STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

DER
SEP 6 1979
SOUTHWEST DISTRICT
TAMPA

SOURCE TYPE: Air Pollution [X] New[1] [ ] Existing[1]

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

COMPANY NAME: New Wales Chemicals, Inc. COUNTY: Polk

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peeking Unit No. 2, Gas Fired) DAP Plant With Venturi And Tailgas Scrubbers

SOURCE LOCATION: Street Highway 640-Hillsborough & Polk County Line City Mulberry

UTM: East 396.7 North 3079.4

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

APPLICANT NAME AND TITLE: Thomas L. Craig, Vice-President & General Manager

APPLICANT ADDRESS: P. O. Box 1035, Mulberry, Florida 33860

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of New Wales Chemicals, 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. Further, I agree to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provision of Chapter 403, Florida Statutes, and all the rules and regulations of the department and revisions thereof. I also understand that a permit, if granted by the department, will be non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

*Attach letter of authorization

Signed: Thomas L Craig

Thomas L. Craig, Vice-Pres. & Gen. Mgr.
Name and Title (Please Type)

Date: 8-31-79 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 have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that 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.

(Affix Seal)

CRAIG A. PFLAUM * CERTIFICATE NO. 18595 * STATE OF FLORIDA * REGISTERED PROFESSIONAL ENGINEER

Signed: Craig A Pflaum PE

Craig A. Pflaum
Name (Please Type)

New Wales Chemicals, Inc.
Company Name (Please Type)

P. O. Box 1035, Mulberry, Fl. 33860
Mailing Address (Please Type)

Florida Registration No. 18595 Date: 8-31-79 Telephone No. 813-428-2531

[1]See Section 17-2.02(15) and (22), Florida Administrative Code, (F.A.C.)

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 140 TPH DAP plant is planned with coaxial venturi scrubbers followed by vertical packed bed scrubbers for fluoride removal. Emissions from this plant will meet NSPS.

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

Start of Construction July, 1980 Completion of Construction July, 1983

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.)

Estimated purchase and installation cost $6,000,000. for scrubbing systems.

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

None

E. Is this application associated with or part of a Development of Regional Impact (DRI) pursuant to Chapter 380, Florida Statutes, and Chapter 22F-2, Florida Administrative Code? ____ Yes __X__ No

F. Normal equipment operating time: hrs/day 24 ; days/wk 6.6 ; wks/yr 50 ; if power plant, hrs/yr ____ ; if seasonal, describe: ____

G. 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. Yes
3. Does the State "Prevention of Significant Deterioration" (PSD) requirements apply to this source? If yes, see Sections VI and VII. Yes
4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? Yes
5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? No

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		
Phosphoric acid	F	2.0	70 TPH (P205)	Reactors/Venturi
				Scrubbers
Ammonia	-	-	30 TPH	Reactors/Granulators

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

1. Total Process Input Rate (lbs/hr): 140 TPH

2. Product Weight (lbs/hr): 140 TPH

C. Airborne Contaminants Emitted:

Name of Contaminant	Emission[1]		Allowed Emission[2] Rate per Ch. 17-2, F.A.C.	Allowable[3] Emission lbs/hr	Potential Emission[4]		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
Fluoride	4.0/ $\leq$ 16.5		0.06 lbs F/ton	$\leq$ 4.0	unknown		stacks
			P205				
Particulate	38.0/ $\leq$ 150.0		process wt.	$\leq$ 38.0	unknown		stacks/
							bag coll.
Ammonia	10.0/ $\leq$ 40.0		not regulated	- - - - -	- - - - - -		stacks
SO2	Intermittent		- - - - - - - - - - - - - - - - - - - -				stacks

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

	Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles[5] Size Collected (in microns)	Basis for Efficiency (Sec. V, It[5]
4/ea.	Venturi Scrubbers	F	to comply		
		Part.	with std.		
4/ea.	Tailgas Scrubbers	F			
		Part.			
1/ea.	Bag Collector	Part.			

