PLAINTIFF'S EXHIBIT

UC-2841

LONG RANGE BUSINESS PLAN

MINING AND METALS DIVISION

UNION CARBIDE CORPORATION

W. C. THURBER

UCC 025290

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UNION CARBIDE CORPORATION

MINING AND METALS DIVISION

1975-1979 LONG RANGE PLAN

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ACL Doc 17702 · Page 2 of 25 **asbestosclaims.law/library/17702/2**

MINING AND METALS DIVISION

LONG RANGE PLAN

1. BUSINESS OBJECTIVES

Purpose

The division's fundamental objective is to contribute an increasing flow of cycle-resistant, high quality earnings to the corporation through worldwide application of mineral, metallurgical and commercial skills in securing quality mineral resource and metal product positions with full recognition of the special and increasing profit potential inherent in such positions.

Financial Objective

With 1974 earnings of over 30¢/share (almost double the previous record high) and an ROA of some 20% as base points, we believe we can realistically establish financial objectives for the longer term as follows:

- A 15% average annual growth in earnings per share.
- An ROA of better than 20% consistently achieved.
- A positive cash flow averaging in excess of 50% of net income.

Regarding earnings cyclicality, the division's record through 1974 has been one of consistent earnings growth (averaging 16% per annum) since 1969 with the exception of an abnormal uranium earnings peak in 1970. Even with such a record, a number of important actions have been taken during the past several years to realize a more balanced mix of products, customer industries, individual customers, and geographic markets in order to limit further the risk of sharp fluctuation inherent in serving basic metal industries. Among the achievements of this program:

- Significant penetration of overseas and specialty vanadium markets, reducing our reliance upon the domestic steel industry.
- Successful establishment of our offshore tungsten trading company resulting in a total business posture

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ACL Doc 17702 · Page 3 of 25 asbestosclaims.law/library/17702/3

which relates to and participates in world, rather than simply domestic market dynamics.

- Full exploitation of our proprietary product technology for forward integration from chrome and manganese metal such that sales of these products are now almost totally independent of steel production rates.

- Exploration and technical programs designed to expand our uranium resource base to, in turn, serve a very rapidly growing market that is unrelated to levels of basic metal (steel, aluminum) production.

Direction

Since the fall of 1973, we have seen develop a broad, worldwide appreciation of the fundamental importance and power of basic raw material positions. Being in the extractive industry, we have held this appreciation for some time. It has been and will continue to be the fundamental determinant of our business direction. We have also linked our basic raw material positions to their markets through the manufacture of proprietary end products. With the exception of uranium, all of our sales income is derived from products that are in some way proprietary or unique. A corollary fundamental business direction is therefore to build from basic raw material positions to an array of proprietary end products serving markets diverse in both nature and geographic location.

The extractive industry tends to be capital (as contrasted to labor) intensive. As a result, joint ventures, off-balance sheet financing, and minority positions are well known in the industry. Even though we have been substantial net cash generators to Union Carbide in each of the last five years (and will be in each of the next five years), we propose to utilize these capital moderating techniques to a greater degree in the future. Union Carbide's own demand for certain materials, our exploration and technical skills and our market positions are all assets that can and will be utilized in lieu of cash in developing new and expanded resource positions. These techniques will be particularly appropriate overseas, but a number of opportunities are in hand wherein they can be utilized in the U. S.

As documented in last year's Long Range Plan, in early 1974 we adopted a strategy of growth; growth based primarily on existing skills and positions but also upon entry into new mineral fields. This year's Long Range Plan reflects quantitatively substantial growth based on existing positions; a quadrupling of net income from 1973 to 1979. We plan

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ACL Doc 17702 · Page 4 of 25 asbestosclaims.law/library/17702/4

to pursue this growth objective under the three fundamental directions of:

Basic Resource Positions

Maximum Proprietary Content

Moderated Capital Intensity

2. EXTERNAL ENVIRONMENT

Economic Environment

With minor modifications, we have used the UCC forecast of the macroeconomic environment as the basis of our financial projections. Although this forecast may be a reasonable representation of longer term economic trends, we are extremely concerned over the probability of a severe worldwide economic dislocation in the 1975-76 period. For us, and many others, the most serious impact of such a dislocation would be reduced demand leading to price attrition in the face of continuing cost inflation. We have joined many others over the last 18 months in raising prices to levels which will justify new investment at forecast levels of capital cost. Falling back from such price levels will most seriously affect not only current earnings, but our ability to expand to meet future demand. The quantitative impact of an economic downturn is given in the later section on Financial Projections. The state of the world economy is, without question, the greatest risk factor in our Long Range Plan.

Product Supply and Demand

We believe that the fundamental, longer term supply/demand picture for all of our major products is extremely favorable to the integrated basic producer. Vanadium, tungsten, uranium and chrome and manganese metal are all presently in short supply worldwide. Even in those cases where capacity expansion is known to be underway or planned, we believe that normal growth in demand will keep pace with or exceed the growth in supply. Moreover, we can readily foresee the possibility of substantially increased demand due to factors which favor the expanded use of our products. For example, there is every indication that steel capacity will be inadequate for some time to come, giving impetus to the expanded use of high-strength, low-alloy (i.e., vanadium-bearing) steels to obtain more ultimate utility from the same volume of steel. The growing use of vanadium-bearing steels in automobiles is an extremely important case in point.

