

CALIDRIA CORPORATION
King City Operations

Information For Data Room

16. Reserves/Exploration

The Calidria asbestos mine consists of about 3100 acres in 193 contiguous mining claims, lode and placer, on BLM land in San Benito and Fresno counties, of which 57 lode claims are surveyed for patent. In addition, Calidria Corporation owns the South halves of Sections 21 and 26 in Township 18 South, Range 12 East. All mining claims are in Township 18 South, Range 12 East and Range 13 East, MDM (Mount Diablo Meridian).

It is estimated that the 57 partially-patented claims, all in San Benito County, contain enough ore to produce 50 million tons of -½" mill feed, on a dry weight basis. This quantity is available by proceeding into the hills ahead of the present pit without going any deeper. Based on drill holes, discovery pits and road cuts, the remaining 136 claims also contain ore of good quality. It is conservatively estimated that these claims would provide another 50 million tons of mill feed.

Existing operations are on claims located prior to the Calidria claims. The owner of these claims, Condor Syndicate, receives $0.25 per screened dry ton removed from the property, with a $10,000 per year minimum royalty. All royalties, a total of about $253,000 through 1983, are capitalized and go to eventual purchase of this lease, which had an original cash price of $500,000. Calidria Corporation owns 25% of the Condor Syndicate.

There is no exploration or prospecting work in progress or planned for the future.

INTRODUCTION

Not discovered until 1957 by a Union Carbide geologist, the source of CALIDRIA Asbestos is a unique massive deposit located in central California at the southern end of the Diablo Mountain range, in Fresno and San Benito Counties. It is in what is known as the New Idria mining district, which has long been famous as the oldest and largest mercury mine in the United States. Union Carbide's exploration activities for asbestos mineralization were centered in the nearby town of Coalinga, and the huge deposit became known as Coalinga Asbestos.

The Coalinga deposit is unique for several reasons, not the least being that it is thought to be the largest single mineral deposit in the world. Rich asbestos ore has been found over an area of 40 to 50 square miles, and to depths of over 500 feet. Conservative estimates indicate that over one hundred million tons of chrysotile asbestos are available. Based on exhaustive drilling programs, Union Carbide has retained claims on the richest deposits with enough ore for at least one hundred years of operation at 10 times the current production rate.

Chrysotile asbestos occurs only in serpentine, a fine-grained rock composed almost entirely of hydrous magnesium silicate minerals similar to chrysotile in composition. The Canadian and most other deposits of serpentine contain chrysotile in cross-fiber veins that are rarely more than half an inch thick. A typical ore contains only 6 to 10% fiber, of random lengths and tightly bonded together in a parallel configuration.

The Coalinga deposit bears little resemblance to other serpentine bodies found throughout the world since most of the mass has been highly sheared and pulverized. It consists of soft, friable sheets and clumps of

asbestos fibers, and the only other known ore body of this type is the Stragari deposit in Yugoslavia. In contrast to the cross-fiber arrangement of conventional ores, the Coalinga deposit occurs as a swirling mesh of disoriented fibers. Each fiber or fiber bundle is only in point contact with its neighbor. To summarize, the unusual characteristics of the asbestos ore in the massive Coalinga deposit include:

all chrysotile

all short fiber

random-oriented fibers

over 50% recoverable fiber

15 to 20% natural moisture

MINING

Mining operations are conducted by open pit methods, working from benches 40 feet wide. The faces are 20 feet high and maintained to a 1:1 slope. The gross slope of the pit wall is therefore 18½°. In 1980, benches 60 feet wide were created in the higher areas of the pit face. Plans are to widen all benches to 60 feet, thus conforming with BLM and California approved reclamation plans. Overall slope of pit benches will then be about 14°, adding greater safety during mining operations.

The ore is mined by scrapers pushed by ripper-equipped dozers, and the contractor doing the stripping-mining work will also furnish a blade, water truck, and sloping bar. Some wetting down of haul roads is necessary, but the 18 to 20% natural moisture in the ore minimizes airborne fiber levels.

