MASTER

**INVENTORY & CASE STUDIES
OF LOUISIANA, NON-
ELECTRIC INDUSTRIAL
APPLICATIONS OF
GEOPRESSURED
GEOTHERMAL RESOURCES**

Quarterly Report

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**Quarterly Progress Report
for Period March 1, 1977 - May 31, 1977**

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PROJECT OBJECTIVES:

The potential utilization of geopressured geothermal energy in the State of Louisiana as a primary source of additional energy has not yet been fully determined. The theoretical amounts of existing resources beneath the earth's surface of southern Louisiana indicate endless volumes of high pressured, hot water and more than abundant reserves of natural gas. The magnitude of the resources have been known to exist since the 1920's as a part of the increased exploration of oil and gas.

The knowledge of the existence of vast amounts of geopressured geothermals should have been incentive enough to have encouraged exploitation of the resource, however, this has not been the case. To date, there has not been sufficient enough factual proof to stimulate the actual drilling of a bona fide geothermal well. Evidence must be provided to prospective beneficiaries that there indeed are large-enough volumes of water, at the proper temperature, within the estimated proximity, containing tolerable properties and are reasonably accessible, to attract private investment industries.

It is the intent of this project to provide, as adequate as possible, a quick reference source of all the above answers that will illustrate the potential resource areas within the State of Louisiana. All available data of known geopressured geothermal locations together with the theoretical

high potential areas can provide much to progress the interests and the useful development of the resource.

Also, it is the intent of this project to catalogue and inventory all of the industries within the State of Louisiana, classified as "Food and Kindred Products", to determine potential and specific industrial uses of the known energy resources. This will allow for the provision of technical and economic criteria for the conversion, application and transmission of energy necessary to industrial processing as a means of supplanting or reducing present energy consumption. There will also be the possibility of relocating industries to the available resources, offering the opportunity of developing geothermal energized industrial complexes.

Finally, the project will provide and present individual case studies for near term industrial conversion for resource application. The case studies will illustrate the technical and economic feasibility of the non-electric industrial applications of geopressured and geothermal waters from the production well site to the disposal well, indicating the various opportunities for resource application - processing, heating, cooling, production, etc.

TASK #1 - INVENTORY GEOPRESSURED GEOTHERMAL (GPGT) RESOURCES

The investigations pertaining to the GPGT Resources, to date reveal the following information.

A. The Geologic Formations:

Basically the formation of geologic deposits leading to the creation of massive layers of oil, gas and water enriched sands and gravel areas are interbedded with organic clays or silts that comprise the geologic composition of Southern Louisiana. The formations are considered to be very young, not any older than the Catahoula formation of the Miocene Age. Due to the Mississippi and Atchafalaya Rivers, deltaic deposits, aided and abetted by the climatic changes that occurred during the Pleistocene epoch and the fluctuations in sea levels that occurred and the alluvial deposits from floods, the huge deposits began from a series of faulting and sedimentation that resulted in the entrapment and compaction of fluids. These fluids of water and materials of fossil decay created deep gas and water pockets that are the subject to today's vast exploration efforts and extensive studies and investigations. The thousands of years of deposits, the faulting of subsurface layers, the down-warp of earth masses, the gulfward shift of deposits have greatly complicated the scientists' ability to predict exactly what and how much resources are beneath the surface.

The repetitive occurrences of deposition and compaction beneath the earth, compounded by heat and decay, have resulted in the super saturation of minerals, fluids and other gasses. The quantity and quality of each can vary drastically from one location to another and can be altogether different at one depth than at another.

The fact that the geologic formations in Louisiana are young, the ability to extract the found resources are optimum as compared to older similar formations in Texas and Oklahoma. Deep well drilling is much more simple because there are no limestone deposits to contend with. The aquifers are much cleaner and are relatively free of impediments such as poor porosity and insufficient permeability.

B. Geopressure and Geothermal Characteristics:

The occurrences of the GPGT resources in Louisiana can be described as all of the land and offshore areas between latitudes 28° and 31°. The optimum depths for locating the resources are considered to range from 5,000 feet to 25,000 feet. Estimated thicknesses of any given resource aquifer can vary from 3 feet to 200 feet. The areal extent of the on land resources in Louisiana is just under 30,900 square miles. Overall average depth to the resources have been estimated to be between 10,054 and 15,912 feet. Average pressure is estimated as 14,108 psi and average temperature is

274.9°F.

There have been varying estimates of dissolved natural gas in the GPGT resources that further clouds the overall picture. A value of dissolved natural gas of 35 standard cubic feet per barrel would yield an in place reserve of 5,735 trillion cubic feet (Tcf) from the GPGT zones of Texas and Louisiana. By comparison Hise of L.S.U. has estimated 3,000 Tcf, Jones of L.S.U. has estimated 49,000 Tcf and the U.S.G.S. has estimated 23,600 Tcf (onshore only). Based upon the latest discovery by Chevron Oil Co. (test well in Pointe Coupee Parish) of 107 standard cubic feet per barrel we can also add another estimate of 111,500 Tcf. The uncertainty of the methane content is due to the lack of reliable information. Estimates based upon oil and gas well logs are not sufficient to provide a sound basis for assessing the GPGT resources. The best method for determining the methane content and for assessing the quantity and value of the natural gas is to obtain sample data from actual GPGT aquifers.

- C. Criteria for Resource Utilization: In order to fully utilize the GPGT's beneath the earth's surface of Louisiana it will be necessary to address the resource's major assets. Fundamental to all investigations thus far, the most attractive component of the resource is the methane content. Attributable to the methane,

there are large amounts of pressure (hydraulic energy) which can be utilized. The low temperature waters also provide a source of energy that must be put to use if the extraction of the resource is to comply with State legislation.

In addition to the above major assets, the resource can provide secondary elements such as salts (bromide) from the water and possibly some potable water. Perhaps as much as 50% of the water production can be filtered into potable water.

All of this, of course, is based upon the data obtained from existing oil and gas well logs and core samples. It is anticipated that most of the theoretical projections will be verified by further investigations from other ERDA projects.

Basically the criteria for utilizing the resource can be summarized as follows:

1. Utilize the high pressures of the resource in close proximity of the production well prior to the separation of hot water and methane.
2. Separate methane from hot waters, thus greatly reducing the resource pressures.
3. Apply each resource, as feasible, for appropriate utilization.

These basic standards will provide guidance to the Project

Study Team to begin to investigate the potential for non-electrical application of the resource(s).

- D. Institutional Constraints: Extraction of the GPGT in the State of Louisiana will be administered by the Louisiana Department of Conservation. Standards and regulations to which the industry will be regulated are presently being prepared. A permit from the Dept. of Conservation is all that is necessary to be able to drill a production well in the State of Louisiana.

In 1975 the Louisiana legislature, for the first time, began to deal with geothermal or geopressured waters as a separate source of possible energy. This treatment was evidenced by the passage of Acts 735 and 784 of 1975. (R.S. 30:681.1 thru 681.5 and R.S. 30:800 thru 808 respectively)

Act No. 735, known as the Louisiana Geothermal and Geopressured Energy Research and Development Act recognizes the possibility that there exists a large source of previously untapped energy under the lands of this state. Pursuant to the provisions of R.S. 30:681.3, the State Department of Conservation was given the responsibility for the management and coordination of a state geothermal and geopressure energy research and development program. The perimeters within which such management and coordination of the energy research and

development program was to be exercised were four in number.

1. The determination and evaluation of the resource base;
2. Research and development with respect to exploration, extraction and utilization technologies, which shall include research toward development of reliable predictive methods and control techniques for the production of geothermal and geopressure resources from reservoirs or aquifers;
3. Determination of the environmental ramifications of the production of this energy resource; and
4. Examination of the legal, social and economic consequences of development of this resource for the purpose of developing policy and providing a framework of policy alternatives for the commercial utilization of this resource.

This legislation represented the first direct grant of authority to the Department of Conservation to pursue, with all of the resources at its command, a program which will eventually lead to the utilization of the pressured and heated waters lying beneath the state.

Act 784 of 1975, entitled Geothermal Energy Resources, declared that it was state policy to rapidly and orderly develop geothermal resources, conserve these natural

resources to the fullest extent and to provide rules and regulations governing their development production and distribution.

Pursuant to the intent of the act of the legislature granted to the State Mineral Board, authority to lease development, production and distribution of geothermal resources and the byproducts thereof any lands belonging to the state of which the state had title. (R.S.30:802) Then the legislature sought to grant full regulatory authority over all drilling and production operations under a geothermal lease to the State Department of Conservation and by specific reference made the provisions of R.S. 30:1 et seq (R.S. 30:807) applicable to all operations under geothermal leases. It also permitted the Commissioner of Conservations to promulgate such additional rules and regulations relating specifically to geothermal leases deemed necessary.

In 1976 there were ammendments passed by the Louisiana Legislature to strengthen the original legislation. The ammendments further clarified the responsibilities of the Commissfoner of Conservation pertaining to private and public geothermal leases. Also the original legislation was further ammended to refer to both geothermal waters and geopressured waters thereby eliminating possible conflicts of interpretation. In addition, the 1976 legislation made as a requirement to the

permit application, the preparation of a public impact statement showing the effects the development will have.

E. Location of the GPGT Resources:

The geopressured geothermal resources are primarily located in the southern half of the State of Louisiana. Based upon available data, which is limited to data and information collected from existing oil and gas exploration, the location of the resources is theoretical and non specific. Statewide maps have been prepared that illustrate the general areas of resource potential.

Figure 1.1 defines the overall GPGT resources by means of sub-areas of distinction.¹ The resource for each sub-area is defined to be an average depth, pressure, temperature and areal extent. Each area's average has been determined from well log and core samples of oil and gas exploration in the Gulf Coast area. Table 1.1 illustrates the sub-area averages and the number of samples taken in each area.

Since the 1975 study, more data pertaining to deep oil and gas explorations have developed in the northern Louisiana sub-areas - areas ATL₂, DL₆ and EL₇. Figure 1.1a illustrates

1

"Assessment of Onshore Geopressured-Geothermal Resources in Northern Gulf of Mexico Basin", 1975 by S. S. Papadopoulos, R. H. Wallace, Jr., J. B. Wesselman and R. E. Taylor.

STATE OF LOUISIANA

ASSESSED GEOPRESSURED ZONES AND THEIR DIVISION INTO SUBAREAS

EXPLANATION

AREAL EXTENT AND AVERAGE PRESSURE, TEMPERATURE, AND SALINITY
CONDITIONS IN EACH SUBAREA.

SUBAREA	AREAL EXTENT KM ²	AVERAGE DEPTH TO TOP OF GEOPRESSURE KM	AVERAGE DEPTH TO MIDPOINT KM	AVERAGE PRESSURE MN/m ²	AVERAGE TEMPERATURE C°
ATL 2	20,965	2.47	4.23	78.5	156
BT 2	5,595	2.32	4.16	81.4	150
DTL 4	5,102	2.62	4.31	83.4	141
DL 5	7,015	3.01	5.01	102.0	164
DL 6	3,729	3.05	5.02	104.0	160
ETL 4	3,461	2.63	4.31	87.3	140
EL 5	8,144	3.66	5.33	106.9	165
EL 6	8,849	3.32	5.16	105.0	159
EL 7	6,249	2.99	5.00	100.1	146
FL 2	4,707	3.76	5.38	105.0	148
FL 3	6,139	3.88	5.44	110.8	151

Table 1.1.

**AREAL EXTENT & AVERAGE PRESSURE, TEMPERATURE
AND SALINITY CONDITIONS IN EACH SUB-AREA²**

Sub-Area	Areal Extent, Sq Miles (Km ²)	Average depths to top of geopressure Feet (Km)	Average depths to midpoint Feet (Km)	Average Pressure PSI(MN/m)	Average Temperature ° F(°C)	Average Salinity	
						No. of Samples	TDS g/I
AtL ₁	8095 (20,965)	8104 (2.47)	13878 (4.23)	11385 (78.5)	281 (156)	-	20*
BT ₂	2160 (5,595)	7612 (2.32)	13648 (4.16)	11806 (81.4)	270 (150)	50	38
DTL ₄	1970 (5,102)	8596 (2.62)	14140 (4.31)	12096 (83.4)	254 (141)	18	46
DL ₅	2708 (7,015)	9875 (3.01)	16437 (5.01)	14794 (102.0)	295 (164)	222	65**
DL ₆	1440 (3,729)	10007 (3.05)	16470 (5.02)	15084 (104.0)	288 (160)	14	55 ⁺⁺
ETL ₄	1336 (3,461)	8629 (2.63)	14140 (4.31)	12662 (87.3)	252 (140)	14	52
EL ₅	3144 (8,144)	12008 (3.66)	17486 (5.33)	15505 (106.9)	297 (165)	39	90**
EL ₆	3417 (8,849)	10892 (3.32)	16929 (5.16)	15229 (105.0)	286 (159)	87	83
EL ₇	2413 (6,249)	9810 (2.99)	16404 (5.00)	14518 (100.1)	263 (146)	9	26
FL ₂	1817 (4,707)	12336 (3.76)	17651 (5.38)	15229 (105.0)	266 (148)	46	84 ⁺⁺
FL ₃	2370 (6,139)	12730 (3.88)	17848 (5.44)	16070 (110.8)	272 (151)	11	45 ⁺⁺

* Estimated samples not available.

** Only few samples from deep zones included.

⁺⁺ No samples from deep zones are included.

² Ibid.

FIG. 1.1a

the new deep discoveries. The Chevron Discovery in Point Coupee Parish has been noted as a GPGT well in which the production specifics greatly exceed the sub-area averages (See Table 1.1). This can be compared as follows:

Sub-Area	Average depth to top of geopressure Feet (Km)	Average pressure PSI(MN/m	Average temperature °F (°C)	Methane Content std Ft ³ /bbl(std m ³ /m ³
ATL ₂	8140 (2.47)	11385 (78.5)	281 (156)	47.2 (8.4)
Chevron Discovery Well	20600 (6.28)	16000 (110.3)	425 (218)	107 (19.06)

The Chevron Discovery Well, 20 miles west of Baton Rouge, Louisiana flowed methane-saturated superheated water from a water sand at a depth of 20,600 feet. The Chevron test well flowed 5,000 barrels of water through a gas separator for a period of two days, after which Chevron sealed the well approximately 2000' above the aquifer and is presently extracting the gas from a shale formation immediately above the GPGT. The water temperature of the GPGT was 425°F, its salinity was 12,000 mg/l, and the closed-in formation pressure was 16,000 psi. The dissolved gas content was 107 standard cubic feet per barrel, at saturation according to the curves of Russian Geologists, Sultanov, Skripka and Namiot, (1972).

The details of this well have been reported by Chevron to Dr. James C. Bresee, Director of ERDA's Division of Geothermal Energy.

Figure 1.2 illustrates the areal distribution of GPGT resources based upon depth of occurrence.³ It is a generalized map showing the depth of the geopressured zone in Neogene deposits. The onshore part is based largely on shale resistivity data derived from electric logs, by the method of Hottman and Johnson (1965); offshore, reservoir data provide the pressure-depth control for the map. Combined with and superimposed on the same map is the estimated thickness, in kilometers, of cenozoic deposits (Jones, 1969). The discontinuous (broken) lines indicate where approximated.

Figure 1.3 illustrates the known location of fields containing representative GPGT reservoirs based upon oil and gas exploration.⁴ Table 1.2 is a supportive listing of the illustrated fields identifying the depth, temperature

³P.H. Jones, 1967

⁴P.H. Jones, 1967

322

302

TABLE 1.2*

Geopressured aquifers in southern areas of the Continental Shelf (partial extract of data in Exhibit "H", Southern Louisiana Rate Case AR61-2, Gas Supply Section, U. S. Federal Power Commission)^{1/}

Depth (feet)	Field Name	Temperature (degrees F.)	Pressure (psi) 2/	Geostatic Ratio
1355-1430	Bay Marchand	91	680	.502
2674-?	Southeast Pass	106	1,390	.520
5405-5433	Ship Shoal	140	3,132	.570
6268-6311	West Cameron	163	3,205	.511
7080-7090	West Cameron	173	3,712	.524
7483-7507	West Cameron	179	3,993	.533
7996-8013	West Cameron	187	4,370	.546
8400-8413	Vermilion Bay	208	4,580	.545
8700-8831	Vermilion Bay	211	4,680	.538
9012-9047	Eugene Island	182	4,715	.523
9033-9061	South Pelto	219	4,938	.547
9401-9422	Church Point	201	6,417	.683
9464-9533	South Pelto	225	5,416	.572
9824-9877	East Cameron	213	6,025	.613
9879-9906	East Cameron	213	6,001	.607
10005-10047	Iowa	246	7,169	.717
10025-10039	Jefferson Island	194	5,379	.537
10410-10418	High Island	209	7,802	.749
10500-10517	English Bayou	233	8,154	.777
10585-10630	West Cameron	223	6,325	.598
10790-10816	Raceland	208	6,792	.629
10800-10906	Mud Lake	231	5,724	.530
10950-10974	Churchpoint	243	7,686	.702
11200-11389	Mud Lake	246	6,272	.560
11330-11356	Rayne	217	6,900	.609
11650-11679	Chalkley	233	9,345	.802
11933-11943	Erath	231	6,602	.553
11950-11995	Bayou Penchant	230	9,031	.756
12200-12246	Lake Arthur	262	10,100	.828
12295-12328	Thornwell	303	11,800	.960
12450-12493	Belle Isle	231	6,690	.537
12550-12562	Grand Isle	263	8,745	.697
12693-12757	Vermilion	235	8,276	.652
12900-12935	Bastian Bay	224	8,859	.687
12942-12949	Bayou Chevrui	246	11,067	.855
13200-13228	Lake Chicot	232	11,522	.873
13265-13275	West Cameron	280	11,664	.879
13617-13640	Thibodaux	237	10,418	.765
13700-13735	Thornwell	272	12,282	.896
13708-13761	West Delta	239	10,782	.787
13753-?	Caillou Island	270	7,113	.517

*For location of each field refer to Figure 1.2.

