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E. I. du Pont de Nemours & Company
Explosives Department
Wilmington 98, Delaware

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[redacted]

MINUTES OF TECHNICAL DIVISION STEERING COMMITTEE MEETING
JANUARY 11, 1955, SAVANNAH RIVER LABORATORY

Committee Members Present

D. F. Babcock
J. E. Cole
J. W. Croach
G. Dessauer
L. C. Evans
J. W. Morris
V. R. Thayer
M. H. Wahl
C. W. J. Wende
J. C. Woodhouse
H. Worthington

Others Present During Parts of the Meeting

L. Cathey
A. H. Dexter
B. W. Dunnington
T. C. Evans
E. J. Hennelly
R. T. Huntoon
J. L. Hyde
A. A. Johnson
W. C. Kay
H. M. Kelley
C. C. McBride
V. I. Montenyohl
E. A. Orr
W. P. Overbeck
P. H. Permar
C. D. Smith
J. W. Walker
J. N. Wilson

APPROVALS

The following Studies were approved for the programs outlined in the appendixes:

Study No.	Title	Man Months	From	To
8501	Non-destructive Testing	12	1/1/55	3/31/55
8502	300 Area Process Development - Present Components	3	1/1/55	3/31/55
8503	New Fuel Element Fabrication	7	1/1/55	3/31/55
8504	Protective Coatings for New Fuel Elements	25	1/1/55	3/31/55
8505	Corrosion	12	1/1/55	3/31/55
8508	Instrument Development - 300 Area	26	1/1/55	3/31/55
8514	Instrument Development - 100 Area	18	1/1/55	3/31/55
8515	Instrument Development - 200 Area	23	1/1/55	3/31/55
8524	New LM Elements	40	1/1/55	3/31/55

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MASTER

DISCLAIMER

INFORMATION AND AGREEMENTS REACHED

1. Safety

The minor injury frequency for the Laboratory decreased to 0.28 in December from 0.36 in November.

As a result of a recent incident in the Laboratory, the procedure for recovering plutonium will be revised. Under certain conditions a vigorous reaction can be obtained with the peroxide precipitation method for plutonium recovery.

The Laboratory is participating in the Plant's safety flag plan.

Consideration is being given to the use of local fire brigades to supplement the Plant Fire Department.

2. The Laboratory had nine security violations in December, an increase from the record performance of the previous month--one violation.

3. Plans are being made to hire about 5 student employees to work at the Laboratory next summer.

4. Demonstrations of the step-pressing and co-extrusion processes are planned by the Laboratory on about January 27.

5. Since the MTR can be expected to give only gross results, the Laboratory will plan Plant tests of new or modified elements whenever possible.

6. The Laboratory will look at current enriched slugs to determine the amount of segregation that exists.

7. Two of the four quatrefoils containing thorium slugs will be left in the L reactor for another cycle if an examination at the next discharge indicates no damage. The Test Authorization will be modified accordingly.

8. The Laboratory will arrange with the AEC to have plates made from uranium containing approximately 1.5% U-235. It is estimated that about 3 tons of this material will be required as ingots to obtain a suitable number of test plates. This step is being taken to permit a limited number of plate fuel assemblies to be evaluated in a production reactor at a power level about 50% higher than could be obtained with natural uranium.

9. Tentatively, the next Steering Committee meeting will be held at the Laboratory on February 8, 1955.

10. Attached for information are:

Appendix A - Financial Status

Appendix B - Instrument Development Program

Appendix C - Metallurgical Development Program

Appendix D - Technical Division Study Status

TECHNICAL DIVISION

L. C. Evans

LCE:hw
Attachs.

APPENDIX A

FINANCIAL STATUS

The AEC has not yet accepted the December 1 Financial Plan in detail. However, the AEC will approve a total of $8,168,000 to cover process development for the entire FY-1955. This revised figure is about $450,000, or 5%, lower than the June 1 forecast. It includes sufficient funds to cover the cost of the pneumatic bonding facility being installed at the Laboratory but does not include any funds to cover the thorium recycle facility to be located in the TNX Area. The AEC has been alerted to the fact that this latter will increase process development expenditures by $300,000 to $400,000 during the remainder of FY-1955. When this estimate becomes firmer, the AEC will be requested to increase our Financial Plan by the proper amount.

For the past four successive months, process development expenditures have exceeded $30,000 per budgeted man year. This figure previously had been used as a budgeting basis but will have to be increased if this trend continues. This increase has been contributed to, in a minor manner, by raising costs for maintenance labor and supplies and in a major manner by an increase of about $1500 per man year in overhead allocations, and by a significant increase in Transfers In. This latter results mainly from increased costs of the Laboratory service groups and for work being done for us by the Manufacturing Group, such as the co-extrusion work in Building 320.

