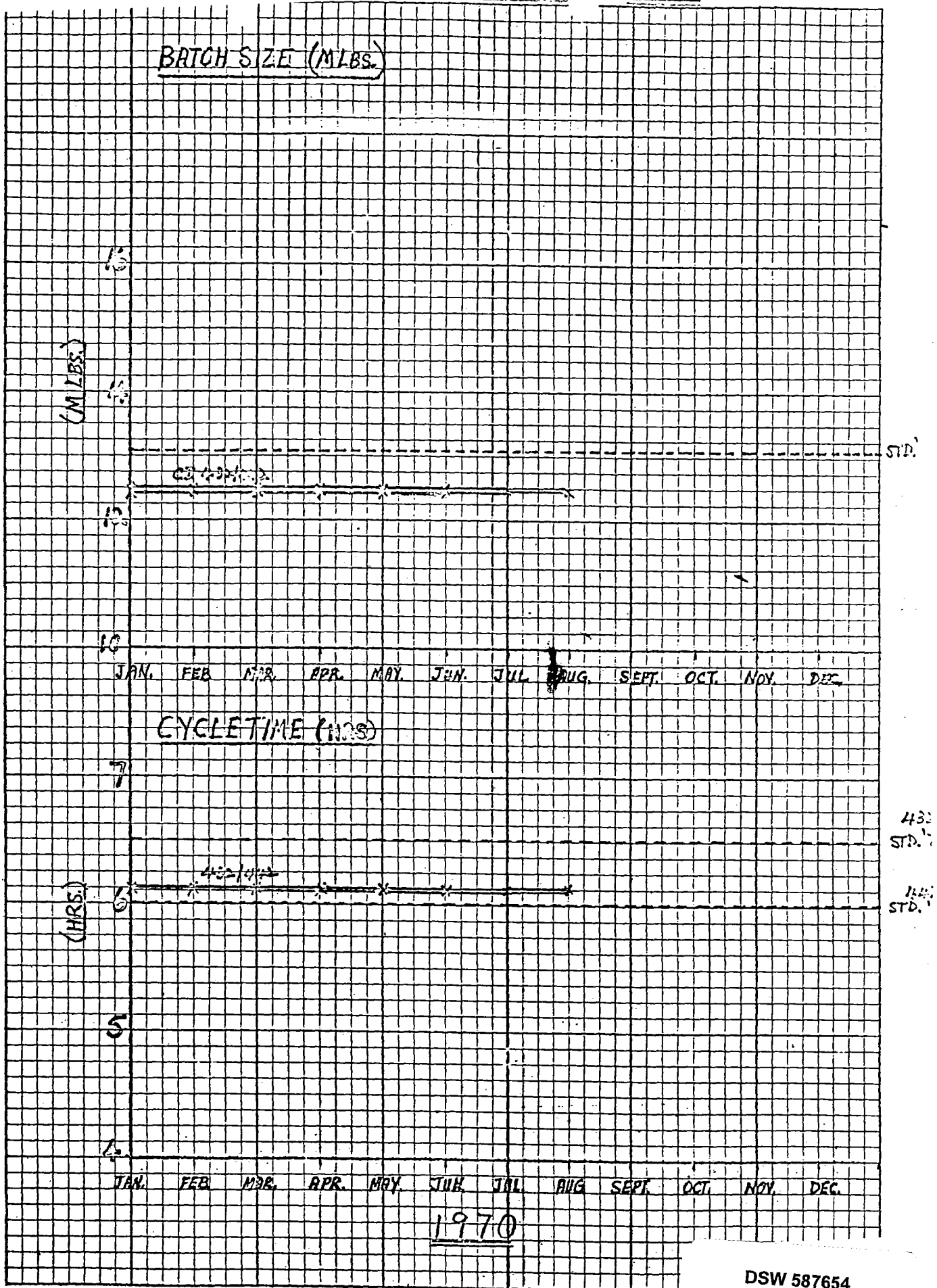
MICROGRAPH



DSW 587653

STLCOPCB4092989

6 X 6 TO THE INCH
MADE IN CANADA



STYLING POLYMERS: CN

BATCH SIZE (MLES)

(MLES)

24

23

22

21

20

JAN. FEB. MAR. APR. MAY JUN. JUL. AUG. SEPT. OCT. NOV. DEC.

