IMC FERTILIZER, INC.

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

March 5, 1990

Mr. John Reynolds, Engineer IV
Permitting and Standards Section
FLORIDA DEPARTMENT OF ENVIRONMENTAL
REGULATION
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear John:

My thanks to you for taking the time to meet with Jerry Girardin and me on February 28 to discuss the proposed construction of an additional cooler and scrubber on our DAP No. 2 Plant.

Attached is our construction permit application and check to cover the application fee.

The DAP Plant in question is currently operating under three permits, AO53-106293, AO53-134734, and AO53-139336. These permits encompass the two wet scrubbing systems for DAP No. 2 and the bag collector for the product cooler which serves both plants. To this existing equipment, we intend to add an additional cooler, because the existing cooler does not sufficiently cool the product output from the two plants. The currently permitted emission control equipment is not sufficient to control the particulate emissions from the new cooler and as such, we plan to construct a new venturi scrubber for the new cooler. This will add a fourth particulate emission point to the DAP No. 2 plant.

IMC Fertilizer, Inc. ○ New Wales Operations
P. O. Box 1035 ○ Hwy. 640 West ○ Mulberry, Florida 33860 ○ (813) 428-2531

J. M. Baretincic

IMC FERTILIZER, INC.

IMC Fertilizer, Inc. ○ New Wales Operations
P. O. Box 1035 ○ Hwy. 640 West At County Line
Mulberry, Florida 33860

TO: Mr. John Reynolds, Engineer IV
Permitting and Standards Section
FLORIDA DEPARTMENT OF ENVIRONMENTAL
REGULATION
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

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Current particulate emissions from the three sources for the last several years are as follows:

	Actual Lbs./Hr.	Allowable Lbs./Hr.
DAP No. 2 East, AO53-134734	6.39	14.1
DAP No. 2 West, AO53-139336	7.47	14.1
DAP No. 2 Cooler, AO53-106293	1.13	4.5
Total	14.99	32.7

The addition of the new cooler with venturi scrubber operating 7,884 hours per year and emitting a maximum of 6.2 pounds per hour of particulate will add 24.5 tons per year to the current actual particulate emissions.

With respect to the make and model number of the proposed venturi scrubber, we do not have this information at this time. The design specifications call for a Koch venturi, or equivalent, but we have not let the bid as of this writing and do not know who the supplier will be. Current timing calls for purchase order to be let by April 16, and as soon as this is done we can then supply you with this information.

Pond water fluorides are averaging approximately 1% during the year with occasional peaks of 1.1% during the cooler months of the year when a lack of rainfall allows concentration of fluorides in the pond. It has been our experience that the cooling pond fluoride concentration fluctuates very little.

Again, we wish to thank you and Jim Pennington for allowing us to meet with you in Tallahassee. If you have any questions regarding the permit application or information in this letter, please contact me or Jerry Girardin at (813) 428-2531.

Sincerely,

J. M. Baretincic
Director
Environmental Services

JMB/dws

Enclosures

CC: J. A. Brafford
A. L. Girardin
C. A. Pflaum, P.E.

J. Reynolds
B. Thomas, SW Dist

BEST AVAILABLE COPY

FIRST FLORIDA BANK, N.A.
FORT MYERS, FLORIDA

IMC FERTILIZER, INC.
NEW WALES OPERATIONS
P.O. BOX 1035 • MULBERRY, FLORIDA 33860

IMC FERTILIZER, INC. 63-329 / 670

CHECK NO. 711101

03	02	90
MONTH	DAY	YEAR

OPERATING ACCOUNT

AMOUNT
**********200.00

PAY TO THE ORDER OF

FLORIDA DEPT. OF ENVIRONMENTAL
REGULATIONS
2600 BLAIRSTONE RD.
TALLAHASSEE FL 32301

AUTHORIZED SIGNATURE

⑈711101⑈ ⑆067003299⑆ 800003016⑈

O. 711101 F53566

IMC FERTILIZER, INC.
NEW WALES OPERATIONS • P.O. BOX 1035 • MULBERRY, FLORIDA 33860

IMC FERTILIZER, INC.

INVOICE DATE			INVOICE NUMBER	REFERENCE NUMBER	PURCHASE ORDER NO.	INVOICE AMOUNT	DISCOUNT	NET PAYABLE
ONTH	DAY	YEAR						
02	28	90	C/R	552-936		200.00		200.00
						200.00	.00	200.00

INTER-OFFICE CORRESPONDENCE

COPIES TO:

TO J. A. Brafford

FROM B. B. Turner

DATE August 19, 1987

SUBJECT Delegation of Signature Authority

Referring to your appointment as Vice President and General Manager - New Wales Operations of IMC Fertilizer, Inc. (the "Corporation") and pursuant to the resolution adopted by the Board of Directors on July 1, 1987 respecting delegation of signature authority to appointed Vice Presidents of the Corporation, I hereby delegate to you in your capacity as Vice President of the Corporation and General Manager - New Wales Operations, the authority to execute contracts and other documents on behalf of the Corporation to the same extent as if you were a Senior Vice President of the Corporation elected by the Board of Directors, provided, however, that such authority shall be limited to contracts and other documents which pertain to the New Wales operations of the Corporation, and provided, further, that such authority is subject to all necessary corporate approvals being first obtained, as required by resolutions of the Board of Directors, the Management Guide, or by any Executive Policy Bulletins and memoranda either heretofore or hereafter promulgated by the Executive Office of the Corporation, and is further limited now or in the future by such resolutions, management guides, and memoranda as may be inconsistent with this delegation.

This delegation supersedes any previous delegations of similar authority that may have been given either to you or any predecessor.

Billie B. Turner
Billie B. Turner
President
IMC Fertilizer, Inc.

FORM 0-100A

#200 pd.
3-7-90.
Rcpt. # 151107

Florida Department of Environmental Regulation
Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

DER Form #
Form Title
Effective Date
DER Application No. (Filled in by DER)

AC53-177264

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: PARTICULATE SCRUBBER [x] New[1] [ ] Existing[1]

APPLICATION TYPE: [x] Construction [ ] Operation [ ] Modification

COMPANY NAME: IMC FERTILIZER, INC NEW WALES OPERATIONS COUNTY: POLK

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired) _____

SOURCE LOCATION: Street HIGHWAY 640 & COUNTY LINE ROAD City MULBERRY

UTM: East 396.7 North 3079.4

Latitude ____° ____' ____"N Longitude ____° ____' ____"W

APPLICANT NAME AND TITLE: JOHN A. BRAFFORD - VICE PRESIDENT & GENERAL MANAGER

APPLICANT ADDRESS: P.O. BOX 1035, MULBERRY, FL 33860

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of IMC FERTILIZER, INC.

I certify that the statements made in this application for a CONSTRUCTION permit are true, correct and complete to the best of my knowledge and belief. Furthe I agree to maintain and operate the pollution control source and pollution contr facilities in such a manner as to comply with the provision of Chapter 403, Flori Statutes, and all the rules and regulations of the department and revisions thereof. also understand that a permit, if granted by the department, will be non-transferabl and I will promptly notify the department upon sale or legal transfer of the permitte establishment.

*Attach letter of authorization

Signed: John A. Brafford

JOHN A. BRAFFORD, VICE PRESIDENT & GEN. MGI
Name and Title (Please Type)

Date: 03/08/90 Telephone No. (813) 428-2531

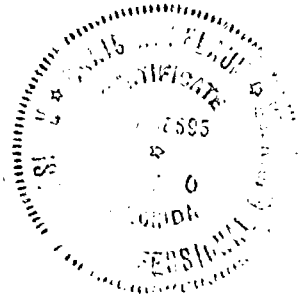
B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

This is to certify that the engineering features of this pollution control project ha been designed/examined by me and found to be in conformity with modern engineeri principles applicable to the treatment and disposal of pollutants characterized in t permit application. There is reasonable assurance, in my professional judgment, th

[1] See Florida Administrative Code Rule 17-2.100(57) and (104)

Northwest District 160 Governmental Center Pensacola, Florida 32501-5794
Northeast District 3426 Bills Rd. Jacksonville, Florida 32207
Central District 3319 Maguire Blvd. Suite 232 Orlando, Florida 32803-3767
Southwest District 4520 Oak Fair Blvd. Tampa, Florida 33610-7347
South District 2269 Bay St. Fort Myers, Florida 33901-2896
Southeast District 1900 S. Congress Ave., Suite A West Palm Beach, Florida 33406

the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.



Signed _____

CRAIG A. PFLAUM
Name (Please Type)

IMC FERTILIZER NEW WALES OPERATIONS
Company Name (Please Type)

P.O. BOX 1035, MULBERRY, FL 33860
Mailing Address (Please Type)

Florida Registration No. 18595 Date: _____ Telephone No. (813) 428-2531

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

A NEW DAP PRODUCT COOLER WILL BE ADDED TO SUPPLEMENT THE EXISTING PRODUCT COOLER. PARTICULATE EMISSIONS ARE TO BE CONTROLLED WITH A FOUR CLUSTER CYCLONE FOLLOWED BY A DIRECT CONTACT VENTURI SCRUBBER TO MEET COMPLIANCE REQUIREMENTS.

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction SEPT. 1990 Completion of Construction JUNE 1991

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

CYCLONES 162,000

SCRUBBER 330,000

SCRUBBER PUMPS 69,000

ID FAN 207,000; STACK 201,000

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

NEW SOURCE, NO PREVIOUS PERMITS ISSUED FOR THIS PROPOSED EMISSION SOURCE.

AN EXISTING COOLER AND BAGHOUSE ARE PERMITTED UNDER A053-106293, AS WELL AS DAP 2E A053-134734 AND DAP 2W A053-139336

(7884 HRS/YR)

E. Requested permitted equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 52 ;

if power plant, hrs/yr_____; if seasonal, describe:_____

F. If this is a new source or major modification, answer the following questions. (Yes or No)

1. Is this source in a non-attainment area for a particular pollutant? NO

   a. If yes, has "offset" been applied? _____

   b. If yes, has "Lowest Achievable Emission Rate" been applied? _____

   c. If yes, list non-attainment pollutants. _____

2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. NO

3. Does the State "Prevention of Significant Deterioriation" (PSD) requirement apply to this aource? If yes, see Sections VI and VII. NO

4. Do "Standards of Performance for New Stationary Sourcea" (NSPS) apply to this source? YES

5. Do "National Emisaion Standarda for Hazardous Air Pollutants" (NESHAP) apply to this source? NO

H. Do "Reasonably Available Control Technology" (RACT) requirements apply to this source? NO

   a. If yes, for what pollutants?_____

   b. If yes, in addition to the information required in this form, any information requested in Rule 17-2.650 must be submitted.

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable:

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Diammonium Phosphate	TSP	100	300,000	COOLER

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): 300,000

2. Product Weight (lbs/hr): 280,000

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

Name of Contaminant	Emission[1]		Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/yr	T/yr	
TSP	6.2	24.5	0.011gr/DSCF	6.2	6.2	24.5	STACK

[1]See Section V, Item 2.

[2]Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input)

[3]Calculated from operating rate and applicable standard.

[4]Emission, if source operated without control (See Section V, Item 3).

D. Control Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
VENTURI SCRUBBER	TSP	99.9%	100% > 100 μ	
			95% > 10 μ	
			10% > 40 μ	

E. Fuels N/A

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	

*Units: Natural Gas--MMCF/hr; Fuel Oils--gallons/hr; Coal, wood, refuse, other--lbs/hr.

Fuel Analysis: N/A

Percent Sulfur: _____ Percent Ash: _____

Density: _____ lbs/gal Typical Percent Nitrogen: _____

Heat Capacity: _____ BTU/lb _____ BTU/gal

Other Fuel Contaminants (which may cause air pollution): _____

F. If applicable, indicate the percent of fuel used for space heating.

Annual Average _____ Maximum _____

G. Indicate liquid or solid wastes generated and method of dispoaal.

LIQUID WASTE TO COOLING POND

H. Emission Stack Geometry and Flow Charscteristics (Provide data for each stack):

Stack Height: 170' ft. Stack Diameter: 5' ft.

Gas Flow Rate: 76,000 ACFM 66,000 DSCFM Gas Exit Temperature: 110 °F.

Water Vapor Content: 3.00 % Velocity: 64 FPS

SECTION IV: INCINERATOR INFORMATION N/A

Type of Waste	Type 0 (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq.& Gas By-prod.)	Type VI (Solid By-prod.)
Actual lb/hr Incinerated							
Uncontrolled (lbs/hr)							

Description of Waste _____

Total Weight Incinerated (lbs/hr) _____ Design Capacity (lbs/hr) _____

Approximate Number of Hours of Operation per day _____ day/wk _____ wks/yr. _____

Manufacturer _____

Date Constructed _____ Model No. _____

	Volume $(ft)^3$	Heat Release (BTU/hr)	Fuel		Temperature (°F)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: _____ ft. Stack Diamter: _____ Stack Temp. _____

Gas Flow Rate: _____ ACFM _____ DSCFM* Velocity: _____ FPS

*If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

Type of pollution control device: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner

[ ] Other (specify) _____

Brief description of operating characteristics of control devices: _____

_____

_____

_____

_____

Ultimate disposal of any effluent other than that emitted from the stack (scrubber water, ash, etc.):

_____

_____

_____

_____

NOTE: Items 2, 3, 4, 6, 7, 8, and 10 in Section V must be included where applicable.

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight -- show derivation [Rule 17-2.100(127)]

2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.) and attach proposed methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made.

3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).

4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, design pressure drop, etc.)

5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3 and 5 should be consistent: actual emissions = potential (1-efficiency).

6. An 8 1/2" x 11" flow diagram which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained.

7. An 8 1/2" x 11" plot plan showing the location of the establishment, and points of airborne emissions, in relation to the surrounding area, residences and other permanent structures and roadways (Example: Copy of relevant portion of USGS topographic map).

8. An 8 1/2" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.

9. The appropriate application fee in accordance with Rule 17-4.05. The check should be made payable to the Department of Environmental Regulation.

10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?

[ ] Yes [xx] No

Contaminant	Rate or Concentration

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy.)

[ ] Yes [ ] No

Contaminant	Rate or Concentration

C. What emission levels do you propose as best available control technology?

Contaminant	Rate or Concentration

D. Describe the existing control and treatment technology (if any). (A053-106293)

1. Control Device/System: BAGHOUSE
2. Operating Principles: AIR FILTER
3. Efficiency:* 99.9/DESIGN
4. Capital Costs: 640,000 (1980)

*Explain method of determining

5. Useful Life: 10 YRS.

6. Operating Costs:

7. Energy: 1.31 x 10^6 KWH/YR

8. Maintenance Cost:

9. Emissions: 0.01 GR/DSCF

Contaminant	Rate or Concentration
TSP (DIAMMONIUM PHOSPHATE)	300,000 lbs/hr COOLER FEED.

