Analysis of Organizational Options for the Uranium Enrichment Enterprise in Relation to Asset Divesture

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August 1986

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SUMMARY

This report presents a comparison of the characteristics of some prominent examples of independent government corporations and agencies with respect to the Department of Energy's (DOE) uranium enrichment enterprise. The six examples studied were:

- o the Bonneville Power Administration (BPA)
- o the Tennessee Valley Authority (TVA)
- o the Synthetic Fuels Corporation (SYNFUELS)
- o the Consolidated Rail Corporation (CONRAIL)
- o the British Telecommunications Corporation (British TELECOM)
- o the Communications Satellite Organization (COMSAT)

The examples identified above are listed in order of decreasing levels of government ownership and control. They range from BPA, which is organized as an agency within DOE, to COMSAT, which is privately owned and free from almost all regulations common to government agencies. Differences in the degree of government involvement in these corporations and in many other characteristics serve to illustrate that there are no accepted standards for defining the characteristics of government corporations. Thus, historical precedent indicates considerable flexibility would be available in the development of enabling legislation to reorganize the enrichment enterprise as a government corporation or independent government agency.

One characteristic that is supposed to be common to all government corporations is that they serve commercial purposes and have some prospect of being financially self-supporting through revenues (National Academy of Public Administration 1981). Except for SYNFUELS and TVA's/BPA's non-power programs, the examples analyzed in this study appear to meet this criteria. More importantly, the enrichment enterprise also appears to meet the basic criteria necessary for determining whether a government activity is appropriate to be conducted within the framework of a government corporation.

The amount of benefits, in terms of operational flexibility and other characteristics, that the enrichment enterprise is likely to realize from

reorganization as a government corporation or independent agency will depend to a great extent on the type of organizational form chosen and the provisions of any enabling legislation that may be used. For example, the only major difference in operating flexibility that was identified between BPA and the current enrichment enterprise is that BPA has Treasury borrowing authority for long-term capital improvements, while the current enrichment enterprise does not. Except for this difference, BPA is subject to the same major controls and regulations as the current enrichment enterprise. On the other hand, other examples studied, such as COMSAT, are exempt from almost all regulations and controls common to government agencies, such as Freedom of Information laws, Civil Service employment regulations, etc.

Analysis of the six examples indicates that the probability of eventual private sector participation in the enrichment enterprise will be facilitated and enhanced by some type of stock ownership form. British TELECOM was converted to a government corporation in 1981 and privatized through stock sales in 1984. CONRAIL was initially developed in a stock ownership form where 85 percent of the stock was owned by the government and is currently in the process of being privatized. At the other extreme, privatization of BPA and TVA is made more difficult because they have no stock ownership form.

Among the six examples studied, it appears that SYNFUELS is most different from the uranium enrichment enterprise in terms of business characteristics. The only similarity in business characteristics between SYNFUELS and the enterprise would appear to be that they are both associated with energy. Major differences between the enterprise and SYNFUELS include:

- o SYNFUELS was essentially a lending institution that directly produced no tangible product
- o SYNFUELS had no significant revenue producing assets
- o SYNFUELS had no prospect of being self-supporting through revenues

It appears that the enrichment enterprise is most similar to COMSAT among the six examples studied. Major similarities between the enrichment enterprise and COMSAT include:

- o COMSAT serves both national and international markets

- o COMSAT's primary customers are a specific type of user group with similar characteristics to those of the enterprise
- o COMSAT has both defense and non-defense applications
- o COMSAT faces international competition
- o COMSAT's original justification was based on national goals

Although further study of a "COMSAT-like" organizational form for the enterprise is warranted, a point of caution should be noted. The success of COMSAT as a viable corporation can be traced to the fact that private investors were willing to provide financing for COMSAT based on the excitement associated with satellite business and its expected high profitability. Under current conditions, similar investor acceptance of the enrichment enterprise would not appear likely, although government incentives and improved financial conditions in the enrichment market could change this.

The primary relevancy to the enrichment enterprise of examining the six examples of government corporations and independent agencies is that these corporations may have advantages in operating flexibility and financing that the enrichment enterprise does not currently have. In general, the higher the degree of government participation and investment in these corporations, the less these advantages are likely to be realized. However, a high level of government involvement may be required in the early years of a government corporation until the profitability of the corporation has been sufficiently demonstrated to encourage private investment.

The six examples are also relevant to the enterprise because they demonstrate precedence in the formation and use of government corporations and independent agencies to successfully provide products and services on a large scale, financially self-supporting basis. While most of these examples were formed in a politically charged "crisis-atmosphere," COMSAT and British TELECOM provide precedence for the systematic development of a government corporation. Some of the examples studied are judged to have been more successful in performing their mission than others. It is recommended that TVA, CONRAIL, British TELECOM, and COMSAT be studied further to identify aspects of their enabling legislation that may be relevant and useful to the potential

formation of an enrichment services corporation.

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1.0 INTRODUCTION

The purpose of this study is to characterize organizational options for the Department of Energy's uranium enrichment enterprise, with particular emphasis on investigating the option of a government corporation or independent agency. Detailed information is provided on several examples of government corporations and independent agencies that provide precedence for the enrichment enterprise in the potential formation of an enrichment services corporation. The research is sponsored by the Department of Energy's Office of Uranium Enrichment as part of an ongoing effort to examine the purpose and structure of DOE's uranium enrichment program, as has been suggested by the General Accounting Office and others.

Identifying and recommending specific organizational structure that is appropriate for the uranium enrichment enterprise is beyond the scope of this study. However, the analysis presented in this report does outline the potential advantages and disadvantages of several alternative structures - from maintaining the enterprise in its present form as an office within the Department of Energy to immediate privatization. Detailed information on the characteristics of the enrichment enterprise and six examples of government corporations and independent agencies is also presented. The examples of government corporations or independent agencies that are characterized in this report include:

- o the Bonneville Power Administration (BPA)
- o the Tennessee Valley Authority (TVA)
- o the SYNFUELS Corporation (SYNFUELS)
- o the Consolidated Rail Corporation (CONRAIL)
- o British TELECOM
- o the Communications Satellite Corporation (COMSAT)

The characteristics of these six examples are then compared to those of the enrichment enterprise in terms of their similarities, their differences, and their relevance to the possible formation of an enrichment services corporation.

This report is organized into five chapters. The second chapter presents the major results and conclusions of the study. Chapter 3 presents background information on the characteristics of the enrichment enterprise for later use in comparing these characteristics to those of the six examples of government corporations or independent agencies. In Chapter 4, the advantages and disadvantages of the general types of organizational options available to the enrichment enterprise are described. Chapter 5 presents detailed information on the characteristics of the six selected examples of government corporations and independent agencies. The report includes two appendices that provide an analysis of the similarities and differences between the enrichment enterprise and the six examples, and organizational charts for selected examples.

2.0 RESULTS AND CONCLUSIONS

The uranium enrichment enterprise appears to have three basic options with regard to its future organizational structure:

- o the enterprise can maintain its current structure within DOE
- o the enterprise can be privatized
- o the enterprise can change its structure within the government to establish a government corporation or independent agency

The major advantages and disadvantages of the three options are summarized in Table 1 presented at the end of this chapter. The listing of advantages and disadvantages provided in Table 1 indicate that, at the present time, reorganization of the enterprise as a government corporation or some other type of independent agency appears to be desirable. An important caveat to this conclusion, however, is that the relative benefits to be gained from such a reorganization will be highly dependent on form of the government corporation or independent agency that is eventually adopted. Thus, an investigation of six examples of independent agencies or government corporations was undertaken to determine their possible applications to the reorganization of the enterprise.

The enrichment enterprise and the six examples of government corporations were characterized in terms of a number of factors that were believed to be important in their organization and operation. One page summaries of these characterizations were developed and are presented in Tables 2 through 8. The characterizations presented in Tables 2 to 8 are presented in order of increasing private sector involvement and decreasing government control. They range from the current enrichment enterprise, which is organized as a fully government organization within a federal department, to COMSAT, which in most respects, is a private corporation.

The similarities and differences between the enrichment enterprise and the six examples of government corporations or independent agencies were then analyzed. The results of this analysis are summarized in the remainder of this chapter. For more detailed information on this analysis, the reader is referred to Appendix A.

2.1 BUSINESS DEFINITION

It appears that the services provided by COMSAT and CONRAIL are similar in principle to the enrichment enterprise because they involve serving as an intermediate step between a producer of a good or service and its ultimate end-user. In addition, similar to the enterprise, COMSAT's services have both non-defense and defense applications. The services provided by SYNFUELS and TVA's/BPA's non-power programs appear to be the most different from the enrichment enterprise because they do not involve the provision of products or services on a financially self-sustaining basis. In SYNFUELS case, the service provided was non-commercial financial assistance. TVA's/BPA's non-power programs involve a wide variety of non-commercial activities, from environmental research to economic development.

2.2 OBJECTIVE

The uranium enrichment enterprise has both commercial objectives in serving electric utilities and non-commercial objectives in serving defense and other national purposes. TVA and BPA have similar joint missions. However, with 80 percent of its sales to commercial utilities and the requirement to be financially self-supporting, the enterprise's commercial objectives would appear to be most important in determining its actions and policies. Thus, the purely commercial objectives of CONRAIL, British TELECOM and COMSAT do not appear to be much different from the enterprise. In contrast, the non-commercial objectives of SYNFUELS causes it to be very different.

2.3 MARKETS SERVED

Only COMSAT appears to be similar to the enrichment enterprise in terms of the global scope of the markets that it serves. All of the other examples serve only national, and in some cases, regional markets. COMSAT is also similar to the enterprise in that it primarily serves a specific group of customers that provide utility services and that the Department of Defense is one of its most important customers. BPA and TVA are similar to the enterprise in that their primary customers are electric utilities. SYNFUELS is the most different from the enterprise in terms of the markets it serves.

2.4 FUNCTIONAL ATTRIBUTES

Similar to the enrichment enterprise, all of the examples studied except SYNFUELS have large amounts of revenue producing assets. As a lending institution, SYNFUELS had no real revenue producing assets of any significant value. The accounting value of the assets of the enterprise compare most closely to those of CONRAIL. The operating revenues of the enterprise compare most closely to COMSAT. Comparisons of the asset and revenue values indicate that the enterprise would not be particularly large when compared to the five examples of currently operating independent agencies and government corporations.

2.5 JUSTIFICATION/LEGISLATIVE HISTORY

The establishment of both COMSAT and SYNFUELS was initially justified based on national priorities to demonstrate United States technological capabilities to the American people and to the rest of the world. These national priorities were similar to the national defense goals for which the enterprise was established. The initial establishment of TVA and BPA were justified based on a different type of regional economic development goals.

The legislative histories of the six examples of independent agencies or government corporations indicate that substantial precedence exists for changing the operating rules of a government enterprise after its initial development. Both TVA in the 1950s and BPA in 1974 were granted borrowing authority for their power programs that placed them on a more self-supporting and independent basis. CONRAIL's ability to become financially self-supporting was greatly enhanced by later Congressional actions to deregulate the rail industry. Probably the most relevant example is provided by British TELECOM which was converted to a government corporation in 1981 and privatized through stock sales of a controlling interest in the corporation in 1984.

2.6 ORGANIZATIONAL STRUCTURE

The current organizational structure of the enrichment enterprise is most similar to that of BPA and most different from those of CONRAIL, British TELECOM and COMSAT. The later three organizations have made efforts to involve

private sector representatives in their management since their initial establishment.

2.7 FINANCING

All of the six examples studied appear to have significantly more financing flexibility than the enterprise. Only TVA's non-power programs are directly dependent on the annual appropriations process for financing. Only BPA has authority to borrow directly from the U.S. Treasury for specific long-term capital projects. All of the other examples studied currently obtain financing through private capital markets, net revenues, or in TVA's case, the Federal Financing Bank.

2.8 PRICING

All of the examples studied except SYNFUELS and TVA's/BPA's non-power programs are similar to the enrichment enterprise in that the prices they charge for services are expected to be high enough to at least cover the costs of providing these services. In the case of CONRAIL, British TELECOM and COMSAT, the prices charged are also expected to earn a profit above costs. British TELECOM and COMSAT's prices for some services are regulated by government regulatory commissions in a manner similar to investor-owned utilities.

2.9 OTHER REGULATORY FEATURES

BPA is subject to the same types of government regulations as the enrichment enterprise. TVA is subject to most of these regulations except in the two important areas of employment and procurement. In its enabling legislation, SYNFUELS was exempted from most standard government regulations. However, most of these were replaced by similar regulations specifically developed for SYNFUELS. CONRAIL and COMSAT are exempt from almost all of the regulations common to federal government agencies.

2.10 COMPETITION

Only COMSAT appears to be facing the kind of international competition that is faced by the enrichment enterprise. BPA, TVA and SYNFUELS essentially

have no competition for the specific types of services they provide. CONRAIL and British TELECOM face only limited domestic competition within the markets they serve. Because of their lower level of competition, it is likely that all of the examples studied have more ability to obtain full-cost recovery without losing market share than does the enrichment enterprise in its current situation.

2.11 CONCLUSIONS

The six examples of government corporations or independent agencies analyzed in this study provide substantial precedence for the possible formation of a similar organization to provide uranium enrichment services. The enrichment enterprise appears to have the same commercial revenue producing characteristics that are common to all of the examples studied except SYNFUELS. The example studied which appears to be most similar to the enrichment enterprise in terms of business definition, markets served, and other commercial characteristics is COMSAT. COMSAT is also the example whose current organizational structure is most different from that of the current structure of the enterprise. The example studied that is most different from the enterprise in terms of commercial characteristics is SYNFUELS.

The examples studied indicate that significant flexibility would be available in defining the operational characteristics of an enrichment services corporation or independent agency. Constraints imposed on an organization's commercial activities vary widely depending upon its operational charter. Organizations with a stock form of capital structure and private sector involvement in overseeing the management of their operations are likely to have a better chance of eventual privatization than other types of government organizations.

The major aspects of the six examples studied that appear to be most relevant to the enrichment enterprise are summarized in Table 9. Note from Table 9 that four of the six examples studied (BPA, TVA, SYNFUELS and CONRAIL) were formed to solve what were considered to be significant national problems, and that the decisions that organized these agencies and corporations were made in what can be characterized as "crisis atmospheres." A perceived crisis is often necessary to muster the political will for the formation of a

government corporation and may be necessary for the enrichment enterprise. However, British TELECOM and COMSAT provide precedence for a more orderly and systematic formation of a government corporation in response to national goals.

Based on the results summarized in Table 9, it appears that if the enrichment enterprise is interested in reorganizing as an independent government agency, the enabling legislation and operational aspects of TVA should be studied further for possible application. If the enterprise desires reorganization as a government corporation with possible private sector participation COMSAT, CONRAIL, and British TELECOM should be studied further.