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ACL Doc 17702 · Page 5 of 25 asbestosclaims.law/library/17702/5

Tools, and tool steels, the primary applications for our tungsten products, are almost certain to be in strong demand. This demand is founded upon a basic world undersupply condition which has existed for many years, but which was temporarily distorted by a huge GSA stockpile disposal in 1969. The material sold by GSA was fully absorbed during 1973.

Projections of demand for uranium to fuel U. S. nuclear reactors, under construction or planned, indicate a need to expand domestic uranium oxide capacity by a factor of four by 1985. This will be extremely difficult and a very tight supply situation is indicated for the next 10-12 years.

Finally, capacity shortages in the aluminum industry promise to sustain and expand the demand for our UCAR products, the use of which effectively increases the aluminum industry's basic metal capacity.

Short of a major worldwide recession, a key problem over the Plan period, and beyond, will be how to provide adequate capacity to meet demand in all our product lines.

Governmental Environment

The composition of future Congresses could result in legislation or regulation seriously detrimental to our business in the Plan period. Among the possibilities are: (1) elimination or reduction of percentage depletion allowances which could have serious impact on our earnings for at least the year or two required for price increases to compensate; (2) Government stockpile disposal practices disruptive of the marketplace and resulting in temporary but sharp price erosion particularly in tungsten; (3) pollution control and safety regulations involving prohibitive compliance costs or actual closure of mining or milling operations; (4) foreign trade negotiations resulting in abrupt and drastic reductions in the existing duties on vanadium or tungsten.

Continued nationalistic tendencies on the part of foreign governments could severely limit the scope of our worldwide exploration efforts and the economic benefits to be derived therefrom. The premium on U. S. resource positions is clear, but we believe effective ways can and will be found to operate overseas.

We believe that energy and energy-dependent purchased raw materials will continue to be very costly, but available to meet our relatively modest needs.

UCC 025295

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ACL Doc 17702 · Page 6 of 25 asbestosclaims.law/library/17702/6

3. STRATEGIES

The issue most critical to the division's longer term future is the fact that, save for asbestos, our present domestic ore reserves will be largely exhausted during the next 10 to 12 years. This fact is basic to the following divisional strategies:

- Multiple action plans have been and are being executed in order to insure the maximum possible extension of the lives of existing facilities. These include: (1) detailed calculation of ore reserves available from all existing properties at different prices and cut-off grades; (2) the development of a modified operating program for Bishop utilizing less captive ore per annum while loading the mill and maintaining market position with purchased ore concentrates; (3) specific actions to obtain and use the maximum quantity of supplemental feeds for our vanadium-producing facilities, including the planned construction of a ferrophosphorous oxidizing facility at Arkansas (CBR to be submitted in late 1974); (4) maximum efforts to perfect new and unconventional mining techniques (i.e., solution mining) to permit exploitation of low grade ores already under our control; and (5) major efforts to improve the metallurgical recovery at all our milling facilities.

- New ore bodies already well explored and defined will be brought into production, properly phased with existing operations and market conditions, as promptly as capital availability will permit. A major expansion of the UCAR Minerals vanadium operation in South Africa is now underway and Capital Budget Proposals covering new tungsten operations at Tempiute, Nevada and Boca de Lage, Brazil will be submitted this fall.

- Full commitment has been made to a domestic and foreign exploration program giving top priority to tungsten and uranium to replace the depleting reserve positions in the proper time frame, while continuing to seek out other mineral positions relevant to the division or other arms of UCC and maintaining surveillance relative to new vanadium deposits.

- Maintenance of a leading position in end-product technology to further enhance existing and new raw material positions

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ACL Doc 17702 · Page 7 of 25 asbestosclaims.law/library/17702/7

and to maximize the profitability of utilizing purchased raw materials, if they must be resorted to eventually.

- Development of new and novel basic resource positions in those business areas (primarily chrome and manganese metal) wherein UCC's traditional resource positions are either threatened or depleted.

We are the, or one of the, low cost producers in all our basic product lines. Business withdrawals have been carefully considered over the past five years and some have been executed. No others are presently contemplated.

As our business becomes increasingly worldwide and increasingly complex, our need for highly skilled negotiators and entrepreneurs becomes increasingly acute. Such people tend to be born not made and an aggressive, highly selective program of senior level recruiting will be implemented.

Major specific objectives pertinent to each of the business areas are included in the section which follows.

4. BUSINESS PORTFOLIO

The division has identified five Strategic Planning Units. These are shown by category with financial data, major objectives and strategies as follows:

TUNGSTEN - Category 1 - Industrial Specialty

Financial Summary

($MM)

HISTORICAL				CURRENT		PROJECTED				
19 70	19 71	19 72	19 73	19 74		19 75	19 76	19 77	19 78	19 79
25.7	21.9	19.9	24.5	32.7	Total Net Sales	46.9	50.1	53.5	57.6	63.0
				6.9	Growth Rate (2)					14.8
47.8	43.6	39.3	29.8	44.8	Gross Margin %	47.5	49.9	50.5	52.0	50.3
6.0	7.1	8.8	6.4	5.1	Overhead % of Sales	4.8	4.4	4.3	4.1	4.0
6.9	5.3	4.2	3.3	9.4	Net Income After Tax	12.1	13.1	13.8	15.9	16.4
				5.3	Growth Rate (2)					19.2
1.0	0.8	2.2	2.5	1.6	Construction	11.5	7.9	2.8	12.2	3.1
16.7	16.8	19.2	23.5	20.3	Net Assets Employed	23.0	33.5	39.9	40.8	49.4
40.7	31.5	21.9	14.0	47.2	ROA %	52.6	39.1	34.6	39.0	33.2
1.54	1.30	1.03	1.04	1.61	Sales ÷ Net Assets Employed	2.04	1.50	1.34	1.41	1.28

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ACL Doc 17702 · Page 8 of 25 asbestosclaims.law/library/17702/8

The tungsten business experienced a dramatic earnings improvement in 1974 primarily due to:

- The final exhaustion, at year-end 1973, of the surplus inventory overhanging the market since the enormous 1969-70 GSA stockpile disposal. Thus, in 1974, a normal supply/demand market system functioned and, as expected,a supply deficiency was revealed.