No drilling or blasting is necessary, other than an occasional pop to break a huge serpentine boulder. Stripping ratio runs about 1:1, the determination of waste being by eyeball. (Only uncolored material is called "ore".) All muck, except the largest boulders, are hauled by scrapers and dumped on either ore stockpiles or waste dumps. Boulders larger than three feet in diameter are removed as the ore stockpile is being made.

Ore stockpiles are built on the pit floor and might contain 150,000 cubic yards or more. When completed, the piles are smoothed and shaped for subsequent surveying by Calidria Mining Department people. Experience has shown that one cubic yard of mine stockpile will, after screening through a ½" mesh screen, result in about one dry ton of mill feed.

Mining costs are low because of the operation's simplicity and be-

cause enough ore is produced and stockpiled for two or more years of mill usage. In 1980, the last year of mining, stripping and mining costs were $1.127 per bank yard of either ore or waste removed. Bank yards are determined by before and after surveys of the pit face. Eight or nine weeks of work by the contractor will produce enough ore for several years.

SCREENING

The mine-run ore is screened by a portable screening plant consisting of a hopper, pan feeder, 3' x 51' conveyor belt and a 4' x 10' double deck screen. The upper screen cloth contains 4" x 4" openings; the bottom screen cloth contains ½" x ½" openings. The -½" material is stockpiled by a portable stacking conveyor equipped with a 2' x 60' conveyor belt and swivel truck to allow pivoting. The system is fed by a 4½ cubic yard, rubber-tired, front-end loader with the productivity of the system being 75-80 dry tons of underflow per hour.

Since the scrapers tend to compact the moist ore when stockpiling, it has been found advantageous to loosen the stockpile by bulldozing the pile in toward the screening plant. Increased recovery through the ½" screen is due to the comminution caused by bulldozing the ore in thin lifts from the top of the stockpile. An estimated 80% of the ore fed to the screen is recovered as -½" material. Oversize is wasted at the pit.

TRUCKING

The screened ore is shipped to the processing plant at King City, 60 miles from the mine. Usually six haul units, each consisting of two bottom-dump trailers pulled by a single-axle tractor, are employed, operating 14 hours per day, 5 days per week. Since the majority of the route

is over winding mountainous roads of low design standards, the tractors are equipped with Jacobs' compression braking systems.

Each unit hauls 26½ screened wet tons per trip and makes three round trips per day. The trucking season starts about May 1st each year, and lasts about six months, when the rainy winter season usually begins. The same trucking contractor has done this work for several years. 1983 haulage charges were $7.75 per screened wet ton.

MILLING

Union Carbide evaluated various dry processing methods but the best product looked little different than and performed very similar to Canadian asbestos. An investment to produce such a product for conventional asbestos applications was not justified. In order to take full advantage of the unique features of the Coalinga ore deposit, a hydraulic beneficiation process was developed. The plant location in King City was selected because of ample water supply and adjacent rail and freeway services. Conventional mineral processing techniques are combined with the innovative use of special equipment and the plant consists of three basic systems: rock fiber separation, refining, and special treatment. This enables production of three basic product categories: fiber, colloidal, and modified, all with highly liberated short fibers. The main plant began operation in 1963 and was expanded to its present capacity in 1966. A system for producing RG-244 was installed in 1968 and expanded in 1974 to double its original capacity.

A. Main Plant (Refer to Attached Flow Chart)

Stockpiled ore is mixed with water in a slurrying system about ¼ mile northeast of the mill area. The slurry is pumped to the mill and over a 3/16" x 3/16" screen to remove +3/16" rock from flakes of fibrous

ore. Further separation of rock and fiber is accomplished in a Harz Jig and on Diester shaking tables. Magnetite is removed by the tables and two magnetic drum separators. A 12" hammer mill is used to grind particles to less than 1/8" and hydroclones are used to separate heavy undesirable particles from the lighter flakes of chrysotile fiber. The "good" slurry from the jig, shaking tables and hydroclones is pumped to thickeners and provides the "feedstock" for all final products in the main plant and for RG-244 production, which is a separate circuit described elsewhere.

