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CABINET COUNCIL DECISION MEMORANDUM

- I. Subject: Private Sector Transfer of LANDSAT Activities
- II. Originator: Cabinet Council on Commerce and Trade
- III. Date: 12/14/81
- IV. Issues: The LANDSAT Program: Level of Federal Commitment
The Civil Weather Satellites: Level of Policy and Cost Analysis

SUMMARY AND AGENCY RECOMMENDATIONS

The President's 1982 Budget policy stated that the Administration would terminate the commitment to earth sensing satellite data continuity through the 1980's because,

"It is the Administration's judgment that the present NASA investment in LANDSAT satellites is sufficient to permit evaluations of operational uses of LANDSAT data and, if these uses are cost effective, to attract a private sector owner/operator.

NASA's program to develop, launch, and test two additional satellites (LANDSAT D and D') will continue as previously planned. Expansion and extension of the U.S. civil land remote sensing program, beyond that already funded by NASA, is inconsistent with the need for across-the-board fiscal restraints. The NOAA operation of LANDSAT D and D' should provide satellite data continuity through the mid 1980's, by which time the private sector could develop a system if a sufficient market exists."

In order to carry out the President's budget policy and develop a policy for handing off civil satellite sensing to the private sector, the Deputy Director of the Office of Management and Budget asked the Cabinet Council to address two issues:

1. What is the best mechanism to implement the current policy of transfer of civil land remote sensing systems (LANDSAT) to the private sector as soon as possible?
2. Should the Administration consider simultaneously private sector transfer of both civil weather and land remote sensing systems?

Civil Land Remote Sensing

The Administration's current policy is that additional satellites after the government funded LANDSAT D and D' are contingent on commercializing the system. Most agencies on the Working Group (the

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Departments of Agriculture, Interior, Defense, State and Commerce (NOAA) and the Central Intelligence Agency) favor a transfer to the private sector, but are concerned that a hasty transfer could result in a demise of the United States program. They feel that a vigorous U.S. capability is essential to establishing important national and international policies; to management of resources and public lands; to the U.S. energy, minerals and agricultural industries; and to the economic and national security interests of the nation as a whole. While some of these benefits are potential, they may be very valuable. This new technology has not been fully adopted in government and industry, creating a dilemma. The data market cannot grow to support a viable commercial venture without continuity of data. In turn, under present budget guidance continuity cannot be guaranteed in the absence of a viable data market.

Other working group members (the Council of Economic Advisors and the Office of Management and Budget) believe that the central issue is the real market value of this technology. They recognize that there is a possibility that the private sector might not make large capital investments in a commercial venture if Federal commitments are limited to data purchases. However, they believe that private sector involvement may well evolve from limited remote sensing ventures to meet the needs of specific near-term markets which may require significantly smaller investments. Continuation of the large Federal subsidy for LANDSAT satellites could undermine such private sector initiatives. Finally, the view of OMB is that five Federally funded LANDSAT satellites and over ten years of Government-subsidized satellite data is enough "technology push" for this activity and that the Administration should continue its present policy of making additional satellites, beyond LANDSAT D and D', dependent on commercializing the system. If there should be a hiatus in the availability of new satellite data, the main application that would be affected would be agriculture forecasting. OMB does not believe LANDSAT data is critical or essential for this application because it believes there are other reliable sources of data; however, the key user agencies disagree.

In addition, CEA believes it is important that we move rapidly toward the transfer of LANDSAT from the public to the private sector. In the view of CEA, LANDSAT no longer contains, to any significant degree, the natural monopoly, externality, or high transaction cost elements that have traditionally been used to justify government interference in market processes. Initially government involvement was justifiable based on the external benefits that are generated when a new area of basic research is explored. CEA believes that now the basic question is one of applying technology, an area where market forces are more appropriate.