- The expiration of price controls which permitted price increases to reflect the supply deficiency in the world market. This is exemplified by the fact that our APT price is now $116.50/STU as compared to an extremely depressed and controlled 1973 price of $50.50.

The longer term outlook is extremely promising based upon a basic, long term supply shortage. The financial projection is conservative in that there is no provision for price increases beyond those required to directly recover increased production and overhead costs.

The major critical issues and the strategies to be employed are:

1. Ore Reserves

We will continue to assign top exploration priority to tungsten. With the Tempiute and Brazil projects, the initial objective of replacing Bishop will be perhaps one-third achieved. More is needed to fully replace Bishop and meet the clearly indicated long term shortage. Full UCC ownership of positions in the U. S. will be preferred, while partnerships will be typical overseas. Purchase as well as location of ore bodies will be considered but today's price levels render purchase opportunities rare.

2. GSA Stockpile

Past efforts to see that the GSA stockpile disposal program was not disruptive have been successful to date. Continuing attention to the issue is critical so that the GSA will have accurate, current information on the marketplace and regular reminders of the pivotal role they play.

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ACL Doc 17702 · Page 9 of 25 asbestosclaims.law/library/17702/9

3. New Projects

Projects for new tungsten mining and milling facilities in Nevada and Brazil will be submitted for Management Committee action in the early fall. The projects are within our capital allocation and are critical to meeting our tungsten objectives.

4. Trading Activities

The London tungsten trading company was successfully launched in 1974. It will be supported vigorously as an essential part of our overall tungsten business.

VANADIUM - Category 3 - Industrial Specialty

Financial Summary ($MM)

HISTORICAL				CURRENT		PROJECTED				
19 70	19 71	19 72	19 73	19 74		19 75	19 76	19 77	19 78	19 79
30.9	27.9	31.4	39.2	50.7	Total Net Sales	52.7	55.3	59.7	61.7	63.3
				15.6	Growth Rate (2)					6.9
16.7	27.1	19.6	24.5	28.6	Gross Margin %	25.5	24.1	28.9	28.9	28.9
6.6	8.9	8.5	8.6	7.6	Overhead % of Sales	8.3	8.0	7.7	7.7	7.8
0.4	2.0	1.6	3.5	6.2	Net Income After Tax	4.9	4.5	6.7	6.9	6.5
				159.0	Growth Rate (2)					8.2
1.1	0.9	1.9	3.1	5.1	Construction	3.3	3.8	2.5	3.3	1.7
47.8	44.0	48.5	52.0	48.5	Net Assets Employed	42.6	42.9	45.9	45.0	44.5
0.8	4.5	3.3	6.7	12.9	ROA %	11.6	10.5	14.6	15.3	14.6
0.65	0.63	0.65	0.75	1.05	Sales ÷ Net Assets Employed	1.24	1.29	1.30	1.37	1.42

During 1974, demand for vanadium products in the U. S. and in export markets increased to unprecedented levels, exceeding the production capability of the domestic industry and reducing producer inventories to very low levels. Prices were raised twice with earnings at record levels.

Critical issues and strategy summaries are:

1. Productive Capacity

UCC vanadium capacity is totally utilized. The new UCAR Minerals facility will be largely sold out when it comes on-stream in 1977. Output from existing mills in the U. S. will be expanded or sustained far beyond their captive ore capability by additions of supplemental feeds. A capital project for a proprietary supplemental feed facility at Arkansas will be submitted later in 1974.

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Metallurgical recovery will be stressed at all locations. Additional vanadium paid as a uranium conversion fee at Uravan is under negotiation. Two new 15 million pound/year facilities will be needed by 1985, preferentially in the western hemisphere. Novel petroleum sources are under investigation to this end.

2. Market Position

Our leading market position must be maintained in the steel and faster growing titanium and chemical industries. Our proprietary NITROVAN and CARVAN are making excellent inroads in the new automotive steel applications and this area will be stressed with technical service. Overseas markets now successfully penetrated must be carefully served, pending the availability of additional capacity. Prices will be maintained at levels justifying new capacity and permitting steady market growth. Product uniqueness will be maintained as priority consideration.

URANIUM - Category 3 - Industrial Specialty

Financial Summary

($MM)

HISTORICAL				CURRENT		PROJECTED				
1970	1971	1972	1973	1974		1975	1976	1977	1978	1979
26.5	15.2	14.0	10.3	17.3	Total Net Sales	22.6	26.8	21.7	35.5	29.2
				(15.5)	Growth Rate (Z)					16.2
28.7	22.4	32.0	17.7	13.4	Gross Margin %	23.1	33.0	31.6	39.5	49.8
9.7	8.1	9.5	8.1	9.0	Overhead % of Sales	10.5	9.3	11.9	7.5	9.5
3.7	1.6	2.2	1.0	1.0	Net Income After Tax	2.3	4.9	3.1	7.5	8.6
				(45.0)	Growth Rate (Z)					97.0
0.2	0.2	1.5	0.9	0.8	Construction	0.5	0.8	0.7	0.6	0.9
8.1	10.5	13.1	11.3	10.8	Net Assets Employed	18.4	15.6	15.0	15.5	18.0
45.7	15.2	16.8	8.3	9.7	ROA %	12.4	31.2	20.9	48.6	47.6
3.27	1.45	1.07	1.91	1.60	Sales ÷ Net Assets Employed	1.23	1.72	1.45	2.29	1.62

In mid-1973, the U. S. uranium business began to turn around dramatically. It is now clear that demand will outstrip capacity for at least the next ten years; prices have doubled and will triple by 1980; the government stockpile has been essentially committed, and foreign demand has greatly moderated the threat of imports.