Standard Grade (SG) products are made directly from the feedstock mentioned above; or, depending on customer requirements, the feedstock is passed through a Bauer disc mill. The SG slurry at this point is about 6% solids and about 60% will pass through a 200-mesh screen. The maximum particle size is less than 1/8" and contains about 1.5% magnetite.

To produce Super Standard Grade (SSG) products the SG slurry is pumped through 18" diameter high-speed hammer mills. The solids and magnetite content are the same as SG slurry but about 80% of the SSG slurry will pass through a 200-mesh screen.

High Purity (HP) or colloidal products are made by diluting the SSG slurry to about 2% solids and pumping the slurry through banks of different size hydroclones to further remove heavier undesirable non-fibrous materials. The final HP slurry contains about 0.5% magnetite and less than 0.5% of particles greater than 65 mesh.

The remaining steps to produce final product are the same for SG, SSG and HP slurries.

Slurry is pumped into 48" recessed chamber-type filter presses,

to about 100 psi, as the initial de-watering step. The SG and SSG filter cake is about 60% solids while the HP cake is about 45% solids. All filtrate is collected and recycled for use as make up water in the original ore slurry system.

Belt conveyors move the filter cake (solid enough to walk on) to an extruder (a closed screw with a die plate on the end) which discharges directly into a 10' diameter by 36' long gas-fired rotary dryer. The cake exits the extruder in about ¼" diameter "strings" which break into pellets about ½" long as they pass through the dryer.

Dried pellets are moved from the dryer discharge via conveyor systems and bucket elevators. Pellets can be loaded directly into bulk railroad hopper cars for shipment to customers or they are conveyed to storage bins. From the storage bins the pellets can be packaged in paper or plastic bags with air-flow or auger packers, respectively; or the pellets can be fed to 35" vertical air-swept hammer mills to produce "open" fiber products. The open fiber products are packaged in paper bags only.

All paper bags are individually shrink-filmed to improve package integrity and eliminate dust generation during handling. All bags are palletized for storage. Those which will be shipped on pallets have glue between bag layers and most pallets are stretch-wrapped.

The budgeted production rate for 1984 is 85 TPD and the average production or packaging rate for various products is as follows:

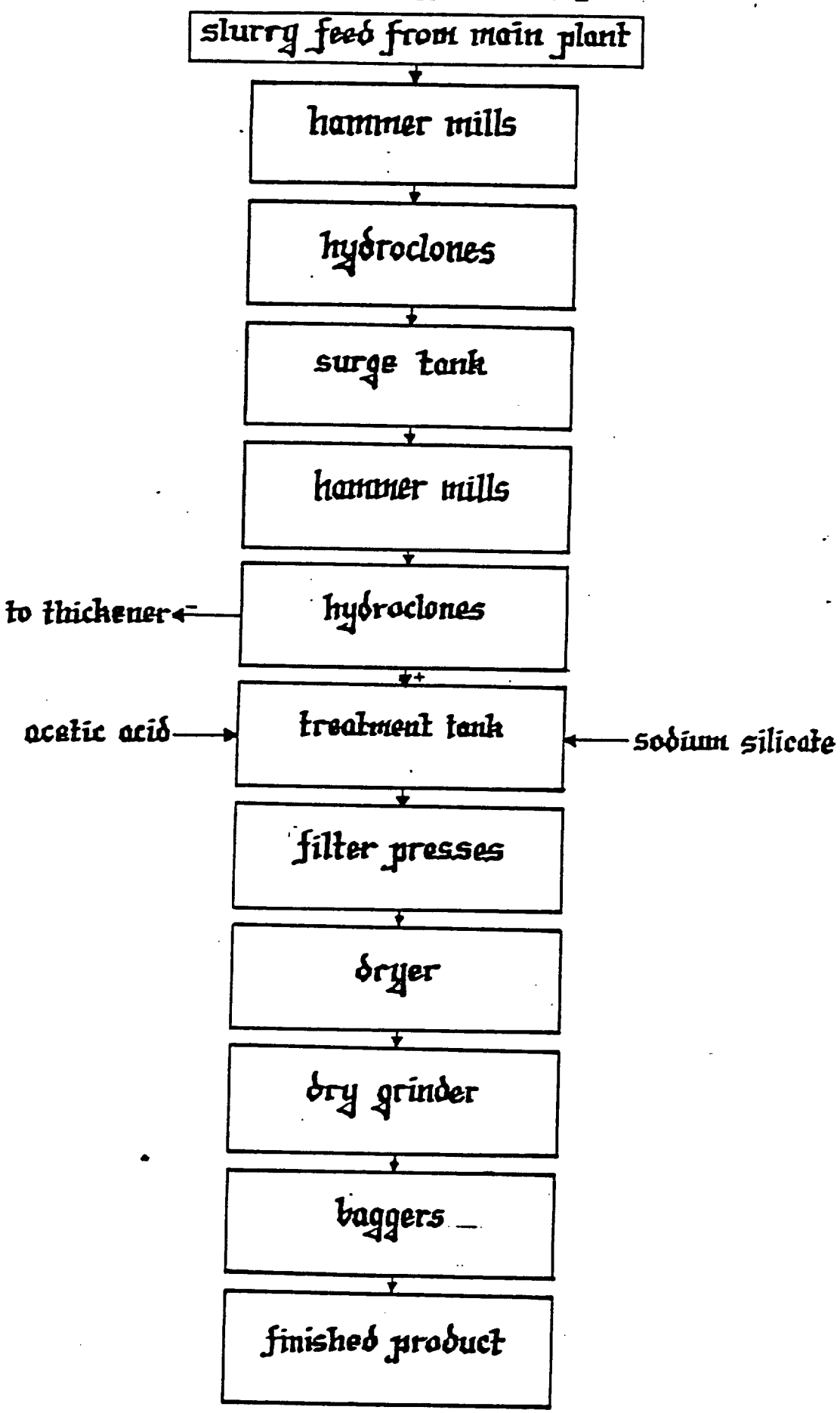
Product	Rate, TPH	Rate, TPD
SG Pellets	6.0	144
SG Open Fiber	3.4	82
SSG Pellets	5.5	132
SSG "Cracked" Pellets	5.2	125
SSG Open Fiber	1.7	41
HP Pellets	4.9	118
HP Open Fiber	2.9	70