The principal user agencies (the Departments of Agriculture, Interior, and Defense, and the Central Intelligence Agency) and the Departments of Commerce (NOAA) and State* point out that agencies use the data to produce information. Decision makers in government (and

* Department of State positions in this report are based on oral communication; written response had not been received by November 25, 1981.

in industry in some cases) could use this information in ways that may have positive impacts on the growth of the gross national product, the reduction of U.S. dependence on foreign sources of strategic minerals, the export of agricultural products, and the balance of payments. Thus, these decision makers are the ultimate users of the satellite system, and the importance to the U.S. of the information cannot be measured only in terms of agency data budgets. However, OMB believes the data uses are not critical or essential to the Government because it believes other sources of data provide decision makers with the minimum data needs. Furthermore, the type of data needed on a continuous and costly basis is related to monitoring renewable domestic resources (agriculture) and monitoring overseas crops.

The majority of the Working Group concludes that the central decision facing the Administration with respect to Issue 1 on the mechanism to transfer the LANDSAT program to the private sector is the level of commitment it is prepared to make. There are two options:

Option 1 - The Federal commitment is limited to data purchases on the order of \$15 to \$20 million per year from the budgets of the user agencies. In the future agencies could allocate additional resources within overall budgetary allowances. This approach to commercialization would allow private participation in other government satellite programs, various forms of joint ventures, transfer of the government's LANDSAT assets in return for financing or services or other approaches that could be implemented at no additional cost to the government.

Option 2 - The Federal commitment would include the above Federal data purchases plus other forms of direct support to encourage investment. Support could include transfer of the LANDSAT assets, "free" government services, subsidy payments, loan guarantees, or other financial arrangements. The direct support required to encourage private sector investment of perhaps one to three billion dollars over the next decade is believed by some to total perhaps \$250 to \$500 million over a number of years (five to ten), but this amount cannot be determined with certainty until firm proposals are in hand.

The Departments of Agriculture and Interior suggest focusing on a particular mechanism to achieve the transfer, but the majority of the Working Group believes that the best mechanism cannot be chosen until the level of Federal commitment is determined. Once this determination is made by the Cabinet Council/President, the Department of Commerce, in consultation with the interagency LANDSAT Program Board, can select the best mechanism to achieve the transfer. Subsequent decisions can be implemented through the normal administrative, legislative, and budget processes.

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The Departments of Agriculture, Interior, Defense, State, and Commerce (NOAA) and the Central Intelligence Agency recommend an enhanced Federal commitment. They do not believe that the minimum level commitment is sufficient to create a viable land remote sensing program in the U.S. private sector. The small data market today, combined with competition from subsidized foreign systems, poses too large a business risk with too small a return on investment for a commercially viable venture at this time. Companies will be unable to get needed financing to continue or improve the system. Continued United States leadership in this space technology is considered by these agencies to be in the national interest. They believe that the public benefits of the information derived by the user agencies from a United States system are more than sufficient to warrant an enhanced level of Federal support from general tax revenues. All these agencies except Agriculture and Interior recommend Option 2.

The Departments of Agriculture and Interior cannot support either of the options as they are stated. To do so would give Agriculture's "implicit approval to an ill-advised decision to prematurely transfer the land satellite system to the private sector." Interior believes that the budgetary decision to transfer the program to the private sector as soon as possible is based on an overestimate of the program's technological maturity and user acceptance. These agencies urge reconsideration of the Administration's policy to commercialize the land remote sensing system as soon as possible.

The Office of Management and Budget, the Office of Science and Technology Policy and the National Security Council staff recommend the minimum Federal commitment specified in Option 1. They believe that the real market value of LANDSAT can best be determined by free market forces (i.e., by the private sector's willingness to make the required investments in a commercial venture without a Federal subsidy). Furthermore, they feel that the magnitude of the enhancement suggested in Option 2 cannot be supported in this period of fiscal constraint when the costs and benefits are uncertain. Given the relatively small price that users appear to be willing to pay, the program's ability to pass a cost benefit test is suspect. Other non-LANDSAT options (e.g., the large format camera) may, however, pass such a test with equal or greater benefits.