Under these circumstances, we believe we should pursue the uranium business vigorously, in spite of the Management Committee's relegation of the business to Category 3 and the absence of a major project capital allocation in the 1975-79 period. Our interest is based on the following:

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ACL Doc 17702 · Page 11 of 25 asbestosclaims.law/library/17702/11

- We have on hand all the skills to participate in this business in a thoroughly professional, highly competitive fashion.

- We lack adequate ore reserves in the post-1980 period but have the time, skills and resources to conduct exploration programs to meet this deficiency, with reasonable odds of success.

- It is clearly going to be one of the most profitable extractive industries over the next ten to fifteen years.

If one or more major ore bodies are found, we have a number of thoroughly viable options for exploitation:

- We could sell them as such and many buyers can be readily identified.

- We could develop them jointly with others utilizing off-balance sheet financing and minimum UCC capital.

- We could develop them ourselves utilizing UCC capital made available through either adoption of an alternate plan and hence a revised allocation or competition on merit for UCC reserve funds.

Due to the potential earnings quality of a new uranium mine-mill complex, we strongly feel that it would be a highly desirable project for 100% UCC financing, on the basis of a revised Mining and Metals Division Alternative Plan.

Funds for a vigorous U. S. uranium exploration program seeking an ore body to support such a project have been included in this Long Range Plan as presented. We seek understanding and agreement with the Management Committee that, (1) this exploration program be executed as planned, (2) an Alternative Long Range Plan be approved that includes a new uranium mining and milling facility of approximately $30 million in capital cost to be spent roughly as $5 million in 1977, $15 million in 1978, and $10 million in 1979, and (3) the uranium business be returned to Category 2 status.

This Alternative Plan will have essentially no impact on sales or earnings in the Plan period, but, if an ore body is found, it could add some $6 to $8 million per year in net income in the 1980-90 period with a probable ROA of 30 to 40%.

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ACL Doc 17702 · Page 12 of 25 asbestosclaims.law/library/17702/12

SPECIAL METALS AND ALLOYS - Category 3 - Industrial Specialty

Financial Summary

($MM)

HISTORICAL				CURRENT		PROJECTED				
19 70	19 71	19 72	19 73	19 74		19 75	19 76	19 77	19 78	19 79
12.5	13.0	17.4	24.0	30.8	Total Net Sales	37.9	43.0	45.2	50.3	55.3
				30.6	Growth Rate (2)					13.7
21.0	21.8	20.4	21.3	23.1	Gross Margin %	28.6	27.5	26.9	30.5	32.7
7.5	8.4	6.6	6.1	5.9	Overhead % of Sales	6.1	5.5	5.5	5.2	5.0
-	0.1	0.9	1.5	2.3	Net Income After Tax	3.9	4.3	4.1	5.5	6.5
				120.0	Growth Rate (2)					24.5
0.6	0.5	0.3	0.2	1.3	Construction	0.6	5.7	3.7	0.7	1.0
13.0	12.0	13.6	11.9	11.0	Net Assets Employed	16.6	22.3	26.0	26.1	26.8
-	7.3	6.7	12.6	20.9	ROA %	23.6	19.3	15.8	21.1	24.3
0.96	1.08	1.28	2.02	2.80	Sales ÷ Net Assets Employed	2.28	1.93	1.74	1.93	2.06

This business, based largely on electrolytic chrome and manganese metal, consists of a family of proprietary additives for the aluminum industry (manganese-aluminum, chrome-aluminum, iron-aluminum), vacuum grade chromium metal used in the production of vacuum melted superalloys, and nickel boron used in hard facing applications, has demonstrated an ability to be a top quality metal conversion business, dependent not on a raw material position but on proprietary processes and products.

Based upon indicated growth in the industries served by our products, we anticipate a continued short supply situation. Despite the appearance of significant new capacity (including our own), we forecast capacity levels of operation throughout the Plan period.

The capital program includes a $5 million electrolytic manganese expansion and $3 million to implement a new, ore-chemical intermediate-metal, route for the production of chrome metal. Efficient execution of this expansion program and maintenance of product uniqueness are critical.