TABLE 1.2*

Geopressured aquifers in southern Louisiana and adjacent areas of the Continental Shelf (partial extract of data in Exhibit "H" Southern Louisiana Rate Case AR61-2, Gas Supply Section, U. S. Federal Power Commission)^{1/}

Depth (feet)	Field Name	Temperature (degrees F.)	Pressure (psi) ^{2/}	Geostatic Ratio
13937-13950	Rousseau	241	10,635	.763
14145-14178	Ship Shoal	261	7,109	.503
14150-14225	Houma	253	10,790	.763
14300-14341	Lake Sand	263	10,975	.767
14344-14376	Garden City	259	12,096	.843
14594-14606	Garden City	263	12,295	.842
14602-14628	Constance Bayou	278	7,340	.503
14600-14650	Lapeyrouse	264	9,075	.622
14700-14731	Lapeyrouse	266	10,020	.682
14900-14940	Lake Washington	266	10,180	.683
15050-15084	Garden City	260	14,210	.944
15150-15160	Deep Lake	332	9,390	.620
15249-15289	Lake Pagie	268	10,819	.709
15318-15375	Thornwell	315	11,376	.743
15336-15407	Lake Arthur	329	13,933	.909
15580-15595	Leleux	277	13,570	.871
15600-15800	Deep Lake	366	9,885	.634
15871-15880	Lake Sand	296	12,505	.788
16000-16018	Lacassine	275	14,625	.914
16450-16495	Hollywood	280	14,540	.884
16570-16585	Weeks Island	266	9,495	.573
17300-17340	Belle Isle	316	11,420	.660
17395-17429	Lake Sand	318	13,477	.775

^{1/} Locations of fields listed are shown on Figure 7.

^{2/} A pressure of 1 psi is equivalent to 2.31 feet of fresh-water head.

* For location of each field refer to Figure 1.2.

and pressures of each field. It identifies optimum oil and gas explorations that have known GPGT aquifers. It does not however, identify optimum aquifers that may have long lasting resources, desirable temperatures and desired methane saturation.

Figure 1.4 indicates the estimated depth of occurrence of the geopressed zone for coastal and offshore areas of Southern Louisiana. This map is based on the depth of shale density reversal.

Recent Information From GPGT Tests

As part of an ERDA Research and Development Project, a test well in Vermilion Parish, Louisiana was established by reopening a depleted gas well formally owned by Coastal States Gas Producing Company. The actual flow tests began May 22nd, 1977 by perforating the existing casing between the depths of 12,869 feet and 12,893 feet. The extracted water was flowed at rates up to 10,000 barrels per day with a surface temperature of 218°F and a bottom hole temperature of 240°F. The bottom hole shut in pressure was 11,000 psi and tubing shut in pressure was 6,000 psi. Gas production averaged 68 SFC/bbl.

The gas content analyzed at 90 percent methane, 4 percent ethane, 1/2 percent carbon dioxide, with small amounts of higher boiling hydrocarbon fractions.

DEPTH OF OCCURRENCE OF THE GEOPRESSURED ZONE.
(Based upon Depth of Reversal of Shale Density Gradient)

FIG. 1.4

The water samples were analyzed as follows:

Conductivity	145,000 Micromhos/cm.
Total Dissolved Solids	115,000 P.P.M.
Bicarbonate Concentration	1,100 P.P.M.
Total Hardness	6,100 P.P.M.
Total Chlorides	67,000 P.P.M.
PH	6.0 (mildly acid)

Initially, natural gas was recovered from the test well at rates exceeding 1.5 million cubic feet per day, indicating that some undissolved natural gas being recovered in addition to the dissolved natural gas. Toward the end of the 10 day flow test, the water production rate was reduced to 3,000 barrels per day which in turn reduced the gas production to 200,000 cubic feet per day.

Further tests and analysis are planned to be conducted on a second aquifer approximately 300 feet above the first aquifer.

TASK #2 - INVENTORY LOUISIANA INDUSTRY

The primary purpose of this Task in the Study, is to inventory and catalogue the existing food and kindred products in the State of Louisiana in such a manner as to illustrate the operating characteristics for application of geopressured geothermal resources.

The food and kindred products industries is a major group of classified industries of the manufacturing division in the U.S. Office of Management & Budget's Standard Industrial Classification Manual (SIC). The SIC defines industries in accordance with the composition and structure of the nation's economy. It covers the entire field of economic activities. Each industry is classified and numerically identified as part of eleven divisions (A through K) and further subdivided into major groups (varies from 3 to 20 in each division). The Food and Kindred Products Industries are a part of the largest division, Division D, Manufacturing and the first major group, Group #20.

According to the SIC, the manufacturing division includes establishments engaged in the mechanical or chemical transformation of materials or substances into new products. These establishments are usually described as plants, factories or mills and characteristically use power driven

machines and materials handling equipment to further refine or develop a raw product or semi-processed product into a new or further finished product.

The Food and Kindred Products is a major group of industries that include establishments manufacturing or further processing foods and beverages for human consumption. Certain related products are also included, such as manufactured ice, chewing gum, vegetable fats and oils and prepared feeds for animals and fowls. These industries are the twenty industries, identified numerically from #2011 through #2099.

The inventory of all Food and Kindred Products (SIC-20) in the State of Louisiana has been completed. A listing of all industries is available, including firm name, employment, activity location and area of product distribution.

The overall statewide outlook of manufacturing industries is presented in Table 2.1. Industry #20, Food and Kindred Products, ranks as #2 in the State in number of establishments, #1 in employment, #4 in earned wages and #2 in value added by manufacture. Economically 15.8 percent of the total manufacturing employment earns 10.4 percent of the total manufacturing wages, to produce 13.5 percent of the total value of manufactured products. This indicates the importance of maintaining and increasing the economic production of this particular industry.

TABLE 2.1

STATE OF LOUISIANA - DISTRIBUTION OF ESTABLISHMENTS, EMPLOYMENT,
WAGES & PRODUCTION VALUE BY INDUSTRY

Indus- try Code	Industry	# Estab- lishments	% of Total	# All Em- ployees (1000)	% of Total	# Production Workers (1000)	% of Total	Wages (\$ mil- lion)	% of Total	Value Added by Manufacturer (\$ million)	% of Total
20	Food & Kindred Products	556	15.5	28.1	15.8	18.7	13.9	111.2	10.4	579.3	13.5
22	Textile Mill Products	12	0.3	1.3	0.7	1.1	0.8	5.7	0.5	14.1	0.3
23	Apparel, Other Textile Products	91	2.5	9.0	5.1	7.9	5.9	30.6	2.9	67.3	1.6
24	Lumber & Wood Products	930	25.9	14.7	8.3	13.0	9.7	71.9	6.7	208.9	4.9
25	Furniture & Fixtures	65	1.8	1.5	0.8	1.3	1.0	6.0	0.6	15.5	0.4
26	Paper & Allied Products	62	1.7	15.5	8.7	12.8	9.5	126.8	11.8	396.9	9.3
27	Printing & Publishing	467	13.0	7.4	4.2	4.7	3.5	32.7	3.1	125.3	2.9
28	Chemical & Allied Products	212	5.9	24.4	13.7	16.9	12.6	192.9	18.1	1349.6	31.5
29	Petroleum & Coal Products	58	1.6	9.5	5.3	6.1	4.5	71.2	6.6	442.6	10.3
30	Rubber, Misc. Plastic Products	37	1.0	0.7	0.4	0.6	0.4	3.2	0.3	11.3	0.3
31	Leather & Leather Products	9	0.3	2.21	1.2	0.2	0.1	0.9	0.1	3.0	0.01
32	Stone, Clay, Glass Products	221	6.2	6.7	3.8	5.3	3.9	39.4	3.7	127.6	3.0
33	Primary Metal Indstrs.	28	0.8	7.3	4.1	5.9	4.4	58.0	5.4	145.0	3.4
34	Fabricated Metal Products	201	5.6	12.5	7.0	9.9	7.4	82.1	7.7	210.9	4.9
35	Machinery, Except Electrical	293	8.2	7.0	3.9	5.3	3.9	39.7	3.7	124.0	2.9
36	Electric, Electronic Equipment	45	1.3	7.0	3.9	5.8	4.3	44.3	4.1	145.0	3.4
37	Transportation Equipmt.	171	4.8	21.9	12.3	17.5	13.0	146.9	13.7	289.4	6.8
38	Instruments Related Products	26	0.7	0.4	0.2	0.2	0.1	1.7	0.2	8.1	0.2
39	Miscell. Manufactur- ing Industries	95	2.7	1.5	0.8	1.2	0.9	6.5	0.6	18.6	0.4
TOTAL - All Manufactur- ing Industries		3660		179.6		134.4		1072.7		4282.4	

A further breakdown of the Food and Kindred products industry, Table 2.2, reveals that the most significant sub-industries are #201 Meat Products, #206 Sugar Confectionery Products, #208 Beverages and #2091 and 2092 Canned and Cured Seafoods and Fresh or Frozen Packaged Fish. Important to the location of the industry to the GPGT resources the #206 Sugar Confectionery Products and #2091 and 2092 Canned and Cured Seafoods and Fresh or Frozen Packaged Fish appear to be the most significant. Application of the resources for non-electric use is further enhanced by the relative proximity of one industry to the other. See Appendix B for individual industry location maps.

A reference index of existing industries within the category of Food and Kindred Products (S.I.C. #20) is provided in Appendix A. The index identifies the location, number of employees during normal period of operation, principal products and the area of distribution of the products of each of these industries according to 4 digit standard Industrial Classification. Table 2.3 identifies number of establishments by Parish within the Food and Kindred Product Industries.

In addition to the collection of above listing, a questionnaire survey was prepared and distributed to some 378 Food and Kindred Product Industries throughout the State. The purpose of the questionnaire was to obtain individual information on each industry so that the appropriate economic analysis of this

TABLE 2.2

SIC# - FOOD & KINDRED PRODUCTS IN STATE OF LOUISIANA

SIC#	Industry	# Establishments	% Total	All Employees (1000)	# Production Workers (1000)	Wages (\$ million)	Value Added by Manufacturer (\$ million)	Capital Expenditures (\$ million)
201	Meat Products	92	16.3	3.4	2.8	14.3	44.2	2.2
2011	Meat Packing Plants	64	11.3	1.0	0.8	4.6	11.4	0.9
2013	Sausages & Other Prepared Meats	17	3.0	0.6	0.4	2.6	10.6	0.5
0216	Poultry Dressing Plants	11	1.9	1.8	1.6	7.1	22.2	0.7
202	Dairy Products	58	10.2	2.9	1.1	6.8	58.8	4.5
2024	Ice Cream & Frozen Deserts	12	2.1	BB/0.4	D/0.2	D/1.0	D/4.4	D/0.1
2026	Fluid Milk	43	7.6	2.5	0.9	5.8	54.4	4.4
203	Preserved Fruit & Vegetables	28	4.9	2.5	2.1	8.3	31.4	1.6
2033	Canned Fruits & Vegetables	13	2.3	1.5	1.3	5.6	14.9	1.0
2035	Pickles, Sauces, Salad Dressings	7	1.2	CC	D	D	D	D
2037	Frozen Fruits & Vegetables	1	0.2	BB	D	D	D	D
204	Grain Mill Products	48	8.5	1.5	1.2	5.9	37.1	1.3
2044	Rice Milling	17	3.0	CC/0.9	D/0.8	D/3.6	D/26.0	D/0.7
2048	Prepared Feeds, NEC	28	4.9	0.6	0.4	2.3	11.1	0.6
205	Bakery Products	47	8.3	3.3	1.7	10.2	50.0	2.9
2051	Bread, Cake & Related Products	45	7.9	FF	D	D	D	D
206	Sugar Confectionery Products	60	10.6	5.1	4.2	33.7	114.8	14.4
2061	Raw Cane Sugar	44	7.8	EE	D	D	D	D
2062	Cane Sugar Refining	7	1.2	FF	D	D	D	D
2065	Confectionery Products	9	1.6	0.2	0.2	0.7	2.5	0.1

Page 2 of 2 TABLE 2.2
SIC# - Food & Kindred Products in
State of Louisiana

SIC#	Industry	# Establishments	% Total	All Employees (1000)	# Production Workers (1000)	Wages (\$ million)	Value Added by Manufacturer (\$ million)	Capital Expenditures (\$ million)
207	Fats & Oils	23	4.1	1.1	0.9	6.0	22.7	4.0
2074	Cottonseed Oil Mills	6	1.1	AA	D	D	D	D
2077	Animal & Marine Fats & Oils	11	1.9	0.5	0.4	2.7	12.7	1.0
2079	Shortening & Cooking Oils	3	0.5	BB	D	D	D	D
208	Beverages	62	10.9	4.5	1.8	12.0	113.9	5.2
2082	Malt Beverages	4	0.7	CC	D	D	D	D
2086	Bottled & Canned Soft Drinks	50	8.8	3.1	1.0	5.0	47.7	4.5
2087	Flavoring Extracts, Syrups, NEC	7	1.2	BB	D	D	D	D
209	Misc. Foods, Kindred Products	148	26.1	3.7	3.0	14.1	106.4	4.0
2091	Canned & Cured Seafoods	24	4.2	CC	D	D	D	D
2092	Fresh or Frozen Packaged Fish	33	5.8	CC	D	D	D	D
2095	Roasted Coffee	13	2.3	CC	D	D	D	D
2097	Manufactured Ice	40	7.1	BB	D	D	D	D
2098	Macaroni & Spaghetti	4	0.7	AA	D	D	D	D
2099	Food Preparations, NEC	<u>34</u>	<u>6.0</u>	<u>0.7</u>	<u>0.5</u>	<u>2.5</u>	<u>16.8</u>	<u>1.3</u>
20	TOTAL - Food & Kindred Products	566		28.1	18.7	111.2	579.3	40.0

PARISH	2011	2013	2016	2021	2022	2023	2024	2026	2032	2033	2034	2035	2037	2041	2044	2046	2047	2048	2051	2052	2061	2062	2065	2066	2074	2075	2076	2077	2079	2082	2085	2086	2087	2091	2092	2095	2097	2098	2099	TOTAL	
POINTE COUPEE																					1				1															2	
RAPIDES	2	1	1				1	1									1	1	1		1							1				3						1		15	
RICHLAND	1																																							1	
SABINE																		1														1								2	
ST. BERNARD																						1						1						1						3	
ST. CHARLES																										1														1	
ST. JAMES																					3	1																	4		
ST. JOHN THE BAPTIST																					1	1										1							3		
ST. LANDRY		2						1				1				1									1	1	1		1			1						2		12	
ST. MARTIN							1	1		3		3	1						1		2												1		2			3		18	
ST. MARY																					4							1						1	4		1			11	
ST. TAMMANY					1		1	1																										1					4		
TANGIPAHOA		2	1					1										4					1									1		2	1			1	14		
TERREBONNE		1						1													2	1						1					9	2		3			20		
UNION	1																																					1		2	
VERMILION								1							4						1							1							1					8	
VERNON																																			1					1	
WASHINGTON				1	2	1	1	2										1															1							9	
WEBSTER		1						1																									2							4	
WEST BATON ROUGE														1							3														1					5	
WEST CARROLL										1																														1	
WEST FELICIANA										1	1																													2	
TOTAL	13	17	5	3	5	2	21	33	2	15	2	16	1	2	16	1	5	18	26	1	38	6	5	1	5	2	1	13	2	3	1	49	5	29	19	12	16	3	37	451	

PARISH	2011	2013	2016	2021	2022	2023	2024	2026	2032	2033	2034	2035	2037	2041	2044	2046	2047	2048	2051	2052	2061	2062	2065	2066	2074	2075	2076	2077	2079	2082	2085	2086	2087	2091	2092	2095	2097	2098	2099	TOTAL	
POINTE COUPEE																					1				1															2	
RAPIDES	2	1	1				1	1									1	1	1		1							1				3						1		15	
RICHLAND	1																																							1	
SABINE																		1														1								2	
ST. BERNARD																						1						1						1						3	
ST. CHARLES																										1														1	
ST. JAMES																					3	1																	4		
ST. JOHN THE BAPTIST																					1	1										1							3		
ST. LANDRY		2						1				1				1									1	1	1		1			1						2		12	
ST. MARTIN							1	1		3		3	1						1		2												1		2			3		18	
ST. MARY																					4							1						1	4		1			11	
ST. TAMMANY					1		1	1																										1					4		
TANGIPAHOA		2	1					1										4					1									1		2	1			1	14		
TERREBONNE		1						1													2	1						1						9	2		3			20	
UNION	1																																					1		2	
VERMILION								1							4						1							1							1					8	
VERNON																																			1					1	
WASHINGTON				1	2	1	1	2										1															1							9	
WEBSTER		1						1																									2							4	
WEST BATON ROUGE														1							3														1					5	
WEST CARROLL										1																														1	
WEST FELICIANA										1	1																													2	
TOTAL	13	17	5	3	5	2	21	33	2	15	2	16	1	2	16	1	5	18	26	1	38	6	5	1	5	2	1	13	2	3	1	49	5	29	19	12	16	3	37	451	

industry group can be prepared. A copy of the questionnaire is provided in Appendix B. Table 2.4 illustrates the individual responses obtained from the survey questionnaire. The overall response to the survey was about 7%. This can be evaluated as good, in that the information asked is highly confidential and many industries do not wish to disclose this data and/or view the effort as time consuming.