10. Stack Parameters

a. Height: 94 ft.

b. Diameter: 5.414 ft.

c. Flow Rate: 30,000-60,000 ACFM

d. Temperature: 150 °F.

e. Velocity: 22-44 FPS

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary).

1.

a. Control Device: Venturi

b. Operating Principles: Air Scrubber

c. Efficiency:[1] 99.9 - DESIGN

d. Capital Cost: 940,000 (1990)

e. Useful Life: 10 YEARS

f. Operating Cost:

g. Energy:[2] 3.3 x 10^6KWH/YR

h. Maintenance Cost:

i. Availability of construction materials and process chemicals: GOOD

j. Applicability to manufacturing processes: GOOD, CONSISTENT AIRFLOW

k. Ability to construct with control device, install in available space, and operate within proposed levels: GOOD

2.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

[1]Explain method of determining efficiency.
[2]Energy to be reported in units of electrical power - KWH design rate.

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

3.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

4.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Costs:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

F. Deecribe the control technology selscted:

1. Control Device:

2. Efficiency:[1]

3. Capital Cost:

4. Useful Life:

5. Operating Cost:

6. Energy:[2]

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processea:

a. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

[1]Explain method of determining efficiency.
[2]Energy to be reported in units of electrical power - KWH design rate.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Procesa Rate:[1]

b. (1) Company:

(2) Mailing Address:

(3) City: (4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

10. Reason for selection and description of systems:

[1]Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

NO APPLICABLE, EMISSIONS WILL NOT EXCEED 25 TPY

SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION

A. Company Monitored Data

1. _____no. sites _____ TSP _____( ) SO^2* _____ Wind spd/dir

Period of Monitoring ____/____/____ to ____/____/____
month day year month day year

Other data recorded _____

Attach all data or statistical summaries to this application.

*Specify bubbler (B) or continuous (C).

2. Instrumentation, Field and Laboratory

a. Was instrumentation EPA referenced or its equivalent? [ ] Yes [ ] No

b. Was instrumentation calibrated in accordance with Department procedures?

[ ] Yes [ ] No [ ] Unknown

B. Meteorological Data Used for Air Quality Modeling

1. _____ Year(s) of data from _____/_____/_____ to _____/_____/_____
month day year month day year

2. Surface data obtained from (location)_____

3. Upper air (mixing height) data obtained from (location)_____

4. Stability wind rose (STAR) data obtained from (location)_____

C. Computer Models Used

1. _____ Modified? If yes, attach description.

2. _____ Modified? If yes, attach description.

3. _____ Modified? If yes, attach description.

4. _____ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate
TSP	_____ grams/sec
SO^2	_____ grams/sec

E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description of point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

F. Attach all other information supportive to the PSD review.

G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.

FINAL PROJECT SCOPE DEFINITION
PROJECT F-2125
NEW DAP2 COOLER INSTALLATION

Purpose:

Increase DAP2 cooling capacity to achieve product temperatures of 120°F maximum. This is a requirement to produce non-caking DAP. The objective is to produce better quality DAP from New Wales.

Background Information:

For the past 18-20 months, New Wales has been plagued with customer complaints of poor quality DAP--particularly as it relates to caking and setting up in railcars.

After an extensive effort to define the problem, all signs point to product temperature as the most significant variable. DAP1, which now cools product to 120°F, has almost no customer complaints. Efforts continue to improve cooling in that plant to allow it to produce at the former high rates.

DAP2, which has been cooling to about 145°F, continues to experience customer complaints. This new project will allow DAP2 to cool product as low as DAP1. (Recent improvements have reduced the DAP2 product temperature to about 135°F.)

For background, it is important to note that DAP2 was designed to produce 70 TPH of product from each side; it was designed to cool this product from 170°F to 130°F, which was the best information available ten years ago.

With some effort, this plant is now able to produce 140 TPH from one side and 100 TPH from the other. This has overloaded the cooling system.

Scope of installation:

Install separate product cooling system for DAP 2E, allowing DAP 2W to use the existing cooling system. Some flexibility may be provided to cross-feed each system--if feasible.

DAP 2E will produce 140 TPH, with a new cooler, conveying equipment and air handling system. It will discharge into the existing product elevator. The existing air chiller will be connected to the new cooler. Product temperature will be 120°F maximum.

DAP 2W will operate at 100 TPH, with the existing cooler and air handling system. It will continue to discharge into the existing product elevator. It will not use the existing air chiller. Product temperature will be 120°F maximum. Future debottlenecking of DAP 2W to 140 TPH would require a new air chiller.

The new cooler and air handling equipment will be located east of the DAP2 building, adjacent to the DAP 2E dryer. A sketch of the area is included in the Appendix.

Rotary Cooler

12' diameter, 55' long, with lifting discharge flights. 250 HP, 2300V motor. Maximum instantaneous feed rate-200 TPH. Temperatures: feed-185°F, product-120°F, inlet air-45°F, outlet air-160°F. 0.3% moisture removal assumed. 60,000 ACFM exit air flow through cooler.

Feed Conveyor

Designed to convey up to 200 TPH product-sized material at 185°F to the new cooler.

Product Elevator and Conveyor

Designed for up to 200 TPH product. To lift and convey product to existing product elevator. Elevator designed for 80% bucket loading and 120 fpm speed.

Cyclone

Buell four cluster cyclone, with bottom hopper and flapper valve. 80,000 ACFM at 155°F. 6" pressure drop.

Scrubber

Koch Engineering direct contact venturi scrubber with manually adjustable throat and cyclonic separator. 316L SS. 16" total pressure drop. 80,000 ACFM air flow at 155°F. 800 gpm recirculation flow, 100 gpm of fresh water, vaporizer condensate and/or pond water make-up.

Scrubber Recycle Pumps

Two Durco or Wilfley pumps, 800 gpm capacity. 30 HP motors.

Scrubber Exhaust Fan

Robinson fan, rubber-lined steel housing, 316 ELC wheel. 76,000 ACFM, 32" pressure rise. 500 HP, 2300V motor.

Stack

76,000 ACFM at 110°F. 5' diameter, 170' tall, Rubber-lined steel or FRP, with sampling platform and ports.

Safety:

All equipment will conform to New Wales standards.

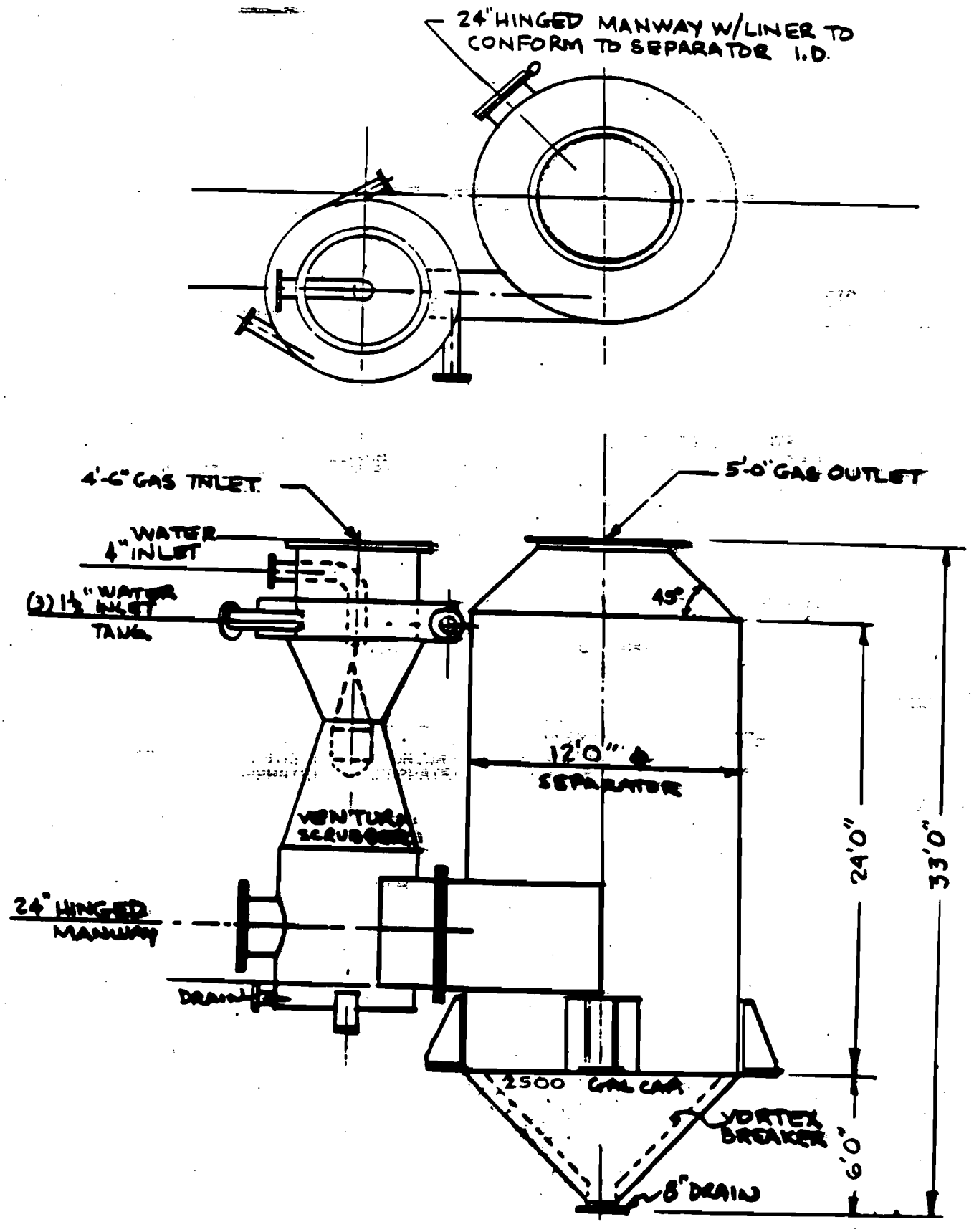
Environmental:

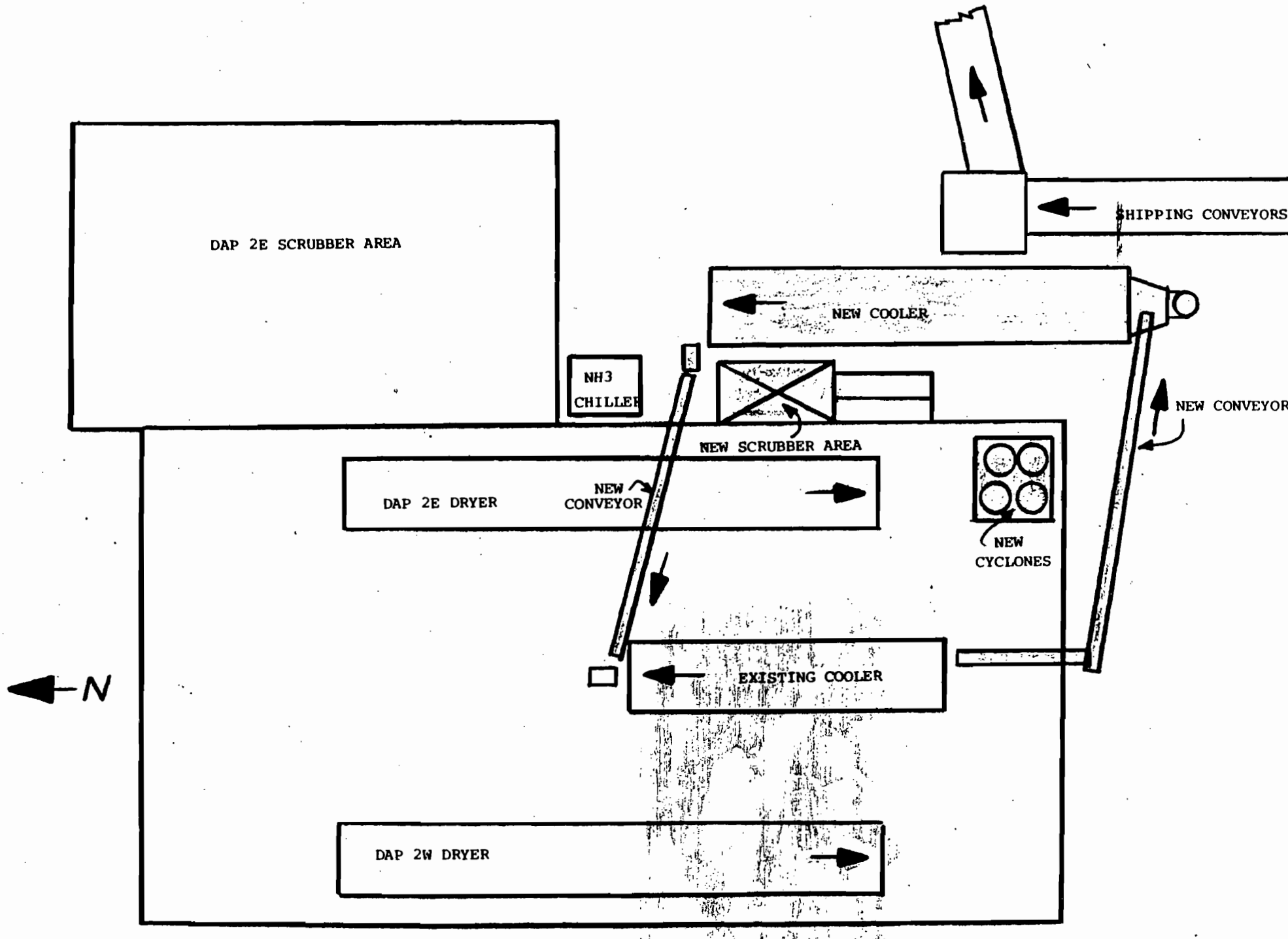
A new 76,000 ACFM air handling system will be installed. This will require a DER air pollution permit. The system will include a cyclone, venturi/cyclonic scrubber, exhaust fan, and stack.

The air will be scrubbed with a mixture of fresh water, pond water, and ammonia vaporizer condensate--at a neutral pH--with the effluent reused at wetrock grinding.

Schedule of Project:

The new cooler system can be started up by December 28, 1990, but only with early approval to commit expenditures before formal CPAR approval.