APPENDIX B

INSTRUMENT DEVELOPMENT PROGRAM
January 1, 1955 - March 31, 1955

		Estimated Man Months
Study 8508 -	Instrument Development - 300 Area	26
Job #9-3	Striped Load Tester	
10-3	Inclusion Tester for Slugs	
10-5	Pulsed Eddy Current Techniques	
10-6	Tester for Cans	
10-7	Eddy Current Porthole Extrusion Tester	
18-6	Elastic Constant Determinations	
18-10	High Speed Non-Bond Tester	
18-11	Transformation Tester	
18-12	Tester for Cracks in Plates	
18-13	Tester for Voids in Billets	
18-14	Ultrasonic Porthole Extrusion Tester	
47-2	Exterior Cladding Tester for Pipes	
47-3	Interior Cladding Tester for Pipes	
72	NTG	
--	Supervision & Unknown	
Study 8514 -	Instrument Development - 100 Area	18
Job #12-2	Matrix Monitor	
12-3	Three-Dimensional Recorders	
26	Poison Computer	
28	Wire Flux Monitor	
46	Compensated Ion Chamber	
54	Evaluation of Power Supplies	
56	Automatic Pile Control	
57	Flow Monitor	
62	Temperature Monitor	
64	Storage Basin Monitor	
74	Photoelectric Pulser	
--	Supervision & Unknown	

APPENDIX B (Cont.)

		Estimated Man Months
Study 8515 -	Instrument Development - 200 Area	23
Job #2-2	H_2S Detector	
5	Dimple Water Monitor	
5-1	Alpha Water Monitor	
5-2	Beta-Gamma Water Monitor	
7-2	Laundry Monitor	
7-3	Alpha Hand and Foot Counter	
8-2	Tritium Air Monitors	
8-3	Tritium Water Monitor	
31	Special Counting Instruments	
44	Standards Lab	
69	Fission Counter	
70	Continuous Airborne Alpha Monitor	
73	Glove Box Monitor	
76	Nephelometer	
77	Continuous Colorimeter	
77-1	Continuous Colorimeter for Ferrous Ion	
78	Dielectric Constant Meter	
79	Stack Monitor	
80	Continuous Polarograph	
81	M-S Inventory Monitor	
--	Supervision & Unknown	

APPENDIX C

METALLURGICAL DEVELOPMENT PROGRAM
January 1, 1955 - March 31, 1955

		Estimated Man Months
Study 8501	Non-destructive Testing	12
Study 8502	300 Area Process Development - Present Components	3
Study 8503	New Fuel Element Fabrication	7
Study 8504	Protective Coatings for New Fuel Elements	25
Study 8505	Corrosion	12
Study 8524	New LM Elements	40

PROGRAM AND OBJECTIVES

I. NATURAL URNAIUM SLUGS (2% of effort)

1. Revise Technical Standards
2. New Eddy-Current Tests
* 3. Study "Abnormal" Slugs
• 4. Specifications for Inclusion Content
• 5. Corrosion of Striated Slugs

II. NATURAL URANIUM PLATES (42% of effort)

1. Procure Uranium Cores
2. Preferred Orientation Studies
3. Irradiations at MTR, SRP
4. Nickel Plating
   a. Water
   b. Thickness
   c. 4 Plates per day
   * d. Kanigen process
5. Redesign End Plug
6. Test Aluminum Sheaths
7. Step-Press Bonding
   a. 305 Plates for SE
   b. 80 Plates for SRP
   c. Mechanize step-press die
   d. Increase rib height
   e. New double-acting die
   f. Make MTR specimens

APPENDIX C (Cont.)

8. Fluid-Pressure Bonding
   a. Liaison
   b. Preparation at SRL
9. Plate Straightening
10. Plate Evaluation (Destructive)
   a. Backlog of pressed plates
   * b. Kanigen plated
   c. Current production
   d. Test program
      Non-bond
      Chisel test
      Bond strength
      Pinhole corrosion
      Metallography
      Fatigue and non-bond
      Autoclave
11. Plate Evaluation (Non-destructive)
   a. Scale-up ND tests
   b. Evaluate SEP powder plates
   c. Purchase fluoroscope

12. End Closures
   a. Forged in open and closed dies
   b. Arc welded
   c. As pressed
   d. Evaluate closures
   * e. Develop non-destructive tests
   * f. Evaporated coatings

III. ENRICHED U-AL SLUGS (1% of effort)

1. Revise Technical Standards
* 2. Corrosion of Irradiated Slugs
* 3. Riverbank Program

IV. ENRICHED U-AL TUBES (32% of effort)

* 1. Physical Metallurgy of U-Al Alloys
* 2. Stress Corrosion of Alloy Tubes
3. Machining
   a. Quality control
   b. Solid Al-Si end plugs
   c. Increased clearances

APPENDIX C (Cont.)