CYCLE TIME (HRS)

7

6

5

4

JAN. FEB. MAR. APR. MAY JUN. JUL. AUG. SEPT. OCT. NOV. DEC.

1970

57/5
STD.

57/1
STD.

55/5
STD.

52/1
STD.

DSW 587655

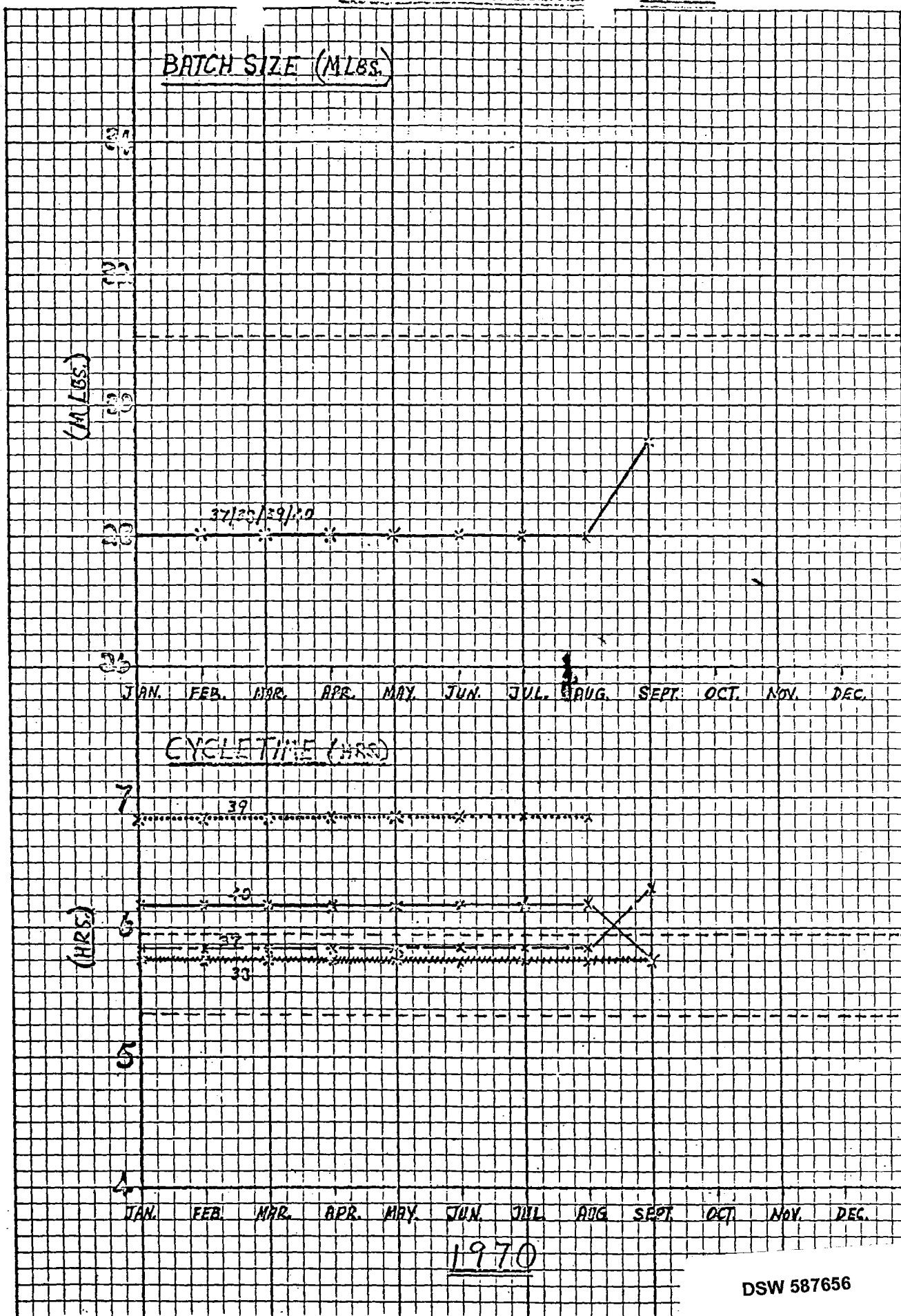
STLCOPCB4092991

8 X 8 TO THE INCH
MADE IN CANADA

MICROGRAPH

8 X 8 TO THE INCH
MADE IN CANADA

MICROGRAPH



STD.