24" HINGED MANWAY W/LINER TO CONFORM TO SEPARATOR I.D.
4'-6" GAS INLET
WATER 4" INLET
(3) 1½" WATER INLET TANG.
5'-0" GAS OUTLET
45°
12'0" Ø SEPARATOR
VENTURI SCRUBBER
24" HINGED MANWAY
DRAIN
2500 GAL CAP.
VORTEX BREAKER
8" DRAIN
24'0"
33'0"
6'0"



DAP2 PLANT

PLAN VIEW-PROPOSED

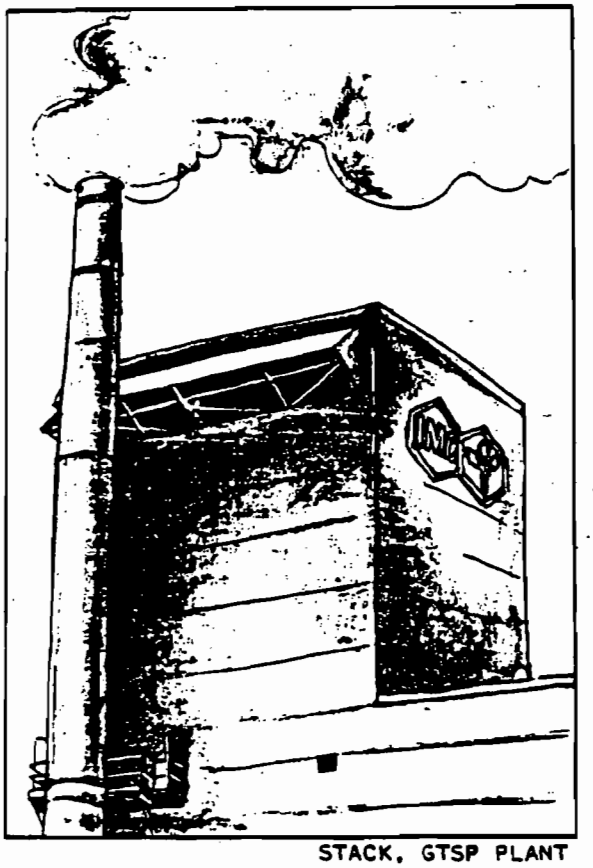
WELCOME TO NEW WALES

THIS BOOKLET WAS PREPARED TO TAKE YOU ON A VERBAL TOUR OF THE NEW WALES PLANT. THE FIGURES GIVEN FOR CONSUMPTION, RATE AND PRODUCTION ARE A COMBINATION OF APPROXIMATIONS, RATED CAPACITIES AND HISTORY.

FOR THOSE OF YOU WHO LIKE TO CALCULATE YIELDS OR CLOSE MATERIAL BALANCES, YOU WILL FIND THE NUMBERS DO NOT ADD UP. THIS IS ON PURPOSE; WE CONSIDER THE EXACT NUMBERS TO BE PROPRIETARY.

Contents:

MAY, 1985



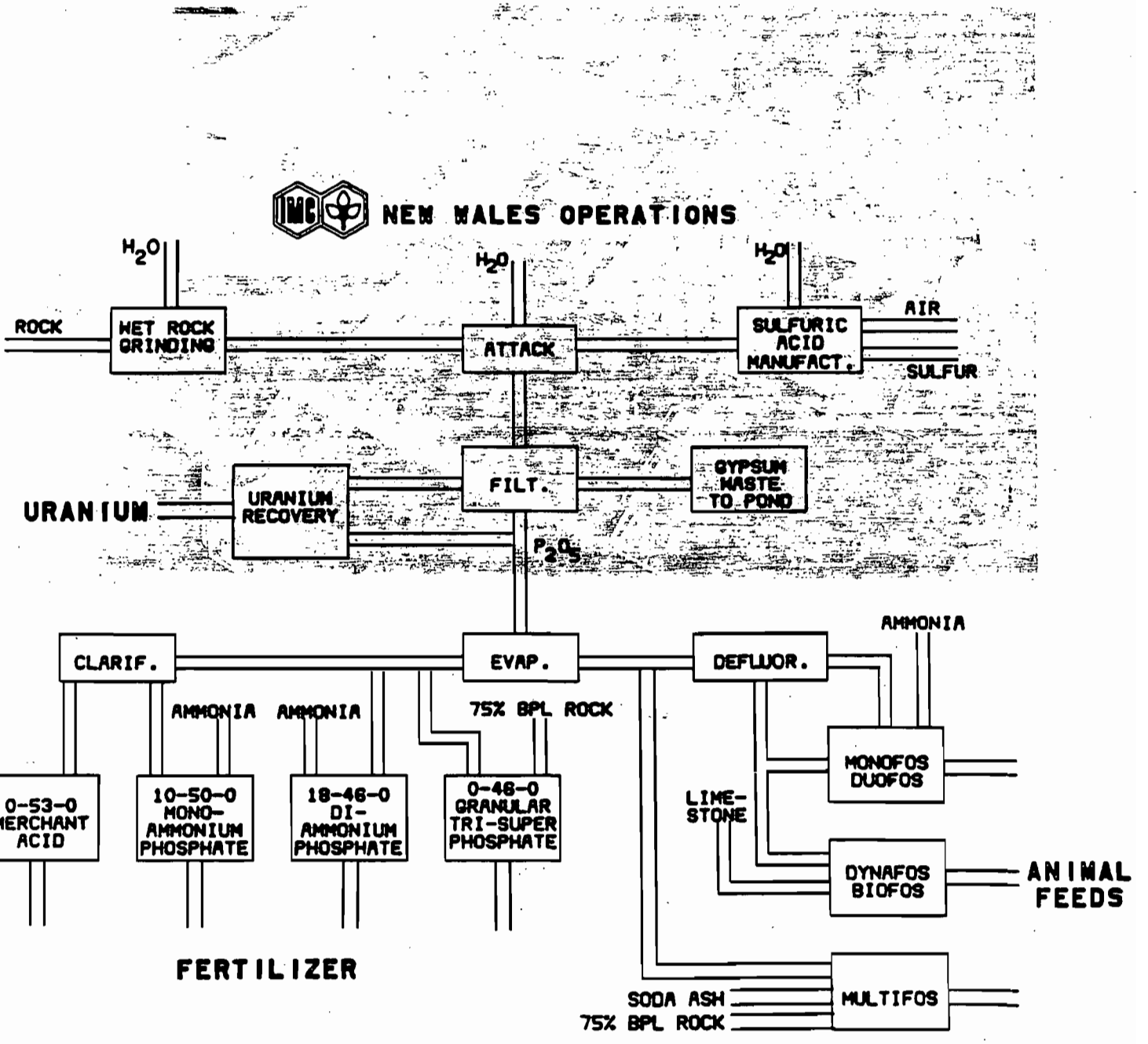
STACK, GTSP PLANT

Plant Material Flow

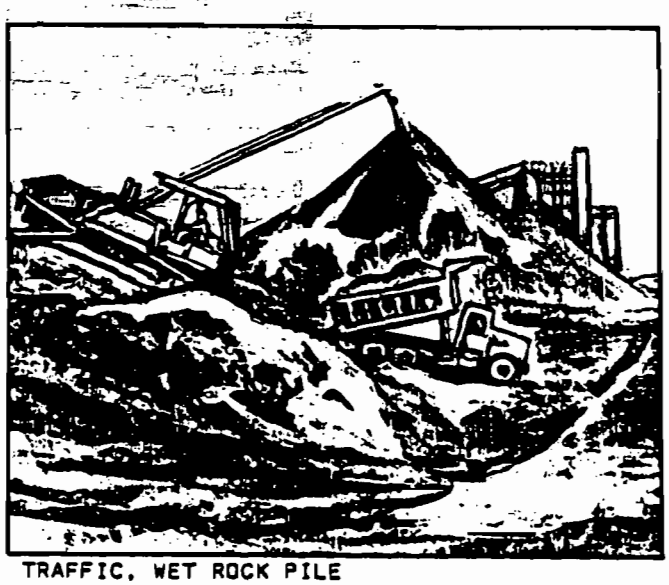
THE NEW WALES OPERATIONS OF INTERNATIONAL MINERALS AND CHEMICAL CORPORATION IS THE WORLD'S LARGEST GRASS ROOTS PRODUCTION FACILITY FOR THE MANUFACTURE OF PHOSPHORIC ACID AND PHOSPHATE FERTILIZER INGREDIENTS.

IN 1985, THIS COMPLEX WILL PRODUCE OVER 1,400,000 TONS OF PHOSPHORIC ACID. WITH THE THIRD TRAIN EXPANSION, THE COMPLEX HAS A CAPACITY OF ABOUT 1,750,000 TONS A YEAR OF PHOSPHORIC ACID.

THE NORMAL DAILY COMSUMPTION OF 67% BONE PHOSPHATE OF LIME (BPL) GRADE PHOSPHATE ROCK IS 15,000 TONS. THIS ROCK IS SUPPLIED TO NEW WALES AS WET ROCK AND STORED IN THE WET ROCK STORAGE PILE.


NEW WALES OPERATIONS
H_2O
H_2O
H_2O
ROCK
WET ROCK GRINDING
ATTACK
SULFURIC ACID MANUFACT.
AIR
SULFUR
FILT.
GYPSUM WASTE TO POND
URANIUM
URANIUM RECOVERY
P_2O_5
AMMONIA
CLARIF.
EVAP.
DEFLUOR.
AMMONIA
AMMONIA
75% BPL ROCK
MONOFOS DUOFOS
LIME-STONE
DYNAFOS BIOFOS
ANIMAL FEEDS
0-53-0 MERCHANT ACID
10-50-0 MONO-AMMONIUM PHOSPHATE
18-46-0 DI-AMMONIUM PHOSPHATE
0-48-0 GRANULAR TRI-SUPER PHOSPHATE
FERTILIZER
SODA ASH
75% BPL ROCK
MULTIFOS

THE ROCK IS RECEIVED AND STORED AT ABOUT 10% MOISTURE. THE WET ROCK HANDLING FACILITIES (UNLOADING, STORAGE AND RECLAIM) WERE DOUBLED WITH THE THIRD TRAIN EXPANSION.



TRAFFIC, WET ROCK PILE

ALL ROCK IS WET GROUND IN TWO BALL MILLS AND TWO ROD MILLS. FORMERLY, ROCK WAS DRY GROUND IN TWO BALL MILLS OPERATING IN PARALLEL. THE NEW WET ROCK GRINDING FACILITY, HOWEVER, HAS REPLACED THE ROCK DRYER AND DRY ROCK GRINDING.

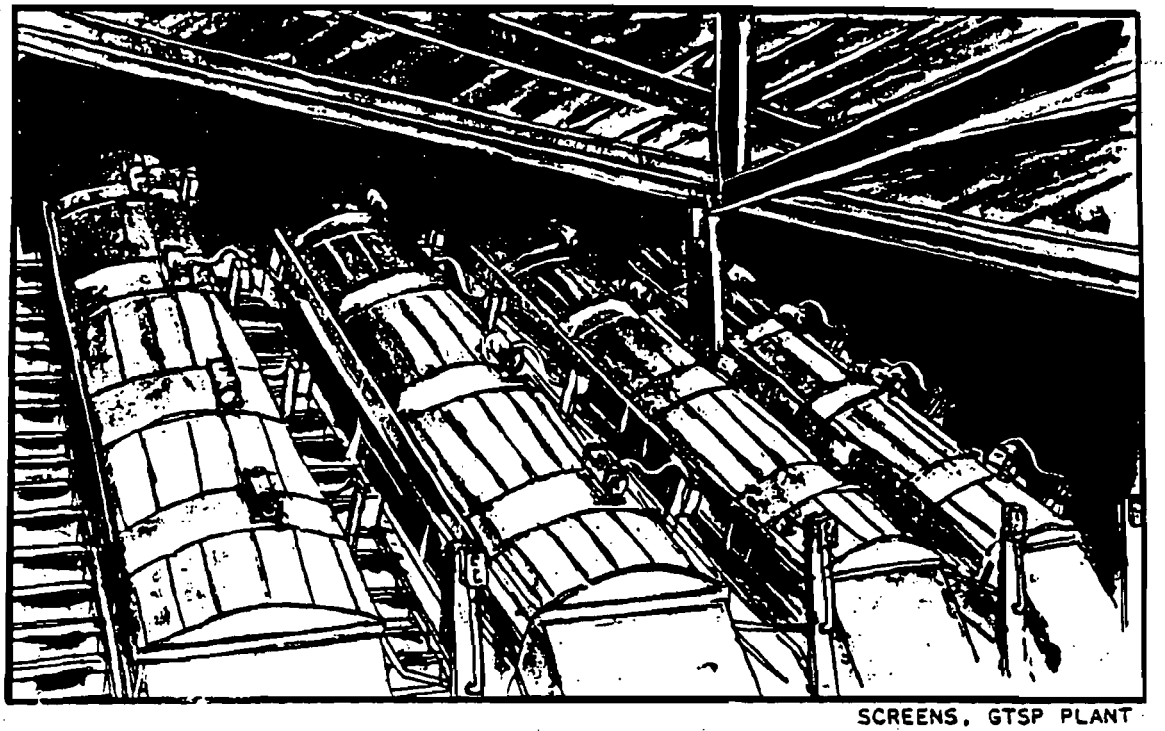
OUR PLANTS' SULFURIC ACID DEMAND IS ALMOST 11,000 TONS PER DAY (TPD), OF 100% H_2SO_4. THIS ACID IS PRODUCED IN FIVE DOUBLE ABSORPTION PLANTS. DAILY WE CONSUME ALMOST 3,500 TONS OF SULFUR.

PRAYON FILTER, PHOS. ACID PLANT

THE PHOSPHORIC ACID PLANTS PRODUCE AN AVERAGE OF 4,500 TPD P_2O_5 AS 27% ACID. THIS ACID IS MADE BY REACTING GROUND ROCK WITH SULFURIC ACID. THE REACTION RESULTS IN A SLURRY OF PHOSPHORIC ACID AND GYPSUM. THE GYPSUM IS A BY-PRODUCT AND IS SEPARATED FROM THE ACID BY FILTERING. NEW WALES GENERATES 21,000 TPD OF WASTE GYPSUM.

THE WEAK PHOSPHORIC ACID IS CONCENTRATED BY EVAPORATION TO 54% ACID FOR USE. THE ACID MAY BE CLARIFIED FOR DIRECT SALES OR PROCESSED FURTHER INTO DRY PRODUCTS.

APPROXIMATELY 500 TPD OF P_2O_5, AS 54% ACID, IS CLARIFIED BY NOZZLE CENTRIFUGES TO PRODUCE MERCHANT GRADE PHOSPHORIC ACID. A BY-PRODUCT OF THIS CLARIFICATION IS A HIGHLY IMPURE PHOSPHORIC ACID SLUDGE. THIS SLUDGE IS REACTED WITH AMMONIA IN A SPRAY TOWER TO PRODUCE 900 TPD OF NON-GRANULAR MONOAMMONIUM PHOSPHATE (MAP). MAP IS A 10-50-0 ANALYSIS FERTILIZER USED IN BULK BLENDS, SUSPENSION FERTILIZERS AND GRANULATION PLANTS.