On the question of maintaining technological leadership in land remote sensing, it is OMB's judgment that the ongoing DOD and NASA R&D programs will ensure that the U.S. continues to have the most advanced satellite remote sensing capability.

Civil Weather Satellites

With respect to Issue II on the simultaneous transfer of the civil land and weather satellites, the Working Group believes there is insufficient information at this time to make a recommendation on commercialization of the civil weather satellites. National and international policy implications of commercializing the government's civil weather satellites could be severe. The potential cost to the government of transferring these weather satellite programs to the

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private sector is unknown. A decision to commercialize them simultaneously with land remote sensing from space is therefore considered premature. There are two options to obtain the required information:

Option 1 - Initiate the competitive bidding process required under OMB Circular A-76 to determine the relative costs of industry versus government ownership and management of civil weather satellites. Assume that the Working Group analysis of national security and national and international policy implications of commercialization and of possible future Federal roles in providing weather services identify no show-stoppers.

Option 2 - Conduct analyses of national and international policy issues over the next six to twelve months, including consideration of the possible future Federal role in providing weather services. Preliminary estimates would be made of commercial costs to provide weather satellite data. If the results of these analyses warrant, the full competitive bidding process required under OMB Circular A-76 would be conducted.

The Departments of Commerce (NOAA), Defense, State, Interior and Agriculture and the CIA stated that the national security and interational concerns over commercialization of the civil weather satellites will be significant. Any analysis leading to a possible decision to transfer these civil satellite systems to the private sector must be thorough and comprehensive. An unnecessarily superficial, short-term study that attempts to identify and resolve these policy issues is not a sound approach. The Departments of Interior and Agriculture did not specifically support either option. Agriculture opposes proposals to move the civil weather satellites before all domestic and international implications have been carefully studied and appropriate decisions made. Interior comments that the issues involved are too important to be rushed through the policy making process. Other agencies, except OMB, OSTP and NSC staff, recommend the adoption of the second option. All these agencies oppose linking decisions on civil weather and land satellites. They feel that decisions on the private sector role in these two satellite systems should be made on their own merits.

Option 1 is supported by the OMB, OSTP and the NSC staff. They believe that policy decisions on national and international issues can be made more quickly (i.e., during the two to four month period necessary to prepare the statement of work needed to initiate the

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A-76 process) than the other agencies believe, and that there is no valid reason to delay initiating the process of determining relative private sector versus Federal costs. If significant cost savings can be achieved, they should be available as soon as possible. A delay of up to six months is unnecessary and, recognizing the potential for delay, may deny the Administration the opportunity to achieve this significant private sector transfer before the next Presidential election. It could result in the loss of interest in commercializing civil weather satellites expressed by one or two major firms.

DISCUSSION AND ANALYSIS OF ISSUES AND OPTIONS

I. The Landsat Program

Issue Statement: What is the best mechanism to implement the current policy of transfer of civil land remote sensing systems (LANDSAT) to the private sector as soon as possible?

The fundamental issue considered by the Working Group is the level of commitment the government should make to achieve the transfer to the private sector. Resolution of this issue will permit the selection of the mechanism to accomplish the transfer. Secondary issues discussed in the OMB's July 13, 1981 memorandum, can then be resolved also. These decisions can be executed by the Department of Commerce, in consultation with the interagency LANDSAT Program Board through normal administrative, legislative, and budgetary channels. Two options are discussed below:

Option 1 - Minimum Federal Commitment

The Federal commitment to commercial land remote sensing from space beyond the five federally purchased LANDSAT satellites is limited to the funds identified in the budget for the purchase of LANDSAT data. The present plan is to transfer \$14.5 and \$17.9 million per year in FY 1983 and 1984, respectively, from the LANDSAT operations and maintenance budget of the Department of Commerce to the budgets of the user agencies to establish a base for Federal data purchases. Funds as the user agencies are willing to reprogram could augment this Federal commitment. No other investment incentives involving increased budget commitment would be offered. A modified "laissez faire" approach to commercialization would be adopted. The government would consider any private sector proposal. Possibilities include new private sector initiatives, transfer of the government's LANDSAT assets in return for financial or service commitments, or various forms of joint ventures (such as adding privately owned sensors on government satellites or launch vehicles where feasible)

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if such can be accomplished at no additional cost to the government. Details would be negotiated with the appropriate operators of government satellites such as NASA, NOAA, or DOD.