Important factors that need to be considered in further work on the potential reorganization of the enrichment enterprise include:

- o the willingness of the private sector to participate in financing the development of an enrichment corporation
- o the regulations currently imposed on the enterprise that most significantly affect its efficient operation
- o the acceptability and importance of Treasury borrowing authority

Table 1. Summary of the Major Advantages and Disadvantages of Basic Organizational Options for the Uranium Enrichment Enterprise

Organizational Option	Advantages	Disadvantages
Maintain enterprise in its current form	<ul style="list-style-type: none"> 1) No enabling legislation required 2) No regulatory changes (NRC licensing, etc.) required 3) Continued government control over enrichment technology 	<ul style="list-style-type: none"> 1) Continued lack of flexibility to deal with changing competitive and market conditions 2) Inadequate financing to adequately support advanced technology development 3) Continued government investment 4) Future privatization would be difficult
Immediate privatization	<ul style="list-style-type: none"> 1) No direct government involvement or funding in providing enrichment services 2) Greater flexibility to deal with changing competitive and marketing conditions 3) Increased access to financing 	<ul style="list-style-type: none"> 1) Immediate privatization may not be feasible because of a lack of private sector interest 2) Significant regulatory changes would be required 3) Enabling legislation would be required 4) Reduced government control over enrichment technology

Table 1. (Continued)

Organizational Option	Advantages	Disadvantages
Government corporation or independent agency	<ol style="list-style-type: none"> 1) Increased operating flexibility to deal with changing competitive and market conditions 2) Continued government control over enrichment technology 3) Less regulatory changes required 4) Increased access to financing 5) Future privatization facilitated and enhanced 6) Reduced dependence on government funding in the future 	<ol style="list-style-type: none"> 1) Enabling legislation required 2) Advantages may not be realized depending upon characteristics of the corporation

Table 2. Summary of Uranium Enrichment Enterprise Characteristics

<u>Business Definition</u>	- Enriching uranium for use in nuclear fission power plants
<u>Objective</u>	- To maintain a reliable, competitive domestic source of commercial enrichment services and support defense and other national objectives
<u>Markets Served</u>	- Domestic utilities, foreign utilities, domestic defense and other government agencies
<u>Functional Attributes</u>	- Land, gaseous enrichment plants, equipment and other assets valued at approximately \$6.6 billion and gross revenues of about \$1.5 billion in 1985
<u>Justification/ Legislative History</u>	<ul style="list-style-type: none"> - Initially justified by national defense goals - Civilian applications in enrichment for nuclear electric power plants later seen as a beneficial use of enrichment capacity - Initial civilian applications authorized in 1954 Atomic Energy Act that was later extended by the Private Ownership Act of 1964 - Government ownership has historically been justified by control concerns, a lack of private sector interest, and an organizational structure not amenable to change
<u>Organizational Structure</u>	- Currently organized as a government agency within the Office of Nuclear Energy of DOE
<u>Financing</u>	<ul style="list-style-type: none"> - Currently financed by appropriations subsequently recovered through sales revenues - Must recover past and present appropriations over a reasonable period of time (10 years)
<u>Pricing</u>	<ul style="list-style-type: none"> - Pricing based on need for full-cost recovery - Pricing methods recently changed to include a ceiling price, an incentive price and other elements needed to price competitively
<u>Other Regulatory Features</u>	- Subject to all standard federal regulations in areas such as employment, procurement, etc.
<u>Competition</u>	- Faces competition from several foreign government-owned suppliers and from utility inventories

Table 3. Summary of BPA Characteristics

<u>Business Definition</u>	-	Marketing/development of electric power and fish and wildlife enhancement in the Pacific Northwest
<u>Objective</u>	-	To ensure adequate electricity supplies of in the Pacific Northwest at the lowest possible cost and to maintain/increase fish and wildlife populations
<u>Markets Served</u>	-	Municipal/cooperative public utilities, investor-owned private utilities, large direct service industrial (DSI) customers and federal agencies in the Pacific Northwest
	-	Utilities in the Southwest and British Columbia
<u>Functional Attributes</u>	-	Electric power transmission and distribution facilities valued at approximately \$3 billion and gross revenues of about \$2.9 billion in 1985
<u>Justification/ Legislative History</u>	-	Justified by the economic need to utilize power from Pacific Northwest hydroelectric dams
	-	Enabling legislation was the 1937 BPA Act
	-	Became self-financing in 1974 through P.L. 93-454
<u>Organizational Structure</u>	-	Organized as a government agency in DOE
	-	Administrator reports to and is appointed by the Secretary of DOE
<u>Financing</u>	-	Prior to 1974, funded through appropriations and returned all revenues to the Treasury
	-	Currently funds most programs from power revenues
	-	Has authority to borrow up to \$2.5 billion from the Treasury for specific purposes
	-	Can borrow indirectly through municipal agencies
<u>Pricing</u>	-	Power rates are required to recover all costs, including government debt service
	-	Has occasionally missed government debt payments, but in 1985, paid \$686 million on debt
<u>Other Regulatory Features</u>	-	Subject to all standard government regulations in procurement, employment, etc.
<u>Competition</u>	-	Has no significant competition

Table 4. Summary of TVA Characteristics

<u>Business Definition</u>	-	Regional development and applied research
<u>Objectives</u>	-	To perform energy, natural resource and economic research and development activities that benefit the TVA area and the nation
<u>Markets Served</u>	-	Vary widely; range from other federal government agencies to private industrial power users
<u>Functional Attributes</u>	-	Land, electric power plants and equipment, a fertilizer chemical plant and other assets valued at \$21.5 billion in 1985; gross revenues from power sales of \$4.5 billion in 1985
<u>Justification/ Legislative History</u>	-	Originally justified by the need for economic development and flood control in the TVA region
	-	Enabling legislation was the TVA Act of 1933, which was later amended in the 1950s to explicitly state TVA's role as an electric power supplier
	-	Currently being asked to justify its existence on the basis of national benefits
<u>Organization Structure</u>	-	Three full-time Board of Directors appointed by the President and confirmed by the Senate for nine-year terms
	-	Organized as an independent agency of the federal government with all expenditures "on-budget"
<u>Financing</u>	-	Power program is self-supporting through revenues and financed through bonds
	-	Bonds are not backed by the federal government
	-	Non-power programs funded through appropriations and partial revenues
<u>Pricing</u>	-	Power rates must be high enough to recover costs, while non-power rates need not recover costs
<u>Other Regulatory Features</u>	-	Subject to many of the same regulations as government departments
	-	Generally free from standard government regulations in procurement and personnel
<u>Competition</u>	-	Essentially none, except for other government programs that compete for appropriations

Table 5. Summary of SYNFUELS Characteristics

<u>Business Definition</u>	- Providing financial assistance to the domestic synthetic fuels industry
<u>Objective</u>	- To establish a viable synthetic fuels industry
<u>Markets Served</u>	- Domestic synthetic fuel industry developers
<u>Functional Attributes</u>	- As a lending institution, office space and the ability to provide appropriated funds to developers were its only significant functional attributes
<u>Justification/ Legislative History</u>	<ul style="list-style-type: none"> - Originally justified by economic and security concerns about dependence on imported oil - Enabling legislation was the Energy Security Act of 1980 - Autonomous, highly-visible form was chosen to demonstrate government concern to public, even though mission was similar to a government agency - Because of falling oil prices and reduced public support, it is now defunct
<u>Organizational Structure</u>	<ul style="list-style-type: none"> - Seven directors appointed by the President and organized in a project matrix system - Wholly "owned" by the federal government - Advisory Committee composed of government agency leaders
<u>Financing</u>	- Financing through appropriations to the Energy Security Reserve Account of the U.S. Treasury from which funds could subsequently be drawn out
<u>Pricing</u>	- Provisions for the "pricing" of the financial assistance provided by SYNFUELS were unclear
<u>Other Regulatory Features</u>	<ul style="list-style-type: none"> - Exempted from most standard government regulations - Specific regulations in the enabling legislation replaced many of the standard regulations - Subject to outside audit and administrative expense controls
<u>Competition</u>	- Essentially no competition for the specific type of financial assistance it provided

Table 6. Summary of CONRAIL Characteristics

<u>Business Definition</u>	- Railroad freight hauling services
<u>Objective</u>	- To profitably provide rail freight hauling services and return to private sector ownership
<u>Markets Served</u>	- Primarily domestic manufacturers, mail shippers, automobile companies and coal suppliers
<u>Functional Attributes</u>	- Track, land and freight hauling equipment valued at approximately \$6.5 billion and operating revenues of approximately \$3.2 billion in 1985
<u>Justification/ Legislative History</u>	<ul style="list-style-type: none"> - Justified by the economic need to maintain a viable rail freight hauling capability in the East - Established by enabling legislation in the 1973 Regional Rail Reorganization Act and the 1976 Railroad Revitalization and Regulatory Reform Act - Profitability was aided through the 1980 Staggers Act, the 1981 Northeast Rail Service Act and a 1982 decision by Congress to transfer unprofitable passenger services to AMTRAK - In the process of transfer to private ownership
<u>Organizational Structure</u>	<ul style="list-style-type: none"> - Organized as a "for-profit" corporation - 13 Board of Directors selected from public and private sector by government stockholders
<u>Financing</u>	<ul style="list-style-type: none"> - In its early years, obtained financing from appropriations funneled through the United States Railway Association - Currently, self-supporting through revenues
<u>Pricing</u>	<ul style="list-style-type: none"> - Generally free to price its services competitively - Still subject to limited ICC regulation
<u>Other Regulatory Features</u>	<ul style="list-style-type: none"> - Generally free from regulations common to government agencies - GAO audit required when government funds are used - Congressional approval and enabling legislation required for change in ownership to occur
<u>Competition</u>	- Primary competition is from truck freight haulers

Table 7. Summary of British TELECOM Characteristics

<u>Business Definition</u>	- Telephone, data processing and other telecommunications products and services
<u>Objective</u>	- To establish a people's capital market through profitably providing telecommunication services
<u>Markets Served</u>	- Primarily business and residential customers in the United Kingdom and Northern Ireland
<u>Functional Attributes</u>	- Telephone facilities and other assets valued at about \$8.95 billion and operating revenues of approximately \$5.1 billion in 1985
<u>Justification/ Legislation History</u>	<ul style="list-style-type: none"> - Past government control justified by tradition of nationalizing essential services - Privatization justified by a need to reduce costs, improve services, and involve private citizens in ownership - Enabling legislation for establishing a corporation was the 1981 British Telecommunications Act and private ownership was enabled in the 1984 Telecommunications Act
<u>Organizational Structure</u>	<ul style="list-style-type: none"> - Has a Board of Directors composed of former members of the government corporation and private sector representatives - Employees now own .9% of the stock shares, individuals 13.7%, corporate/institutional investors 35.6% and the government 49.8%
<u>Pricing</u>	<ul style="list-style-type: none"> - Rate of price increase is required to be 3 points below the rise in the retail price index - British Office of Telecommunications (OFTTEL) is responsible for regulating rates
<u>Financing</u>	<ul style="list-style-type: none"> - 1984 stock sales to private investors raised about \$5.85 billion in largest share issue ever - Employees/individuals given preference in purchasing shares through free and/or discounted stock purchases
<u>Other Regulatory</u>	- OFTEL has authority to regulate procurement, etc., but enforcement power is limited
<u>Competition</u>	- Until 1990, the only competition is from Mercury, a subsidiary providing long-distance services

Table 8. Summary of COMSAT Characteristics

<u>Business Definition</u>	- Communications satellite services
<u>Objective</u>	- To profitably provide telecommunications satellite services
<u>Markets Served</u>	- Primarily foreign and domestic governments, telecommunications carriers, and international corporations
<u>Functional Attributes</u>	- Satellite and other communications assets valued at approximately \$1.2 billion and operating revenues of approximately \$460 million in 1985
<u>Justification/ Legislative History</u>	<ul style="list-style-type: none"> - Justified by national goals to establish a viable satellite network - Enabling legislation, in the form of the Satellite Act of 1962, granted monopoly status - Monopoly status and industry characteristics sufficient to induce private investment - Formation and operation of COMSAT after enabling legislation was relatively quick
<u>Organizational Structure</u>	- 100 percent privately owned corporation
<u>Financing</u>	<ul style="list-style-type: none"> - Private financing through debt and stock issuance - Certain aspects of financing, such as debt-to-total capital ratio, controlled by FCC
<u>Pricing</u>	<ul style="list-style-type: none"> - Pricing for INTELSAT and INMARSAT services regulated by FCC using return-on-ratebase method - Pricing in unregulated markets is competitive
<u>Other Regulatory Features</u>	<ul style="list-style-type: none"> - Basically considered a private corporation and is exempt from many features of government agencies such as Civil Service Employment rules, freedom-of-information provisions, etc. - Has restrictions on Board of Director appointments and stock ownership distribution
<u>Competition</u>	- Appears to be growing threat to COMSAT as a result of recent moves by the Administration and the FCC to deregulate telecommunications

TABLE 9. Summary of Relevance to Uranium Enrichment
Enterprise of Selected Government
Corporations and Independent Agencies

<u>Organization</u>	<u>Relevancy</u>
BPA	<ul style="list-style-type: none"> - Originally formed in the 1930s for purposes of economic development - Is subject to nearly the same set of government regulations as the enterprise - Does have long-term borrowing ability, some ability to defer debt payments, and a somewhat independent administrator - Does not have any significant competition within the regional markets it serves - Was converted from an organization dependent on appropriations to a financially self-supporting status in 1974
TVA	<ul style="list-style-type: none"> - Originally formed in the 1930s for purposes of economic development - Is subject to basically the same set of government regulations as the enterprise, with important exceptions in areas of employment and procurement - Does have long- and short-term borrowing ability, although bonds are not backed by the government - Has an independent group of administrators - Does not have any significant competition within the regional markets it serves
SYNFUELS	<ul style="list-style-type: none"> - Originally formed in the 1970s to produce independence from foreign oil suppliers - Was not a true example of a government corporation because it had no significant revenue producing assets or any likely prospect of being financially self-supporting - Most regulations from which it was exempted were incorporated in a different form in its enabling legislation

TABLE 9. (continued)

<u>Organization</u>	<u>Relevancy</u>
SYNFUELS (con't)	<ul style="list-style-type: none"> - Had indirect access to Treasury financing through appropriations to the Energy Reserve Account - Is the most different from the enterprise, in terms of business characteristics, of all examples studied
CONRAIL	<ul style="list-style-type: none"> - Originally formed in the 1970s to prevent the financial collapse of the eastern railroad industry - Was transformed from a money losing to a profit making organization through government infusions of capital, regulatory changes and private sector management - Most regulations common to government agencies do not apply - Has long- and short-term borrowing ability, but currently finances expenditures from net revenues - Is currently in the process of being converted to private sector ownership - Has limited competition from trucking firms within the regional markets it serves
British TELECOM	<ul style="list-style-type: none"> - Originally formed in the 1980s to increase the efficiency of British phone services through formation of a government corporation - Provides an example of the use of a government corporation as a transitional mechanism for conversion to private sector ownership - Employees and individuals given preferences in stock purchases - Government involvement maintained through continued stock ownership - To encourage private investment, competition was limited through legislation

TABLE 9. (continued)

<u>Organization</u>	<u>Relevancy</u>
COMSAT	<ul style="list-style-type: none"> - Originally formed in the 1960s to provide a mechanism for United States participation in satellite telecommunications - Is a government initiated corporation that prospered in a high risk environment without government funds as a result of a sound market base, legislated controls on competition and a viable technology developed through previous government research and development - Is in most respects a private corporation, with some regulatory exceptions in stock ownership rules, government participation in the Board of Directors and some reporting requirements - Is privately owned and thus, regulations common to government agencies do not apply - Is a regulated monopoly in some business segments and a competitive private corporation in others - Competition was formerly limited, but is increasing as a result of markets being opened up - Is the most similar to the enrichment enterprise in terms of business characteristics of all examples studied

3.0 CHARACTERIZATION OF THE ENRICHMENT ENTERPRISE

In order to compare and contrast the uranium enrichment enterprise to examples of government corporations and independent agencies, it is necessary that enrichment enterprise be characterized in terms of a number of different elements. These elements include:

- o a business definition
- o objectives
- o markets served
- o functional attributes
- o justification/legislative history
- o organizational structure
- o financing
- o pricing
- o other regulatory features
- o competition

3.1 BUSINESS DEFINITION

For purposes of this study, a business definition is intended to describe what an organization does, with emphasis on the products and services it produces. The function of the uranium enrichment enterprise is to enrich uranium feedstock for use as fuel in electrical generating and other nuclear-fired power plants. The enrichment process is necessary because, in its natural state, uranium does not contain a high enough concentration of the U_{235} isotope to provide a sustained chain reaction in a nuclear fission plant. Enriching of uranium to a level of two to four percent U_{235} provides the required fuel for commercial nuclear power production. Some non-commercial research and defense applications require much higher concentrations of U_{235} .

The enrichment services provided by the enterprise are measured and priced in terms of Separative Work Units (SWUs). A SWU is a measure of the separation of uranium into two components, one having a high concentration of U_{235} and

one having a low concentration of U_{235} , that is achieved during enrichment. The high concentration component is sent to a fabrication plant, formed into pellets, placed into zirconium tubes, assembled into bundles, and shipped to nuclear power plants. The low concentration component is known as "tails" and is currently considered a waste product.

The enrichment enterprise currently operates as part of the U.S. Department of Energy. Actual operation of much of the enterprise's plant capacity is performed by private companies under a cost-plus-fee contracting arrangement. In addition to providing enrichment services, the enterprise actively engages in research, marketing and other activities that support its primary business.

3.2 OBJECTIVES

Because the enrichment enterprise serves both commercial and non-commercial areas, its objectives are diverse. In the commercial area, the objective of the enterprise is to regain lost market share and maintain a reliable, competitive enrichment enterprise in the United States (U.S. Department of Energy 1985a). In the non-commercial area, the objective of the enterprise is to reliably support U.S. defense and other national objectives. The commercial and non-commercial purposes of the enrichment enterprise have been present since the early years of the enterprise's development. The fact that the enterprise continues to serve both areas has a significant impact upon the operational characteristics and constraints of the enterprise.

3.3 FUNCTIONAL ATTRIBUTES

For purposes of this study, the functional attributes of the enrichment enterprise are the assets the enterprise utilizes and/or has at its disposal in support of performing its primary function. The major functional attributes of the enterprise in 1985 were the following (U.S. Department of Energy 1985b):

- o three gaseous diffusion enrichment plants (GDPs) with a total production capacity of 27.3 million SWUs per year
- o a nearly operational gaseous centrifuge enrichment plant (GCEP)
- o an extensive research and development program on the Atomic Vapor Laser Isotope Separation (AVLIS) technology

- o an extensive financial modeling and planning capability
- o total assets valued at approximately \$6.6 billion
- o total gross revenues of approximately \$1.5 billion

The three GDPs that represent the primary functional attributes of the enrichment enterprise are located at Oak Ridge, TN, Paducah, KY and Pike, OH. Because of the nature of GDP technology, they are among the largest industrial complexes in the country, covering over 2000 acres in total (Department of Energy 1982). In 1985, the Oak Ridge GDP was placed on standby in an effort to bring the supply of uranium enrichment services more in line with demand. At the time of this decision, it was estimated that the capacity of two GDP's would be sufficient to meet projected SWU sales levels through the year 2000.