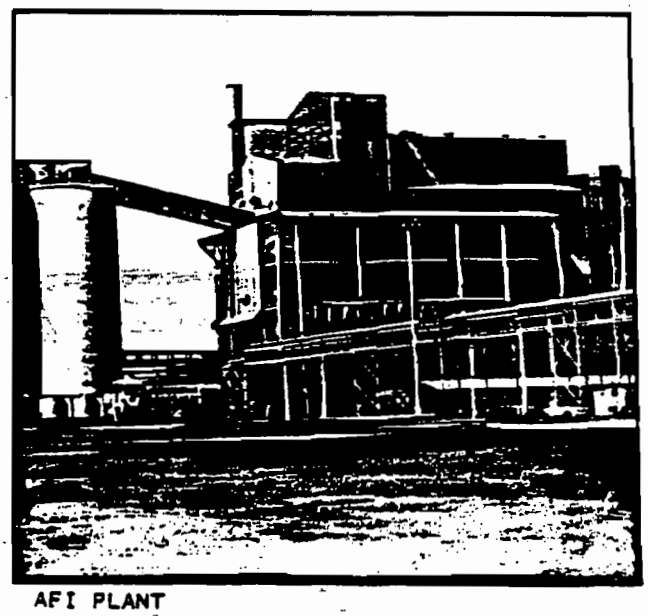
SCREENS, GTSP PLANT

GRANULAR TRIPLE SUPER PHOSPHATE IS A 0-46-0 (NPK) FERTILIZER. IT IS MADE IN A CONVENTIONAL SLURRY GRANULATION PLANT. WE REACT PHOSPHORIC ACID WITH FINELY GROUND (85% - 200 MESH) 73% BPL PHOSPHATE ROCK. THE SLURRY PRODUCED BY THIS REACTION IS SPRAYED ON A RECYCLE BED OF MATERIAL. THIS YIELDS A SPHERICAL PRODUCT. NEW WALES PRODUCES 1,000 TPD OF GTSP.

THE HIGHEST VOLUME PRODUCT MANUFACTURED AT NEW WALES IS DIAMMONIUM PHOSPHATE (DAP). DAP IS AN 18-46-0 FERTILIZER. DAP IS MADE BY REACTING PHOSPHORIC ACID WITH AMMONIA. THE AMMONIATED PHOSPHATE SLURRY IS GRANULATED TO A SPHERICAL PRODUCT SIMILAR TO GTSP. NEW WALES PRODUCES 4,000 TPD OF DAP.

WE ALSO PRODUCE GRANULAR MAP IN THE #1 DAP PLANT.

OVER 600 TPD OF PHOSPHORIC ACID IS DEFLUORINATED FOR THE PRODUCTION OF LOW FLUORINE ANIMAL FEED SUPPLEMENTS IN OUR AFI PLANT. LIMESTONE IS REACTED WITH PHOSPHORIC ACID TO PRODUCE DYNAFOS AND BIOFOS. AMMONIA IS REACTED WITH PHOSPHORIC ACID TO PRODUCE MONOFOS AND DUOFOS.

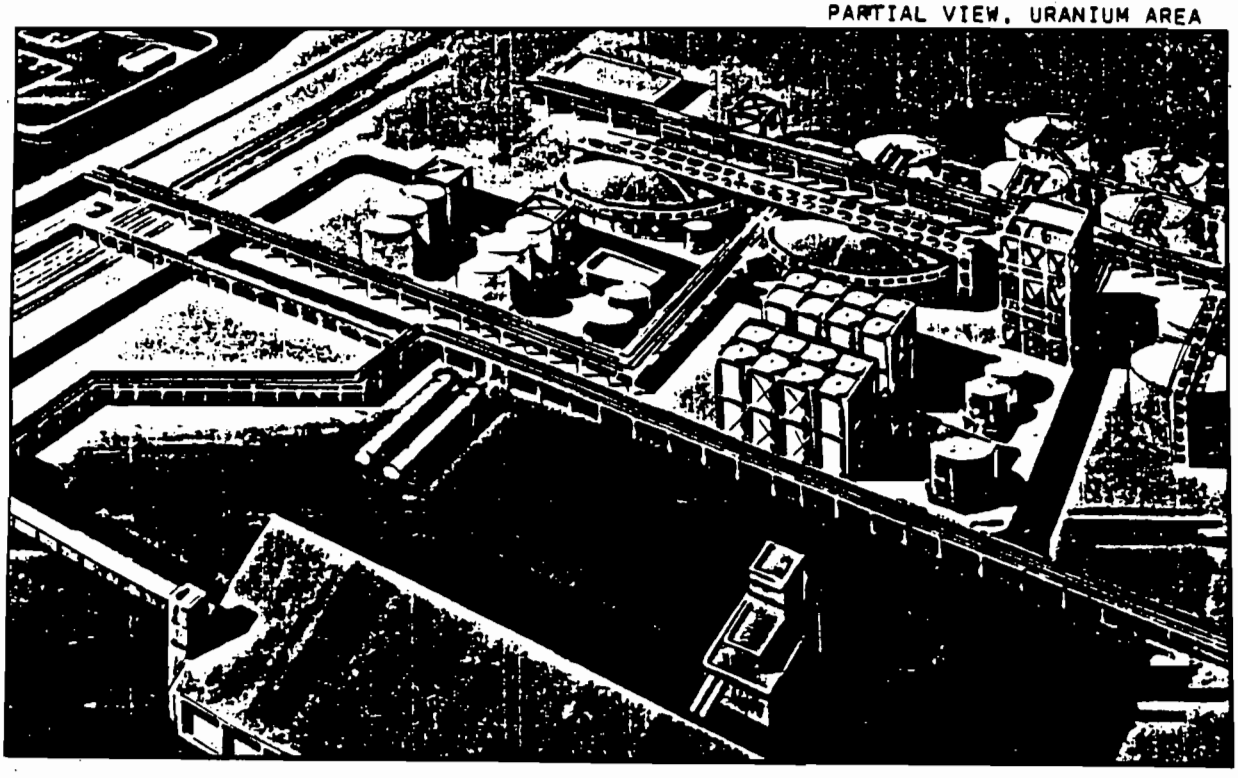


AFI PLANT

ANOTHER OPERATION PRODUCES 300 TPD MULTIFOS BY THE REACTION OF PHOSPHORIC ACID, SODA ASH, AND 75% BPL DRY ROCK. MULTIFOS IS ANOTHER LOW FLUORINE ANIMAL FEED INGREDIENT.

OTHER OPERATIONS AT THIS FACILITY INCLUDE UTILITIES GENERATION AND DISTRIBUTION, RAW MATERIALS HANDLING, AND END PRODUCT SHIPPING.

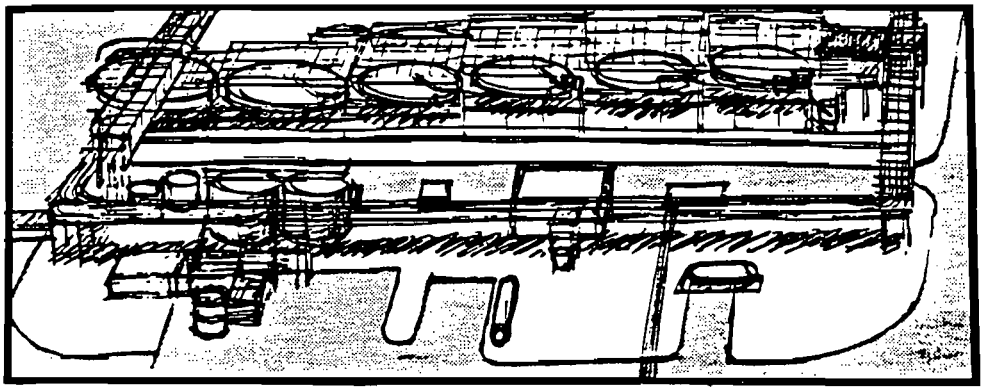
PARTIAL VIEW, URANIUM AREA



UNTREATED PHOSPHORIC ACID OR "PHOS ACID" IS THE STARTING POINT OF THE URANIUM RECOVERY PROCESS. AREA 10 IS DESIGNED TO CLEAN AND PRETREAT PHOS ACID BEFORE IT GOES INTO THE EXTRACTION CIRCUIT.

AS PHOS ACID IS PRODUCED, IT IS PUMPED DIRECTLY TO TWO STORAGE TANKS. FROM STORAGE, THE ACID IS COOLED IN SPIRAL HEAT EXCHANGERS USING POND WATER AS A COOLING AGENT. TEMPERATURE AFTER COOLING IS ABOUT 125°F. THE ACID, STILL BROWNISH IN COLOR, IS MIXED WITH A POLYMER THAT CAUSES SOLIDS TO SETTLE AND CLARIFY.

THIS CLARIFIED ACID, BROWNISH IN COLOR AND FREE OF SOLIDS, IS NOW PUMPED TO THE CARBON COLUMNS. ACTIVATED CARBON IN THE COLUMNS FURTHER PURIFIES THE ACID UNTIL IT EXITS AS A CLEAR, BRIGHT GREEN LIQUID, READY FOR THE PRIMARY EXTRACTION CIRCUIT.

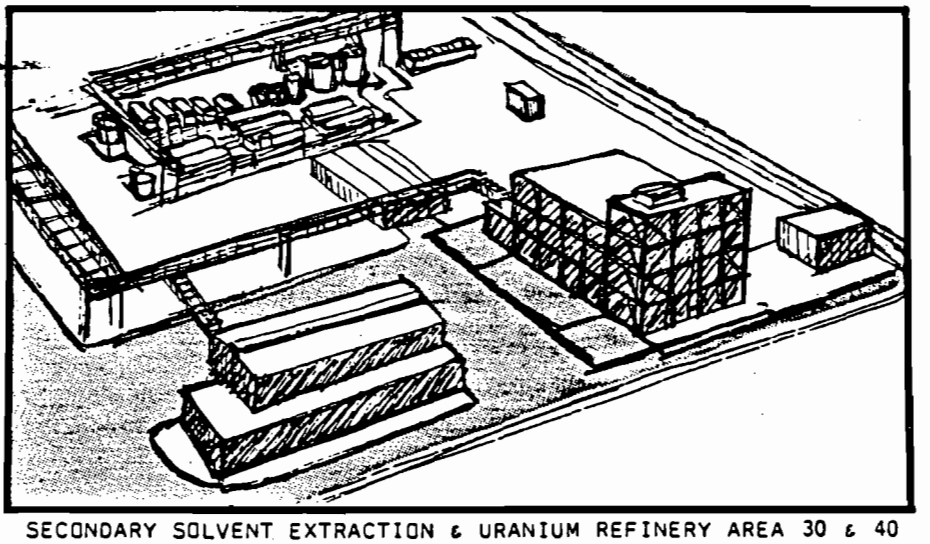


PRIMARY SOLVENT EXTRACTION & STRIP CIRCUITS AREA 20

CLARIFIED ACID IS PUMPED TO AREA 20 TO BEGIN EXTRACTION. IN THE FIRST PHASE OF THIS PROCESS, THE URANIUM IS OXIDIZED, THEN IT COMES IN CONTACT WITH A SOLUTION CALLED DEPA-TOFO.

IN AREA 20 WE CUT DOWN THE AMOUNT OF LIQUID HANDLED BY CONCENTRATING THE URANIUM INTO A SMALLER ACID STREAM. THE PERCENTAGE OF URANIUM, THEREFORE, INCREASES FROM THE BEGINNING OF THIS PHASE TO THE END.

THE "STRIP ACID" THAT LEAVES AREA 20 HAS THE URANIUM IN IT - BUT THE VOLUME HAS BEEN CUT BY 98%.



SECONDARY SOLVENT EXTRACTION & URANIUM REFINERY AREA 30 & 40

THIS SMALL AMOUNT OF "STRIP ACID" IS PUMPED TO AREA 30. HERE URANIUM IS RE-EXTRACTED INTO AN ORGANIC CONTAINING DEPA-TOPO.

STRIPPING TRANSFERS THE URANIUM TO AN AMMONIUM CARBONATE SOLUTION. IT IS PUMPED TO THE REFINERY WHERE YELLOWCAKE IS PRECIPITATED USING HYDROGEN PEROXIDE.

EXTREME SAFETY PRECAUTIONS HAVE BEEN TAKEN TO AVOID POSSIBLE CONTAMINATION. IT IS IMPORTANT TO REALIZE, HOWEVER, THAT THE YELLOWCAKE IS NOT CONSIDERED EXTREMELY DANGEROUS. IT EMITS ALPHA PARTICLES, A TYPE OF RADIATION THAT CAN BE STOPPED BY GLASS, CLOTHING, EVEN SKIN. PROLONGED INHALATION, HOWEVER, CAN BUILD UP TO POTENTIALLY DANGEROUS LEVELS, SO IMC HAS TAKEN EVERY CONCEIVABLE STEP TO GUARANTEE THE SAFETY OF ITS WORKERS.

ABOUT 1,100,000 POUNDS PER YEAR OF YELLOWCAKE ARE RECOVERED HERE AT NEW WALES. ONCE YELLOWCAKE IS DRIED, IT IS LOADED AND STORED FOR SHIPMENT TO FURTHER PROCESSING PLANTS. THE YELLOWCAKE PRODUCED AT IMC MUST BE FURTHER REFINED AND PROCESSED INTO THE "ROD BUNDLES" USED TO FUEL NUCLEAR REACTORS.

Introduction

A PLANT TOUR

THE NEW WALES COMPLEX PRODUCES NO RAW MATERIALS. WE RELY HEAVILY ON TRUCK AND RAIL TRANSPORATION TO BRING IN SULFUR, PHOSPHATE ROCK, FUEL OIL, AMMONIA, LIMESTONE, SODA ASH, SILICA AND REAGENTS.

THE TRAFFIC DEPARTMENT HANDLES OVER 200 RAIL CARS AND 600 TRUCKS ON A TYPICAL DAY.