ASBESTOS - Category 3 - Industrial Specialty

Financial Summary

($MM)

HISTORICAL				CURRENT		PROJECTED				
19 70	19 71	19 72	19 73	19 74		19 75	19 76	19 77	19 78	19 79
1.8	2.4	2.6	3.8	4.5	Total Net Sales	5.4	6.2	8.1	9.7	11.4
				27.4	Growth Rate (2)					22.8
20.0	31.3	31.5	36.5	35.3	Gross Margin %	40.1	37.4	40.5	40.8	41.1
33.9	21.5	21.1	22.2	19.4	Overhead % of Sales	17.6	16.1	13.2	11.3	10.1
(0.3)	-	0.1	0.3	0.4	Net Income After Tax	0.7	0.7	1.1	1.5	1.9
				67.0	Growth Rate (2)					50.0
0.2	0.2	0.2	0.5	1.2	Construction	1.2	1.6	0.3	0.2	0.3
3.3	3.0	3.2	2.9	3.8	Net Assets Employed	4.8	5.6	6.8	6.8	6.7
-	-	3.1	11.4	12.3	ROA %	14.5	12.5	16.2	22.1	28.4
0.55	0.80	0.81	1.31	1.18	Sales ÷ Net Assets Employed	1.12	1.11	1.19	1.43	1.70

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ACL Doc 17702 · Page 13 of 25 asbestosclaims.law/library/17702/13

This small business has shown rapid earnings growth despite severe pressure related to the asbestos toxicity issue. The Plan calls for a continuation of the growth pattern with sales of over $10 million and earnings of nearly $2 million in 1979.

The growth in sales and earnings will come from the RG-244 expansion now underway and expected to be completed by the end of 1974 and an expansion of the overall plant capacity to 60M tons/year (nearly double existing capacity) by early 1976.

Critical to the longer-term position, is the building of a business that could be proportionate to our very, very large ore body. To find ways to do this and maintain earnings quality is the subject of several current action plans.

5. RESOURCE REQUIREMENTS

The capital resource requirements for the division are summarized by SPU as follows:

($ MM)	1975	1976	1977	1978	1979	Total
Tungsten, Cat. 1	10.2	5.8	1.0	11.0	1.0	29.0
Vanadium, Cat. 3	2.3	2.0	1.0	2.0	-	7.3
Uranium, Cat. 3	-	-	-	-	-	-
Asbestos, Cat. 3	1.0	1.4	-	-	-	2.4
Special Metals & Alloys, Cat. 3	-	5.0	3.0	-	-	8.0
Working Budgets	3.6	5.6	5.0	4.0	6.0	24.2
TOTALS	17.1	19.8	10.0	17.0	7.0	70.9

These amounts correspond precisely with the division's capital allocation, except for very modest year-to-year adjustments reflective of construction timing. As indicated, they provide no capital for the uranium SPU and the prospective needs in this area are the basis for the division's alternate plan capital requirements.

These base case capital requirements include provision for expansion in every SPU corresponding with anticipated market conditions, and a speculative project involving a new U. S. tungsten deposit needed to complement Bishop and Tempiute in the 1980's. The CBR for the Tempiute project, to be submitted shortly, involves a lease commitment having an NPV of $1.2 million as fully described in the CBR. The division had not previously foreseen this lease opportunity and hence had not solicited a lease allocation.

These capital allocations are modest relative to the demonstrated and projected financial performance of this business and the very major importance of domestic resource positions. Several projects are

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ACL Doc 17702 · Page 14 of 25 asbestosclaims.law/library/17702/14

omitted (e.g., a zinc joint venture in support of the Battery Products Division), but will be pursued and quantitatively analyzed on the presumption that off-balance sheet financing or partial interests in exchange for technology or marketing will be available. It is worth noting that most of our competitors, mining companies at large, and many firms not historically associated with mining, are making major capital commitments in recognition of the major future profit potential in basic resource positions.

Included in the financial projections for the Plan period are annual expenses of some $4.0 million for domestic mineral exploration. This is up significantly from prior years and entirely consistent with our business direction and strategies. A program of somewhat larger size is planned for overseas exploration, as will be detailed in our 1975 Business Budget. In constant dollars, R&D expenditures rise little over the Plan period, but are adequate to meet our objectives. Massive new overhead programs in other areas are not indicated or appropriate in the Plan period or beyond.

6. FINANCIAL PROJECTIONS

The actual and projected financial performance of the division is shown in the following table. As indicated, it calls for a 22.1% annual growth in earnings to over 62¢/share in 1979.

Total Division
Base Case
($MM)

HISTORICAL				CURRENT		PROJECTED				
1970	1971	1972	1973	1974		1975	1976	1977	1978	1979
102.0	91.0	92.5	102.0	136.2	Total Net Sales	165.5	181.4	188.2	214.9	222.4
				7.9	Growth Rate (2)					12.3
28.0	25.5	24.2	22.8	27.7	Gross Margin %	30.7	31.5	32.8	35.2	35.9
8.1	8.2	7.8	8.2	7.6	Overhead % of Sales	7.4	6.9	7.0	6.4	6.5
10.6	8.1	8.4	9.2	17.9	Net Income After Tax	22.2	25.4	26.9	35.3	37.6
				16.1	Growth Rate (2)					22.1
3.3	2.6	5.8	7.2	10.0	Construction	17.1	19.8	10.0	17.0	7.0
94.9	95.3	107.7	101.1	93.9	Net Assets Employed	104.7	118.6	130.3	132.8	141.7
11.2	8.5	7.8	9.1	19.1	ROA %	21.2	21.5	20.6	26.6	26.5
1.07	0.96	0.86	1.01	1.45	Sales ÷ Net Assets Employed	1.58	1.53	1.44	1.62	1.57

With the base case capital expenditures being essentially representative of the amounts needed to sustain the present operations, earnings quality averages well over 20% ROA for the period. Gross Margin increases to 36% in 1979 and would increase much more if prices had to be raised to offset the loss of percentage depletion. After tax return on sales reaches 17% in 1979.

A positive cash flow totalling over $120 million is projected for the Plan period, equal to over 80% of the projected earnings.