[1] See Section V, Item 2.

[2] Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E. (1), F.A.C. — 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)

[5] If Applicable

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
#6 Fuel Oil	Intermittent	- - - - - - -	- - - - - - - - - - -

*Units Natural Gas, MMCF/hr; Fuel Oils, barrels/hr; Coal, tbs/hr

Fuel Analysis:

Percent Sulfur: 2.5 Percent Ash: 0.02

Density: 8.0 lbs/gal Typical Percent Nitrogen: 0.15

Heat Capacity: 18,000. BTU/lb 144,000. 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 disposal.

All solid waste will be recycled to process.

All liquid waste will be routed to cooling pond.

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

Stack Height: Stack heights 120' blower discharge 80' ft. Stack Diameter: 6' ea. ft.

Gas Flow Rate: 250,000 DSCFM TOT. ACFM Gas Exit Temperature: 100° °F.

Water Vapor Content: 2-5 % Velocity: 65 FPS

SECTION IV: INCINERATOR INFORMATION

Not applicable

Type of Waste	Type 0 (Plastics)	Type 1 (Rubbish)	Type 11 (Refuse)	Type 111 (Garbage)	Type 1V (Pathological)	Type V (Liq & Gas By-prod.)	Type VI (Solid By-prod.)
Lbs/hr Incinerated							

Description of Waste _____

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

Approximate Number of Hours of Operation per day _____ days/week _____

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 Diameter _____ 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.):

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight — show derivation.
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, 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 8½" 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 8½" 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 8½" 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. An application fee of $20, unless exempted by Section 17-4.05(3), F.A.C. 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 [ ] No

Contaminant	Rate or Concentration
Fluorides	0.060 lbs/ton of P2O5 feed

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy) [ ] Yes [X] No

Contaminant	Rate or Concentration

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

Contaminant	Rate or Concentration
Fluorides	≤ 0.060 lbs/ton P2O5 feed

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

1. Control Device/System: Teller design coaxial venturis with a horizontal packed bed scrubber.
2. Operating Principles: Condensation, absorption, and inertial impact.
3. Efficiency:* to meet standards
4. Capital Costs: 3,000,000.00
5. Useful Life: life of plant
6. Operating Costs: 10-15% of raw material cost
7. Energy: 8.5×10^6 KWH/yr
8. Maintenance Cost:
9. Emissions:

Contaminant	Rate or Concentration
Fluoride	≤ 0.06 lbs/ton P2O5 input
Particulate	≤ process wt. limits
Ammonia	≤ 6.5 lbs/hr

*Explain method of determining D 3 above.

10. Stack Parameters

a. Height: 100 ft. b. Diameter: 6 ft.

c. Flow Rate: 100,000 ACFM d. Temperature: 100-110 °F

e. Velocity: 60 FPS

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

1. Teller design low pressure drop coaxial venturi scrubbing with

a. Control Device: crossflow wet packed bed tailgas scrubbing.

b. Operating Principles: Condensation, absorption and inertial impact.

c. Efficiency*: to meet standards d. Capital Cost: dependent on plant size

e. Useful Life: life of plant f. Operating Cost: operation and maintenance

g. Energy*: dependent on plant size h. Maintenance Cost: cost est. to be 10-15% of raw material cost

i. Availability of construction materials and process chemicals:

Good

j. Applicability to manufacturing processes: Add on system to control emissions.

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

Proven technology

2.

a. Control Device: Coaxial venturi with vertical packed bed scrubber.

b. Operating Principles: Condensation, absorption and inertial impact.

c. Efficiency*: to meet standards d. Capital Cost: dependent on plant size

e. Useful Life: life of plant f. Operating Cost: & maintenance - 10-15%

g. Energy**: dependent on plant size h. Maintenance Costs: of raw material cost

i. Availability of construction materials and process chemicals:

Good

j. Applicability to manufacturing processes: Add on system to control emissions.