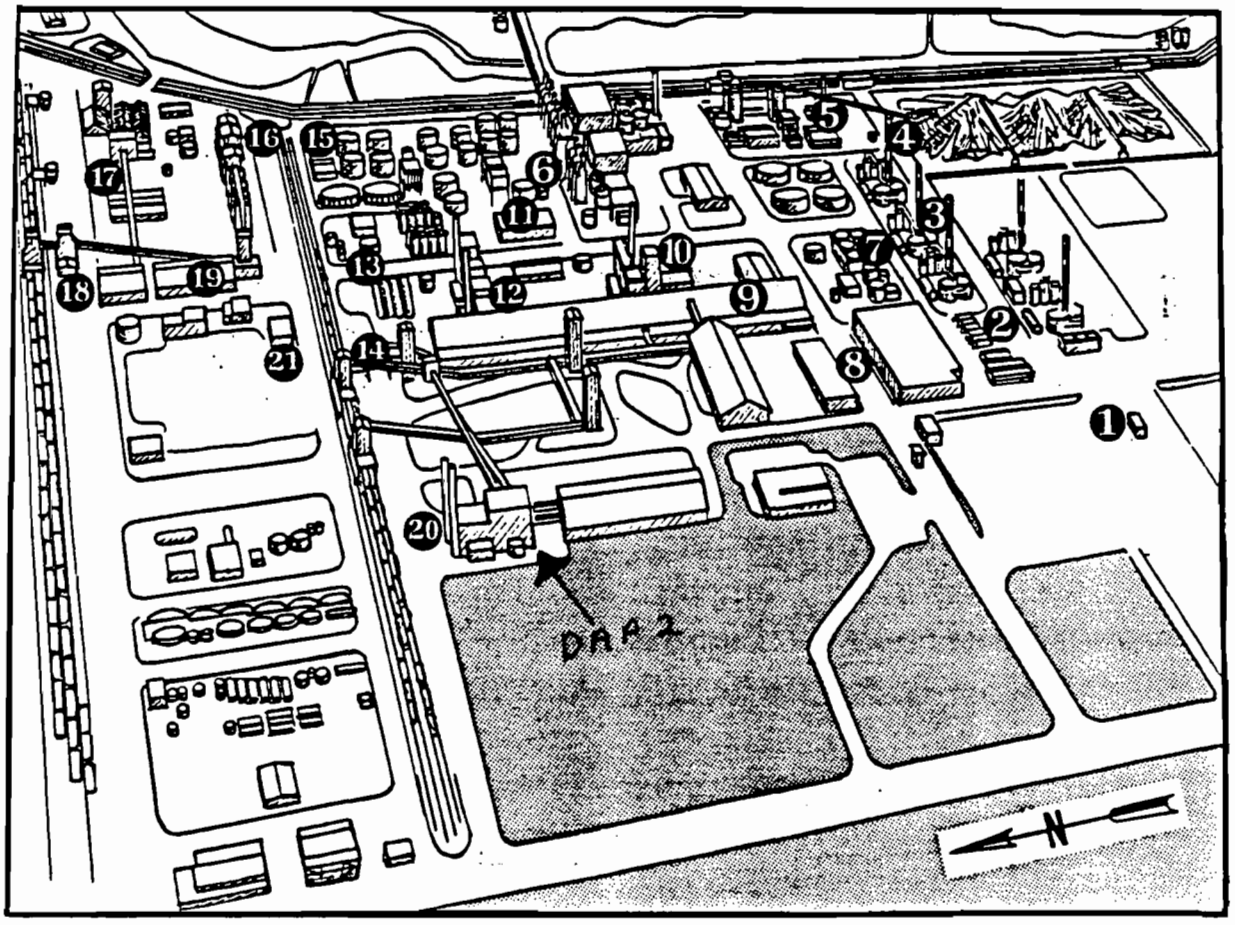
END PRODUCTS INCLUDE MERCHANT GRADE PHOSPHORIC ACID, MONOAMMONIUM PHOSPHATE (MAP), DIAMMONIUM PHOSPHATE (DAP), GRANULAR TRIPLE SUPER PHOSPHATE (GTSP), AND SULFURIC ACID. ANIMAL FEED INGREDIENTS INCLUDE DEFLUORINATED CALCIUM PHOSPHATES (DYNAFOS, BIOFOS, MULTIFOS) AND DEFLUORINATED AMMONIUM PHOSPHATES (MONOFOS AND DUOFOS). TOTAL PRODUCTION FOR THE 1985 FISCAL YEAR WILL BE 1,400,000 TONS OF P_2O_5.

CURRENT EMPLOYMENT LEVEL AT NEW WALES IS APPROXIMATELY 1,100 PERSONS. TOTAL PAYROLL COSTS FOR FISCAL 1985 ARE EXPECTED TO EXCEED $30,000,000.

THE PLANT SITE PROPERTY IS THREE-QUARTERS OF A MILE LONG BY ONE-HALF MILE WIDE, WITH THE FARTHEST POINT OF THE COOLING POND TWO MILES AWAY.

NEW WALES

KEY POINTS ARE NUMBERED. THESE ARE DESCRIBED ON THE FOLLOWING PAGES.



1. ENTRANCE FACILITY

TO MORE READILY UNDERSTAND THE SIZE AND CAPACITY OF NEW WALES, LET'S TAKE A TOUR OF THE COMPLEX STARTING AT THE SOUTH TRAFFIC GATE.

2. SULFUR UNLOADING AND STORAGE

THE FIRST STOP INSIDE THE PLANT FOR MOST TRUCKS IS THE MOLTEN SULFUR UNLOADING AND STORAGE FACILITY. UP TO 100 TRUCKS PER DAY UNLOAD SULFUR INTO THIS CONCRETE, STEAM HEATED PIT, HOLDING UP TO 1,400 TONS OF MOLTEN SULFUR AT 270°F.

SULFUR IS ALSO RECEIVED BY RAIL CAR AT A SERIES OF UNLOADING STATIONS. AS MUCH AS 1,600 TPD CAN BE UNLOADED AT THESE STATIONS AND TRANSFERRED TO A PAIR OF HEATED, INSULATED STORAGE TANKS. THE SULFUR RECEIVED VIA TRUCK AND RAIL CAR IS USED AT A RATE 3,500 TPD AT AN EFFICIENCY OF 99.7% TO PRODUCE SULFURIC ACID.

3. SULFURIC ACID PLANTS

TO THE LEFT ARE THREE MONSANTO ENVIRO-CHEM DOUBLE ABSORPTION SULFURIC ACID PLANTS CONSTRUCTED IN 1974. TO THE RIGHT ARE TWO MONSANTO ENVIRO-TECH PLANTS COMPLETED IN 1981. THE PLANTS ARE EACH RATED AT 2,000 TONS, BUT ARE CAPABLE OF PRODUCING 2,700 TPD AT TIMES.

MOLTEN SULFUR IS BURNED WITH AIR AT 1,900°F IN A HORIZONTAL, BRICK-LINED FURNACE TO PRODUCE GASEOUS SULFUR DIOXIDE. THIS GAS IS THEN REACTED WITH MORE AIR AT 800-1,100°F, IN THE PRESENCE OF A SPECIAL VANADIUM PENTOXIDE CATALYST, TO PRODUCE GASEOUS SULFUR TRIOXIDE. THIS GAS IS REACTED WITH A MIXTURE OF WATER AND SULFURIC ACID IN ABSORPTION TOWERS TO PRODUCE SULFURIC ACID.

PRIOR TO 1974, IT WAS ONLY NECESSARY TO ACHIEVE SULFUR EFFICIENCIES OF 97%. EFFORTS TO IMPROVE AIR QUALITY HAVE RESULTED IN LEGISLATION REQUIRING STACK GASES TO BE CLEANED TO A LEVEL EQUIVALENT TO 99.7% EFFICIENCY. THESE SULFURIC ACID PLANTS MEET THIS REQUIREMENT BY UTILIZING THE DOUBLE ABSORBTION PROCESS. SULFUR TRIOXIDE IS ABSORBED INTO WATER

TO PRODUCE SULFURIC ACID IN TWO STEPS. THE FIRST RESULTS IN AN EFFICIENCY OF 90% AND THE SECOND RESULTS IN AN EFFICIENCY OF 99.7%.

TO CONSERVE ENERGY, LARGE BOILERS AND GAS-TO-GAS HEAT EXCHANGERS ARE IN THE PLANTS. WE MAKE ENOUGH HIGH PRESSURE, HIGH QUALITY STEAM TO OPERATE A 10 AND A 58 MEGAWATT TURBINE DRIVEN ELECTRIC GENERATOR. THESE GENERATORS ARE LOCATED EAST OF THE NEW CONTROL ROOM. THEY SUPPLY ALL OF THE ELECTRICAL POWER REQUIRED FOR BOTH NEW ACID PLANTS AND EXPORT POWER TO THE REMAINDER OF THE COMPLEX. THESE GENERATORS HAVE REDUCED PURCHASED POWER COST BY ABOUT $1,000,000 A MONTH.

SULFURIC ACID IS SENT TO FOUR 13,000 TON STORAGE TANKS FOR USE WITHIN THE PLANT.

4. ROCK RECEIVING

WET, UNGROUND PHOSPHATE ROCK IS RECEIVED BY RAIL CAR AND TRUCK FROM THE VARIOUS IMC MINES. THESE MINES ARE KINGSFORD, NORALYN, CLEAR SPRINGS, PHOSPHORIA, AND FOUR CORNERS. WET ROCK, CONSISTING OF PEBBLE AND CONCENTRATE, IS UNLOADED BY CONVEYOR BELTS AND STORED ON THE 400,000 TON WET ROCK STORAGE PILE. THIS PILE PROVIDES ABOUT THREE WEEKS STORAGE CAPACITY FOR THE PLANT. A PAIR OF TRAVELING STACKER CONVEYORS BLEND THE INCOMING ROCK. THIS GIVES A MORE UNIFORM FEED TO PRODUCE HIGH QUALITY END PRODUCTS. THIS BLENDING OPERATION IS BECOMING MORE IMPORTANT AS THE PHOSPHATE COMPANIES ARE FORCED TO USE LOWER GRADES OF ROCK.

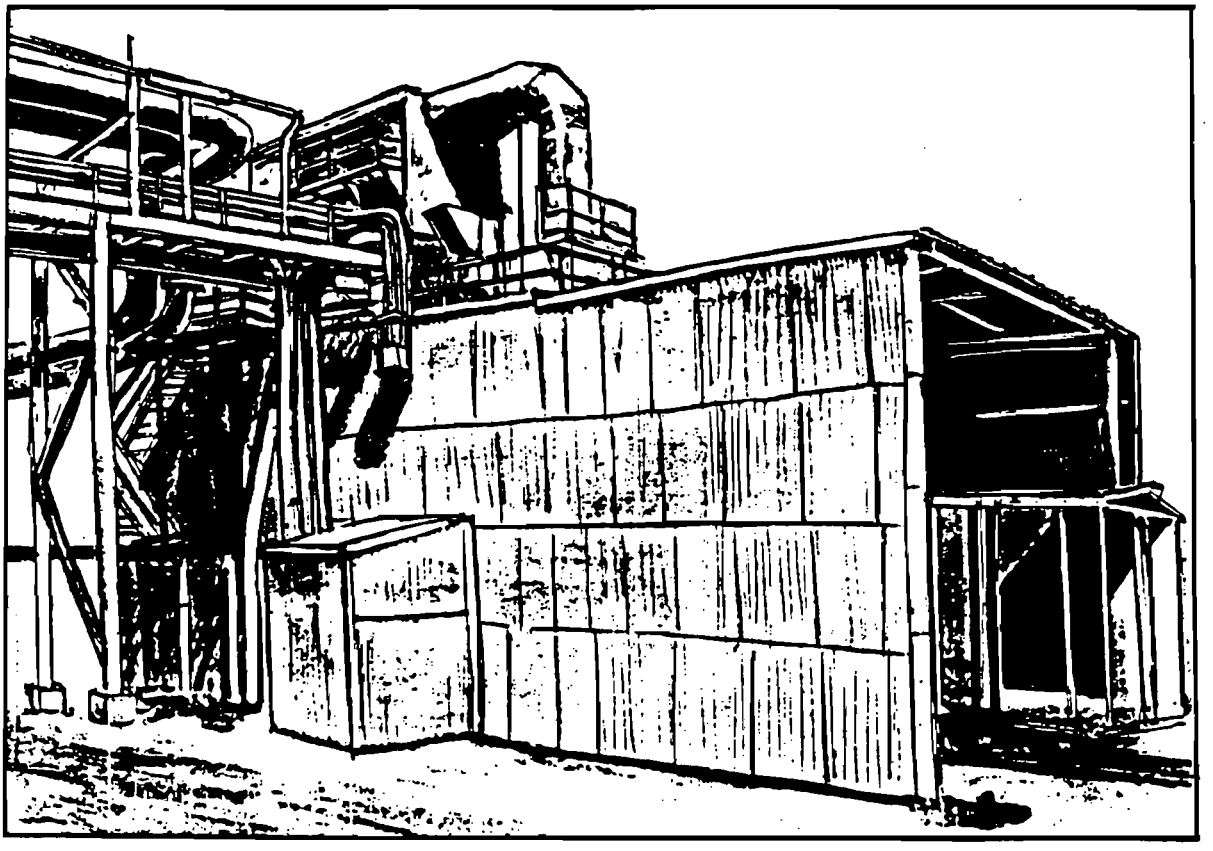
5. ROCK WASHING AND WET ROCK GRINDING

PEBBLE IS RECLAIMED FROM THE STORAGE PILE AND CONVEYED TO THE WASHER PLANT. RESIDUE CLAYS AND SLIMES ARE REMOVED BY TWO LOG WASHERS FOLLOWED BY TWO CLASSIFIERS. THE DISCHARGED PRODUCT IS CONVEYED TO THE ROD MILL FEED SURGE BIN. HERE IT IS FED INTO TWO PARALLEL ROD MILL WET GRINDING TRAINS OPERATED IN OPEN CIRCUIT.

A BLEND OF PEBBLE AND CONCENTRATE IS FED TO TWO PARALLEL BALL MILL WET GRINDING TRAINS OPERATED IN CLOSED CIRCUIT. SLURRY FROM THE ROD AND BALL MILLS CONTAINS 68% SOLIDS WITH A 1% +20 MESH PARTICLE SIZE. THIS SLURRY IS HELD IN SLURRY STORAGE TANKS WHICH PROVIDE FEED TO THE PHOSPHORIC ACID PLANTS.

GROUND PHOSPHATE ROCK OF HIGHER QUALITY IS REQUIRED FOR PRODUCTION OF GTSP. THIS ROCK IS RECEIVED BY RAIL CAR IN A DRY, GROUND FORM AT THE FACILITY TO THE RIGHT. ROCK IS PNEUMATICALLY CONVEYED, TO THE GTSP PLANT SOUTH OF THE TRACKS.