Due to unavailability of the production cost data of each surveyed industry, it was not possible to work out figures of energy intensiveness as a percentage of each dollar of production cost. It was therefore decided to compute these figures as a percentage of (1) each wage dollar and (2) each dollar of sales. Table 2.5 illustrates the energy intensiveness of industries which responded to the survey questionnaires.

With the objective of selecting a few high priority establishments, considering their employment and energy demands, various maps listing by parishes the different kinds of establishments by four digits within the S.I.C. Code #20 were prepared. Further, a summary map (Figure 2.1) showing the employment and energy consumed by parishes was prepared with a view to locate the concentration of the above two factors.

Although it was found that the major concentration of

TABLE 2.4
SUMMARY OF QUESTIONNAIRES RECEIVED

NO.	INDUSTRY NAME	S.I.C. NO.	PARISH	ENERGY CONSUMED		TOTAL (MILLION BTU'S)	ANNUAL EXPENDITURE ON ENERGY *	AVERAGE ANNUAL EMPLOYMENT	CAPITAL INVESTMENT		ANNUAL WAGES *	ANNUAL SALES *
				FUEL (MILLION BTU'S)	ELECTRICITY (MILLION BTU'S)				BUILDING *	PLANT *		
1	Amstar Corporation	2062	St. Bernard	2,603,087	-0-	2,603,087	6,260,000	700	N.A.	N.A.	10,000,000	233,000,000
2	Seacoast Products, Inc.	2077	Vermilion	344,065	6,830	350,895	438,000	+200	N.A.	N.A.	N.A.	N.A.
3	Bruce Foods Corporation	2033 2035 2099	Iberia	60,160	3,347	63,507	114,250	145	1,200,000	3,750,000	1,131,000	12,000,000
4	L.A. Frey & Sons, Inc.	2011	Orleans	16,288	9,509	25,797	122,900	200-250	N.A.	N.A.	N.A.	N.A.
5	L.A. Frey & Sons, Inc.	2011	Lafayette	69,797	26,610	86,407	240,266	200-250	N.A.	N.A.	N.A.	N.A.
6	Charlo Foods, Inc.	2099	Caddo	3,348	-0-	3,348	5,691	12	28,000	107,000	70,468	N.A.
7	John A. Chauvin, Inc.	2091 2092	Jefferson	N.A.	N.A.	N.A.	27,000	60	100,000	230,000	250,000	2,000,000
8	Elmer Candy Corp.	2065	Tangipahoa	N.A.	N.A.	N.A.	66,000	130	2,000,000	1,300,000	950,000	5,000,000
9	Martin's Sausage, Inc.	2013	Ascension	-0-	89	89	9,600	11	160,000	175,000	129,000	801,000
10	Savole Industries, Inc.	2061	Assumption	65,000	256	65,256	147,550	105	1,000,000	8,000,000	850,000	5,002,500
11	Glenwood Cooperative, Inc.	2061	Assumption	247,950	3,852	251,802	534,970	71	1,000,000	5,500,000	653,000	5,038,000
12	Texada Bailey Co.	2011	Rapides	N.A.	N.A.	N.A.	70,800	75	-0-	500,000	800,000	N.A.
13	Cora Texas Mfg. Co., Inc.	2061	Iberville	139,440	5,848	145,288	313,591	50	1,000,000	6,000,000	467,352	4,410,000
14	Dr. Pepper Bottling Co., Inc.	2086	Rapides	546	194	740	3,146	22	100,000	175,000	212,223	1,570,374
15	Meeker Sugar Cooperative, Inc.	2061	Rapides	196,580	6,845	203,425	236,801	64	272,600	3,933,265	650,050	6,321,241
16	National Fruit Flavor Co., Inc.	2087	Orleans	215	148	363	3,178	12	-0-	200,000	100,000	750,000
17	Gulf South Beverages, Inc.	2086	Jefferson	5,923	4,075	9,998	29,538	222	1,000,000	1,000,000	2,487,221	14,700,000
18	Caire & Graugnard	2061	St. John	176,215	3,295	179,510	232,120	102	9,000	212,000	897,079	N.A.
19	Howard Stark Co., Inc.	2065	Lafourche	5,038	2,141	7,179	28,500	38	200,000	350,000	270,000	1,520,000
20	Petrou Fisheries, Inc.	2077	Plaquemines	116,410	9,145	125,555	188,866	65	1,488,000	3,619,000	634,000	5,373,000
21	Dairymen, Inc.	2021 2022 2023 2026	Washington	133,324	22,125	155,449	274,772	149	2,350,000	2,640,000	1,231,125	14,382,698
22	Coastal Canning Enterprises, Inc.	2086	St. John	N.A.	N.A.	N.A.	35,823	60	1,000,000	3,500,000	596,017	10,525,868
23	Turnbull Cone Baking Co.	2052	Orleans	N.A.	N.A.	N.A.	60,000	+80	N.A.	N.A.	N.A.	1,000,000
24	-	2044	Acadia	N.A.	N.A.	N.A.	86,000	80	2,000,000	1,000,000	685,620	9,867,000
25	-	-	-	75,000	-0-	75,000	70,000	40	200,000	3,000,000	N.A.	2,500,000

* Figures in Dollars
N.A. : Not Available

TABLE 2.5
INDUSTRY ENERGY INTENSIVENESS

NO.	INDUSTRY NAME	S.I.C. NO.	ANNUAL EXPENDITURE ON ENERGY ^a (A)	ANNUAL WAGES ^a (B)	$\frac{A}{B} \times 100$ (C)	ANNUAL SALES ^a (D)	$\frac{A}{D} \times 100$ (E)	MEAN OF C & E
1	Amstar Corporation	2062	6,260,000	10,000,000	62.6	233,000,000	2.69	32.64
2	Seacoast Products, Inc.	2077	438,000	N.A.	-	N.A.	-	-
3	Bruce Foods Corp.	2033 2035 2099	114,250	1,131,000	10.10	12,000,000	0.95	5.53
4	L.A. Frey & Sons, Inc.	2011	122,900	N.A.	-	N.A.	-	-
5	L.A. Frey & Sons, Inc.	2011	240,266	N.A.	-	N.A.	-	-
6	Charlo Foods, Inc.	2099	5,691	70,468	8.08	N.A.	-	-
7	John A. Chauvin, Inc.	2091 2092	27,000	250,000	10.80	2,000,000	1.35	6.08
8	Elmer Candy Corp.	2065	66,000	950,000	6.95	5,000,000	1.32	4.13
9	Martin's Sausage Inc.	2013	9,600	129,000	7.44	801,000	1.20	4.32
10	Savoie Industries, Inc.	2061	147,550	850,000	17.36	5,002,500	2.95	10.15
11	Glenwood Cooperative, Inc.	2061	534,970	653,000	81.92	5,038,000	10.62	46.27
12	Texada Bailey Co.	2011	70,800	800,000	8.85	N.A.	-	-
13	Cora Texas Mfg. Co., Inc.	2061	313,591	467,352	67.10	4,410,000	7.11	37.11
14	Dr. Pepper Bottling Co. Inc.	2081	3 146	212,723	1.40	1,570,374	9.20	0.84
15	Meeker Sugar Cooperative, Inc.	2061	236,801	650,050	36.43	6,321,241	3.75	20.09
16	National Fruit Flavor Co., Inc.	2087	3,178	100,000	3.18	750,000	0.42	1.80
17	Gulf South Beverages, Inc.	2086	29,538	2,487,221	1.19	14,700,000	0.20	0.69
18	Caire & Graugnard	2061	232,120	897,079	25.88	N.A.	-	-
19	Howard Stark Co., Inc.	2065	28,500	270,000	10.56	1,520,000	1.88	6.22
20	Petrou Fisheries, Inc.	2077	188,866	634,000	29.79	5,373,000	3.52	16.65
21	Dairymen, Inc.	2021 2022 2023 2026	274,772	1,231,125	22.32	14,382,698	1.91	12.11
22	Coastal Canning Enterprises, Inc.	2086	35,823	596,017	6.01	10,525,868	0.34	3.18
23	Turnbull Cone Baking Co.	2052	60,000	N.A.	-	1,000,000	6.00	-
24	-	2044	86,000	685,620	12.54	9,867,000	0.87	6.71
25	-	-	70,000	N.A.	-	2,500,000	2.80	-

^a Figures in Dollars
N.A.: Not Available

employment and energy was in Orleans Parish. This parish was overlooked for further investigation for the following reason:

It was felt that in the event a pilot project was to be initiated to demonstrate the ability of a chosen establishment or a group of establishments to use efficiently the geothermal energy produced from an experimental geothermal well, it might be difficult to find within such area a suitable place to locate the geothermal well because of a high amount of concentrated development within the metropolitan area of New Orleans.

Other two concentrations of employment and energy, although lower in magnitude were located in (1) the five parish group of Vermilion, Acadia, Lafayette, St. Martin and Iberia and (2) the two parish group of Terrebonene and Lafourche. Both of these parish groups were further analyzed with respect to employment and energy use in each of the cities/towns within these parishes, (Refer Tables 2.6, 2.7 and Figures 2.2, 2.3). The purpose was to pin down the cities/towns with high amounts of employment and/or energy demand.

From the information collected by the survey and with additional data collected by means of telephone contacts and personal visits, an attempt has been made to rank the known industry data as industries of high potential applicants to the GPGT resources. The first five ranked establishments are as shown below:

TABLE 2.6
SELECTED PARISHES ANALYSIS OF
EMPLOYMENT AND ENERGY

<u>PARISH/TOWN</u>	<u>EMPLOYMENT NO.</u>	<u>FUELS (KWH EQUIVALENT)</u>	<u>ELECTRICITY</u>
<u>ACADIA PARISH - Eleven (11) Establishments</u>			
Crowley	309	82.68	4.5
Church Point	75	13.78	0.75
Mermentau	70	27.56	1.56
Rayne	75	13.78	0.75
Estherwood	35	13.70	0.75
<u>IBERIA PARISH - Seventeen (17) Establishments</u>			
New Iberia	1404	179.14	9.75
Patoutville	175	13.78	0.75
Jeanerette	210	27.56	1.50
Avery Island	175	13.78	0.75
<u>ST. MARTIN PARISH - Eleven (11) Establishments</u>			
St. Martinville	635	68.90	3.75
Breaux Bridge	112	68.90	3.75
Code	375	13.78	0.75
<u>LAFAYETTE PARISH - Twelve (12) Establishments</u>			
Lafayette	1169	137.8	7.5
Milton	175	13.78	0.75
Broussard	75	13.78	0.75
<u>VERMILLION PARISH - Eight (8) Establishments</u>			
Abbeville	285	41.34	2.25
Kaplan	560	55.12	3.00
Intracoastal City	75	13.78	0.75

SELECTED PARISHES ANALYSIS OF EMPLOYMENT AND ENERGY *

FIG. 2.2

* Food & Kindred Products Only
(S.I.C.# 20.)

TABLE 2.7
SELECTED PARISHES ANALYSIS OF
EMPLOYMENT AND ENERGY

<u>PARISH/TOWN</u>	<u>EMPLOYMENT NO.</u>	<u>FUELS (KWH</u>	<u>ELECTRICITY EWUIVALENT</u>
<u>TERREBONNE PARISH - Nineteen (19) Establishments</u>			
Dulac	579	82.68	4.50
Houma	642	124.02	6.75
Chauvin	364	41.34	2.25
Montegut	35	13.78	0.75
<u>LAFOURCHE PARISH - Eighteen (18) Establishments</u>			
Thibodaux	545	96.46	5.25
Golden Meadow	264	96.46	5.25
Lockport	35	13.78	0.75
Raceland	175	13.78	0.75
Valentine	175	13.78	0.75
Mathews	175	13.78	0.75

SELECTED PARISHES ANALYSIS OF EMPLOYMENT AND ENERGY *

FIG. 2.3

* Food & Kindred Products Only
(S.I.C. # 20)

1. AMSTAR CORP., Arabi, St. Bernard
(S.I.C. # 2062) Average annual employment of 700, annual consumption of 130,000 MCF of natural gas and 427,500 Bbl of oil or a total annual energy consumption of 811,547,758 KWH (2,603,087 X 10⁶ BTU).
2. SEACOAST PRODUCTS, Abbeville, Vermilion
(S.I.C. #2077) Average annual employment over 200, annual consumption of 292,000 MCF of natural gas, 9000 Bbl of oil and 2,000,000 KWH of electricity or a total annual energy consumption of 103,838,558 KWH equivalent (350,895 X 10⁶ BTU).
3. CAIRE & GRAUGNARD, Edgard, St. John The Baptist
(S.I.C. #2061) Average annual employment of 102, annual consumption of 176,215 MCF of natural gas and 965,000 KWH of electricity or a total annual energy consumption of 52,595,530 KWH equivalent (179,510 X 10⁶ BTU).
4. L.A. FREY & SONS, Lafayette, Lafayette
(S.I.C. #2011) Average annual employment between 200 to 250, annual consumption of 59,797 MCF of natural gas and 7,792,018 KWH of electricity or a total annual energy consumption of 25,312,381 KWH equivalent (86,407 X 10⁶ BTU).

5. GULF SOUTH BEVERAGES, INC., Harahan, Jefferson
(S.I.C. #2086) Average annual employment of 222,
annual consumption of 5,923 MCF of natural gas and
965,000 KWH of electricity or a total annual energy
consumption of 2,928,523 KWH equivalent (9998×10^6
BTU).

TASK #3 - INDUSTRY POTENTIAL FOR GEOTHERMAL UTILIZATION

Of the food and kindred industries' processes which have been reviewed, heat energy predominantly in the form of fossil fuels as fuel oil and/or natural gas for production of steam and/or hot water in combination with electrical energy for motor drives and process drying are the fundamental energy inputs.

In the processing of foods and related products, a basic demand in the industry is for fresh, potable water for contact heating (cooking) or for steaming, pressure or atmospheric, in the preparation of fruits, vegetables, meats, poultry and seafoods. The cooking or preparation temperatures are in the range of 200°F to 265°F for poultry processing, and 160°F to 200°F for blanching of vegetables prior to canning. See Appendix C for preliminary listing of Food Processes and required temperatures.

Steam is the principal and typical heating agent or energy form common to conventional food processing plants and therefore common to these industries in South Louisiana.

This energy is imparted to the food products as an increase in temperature level through the medium of direct contact pressure steaming or by means of steam jacketed kettles or cookers. In the preparation of dried or fried foods, the energy for drying or frying enters the process customarily as natural gas or electrical heaters. Heat from those sources is imparted through an intermediate fluid, such as cooking oil, water, or air to

effect the desired result. In the case of food product drying, air temperatures range from 150°F to 300°F. For frying, temperatures of the cooking medium, fats and oils are generally maintained at 300+ by modulating gas burner or electrical heater inputs, and will be considered to be above the temperatures available directly from geothermal sources. The use of water as a thermal medium for contact heating (cooking) of food products requires fresh or potable water (low salinity) and requires specific exclusion of certain dissolved salts and/or minerals which, in given instances, would adversely affect the taste and often the color of the food product undergoing processing.

From South Louisiana, a cross sectional tabulation of properties and characteristics of available geopressured well data, indicate salinities as measured and recorded range from 26G./L to 80+G/L. (Sea Water approximates 35G./L or 35,000 parts per million salinity).

Potable water for human consumption when produced from seawater carries a stipulation for salinity not to exceed 0.25 grains per gallon or 4.3 parts per million as recommended by H.E.W. (U.S. P.H.S.) publication.

In order to accomplish the separation of saline water for applications within the food and kindred industries, in contact heating of food and related products, geothermal water as a primary heating medium may be used in a fluid heat exchanger

to impart temperature to a secondary flow of water (potable from other sources) which, in turn, would be used for contact heating, blanching and cleansing of food entities. See Figure 3.1. This would remove the problem of saline geothermal water contacting food in the heating or cleansing processes.

Each of the food and kindred products industries surveyed in the course of this investigation is a candidate for the utilization of geothermal energy in some measure within its domestic and/or requirements for processing operations.

The following table of food-related industries have been listed in a decreasing order of potential for geothermal energy utilization. (See Table 3.1).

The criteria applied to the ranking includes the considerations of:

- 1.) Max. vs./min. temperature demands of the process(es).
- 2.) Opportunities for thermal cascading of processes.
- 3.) Total BTU/Hr. demand at each gradient of temperature available from the geo-resource.
- 4.) Modular compatibility with unit well capacity.
- 5.) Proximity to the resource aquifer (well site).
- 6.) Maximization of geo-potential thru specific aquifer selection within an area of known geo-thermal capability.
- 7.) Thermal compatibility with existing or neighboring processes for possible sharing of the resource.

SEPARATION OF SALINE GEOTHERMAL WATER
FROM
PROCESS FRESH WATER VIA HEAT EXCHANGER
IN FOOD AND KINDRED PRODUCTS PREPARATION

FIG. 3.1

INDUSTRY	PARISHES	AQUIFER RANK	MAPPING AREA
1) Amstar Corp.	St. Bernard	1	Chalmette/Arabi/Violet
2) Robinson Canning	Jefferson	1	Westwego/Lafitte/Marrero
3) Seacoast Products	Vermillion	2	Abbeville
4) Southdown Sugars	Terrebonne, Lafourche	3	Houma
5) Industrial Park	Terrebonne	3	Houma
6) Caire & Graugnard	St. John The Baptist	4	Edgard
7) Borden, Inc.	Calcasieu	5	Westlake/Hecker
8) Coca Cola 7-Up	Jefferson Davis	5	Jennings
9) Supreme Rice Mill	Acadia	6+7 (2 Aquifers)	Crowley
10) L. A. Frey Trappeys Bruce Foods	Lafayette Iberia St. Martin	8	Lafayette

TABLE OF RANKING OF CANDIDATES IN FOOD AND KINDRED PRODUCTS
INDUSTRIES AND RELATED GEOTHERMAL AQUIFER POTENTIALS.