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

Proven technology

*Explain method of determining efficiency.

**Energy to be reported in units of electrical power – KWH design rate.

3.

a. Control Device:

b. Operating Principles:

c. Efficiency*: d. Capital Cost:

e. Life: f. Operating Cost:

g. Energy: h. Maintenance Cost:

*Explain method of determining efficiency above.

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*:

d. Capital Cost:

e. Life:

f. Operating Cost:

g. Energy:

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. Describe the control technology selected:

1. Control Device: Coaxial venturi with vertical packed bed tailgas scrubber.
2. Efficiency*: to meet standards
3. Capital Cost: $6,000,000.00
4. Life: life of plant
5. Operating Cost: Estimated combined cost to be 10-15% of raw material cost
6. Energy: 16 x 10^6 KWH/yr.
7. Maintenance Cost:
8. Manufacturer: Davy McKee Lakeland, Inc.
9. Other locations where employed on similar processes:

a. Similar scrubbing system designed by D. M. Weatherly.

(1) Company: USS Agri-Chemicals

(2) Mailing Address: Box 150

(3) City: Bartow (4) State: Florida 33830

(5) Environmental Manager: Jim Carroll

(6) Telephone No.: 813-533-0471

*Explain method of determining efficiency above.

(7) Emissions*:

Contaminant	Rate or Concentration
Fluoride	= 0.06 lbs/ton P205 process input
Particulate	process wt. limits
SO2	unknown
Ammonia	unknown

(8) Process Rate*: 72 TPH

b.

(1) Company:

(2) Mailing Address:

(3) City: (4) State:

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

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions*:

Contaminant	Rate or Concentration

(8) Process Rate*:

10. Reason for selection and description of systems:

New Wales has had extensive conversations with DAP plant operators and their environmental personnel in this area. Because of our contacts we have concluded that the vertical packed tailgas scrubber, which is currently in use at USS Agri-Chemicals, is the most efficient fluoride removal device currently available.

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

SECTION VII – PREVENTION OF SIGNIFICANT DETERIORATION

PSD data to be submitted separately.

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.