DUST UNLOADING, ROCK PLANT



6. PHOSPHORIC ACID PLANTS

THE PRAYON WET PROCESS PHOSPHORIC ACID PLANTS HAVE A CAPACITY OF 1,750,000 TPY OF P_2O_5 AS 27% ACID. THEY ARE COMPOSED OF TWO IDENTICAL TRAINS AND A NEW GENERATION MARK IV PLANT. THE BASIC RAW MATERIALS FOR THE PHOSPHORIC ACID PLANTS ARE 67% BPL GROUND PHOSPHATE ROCK AND 96% SULFURIC ACID.

PHOSPHORIC ACID IS PRODUCED BY REACTING GROUND PHOSPHATE ROCK WITH SULFURIC ACID IN LARGE CONCRETE MULTICOMPARTMENTED VESSELS CALLED ATTACK TANKS. HERE, GENTLE AGITATION AND RETENTION TIME ALLOW FOR THE CRYSTALLIZATION OF WASTE GYPSUM. THE RESULTING 27% P_2O_5 AND GYPSUM ARE SEPARATED ON A BIRD-PRAYON FILTER.

THE GYPSUM IS MIXED WITH WATER FROM THE GYPSUM POND AND THE MIXTURE FLOWS BY GRAVITY BACK TO THE GYPSUM POND TO SETTLE OUT. ULTIMATELY THE GYPSUM PONDS WILL ENCOMPASS MORE THAN 750 ACRES OF LAND. ABOUT 7,000,000 TPY OF GYPSUM ARE PRODUCED AT THIS PLANT.

THE 27% P_2O_5 IS TRANSFERRED TO THE URANIUM RECOVERY AREA HERE URANIUM OXIDE IS EXTRACTED AND THE ACID IS RETURNED TO THE STORAGE TANK FARM AREA TO THE RIGHT. THIS ACID IS THEN CONCENTRATED (STAGE-WISE) TO UP TO 54% FOR FURTHER PROCESSING IN THE ELEVEN EVAPORATORS LOCATED TO THE LEFT.

ABOUT 15% OF THE PHOSPHORIC ACID PRODUCED IN THIS FACILITY IS FURTHER CLARIFIED FOR DIRECT SALES TO CUSTOMER. THE MAJORITY OF THE 54% ACID IS PUMPED TO THE MAP, DAP, GTSP, AFI AND MULTIFOS PLANTS.

7. SULFURIC ACID UTILITIES CONTROL CENTER

On the right, crossing the Complex to the west, we come to the Sulfuric Acid and Utilities Control buildings. The five sulfuric acid plants are controlled from these buildings. Also, the utilities generation and distribution system is controlled in this area. The New Wales Complex uses large quantities of process water from wells (some of which is treated for drinking), instrument and plant air, demineralized boiler feed water, fuel oil, diesel oil and steam. These control units make up the heart of the Complex.

8. LABORATORY FACILITIES AND MAINTENANCE WAREHOUSE

To the left is the Plant Office building. This building houses the Quality Control and Environmental Laboratory facilities and offices for Engineering and Production superintendents.

To the right is the Maintenance Warehouse which houses all spare parts for the Complex and many of the shops' facilities. These include instrumentation, electrical, and machine shops.

9. FERTILIZER BULK STORAGE BUILDING

To the left is a 960-foot long fertilizer storage building, which houses up to 70,000 tons of bulk products. Bulk granular material from the DAP and GTSP plants is conveyed into this storage building and then stacked in two separate piles. Material is reclaimed using large front end loaders and directed onto a 1000-foot long conveyor belt. This belt handles 250 tph of product. A second product storage building for MAP is located to the west. A third product storage building for #2 DAP is located farther to the west.

10. MAP/NO. 1 DAP MANUFACTURING FACILITY

MAP IS MADE BY REACTING 54% PHOSPHORIC ACID AND AMMONIA AT THE TOP OF A PRILL TOWER. THIS TOWER IS ENCLOSED WITH A FLEXIBLE CURTAIN. MATERIAL FALLING THROUGH THE CURTAIN REACTS AND DRIES BEFORE REACHING THE FLOOR. A LARGE ROTATING RAKE DIRECTS THIS MATERIAL TO A ROTARY COOLER. FROM THERE IT IS CONVEYED TO THE PRODUCT ELEVATOR AND TRANSFER CONVEYOR TO STORAGE. THE COOLER IS VENTED TO A VENTURI-CYCLONIC SCRUBBER. THE MAP (2ND PRODUCT) TRUCK AND RAIL LOADING FACILITIES CAN LOAD EITHER MAP OR DAP FROM THE EXISTING DAP STORAGE BUILDING.

GRANULAR DAP IS MADE BY REACTING 54% PHOSPHORIC ACID AND AMMONIA IN A REACTION AND GRANULATION CIRCUIT. A WET GRANULAR PRODUCT IS PRODUCED. THIS IS THEN DRIED, SCREENED, COOLED AND SENT TO STORAGE. ABOUT 100 TPH OF DAP ARE PRODUCED IN THIS FACILITY.

AT TIMES WE MAKE GRANULAR MAP IN THIS DAP FACILITY.

THE ORIGINAL MAP AND DAP FACILITIES WERE CONSTRUCTED BY THE D. M. WEATHERLY COMPANY OF ATLANTA, GEORGIA.

11. PRODUCTION AND SAFETY OFFICE BUILDING

TO THE EAST OF DAP/MAP IS THE BUILDING WHICH HOUSES THE PLANT SAFETY DEPARTMENT, PRODUCTION ACCOUNTING, AND PRODUCTION SUPERVISORS.

12. GTSP MANUFACTURING

GTSP IS PRODUCED BY REACTING 40% PHOSPHORIC ACID WITH 73% BPL GROUND ROCK IN A REACTION AND GRANULATION CIRCUIT. A WET GRANULAR PRODUCT IS PRODUCED, WHICH IS THEN DRIED, SCREENED AND SENT TO STORAGE. AT PRESENT RATES, 50 TPH ARE MADE. THE GTSP FACILITY WAS CONSTRUCTED BY THE D. M. WEATHERLY COMPANY.

GTSP FROM THE EXISTING STORAGE BUILDING IS TRANSFERRED TO A NEW SCREENING AND TRUCK LOADOUT STATION.

13. URANIUM RECOVERY FACILITIES

To the east is "Area 10", where the first stage of the uranium recovery process involves "Acid Clean-up".

14. #1 PRODUCT SHIPPING FACILITY

DAP is conveyed from the bulk storage building to the shipping building at 250 tph. Product is loaded to either rail cars or trucks at rates approaching 6,000 tpd. To reduce transporation costs, dual purpose trucks are used for incoming sulfur and outbound fertilizer. A second rail car shipping system adjacent to this facility is connected to truck loadout, west of the existing bulk storage building (point 9), for the MAP storage building. A third facility for GTSP truck and railcar shipments, is not in operation at this time.

15. URANIUM RECOVERY PILOT PLANT

IMC piloted much of its uranium recovery process in the area to the south. Other plant-wide development studies are currently underway in these facilities.

16. AFI (animal feed ingredients) PLANT

This modern facility was constructed to meet the market demand for phosphate products that are low in fluorine. Since the fluorine is removed directly from the feed phosphoric acid, a valuable purified acid called Liquifos is also produced. Production of up to 2,500 tpd of calcium and ammonium phosphate animal feed grade products is possible in this plant.

Product storage is in the large concrete silos and in a bulk storage building. Limestone feed is also stored in the silo cluster.

17. ~~MULTI~~FOS PLANT

THE MULTIFOS PLANT, HAS TWO HUGE KILNS. IT PRODUCES LOW FLUORINE TRICALCIUM PHOSPHATE. THIS IS DONE BY CALCINING 75% BPL ROCK, AT HIGH TEMPERATURE WITH SODA ASH AND PHOS ACID. DESIGN RATE IS 300 TPD. THE PLANT CONSISTS OF A MIXED FEEDS SECTION WITH ITS OWN WAREHOUSE, AND A PRODUCT SIZING AND CLASSIFICATION SECTION AFTER THE KILNS. STORAGE IS IN THE AFI BULK STORAGE BUILDING NORTH OF THE AFI GATE.

18. AFI, SHIPPING, MAINTENANCE AND MAINTENANCE WAREHOUSE

THE AFI AND MULTIFOS SHIPPING AND STORAGE AREAS ARE PURPOSELY ISOLATED FROM THE OTHER AREAS OF THE COMPLEX. THIS IS TO INSURE OUR CUSTOMERS A MINIMUM CHANCE OF CONTAMINATION BY PRODUCTS CONTAINING NORMAL LEVELS OF FLUORINE. EVEN THE MAINTENANCE WAREHOUSE IS SEPARATE TO AVOID THE CHANCE OF CONTAMINATED EQUIPMENT BEING PLACED IN SERVICE.

19. AFI BULK STORAGE BUILDING

THIS CONCRETE AND WOOD STRUCTURE, EFFICIENTLY REPLACES OLDER STEEL BUILDINGS THAT ARE LESS SUITABLE FOR FERTILIZER STORAGE. STORAGE CAPACITY IS 11,000 TONS.

20. NO. 2 DAP PLANT

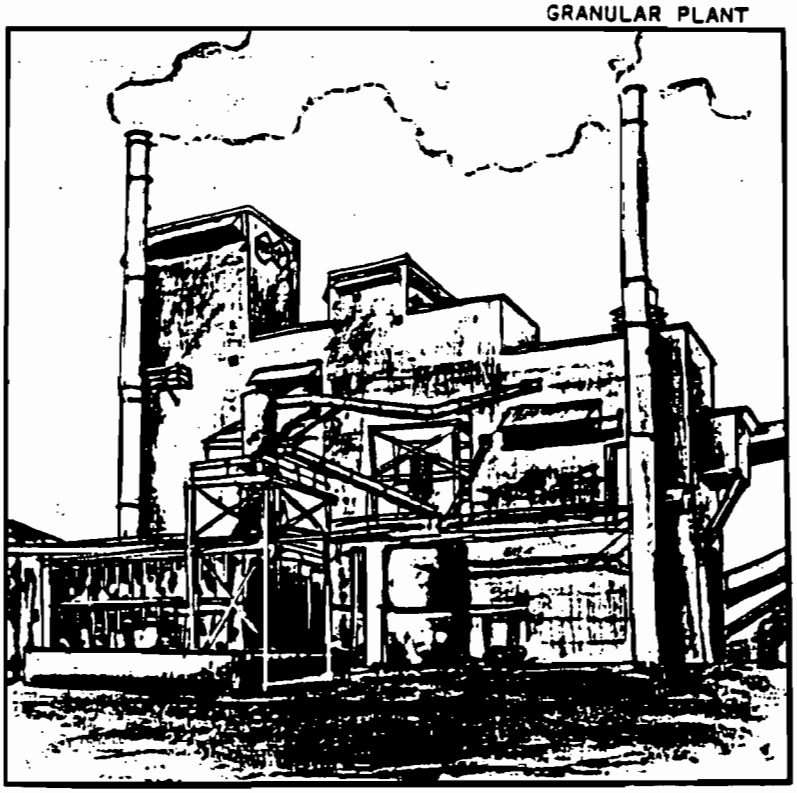
THE NO. 2 DAP PLANT CONSISTS OF TWO UNITS WHICH PRODUCE 18-46-0 GRADE DIAMMONIUM PHOSPHATE. IT IS DESIGNED TO PRODUCE 200 TPH OF DAP IN TWO "BACK-TO-BACK" PRODUCTION UNITS. THE NO. 1 DAP PLANT PRODUCES 100 TPH.

THESE TWO UNITS ARE ALMOST IDENTICAL TO THE NO. 1 PLANT. THE COOLER PRODUCT IS TRANSPORTED TO THE STORAGE BUILDING. FROM THE STORAGE BUILDING, PRODUCT IS CONVEYED TO THE #1 PRODUCT LOADOUT FACILITY (#14 ON THE TOUR MAP).

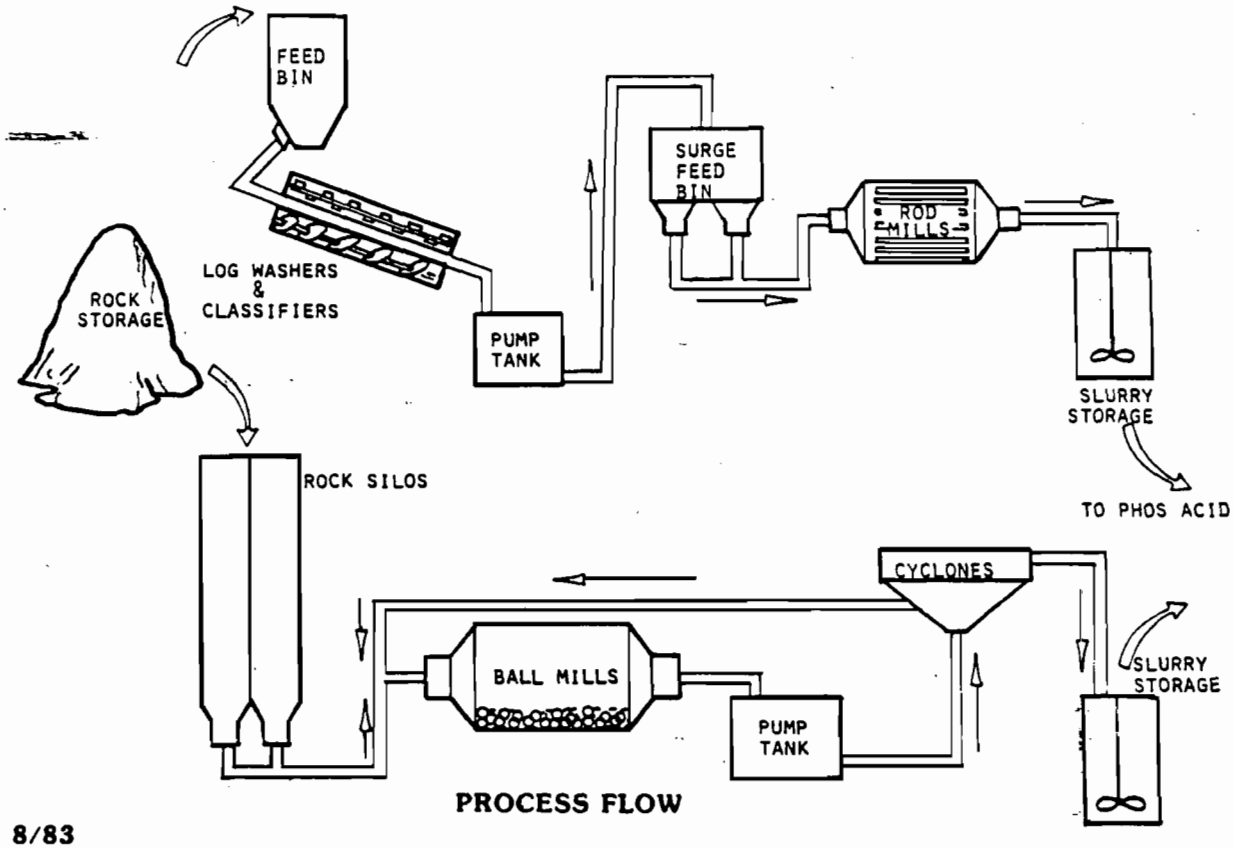
21. NORTH GATE - END OF TOUR

THE FACILITIES TO THE WEST ARE PART OF URANIUM OPERATIONS. THIS INCLUDES AREA 20 (FIRST CYCLE SOLVENT EXTRACTION), AREA 30 (SECOND CYCLE SOLVENT EXTRACTION) AND AREA 40 (YELLOWCAKE REFINERY).