Option 2 - Enhanced Federal Commitment

The Federal commitment would include the data purchases suggested in Option 1, augmented by any of several forms of direct support to encourage investment. LANDSAT assets could be transferred in exchange for service commitments to the government. Support could be in the form of joint financial ventures, or combined government/industry satellites. Other forms of support could include direct subsidy payments, special tax incentives, guaranteed loans or other forms of financial support. This support would need to be \$250 to \$500 million over a number of years to encourage the sizable private capital investments required, and to support the market development efforts needed to make the system self-sustaining. The form and extent of the Federal commitment cannot be determined without specific industrial proposals. An owner/operator could be selected through a competitive selection process or designated by legislation.

Assumptions

The following assumptions apply to both options:

1. The focus of this issue is on the continued availability to Federal and non-Federal users of multispectral data such as that provided by LANDSAT's Multispectral Scanner or Thematic Mapper. Other forms of remote sensing from space (e.g., stereoscopic data or film images taken by satellite) could be permitted under Option 1. These unique forms of satellite data would not necessarily be included under Option 2.
2. It is unlikely that either option can be implemented without some form of legislation. To create an environment that will encourage private sector investment, the government should make it clear that regulation will be kept to the minimum needed to protect national security and foreign policy interests, and to meet U.S. treaty obligations. Any legislation will take time. The Congress can be expected to express its views on the level and form of Federal commitment, on the form and type of regulation, and on the best mechanism to achieve the transfer to the private sector.
3. If the government users need assured continuity of space-derived data after the projected lifetime of LANDSAT D and D' (circa 1988), the government needs to decide on its level of commitment as soon as possible. Time is needed to make and implement subsequent decisions,

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including time to enact any required legislation, complete any implementing mechanisms, and allow the private sector time to build and launch its satellite systems. This process may take up to five or six years.

4. Either option could include early transfer of the government's LANDSAT D space and ground assets. Some companies consider LANDSAT D to be a research and development system not suitable for commercial operation, and feel that it is best left under government operation until industry designs and builds its own commercial version using different sensor technology. Other companies have expressed interest in managing the government's system in order to gain operating experience in commercial land remote sensing from space, and to acquire a data source needed to begin marketing efforts. The amount of any financial or service remuneration that would be offered for the government assets is unknown.

5. The analysis of civil weather satellites considered under Issue II could result in the decision to commercialize all or parts of these programs. If such a conclusion is reached, private sector transfer could be treated along with that of the land system, or as a separate activity, depending on the conditions when the decision is made.

The pros and cons of the two options for the private sector transfer of the land remote sensing activities are:

Option 1 - Minimum Federal Commitment

Pros

1. Would be more consistent with this Administration's general philosophy on the role of the Federal Government in commercialization activities. In most areas (e.g., Department of Energy) this Administration is reducing the Federal role in technology development that is designed to accelerate the introduction of new technology in commercial ventures.

2. Avoids Government subsidies for additional LANDSAT satellites. Expenditures are limited to budgets for Federal data purchases. The level of these expenditures would be determined in the normal budget process, but probably would be on the order of \$15 to \$20 million per year.

3. Ensures the maximum flexibility for private sector initiative and innovation, and the greatest incentive for the owner/operator to develop a vigorous, successful marketing program.

4. Transfers a technology developed by the government to commercial application, and shifts the financial risks from the government to industry.

Cons

1. Most, but not all, representatives from private industry have indicated that they are not interested in commercializing land remote sensing from space without a Federal commitment that will enable it to obtain private financing. This commitment is inadequate.