TABLE 3.1

While the properties and characteristics of a projected geopressured geothermal well cannot be predicted with certainty, very close approximations can be forecast from geologic data developed from existing well logs, cumulative sand-bed aquifer thickness maps, temperature gradients and related information which is either available or which can be developed for the aquifer under consideration.

From geo-maps indicating depths to the geopressured zones and cumulative sand thicknesses in South Louisiana and developed composite data from existing areal wells, deductions and projections for probable values of pressure, temperature, methane content, salinity and related properties and characteristics can be projected for a typical well expectancy in a specific geopressured area.

As an example, with reference to Figure 1.4 indicating depths to the geopressured zones in South Louisiana, interpolated values from proximal wells permit the development, within the ranges indicated, of expected characteristics.

The specific location of a well for release of geo. resources for industrial (food and kindred products) utilization must be coincident with the following evaluations:

- 1.) Availability of agricultural land areas or sea harvests, (annual tonnage inputs).
- 2.) Crop productive soils
- 3.) Potable water
- 4.) Economic factors
- 5.) Tax, Regulatory and administrative influences
- 6.) Labor availability
- 7.) Neighboring activities
- 8.) Distance to market centers
- 9.) Current competition and potential market penetrations.
- 10.) Capital requirements
- 11.) Energy costs, conventional vs. Geothermal.
- 12.) Return on investment
- 13.) Energy intensiveness
- 14.) Economic feasibility
- 15.) Project lead-time from initiation to saleable production or output, months.
- 16.) Continuity of the energy demand for in the process(es) considered. (Geothermal Georesource is available on a continuous release basis).
- 17.) Initial temperature input requirements of the process or processes.
- 18.) Opportunities for thermal cascading of the hot water through a series of processes for maximum utilization of the thermal resource as hot water.
- 19.) Potentials for thermal boosting of the hot water (via fuel firing) to meet process input temperature requirements.

Energy surveys from South Louisiana industrial (food processing) operations indicate ample compatibilities with energy potentials available from areal geo-resources. See Attached Table 3.1 for a listing of eligible candidate industries (food processing and related).

When applied to practical and feasible applications, the initial temperatures required by the food processes reviewed can be met by geothermal hot water temperatures in the order of 275°F. Employment of counterflow heat exchangers to deliver btu's to a secondary stream of fresh or potable water (assuming a 10°F approach or ΔT) should yield process water temperatures of approximately 265°F. See Figure 3.1.

The aforementioned approach provides an effective means of separating foods from the highly saline geothermal water in contact preparation processes, thereby preventing undesirable tastes, and discoloration which often accompanies the presence of high dissolved salts and mineral content in the waters used for contact heating, of fruits and vegetables in preparation.

Considering the volumes of steam used in processing operations, both in processing of foods and in plant and equipment clean-up, provision should be made for converting some of the geothermal (saline) water to steam by permitting flashing of the hot water to steam for clean-up, or when required by the process in any existing plant equipment to heat steam kettles, retorts and related industrial processing devices.

One of the prime requirements in the food processing industry is an ample supply of potable water.

The inherent salinity to be expected from the production of geo-resources in South Louisiana removes from consideration the direct application of geothermal water to satisfy the potable water requirement by means of available techniques in membrane (osmosis) type filtration (desalination) equipment. The principal demands of food processing are for potable water heated to temperatures ranging from 160°F for blanching of fruits, vegetables and for space heating, to 265°F water for retort cooking.

This range of temperatures is within the potential of specific geopressured geo-thermal aquifers available for tapping in South Louisiana when thermally boosted in hot water boilers.

If, in the case of a given geo-well completion, the temperature expectancy was deficient by a given number of degrees, this deficiency could be compensated by boosting to the temperature required in boilers using methane from the geo-resource, or by firing with conventional fossil fuels, or a combination of both, fossil fuels and methane. Refer to Figure 3.2.

**THERMAL BOOSTING OF GEO-THERMAL
WATER VIA METHANE BOILER TO ADAPT
TO INDUSTRIAL PROCESS TEMPERATURE
REQUIREMENT**

The Louisiana Industries cataloged in Table 2.4 with few exceptions, are eligible candidates in some measure for utilization of geo-energy either as hot water, methane or steam or combinations thereof. See Figure 3.3.

To subdivide the total geo-resource, consisting of hydro-pressure, methane fuel, and hot water into its constituents requires the application of existing technologies drawn from hydro-turbine manufacturers, liquid/gas separators characteristic of the petroleum industry, and heat exchangers common to thousands of industrial processes.

As presented in Figure 3.4, the geo-resource upon emergence from the GPGT well through a control orifice and pressure regulating valve can be firstly separated into liquid and gaseous components either (1). Upon introduction to a hydro-turbine to absorb the hydro pressured energy for conversion to shaft horsepower for mechanical drives or, (2). Upon introduction to a liquid/gas separator vessel for separation and capture of methane, and for retention of the thermal energy in the geothermal water.

From alternate (2), a portion of the geo-thermal water may be flashed to provide steam to processes having steam demands. Also, the remaining hot saline water at considerable temperature potential but, at reduced pressure can be delivered to thermal processes within the range of the prevailing water temperature,

GEO - RESOURCE

ENERGY POTENTIALS FROM GEO - RESOURCE

FIG. 3.3

**UTILIZATION OF ENERGIES FROM
GEOTHERMAL RESOURCES,
THERMAL, METHANE, MECHANICAL
SOUTH LOUISIANA**

either in closed systems, or through the medium of heat exchangers.

In those processes wherein a temperature in excess of that of the geothermal water is required, some of the geo resource (methane) could be used to boost the temperature of fresh water in a boiler for circulation through the secondary loop of a heat exchanger system. This is in the interest of minimizing scaling, calciting, hydriting and corrosion which would otherwise attend heating of the highly saline geo-water.

TASK #4 - RELOCATION OF INDUSTRY TO GEOTHERMAL RESOURCE

With due consideration of the economics of relocation of industry (in terms of currently productive industrial operations) to distant geothermal well sites, we have not been able to elicit any positive indications from those plant managements visited in the course of this study.

While each management was very interested in the potential availability of geo-resources for his operation, each was reluctant to make commitment as to any probable economic involvement, with the exception of Campbell Soup Company.

While representatives of Campbell Soup Company were not able to commit the organization, an interest was expressed for an opportunity to assess and evaluate the possible economic advantages which could result from a plant designed site-specifically for utilization of geo-resources.

This interest would be in a possible new plant projection to operate in close proximity (minimum transmission distance) to a planned geo-thermal well site, and is distinctly apart from considerations of "uprooting an industry or plant operation to a distant geothermal opportunity."

The Campbell Soup Company, prominent in agricultural and food production technology as well as food processing technology (canning, freezing, drying) with specialized skills in research, engineering and marketing, is in possession of the basic

hardware information with adequate supporting technologies for utilization of the geo-resource, subject to analysis and evaluation in accordance with accepted in-house standards and criteria.

In order to quantify expectancies from a typical geo-thermal well from available geological data, the following moderated evaluations can be assumed for a unit or model well.

MODEL WELL, PROFILE

Production: 30,000 to 50,000 bbls/day

Well Head Pressure: 1000 to 4000 psi

Water Temperature: 220°F to 240°F

Salinity: 30,000 to 70,000 mg/l

Methane Content: 26 to 30 ft³/bbl.

The resource constituents can be separated and utilized in food or other industries in their basic forms, hydro-energy, methane fuel, and hot water and/or steam by means of existing technologies.

In determinations of requirements for separating methane, and subsequently scrubbing and sweetening prior to transmission, these technologies are common to the petroleum and gas transmission industries. The hardware for these processes is obtainable from respective manufacturers on a specification and purchase order basis with reasonable lead times.

Extraction of mechanical (kinetic) energy as hydropressure energy from the high pressure geo-waters can be accomplished by

employment of one or more hydro-turbines which would produce shaft horsepower for mechanical drives such as fans, blowers, mills, pumps, compressors, generators, and related machinery.

Manufacturers are currently in position to accept specifications to quote upon, design and build hydro-turbines for conversion of pressurized water into mechanical shaft horse power. This same device, the hydro-turbine may also serve as the separator or the geo-resource into its constituents, hot water (tail water), and methane gas while producing mechanical energy from the Kinetic potentials of the high (geo) pressured well water.

The heat or thermal energy in the geothermal waters can be readily utilized in the low and moderate temperature heating demands of the food and kindred industries prominent in Southern Louisiana.

In process industries wherein food products are heated or prepared in jacketed vessels (no contact with product) substitution of corrosion resistant (resistant to hot saline water) heating vessels and retorts with larger supply and return lines for circulation of hot water would permit substitution (at given temperature levels) of geothermal water for presently employed low pressure steam heating.

In those process instances, where direct contact preparations and aqueous mixtures, such as, cooking of soups and gravies, blanching of fruits, vegetables, seafood (stearns), chicken

deboning, or where hot-water sterilization is employed, the contact heating water must be free of salts and chemicals which would deteriorate the taste, color or other presentation for saleability of the food product.

Food preparation methods in use often require, and quite plausibly, that the water in contact with the product be fresh, potable water free of chemicals deleterious to taste, color, appearance or marketability of the product.

This requirement negates any considerations of contact of the food product with hot saline waters containing objectionable salts or chemicals. This problem can be overcome, of course, by first transferring the heat from the hot saline geo-resource water to potable or fresh water in relatively conventional heat exchangers. The fresh, potable water at elevated temperatures would then be used in those food processes requiring contact of the product or cannisters with the hot water employed in aqueous mixtures, contact processing or in sterilization thereof.

Heat transfer and heat exchanger technology, including considerations of pressure, temperature, and corrosion resistance with resultant hardware are available from existing manufacturers.

TASK #5 - TRANSMISSION OF RESOURCE TO INDUSTRY

In considerations of transmission of geo-resources to industry:

- 1.) Methane, demisted, scrubbed and/or sweetened, raised or lowered in pressure from its initial pressure values can be readily piped from well site to industry by everyday methods common to the gas industry.
- 2.) Considerations of piping (transmission of the geothermal waters in large volumes and at minimum loss of initial energy content (temperature) for considerable distances) would require:
 - a.) Pressure containment
 - b.) Insulation
 - c.) Protection from elements and damage
 - d.) Rights-of-way
 - e.) Maintenance
 - f.) Relatively high cost per foot of installation

Each of the foregoing considerations is cost-aggravated linearly per each foot of transmission distance. It follows then that the economics of a geothermal utilization would dictate that the transmission distance from the geothermal well-head to the geothermal consuming process be held to an absolute and practical minimum. While no new technologies are demanded by the transmission requirements for hot water, each of the before listed factors contribute to the cost of transmission of the hot water resource.

With reference to:

- 1.) Pressure containment: by reducing the pressure of the geo-resource at the well site, the design strength requirements of the pipe, valves and fittings in the succeeding portion of the line carrying the resource can be reduced with attendant control of capital for transmission of the resource.
- 2.) Insulation: Existing technologies can be applied to the requirement for insulating pipe or pipe lines which would deliver geothermal waters from the well site to points of utilization. Again, costs for insulation are nearly linear with the transmission distance in feet. This cost also can be controlled or minimized by locating the production thermal process in as close proximity to the well site as is practicable.

Each of the remaining cost contributors related to transmission of the hot water from the well approaches a minimum as well-site to plant transmission distance is held likewise at a minimum.

In considerations of a sub-surface pipe-line, the cost of insulating, water proofing, trenching, bedding, testing, and back-filling the excavation for a geothermal transmission line can vary widely with the flow rate in gpm, and distance to be transmitted. Allowable pressure drop, pumping costs, permissible thermal loss, type of terrain, depth of burial, frequency of expansion joints, height of water table (depth to ground water)

and related inputs contribute to cost considerations and are extended to include:

- 1.) Pipe materials selection,
 - a.) Inherent strength
 - b.) Burst value
 - c.) Crush resistance
 - d.) Bending strength
- 2.) Corrosion Resistance
- 3.) Temperature Rating
- 4.) Service Life
- 5.) Seals
 - a.) Materials selection
 - b.) Temperature rating
 - c.) Service Life

As previously presented in this report, the high-pressure consideration of the geo-resource suggests reduction of initial pressures to lesser levels at the well site thereby permitting economic installation of transmission facilities.

Upon evaluating the large volumes of hot geo-thermal water to be handled and the existing technology for separating methane therefrom economic evaluations dictate on-site extraction of methane at the well with simultaneous reduction of 90-95% of the initial pressure.

This projection provides for the design of medium to low pressure, low cost (conventional) gas transmission piping to carry methane to its point of sale for consumption as fuel.

Similarly, the pressure reduction effected within the hot geothermal water also permits design and utilization of low pressure, and relatively conventional, insulated piping systems for transmission of the resource.

Since the investment for piping hot water from a geo-well to a point or to points of industrial consumption in considered areas of interest in Southern Louisiana, will be nearly linear with the piping distance in feet, it becomes obvious that investment or expenditure for piping the hot water can be minimized by controlling the piping distance between the geo-well and points of utilization. This dictates locating the geothermal industry candidate in good proximity to the well site; or selecting a well site within economic range (distance) to an existing candidate for utilization of the resource. There is the further criteria in this latter instance that aquifer potentials also be coincident in the area of selection of the candidate industry.

Since cross country distances translate in miles, we have selected that interval (one mile, 5280 feet) as a model for costing transmission of hot water as a geo-resource.

Ref: 1 mi. = 1.6 Km

1 Km = 0.62 mi.

From our model well characteristics and capacities (profile), and selecting from existing materials and established construction methods and piping systems, the following input and cost data can be developed:

Hot Water Production: 50,000 bbls/24 hr. day or
3000 gals/min

Initial delivery pressure
to geothermal piping or
transmission line (after
pressure reduction at
well site.) 55 psi ga.

For first approximation, we have selected a 16" nominal diameter steel pipe for evaluating pressure drop.

At a flow capacity of 3000 gpm, a 16" dia. piping system at a length or distance of one mile would undergo a pressure loss of:

Source: Cameron Hydraulic Tables

Loss = 4.92 ft of head per 1000 ft or; per mile:

$$4.92 \times \frac{5280}{1000} \times 0.433 = 11.24 \text{ lbs./sq. in.}$$

(This loss calculation assumes a Kinematic viscosity of 1.1 centistokes for the geo-thermal water.)

Steel pipe of 16" nominal size in standard wall thickness markets for approximately \$20.00 per foot (1977 dollars).

Preinsulation and waterproofing or jacketing of the line for an economically acceptable heat loss when buried to a nominal invert depth of 4.5 ft. including:

pre-insulated pipe

pipe ballasting

excavation

bedding and testing
back filling
easement and repairs
expansion provisions
couplings and seals
cost of easements and crossings

totals \$181.00 per foot (1977 dollars) including contractor allowance, or approximately one million dollars per mile. Substitution of transite (asbestos - cement) pipe would reduce this cost nominally, that is, by a reduction of \$7.00 per foot in material costs or \$37,000.00 per mile.

It is estimated that an overland, (above ground) piping system or those portions of the total system which were adaptable to overland installation would cost approximately 70% of the underground system. This considers periodic supports, elevated crossings, insulation and sheathing.

These capital estimates do not include special controls, meters, or valves, engineering allowances or contingencies.

The foregoing cost in a typical, selected instance indicates the order of magnitude of costs for transmission of the geo-thermal waters from well site to points of consumption. This is a factor supporting minimization of piping distances involving transmission of this resource. Attendant loss of energy per foot or per mile of pipe offers further support to minimizing transmission distance between the geothermal well and the candidate industry.