37/3
STD.

33
STD.

DSW 587656

PT&E AUGUST 1970 MONTHLY REPORT

POLYVINYL CHLORIDE

JOB NO. 2300 - MTS SUPPORT WORK.

Pre-stabilized Opalon 539 has been produced using bisphenol A as the antioxidant. Further tests to gain supportive evidence and determine optimum levels are in progress.

Opalon 670 has been trialled at General Tower. Problems with "sticking" on the rolls have been encountered. A program to determine and correct the problem by comparison with the Gulf competitive resin and vygen123 is planned.

A summary of data indicating our present capability with respect to fisheyes on Opalon 640 was made. Comparisons with packaging grade Opalon 650 from the U.S., Gulf Q-1812 and Esso 366 were made after evaluation in the plastics Lab. As expected this confirmed that our best still falls far short of our competitor's best. A spec. of 70 F.E./gr maximum would be met on estimated 70-80% of the time. The level is inadequate for packaging or wire and cable extrusion where there is no pre-compounding.

JOB NO. 2550 - OPALON 510-B-3 DEVELOPMENT

During a visit to Springfield a run plan for further investigative work on developing a viable Opalon 510-B-3 process, was drafted. All aspects of this work so far were reviewed with R. Wojick and other technical personnel in the P.V.C. area. The latest information from MMK and MMSA was critically examined and compared with the MOCAN data. The three general areas that the run plan concentrates on are:

1. Agitation condition.
2. Raw material quality.
3. Procedural consistency.

It is planned to run an 80% volume batch utilizing MMK-B-3 and better grade stearic acid. Due to X24 resin commitments this work will not recommence until the end of September. A status report is being published.

DSW 587657

STLCOPCB4092993

JOB NO. 2557 - INCREASED HOMOPOLYMER CAPACITY

A report was issued on the homopolymer reflux process. The economics indicate a reduction in conversion cost of 0.78¢/lb.

JOB NO. 2558 - VCM RECOVERY SYSTEM

The delivery of the Nash Separator tank for the RVCM compression has been delayed from September to October due to a strike at Nash. The cooling system for the RVCM will be installed during September. Final approval to remove the chiller unit from Organics has been obtained.

JOB NO. 2559 - QUALITY IMPROVEMENTS

Two batches of 650 in kettle 3 and 4 were partially agglomerated. The cause is not yet known. The raw materials were used on previous batches with no problems. One common factor is that both batches were the first after the kettle had been cleaned. Investigation continuing.

JOB NO. 2570 - PVC EXTRUSION COMPOUNDING

A production trial on the 3-1/2 inch extruder was carried out during the month with dry blend prepared at Diamid Alkali previously. A 2001 screw was employed with a modified styrene die. Problems were encountered with shear heat with consequent loss of temperature control. The overheating caused handling difficulties at the die face. Further trials are planned on the 6 inch variable speed Danson-Hartig machine in the coming month.

JOB NO. 2985 - DEPARTMENTAL ACTIVITIES

Further reductions in catalyst concentration were necessary to eliminate the heat kicks half way through the reaction for Opalon 650. Though the normal reductions were made for summer conditions, the heat kicks persisted. Thus we had to be satisfied with longer reaction times. The heat transfer co-efficient on kettle 1 was measured to be 31 BTU/hr H °F. Heat transfer coefficient for the other kettles, will be done as soon as production time permits. It is suspected that the rates are quite low and the jackets will probably require cleaning.