In 1985, it was estimated that GCEP could begin to operate at a capacity of .55 million SWUs per year in 1987, if an additional \$40 million was provided to complete machine installation and start-up. However, because the economics of completing and operating GCEP were judged to be unfavorable relative to increasing the utilization of the existing GDPs, it was decided in 1985 to begin closeout of the GCEP project. The enterprise is currently working with Congress and other parts of the government to identify alternative, non-enrichment uses of existing GCEP facilities (U.S. Department of Energy 1985a).

Prior to 1985, the enterprise sponsored two research efforts related to advanced enrichment technology - AVLIS and advanced gaseous centrifuge (AGC). After extensive consideration of the technical and economic potential of the two technologies, it was decided that AVLIS should be selected to be the "enrichment technology of the future" and that support for the AGC should be discontinued (Department of Energy 1985a). If the projected economics and performance of AVLIS become a commercial reality, there is a high probability that AVLIS will be able to economically replace the existing GDPs, although such replacement is not likely for a number of years.

The significant decisions made by the enterprise that placed one of the GDPs on standby, closed out GCEP, and ended sponsorship of research on AGC were all related to a need to improve the future financial condition of the

enterprise and restore the competitiveness of the enterprise in serving its markets.

3.4 MARKETS SERVED

The primary markets served by the enrichment enterprise can be classified into three basic categories:

- o domestic utilities that require enriched uranium for electric power production
- o foreign utilities that require enriched uranium for electric power production
- o domestic defense and other government operations that require enriched uranium for research reactors, submarines, aircraft carriers, etc.

Sales to domestic utilities comprised approximately 48 percent of total SWU sales by the enrichment enterprise in 1985 (Department of Energy 1985a). The enterprise has 52 commercial customers in the United States. In 1984 and 1985, 45 of these utilities (comprising over 90 percent of current domestic utility sales) signed a new 10-year contract with the enterprise to supply at least 70 percent of their enrichment needs. In 1985, the enterprise offered an additional incentive contract to capture the uncommitted enrichment demand of participating utilities. This offer raised the average commitment of the 45 utilities signing the new contract to 90 percent of their needs from 1987 to 1990.

Sales to foreign utilities comprised approximately 32 percent of total 1985 SWU sales by the enterprise. Approximately 65 percent of these foreign sales were to Japan, South Korea and Taiwan. All of the 12 customers in these three countries signed the new long-term contract and an additional 15 of the 22 other foreign customers also signed the new contract. When additional sales under the incentive contract are included, the average commitment of the 27 foreign customers who signed the new contract are approximately 82 percent of their needs over the 1987 to 1990 period.

It should be noted that although the new enrichment contract can generally be considered a success from a marketing standpoint, the legality of the contract is currently being challenged in a suit brought by uranium mining

companies (McGraw-Hill 1984c). Thus, it appears that some degree of uncertainty exists about whether those markets that are committed to the enterprise through the new contract will be allowed to maintain their commitment.

Non-commercial sales to defense and other government agencies comprise approximately 20 percent of enterprise sales. Much of these sales are for the Naval Propulsion program, which requires highly enriched uranium (U_{235} above 90 percent) for use in its equipment. The Portsmouth, OH GDP is the only GDP capable of producing the highly enriched uranium used by non-commercial customers.

3.5 JUSTIFICATION/LEGISLATIVE HISTORY

The establishment of the government enrichment enterprise was initially justified by national defense considerations. Construction of the first GDP was begun before World War II (1943) and the other two were started shortly after the completion of the war (1951 and 1953). Up until the early 1960s, the GDPs owned by the enterprise were operated at essentially full capacity, with the majority of the output from the plants being used for defense related purposes (Department of Energy 1982).

Movement towards possible civilian applications of enrichment services began in 1954, when Congress established the policy of encouraging the use of nuclear energy for civilian peaceful purposes (Moore 1978) through the Atomic Energy Act. However, the process of orienting the enterprise towards civilian purposes moved slowly. It was not until the Private Ownership of Special Nuclear Materials Act of 1964 that authorization for the Atomic Energy Commission (AEC) to provide enrichment services to private utilities was granted. It was also about this time that defense demands for enriched uranium were beginning to decrease. Fulfilling civilian demands appeared to represent a natural extension to utilize the GDPs' capacity. In 1967, selected information on enrichment technologies was made available to the nuclear industry to assure the industry of the adequacy of the diffusion plants and in 1969 the AEC began performing toll enriching services for private utilities.

During the 1950s and 1960s, private interests began to take over more and more of the nuclear energy industry, until only research and development

and uranium enrichment services remained predominantly government responsibilities. Thus, in the late 1960s the first of many attempts to "privatize" the provision of enrichment services was initiated. A number of studies were performed related to alternative organizational structures for the enterprise involving combinations of private sector and public sector interests (Atomic Industrial Forum 1969) (Atomic Energy Commission 1969) and (General Accounting Office 1969).

Another attempt to have the private sector become involved in providing enrichment services was initiated in 1972. A series of Congressional hearings on the subject were held in 1973-1976, and a proposal to build a large enrichment plant was advanced by a consortium of private sector companies (Moore 1978). Other attempts to alter the organizational structure of the enterprise occurred in the late 1970s and early 1980s.

If the legislative history of the enterprise provides any guidance, the justification for the enrichment enterprise's existence in its current form as a totally government entity is related to three primary factors:

- 1) the executive and/or legislative branches of government have been reluctant to relinquish control of enrichment services because of concerns about nuclear proliferation, safety, national security, supply reliability and economics
- 2) the private sector has been reluctant to participate in enrichment services because of concerns that the potential regulatory, financial and other risks of providing enrichment services are too high relative to the potential returns that may be realized
- 3) the current organizational form of the enterprise is not easily amenable to privatization

Although there is considerable argument about the legitimacy of these justifications for maintaining government control, they have all been used at one time or another to justify the current form of the enterprise over its approximately 40-year existence.

3.6 ORGANIZATIONAL STRUCTURE

The uranium enrichment enterprise is currently organized as an office within the Department of Energy's Office of Nuclear Energy. The Office for Uranium Enrichment (i.e. the enrichment enterprise) contains four offices: 1) the Office of Marketing and Business Operations, 2) the Office of Operations and Facility Reliability, 3) the Office of Technology Deployment and 4) the Office of Advanced Technology Projects and Technology Transfer (Department of Energy 1985d). As a wholly government entity within the Department of Energy, the enrichment enterprise has no formal outside Board of Directors, although business leaders from within utilities and other industries are called upon occasionally to advise the enterprise in performing strategic planning and other related activities.

3.7 FINANCING

As a wholly government entity within the Department of Energy, the enrichment enterprise receives all of the financing necessary to conduct its operations through appropriations. It currently does not have authority to borrow directly from the Treasury or from any other source. Thus, to fund its operations, the enterprise receives a "net-zero" appropriation as part of the Department of Energy's annual budget. The enterprise's appropriation is classified as "net-zero" because, by law, the revenues from providing enrichment services must recover "the costs of past and present government appropriations over a reasonable period of time" (General Accounting Office 1984). In addition, any surpluses in revenues over costs are returned to the government's general fund. As a matter of general practice, 10 years has generally been the period of time upon which cost recovery has been based.

Because it is a government organization dependent on appropriations, funding for the enterprise often is made inefficient by the political process. Excess funds gained from enrichment revenues are subject to diversion from the enterprise for use in performing other government activities. Management of the enterprise is often difficult in an environment where available funding is subject to many external influences.

3.8 PRICING

Until 1984, pricing for enrichment services was directly determined by the enterprise's cost recovery requirement, and the basic steps by which the enterprise determined prices were as follows:

- o project production and non-production costs for providing enrichment services over an ensuing 10-year period
- o project SWU sales and the ending inventory of enriched uranium for the 10-year period
- o divide the total projected cost plus the cost of beginning inventory by the sum of SWU sales and the SWUs contained in the ending inventory to obtain a cost per SWU to be charged adjustable, fixed-commitment contract customers

The production costs used in determining prices include electric power, direct labor, depreciation on GEP plant and equipment, and other direct costs. These costs escalated sharply in the 1970s and early 1980s, primarily as a result of increases in the price of electric power, which currently comprise approximately 80 percent of the direct costs of producing enriched uranium using the diffusion process (Department of Energy 1985c). Non-production costs, which include imputed interest on the government's investment, costs of research activities, and other indirect costs also increased. Much of this increase was related to expenditures on the GCEP program. The result of incorporating these cost increases into the price calculation process was that, by 1980, the enterprise had the highest prices for enrichment in the world (General Accounting Office 1984).

Not surprisingly, the relatively high SWU prices charged by the enterprise resulted in a loss of market share to its competitors. In an effort to reduce this loss and restore the competitiveness of the enterprise, a new contract was introduced in 1984 that contained the following major elements:

- o a guaranteed ceiling price for SWUs over the next 10 years that, except for power costs and inflation, is not to exceed \$135 per SWU
- o a price differential above the \$135 dollar ceiling price for those customers not converting to the new contract

- o a price differential for selecting a Variable Tails Assay Option that allows a customer to vary the amount of U_{235} contained in his tails and thus, vary the number of SWUs and feedstock that he purchases for a given amount of enriched product

In order to ensure that SWU prices could be kept under the ceiling price while satisfying cost recovery requirements, several asset value modifications were implemented. These modifications included a reduction in the undepreciated value of the GDP plants based on the rationale that only 40 percent of the GDPs capacity would likely be used over the next ten years. Another important modification was to revalue the uranium feedstock inventory from the current market price value to an acquisition cost value. These changes were estimated to result in a reduction of approximately \$27 per SWU in production costs required to be recovered from SWU sales (General Accounting Office 1984).

As stated in Section 3.4, customers signing the new contract were only required to purchase a minimum of 70 percent of their enrichment requirements from the enrichment enterprise. In an effort to capture the remaining uncommitted demand, the enterprise offered an initial incentive price of \$90 per SWU for additional SWU sales above the newly contracted amount. In order to receive the incentive price, customers were required to purchase all of their enrichment requirements from DOE. The incentive contract is estimated to have increased DOE sales from FY 1987-FY 1990 by 14 percent, or over 5 million SWUs (Department of Energy 1985a).

It should be noted that many of the provisions of the enterprise's current pricing policies are not fixed and are subject to possible revisions. For example, the original ceiling price of \$135 per SWU incorporated in the new contract has now been reduced. In addition, in September 1985, the enterprise offered free Variable Tails Assay Options to customers as a method of assisting domestic uranium feedstock provisions (McGraw-Hill 1985). Challenges to selected provisions of the new pricing policies have been brought by both uranium mining companies and the General Accounting Office.

The above discussion briefly summarizes the pricing policies that have been followed by the enrichment enterprise in the past and the major elements of the enterprise's current pricing policy. These policies have changed over time

from being based strictly on government cost recovery to more market oriented approaches. At times the need to restore pricing competitiveness has conflicted with requirements for full cost recovery on SWU sales, and necessary compromises have had to be made.

3.9 OTHER REGULATORY FEATURES

As a government organization within DOE, the enrichment enterprise is subject to the full range of regulations typically applied to government agencies. Examples of these regulations include Civil Service rules, Freedom of Information requirements, GAO oversight requirements and many others. Although the enterprise calls upon private sector representatives for advice, many types of direct involvement by such representatives are not permitted within the confines of the enterprise's current regulatory structure. The enterprise's actions and policies are not permitted to be independent of overall DOE policy.

3.10 COMPETITION

Until the mid-1970s, the enrichment enterprise had no competition for free-world SWU sales. In 1974, it supplied 100 percent of non-Communist world market needs, and utilities were signing enrichment contracts far in advance of reactor construction and operation (Department of Energy 1985c). Existing and planned GDP capacity of 27.3 million SWU was fully contracted for and the enterprise closed its order books in the mid-1970s (Department of Energy 1985a).

The monopoly position held by the enterprise and its expected inability to meet projected market demands resulted in the development of competing suppliers of enrichment services. In addition, the failure of projected demands for enriched uranium to be realized resulted in the holding of significant excess inventories on the part of potential users of enriched uranium. These two factors eroded the enterprise's market position until in 1985, the enterprise supplied only 47 percent of non-Communist world market needs (Department of Energy 1985c).

In 1985, the enterprise's competition for SWU sales comes from four primary sources:

- o EURODIF with 22 percent of the world market

- o the enriched uranium inventories spot market with 17 percent of the world market
- o TECHSNAB with 8 percent of the world market
- o URENCO with 6 percent of the world market

EURODIF is a consortium of government energy agencies of southern European and Middle Eastern countries. It is dominated by France, whose commercial interests are represented by a private corporation--Cogema. Cogema has the largest ownership share of EURODIF and is responsible for marketing all EURODIF SWUs in excess of shareholders' future needs. EURODIF uses GDF technology similar to the enterprise's and obtains power primarily from French nuclear plants.

TECHSNAB is the Soviet Union's uranium enrichment enterprise. In 1980, TECHSNAB supplied 26 percent of the free-world market. Its free-world market position has slipped significantly since that time, but nevertheless, it remains a competitor for the enterprise.

URENCO is owned by a consortium of northern European interests from Britain, the Netherlands and West Germany. Although it currently supplies a relatively small proportion of the world's enrichment needs, its importance is growing. URENCO uses gaseous centrifuge technology that is more energy efficient than the gaseous diffusion technology used by the enterprise. In addition, gaseous centrifuge technology is more modular than gaseous diffusion technology, allowing greater flexibility to adapt to changing demand conditions. An official of URENCO recently stated that "URENCO is currently the lowest cost supplier of enrichment services" (Nuclear News 1985). While the accuracy of this statement can be questioned, there is no doubt that URENCO is growing in importance as a competitor to the enrichment enterprise.

In recent years, inventories held by both users and producers of enriched uranium have become a significant competitor to the services offered by the enrichment enterprise. As nuclear programs were curtailed or eliminated, significant excess inventories of enriched uranium developed as a result of advance contracting based on forecast needs that never materialized. A significant spot market for these inventories developed. Both the enrichment enterprise (Department of Energy 1985a) and its competitors (McGraw-Hill 1984b)

agree that without major output adjustments by producers, inventories are likely to remain a significant source of enriched uranium supplies well into the 1990s.

In addition to its current competitors, the enrichment enterprise has competitors that could impact upon its operations in the future. For example, Japan has expressed interest in developing enrichment capability as a means of lessening its dependence on foreign sources. The competitiveness of the enrichment enterprise is frequently impacted by factors beyond its control, such as the rise in the value of the dollar that adversely impacted the relative prices of the enterprise versus its competitors during the early 1980s.

4.0 ANALYSIS OF ORGANIZATIONAL OPTIONS FOR THE ENRICHMENT ENTERPRISE

The enrichment enterprise would appear to be faced with three basic options with regard to its future organizational structure. These options are:

- o maintain the enterprise in its current form as an office within the federal government
- o privatize the enterprise by transferring ownership and operation of the enterprise to private sector interests
- o convert the enterprise to some type of government corporation or independent agency

Each of the options listed above present advantages and disadvantages in a number of different areas including the need for legislation, operating flexibility, access to financing, and many others. These advantages and disadvantages are summarized in this chapter. The section on the privatization option also incorporates information drawn from the results of the responses to the enterprise's request for Expressions Of Interest (EOIs) related to private sector involvement in the enterprise.

4.1 OPTION 1 - MAINTAIN ENTERPRISE IN ITS CURRENT FORM

Maintaining the enterprise in its current form is appealing in many quarters because it would not require any effort to change the status quo. In particular, no enabling legislation would be required to maintain the enterprise in its current form. In addition, no regulatory changes, such as Nuclear Regulatory Commission (NRC) oversight of enrichment activities, would be required. The government would continue to maintain control over the dissemination and use of enrichment technology, which would reduce concern about the possible spread of this technology into unfriendly hands.

A major disadvantage of maintaining the enrichment enterprise in its current form is a continued lack of flexibility to deal with changing competitive and market conditions. In many instances, the government environment that the enterprise currently operates in restricts its ability to operate in a business-like manner.

For example, the requirement that the enterprise always obtain "full-cost" recovery in pricing for its services resulted in the enterprise having the highest enrichment services price in the world, little ability to account for differing levels of buyers' price sensitivities, and a significant erosion in the enterprise's market share (General Accounting Office 1984). To lessen these problems, the enterprise modified its pricing policies by offering a ceiling price and other market-based pricing policies. Selected elements of these actions were then challenged by the General Accounting Office (GAO) and others as violations of the legislative requirements for full-cost recovery by the enterprise. However, the GAO also acknowledged the enterprise's need to operate in a manner consistent with the realities of the market place and recommended that Congress and the executive branch reevaluate the basic purpose and structure of the enrichment program (Peach 1986).