APPENDIX A

CATALOGUE - FOOD & KINDRED PRODUCTS INDUSTRIES

(MAJOR GROUP 20)

CATALOG - FOOD AND KINDRED PRODUCTS INDUSTRIES (MAJOR GROUP 20)

<u>NAME OF ESTABLISHMENT BY S.I.C. NO.</u>	<u>TOWN/ CITY</u>	<u>PARISH</u>	<u>PRINCIPAL PRODUCTS</u>	<u>KEY IDENTIFIER*</u>
2011. MEAT PACKING PLANTS				
Barthel Packing Co., Inc.	Rayville	Richland	Steaks, Sausage	L/C
Bryan Sausage, Inc.	Downsville	Union	Sausage, Prepared Salads	R/C
L.A. Frey and Sons, Inc.	Lafayette	Lafayette	Fresh Pork, Veal, Beef, Bacon, Ham, etc.	I/D
L.A. Frey and Sons, Inc.	New Orleans	Orleans	Sausage, Wieners, Sliced Cold Cuts, etc.	R/E
John Micelle Meat Packer	Lake Charles	Calcasieu	Sausage, Bologna, Frankfurters, Chili, etc.	L/D
Millwood Packing Co., Inc.	Scotlandville	E. Baton Rouge	Dress Beef & Veal	L/B
Monroe Packing Co.	W. Monroe	Ouachita	Ham, Bacon, Sausage, Wieners, Salami, etc.	L/C
Rapides Packing Co., Inc.	Alexandria	Rapides	Dressed Beef, Pork, Sausage, Wieners, etc.	R/D
Shreveport Packing Co., Inc.	Shreveport	Caddo	Beef, Veal, Sausage, Smoked Meats	R/E
Stevens Meat Co., Inc.	Gonzales	Ascension	Dressed Beef	R/E
Swift Fresh Meats Co.	Shreveport	Caddo	Meat Processing	L/D
Texada-Bailey Co., Inc.	Alexandria	Rapides	Fresh & Smoked Meats, Sausage	R/D
Thompson Packing Co., Inc.	Thibodaux	Lafourche	Sausages	I/D
2013. PREPARED MEAT PRODUCTS				
Arcadia Foods, Inc.	Metairie	Jefferson	Meats, Frozen Sausage, Beef, Hamburger, etc.	R/C
Autin Packing Co., Inc.	Houma	Terrebonne	Sausage, Ham, Bacon, Bologna, Vienna Sausage	R/C
Bar M Ranch Foods, Inc.	Opelousas	St. Landry	Sausage, Tasso, Barbeque Beef in Sauce, etc.	L/B
Nat. Buring Packing Co. of La.	Harahan	Jefferson	Sausage, Smoked Meats, Cold Cuts, etc.	I/E
Caldwell-West Packing Co., Inc.	West Monroe	Ouachita	Sausage, Salami, Hams & Souse	L/C
Chisesi Bros. Meat Packing Co.	New Orleans	Orleans	Sausage, Wieners, Bologna, Salami, etc.	L/D

* SEE FOOTNOTE ON PAGE

CATALOG - FOOD AND KINDRED PRODUCTS (MAJOR GROUP 20)

<u>NAME OF ESTABLISHMENT BY S.I.C. NO.</u>	<u>TOWN/ CITY</u>	<u>PARISH</u>	<u>PRINCIPAL PRODUCTS</u>	<u>KEY IDENTIFIER*</u>
Cudahy Co.	Alexandria	Rapides	Hams & Picnics	R/C
Wilson Fontenot Packing Co.	Ville Platte	Evangeline	Sausage, Tasso, Bacon, Boudin, etc.	L/B
Four Star Meat Co. of La.	New Orleans	Orleans	Cooked Hams	L/B
The Great Atlantic & Pacific Tea Co., Inc.	Harahan	Jefferson	Processed Meals, Bacon, Corned Beef	R/E
Joan of Arc	New Belledeau	Avoyelles	Canned Meat Products & Canned Yams	N/H
Manda Packing Co., Inc.	Zachary	East Baton Rouge	Sausage, Salami, Hogshead Cheese	R/B
Martin's Sausage Co.	Prairieville	Ascension	Sausage	R/B
Mountaire Kitchens, Inc.	Springhill	Webster	Chicken, Bologna, Wieners, Corn Dogs	N/A
Old Tyme Sausage	Ponchatoula	Tangipahoa	Smoked Sausage	R/B
Old Plantation Sausage	Ponchatoula	Tangipahoa	Sausage, Hogshead Cheese, Processed Meats	R/B
Savoie's Sausage Kitchen	Opelousas	St. Landry	Sausage, Hogshead Cheese, Boudin, etc.	L/C
Schott and Co., Inc.	New Orleans	Orleans	Sausage, Hams, Bacon, Wieners, Smoked Meats	R/E
2016. <u>POULTRY DRESSING</u>				
Chisesi Brothers Meat Packing Co.	New Orleans	Orleans	Sausage, Wieners, Bologna, Salami, Hams, etc.	L/D
ConAgra, Inc., Poultry Div.	Arcadia	Bienville	Fresh Dressed Poultry	R/B
J-M Poultry Packing Co, Inc.	Alexandria	Rapides	Fresh Ice Packed Poultry	R/M
Molbert Bros. Poultry & Egg Co., Inc.	Lake Charles	Calcasieu	Dressed Poultry	L/E
Rite Care Poultry Co.	Logansport	De Soto	Fresh & Frozen Dressed Poultry	N/E

* SEE FOOTNOTE ON PAGE

CATALOG - FOOD AND KINDRED PRODUCTS (MAJOR GROUP 20)

<u>NAME OF ESTABLISHMENT BY S.I.C. NO.</u>	<u>TOWN/ CITY</u>	<u>PARISH</u>	<u>PRINCIPAL PRODUCTS</u>	<u>KEY IDENTIFIER*</u>
Veri-Fresh Poultry, Inc.	Hammond	Tangipahoa	Fresh Ice Packed Hens & Fryers, etc.	L/E
2021. <u>CREAMERY BUTTER</u>				
Clover Leaf Dairy Products, Inc.	Monroe	Ouachita	Butter, Ice Cream, Milk, & Milk Products	L/D
Dairymen, Inc.	Lafayette	Lafayette	Butter, Cheese	R/C
Dairymen, Inc., Gulf Div.	Franklinton	Washington	Butter, Cheeses, Non-Fat Dry Milk, etc.	R/E
2022. <u>CHEESE, NATURAL AND PROCESSED</u>				
Borden Inc., Starflake Foods Co.	Franklinton	Washington	Cheese, Sour Cream, Buttermilk, etc.	R/D
Brown's Velvet of Baton Rouge, Inc.	Baton Rouge	East Baton Rouge	Cheese, Milk, & Milk Products	L/D
Dairymen, Inc.	Lafayette	Lafayette	Butter, & Cheese	R/C
Dairymen, Inc., Gulf Div.	Franklinton	Washington	Butter, Cheeses, Non-Fat Dry Milk, etc.	R/E
Prats Dairy, Inc.	Abita Springs	St. Tammany	Cheese, Ice Milk Mix, Milk & Dairy Products	L/B
2023. <u>CONDENSED AND EVAPORATED MILK</u>				
Dairymen, Inc., Gulf Div.	Franklinton	Washington	Butter, Cheese, Non-Fat Dry Milk, etc.	R/E
Midwest Farms Div., The Southland Corp.	Shreveport	Caddo	Malt Mix, Milk & Milk Products	L/E

* SEE FOOTNOTE ON PAGE

CATALOG - FOOD AND KINDRED PRODUCTS (MAJOR GROUP 20)

<u>NAME OF ESTABLISHMENT BY S.I.C. NO.</u>	<u>TOWN/ CITY</u>	<u>PARISH</u>	<u>PRINCIPAL PRODUCTS</u>	<u>KEY IDENTIFIER*</u>
2024.				
<u>ICE CREAM AND FROZEN DESSERTS</u>				
Borden, Inc.	Lake Charles	Calcasieu	Ice Cream, Milk & Related Products	L/E
Borden, Inc.	Metairie	Jefferson	Ice Cream, Fluid Milk	L/E
Borden, Inc., Dairy & Services Div.	Baton Rouge	East Baton Rouge	Ice Cream, & Other Frozen Products, etc.	L/E
Brown's Velvet Dairy Products, Inc.	New Orleans	Orleans	Ice Cream, Milk & Dairy Products	R/F
Clover Leaf Dairy Products, Inc.	Monroe	Ouachita	Buttermilk, Ice Cream, Milk & Milk Products	L/D
The D & H Ice Cream Co., Inc.	Napoleonville	Assumption	Ice Cream	L/B
Dixie Maid Ice Cream Co., Inc.	DeRidder	Beauregard	Ice Cream & Ice Cream Novelties	L/C
Foremost Foods Co.	Shreveport	Caddo	Ice Cream & Ice Cream Products, Milk, etc.	L/E
Guth Dairy, Inc.	Lake Charles	Calcasieu	Ice Cream, Milk & Dairy Products, etc.	L/D
Hebert Creamery, Inc.	Breaux Bridge	St. Martin	Ice Cream, Fluid Milk	L/C
Kokinos Purity Ice Cream Co., Inc.	Monroe	Ouachita	Ice Cream	R/C
Lynn's Dairy Products, Inc.	Shreveport	Caddo	Ice Cream, Fluid Milk & Milk Products	L/C
Melba Ice Cream, Inc.	New Orleans	Orleans	Ice Cream, Ice Cream Novelties	R/B
Midwest Farms Div., The Southland Corp.	Ruston	Lincoln	Ice Cream	R/C
Pelican Creamery Co.	New Iberia	Iberia	Ice Cream Products, Fluid Milk, etc.	L/A
Prats Dairy, Inc.	Abita Springs	St. Tammany	Cheese, Ice Milk Mix, Milk, etc.	L/B
Red Bird Ice Cream Co., Inc.	Bogalusa	Washington	Ice Cream, Ice Cream Novelties, Mix	L/B

* SEE FOOTNOTE ON PAGE

CATALOG - FOOD AND KINDRED PRODUCTS (MAJOR GROUP 20)

<u>NAME OF ESTABLISHMENT BY S.I.C. NO.</u>	<u>TOWN/ CITY</u>	<u>PARISH</u>	<u>PRINCIPAL PRODUCTS</u>	<u>KEY IDENTIFIER*</u>
Russell Ice Cream Co., Inc.	New Orleans	Orleans	Ice Cream & Frozen Novelties	R/D
Sealtest Foods, Div. of Kraftco Corp.	New Orleans	Orleans	Ice Cream, Fluid Milk, Cream, Cottage Cheese, Yogurt, etc.	R/E
Walker-Roemer Daries, Inc.	Alexandria	Rapides	Ice Cream, Fluid Milk, Cottage Cheese, etc.	L/E
Walker-Roemer Daries, Inc.	Metairie	Jefferson	Ice Cream, Milk, Cream, Cream Cheese, etc.	L/E

2026.

FLUID MILK AND RELATED PRODUCTS

A & P Tea Co., National Dairy Div.	Kentwood	Tandipahoa	Milk & Fluid Milk Products	R/C
Acadia Dairy, Inc.	Thibodaux	Lafourche	Raw Sugar, Black Strap Molasses	L/D
Barbe's Dairy, Inc.	Westwego	Jefferson	Milk, Cream, Cream Cheese, etc.	L/C
Borden, Inc., Dairy & Services Div.	Baton Rouge	East Baton Rouge	Ice Cream & Other Frozen Products, Fluid Milk & Milk Products	L/E
Borden, Inc.	Lafayette	Lafayette	Fluid Milk & Milk Products	L/E
Borden, Inc.	Lake Charles	Calcasieu	Ice Cream, Fluid Milk & Related Products	L/E
Borden, Inc.	Metairie	Jefferson	Ice Cream, Fluid Milk	L/E
Borden, Inc.	Monroe	Ouachita	Milk, Cream, Milk Products	L/C
Borden, Inc., Starflake Foods Co.	Franklinton	Washington	Creole Cheese, Dips, Sour Cream, etc.	R/D
Brown's Velvet of Baton Rouge	Baton Rouge	East Baton Rouge	Cheddar Cheese, Fluid Milk, etc.	L/D
Brown's Velvet Dairy Products, Inc.	New Orleans	Orleans	Ice Cream, Fluid Milk & Dairy Products	R/F
Clover Farms Creamery	Opelousas	St. Landry	Ice Cream and Other Frozen Desserts, etc.	R/C

* SEE FOOTNOTE ON PAGE

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Clover Leaf Dairy Products, Inc.	Monroe	Ouachita	Butter, Ice Cream, Milk & Milk Products	L/D
Dairymen, Inc., Gulf Div.	Franklinton	Washington	Cheese, Non-Fat Dry Milk, etc.	R/E
Flav-O-Rich, Inc.	Monroe	Ouachita	Fluid Milk & Milk Products	L/E
Foremost Foods Co.	Shreveport	Caddo	Ice Cream & Ice Cream Products, etc.	L/E
Gold Seal Creamery, Inc.	New Orleans	Orleans	Fluid Milk	L/D
Guth Dairy, Inc.	Lake Charles	Calcasieu	Ice Cream, Milk & Dairy Products, etc.	L/D
Hebert Creamery, Inc.	Breaux Bridge	St. Martin	Ice Cream, Fluid Milk	L/C
Kleinpeter Farms Dairy, Inc.	Baton Rouge	East Baton Rouge	Fluid Milk & Milk Products	L/D
Lynn's Dairy Products, Inc.	Shreveport	Caddo	Ice Cream, Fluid Milk & Milk Products	L/C
Midwest Farms Div., The				
Southland Corp.	Shreveport	Caddo	Malt Mix, Fluid Milk & Milk Products	L/E
The Milk House, Div. Flav- O-Rich	Winnsboro	Franklin	Dairy Products	L/C
Norwood Dairy, Inc.	Marrero	Jefferson	Milk	L/B
Pelican Creamery Co.	New Iberia	Iberia	Ice Cream Products, Fluid Milk, etc.	L/E
Prats Dairy, Inc.	Abita Springs	St. Tammany	Cheese, Ice Milk Mix, Milk, etc.	L/B
Sanitary Dairy Products, Inc.	Minden	Webster	Fluid Milk & Milk Products, etc.	L/D
Sealtest Foods, Div. of Kraftco Corp.	New Orleans	Orleans	Ice Cream, Fluid Milk, Cream, etc.	R/E
Superbrand Dairy Products, Inc.	Harahan	Jefferson	Milk & Milk Products	R/B
Vermilion Creamery	Abbeville	Vermilion	Fluid Milk & Dairy Products	L/D
Walker-Roemer Daries, Inc.	Alexandria	Rapides	Ice Cream, Fluid Milk, Eggnog, etc.	L/E
Walker-Roemer Daries, Inc.	Metairie	Jefferson	Ice Cream, Milk, Cream, etc.	L/E
Ziegler-Trahan Dairy Products	Crowley	Acadia	Fluid Milk	L/C

* SEE FOOTNOTE ON PAGE

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2032. <u>CANNED SPECIALTIES</u>				
Fiesta Foods, Inc. Zatarain's, Inc.	New Orleans Gretna	Orleans Jefferson	Tamales, Chilli, Beef Gravy Soups, Creole Mustard, Sauces, Spices, etc.	R/B I/C
2033. <u>CANNED FRUITS, VEGETABLES, PRE- SERVES, JAMS AND JELLIES</u>				
Acadia Packing Co. Barbe's Dairy, Inc. Baumer Foods, Inc. Bruce Foods Corp. Cajun Chef Products, Inc.	Church Point Westwego New Orleans Cade St. Martinville	Acadia Jefferson Orleans St. Martin St. Martin	Canned Sweet Potatoes, Okra Milk, Cream, Cream Cheese, etc. Canned Yams, Okra, Preserves, jams, etc. Canned Yams, Okra, Squash, Sauces, etc. Fig Preserves, Pickles, Sauces, etc.	R/D L/C I/E I/F R/D
Charles Dennery Co., Div. of DCA Food Industries, Inc. Evangeline Food & Pepper Co. Gonzales Products Co., Inc. Hayward Food Products Joan of Arc Co.	Jefferson St. Martinville Gonzales Labadieville New Belledeau	Jefferson St. Martin Ascension Ascension Avoyelles	Jams, Jellies, Fruits, Flavors, etc. Canned Yams, Okra, Hot Sauces, etc. Canners of Dried Beans & Figs, etc. Canned Syrup & Molasses, Preserves Canned Meat Products, Canned Yams	I/E N/F R/C R/B N/H
Joan of Arc Co. King Pharr Canning Operations, Inc. Lormand Canning Factory B.F. Trappey's Sons, Inc. Valley Canning Co.	St. Francisville Oak Grove Milton Lafayette Ville Platte	West Feliciana West Carroll Lafayette Lafayette Evangeline	Canned Yams, Irish Potatoe Salad, etc. Canned Yams Canned Sweet Potatoes Canned Sweet Potatoes, Okra, Beans, Peas Canned Sweet Potatoes	N/J N/E N/E N/E R/E

* SEE FOOTNOTE ON PAGE

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2034. DRIED FRUITS & VEGETABLES				
Frank Foods, Inc. Joan of Arc Co.	New Iberia St. Francisville	Iberia West Feliciana	Dehydrated Parsley Flakes, etc. Canned Yams, Irish Potatoe Salad, etc.	I/C N/J
2035. PICKLED FRUITS AND VEGETABLES; SALAD DRESSINGS				
American Inn Baumer Foods, Inc. Brown-Miller Co. Bruce Foods Corp. Cajun Chef Products, Inc.	Ville Platte New Orleans Harahan Cade St. Martinville	Evangeline Orleans Jefferson St. Martin St. Martin	Barbeque Sauce Canned Yams, Okra, Preserves, Jams, etc. Pickles, Relishes, Mustard Canned Yams, Okra, Squash, Sauces, etc. Fig Preserves, Pickles, Gumbo File', etc.	R/A I/E R/D I/F R/D
Allen Estilette Pepper Co. Evangeline Food and Pepper Co. Wilson Fontenot Packing Co., Inc. Frank Foods, Inc. The I-Ron Pot Roux Co., Inc.	New Iberia St. Martinville Ville Platte New Iberia Ville Platte	Iberia St. Martin Evangeline Iberia Evangeline	Pickled Peppers Canned Yams, Okra, Hot Sauce, etc. Sausage, Tasso, Bacon, Boudin, etc. Dehydrated Parsley Flakes, Hot Pepper Sauce Barbeque Sauce, Roux	I/C N/F L/B I/C R/A
Luzianne Coffee Co. McIlhenny Co. Savoie's Sausage Kitchen Spivey Bros. Sauce Co., Inc. B.F. Trappey's Sons, Inc.	New Orleans Avery Island Opelousas Shreveport New Iberia	Orleans Iberia St. Landry Caddo Iberia	Mayonnaise, Fruit Drink Mix, Etc. Pepper Sauce Sausage, Boudin, Tasso, Roux, etc. Sauces, Barbeque Spice Mix Sauces, Pickled Peppers, Spices	R/E I/E L/C R/B R/E

* SEE FOOTNOTE ON PAGE

CATALOG - FOOD AND KINDRED PRODUCTS (MAJOR GROUP 20)