DSW 587658

STLCOPCB4092994

JOB NO. 2985 - DEPARTMENTAL ACTIVITIES Contd...

The solvent cleaning that were scheduled to be done on the large kettles, after the styrene plant kettle cleaning was cancelled since no problems with suspending agent interactions were encountered.

An operator training manual was completed and is presently being reviewed before publication.

K.M. Doyle

DSW 587659

STLCOPCB4092995

P T & E AUGUST 1970 MONTHLY REPORT

PLASTICS PRODUCE DEVELOPMENT

JOB NO. 2167 - OPALON 640 DEVELOPMENT FOR NORTHERN ELECTRIC

Laboratory experiments using the lin. strip extruder have proven ineffective in duplicating the degree of compound porosity observed in N.E. operations. Pending Brabender dry time testing on selected particle size fractions of 640 and Esso 366 resins this phenomenon will have to be resolved during plant scale runs on N.E. 8 inch extrusion line.

JOB 2232 - PVC ALLOYS

A change from Barium - Cadmium to a tin stabilizer system has proven effective in improving processing stability of PVC/ABS alloys. Physical properties testing is currently underway on a series of plasticized and unplasticized compounds.

JOB 2545 - MTS SUPPORT

A visit was made to Admiral to observe extrusion trial of TS 8504 (PEX 251A) which is proposed to replace HT92 for refrigeration food lines. Results were excellent in that surface defects encountered earlier with HT92 and TS 8496 were eliminated and excellent compatibility with Dow 456 regrind and Korlin white masterbatch was demonstrated.

Similar to our experiences at Plastalene with Lustran it was shown that at extrusion rates in the order of 1000 lbs/hr. on 4-1/4 inch sheet lines, melt viscosity becomes critical; TS 8504 being softer than HT 92 by some 15%.

JOB 2548 - LAMINATES

Samples of D483/Luran S and C.G.T. rigid PVC/Luran S laminates for Olson mfg have been received for evaluation.

Samples of R464 semi-rigid sheet from Springfield are on hand awaiting scheduling of lamination trials at Plastalene and possibly one other sheet extruder.

JOB 2564 - WEATHERABLE ABS

Samples have been received from Geigy in the UV stabilizer evaluation series after 4 months exposure in Arizona. FDI data are better than expected based on 2 months exposure results and reverse side impact tests are scheduled to better define differences in stabilizer performance.

DSW 587660

STLCOPCB4092996

JOB 2564 - WEATHERABLE ABS contd...

2000 hours Weather-O-Meter testing of a highly stabilized formula in Behoo red will be completed in September.

JOB 2568 - HI-TEMPERATURE OPALON COMPOUNDS

Recommendations have been made to PT&E Oakville for cost evaluation of proposed Santicizer 1170/Cereclor 42 plasticized formulations. Selection of candidates for further development will be based on estimated cost advantage over current products if such is indeed indicated.

Attended a 1/2 day presentation on Santicizer 711 and DUP by E. Kaiser, Product Specialist, from MC. No immediate action regarding these plasticizers planned.

G. Rundans

DSW 587661

STLCOPCB4092997

PT&E AUGUST 1970 MONTHLY REPORT

CHEMICALS EAST

I CELLUCHEM (PARENT, BRIGGS, HANCOCK)

JOB NO. 7118 MERSIZE PRODUCTION ASSISTANCE

1. Several changes were made to Project on CT162 fume elimination re ice problem on roof and the project was resubmitted.
2. Assistance was provided on Aroclor "Boil-Up" problem a) vent, which relieved inside the building is now fed to drum on 2nd. floor and vented to drum on roof (PT&E will follow up) b) system was thoroughly cleaned with trichloro-ethylene, new Aroclor charged, pressure guages, relief valves, pressure switches, temperature limit relay, temperature relay, temperature indicator and controller all checked and recalibrated. c) burnt-out heaters were replaced. PT&E will prepare operating trouble-shooting procedures for the Aroclor system.