Another disadvantage of maintaining the enrichment enterprise in its current form is that not enough financing is likely to be available to support the development of new enrichment technology that will enhance the enterprise's future competitive position. Full development of the AVLIS technology is believed to be a crucial element in maintaining the future long-term viability of the enterprise. However, the current federal budget situation is placing severe limitations on AVLIS research and development that may result in AVLIS not being available at the time it is needed.

Maintaining the enrichment enterprise in its current form will result in the continued dependence of the enterprise on government funding that is allocated through a political, rather than an economic process. In addition, any future lessening of government involvement in providing enrichment services is likely to be difficult to obtain because the current form of the enterprise is not amenable to privatization. Traditional government agencies do not have mechanisms for facilitating direct private sector involvement in their operations.

4.2 OPTION 2 - IMMEDIATE PRIVATIZATION OF ENRICHMENT SERVICES

The advantages of immediate privatization of the enrichment enterprise relate primarily to the fact that goods and services provided on a financially self-supporting basis can likely be provided more efficiently by private sector

organizations. Most goods and services in the United States market economy are provided by the private sector. Because the enrichment enterprise has many business-like characteristics, many believe that its activities should be conducted within the private sector.

Immediate privatization would result in no direct government involvement or funding for providing enrichment services, which has obvious benefits given the current financial condition of the federal government. In addition, proponents of privatization argue that a much higher degree of operating flexibility would be available to the enterprise, resulting in greater efficiency. Finally, immediate privatization would offer increased access to financing through the private financial markets.

The major disadvantage (or barrier) to immediate privatization is that, under current conditions, private sector firms appear to be unlikely to become involved in providing enrichment services without significant incentives and guarantees being provided by the federal government. The recent level of interest expressed by private sector firms in participating in the enrichment enterprise can be described, at best, as moderate.

The degree of private sector interest in the enrichment enterprise can be characterized by the responses to the request for Expressions Of Interest (EOI) recently issued by the enrichment enterprise. The EOI issued by the enterprise requested that private sector firms provide information on their level of interest and possible requirements for participation in some or all aspects of the U.S. uranium enrichment program. The enterprise received 16 responses to the EOI. The statements and opinions in the responses can be divided into six main topic areas: 1) Atomic Vapor Laser Isotope Separation (AVLIS) technology; 2) the legislative and institutional environment and risks surrounding privatization of the enrichment enterprise; 3) offers of consulting and other services to DOE; 4) centrifuge technology and Gaseous Centrifuge Enrichment Plant (GCEP); 5) the potential formation of a government corporation for uranium enrichment; and 6) DOE's industrial access program.

Eight of the 16 respondents expressed some form of interest in AVLIS technology. Three of these briefly stated their support for continued AVLIS development and implementation. A fourth source went into more detail, recommending AVLIS be developed to a state of commercial readiness as driven

by demand for enrichment services. The other four AVLIS respondents made more specific offers of interest. One source indicated its willingness to license its AVLIS patents to DOE or to a private concern. A foreign source was interested in having staff participation in the AVLIS program. A third respondent expressed interest in providing metal feed and participating in the waste management plan for AVLIS. Finally, one company was interested in offering its consulting and technical services to DOE, particularly for AVLIS.

Five organizations cited institutional and legislative risk as issues affecting their willingness to participate in DOE's enrichment enterprise. One organization simply concluded that the institutional environment and risks do not warrant their participation in the enterprise. Another organization indicated support for long-term privatization, but said it was premature to set forth a specific proposal due to "many unresolved issues." Three of the five organizations indicated that legislative and institutional issues would have to be resolved before their participation would be possible. One of these organizations stated its interest in organizing a consortium to purchase and operate the Portsmouth and Paducah Gaseous Diffusion Plants (GDPs) once DOE resolves legislative and other institutional issues.

Four respondents indicated their interest in providing consulting and other services, either to DOE or to private firms. One source (as previously mentioned) offered to provide consulting and technical services to DOE, especially on the AVLIS project, while another was interested in providing a full range of engineering and construction services to DOE. A third company was interested in providing consulting services to DOE relative to organizing a consortium for the management of the GDPs. A fourth company was interested in representing private firms to negotiate and implement privatization.

Three respondents expressed interest in centrifuge technology or in DOE's gaseous centrifuge plant (GCEP). One respondent was interested in procurement of centrifuge technology and unused centrifuge machines to enrich non-uranium isotopes in bulk quantities. Another respondent, a direct competitor of DOE, was interested in finding U.S. partners to deploy its centrifuges in the U.S. The third respondent expressed interest in immediate negotiation of lease/purchase contracts for portions of the GCEP facility.

Four respondents recommended formation of an enrichment services government corporation as a transitory step towards privatization. Three firms expressed interest in the industrial access program. One firm added that the program was the logical first step for participation in the enterprise.

In summary, the results of the responses to the EOI are decidedly mixed. While some interest was expressed in acquiring GCEP or AVLIS technology from the enterprise, many responses were related to providing services for the enterprise. No respondent expressed interest in acquiring the total operation of the enrichment enterprise, as long as current legal and institutional issues related to the enterprise remain to be resolved. Thus, based on the results of the responses to the EOI, immediate privatization of the entire enterprise does not appear feasible.

The legal and institutional issues mentioned by the private sector respondents to the EOI as a barrier to their participation in uranium enrichment will require time and effort to resolve and constitute a considerable barrier to immediate privatization of the enterprise. These issues include NRC licensing requirements, compliance with federal and state environmental standards, compliance with occupational health and safety regulations, and compliance with the security and classification requirements of the Atomic Energy Act. Enabling legislation will likely be required to resolve these issues and facilitate privatization. Such privatization is likely to reduce government control over enrichment technology.

4.3 OPTION 3 - A GOVERNMENT CORPORATION OR INDEPENDENT GOVERNMENT AGENCY

As mentioned above, a government corporation was suggested by several respondents to the EOI as a possible interim step towards privatization. Because no precise terms exist for defining a government corporation, it is only possible to characterize it in general terms as an intermediate step between the enterprise's current form and a private enrichment enterprise. An independent government agency also fits within this general category.

A government corporation or independent agency could offer several potential advantages compared to the enterprise's current organizational form. Increased operating flexibility to deal with changing competitive and market

conditions could be available to the enterprise. For example, it appears that the U.S. Postal Service has been able to react to competitive challenges brought by overnight mail delivery services much more readily in their current form as an independent agency than would likely have been the case under their previous organizational structure as a government department. The operating flexibilities available to several examples of government corporations are described in the next chapter of this report.

Increased access to financing could also be available to the enterprise as a government corporation or independent agency. Many government corporations have authority to borrow from the Treasury or to issue stocks and bonds for sale on private financial markets. Organization as a government corporation or independent agency offers the potential to reduce the dependence of the enterprise on the political appropriations process. Eventually, such an organizational change could reduce or eliminate the dependence of the enterprise on government funding.

The government would argue that only limited regulatory changes would likely be required to reorganize the enrichment enterprise as a government corporation or independent agency. These changes would be limited primarily because the government would likely retain full control over enrichment technology, at least until the regulatory and institutional issues (such as Nuclear Regulatory Commission licensing requirements) regarding the transfer of this technology to the private sector could be resolved.

Any future privatization of the enterprise is likely to be enhanced by organizing the enterprise as a government corporation or independent agency. By placing the enterprise on a more self-supporting basis outside of the main government structure, the financial viability of the enterprise can be demonstrated to potential investors. In addition, the stock ownership form of many government corporations provides a convenient mechanism for facilitating privatization to any level desirable based on the composition of stock ownership.

The primary disadvantage of a government corporation or independent agency is that the advantages of such an organizational form may not be realized if the charter governing the operation of the organization is not correctly structured. Substantial freedom is available for defining the operating rules

of a government corporation, because no precise definition of what should constitute a government corporation is commonly applied. The Government Corporation Control Act of 1945 was intended to provide a uniform set of rules for government corporations, but many of the recently formed corporations have been exempted from this Act (National Academy of Public Administration 1981). It will be important for the enrichment enterprise to carefully examine its desired operating charter prior to developing a detailed proposal to reorganize the enterprise as a government corporation.

Another problem or barrier to organizing the enterprise as a government corporation is that enabling legislation will likely be required. A political mandate on the future purpose and direction of the enrichment program will have to be developed. Significant effort will be required to ensure that this legislation contains provisions that are appropriate to the continued viability of the enterprise.

4.4 CONCLUSIONS

Continued operation of the enterprise in its current form is likely to result in a continued lack of operating flexibility to meet competitive and market conditions and a low probability of future privatization. Immediate privatization of the enterprise does not appear to be feasible because of institutional constraints and a lack of private sector interest. Thus, a government corporation appears to be a desirable alternative between the two extremes. However, the relative advantages of converting to a government corporation will be largely determined by the specific characteristics incorporated in its charter. Detailed information on several examples of government corporations and independent agencies that provide precedence for the enterprise in organizing in a similar fashion are presented in the next chapter of this report.

5.0 DETAILED CHARACTERIZATIONS OF SELECTED GOVERNMENT CORPORATIONS AND INDEPENDENT AGENCIES

A minimum of perhaps 20 organizations could be considered to be in the general category of government corporations and independent agencies. Thus, for purposes of this study, it was necessary that examples of government corporations and independent agencies be selected for detailed analysis.

The examples selected for detailed study were chosen with the following criteria in mind:

- o the examples selected should represent a range of organizations from fully government independent agencies to nearly private corporations
- o independent agencies and government corporations associated with the Department of Energy should be represented among the selected examples
- o the organizations chosen for study should be focused upon business objectives (such as revenue production) rather than more social objectives (such as income redistribution)
- o the organizations selected for study should include at least one example of an organization that was at one time "fully government" and is now operating with private sector participation

With these criteria in mind, the following examples of government corporations and independent agencies were selected for detailed characterizations:

- o the Bonneville Power Administration (BPA)
- o the Tennessee Valley Authority (TVA)
- o the Synthetic Fuels Corporation (SYNFUELS)
- o the Consolidated Rail Corporation (CONRAIL)
- o British TELECOM
- o the Communications Satellite Corporation (COMSAT)

These examples are listed in order of decreasing government involvement in their ownership and management. Detailed characterizations of each of these six examples are presented in the remainder of this chapter.

5.1 CHARACTERIZATION OF THE BONNEVILLE POWER ADMINISTRATION (BPA)

BPA is an independent government agency. It was originally established as a bureau of the Department of the Interior, but is now incorporated within the Department of Energy.

5.1.1 Business Definition

BPA was created by Congress in 1937 to act as the marketing agent for power generated by Bonneville Dam. Its power marketing role grew with subsequent legislation and executive acts which designated it as the marketing agent for 23 Federal hydroelectric generating projects built by the Corps of Engineers and the Bureau of Reclamation, as well as power generated by private generation plants in the region. BPA markets power to publicly and privately owned utilities, federal agencies, large industries which buy direct (DSIs), and other industries which don't "buy direct". BPA also markets and exchanges power with utilities in the Southwest over the Pacific Intertie and with utilities in British Columbia, Canada. BPA has also been designated as a key player in restoring the wildlife and fishery resources which have been adversely affected by the dams on the Northwest's rivers. Today, BPA works closely with federal and state fish and game agencies to minimize the impact that the power generation facilities have on the ecosystem.

5.1.2 Objectives

The Pacific Northwest Electric Power Planning and Conservation Act of 1980 incorporates the broad goals of helping the Pacific Northwest achieve an adequate power supply, keeping power rates low, and emphasizing conservation and renewable sources of energy to cover the growth in power demand. BPA has a key role to play in achieving the Act's goal. Under the Act, BPA's part has been expanded from that of a marketing agency for power within the Northwest to that of a "power broker" for the Northwest (Bonneville Power Administration 1981). Thus, BPA has incorporated the Act's objectives of rate stability, ensuring adequate power supplies and other goals within its overall mission.

5.1.3 Markets Served

BPA's main source of revenue comes from firm power sales to public and private utilities in the Pacific Northwest. The Administration sells power to 120 public utilities and 8 investor-owned private utilities (IOUs). The Bonneville Project Act specifies that the Administrator shall give preference and priority to public bodies and cooperatives in the sale of power by BPA (Bonneville Power Administration 1981). As a result, cooperatives, municipalities and public and people's utility districts have priority claims for power and are designated as "preference customers." In 1985, private utilities contributed 39.3% of BPA's revenue and public utilities contributed 36.4% (Bonneville Power Administration 1985).

BPA's second major market is the direct-service industries (DSIs) which buy power directly from BPA. There are 14 customers in this category, most of which are aluminum companies. Ten smelters buy power directly from BPA and have historically accounted for one-fourth to one-third of BPA's total revenue. However, in 1985, the aluminum industry contributed only 15.5% of BPA's revenue (Bonneville Power Administration 1985). It is vital that this market be maintained because the DSIs have traditionally allowed for BPA to cover system costs.

The third major market area that will have increasing importance if the DSIs revenue contribution remains depressed, is the "wheeling" of power over the Pacific Intertie. "Non-firm" power sales to Southwest utilities contributed about 5.2% of BPA's 1985 revenues in a relatively dry year that diminished the surplus power which could be generated for sale over the intertie (Bonneville Power Administration 1985).

5.1.4 Functional Attributes

To perform in the role of "power broker" for the region, BPA has developed the largest network of long-distance, high-voltage transmission lines in the nation. BPA has an annual budget of approximately \$3 billion. The major functional attributes (operating assets) of BPA in 1985 were the following (Bonneville Power Administration Annual Report 1985):

- o 383 substations
- o 14,203 circuit miles of line

- o a new remote-control operating system for substations
- o significant irrigation assistance, fish and wildlife rehabilitation, and conservation programs
- o a work force of approximately 3000
- o operating revenues of about \$2.9 billion
- o transmission facilities with a balance sheet value of about \$3 billion

The power grid connects at over 100 locations with 17 other transmission systems. It serves as the backbone of the network of interconnected utilities in the region. An important segment of the network is the Intertie, which represents the single largest transmission program ever undertaken in the United States. It consists of three major lines linking the Pacific Northwest and Canadian generation facilities with consumption markets in California and the Southwest.

5.1.5 Justification and Legislative History

BPA was formed during the depression period of the 1930s. Its formation was closely tied to the passage of the National Industrial Recovery Act that authorized the construction of Grand Coulee and Bonneville dams. Construction of these dams and other activities conducted under the Recovery Act were approved as a means of achieving government sponsored economic development during troubled economic times. Considerable debate--both in Congress and in the Pacific Northwest--was associated with major federal hydroelectric development. It was a compromise decision that would lead to the eventual creation of the Bonneville Power Administration. The compromise decision was to "establish a new agency, whose purpose it would be to transmit and market the power from the dams and to promote its sale, rather than rest such functions in the Federal agencies which built them (Bonneville Power Administration 1977)." This eventually resulted in the writing of the Bonneville Project Act.

The major functions set down for the Bonneville Power Administration in the Bonneville Project Act were as follows: (Bonneville Power Administration 1981)

- o sell at wholesale the electric energy from Bonneville Dam.
- o construct, operate, and maintain transmission lines and substations.

- o interconnect the Bonneville project with other Federal projects and publicly owned power systems.
- o encourage the widest possible use of all the electric energy that can be generated and marketed, and prevent monopolization by limited groups by giving preference to public bodies and cooperatives.
- o set rates to recover the cost of generating and transmitting electric energy.

The Act was signed by the President on August 20, 1937. These functions are still relevant and apply to the marketing of all the power generated by the various federal projects.

BPA is responsible for the repayment of federal funding for the Federal Columbia River Power System with interest. This investment is about \$9 billion and includes the transmission system, plus the generation, irrigation, navigation, flood control, recreation, and other facilities at the Federal Dams. In recent years, BPA has generated controversy by missing some payments to the government. In addition, although rates rose substantially in the late 1970s and early 1980s, they remain significantly less than the national average. Thus, calls have been made for BPA to incorporate a higher level of interest costs in its rates. Proposals to privatize BPA have also been advanced.

5.1.6 Organizational Structure

As a purely federal entity within the Department of Energy, BPA has no formal outside Board of Directors, and its administrator is appointed by the Secretary of Energy. An organizational chart illustrating the linkage between BPA and the Department of Energy is provided in Appendix B.

BPA has six major offices which are directed on a relatively independent basis by its administrator. They are:

- o Financial Management
- o Engineering and Construction
- o Conservation
- o Regional Operations

- o Power Resources Management
- o Management Services

5.1.7 Financing

BPA originally financed its operations solely through Congressional appropriations. Congressional endorsement was required to borrow from the Treasury to add to the transmission network, set up conservation programs, and rebuild fish and wildlife resources which may have been adversely affected by the system. BPA put all its revenues back into the Treasury and obtained funding through the appropriations process. The money was used both on its construction program and operation and maintenance.