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Zatarain's, Inc.	Gretna	Jefferson	Soups, Sauces, Gumbo File', Spices	I/C
2037. <u>FROZEN FRUITS, FRUIT JUICES AND VEGETABLES</u>				
Cajun Country Foods, Inc.	Breaux Bridge	St. Martin	Okra, Frozen French Market Donuts, etc.	R/B
2041. <u>FLOUR AND OTHER GRAIN MILL PRODUCTS</u>				
Seaboard Allied Milling Corp. Shreveport Grain & Elevator Co.	Port Allen Shreveport	West Baton Rouge Caddo	Flour Edible Corn Meal, Animal & Poultry Feed	I/C R/C
2044. <u>RICE MILLING</u>				
Broussard Rice Mill, Inc.	Mermentau	Acadia	Rice & Rice By-Products	I/C
Conrad Rice Milling & Planting Co.	New Iberia	Iberia	Milled Rice, Brewer's Rice, Bran, etc.	N/A
Dore Rice Mill, Inc.	Crowley	Acadia	Milled Rice, Bran, Rice Mill Feed	I/D
Eagle Rice & Feed Mills, Inc.	Crowley	Acadia	Milled Rice	N/C
Edmundson Rice Mill	Rayne	Acadia	Milled Rice, Rice Bran, Rice Mill Feed	I/D
Estherwood Rice Sales Corp.	Estherwood	Acadia	Rice & By-Products	I/C
Farmers Rice Milling Co., Inc.	Lake Charles	Calcasieu	Milled Rice, Brewers Rice, Rice Bran, etc.	I/C
Kaplan Rice Mill, Inc.	Kaplan	Vermillion	Milled Rice, Rice By-Products	I/E
Liberty Rice Mill, Inc.	Kaplan	Vermillion	Milled Rice, Rice Bran	I/E
MFC Rice Mill	Crowley	Acadia	Milled Rice, Rice Bran, Hulls, Mill Feed	I/D

* SEE FOOTNOTE ON PAGE

CATALOG - FOOD AND KINDRED PRODUCTS (MAJOR GROUP 20)

<u>NAME OF ESTABLISHMENT BY S.I.C. NO.</u>	<u>TOWN/ CITY</u>	<u>PARISH</u>	<u>PRINCIPAL PRODUCTS</u>	<u>KEY IDENTIFIER*</u>
Mamou Rice Mill, Inc.	Mamou	Evangeline	Milled Rice	I/B
Republic Rice Mill, Inc.	Gueydan	Vermillion	Milled Rice, Rice By-Products	I/C
Rice City Milling Co., Inc.	Crowley	Acadia	Milled Rice, Rice Bran, Mill Feed	I/B
River Rice Sales, Inc.	Mermentau	Acadia	Rice & Rice By-Products	I/C
Riviana Foods, Inc.	Abbeville	Vermillion	Milled Rice, Rice Bran, Rice Oil	I/E
Supreme Rice Mill, Inc.	Crowley	Acadia	Milled Rice, Rice By-Products	I/D

2046.
WET CORN MILLING

Lou Ana Foods, Inc.	Opelousas	St. Landry	Refined Corn, Cottonseed, Soybean, etc. Oil	N/E
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2047.
DOG, CAT AND OTHER PET FOOD

Kalmbach-Burckett Co., Inc.	Shreveport	Caddo	Bird Feed, Dog Food, Dairy, Poultry Feed	R/D
Lipton Pet Foods, Inc.	Golden Meadow	Lafourche	Cat Food	N/C
National Distributors Corp.	Alexandria	Rapides	Dog Bone	I/A
Rex Milling Co., Inc.	New Iberia	Iberia	Dog Food, Poultry, & Livestock Feeds	R/C
Summersgill Enterprises, Inc.	Golden Meadow	Lafourche	Frozen Animal Foods	I/C

2048.
PREPARED FEEDS FOR ANIMALS
AND FOWLS

Allen Brothers of Homer, Inc.	Homer	Claiborne	Feed, Fertilizer	L/B
Amite Milling Co.	Amite	Tangipahoa	Dairy Feeds, Horse Feed	R/C
Burris Mill and Feed, Inc.	Franklinton	Washington	Dairy Feed, Mash & Pellets	L/B
N. Cefalu Co., Inc.	Amite	Tangipahoa	Feed, Feed Grinding & Mixing	L/B

* SEE FOOTNOTE ON PAGE

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<u>NAME OF ESTABLISHMENT BY S.I.C. NO.</u>	<u>TOWN/ CITY</u>	<u>PARISH</u>	<u>PRINCIPAL PRODUCTS</u>	<u>KEY IDENTIFIER*</u>
Cotton's Ouachita Bakery, Inc.	Monroe	Ouachita	Bread	R/E
Dufrene Bakery, Inc.	Golden Meadow	Lafourche	Bread & Pastries	L/C
Entringer Bakeries, Inc.	New Orleans	Orleans	Pastries, Cakes, Doughnuts	L/E
Freitag's Bakery & Confectionery	New Orleans	Orleans	Pies, Cakes, Rolls, Doughnuts	L/B
Joe Gambino's Bakers & Caterers, Inc.	New Orleans	Orleans	Bread, Cakes & Pies	L/C
John Gendusa Bakery, Inc.	New Orleans	Orleans	Po-Boy Sandwich Bread	L/C
Holsum Bakeries, Inc.	New Orleans	Orleans	Bread, Buns, Pastries	L/F
Simon Hubig Co.	New Orleans	Orleans	Pies, Baked - Fried	R/D
Huval Baking Co., Inc.	Lafayette	Lafayette	Bread & Buns	R/F
Krispy Kreme Doughnut Co.	Baton Rouge	East Baton Rouge	Doughnuts	L/C
G. H. Leidenheimer Baking Co., Ltd.	New Orleans	Orleans	French Bread, Buns	L/D
LeJeune Bakery, Inc.	Jeanerette	Iberia	Bread, Pies, Cakes	L/C
Bill Long's Bakery & Delicatessen	New Orleans	Orleans	Bread, Rolls, Cakes, Pastries	L/C
Mayeaux Bakery Co.	Marksville	Avoyelles	Fried Pies	L/A
Sanitary Bakery	Lake Charles	Calcasieu	Cakes, Rolls, Doughnuts, Cookies, Pies	L/B
Southern Maid Doughnuts of Shreveport, Inc.	Shreveport	Caddo	Doughnuts	L/B
Specialty Bakers, Inc.	Shreveport	Caddo	Bread & Rolls	L/B
Sunrise Bakery, Inc.	New Orleans	Orleans	Bread, Brown & Serv-Bread, French Bread	N/E
Wolf Baking Co., Inc.	Baton Rouge	East Baton Rouge	Bread, Rolls, Cakes	R/E
Wolf Baking Co., Inc.	Lafayette	Lafayette	Bread, Buns, Rolls, Cakes	R/E
Wolf Baking Co., Inc., Sunbeam Bakery	Shreveport	Caddo	Bread & Rolls	R/E

* SEE FOOTNOTE ON PAGE

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N. Cefalu Co., Inc.	Amite	Tangipahoa	Feed, Feed Grinding & Mixing	L/B
Highland Growers	De Ridder	Beauregard	Custom Feed Mixing, Fertilizer Blending	L/B
Huck Milling Co.	Independence	Tangipahoa	Dairy & Beef Cattle Feed	L/B
J-M Poultry Packing Co.	Many	Sabine	Poultry Feed (Captive)	L/C
Kalmbach-Burckett Co., Inc.	Shreveport	Caddo	Bird Feed, Dog Food, Dairy Poultry Feed	R/D
Lone Star Feed & Fertilizer	Keatchie	De Soto	Animal Feeds	L/B
M.F.C. Services, Arcola Feed Mill	Arcola	Tangipahoa	Poultry, Beef, Dairy & Speciality Feeds	R/B
Pellets, Inc.	Mer Rouge	Morehouse	Dehydrated Pellets, Livestock Feeds, etc.	I/C
Ralston Purina Co.	Shreveport	Caddo	Animal & Poultry Feed	R/D
Red River Cotton Products, Inc.	Alexandria	Rapides	Livestock Feed, Including Pelletized	R/B
Rex Milling Co., Inc.	New Iberia	Iberia	Dog Food, Poultry & Livestock Feeds	R/C
Ruston Oil Mill & Fertilizer Co.	Ruston	Lincoln	Livestock Feed & Fertilizers	L/B
Shreveport Grain & Elevator Co.	Shreveport	Caddo	Edible Corn Meal, Animal & Poultry Feed	R/C
A. E. Stanley Mfg. Co.	Lockport	Lafourche	Dried Molasses Concentrated for Livestock	N/C
West Feed Mills, Inc.	West Monroe	Ouachita	Feeds	L/B

2051.

BREAD AND OTHER BAKERY PRODUCTS

Bunny Bread Co.	New Orleans	Orleans	Bread & Bread Products	L/E
Cajun Country Foods, Inc.	Breaux Bridge	St. Martin	Okra, Frozen Doughnuts, Crayfish, etc.	R/B
Cotton Baking Co., Inc.	Shreveport	Caddo	Bread & Bread Products	L/E
Cotton Bros. Baking Co., Inc.	Alexandria	Rapides	Bread, Cakes	R/F
Cotton's Holsum Bakery, Inc.	Baton Rouge	East Baton Rouge	Bread	R/E

* SEE FOOTNOTE ON PAGE

CATALOG - FOOD AND KINDRED PRODUCTS (MAJOR GROUP 20)

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2052. <u>COOKIES AND CRACKERS</u>				
Turnbull Cone Baking Co. of La.	New Orleans	Orleans	Ice Cream Cones, Melba Toast	N/D
2061. <u>CANE SUGAR, EXCEPT REFINING ONLY</u>				
Alma Plantations, Ltd.	Lakeland	Point Coupee	Raw Sugar, Blackstrap Molasses	L/D
Billeaud Sugar Factory	Broussard	Lafayette	Raw Cane Sugar, Blackstrap Molasses	R/D
Breaux Bridge Sugar Cooperative, Inc.	Breaux Bridge	St. Martin	Sugar; Cane & Raw, Molasses	L/C
William T. Burton Industries, Inc.	White Castle	Iberville	Raw Sugar	L/E
Caire & Graugnard	Edgard	St. John The Baptist	Raw & Plantation Sugar, edible & Blackstrap Molasses	N/C
Cajun Sugar Co-operative, Inc.	New Iberia	Iberia	Raw Sugar & Blackstrap Molasses	N/E
Caldwell Sugars Co-op, Inc.	Thibodaux	Lafourche	Raw Sugar & Blackstrap Molasses	L/D
Cinclare Central Factory	Brusly	West Baton Rouge	Raw Sugar & Blackstrap Molasses	L/E
Colonial Molasses Co. of La., Inc.	Gretna	Jefferson	Syrup and Molasses	N/C
Columbia Sugar Co.	Franklin	St. Mary	Raw Sugar & Blackstrap Molasses	R/D
Cora-Texas Mfg. Co.	White Castle	Iberville	Raw Sugar & Blackstrap Molasses	L/E
Dugas & LeBlanc, Ltd.	Paincourtville	Assumption	Raw Sugar & Blackstrap Molasses	R/E
Evan Hall Sugar Cooperative, Inc.	McCall	Ascension	Raw Sugar & Blackstrap Molasses, Bagasse	R/C
Glenwood Cooperative, Inc.	Napoleonville	Assumption	Raw Sugar & Blackstrap Molasses	N/D
Hayward Food Products	Ladadieville	Assumption	Cane Syrup, Molasses, Preserves	R/B

* SEE FOOTNOTE ON PAGE

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Helvetia Sugar Co-op, Inc.	Convent	St. James	Raw Sugar & Blackstrap Molasses	L/D
Iberia Sugar Cooperative, Inc.	New Iberia	Iberia	Raw Cane Sugar, Blackstrap Molasses	N/E
Lafourche Sugar Co.	Thibodaux	Lafourche	Raw Sugar, Molasses, Bagasse	R/E
Louisa Sugar Co-op, Inc.	Louisa	St. Mary	Raw Cane Sugar & Blackstrap Molasses	L/E
Meeker Sugar Cooperative	Meeker	Rapides	Raw Cane Sugar, Blackstrap Molasses	N/E
M.A. Patout Sons, Ltd.	Patoutville	Iberia	Raw Sugar, Blackstrap Molasses, Syrup	R/E
Poplar Grove Planting & Refining Co., Inc.	Port Allen	West Baton Rouge	Raw Cane Sugar, Blackstrap Molasses	R/E
St. James Sugar Cooperative, Inc.	St. James	St. James	Raw Cane Sugar, Blackstrap Molasses, Bagasse	N/D
St. Martin Sugar Cooperative, Inc.	St. Martinville	St. Martin	Raw Cane Sugar, Blackstrap Molasses	L/D
St. Mary Sugar Cooperative, Inc.	Jeanerette	Iberia	Raw Sugar, Molasses	N/E
Savoie Industries	Belle Rose	Assumption	Raw Cane Sugar & Molasses	N/E
Smithfield Sugar Cooperative, Inc.	Chamberlin	West Baton Rouge	Raw Cane Sugar, Blackstrap Molasses	N/E
South Coast Corp., Oaklawn Factory	Franklin	St. Mary	Raw Sugar	R/E
South Coast Corp., Raceland Factory	Raceland	Lafourche	Raw Sugar, Blackstrap Molasses	L/E
South Coast Corp., Terrebonne Factory	Montegut	Terrebonne	Raw Cane Sugar	L/C
Southdown Sugars, Inc.	Houma	Terrebonne	Raw Sugar, Blackstrap Molasses, etc.	R/E
Southdown Sugars, Inc.	Thibodaux	Lafourche	Sugar, Blackstrap Molasses	N/D
Southdown Sugars, Inc., Armant Factory	Vacherie	St. James	Raw Sugar, Blackstrap Molasses, Bagasse	N/E
The C.S. Steen Syrup Mill, Inc.	Abbeville	Vermilion	Cane Syrup, Lacuite	R/C

* SEE FOOTNOTE ON PAGE

CATALOG - FOOD AND KINDRED PRODUCTS (MAJOR GROUP 20)

<u>NAME OF ESTABLISHMENT BY S.I.C. NO.</u>	<u>TOWN/ CITY</u>	<u>PARISH</u>	<u>PRINCIPAL PRODUCTS</u>	<u>KEY IDENTIFIER*</u>
Sterling Sugars, Inc.	Franklin	St. Mary	Raw Sugar & Blackstrap Molasses	N/C
J. Supple's Sons Planting Co. Ltd., Catherine Refinery	Bayou Goula	Iberville	Raw Sugar & Edible Molasses	N/D
Valentine Sugars, Inc.	Valentine	Lafourche	Sugar & Molasses, Industrial Resins, etc.	N/E
A. Wilbert's Sons Lumber & Shingle Co.	Plaquemine	Iberville	Raw Sugar, Rough Hardwood, Cypress Lumber	N/E

2062.

CANE SUGAR REFINING

Amstar Corp. Chalmette Refinery	Arabi	St. Bernard	Refined Cane Sugar, Liquid Sugar	R/H
Colonia Sugars Co.	Gramercy	St. James	Refined Cane Sugar	N/G
Goudchaux-Henderson Sugar Co., Inc.	Reserve	St. John The Baptist	Refined Granulated Sugar, Syrups, etc.	N/G
South Coast Corp., Georgia Refinery	Mathews	Lafourche	Blackstrap Molasses, Refined Sugar	R/E
Southdown Sugars, Inc.	Houma	Terrebonne	Raw Sugar, Blackstrap Molasses, etc.	R/E
Supreme Sugar Co., Inc.	Supreme	Assumption	Refined Cane Sugar	N/E

2065.

CANDY AND CONFECTIONERY PRODUCTS

Bayou Candy Co., Inc.	New Orleans	Orleans	Hard, Bulk Candies	N/D
Elmer Candy Corp.	Ponchatoula	Tangipahoa	Candy	N/E
Evans Creole Candy Co., Inc.	New Orleans	Orleans	Pecan Candies	L/C
Merlin Candies, Inc.	New Orleans	Orleans	Chocolate Candies	R/A
Howard Stark Co., Inc.	Thibodaux	Lafourche	Candy	I/C

* SEE FOOTNOTE ON PAGE

CATALOG - FOOD AND KINDRED PRODUCTS (MAJOR GROUP 20)

<u>NAME OF ESTABLISHMENT BY S.I.C. NO.</u>	<u>TOWN/ CITY</u>	<u>PARISH</u>	<u>PRINCIPAL PRODUCTS</u>	<u>KEY IDENTIFIER*</u>
2066. <u>CHOCOLATE AND COCOA PRODUCTS</u>				
Charles Dennergy Co., Div. of DCA Food Ind., Inc.	Jefferson	Jefferson	Flavors, Colors, Bakery Stabilizers, Jams, etc., Chocolate Ice Cream Coatings	I/E
2074. <u>COTTONSEED OIL MILLS</u>				
Lou Ana Foods, Inc.	Opelousas	St. Landry	Refined Corn, Cottonseed, peanut, Oils, etc.	N/E
Riverland Oil Mill, Inc.	Bossier City	Bossier	Cottonseed Oil, Cake & Meal	R/D
The Southern Cotton Oil Co., Inc.	Natchitoches	Natchitoches	Crude Cottonseed Oil, hulls, linters, etc.	R/C
The Southern Cotton Oil Co., Inc.	New Roads	Pointe Coupee	Crude Cottonseed Oil, Cottonseed Meal, etc.	N/C
Union Oil Mill, Inc.	West Monroe	Ouachita	Cottonseed Products	I/E
2075. <u>SOYBEAN OIL MILLS</u>				
Bunge Corp. Vegetable Oil Div.	Destrehan	St. Charles	Soybean Oil, Meal	I/C
Lou Ana Foods, Inc.	Opelousas	St. Landry	Refined Corn, Cottonseed, Peanut Oils, etc.	N/E

* SEE FOOTNOTE ON PAGE

CATALOG - FOOD AND KINDRED PRODUCTS (MAJOR GROUP 20)