We believe that the indicated levels of performance fully meet our financial objectives and are, save for the risk inherent in worldwide

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ACL Doc 17702 · Page 15 of 25 asbestosclaims.law/library/17702/15

recession or arbitrary governmental action, both realistic and attainable.

In attempting to project the trend of financial performance beyond the 5-year Plan, we can reasonably conclude that present ore reserves, expansion programs now in progress, and indicated supply/demand conditions will support performance in the 1980-84 period similar to that forecast for the latter part of the 1975-79 Plan period. Following that, we could experience a severe downturn, if present ore reserves have been exhausted and we have not been able to locate or acquire new deposits of equivalent economic value.

This situation was emphasized and roughly quantified in our last Long Range Plan. Since then, incremental ore discoveries, planned new capital projects, improved operations, supplemental mill feed programs and higher prices, have combined to push the real peril point perhaps three years into the future. The 1984-90 period is now critical, but we believe that aggressive pursuit of existing plans and programs can support a growing, high quality business to and perhaps beyond the turn of the century.

The principal assumptions used in developing these financial projections can be summarized as follows:

- Reflecting the corporate economic forecast, the continued high level demand for our products and, in some cases, increased market penetration, we are projecting capacity level production and sales, inclusive of expansions, through the period.

- The 1975 prices and costs are based upon specific, preliminary Budget quality estimates. Beyond 1975, the following assumptions are incorporated.

  - Except for uranium, prices will increase an average of 3% per annum to allow recovery of specific cost increases and preserve overall financial quality. No price increases other than those necessary to keep pace with inflation are included, although they are highly probable in several areas. Uranium prices are based on existing sales contracts, including recently negotiated increases, and on currently quoted future prices for volumes not now under contract.

  - Plant costs and overhead will be subjected to an annual inflation rate of 5-1/2%, but productivity increases and operating improvements will, based on actual prior experience, limit the plant and distribution cost impact to a 3-1/2% annual rate.

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ACL Doc 17702 · Page 16 of 25 asbestosclaims.law/library/17702/16

- Supplies of energy and raw materials will continue to be tight and expensive, but will not result in significant curtailment of operations.

- Government actions relative to tax rates, depletion, imports, and stockpile disposal will not result in materially changed business conditions relative to the division's products.

- The Byrd Amendment will not be repealed.

Regarding the areas of significant risk, as outlined earlier, we can estimate the financial consequences of the major items roughly as follows:

- Elimination of the depletion allowance would reduce the annual net income by $7-$11 million until such time as compensatory price increases could be implemented.

- A severe worldwide recession could result in a return to pre-1974 levels of earnings, i.e., the $8-$10 million per annum range for the duration of the recession.

- Stockpile dumping on the part of the GSA, particularly in tungsten, could result in sharp price erosion which could reduce annual earnings by $7-$10 million for three to four years.

The Plan data include a managerial adjustment of $2 million/year in added plant costs to cover natural disaster contingencies. This is consistent with our past Long Range Planning practice.

Alternate Plan

We were extremely disturbed that the Capital Allocation/Direction Setting process relegated our Uranium SPU to Category 3 and eliminated all major project capital expenditures relative to uranium. We find it difficult to reconcile the demonstrated performance of this business, the very rapid market growth, the very significant escalation in prices, the clear indications of acute shortage and our large body of established skills with a Category 3 designation.

Our problem, and our only serious problem, is a shortage of ore reserves post-1980. Although the only probable economic impact during the Plan period will be in capital expenditures, we wish to present an Alternative Plan that includes a vigorous, sustained involvement in the

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ACL Doc 17702 · Page 17 of 25 asbestosclaims.law/library/17702/17

uranium business as at least a Category 2 business. The nature of this Alternative Plan is described in the Uranium Business Summary presented earlier. The essential difference from the base case is an additional $30 million in capital in the 1977-79 period for construction of a new uranium mine and mill.

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ACL Doc 17702 · Page 18 of 25 **asbestosclaims.law/library/17702/18**

TABLES AND CHARTS

Union Carbide trial exhibit UC-2841: Union Carbide Mining and Metals Division, 1975-1979 Long Range Business… Published by AsbestosClaims.Law
ACL Doc 17702 · Page 19 of 25 **asbestosclaims.law/library/17702/19**

Union Carbide trial exhibit UC-2841: Union Carbide Mining and Metals Division, 1975-1979 Long Range Business...
ACL Doc 17702 · Page 20 of 25