B. RG-244 Production (Refer to Attached Flow Chart)

SG slurry from the main circuit is pumped to a separate circuit used only for the production of RG-244, a surface-modified asbestos fiber product used for viscosity control in specialty applications. The slurry is pumped through two primary vertical hammer mills, a bank of 3" hydroclones, two secondary vertical hammer mills and finally through a bank of 37 mm (~1½") cyclones. The purpose of these operations is to produce an extremely pure chrysotile asbestos fiber with essentially no impurities, very limited fiber length distribution, and a minimum amount of fiber bundles.

The final slurry, at about 1.5% solids, contains less than 0.3% magnetite and over 99% will pass through a 200-mesh screen. Sodium silicate and acetic acid are added to the slurry in agitated treatment tanks. The two chemicals produce amorphous silicon dioxide which coats the asbestos fibers. The treated slurry is dewatered in 36" recessed chamber filter presses at about 55 psig. The cake, at only 20% solids, is fed to a closed screw with a 3/4" mesh screen on the discharge end which feeds directly into a 7' diameter by 20' long rotary dryer. The dried 3/4" pieces are stored in portable bins for eventual grinding in 18" vertical air-swept hammer mills. The fine powder is packaged in paper bags with an air flow packer and each bag is individually shrink-filmed. The bags hold about two cubic feet but weigh only 10 pounds. Bags are palletized for storage and subsequent shipment. The budgeted RG-244 production rate is 4.5 TPD.

RG-244 Circuit



PRODUCTION COSTS

The following table summarizes combined main plant and RG-244 circuit production costs in $/ton for the last six years and 1984 budget:

	1978	1979	1980	1981	1982	1983	1984B
Variable Normal	89	98	121	154	197	180	185
Period Cost	21	22	24	28	46	49	43
Fully Absorbed	110	120	145	182	243	229	228
Other Costs	1	1	0	2	3	9	4
Total	111	121	145	184	246	238	232
Production, Tons	36000	31000	30000	29000	19000	19000	21000

1978 was a record production year. Natural gas costs have increased 129% from 1978 to 1984 and electricity has increased 68% during the same period.