<u>NAME OF ESTABLISHMENT BY S.I.C. NO.</u>	<u>TOWN/ CITY</u>	<u>PARISH</u>	<u>PRINCIPAL PRODUCTS</u>	<u>KEY IDENTIFIER*</u>
2076. <u>VEGETABLE OIL MILLS, EXCEPT CORN, COTTONSEED AND SOYBEAN</u>				
Lou Ana Foods, Inc.	Opelousas	St. Landry	Refined Corn, Cottonseed, Soybean Oil, etc.	N/E
2077. <u>ANIMAL AND MARINE FATS AND OILS</u>				
A.B.C. Rendering Co., Inc.	Lafayette	Lafayette	Animal Fats, Meat & Bone Meal; feed	R/C
Empire Menhaden Co., Inc.	Empire	Plaquemine	Menhaden Fish Meal & Scrap, Fish Oil, etc.	R/D
Gulf Soap Corp.	Violet	St. Bernard	Meat & Bone Meal, Poultry Meal, etc.	I/D
Louisiana By-Products	Holden	Livingston	Tallow, Tankage, By-Product Meal	R/C
Louisiana Menhaden Co.	Cameron	Cameron	Menhaden Fish Meal, Scrap, Fish Oil, etc.	N/C
Louisiana Poultry By-Products Co.	Alexandria	Rapides	Poultry Meal, Feather Meal, Poultry Fat	R/B
Petrou Fisheries, Inc.	Empire	Plaquemine	Fish Oil & Fish Meal	N/E
Riegel By-Products Co., Inc.	Shreveport	Caddo	Meat Meal, Tallow	L/B
Seacoast Products, Inc.	Amelia	St. Mary	Fish Meal, Fish Solubles, Fish Oil	N/D
Seacoast Products, Inc.	Cameron	Cameron	Menhaden Meal; Oil & Solubles	N/D
Seacoast Products, Inc.	Intracoastal City	Vermilion	Menhaden Fish Meal	R/D
Zapata Haynie Corp.	Cameron	Cameron	Menhaden Fish Meal & Scrap, Fish Oil, etc.	N/D
Zapata Haynie Corp.	Dulac	Terrebonne	Oils, Menhaden	I/E

* SEE FOOTNOTE ON PAGE

CATALOG - FOOD AND KINDRED PRODUCTS (MAJOR GROUP 20)

<u>NAME OF ESTABLISHMENT BY S.I.C. NO.</u>	<u>TOWN/ CITY</u>	<u>PARISH</u>	<u>PRINCIPAL PRODUCTS</u>	<u>KEY IDENTIFIER*</u>
2079. <u>SHORTENING, TABLE OILS, MARGARINE AND OTHER EDIBLE FATS AND OILS, N.E.C.</u>				
Hunt-Wesson Foods, Inc. Lou-Ana Foods, Inc.	Gretna Opelousas	Jefferson St. Landry	Edible Oil, Shortening Refined Corn, Cottonseed, Peanut Oil, etc.	I/E N/E
2082. <u>MALT BEVERAGES</u>				
Dixie Brewing Co., Inc. Falstaff Brewing Corp. Lake Grain Co., Inc.	New Orleans New Orleans New Orleans	Orleans Orleans Orleans	Beer Beer Dried Brewers Grain, Spent Brewers Yeast	R/E I/F R/A
2085. <u>DISTILLED, RECTIFIED AND BLENDED LIQUORS</u>				
Sazerac Co., Inc.	New Orleans	Orleans	Distilled Spirits	N/C

* SEE FOOTNOTE ON PAGE

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2086. SOFT DRINKS AND CARBONATED WATERS				
Alexandria Coca-Cola Bottling Co., Ltd.	Alexandria	Rapides	Soft Drinks	L/D
Barq's Beverages of Baton Rouge, Inc.	Baton Rouge	East Baton Rouge	Soft Drinks	R/C
Barq's Beverages, Inc.	New Orleans	Orleans	Soft Drinks	L/E
Baton Rouge Coca-Cola Bottling Co., Ltd.	Baton Rouge	East Baton Rouge	Soft Drinks	L/E
Bogalusa Coca-Cola Bottling Co., Inc.	Bogalusa	Washington	Soft Drinks	L/C
Bunkie Coca-Cola Bottling Co., Inc.	Bunkie	Avoyelles	Soft Drinks	I/C
Canada Dry Mid-South, Div. of Lastarmco Corp.	Harahan	Jefferson	Soft Drinks, Ginger Ale, etc.	R/C
Central Bottling Co.	Jennings	Jefferson Davis	Soft Drinks	L/C
Coastal Canning Enterprises, Inc.	Reserve	St. John The Baptist	Canned Soft Drinks	R/C
Coca-Cola Bottling Co., Inc.	Minden	Webster	Soft Drinks	L/D
Coca-Cola Bottling Co. of Lake Charles, Inc.	Jennings	Jefferson Davis	Soft Drinks	L/B
Coca-Cola Bottling Co. of Lake Charles, Inc.	Lake Charles	Calcasieu	Soft Drinks	L/D
Coca-Cola Bottling Co. of Shreveport, Inc.	Shreveport	Caddo	Soft Drinks	L/F
DeRidder Coca-Cola Bottling Co., Inc.	DeRidder	Beauregard	Soft Drinks	L/C
Dr. Pepper Bottling Co.	Alexandria	Rapides	Soft Drinks	L/C

* SEE FOOTNOTE ON PAGE

CATALOG - FOOD AND KINDRED PRODUCTS (MAJOR GROUP 20)

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Dr. Pepper Bottling Co., Inc.	Lafayette	Lafayette	Soft Drinks	L/C
Dr. Pepper Bottling Co., Inc.	Monroe	Ouachita	Soft Drinks	L/C
Dr. Pepper - 7 Up Bottling Co.	Ruston	Lincoln	Soft Drinks	L/C
Dr. Pepper - Wright Root Beer Bottling Co.	Baton Rouge	East Baton Rouge	Soft Drinks	L/C
Eunice 7 Up Bottling Co., Inc.	Eunice	St. Landry	Soft Drinks	L/C
Evangeline Coca-Cola Bottling Co., Inc.	New Iberia	Iberia	Soft Drinks	L/C
Grapette Bottling Co.	New Iberia	Iberia	Soft Drinks	L/B
Grapette Bottling Co. of Winnsboro	Winnsboro	Franklin	Soft Drinks	L/C
Gulf Bottlers, A Div. of Pepsi-Cola General Bottlers, Inc.	Baton Rouge	East Baton Rouge	Soft Drinks	L/C
Gulf Bottlers Div. of Pepsi- Cola General Bottlers, Inc.	Harahan	Jefferson	Soft Drinks	L/E
Guth Dairy, Inc.	Lake Charles	Calcasieu	Milk & Dairy Products, Fruit Drinks	L/D
Jefferson Bottling Co., Div. of Paillet Industries	Metairie	Jefferson	Soft Drinks	L/C
Lafayette Coca-Cola Bottling Co.	Lafayette	Lafayette	Soft Drinks	L/D
Lake Charles Dr. Pepper Bottling Co., Inc.	Lake Charles	Calcasieu	Soft Drinks	R/C
The La. Coca-Cola Bottling Co., Ltd.	Gretna	Jefferson	Soft Drinks	L/E
The La. Coca-Cola Bottling Co., Ltd.	New Orleans	Orleans	Soft Drinks	R/F
La. Coca-Cola Bottling Co., Ltd.	Thibodaux	Lafourche	Soft Drinks	L/D
La. Coca-Cola Bottling Co., Ltd. Hammond Branch Plant	Hammond	Tangiphoa	Soft Drinks	L/C
Many Nehi Bottling Co.	Many	Sabine	Soft Drinks	L/C
Natchitoches Coca-Cola Bottling Co.	Natchitoches	Natchitoches	Soft Drinks	L/C

* SEE FOOTNOTE ON PAGE

CATALOG - FOOD AND KINDRED PRODUCTS (MAJOR GROUP 20)

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Nehi Bottling Co. of Alexandria Inc.	Alexandria	Rapides	Soft Drinks	L/C
Ouachita Coca-Cola Bottling Co., Inc.	Monroe	Ouachita	Soft Drinks	L/E
Pepsi-Cola Bottling Co.	Monroe	Ouachita	Soft Drinks	L/C
Pepsi-Cola Bottling Co.	Shreveport	Caddo	Soft Drinks	L/C
Quickick, Inc.	Baton Rouge	East Baton Rouge	Salt Supplement Drinks	N/A
Refreshment Enterprises, Inc.	Gretna	Jefferson	Canned Soft Drinks	R/C
Royal Crown Bottling Co., Inc.	Shreveport	Caddo	Bottled Soft Drinks	L/D
Royal Crown Bottling Co. of N.E. La., Inc.	West Monroe	Ouachita	Soft Drinks	L/C
Ruston Coca-Cola Bottling Co., Inc.	Ruston	Lincoln	Soft Drinks	R/C
Sanitary Dairy Products, Inc.	Minden	Webster	Fluid Milk & Milk Products, Fruit Drinks	L/D
Seven-Up and Pepsi-Cola Bottling Co.	Jennings	Jefferson Davis	Carbonated Beverages	L/C
Shasta Beverages	Kenner	Jefferson	Soft Drinks	R/C
Zetz Seven-Up Bottling Co., Inc.	Baton Rouge	East Baton Rouge	Soft Drinks	L/D
Zetz Seven-Up Bottling Co., Inc.	New Orleans	Orleans	Soft Drinks	R/E

2087.
FLAVORING EXTRACTS AND FLAVORING SYRUPS

Baker Maid Products	New Orleans	Orleans	Extracts, Pie, Powered Fillings, etc.	N/B
Cajun Chef Products, Inc.	St. Martinville	St. Martin	Fig Preserves, Pickles, Sauces, etc.	R/D
Charles Denny Co., Div. of DCA Food Industries, Inc.	Jefferson	Jefferson	Jams, Toppings for Bakeries, Flavors, etc.	I/E
Luzianne Coffee Co.	New Orleans	Orleans	Mayonnaise, Fruit Drink Mix, etc.	R/E
National Fruit Flavor Co., Inc.	New Orleans	Orleans	Flavor Extracts, Concentrates, syrups, etc.	I/B

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2091. CANNED AND CURED FISH AND SEAFOODS				
Algiers Canning and Sales Co.	Algiers	Orleans	Canned Shrimp, Frozen Cooked Shrimp, etc.	I/D
Authement Packing Co., Inc.	Dulac	Terrebonne	Canned Shrimp	I/D
Calvin J. Authement Packing Co., Inc.	Houma	Terrebonne	Canned Shrimp, Oysters, Sun Dried Shrimp	I/D
A. J. Bordelon Packing Co., Inc.	New Orleans	Orleans	Crab, Shrimp Burgers, Crawfish Patties, etc.	R/B
Blum and Bergeron, Inc.	Houma	Terrebonne	Shrimp, Dry, Shredded or Ground	I/A
Buquet Canning Co.	Houma	Terrebonne	Canned Shrimp & Oysters	I/D
Carlo's Oyster House, Inc.	Amite	Tangiphoa	Canned & Fresh Oysters	R/D
Chauvin Fishing & Packing Co., A Div. of A.C.L.I. International	Chauvin	Terrebonne	Fresh Frozen and Canned Shrimp	N/E
John A. Chauvin, Inc.	Gretna	Jefferson	Seafood Specialties, Frozen Shrimp, etc.	I/E
Cutcher Canning Co., Inc.	Westwego	Jefferson	Canned Shrimp and Oysters	I/E
Sidney Fabre & Son Seafood Co.	Barataria	Jefferson	Canned Crab Meat, Fresh & Frozen Shrimp	N/D
Grand Caillou Packing Co., Inc.	Dulac	Terrebonne	Canned Shrimp and Oysters	I/D
Gulf Coast Packing Co., Inc.	Dulac	Terrebonne	Canned and Frozen Shrimp	I/E
Indian Ridge Shrimp Co.	Chauvin	Terrebonne	Canned, Breaded, Frozen Shrimp, Oysters, etc.	N/E
Jaibas Internacionales S.A.	Port Allen	West Baton Rouge	Crab Processing	L/D
Joey Oyster, Inc.	Amite	Tangiphoa	Canned and Fresh Oysters	R/C
Johnson Seafood Canning Co., Inc.	Lafitte	Jefferson	Canned Shrimp and Oysters	N/C
Lafitte Crab Co., Inc.	Lafitte	Jefferson	Steamed Crabs, Canned Crab Meat	N/E
Lazy River Canning Kitchen	Denham Springs	Livingston	Shrimp Gumbo, Etouffee, Shrimp-A-La-Creole	R/A
Ed Martin Seafood Co.	Westwego	Jefferson	Fresh Canned Crab Meat, Breaded Shrimp, etc.	N/E
New Orleans Cuisine, Inc.	New Orleans	Orleans	Canned & Frozen Gumbo, Turtle Soup, etc.	R/D
New Orleans Shrimp Co., Inc.	Jefferson	Jefferson	Breaded, Headless and Peeled Shrimp	I/F

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CATALOG - FOOD AND KINDRED PRODUCTS (MAJOR GROUP 20)

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Roy J. Picou	Houma	Terrebonne	Sun Dried Shrimp	I/B
Reuther's Seafood Co., Inc.	New Orleans	Orleans	Canned Shrimp, Frozen, Cooked Shrimp	I/D
Robinson Canning Co., Inc.	Westwego	Jefferson	Canned Shrimp, Oysters, Shrimp Dinners	I/E
Shell Key Packing Co.	Franklin	St. Mary	Canned Crab Meat	R/E
Southern Shell Fish Co., Inc.	Harvey	Jefferson	Canned Oysters, Shrimp, Crab Meat, etc.	I/E
Southland Canning & Packing Co. Inc.	Harahan	Jefferson	Canned Shrimp & Oysters	N/E
Trosclair Canning Co., Inc.	Cameron	Cameron	Canned Shrimp, Fresh Headless Shrimp	R/D
Violet Packing Co., Inc.	Violet	St. Bernard	Canned Shrimp and Oysters	I/E
2092. <u>FRESH OR FROZEN PACKAGED FISH AND SEAFOODS</u>				
Algiers Canning & Sales Co.	Algiers	Orleans	Canned Shrimp, Frozen Cooked Shrimp, etc.	I/D
Calvin J. Authement Packing Co., Inc.	Houma	Terrebonne	Canned Shrimp, Oysters, Sun Dried Shrimp	I/D
Blue Channel Co.	New Iberia	Iberia	Seafood, Processed	I/E
Cajun Country Foods, Inc.	Breaux Bridge	St. Martin	Okra, Frozen Doughnuts, Frozen Crawfish, etc.	R/B
Carlo's Oyster House, Inc.	Amite	Tangiphoa	Oysters - Fresh & Canned	R/D
Chauvin Fishing & Packing Co. A Div. of A.C.L.I. International	Chauvin	Terrebonne	Canned Shrimp, Fresh & Frozen Shrimp	N/E
John A. Chauvin, Inc.	Gretna	Jefferson	Seafood Specialties, Frozen Shrimp, etc.	I/E
Leroy J. Chauvin, Inc.	Houma	Terrebonne	Fresh & Frozen Oysters, Breaded Shrimp, etc.	N/C
Desanka Oyster House, Inc.	Amite	Tangiphoa	Fresh Oysters	R/D
Sidney Fabre & Son Seafood Co.	Barataria	Jefferson	Canned Crab Meat, Fresh, Frozen Shrimp	N/D

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Farmers Seafood Co., Inc.	Shreveport	Caddo	Frozen Seafood Products	R/C
Gulf Coast Packing Co., Inc.	Dulac	Terrebonne	Canned & Frozen Shrimp	I/E
Gulf Shrimp Processors, Inc.	Golden Meadow	Lafourche	Frozen Shrimp	I/C
Indian Ridge Shrimp Co.	Chauvin	Terrebonne	Canned & Breaded Shrimp, Oysters, Fish, etc.	N/E
Joey Oyster, Inc.	Amite	Tangiphoa	Canned & Fresh Oysters	R/C
Lafitte-Barataria Fishermen's Co-Op, Inc.	Lafitte	Jefferson	Frozen Shrimp	L/B
Hubert Lafont Shrimp Co., Inc.	Golden Meadow	Lafourche	Fresh & Frozen Shrimp	I/C
Andrew Martin Seafood, Inc.	Leeville	Lafourche	Fresh & Frozen Shrimp	I/C
Ed Martin Seafood Co.	Westwego	Jefferson	Fresh Crab Meat in Cans, Frozen Shrimp, etc.	N/E
Morgan City Freezer & Cold Storage, Inc.	Morgan City	St. Mary	Frozen, Bread & Green Headless Shrimp	I/D
Mr. Crawfish, Inc.	Breaux Bridge	St. Martin	Clean, Frozen Crawfish Tails	R/C
New Orleans Cuisine, Inc.	New Orleans	Orleans	Canned Gumbo, Turtle Soup, etc.	R/C
New Orleans Shrimp Co., Inc.	Golden Meadow	Lafourche	Frozen Shrimp and Crabs	I/D
New Orleans Shrimp Co., Inc.	Jefferson	Jefferson	Breaded Shrimp, Headless & Peeled Shrimp	I/E
Ozio Fisheries	Morgan City	St. Mary	Fresh Crab Meat, Cleaned Crabs, etc.	N/C
Patterson Shrimp Co., Inc.	Patterson	St. Mary	Fresh & Frozen Shrimp	N/C
Pelican Oyster & Fish Co., Inc.	Metairie	Jefferson	Frozen Shrimp, Soft Shell Crab	N/C
Reuther's Seafood Co., Inc.	New Orleans	Orleans	Canned Shrimp, Frozen, Cooked Shrimp	I/D
Robinson Canning Co.	Westwego	Jefferson	Canned Shrimp & Oysters, Shrimp Meal	I/E
Sea Shrimp Co., Inc.	Patterson	St. Mary	Frozen Shrimp in Shell, Stuffed Shrimp	N/C
Shell Keys Packing Co.	Kaplan	Vermilion	Seafood	N/E
Southern Shell Fish Co., Inc.	Harvey	Jefferson	Canned Oysters, Shrimp, Crab Meat, etc.	I/E
Steed's Fish Co., Inc.	Cameron	Cameron	Frozen Shrimp	I/C
Trosclair Canning Co., Inc.	Cameron	Cameron	Canned Shrimp, Fresh, Headless Shrimp	R/D
The Voisin Canning Co., Inc.	Dulac	Terrebonne	Frozen Peeled Shrimp	N/D