UCC 025309

TABLE I
LONG RANGE PLAN

HISTORICAL				ESTIMATED ACTUAL		PROJECTED				
19 70	19 71	19 72	19 73	1974	FINANCIAL SUMMARY	19 75	19 76	1977	1978	19 79
97.8	86.4	83.1	85.4	120.4	Domestic Sales	151.9	166.3	179.1	205.1	211.7
4.2	4.6	9.4	16.6	15.8	Export Sales	13.6	15.1	9.1	9.8	10.7
102.0	91.0	92.5	102.0	136.2	Total Net Sales	165.5	181.4	188.2	214.9	222.4
				7.9	Total Net Sales Growth Rate [1]					12.3
116.4	126.0	128.6	129.0	154.5	Price Index (1967 = 100)	181.7	190.8	200.3	210.3	220.8
133.4	107.5	102.5	104.5	122.7	Volume Index (1967 = 100)	132.0	137.4	141.2	154.2	151.5
					Variable Margin % of Total Net Sales (If available)					
28.0	25.5	24.2	22.8	27.7	Gross Margin % of Total Net Sales	30.7	31.5	32.8	35.2	35.9
1.6	1.5	1.3	1.2	2.2	Research & Development	3.1	3.2	3.4	3.5	3.7
7.0	6.2	6.2	7.2	8.1	Overhead (Excl. R&D)	9.2	9.4	9.8	10.3	10.8
8.1	8.2	7.8	8.2	7.6	Total Overhead % of Total Net Sales	7.4	6.9	7.0	6.4	6.5
				5.0	Total Overhead Growth Rate[1]					8.2
6.9	5.9	5.7	5.8	6.7	Depreciation & Book Depletion	7.3	8.4	9.2	10.3	12.2
(1.8)	(1.9)	(1.3)	(1.0)	(0.8)	Other Income Net	(1.7)	(2.1)	(2.5)	(2.8)	(3.1)
7.8	-	-	8.2	10.2	Tax Rate	24.7	25.3	26.9	27.5	24.8
10.6	8.1	8.4	9.2	17.9	Net Income After Taxes	22.2	25.4	26.9	35.3	37.6
0.176	0.134	0.137	0.151	0.294	Per Share	0.364	0.416	0.441	0.579	0.616
10.4	8.9	9.0	9.0	13.2	Percent of Sales	13.4	14.0	14.3	16.4	16.9
				16.1	Growth Rate[1]					22.1
11.5	8.2	7.4	8.1	15.9	ROI %	19.5	20.8	20.2	25.1	25.6
11.2	8.5	7.8	9.1	19.1	ROA %	21.2	21.5	20.6	26.6	26.5
3.3	2.6	5.8	7.2	10.0	Construction & Investment Expenditures	17.1	19.8	10.0	17.0	7.0
12.1	0.2	14.4	19.5	8.4	Net Cash Generated	10.7	14.1	27.3	29.6	45.8
94.6	95.3	107.7	101.1	93.9	Net Assets Employed (NAE)	104.7	118.6	130.3	132.8	141.7
199.6	228.0	221.4	211.8	209.5	Total Utilized Investment (TUI)	226.9	248.0	268.1	279.7	288.8
2.3	1.7	3.8	4.6	6.2	Construction % of Gross Fixed Investment	10.0	9.6	4.6	7.6	2.9
37.0	31.9	29.2	28.6	28.3	Net Fixed Assets % of Gross Fixed Investment	28.7	31.1	33.5	32.2	34.1
107.5	95.5	85.9	100.9	145.0	Sales % Net Assets Employed	158.1	153.0	144.4	161.8	157.0
335	378	453	442	436	GFI ÷ No. of Exempt Personnel	433	454	485	506	519
25	20	25	26	48	Net Income ÷ No. of Exempt Personnel	50	55	57	77	80

(1) See Notes to Financial Projections

DIVISION	DATE
MINING AND METALS	8/31/74

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ACL Doc 17702 · Page 21 of 25

UCC 025310

TABLE II
LONG RANGE PLAN
STRATEGIC PLANNING UNIT SUMMARY (1)

(Last Historical Actual & Fifth Year of Plan)

UNIT	CATE-GORY	TOTAL NET SALES (3) $	TOTAL NET SALES (3) % of Total	TOTAL NET SALES (3) $	TOTAL NET SALES (3) % of Total	NET INCOME $	NET INCOME % of Total	NET INCOME $	NET INCOME % of Total	Net Inc. Growth Rate (4)	TOT. CAPITAL EXPEND. (2) $	TOT. CAPITAL EXPEND. (2) % of Total	ROA %	
TUNGSTEN	1	24.5	24	63.0	28	3.3	36	16.6	44	19.2	37.5	53	14.0	33.2
VANADIUM	3	39.2	38	63.3	28	3.5	38	6.5	17	8.2	14.6	21	6.7	14.6
URANIUM	3	10.3	10	29.2	13	1.0	11	8.6	23	97.0	3.5	5	8.3	47.6
SPECIAL METALS & ALLOYS	3	24.0	24	55.3	25	1.5	16	6.5	17	24.5	11.7	17	12.6	24.3
ASBESTOS	3	3.8	4	11.4	6	0.3	3	1.9	5	50.0	3.6	5	11.4	28.4
ELIMINATION OF INTRA DIVISION						(0.4)	(4)	(2.3)	(6)					
TOTAL DIVISION		102.0	100%	222.4	100%	9.2	100%	37.6	100%	22.1	70.9	100%	9.1	26.5

(1) List Each Strategic Planning Unit by Category (1 through 6) and Sub Total each Category. (Use additional forms if needed)
(2) Total Capital Expenditures for the Five Year Projected Period, including share of expenditures for facilities jointly used with other units.
(3) Includes Intra Division
(4) See Notes to Financial Projections

DIVISION	DATE
MINING AND METALS	8/31/74

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ACL Doc 17702 · Page 22 of 25

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TABLE III
LONG RANGE PLAN
SUMMARY RECONCILIATION OF EARNINGS CHANGE

($ PER SHARE)

CURRENT YEAR TO FIRST YEAR OF LONG RANGE PLAN *		LAST HISTORICAL ACTUAL YEAR TO LAST YEAR OF LONG RANGE PLAN **
+ 11.8	Selling Prices	+ 0.6
+ 10.1	Carryover	+ 71.5
+ 7.4	New	+ 48.3
	Sales Volume & Mix	
	Product Mix (If Available)	
	Variable Plant and Distribution Cost	
	Period Plant and Distribution Cost	
+ 16.1	Total Plant and Distribution Cost	+ 65.3
+ 2.0	Total Overhead	+ 6.4
+ 0.6	Depreciation & Book Depletion	+ 6.4
	Interest Expense	
+ 0.9	Other Income Net	+ 2.1
+ 5.2	Income Taxes	+ 11.7
+ 4.3	Total Earnings Change $ MM	+ 28.4
+ 0.070	- $ Per Share	+ 0.465