In 1974, BPA became a self-financing agency under P.L. 93-454. Prior to this, any surpluses generated by BPA were deposited in the Treasury. Presently, BPA funds its operation, maintenance, and where possible, construction activities from its revenues. For the construction costs it can't cover, BPA has bonding authorization to borrow up to \$2.5 billion from the Treasury to build new lines, carry out energy saving programs, and rebuild fish and wildlife resources reduced by power projects. It also receives some appropriations for expenditures in environmental research and other non-power areas.

In addition, BPA has the ability to indirectly obtain financing by backing the debt issues of other organizations. For example, in 1985, BPA and Eugene Water and Electric Board (a public utility) cooperated in a sale of \$17 million worth of municipal revenue bonds to fund a 3 year residential weatherization program. The utility issued the bonds, and BPA will pay the debt service. Using this arrangement, the interest on the bonds came in two points below the rate at which BPA could have borrowed from the Treasury, netting about \$1.8 million in cost savings (Bonneville Power Administration 1985).

5.1.8 Pricing

BPA must set rates which will recover the costs of the services offered. For example, in 1985 the standard rate for nonfirm electricity sales was increased from 1.85 to 2.34 cents per kWh to acknowledge the Federal Energy Regulatory Commission (FERC) decision that insufficient costs were included

in nonfirm rates (Bonneville Power Administration 1985). FERC appears to be BPA's primary regulatory agency in rate matters. It reviews BPA's revenue requirements publications to determine whether or not projected revenues are likely to be attainable and adequate to return funds to the Treasury within the period prescribed by law.

BPA's rate setting exercise can vary depending on the market segment being dealt with. For example, BPA has the authority to give a rate break to its industrial customers if it can demonstrate that the rate will increase overall revenues beyond what it could bring in without such a rate. It granted such a rate break to aluminum companies in 1985, marking the third consecutive special rate given in the last two years.

BPA's rates are developed by its staff and submitted to the Department of Energy for review. Once through the review process, the rates package is sent before FERC for ultimate approval or rejection. BPA's current repayment policy is used to determine its revenue requirements and rate levels. This policy is the result of DOE's interpretation of the relevant laws and regulations, and requires that power systems' revenues be sufficient to:

- o pay the cost of obtaining power through purchase and exchange agreements
- o pay the cost of operating and maintaining the power system
- o pay interest and principal on revenue bonds sold to the U.S. Treasury to finance transmission system construction
- o pay interest on the unrepaid investment in power facilities financed with appropriated funds
- o pay, with interest, any outstanding deferral
- o pay the investment in each federal hydroelectric project within 50 years
- o pay each increment of the investment in the BPA transmission system financed with appropriated funds within 45 years
- o pay each increment of financing for conservation within 20 years
- o pay the investment in each replacement at a federal hydroelectric project within its service life

- o pay construction costs at Federal reclamation projects, which are beyond the ability of the irrigation water users to pay, within 40 to 66 years (Bonneville Power Administration 1985)

It should be noted that the repayment policy described above represents BPA's current policy. Repayments to the federal government have been deferred in the past in accordance with the BPA policy in existence at the time.

5.1.9 Other Regulatory Features

Since BPA is an operating unit within the Department of Energy the government wide statutes relating to employment, procurement, Freedom of Information, Sunshine in Government, privacy and administrative procedures apply. BPA's accounts are kept in accordance with the uniform system of accounts created for electric utilities by the Federal Energy Regulatory Commission. Its accounting policies also reflect specific legislation and executive directives issued by DOE.

5.1.10 Competition

Because the Bonneville Power Administration is a federal entity charged with the responsibility of power marketing for the Pacific Northwest, it has no real competition in its direct line of business. It is by far the dominant owner and operator of high voltage transmission lines in the region. In total, BPA's system accounts for about 50 percent of the power generated in the region and carries approximately 75 percent of the region's total electricity load.

5.2 CHARACTERIZATION OF THE TENNESSEE VALLEY AUTHORITY

The Tennessee Valley Authority (TVA) provides an example of a wholly government organization that is free from many of the operating restrictions of government agencies. TVA is generally regarded as having successfully achieved its primary mission of increasing the living standards of individuals within the Tennessee Valley region. However, it has certainly not been without controversy during its approximately 50 years of operation.

5.2.1 Business Definition

TVA is a wholly owned government corporation whose primary mission is the unified development of a river basin area comprised of parts of seven states. Within this mission, TVA conducts programs for flood control and navigation, electric power resource development and production, natural resource management, conservation, economic development, and environmental protection. TVA was initially formed primarily to serve as a vehicle for the development of what was, at the time, perhaps the most depressed area of the country. However, it now views itself as serving national interests by providing a unique testing ground for new ideas (Tennessee Valley Authority 1985a).

In fulfillment of its mission, TVA conducts a number of different types of activities. One of these activities (the electric power program) is financially self-supporting, some are partially self-supporting, and some are financed primarily through appropriations. A partial list of TVA's various activities is as follows:

- o electric power
- o fertilizer research and development
- o navigation
- o flood control
- o water and air quality
- o recreation
- o fisheries
- o wildlife development
- o forest resources
- o economic and community development

TVA's various programs are intended to primarily benefit the people of the seven-state regional area that it serves. However, TVA sponsors a number of research, development and demonstration programs that have applications beyond this area. For example, TVA's National Fertilizer Development Center has long enjoyed an international reputation for excellence among fertilizer technicians. It is estimated that products and processes used to produce 75

percent of the world's fertilizers were originally developed at this center (Tennessee Valley Authority 1985a).

5.2.2 Objectives

TVA's non-business objectives include improving the economic, environmental and social climate of the TVA area. They also include providing an arena for the testing of experimental programs and technologies with applications beyond the TVA area. TVA's business objectives are primarily related to its electric power program. These objectives include maintaining a reliable source of electric power at the lowest possible cost for its regional customers, subject to the legal constraint that revenues from power sales must recover the costs of providing this power.

5.2.3 Markets Served

Because TVA conducts such a wide variety of programs, it also serves a wide variety of markets. These markets include:

- o the general populace living within its service area
- o municipalities and state agencies within its service area
- o other federal government agencies, such as the Departments of Agriculture, Interior, Energy, and Defense
- o large industrial power users operating within its service area
- o private companies and individuals in the industries of fertilizer/agriculture, mining, electric utilities, and navigation/water transportation
- o research and development institutes, such as EPRI

The primary market for TVA's electric power are municipal and cooperative power agencies and the customers they serve. In 1985, sales to municipals and cooperatives comprised almost 75 percent of total TVA power sales (Tennessee Valley Authority 1985b). The remainder of its sales were divided approximately equally between large industrial customers and federal agencies, with a small amount of sales to other electric utilities. Among its non-power activities,

TVA's fertilizer research, development and production programs comprise the largest share of its non-power related expenditures.

5.2.4 Functional Attributes

TVA's functional attributes (i.e. its productive assets) are primarily production plants/equipment, land and buildings. In 1985, TVA's total assets were valued at approximately \$21.5 billion. TVA's primary functional attribute is its electric power generation, transmission and distribution system. TVA is the largest electric supplier in the country, and in 1985, some important attributes of its electric power system were the following (Tennessee Valley Authority 1985b):

- o electric power property, plant and equipment valued at approximately \$16.8 billion
- o sales revenues of approximately \$4.5 billion from approximately 103.5 billion kWh
- o net income from sales of approximately \$426 million
- o 25 multi-purpose hydroelectric power dams, 9 single-purpose hydroelectric dams, 12 coal-fired steam generation plants, 2 operating nuclear plants, and 4 gas-turbine plants

Among its non-power assets, TVA's chemical plant used in fertilizer research and production is the largest. In 1985, this plant and related land and equipment was valued at approximately \$150 million. TVA's Land Between The Lakes recreation and environmental unit was valued at approximately \$88 million in 1985.

5.2.5 Legislative History and Justification

TVA was created by the Tennessee Valley Authority Act of 1933. It's original mission, as stated in the Act, was as follows (Tennessee Valley Authority 1984):

- to improve the navigability and to provide for the flood control of the Tennessee River; to provide for reforestation and the proper use of marginal lands in the Tennessee Valley; to provide for the agricultural

and industrial development of said valley; to provide for the national defense by the creation of a corporation for the operation of Government properties at and near Muscle Shoals in the State of Alabama, and for other purposes

At the time TVA was established, significant concerns existed about the concept of "creeping socialism" embodied in the TVA proposal. However, the nation was also in the midst of a depression and it was believed that no private sector organization with sufficient resources was available for undertaking an activity as large as the development of the Tennessee Valley area. The need for economic development during the 1930s and President Roosevelt's strong commitment to the use of the federal government resources in promoting this development were key factors in justifying the establishment of TVA.

As can be seen from the above mission statement, electric power production by TVA (which currently is the largest component of TVA assets, revenues and expenditures) was not the primary intent of the original act. This activity evolved out of TVA's primary missions of flood control and industrial development. Later amendments to the original act in the late 1950s more explicitly established TVA's role as a power supplier on a financially self-sustaining basis.

Until recently, TVA's existence as a government corporation attracted little attention at a national level. During its first 20 years of existence from 1933 to 1953, its accomplishments were regarded as extraordinary (Tierney 1984). It tamed the destructive Tennessee River, reforested 212,000 acres of land, and developed into the nation's largest electric utility (with some of the lowest rates) in the country.

During recent years, TVA has generated significantly more controversy, as its mission to produce electric power has led to disagreements with environmentalists, and its electric power rates have risen. The results of these disagreements have been to call into question the justification for TVA's existence as a government corporation serving multiple missions. Environmentalists and others have called for more government control of TVA so that it can better serve its societal objectives. Ratepayers and others have begun to question TVA expenditures for non-power related activities as power rates have risen (Committee on Public Works and Transportation 1982).

Similar to other utilities, TVA's nuclear construction program has experienced significant cost overruns and plant construction delays and terminations.

The problems experienced by TVA and its unusual corporate status have raised questions of the whether TVA is accountable to the President, to Congress, to the States in which it operates, to its customers, or to some combination of the above (Moe 1983). Congress has specifically requested that TVA demonstrate the national benefits it provides in addition to those provided to the people within its immediate service area (TVA 1985a). Thus, while in its early years, TVA was justified by the need for economic development and the lack of private sector alternatives, it is now being called to demonstrate its value as a testing ground for new ideas.

5.2.6 Organizational Structure

TVA is organized as an independent agency of the federal government. All responsibility for the direction of TVA are vested in its three member, full-time Board of Directors. The President appoints (and can remove) these directors, and they are confirmed by the Senate for staggered terms of nine years. TVA also has a General Manager that serves as the chief administrative officer (Moe 1983). The enabling legislation pertaining to TVA contains a feature unique to government corporations - a requirement that members profess to believe in the "wisdom and feasibility" of the Tennessee Valley Authority (Tennessee Valley Authority 1984). An organizational chart for TVA is presented in Appendix B.

The organizational structure of TVA, with so much power vested in a full-time Board of Directors has been a subject of controversy almost since TVA's beginning. Because ratepayers and other groups directly affected by TVA actions have no input into the selection of the Board of Directors other than through Congress and the President, proposals have been advanced to develop a larger board representative of the states in the TVA system. Other suggested changes include the appointment of a part-time Board of Directors more similar to those of private sector corporations (Moe 1983).

5.2.7 Financing

TVA obtains financing from three primary sources:

- o appropriations by Congress
- o proceeds from current power operations and debt borrowings against future power revenues
- o proceeds from nonpower activities

Appropriations by Congress are for non-power related activities in research, natural resource development, and economic development. TVA's appropriation in fiscal year 1985 was approximately \$113 million. Part of TVA's appropriations are used in non-revenue generating activities, while the rest is used in funding activities where proceeds from the products or services provided by TVA partially cover expenses.

The TVA electric power program has the authority to issue bonds on the open market or to borrow through the Federal Financing Bank. Until 1974, financing for TVA's power program was obtained primarily through issuing bonds in the private sector capital markets. Today, most of TVA's borrowing is done through the Federal Financing Bank which borrows funds through treasury debt issues and then lends these funds to TVA at a rate of return equal to the treasury debt rate plus one eighth of a percentage point. TVA could return to borrowing from the private sector capital markets if it was advantageous to do so. TVA's existing private sector bonds receive high rankings for credit-worthiness among investors.

The original enabling legislation for TVA allowed it to issue up to \$111.5 million of bonds for its electric power program that were backed by the full faith and credit of the U.S. government. These bonds were subject to interest limitations (less than 3.5 percent), length of maturity restrictions (less than 50 years) and could not be issued after 1941 (except if the total amount of borrowing authority had not been used). The use of the proceeds from these sales was also controlled.

In 1957, TVA was authorized to issue up to \$30 billion in bonds outstanding at any one time to support its electric power program development. These bonds are not obligations of the U.S. Government. In 1985, the total long-term debt of TVA associated with these bonds was approximately \$15.5 billion. Payments on these bonds take precedence over payments to the U.S. Treasury for government investments in the TVA power program, which TVA must also pay at a

rate of interest equal to the current average rate on U.S. Treasury total debt obligations (TVA 1985a).

All TVA financial obligations and expenditures are treated as "on-budget" items within the government accounting system. The 1957 legislation that established TVA's right to issue its own bonds for power program development provided that the power program be placed off-budget, but the Senate deleted this provision in an effort to maintain more control over TVA's operations. TVA objects to the inclusion of its power program debt obligations as on-budget items because these obligations are not backed by the federal government (National Academy of Public Administration 1981).

5.2.8 Pricing

According to the Tennessee Valley Authority Act, TVA must charge rates for power which will produce gross revenues sufficient to:

- o provide funds for operation, maintenance, and administration of its power system
- o payments to States and counties in lieu of taxes
- o debt service on outstanding bonds
- o payments to the Treasury
- o an additional margin that the Board of Directors of TVA may considerable desirable for early retirement of debt or other purposes

In general, TVA has significantly more flexibility in setting electric rates than do most private utilities. For example, TVA has considerably more flexibility to incorporate ongoing construction program costs in their rate base than do most private utilities. Proposals have been advanced for maintaining more oversight of TVA rates by subjecting these rates to Federal Energy Regulatory Commission review. However, in a number of cases, the federal courts have broadly held that TVA electric rates are not subject to judicial review (Committee on Public Works and Transportation 1982). No information could be found on the process TVA uses to set rates for the non-power services it provides, other than to determine that there is no mandate for such rates to recover the full costs of providing such services.

5.2.9 Other Regulatory Features

TVA is subject to many of the same regulations as other federal agencies and departments. Regulations and acts which have been interpreted to apply to TVA include:

- o the Brooks Act
- o the Freedom of Information Act
- o the Buy American Act
- o the Sunshine in Government Act
- o the Privacy Act
- o the Ethics Act
- o the Government Corporation Control Act

In addition to these regulations, TVA's financial transactions are subject to General Accounting Office audits and oversight. TVA's annual budgets must be submitted to the Office of Management and Budget (OMB) and are subject to apportionment by OMB under the Anti-Deficiency Act. However, TVA attempts to minimize its contact with and supervision by OMB, particularly with regard to its power program, because it feels that OMB oversight should not apply to many of its activities (Moe 1983).

TVA's freedom from regulations typically applied to government agencies are in two primary areas:

- o procurement
- o personnel

TVA is exempt from most government procurement statutes. In addition, personnel policies are not subject to position ceilings, civil service pay scales, and hiring rules. TVA's senior staff are not included in the Senior Executive Service, although the TVA Act does contain a provision that no regular officer of TVA shall receive a salary in excess of that received by a member of the Board of Directors (Tennessee Valley Authority Act 1984). A Federal Court of Appeals recently upheld TVA's independence in personnel matters in a suit brought by a former TVA employee.

5.2.10 Competition

TVA essentially has no competition for the electric power services it provides within its service territory, other than from alternative fuels (such as natural gas). Increased deregulation of the electric utility industry may open up some additional competition for TVA, although it seems unlikely that this could have a significant impact on TVA anytime in the near future because of TVA's advantageous cost structure and other factors. The competition for TVA in providing non-power services primarily comes from other federal agencies. In recent years, concern has been expressed about providing federal funding to TVA to conduct regional activities that could also be performed by other federal agencies (such as the Department of Agriculture) that have a mission considered more national in scope.

5.3 CHARACTERIZATION OF UNITED STATES SYNTHETIC FUELS CORPORATION

The United States Synthetic Fuels Corporation provides an example of a government organization formed in a crisis atmosphere for the purpose of supporting the development of a new energy technology. It is generally regarded as a failure in terms of its primary mission to establish a viable synthetic fuels industry and has now been closed down.