GRANULAR PLANT



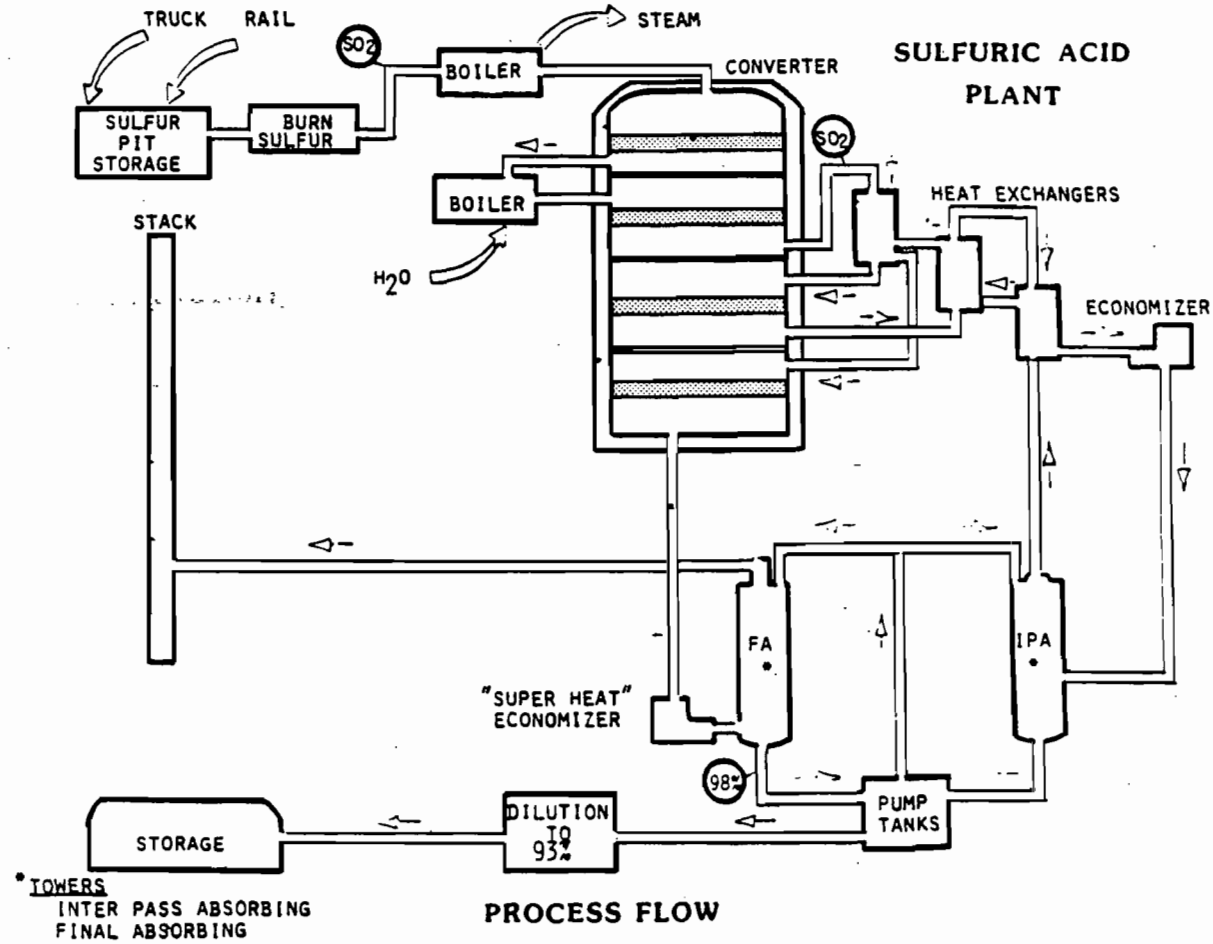
ROCK AREA



PROCESS FLOW

8/83

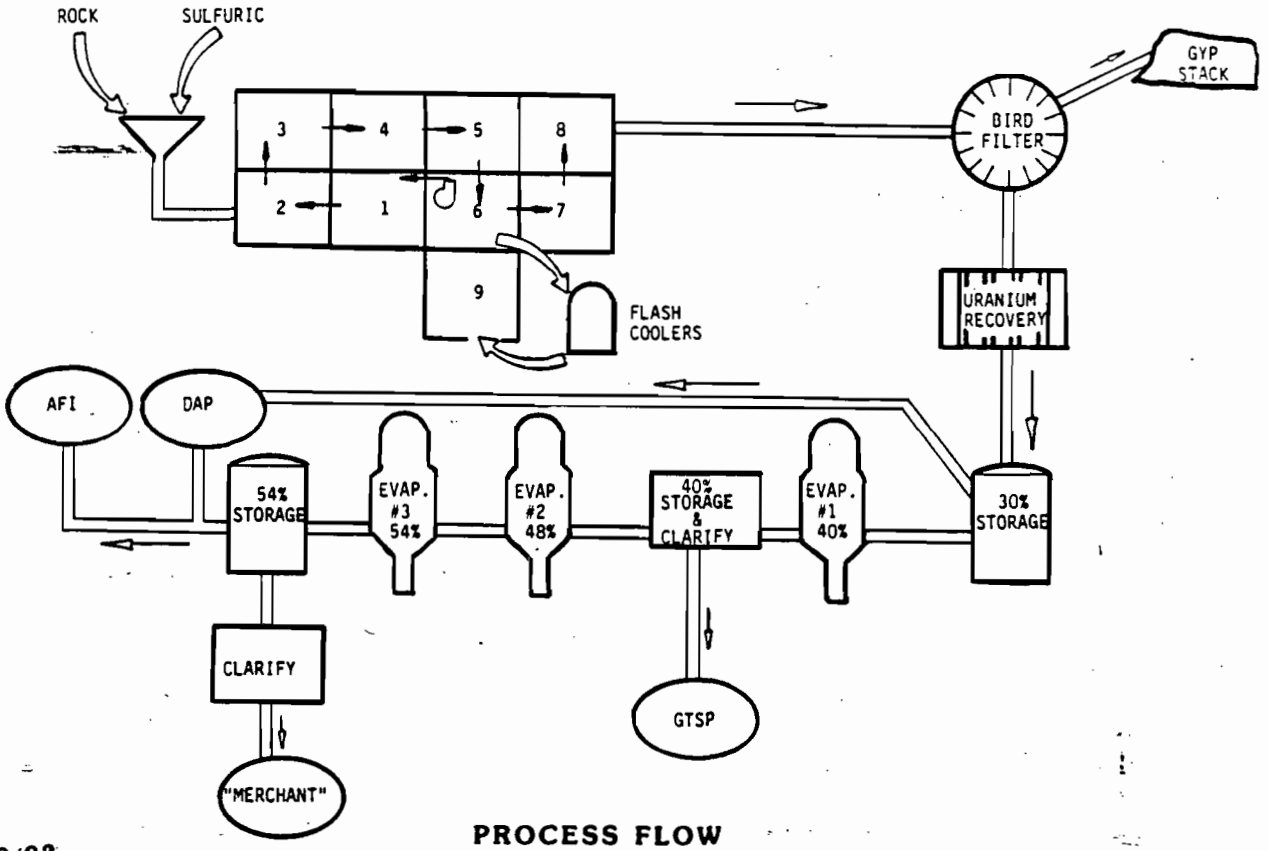
SULFURIC ACID PLANT



*TOWERS
INTER PASS ABSORBING
FINAL ABSORBING

PROCESS FLOW

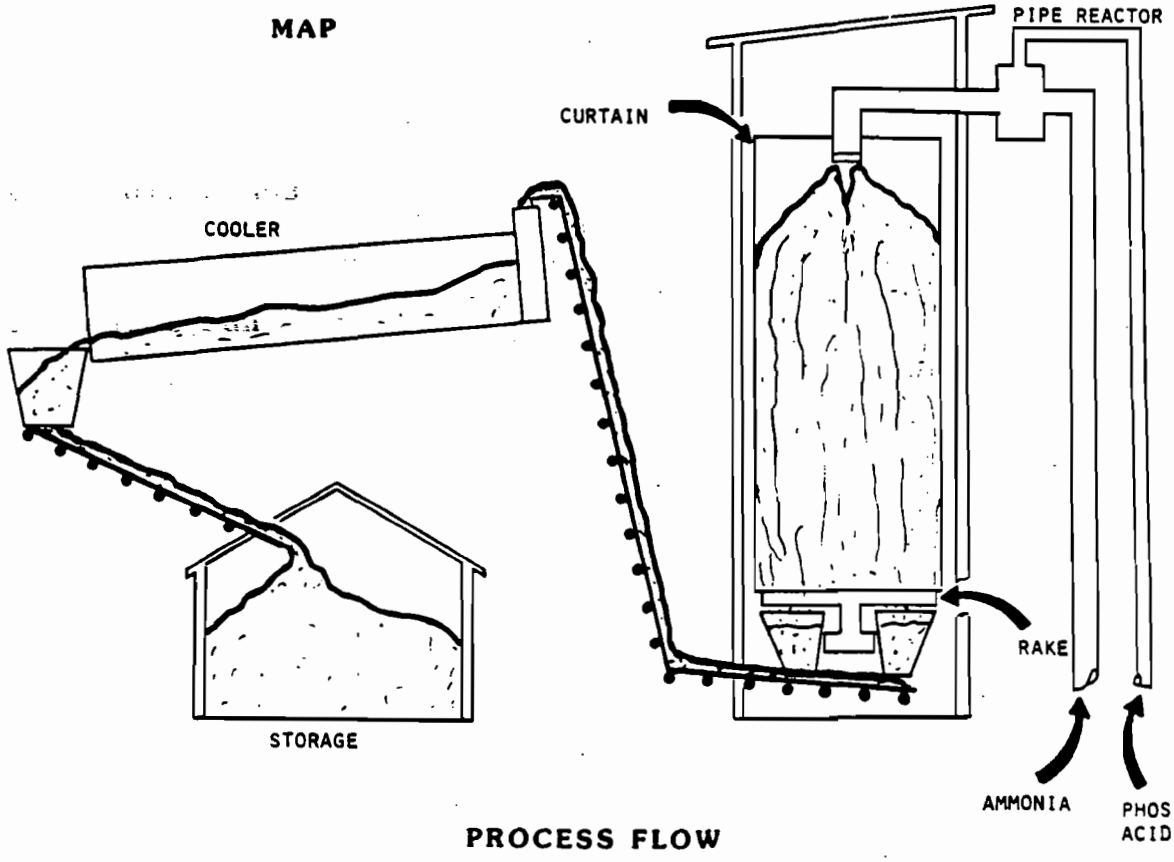
PHOSPHORIC ACID PLANT



PROCESS FLOW

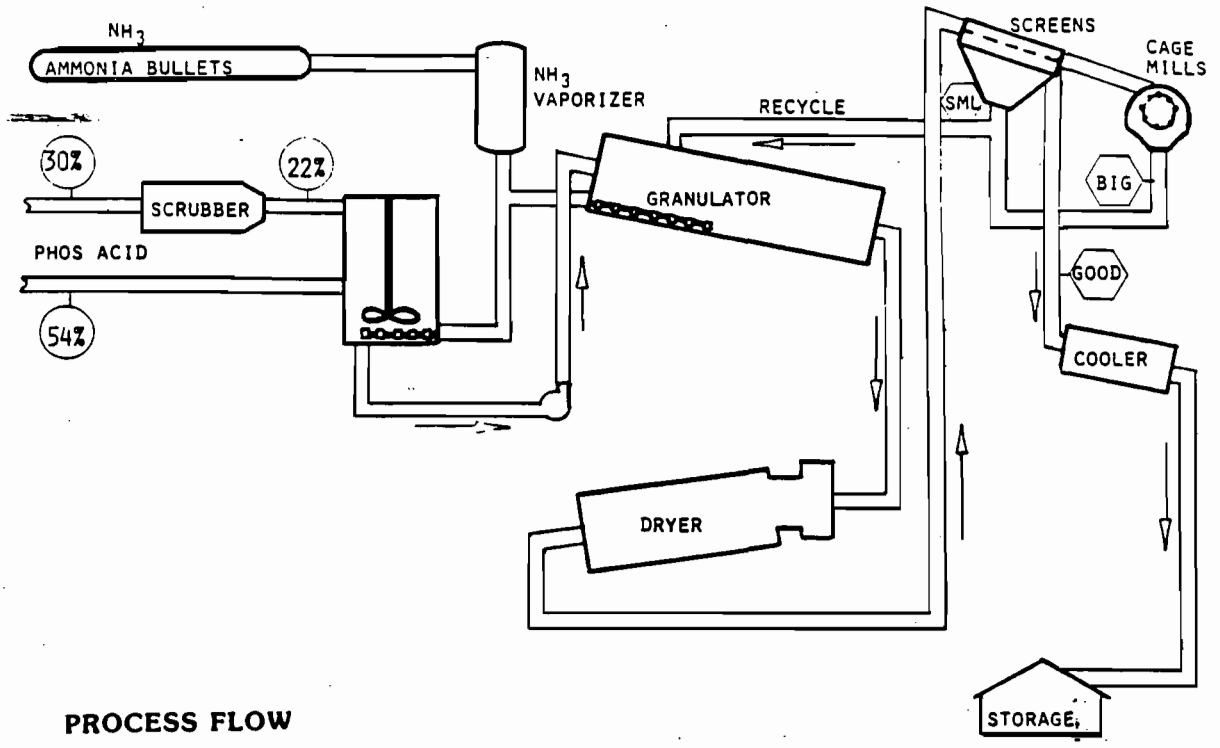
8/83

MAP



PROCESS FLOW

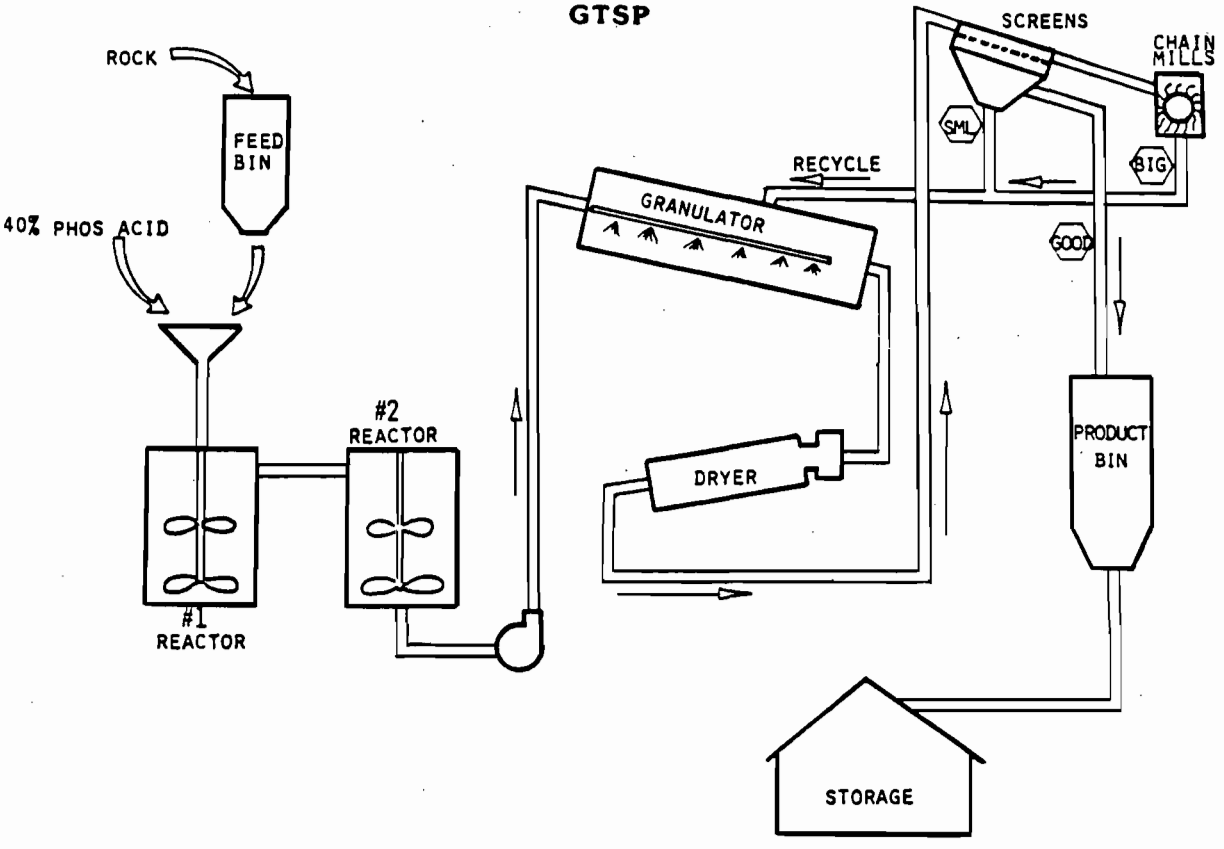
DAP



PROCESS FLOW

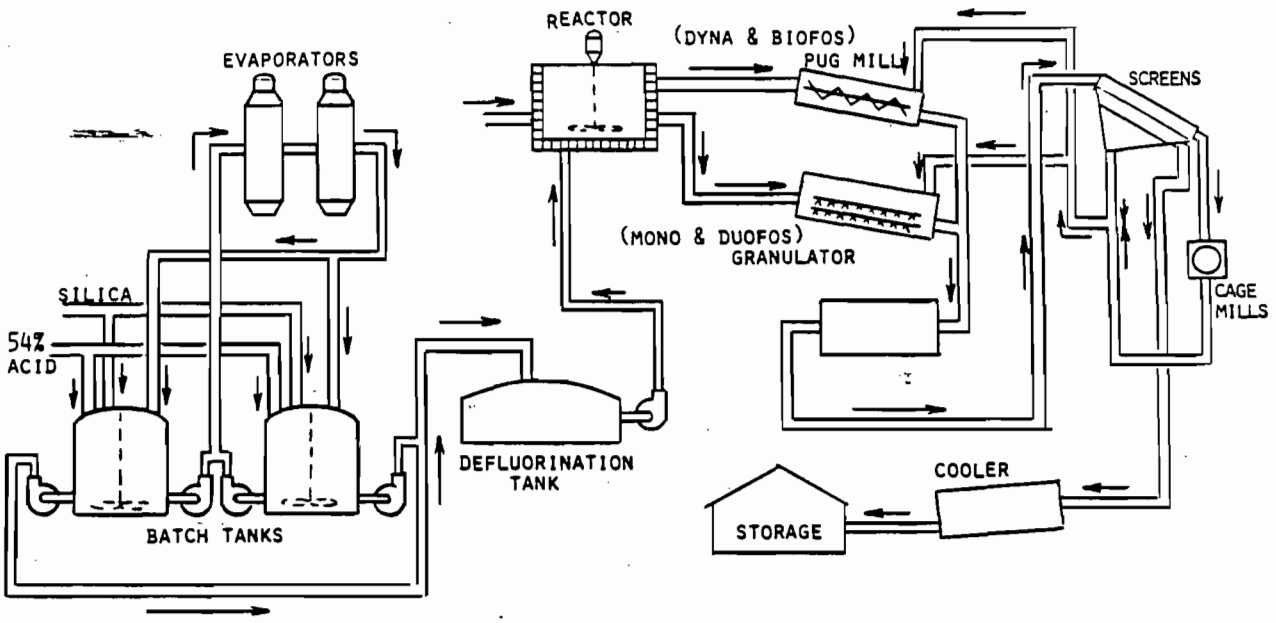
8/83

GTSP



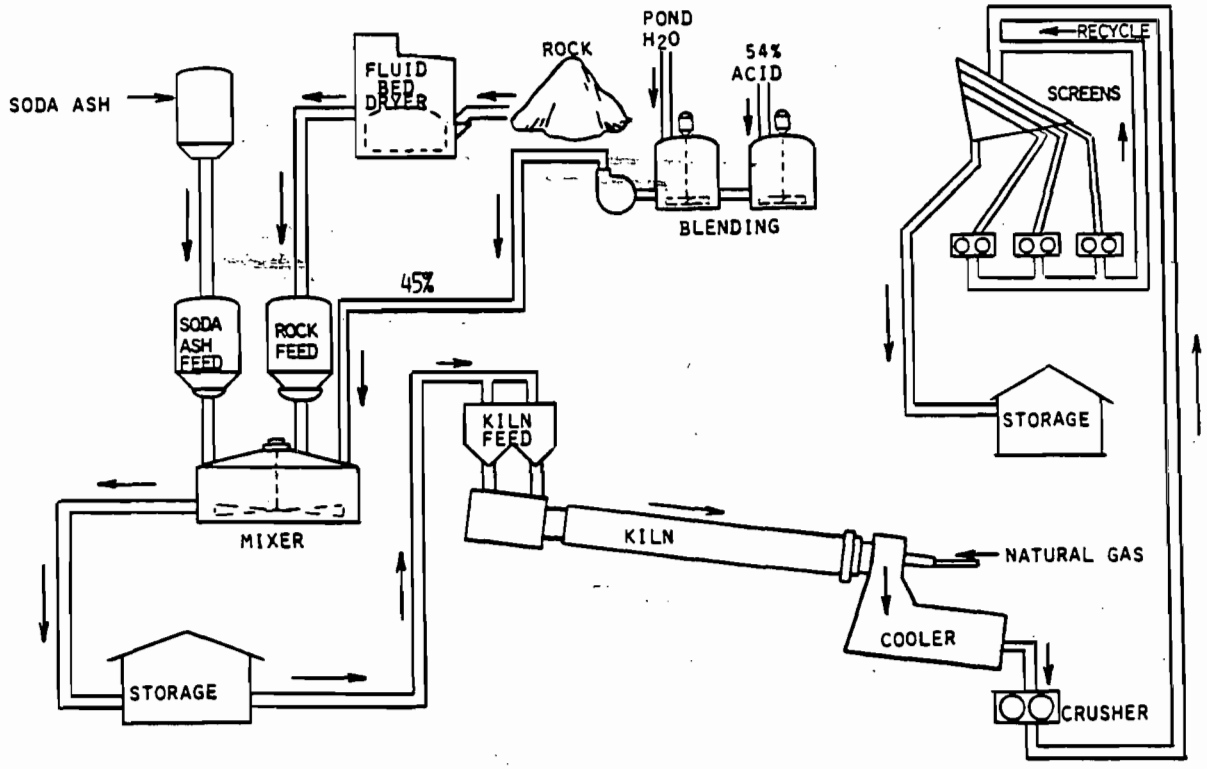
PROCESS FLOW

8/83

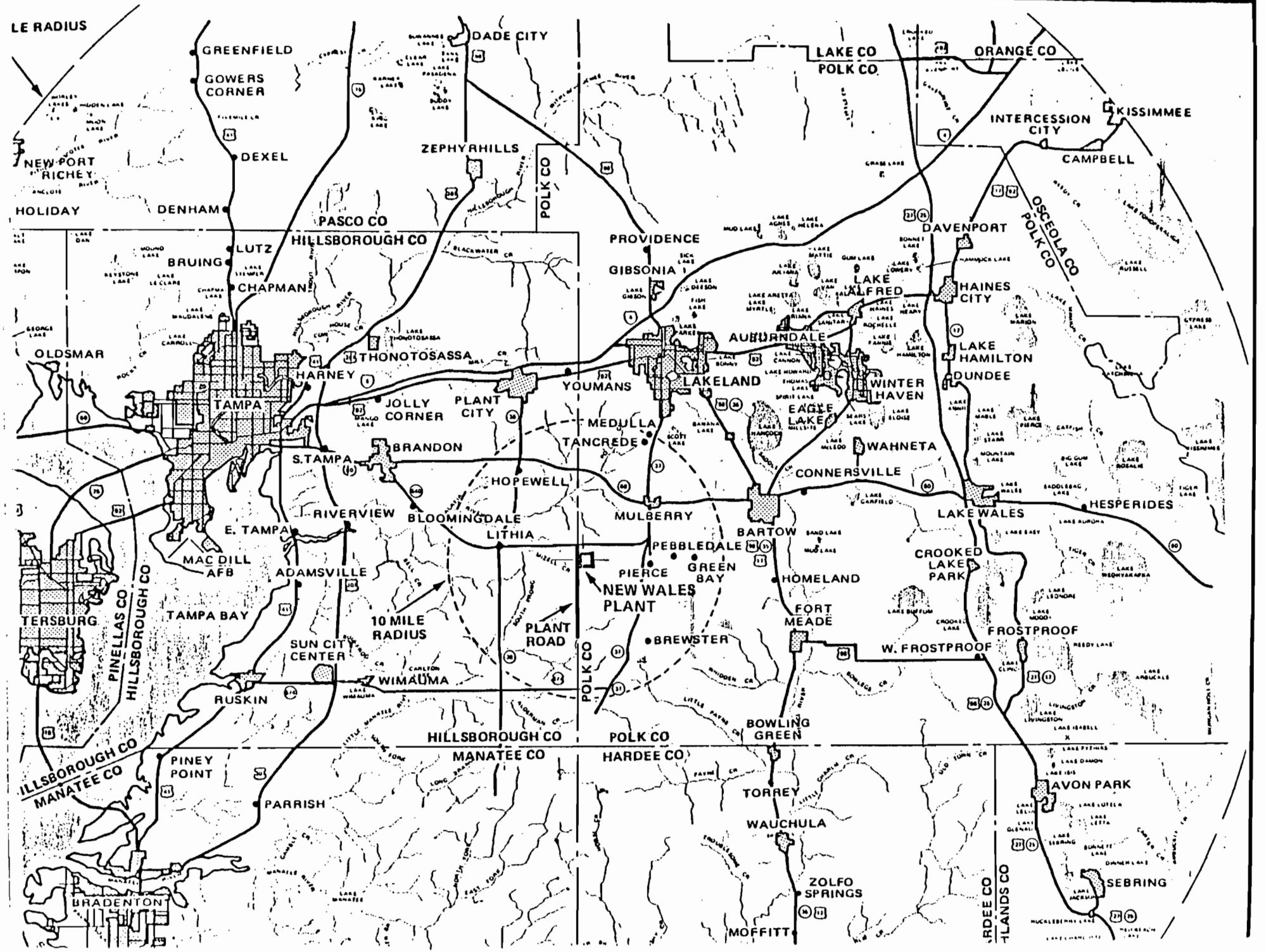


PROCESS FLOW

MULTIFOS



PROCESS FLOW


LE RADIUS
GREENFIELD
GOWERS CORNER
DADE CITY
LAKE CO
POLK CO
ORANGE CO
INTERCESSION CITY
KISSIMMEE
CAMPBELL
DEXEL
ZEPHYRHILLS
NEW PORT RICHEY
HOLIDAY
DENHAM
PASCO CO