JOB 7520 - MERSIZE PROCESS TECHNOLOGY UPGRADING

- 1) Revised A.N. test did not work.
- 2) LMP #50-35-25 was issued to cover post addition of Fumaric acid to reactor. Trial on 3 batches will start Sept 3rd. (LMP 50-35-18 calling for M.A./Fumaric will be the process used)
- 3) We will complete evaluation of larger batch size in September and adopt it successful.
- 4) A Parent was present at presentation on Scripset 520 given to Domtar Cornwall.

JOB 7589 MERSIZE PRODUCTIVITY IMPROVEMENT

Preliminary results of 10% batch size increase look good. Samples will be submitted to St. Louis for efficiency check before amendment is issued.

JOB NO 7598 MERSIZE QUALITY IMPROVEMENT

- 1) All recent shipments to Domtar Cornwall had clear 24 hour solution stability. A higher proportion of Tenneco to Union Camp rosin use may be the contributing factor to the excellent stability.

Our July monthly composite had "equivalent to standard" efficiency.

DSW 587662

STLCOPCB4092998

JOB NO 7599 ROSIN STORAGE TANKS

A preliminary scope has been prepared for rosin storage. Scope will be reviewed and submitted within a week.

II CONSUMER PRODUCTS (Parent, Rauch, Charron)

JOB NO 3506 - CPD ROUTINE MTS

1. An average of 5 telephone calls per day on Rez applications. For example, "Where can I buy Granite Gray Rez?" etc.
2. An average of 3 complaints per month are handled. Most are unjustified however in all cases they require lab investigation and in some cases on site investigation is required.
3. Intermixes of stocked Rez colours to produce non-stocked or discontinued Rez colours were developed. For example this month Granite Gray and Flamingo were matched.
4. The maintenance of samples (Moclad) for our sales effort and demonstrations are handled by this laboratory.
5. The routine circulation of Moclad literature to interested potential customers is handled as well as maintaining colour chips of our Moclad colours.
6. Prices, FOB St. Louis literature, estimated volumes were prepared for DND and LTV Electro-Systems. An order for \$35,000 is on its way.

JOB NO 3507 - CPD CUSTOMER DEMONSTRATIONS

The non-routine MTS work is covered by this project. In the month of August, 1970 the following was performed:-

1. At sales request SNO-JET blue colour was matched and samples sent to the customer.
2. Two dipping stains were developed, one for Keenan Ind, which is a solvent soluble dye and the other is roughly based on Moclad X-24 but walnut coloured. A three drum trial order has been received for the latter.
3. The FDA approval for Moclad 8050-100 for liquid sugar contact has been followed up. An immediate potential order of \$3,000. is pending and potential sales of \$10-\$20,000 is found in this area.

DSW 587663

STLCOPCB4092999

JOB NO 3507 - CPD CUSTOMER DEMONSTRATIONS Contd..

4. Samples of Moclad were applied to various pieces of furniture for Isotech Ltd.
5. Plasti-shields epoxy-glass coating was compared to Moclad white for abrasion resistance, UV Resistance, skydrol resistance. So far Plasti-shield is inferior to Moclad for abrasion resistance.
6. A new tan foam colourant was developed and samples sent to Woodbridge. NB; time was charged to 6554.
7. 15 cases of Moclad 8000-807 for Mohawk airlines was prepared in the lab for a small trial order.

JOB NO 3510 - REZ PRODUCTION ASSISTANCE

Various Q/C tests were verified or decisions taken to fail or pass batches. An average of 3 batches per week require this lab's attention.

JOB NO 3218 - RAW MATERIALS -REZ

1. The use of Hoechst's Permanent red 5RK has been approved for use in Red Mahogany Rez. Initial tests had shown poor colour match, but subsequent work resulted in a successful substitute for madder lake 46-510 at a .05¢ per gallon saving plus the processing savings incurred (Potential savings \$500.00)
2. Various Raw Material suppliers are handled to determine new products, price breaks, etc. The number of suppliers averages to 3 per week.

JOB NO. 3521 NEW MOCLAD SYSTEM

1. Samples for C.P. Air should be prepared in September.
2. Test results were presented to Quality Assistance Ottawa on Moclad against MAT 9-3 spec. and Moclad Stripper 8609 versus 31 GP 278A.