5.3.1 Business Definition

The United States Synthetic Fuels Corporation (SFC) was set up to foster the development of the synthetic fuels industry by providing financial assistance to private sector endeavors which would lead to the construction and operation of commercial production plants. Such plants would have the capability to produce substitute synthetic oil and gas products from the nation's plentiful reserves of coal (including lignite and peat), oil shale, tar sands, and certain heavy oil resources (U.S. Synthetic Fuels Corporation 1983).

As a financial assistance organization, SFC did not have responsibility for the in-house provision of any goods or services on a financially self-supporting basis. The corporation's enabling legislation set forth a clear hierarchy to follow regarding the form in which its financial aid was to be

administered. The corporation's first option was price guarantees, purchase agreements or loan guarantees. Its second option was loans, and the third option was joint ventures.

SFC could guarantee a purchase price for all or any part of the output of a project. This price could be negotiated on a per project basis and in no instance could a project be guaranteed a profit through a "cost plus" arrangement. A purchase agreement was very similar to a price guarantee in that SFC could purchase at a specific sales price all or part of the output of a project. The Corporation could also guarantee loans up to 75 percent of the estimated cost of a project.

SFC's second tier option of issuing a direct loan was subject to such basic guidelines as a limit of up to 75 percent of the estimated project cost. Loans could only be set up if there was a reasonable prospect of repayment and that the project would have a significant impact on production goals. The third and final option was that of a joint venture where SFC would act as a limited partner. SFC's role would be to provide financial support rather than construction or project operation.

Since (SFC) acted as a lending institution for the infant synthetic fuels industry, it's assistance was meant to encourage and supplement, rather than compete with private investment capital. Thus, it had no owned subsidiaries or defined strategic business units.

5.3.2 Objectives

The primary goal of SFC was to assist in the development of a synthetic fuels industry that could compete successfully in the marketplace and contribute to the nation's economic growth and national security. It was perceived at the time SFC was formed that the United States desperately needed domestic supplies of fuel. Continued reliance on the stability and good-will of a small group of Middle Eastern countries for the energy needed to run the country was perceived to expose the United States to a very high risk. This risk could be greatly reduced with the development of synthetic fuels produced from the abundant domestic supplies of coal, oil shale and tar sands.

5.3.3 Markets Served

SFC had only one market--the infant synfuels industry, which it was created to help develop through financial aid. Because this industry never really established itself, SFC had only a few customers for its financial services.

5.3.4 Functional Attributes

Since the corporation was basically a lending institution, it did not have any subsidiaries or plant and equipment, other than its offices in Washington D.C. and in areas which may have been designated by its chairman. It received total appropriations from Congress for up to 88 billion dollars with approximately 15 billion of that set out for "Phase I" operations.

5.3.5 Justification and Legislative History

The Synthetic Fuels Corporation was the product of oil shortages and high prices in the mid-1970s. At that point, the American population and their government felt threatened by a reliance on foreign suppliers. With this impetus, Congress was very responsive to the President's proposal for the immediate development of synthetic fuels as a means to achieve a greater degree of independence from foreign oil. This was seen to be a means of demonstrating to the voters that the government was doing something about the problem.

The Energy Security Act of 1980 (94 Stat. 636; 42 U.S.C. 8701) established the Synfuels program. The Act was essentially written by Congress with limited input from the President. The Act set a national goal of producing the equivalent of 500,000 barrels of oil per day in synthetic fuels by 1987 and 2,000,000 barrels per day by 1992 (U.S. Synthetic Fuels Corporation 1982a). For various political reasons the President and Congress choose not to use the newly formed Department of Energy to achieve this goal. Instead, they opted for an entirely new, autonomous, highly visible, government-funded organization (Moe 1983). However, the distinction between SFC's mission and responsibilities and those of typical government agencies or departments was never clear. A GAO report concerning revision of basic corporate control laws (General Accounting Office 1983) named the Synthetic Fuels Corporation as one of three corporations which clearly performed functions common to executive agencies.

The Corporation for Public Broadcasting and the Legal Services Corporation administer grant programs. The U.S. Synthetic Fuels Corporation administers financial assistance programs that do not involve predominately business or commercial transactions. Technically, they could operate either as units of already existing agencies or as independent agencies. When they were given corporate status, it was because the President and the Congress wanted them to operate independently, free from certain managerial controls of executive agencies (General Accounting Office 1983).

The initial period of operation of SFC, known as "Phase I", was to last up to 4 years. At the end of Phase I, the Corporation was to present to Congress its plan for meeting the national production goals. The plan was to set forth specific objectives, schedules, financial requirements, and as much detail as possible regarding technologies to be used and the role the private sector would play in development of a synthetic fuels industry.

As time passed, the ability of the open market for energy to realign oil demand with supply became more apparent. A significant decrease in the level of concern expressed by the U.S. population regarding dependency on foreign oil occurred. This corresponded to a decrease in support from the general public for a federally sponsored synfuels program. This change in the country's attitude caused SFC to modify its long and short-term goals and objectives. The Chairman of the Board, Edward Noble, writing in January 1983, stated:

1982 was a fast paced and pivotal year in the shifting energy fortunes of the free world countries, whether net energy producer or consumer. For synthetic fuels, especially, it was a year of changing attitudes and adjustments. Early illusions and exaggerated expectations were replaced with a much more realistic understanding of the role of synthetic fuels in national energy and economic policies (U.S. Synthetic Fuels Corporation 1983).

The changed American public attitude had shifted the rationale behind the development of a synfuels industry from that of price control to that of the long-term utilization of the country's solid resources. The recent demise of SFC was the result of the change in public attitudes, the drop in world oil prices, technical difficulties with synthetic fuels technology and the diminished support of both the executive and legislative branches of government.

5.3.6 Organizational Structure

The Synthetic Fuels Corporation had a unique organizational structure for a "corporation". The Corporation had a Board of Directors with members appointed by the President and confirmed by the Senate. They serve for seven-year staggered terms. The Board consisted of a Chairman and six other directors. No more than four of the seven directors can have the same political affiliation. The chairman is appointed by the president and functions as the CEO. An organizational chart for SFC is provided in Appendix B.

The Corporation was a project-oriented entity and consisted of the following offices (U.S. Synthetic Fuels Corporation 1982b):

1. Projects
2. General Counsel and Secretary
3. Technology and Engineering
4. Finance
5. External Relations
6. Administration and Treasurer
7. Inspector General

It used a project matrix management system that utilized members from each of the relevant offices to form a project team that was responsible for all the aspects of one or more projects. SFC was wholly "owned" by the federal government, although it was specifically designated as not an agency or instrumentality of the U.S. SFC had a congressionally mandated limit on staff size at 300 full-time employees and an advisory committee.

The purpose of the advisory committee was to review the solicitation process for proposals for financial assistance and generally to advise the Board of Directors (42 U.S.C. 8719). This committee was made up of the Secretaries of Energy, Interior, Defense and Treasury, and the Administrator of the Environmental Protection Agency. Its chairman was designated by the President from among the individuals above, and enabling legislation called for it to meet with SFC's Directors at least twice a year. This committee and SFC's Inspector General provided the executive branch with limited oversight of the corporation.

5.3.7 Financing

Funds were made available to SFC through the Energy Security Reserve Fund in the U.S. Treasury. Once the president ruled in 1982 that the Synthetic Fuels Corporation was "operational", the uncommitted funds appropriated to DOE's interim programs were transferred to the Energy Security Reserve Account. This, along with the funds which had originally been appropriated to the account in 1980, gave the Corporation almost \$15 billion to draw on. The corporation could get at these funds by issuing a noninterest-bearing note payable to the United States Treasury.

5.3.8 Pricing

SFC had a wide range of "pricing" options it could have utilized depending on which form of financial assistance was used in a specific instance. It is not clear that SFC had to be repaid for the financing it provided. Provisions for collection of an annual fee of .5 percent of the amount of a loan guarantee did exist, but it was not clear that "price guarantees" or "purchase agreements" had any such payback requirement. The other two forms of financial assistance, direct loans and joint ventures, had even fewer stipulations regarding recovery of government funds.

5.3.9 Other Regulatory Features

SFC's "public administration" character was unique. In writing the enabling legislation the Congress exempted the corporation from most controls usually held by the President or the executive oversight agencies, such as the OMB. This is not to say that SFC was unrestricted, because Congress also made the corporation subject to 26 different provisions for the legislative veto (Norton 1982). The enabling legislation specifically stated that "no Federal law shall apply to the corporation as if it were an agency or instrumentality of the United States, except as expressly provided in this part." (42 U.S.C. 8755) Generally, the government wide statutes relating to procurement, Freedom of Information, Sunshine in Government, privacy, and administrative procedures were not applicable in standard form, but were replaced with "tailored" rules set down in the Energy Security Act.

The corporation was subject to annual expenditure limits of \$35 million for administrative expenses, including \$2 million for inspector general operations. It had to retain a nationally recognized accounting firm to prepare an audit of its accounts, and had a specific termination date set down in its enabling legislation. The executive agency which probably had the closest contact with SFC was the Department of the Treasury, as illustrated by the following: "The Corporation, in consultation with the Secretary of the Treasury, shall insure to the maximum extent feasible that the timing, interest rate, and substantial terms and conditions of any financial assistance will have the minimum possible impact on the capital markets of the United States, taking into account Federal activities which directly or indirectly influence such capital markets." (42 U.S.C. 8731(q)).

5.3.10 Competition

In the standard sense of the word the corporation did not have any competition. It was a "one-of-a-kind" organization providing a service to a very specific type of consumer (i.e. different types of synthetic fuel producers and proposed projects). The corporation did have to "compete", or more appropriately, "deal" with the real world reality that as oil prices dropped in the world market, it continually made less economic sense to develop a subsidized synthetic fuels industry.

5.4 CHARACTERIZATION OF CONSOLIDATED RAIL CORPORATION

The Consolidated Rail Corporation provides an example of an organization that was formerly private, came under the control of the government, and is now in the process of returning to the private sector. It is generally regarded as being successful in its primary mission of helping to restore financial health to the Eastern rail industry.

5.4.1 Business Definition

The Consolidated Rail Corporation (CONRAIL) provides the East and Midwest with their principal railroad freight service. CONRAIL's current service territory covers an area ranging from Massachusetts at its easternmost point to Illinois at its westernmost point. The corporation has three major business

areas that it is currently focusing on: intermodal traffic, logistic related traffic, and coal traffic.

"Intermodal" refers to the practice of loading truck trailers or shipping containers onto special rail flat cars for transport by rail to consumer markets or distribution points at which the freight is picked up by truck for final delivery. Intermodal transportation combines water, motor, and rail transportation and has been one of the few growth areas in rail freight traffic. CONRAIL is one of the nation's largest intermodal carriers. CONRAIL offers a "mini-landbridge service," involving the rail shipment of containers and trailers originating by ship in the Pacific Basin to East Coast markets, that represents about a sixth of CONRAIL's intermodal business.

The second major business area is "logistics related traffic" involving the timely delivery of parts and products. This type of traffic has become more important because of a recent drive for efficiency in the U.S. automobile industry using "just-in-time" inventory deliveries.

The third major business area for CONRAIL is the shipping of coal. CONRAIL recently built a spur-line and loading facility to access a very high quality (low sulfur content) coal deposit in West Virginia that will be used to fill a 10-year transportation contract with Detroit Edison. In addition to the transportation of coal to domestic markets, CONRAIL also does a significant business with foreign markets. In 1985, CONRAIL carried almost six million tons of export coal (Consolidated Rail Corporation 1985).

5.4.2 Objectives

CONRAIL was the vehicle developed by Congress to keep the Northeast and Midwest region's railroad transportation systems operational. The Consolidated Rail Corporation was created to operate the system while United States Railway Association (USRA) developed a long term plan for the system and its possible sale back to the private sector. CONRAIL was not meant to be a permanent organization in the fact that the ultimate goal of the government was to establish an interim operational system which would continue rail services and then be sold off once it became profitable.

5.4.3 Markets Served

CONRAIL is the Northeast's primary freight railway with its major markets being the automotive industry, coal shipping, and containerized shipping. At present, two other customers account for a third of CONRAIL's business in intermodal transportation: the United Parcel Service and the United States Postal Service.

CONRAIL's service territory holds North America's greatest concentration of assembly plant capacity and customer demand. It includes production facilities of all the major U.S. automakers as well as Honda, Volkswagen, Toyota, Mazda, and Mitsubishi. As the nation's largest automotive transporter, with 1985 volume of 280,000 carloads of auto parts and almost 2 million complete vehicles, CONRAIL is an integral part in the auto industry's push for increased efficiency. This is CONRAIL's single largest market. CONRAIL also has a major interest in the coal transportation business and has a close relationship with BethEnergy (a subsidiary of Bethlehem Steel) and Consolidation Coal (Consolidated Rail Corporation 1985).

5.4.4 Functional Attributes

Between April 1976 and June 1981, the government invested over \$3 billion in CONRAIL to modernize and upgrade its plant and equipment. Since mid-1981 no federal funds have been used, and the corporation has funded over \$2 billion worth of improvements. In 1986, they expect to spend another \$.5 billion. The following is a list of some of CONRAIL's most significant attributes:

- o A sophisticated rail-to-water transshipment facility
- o SteelNET, Flexi-Flo and other bulk handling facilities
- o a rail network extending north to Montreal, east to Boston, west to St. Louis and South to Charleston.
- o trains operating on over approximately 15000 route miles
- o a heavily unionized civilian work force of about 35000
- o total assets valued at approximately \$6.6 billion
- o gross revenue of approximately \$3.2 billion

5.4.5 Justification and Legislative History

When the Penn Central and five other Northeast railroads collapsed, a crisis of national importance arose. The crisis involved approximately 100,000 jobs in the rail industry and the continued existence of freight rail service crucial to the Northeast's industries. Congress felt it had an obligation to ensure that this region had adequate rail service. Thus, CONRAIL was created as an entity to rehabilitate the railroad and restore adequate service, with the help of substantial federal funds, and with the hope of eventually returning a profitable railway to the private sector (Crane 1983).

CONRAIL was the product of 2-2.5 years of work, with the bankrupt railroads finally being consolidated under a federal umbrella and receiving payment for their assets in the form of common stock in CONRAIL. CONRAIL first came into being as a result of the Regional Rail Reorganization Act of 1973, which set up the United States Railway Association (USRA). The legislation, however, forced CONRAIL to retain unprofitable service and, at the same time, provided extremely generous settlements to displaced union workers and executives.

USRA was set up to develop a long range plan for CONRAIL, to act as CONRAIL's banker, and to act as a watchdog over CONRAIL. The long range plan developed by USRA came to be known as the Final System Plan. Under the plan, bankrupt railroads in the Northeast and Midwest were to be transferred to the new CONRAIL.

The Railroad Revitalization and Regulatory Reform Act of 1976 provided for the merger of the seven bankrupt rails into CONRAIL, which began operating on April 1, 1976 (Moe 1983). The new corporation did not perform up to expectations and was forced to rely on government funding through 1981 when additional legislation made it possible for the railroad to discontinue some of its unprofitable services. Provisions of the Staggers Rail Act of 1980 and the NERSA Act of 1981 gave CONRAIL an additional opportunity to make a profit and cease receiving Federal funds (Moe 1983).

Currently, CONRAIL is up for sale. The strongest contender for ownership is the Norfolk-Southern Railroad. One of the major problems faced by it or any other prospective purchaser from the railroad industry are anti-trust

issues that are inevitable with a deal involving acquisition of one of the nation's largest rail freight haulers.

5.4.6 Organizational Structure

CONRAIL is organized as a "for-profit" corporation. Its management structure is similar to a private corporation, while its ownership is very different. By law, there are 13 Board of Directors. Six are selected by owners of the corporation's debentures and series A preferred stock, three selected by holder's of series B preferred stock and two individuals selected by the owners of the common stock. This translates into USRA selecting six directors and the Dept. of Transportation naming five directors for a total of eleven. The Chief Executive Officer and Chief Operating Office are selected by the board and constitute the remaining two board members. These men come from both private industry and the government agencies that have an interest in CONRAIL. Currently, the Federal government owns 85% of CONRAIL's common stock, while the remaining 15% is owned by CONRAIL employees

5.4.7 Financing

In its early years, CONRAIL had to rely on loans from Congress, which were funneled through USRA, as its primary source of financing. Congress granted USRA appropriations permitting it to purchase up to \$1 billion of debentures, up to \$2.6 billion of series A preferred stock, and \$262 million of Series A stock and accounts receivable; authority to issue debt instruments, Series B preferred stock, and common stock (General Accounting Office 1983).

