MINES INVESTMENT ANALYSIS

Table 1: Production Cost Components*

I. Operating Cost or Manufacturing Cost
   A. Direct Production Costs
      1. Materials
         a. Raw materials
         b. Processing materials
         c. Byproduct and scrap credit
         d. Utilities
         e. Maintenance materials
         f. Operating supplies
         g. Royalties and rentals
      2. Labor
         a. Direct operating labor
         b. Operating supervision
         c. Direct maintenance labor
         d. Maintenance supervision
         e. Payroll burden on all labor charges
            (1) FICA tax
            (2) Workmen's compensation coverage
            (3) Contributions to pensions, life insurance, etc.
            (4) Vacations, holidays, sick leave, overtime premium
            (5) Company contribution of profit sharing
   B. Indirect Production Costs
      1. Plant overhead or burden
         a. Administration
         b. Indirect labor
            (1) Laboratory
            (2) Technical service and engineering
            (3) Shops and repair facilities
            (4) Shipping department
         c. Purchasing, receiving, and warehouse
         d. Personnel and industrial relations
         e. Inspection, safety, and fire protection
         f. Automotive and rail switching
         g. Accounting, clerical, and stenographic
         h. Plant custodial and plant protective
         i. Plant hospital and dispensary
         j. Cafeteria and clubrooms
         k. Recreational activities
         l. Local contributions and memberships
         m. Taxes on property and operating licenses
         n. Insurance—property, liability
         o. Nuisance elimination—waste disposal
      2. Depreciation
   C. Contingencies
   D. Distribution Costs
      1. Containers and packages
      2. Freight
      3. Operation of terminals and warehouses
         a. Wages and salaries plus payroll burden
         b. Operating materials and utilities
         c. Rental or depreciation

II. General Expenses
   A. Marketing or Sales Costs
      1. Direct
         a. Salesmen salaries and commissions
         b. Advertising and promotional literature
         c. Technical sales service
         d. Samples and displays
      2. Indirect
         a. Sales supervision
         b. Travel and entertainment
         c. Market research and sales analysis
         d. District office expenses
   B. Administrative Expenses
      1. Salaries and expenses of officers and staff
      2. General accounting, clerical, and auditing
      3. Central engineering and technical
      4. Legal and patent
         a. Within company
         b. Outside company
         c. Payment and collection of royalties
      5. Research and development
         a. Own operations
         b. Sponsored, consultant, and contract work
      6. Contributions and dues to associations
      7. Public relations
      8. Financial
         a. Debt management
         b. Maintenance of working capital
         c. Credit functions
      9. Communications and traffic management
      10. Central purchasing activities
      11. Taxes and insurance

Salient Factors Requiring Consideration
in a Feasibility Study

I. Information on Deposit
   A. Geology
      1. Mineralization: type, grade, uniformity
      2. Geologic structure
      3. Rock types: physical properties
   B. Geometry
      1. Size, shape, and attitude
      2. Continuity
      3. Depth
   C. Geography
      1. Location: proximity to towns, supply depots
      2. Topography
      3. Climatic conditions
      4. Surface conditions: vegetation, stream diversion
      5. Political boundaries
   D. Exploration
      1. Historical: district, property
      2. Current Program
      3. Reserve: tonnage, distribution, classification
      4. Sampling: types, procedures
      5. Proposed program

II. Information on General Project Economics
   A. Markets
      1. Marketable form of product, concentrates, direct shipping ore, specifications
      2. Market location and alternatives
      3. Expected price levels and trends: supply-demand, competitive cost levels, new source of product substitutions, tariffs
   B. Transportation
      1. Property access
      2. Product transportation: methods, distance, costs
   C. Utilities
      1. Electric power: availability, location, ownership right of way, costs
      2. Natural gas: availability, location, costs
      3. Alternatives: on site generation
   D. Land and Mineral Rights
      1. Ownership: surface, mineral, acquisition and/or option costs
      2. Acreage requirements: concentrator site, waste dump location, tailings pond location
   E. Water
      1. Potable and process sources, quantity, quality, availability, costs
      2. Mine water: quantity, quality, depth and source, drainage method, treatment
   F. Labor
      1. Availability and type: skilled/unskilled in mining
      2. Rates and trends
      3. Degree of organization
      4. Local/decline labor history
   G. Governmental Considerations
      1. Taxation: federal, state, local
      2. Reclamation and operating requirements and trends
      3. Zoning
      4. Proposed and pending mining legislation

III. Mining Method Selection
   A. Physical Controls
      1. Strength: ore, waste, relative
      2. Uniformity: mineralization, blending requirements
      3. Continuity: mineralization
      4. Geology: structure
      5. Surface disturbance: subsidence
      6. Geometry
   B. Selectivity
   C. Production Requirements
      1. Relative production
      2. Development: methods, quantity, time requirements
      3. Capital requirements vs. availability
IV. Processing Methods
   A. Mineralogy
      1. Properties of ore: metallurgical, chemical, physical
      2. Ore hardness
   B. Alternative Processes
      1. Establish flowsheet, recovery grade
      2. Production schedule
   C. Production Quality vs. Specifications
   D. Recoveries

V. Capital and Operating Cost Estimates
   A. Capital Costs
      1. Exploration
      2. Mining
         a. Preproduction development (may also be considered operating costs)
         b. Site preparation
         c. Mine buildings
         d. Mine equipment
      3. Mill
         a. Site preparation
         b. Mill buildings
         c. Mill equipment
         d. Tailings pond
   B. Operating Costs
      1. Mining
         a. Labor
         b. Maintenance and supplies
         c. Development
      2. Milling
         a. Labor
         b. Maintenance and supplies
      3. Administrative and supervisory