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2095. ROASTED COFFEE				
American Coffee Co., Inc.	New Orleans	Orleans	Coffee, Coffee & Chicory	N/D
Arnaud Coffee Corp.	New Orleans	Orleans	Roasted Coffee, Black Pepper, etc.	N/B
Community Coffee Co., Inc.	Port Allen	West Baton Rouge	Roasted & Instant Coffee	R/C
The Folger Coffee Co.	New Orleans	Orleans	Coffee, Vacuumed Packed & Instant	R/E
Foltz Tea & Coffee Co., Inc.	New Orleans	Orleans	Roasted Coffee, Tea, Pepper	N/C
Luzianne Coffee Co.	New Orleans	Orleans	Mayonnaise, Fruit Drink Mix, Coffee, etc.	R/E
Mello Joy Coffee Co.	Lafayette	Lafayette	Roasted Coffee	L/B
Morning Treat Coffee Co., Inc.	Baton Rouge	East Baton Rouge	Coffee & Tea	I/C
Ocean Coffee Co., Inc.	Shreveport	Caddo	Roasted Coffee, Pine Oil, Insectides, etc.	R/A
Richheimer Coffee Co.	New Orleans	Orleans	Coffee, Roasted & Ground, Tea, etc.	I/B
Standard Brands, Inc.	New Orleans	Orleans	Roasted & Instant Coffee, Tea	N/E
Superior Tea & Coffee Co.	New Orleans	Orleans	Roast, Grind & Packaged Coffee	R/B
2097. MANUFACTURED ICE				
Ivy Authement Ice Co., Inc.	Dulac	Terrebonne	Ice	L/A
Buquet Ice Co., Inc.	Houma	Terrebonne	Ice	L/B
Claiborne Ice Plant, Div. of Pallet Industries	New Orleans	Orleans	Ice	L/B
Cristina Ice Service	Marrero	Jefferson	Ice	L/B
Frazer Ice Co., Inc.	Monroe	Ouachita	Ice	L/B
Hernandez Ice, Inc.	Scotlandville	East Baton Rouge	Ice	L/B
Ice Service	Baton Rouge	East Baton Rouge	Ice	L/C
Ice Service Corp.	Natchitoches	Natchitoches	Ice	L/B
Independent Ice & Cold Storage Co., Inc.	Shreveport	Caddo	Ice	L/C
Liberty Ice & Cold Storage	New Orleans	Orleans	Ice	L/C

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Liquid Carbonic Corp., Div. Houston Natural Gas Louisiana Quick Freezing & Cold Storage, Inc. Martin Ice Corp. Pelican Ice & Cold Storage, Inc. A. St. Martin Co., Ltd.	New Orleans Morgan City Golden Meadow New Orleans Chauvin	Orleans St. Mary Lafourche Orleans Terrebonne	Dry Ice Ice Ice Ice, Block, Crushed, Cube Ice	R/C L/B L/B L/D L/B
Service Ice Co.	Lake Charles	Calcasieu	Ice	L/B

2098.
MACARONI, SPAGHETTI AND NOODLES

National Food Products, Inc. New Orleans Macaroni Mfg., Inc. Shreveport Macaroni Mfg. Co., Inc.	Harahan New Orleans Shreveport	Jefferson Orleans Caddo	Macaroni & Noodle Products Macaroni, Egg Noodles, Spaghetti Macaroni, Spaghetti, Egg Noodle Products	R/E R/B R/C
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2099.
FOOD PREPARATIONS, N.E.C.

Arnaud Coffee Corp. Baker Maid Products Co. Bar M Ranch Foods, Inc. Braud Potato Chip Co., Inc. Bruce Foods Corp.	New Orleans New Orleans Opelousas Baton Rouge Cade	Orleans Orleans St. Landry East Baton Rouge St. Martin	Roasted Coffee, Black Pepper, etc. Extracts, Pie Fillings, Emulsions, etc. Sausage, Tasso, Beef Patties, Dressing Mix Potato Chips, Corn Chips & Puffs, etc. Canned Yams, Okra, Squash, hot sauce, etc.	N/B N/B L/B R/C I/F
Bryan Sausage, Inc. Cajun Chef Products, Inc. Cereal Products, Inc. Charlo Foods, Inc. Dainty Maid Sandwich Co.	Downsville St. Martinville New Orleans Shreveport Baton Rouge	Union St. Martin Orleans Caddo East Baton Rouge	Sausage, Prepared Salad Fig Preserves, Pickles, Gumbo File, etc. Bread Crumbs Potato, Corn, Tortilla Chips Sandwiches	R/C R/D N/A R/B L/A

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Charles Dennery Co., Div. of DCA Food Industries, Inc.	Jefferson	Jefferson	Jams, Flavors, Bakery Stabilizers, etc.	I/E
Dickey Foods	New Orleans	Orleans	Potato Chips, Popcorn, Peanuts, etc.	R/E
El Sol, Inc.	New Orleans	Orleans	Corn Tortillas, Taco Shells, etc.	R/A
Elmer's Fine Foods, Inc.	New Orleans	Orleans	Potato Chips, Popcorn, Pork Skins, etc.	R/B
Evangeline Food & Pepper Co.	St. Martinville	St. Martin	Canned Yams, Hot Sauces, Gumbo File, etc.	N/F
Ever-Fresh Sandwich & Pie Co.	Shreveport	Caddo	Ready-Packaged Sandwiches	R/B
Foltz Tea & Coffee Co., Inc.	New Orleans	Orleans	Roasted Coffee, Tea, Pepper	N/C
Frito-Lay, Inc.	Harahan	Jefferson	Potato Chips	N/D
Gonzales Products Co., Inc.	Gonzales	Ascension	Canners of Dried Beans & Figs, Vinegar	R/C
Joan of Arc Company	St. Francisville	West Feliciana	Canned Yams, Instant Yam Flakes, etc.	N/J
Lake Grain Co., Inc.	New Orleans	Orleans	Dry Brewers Grain, Spent Brewer's Yeast	R/A
Beulah Ledner Industries, Inc.	Metairie	Jefferson	Frozen Doberge Tortes	L/A
Luzianne Coffee Co.	New Orleans	Orleans	Mayonnaise, Fruit Drink mix, Coffee, Tea	R/E
Modern Maid Food Products of La., Inc.	Ponchatoula	Tangipahoa	Prepared Breading & Batter Mixes	N/C
Morning Treat Coffee Co., Inc.	Baton Rouge	East Baton Rouge	Coffee, Tea	I/C
New Orleans Imports Co., Ltd.	New Orleans	Orleans	Spices, Creole Gumbo File, Tea, etc.	I/C
Noah's Potato Chip Co., Ltd.	Alexandria	Rapides	Potato Chips, Pig Skins, Peanuts, Popcorn	L/C
Rand Laboratories, Inc.	Metairie	Jefferson	Food Supplements	N/B
Red Star Yeast, Div., Universal Foods Corp.	Belle Chasse	Plaquemines	Baker's Yeast	I/C
Richheimer Coffee Co.	New Orleans	Orleans	Roasted & Ground Coffee, Coffee & Tea	I/B

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Savoie's Sausage Kitchen	Opelousas	St. Landry	Sausage, Boudin, Barbeque Sauce, etc.	L/C
R. E. Schanzer, Inc.	New Orleans	Orleans	Roasted & Ground Chicory	N/C
Southern Spice Co., Inc.	Shreveport	Caddo	Sausage Seasonings, Meat Binders, etc.	R/B
Spivey Bros. Sauce Co., Inc.	Shreveport	Caddo	Barbeque Sauce, Steak, etc.	R/B
Standard Brands, Inc.	New Orleans	Orleans	Roasted & Instant Coffee & Soluble Tea	N/E
B. F. Trappey's Sons, Inc.	New Iberia	Iberia	Sauces, Hot Pepper & Table, etc.	I/E
Zatarain's Inc.	Gretna	Jefferson	Soups, Sauces, Gumbo File, Spices, etc.	I/C

* KEY IDENTIFIER :

DISTRIBUTION OF PRODUCTS

L = Local
R = Regional

N = National
I = International

NUMBER OF EMPLOYEES

A. 1 - 7
B. 8 - 19
C. 20 - 49
D. 50 - 99

E. 100 - 249
F. 250 - 499
G. 500 - 749
H. 750 - 999

J. 1000 - 2499
K. 2500 - Over

APPENDIX B

SAMPLE QUESTIONNAIRE

LOCATION MAPS OF FOOD & KINDRED PRODUCTS INDUSTRIES

CONFIDENTIAL

Information is requested for the calendar year 1976. If it is not possible to provide data for 1976, please use the nearest available year. If this questionnaire is completed for any period other than the calendar year 1976, please indicate the year used. 19__

If any questions arise with regard to specific items in this questionnaire please call:

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New Orleans, La. 70130
(504) 524-5132

-
1. Name of Establishment:
 2. Address of Establishment:
 3. Respondent's name:
 4. Respondent's title:
-

5a. Was your industry in active operation year around or only seasonal?
____ Year around _____ Seasonal

b. If seasonal give the peak months of activity.

6. Please indicate the distribution of your products/services.

- ____ Local-within 100 miles distance
____ Regional-within 500 miles distance
____ National-beyond 500 miles distance
____ International-outside of U.S.A.
____ All of the above.

7. Please indicate the size of your plant

____ 1,000---10,000 sq. ft. ____ 10,000---20,000 sq. ft. ____ Above 20,000 sq

8. Please indicate the type and quantity of Power and Energy used:

____ Coal	_____ Tons
____ Natural Gas (dry)	_____ M.C.F.
____ Natural Gas (liquid)	_____ M.C.F.
____ Oil	_____ Bbl.
____ Electricity	_____ Kwh.
____ Other (Please specify _____)	_____

9. Please indicate your expenditure on Power and Energy

Coal	\$ _____
Natural Gas (dry)	\$ _____
Natural Gas (liquid)	\$ _____
Oil	\$ _____
Electricity	\$ _____
Other	\$ _____

10. What is the approximate value of your capital investment?
 Building \$ _____ Plant and Equipment \$ _____
11. What is your average annual employment?*
12. Please indicate the total annual wages and salaries (payroll).*
 \$ _____
13. Materials used in Production*

Type of Material (specify in de- tail)	Total Cost (annual)	Indicate if Transportation is included in the total costs *	Origin of shipments
a.			
b.			
c.			
d.			
e.			
f.			
g.			
h.			
i.			
j.			

14. Sales (Value of shipments)*

Type of product (specify in de- tail)	Gross weight (tons) (annual)	Sales value of shipments (annual)	Indicate Trans- portation costs if any, included in sale value
a.			
b.			
c.			
d.			
e.			
f.			
g.			
h.			
i.			
j.			

15. What percentage of your sales go to the following:

Household	Retail outlets	Wholesale	Other manufacturing firms La. Outside La.
a.			
b.			
c.			
d.			
e.			
f.			
g.			
h.			
i.			
j.			

* See attached supplementary information sheet for particulars regarding these items.

If possible, would you please furnish a map showing the location of your industry with respect to the nearest town/city?

B-11

B-12

APPENDIX C

PROCESS TEMPERATURES IN FOOD PREPARATION INDUSTRIES

SUBJECT

Grain Drying

FILE:

TRI

DEPARTMENT

Process Design

PREPARED BY:

J. E. Clarke

DATE:

6/16/77

CHECKED BY:

DATE:

PAGE

OF PAGES

Energy Requirements

1) Electrical

Material Handling

Drying

KVA/1000 lbs/hr

.41

.62

2) H₂O Requirements(212° F H₂O)

BTU/hr

1000 lbs/hr

150,000

of Grain

gal/hr

1000 lbs/hr

180

- based on
100°F drop

System Capacity

1) Drying Air rate

840 cfm/1000 lbs/hr

2) Cooling Air rate

840 cfm/1000 lbs/hr

3) Incoming Grain

(Moisture Content = 10%)

1000 lbs/hr

11'

4) Outgoing Grain

900 lbs/hr

PRELIMINARY

Grain Drying

PRELIMINARY

SUBJECT Pepper Processing Plant

FILE: TRI

DEPARTMENT Process Design

PREPARED BY: J. E. Clarke

DATE: 5/20/77

CHECKED BY: _____ DATE: _____

PAGE _____ OF _____ PAGES

ALTERNATIVES

Energy Requirements		Canning	Freezing			
1) Electrical						
Refrigeration	$\frac{\text{KVA}}{1000 \text{ lbs/hr}}$	—	38			
Ventilation	"	12	12			
Equipment	"	453	447			
Lighting	"	20	20			
Compressed air	"	2.3	2.3			
2) Natural Gas						
Heating	$\frac{\text{cfh}}{1000 \text{ lbs/hr}}$	21	21			
Boiler		2500	825			
System Capacity						
1) Refrigeration	$\frac{\text{BTU/hr}}{1000 \text{ lbs/hr}}$	—	144,000			
2) CO ₂ Usage	$\frac{\text{BTU/hr}}{1000 \text{ lbs/hr}}$	—	142,000			
3) Ventilation						
Air Supply	$\frac{\text{cfm}}{1000 \text{ ft}^3}$	5760	5760			
Exhaust	"	5225	5225			
4) Steam Usage	$\frac{\text{lbs/hr}}{1000 \text{ lbs/hr}}$	1650	590			
(120 psig)						
5) Water Usage						
Cold (70°F)	$\frac{\text{gpm}}{1000 \text{ lbs/hr}}$	1700	1700			
Hot (210°F)		250	250			

PRELIMINARY

Pepper and OKra Processing Plant

Alternative 1 - Freezing

Alternative 2 - Canning

PRELIMINARY

SUBJECT: Poultry Processing Plant

FILE: TRI

DEPARTMENT: Process Design

PREPARED BY: J. E. Clarke

DATE: 5/20/77

CHECKED BY: DATE:

ALTERNATIVES

PAGE OF PAGES

		RAW POULTRY	FURTHER PROCESS			
Energy Requirements		Raw Poultry	Cut-up	Frying	Packaging	Total
1) Electrical			①	①	②	①
Refrigeration	kVA 1000 lbs/hr	47	-	-	38	38
Ventilation	"	9	2.3	3.5	2.4	8.2
Equipment	"	30	6.25	19	2.8	28.05
Lighting	"	15	4	6.25	4.2	14.45
Compressed Air	"	1.2	2.3	2.3	2.3	6.9
2) Natural Gas						
Heating	cfh 1000 lbs/hr	693	4.2	6.6	4.5	15.3
Boiler	"	1307	30	320	32	382
Equipment	"	500	-	1875	-	1875
BASED ON Eviscerated Wt.						
System Capacity						
1) Refrigeration	RT/hr 1000 lbs/hr	470,000	-	-	150,000	
2) Ice Making	lbs ice/hr 1000 lbs/hr	360	-	-	-	
3) Ventilation						
Air Supply	cfm 1000 ft ²	5760	5760	5760	5760	
Exhaust	"	5225	5225	5225	5225	
4) Steam Usage (120 psig)						
	lbs/hr 1000 lbs/hr	915	21	225	22	
5) Water Usage						
Cold (70°F)	gpm 1000 lbs/hr	20	13	13	13	
Temperd (85°F)	"	13	-	-	-	
Hot (115°F)	"	13	-	-	-	
6) Air Conditioning	BTU/hr 1000 ft ²	7500	7500	7500	7500	
7) CO ₂ Usage	lb/hr	-	-	-	320,000	

PRELIMINARY

Poultry Processing Plant

Alternative 1 - Raw Poultry

Alternate 2 - Processed Poultry

PRELIMINARY

SUBJECT

Poultry Processing - Chester town

FILE:

TRI

DEPARTMENT

Process Design

PREPARED BY:

J. E. Clarke

DATE:

5/20/77

CHECKED BY:

DATE:

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Energy Requirements			Plant		
1) Electrical					
Refrigeration	$\frac{kw}{1000 kw/hr}$		40.5		
Lighting + Equipment	"		96		
Compressed Air	"		11.8		
Ventilation	"		12		
Air Conditioning	"		10		
2) Natural Gas	$\frac{cfh}{1000 btu/hr}$		7250	7,250,000 Btu/1000#/hr	
Utilities Usage					
1) Steam (120 psig)					
Thawing	$\frac{lbs/hr}{1000 lbs/hr}$		381		
Vent Diges. + Kettles	"		381		
Horiz Digester	"		667		
Sellers Jets	"		1428		
Evap, Concen, Sterilizer	"		762		
Bone dryer	"		667		
Pan/Shackle Washer	"		190		
Fat tank	"		95		
Heating	"		952		
2) Water Usage					
			75°F	170°F	212°F
Plate Cooler (fat)	$\frac{lbs/hr}{1000 lbs/hr}$		7619	-	-
Heat Exchanger	"		6666	-	-
Evaporator/Concentrator	"		-	619	-
Sterilizer + Evaporator	"		-	9255	-
Bone Dryer	"		-	590	-
Cooling Tanks	"		28,570	-	-
Sellers Jets	"		13,333	-	-
Horizontal Digester	"		-	-	666
Misc	"		-	-	419
3) Refrigeration	$\frac{BTU/hr}{1000 lbs/hr}$		422000		
4) Air Conditioning	$\frac{BTU/hr}{1000 ft^2}$		300,000	Applies only to office area	
5) Ventilation					
Air Supply	$\frac{cfm}{1000 ft^2}$		5760		
Exhaust	"		5225		

PRELIMINARY

Poultry Processing - Spent Hens

CELLULAR

Shrimp Processing Plant

Alternative 1 - Glazing

Alternative 2 - Frying

PRELIMINARY