4. Casting
   a. Vacuum vs. air melt
   b. Recovery of scrap
   c. Pouring method
   d. Mold rotation
5. Assembly, Welding, Outgassing
   a. Refine techniques
   b. Transfer to 320-M
6. Extrusion
   a. 14 14-ft. tubes for PDP
   b. 5 14-ft. tubes for SRP
   * c. 63 5-ft. tubes for SE
7. Drawing and Straightening
   a. Tandem dies
   b. Gag-pressing
   c. Roller-straightening
8. Tube Evaluation
   a. Dimensions
   b. Bonding
   c. Physical properties
   d. Non-destructive tests (14-ft.)

V. THORIUM (23% of effort)

1. Metal Quality
   a. Arc-melted vs. induction-melted
   b. Committees
   c. Extrude rod and bare tube
2. Produce Mark IV Slugs
3. Evaluate Canned Slugs
   a. Pressed and dipped Mark II
   b. Pressed and dipped Mark IV
   c. Powder metallurgy
4. Write Technical Standards for SEP Hot-Pressing
5. Irradiation in MTR, SRP
6. Corrosion of Thorium Elements
7. Corrosion of Stainless Steel and Carbon Steel (200 Area)

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* These items will be worked on if time is available.

TECHNICAL DIVISION STUDY STATUS

Study No.	Title	Man Mo.	From	To	Man Mo. used to 12/31	Total Man Mo. used FY-1955	Program		Budget
8501	Non-destructive Testing	12	1/1/55	3/31/55	0	54.55	40% 30% 30%	MD MD MD	2802 2961 2922
8502	300 Area Process Development - Present Components	3	1/1/55	3/31/55	0	7.25		MD	2802
8503	New Fuel Element Fabrication	7	1/1/55	3/31/55	0	18.95		MD	2802
8504	Protective Coatings for New Fuel Elements	25	1/1/55	3/31/55	0	39.75		MD	2802
8505	Corrosion	12	1/1/55	3/31/55	0	23.80	30% 50% 20%	MD MD MD	2802 2922 2961
8506	100 Area Process Development - General	23	11/1/54	1/31/55	7.50	32.05	60% 40%	RPD RPD	2803 2923
8507	Heat Transfer and Water Quality					0		RPD	2803
8508	Instrument Development - 300 Area	26	1/1/55	3/31/55	0	0	40% 30% 30%	MD MD MD	2802 2922 2961
8509	Design and Evaluation of Fuel Elements	44	11/1/54	1/31/55	30.60	82.20	50% 50%	RPD RPD	2803 2923
8510	Purex Design Testing			Inactive				CPD	2804
8511	Separations Process and Equipment Demonstration	35	12/1/54	2/28/55	11.20	63.40	80% 10% 10%	CPD CPD CPD	2804 2910 2924
8512	Separations Process Chemistry	50	12/1/54	2/28/55	16.30	94.00	40% 5% 50% 5%	CPD CPD CPD CPD	2804 2910 2924 2962

TECHNICAL DIVISION STUDY STATUS (Cont.)

Study No.	Title	Man Mo.	From	To	Man Mo. used to 12/31	Total Man Mo. used FY-1955	Program	Budget
8513	Separations Engineering Development	40	12/1/54	2/28/55	11.35	63.35	75% CPD 25% CPD	2804 2924
8514	Instrument Development - 100 Area	18	1/1/55	3/31/55	0	0	50% RPD 50% RPD	2803 2923
8515	Instrument Development - 200 Area	23	1/1/55	3/31/55	0	71.65	70% CPD 10% CPD 20% CPD	2804 2910 2924
8517	Separations Process Hazards	3	12/1/54	2/28/55	1.20	6.80	CPD	2924
8518	Theoretical Physics	40	11/1/54	1/31/55	20.45	60.70	60% RPD 40% RPD	2803 2923
8519	Experimental Pile Physics	70	11/1/54	1/31/55	43.20	127.00	65% RPD 35% RPD	2803 2923
8520	100 Area Mechanical Development	36	11/1/54	1/31/55	23.65	67.15	60% RPD 40% RPD	2803 2923
8521	Hydriside Development	6	12/1/54	2/28/55	2.50	15.40	CPD	2910
8522	Analytical Chemistry Development	20	12/1/54	2/28/55	10.00	53.30	75% CPD 25% CPD	2804 2924
8523	Waste Handling	3	12/1/54	2/28/55	.20	.20	CPD	2804
8524	New LM Elements	40	1/1/55	3/31/55	0	80.20	35% MD 65% MD	2922 2961
8525	Fluid Pressure Facility	(For construction cost only)					MD	2802
8526	Recycle Facility	(For construction cost only)					CPD	2604