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

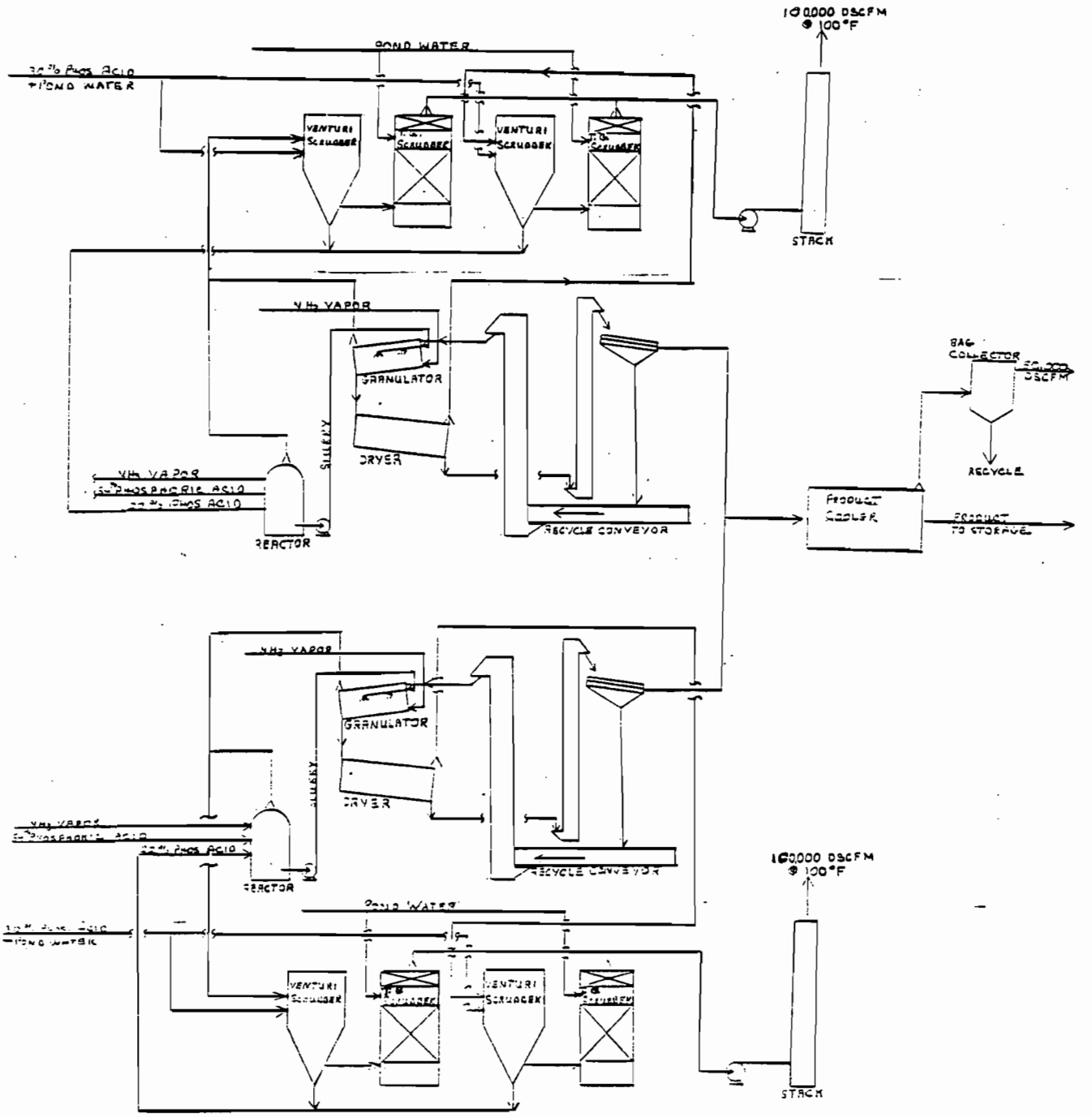
Attach list of emission sources. Emission data required is source name, description on point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

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

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

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.



DAP PLANT WITH DUAL REACTOR/GRANULATORS + COMMON COOLER

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

Form 0-136 Rev. 10-58
PRINTED IN U.S.A.