Details of costs for the separate circuits are shown in the attached table. Costs are based on 1983 experience and previously developed Normal Costs.

PRODUCTION COST DETAILS

(Based on 1983 Costs & Production Data
and Previously Established Normal Costs)

	Total Costs		Main Plant Costs		RG-244 Costs	
Direct Materials	$M	% of Total	$M	$/Ton	$M	$/Ton
(1) Ore	482	11.2	453	25.39	29	29.70
Electricity	473	11.0	127	7.12	346	354.31
Natural Gas	558	13.0	434	24.33	124	126.98
(2) Packaging	330	7.6	253	14.18	77	78.85
Chemicals	94	2.2	0	-----	94	96.26
(3) Direct Labor	352	8.1	218	12.22	134	137.22
Departmental Material	279	6.5	234	13.12	45	46.08
(3) Departmental Labor	373	8.6	284	15.92	89	91.14
Auxiliary Material	188	4.4	138	7.74	50	51.20
(3) Auxiliary Labor	94	2.2	69	3.87	25	25.60
TOTAL VARIABLE NORMAL	3223	74.8	2210	123.87	1013	1036.85
Period Cost						
Safety	25	0.6	---	-----	---	------
(4) Salaries	621	14.4	---	-----	---	------
Taxes & Ins.	95	2.2	---	-----	---	------
Travel	12	0.3	---	-----	---	------
Other	87	2.0	---	-----	---	------
TOTAL PERIOD COST	840	19.5	622	34.87	218	223.20
FULLY ABSORBED COST	4063	94.3	2832	158.74	1231	1260.05
Distribution	79	1.8	---	-----	---	------
Other Plant Costs	165	3.8	---	-----	---	------
TOTAL COSTS	$4307	100.0	---	-----	---	------
TOTAL COSTS, $/Ton	229	-----	---	-----	---	------
(5) Tons Produced	18,817		17,841		977	

NOTES:

(1) Includes $1.02/ton for 1980 mining costs, which did not include overburden removal. Mining costs in 1985 or future years would be at least $4/ton. 1983 ore screening and hauling costs were $105,000 and $299,000 respectively.
(2) Includes bags, pallets, bag shrink-film and pallet stretch-wrap.
(3) Includes 58.7% employee plans expense.
(4) Includes 29% employee plans expense.
(5) Mill operated 32 hrs/wk. for first three quarters and 40 hrs/wk. during last quarter.