2. There would be no certainty that U.S. multispectral data will continue to be available to those users in all levels of government and industry. Programs designed to provide broad public good and benefits in the areas of global crop production forecasting, improved management of renewable and non-renewable resources on public lands, and the search by industry for new sources of oil, gas, and other minerals could be adversely impacted.

3. If for financial reasons the private sector does not elect to invest in this technology, the United States could lose the technological leadership it has developed at a cost of over one billion dollars. Other nations (e.g., France and Japan) would reap the benefits of this U.S. investment without U.S. competition. The U.S. industry may not be able to regain this leadership in the future.

4. If the private sector were to take the initiative under this option, an unsubsidized U.S. commercial venture would be in competition with subsidized systems operated by other nations (France and Japan).

Option 2 - Enhanced Federal Commitment

Pros

1. May encourage large private sector investments in the near-term (i.e., over \$500 million) that will lead to longer-term reductions in Federal expenditures for the data needed to deliver these public and commercial benefits. Reflects the presently undeveloped market for data as being insufficient, at this time, to support a pure commercial venture of the size and scope that many users would like to have.

2. Provides greater assurance of the continuity of satellite data for the future public goods such as the benefits derived from crop production forecasting, management of renewable and non-renewable resources, and the search for new sources of petroleum and other minerals.

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3. Recognizes that the Federal government has national and international policy interests in the continued evolution and maturation of space technology. While not measurable in dollar terms, United States technological leadership and international goodwill, combined with the economic benefits from activities such as crop production forecasting and the location of new sources of minerals, may provide a return to the nation that is in excess of the enhanced level of Federal commitment.

4. Places a U.S. commercial venture on a more sound footing in its competition with systems operated and subsidized by foreign nations.

Cons

1. Continues significant Federal subsidy -- perhaps as high as \$250 to \$500 million over a five year period -- for information services that may not be critical or essential to the Government, and whose true market value is not certain at this time, when the goal is to reduce Federal expenditures and balance the budget.

2. Fails to achieve the desired level of private sector investment and its full assumption of marketing and financial risks. The availability of large governmental support may reduce motivation for technical innovation, better management, and aggressive marketing.

3. The legislation required to implement this option, particularly those portions dealing with the magnitude, form and duration of the enhanced Federal support, may be difficult and time consuming to enact. The Congress can be expected to express views on these issues that may be difficult to reconcile with those of the Administration.

II. The Civil Weather Satellite

Issue Statement: Should the Administration consider simultaneously private sector transfer of both civil weather and land remote sensing systems?

The Working Group finds that there are major policy, market, and potential cost saving differences between the land remote sensing system and the civil weather satellite programs. Among them are:

- o While important national security concerns may arise as the land system technology advances, commercialization of the civil weather satellite programs will raise important national security concerns over military dependence (as a backup to military satellite systems) on a commercial system observing weather data critical to strategic,

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tactical, and intelligence missions, and over the ability of the Federal Government to control this important source of information in a national emergency.

o No negative international reaction to the commercialization of the land program has yet been voiced. Some countries have already expressed concern over commercialization of the U.S. civil weather satellites. It is not known how widespread this concern will prove to be. What position other nations will take on the free exchange of weather data from satellites and other sources with U.S. Government users is also unknown. Upward of 100 nations now receive weather data from U.S. satellites. If these nations were charged significant amounts for U.S. weather satellite data, they might either terminate the present international free flow of other weather observations that are essential to U.S. civil and military weather programs, or charge the United States for global data which it now receives without cost.

o Revenues from non-Federal users to the operator of the land system in FY 1983 are projected to be between 40 to 50 percent of the total receipts. This figure is expected by some sources to rise to 60 to 70 percent in the late 1980s. In contrast, the Federal Government would likely provide 95 percent or more of the revenues from the sale of weather satellite data, at least during the balance of this decade.