PROJECT DAP PLANT

FOR

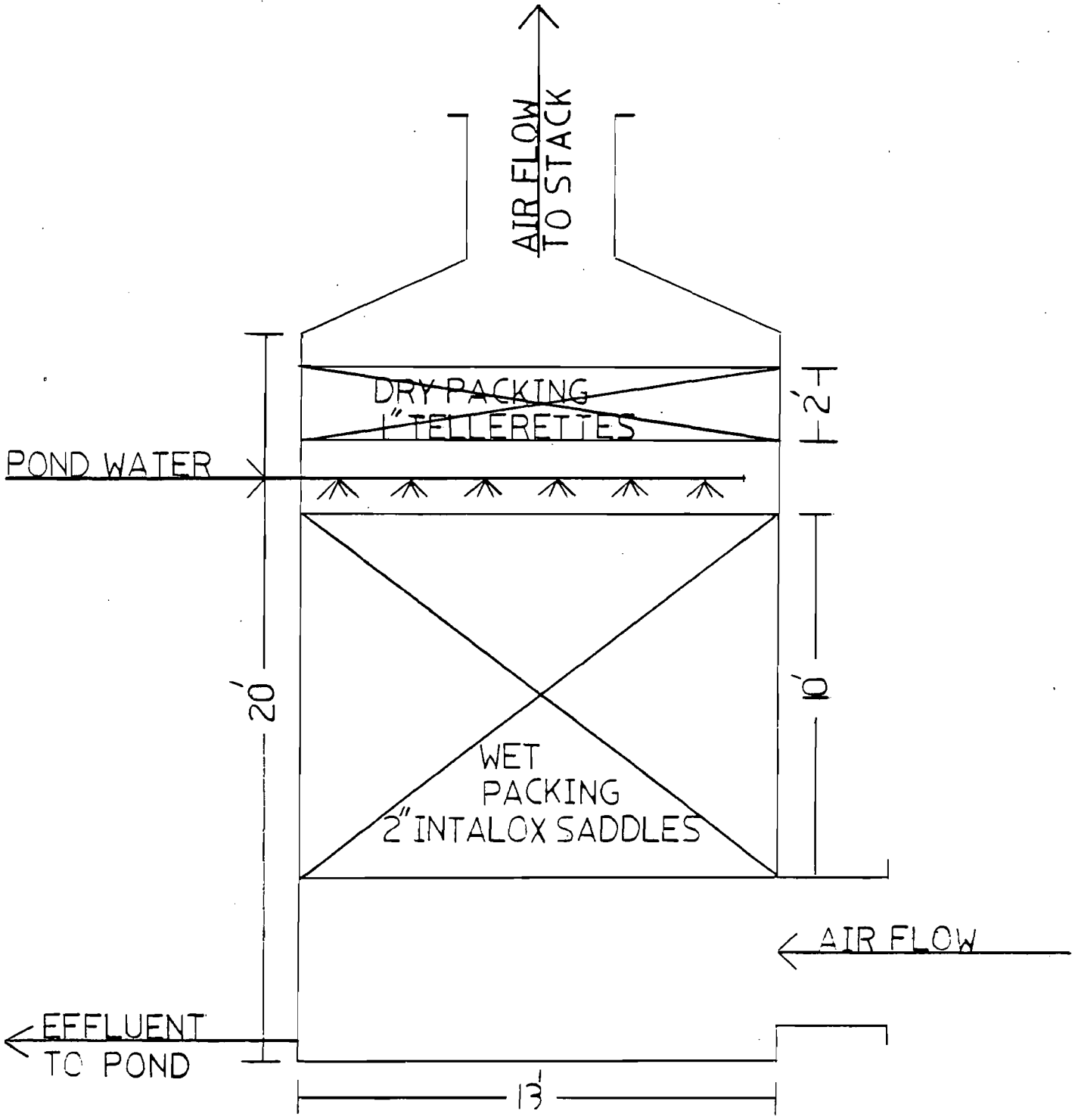
AT

DESCRIPTION

SKETCH NO. 1

DATE 8/29/79

BY ALG



TAILGAS
SCRUBBER

HARRY L. CARROLL
Vice President
Florida

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

November 22, 1978

Mr. T. L. Craig
Vice President & General Manager
New Wales Chemicals, Inc.
Post Office Box 1035
Mulberry, Florida 33860

Dear Tom:

This letter is your authorization to sign on behalf of New Wales Chemicals, Inc. the various applications for permits, specifically the applications for operating permits from the Florida Department of Environmental Regulation.