JOB NO. 3242 - PT&E UPGRADING

1. Moclad Toxicity - Col. Marriott of the Surgeon Generals Office has replied to our request in Ottawa for a review of government policy on isocyanate containing coatings. We expect to hear from them in October re their new test results.

DSW 587664

JOB NO 3242 - PT&E UPGRADING contd...

2. Test information was obtained on determining insulation values on a Fome Core trailer. This work can be done by "Low Temperature Lab" at NRC.
3. A question and answer summary on Rez was issued to Marketing as a selling aid.

III PLASTICIZERS (PARENT)

JOB NO. 7575 PRODUCTION ASSISTANCE

1. LMP 50-44 was issued calling for reduced washing on 51172 trial was successful.
2. Assistance was provided on high colour, high odor batches re DOP, DNODA.
3. LMP was issued for blending off 81165.

JOB NO 7162 - PLASTICIZERS NEW PRODUCTS

1. LMP's were issued to produce 2 batches each of DUP and S711 on or about Sept 10th pending arrival of alcohols.

IV SANTOFLEX AW-DD-SANTOQUIN (PARENT, BRIGGS)

JOB NO 7137 - PRODUCTION ASSISTANCE

Successful demonstration of new stop scald formulation using a new emulsion stabilizer - Atlox 3409 amendment to process to be issued in September.

V VINYL SEALS - (PARENT, HANCOCK)

JOB NO. 7593 - VINYL SEALS PROCESS IMPROVEMENT

Scope was revised and AR reissued for approval.

VI - RESINS (BRIGGS)

JOB NO.3236 - MTS

Follow-up was made on cratering problem at Desoto re Resimene 84-169. Panels have been prepared and will be presented to customer on Sept 11th. with our suggestions.

A. Parent

DSW 587665

STLCOPCB4093001

PT&E AUGUST 1970 MONTHLY REPORT

7597 SCOPE NEW M.A. PLANT

Drew up alternative available for expanding production of the M.A. plant. Reviewed these with Queeny Manufacturing Representatives, along with the progress of research into a C.4. feedstock based plant. Best approach is a new 20 M # / year benzene based S.D. Plant installed alongside, and operating with the existing Plant.

This case along with alternatives was presented to the Business Group, who accepted expansion in principle providing the financial criteria can be met. A schedule was agreed on and drawn up that plans to start scoping the expansion at the end of September.

7534 M.A. PRODUCTION ASSISTANCE

Drew up schedule for increasing M.A. production rate and obtained agreement with Queeny. Manufacturing, Syndan 203 type catalyst will be available for next catalyst change, due in February.

7594 M.A. DE-BOTTLENECKING

Reviewed existing plant capacity and concluded that, based on Syndan 203 Catalyst, best production obtainable in 71 will be 8.2 M #/year. Examined the possibility of using our existing dehydrating/refining column for refining only in an expanded production situation. Concluded that based on refining only it can operate at least 20 M #/year and with equipment modification up to 28 M #/year.

7582 HYDROGENATION PRODUCTION ASSISTANCE

Estimated the unit Manufacturing cost for operation on 5 days and 7 days/week for S13 and S.77. Plotted curves of Manufacturing cost vs production per month and found the production level per month corresponding to the best unit cost. A useful tool for production to judge their optimum conditions.

7547 HYDROGENATION PTE UPGRADING

Estimated manufacturing costs for S.13 based on 4 N.D.P.A. vs 4. A.D.P.A. and found that with present raw material costs, the 4 N.D.P.A. route is 2-4¢/# cheaper. (no allowance made for handling of 4 NDPA in drums or disposal of containers).

DSW 587666

STLCOPCB4093002

7166 EVALUATION S.36

Drew up operating instructions for S.36 run, and estimated cost. Run is scheduled for October.

7607 WATER POLLUTION SAMPLING

Continued to sample and analyse main sewer outlet. Received a second sampling pump and installed this in Hydrogenation sewer. Found that concentration of ketones was too low to justify recovery (<.02%).

D. HORNSEY

DSW 587667