STAFFING

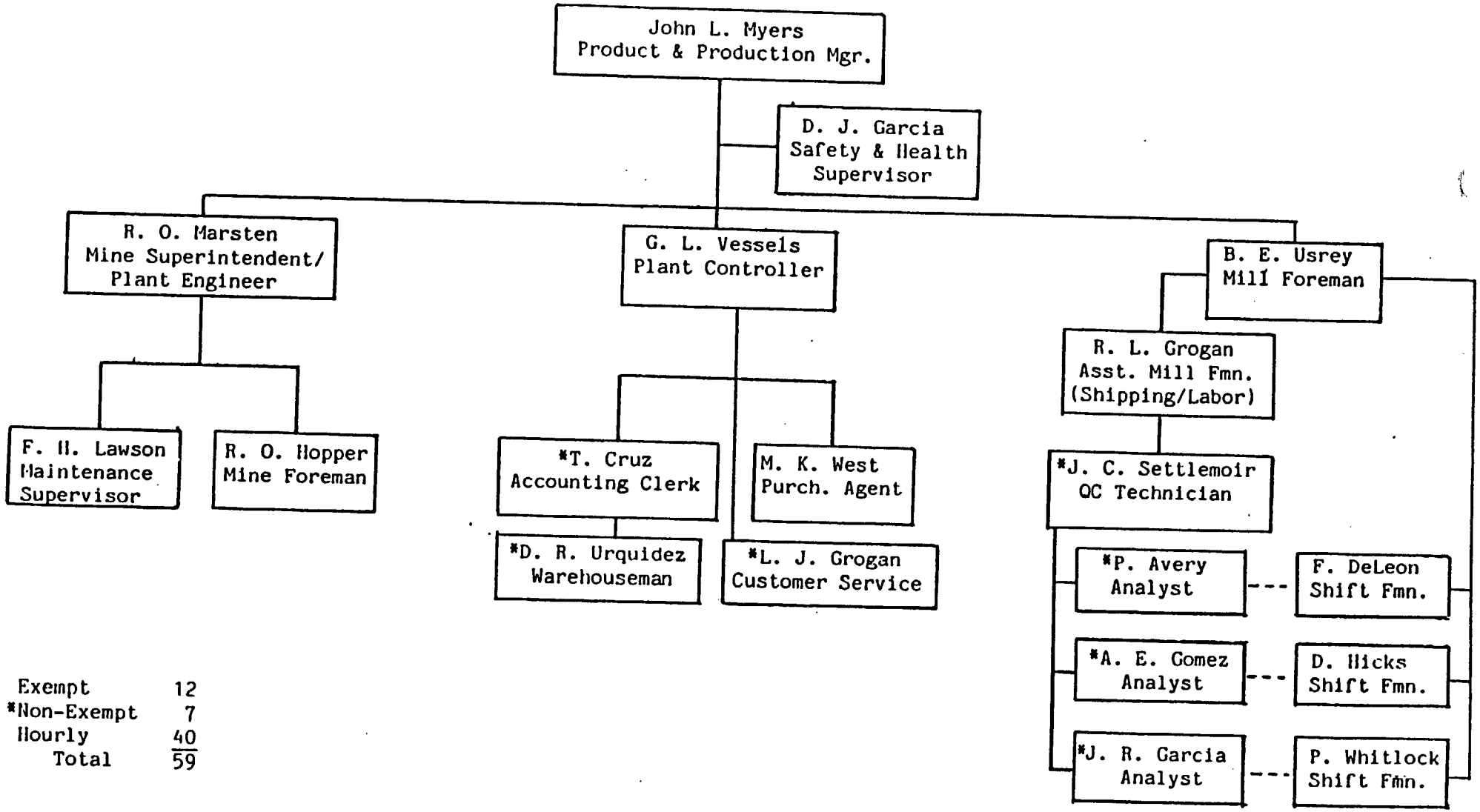
The attached organization chart, effective June 1, 1984, reflects a 3 shifts per day, 5 days per week operating schedule at the mill and mine. When the mining/hauling operation is shut down from October to March, the mine operators are assigned to the maintenance and labor crews at the mill. In the past, when inventory exceeds requirements, the mill has been operated on a 3 shifts per day 4 days per week schedule. A California worksharing program provides some unemployment compensation for employees on a reduced work schedule.

The current average labor rate is $9.42 per hour and ranges from $7.00 for an entry laborer to $11.40 for a mechanic/electrician I (the last wage increase was April 3, 1983). As of December 31, 1983, the average hourly employee had 9 years of company service credit.

The salary work force consists of 12 exempt and 7 non-exempt employees. Company service credit for exempts averages 22 years and for non-exempts 11 years. Also attached is a sheet summarizing the salary force work experience.

Union Carbide trial exhibit UC-399: Calidria Corporation, King City Operations: Information for Data Room on Rese...
ACL Doc 15647 · Page 14 of 19