Very truly yours,

Harry L. Carroll

t

Post Office Box 3607 • Lakeland, Florida 33802 • (813) 648-5061

STATE OF FLORIDA

DEPARTMENT OF STATE • DIVISION OF CORPORATIONS

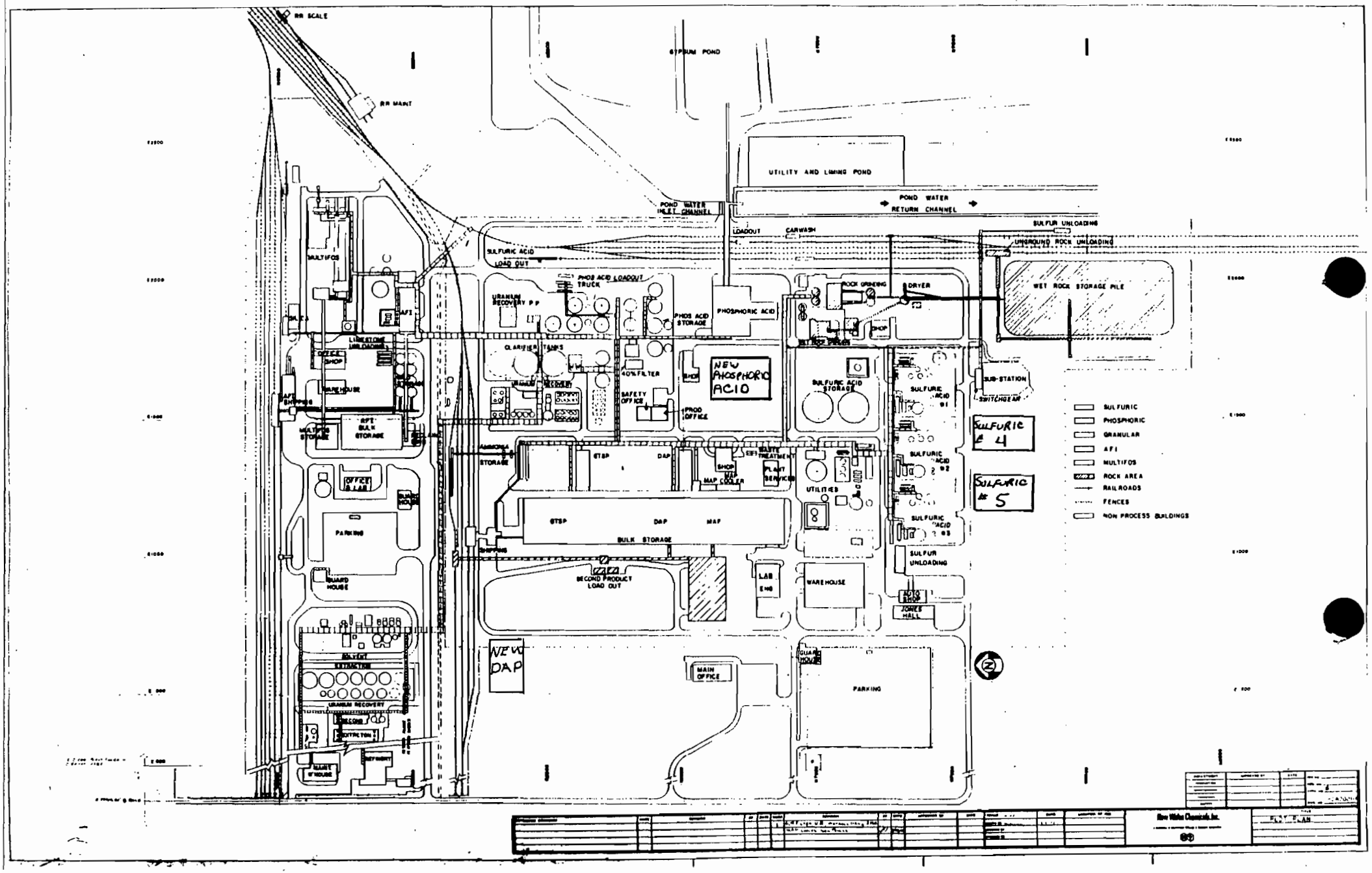
I certify from the records of this office that DMC CHEMICALS CORP., changed its name to; NEW WALES CHEMICALS, INC., is a corporation organized under the Laws of the State of Delaware, authorized to transact business within the State of Florida, qualified on the 1st day of June, 1977, under the new name.