Conclusion

The Working Group concludes that there is now insufficient information on the weather satellite services to be commercialized, on the relative costs of private sector versus government operations, and on the national security and international policy implications of commercializing these functions to make a recommendation on commercialization. However, preliminary analysis by OMB, OSTP and NSC staff suggests that the national security and international implications, although important, do not present insurmountable obstacles. There are two options for obtaining the required policy determinations and cost information:

Option - 1 Assume resolution of the national and international policy issues associated with commercializing civil weather satellite services and initiate the competitive bidding process described in OMB Circular A-76 to determine cost impacts.

Assume that there are no show-stopping policies to preclude commercialization of the civil weather satellites. Initiate the development of the Statement of Work required in the competitive selection process specified under OMB Circular A-76. Include in the Statement of Work provisions to ensure that the international flow of

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weather data needed by government civil and military weather services will continue. Include also terms and conditions to protect identified national security concerns and reflect the needs of the government's current civil weather services. Submit unresolved policy issues to the Cabinet Council for resolution. Upon completion of the Statement of Work, initiate the competitive bidding process and evaluation specified in the Circular to determine relative costs of government versus industry ownership and management.

Option 2 - Conduct analyses of the national and international policy issues associated with commercializing civil weather satellite services, make preliminary estimates of the cost impacts of various forms of commercialization, and, if warranted, conduct the A-76 bidding process to determine actual cost impacts.

Conduct analyses over the next six months to a year to identify alternatives for meeting government needs for civil weather satellite data. Take into consideration possible future government roles in the provision of weather services. In consultation with industry representatives, make preliminary estimates of the cost of providing the required data under industry versus government ownership of the civil weather satellite systems. If these studies identify no significant policy barriers to commercialization and the preliminary cost estimates indicate that total Federal costs for weather satellite data are comparable to or lower than costs under government ownership, initiate the full competitive bidding process as specified in OMB Circular A-76.

The pros and cons of the two options to obtain the information needed to make decisions on the commercialization of the civil weather satellite systems are:

Option 1 - Concurrent policy analyses and competitive bidding

Pros

1. Avoids long-term policy studies which OMB, OSTP and NSC staff believe are not required.
2. Allows decisions to be made in perhaps one to two years, several months earlier than under Option 2.
3. Savings, if any, would reduce the Federal budget earlier.
4. Would provide a clear signal of the Administration's intention to meet its civil weather satellite data needs from the private sector, if it is cost effective to do so.

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Cons

1. Allows only a very short time to assess carefully and resolve the national security and national and international policy implications of commercialization.
2. There may not be time to consider options for the future Federal role in the provision of weather services.
3. Precludes consideration of other alternatives in reducing the total Federal costs for weather satellite data, such as increased mutual support of the requirements of the civil and defense sectors and possible forms of internationalization.
4. The preparation of performance specifications to which a private owner/operator must respond are complex and must be responsive to the policy determinations. Premature statement of these requirements could result in a service that is not responsive to future Federal needs. Subsequent amendment of these statements could necessitate a new bidding process with the result that the availability of the required cost information could be delayed longer than in Option 2.
5. Decisions made as a result of the A-76 bidding process will govern government civil and military weather activities for decades to come. Less than optimum decisions made prematurely could adversely impact both civil and military weather activities. They could result in greater rather than smaller long-term Federal costs.

Option 2 - Sequential policy analyses and competitive bidding

Pros

1. Permits civil weather satellite policy decisions to be made based on more comprehensive analyses of national security and national and international issues.
2. Allows consideration of alternatives other than commercialization to achieve the goal of reducing Federal civil and military expenditures for weather satellite data.

Cons

1. Decisions to commercialize civil weather satellite programs would be delayed by perhaps six to eighteen months. Savings, if any, would be delayed that long.

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2. Does not provide as clear a signal that the Administration intends to meet its weather satellite data needs from the private sector, if it is cost effective to do so.

3. Initiates in-depth, detailed policy studies which OMB, OSTP and NSC staff believe are not required.