Originally, all of CONRAIL's common stock was issued to the estates of the defunct railroads in exchange for rail assets conveyed to CONRAIL. Later (1980), as a result of litigation, the government agreed to buy out the railroads for \$2.11 billion in payments to their creditors. In return, the railroads gave up rights to stock that entitled its owners to seats on CONRAIL's Board. Soon after this, cost reductions instituted by CONRAIL management, as well as provisions of the Staggers Rail Act of 1980 and the NERSA Act of 1981 gave the corporation the opportunity to make a profit and cease receiving Federal funds (Moe 1983). Today, revenue from freight hauling services are

CONRAIL's principle source of financing. 1985 was CONRAIL's fifth consecutive year of profitability.

CONRAIL also has a \$100 million unsecured revolving credit agreement with a group of banks. If this line of credit is ever called on, the interest rate would not exceed the prime rate at that time. This credit line is for general corporate purposes and contains, among other conditions, restrictive covenants relating to stockholders' equity, indebtedness and payment of dividends. So far CONRAIL has not chosen to utilize this credit line (Consolidated Rail Corporation 1985).

5.4.8 Pricing

Currently, primarily as a result of the 1980 Staggers Act, the railroad industry has the ability to price competitively. The industry was heavily regulated by the Interstate Commerce Commission before the 1980 Act, which significantly reduced the ICC's oversight authority. The Act dealt with the deregulation of U.S. railroads and CONRAIL in particular. Recent decisions interpreting the Act have enhanced competition in transportation service rates, including allowances for contract rates, back haul rates, proportional rates, and joint rates limited to a narrow range of interline routes (Crane 1983).

5.4.9 Other Regulatory Features

In addition to limited ICC pricing regulation and various federal financing restrictions, CONRAIL is subject to government supervision or control in several other areas. For example, in any year when federal funds are used to finance operations, a GAO audit is required, even though the corporation is not covered by the Government Corporation Control Act (GAO Report 1983). In the past, CONRAIL has been particularly involved with: the Dept. of Transportation, which owns stock and selects six members of the board; the USRA which also owns stock, acts as a banker, selects boardmembers, and handled the litigation that concluded a financial settlement with the bankrupt rails; and the ICC, which is the rail industry's traditional regulating agency.

5.4.10 Competition

The decline experienced by U.S. railroads during the late 1960s was caused by a combination of heavy regulation and increased competition from motor and air transportation. In 1950, U.S. railroads earned almost three-quarters of all land freight operating revenues. By 1970, the railways had less than half of these revenues and by 1979, accounted for less than 38 percent of the amount spent for domestic land freight hauling.

Within the last two years, the rail industry's decline has subsided largely as a result of deregulation which has allowed railroads to offer rates and services that are comparable to trucks. However, the trucking industry remains the primary source of competition for CONRAIL.

5.5 CHARACTERIZATION OF BRITISH TELECOM

Although British TELECOM is a foreign organization, its recent history may have substantial relevance to the enrichment enterprise. It was reorganized as a government corporation in 1981 and has now been privatized through sales of a controlling interest in common stock shares to private investors.

5.5.1 Business Definition

British Telecom is one of the larger telecommunications companies in the world, providing telephone and other communication services for all of the United Kingdom and Northern Ireland. The formerly state-owned agency has proven its ability to prosper in the commercial telecommunications market.

As the UK's major supplier of telecommunications, many services and activities are performed. The range of activities can be compared to those of AT&T before the divestiture of the local Bell companies. The company, including its subsidiaries, has five divisions: Local Communication Services, National Networks, British Telecom Enterprises, Development and Procurement (British Telecom 1985a).

British TELECOM's services include: (Research Magazine Inc. 1986) over 21 million access lines; a toll-free service similar to the 800 service in the United States; telephone, telex data, and television transmission services to over 200 countries utilizing undersea-cable, satellite, and microwave radio

facilities; direct telephone dialing to over 160 countries; two-way direct dialing agreements with MCI, GTE Sprint, and TRT in the U.S.; the supplying of customer premises equipment (i.e., telephones, published directories, computer software); computerized videotex information system with over 63,000 subscribers; and a National Data Processing service.

5.5.2 Objectives

British TELECOM's objective is to build a people's capital market by profitably providing telecommunication services (British TELECOM 1985a). The company is taking steps to improve operating efficiency and productivity through modernizing, replacing and expanding its network, and developing and introducing new services. Improving both quality and growth are goals that underlie British TELECOM's principal activity of providing communication services in the United Kingdom. British TELECOM's strategy in other markets is the pursuit of developing into a top-class information technology business operating around the world (British TELECOM 1985a).

5.5.3 Markets Served

British TELECOM chiefly serves the United Kingdom with a few markets in Northern Ireland. British TELECOM's market of 20 million customers operates over 77,000 public call boxes and 293,000 rented pay phones to customers in hotels, restaurants, and shops (The Economist 1984). Currently, it provides 36 access lines per 100 people compared to 48 per 100 in the U.S. (Research Magazine Inc. 1986). People in the U.K. also make only about one-third the number of phone calls made by Americans. These two facts have spurred British TELECOM into aggressive action to win more customers and promote higher network usage. By offering additional services, such as a toll-free service number, and improved efficiency through a program aimed at replacing a mostly analogue system with modern digital and switching technology, British TELECOM appears to have significant prospects for market growth.

5.5.4 Functional Attributes

British TELECOM's functional attributes (i.e., its productive assets) are primarily equipment that provides for voice telephony, supplemented by data

services, over a single nationwide public network, and a range of more specialized services in telecommunications and information technology (British Information Services 1985). Also among its attributes are public service (help for disabled customers and education), small business innovative applications development, local and national telex, and mobile communications systems. In 1985, total assets were approximately \$8.95 billion, with operating revenues of \$5.1 billion (British Telecom 1985a).

5.5.5 Legislative History and Justification

In 1981, under the 1981 British Telecommunications Act, British TELECOM was reorganized as a wholly owned government corporation by spinning-off from the British Post Office (Research Magazine Inc. 1986). The original organizational structure had been justified by a British tradition of nationalizing essential services. The reorganization was justified as a means to improve operating efficiency and possibly serve as a mechanism for eventually obtaining private sector participation in the organization.

The gains to be obtained through private sector participation were soon realized. In April 1984, the company was incorporated as a public limited company to continue the business of the statutory corporation. This was part of a program to denationalize state-owned corporations. The transfer of property, rights, and liabilities of the corporation to the company occurred under the terms of the Telecommunications Act of 1984 on August 6, 1984. The Act incorporated provisions that limited competition to British TELECOM until the early 1990s in most of its major markets (The Economist 1986).

Privatization occurred by way of a public offer and subsequent sales of 50.2% of the issued ordinary stock shares of the company by the Secretary of State for Trade (British Telecom 1985a). Once privatized, British TELECOM was licensed by the Office of Telecommunications (OFTEL). This licensing agreement serves to regulate British TELECOM by granting OFTEL the power of rate regulation, controlling the provision of certain "necessary" services and providing regulatory oversight in other selected areas (The Economist 1983).

It is too soon to form judgement on British TELECOMs operation after privatization. However, profits are being realized and citizen involvement

has boosted the overall morale of employees and British TELECOM's position in the industry (Research Magazine Inc. 1986).

5.5.6 Organizational Structure

British TELECOM has a mixed Board of Directors composed of former members of the government corporation and private sector representatives. Since the Telecommunications Act of 1984, 50.2% of the company is privately owned and 49.8% is government owned. Of the 50.2% of the stock that is privately owned, employees own .9%, individuals own 13.7%, and corporate/institutional investors own 35.6% (British Telecom 1985a).

5.5.7 Pricing

Only about half of British TELECOM's total business is subject to price regulation. British TELECOM's pricing formula for its regulated business is simply defined as the rate of retail price increase minus three (The Economist 1985a). This requires it to keep a rise in the price of a basket of its regulated services to three percentage points below the rise in the retail price index. For example, if the index increases by 7%, British TELECOM can increase its rates by only 4%. No restrictions are placed on British TELECOM's total financial rate of return and corresponding profits (Research Magazine Inc. 1986).

British TELECOM is required to charge all customers of its regulated services the same rates regardless of location and size. Charges are also identical for both business and domestic users, although line rental costs may differ (The Economist 1986). Some geographical price discrimination is apparent for a few "much used routes," however. The regulation contained in the Telecommunications Act of 1984 on price discrimination is unclear as to when it is allowed.

5.5.8 Financing

British TELECOM's 1984 offer of 50.2% of issued ordinary shares to the private sector raised 3.9 billion pounds (\$4.8 billion) (The Economist 1984b). The original offer was underpriced leading to over subscription. A total of 2 million applications were made for the 868 million available shares, with a

minimum application set at 200 shares. The first day on the market a premium of up to 48 pence per share on a partly paid price of 50 pence was made (The Economist 1984c). Preference in the sale of stock was given to the small investor so that the representation of this group could be increased. However, British TELECOM gives these small investors little acknowledgement (The Economist 1985b).

British TELECOM made the purchasing of shares by employees extremely attractive by offering high incentive bonuses such as free and/or discounted stock purchases. Loyalty bonuses taken from the government's remaining 49.8% were also given to investors who qualified. Qualification was determined by holding allocated shares for three years. Four-fifths of initial investors qualified with 96% of total employees taking advantage of free and/or discounted shares (The Economist 1985a). Such "incentive" offerings led to greater overall private sector involvement.

British TELECOM's share offer in 1984 saw a three-way split. Of the 50.2% sold, 13.8% went to overseas sales, 47.4% to institutions, and 38.8% to employees and the general public (The Economist 1984b).

5.5.9 Other Regulatory Features

Once British TELECOM was privatized in 1984, OFTEL had a licensing agreement enabling it to exercise authority over its activities. In practice, British TELECOM's activities and strategies have often been beyond OFTEL's control. OFTEL is currently faced with the job of forcing competition within a framework that suppresses it. OFTEL has the authority to regulate, but enforcement power is limited (The Economist 1984a).

OFTEL is capable of taking British TELECOM to court over any issue dealing with the licensing agreement, if it is felt that the corporation is not abiding by the agreement. OFTEL, by agreement of British TELECOM or by backing of the monopolies commission, can also change the license conditions.

One example of OFTEL's lack of power over British TELECOM involves Britain's General Electric (GEC) (The Economist 1985c). British TELECOM, which was asked by OFTEL to accept a quota purchase plan to buy switches made by GEC, rejected the request feeling that GEC's product was unsuitable.

5.5.10 Competition

British TELECOM's only competitor until 1990 is Mercury, a cable and wireless subsidiary, which is only allowed to operate non-residential long distance service. In residential service, British TELECOM monopolizes the market. As of May, 1986, Mercury was pricing 20-25% below British TELECOM in the small market it has access to. Mercury's main advantage in the market place is that it faces no pricing restrictions (The Economist 1986).

British TELECOM is reacting to Mercury by price cutting, but is unable to compete in price without increasing local rates. Consequently, local call rates have been increasing (The Economist 1986).

5.6 COMSAT CHARACTERISTICS

COMSAT is a privately owned and operated corporation that was originally established by the government for specific national purposes. It is a multi-faceted organization operating in a highly technical industry.

5.6.1 Business Definition

The Communications Satellite Corporation (COMSAT) provides communications satellite services. In association with this one basic activity, however, COMSAT is organized into a number of distinct components providing different products and services. Since a reorganization in 1985, COMSAT has had three strategic business units - Space Communications, Communication Services, and Technology Products.

The Space Communications business unit has three separate business activities- INTELSAT, INMARSAT, and COMSAT Laboratories. The International Telecommunications Satellite Organization (INTELSAT) provides international satellite communications services to U.S. international service carriers and other users of the INTELSAT network. The International Maritime Satellite Organization (INMARSAT) provides communication services to shipping and offshore industries in the Atlantic, Pacific, and Indian Oceans. The third and final part of the unit is COMSAT Laboratories, which is the research and development arm of COMSAT, and works to advance the capabilities of satellite communication technology.

The Communications Services business unit has four distinct parts - COMSAT General Corporation; COMSAT International Communications, Inc. (CICI); Satellite Television Corporation; and COMSAT Government Systems, Inc. COMSAT General provides tailored communication systems and network services to corporations, government and other organizations; it also operates the COMSTAR and MARISAT satellite systems. Examples of the products COMSAT General has provided include satellite networks engineered, owned and managed by COMSAT General for NBC, Holiday Inns, and the U.S. Army (COMSAT 1985a). The second business activity in the Communications Services business unit is COMSAT International Communications, Inc. (CICI). CICI provides end-to-end international communications services for businesses and government. Its private networks for such firms as Merrill Lynch and Citibank now provide direct communication between overseas offices.

The third business activity in the Communications Services business unit is the Satellite Television Corporation (STC), which was formed to develop a role for COMSAT in the direct broadcast satellite business. The Federal Communications Commission (FCC) has imposed funding limitations on COMSAT's investment in STC casting a shadow on its long-term prospects. The last business activity in this business unit is COMSAT Government Systems Inc. It was formed in 1985 to promote the use of communication systems by the Department of Defense and other government agencies.

The third distinct business unit within COMSAT is Technology Products, which develops, manufactures, and markets a wide range of telecommunications products aimed at many different markets. COMSAT Technology Products, Inc. (CTP) has two wholly owned subsidiaries - Amplica, Inc., which produces microwave amplifiers and systems for the defense industry; and COMSAT Telesystems, Inc., which manufactures mobile satellite terminals, voice control and voice enhancement equipment for communications carriers.

5.6.2 Objectives

The Communications Satellite Act of 1962 set a national policy for the establishment of a satellite system in cooperation with other nations. COMSAT was a private corporation that was given the mission of profitably developing this global satellite system in cooperation with its counterparts in other

countries. Thus, COMSAT's objectives can be characterized as those of a profit making corporation serving a national purpose (Communications Satellite Act 1962).

5.6.3 Markets Served

COMSAT provides communication capacity for both domestic and foreign telecommunication and data carriers, such as AT&T, GTE, etc. It designs and engineers communication systems for multi-national firms, such as Merrill Lynch, and domestic firms. It also provides similar services for various government agencies, such as the Department of Defense.

5.6.4 Functional Attributes

COMSAT and its subsidiaries have developed and created significant attributes which make it possible for the corporation to carry out its mission of providing a global satellite network. The following is a list of some its most significant attributes (COMSAT 1985a).

- o a work force of approximately 2700
- o a total of 39 satellites launched since 1965
- o a satellite television distribution network operated for NBC
- o a research laboratory in Clarksburg, Maryland
- o 1985 operating revenue of \$459,036,000
- o 1985 asset values of approximately \$1.2 billion

5.6.5 Justification and Legislative History

The formation of COMSAT was a product of the political and economic environment of the late 1950s and early 1960s that favored investments in anything connected with outer space exploration and development. The "space race" was in its initial stages, and the development of a space satellite system for economic and military purposes was a natural extension of this activity.

When the idea for establishing a satellite network was first proposed, it resulted in substantial debate over whether the network should be owned and

managed by the government or by private interests^(a). In accordance with the First Amendment, the federal government had traditionally been in favor of keeping publication, communication, and other information services in the private sector. The problem with this approach in regard to establishing a satellite network was the high risk associated with such a large undertaking involving an unproven technology. The financial and technical risks associated with satellite network development were thought to be too large to interest private investors, unless some kind of protection for these investors was granted.

In an effort to find a workable solution, the congress granted COMSAT a "Monopoly Status" as a provision of the Satellite Act of 1962. This status authorized COMSAT to be the only U.S. carrier in the international telecommunications satellite business. Thus, private investors in COMSAT were assured that their returns could not be eroded through competition and were more willing to incur the high risks associated with the satellite business.

The influential support that COMSAT enjoyed in the executive branch was an important factor in COMSAT's successful development that began with the passage of the Satellite Act. The potential uses of COMSAT fit the needs of the Eisenhower and Kennedy administrations in demonstrating the influence of United States technology to the rest of the world. Thus, development of a satellite network was consistent with national interests, and the monopoly status was granted to provide an incentive for the private sector to fulfill this national interest. John F. Kennedy stated, "The ultimate result will be to encourage and facilitate world trade, education, entertainment and many kinds of professional, political and personal discourses which are essential to healthy human relationships and international understanding" (COMSAT 1985b).

Because of the strong national priority associated with the development of a U.S. satellite network, the development and organization of COMSAT proceeded quickly. After the Satellite Act was signed into Law, President Kennedy nominated 12 "Incorporators" who were confirmed by the senate and acted as the first Board of Directors, serving until the shareholders elected

(a) Personal communication with an official of COMSAT.

a board at the first annual meeting. Only four months were needed for the new board to adopt COMSAT's Articles of Incorporation, transmit them to President Kennedy and receive his and the Attorney General's approval. Later that same month a \$5-million line of credit was set up with commercial banks to cover COMSAT's start-up costs and was approved by the FCC (COMSAT 1985b).

5.6.6 Organizational Structure

COMSAT is organized much the same as any other private corporation. Its management structure and ownership are very similar to other private corporations. It has a 15 member board of directors, 12 of which are from the private sector, and is 100% privately owned. COMSAT has 2667 employees, none of which are represented by a labor union. In its role as the United States representative on INTELSAT, COMSAT has a unique linkage to INTELSAT. An organizational chart illustrating COMSAT's relationship to INTELSAT is presented in Appendix B.