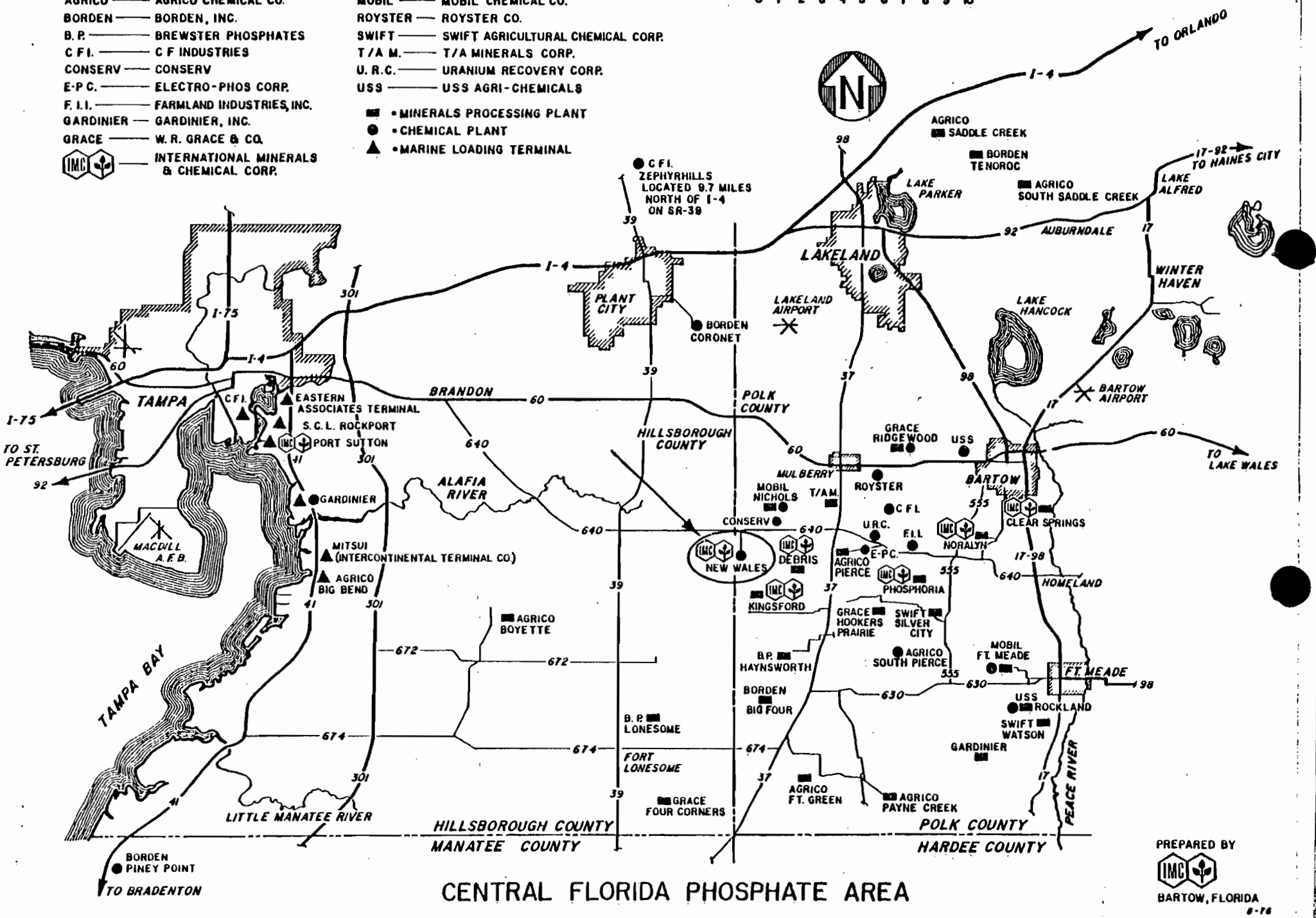
I further certify that said corporation has paid all fees due this office through December 31, 1977 and its status is active.

GIVEN under my hand and the Great Seal of the State of Florida, at Tallahassee, the Capital, this the 1st day of June 1977.

Bruce O. Smith

SECRETARY OF STATE





CENTRAL FLORIDA PHOSPHATE AREA

PREPARED BY
IMC
BARTOW, FLORIDA
8-76