* Example: In 1974 Reconcile 1974-1975

** Example: In 1974 Reconcile 1973-1979

DIVISION: MINING AND METALS

DATE: 8/31/74

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TABLE IV

LONG RANGE PLAN

HISTORICAL				ESTIMATED ACTUAL	SUMMARY	PROJECTED				
1970	1971	1972	1973	1974	ASSET ACQUISITION PROGRAM	1975	1976	1977	1978	1979
					Construction Expenditures[1]					
0.5	0.4	2.7	1.7	2.6	Major Projects	13.5	14.2	5.0	13.0	1.0
2.8	2.2	3.1	5.5	7.4	Working Budgets	3.6	5.6	5.0	4.0	6.0
3.3	2.6	5.8	7.2	10.0	Total Construction	17.1	19.8	10.0	17.0	7.0
-	-	-	-	-	Investment Expenditures	-	-	-	-	-
3.3	2.6	5.8	7.2	10.0	Total Construction and Investment	17.1	19.8	10.0	17.0	7.0
			8.0	10.0	Capital Allocation	17.0	20.0	7.0	19.0	8.0
					Capital Authorizations[2]					
1.1	0.6	3.9	1.3	17.3	Major Projects	9.9	8.0	13.0	-	-
2.8	2.5	4.0	8.3	5.5	Working Budgets	5.0	6.0	6.0	6.0	7.0
3.9	3.1	7.9	9.6	22.8	Total Authorizations	14.9	14.0	19.0	6.0	7.0
					Outstanding Lease Commitment (As of 12/31)	-	7.5	7.3	7.1	6.9
					NPV of Outstanding Lease Commitment	-	1.2	1.0	0.9	0.8
					Lease Allocation[3]	-	-0-	-	-	-

(1) Data should represent projected levels not necessarily supported by currently known projects, leases or investments.

(2) Total value of projects to be authorized during year.

(3) Allocation is on basis of NPV of Outstanding Lease Commitment.

DIVISION	DATE
BASE CASE MINING AND METALS	8/31/74

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ACL Doc 17702 · Page 23 of 25

TABLE IV

LONG RANGE PLAN

HISTORICAL				ESTIMATED ACTUAL	SUMMARY	PROJECTED				
19 70	19 71	19 72	19 73	19 74	ASSET ACQUISITION PROGRAM	19 75	19 76	19 77	19 78	19 79
					Construction Expenditures[1]					
0.5	0.4	2.7	1.7	2.6	Major Projects	13.5	14.2	10.0	28.0	11.0
2.8	2.2	3.1	5.5	7.4	Working Budgets	3.6	5.6	5.0	4.0	6.0
3.3	2.6	5.8	7.2	10.0	Total Construction	17.1	19.8	15.0	32.0	17.0
-	-	-	-	-	Investment Expenditures	-	-	-	-	-
3.3	2.6	5.8	7.2	10.0	Total Construction and Investment	17.1	19.8	15.0	32.0	17.0
			8.0	10.0	Capital Allocation	17.0	20.0	7.0	19.0	8.0
					Capital Authorizations[2]					
1.1	0.6	3.9	1.3	17.3	Major Projects	9.9	8.0	43.0	-	-
2.8	2.5	4.0	8.3	5.5	Working Budgets	5.0	6.0	6.0	6.0	7.0
3.9	3.1	7.9	9.6	22.8	Total Authorizations	14.9	14.0	49.0	6.0	7.0
					Outstanding Lease Commitment (As of 12/31)	-	7.5	7.3	7.1	6.9
					NPV of Outstanding Lease Commitment	-	1.2	1.0	0.9	0.8
					Lease Allocation[3]	-	-0-	-	-	-

(1) Data should represent projected levels not necessarily supported by currently known projects, leases or investments.

(2) Total value of projects to be authorized during year.

(3) Allocation is on basis of NPV of Outstanding Lease Commitment.

DIVISION	DATE
ALTERNATE PLAN MINING AND METALS	8/31/74

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ACL Doc 17702 : Page 24 of 25

TABLE IV

LONG RANGE PLAN

HISTORICAL				ESTIMATED ACTUAL	SUMMARY	PROJECTED				
19	19	19	1973	1974	ASSET ACQUISITION PROGRAM	1975	1976	1977	1978	1979
					Construction Expenditures[1]					
					Major Projects					
					Working Budgets					
					Total Construction					
			0.6	1.0	Investment Expenditures World-wide Mining	4.0	4.0	4.0	4.0	-
			0.6	1.0	Total Construction and Investment	4.0	4.0	4.0	4.0	-
			0.6	1.0	Capital Allocation	4.0	4.0	4.0	4.0	-
					Capital Authorizations[2]					
					Major Projects					
					Working Budgets					
					Total Authorizations					
					Outstanding Lease Commitment (As of 12/31)					
					NPV of Outstanding Lease Commitment					
					Lease Allocation[3]					

(1) Data should represent projected levels not necessarily supported by currently known projects, leases or investments.

(2) Total value of projects to be authorized during year.

(3) Allocation is on basis of NPV of Outstanding Lease Commitment.

DIVISION	DATE
U.C. EXPLORATION	8/31/74

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ACL Doc 17702 · Page 25 of 25
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