POLK CO
HILLSBOROUGH CO
PROVIDENCE
DAVENPORT
OSCEOLA CO
POLK CO
LUTZ
BRUING
CHAPMAN
GIBSONIA
LAKE ALFRED
HAINES CITY
AUBURNDALE
OLDSMAR
THONOTOSASSA
HARNEY
YOUMANS
LAKELAND
LAKE HAMILTON
DUNDEE
WINTER HAVEN
TAMPA
JOLLY CORNER
PLANT CITY
MEDULLA
EAGLE LAKE
TANCREDE
BRANDON
WAHNETA
S.TAMPA
CONNERSVILLE
HOPEWELL
HESPERIDES
RIVERVIEW
BLOOMINGDALE
MULBERRY
LAKE WALES
E. TAMPA
LITHIA
BARTOW
PEBBLEDALE
CROOKED LAKE PARK
MAC DILL AFB
ADAMSVILLE
PIERCE
GREEN BAY
NEW WALES PLANT
HOMELAND
TERSBURG
TAMPA BAY
10 MILE RADIUS
PLANT ROAD
FORT MEADE
FROSTPROOF
SUN CITY CENTER
BREWSTER
W. FROSTPROOF
WIMAUMA
RUSKIN
PINELLAS CO
HILLSBOROUGH CO
POLK CO
BOWLING GREEN
HILLSBOROUGH CO
MANATEE CO
POLK CO
HARDEE CO
PINEY POINT
TORREY
AVON PARK
PARRISH
WAUCHULA
ZOLFO SPRINGS
SEBRING
BRADENTON
MOFFITT