CALIDRIA CORPORATION
King City Asbestos Operation



Exempt	12
*Non-Exempt	7
Hourly	40
Total	59

Effective 6/1/84

Published by AsbestosClaims.Law
asbestosclaims.law/library/15647/14

CALIDRIA CORPORATION

Personnel Summary
(6/1/84

King City Operations

John Myers	Product & Production Manager, at King City since 1981, responsible for mine and mill operations, litigation, regulations, legislation. President of Asbestos Information Association/North America. (B.S. Ch.E.). Started with UCC 1951 at Oak Ridge, then at Paducah until 1966. Asbestos R&D, 1966, Niagara Falls; Technical Supt., King City asbestos mill 1967-1970; Marketing Manger-Asbestos, Niagara Falls 1970-1981.
Darrell Garcia	Safety & Health Supervisor (effective 6/1/84), also handles employee interviewing, training, medical surveillance program, etc., with UCC at King City since 1963.
Dick Marsten	Plant Engineer and Mining Superintendent, at King City since 1967, also handles environmental responsibilities for mine and mill. (B.S. Mining Engineering). Started with UCC in 1960 at Gas Hills, then Uravan.
Fred Lawson	Maintenance Foreman, at King City since 1978. Started with UCC in 1949.
Roger Hopper	Mine Foreman, at Coalinga and King City since 1960.
George Vessels	Plant Controller, at King City since 1963. Started with UCC in 1953 at Colorado operations.
Kemper West	Purchasing Agent, at King City since 1963. Started with UCC in 1959 in Colorado.
Linda Jo Grogan	Customer Service, at King City since 1972 (also 1963). Responsible for order entry, shipping, inventory, etc., also handles secretarial duties.
Trini Cruz	Accounting Clerk (effective 6/1/84), with UCC at King City since 1966.
Dave Urquidez	Warehouseman (effective 6/1/84), with UCC at King City since 1975.
Bill Usrey	Mill Foreman (effective 6/1/84), with UCC at King City since 1963.

King City Operations

Ray Grogan	Assistant Mill Foreman (effective 6/1/84), supervises shipping/labor crew and laboratory, with UCC at King City since 1963.
David Hicks	Shift Foreman, with UCC at King City since 1976.
Paul Whitlock	Shift Foreman, with UCC at King City since 1963.
Frank DeLeon	Shift Foreman, with UCC at King City since 1973.
Jim Settlemoir	Lab Supervisor, with UCC at King City since 1966.
Annie Gomez	Analyst, with UCC at King City since 1979.
Petra Avery	Analyst, with UCC at King City since 1980.
Roy Garcia	Analyst (effective 6/1/84), with UCC at King City since 1978.

Hourly Personnel at King City Operation:

Maintenance	10	
Mine Operators	2	
Mill Operators	21	(7 each on 3 shifts)
Shipping/Labor	7	
Total	40	

Other

Gordon Dickson	Sales Manager since 1983, Pittsburgh, with asbestos R&D and sales in Niagara Falls from 1964. (B.S. Chem.).
Jack Walsh	Distributor Sales, Atlanta, with asbestos sales since 1972, started with UCC in 1961. (B.S. Biology).
Tom Norris	Commercial Sales, Long Beach, with asbestos sales since 1970, with UCC since 1960 (B.S. Marketing).
Blair Ingalls	Development Engineer, Niagara Falls, with asbestos R&D since 1963. (B.S. Ch.E.).

EMPLOYEE SAFETY AND HEALTH

Union Carbide has provided medical surveillance for asbestos plant employees and conducted air monitoring since 1963. Some plant areas are currently monitored as often as once per month to ensure that dust control measures are effective. Safety meetings, posters, and individual consultations are some of the means used to advise employees of the asbestos health hazard. The use of safety equipment is rigidly enforced and employees are constantly reminded of safe procedures and precautions to take to preserve their health. Smoking has always been prohibited in certain plant areas and has been generally discouraged by communicating to employees the apparent connection between an increase in lung cancer and asbestos workers who smoke. Since January 1, 1977, smoking has been prohibited on all plant property. Medical surveillance has included chest X-ray, pulmonary function analysis, and sputum cytology. Before initiating new rules or programs, they are thoroughly discussed with employees. They can then understand the reasons and cooperate in establishing a safe working environment.

COMMUNITY RELATIONS

The King City asbestos mill is located about five miles south of King City, California, in the Salinas Valley area of Monterey County. All other industrial and business activity in the area is related to agriculture.

Calidria Corporation enjoys excellent relations with the community and many employees participate in civic groups and other volunteer activities. We are a stable year-round employer as contrasted to many of the seasonal operations related to agriculture.

King City is located on U.S. 101 and the main line of the Southern Pacific Railroad. It is 150 miles south of San Francisco and 280 miles north of Los Angeles. It is about 25 miles from the Pacific Ocean "as the crow flies". King City's population is about 5500 and a trading center for about 20,000.

"Calidria" Asbestos Production — Main Plant