5.6.7 Financing

According to a COMSAT official, the two biggest keys to success for the "private corporation with monopoly status" concept of COMSAT were the political backing alluded to earlier and the fact that COMSAT was able to keep from borrowing from the Treasury Department^(a). This last fact is stated clearly in the corporation's 1985 10K report: "The U.S. Government has not invested funds in COMSAT or guaranteed funds invested in COMSAT; nor has it guaranteed the payment of dividends by, or the profitability of COMSAT" (COMSAT 1985c).

COMSAT has been able to remain free of government investment because, from its earliest stages, the provisions of the Satellite Act and the potential profitability of the satellite industry provided a sufficient incentive for private investors to participate in COMSAT. The \$5-million line of credit provided by commercial banks to cover COMSAT's start-up costs was alluded to earlier. On June 2, 1964 COMSAT had its first issuance of stock. It consisted of 10 million shares at \$20 a share, COMSAT netted about \$196 million. Under the provisions of the Satellite Act, half the stock (Series I) was sold to

(a) Personal communication with a COMSAT official.

the public in a manner designed to gain a wide distribution. The other half of the stock (Series II) was sold to 163 communications common carriers, which had been authorized by the FCC to hold shares. These carriers have since sold most of their shares and by 1977, they held less than 1 percent of the total shares outstanding.

COMSAT is currently listed on the New York, Midwest, and Pacific Stock Exchanges. The company's standing in the financial world has been eroded in recent years by the threat of deregulation of certain aspects of its operations and by several money losing ventures in direct satellite broadcasting. These setbacks have not altered the basic financial stability of COMSAT as a whole, although there are mixed feelings among investors concerning the long-term desirability of investing in COMSAT (Wall Street Journal 1984).

Certain aspects of COMSAT's financing activities are subject to approval by the FCC. The Corporation is required to keep a debt-to-total capital ratio not to exceed 40 percent and an interest coverage ratio in excess of 2.5-to-1 (COMSAT 1985a). In January, 1986, the FCC approved a 1985-1987 Capitalization Plan for COMSAT external financing authority in the period not to exceed \$216 million in long-term debt and \$100 million in short-term debt.

5.6.8 Pricing

The rates COMSAT charges for its INTELSAT space segment and earth segment services are regulated by the FCC, which uses the traditional return-on-rate-base method. This method, similar to those used by public utility commissions, calculates the value of COMSAT's regulated assets (i.e. its rate base) and determines rates for COMSAT's services based on an allowed rate-of-return on the calculated rate base. In 1984, the FCC reviewed the structure and operations of COMSAT and found that some adjustments were necessary in the way its expense and cost allocation practices were carried out. Many other segments of COMSAT, such as its Technology Products business unit, are unregulated with respect to the prices they charge. Prices in these segments are determined within competitive markets.

5.6.9 Other Regulatory Features

In addition to FCC pricing and financing regulations, COMSAT is subject to government supervision or control in several other areas. The Satellite Act itself contains provisions which govern corporate affairs that are not ordinarily subject to U.S. government supervision or control.

For example, of the 15-member Board of Directors, three are appointed by the President of the United States with the advice and consent of the United States Senate (General Accounting Office 1983). Other provisions in the Satellite Act, pertaining to FCC control of the issuance of any shares of capital stock and the borrowing of money, were described earlier. In addition, the assumption of obligations for securities of any other person or firm by COMSAT must be cleared by the FCC. There are also limitations placed on the classes of persons which may hold shares of common stock and on the number of shares a person or class of persons may hold.

5.6.10 Competition

Although it would appear that the monopoly status granted COMSAT would allow it to remain free of competitive pressures, recent events indicate that the company's monopoly position is less strong than it once was. For example, in an order released in December 1984, the FCC decided that any U.S. international carrier or group of carriers may apply for authority to construct and operate U.S. earth stations that access the INTELSAT system. The result of the Earth Station Order has been COMSAT's agreement to sell its 50% ownership interest in three U.S. earth stations to AT&T for their net book value on an effective sale date of December 31, 1987 (COMSAT 1985a).

In addition, since 1983, seven companies have filed application with the FCC to establish private international satellite systems between the U.S., Europe and South America. The FCC did not act on the applications at the request of the U.S. Departments of State and Commerce until a review of the impacts of such systems could be completed. The review was completed and in September of 1985, the FCC issued an order authorizing the establishment of separate international communications satellite systems. In separate actions, the FCC granted conditional construction permits to six applicants.

Another area of competition for COMSAT is related to Fiber-Optic Cables, which are currently the main competition for satellites in international communications. In the past, the distribution of circuits (traffic) by the FCC was determined through use of a methodology known as balanced loading that required carriers to equitably distribute traffic among available satellite and cable paths. In August 1985, the FCC modified this procedure to permit carriers like AT&T to vary the overall mix of circuits placed on cables and satellites by up to 2% a year. Because space segment and earth segment services between the U.S. and Europe provided by INTELSAT represent the major source of revenues for COMSAT the FCC orders may have a significant adverse effect on the future revenues and income of the corporation's rate-regulated business.

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APPENDIX A

COMPARISON OF SELECTED CORPORATIONS TO THE ENRICHMENT ENTERPRISE

The uranium enrichment enterprise has many similarities to the examples of government corporations and independent agencies described in the previous chapter. It also has many characteristics that differ from these examples. The purpose of this chapter is to describe these similarities and differences in order to suggest those examples that appear to be most relevant for further study as part of the possible development of a detailed proposal for organization of an enrichment services corporation. The chapter is organized in terms of the 10 characteristics that were described in Chapters 3 and 5.

A.1 BUSINESS DEFINITION

None of the examples studied are similar to the enrichment enterprise in terms of the nuclear industry services it provides. Thus, any governing charter developed for the enterprise will need to include special provisions related to the nuclear related services that it markets.

COMSAT and CONRAIL are similar to the enrichment enterprise in terms of the general nature of the services they provide. Both of these organizations serve as an intermediate step between producers of goods and ultimate end-users. CONRAIL provides for the transportation of goods from producers to consumers, while COMSAT provides for the transmission of information from producers to consumers. The enrichment enterprise serves as an intermediary in converting raw uranium into a form that is appropriate for use in power plants.

Another similarity between the business definition for COMSAT and that of the enrichment enterprise is they both serve defense and non-defense purposes. A significant part of COMSAT's business is associated with the installation and operation of satellites for defense purposes, while approximately 20 percent of the enterprise's total business is related to providing enriched uranium for defense uses.

The business definition of SYNFUELS appears to be most different from that of the enrichment enterprise. SYNFUELS provided non-commercial financial assistance to a developing industry and never was really intended to be a viable

commercial enterprise. The only similarity between SYNFUELS and the enrichment enterprise is that they are both associated with the energy industry. TVA's and BPA's non-power programs also differ from the enterprise because they are primarily intended to contribute to the "social good", rather than providing a commercial product or service with the possibility of being financially self-supporting.

A.2 OBJECTIVE

The enrichment enterprise has commercial objectives in pricing competitively, maintaining market share and other activities associated with serving electric utilities. However, the enterprise also has non-commercial objectives in serving defense and other national purposes. TVA and BPA are most similar to the enterprise in terms of having a mixture of both commercial objectives in their power programs and non-commercial objectives in their other programs.

Currently, it would appear that the commercial objectives of the enterprise are more important in determining its strategy than its non-commercial objectives. With 80 percent of its current sales associated with sales to commercial utilities and the requirement that it be financially self-supporting, it is logical that the commercial objectives of the enterprise should predominate. Thus, the purely commercial objectives of COMSAT, CONRAIL and British TELECOM would not appear to be that much different from the enterprise.

SYNFUELS is the only government corporation or independent agency selected for study where non-commercial objectives would appear to be most important. Since its beginning, controversy existed over whether SYNFUELS should be classified as a government corporation because there was no real indication that it would ever be financially self-supporting. The non-commercial nature of SYNFUELS suggests that its functions could likely have been carried out within the framework of a government agency. It appears most different from the enterprise, in terms of objectives, among all the examples studied.

A.3 MARKETS SERVED

The uranium enrichment enterprise serves a global market because of its sales to foreign utilities. The only example studied that serves a similar

global market is COMSAT. All of the other examples of government corporations and independent agencies are different from the enrichment enterprise because they serve only national or regional markets.

COMSAT's primary customers are telecommunications carriers, which until recently, were regulated utilities. The enterprise serves a similar select group of customers through its sales to electric utilities. BPA and TVA also serve primarily electric utilities, although their electric utility markets are much more regional in scope than those of the enterprise. CONRAIL also serves electric utilities through its coal shipping business. Little similarity is evident between the developing energy firms served by SYNFUELS and the enrichment enterprise.

A.4 FUNCTIONAL ATTRIBUTES

Similar to the enrichment enterprise, all of the examples studied except SYNFUELS have large amounts of revenue producing assets. As an institution providing financial assistance, SYNFUELS had no real revenue producing assets of any significant value. The accounting value of the assets of the enterprise of approximately \$6.6 billion in 1985 compare most closely to those of CONRAIL. Its gross revenue level of approximately \$1.5 billion in 1985 is most similar to that of COMSAT's.

Examination of the scope (in terms of gross revenues and asset values) of the operations conducted by the enrichment enterprise reveals that an enrichment services corporation would not be particularly large when compared to the six examples of currently operating government corporations and independent agencies. The gross revenues of the enterprise in 1985 were less than all of the examples studied except SYNFUELS and COMSAT. The 1985 asset values were less than all of the selected examples except SYNFUELS, COMSAT and BPA.

A.5 JUSTIFICATION/LEGISLATIVE HISTORY

The establishment of both COMSAT and SYNFUELS were initially justified based on national priorities to demonstrate United States technological capabilities to U.S. citizens and the rest of the world. These national priorities were similar to the national defense goals for which the enrichment

enterprise was initially established. TVA and BPA were initially established for purposes of regional economic development, which would appear to be a justification that is much different from that of the enterprise.

Significant changes have occurred over time in nearly all of the six examples studied as a result of legislation passed after their initial establishment. For example, TVA in the 1950s and BPA in 1974 were granted borrowing authority for their power programs that placed them on a more self-supporting and independent basis. CONRAIL's ability to become more financially independent was significantly enhanced by later Congressional actions to deregulate the rail industry. These examples illustrate that substantial precedence exists for changing the operating rules of government enterprises after their initial establishment.

The most relevant recent example of the potential outcome of conversion to a government corporation is provided by British TELECOM. British TELECOM was converted from a fully government department within the British government to a government corporation in 1981. After a three-year transitional period, British TELECOM was privatized through stock sales of a controlling interest in the corporation in 1984.

A.6 ORGANIZATIONAL STRUCTURE

The current organizational structure of the enterprise is most similar to that of BPA because they are both contained within the Department of Energy. In most respects, the structure of BPA is the same as that of the enterprise, although the more independent status of the BPA administrator likely provides BPA with more flexibility than does the current structure of the enterprise.

The current organizational structure of the enterprise is most different from those of COMSAT, British TELECOM and CONRAIL. All of these organizations are organized in stock form of ownership with a Board of Directors and all have made significant efforts to involve private sector representatives directly in their management since their inception. The ability of the enrichment enterprise to receive direct input from private sector representatives on the management and strategy of the enterprise is limited under its current organizational structure.

A.7 FINANCING

Only TVA's non-power programs are similar to the enrichment enterprise in terms of being directly dependent upon the annual appropriations process for financing. BPA's non-power programs may also be funded through appropriations or through power revenues. SYNFUELS was financed through longer-term appropriations to the Energy Reserve Account of the U.S. Treasury.

Among the six examples studied, only BPA has authority to borrow directly from the Treasury for long-term capital projects. TVA issues bonds through the Federal Financing Bank. However, these bonds are not backed by the federal government and TVA could return to issuing its own bonds on private financial markets (as it did prior to 1974), if it was advantageous to do so. COMSAT, CONRAIL and British TELECOM are all financed through net revenues and sales of bonds and/or stocks on private financial markets. Because of their access to either government or private financial markets, all of the examples studied seem to have significantly more flexibility in obtaining financing than does the enrichment enterprise.

A.8 PRICING

All of the examples studied except SYNFUELS and TVA's/BPA's non-power programs are similar to the enrichment enterprise in that the prices they charge for services are expected to be high enough to at least cover the costs of providing these services. BPA rates may be subject to General Accounting Office, Federal Energy Regulatory Commission and other external reviews as a means of determining their adequacy.

For CONRAIL, British TELECOM and COMSAT, the prices charged for services are expected to earn an additional profit above costs as a return to investors. For many services, these organizations are free to price competitively at whatever level the market will bear. However, COMSAT is subject to regulation of its rates for INTELSAT space segment and earth segment services by the Federal Communications Commission using the return-on-ratebase method. British TELECOM rates are also subject to regulatory review by the British Office of Telecommunications. CONRAIL rates are subject to very limited regulatory review by the Interstate Commerce Commission.

A.9 OTHER REGULATORY FEATURES

BPA, SYNFUELS and TVA are similar in most respects to the current enrichment enterprise in terms of the non-pricing regulations that govern their operation. BPA is subject to almost exactly the same regulations as is the current enrichment enterprise. In its enabling legislation, SYNFUELS was exempted from most standard government regulations, but most of these were subsequently replaced by similar regulations specifically developed for SYNFUELS. TVA is subject to most of the same government regulations as the current enrichment enterprise except in two important areas - employment and procurement.

COMSAT and CONRAIL are exempt from most of the regulations common to government agencies. In most respects, these organizations are similar to investor-owned corporations in terms of the regulations that govern their operations.

A.10 COMPETITION

The uranium enrichment enterprise currently faces substantial competition from well-financed international competitors. Only COMSAT would appear to be facing similar competition in several of the markets it serves as a result of recent moves to open up the satellite industry. CONRAIL faces competition from the trucking industry for the shipping of goods. British TELECOM faces only limited competition as a result of legislative provisions that limit entrance by other firms into its major markets until 1990.

BPA, TVA and SYNFUELS essentially have no competition for the specific types of services they provide. Thus, while these organizations have similar competitive environments to the one that existed 10 years ago for the enrichment enterprise, they are much different from the competitive environment currently faced by the enterprise. Because of their lower level of competition, all of the examples studied likely have more ability to obtain full-cost recovery without losing market share than does the enrichment enterprise.

A.11 SUMMARY OF COMPARATIVE ANALYSIS

An analysis of the similarities and differences between the DOE uranium enrichment enterprise and the six examples of government corporations and independent agencies was presented in this chapter. This analysis revealed that the enterprise has the one primary characteristic shared by all of the examples except SYNFUELS - a large amount of revenue producing assets that are potentially capable of being financially self-supporting. Thus, these organizations provide precedence for the possible establishment of a similar type of organization to provide uranium enrichment services.

The example studied that appears to be most similar to the enterprise in terms of basic business characteristics (such as business definition, markets served, and competitive environment) is COMSAT. The example studied that appears to be most different from the enterprise along these dimensions is SYNFUELS. SYNFUELS was essentially a financial assistance institution that bears little similarity to the enterprise except that it was also related to energy production.

In terms of current organizational structure, the enrichment enterprise is most similar to BPA and most different from COMSAT. The similarities of the enterprise to COMSAT in terms of business characteristics suggest that COMSAT should be examined carefully as a possible model for an enrichment services corporation. It should be noted, however, that COMSAT has been successful in its organizational form as a corporation primarily because private investors were confident about the long-term profitability of the satellite business. Whether such confidence could be generated about the uranium enrichment business is unknown, but it would not appear to be likely under present conditions.

The experience of CONRAIL and British TELECOM indicate that a stock form of organizational ownership is most likely to facilitate eventual privatization of a government organization. Other examples studied such as BPA and TVA would likely be as difficult to privatize as the enrichment enterprise in its current form.

The brief analysis presented in this chapter illustrates the diversity associated with organizations included in the general category of government corporations or independent government agencies. This diversity indicates

that substantial freedom will likely be available in defining the organizational charter of a potential enrichment services corporation. Issues that appear to be important to consider in developing this charter include:

- o the willingness of the private sector to finance the development of an enrichment corporation
- o the regulations currently imposed on the enterprise that most significantly affect its efficient operation
- o the acceptability and importance of Treasury borrowing authority

APPENDIX B

ORGANIZATIONAL CHARTS FOR SELECTED EXAMPLES OF
INDEPENDENT AGENCIES AND GOVERNMENT CORPORATIONS

Figure B.1 Organizational Chart Showing Linkage of BPA to DOE

Figure B.2
ORGANIZATION OF THE TENNESSEE VALLEY AUTHORITY

Figure B.3 Synfuel's Corporate Organizational Chart

Figure B.4 Organizational Chart Showing Relation
of COMSAT to INTELSAT

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